Environment and Climate Change Canada
Environnement et Changement climatique Canada

Canadian Atlas of Bird Banding

Volume 1: Doves, Cuckoos, and Hummingbirds through Passerines, 1921 – 1995

Canada

Canadian Atlas of Bird Banding

Volume 1:

Doves, Cuckoos, and Hummingbirds through Passerines, 1921 – 1995

Special Publication
Canadian Wildlife Service

David Brewer[1]
Anthony Diamond[2]
Eric J. Woodsworth[3]
Brian T. Collins[4]
Erica H. Dunn[4]

[1]R.R. 1, Puslinch, ON N0B 2J0
[2]University of New Brunswick, P.O. Box 45111, Fredericton, NB E3B 1J7
[3]Canadian Wildlife Service, Environment Canada, 115 Perimeter Rd., Saskatoon, SK S7N 0N4
[4]Canadian Wildlife Service, Environment Canada, 110 Gamelin Blvd., Hull, QC K1A 0H3

LIBRARY AND ARCHIVES CANADA CATALOGUING IN PUBLICATION

Canadian atlas of bird banding. Volume 1, Doves, Cuckoos, and Hummingbirds through Passerines, 1921-1995 /
David Brewer … [et al.].

(Special publication/Canadian Wildlife Service)
Issued also in French under title: Atlas des oiseaux bagues ou repris au Canada.
Volume 1, Tourterelles, coulicous, colibris et passereaux, 1921-1995.

ISBN 978-0-660-09709-1
Cat. no.: CW69-20/2-2018E-PDF

1. Bird banding–Canada–Maps. 2. Doves, Cuckoos, and Hummingbirds through Passerines–Migration–North America.
I. Brewer, David. II. Canadian Wildlife Service III. Title: Doves, Cuckoos, and Hummingbirds through Passerines, 1921-1995.
IV. Series: Special publication (Canadian Wildlife Service)

Cover photo credits:
Black-capped Chickadee, © Simon Duval
White-throated Sparrow, © Charles M. Francis
House Finch, © Simon Duval

First edition was published in 2000

A web only edition, with corrections, was published in 2007

The portable document format (PDF) version was prepared from the web version and published in 2018

Aussi disponible en français

Abstract

This atlas summarizes, for the first time, bird-banding results for Canada, including data on birds banded in Canada and those banded elsewhere but encountered in Canada. Although limited in geographic scope, the data depict movement patterns that are typical for North America as a whole.

A full account is given for each species with at least one record of an individual moving more than 100 km; banding and encounter statistics for all species banded in Canada are summarized in an appendix. Species accounts consist of 1) one or more encounter maps showing lines joining points of banding and encounter; 2) a narrative discussing results and movement patterns and recapping any major analyses of band encounters already published for the species; 3) a list showing details of selected encounters; 4) a table giving summary statistics such as encounter rate and mean distance moved; and 5) an effort map showing frequency of banding by geographic location.

Many of the results for rarely encountered species have not been published before. Results for more frequently encountered species indicate geographic differences in movement patterns, which are often consistent across many species. The information presented here should be of interest not only to banders and students of migration, but also to managers and conservationists wanting to know more about the wintering destinations and migration routes of Canada's birds.

Acknowledgements

This atlas evolved over several decades and could not have been completed without the help of dozens of contributors. The original manuscript, which covered banding data up to 1976, benefited from the help of Suzanne Blain, Anne Lambert, Colleen Hyslop, Tony Salvadori, and Linda Prywezcki. Heather Trueman helped Eric Woodsworth significantly with the data thinning and mapping programs, while Glen Atkinson and Richard Aylesworth contributed to the development of base maps and projection methods. Major word-processing assistance was provided by Manon Vincent and Lorraine Tomkewich.

After a decision was made to extend coverage through 1995, additional people provided help. These included Kathy Meeres, Lucie Métras, Louise Laurin, Ann Demers, Peter Blancher, Danny Bystrak, and Christine Eberl. Mary Gustafson of the U.S. Bird Banding Laboratory kindly checked the original data to answer many queries. In tracing Canadian encounters of foreign-banded birds, the authors were greatly helped by officers of the banding schemes in Greenland (Denmark) (Kaj Kampp), Iceland (Aevar Petersen), the United Kingdom (the late Chris Mead), and Europe as a whole (R.D. Wassenaar of the European Union for Bird Ringing).

Other contributions to Volume 1 were as follows: Audrey Heagy updated a large number accounts, and other reviews or new accounts were contributed by A.J. Erskine (Band-tailed Pigeon through Belted Kingfisher, Horned Lark, and Black-billed Magpie), Doug Collister (flycatchers and vireos), Nat Wheelwright (Savannah Sparrow), and Nicolaas Verbeek (Northwestern Crow). Laurie Hohban, Jeremy Hussell, and Beverly McBride provided clerical help. We especially thank David Hussell and Danny Bystrak for their thorough reviews of the manuscript, as well as Jane Whitney for her meticulous editing, all of which greatly improved the final document.

The first edition was produced by the Scientific and Technical Documents Division of the Canadian Wildlife Service. Environment Canada Internet and database specialists prepared the second (online) edition in collaboration with Environment Canada editors. This edition was translated into French thanks to the Scientific and Technical Communications Section of the Canadian Wildlife Service and the Translation Bureau, which has also participated in the translation process. The current portable document format (PDF) version was prepared by Thomas Villeneuve with support from Charles M. Francis based on the web version.

Finally, we want to acknowledge the uncountable hours of effort that hundreds of banders have put into amassing the database on which this summary is based. This atlas is for you.

Table of Contents

1. Introduction

This publication is part of an atlas series that presents, for the first time, a comprehensive overview of bird-banding results involving birds banded, recaptured or recovered in Canada for all species of birds except waterfowl. Volume 1 covers most land birds (passerines and near passerines). Volume 2 covers seabirds (albatrosses, petrels, gannets, cormorants, pelicans, jaegers, gulls, terns, and auks). Volume 3 covers raptors (hawks and owls), vultures, and a variety of waterbirds (loons, grebes, cranes, herons, and rails). Volume 4 covers shorebirds (plovers and sandpipers).

Bird banding involves placing a metal band with a unique serial number on a bird's leg, so that the bird can be individually identified when it is found again. An "encounter" is any subsequent observation of the banded bird, dead or alive. (The term "recovery," sometimes used as synonymous with encounter, refers only to encounters of dead birds.)

Bird banding in Canada was begun by private individuals in the early years of the twentieth century. Following the 1916–1917 implementation of the Migratory Birds Convention between Great Britain (for Canada) and the United States, the public sector organized the administration of bird banding. The Canadian Bird Banding Office, established in 1923, was originally part of the Dominion government's Parks Branch but is now administered in Ottawa by the Canadian Wildlife Service (CWS) of Environment Canada. The Office works closely with the Bird Banding Laboratory of the U.S. Geological Survey's Biological Resources Division, which was established in 1920. These two agencies jointly administer the North American Bird Banding Program for migratory birds. Mexico joined the North American Bird Banding Program in 2006 and is developing a banding system in that country.

In Canada, as in most countries with vigorous banding programs, bird banding has included a great deal of volunteer activity. While many professional biologists use banding in their research and government biologists have done much of North America's banding of game birds, interest in the spectacular migrations of birds has led scores of unpaid enthusiasts to spend much of their spare time banding birds. Most published analyses of band encounters have involved species with numerous records, particularly species of economic importance. For other species, there is an enormous body of encounter data that has never been compiled, covering many decades of effort. This atlas series is intended to fill that gap.

2. Overview of the series

The bulk of this atlas series consists of individual species accounts that depict movement patterns and summarize data to indicate what is available for further analysis. Although species accounts range from those reporting a single encounter to those summarizing 10000 or more, each is presented in a consistent format that is described in detail in the next section. Here we provide a brief overview of our treatment of the data and point out the limitations of our analyses.

Full accounts are included for species for which there was at least one encounter over 100 km from the banding site; banding statistics for other species banded or encountered in Canada are included in Banding Summary. Each species account provides one or more maps showing movement patterns, followed by a narrative and a listing of selected encounters reported in detail. Each account concludes with a summary table of standard information and a map showing the distribution of bandings for that species in Canada.

The survival or movements of species for which there are 100 or more encounters have often been analyzed in published works. In such cases, we provide a précis of the results in our narrative (including some important references from later than 1995, including Banding Office data on maximum longevity to 2007). When there is little or no literature, we have tried to highlight the most important patterns indicated by the encounters.

The list of selected encounter records in each account includes examples of typical movements, but also includes cases that will interest banders — for example, records showing unusually long-lived or fartravelled birds, movement outside the normal range of distribution, and cases of apparent "reverse" migration. We recognize from our own experience as banders that it is often the unusual or spectacular encounter that stimulates a bander's interest, and we hope that some of those listed will serve this purpose.

The database used in preparing this atlas series includes all records of birds banded under the North American scheme that were 1) banded in Canada and encountered anywhere or 2) banded elsewhere (usually in the United States but a few in Central America or on Pacific islands) and encountered in Canada. Encounters in Canada of birds banded under other banding schemes (chiefly in northwestern Europe and Greenland) are also included to the extent that we could find out about them, because these records add so much to our knowledge of the distribution and movements of Canadian birds (Tuck 1971; Dennis 1981). Encounters of this sort from the period prior to 1975 were extracted from European banding reports and other published sources. Those from 1975 to 1995 were obtained in

part from literature but primarily from the European Union for Bird Ringing, or EURING, and we recognize that this atlas gives an incomplete picture of European-banded birds encountered in Canada. At some modest risk of creating a diplomatic incident, we have also included in this series a few records that did not involve Canadian territory — from the French islands of St. Pierre and Miquelon (located off the south coast of the island of Newfoundland).

The most obvious limitation of this atlas series is that it deals only with bandings or encounters occurring within Canadian boundaries and the seas immediately offshore. U.S. records that did not involve Canadian territory had to be excluded because the sheer volume of data for North America as a whole was simply beyond our means to handle. (The project was well under way before the dawn of the computer age.) Nevertheless, we felt that the Canadian database was sufficiently large and geographically representative to justify restricting our coverage. We hope that this atlas series will stimulate our American colleagues to collaborate in a more comprehensive continental assessment of banding and encounter data.

Banding data can be misleading if not interpreted carefully with a full understanding of biases and limitations. There is always uncertainty about specific records. The person reporting an encounter has to provide accurate information on the band number (which is usually the means of identifying the species); however, band numbers are easily misread, and only rarely is the actual band returned with the report of finding. In addition, the finder must accurately report date, place, and other details, and investigation shows that reports may often be incomplete or incorrect (Houston and Francis 1993). Data entry is another common source of mistakes. Given the qualifications necessary to get a banding permit, bander error is a less likely source of problems. However, occasional odd encounters are most plausibly explained as mistaken species identification on the part of the bander. This can occur, for example, when chicks are banded in mixed colonies of gull or tern species.

Although we could not check every record, we have checked the details of the most striking encounters. In most cases, there are no data entry errors and no clue as to whether the band number was read correctly. We therefore had to use our judgement as to whether to include certain odd records. When a record was clearly in error we excluded it, but when it was merely suspicious we retained it, usually calling attention to it in the species account. Readers should regard all individual records with a degree of caution, however, and give greatest credence to overall patterns of movement. Although it was sometimes discouraging (although hardly surprising) to see that errors had crept into this large database, we are convinced that the value of the data set as a whole justifies our summarizing all the available data for public scrutiny.

3. Overview of Volume 1

The first edition of Volume 1 was published in paper copy in 2000, but is now out of print. The second edition is an electronic-only version of the original atlas which corrects errata detected in the first edition and has some new features. The "Summaries of banding statistics" now include numbers banded in Canada (1955-1995) as Hatch-Year or as After-Hatch-Year birds. The "Banding Summary" (Appendix 1 in the first edition) has been compressed, and no longer shows the numbers of birds encountered in each decade. These numbers were hard to interpret, as date of reporting was not always in the same decade as the actual encounter, and the revised appendix is now easier to read. Finally, the second edition is available both in French and English.

This volume covers the 227 species of small land birds that were banded or encountered in Canada from 1921 through 1995 (see full listing in Species Search). Of these, 133 species are treated with a full species account (these are species for which there was at least one encounter more than 100 km from the banding site).

For the 227 species covered in this volume, 2 502 063 individuals were banded in Canada between 1955 and 1995. (Numbers of birds banded prior to 1955 have not been entered into the electronic database.) Of these, 11 390 were later encountered, for an overall encounter rate of 0.5%. The encounter rate for individual species varied from less than 0.1% (e.g., Ruby-crowned Kinglet) to rates in the order of 3-5% for larger species (e.g., jays), to a maximum of 8% for Common Ravens. Small birds are encountered less often, in part because they are small (and therefore difficult to see) and are quickly eaten by scavengers, but also because the smallest bands have the return address on the inside of the band where few finders are likely to look for it (Hussell et al. 1993).

The amount of small bird banding has increased greatly since 1975 (see Species Search), particularly for the smallest birds (band size 0), of which more than 450 000 were banded from 1986 to 1995 compared with about 150 000 from 1966 to 1975. This increase is largely due to the adoption of mist nets as a bird-catching device in North America, but it may also reflect the growing number of high-volume migration monitoring stations in Canada.

In addition to the 11 390 encounters of birds banded in Canada between 1955 and 1995, this volume covers encounters of birds banded between 1921 and 1955 - but this adds only 1923 additional records (another indication of the rise in banding volume over time). On top of the 13 313 encounters of Canadian-banded birds from 1921 to 1995, this volume also includes 7294

cases of birds banded in other countries but encountered in Canada during the same time period.

The encounter maps show that small land birds are broad-front migrants that tend to follow the same flyways as waterfowl (Lincoln 1935). Migratory birds breeding in British Columbia tend to move west of the Rocky Mountains and along the Pacific coast. Those from the Prairie Provinces tend to move on a southeast-northwest axis, heading toward the south-eastern U.S. in fall. Ontario is in a transition zone, with birds tending to move more directly north-south, but with migrants passing over from more western and more eastern breeding areas. There is also some suggestion that individual migrants may take different routes through the Great Lakes in different years. Quebec and Maritimes birds have a more southwest-northeast axis of movement, generally moving parallel to the Atlantic coast.

The maps for the American Robin illustrate these typical patterns particularly well, but birds with far fewer encounters can show the same pattern (see maps for other thrush species and the American Redstart, for example). A few species show somewhat different patterns, as pointed out in the species accounts (e.g., White-crowned Sparrow, European Starling).

Although overall patterns of songbird migration are well illustrated by band encounters, it is clear that there are still enormous gaps in our knowledge of the migration and wintering areas of particular breeding populations, even after more than 75 years of nongame-bird banding in Canada. Over half the 227 species covered in this volume have 5 or fewer encounter records, and 75% have fewer than 30 records (Species Search). In many cases the available records are inadequate for defining wintering area or migration routes for the species as a whole, let alone for regional populations. Only 15% of the species have more than 100 encounter records.

This volume lists many individual records of birds encountered at some distance within a few days of banding, including a White-throated Sparrow that travelled 673 km in a single day. The maximum distance between the banding and encounter location of any individual of a species included in this volume was 7764 km for a Bank Swallow banded in Saskatchewan and recovered six years later in Bolivia.

4. Detailed explanation of species accounts

4.1 Species name

The first items in each account are the species' common and scientific names, for which we follow the seventh edition of the Check-list of North American Birds (American Ornithologists' Union 1998 and updates through the 50th supplement), and the species number from The North American Bird Banding Manual (Gustafson et al. 1997).

4.2 Encounter maps

The encounter map shows lines joining banding locations with encounter sites for birds encountered more than 100 km from the banding site. The symbol at the end of each line marks the encounter location.

Prior to mapping, data were screened to delete records showing encounters within 100 km of the banding site (the latter being relatively uninteresting for depiction on maps). Encounters with inexact location codes or coordinates were also excluded, except as follows. Records providing degrees of latitude and longitude but lacking the exact 10' block were assigned coordinates at the southeast corner of the 1^{o} block. Some of the older encounters from Mexico report the state but do not give any coordinates; in such cases, we assigned coordinates for the centre of the state. To ensure that scarce longdistance encounters would be mapped, we also assigned coordinates for inexact locations within Central or South American countries, giving coordinates for the centre of the relevant country.

For species with few band encounters, every record of movement greater than 100 km could be mapped individually. However, this was not possible for species with high numbers of encounters, as even maps with as few as 50 lines can appear too cluttered. We therefore reduced the complexity of the maps using several methods. For example, for a few species (noted in the text), we omitted encounters within 200–400 km of the banding site, as opposed to the usual 100 km. A second approach was to produce several maps for a species to allow depiction of more cases.

Most commonly, we used a thinning process. First, groups of records were identified that shared the same banding and encounter coordinates (i.e., all the birds were banded within one 10' latitude-longitude block and encountered within another 10' block). Then a single line was plotted with a larger symbol to indicate the number of encounters represented by that line (see key on each map). If further thinning was required, coordinates were rounded to form larger degree blocks (instead of 10' blocks), and new (larger) groups of records were formed that shared the new banding and encounter coordinates. From each group, a single record was randomly chosen to represent the group on the map, and these lines were plotted using their original coordinates. Again, the size of the symbol at the end of the selected line shows the number of records represented. If the

map was still too crowded, the process was repeated with larger block sizes until the maps became clear. Block size in degrees (in decimal format) is shown with each map for which block size was enlarged above 10' of latitude and longitude for the purposes of thinning.

The number of encounters represented by each symbol is consistent across all maps, with only two sets of frequency classes being used: one for large data sets (map symbols are triangles) and one for smaller data sets (map symbols are squares).

The result of the thinning process is a set of lines joining banding and encounter locations that summarizes geographic patterns of movement, rather than showing every encounter separately. The advantage of this system is that sparse or outlier records are not eliminated in the thinning process, whereas dense areas of repetitious records are rigorously weeded to reduce clutter. The disadvantage is that many individual records (sometimes hundreds) are not shown on the maps. When block size is large (over a few degrees), the text draws attention to that fact and notes any distortions of pattern that may result.

4.3 Narrative

Each narrative begins with a clarification of taxonomy if taxa traditionally recognized by banders do not coincide with those in current use by systematists. A short description of the North American breeding distribution and each species' wintering area follows, based mainly on Peterson (1980), the American Ornithologists' Union (1998 and subsequent supplements), Godfrey (1986), and individual species accounts in the Birds of North America series (Gill and Poole 1991–2001).

The main body of the text discusses movement patterns revealed by the encounters and refers to specific records (by number) that are listed below the text. If there are major published analyses of band encounters for the species, relevant results are summarized briefly in the account, even if published later than the cut-off date for including band encounters (end of 1995). Cited longevity records (from the U.S. Banding Laboratory web site) were current as of 2006.

4.4 List of selected encounter records

The encounter records are listed in a standard format. Each one occupies two lines, the upper containing mostly the banding information, and the lower, the encounter details. The band number is given first. Below it, on the second line, appear either the initials of the bander or, if these cannot be traced, the bander's permit number or acronym of the permitting organization or the name of the country of banding. (This is the only banding information that appears on the second line rather than the first.) The name of the bander can be displayed by scrolling over the bander's initials.

All codes in the encounter listings are from The North American Bird Banding Manual (Gustafson et al. 1997). The meaning of the codes can be displayed by scrolling over the code. These codes are used in preference to the "international" symbols because they contain more information (Brewer and Salvadori 1978). Following the band number and the initials or permit number of the bander or country of banding are two sets of codes: on the upper line, the alphabetic versions of the codes for age (first) and sex (second) of the bird at banding; on the lower line, the numeric codes for "present status of bird and band" and "how obtained" from the encounter data. Together, the latter two codes give some indication of the completeness of information for the particular record.

Next are the dates of banding (above) and encounter (below). Note that these are in the order day/month/year (not month/day/year as they are in the computer files), to conform with common Canadian usage. Special codes indicate inexact dates of encounter (an explanation is provided by scrolling over the code).

Dates are followed by the names of the places of banding (above) and encounter (below). Most place names were obtained from the gazetteer of banding and encounter localities on file at the U.S. Bird Banding Laboratory. The location names in the gazetteer were assigned by Laboratory personnel and frequently differ from the names that banders assign to their own sites. We have changed site names to those more recognizable by banders in the few cases where we knew which names were more appropriate, but in many cases we were not able to do so. When locations were not given in the gazetteer, we used atlases to find nearby place names.

The next data in the encounter records are the latitude and longitude of banding (upper line) and encounter (lower line), expressed as the coordinates of the southeast corner of the appropriate 10′ geographic block (Gustafson et al. 1997). Question marks indicate inexact locations. Where we assigned coordinates (see notes in section 4.2), the distance travelled (see below) is given as approximate. In a few specific cases for which revelation of the breeding locations might be deleterious to the bird, precise banding locations have been omitted. In these cases, we have identified only the province or state and rounded the geographic coordinates and the distances travelled.

The last data given are not extracted from the standard computer files but have been calculated separately. On the upper line is the time elapsed between banding and encounter (omitted when date of actual encounter was ambiguous or the bird was long dead at the time it was found), and on the lower is the calculated distance and direction between banding and encounter locations (see Additional details on data coding and analyses). The latter is blank when locations are inexact or where approximate locations were assigned (see section 4.2), in which case approximate distance and direction were calculated. Most encounters listed in detail are specifically cited in the text, but often the bird with the longest period between banding and encounter is listed at the end without any comment.

4.5 Summary of banding statistics

A summary of banding statistics is provided for each species with bandings in Canada. Data are arranged in three columns: birds banded in their first calendar year of life (Hatch Year), those banded in their second or subsequent calendar year of life (After Hatch Year), and the total banded regardless of age (including birds of unknown age when banded). An explanation of each line in the summary table is given below.

No. of Canadian bandings (1955-1995):

Banding numbers were not handled by computer prior to 1955, so this item and the next ("No. encountered per 1000 banded") are restricted to the 1955–1995 period. These two lines are italicized in the table to emphasize that they are a restricted subset of the numbers appearing in the remainder of the table. The term Hatching Year refers to birds banded in the calendar year of hatching; After Hatch Year includes all older birds. Note that the Total also includes birds of unknown age.

No. encountered per 1000 banded (1955-1995):

$$\frac{\text{(No. of encounters of birds banded in Canada, 1955 – 1995) x 100}}{\text{Total no. banded in Canada, 1955 – 1995}}$$

The number of encounters includes birds killed, found dead, or captured alive, as well as sight records (i.e., bands read from a distance). If a single bird was encountered multiple times, it was tallied only once.

The encounter rate is influenced by such factors as the size and conspicuousness of a species, density of human population, and whether the species is hunted, as well as by the geographic distribution of bird banders and the number of individuals of the species they handle. The encounter rate is also affected by the number of reports of birds encountered in the same 10′ block in which they were banded. Prior to 1958, encounters within 90 days at the site of banding were incorporated into the database (although the numbers are not large); in 1958, however, this practice was discontinued. Encounters at the site of banding more than 90 days after banding can still be submitted to the banding office; however, some banders do not submit such encounters, and not all of those sent in are actually entered into the database (L. Métras, pers. commun.).

Total no. encountered (1921-1995):

No. of encounters of birds banded in Canada (1921–1995) + no. of Canadian encounters of birds banded elsewhere (1921–1995)

All further calculations in this table are based on this set of encounters. Duplicate encounters of the same bird were excluded.

No. encountered from foreign bandings:

No. of the above encounters (1921-1995) that involved birds banded in another country but encountered in Canada

Maximum period from banding to encounter (mo.):

Maximum for any individual, rounded to the nearest month

This information is provided as an indicator of a bird's minimum age, so is not provided when date of encounter or actual date of death is highly uncertain. Note also that this figure does not represent longevity, except for birds banded as very young chicks, as no attempt was made to estimate the true age of the bird by guessing at its age when banded.

No. of Canadian-banded birds moving > 0 km:

This number gives the sample size for the calculation below.

Mean movement > 0 km of Canadian-banded birds:

$$\frac{\text{Sum of km moved for all encounters of Canadian-banded birds that moved > 0 km}}{\text{No. of Canadian-banded birds moving > 0 km}}$$

The distance between the banding and encounter locations of each record was computed using a great-circle distance — that is, the shortest distance that could be travelled between the two coordinates allowing for the curvature of the earth (Cowardin 1977; Additional details on data coding and analyses). Although the maps show straight lines connecting points of banding and encounter, no birds are likely to fly in an exact straight line, least of all seabirds, most of which will not overfly land and hence are constrained by the shape of coastlines. This is particularly important to bear in mind when considering birds banded in Hudson Bay or the Gulf of St. Lawrence and encountered on the

U.S. east coast. These individuals must have travelled much farther than the straight-line distances suggest. Hence, mean movement should be treated as the absolute minimum distance that individuals had travelled between banding and encounter. Distance travelled is shown as approximate in records for which we assigned encounter coordinates (see explanation in section 4.2).

Maximum movement from all encounters (km):

Maximum calculated distance moved for any individual

Unlike the calculation for mean movement of Canadian-banded birds (above), the maximum distance is given for any encounter in the database, regardless of banding location.

% recovered (encountered dead):

$$\frac{\text{(Total no. encountered dead) x 100}}{\text{Total no. encountered}}$$

Birds with "unknown" present condition codes were treated as dead for this calculation and the next one ("% direct recoveries"), as were birds banded in their Hatch Year and encountered in the same 10' block within three months of banding.

Birds encountered before 1965 and birds banded outside the North American banding scheme (mainly in Europe and Greenland) did not have true "present condition" codes to indicate whether the encountered bird was alive or dead. We assigned codes to these records based on available information to enable their inclusion in this calculation.

% direct recoveries:

$$\frac{\text{(Total no. of direct recoveries) x 100}}{\text{Total no. of encounters}}$$

A direct recovery is an encounter with a bird "killed or found dead before, during, or immediately after the first period of migratory movement following banding and before return migration would be likely to have occurred" (Gustafson et al. 1997). Additional details on data coding and analyses shows how this designation was assigned; see also notes above on "% recovered."

The "% direct recoveries" is used chiefly as a measure of the hunting pressure on species in which most of the mortality is inflicted by hunters. In species that are not hunted, this figure is a rough guide to the magnitude of annual mortality. In the majority of species, this figure will be much higher for birds banded in their Hatch Year than for those banded in later years, reflecting the high mortality of juveniles typical of most birds.

% encountered during banding operations:

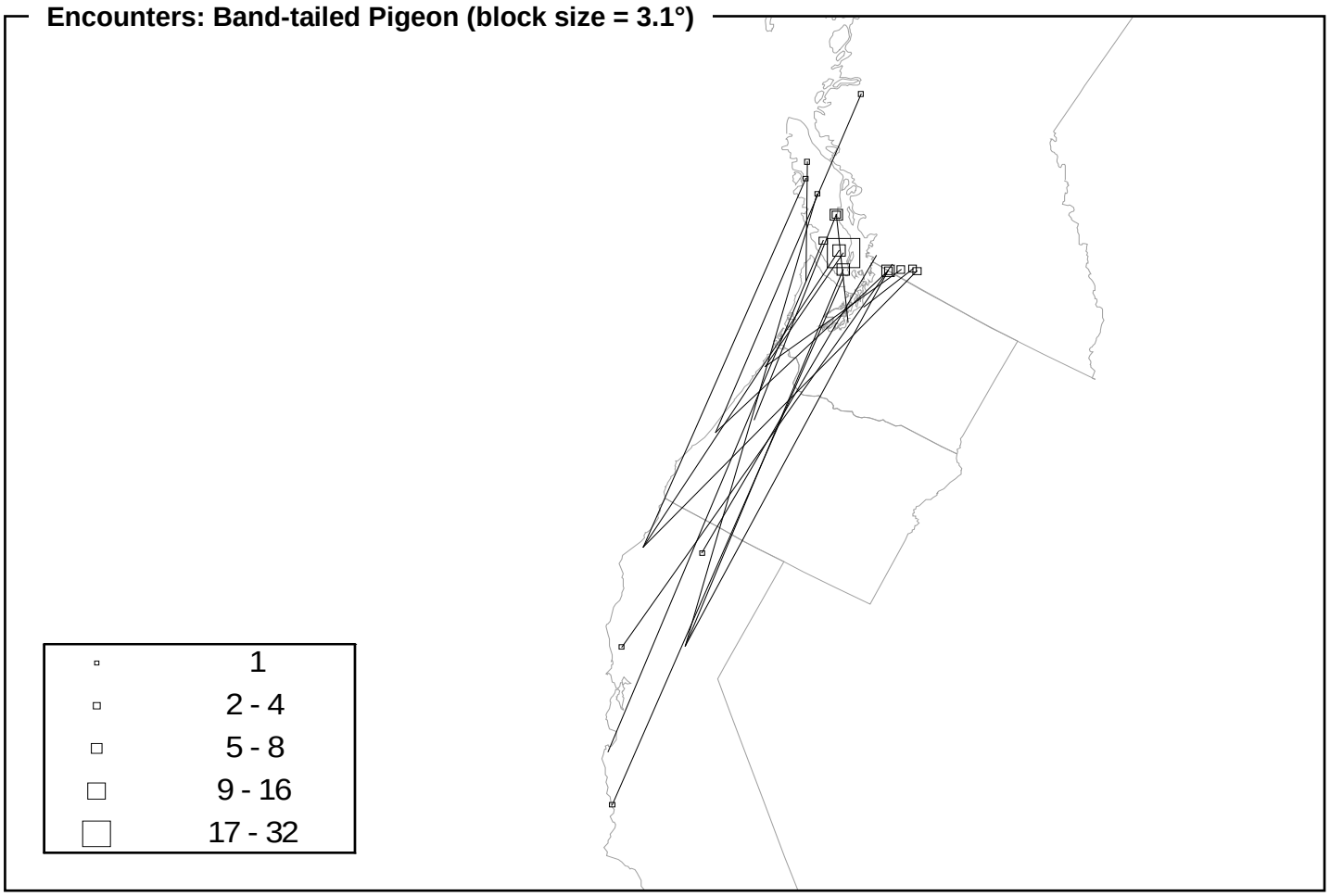
$$\frac{\text{(Total no. encountered in banding operations) x 100}}{\text{Total no. of encounters}}$$

The number of birds encountered during banding operations was the sum of birds with "how obtained" codes of 89 or 99.

4.6 Banding effort map

The banding effort map shows the numbers of individuals for each species that were banded in Canada from 1955 to 1995 in each location (compiled by 10′ block, with blocks combined if too close to be shown separately on the map). This map helps the reader interpret the distribution of encounters, because it shows where banding effort has been concentrated. Under each map is a list of up to five of the master Canadian permit holders responsible for the most bandings of the species in Canada from 1955 to 1995 (listed in descending order). One to many individuals may band under a single master permit, so this listing does not necessarily identify the most prolific individual banders.

Band-tailed Pigeon (*Columba fasciata*) 312.0



The Band-tailed Pigeon breeds in the U.S. Southwest and along the Pacific coast; in Canada it breeds only in southwestern British Columbia, west of the Cascade-Coast mountains, north to Alta Lake (formerly farther north; Campbell et al. 1990b). It winters mainly from central California (see record 1) southward into Central America and western South America to northern Argentina, and in small numbers north to southern Vancouver Island (record 2).

Fifty-seven encounters involved birds banded in the U.S. and encountered in British Columbia; most were banded in winter or during spring migration and were encountered in August and September, reflecting the start of the hunting season (records 3-5). States of banding were Washington (16 cases, including record 6), Oregon (22 birds, e.g., record 3), and California (19 cases, e.g., records 4, 5, and 7). A few birds that evidently bred in California and Oregon moved north after breeding and were encountered in Canada that same summer or fall (record 8).

This species is regularly hunted, so it is not surprising that most encounters were of birds that had been shot. The mapped encounters in British Columbia probably reflect the distribution of people (and pigeon hunters) more than the real distribution of the birds. Samples are too small for estimating survival rigorously, but the relatively low proportion of birds recovered within a year of banding (see "% direct recoveries" in summary table) suggests low hunting pressure and good survival compared with most other game birds. The longest period between banding and encounter was for a bird shot more than 10 years after banding (record 3).

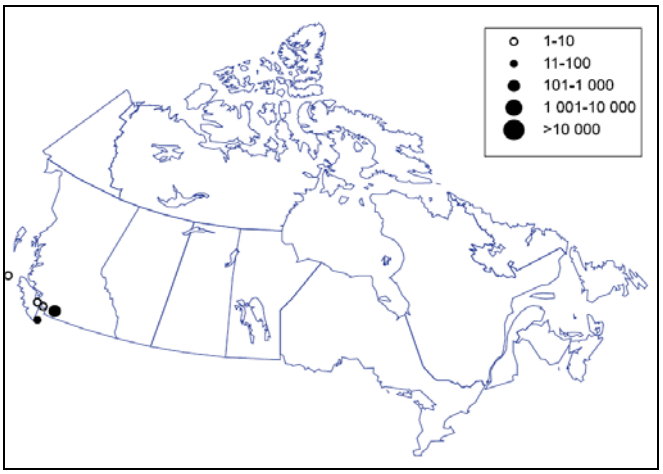
Encounter records: Band-tailed Pigeon

1	505-29971	HY	U	27/05/56	Beacon Hill, BC	48°20'N 123°20'W	1 yr. 7 mo.
	EDW	0	1	20/12/57	Cambria, CA	35°30'N 121°00'W	1441 km S9°E
2	0635-86891	AHY	U	15/05/68	Fox Island, WA	47°10'N 122°30'W	3 yr. 8 mo.
	WDW	2	98	28/01/72	Victoria, BC	48°20'N 123°20'W	144 km N25°W
3	0515-58591	AHY	U	25/04/57	Florence, OR	43°50'N 124°00'W	10 yr. 4 mo.
	CAL	5	1	08/LT/67	South Bentinck Arm, BC	52°10'N 126°50'W	951 km N12°W
4	0515-72728	AHY	F	04/05/55	Monterey Beach, CA	36°30'N 121°50'W	5 mo.
	CDFG	0	3	09/10/55	Annacis, BC	49°10'N 122°50'W	1412 km N3°W
5	0515-62660	AHY	F	15/04/63	Arcata, CA	40°50'N 124°00'W	2 yr. 5 mo.
	CFY	5	1	09/05/65	Hope, BC	49°20'N 121°20'W	969 km N12°E
6	0715-21235	AHY	U	30/05/68	Forks, WA	47°50'N 124°20'W	3 yr. 1 mo.
	WDW	5	3	27/06/71	18 km west of Moss, BC	50°10'N 126°50'W	317 km N34°W
7	0505-83993	U	F	17/03/53	Bangor, CA	39°20'N 121°20'W	3 yr. 3 mo.
	CDFG	0	1	28/06/56	Sechelt Pena., BC	49°40'N 125°50'W	1204 km N16°W
8	0655-76793	AHY	M	06/08/74	Pebble Beach, CA	36°30'N 121°50'W	3 mo.
	FW	5	1	5/9/1974	Franklin Camp, BC	48°50'N 124°40'W	1392 km N9°W

Summary of banding statistics: Band-tailed Pigeon

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*199*
No. encountered per 1000 banded (1955-1995)			*30*
Total no. encountered (1921-1995)	1	54	63
No. encountered from foreign bandings	1	48	57
Maximum period from banding to encounter (mo.)	12	124	124
No. of Canadian-banded birds moving > 0 km	0	5	5
Mean movement > 0 km of Canadian-banded birds (km)	-	710	710
Maximum movement from all encounters (km)	167	1441	1441
% recovered (encountered dead)	100	98	98
% direct recoveries	0	14	12
% encountered during banding operations	0	1	1

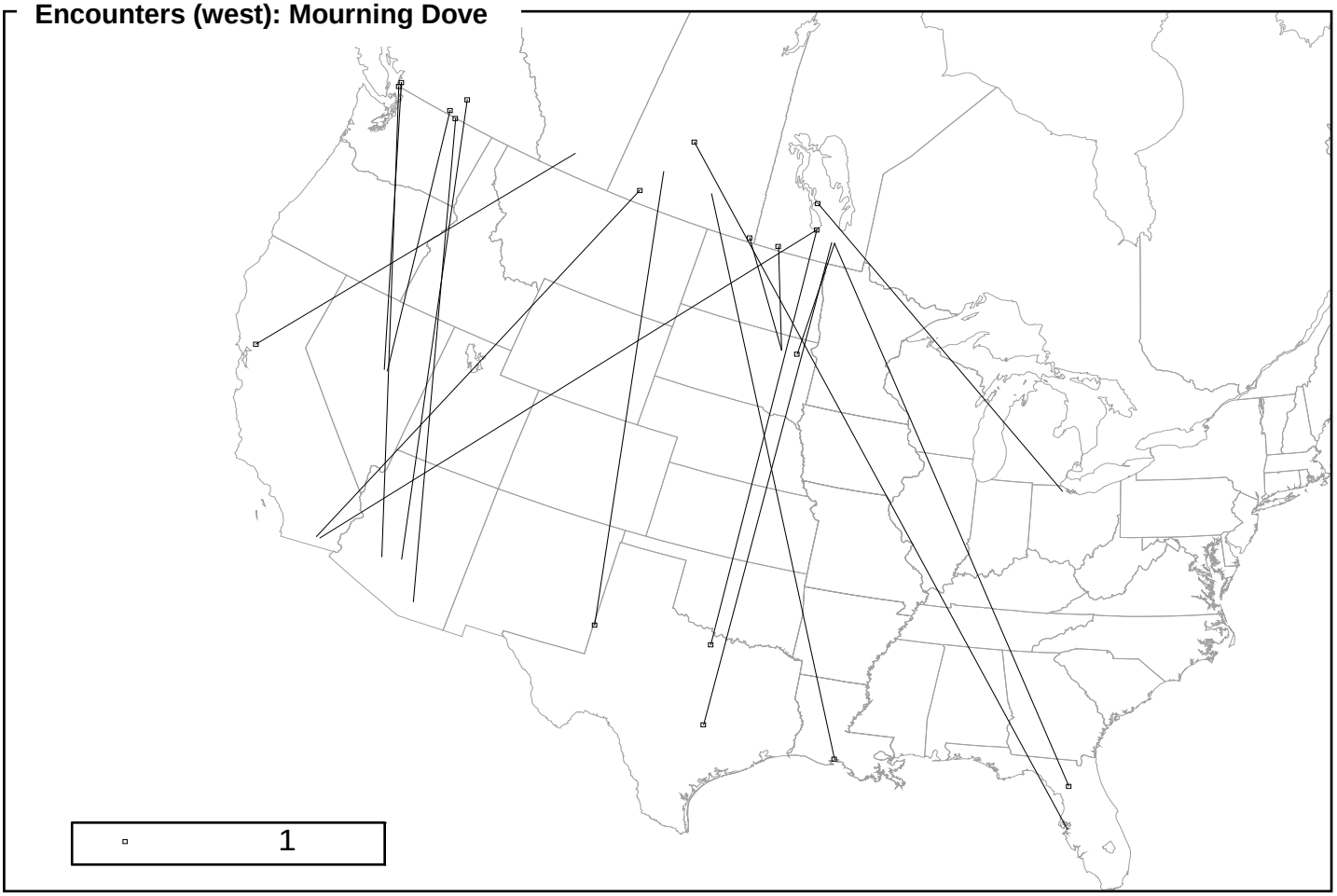
Banding effort: Band-tailed Pigeon



Top banders: WAM, RDH, CWS-BC, EDW, DAH

Mourning Dove (*Zenaida macroura*) 316.0

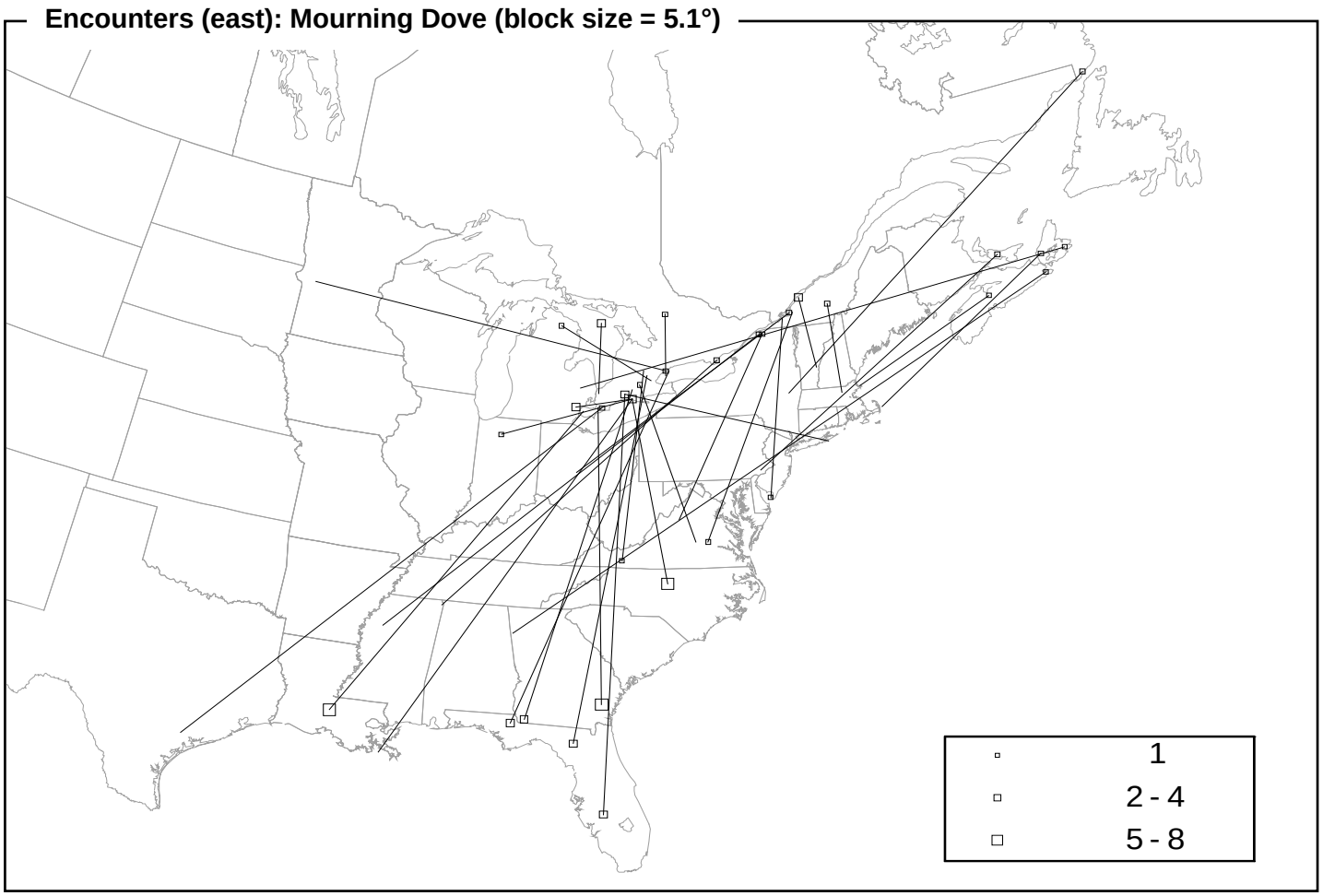
Encounters (west): Mourning Dove



The Mourning Dove breeds across most of southern Canada and all of the U.S. It winters throughout the U.S. and Mexico to Panama, but also in the Maritimes and southern British Columbia, Ontario, and Quebec. It occurs sparsely but regularly in Newfoundland north of most published range maps (B. MacTavish, pers. comm.; see record 1).

Although protected in Canada (except in some parts of British Columbia), three to four times more Mourning Doves are shot annually in the U.S. than all species of waterfowl combined, producing thousands of encounters (Dunks et al. 1982). Analyses (reviewed by Tomlinson 1993) showed that adult males may winter farther north than females and immatures. Breeding populations tend to winter in sectors directly south of the breeding range, but U.S. birds from north-central states fan out more. Most birds winter in the southern tier of U.S. states, except for New England breeding populations, which do not go as far south.

The relatively small number of Canadian encounters (127 in total) generally fit this picture well. Western birds winter in the southwestern U.S. (record 2), while doves from the Prairie Provinces appear to winter from coast to coast (records 3-5; see also records 6-8 for additional evidence of wintering across the southern U.S.). Most recoveries were of Ontario birds shot in winter in the southeastern U.S. (record 9). Other probable Ontario breeders were encountered predominantly in Louisiana (nine birds, including record 10), Georgia (seven birds), Florida (seven birds, e.g., record 9), and South Carolina (five birds); however, a few wintered farther west (record 11). (Note that the eastern map does not depict all these encounters because of the thinning process used in mapping; see introduction for explanation.) Quebec and Maritimes birds, like New England populations, appear not to winter as far south as doves from the Great Lakes.



No Canadian doves have been encountered in Mexico despite regular hunting there. Mid-winter encounters in Canada increased substantially after 1975, in keeping with the growing tendency for eastern Canadian birds not to migrate (Mirarchi and Baskett 1994).

A surprising number of birds wintered farther north than where they were banded in summer. Two moved to Nova Scotia from Alabama (record 12) and Michigan (record 13), and two adults banded in Nevada in summer were encountered in British Columbia later the same fall. Also noteworthy are encounters of birds spending different summers in very distant localities, for example, Arizona and British Columbia, New York and Newfoundland (record 1), and Ontario and Mississippi (record 14). The latter bird (record 14) showed the longest period between banding and encounter.

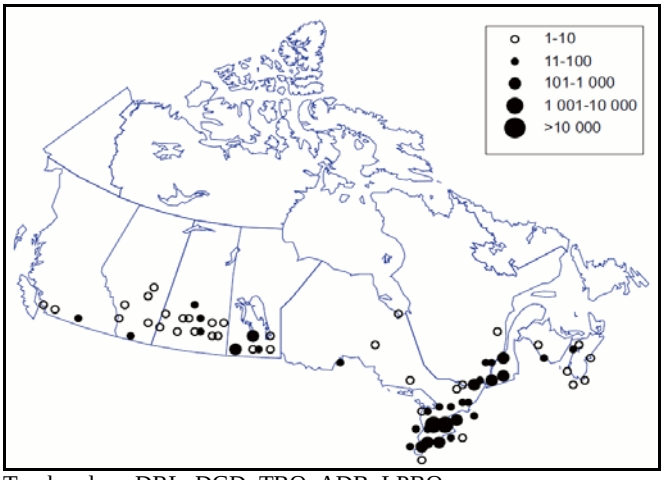
Encounter records: Mourning Dove

1	0803-33690	HY	M	08/05/73	near Albany, NY	42°40'N 73°50'W	1 yr. 1 mo.
	RPY	5	0	10/06/74	near West St. Modiste, Labrador, NL	51°40'N 56°40'W	1634 km N46°E
2	0703-96761	AHY	M	02/02/64	near Pantano, AZ	32°00'N 110°40'W	2 yr. 7 mo.
	LHB	3	1	28/09/66	Osoyoos, BC	49°00'N 119°20'W	2026 km N18°W
3	0633-49970	HY	U	23/06/68	near Chin, AB	49°50'N 112°30'W	3 mo.
	PM	5	1	06/09/68	near Napa, CA	38°20'N 122°10'W	1493 km S35°W
4	0803-77176	AHY	M	14/02/65	Brawley, CA	33°00'N 115°40'W	8 mo.
	WKM	3	12	99/10/65	near Instow, SK	49°30'N 108°20'W	1934 km N18°E
5	0523-54512	HY	U	01/10/56	Regina, SK	50°20'N 104°30'W	2 mo.
	FGB	0	1	02/12/56	Abbeville, LA	29°50'N 92°00'W	2510 km S29°E
6	0593-67406	U	U	23/08/65	Union Point, MB	49°50'N 97°10'W	1 mo.
	DRH	3	1	29/09/65	near Utley, TX	30°20'N 97°30'W	2171 km due S
7	0593-67511	L	U	01/07/63	near Rush Lake, SK	50°30'N 107°30'W	3 yr. 2 mo.
	CSH	3	1	01/09/66	near Tatum, NM	33°10'N 103°00'W	1964 km S13°E
8	0653-82504	AHY	U	02/04/61	St. Petersburg, FL	27°40'N 82°30'W	5 yr. 2 mo.
	LLH	5	12	05/06/66	near Saskatoon, SK	52°00'N 106°30'W	3365 km N30°W
9	0623-20464	L	U	09/06/62	Toronto, ON	43°40'N 79°10'W	1 yr. 4 mo.
	GP	0	1	11/10/63	near Altha, FL	30°40'N 85°10'W	1541 km S22°W
10	0513-24006	AHY	U	03/11/50	Rose Pine, LA	30°50'N 93°10'W	
	LDWF	0	98	??/08/65	near Point Pelee Marsh, ON	41°50'N 82°30'W	1546 km N44°E
11	0973-01591	AHY	M	14/02/67	near Victoria, TX	28°50'N 97°00'W	1 yr. 3 mo.
	TTPWD	5	14	28/05/68	near Merlin, ON	42°20'N 82°10'W	2009 km N38°E
12	1133-05298	HY	U	05/08/68	near Cedartown, AL	34°00'N 85°20'W	4 mo.
	ADC	5	1	15/12/68	Chedabucto Bay, NS	45°20'N 61°20'W	2399 km N51°E
13	1193-37210	HY	U	20/07/70	Attica, MI	43°00'N 83°10'W	5 mo.
	MDNR	5	12	10/12/70	near Louisburg, NS	46°00'N 60°10'W	1850 km N72°E
14	0613-94502	L	U	18/07/58	Greenwood, MS	33°50'N 90°20'W	9 yr. 1 mo.
	MDWFP	7	89	31/08/67	Chase Mills, ON	44°50'N 75°00'W	1795 km N43°E

Summary of banding statistics: Mourning Dove

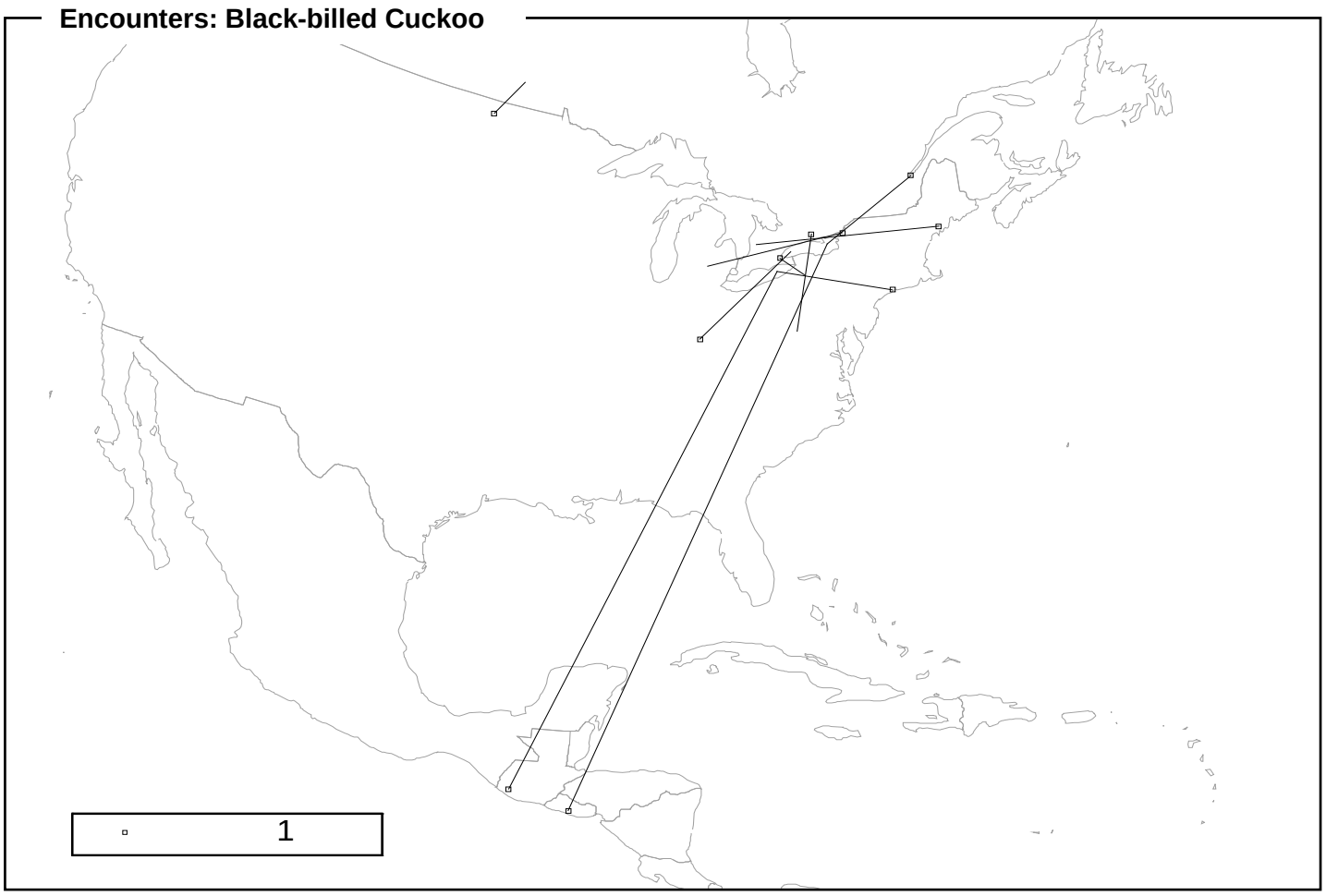
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*6528*
No. encountered per 1000 banded (1955-1995)			*12*
Total no. encountered (1921-1995)	49	70	127
No. encountered from foreign bandings	13	27	40
Maximum period from banding to encounter (mo.)	109	92	109
No. of Canadian-banded birds moving > 0 km	28	21	53
Mean movement > 0 km of Canadian-banded birds (km)	1332	637	1039
Maximum movement from all encounters (km)	2571	3365	3365
% recovered (encountered dead)	95	91	92
% direct recoveries	40	34	37
% encountered during banding operations	2	5	5

Banding effort: Mourning Dove



Top banders: DRL, DGD, TBO, ADB, LPBO

Black-billed Cuckoo (*Coccyzus erythopthalmus*) 388.0



The Black-billed Cuckoo breeds in the northern U.S. and in southern Canada east of the Rocky Mountains, from Alberta east to Nova Scotia. It winters in northwestern South America from northern Colombia and Venezuela (including Trinidad) to Ecuador and northern Peru.

All encounters are listed below. Although several are quite long distance (records 1 and 2), none involves the winter range. Abundance in breeding areas (and presence in peripheral areas) varies with the abundance of tent caterpillars, a major food. Although three birds banded in June in southern Ontario were encountered in June of later years in Connecticut (record 3), Maine (record 4), and Quebec (record 5), this does not necessarily indicate lack of breeding site fidelity, because cuckoos are very late migrants.

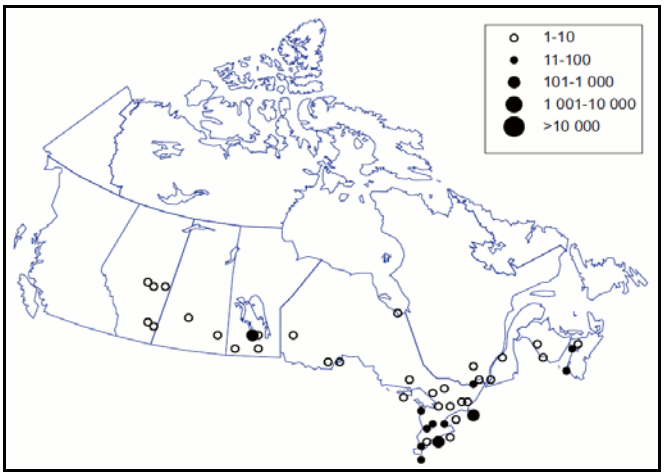
Encounter records: Black-billed Cuckoo

1	0552-90593	U	U	31/05/62	Long Point, ON	42°30'N	80°00'W	
	LPBO	0	1	??/10/64	Mazatenango, GUATEMALA	14°30'N	91°40'W	3312 km S23°W
2	0832-43791	AHY	U	24/06/79	Prince Edward Point, ON	43°50'N	76°50'W	
	PEPO	5	1	??/07/83	inexact location, EL SALVADOR	13°??'N	89°??'W	c. 3571 km S23°W
3	0552-98476	U	U	10/06/65	Long Point, ON	42°30'N	80°00'W	4 yr. 0 mo.
	LPBO	5	0	14/06/69	Ansonia, CT	41°20'N	73°00'W	594 km S80°E
4	0722-68050	AHY	U	11/06/78	Whitechurch, ON	43°50'N	81°20'W	3 yr. 0 mo.
	JBMi	5	0	25/06/81	Hallowell, ME	44°10'N	69°40'W	934 km N84°E
5	0832-48513	AHY	U	18/06/81	Prince Edward Point, ON	43°50'N	76°50'W	0 mo.
	PEPO	5	12	26/06/81	L'Ange-Gardien, QC	46°50'N	71°00'W	565 km N52°E
6	0502-78737	AHY	U	02/09/66	Crystal Beach, ON	42°50'N	79°00'W	2 yr. 9 mo.
	PMB	5	0	19/06/69	Agincourt, ON	43°40'N	79°10'W	94 km N8°W
7	0712-82449	HY	U	14/10/67	Elton, NY	42°20'N	78°20'W	7 mo.
	DFC	5	13	23/05/68	Cootes Paradise, ON	43°10'N	79°50'W	154 km N52°W
8	0762-35830	AHY	U	20/08/76	11 km east of Delta, MB	50°10'N	98°20'W	9 mo.
	UM	3	13	26/05/77	Rugby, ND	48°20'N	99°50'W	231 km S29°W
9	0782-78123	AHY	U	28/08/78	Eckhart, MD	39°30'N	78°50'W	11 mo.
	JBW	5	14	13/07/79	Trent River, ON	44°20'N	77°50'W	544 km N8°E
10	0862-93335	AHY	U	02/06/88	Toronto, ON	43°30'N	79°10'W	10 mo.
	TBO	5	0	10/04/89	Cincinnati, OH	39°00'N	84°30'W	671 km S43°W
11	0792-12201	AHY	U	07/08/76	Muttonville, MI	42°40'N	84°20'W	11 mo.
	BBU	3	0	01/07/77	Alexandria Bay, NY	44°20'N	75°50'W	711 km N72°E

Summary of banding statistics: Black-billed Cuckoo

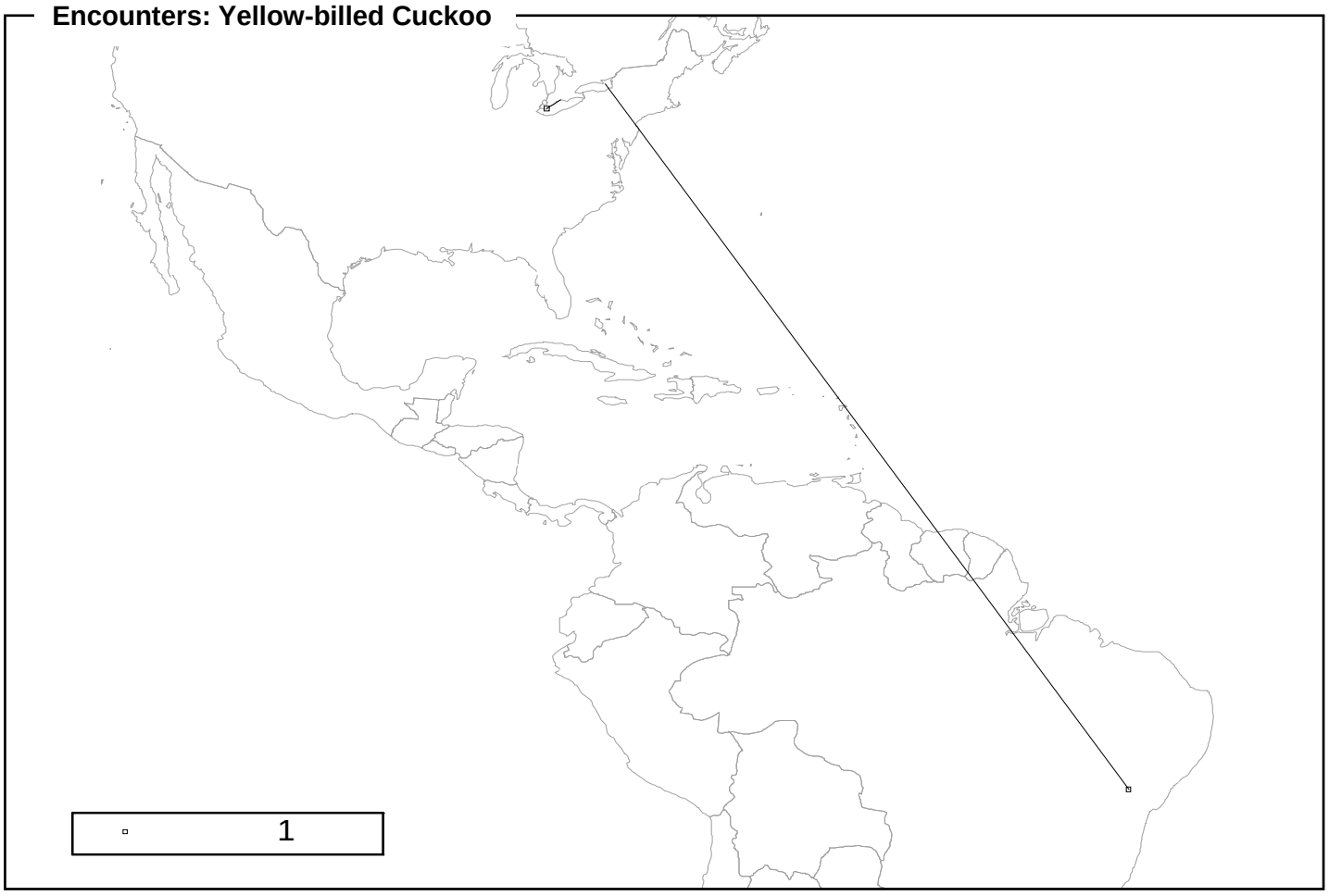
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*1115*
No. encountered per 1000 banded (1955-1995)			*7*
Total no. encountered (1921-1995)	1	8	11
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	7	36	48
No. of Canadian-banded birds moving > 0 km	0	6	8
Mean movement > 0 km of Canadian-banded birds (km)	-	1010	1246
Maximum movement from all encounters (km)	153	3570	3570
% recovered (encountered dead)	100	100	100
% direct recoveries	0	12	9
% encountered during banding operations	0	0	0

Banding effort: Black-billed Cuckoo



Top banders: LPBO, UM, PEPO, JBMi, IPBO

Yellow-billed Cuckoo (*Coccyzus americanus*) 387.0



The Yellow-billed Cuckoo breeds over much of eastern and central North America; in Canada it breeds in southern Ontario, the extreme southwestern parts of Quebec, and (possibly) New Brunswick. It is a frequent northeastward vagrant on the east coast in fall (see records in Nova Scotia on banding effort map), but it winters from northern Venezuela southwestward in a band east of the Andes to Bolivia and northern Argentina, and southeastward through eastern Brazil.

Only two encounters of Canadian-banded Yellow-billed Cuckoos were recorded up to the end of 1995, but one of these is a spectacular encounter linking breeding and wintering areas (record 1). That bird was shot, whereas the bird encountered in Ontario (record 2) was killed by a cat.

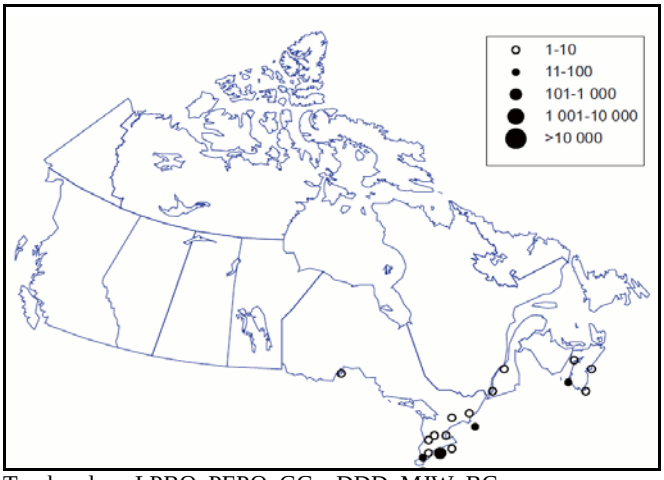
Encounter records: Yellow-billed Cuckoo

1	0832-48226	AHY	U	23/05/80	Prince Edward Point, ON	43°50'N 76°50'W	7 mo.
	PEPO	5	1	27/12/80	near Utinga, BRAZIL	12°00'S 41°00'W	7198 km S39°E
2	0472-05657	AHY	U	31/05/49	St. Thomas, ON	42°40'N 81°10'W	2 yr. 3 mo.
	MHF	0	12	10/08/51	Leamington, ON	42°00'N 82°30'W	132 km S56°W

Summary of banding statistics: Yellow-billed Cuckoo

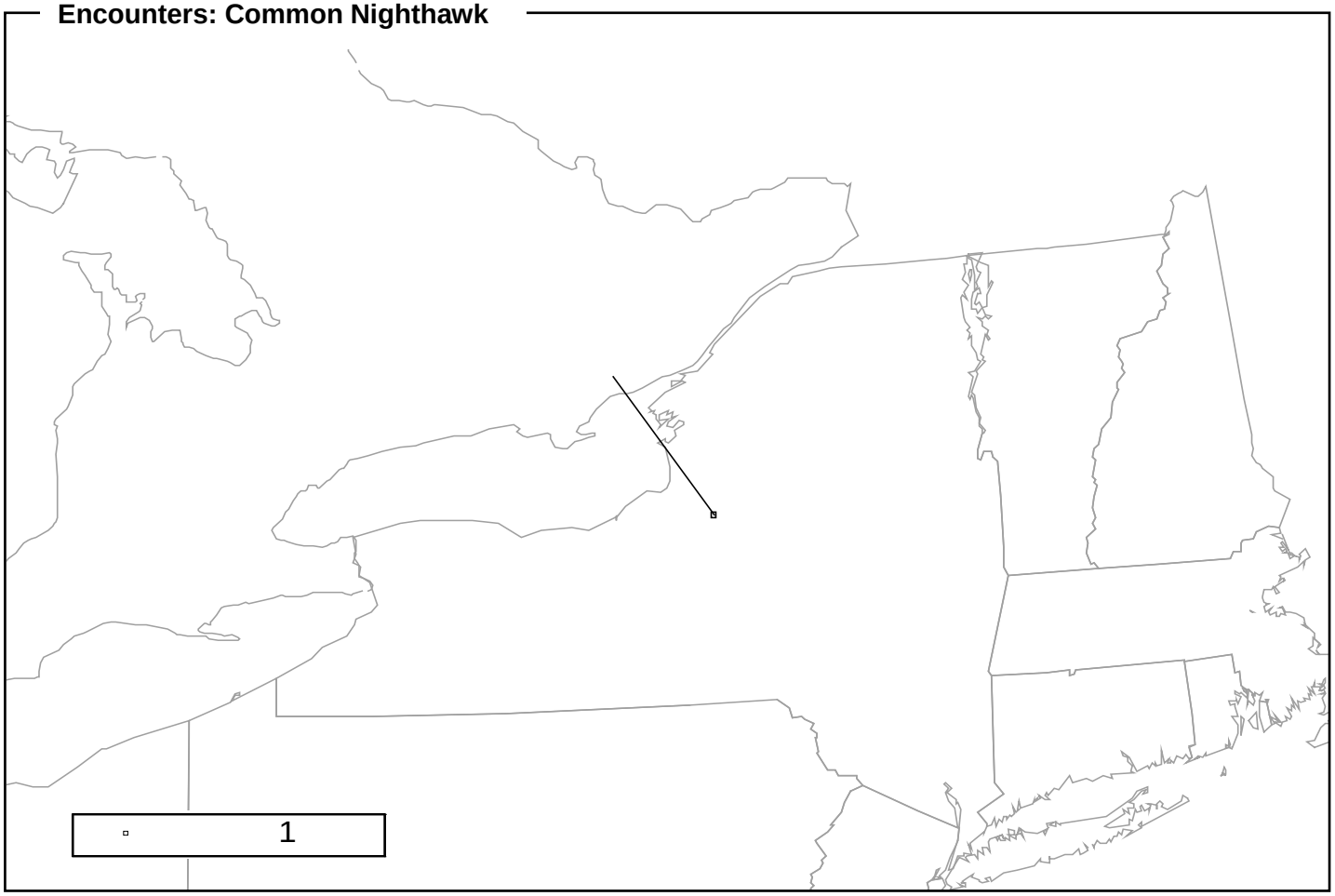
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*323*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	0	2	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	27	27
No. of Canadian-banded birds moving > 0 km	0	2	2
Mean movement > 0 km of Canadian-banded birds (km)	-	3664	3664
Maximum movement from all encounters (km)	-	7197	7197
% recovered (encountered dead)	-	100	100
% direct recoveries	-	50	50
% encountered during banding operations	-	0	0

Banding effort: Yellow-billed Cuckoo



Top banders: LPBO, PEPO, GGa, DDD, MJW, BC

Common Nighthawk (*Chordeiles minor*) 420.0



The Common Nighthawk breeds all across the U.S. and southern Canada from Vancouver Island to Cape Breton Island, and from southwestern Yukon to southern interior Labrador. It is not known to breed in insular Newfoundland but is an almost annual visitor there. The species winters mainly in northern and central South America. Specimen evidence suggests Canadian birds (mostly C. m. minor) occur throughout most of the winter range.

Nighthawks are late to arrive and early to depart from the breeding grounds (Poulin et al. 1996). The only Canadian-banded bird encountered away from its banding area (record 1) was migrating south from Ontario a month later than most local departures, though within the known extreme dates (Quilliam 1973). At the date when this bird was banded, most nighthawks have already passed through Virginia (Blem and Blem 1986). However, this bird was banded by a rehabilitator and may have been held for some time prior to release.

Two birds recaptured near an Okanagan Valley banding location survived nearly five years (records 2 and 3).

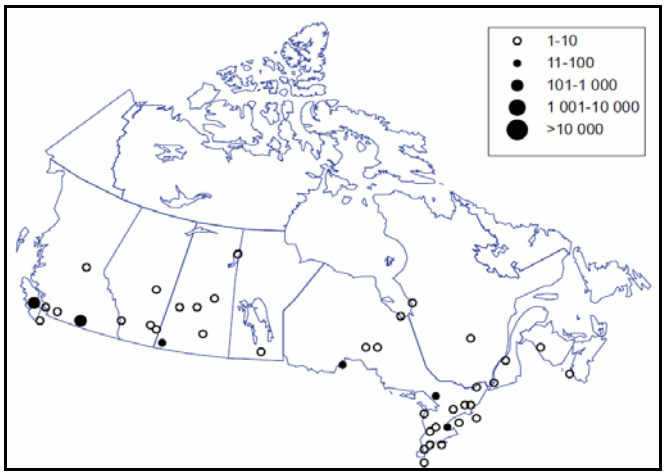
Encounter records: Common Nighthawk

1	0852-06907	U	U	14/09/81	Yarker, ON	44°20'N 76°40'W	1 mo.
	ERC	5	0	03/10/81	Amboy Center, NY	43°20'N 75°50'W	129 km S31°E
2	0912-57773	U	F	30/07/87	Penticton, BC	49°20'N 119°30'W	5 yr. 0 mo.
	PJW	7	99	05/07/92	Penticton, BC	49°20'N 119°30'W	0 km
3	0912-57768	U	F	15/07/87	Penticton, BC	49°20'N 119°30'W	4 yr.11 mo.
	PJW	7	99	28/06/92	Penticton, BC	49°20'N 119°30'W	0 km

Summary of banding statistics: Common Nighthawk

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*511*
No. encountered per 1000 banded (1955-1995)			*8*
Total no. encountered (1921-1995)	1	1	5
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	25	60
No. of Canadian-banded birds moving > 0 km	0	0	1
Mean movement > 0 km of Canadian-banded birds (km)	-	-	129
Maximum movement from all encounters (km)	0	0	129
% recovered (encountered dead)	100	0	40
% direct recoveries	100	0	40
% encountered during banding operations	0	100	60

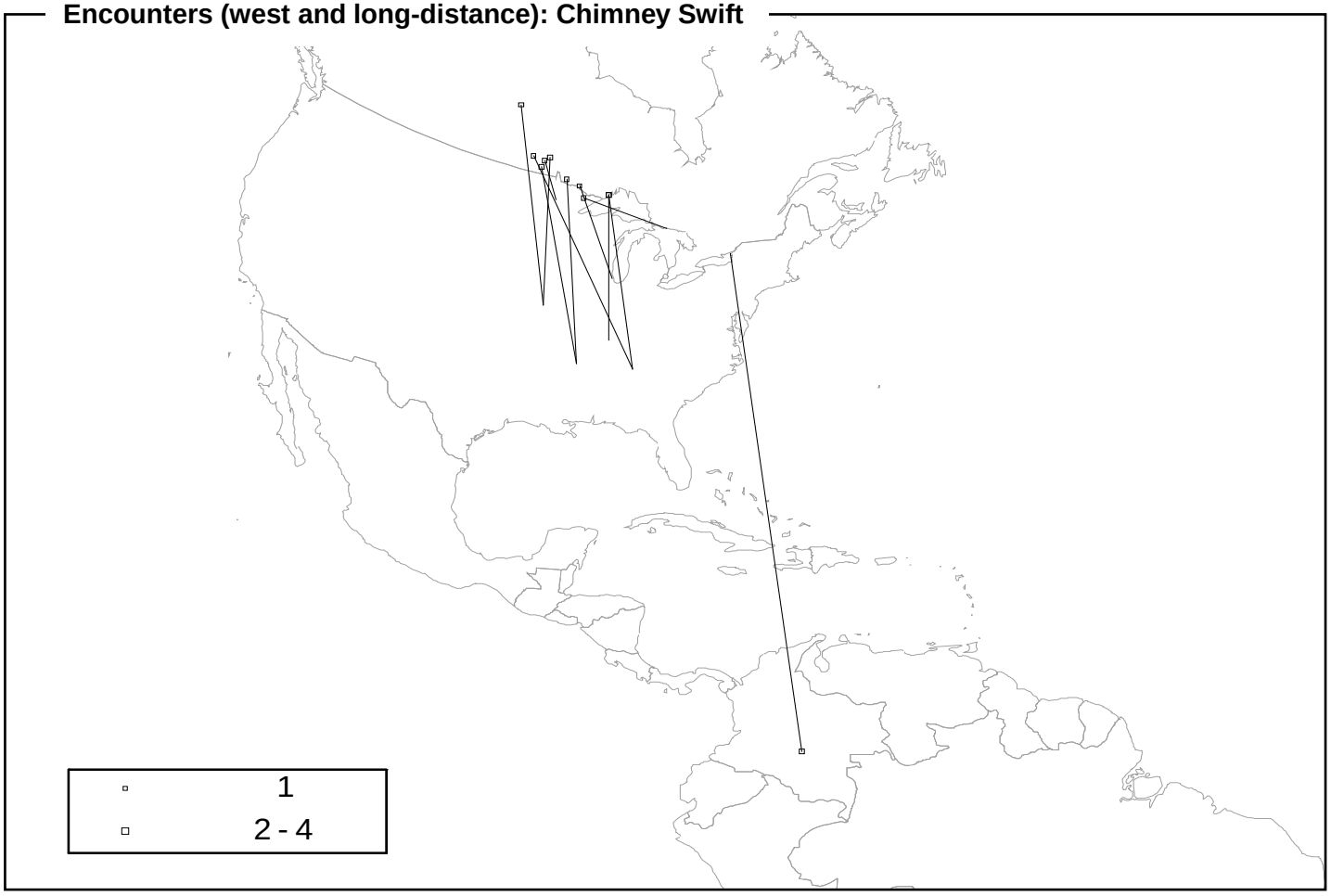
Banding effort: Common Nighthawk



Top banders: MKM, RMB, PJW, JBMi, LPBO

Chimney Swift (*Chaetura pelagica*) 423.0

Encounters (west and long-distance): Chimney Swift

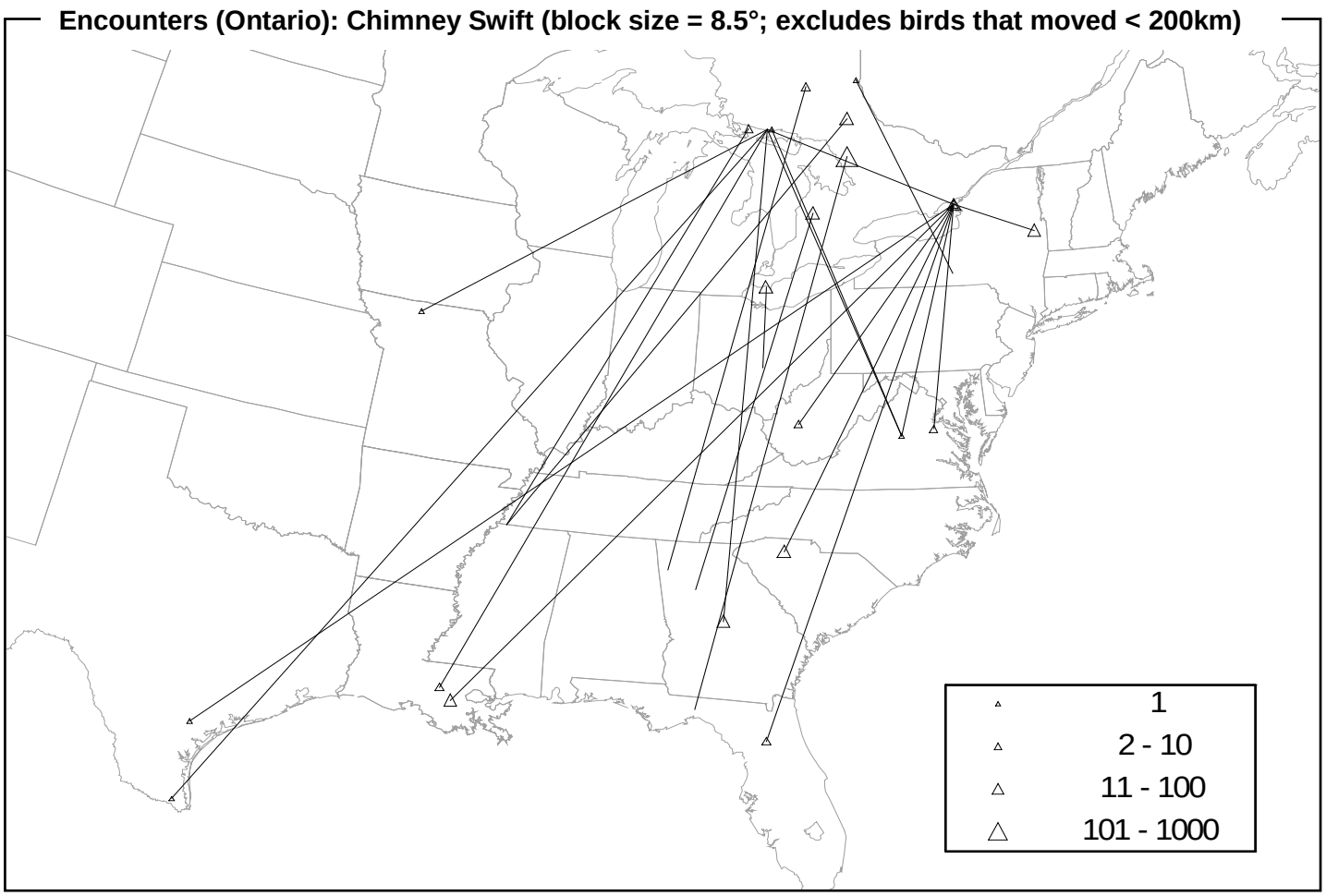


The Chimney Swift breeds from east-central Saskatchewan across southern Canada to the Gaspé Peninsula and Nova Scotia, as well as throughout the U.S. It winters in northern South America, including eastern Peru, Colombia, and northwestern Brazil.

This species roosts in huge flocks in chimneys during migration, which encouraged large-scale banding from the 1920s to the 1940s (e.g., Bowman 1952), mainly in the U.S. Thousands of encounters contributed to studies of breeding biology and population dynamics (Dexter 1969), but there was little study of movement (Hitchcock 1945). Few swifts have been banded since 1950; the latest encounter in Canada up to 1995 was in 1964 of a bird banded in 1961.

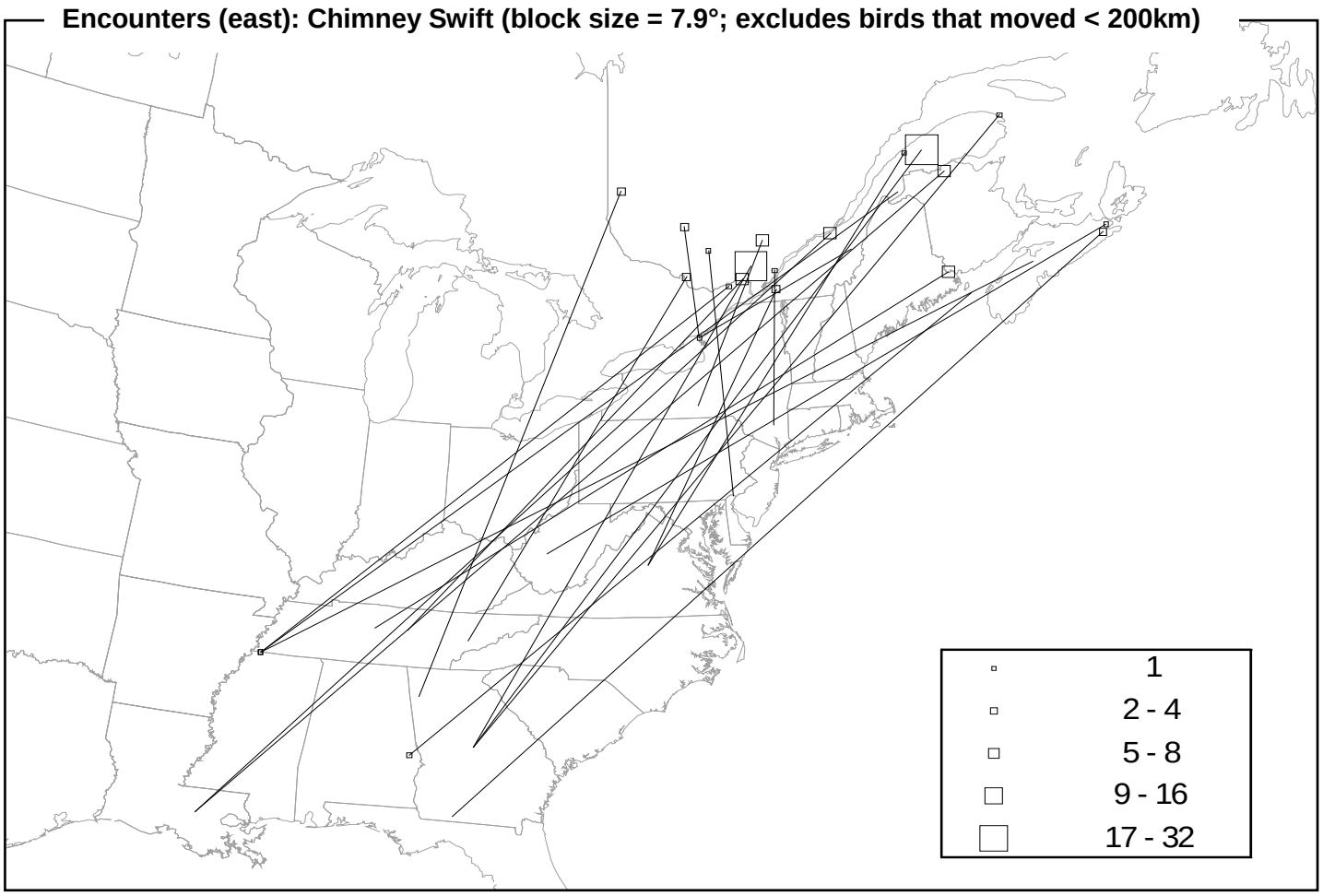
Vast flocks of migrating swifts have long been a conspicuous feature of city life in eastern North America, but knowledge of the species' whereabouts in winter is quite recent. The first information on winter quarters came in May 1943, when the U.S. embassy in Lima, Peru, obtained 13 bands from "swallows" killed by Indians "about 6 months before" in the highlands of Peru, close to its border with Colombia. The bands had been placed on Chimney Swifts in North America, one of them (record 1) in Kingston, Ontario (Lincoln 1944, Hitchcock 1945).

The pattern of encounters is strongly affected by banding activity. Nearly 70% of encounters were returns to the original banding site, and 83% of encounters were of birds recaptured during banding activities (e.g., record 2, the bird with the longest period between banding and encounter). Over 80% of Canadian bandings and encounters were in Ontario (e.g., records 1-7). Many Ontario encounters were of birds banded in Tennessee (record 6), whereas a large proportion of birds encountered in Quebec and the Maritime Provinces were banded in Georgia (record 8).



Swifts encountered in the Prairie Provinces moved on a southeast-northwest axis, evidently staying west of the Appalachians (records 9 and 10). Ontario swifts have been encountered on migration all across the Gulf Coast (records 2-6) and evidently overlap with birds from Quebec and the Prairie Provinces (e.g., compare records 6, 9, and 11). Possibly, swifts move on a broad front across the Gulf of Mexico and western Caribbean.

Repeated trapping of banded birds at the same sites has yielded much information about longevity and survival. Dexter (1969) recorded 19 birds aged 10 years or older (as in records 2, 7, and 8) and calculated the "average age" as 4.6 years. The maximum recorded age is 14 years (Clapp et al. 1983).


Encounters (east): Chimney Swift (block size = 7.9°; excludes birds that moved < 200km)
1
2 - 4
5 - 8
9 - 16
17 - 32

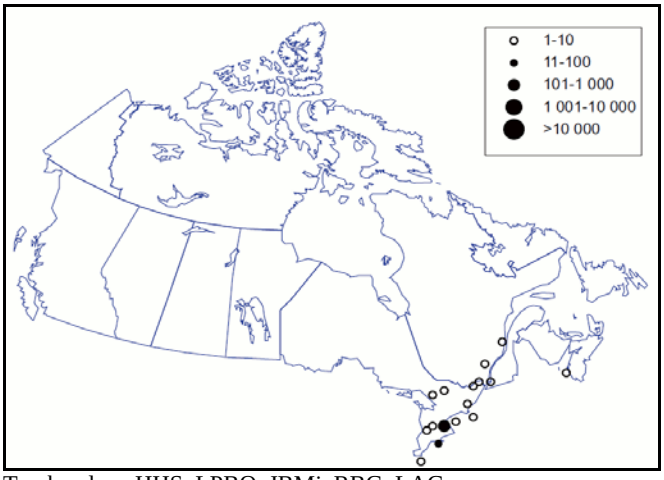
Encounter records: Chimney Swift

1	0380-87399	AHY	U	19/05/40	Barriefield, ON	44°10'N 76°20'W	3 yr. 7 mo.
	RWS	0	1	99/12/43	unknown site, PERU	2°??'N 73°??'W	c. 4706 km S5°E
2	0380-87838	U	U	19/05/40	Barriefield, ON	44°10'N 76°20'W	12 yr. 4 mo.
	RWS	0	89	21/09/52	near Rome, GA	34°10'N 85°10'W	1347 km S37°W
3	0021-13469	U	U	11/10/28	Tallahassee, FL	30°20'N 84°10'W	3 yr. 7 mo.
	HLS	0	89	07/05/32	Wolfe Island, ON	44°10'N 76°20'W	1687 km N22°E
4	0381-45329	AHY	U	23/07/38	Blind River, ON	46°10'N 82°50'W	2 mo.
	ISS	0	89	27/09/38	Baton Rouge, LA	30°20'N 91°10'W	1905 km S25°W
5	0421-44604	AHY	U	15/07/43	Blind River, ON	46°10'N 82°50'W	10 mo.
	ISS	0	12	04/05/44	Harlingen, TX	26°10'N 97°40'W	2585 km S36°W
6	0400-80786	HY	U	29/09/40	Memphis, TN	35°00'N 90°00'W	4 yr. 8 mo.
	BBC	0	89	25/05/45	Barriefield, ON	44°10'N 76°20'W	1551 km N45°E
7	0380-87340	AHY	U	19/05/40	Barriefield, ON	44°10'N 76°20'W	10 yr. 1 mo.
	RWS	0	0	ST/06/50	Barriefield, ON	44°10'N 76°20'W	0 km
8	0001-99067	U	U	12/04/27	near Ochlocknee, GA	30°50'N 84°00'W	11 yr. 3 mo.
	HLS	0	89	10/07/38	Hudson Heights, QC	45°20'N 74°10'W	1826 km N25°E
9	0050-14123	U	U	05/10/30	East Chattanooga, TN	35°00'N 85°10'W	1 yr. 7 mo.
	WRG	0	21	25/05/32	Delta, MB	50°10'N 98°10'W	1990 km N28°W
10	0381-45055	AHY	U	17/06/38	Richmond, MO	39°10'N 93°50'W	1 mo.
	ISS	0	89	28/06/38	Stead, MB	50°20'N 96°20'W	1258 km N 8°W
11	1390-15329	HY	U	08/10/38	Memphis, TN	35°00'N 90°00'W	1 yr. 7 mo.
	BBC	0	20	30/05/40	near Repentigny, QC	45°40'N 73°20'W	1840 km N45°E

Summary of banding statistics: Chimney Swift

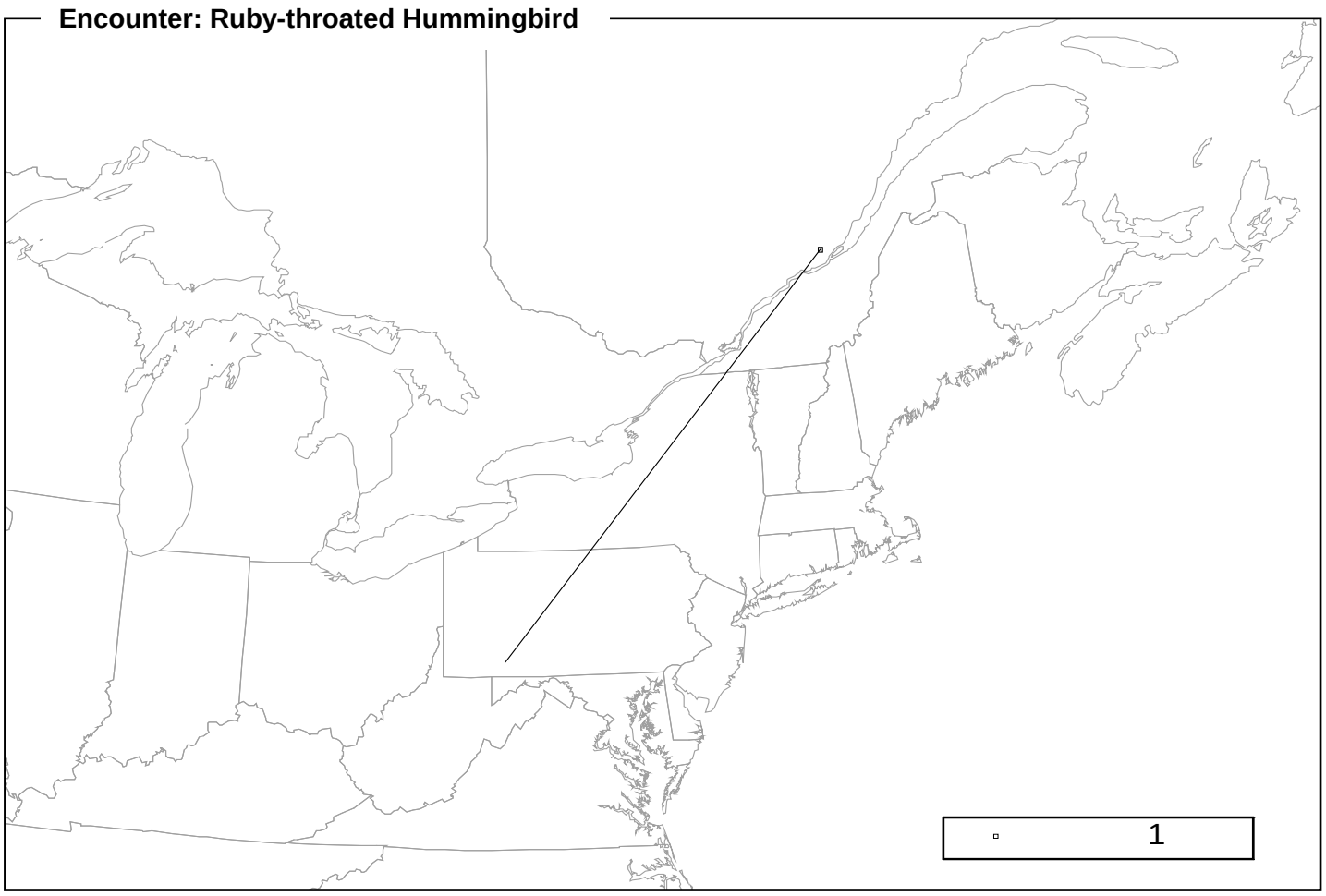
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*153*
No. encountered per 1000 banded (1955-1995)			*33*
Total no. encountered (1921-1995)	17	1723	2036
No. encountered from foreign bandings	10	109	311
Maximum period from banding to encounter (mo.)	58	121	148
No. of Canadian-banded birds moving > 0 km	0	224	294
Mean movement > 0 km of Canadian-banded birds (km)	-	853	886
Maximum movement from all encounters (km)	1840	4646	4646
% recovered (encountered dead)	47	10	16
% direct recoveries	11	5	6
% encountered during banding operations	52	89	83

Banding effort: Chimney Swift



Top banders: HHS, LPBO, JBMi, RBG, LAG

Ruby-throated Hummingbird (*Archilochus colubris*) 428.0



The Ruby-throated Hummingbird breeds across southern Canada from west-central Alberta to eastern Nova Scotia, and in the eastern U.S. west to Nebraska and eastern Texas. It winters from the extreme southern U.S. through Mexico and Central America to Costa Rica and Panama.

All three encounters are listed below. The only distant encounter to or from Canada (record 1), which is also the longevity record in Canada, was of a bird found in early June near the northern known limit of the breeding range. Observations demonstrate that males precede females in both migrations, and juveniles of both sexes lag behind adults in the fall (Robinson et al. 1996). The two sight records below (records 2 and 3) indicate that two adult males had not yet left the breeding area in early September.

Long-term banding sites report annual survival (based on recaptures) of 25-60% (Mulvihill et al. 1992), which is quite high for such a small bird.

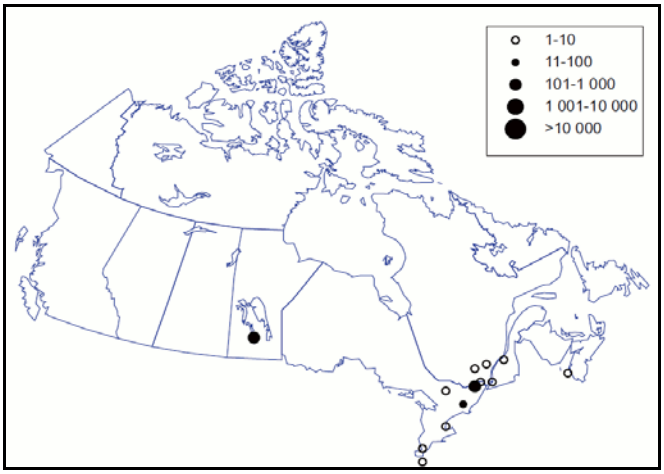
Encounter records: Ruby-throated Hummingbird

1	7000-22259	HY	M	04/09/80	Stahlstown, PA	40°00'N 79°10'W	1 yr. 9 mo.
	CMNH	5	0	05/06/82	11 km east of Lake Tantaré, QC	47°00'N 71°20'W	1003 km N36°E
2	7000-00003	AHY	M	26/05/51	Thorold, ON	43°00'N 79°10'W	4 mo.
	JS	0	29	10/09/51	Thorold, ON	43°00'N 79°10'W	0 km
3	7000-00004	AHY	M	31/05/51	Thorold, ON	43°00'N 79°10'W	4 mo.
	JS	0	29	03/09/51	Thorold, ON	43°00'N 79°10'W	0 km

Summary of banding statistics: Ruby-throated Hummingbird

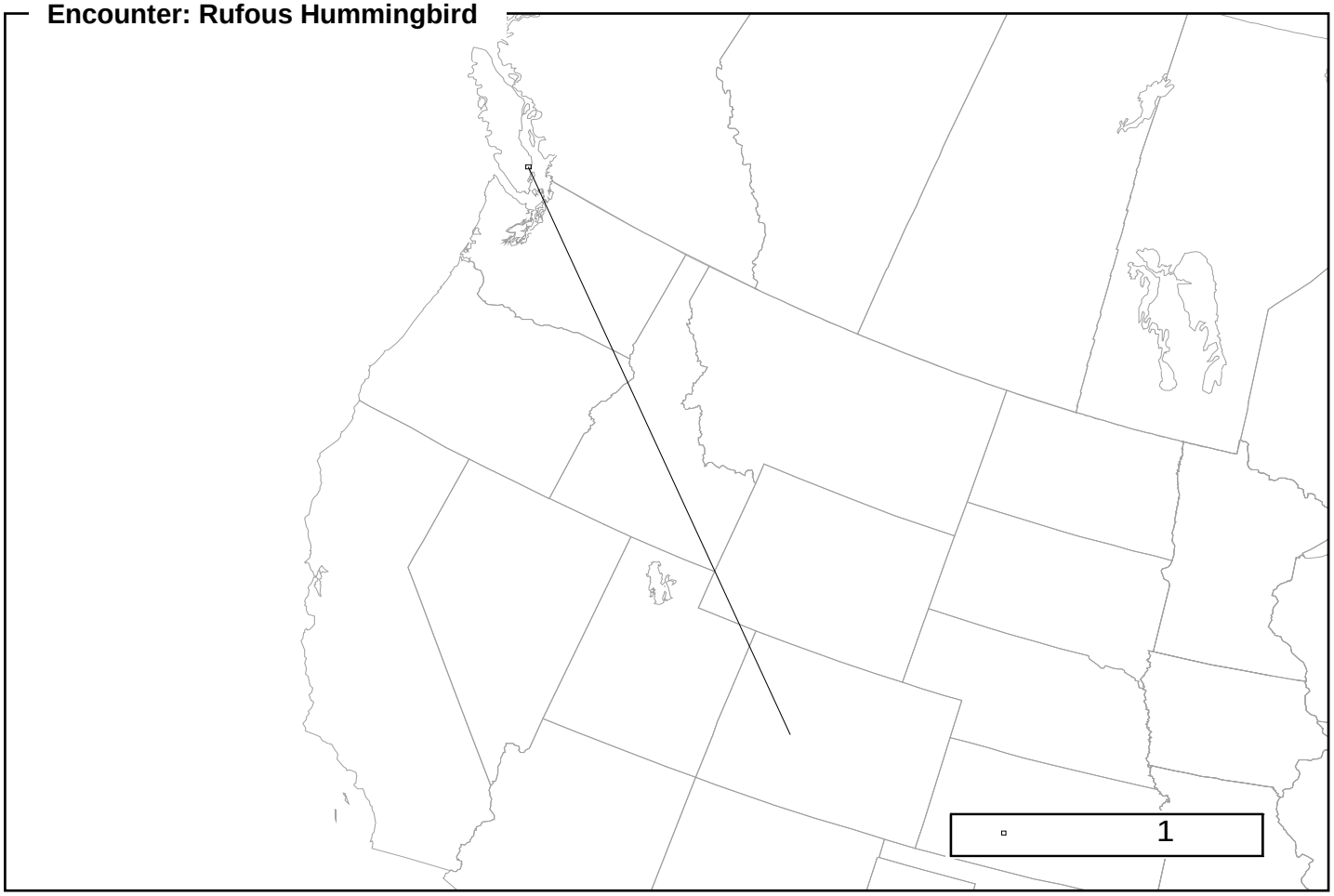
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*675*
No. encountered per 1000 banded (1955-1995)			*0*
Total no. encountered (1921-1995)	1	2	3
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	21	4	21
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	1002	0	1002
% recovered (encountered dead)	100	0	33
% direct recoveries	0	100	66
% encountered during banding operations	0	0	0

Banding effort: Ruby-throated Hummingbird



Top banders: IPBO, UM, MBi, MB, BC

Rufous Hummingbird (*Selasphorus rufus*) 433.0



The Rufous Hummingbird breeds in British Columbia west of the Rocky Mountains and probably in southwestern Yukon; it also breeds in southeastern Alaska and in the coterminous U.S. south to northern California and southern Idaho. The species winters in Mexico south to Guerrero and Veracruz, and along the Gulf Coast of the U.S.

This northernmost-breeding hummingbird species has an elliptical pattern of migration (Calder 1993). The birds move north along the Pacific coast in early spring, feeding on flowers there while the Rocky Mountains are still covered in snow. By July, they are heading south again, but this time many head east of the Rockies taking advantage of montane flowers as they move through Colorado and the Grand Canyon states. The only Canadian encounter of this species (record 1) fits this pattern well. The bird was banded in Colorado in mid-July and encountered in British Columbia in the next breeding season.

Encounter record: Rufous Hummingbird

1	8000-31618	AHY	F	16/07/90	Crested Butte, CO	38°50'N 106°50'W	11 mo.
	WC	5	23	19/06/91	Cassidy, BC	49°00'N 123°50'W	1764 km N45°W

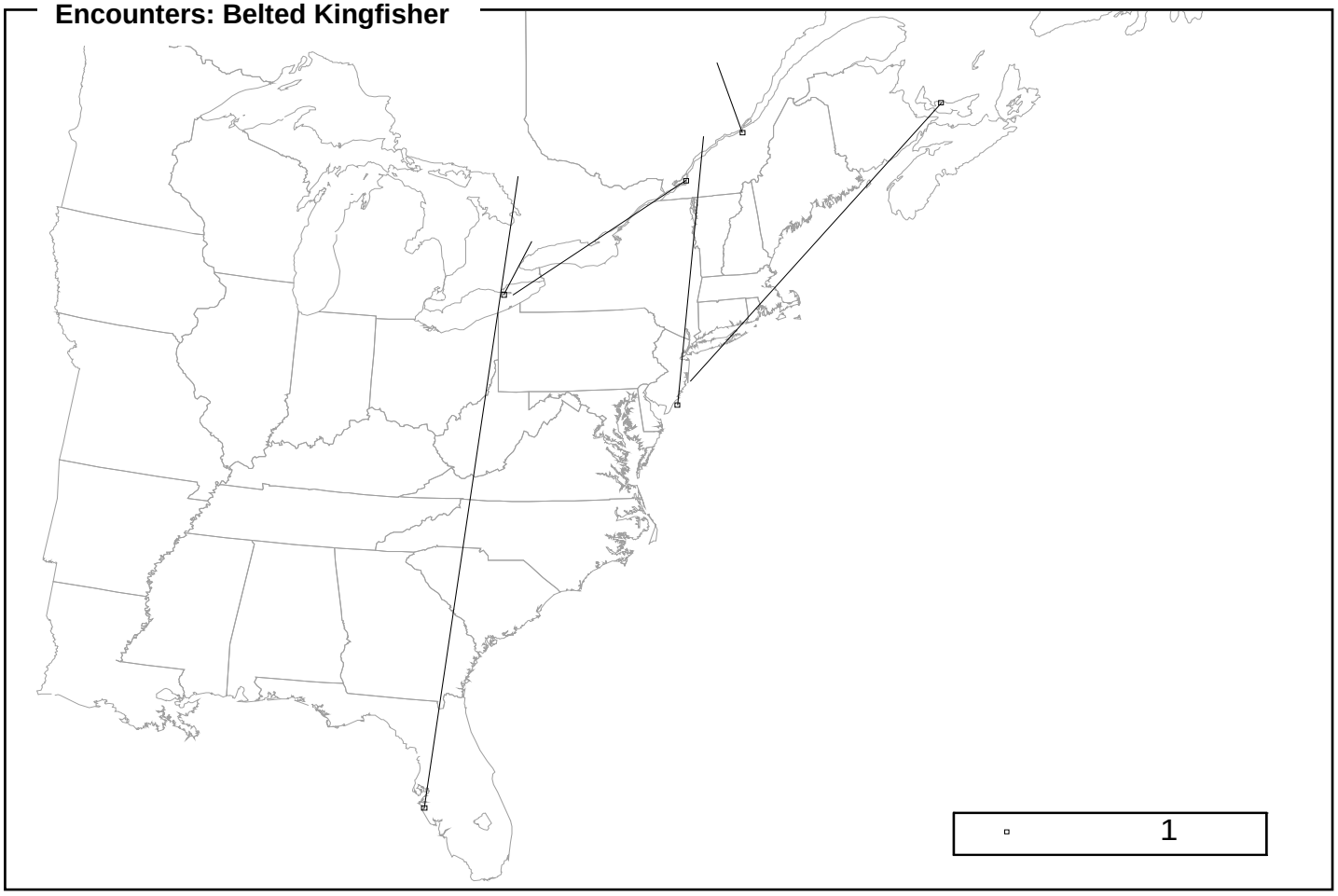
Summary of banding statistics: Rufous Hummingbird

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*911*
No. encountered per 1000 banded (1955-1995)			*0*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	-	11	11
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	-	1764	1764
% recovered (encountered dead)	-	100	100
% direct recoveries	-	0	0
% encountered during banding operations	-	0	0

Banding effort: Rufous Hummingbird

Top banders: IPBO, UM, MBi, MB, BC

Belted Kingfisher (*Ceryle alcyon*) 390.0



The Belted Kingfisher breeds throughout the U.S. and across Canada approximately to the limits of dense boreal forest. It winters from southern British Columbia and Ontario south through much of Central America and the West Indies, occasionally to northern South America (Colombia, Venezuela, Guyana, and Trinidad).

All records that appear on the encounter map are listed below (records 1-6). Most encounters are not mapped, because they occurred within a few months at or within 100 km of the banding location (e.g., record 7). Most of these involved Ontario or New Brunswick and include many encounters of kingfishers banded in New Brunswick in 1948. The banding effort map does not reflect this intensive banding, because it summarizes the effort for 1955-1995 only.

The longest period between banding and encounter was only one year and nine months (record 8). However, 15 of the 32 encounters were of birds released alive after recapture, and these birds, of course, lived on.

Not all birds migrate out of Canada in winter. An observer in Ontario noted that all wintering kingfishers that he was able to see well enough to sex were males (Pittaway 1994), suggesting differential migration by sex. The only banded kingfisher encountered in Canada in the winter months was also a male (record 7).

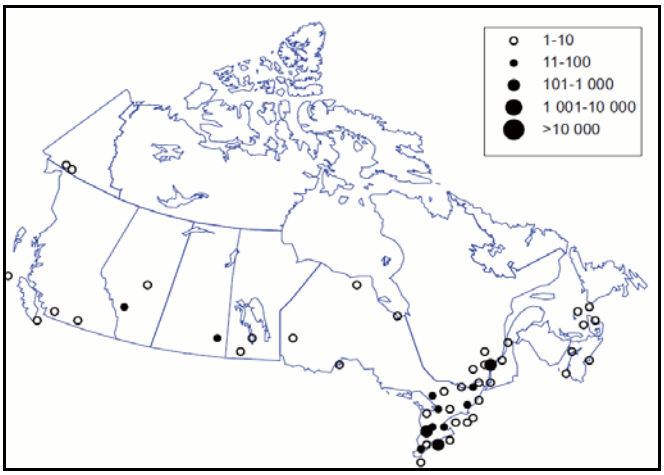
Encounter records: Belted Kingfisher

1	0374-17646	U	U	24/06/48	Saint-Coeur-de-Marie, QC	48°40'N 71°50'W	1 yr. 0 mo.
	FH	0	89	16/06/49	Lévis, QC	46°40'N 71°10'W	228 km S13°E
2	1143-63420	L	U	22/06/80	Grandes-Piles, QC	46°40'N 72°40'W	1 yr. 3 mo.
	CWS-QC	3	0	28/09/81	Ocean City, NJ	39°10'N 74°30'W	848 km S11°W
3	1143-36507	AHY	F	25/04/81	Island Beach, NJ	39°50'N 74°00'W	1 mo.
	MED	3	0	04/05/81	Darnley, PEI	46°30'N 63°30'W	1129 km N45°E
4	0374-04708	HY	U	02/07/39	Newmarket, ON	44°00'N 79°20'W	2 mo.
	FHP	0	97	09/09/39	Port Rowan, ON	42°30'N 80°20'W	186 km S26°W
5	0533-03612	HY	M	05/07/66	Arnstein, ON	45°50'N 79°50'W	3 mo.
	DWW	3	13	17/10/66	Bradenton, FL	27°20'N 82°30'W	2073 km S7°W
6	0593-67944	HY	U	22/08/72	Long Point, ON	42°30'N 80°00'W	9 mo.
	LPBO	5	0	11/05/73	Hampstead, QC	45°30'N 73°30'W	618 km N55°E
7	0394-34752	U	M	25/06/48	Hamilton, ON	43°10'N 79°50'W	6 mo.
	NB	0	1	99/12/48	Stoney Creek, ON	43°10'N 79°10'W	54 km N90°E
8	0513-10905	AHY	F	17/08/57	Smithville, ME	44°30'N 67°50'W	1 yr. 9 mo.
	GHP	0	56	06/05/59	Woodwards Cove, NB	44°40'N 66°40'W	94 km N78°E

Summary of banding statistics: Belted Kingfisher

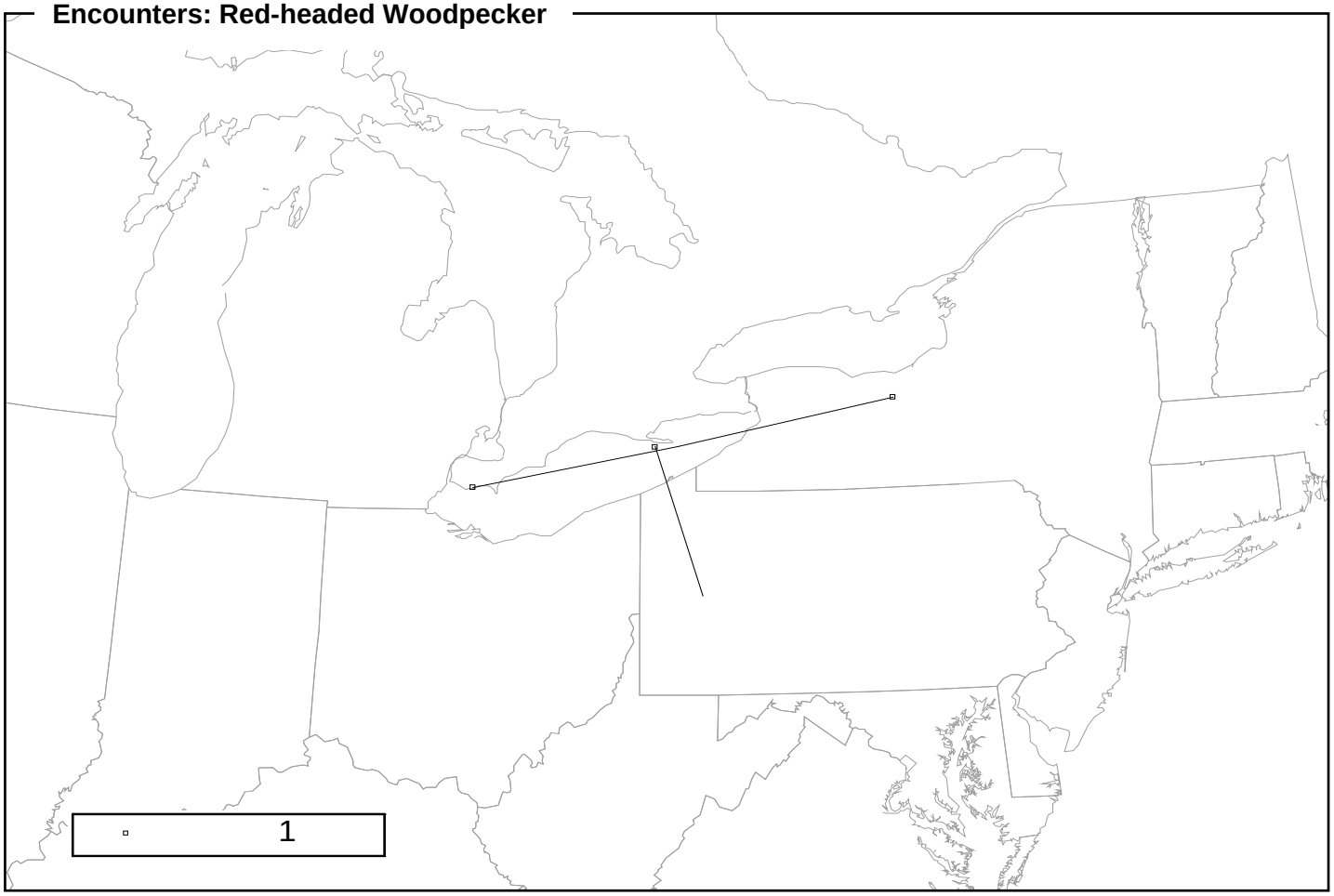
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*813*
No. encountered per 1000 banded (1955-1995)			*9*
Total no. encountered (1921-1995)	24	5	32
No. encountered from foreign bandings	1	3	4
Maximum period from banding to encounter (mo.)	15	5	15
No. of Canadian-banded birds moving > 0 km	13	0	18
Mean movement > 0 km of Canadian-banded birds (km)	329	-	287
Maximum movement from all encounters (km)	2072	1128	2072
% recovered (encountered dead)	45	80	53
% direct recoveries	83	60	75
% encountered during banding operations	0	20	6

Banding effort: Belted Kingfisher



Top banders: JBMi, LPBO, CWS-QC, ADB, DW

Red-headed Woodpecker (*Melanerpes erythrocephalus*) 406.0



The Red-headed Woodpecker breeds east of the Rocky Mountains in the U.S. and in the extreme south of Canada from Saskatchewan and Manitoba (rarely and locally) to New Brunswick. It winters in the eastern U.S. (and rarely in southern Ontario and southern Manitoba). It is somewhat migratory in the northern parts of its range (Godfrey 1986).

All three encounters showing movement of over 100 km are listed and mapped. Record 1 is of a bird found on spring migration in two different years. Records 2 and 3 are of birds banded during spring migration and found at possible breeding locations in the following year. There were three additional encounters showing shorter-distance movements, two involving short hops across Lake Erie and one within southwestern Ontario.

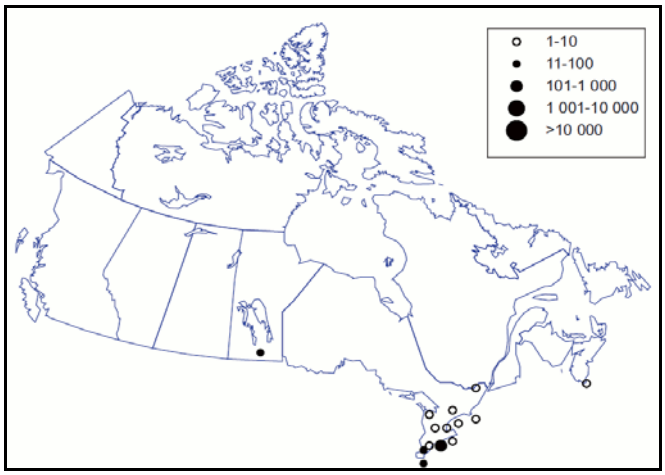
Encounter records: Red-headed Woodpecker

1	0532-68034	AHY	U	19/05/56	Fenelton, PA	40°50'N 79°40'W	
	RCR	0	21	??/05/60	Big Creek Marsh, ON	42°30'N 80°20'W	194 km N16°W
2	0542-06770	U	U	14/05/60	Long Point, ON	42°30'N 80°00'W	1 yr. 1 mo.
	LPBO	0	14	17/06/61	Newark, NY	43°00'N 77°00'W	251 km N76°E
3	0692-14676	AHY	U	21/05/68	Long Point, ON	42°30'N 80°00'W	1 yr. 1 mo.
	LPBO	5	0	99/06/69	Harrow, ON	42°00'N 82°50'W	240 km S78°W

Summary of banding statistics: Red-headed Woodpecker

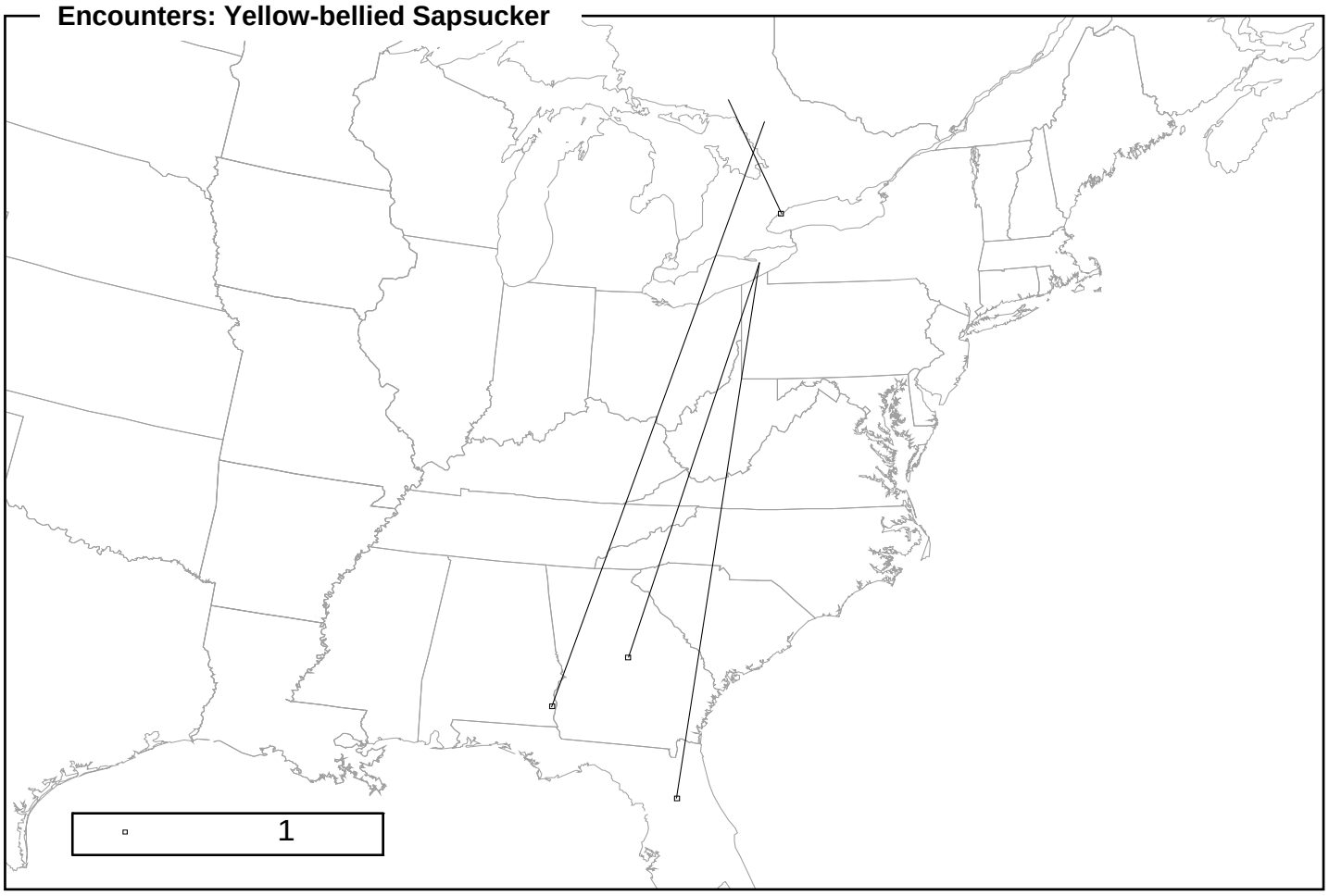
	Age at banding		
	Hatch year	After hatch year	All age
No. of Canadian bandings (1955-1995)			*902*
No. encountered per 1000 banded (1955-1995)			*6*
Total no. encountered (1921-1995)	0	7	8
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	-	13	13
No. of Canadian-banded birds moving > 0 km	0	3	4
Mean movement > 0 km of Canadian-banded birds (km)	-	126	157
Maximum movement from all encounters (km)	-	239	251
% recovered (encountered dead)	-	71	75
% direct recoveries	-	14	12
% encountered during banding operations	-	28	25

Banding effort: Red-headed Woodpecker



Top banders: LPBO, DDD, LTS, WCa, FAD

Yellow-bellied Sapsucker (*Sphyrapicus varius*) 402.0



Red-breasted and Red-naped Sapsuckers, formerly considered subspecies of the Yellow-bellied Sapsucker, are now treated as separate species (American Ornithologists' Union 1998). This account deals only with Yellow-bellied Sapsuckers.

The Yellow-bellied Sapsucker breeds from southern Yukon and eastern British Columbia across the rest of Canada, north to the limits of dense forest, except for the southern Prairie Provinces and southeastern Quebec; it also breeds in the northeastern U.S. and in the western U.S. east of the Rocky Mountains. It winters from southern California, the Gulf Coast, and Florida south to western Panama, and in small numbers in the West Indies.

Movement was shown only by the eastern populations, but this may merely reflect the preponderance of banding in southern Ontario (see effort map). Three sapsuckers banded in Ontario wintered in Florida (record 1), Georgia (record 2), and Alabama (record 3). Record 4 is of a bird that was probably heading south when it fell prey to a domestic animal, after travelling at least 40 km per day for over eight days.

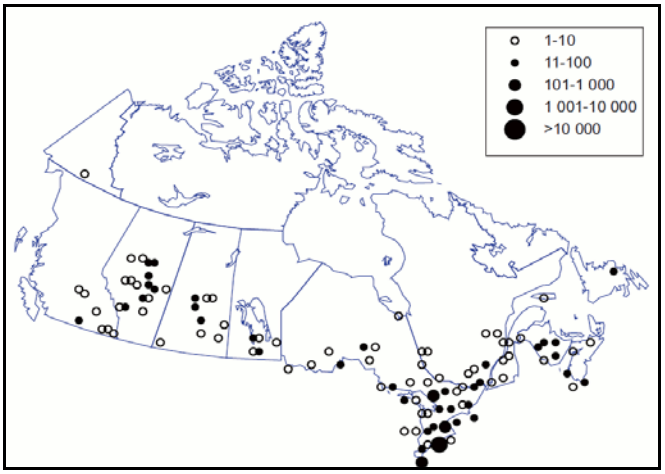
Encounter records: Yellow-bellied Sapsucker

1	0271-36021	U	M	15/04/61	Long Point, ON	42°30'N 80°00'W	10 mo.
	LPBO	0	1	19/02/62	Black Sink Prairie, FL	29°20'N 82°00'W	1477 km S8°W
2	0291-03540	U		28/09/63	Long Point, ON	42°30'N/80°00'W	4 mo.
	LPBO	0	0	07/01/64	Gordon, GA	32°50'N 83°20'W	1115 km S16°E
3	1201-36984	HY	U	16/07/80	Arnstein, ON	45°50'N 79°50'W	8 mo.
	DW	5	0	15/03/81	Abbeville, AL	31°30'N 85°10'W	1661 km S18°W
4	0741-78775	HY	U	22/09/74	near Sudbury, ON	46°20'N 81°00'W	8 dy.
	JGL	5	12	30/09/74	Don Mills, ON	43°40'N 79°20'W	325 km S24°E
5	0461-00945	AHY	M	12/05/49	Rutherglen, ON	46°10'N 79°00'W	4 yr. 11 mo.
	LdeK	0	99	17/04/54	Rutherglen, ON	46°10'N 79°00'W	0 km

Summary of banding statistics: Yellow-bellied Sapsucker

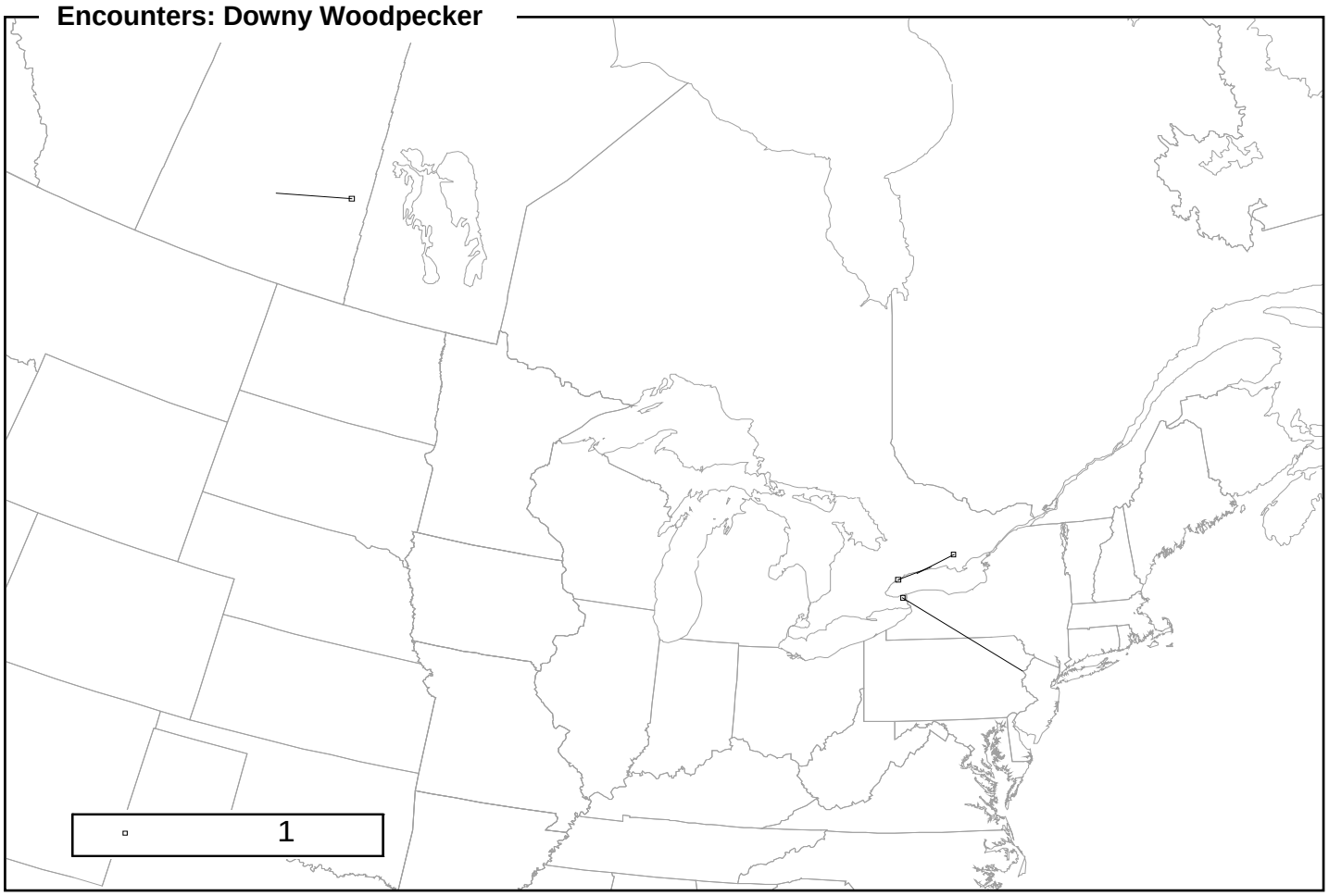
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3715*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	17	1610	1914
No. encountered from foreign bandings	10	106	302
Maximum period from banding to encounter (mo.)	58	121	148
No. of Canadian-banded birds moving > 0 km	0	221	290
Mean movement > 0 km of Canadian-banded birds (km)	-	849	882
Maximum movement from all encounters (km)	1840	4646	4646
% recovered (encountered dead)	47	10	17
% direct recoveries	11	5	6
% encountered during banding operations	52	89	82

Banding effort: Yellow-bellied Sapsucker



Top banders: LPBO, DW, JBMi, ETJ, TBO

Downy Woodpecker (*Picoides pubescens*) 394.0



The Downy Woodpecker breeds in most of the U.S. and to the northern limit of boreal forest across Canada. The species is generally resident, although there are occasional southward irruptions from the northern part of the range.

Ninety percent of encounters showed no movement (e.g., record 1, showing the longest period between banding and encounter), and only six birds moved more than 50 km (records 2-3). Browning's (1995) analysis of all North American encounters showed that 99.7% of encountered birds had not moved. Those that did were primarily females (e.g., records 2 and 3), which were probably dispersing. Record 3 is well supported, because the band was returned by the finder.

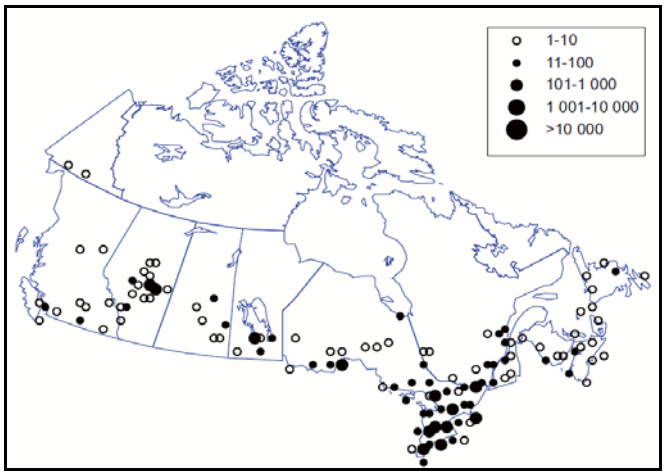
Encounter records: Downy Woodpecker

1	0221-12405	U	M	21/02/59	west of Canora, SK	51°30'N 102°30'W	9 yr. 1 mo.
	WA	8	99	03/03/68	west of Canora, SK	51°30'N 102°30'W	0 km
2	0201-89237	AHY	F	05/04/60	Bowmanville, ON	43°50'N 78°40'W	6 mo.
	LdeK	0	0	26/10/60	Ivanhoe, ON	44°20'N 77°20'W	120 km N62°E
3	0321-52053	AHY	F	03/07/65	near Swift Water, PA	41°00'N 75°10'W	8 mo.
	GWC	5	0	0/03/66	Henley Island, ON	43°10'N 79°10'W	409 km N53°W

Summary of banding statistics: Downy Woodpecker

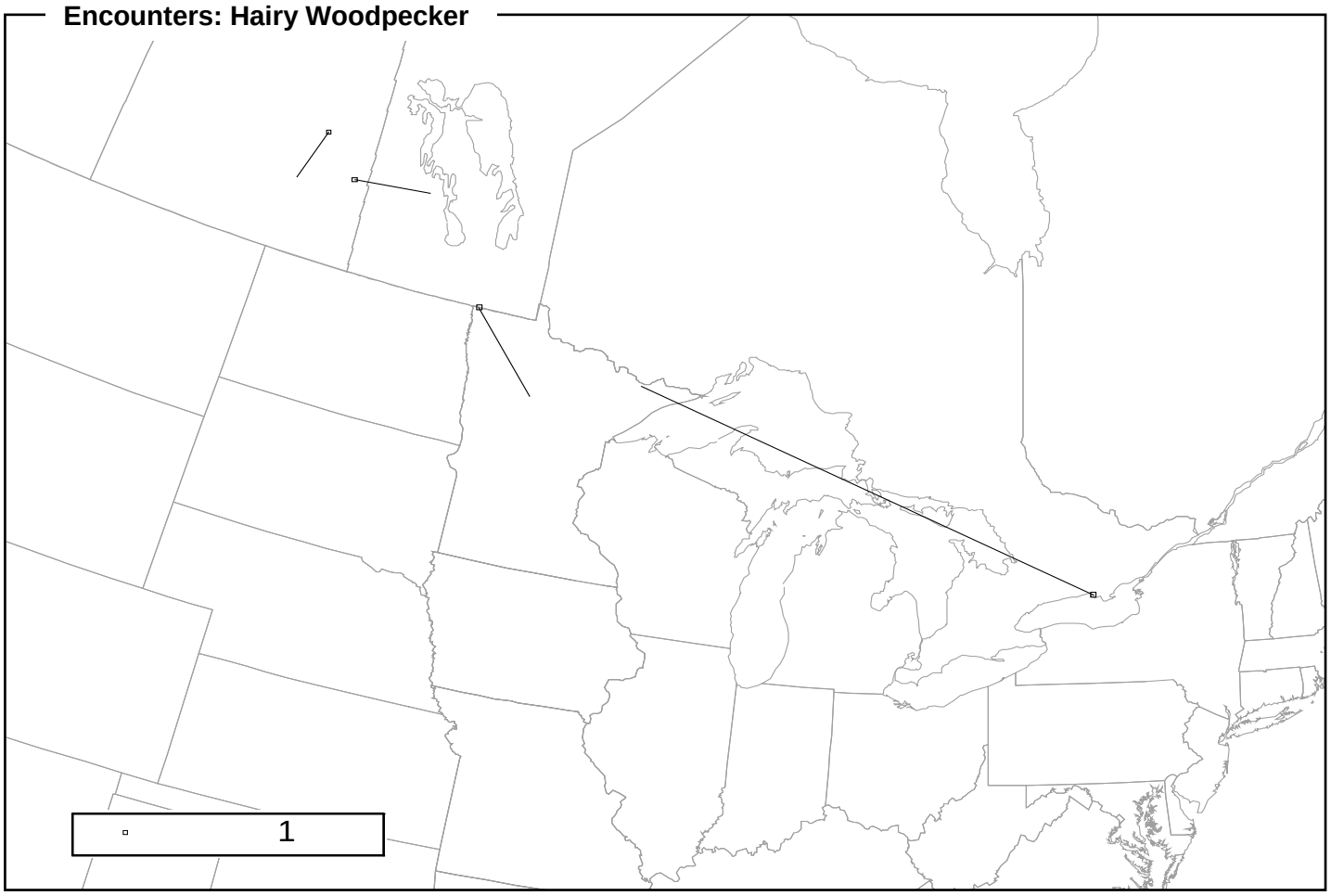
	Age at banding		
	Hatch year	After hatch year	All age
No. of Canadian bandings (1955-1995)			*6605*
No. encountered per 1000 banded (1955-1995)			*12*
Total no. encountered (1921-1995)	12	123	150
No. encountered from foreign bandings	1	1	3
Maximum period from banding to encounter (mo.)	48	77	109
No. of Canadian-banded birds moving > 0 km	2	9	11
Mean movement > 0 km of Canadian-banded birds (km)	27	45	42
Maximum movement from all encounters (km)	84	409	409
% recovered (encountered dead)	41	18	24
% direct recoveries	50	24	28
% encountered during banding operations	41	78	72

Banding effort: Downy Woodpecker



Top banders: LPBO, IPBO, JBMi, ETJ, LG

Hairy Woodpecker (*Picoides villosus*) 393.0



The Hairy Woodpecker breeds across the U.S. and Canada to the northern limits of dense boreal forest. It winters mainly within the breeding range, with some migratory movement in the more northern populations and those in the Prairie Provinces.

The majority of encounters (89%) showed no movement (e.g., record 1). Only five moved more than 50 km (records 2-6), and a few moved very small distances (e.g., records 7 and 8, the latter showing the greatest time between banding and encounter). More than half of all encountered birds were banded in Ontario, yet four of the five longer-distance records are of birds banded or encountered in the Prairie Provinces (records 2-5). The longest-distance encounter (record 6) is extraordinary for a normally sedentary bird, but the band was returned to the banding office by the finder, and the record appears to be valid.

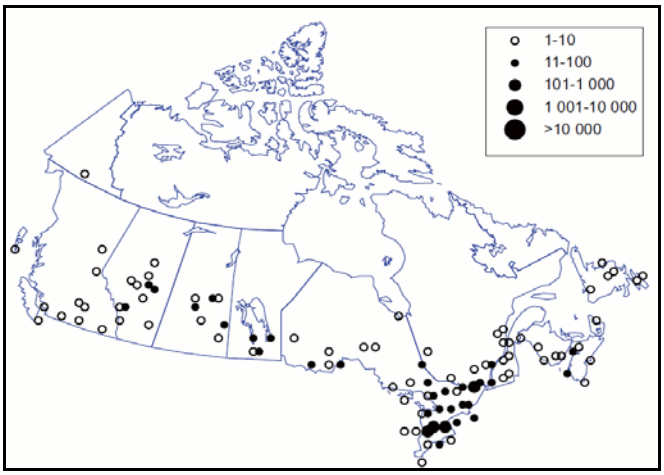
Encounter records: Hairy Woodpecker

1	0442-00280	L	F	18/08/52	Rutherglen, ON	46°10'N 79°00'W	8 yr. 4 mo.
	LdeK	0	99	31/12/60	Rutherglen, ON	46°10'N 79°00'W	0 km
2	0043-27284	AHY	F	12/01/35	Methley Beach, MB	51°10'N 99°30'W	3 yr. 7 mo.
	EdR	0	1	15/08/38	northeast of Regina, SK	51°??'N 102°??'W	c. 300 km
3	0642-24042	U	F	01/11/64	Bemidji, MN	47°20'N 94°50'W	2 yr. 3 mo.
	JEM	5	0	12/02/67	Dominion City, MB	49°00'N 97°00'W	246 km N40°W
4	0023-63992	AHY	M	17/12/31	Hyas, SK	51°50'N 102°10'W	7 yr. 1 mo.
	WMLW	0	0	99/01/39	Lintlaw, SK	52°00'N 103°10'W	71 km N74°W
5	0002-59105	AHY	F	13/01/25	Muscow, SK	50°40'N 103°50'W	1 yr. 4 mo.
	RHC	0	1	ST/05/26	Kuroki, SK	51°50'N 103°20'W	134 km N15°E
6	0722-01334	AHY	M	16/06/74	northeast of Ely, MN	48°00'N 91°30'W	6 mo.
	WSB	5	0	31/12/74	Canadian Forces Base Astra, ON	44°00'N 77°30'W	1168 km S73°E
7	0422-09169	AHY	F	27/02/43	Montréal, QC	45°30'N 73°30'W	
	GGO	0	98	??/??/46	Hudson, QC	45°20'N 74°00'W	43 km S65°W
8	0043-27282	AHY	M	12/01/35	11 km east of Dauphin Lake, MB	51°10'N 99°30'W	10 yr. 4 mo.
	EdR	0	12	99/05/45	18 km north of Dauphin Lake, MB	51°20'N 99°40'W	22 km N32°W

Summary of banding statistics: Hairy Woodpecker

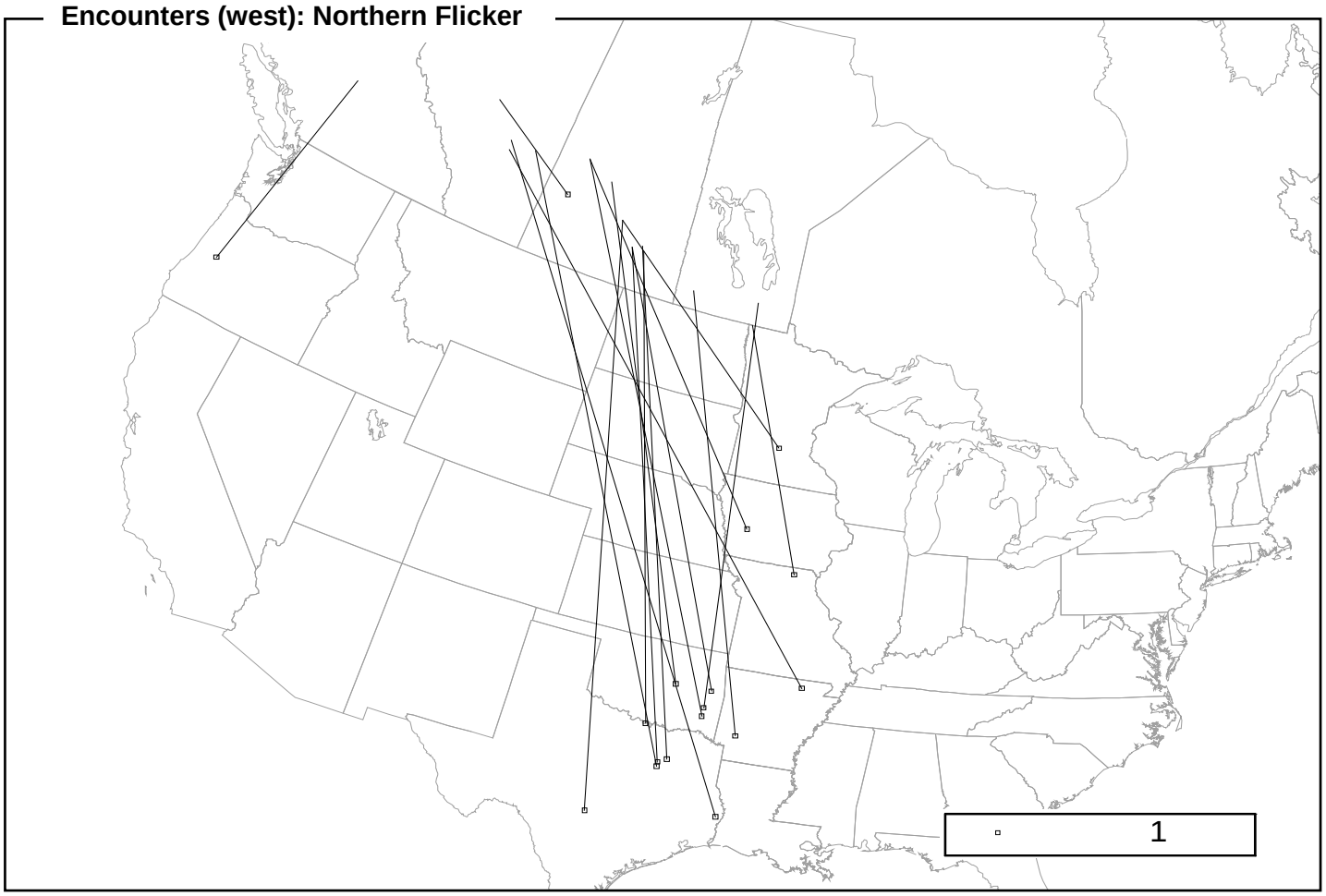
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*1999*
No. encountered per 1000 banded (1955-1995)			*24*
Total no. encountered (1921-1995)	9	85	98
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	100	124	124
No. of Canadian-banded birds moving > 0 km	1	8	9
Mean movement > 0 km of Canadian-banded birds (km)	22	66	61
Maximum movement from all encounters (km)	22	1168	1168
% recovered (encountered dead)	0	24	24
% direct recoveries	0	17	17
% encountered during banding operations	100	71	72

Banding effort: Hairy Woodpecker



Top banders: IPBO, JBMi, LPBO, LGL, SCT

Northern Flicker (*Colaptes auratus*) 412.0 and 413.0



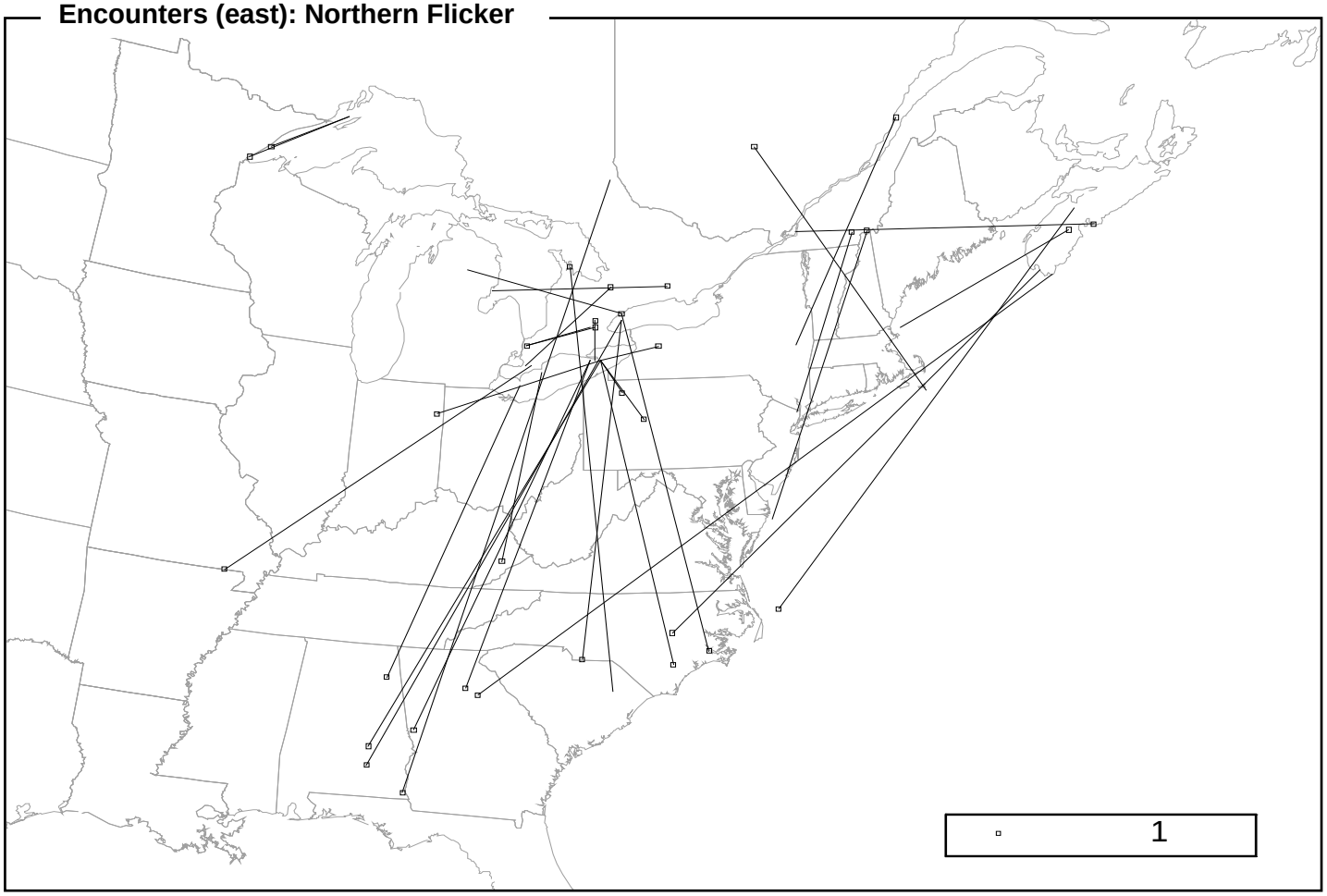
The Northern Flicker breeds across the U.S. and Canada, north virtually to the treeline; it winters from southern Canada south to the Gulf Coast and southern Florida. The Red-shafted subspecies (*C.a. cafer*, AOU 413.0), which replaces the Yellow-shafted subspecies (*C.a. auratus*, AOU 412.0) in southern British Columbia and southwestern Alberta, winters throughout its breeding range and eastward to eastern Kansas and Oklahoma and southern Texas. Northern (i.e., Canadian) populations are largely migratory, but less so in the Red-shafted subspecies (Moore 1995). Although these two taxa are now treated as one species (American Ornithologists' Union 1998), they are recorded separately for banding purposes. This account covers the two, as well as intergrades.

Twenty of the encounters involved Red-shafted Flickers, mostly banded in the Vancouver-Victoria area and encountered in mid-winter in the same area. The one bird that moved (record 1) was banded as a nestling in central British Columbia, where the winters are more severe. One bird of this subspecies was banded and encountered at the same site in Manitoba, several hundred kilometres east of the usually accepted range for this form.

All 47 Yellow-shafted Flickers that were either banded or encountered in the Prairie Provinces were banded during May-July; most of these were encountered in winter (December-February). All showed substantial movement, primarily on a southeast-northwest axis, and wintered in Iowa (one bird), Arkansas (two birds, including record 2), Oklahoma (two birds, including record 3), and Texas (five birds, including records 4-6).

The 62 records for flickers banded or encountered in Ontario and Quebec are mainly of birds banded in migration seasons. Of the flickers from southern Ontario that were encountered in December-February, two were wintering in

Encounters (east): Northern Flicker



North Carolina and one each was encountered in Ontario, South Carolina, Alabama, Missouri (record 7), and Georgia (record 8). Ontario and Quebec birds move more north-south or southwest-northeast than birds encountered in the Prairie Provinces, and the two groups appear to winter on different sides of the Mississippi River. (The only encounter involving Quebec that is listed below, record 9, is the one involving the longest period between banding and encounter.) The southwest movement of birds banded on the north shore of Lake Superior (see eastern map) may be due to the reluctance of this diurnal migrant to fly over water. It remains to be learned whether northern Ontario flickers winter west or east of the Mississippi River.

All nine encounters from the Maritimes involved Nova Scotia. Flickers from this area move southwest along the Atlantic coast as far south as Georgia (record 9), overlapping in winter with birds from Ontario and Quebec.

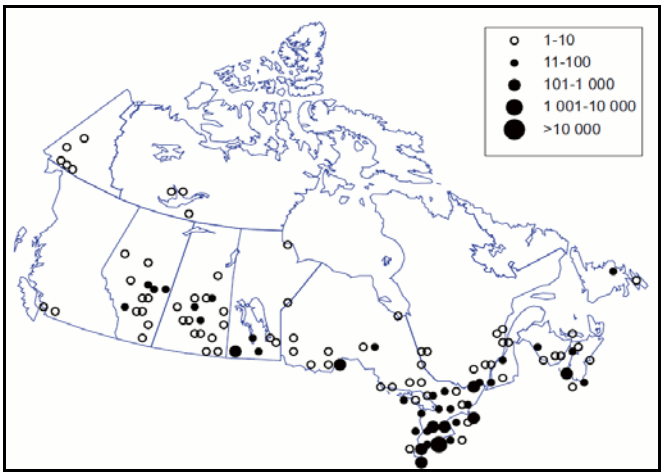
Encounter records: Northern Flicker

1	0523-56524	L	M	26/06/58	near 100 Mile House, BC	51°50'N	122°00'W	2 yr. 6 mo.
	WDMcL	0	1	LT/12/60	Cobourg, OR	44°00'N	123°00'W	875 km S5°W
2	0394-20918	J	U	07/07/39	near Big Valley, AB	52°10'N	112°40'W	6 mo.
	RHC	0	1	01/01/40	near Hardy, AR	36°10'N	91°20'W	2447 km S52°E
3	0033-89660	AHY	M	27/05/35	Meota, SK	53°00'N	108°20'W	8 mo.
	FGB	0	1	24/01/36	Tuskahoma, OK	34°30'N	95°10'W	2307 km S32°E
4	0353-26416	J	U	28/06/36	Last Mountain Lake, SK	51°20'N	105°20'W	1 yr. 6 mo.
	TAH	0	0	20/12/37	Fredericksburg, TX	30°10'N	98°50'W	2417 km S15°E
5	0043-11727	J	U	16/06/34	Bashaw, AB	52°30'N	112°50'W	7 mo.
	GP	0	1	ST/01/35	Jasper, TX	30°50'N	93°50'W	2864 km S40°E
6	0003-99739	HY	U	13/07/26	Indian Head, SK	50°30'N	103°40'W	6 mo.
	GLa	0	98	15/01/27	Durant, TX	33°50'N	97°20'W	1926 km S18°E
7	0623-20241	AHY	M	07/09/63	near Tilbury, ON	42°20'N	82°10'W	4 yr. 5 mo.
	MJW	5	45	09/02/68	Doniphan, MO	36°30'N	90°40'W	977 km S51°W
8	0663-55743	U	M	29/04/65	Long Point, ON	42°30'N	80°20'W	7 mo.
	LPBO	3	3	19/11/65	Braselton, GA	34°00'N	83°40'W	990 km S18°W
9	0443-04761	AHY	M	15/06/49	Hampstead, QC	45°30'N	73°30'W	6 yr. 0 mo.
	MB	0	99	08/06/55	Hampstead, QC	45°30'N	73°30'W	0 km
10	0373-00555	J	U	23/06/37	near Barrington, NS	43°30'N	65°30'W	3 yr. 4 mo.
	MH	0	0	13/10/40	Athens, GA	33°50'N	83°20'W	1881 km S61°W

Summary of banding statistics: Northern Flicker

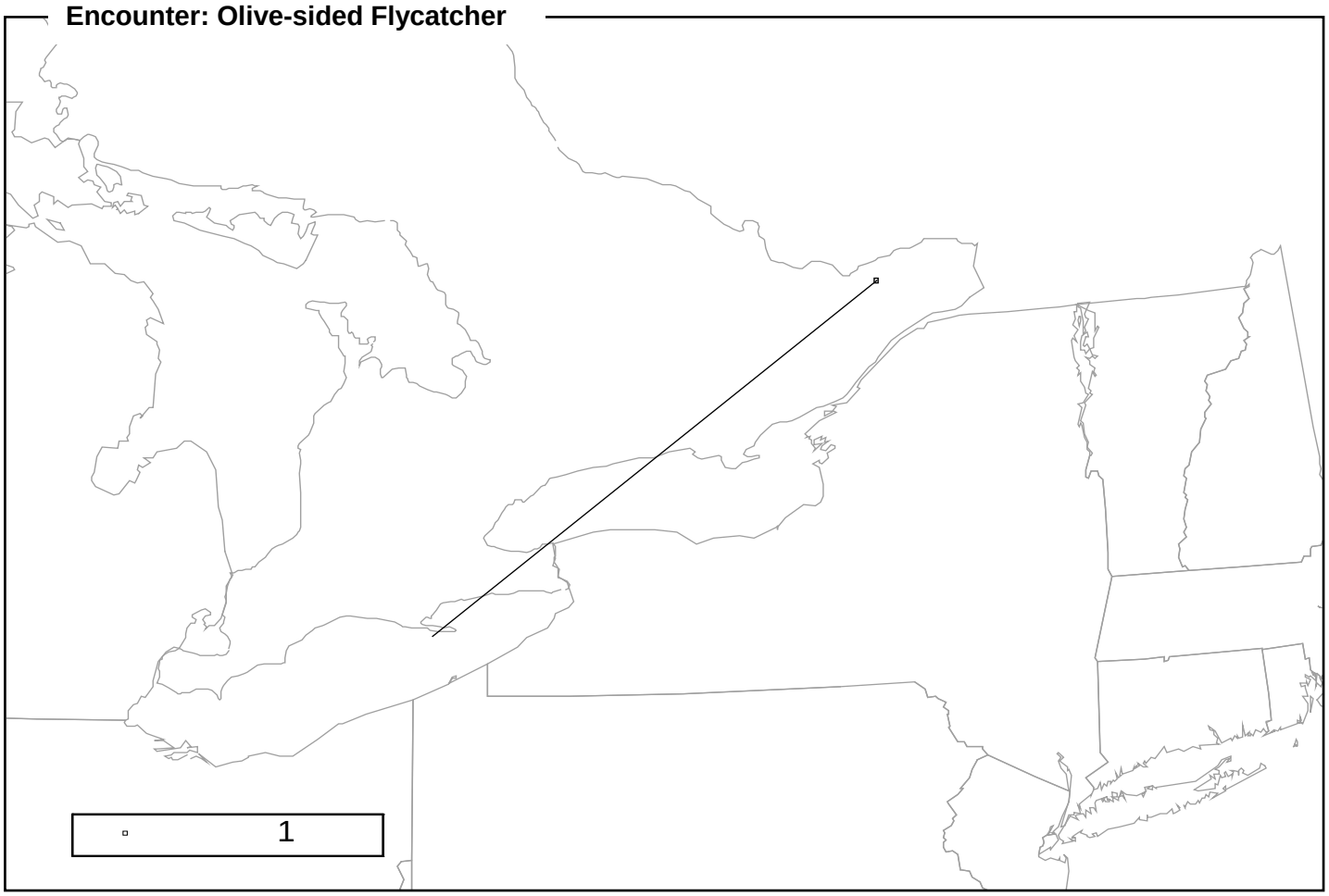
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*8447*
No. encountered per 1000 banded (1955-1995)			*6*
Total no. encountered (1921-1995)	45	76	141
No. encountered from foreign bandings	4	4	9
Maximum period from banding to encounter (mo.)	40	72	72
No. of Canadian-banded birds moving > 0 km	24	36	68
Mean movement > 0 km of Canadian-banded birds (km)	1228	389	753
Maximum movement from all encounters (km)	2863	2307	2863
% recovered (encountered dead)	88	68	78
% direct recoveries	51	36	44
% encountered during banding operations	6	28	19

Banding effort: Northern Flicker



Top banders: LPBO, DRH, PEPO, PPBO, IPBO

Olive-sided Flycatcher (*Contopus cooperi*) 459.0



The Olive-sided Flycatcher breeds through much of the western U.S. and across Canada, except for the Queen Charlotte Islands, northern Yukon, northeastern Northwest Territories, extreme northeastern Manitoba, extreme northern Ontario, and northern Quebec; it is also absent as a breeder from the southern Prairie Provinces (Godfrey 1986). This species winters in northwestern South America from western Venezuela and Colombia to Peru.

The sole record, below, is notable for the age of the bird (at least six years and nine months), close to the seven years and one month record for a banded Olive-sided Flycatcher (Klimkiewicz and Futcher 1989).

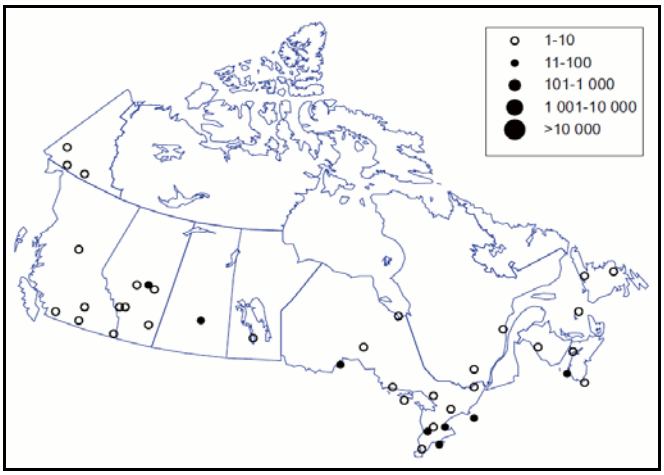
Encounter records: Olive-sided Flycatcher

1	2051-83955	AHY	U	24/05/87	Long Point, ON	42°30'N 80°20'W	6 yr. 0 mo.
	LPBO	5	0	26/05/93	Ramsayville, ON	45°20'N 75°30'W	500 km N49°E

Summary of banding statistics: Olive-sided Flycatcher

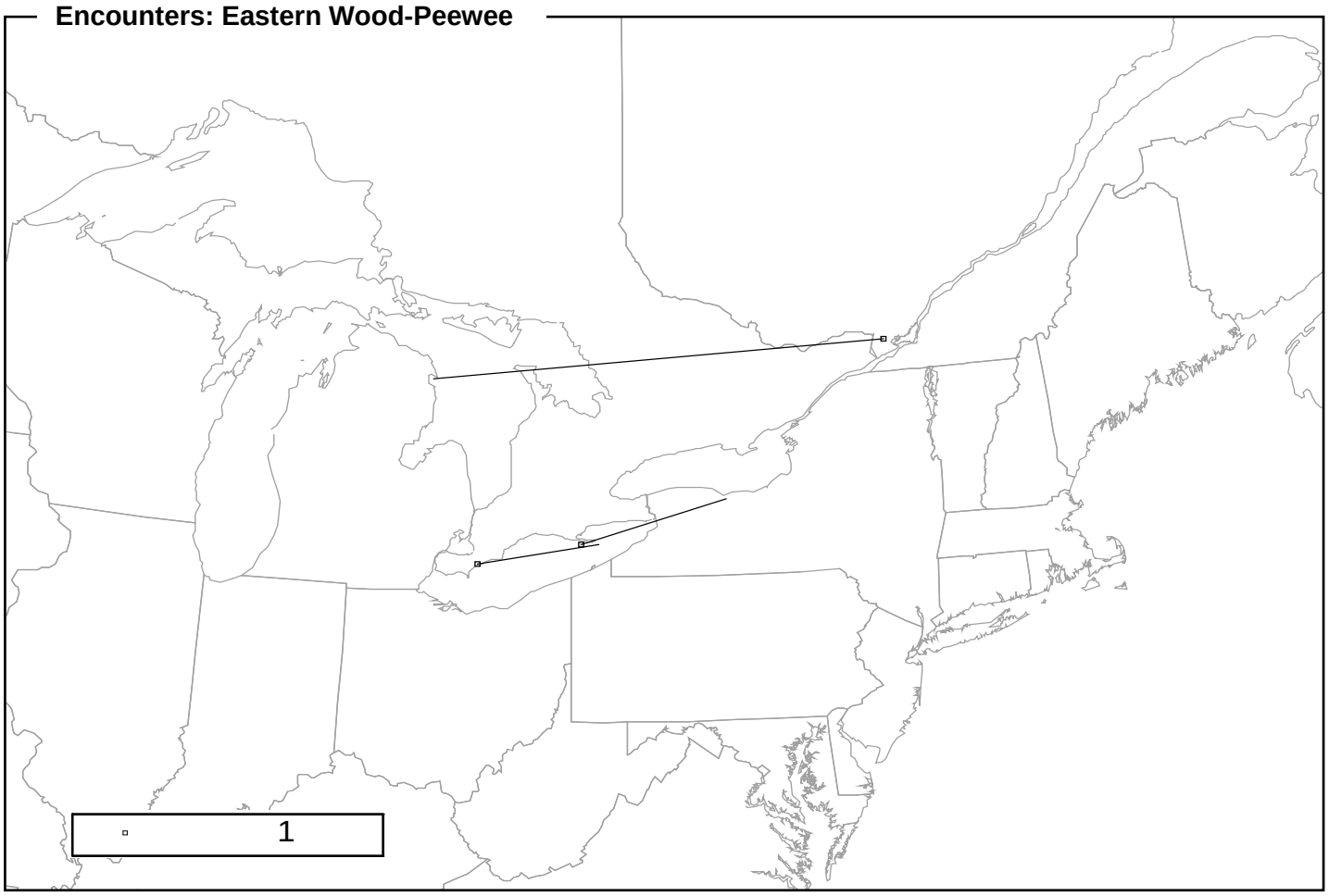
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*237*
No. encountered per 1000 banded (1955-1995)			*4*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	72	72
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	499	499
Maximum movement from all encounters (km)	-	499	499
% recovered (encountered dead)	-	100	100
% direct recoveries	-	0	0
% encountered during banding operations	-	0	0

Banding effort: Olive-sided Flycatcher



Top banders: LPBO, ETJ, RRA, JBMi, ARS

Eastern Wood-Peewee (*Contopus virens*) 461.0



The Eastern Wood-Pewee breeds in the eastern U.S. and southern Canada, from southeastern Saskatchewan across southern Ontario and Quebec, through the Maritimes (excepting Newfoundland). It winters primarily in northern South America (Colombia and Venezuela south to Peru and western Brazil), but it may occur rarely during winter in Central America (Belize, Costa Rica, and El Salvador; McCarty 1996).

All four Canadian encounters are shown below. The rare short-term encounter (record 1) provides insight into the rate of fall migration. Based on 243 km covered in five days, this bird averaged 49 km per day. The bird in record 2 was captured during the fall migration almost exactly two years after being banded only 196 km away on a previous fall migration.

Little information is available on breeding site fidelity (McCarty 1996), but the bird in record 3 is a male that appears to have been faithful to its previous year's breeding site. By contrast, record 4 suggests movement between nesting seasons.

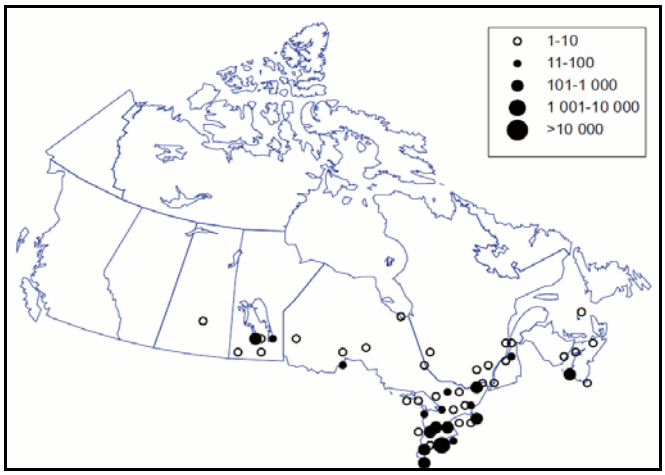
Encounter records: Eastern Wood-Peewee

1	1580-62005	U	U	13/09/84	Irondequoit Bay, NY	43°10'N 77°30'W	5 dy.
	RGMcK	7	89	18/09/84	Long Point, ON	42°30'N 80°20'W	243 km S73°W
2	0320-13891	U	U	04/09/61	Long Point, ON	42°30'N 80°00'W	2 yr. 0 mo.
	LPBO	0	89	01/09/63	Tilbury, ON	42°10'N 82°20'W	196 km S80°W
3	1470-00416	AHY	M	13/06/77	Saint-Pascal, QC	47°30'N 69°40'W	1 yr. 0 mo.
	ABo	7	99	05/06/78	Saint-Pascal, QC	47°30'N 69°40'W	0 km
4	1270-94278	AHY	U	27/05/72	Alpena, MI	45°00'N 83°20'W	2 yr. 0 mo.
	AEV	5	14	28/05/74	near Saint-André-Est, QC	45°30'N 74°10'W	720 km N82°E

Summary of banding statistics: Eastern Wood-Peewee

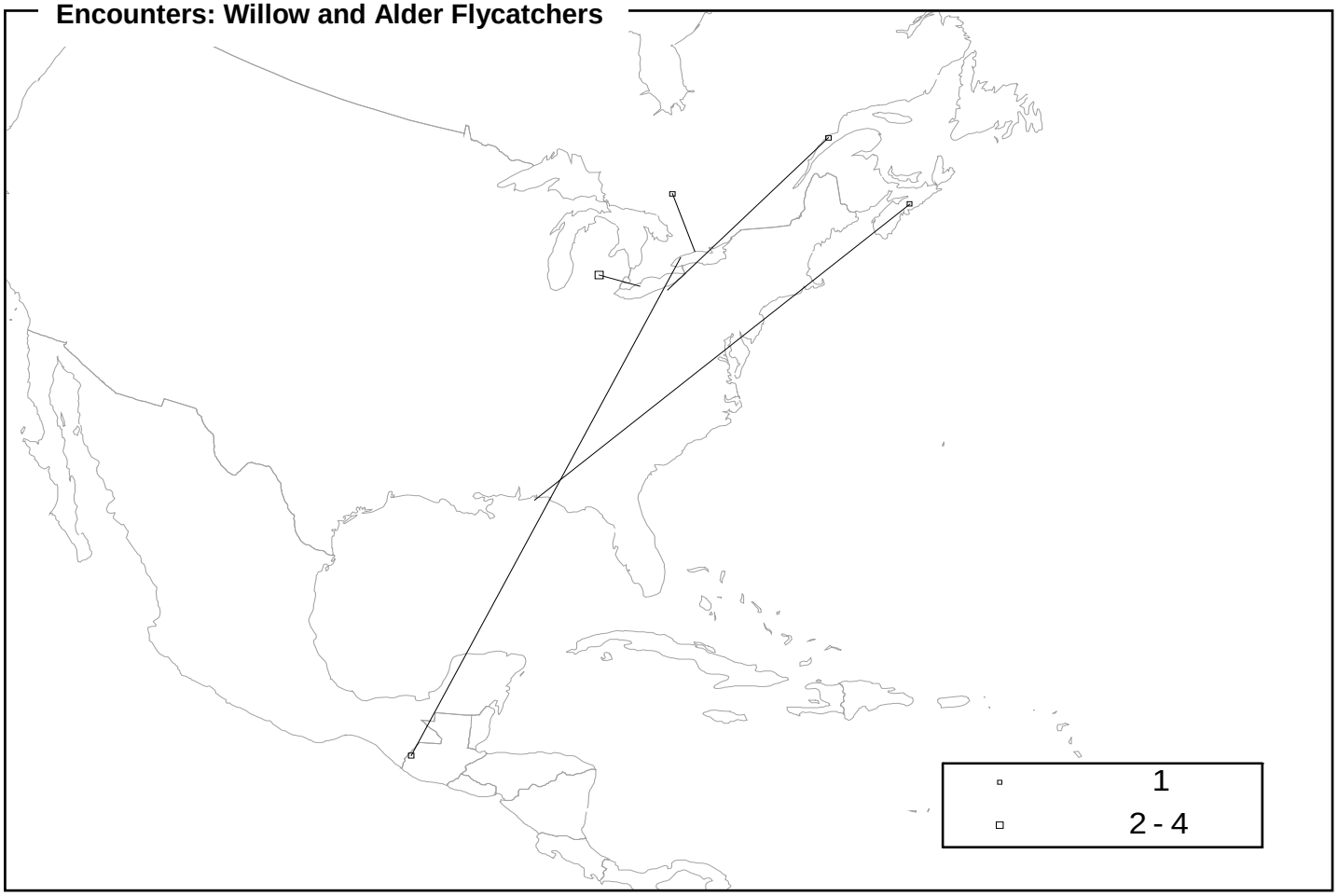
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5035*
No. encountered per 1000 banded (1955-1995)			*0.4*
Total no. encountered (1921-1995)	0	2	4
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	-	24	24
No. of Canadian-banded birds moving > 0 km	0	0	1
Mean movement > 0 km of Canadian-banded birds (km)	-	-	195
Maximum movement from all encounters (km)	-	720	720
% recovered (encountered dead)	-	50	25
% direct recoveries	-	0	25
% encountered during banding operations	-	50	75

Banding effort: Eastern Wood-Peewee



Top banders: LPBO, PEPO, JBMi, MJW, IPBO

Willow Flycatcher (*Empidonax traillii*) 466.0 and Alder Flycatcher (*Empidonax alnorum*) 466.1



The Willow and Alder Flycatchers (Stein 1963, American Ornithologists' Union 1983) are two distinct species that breed sympatrically over parts of their ranges. Separation of the two species is exceptionally difficult in the hand, so most bandings refer to birds identified merely as "Traill's" Flycatcher.

The Alder Flycatcher breeds all across Canada to the treeline (except in southern British Columbia and the southern Prairie Provinces) and into the Appalachian Mountains in the U.S. Willow Flycatchers are more southerly in distribution, breeding across the northern U.S. and in Canada only in southern British Columbia, the extreme south of the Prairie Provinces, and southern Ontario (Godfrey 1986).

The Alder Flycatcher apparently winters mainly in western South America east of the Andes, probably from Colombia and northwest Venezuela south to northern Argentina. In contrast, the wintering range of the Willow Flycatcher extends only from southern Mexico to Panama. Both species occur in northern Central America on migration, so record 1 below could belong to either. All the Canadian encounters not involving Ontario (records 2-5) are likely to be of Alder Flycatchers, given the breeding range of that species.

The rare short-term encounter (record 2) suggests rapid spring migration, with this bird averaging at least 123 km per day over 10 days. Support for breeding site fidelity comes from record 4 and two other birds banded at that same site and recaptured there two years later.

Of the 11 birds encountered, nearly half were recaptured alive. Cause of death was recorded for four birds: two were killed in collisions with vehicles (record 5) and two were killed by cats (records 3 and 6).

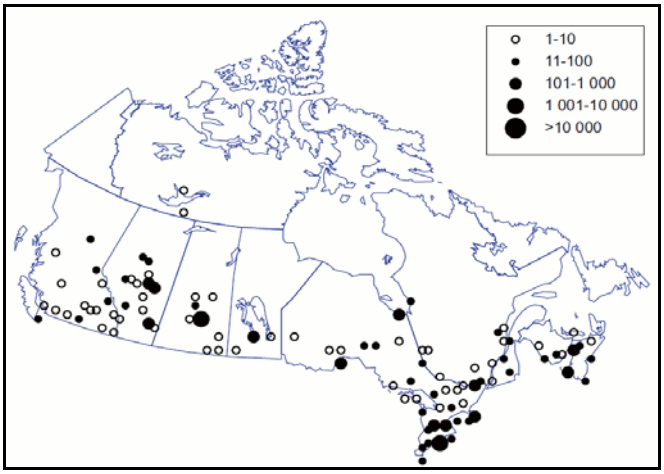
Encounter records: Willow and Alder Flycatchers

1	0290-64929	L	U	14/07/62	near Markham, ON	43°40'N	79°10'W	
	GP	0	97	??/09/63	Near Cuilco, GUATEMALA	15°20'N	91°50'W	3375 km S25°W
2	1540-47685	AHY	U	29/05/82	Erie, PA	42°00'N	80°00'W	10 dy.
	JHS	4	0	08/06/82	Baie-Comeau, QC	49°10'N	68°00'W	1226 km N45°E
3	1550-05532	HY	U	19/09/80	Pensacola, FL	30°20'N	87°10'W	10 mo.
	LRD	3	12	18/07/81	Shubenacadie, NS	45°00'N	63°20'W	2643 km N45°E
4	1300-02379	U	U	30/07/73	11 km east of Sackville, NB	45°50'N	64°10'W	3 yr. 1 mo.
	ADS	7	99	05/08/76	11 km east of Sackville, NB	45°50'N	64°10'W	0 km
5	1280-26181	HY	U	31/08/73	Perryville, RI	41°20'N	71°30'W	1 yr. 0 mo.
	DLK	5	14	03/08/74	unknown site, NS	??°??'N	??°??'W	
6	0220-48757	U	U	16/09/58	Bewdley, ON	44°00'N	78°10'W	
	FS	0	12	??/07/64	Temagami, ON	47°00'N	79°40'W	354 km N19°W
7	0220-38054	AHY	U	03/06/56	Erieau, ON	42°10'N	81°50'W	5 yr. 1 mo.
	FTL	6	89	27/07/61	East Lansing, MI	42°40'N	84°30'W	226 km N75°W

Summary of banding statistics: Willow and Alder Flycatchers

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*12 970*
No. encountered per 1000 banded (1955-1995)			*0.5*
Total no. encountered (1921-1995)	3	5	10
No. encountered from foreign bandings	2	1	3
Maximum period from banding to encounter (mo.)	12	61	61
No. of Canadian-banded birds moving > 0 km	1	1	3
Mean movement > 0 km of Canadian-banded birds (km)	3375	226	1318
Maximum movement from all encounters (km)	3375	1226	3375
% recovered (encountered dead)	100	40	60
% direct recoveries	0	40	20
% encountered during banding operations	0	60	40

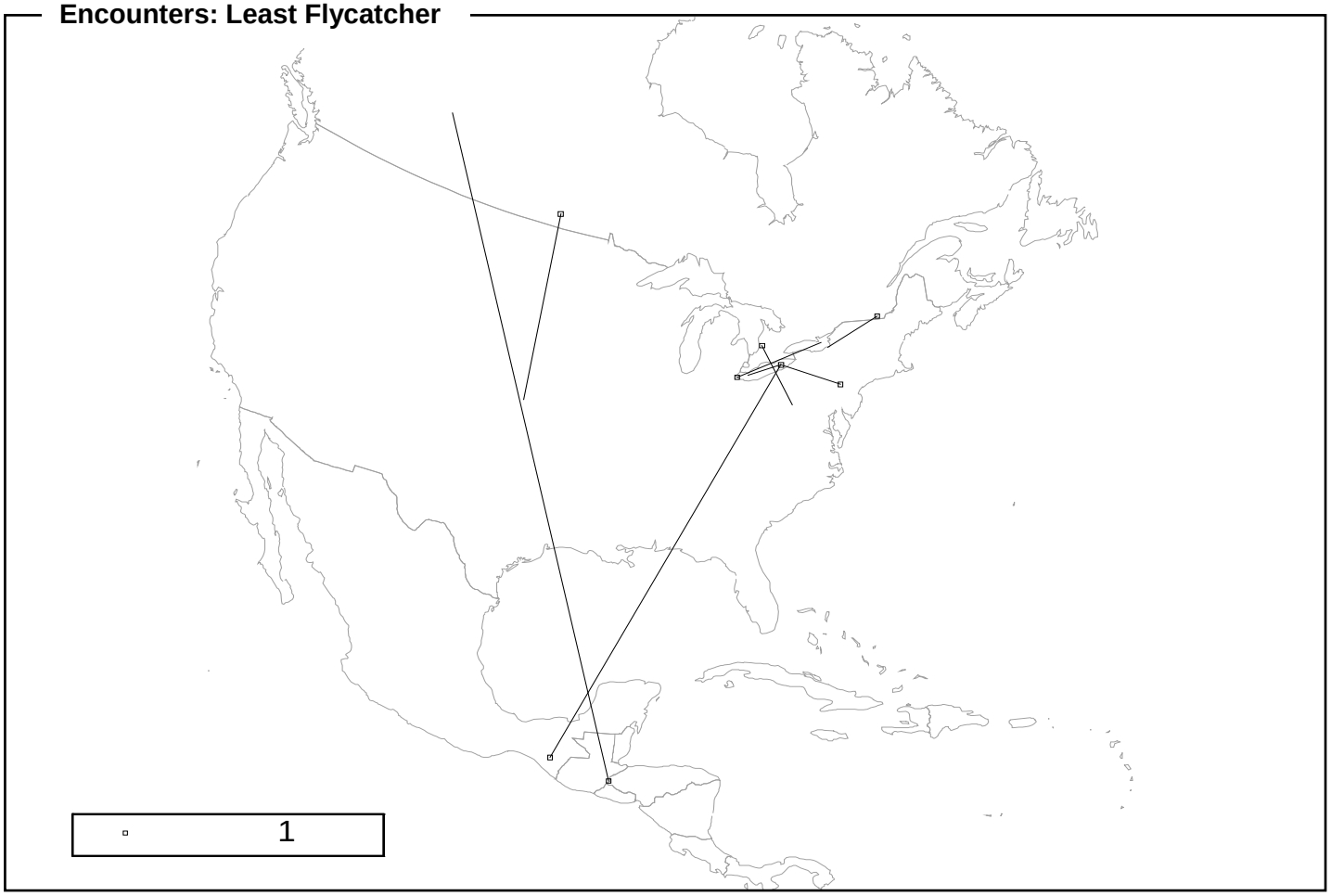
Banding effort: Willow and Alder Flycatchers



Top banders: LPBO, ETJ, ARS, BBO, RIGM

Least Flycatcher (*Empidonax minimus*) 467.0

Encounters: Least Flycatcher



The Least Flycatcher breeds across the northern U.S. and southern Canada, north to the limits of forest, except in the Pacific Northwest (including western British Columbia) and much of Newfoundland. It winters from central Mexico south to Honduras and northern Nicaragua (records 1 and 2), casually to Costa Rica and east to the Canal Zone in central Panama. It also winters regularly on the southern Florida mainland (Briskie 1994).

Spring migration is relatively early; the median date in southern Ontario is 18 May, or about two weeks earlier than for Traill's Flycatchers. Adults spend fewer than 64 days on the Ontario breeding grounds, because their median date of fall migration in southern Ontario is 22 July (versus 29 August for immatures). Least Flycatchers reach Guatemala as early as 13 August (Hussell 1981). Many banding stations do not begin fall coverage in time to handle adults as migrants, and all the records of birds banded as adults show that these birds were banded in the breeding season.

Three of the records below indicate rate of migration: record 2 shows a bird that travelled 3188 km in 32 days from Ontario to Mexico, for a minimum rate of 100 km per day (Hussell 1984), and record 3 shows a bird that travelled 73 km per day over three days. Record 4 appears to be an example of reverse spring migration; that bird travelled 402 km in 11 days for a minimum rate of 37 km per day.

Natal philopatry is low (4.2% at Delta Marsh, Manitoba), whereas breeding and wintering site fidelity both appear to be high (Briskie 1994). Three of the records below illustrate breeding site fidelity (records 5-7).

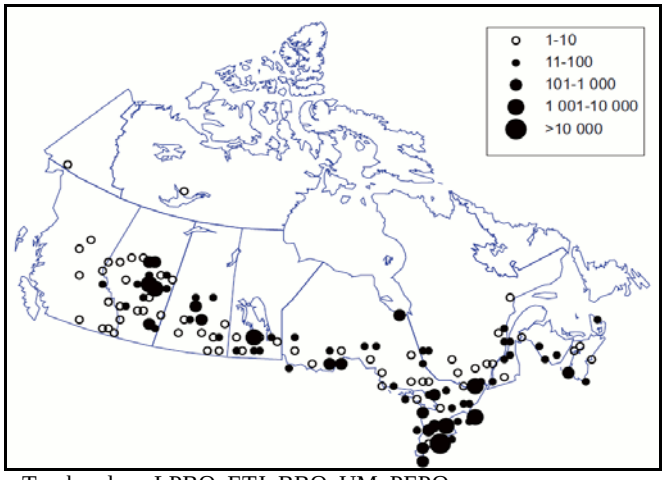
Encounter records: Least Flycatcher

1	1780-41439	U	U	13/08/89	Beaverhill Lake, AB	53°20'N	112°30'W	1 yr. 8 mo.
	BBO	2	98	15/04/91	Zacapa, GUATEMALA	14°40'N	89°20'W	4760 km S34°E
2	1630-02421	HY	U	17/08/82	Long Point, ON	42°30'N	80°00'W	1 mo.
	NG	5	1	18/09/82	Las Rosas, Chiapas, MEXICO	16°00'N	92°40'W	3188 km S26°W
3	0260-90378	AHY	U	21/05/61	Point Pelee, ON	41°50'N	82°30'W	3 dy.
	PPBO	6	89	24/05/61	Long Point, ON	42°30'N	80°00'W	219 km N69°E
4	1160-50672	AHY	U	12/05/69	Long Point, ON	42°30'N	80°00'W	11 dy.
	LPBO	2	98	23/05/69	near Daleville, PA	41°10'N	75°30'W	402 km S70°E
5	1850-62442	AHY	F	27/05/90	Beaverhill Lake, AB	53°20'N	112°30'W	1 yr. 1 mo.
	BBO	8	99	19/06/91	Beaverhill Lake, AB	53°20'N	112°30'W	0 km
6	1300-17341	AHY	U	24/06/74	11 km east of Sackville, NB	45°50'N	64°10'W	2 yr. 0 mo.
	ADS	7	99	14/06/76	11 km east of Sackville, NB	45°50'N	64°10'W	0 km
7	0260-02268	AHY	U	02/06/57	White Fox, SK	53°20'N	104°00'W	11 mo.
	MGS	0	99	27/05/58	White Fox, SK	53°20'N	104°00'W	0 km
8	1260-58728	AHY	U	21/09/72	Cheyenne Bottoms, KS	38°20'N	98°40'W	1 yr. 8 mo.
	EFM	7	28	99/05/74	Brandon, MB	49°50'N	99°50'W	1284 km N4°W
9	1580-21301	SY	F	22/07/83	Stahlstown, PA	40°00'N	79°10'W	4 yr.10 mo.
	CMNH	3	0	16/05/88	Auburn, ON	43°40'N	81°30'W	452 km N25°W

Summary of banding statistics: Least Flycatcher

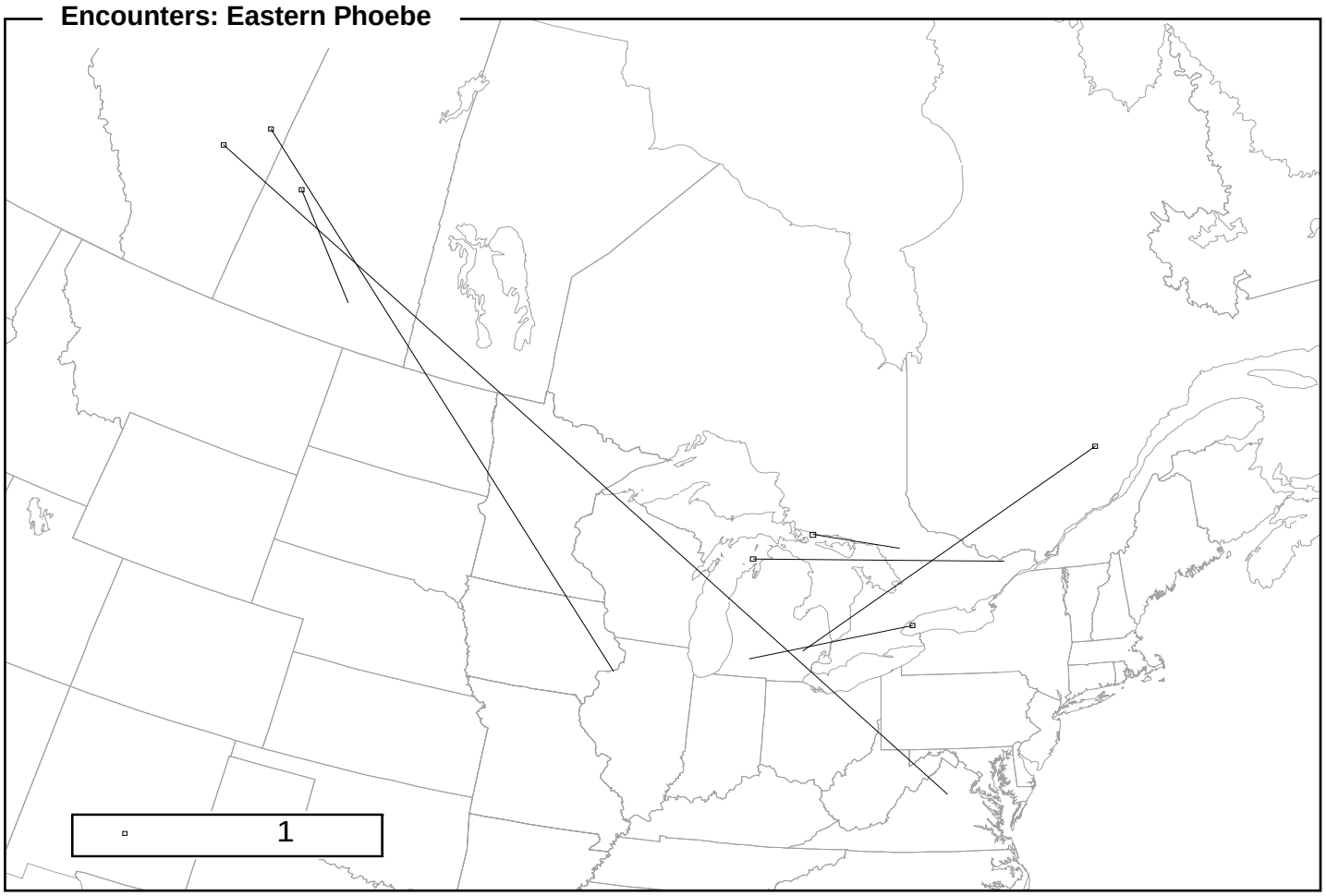
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*37 916*
No. encountered per 1000 banded (1955-1995)			*0.3*
Total no. encountered (1921-1995)	6	10	17
No. encountered from foreign bandings	0	3	3
Maximum period from banding to encounter (mo.)	58	58	58
No. of Canadian-banded birds moving > 0 km	4	4	9
Mean movement > 0 km of Canadian-banded birds (km)	805	303	1021
Maximum movement from all encounters (km)	3187	1283	4759
% recovered (encountered dead)	33	30	35
% direct recoveries	50	20	29
% encountered during banding operations	66	60	58

Banding effort: Least Flycatcher



Top banders: LPBO, ETJ, BBO, UM, PEPO

Eastern Phoebe (*Sayornis phoebe*) 456.0



The Eastern Phoebe breeds in the eastern U.S. and southern parts of eastern Canada to Nova Scotia; it also breeds through the Prairie Provinces into the southern Northwest Territories. It winters principally in the southern U.S., with peak numbers along the Gulf Coast and especially heavy concentrations in east-central Texas and northern Florida; the species also winters as far south as southern Mexico.

There have been no encounters of Canadian birds in winter. The most southerly records (1 and 2) are for birds encountered in the U.S. in October, at the height of the fall migration (Weeks 1994).

Natal philopatry is generally low, with record 3 providing a striking example of the distance a nestling may move to breed in subsequent years (1136 km, assuming the encounter information is correct). On the other hand, there are records of birds returning to sites very close to their natal area (record 4). Several records provide evidence of a pre-migratory dispersal by juveniles before August (records 5 and 6), so record 7 (banded in this dispersal phase) sheds no light on the degree of natal philopatry.

Adult fidelity to breeding sites is strong both within and between years (record 8, Weeks 1994), which can help produce encounters of long-lived birds. However, the longevity record for this species (record 2; Klimkiewicz 1997) is held by a bird both banded and encountered on migration.

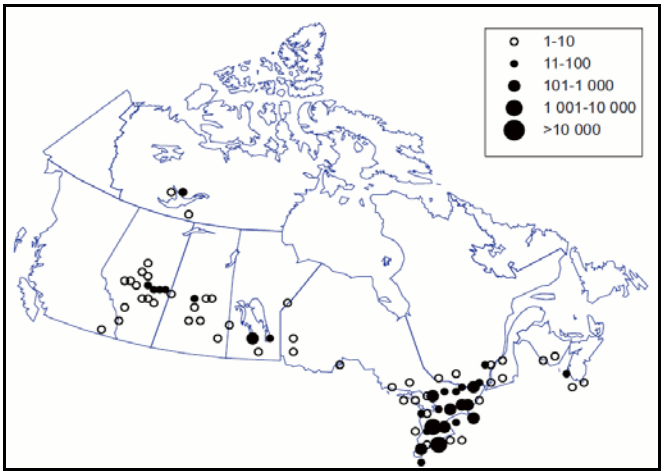
Encounter records: Eastern Phoebe

1	1850-52417	HY	U	13/10/89	Madison, VA	38°20'N 78°10'W	2 yr. 8 mo.
	EHS	7	89	16/06/92	Beaverhill Lake, AB	53°20'N 112°30'W	3098 km N46°W
2	0930-36226	HY	U	10/10/79	Davenport, IA	41°30'N 90°30'W	10 yr. 0 mo.
	PCP	5	0	15/10/89	Bonnyville, AB	54°20'N 110°50'W	2070 km N39°W
3	0580-13543	L	U	06/07/58	Davisburg, MI	42°40'N 83°30'W	2 yr. 8 mo.
	RAOR	0	87	01/03/61	near Saint-Bruno, QC	48°30'N 71°30'W	1136 km N51°E
4	0340-38901	J	U	23/06/34	Teulon, MB	50°20'N 97°10'W	11 mo.
	WAC	0	0	05/05/35	Balmoral, MB	50°10'N 97°10'W	19 km S0°W
5	0031-42271	J	U	14/06/35	Regina, SK	50°20'N 104°30'W	2 mo.
	FGB	0	21	02/08/35	Meota, SK	53°00'N 108°20'W	398 km N40°W
6	0000-11626	J	U	11/07/21	Ottawa, ON	45°20'N 75°40'W	1 mo.
	PF	0	0	04/08/21	North Fox Island, MI	45°20'N 85°40'W	782 km N86°W
7	0820-21467	HY	U	05/08/74	Arnstein, ON	45°50'N 79°50'W	1 yr.10 mo.
	DW	5	0	03/06/76	Sowerby, ON	46°10'N 83°20'W	273 km N81°W
8	0341-74854	AHY	F	23/05/35	Glenevis, AB	53°40'N 114°30'W	1 yr. 2 mo.
	FHP	0	33	26/07/36	Glenevis, AB	53°40'N 114°30'W	0 km

Summary of banding statistics: Eastern Phoebe

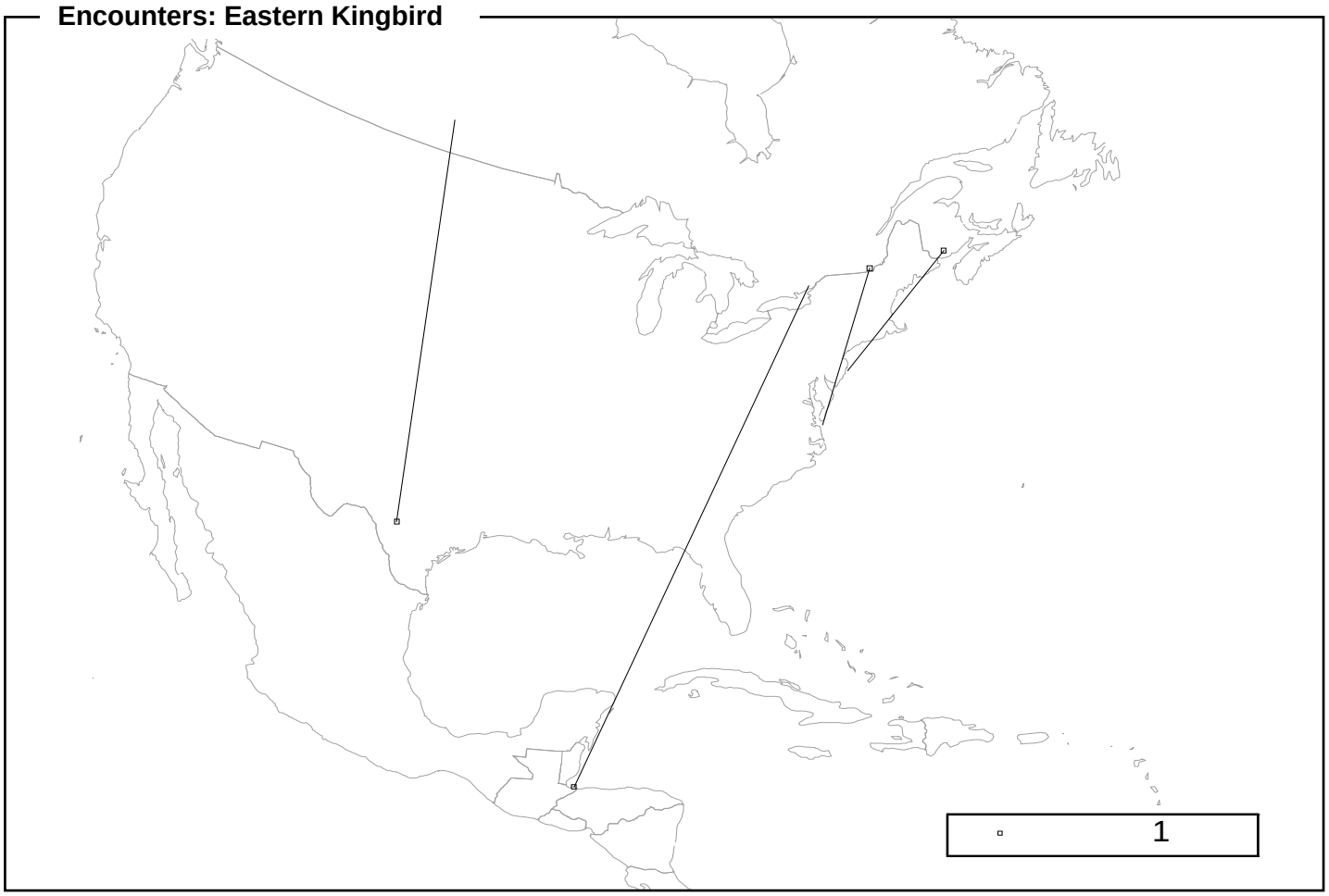
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*6318*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	16	8	27
No. encountered from foreign bandings	4	0	4
Maximum period from banding to encounter (mo.)	120	61	120
No. of Canadian-banded birds moving > 0 km	6	2	8
Mean movement > 0 km of Canadian-banded birds (km)	250	11	191
Maximum movement from all encounters (km)	3098	11	3098
% recovered (encountered dead)	75	25	51
% direct recoveries	37	37	33
% encountered during banding operations	18	62	40

Banding effort: Eastern Phoebe



Top banders: JOLR, LPBO, RJRo, IPBO, PPBO

Eastern Kingbird (*Tyrannus tyrannus*) 444.0



The Eastern Kingbird has the most extensive breeding range of all North American flycatchers, breeding across most of the U.S., except for California and part of the Southwest; it breeds across Canada north to the limits of dense forest, except in western British Columbia, eastern Quebec, and southern Newfoundland. It also breeds locally along the southern coast of Hudson Bay and the southwestern coast of James Bay (Murphy 1996). The species winters in northwestern South America from Colombia (occasionally Honduras) south to the northern parts of Chile and Argentina.

Spring migrants move north through Central America by mid-March, with the first strong wave arriving in the southern U.S. by early to mid-April (Murphy 1996). The 5 March encounter of a kingbird of Saskatchewan origin in Texas (record 1) may represent a very early migrant.

Only four records indicate movement of more than 100 km; these are shown on the encounter map and are listed below (records 1–4), together with one that was at least seven years old when recovered (record 5).

Breeding site fidelity is high (over 90% for males and over 70% for females), but the degree of fidelity to the wintering site is unknown (Murphy 1996). The only bird encountered south of the U.S. was shot in Guatemala (record 4).

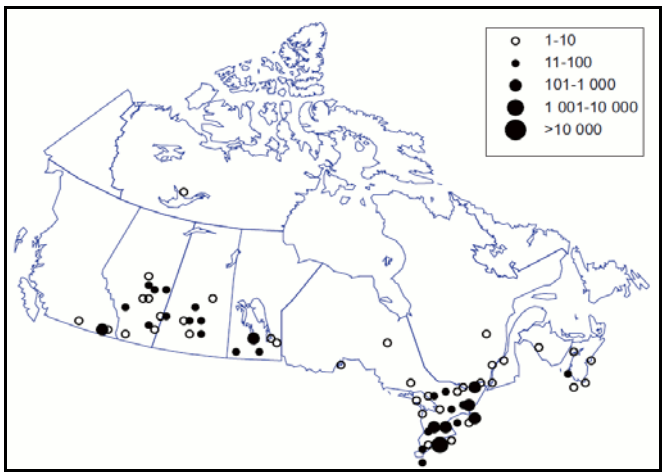
Encounter records: Eastern Kingbird

1	0021-94538	HY	U	27/07/50	Muscow, SK	50°40'N 103°50'W	2 yr. 8 mo.
	JRC	0	0	05/03/53	Reagan Wells, TX	29°30'N 99°40'W	2382 km S10°E
2	0671-78942	HY	U	30/08/67	Island Beach State Park, NJ	39°50'N 74°00'W	1 yr. 0 mo.
	JCM	5	3	04/08/68	Hoyt Station, NB	45°30'N 66°30'W	879 km N42°E
3	1091-20332	HY	U	11/09/70	Adams Island, VA	37°00'N 75°50'W	10 mo.
	FRS	5	0	13/07/71	North Hatley, QC	45°10'N 71°50'W	969 km N19°E
4	1231-01539	L	U	16/06/79	Jones Falls, ON	44°30'N 76°10'W	
	RJRo	5	1	??/09/80	Puerto Barrios, GUATEMALA	15°50'N 88°30'W	3396 km S24°W
5	0581-18363	AHY	U	03/08/67	Long Point, ON	42°30'N 80°00'W	6 yr. 0 mo.
	LPBO	6	0	08/08/73	near St. Williams, ON	42°40'N 80°20'W	33 km N56°W

Summary of banding statistics: Eastern Kingbird

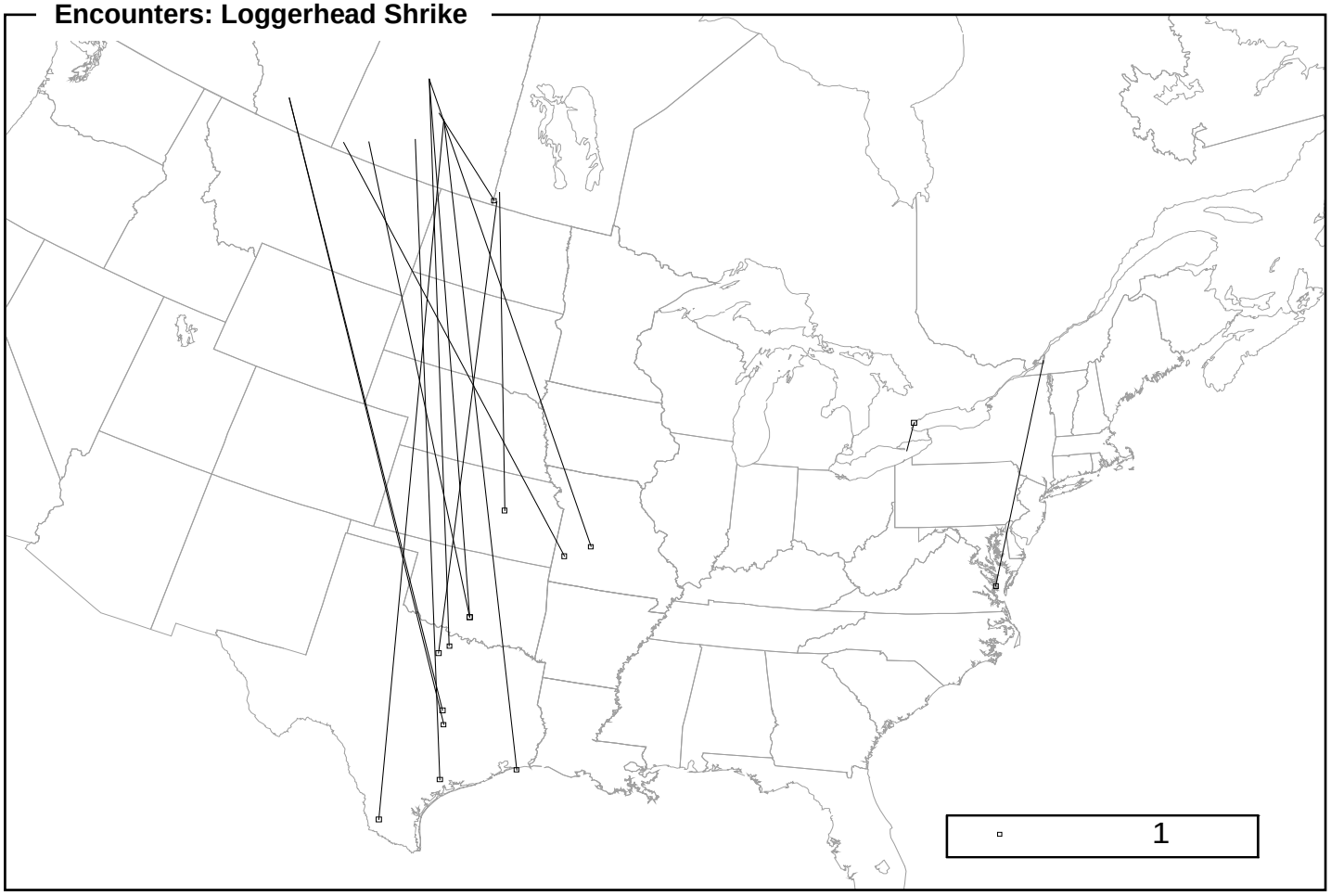
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*4213*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	9	4	15
No. encountered from foreign bandings	2	0	2
Maximum period from banding to encounter (mo.)	32	72	72
No. of Canadian-banded birds moving > 0 km	4	2	7
Mean movement > 0 km of Canadian-banded birds (km)	1464	25	846
Maximum movement from all encounters (km)	3395	33	3395
% recovered (encountered dead)	100	50	86
% direct recoveries	33	0	26
% encountered during banding operations	0	50	13

Banding effort: Eastern Kingbird



Top banders: LPBO, RJRo, PEPO, UM, IPBO

Loggerhead Shrike (*Lanius ludovicianus*) 622.0



The Loggerhead Shrike breeds in southern Canada from central Alberta to southwestern Manitoba (*excubitorides* subspecies) and southern Ontario (*migrans* subspecies), as well as in most of the U.S. The eastern breeding range formerly extended east to southern Nova Scotia. It winters mainly south of the range of Northern Shrikes, from Washington State in the west to New Jersey in the east, south to southern Mexico, the Gulf Coast, and Florida. COSEWIC (1993) listed the eastern Canadian population as "endangered" and the western as "threatened."

Encounters of birds banded in western Canada are consistent with the overall pattern of a north-south migration to wintering grounds south of 40°N (Burnside 1987, Yosef 1996; see records 1-7). Very few birds from eastern Canada have been banded, and there is only a single winter encounter for this endangered population (record 8). Establishing the wintering grounds of the different breeding populations is key to developing appropriate conservation policies, because loss of wintering habitat is considered an important factor limiting population size. (Telfer 1993).

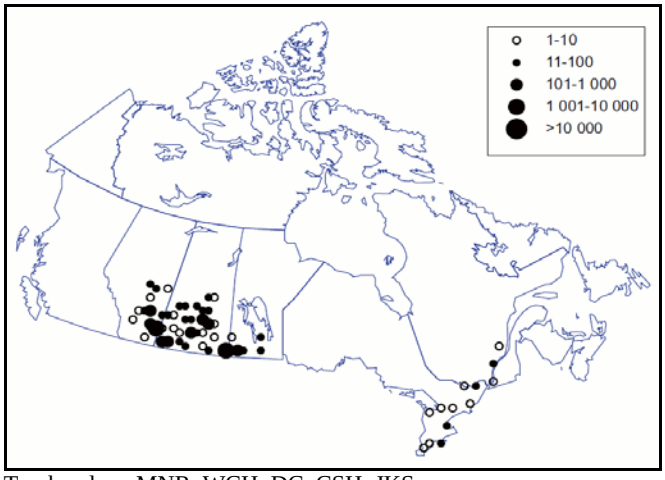
Encounter records: Loggerhead Shrike

1	0022-14218	J	U	04/07/31	Hepburn, SK	52°30'N 106°40'W	2 mo.
	PS	0	0	23/09/31	near Edwards, MO	38°00'N 93°10'W	1923 km S38°E
2	0031-66224	HY	U	25/06/33	Carmangay, AB	50°00'N 113°00'W	6 mo.
	JEH	0	1	22/12/33	near Belton Lake, TX	31°10'N 97°30'W	2461 km S37°E
3	0032-52535	J	U	16/07/33	Carmangay, AB	50°00'N 113°00'W	1 yr. 3 mo.
	JEH	0	1	06/10/34	Granger, TX	30°40'N 97°20'W	2518 km S37°E
4	0382-08085	U	U	23/06/38	Hepburn, SK	52°30'N 106°40'W	3 yr. 10 mo.
	ASL	0	15	08/04/42	Bowie Lake, TX	33°30'N 97°50'W	2230 km S22°E
5	0382-49031	AHY	U	21/08/38	Hepburn, SK	52°30'N 106°40'W	4 mo.
	FJHF	0	0	20/12/38	Antioch, OK	34°40'N 97°20'W	2119 km S24°E
6	0762-22446	L	U	23/07/72	south of Venn, SK	51°20'N 105°10'W	4 mo.
	CSH	5	1	22/11/72	Barrows Ranch, TX	29°30'N 94°20'W	2592 km S24°E
7	8011-19342	L	U	25/06/88	Consul, SK	49°20'N 109°30'W	5 yr. 0 mo.
	WCH	4	11	06/06/93	Stockton, MO	37°30'N 94°10'W	1802 km S49°E
8	0442-04868	HY	U	19/08/45	Hampstead, QC	45°30'N 73°30'W	6 mo.
	MB	0	1	19/02/46	Bland Point, VA	37°30'N 76°20'W	921 km S16°W

Summary of banding statistics: Loggerhead Shrike

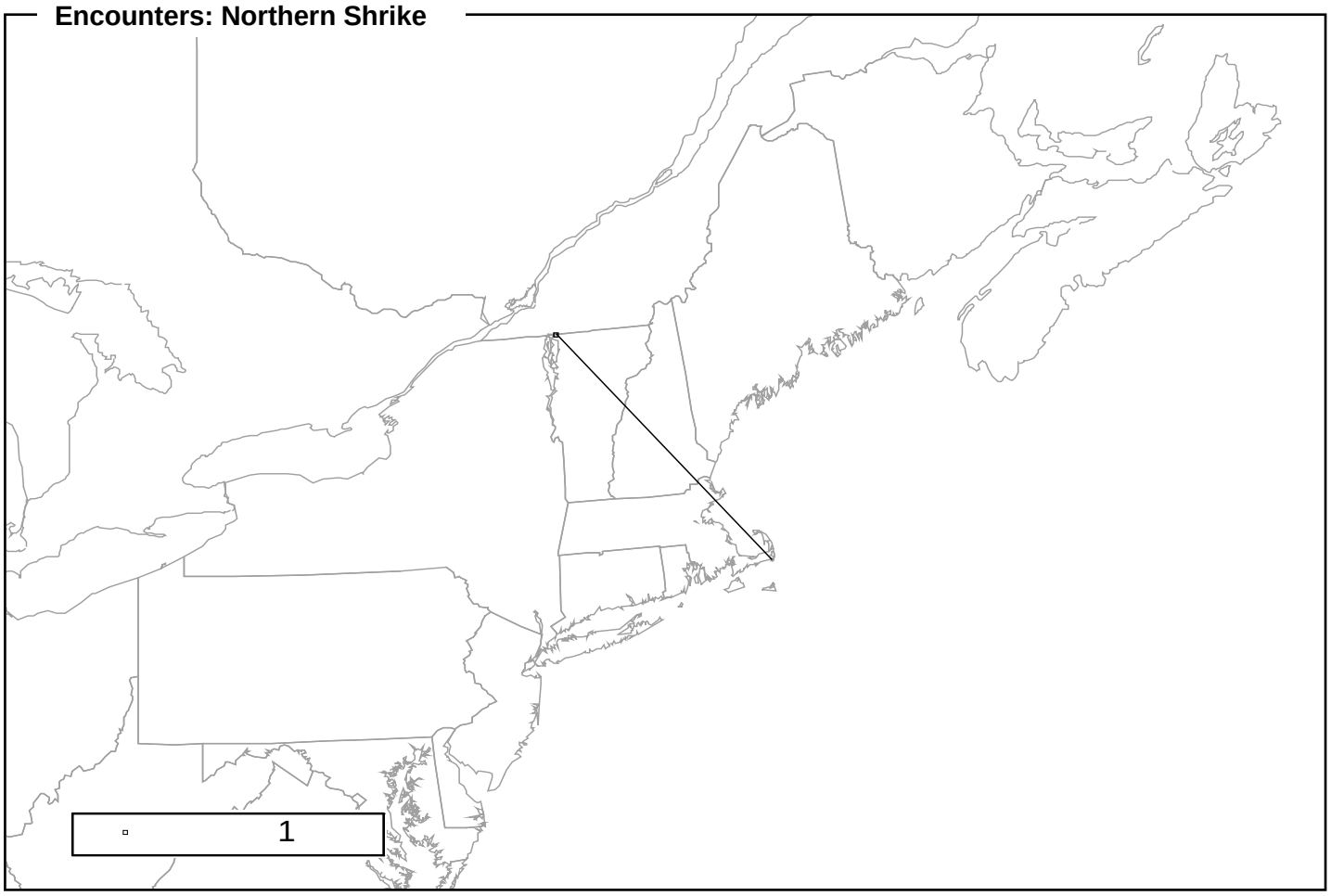
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*7336*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	22	2	27
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	60	25	60
No. of Canadian-banded birds moving > 0 km	20	2	24
Mean movement > 0 km of Canadian-banded birds (km)	1157	1065	1151
Maximum movement from all encounters (km)	2779	2118	2779
% recovered (encountered dead)	72	50	74
% direct recoveries	45	50	44
% encountered during banding operations	27	50	25

Banding effort: Loggerhead Shrike



Top banders: MNR, WCH, DC, CSH, JKSc

Northern Shrike (*Lanius excubitor*) 621.0



The Northern Shrike breeds in Alaska and across Canada in a narrow band along the treeline adjacent to the tundra. It winters from southern Canada south through the U.S. to California in the west and New Jersey in the east.

Very few Northern Shrikes have been banded in Canada, and these were banded mostly south of the breeding range (see effort map). None of the encounters of these birds showed any significant movement. One bird banded in the eastern U.S. has been encountered in Canada (record 1). Although the encounter date for record 2 is inexact, Rimmer and Darmstadt (1996) indicate that this species is faithful to winter territories and possibly also to migration stopover sites.

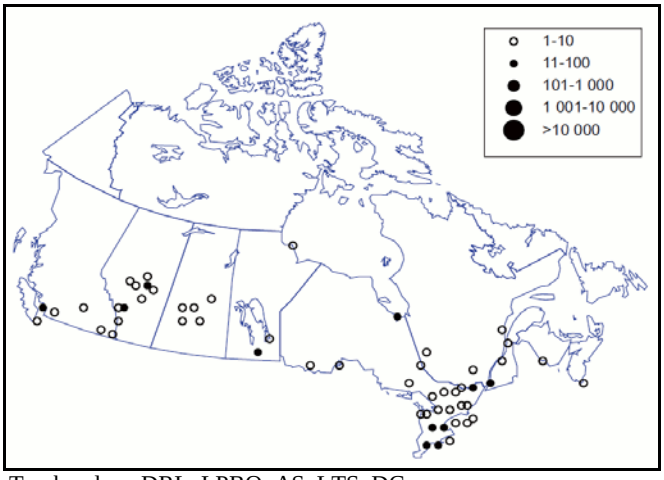
Encounter records: Northern Shrike

1	0032-71756	HY	U	08/11/34	Brewster, MA	41°40'N 70°00'W	1 yr. 5 mo.
	OLA	0	0	FT/04/36	Clarenceville, QC	45°00'N 73°10'W	451 km N34°W
2	0502-29893	AHY	F	06/02/54	Saint-Lazare, QC	45°20'N 74°00'W	
	GGO	0	3	??/02/58	Saint-Lazare, QC	45°20'N 74°00'W	0 km

Summary of banding statistics: Northern Shrike

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*371*
No. encountered per 1000 banded (1955-1995)			*22*
Total no. encountered (1921-1995)	6	5	12
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	17	3	17
No. of Canadian-banded birds moving > 0 km	2	2	4
Mean movement > 0 km of Canadian-banded birds (km)	15	18	17
Maximum movement from all encounters (km)	450	18	450
% recovered (encountered dead)	66	80	75
% direct recoveries	33	80	58
% encountered during banding operations	33	20	25

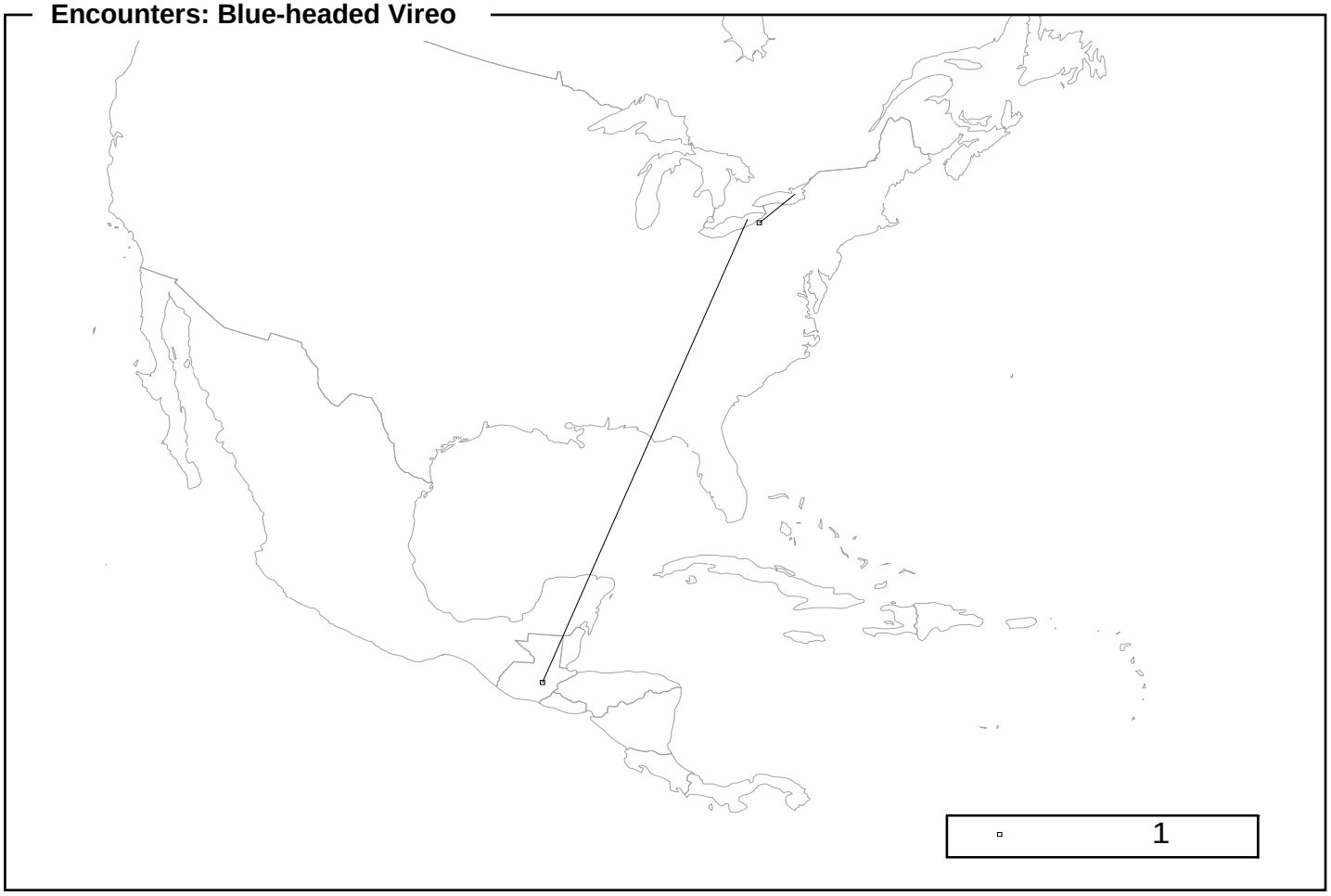
Banding effort: Northern Shrike



Top banders: DRL, LPBO, AS, LTS, DC

Blue-headed Vireo (*Vireo solitarius*) 629.0

Encounters: Blue-headed Vireo



The Blue-headed Vireo is one species in a complex of three that used to be considered a single species, the Solitary Vireo (American Ornithologists' Union 1998). Although Blue-headed, Cassin's and Plumbeous Vireos have now been separated, all Canadian bandings are within the range of the Blue-headed Vireo (see effort map), and both encounters below are virtually certain to be of this species.

The Blue-headed Vireo breeds in northeastern British Columbia, the southwestern Northwest Territories, and north-central Alberta east to Nova Scotia. It winters in the Gulf states, through eastern and southern Mexico to Central America and, rarely, Cuba.

The longevity record for the species is seven years and five months (record 1) (Klimkiewicz et al. 1983). The assumption in determining minimum age was that the bird must have been after-hatch-year at banding, on the basis of date. The bird was shot in Guatemala, on or near its wintering grounds.

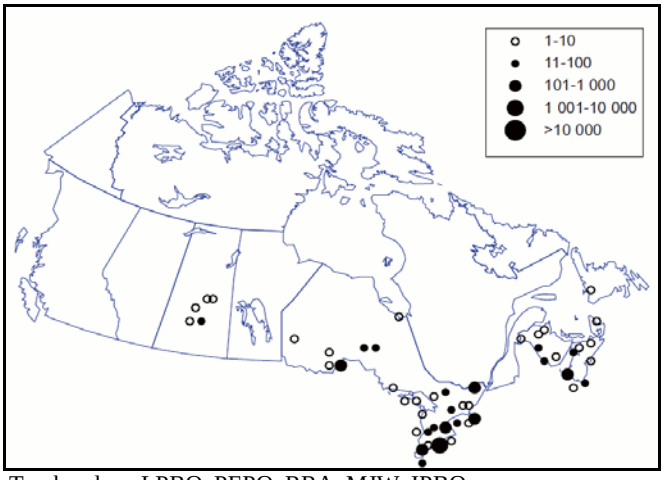
Encounter records: Blue-headed Vireo

1	1020-00711	U	U	15/05/62	Long Point, ON	42 30'N 80°10'W	6 yr. 6 mo.
	LPBO	3	1	01/11/68	unknown site, GUATEMALA	15 ??'N 90 ??'W	c. 3203 km S20°W
2	0890-55713	U	U	27/09/81	Prince Edward Point, ON	43°50'N 76°50'W	8 mo.
	PEPO	7	89	23/05/82	Lamberton, NY	42°20'N 79°20'W	263 km S51°W

Summary of banding statistics: Blue-headed Vireo

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3098*
No. encountered per 1000 banded (1955-1995)			*0.6*
Total no. encountered (1921-1995)	0	0	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	-	78
No. of Canadian-banded birds moving > 0 km	0	0	2
Mean movement > 0 km of Canadian-banded birds (km)	-	-	1732
Maximum movement from all encounters (km)	-	-	3202
% recovered (encountered dead)	-	-	50
% direct recoveries	-	-	0
% encountered during banding operations	-	-	50

Banding effort: Blue-headed Vireo



Top banders: LPBO, PEPO, RRA, MJW, IPBO

Warbling Vireo (*Vireo gilvus*) 627.0

The Warbling Vireo breeds in British Columbia, the southwestern Northwest Territories, northern Alberta and Saskatchewan, southern Manitoba through southern Quebec, and the Maritimes (except Newfoundland); it also breeds in most of the U.S. The species winters mainly from Mexico to Guatemala and El Salvador, with a few individuals wintering in Gulf Coast states.

For the three birds banded as adults in the breeding season and encountered in a subsequent breeding season, the distances moved were 0 km, 0 km, and 14 km, suggesting fidelity to breeding sites (e.g., record 1). Two hatch-year-banded vireos were encountered in subsequent spring migration seasons 259 km and 297 km away from their probable natal sites (records 2 and 3), but they could have moved closer to those natal areas before nesting.

The only long-distance encounter was of a bird near or on its wintering grounds, in Guatemala (record 4). Two records documented reverse spring migration (records 5 and 6).

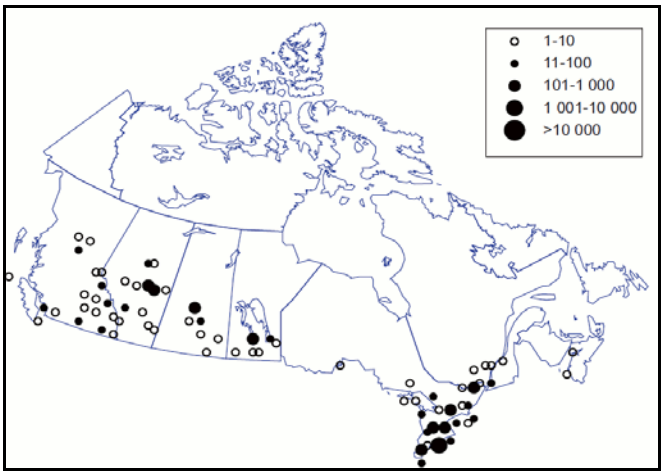
Encounter records: Warbling Vireo

1	2061-50642	AHY	F	26/05/90	Beaverhill Lake, AB	53°20'N 112°30'W	1 yr. 2 mo.
	BBO	8	99	07/07/91	Beaverhill Lake, AB	53°20'N 112°30'W	0 km
2	1890-53135	HY	U	07/08/91	Long Point, ON	42°30'N 80°10'W	1 yr. 9 mo.
	LPBO	7	89	07/05/93	Lacarne, OH	41°30'N 83°00'W	259 km S66°W
3	1470-34820	HY	U	17/08/78	Mountsberg, ON	43°20'N 80°00'W	9 mo.
	AS	5	0	17/05/79	Evans City, PA	40°40'N 80°00'W	297 km S0°W
4	0880-27980	AHY	U	26/06/77	Delta Marsh, MB	50°10'N 98°20'W	1 yr. 5 mo.
	UM	5	1	02/11/78	Jutiapa, GUATEMALA	14°10'N 89°50'W	4081 km S14°E
5	2121-56728	AHY	U	29/05/94	Last Mountain Lake, SK	51°20'N 105°10'W	23 dy.
	ARS	3	0	22/06/94	7 km east of Penzance, SK	51°00'N 105°10'W	37 km S0°W
6	0620-69536	U	U	10/05/63	Long Point, ON	42°30'N 80°00'W	9 dy.
	LPBO	0	0	19/05/63	13 km west of Shawnville, PA	42°00'N 80°00'W	56 km S0°W
7	1910-52290	AHY	F	28/07/92	Calgary, AB	51°00'N 114°00'W	3 yr. 1 mo.
	DC	7	99	04/08/95	Calgary, AB	51°00'N 114°00'W	0 km

Summary of banding statistics: Warbling Vireo

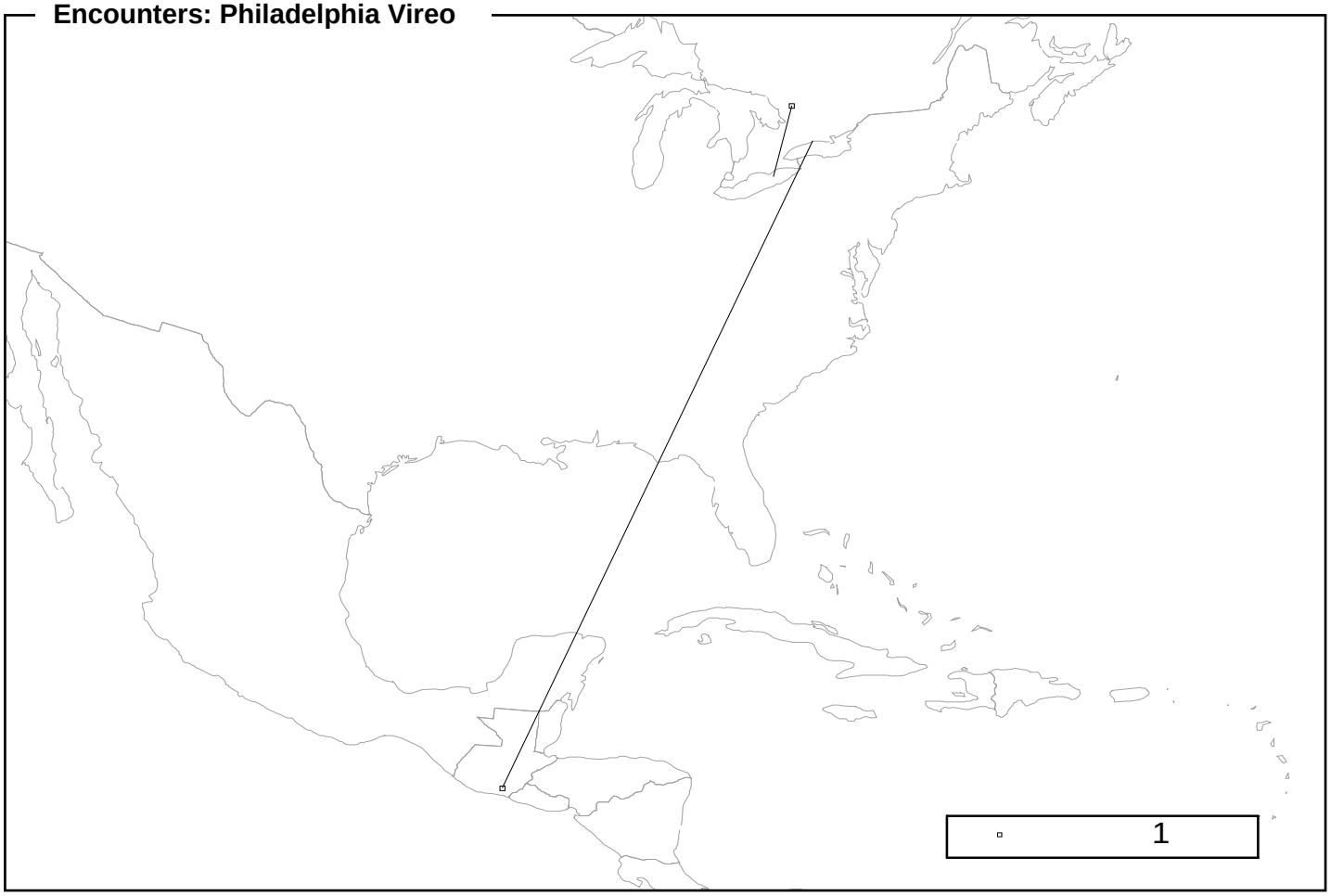
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5178*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	2	6	9
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	21	37	37
No. of Canadian-banded birds moving > 0 km	2	3	6
Mean movement > 0 km of Canadian-banded birds (km)	278	1377	790
Maximum movement from all encounters (km)	296	4080	4080
% recovered (encountered dead)	50	33	44
% direct recoveries	0	16	22
% encountered during banding operations	50	66	55

Banding effort: Warbling Vireo



Top banders: LPBO, UM, ETJ, BBO, IPBO

Philadelphia Vireo (*Vireo philadelphicus*) 626.0



The Philadelphia Vireo breeds from northern Alberta east through forested zones to New Brunswick and Maine; it does not breed in the southern Prairie Provinces. The species winters (October-April) in southern Central America primarily in southern Guatemala, Belize, Honduras, northern Nicaragua, Costa Rica, and western and central Panama (Moskoff and Robinson 1996).

During spring migration, Philadelphia Vireos depart the winter range relatively late (mid- to late April), arriving on the Canadian breeding range in late May and early June. Record 1 shows an example of a bird still on or near its wintering site on 13 April. This bird also holds the longevity record for Philadelphia Vireos, with a minimum age of eight years and 10 months (Klimkiewicz et al. 1983).

Adults have been detected on previous years' breeding sites (Moskoff and Robinson 1996). The second encounter below suggests movement between nestings, but in late May the bird could still have been migrating.

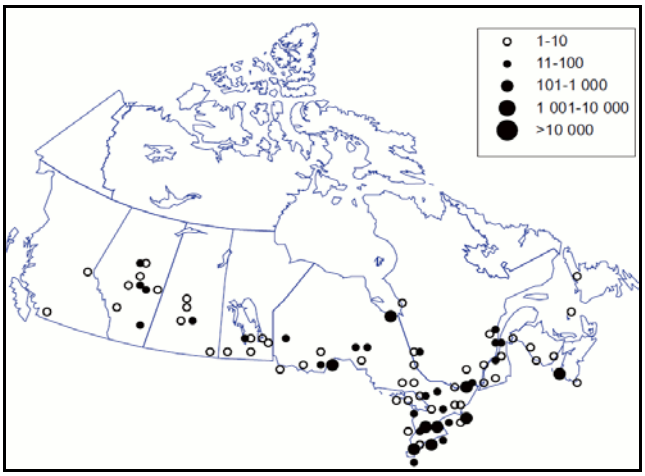
Encounter records: Philadelphia Vireo

1	0620-75810	AHY	U	28/08/62	Bewdley, ON	44°00'N 78°10'W	7 yr. 8 mo.
	FS	5	1	13/04/70	Chiquimulilla, GUATEMALA	14°10'N 90°20'W	3517 km S23°W
2	1780-45131	AHY	U	18/05/87	Long Point, ON	42°30'N 80°20'W	3 yr. 0 mo.
	LPBO	0	14	23/05/90	Burks Falls, ON	45°30'N 79°20'W	343 km N13°E

Summary of banding statistics: Philadelphia Vireo

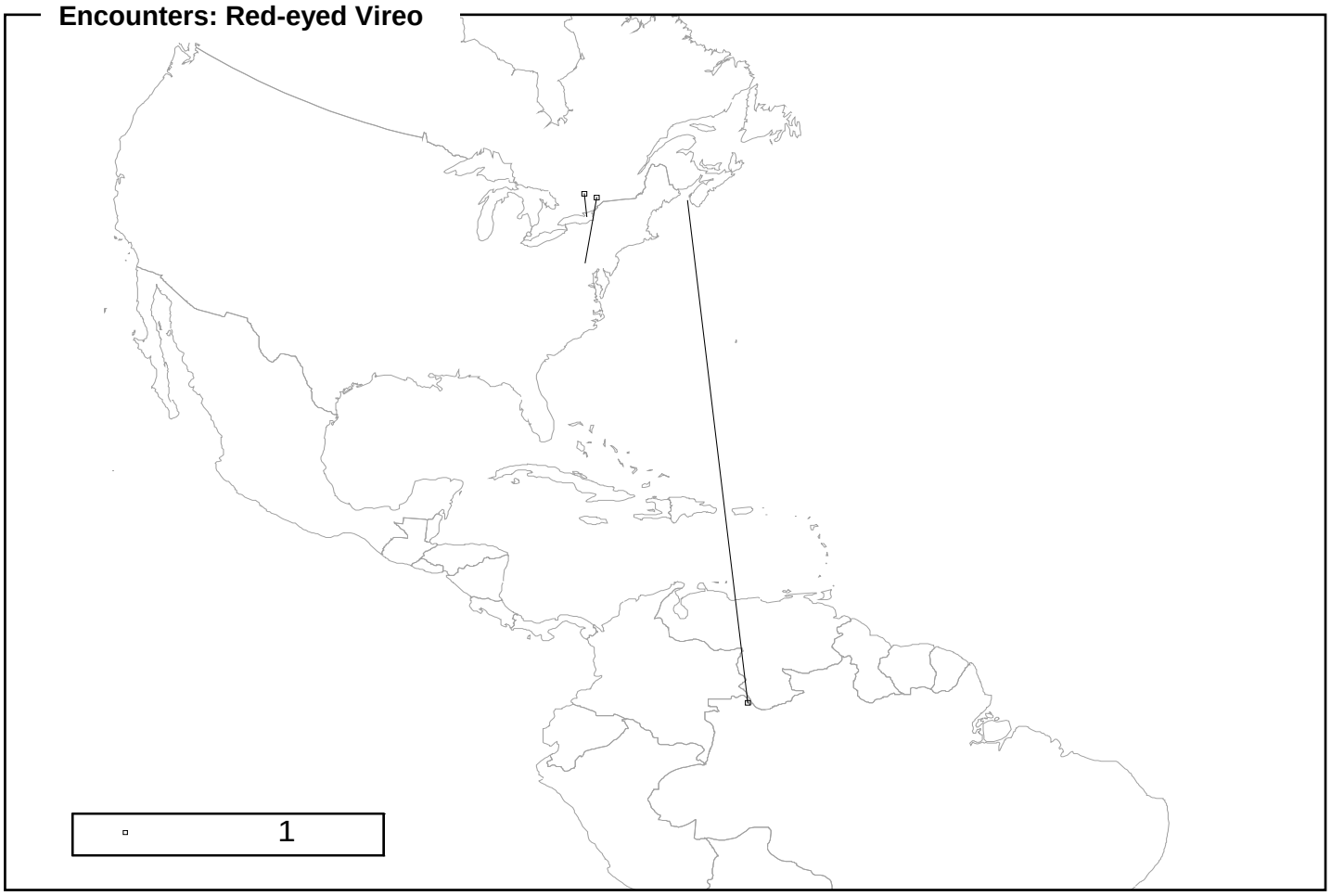
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3366*
No. encountered per 1000 banded (1955-1995)			*0.6*
Total no. encountered (1921-1995)	0	2	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	92	92
No. of Canadian-banded birds moving > 0 km	0	2	2
Mean movement > 0 km of Canadian-banded birds (km)	-	1930	1930
Maximum movement from all encounters (km)	-	3516	3516
% recovered (encountered dead)	-	100	100
% direct recoveries	-	0	0
% encountered during banding operations	-	0	0

Banding effort: Philadelphia Vireo



Top banders: LPBO, PEPO, RIGM, MJW, JBMi

Red-eyed Vireo (*Vireo olivaceus*) 624.0



The Red-eyed Vireo is a forest breeder in the northeastern and northern U.S. and from Vancouver Island across central Canada to Newfoundland. It winters from eastern Mexico south through the northern two-thirds of South America.

Breeding site fidelity appears to be high in this species, because 16 (73%) of the encounters involved adult birds returning to the same breeding site in subsequent years (e.g., record 1).

The oldest Canadian bird (record 2) also appears to have been site-faithful, but it was both banded and encountered during fall migration. Two other birds banded during migration are shown in record 3 (a bird banded in Pennsylvania and encountered the next summer in Ontario) and record 4 (the only long-distance encounter). The latter bird was banded in Nova Scotia and encountered 86 days later in Brazil, presumably on its wintering range. At a minimum, this vireo had to have travelled 54 km per day (4769 km in 86 days).

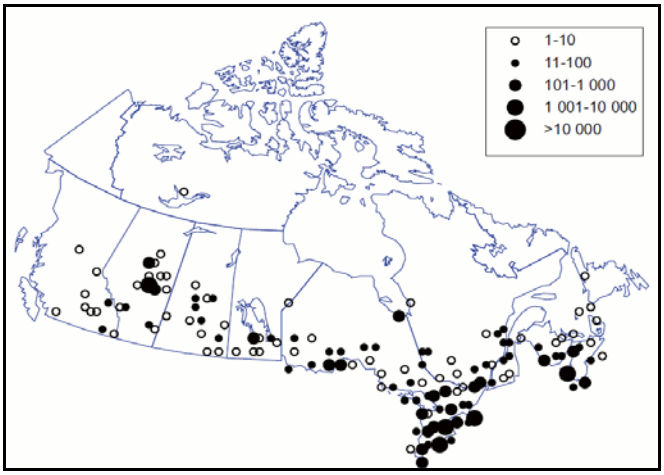
Encounter records: Red-eyed Vireo

1	0500-12922	AHY	U	03/06/59	near Rivière-Ouell, QC	47°20'N 70°00'W	2 yr. 0 mo.
	RMcN	0	99	10/06/61	near Rivière-Ouell, QC	47°20'N 70°00'W	0 km
2	0520-47032	HY	U	09/09/65	Clover Bar, AB	53°30'N 113°20'W	7 yr. 0 mo.
	ETJ	7	89	13/09/72	Edmonton, AB	53°30'N 113°30'W	11 km N90°W
3	0840-87667	HY	U	20/09/74	Carlisle, PA	40°10'N 77°10'W	11 mo.
	CJR	4	14	06/08/75	Ottawa, ON	45°20'N 75°40'W	588 km N12°E
4	0890-56127	AHY	U	21/09/79	Westport, NS	44°10'N 66°20'W	3 mo.
	RRA	5	1	16/12/79	near Uaupés, BRAZIL	1°20'N 67°10'W	4769 km S1°W

Summary of banding statistics: Red-eyed Vireo

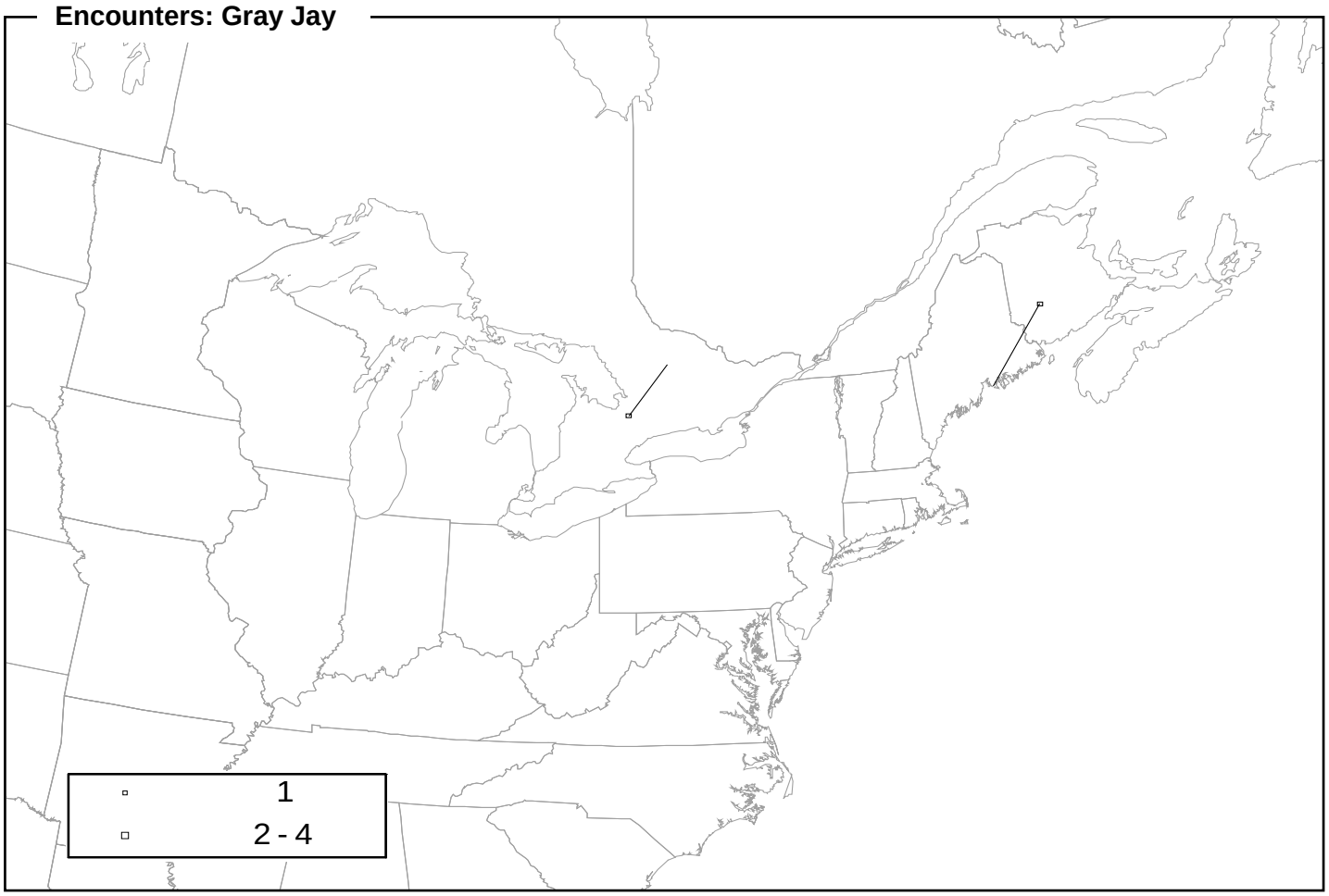
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*19 325*
No. encountered per 1000 banded (1955-1995)			*0.9*
Total no. encountered (1921-1995)	5	12	21
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	84	36	84
No. of Canadian-banded birds moving > 0 km	1	1	3
Mean movement > 0 km of Canadian-banded birds (km)	11	204	1661
Maximum movement from all encounters (km)	588	204	4768
% recovered (encountered dead)	40	8	19
% direct recoveries	20	0	9
% encountered during banding operations	60	83	76

Banding effort: Red-eyed Vireo



Top banders: LPBO, PEPO, RRA, ETJ, JBMi

Gray Jay (*Perisoreus canadensis*) 484.0



The Gray Jay is a permanent resident across Canada except in the Prairie Provinces and southern Ontario. It breeds north to about the treeline and in the northern Pacific and Rocky Mountain states. It winters mostly within the breeding range.

Most of the Canadian banding of this species has been at a long-term study site in Algonquin Park, in Ontario (see effort map).

Most encounters show zero or trivial movement (e.g., records 1 and 2, with record 2 representing the longest period between banding and encounter). The bird in record 3 (the encounter is not mapped because the exact location is missing) was found dead south of the normal range of the Gray Jay; the encounter probably resulted from one of the irregular winter movements to which the species is occasionally prone (see also records 4 and 5). Unusual numbers of encounters are reported from southern Ontario about once every 20 years (Tozer and Richards 1974). Record 5 indicates that adults may take part in these irruptions.

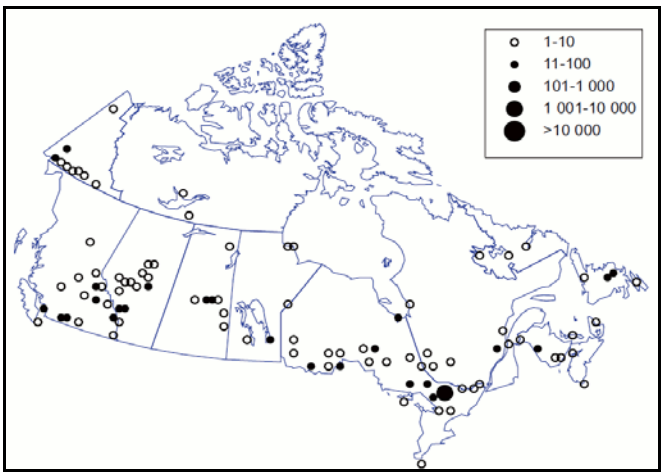
Encounter records: Gray Jay

1	0006-43977	HY	U	10/08/35	Bowron Lake Provincial Park, BC	53°10'N 121°10'W	5 yr. 1 mo.
	TTMcC	0	99	22/09/40	Bowron Lake Provincial Park, BC	53°10'N 121°10'W	0 km
2	0693-83647	U	U	31/10/68	Algonquin Park, ON	45°30'N 78°30'W	9 yr. 0 mo.
	RJR	7	89	22/10/77	Whitefish Lake, ON	45°30'N 78°20'W	13 km N90°E
3	0442-07625	AHY	U	26/10/51	Iroquois Falls, ON	48°40'N 80°40'W	2 yr. 0 mo.
	RBL	0	0	18/10/53	Niagara Region, ON	42°??'N 79°??'W	
4	0693-83654	U	U	11/12/68	Algonquin Park, ON	45°30'N 78°30'W	2 yr. 11 mo.
	RJR	5	50	24/11/71	Barrie, ON	44°20'N 79°40'W	159 km S36°W
5	0552-00798	AHY	U	17/10/60	Brooksville, ME	44°20'N 68°40'W	3 yr. 1 mo.
	MCM	0	4	30/11/63	Zealand, NB	46°00'N 66°50'W	235 km N37°E

Summary of banding statistics: Gray Jay

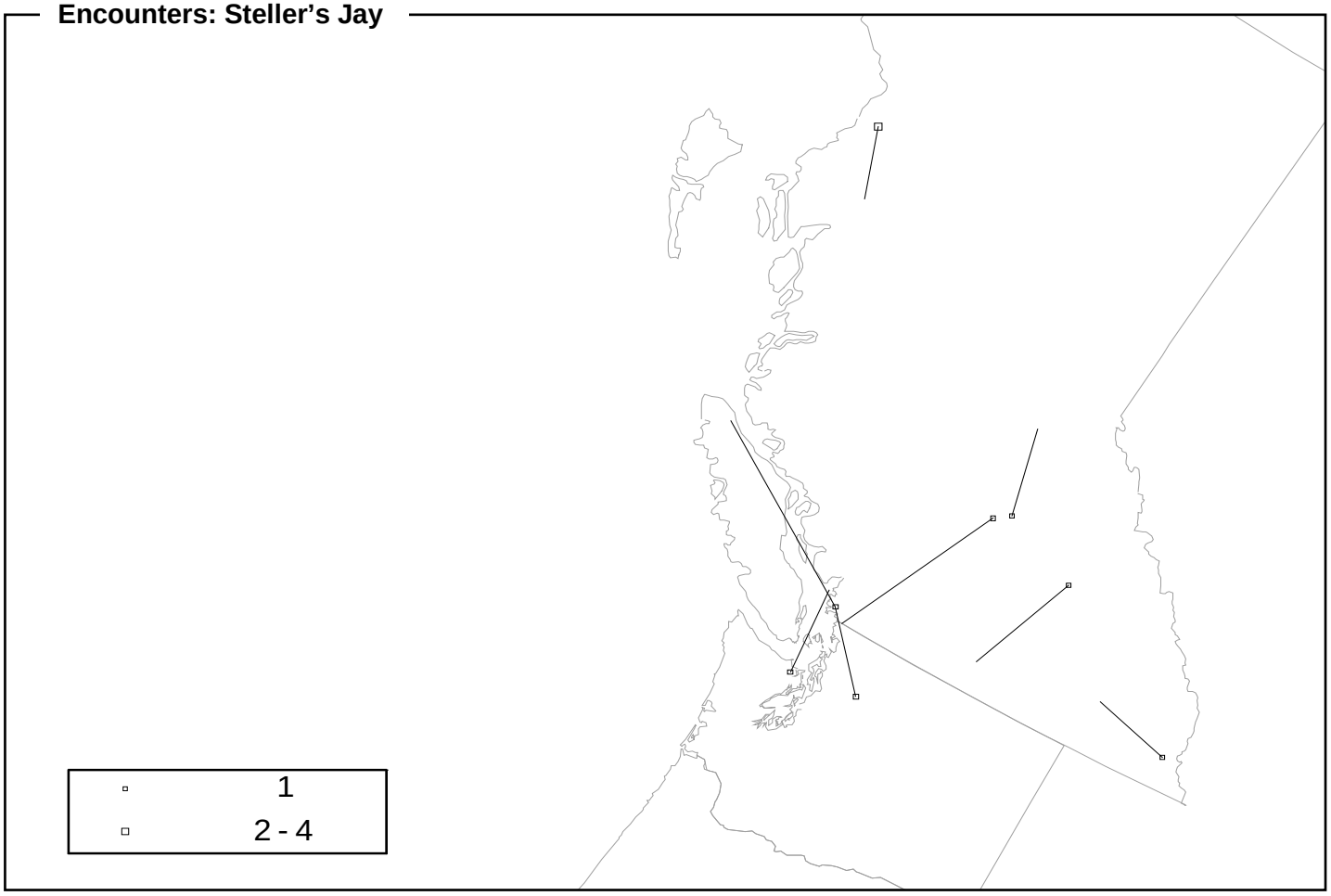
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*2197*
No. encountered per 1000 banded (1955-1995)			*20*
Total no. encountered (1921-1995)	8	43	73
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	73	86	108
No. of Canadian-banded birds moving > 0 km	2	4	16
Mean movement > 0 km of Canadian-banded birds (km)	21	174	69
Maximum movement from all encounters (km)	24	632	632
% recovered (encountered dead)	25	34	35
% direct recoveries	50	27	30
% encountered during banding operations	37	60	56

Banding effort: Gray Jay



Top banders: RDS, RJR, MRL, LPBO, RBCM

Steller's Jay (*Cyanocitta stelleri*) 478.0



Steller's Jay is resident in the western U.S. and in western and southeastern British Columbia and southwestern Alberta. Steller's Jays occasionally wander east of their summer range as far as Saskatchewan (Salt and Salt 1976).

Most encounters (47 or 65%) indicated no movement. Only 11 (15%) showed movements of more than 50 km; the more interesting of these are listed below (records 1-5). Adult Steller's Jays usually stay on territory year-round (e.g., record 6); however, there are occasional irruptions, presumably in periods of low food supply, in which birds move up to several hundred kilometres (Morrison and Yoder-Williams 1984, Stewart and Shepard 1994). Presumably the more distant encounters are of birds either banded or encountered during irruptions.

Twenty birds were encountered due to trapping or shooting, and another 22 were returns to the banding site (e.g., record 6, the record with the longest period between banding and encounter).

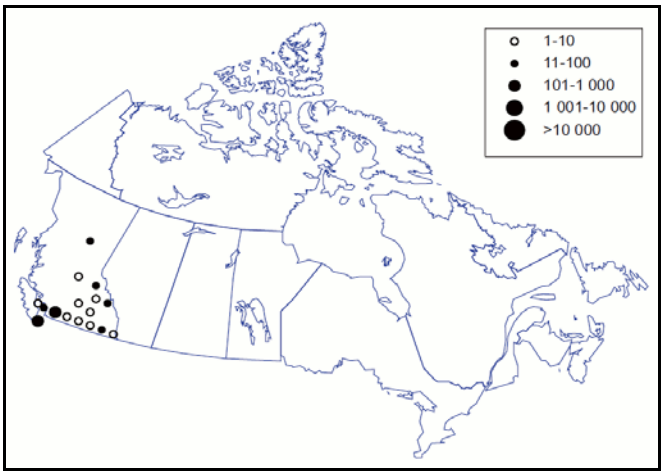
Encounter records: Steller's Jay

1	0005-06927	HY	U	22/09/28	Barkerville, BC	53°00'N 121°30'W	1 mo.
	TTMcC	0	98	01/10/28	near 100 Mile House, BC	51°40'N 120°50'W	155 km S17°E
2	0005-89157	AHY	U	06/10/32	Summerland, BC	49°30'N 119°40'W	1 yr. 5 mo.
	SAL	0	20	ST/03/34	near Lake Adams, BC	51°10'N 118°50'W	195 km N17°E
3	0023-91554	AHY	F	05/11/36	Burrard Inlet, BC	49°10'N 123°00'W	9 mo.
	IRG	0	0	27/08/37	Darrington, WA	48°10'N 121°30'W	157 km S45°E
4	0393-02046	AHY	U	09/12/40	Port Hardy, BC	50°40'N 127°30'W	5 mo.
	FAD	0	4	12/05/41	Burrard Inlet, BC	49°10'N 123°00'W	363 km S64°E
5	1383-67342	HY	U	08/06/89	Cloverdale, BC	49°00'N 122°40'W	3 mo.
	CWS-BC	3	0	11/09/89	Horse Lake, BC	51°30'N 121°10'W	298 km N20°E
6	0364-01502	AHY	U	17/11/35	Cowichan Station, BC	48°40'N 123°40'W	4 yr. 11 mo.
	GH	0	99	05/10/40	Cowichan Station, BC	48°40'N 123°40'W	0 km

Summary of banding statistics: Steller's Jay

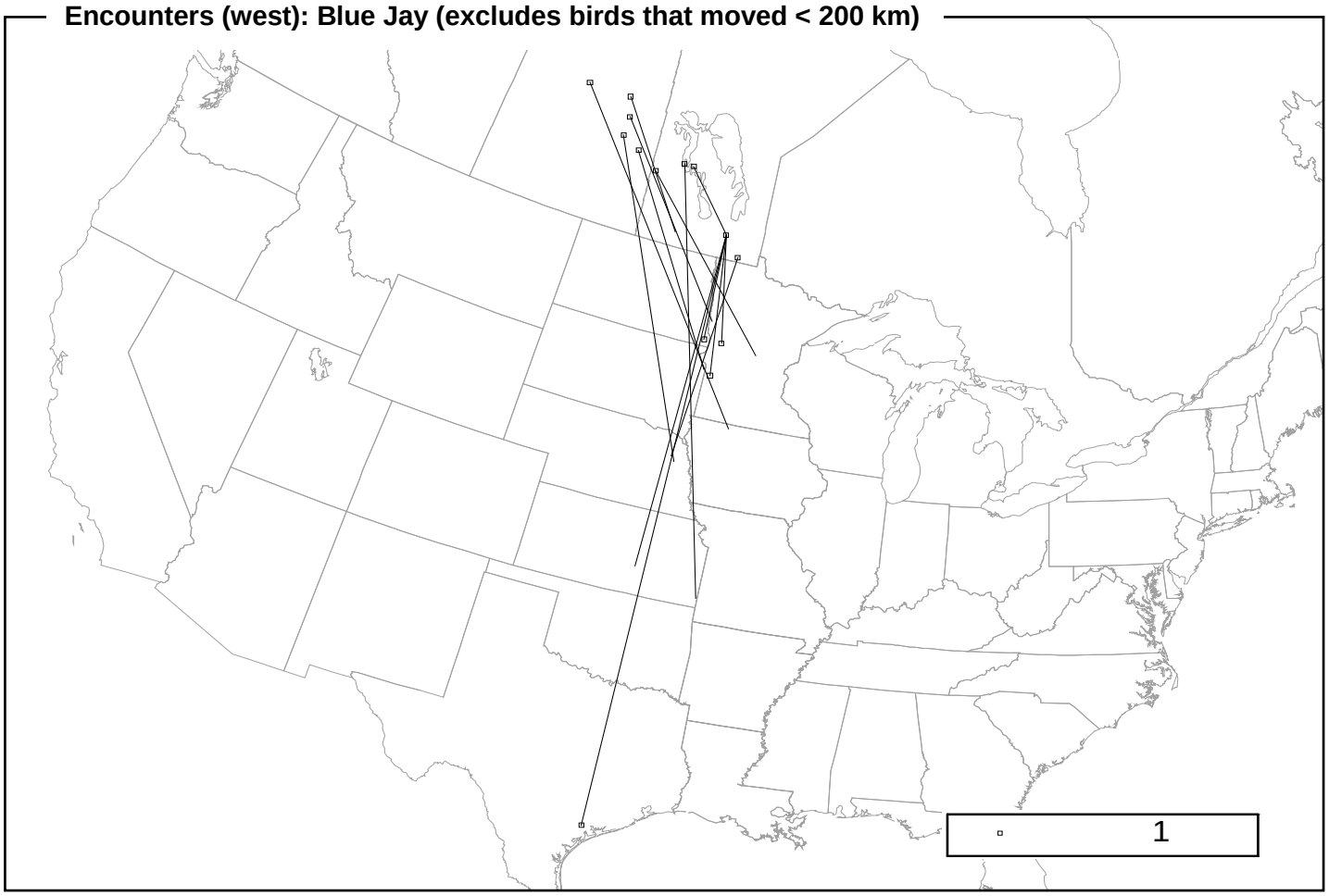
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*635*
No. encountered per 1000 banded (1955-1995)			*30*
Total no. encountered (1921-1995)	21	43	73
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	31	59	59
No. of Canadian-banded birds moving > 0 km	8	13	26
Mean movement > 0 km of Canadian-banded birds (km)	75	105	83
Maximum movement from all encounters (km)	298	363	363
% recovered (encountered dead)	71	55	61
% direct recoveries	66	58	60
% encountered during banding operations	9	41	29

Banding effort: Steller's Jay



Top banders: CWS-BC, JGW, RFH, BCWB, Hmi

Blue Jay (*Cyanocitta cristata*) 477.0



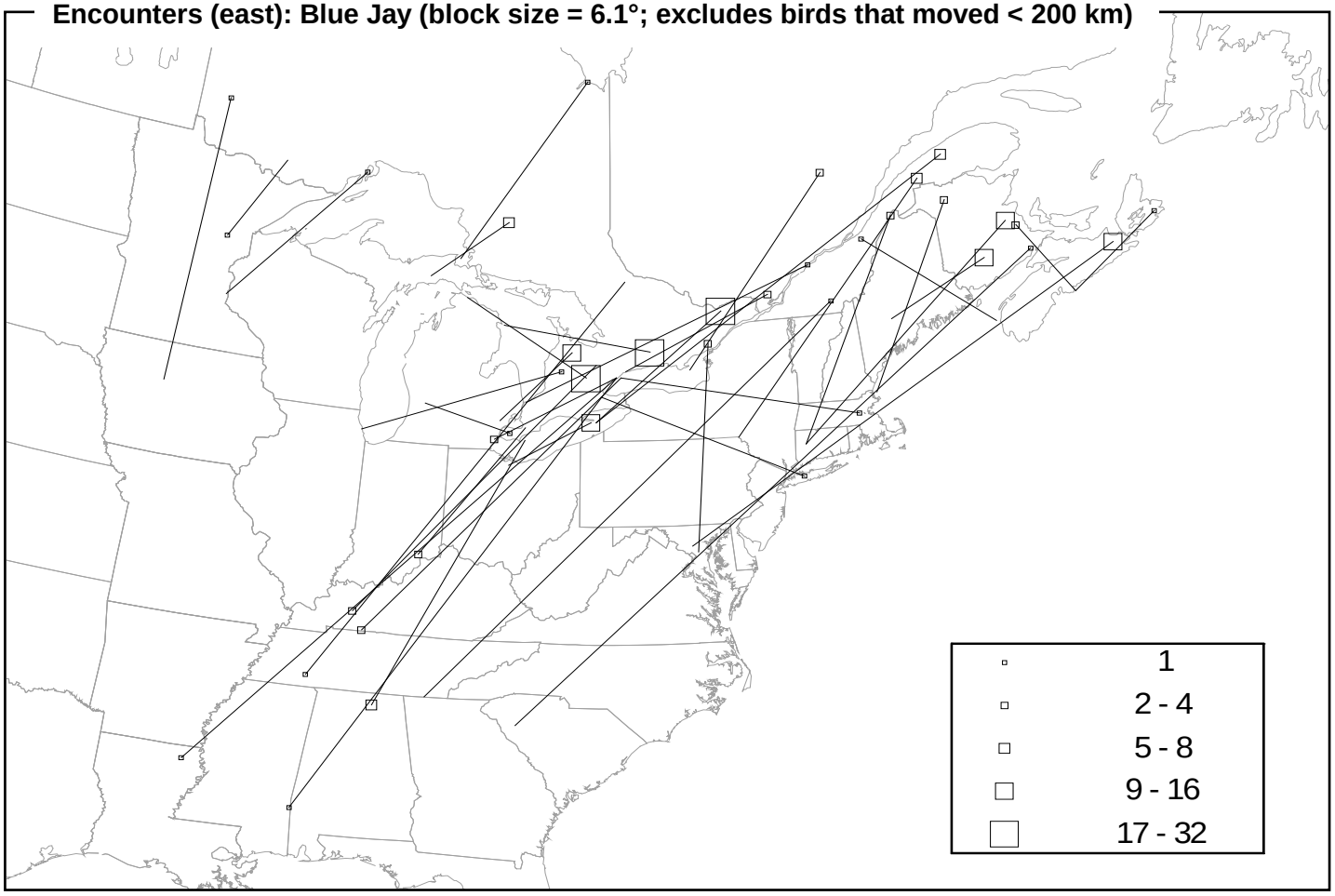
The Blue Jay breeds across southern Canada from west-central Alberta east to Newfoundland. It winters within the breeding range. Northern populations are partly migratory to the southern U.S. and Pacific Northwest.

Because there are so many encounters for this species, the maps exclude all birds that moved less than 200 km (the normal cut-off is 100 km). (See also block size with eastern map and the introduction for explanation.)

Movements were largely north-south or northwest-southeast for birds from the Prairie Provinces and southwest-northeast for eastern Canadian jays. There were five examples of jays banded in winter (December-February) that were encountered in a different state or province in another winter, including an adult banded in Ontario and shot the following winter in Tennessee (record 1). Many more birds banded in winter or travelling to or from a wintering area in the U.S. in one year were found in a different wintering area in Canada in a subsequent year (133 in all, e.g., record 2). This suggests irregular migration (movement in some winters but not in others), probably in response to year-to-year changes in natural food supplies (Smith 1979, Stewart 1982, and references therein). One bird heading north in spring moved at least 151 km per day (record 3).

The cluster of birds moving northeast from eastern Lake Superior (see eastern map) included 10 birds banded as part of an intensive spring migration study at Whitefish Point, Michigan, and subsequently captured in fur traps in northern Ontario and Quebec (Carpenter et al. 1990). Only one was encountered on James Bay (record 4, the encounter shown on the map to represent this group of records); the rest of the birds were found farther south.

Encounters (east): Blue Jay (block size = 6.1°; excludes birds that moved < 200 km)



Excluding birds that were both banded and encountered during the breeding season and summer (June-August), half of the encountered jays banded in their first year of life were encountered in a different state or province (e.g., record 5), while only 30% of encountered jays banded as adults moved between jurisdictions (records 1-4, 6-9). In addition, hatch-year-banded birds moved farther: 51% moved over 100 km and 32% moved over 500 km (versus 30% and 14% respectively for after-hatch-year-banded birds). All these differences are statistically significant, suggesting that young birds are more mobile. (Note: The table of banding statistics shows equal movement of age groups in Canadian-banded birds; the evidence for longer-distance movement by hatch-year birds is based on U.S. bandings of Canadian-breeding jays on migration and in the winter.) The age of the jay that moved the farthest (record 10) was not determined.

The longest period between banding and encounter was nearly 14 years (see record 11).

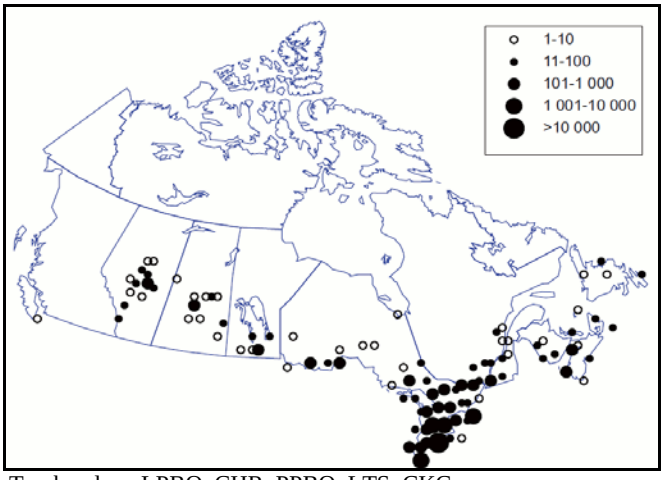
Encounter records: Blue Jay

1	0523-58411	AHY	F	03/01/56	Rutherglen, ON	46°10'N 79°00'W	1 yr. 11 mo.
	LdeK	0	1	18/12/57	Henderson, TN	35°20'N 88°30'W	1445 km S37°W
2	0523-28582	ASY	U	15/03/72	18 km south of Keene, VA	37°40'N 78°30'W	9 mo.
	FSW	5	4	15/12/72	Causapscal, QC	48°20'N 67°10'W	1500 km N34°E
3	1163-79460	AHY	U	20/03/79	Pittsburg, KS	37°20'N 94°40'W	max. 11 dy.
	TMS	3	0	99/03/79	11 km east of Duck River, MB	51°50'N 100°00'W	1667 km N13°W
4	0732-40460	AHY	U	24/05/85	11 km east of Grand Marais, MI	46°40'N 84°50'W	1 mo.
	TWC	7	89	29/06/85	27 northeast of Moosonee, ON	51°20'N 80°20'W	614 km N31°E
5	0813-21205	HY	U	25/07/65	Scarborough, ON	43°40'N 79°10'W	
	LGL	5	56	??/04/66	Mosleys Pond, KY	36°40'N 87°00'W	1024 km S43°W
6	0763-01391	ASY	U	27/04/71	Donalds, SC	34°20'N 82°20'W	7 mo.
	JDC	5	0	99/11/71	near Moncton, NB	45°50'N 64°40'W	1967 km N44°E
7	0553-52244	AHY	U	31/01/56	Superior, IA	43°20'N 94°50'W	9 mo.
	MLJ	0	1	99/10/56	Cookson, SK	53°30'N 106°10'W	1404 km N32°W
8	0963-05765	AHY	U	06/08/68	Toronto, ON	43°40'N 79°20'W	3 mo.
	CHR	3	4	25/11/68	Mer Rouge, LA	32°40'N 91°40'W	1629 km S45°W
9	0842-88392	AHY	U	23/04/86	Ooltewah, TN	35°00'N 85°00'W	11 mo.
	REL	5	0	09/03/87	Sherbrooke, QC	45°20'N 71°50'W	1601 km N40°E
10	1013-61350	U	U	06/08/76	Winnipeg, MB	49°50'N 97°00'W	4 mo.
	LTS	7	20	30/12/76	Rasin, TX	28°40'N 97°00'W	2356 km S0°W
11	0523-56724	AHY	U	18/11/55	Armdale, NS	44°30'N 63°30'W	13 yr. 11 mo.
	WJM	5	0	30/10/69	Armdale, NS	44°30'N 63°30'W	

Summary of banding statistics: Blue Jay

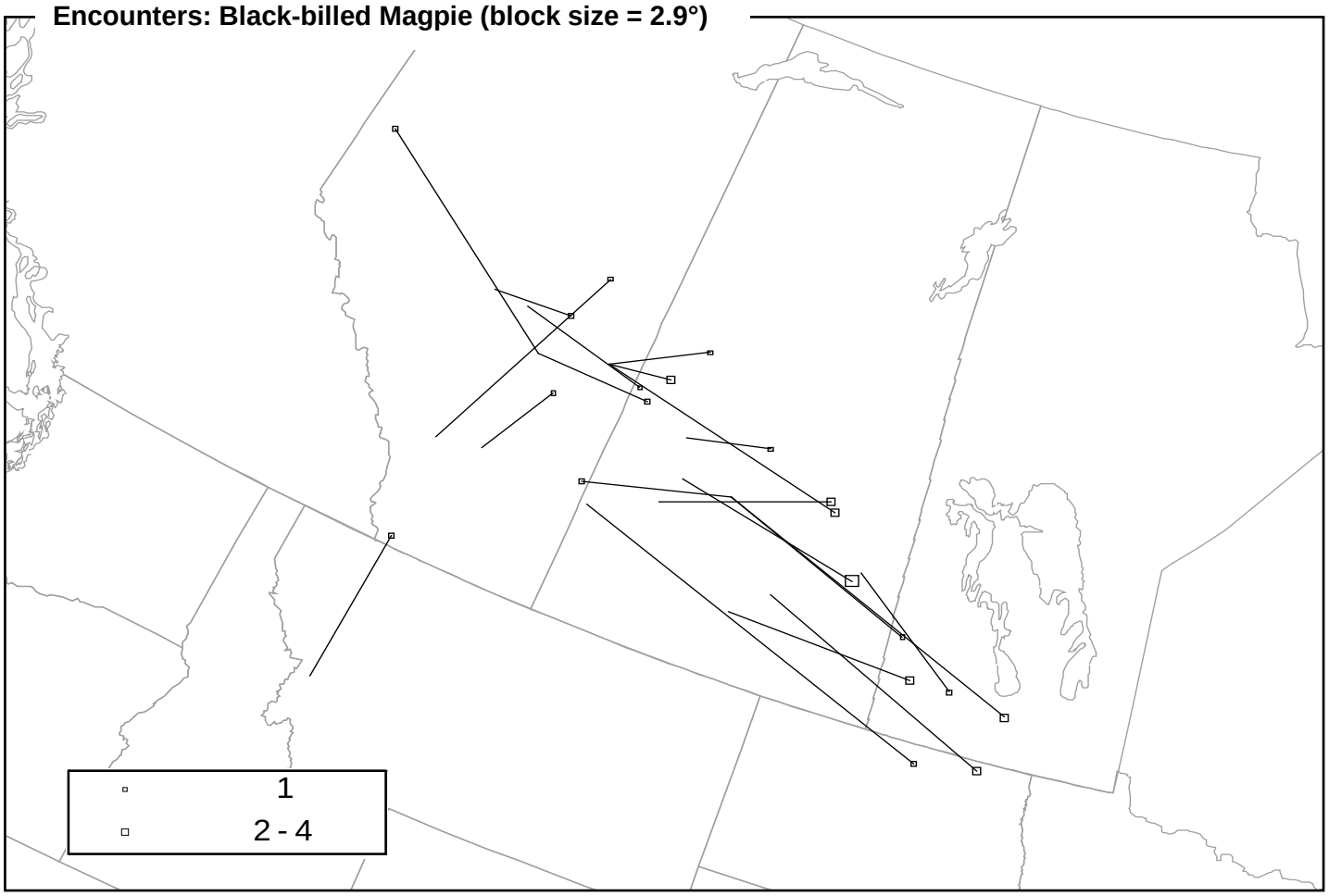
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*27 007*
No. encountered per 1000 banded (1955-1995)			*13*
Total no. encountered (1921-1995)	66	436	638
No. encountered from foreign bandings	11	123	158
Maximum period from banding to encounter (mo.)	154	167	167
No. of Canadian-banded birds moving > 0 km	18	107	170
Mean movement > 0 km of Canadian-banded birds (km)	252	260	287
Maximum movement from all encounters (km)	1114	1967	2356
% recovered (encountered dead)	72	63	67
% direct recoveries	21	25	22
% encountered during banding operations	24	33	29

Banding effort: Blue Jay



Top banders: LPBO, CHR, PPBO, LTS, CKC

Black-billed Magpie (*Pica pica*) 475.0



The Black-billed Magpie breeds in western Canada, from southern Yukon through northern and eastern British Columbia, Alberta, Saskatchewan, and southwestern Manitoba; it also breeds in southern Alaska and south through the western U.S. to California, New Mexico, and Kansas (and in Eurasia and northwest Africa). It winters mainly within the breeding range; however, it apparently moves north and east of the breeding range and has expanded the wintering range in those directions over the last 50 years.

Over 99% of encounters were of birds banded in Alberta or Saskatchewan; only the bird in record 1came north from a U.S. banding site. Many encounters were close to the banding site, including records 2 and 3 (the latter shows the longest period between banding and encounter). Three birds banded as locals were encountered in North Dakota (records 4-6), and one banded in Montana was encountered in fall in Alberta (record 1). Two of 12 Alberta birds (record 7) and the one from Montana (record 1) moved northward, but most of the magpies that moved had a strong west-east component in their movements and remained within Canada (records 8-12).

Over 60% of encountered birds were reported shot (e.g., records 3, 5, and 12); another 14% that were found dead or injured may also have been shot.

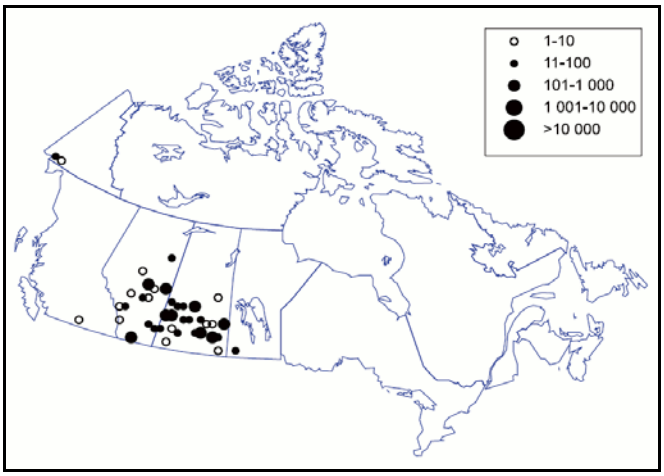
Encounter records: Black-billed Magpie

1	0653-07422	HY	M	28/12/60	Stevensville, MT	46°30'N	114°00'W	10 mo.
	MCWRU	0	47	13/10/61	Twin Butte, AB	49°10'N	113°50'W	297 km N2°E
2	0374-04706	HY	U	07/06/37	Edmonton, AB	53°30'N	113°30'W	4 yr. 7 mo.
	FHP	0		LT/01/42	east of Edmonton, AB	53°30'N	113°20'W	11 km N90°E
3	0524-81846	L	U	23/06/67	Speers, SK	52°40'N	107°30'W	5 yr.
	CSH	5	1	20/06/72	Hafford, SK	52°40'N	107°20'W	12 km N90°E
4	0694-25934	L	U	20/06/91	32 km south of Alsask, SK	51°00'N	109°50'W	6 mo.
	CSH	5	0	15/12/91	11 km east of Overly, ND	48°40'N	100°00'W	752 km S74°E
5	0494-67086	L	U	18/06/61	18 km south of Markinch, SK	50°40'N	104°20'W	4 mo.
	CSH	0	1	29/10/61	Milton, ND	48°30'N	98°00'W	517 km S65°E
6	0564-08906	L	U	17/06/75	Craven, SK	50°40'N	104°40'W	1 yr. 6 mo.
	LS	5	4	05/12/76	Wales, ND	48°50'N	98°30'W	488 km S68°E
7	0344-01139	AHY	U	30/04/49	Calgary, AB	51°00'N	114°00'W	5 mo.
	WRS	0	5	21/09/49	Lac La Biche, AB	54°40'N	111°50'W	433 km N19°E
8	0494-69811	L	U	01/06/58	Vermilion, AB	53°20'N	110°50'W	7 mo.
	MCH	0	4	17/01/59	Archerwill, SK	52°20'N	103°50'W	484 km S80°E
9	0524-75405	L	U	26/06/62	Flat Lake, SK	52°20'N	108°40'W	5 mo.
	JBM	0	4	26/11/62	near Dauphin, MB	51°00'N	100°20'W	594 km S79°E
10	0524-81506	L	U	09/06/65	west of Saskatoon, SK	52°00'N	106°40'W	2 yr. 5 mo.
	CSH	11	4	19/11/67	north of St. Claude, MB	49°40'N	98°20'W	640 km S69°E
11	0363-39277	J	U	30/05/39	Dinant, AB	53°00'N	112°40'W	2 yr.11 mo.
	ALW	0	98	FT/04/42	Lake Glace, AB	55°20'N	119°10'W	497 km N56°W
12	0524-81867	L	U	23/06/67	Saskatoon, SK	52°00'N	106°30'W	2 yr. 5 mo.
	CSH	5	1	02/11/69	11 km west of Sibbald, AB	51°20'N	110°10'W	264 km S75°W

Summary of banding statistics: Black-billed Magpie

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3020*
No. encountered per 1000 banded (1955-1995)			*27*
Total no. encountered (1921-1995)	106	39	153
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	60	33	60
No. of Canadian-banded birds moving > 0 km	72	10	85
Mean movement > 0 km of Canadian-banded birds (km)	163	83	150
Maximum movement from all encounters (km)	751	433	751
% recovered (encountered dead)	96	97	96
% direct recoveries	64	89	69
% encountered during banding operations	1	2	1

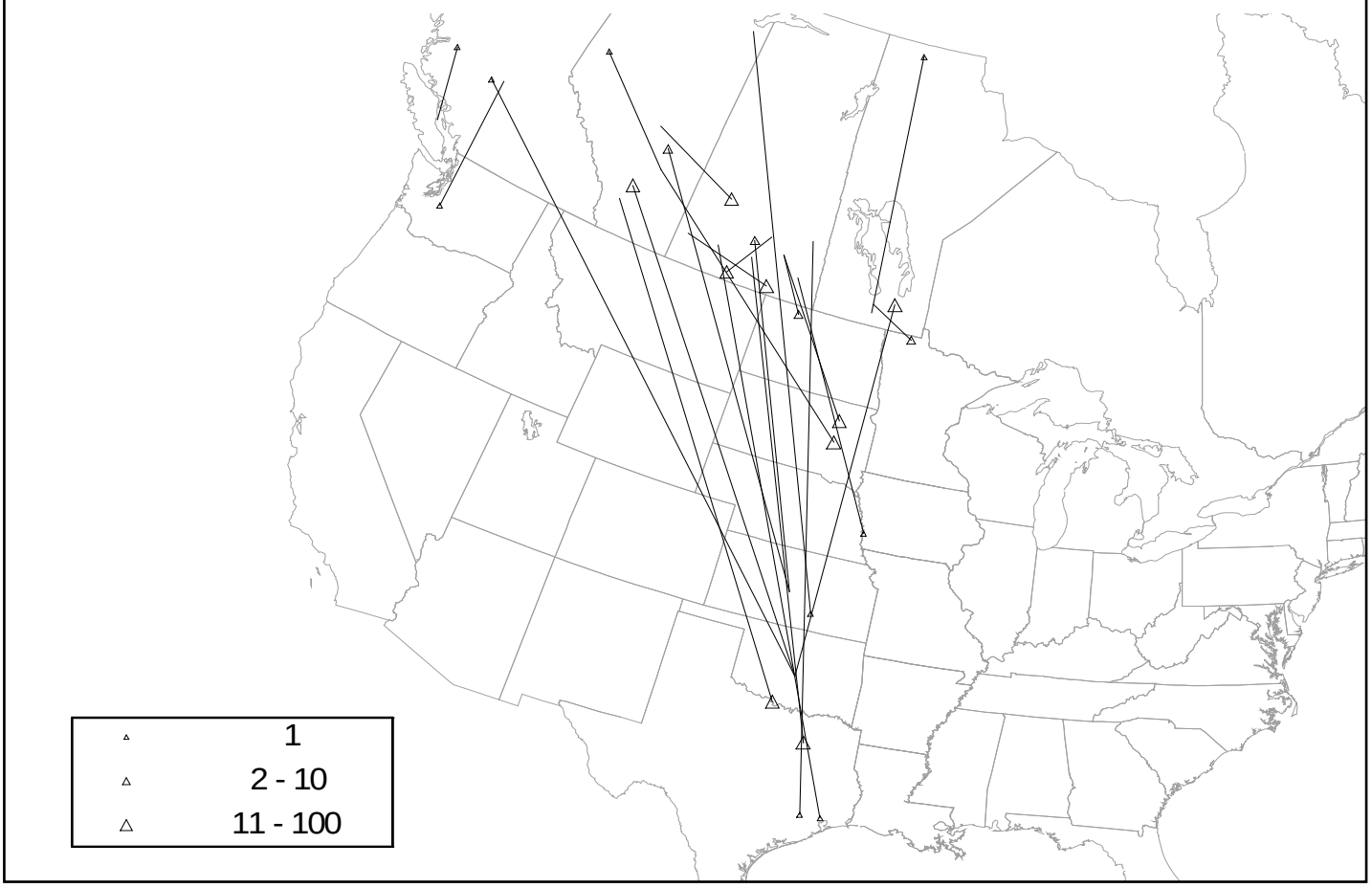
Banding effort: Black-billed Magpie



Top banders: CSH, JBM, AFWD, LS, MCH

American Crow (*Corvus brachyrhynchos*) 488.0

Encounters (west): American Crow (block size = 10.1°; excludes birds that moved < 200 km)



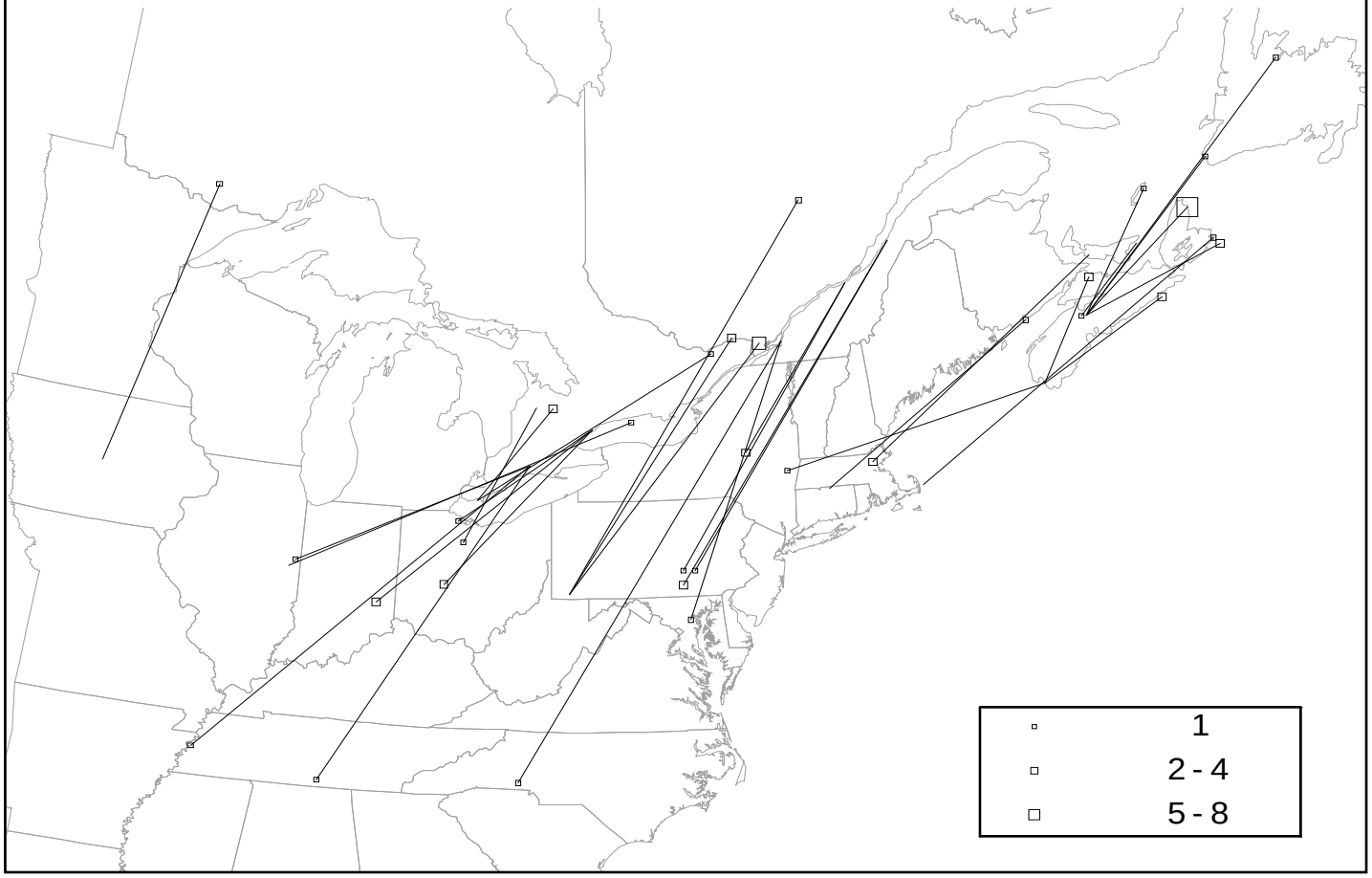
The American Crow breeds across most of the U.S. and Canada, from the southwestern Northwest Territories and eastern British Columbia east throughout the provinces, except for Labrador and north-central Quebec. It winters from southern Canada south, virtually throughout the U.S.

The encounter maps show only those birds moving more than 200 km (the normal cut-off point is 100 km) and greatly condense the encounters, particularly in the west. There, each line representing multiple records shows data from banding and encounter sites combined within 10° blocks of latitude and longitude - wider than the southern border of Saskatchewan (see introduction for further details). The map depicts typical direction and distance of movement quite well, but many of the longer-distance encounters are not shown individually.

Over 70% of the encounters were of birds banded in the Prairie Provinces; over half were banded in May and June. Encounters were spread fairly evenly through the year but with a preponderance in June and July. Nearly 75% of the encountered birds were shot, which accounts for the relatively high encounter rate of this species.

There have been substantial banding efforts targeted at American Crows on their wintering grounds, and these have resulted in large numbers of Canadian encounters. A major project centred on Norman, Oklahoma, in the 1930s produced almost 60 encounters in the Prairie Provinces, which almost exactly paralleled the records showing southward movement of birds banded in the breeding area (except for record 1). Prairie-breeding crows wintered in a remarkably narrow corridor from South Dakota through Nebraska and Kansas to Oklahoma (records 2 and 3); a smaller number penetrated as far as central and eastern Texas (records 4-6). Birds banded in British Columbia, in marked contrast, were almost sedentary, with a few exceptions (records 7 and 8).

Encounters (east): American Crow (block size = 2.1°; excludes birds that moved < 200 km)



Crows encountered from Ontario eastward generally moved on a southwest-northeast axis, again with a remarkable consistency of heading. Birds originating in the lower Great Lakes region, those from the St. Lawrence Valley, and those from the Maritimes do not appear to mingle on the wintering grounds. The average displacement of eastern birds was substantially less than that of birds from the Prairie Provinces (but more than that of B.C. crows) - only two birds from Ontario went as far south as Arkansas (record 9) and Tennessee (record 10), and one from Quebec went to North Carolina (record 11). The longer-distance Maritimes encounters were of birds moving only between Nova Scotia and northeastern U.S. states (records 12 and 13) and between Nova Scotia and Newfoundland (record 14).

The migratory movement of Canadian crows (excepting those in British Columbia) contrasts with the more sedentary habits of crows in the U.S., which are more likely to be year-round residents (Stouffer and Caccamise 1991). Possibly the distance moved by the different populations is related to the harshness of winter weather.

Clapp et al. (1983) cited the bird in record 2 as the oldest American Crow on record (with a minimum age of 14 years and seven months). A crow banded in Ontario in 1954 was reported dead 28 years later (in 1983), but because no details on the date of encounter were included, this cannot be accepted as the longevity record.

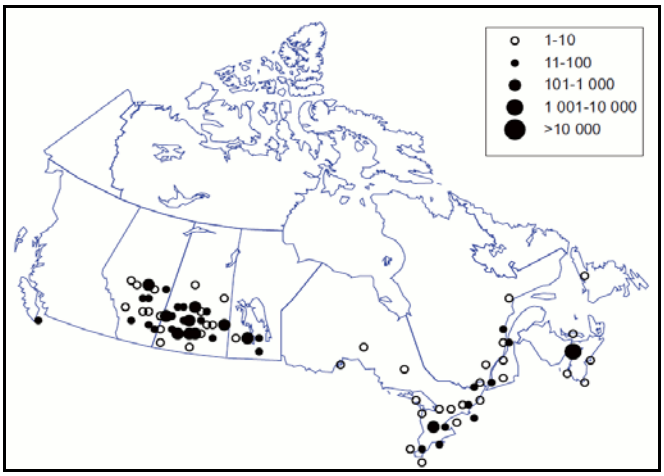
Encounter records: American Crow

1	0354-04157	AHY	U	05/02/36	Norman, OK	35°10'N 97°20'W	4 yr. 2 mo.
	SEA	0	1	11/04/40	near Williams Lake, BC	52°00'N 123°40'W	2804 km N40°E
2	0002-11123	AHY	U	16/04/24	Otto, MB	50°40'N 98°00'W	13 yr. 9 mo.
	ALH	0	1	13/01/38	Sherman, SD	43°40'N 96°20'W	789 km S10°E
3	0396-68397	HY	U	02/07/40	Fort Chipewyan, AB	58°20'N 111°00'W	9 mo.
	DU	0	3	07/04/41	Wichita, KS	37°40'N 97°20'W	2505 km S29°E
4	0004-53019	U	U	25/08/33	Beaverhill Lake, AB	52°30'N 112°30'W	7 mo.
	WR	0	0	22/03/34	Merit, TX	33°10'N 96°10'W	2593 km S37°E
5	0345-07243	J	U	18/06/39	Bashaw, AB	52°30'N 112°50'W	7 mo.
	GP	0	1	07/01/40	Hewitt, TX	31°20'N 97°10'W	2677 km S34°E
6	0375-10193	AHY	U	09/06/37	Lanigan, SK	51°50'N 105°00'W	8 mo.
	FGB	0	1	24/02/38	Greenville, TX	33°00'N 96°00'W	2219 km S23°E
7	0002-20223	AHY	U	28/01/32	Cape Lazo, BC	49°40'N 124°50'W	5 mo.
	TP	0	1	29/06/32	near Bella Coola, BC	52°20'N 126°30'W	319 km N21°W
8	0485-19268	L	U	17/06/50	near Alexis Creek, BC	52°10'N 123°00'W	5 mo.
	IMC	0	1	99/11/50	inexact location, WA	47°??'N 122°??'W	c. 425 km
9	0375-19969	J	U	05/05/38	Belmont, ON	42°50'N 81°10'W	8 mo.
	WL	0	1	06/01/39	Luxora, AR	35°40'N 89°50'W	1092 km S46°W
10	0366-51335	J	U	07/05/38	near Delaware, ON	42°50'N 81°10'W	1 yr. 8 mo.
	WL	0	1	01/01/40	Fayetteville, TN	35°10'N 86°30'W	970 km S30°W
11	0376-13563	L	U	15/05/50	Hampstead, QC	45°30'N 73°30'W	7 mo.
	MRC	0	1	02/12/50	Cherryville, NC	35°20'N 81°20'W	1311 km S33°W
12	0025-51217	AHY	U	26/11/33	Argyle Harbour, NS	43°40'N 65°50'W	3 mo.
	IJP	0	1	12/02/34	Albany, NY	42°30'N 73°40'W	650 km S81°W
13	0505-56901	L	U	30/05/66	Alexandra, PE	46°10'N 63°10'W	7 mo.
	SEV	5	1	24/12/66	Boylston, MA	42°20'N 71°40'W	812 km S61°W
14	0805-57589	AHY	U	29/12/78	Hantsport, NS	45°00'N 64°10'W	3 yr. 4 mo.
	AU	5	0	99/04/82	Springdale, NL	49°30'N 56°10'W	784 km N47°E

Summary of banding statistics: American Crow

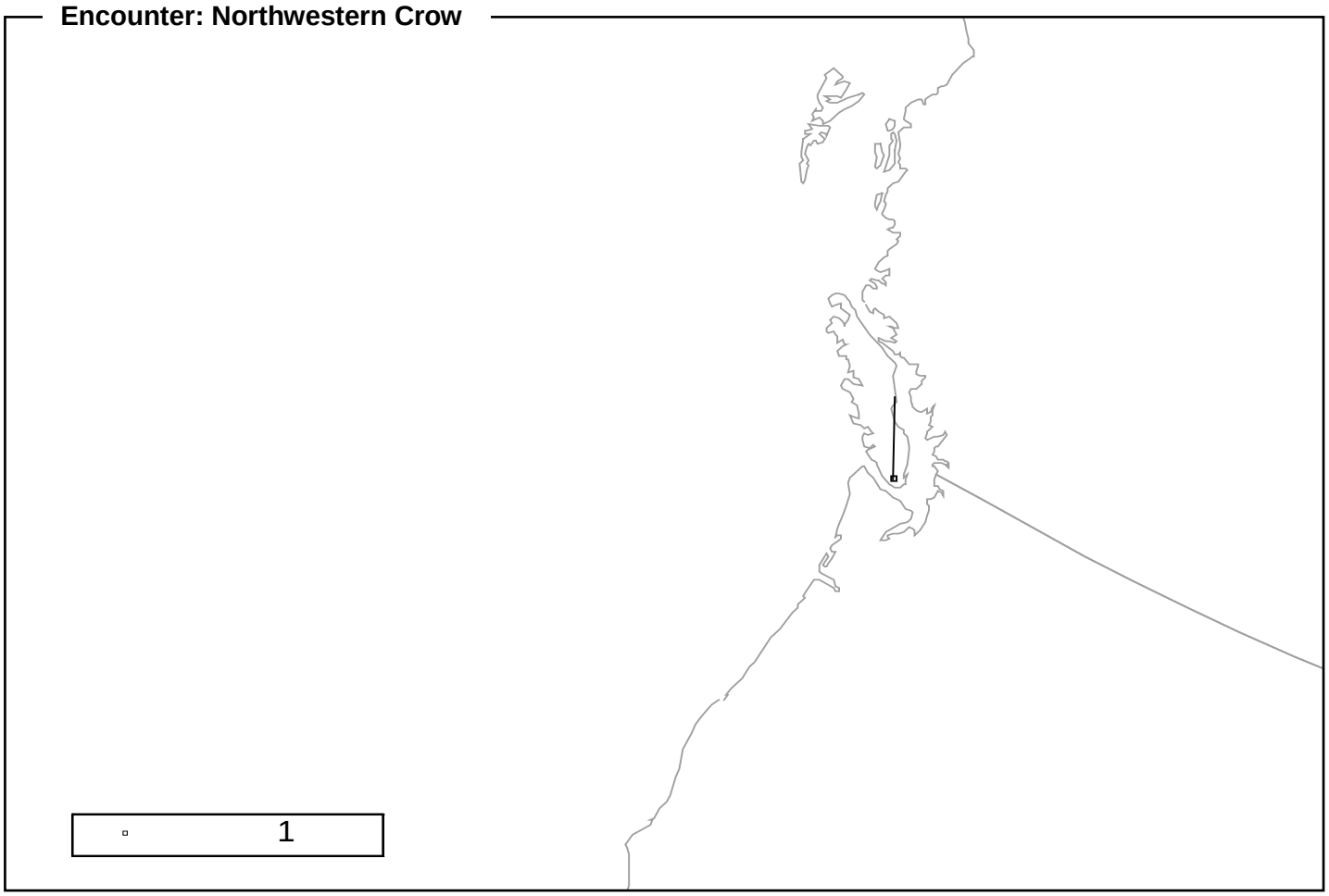
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*4867*
No. encountered per 1000 banded (1955-1995)			*39*
Total no. encountered (1921-1995)	291	332	810
No. encountered from foreign bandings	2	57	86
Maximum period from banding to encounter (mo.)	148	148	165
No. of Canadian-banded birds moving > 0 km	207	214	549
Mean movement > 0 km of Canadian-banded birds (km)	731	330	500
Maximum movement from all encounters (km)	2703	2803	2803
% recovered (encountered dead)	97	97	97
% direct recoveries	51	47	53
% encountered during banding operations	0	0	0

Banding effort: American Crow



Top banders: JBM, AU, CKC, JA, CSH

Northwestern Crow (*Corvus caurinus*) 489.0



The Northwestern Crow breeds along the Pacific coast from Kodiak Island, Alaska, to northwestern Washington State (Puget Sound area). The breeding range and winter range are essentially the same, but there are local movements following the breeding season.

The Northwestern Crow can be hunted at any time of the year. Of the 57 birds encountered, 25 (44%) were shot and 21 (37%) died of unknown causes. Motor vehicles took the lives of two birds (record 1).

Dispersal from the natal site is minimal. Four adults were encountered during the breeding season (from about April to mid August) in the same area where they were banded as nestlings (record 2). Four others had moved to other breeding sites, but the maximum distance moved was 22 km (record 3; the bird in record 4 may also have been on its breeding site in March, in which case it also moved a short distance). Mean movement for all ages combined was only 25 km. The dispersal distance shown in record 5 was exceptional: banded as a nestling on Mitlenatch Island, Georgia Strait, this crow was encountered 177 km away near Victoria, Vancouver Island, British Columbia.

Encounter records: Northwestern Crow

1	0704-03697	L	U	11/06/82	18 km north of Merville, BC	49°50'N 125°00'W	3 mo.
	SFU	5	14	23/09/82	Willow Point, BC	49°50'N 125°10'W	12 km N90°W
2	0704-21287	L	U	13/06/86	18 km north of Merville, BC	49°50'N 125°00'W	8 yr. 2 mo.
	SFU	5	0	03/08/94	18 km north of Merville, BC	49°50'N 125°00'W	0 km
3	0704-03733	L	U	30/05/78	18 km south of Duncan, BC	48°30'N 123°10'W	4 yr. 1 mo.
	RBCM	5	21	03/06/82	Victoria, BC	48°20'N 123°20'W	22 km S34°W
4	0704-03557	L	U	01/06/79	18 km north of Merville, BC	49°50'N 125°00'W	4 yr. 9 mo.
	RBCM	5	12	99/03/84	Willow Point, BC	49°50'N 125°10'W	12 km N90°W
5	0704-03582	L	U	11/06/79	18 km north of Merville, BC	49°50'N 125°00'W	1 yr. 5 mo.
	RBCM	3	3	26/11/80	18 km south of Duncan, BC	48°30'N 123°40'W	177 km S34°E
6	0025-06262	AHY	U	27/01/33	Duncan, BC	48°40'N 123°40'W	12 yr. 3 mo.
	JAF	0	1	15/04/45	Duncan, BC	48°40'N 123°40'W	0 km

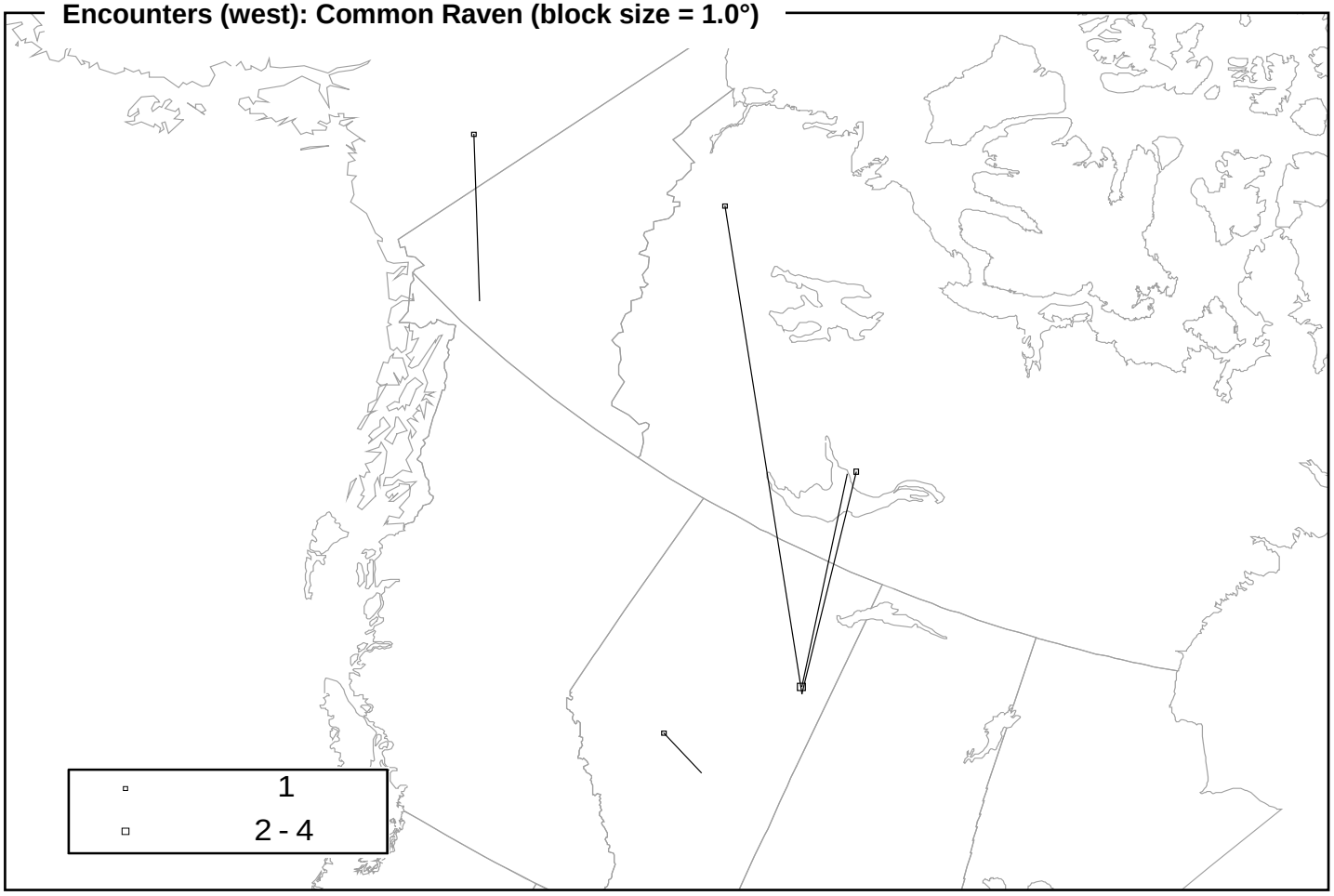
Summary of banding statistics: Northwestern Crow

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*834*
No. encountered per 1000 banded (1955-1995)			*60*
Total no. encountered (1921-1995)	45	6	57
No. encountered from foreign bandings	0	0	1
Maximum period from banding to encounter (mo.)	139	147	147
No. of Canadian-banded birds moving > 0 km	33	2	38
Mean movement > 0 km of Canadian-banded birds (km)	26	18	25
Maximum movement from all encounters (km)	177	18	177
% recovered (encountered dead)	97	100	98
% direct recoveries	44	50	43
% encountered during banding operations	0	0	0

Banding effort: Northwestern Crow

Top banders: SFU, RBCM, CWS-BC, GFVT, RWC

Common Raven (*Corvus corax*) 486.0

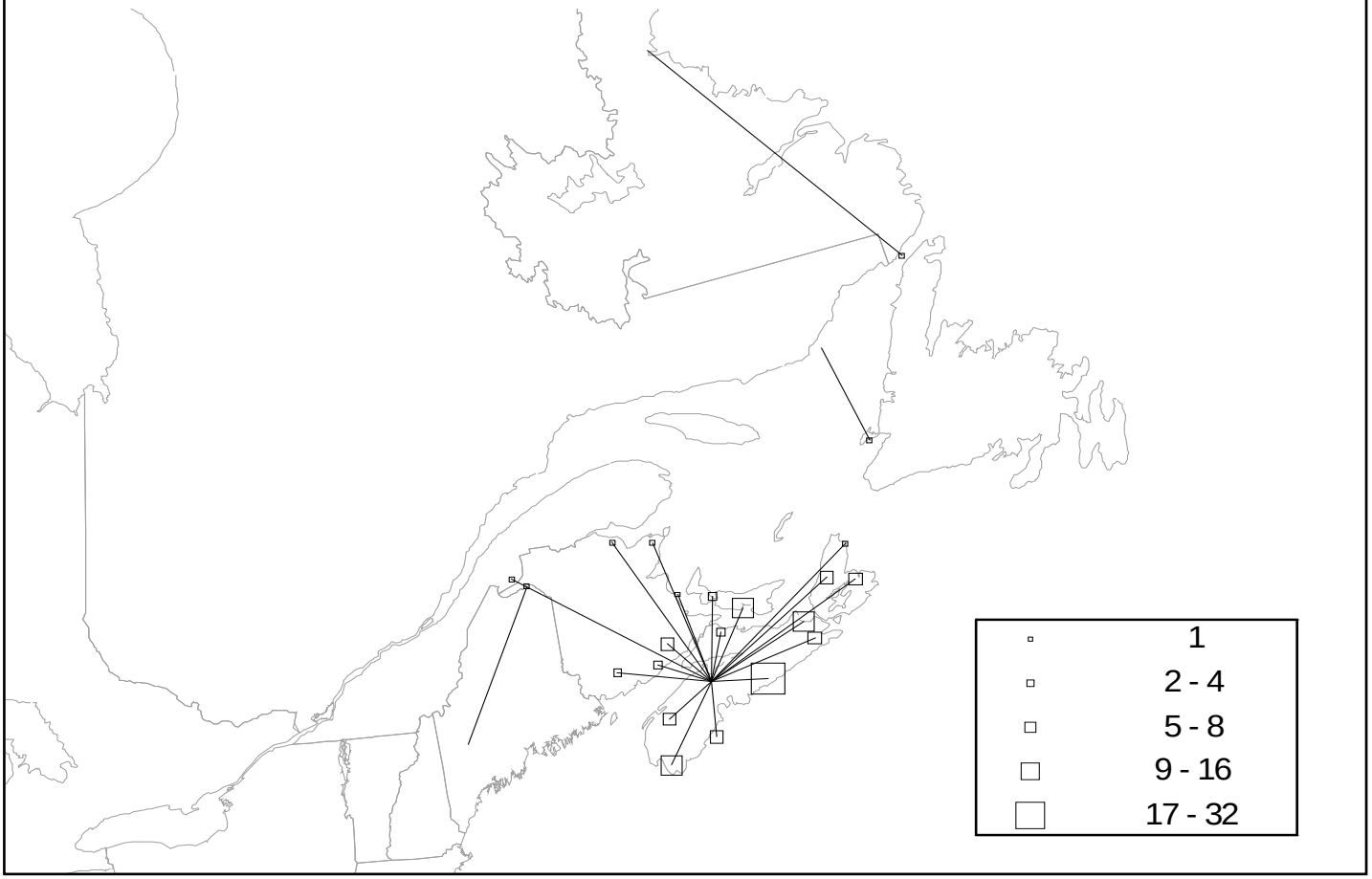


The Common Raven breeds from the high Arctic islands (locally) south throughout Canada, except on the central Prairie Provinces and in extreme southern Ontario; it also breeds through the western U.S. The Common Raven is mainly a permanent resident, wintering within the breeding range but wandering sporadically south into the northeastern U.S.

Nearly all of the encounter records for ravens (96%) are for birds banded in Nova Scotia, and 88% are for birds encountered in that province. Nearly half the birds had been shot (43%), contributing to the relatively high encounter rate for this species. Movements were relatively short in the eastern populations, as might be expected for a species classified as a permanent resident. Although one bird from Labrador moved more than 500 km (record 1), only 7% of other eastern birds moved more than 200 km (e.g., records 2-4). Over 75% of eastern encounters were within 100 km of the site of banding.

By contrast, western ravens appear to be more mobile. The mean distance moved by these birds was 283 km (15 birds), and one (record 5) moved over 1500 km. Four encounters between the Northwest Territories and Alberta suggest that ravens may move south in some winters (record 6) but stay north for others (record 5).

Encounters (east): Common Raven (block size = 1.0°)



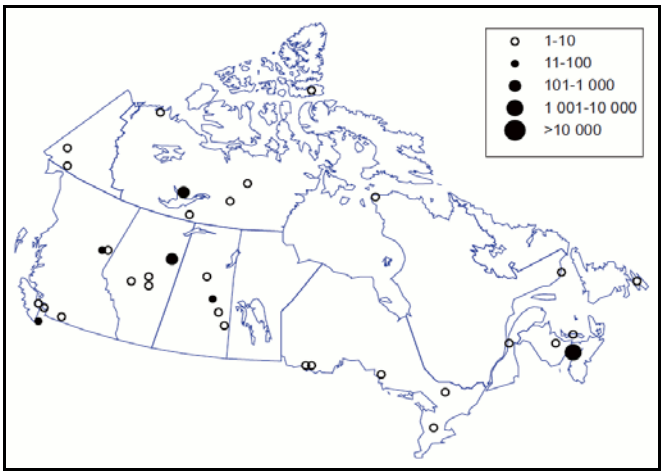
Encounter records: Common Raven

1	0005-60892	U	U	18/07/28	near Nain, Labrador, NL	56°20'N	62°00'W	5 mo.
	DM	0	1	FT/12/28	near Pinware Bay, Labrador, NL	51°30'N	56°40'W	641 km S35°E
2	0666-39001	L	U	30/06/62	south of Harrington Harbour, NL	50°20'N	59°30'W	5 mo.
	JBe	0	5	27/11/62	near Three Rock Cove, NL	48°30'N	59°00'W	207 km S10°E
3	0706-21322	SY	U	19/01/87	Weld, ME	44°40'N	70°20'W	1 yr. 3 mo.
	UV	11	3	21/04/88	11 km west of Madawaska, NB	47°20'N	68°20'W	335 km N27°E
4	1087-19939	AHY	U	06/03/78	Wolfville, NS	45°00'N	64°20'W	4 yr. 3 mo.
	CKC	5	0	24/06/82	11 km east of Saint-Eusèbe, QC	47°30'N	68°40'W	434 km N49°W
5	1437-80400	AHY	U	16/01/89	27 km southeast of Fort McMurray, AB	56°30'N	111°10'W	3 yr. 1 mo.
	BDA	7	89	17/02/92	near Fort Good Hope, NT	66°40'N	130°20'W	1508 km N34°W
6	0876-60844	L	U	02/06/86	Yellowknife, NT	62°20'N	114°20'W	6 mo.
	SC	5	0	24/12/86	Fort McMurray, AB	56°40'N	111°20'W	653 km S16°E
7	0637-40997	AHY	U	05/02/67	Wolfville, NS	45°00'N	64°20'W	12 yr. 8 mo.
	CKC	5	0	09/10/79	Grafton, NS	45°10'N	64°40'W	32 km N55°W

Summary of banding statistics: Common Raven

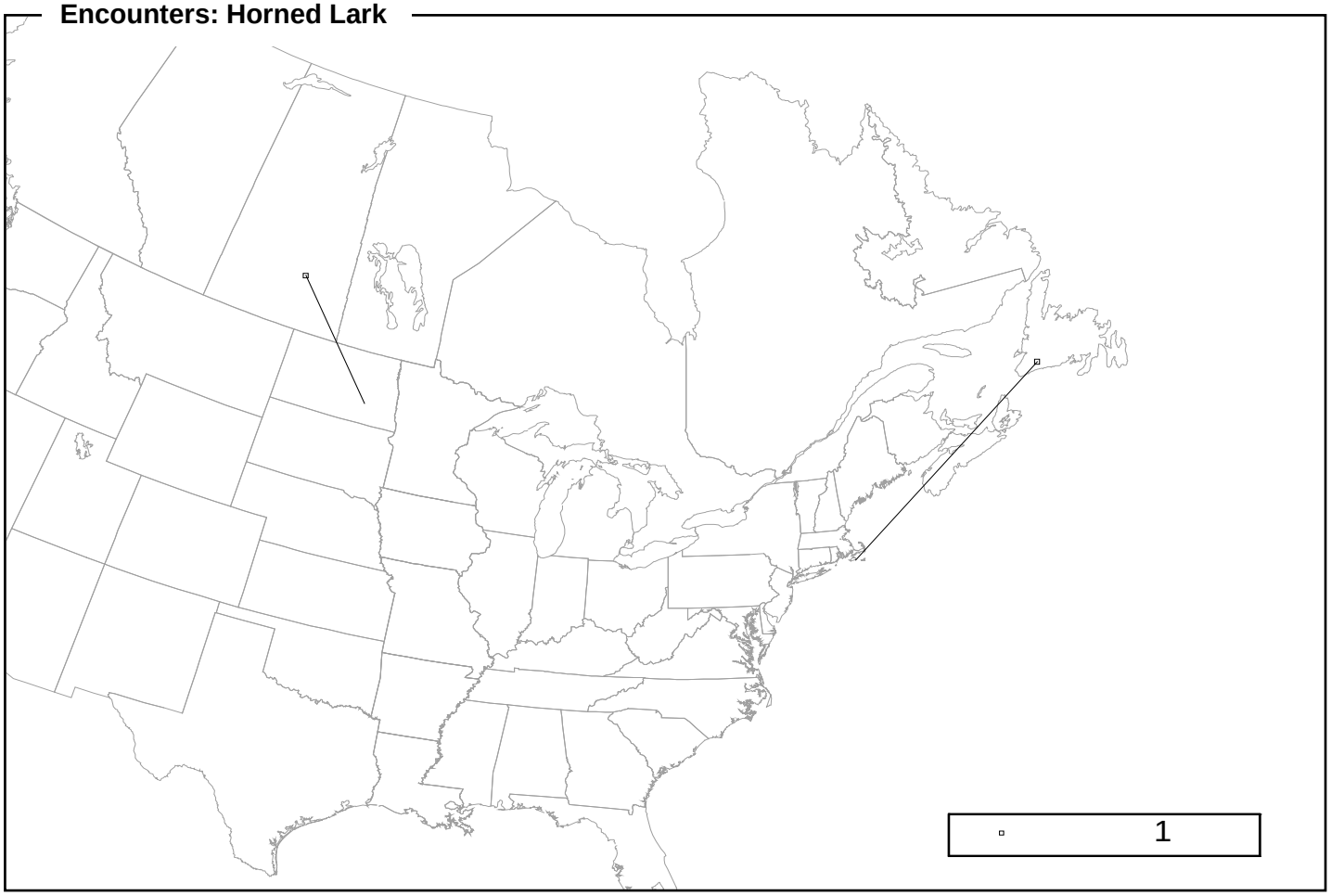
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5680*
No. encountered per 1000 banded (1955-1995)			*84*
Total no. encountered (1921-1995)	109	326	484
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	113	152	152
No. of Canadian-banded birds moving > 0 km	96	286	423
Mean movement > 0 km of Canadian-banded birds (km)	103	93	98
Maximum movement from all encounters (km)	653	1507	1507
% recovered (encountered dead)	95	94	95
% direct recoveries	31	13	18
% encountered during banding operations	1	0	0

Banding effort: Common Raven



Top banders: CKC, NTG, WNL, BDA, AU

Horned Lark (*Eremophila alpestris*) 474.0



The Horned Lark breeds throughout the U.S. and Canada except in the northernmost Queen Elizabeth Islands. It is absent or extremely local in a broad belt of forested country stretching from Alberta to Quebec, because the species prefers terrain with a minimum of ground cover. It winters in the southern parts of most provinces, south through most of the U.S. to Mexico.

The many races of this species allow the identification of wintering areas for different populations. Most Canadian larks are of the three wholly migratory races (*E. a. arcticola*, which breeds in Alaska, Yukon, and mountains in British Columbia; *hoytii* and alpestris), which winter primarily in southern Canada and the northern U.S. (Beason 1995).

Eighteen of the 20 encounters of this species involved birds banded in Canada and encountered at the place of banding (apart from one showing a movement of 9 km) after intervals of up to three years and eight months (record 1). The latter bird is undoubtedly E. a. hoytii. The bird in record 2 is likely E. a. alpestris, returning to its breeding area after wintering in Massachusetts, while the identity of the bird in record 3 is uncertain. Both of the long-distance encounters were of birds banded in the U.S.

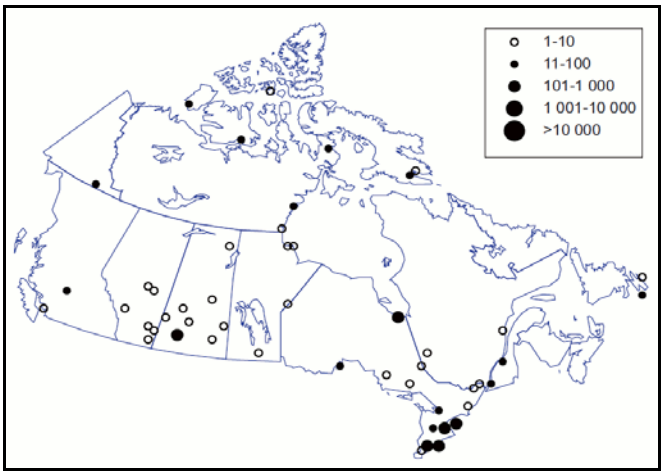
Encounter records: Horned Lark

1	0221-45966	AHY	M	06/09/62	Cambridge Bay, NT	69°00'N 105°00'W	3 yr. 8 mo.
	DFP	5	1	24/05/66	Cambridge Bay, NT	69°00'N 105°00'W	0 km
2	0000-67763	U	U	18/02/23	East Chop, MA	41°20'N 70°30'W	2 mo.
	AKe	0	98	18/04/23	near Stephenville, NL	48°??'N 58°??'W	c. 1235 km N49°E
3	0051-32697	U	U	27/12/33	Jamestown, ND	46°50'N 98°40'W	5 yr.
	CEB	0	0	99/SP/38	near Raymore, SK	51°20'N 104°30'W	657 km N38°W

Summary of banding statistics: Horned Lark

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*2544*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	5	13	20
No. encountered from foreign bandings	0	0	2
Maximum period from banding to encounter (mo.)	24	44	44
No. of Canadian-banded birds moving > 0 km	1	0	1
Mean movement > 0 km of Canadian-banded birds (km)	8	-	8
Maximum movement from all encounters (km)	8	0	1234
% recovered (encountered dead)	100	7	40
% direct recoveries	80	0	25
% encountered during banding operations	0	92	60

Banding effort: Horned Lark



Top banders: WJM, RAH, PL, DJTH, LPBO

Purple Martin (*Progne subis*) 611.0

Encounters (North America): Purple Martin

The Purple Martin breeds in the eastern, southwestern, and Pacific states in the U.S.; it breeds in southern Canada from Manitoba to Newfoundland and throughout much of Saskatchewan and Manitoba to central Alberta. The species winters through most of South America east of the Andes to central Argentina.

As shown on the effort map, banding has been highly concentrated, largely at nesting colonies. Almost half of the encounters were of birds banded as locals and encountered in a subsequent breeding season. Of these, about a third were encountered at the natal site, about a third within 100 km (e.g., record 1, also the record with the longest period between banding and encounter), and about a third farther away (e.g., records 2 and 3). Nearly all were found dead. Adult-banded birds were much more likely to be encountered at the same site as banding, often through recapture (e.g., record 4). One adult that appeared to have moved over 1000 km between breeding seasons (record 5) may have died on migration, because the exact date of encounter is unknown.

No Canadian martins have been encountered in mid-winter (December-February), and the longest-distance encounters (records 6-8) may have been migrating to or from more distant points in South America.

Encounters (Central and South America): Purple Martin

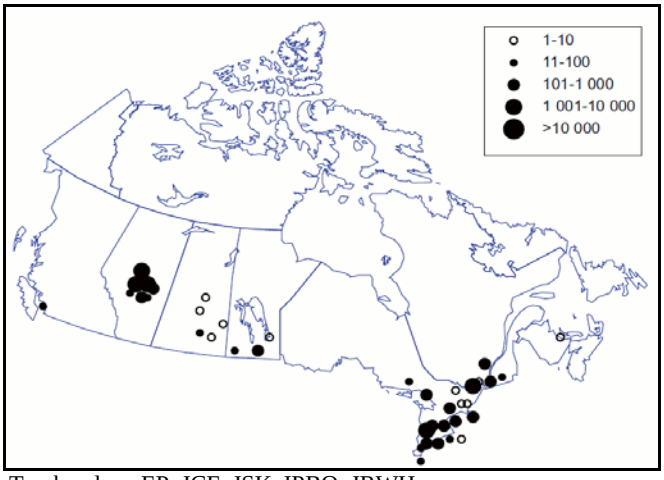
Encounter records: Purple Martin

1	0791-33356	L	U	11/07/77	Clover Bar, AB	53°30'N	113°20'W	7 yr. 0 mo.
	JCF	5	3	11/07/84	St. Albert, AB	53°30'N	113°30'W	11 km N90°W
2	0741-82234	L	U	14/07/71	Long Point, ON	42°30'N	80°00'W	2 yr. 10 mo.
	LPBO	5	0	21/05/74	Cedarburg Swamp, WI	43°10'N	87°40'W	630 km N81°W
3	0392-10167	J	U	15/07/39	Portage La Prairie, MB	49°50'N	98°10'W	1 yr. 1 mo.
	FJW	0	0	26/08/40	Klages Game Management Area, MN	45°10'N	96°20'W	537 km S16°E
4	0201-53177	AHY	F	19/07/52	Bewdley, ON	44°00'N	78°10'W	5 yr. 0 mo.
	FS	0	99	25/07/57	Bewdley, ON	44°00'N	78°10'W	0 km
5	0561-78361	AHY	F	16/07/59	Bay City, MN	44°30'N	92°20'W	
	FVS	0	13	??/05/60	Burlington Beach, ON	43°10'N	79°40'W	1027 km S86°E
6	0761-58164	L	U	25/07/75	Clover Bar, AB	53°30'N	113°20'W	2 mo.
	JCF	3	20	25/09/75	near Jiquilisco, EL SALVADOR	13°20'N	88°30'W	4977 km S36°E
7	0991-12690	L	U	16/07/87	Leduc, AB	53°10'N	113°30'W	1 yr. 9 mo.
	EP	3	0	22/04/89	near Uaupés, BRAZIL	00°50'N	67°10'W	7215 km S53°E
8	8001-83444	L	U	01/08/88	Innis Point, ON	45°20'N	75°50'W	2 mo.
	IPBO	3	1	12/10/88	Corocito, HONDURAS	15°50'N	85°50'W	3415 km S19°W

Summary of banding statistics: Purple Martin

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*17 615*
No. encountered per 1000 banded (1955-1995)			*5*
Total no. encountered (1921-1995)	70	27	100
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	84	60	84
No. of Canadian-banded birds moving > 0 km	44	9	54
Mean movement > 0 km of Canadian-banded birds (km)	510	37	426
Maximum movement from all encounters (km)	7215	1026	7215
% recovered (encountered dead)	97	70	89
% direct recoveries	21	14	20
% encountered during banding operations	0	29	9

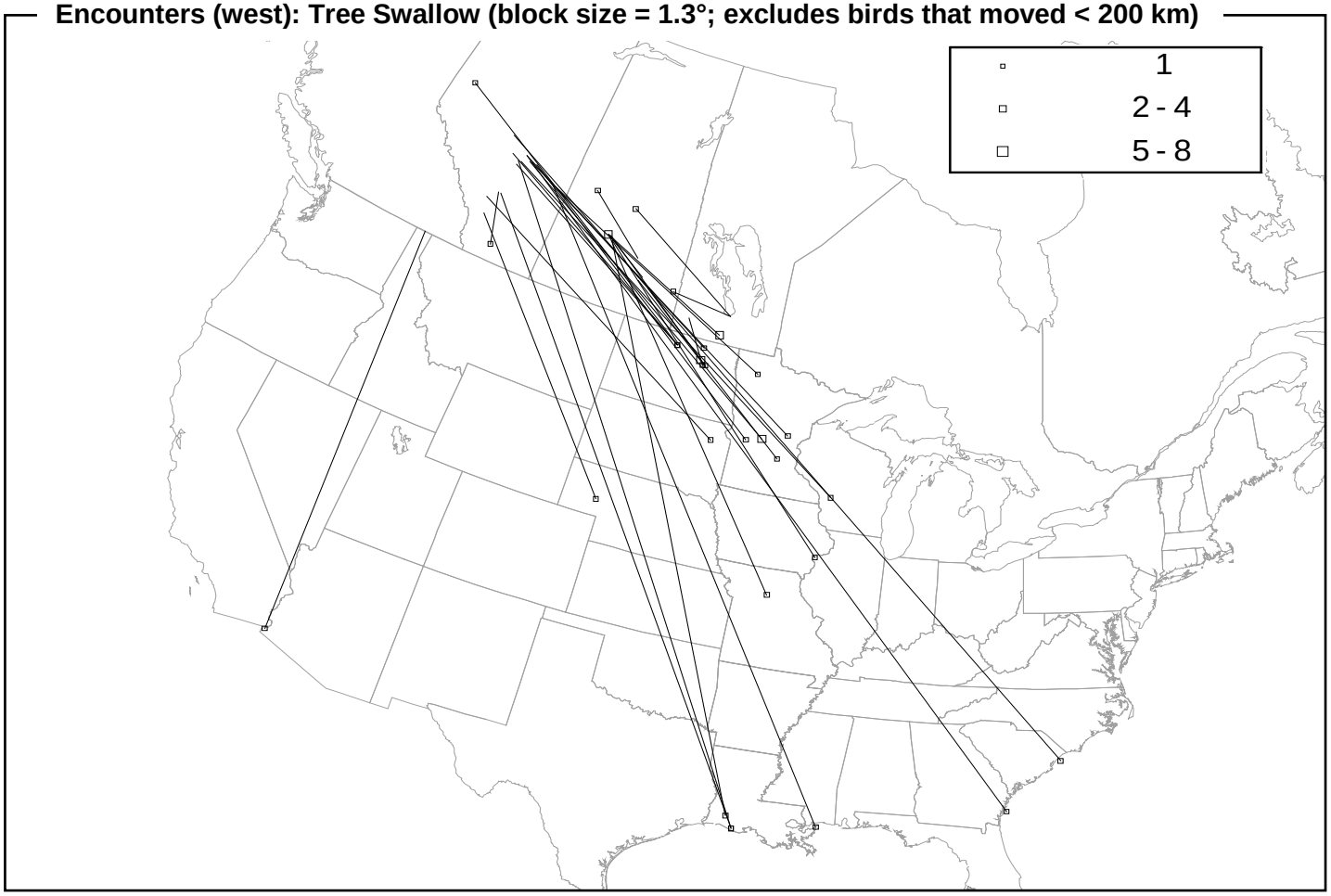
Banding effort: Purple Martin



Top banders: EP, JCF, JSK, IPBO, JRWH

Tree Swallow (*Tachycineta bicolor*) 614.0

Encounters (west): Tree Swallow (block size = 1.3°; excludes birds that moved < 200 km)



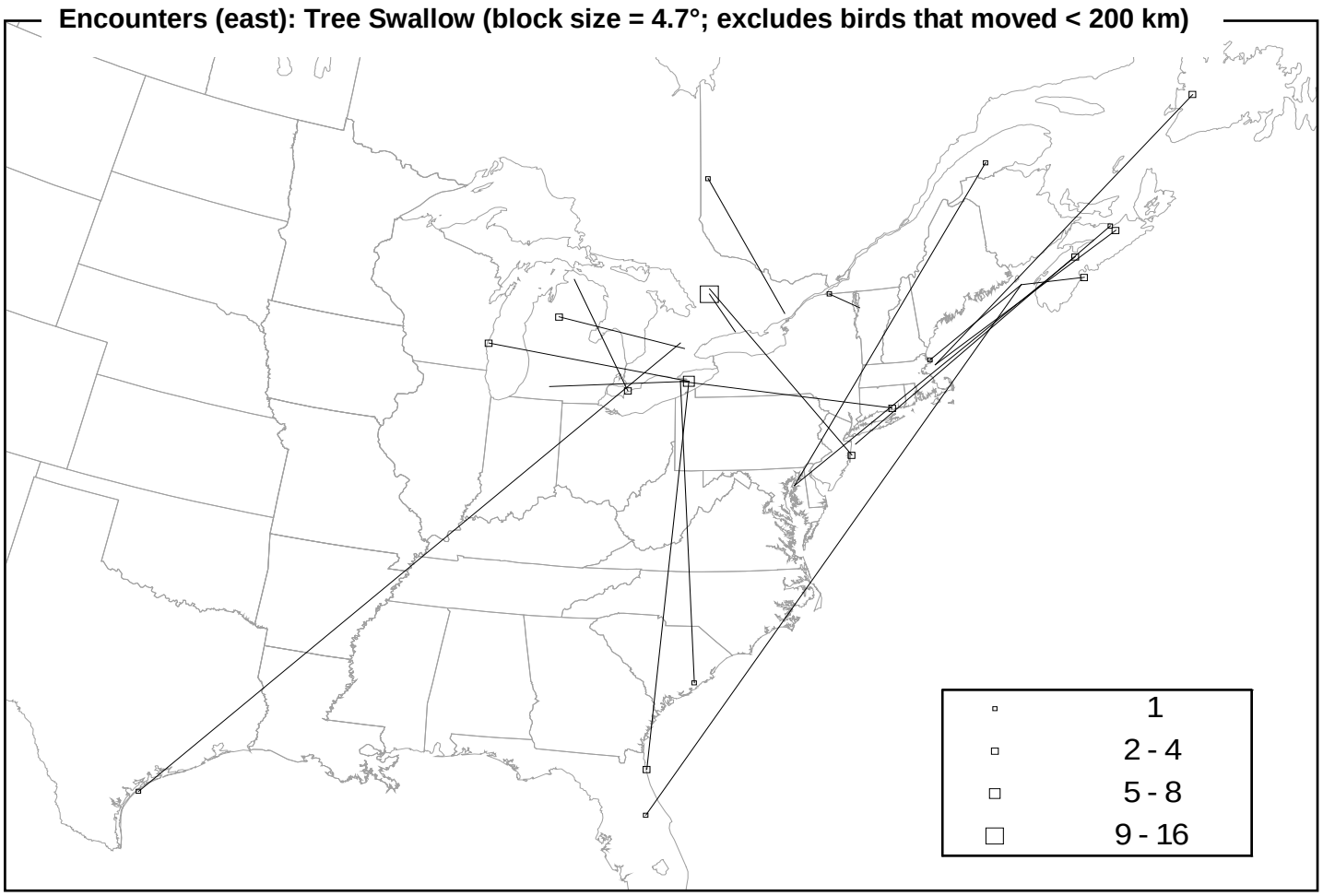
The Tree Swallow breeds virtually throughout Canada south of the treeline and in the northern two-thirds of the U.S.; it winters from the southern U.S. (north to southern California in the west, New York in the east) south to Costa Rica and the Greater Antilles.

Large numbers have been banded in Canada, particularly in nest-box studies. The encounter maps exclude birds that moved less than 200 km (compared with the usual cut-off of 100 km).

Populations along the east side of the Rocky Mountains migrate due south into Mexico (Butler 1988); a single long-distance encounter from British Columbia to Arizona (record 1) indicates that birds breeding west of the Rockies do the same. The strong southeast-northwest component in the movements of birds between the Prairie Provinces and the head of the Mississippi drainage is very consistent (see records 2 and 3). Prairie birds have been encountered on migration along the Gulf Coast (three in Louisiana, e.g., record 4, and one in Mississippi) and also on the Atlantic coast (one in Georgia and one in South Carolina, record 5).

By contrast, birds from Quebec eastward migrate southwest-northeast along the Atlantic coast (records 6-9). Ontario appears to be a transition zone for direction of movement, with many birds banded there as breeders moving southwest-northwest like eastern Canadian swallows (e.g., record 10), and others heading southeast-northwest (like western birds, e.g., records 11-13).

Butler (1988) analyzed all North American band encounter records for this species collected between 1929 and 1984, finding patterns similar to those described above for Canadian encounters alone. He noted that most Tree Swallows from the Canadian Prairie Provinces and U.S. states near the Great Lakes appear to migrate along the Mississippi River Valley.



Although several U.S.-banded swallows have been found in Central America and the Antilles, only three Canadian birds have been encountered in December-March: two in Canada and one in Louisiana (record 4). All the others encountered in the southernmost U.S. could have been migrating, such as the birds in records 7 (which lacks exact date of encounter), 10, and 11.

At the time of encounter, the bird in record 14 held the longevity record for this species at 11 years (Hussell 1992, Clapp et al. 1983). However, the current record is held by a bird banded as a nestling and recaptured 12 years later (Hussell and Anderson 1999).

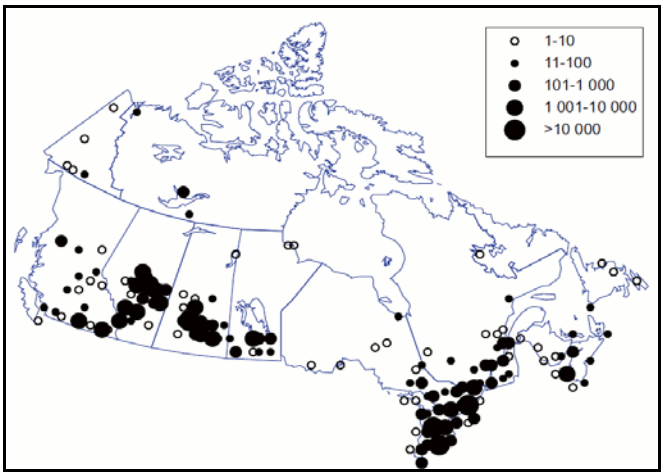
Encounter records: Tree Swallow

1	2051-76792	AHY	M	23/06/87	Creston, BC	49°00'N	116°30'W	3 mo.
	SFU	5	0	FT/09/87	14 km west of Yuma, AZ	32°40'N	114°40'W	1824 km S5°E
2	0720-15845	HY	U	09/08/68	Clark Slayer National Wildlife Area,	48°30'N	100°40'W	1 yr. 9 mo.
	RTG	5	13	15/05/70	Clairmont, AB	55°10'N	118°40'W	1437 km N52°W
3	0800-15555	AHY	F	31/05/72	west of Cooking Lake, AB	53°20'N	113°00'W	3 mo.
	ETJ	0	3	04/08/72	Fairy Lake, MN	45°40'N	94°50'W	1559 km S64°E
4	2021-67115	L	U	03/07/89	11 km east of Dundurn, SK	51°40'N	106°20'W	5 mo.
	CSH	5	39	18/12/89	Iowa, LA	30°10'N	93°00'W	2634 km S30°E
5	1041-85067	L	U	01/07/73	west of Barrhead, AB	54°00'N	114°40'W	3 mo.
	JCF	6	57	31/10/73	east of Burgess, SC	33°30'N	78°50'W	3611 km S65°E
6	0320-65638	HY	U	30/08/60	Carroll's Point, MD	39°10'N	76°10'W	1 yr. 9 mo.
	DAM	0	3	27/05/62	Canning, NS	45°00'N	64°20'W	1168 km N63°E
7	0540-06471	L	U	27/06/55	Kent Island, NB	44°30'N	66°40'W	
	BC	0	1	??/12/57	Altamonte Springs, FL	28°40'N	81°20'W	2189 km S41°W
8	0560-54783	U	U	12/09/65	Carroll's Point, MD	39°10'N	76°10'W	9 mo.
	DAM	7	89	28/06/66	near Wilmot, NS	45°00'N	64°20'W	1113 km N62°E
9	0720-90656	HY	U	24/09/66	Burns John J Park, NY	40°30'N	73°20'W	1 yr. 9 mo.
	THD	8	28	14/06/68	Garnish, NL	47°10'N	55°20'W	1620 km N57°E
10	2111-25722	L	U	21/06/93	Fergus, ON	43°40'N	80°20'W	11 mo.
	DRL	5	0	03/05/94	Aransas Pass, TX	27°50'N	97°00'W	2309 km S46°W
11	0220-02277	HY	U	30/07/53	Bewdley, ON	44°00'N	78°10'W	8 mo.
	FS	0	14	07/03/54	Auburndale, FL	28°00'N	81°40'W	1808 km S11°W
12	0630-84244	AHY	M	17/06/65	Huntsville, ON	45°20'N	79°10'W	9 mo.
	RJR	5	0	29/03/66	Bay Head, NJ	40°00'N	74°00'W	746 km S44°E
13	1410-02831	AHY	U	18/06/50	Bewdley, ON	44°00'N	78°10'W	
	HHS	0	0	??/08/52	Howerton, VA	37°50'N	76°50'W	696 km S10°E
14	0750-48658	SY	F	17/06/70	Long Point, ON	42°30'N	80°00'W	10 yr. 0 mo.
	LPBO	7	99	15/06/80	Long Point, ON	42°30'N	80°00'W	0 km

Summary of banding statistics: Tree Swallow

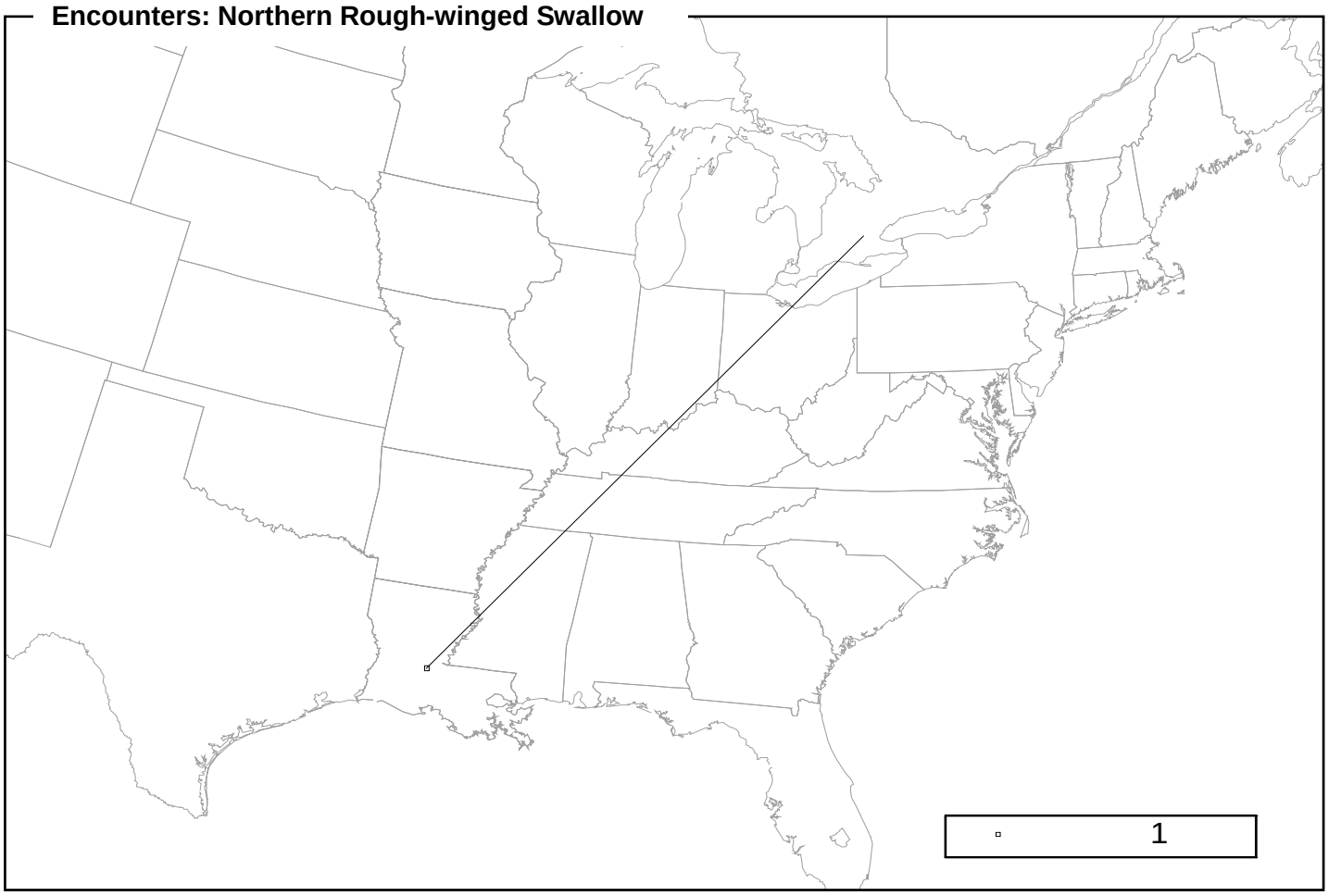
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*159 080*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	316	306	630
No. encountered from foreign bandings	16	4	22
Maximum period from banding to encounter (mo.)	95	120	120
No. of Canadian-banded birds moving > 0 km	201	64	266
Mean movement > 0 km of Canadian-banded birds (km)	291	171	262
Maximum movement from all encounters (km)	3611	1824	3611
% recovered (encountered dead)	65	34	50
% direct recoveries	13	7	10
% encountered during banding operations	18	49	34

Banding effort: Tree Swallow



Top banders: LPBO, CSH, LS, JCF, RJRo

Northern Rough-winged Swallow (*Stelgidopteryx serripennis*) 617.0



The Northern Rough-winged Swallow breeds throughout the U.S., as well as in southern British Columbia and extreme southern Canada (locally) from Alberta to Quebec. It winters on the Gulf Coast and from central Mexico to northern South America and the Greater Antilles.

The single long-distance encounter (record 1) occurred during fall migration. The only other encounter (record 2) is of an adult retrapped at its breeding site the summer following banding.

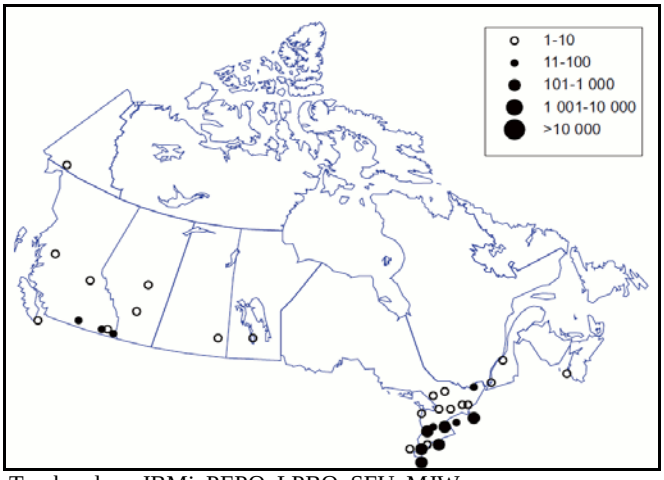
Encounter records: Northern Rough-winged Swallow

1	0430-38518	AHY	U	24/06/45	Doon, ON	43°20'N 80°20'W	
	JMoo	0	1	??/08/45	Augusta, LA	30°50'N 92°10'W	1740 km S41°W
2	0520-06751	AHY	U	30/05/54	Don Mills, ON	43°40'N 79°20'W	1 yr. 1 mo.
	LGL	0	99	12/06/55	Don Mills, ON	43°40'N 79°20'W	0 km

Summary of banding statistics: Northern Rough-winged Swallow

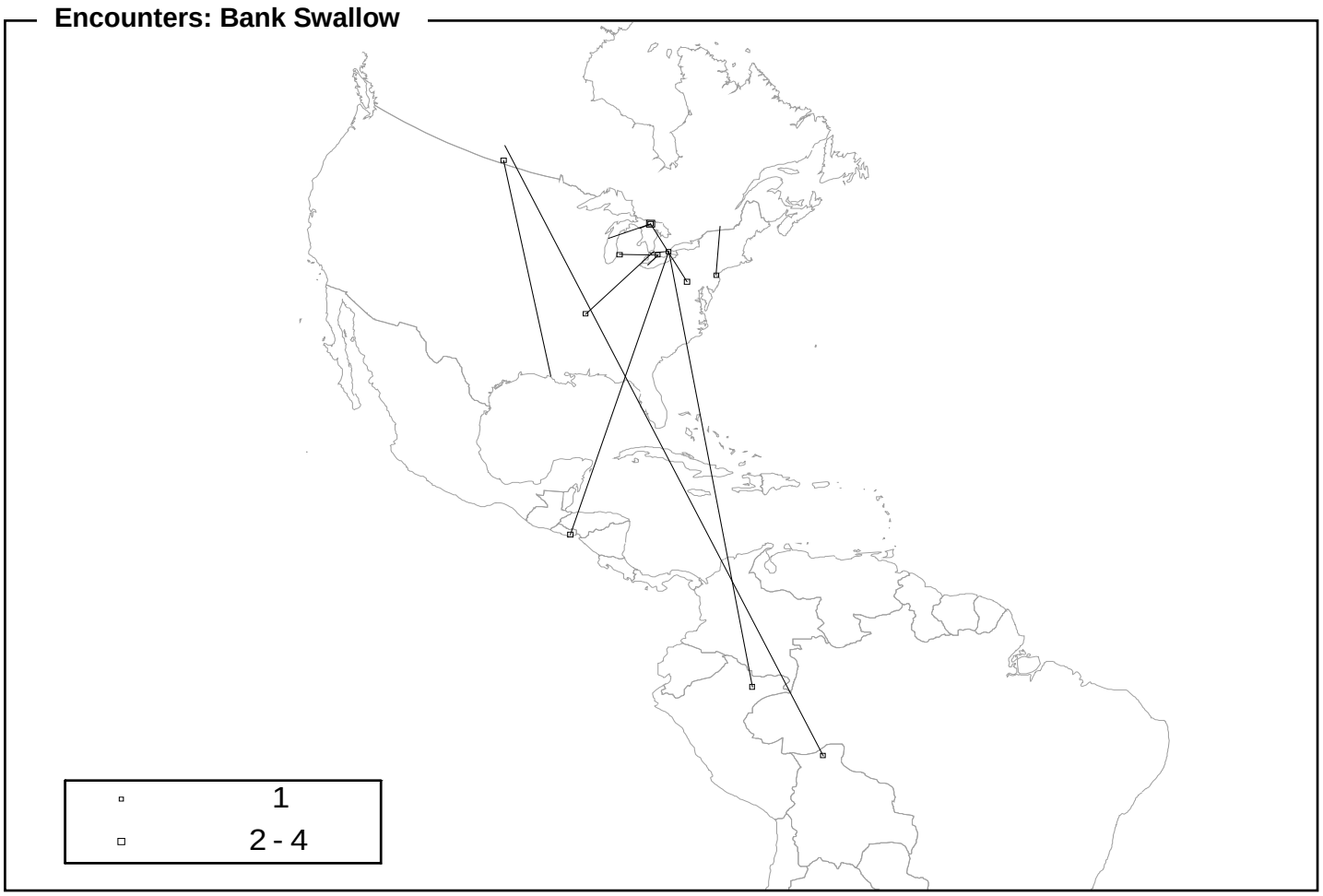
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*1086*
No. encountered per 1000 banded (1955-1995)			*0.9*
Total no. encountered (1921-1995)	0	2	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	13	13
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	1739	1739
Maximum movement from all encounters (km)	-	1739	1739
% recovered (encountered dead)	-	50	50
% direct recoveries	-	50	50
% encountered during banding operations	-	50	50

Banding effort: Northern Rough-winged Swallow



Top banders: JBMi, PEPO, LPBO, SFU, MJW

Bank Swallow (*Riparia riparia*) 616.0



The Bank Swallow's breeding range includes the northern two-thirds of the U.S. and most of Canada north to the treeline; it excludes coastal British Columbia and most of Newfoundland. The wintering range is mainly north and central South America east of the Andes, including western Brazil and Paraguay.

Most encounters showed zero or trivial movement, usually involving birds retrapped at or near the point of banding (the majority at breeding colonies in Ontario, e.g., record 1, the record with the longest period between banding and encounter). In addition to the nine encounters with movement listed below (records 2-10), there were only four other examples of movement: three birds were retrapped in Ontario after being banded in Michigan, and one moved 147 km within southern Ontario. Record 6 indicates a migration speed of at least 44 km per day over 22 days.

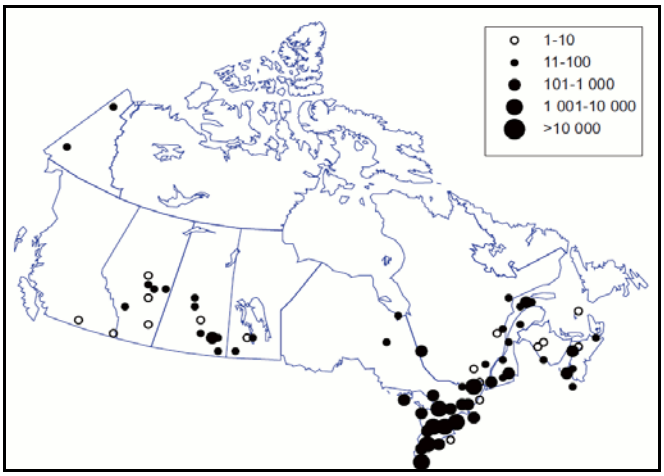
Encounter records: Bank Swallow

1	0260-75881	AHY	U	31/05/59	Cootes Paradise Marsh, ON	43°10'N 79°50'W	4 yr. 2 mo.
	LAG	0	99	06/07/63	Cootes Paradise Marsh, ON	43°10'N 79°50'W	0 km
2	0420-63192	J	U	02/07/42	Delaware, ON	42°50'N 81°20'W	4 yr. 2 mo.
	WAM	0	0	03/09/46	East Saugatuck, MI	42°40'N 86°00'W	382 km S89°W
3	1080-92147	U	U	24/05/64	Manitowac, WI	44°10'N 87°30'W	1 yr. 1 mo.
	BNB	0	89	16/06/65	Gore Bay, ON	45°50'N 82°20'W	447 km N64°E
4	0520-17722	L	U	25/06/55	Greenfield Park, QC	45°20'N 73°20'W	4 yr. 6 mo.
	P-EM	0	1	24/12/59	Berkeley Heights, NJ	40°40'N 74°20'W	526 km S9°W
5	1150-84250	AHY	U	12/06/67	Gore Bay, ON	45°50'N 82°20'W	2 yr. 2 mo.
	FEL	3	14	18/08/69	Orbisonia, PA	40°10'N 77°50'W	729 km S32°E
6	0590-29424	AHY	U	06/07/63	Port Franks, ON	43°10'N 81°50'W	22 dy.
	WPN	0	0	28/07/63	Big Oak Tree State Park, MO	36°30'N 89°10'W	971 km S43°W
7	0390-27427	U	U	08/04/39	Avery Island, LA	29°50'N 91°50'W	2 yr. 2 mo.
	EAM	0	88	16/06/41	Midale Lake, SK	49°20'N 103°20'W	2378 km N21°W
8	1560-23482	AHY	M	05/07/82	Jordon, ON	43°10'N 80°00'W	2 yr. 2 mo.
	ADB	3	56	03/09/84	Usulutan, EL SALVADOR	13°20'N 88°20'W	3416 km S16°W
9	1530-42417	HY	U	07/07/80	Jordon, ON	43°10'N 80°00'W	4 mo.
	ADB	5	1	16/11/80	Francisco De Orellana, PERU	03°40'S 73°10'W	5259 km S9°E
10	0040-03371	HY	U	07/07/29	south of Lipton, SK	50°40'N 103°50'W	5 yr. 11 mo.
	RHC	0	0	99/06/35	Pando, BOLIVIA	11°10'S 67°10'W	7662 km S39°E

Summary of banding statistics: Bank Swallow

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*41 116*
No. encountered per 1000 banded (1955-1995)			*6*
Total no. encountered (1921-1995)	20	253	286
No. encountered from foreign bandings	2	1	5
Maximum period from banding to encounter (mo.)	71	50	71
No. of Canadian-banded birds moving > 0 km	8	50	63
Mean movement > 0 km of Canadian-banded birds (km)	1760	123	324
Maximum movement from all encounters (km)	7764	3415	7764
% recovered (encountered dead)	35	3	5
% direct recoveries	20	9	10
% encountered during banding operations	55	88	86

Banding effort: Bank Swallow



Top banders: ADB, LGL, IPBO, CHG, RBG

Cliff Swallow (*Petrochelidon pyrrhonota*) 612.0

The Cliff Swallow nests widely in Canada, from northern Yukon to Nova Scotia and in most of the U.S. except for the southeastern states. It winters in South America from Paraguay and southern Brazil to southern Argentina.

Only one encounter (record 1) showed a significant movement, evidently a case of juvenile dispersal to a breeding area far from the natal site. All but 10 of the records were for birds banded and encountered in successive years at a colony site in Fingal, Ontario (e.g., record 2). Another six bandings and same-site encounters were reported from Nova Scotia, Alberta, Yukon, Ontario (one each), and British Columbia (record 3 and one other).

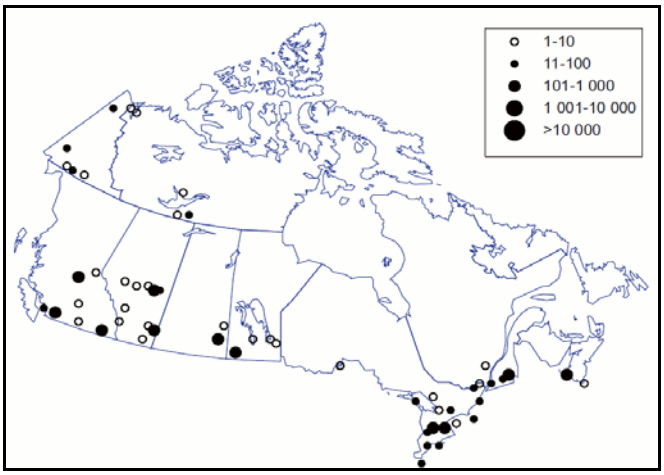
Encounter records: Cliff Swallow

1	2121-69250	HY	U	28/06/93	Keystone, NE	41°10'N 101°30'W	11 mo.
	CRB	5	0	12/05/94	St. Albert, AB	53°30'N 113°30'W	1640 km N29°W
2	0460-28116	AHY	U	16/07/52	Fingal, ON	42°40'N 81°10'W	5 yr. 0 mo.
	MHF	0	99	02/07/57	Fingal, ON	42°40'N 81°10'W	0 km
3	2051-99504	AHY	U	04/05/87	Creston, BC	49°00'N 116°30'W	5 yr.11 mo.
	SFU	7	99	20/04/93	Creston, BC	49°00'N 116°30'W	0 km

Summary of banding statistics: Cliff Swallow

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3415*
No. encountered per 1000 banded (1955-1995)			*11*
Total no. encountered (1921-1995)	1	82	83
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	11	71	71
No. of Canadian-banded birds moving > 0 km	0	3	3
Mean movement > 0 km of Canadian-banded birds (km)	-	30	30
Maximum movement from all encounters (km)	1639	54	1639
% recovered (encountered dead)	100	3	4
% direct recoveries	0	3	3
% encountered during banding operations	0	96	95

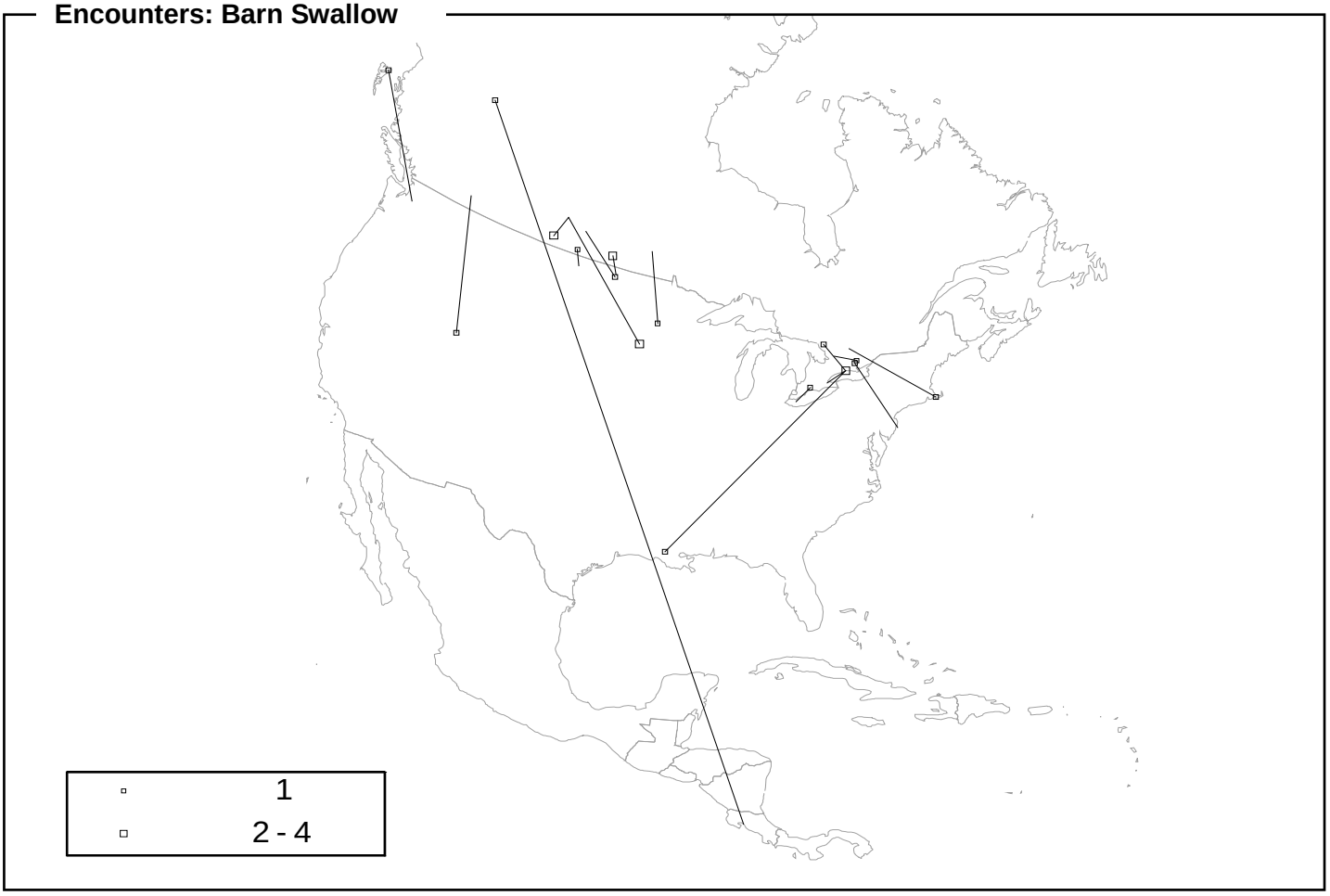
Banding effort: Cliff Swallow



Top banders: US, BBO, MTM, DRH, BC

Barn Swallow (*Hirundo rustica*) 613.0

Encounters: Barn Swallow



The Barn Swallow is holarctic; it breeds across most of the U.S. and Canada north to the treeline. New World populations winter from Panama and the West Indies south through South America to Tierra del Fuego.

As with the other swallows, most encounters were at or near banding sites (e.g., record 1, the bird with the longest time between banding and encounter). The 22 exceptions with movement over 100 km are shown on the map; 10 of these are listed below (records 2-11). The bird encountered in Utah (record 2) did not cross the Rocky Mountains - its banding site is in the southeast corner of British Columbia. The bird in record 3 below was possibly still migrating when banded in Washington; it was found dead in the Queen Charlotte Islands a month later.

No Canadian Barn Swallows have been encountered on the wintering grounds. The most distant encounter (record 4) was of a bird banded in Costa Rica, probably early in migration. It was found at an unknown date sheltering from a storm in a porch in British Columbia and released unharmed; however, the encounter was not reported until much later.

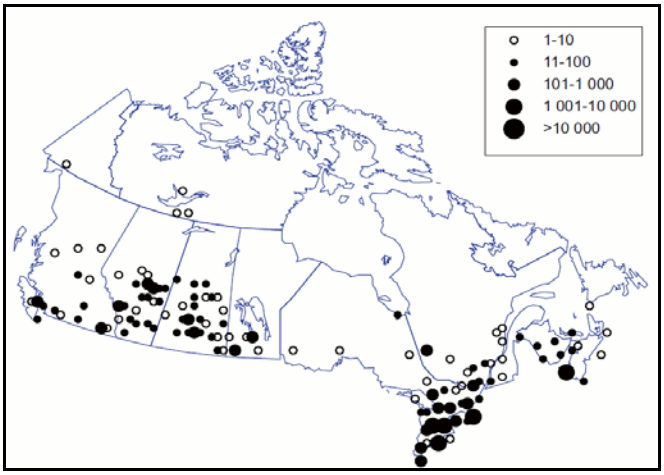
Encounter records: Barn Swallow

1	0470-27890	AHY	U	21/06/52	Whitefish Lake, ON	45°30'N	78°20'W	6 yr.
	JMo	6	0	04/06/58	Algonquin Park, ON	45°30'N	78°30'W	13 km N90°W
2	0620-70878	L	U	06/07/63	Kaslo, BC	49°50'N	116°50'W	
	RFH	0	3	??/05/64	Little Mountain, UT	41°10'N	112°10'W	1031 km S22°E
3	1690-16361	AHY	M	20/05/85	18 km southeast of Startup, WA	47°40'N	121°30'W	1 mo.
	JDA	3	0	28/06/85	Massett, BC	54°00'N	132°00'W	1019 km N42°W
4	1550-80162	SY	U	11/04/80	Puntarenas, COSTA RICA	10°00'N	84°50'W	
	FGS	7	21	??/12/81	Goodlow, BC	56°20'N	120°10'W	5995 km N23°W
5	0060-85254	J	U	06/07/36	Davidson, SK	51°10'N	105°50'W	1 yr. 3 mo.
	FGB	0	0	LT/10/37	Luverne, MN	43°30'N	96°10'W	1120 km S44°E
6	0760-29771	AHY	F	21/05/70	Island Beach, NJ	39°50'N	74°00'W	
	WP	5	13	??/05/71	near Queensboro, ON	44°30'N	77°20'W	588 km N27°W
7	1020-06305	AHY	U	23/05/63	Bewdley, ON	44°00'N	78°10'W	4 mo.
	FS	0	1	03/09/63	10 km west of Grosse Tete, LA	30°20'N	91°30'W	1922 km S42°W
8	1390-86631	U	U	01/07/39	Regina Beach, SK	50°40'N	104°50'W	
	FGB	0	98	??/05/43	11 km south of Upham, ND	48°20'N	100°40'W	396 km S60°E
9	0000-36588	AHY	U	02/07/23	Stone Lake, MB	50°40'N	97°50'W	10 mo.
	ALH	0	0	25/05/24	Anderson Game Management Area, MN	46°00'N	95°40'W	544 km S18°E
10	0410-59557	HY	U	16/08/42	Macrorie, SK	51°10'N	107°00'W	1 mo.
	FJHF	0	0	27/09/42	Bruce, SD	44°20'N	96°50'W	1074 km S49°E
11	0470-10099	L	U	30/07/52	Madawaska, ON	45°30'N	77°50'W	2 mo.
	RFJ	0	0	99/09/52	Lassetts Island, MA	41°40'N	70°30'W	729 km S57°E

Summary of banding statistics: Barn Swallow

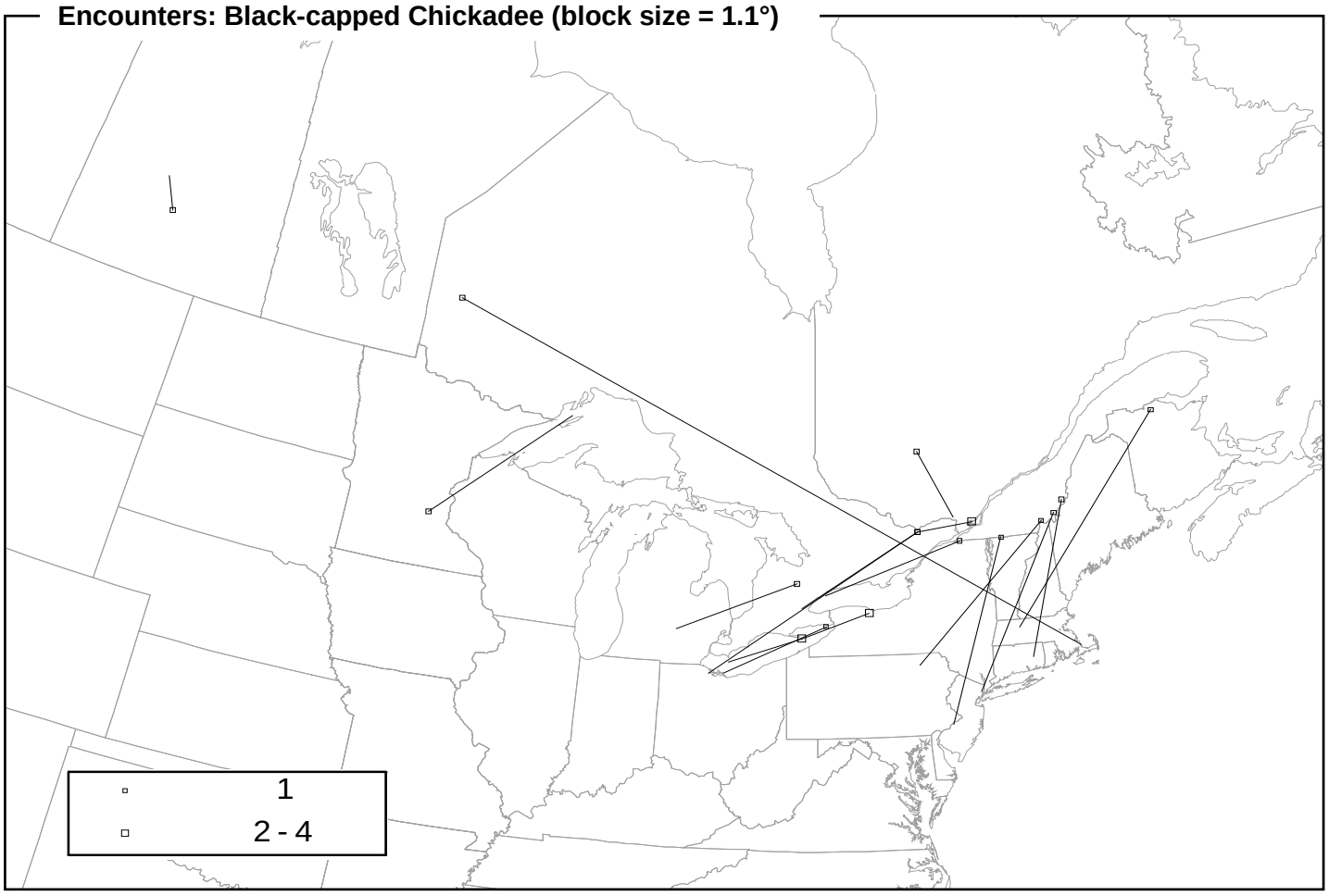
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*18 562*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	32	75	119
No. encountered from foreign bandings	3	3	7
Maximum period from banding to encounter (mo.)	37	72	72
No. of Canadian-banded birds moving > 0 km	16	10	29
Mean movement > 0 km of Canadian-banded birds (km)	343	302	297
Maximum movement from all encounters (km)	1120	5994	5994
% recovered (encountered dead)	81	29	44
% direct recoveries	43	9	21
% encountered during banding operations	12	62	48

Banding effort: Barn Swallow



Top banders: LPBO, BC, JBMi, BKW, PEPO

Black-capped Chickadee (*Poecile atricapillus*) 735.0



The Black-capped Chickadee breeds in southern Yukon, British Columbia (excluding coastal islands), Alberta, Saskatchewan, and in the southern half of Manitoba from The Pas south and east to Newfoundland; it also breeds in the northern half of the U.S. It winters over most of its breeding range but may withdraw from the northernmost localities and from high altitudes in mountains.

The Black-capped Chickadee is highly sedentary in most of its range: over 90% of the encounters showed zero movement. Most encounters (78%) were of birds retrapped at the original banding site. However, at irregular intervals, massive movements of Black-capped Chickadees occur, sometimes in company with Boreal Chickadees. Most of the long-distance encounters occurred in such irruptions. Eighteen birds moved distances of 50-500 km, and eight moved over 500 km (records 1-7), including one (record 7) that moved over 2000 km. The latter was one of 476 birds banded in September 1976 at a coastal Massachusetts site; such high numbers provide certain evidence of a large movement that year (M. Gustafson, pers. comm).

Of particular interest are clusters of distant encounters in certain years. Three encounters involved birds banded at Point Pelee, Ontario, in the spring of 1962 and retrapped at Long Point; two of these occurred within a month of banding (e.g., record 8). During the same spring, there were several retraps of birds showing movement between the different banding areas of Long Point (Hussell and Stamp 1965), in what proved to be an exceptional spring influx of chickadees (Hussell 1996). Two additional clusters of encounters involved birds banded at Innis Point, Ontario, in October 1988 and 1990. In each year, two to three chickadees were encountered a short distance east of Innis Point within 20 days of banding, and one or two birds were encountered 157-183 km east 17-25 days after banding. In the spring of 1991, two birds banded at Long Point, Ontario, (one that spring and one the previous fall) were recaptured on the

same day at Braddock Bay, New York (not shown on map, because the distance travelled was less than 100 km).

Analysis of all North American encounters shows that longer-distance encounters are more directional (northeast in spring, southwest in fall) than shorter-distance movements, which in non-irruption years may represent dispersal (Brooks 1987, 1989, 1991; Stewart 1988; Hussell 1991).

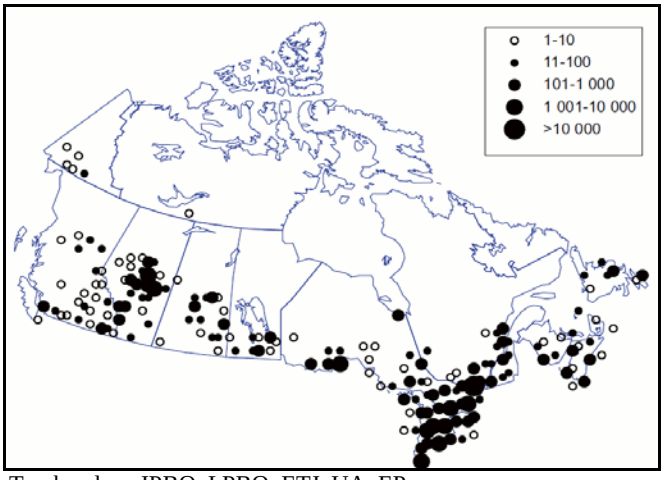
Encounter records: Black-capped Chickadee

1	0250-56327	U	U	07/04/60	Bogota, NJ	40°50'N	74°00'W	4 yr. 6 mo.
	HGMcE	0	0	FT/10/64	Marsboro, QC	45°30'N	70°50'W	580 km N25°W
2	1980-97089	HY	U	07/10/95	Thunder Cape, ON	48°10'N	88°50'W	
	TCBO	3	0	??/12/95	Corcoran, MN	45°00'N	93°30'W	502 km S47°W
3	0270-62171	U	U	09/12/63	Abington, PA	40°00'N	75°00'W	
	LHR	0	14	??/02/65	Bedford, QC	45°00'N	72°50'W	584 km N17°E
4	0480-94120	U	U	15/11/49	Deerfield, MA	42°30'N	72°30'W	6 yr. 3 mo.
	EN	0	1	08/02/56	Campbellton, NB	47°50'N	66°40'W	749 km N36°E
5	1050-05917	AHY	M	15/03/64	Rush, PA	41°40'N	76°00'W	7 mo.
	HLC	0	1	21/10/64	Island Brook, QC	45°20'N	71°20'W	555 km N41°E
6	1600-68367	AHY	U	15/02/82	Rocky Ridge, OH	41°30'N	83°10'W	3 mo.
	JAR	7	89	04/05/82	Innis Point, ON	45°20'N	75°50'W	730 km N52°E
7	1350-85311	U	U	16/09/76	Manomet, MA	41°50'N	70°30'W	
	MBO	0	56	??/05/78	Madsen, ON	50°50'N	93°50'W	2042 km N53°W
8	0260-90606	U	U	28/04/62	Point Pelee, ON	41°50'N	82°30'W	20 days
	PPBO	0	89	18/05/62	Long Point, ON	42°30'N	80°00'W	219 km N69°E
9	1660-93329	U	U	03/08/85	St. Albert, AB	53°30'N	113°30'W	7 yr. 11 mo.
	ETJ	5	30	22/07/93	Fort Saskatchewan, AB	53°40'N	113°10'W	29 km N50°E

Summary of banding statistics: Black-capped Chickadee

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*61 193*
No. encountered per 1000 banded (1955-1995)			*6*
Total no. encountered (1921-1995)	51	612	836
No. encountered from foreign bandings	0	4	9
Maximum period from banding to encounter (mo.)	72	93	95
No. of Canadian-banded birds moving > 0 km	16	25	70
Mean movement > 0 km of Canadian-banded birds (km)	94	64	64
Maximum movement from all encounters (km)	501	730	2041
% recovered (encountered dead)	43	17	21
% direct recoveries	31	22	25
% encountered during banding operations	50	79	76

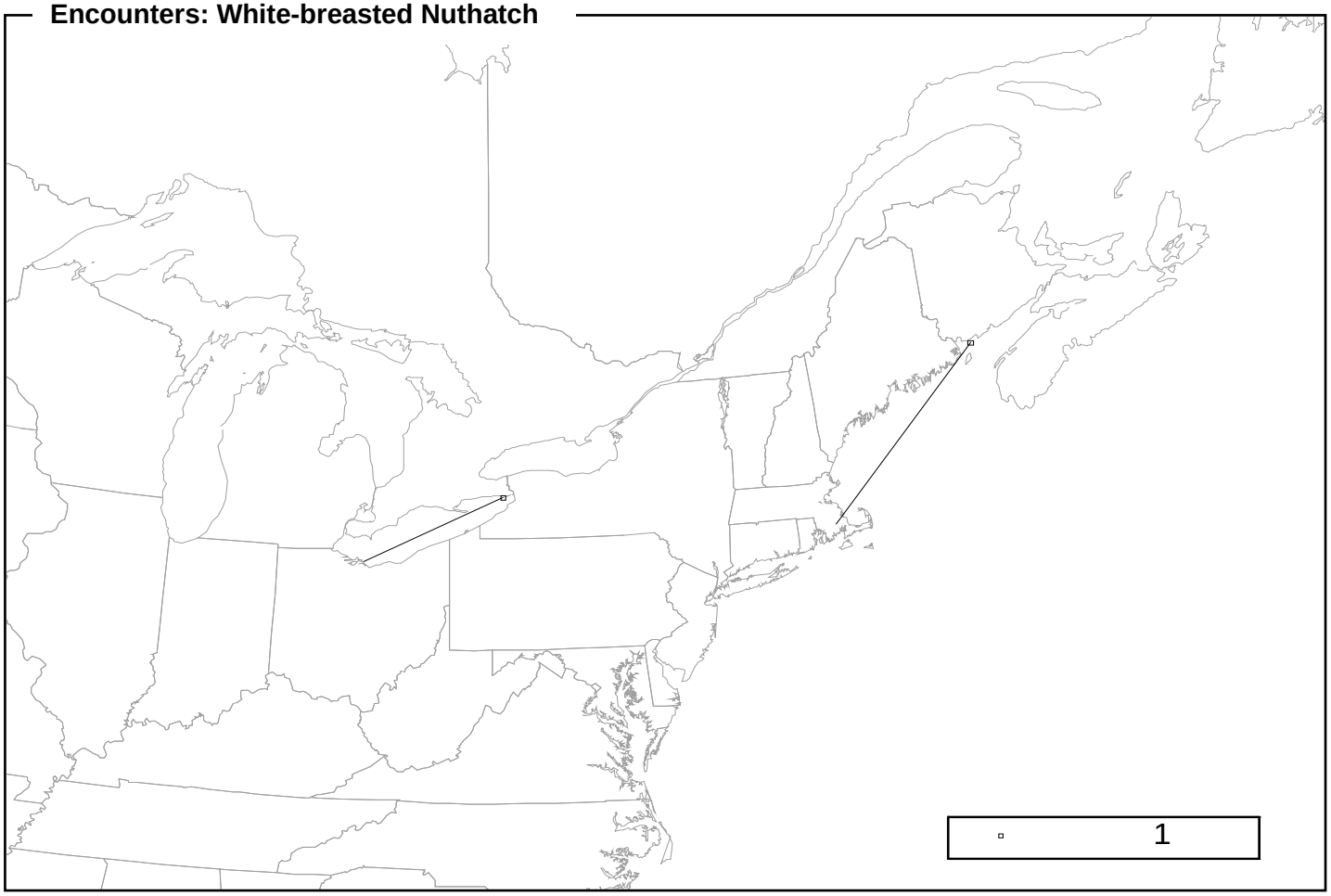
Banding effort: Black-capped Chickadee



Top banders: IPBO, LPBO, ETJ, UA, EP

White-breasted Nuthatch (*Sitta carolinensis*) 727.0

Encounters: White-breasted Nuthatch



The White-breasted Nuthatch breeds throughout much of the U.S. In Canada it breeds in southeastern British Columbia through southwestern Alberta, southeastern Saskatchewan, and southern Manitoba to northwestern Ontario; it also breeds from southern Ontario east to Cape Breton Island. In winter, it withdraws from the northern extremities of the breeding range and from higher altitudes.

Most of the encounters confirm that this species is resident through much of its Canadian range (e.g., record 1). Data from Long Point Bird Observatory suggest occasional irruptive movements in fall (far less frequent than in Red-breasted Nuthatches) and return movements in the following spring (Miller and Dunn 1977; see also Pradosudov and Grubb 1993). The only two encounters showing any significant movement are listed below (records 2 and 3).

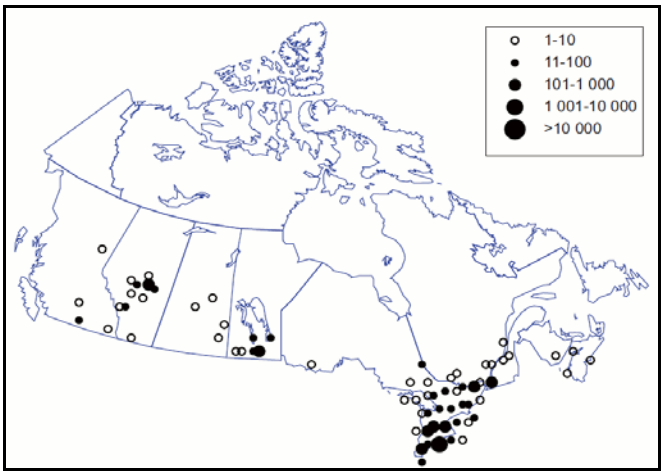
Encounter records: White-breasted Nuthatch

1	0281-70428	U	M	29/03/64	Bracebridge, ON	45°00'N 79°10'W	4 yr. 2 mo.
	BBW	5	0	28/05/68	Falkenburg, ON	45°00'N 79°20'W	13 km N90°W
2	0020-23071	U	U	22/02/26	Bridgewater, MA	41°50'N 70°50'W	2 mo.
	AGM	0	12	23/04/26	Blacks Harbour, NB	45°00'N 66°40'W	487 km N42°E
3	1400-31005	AHY	U	26/01/55	East Harbor State Park, OH	41°30'N 82°40'W	2 mo.
	AS	0	0	27/03/55	near Port Colborne, ON	42°50'N 79°10'W	325 km N62°E

Summary of banding statistics: White-breasted Nuthatch

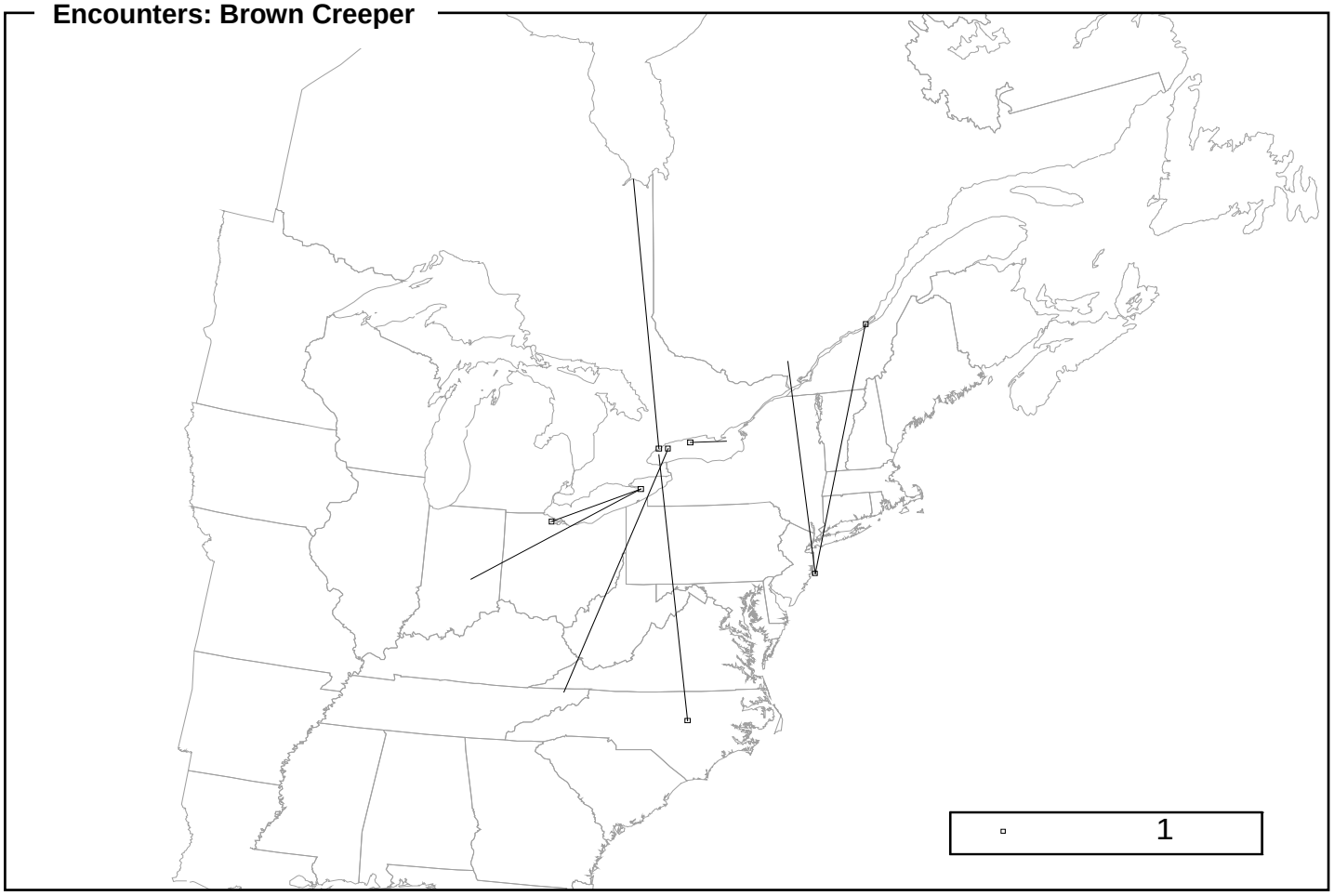
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3627*
No. encountered per 1000 banded (1955-1995)			*5*
Total no. encountered (1921-1995)	1	36	50
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	2	43	50
No. of Canadian-banded birds moving > 0 km	1	1	3
Mean movement > 0 km of Canadian-banded birds (km)	18	18	16
Maximum movement from all encounters (km)	18	324	487
% recovered (encountered dead)	0	22	24
% direct recoveries	100	44	52
% encountered during banding operations	100	72	70

Banding effort: White-breasted Nuthatch



Top banders: LPBO, IPBO, JBMi, LTS, MJW

Brown Creeper (*Certhia americana*) 726.0



The Brown Creeper breeds in the western U.S. and Appalachian Mountains; in Canada it breeds from coastal and southern British Columbia through the southern and central provinces to Newfoundland (except for the Prairie grasslands). It winters mainly within its breeding range in western British Columbia and the U.S. Southwest, probably withdrawing somewhat from higher latitudes; more eastern Canadian breeders migrate to winter throughout the U.S.

Record 1 is of a bird shot on the wintering ground. Almost all other birds were banded or encountered during migration, but the bird in record 2 was banded as a young bird in the breeding range. Records 1 and 2 together neatly connect the breeding and wintering areas via migration through southern Ontario. Record 3 is of a bird banded in fall at Long Point, Ontario, and encountered 12 days later and 57 km south at Erie, Pennsylvania. This suggests a direct crossing of Lake Erie (not shown on map). It is less clear whether a second Long Point bird (record 4) might also have made a lake crossing (as opposed to following coastlines). It was a spring migrant that should have been heading north, but it was found two days after banding near the southeastern corner of Lake Erie.

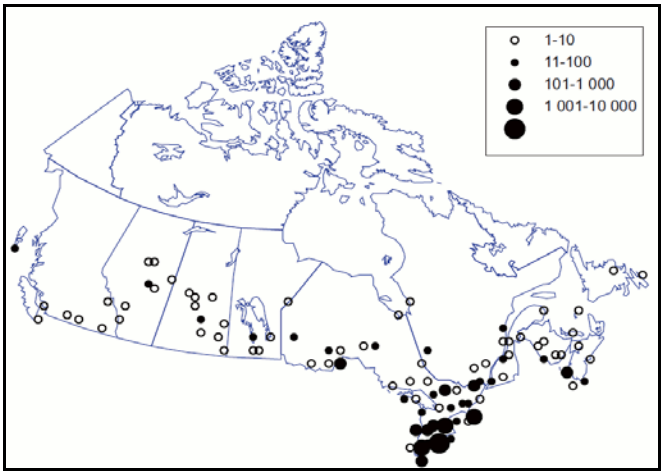
Encounter records: Brown Creeper

1	1080-73636	AHY	U	31/10/67	near Thorold, ON	43°30'N 79°20'W	4 mo.
	RED	5	1	23/02/68	Auburn, NC	35°40'N 78°30'W	875 km S5°E
2	1700-07761	HY	U	01/08/84	27 km northeast of Moosonee, ON	51°20'N 80°20'W	1 yr. 2 mo.
	CCR	5	0	17/10/85	Toronto, ON	43°40'N 79°20'W	857 km S5°E
3	1080-65009	HY	U	07/10/67	Long Point, ON	42°30'N 80°10'W	12 dy.
	LPBO	5	12	19/10/67	Erie, PA	42°00'N 80°00'W	57 km S14°E
4	1910-70278	AHY	U	17/04/93	Long Point, ON	42°30'N 80°00'W	2 dy.
	LPBO	5	0	19/04/93	Irving, NY	42°30'N 79°00'W	82 km N90°E
5	1310-81227	AHY	U	27/03/73	near Gray, TN	36°30'N 82°30'W	1 yr. 1 mo.
	TJB	5	9	12/04/74	Bay Ridges, ON	43°40'N 79°00'W	851 km N19°E
6	1560-07938	HY	F	17/10/81	Toronto, ON	43°30'N 79°20'W	1 yr. 9 mo.
	TBO	7	89	04/07/83	Stoney Creek, ON	43°10'N 79°40'W	46 km S36°W
7	1530-48899	U	U	02/09/87	Saint-Faustin, QC	46°00'N 74°20'W	1 mo.
	DBi	7	89	07/10/87	Island Beach, NJ	39°50'N 74°00'W	687 km S2°E
8	1480-54776	HY	U	15/10/78	Island Beach, NJ	39°50'N 74°00'W	1 yr.
	HBS	5	13	06/10/79	Charlesbourg, QC	46°50'N 71°10'W	812 km N15°E

Summary of banding statistics: Brown Creeper

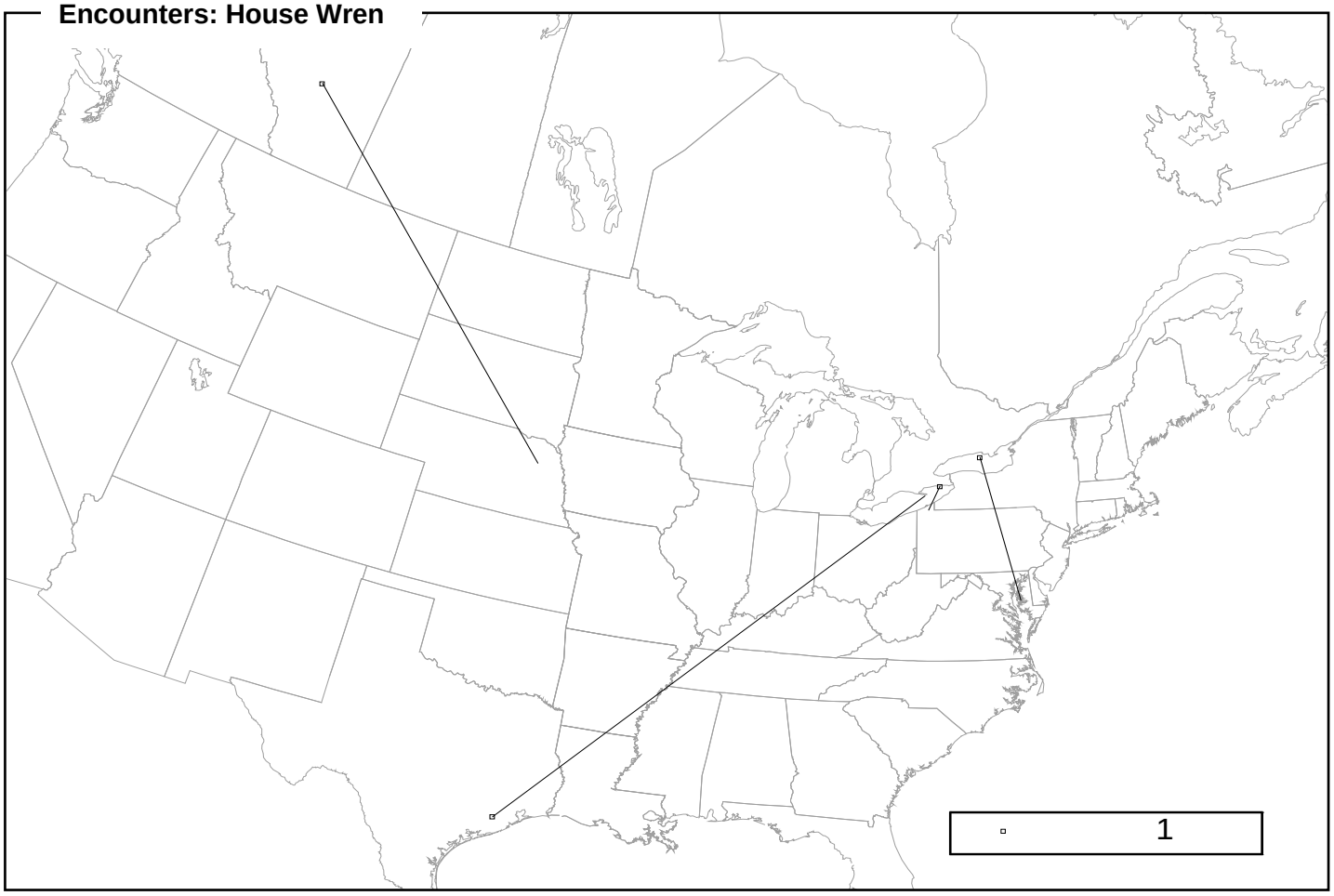
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*25 632*
No. encountered per 1000 banded (1955-1995)			*0.4*
Total no. encountered (1921-1995)	6	5	13
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	21	13	21
No. of Canadian-banded birds moving > 0 km	5	3	10
Mean movement > 0 km of Canadian-banded birds (km)	270	328	306
Maximum movement from all encounters (km)	856	874	874
% recovered (encountered dead)	66	80	61
% direct recoveries	16	60	38
% encountered during banding operations	33	20	38

Banding effort: Brown Creeper



Top banders: LPBO, PEPO, MJW, TBO, RLW

House Wren (*Troglodytes aedon*) 721.0



The House Wren breeds across southern Canada from British Columbia to New Brunswick, mainly south of the boreal forest zone but also deep into northern Alberta; it also breeds in the northern two-thirds of the U.S. House Wrens winter from the southern U.S. north to Maryland in the east and south to central Mexico.

The vast majority of encountered birds were recaptured at or near the site of banding (e.g., records 1 and 2), probably during nest-box studies. Four encounters were of birds that had moved over 100 km (records 3-6).

An analysis of all banding records to 1978 (Taylor et al. 1983) indicated a fairly broad front, north-south migration in this species, although individuals from one northern state may winter in widely separated southern states. Males may winter farther north than females. Eastern seaboard wrens apparently stay east of the Appalachian Mountains. There were also a few east-west encounters, however, which cut across the general north-south pattern (see records 3 and 5).

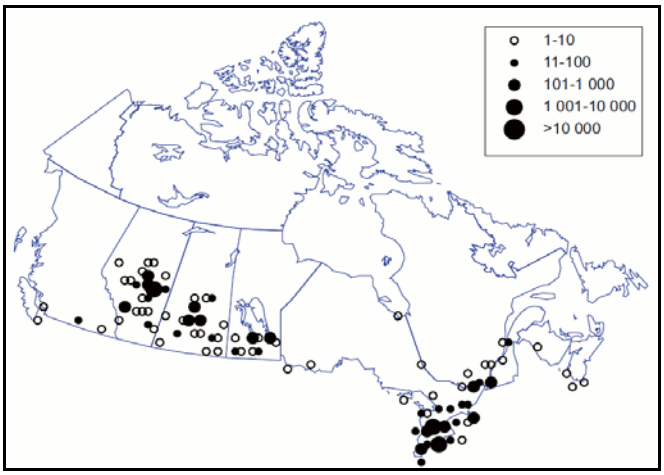
Encounter records: House Wren

1	0220-08906	AHY	M	30/07/54	King City, ON	43°50'N 79°30'W	5 yr. 0 mo.
	LLS	0	99	25/07/59	King City, ON	43°50'N 79°30'W	0 km
2	0500-19786	L	M	24/06/51	Hampstead, QC	45°30'N 73°30'W	1 yr. 11 mo.
	MB	0	87	09/05/53	Hudson Heights, QC	45°20'N 74°10'W	55 km S71°W
3	1020-00642	U	U	12/05/62	Long Point, ON	42°30'N 80°00'W	
	LPBO	0	0	??/02/63	Needville, TX	29°20'N 95°50'W	2029 km S49°E
4	1370-56385	AHY	U	24/05/75	Erie, PA	42°00'N 80°00'W	1 mo.
	RCL	5	12	18/06/75	Dunnville Marsh, ON	42°50'N 79°30'W	101 km N24°E
5	1720-61138	AHY	U	08/05/85	Hadar, NE	42°00'N 97°20'W	2 mo.
	AJD	4	0	23/07/85	Pine Lake, AB	52°00'N 113°30'W	1650 km N42°W
6	1590-93408	HY	U	22/09/84	St. Michael's, MD	38°40'N 76°10'W	8 mo.
	HTA	7	89	15/05/85	18 km south of Hilton, ON	43°50'N 77°40'W	589 km N12°W

Summary of banding statistics: House Wren

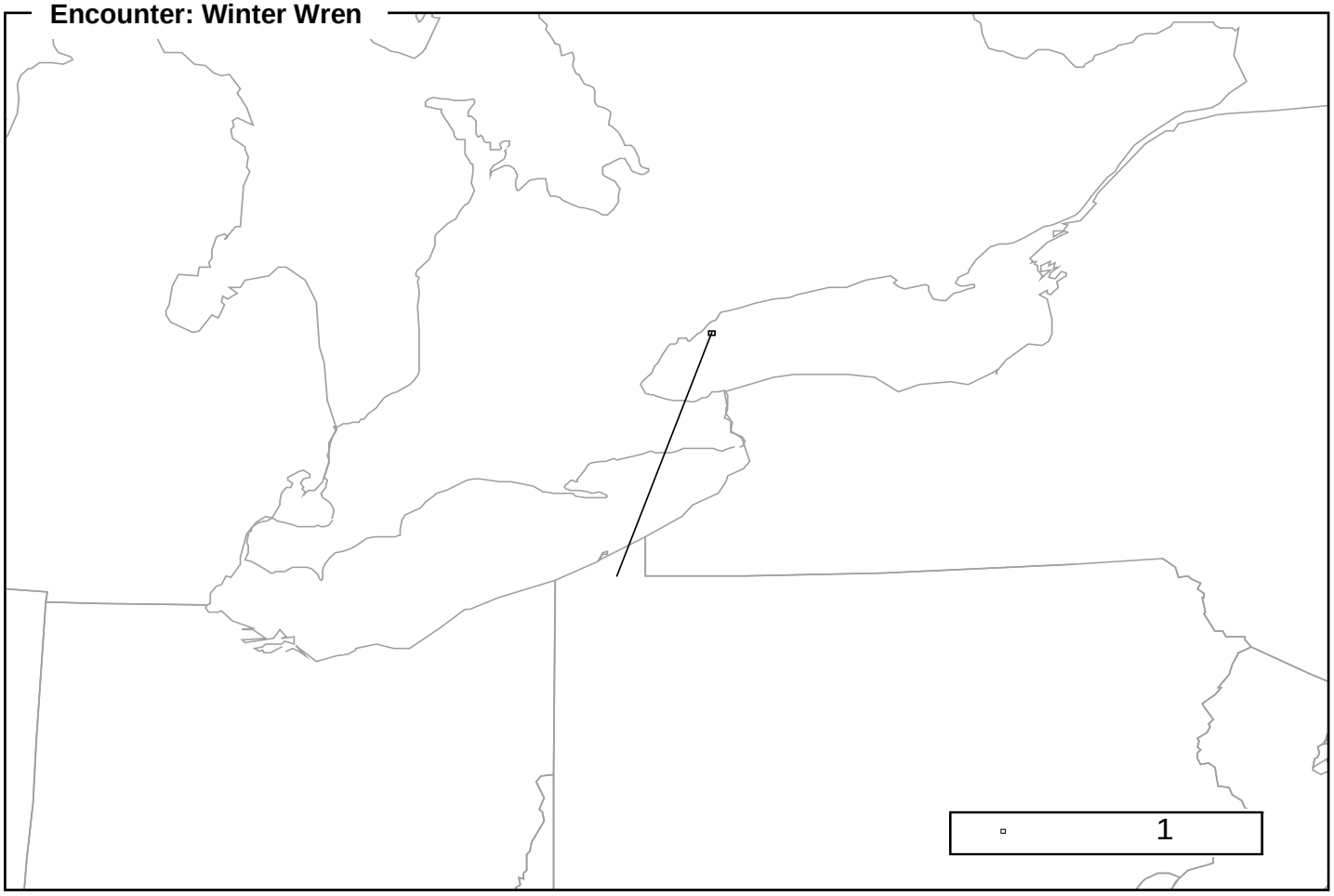
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*13 365*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	35	102	152
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	35	60	60
No. of Canadian-banded birds moving > 0 km	3	1	5
Mean movement > 0 km of Canadian-banded birds (km)	32	18	428
Maximum movement from all encounters (km)	588	1650	2028
% recovered (encountered dead)	57	11	23
% direct recoveries	51	9	20
% encountered during banding operations	34	85	72

Banding effort: House Wren



Top banders: LPBO, BBO, DRL, ETJ, AWD

Winter Wren (*Troglodytes troglodytes*) 722.0



The Winter Wren breeds from coastal British Columbia east to southern Labrador and Newfoundland, south to Wisconsin and New England, and farther south in mountains; it also breeds in the U.S. Pacific states. Pacific coast birds are resident in winter, but other populations retreat to the eastern U.S. and, in the west, to a narrow area along the U.S.-Mexican border.

The only distant encounter (record 1) was of a bird encountered in successive fall migrations. Neither encounter is close to the North American longevity record of just over four years (Klimkiewicz et al. 1983).

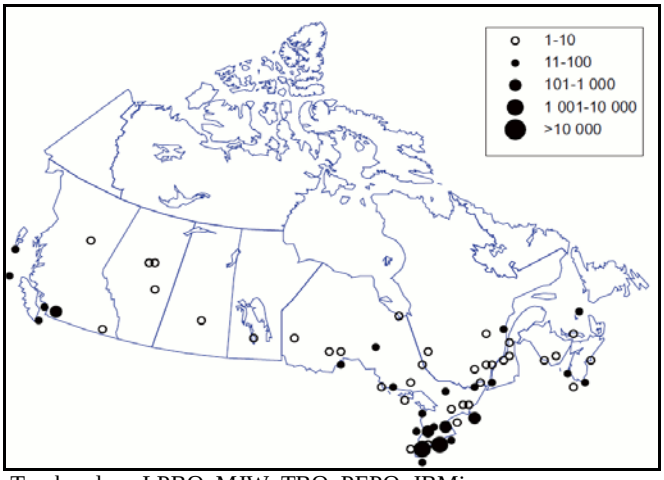
Encounter records: Winter Wren

1	1280-54692	AHY	U	28/09/72	Erie, PA	42°00'N 80°00'W	1 yr. 1 mo.
	RCL	5	12	12/10/73	Agincourt, ON	43°40'N 79°10'W	198 km N20°E
2	0040-56437	AHY	U	10/01/33	Duncan, BC	48°40'N 123°40'W	1 yr. 1 mo.
	GH	0	21	26/02/34	Duncan, BC	48°40'N 123°40'W	0 km

Summary of banding statistics: Winter Wren

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5787*
No. encountered per 1000 banded (1955-1995)			*0*
Total no. encountered (1921-1995)	0	2	2
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	-	13	13
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	-	197	197
% recovered (encountered dead)	-	100	100
% direct recoveries	-	0	0
% encountered during banding operations	-	0	0

Banding effort: Winter Wren



Top banders: LPBO, MJW, TBO, PEPO, JBMi

Marsh Wren (*Cistothorus palustris*) 725.0

The Marsh Wren breeds all across the continent, from southern Canada south to the mid-U.S., with more southerly outposts. The wintering range includes the southern U.S. and northern Mexico.

The sole Canadian encounter record is an interesting one, involving a male banded in the breeding season in Saskatchewan. It was probably on its wintering area when it died, although the encounter date is in July. The code for "how obtained" indicates the bird was "caught by or due to hawks, owls or other raptors (including found in pellets)," so perhaps the remains were found well after the actual death.

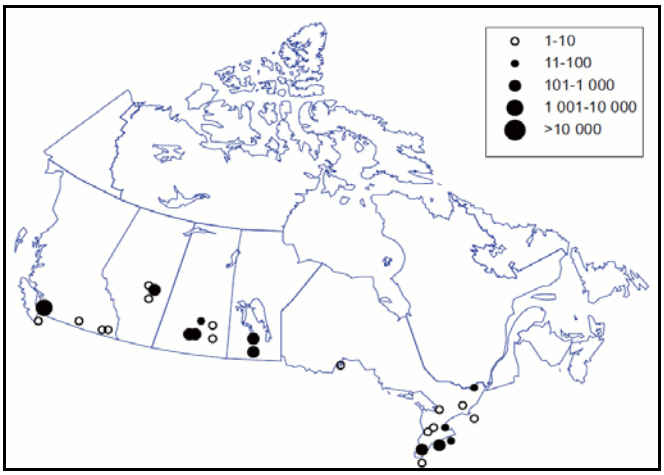
Encounter record: Marsh Wren

1	1580-63266	AHY	M	22/05/91	Tugaske, SK	50°50'N 106°10'W	1 yr. 2 mo.
	DEK	5	9	10/07/92	New Orleans, LA	29°50'N 90°00'W	2697 km S36°E

Summary of banding statistics: Marsh Wren

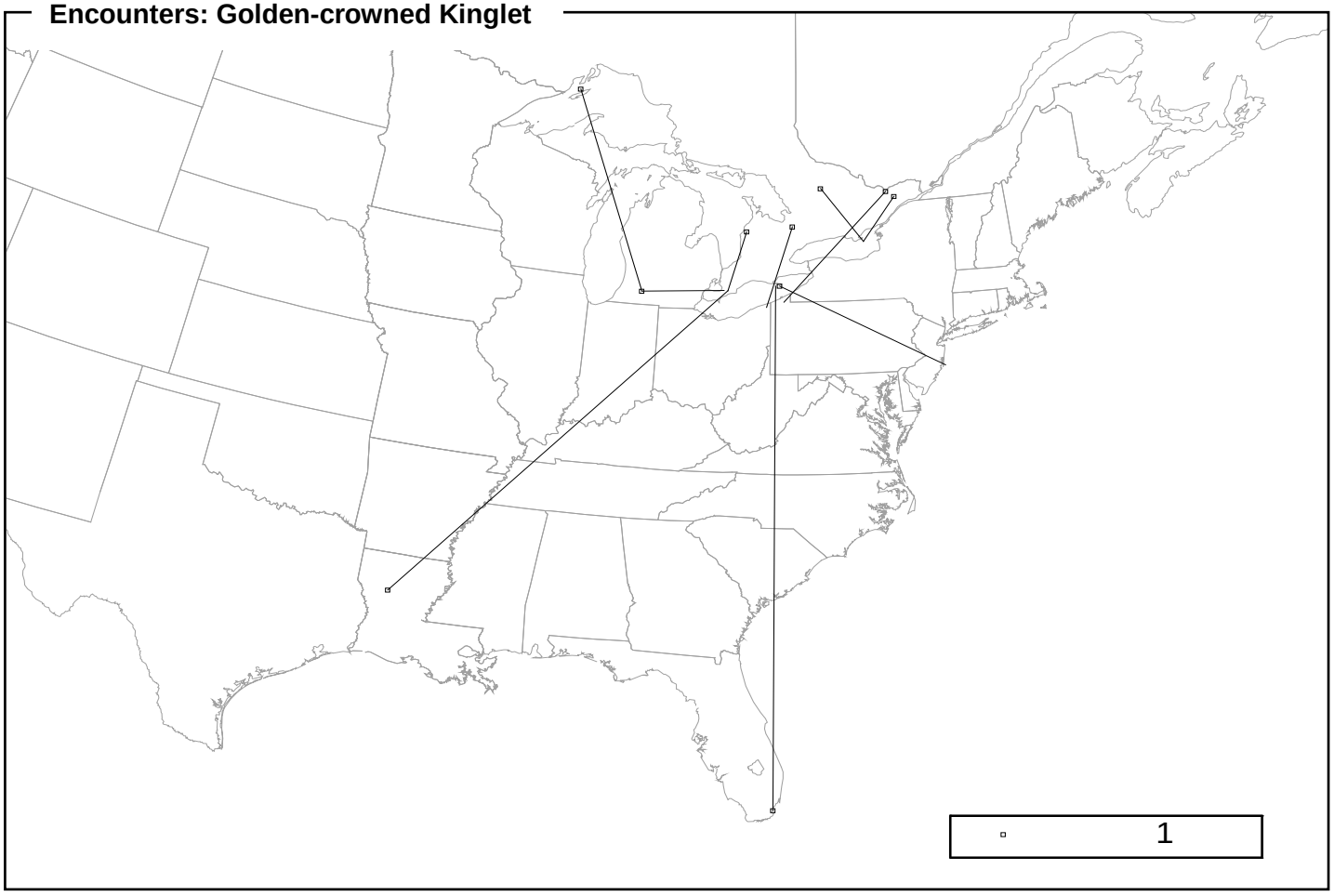
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*4415*
No. encountered per 1000 banded (1955-1995)			*0.2*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	14	14
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	2697	2697
Maximum movement from all encounters (km)	-	2697	2697
% recovered (encountered dead)	-	100	100
% direct recoveries	-	0	0
% encountered during banding operations	-	0	0

Banding effort: Marsh Wren



Top banders: RBCM, UO, MJW, ETJ, DEK

Golden-crowned Kinglet (*Regulus satrapa*) 748.0



The Golden-crowned Kinglet breeds in forested zones throughout British Columbia, in southern Yukon, western and northern Alberta, and northern Saskatchewan, and from central and eastern Manitoba east to Newfoundland; it also breeds in the western U.S. It winters from southern Canada throughout the U.S., as well as in southern Mexico and Guatemala.

All 9 birds that moved were banded or encountered on migration in Ontario (e.g., records 1-5). One was encountered in winter in the southeastern U.S. (record 1), but it is unclear how far north its breeding area might have been.

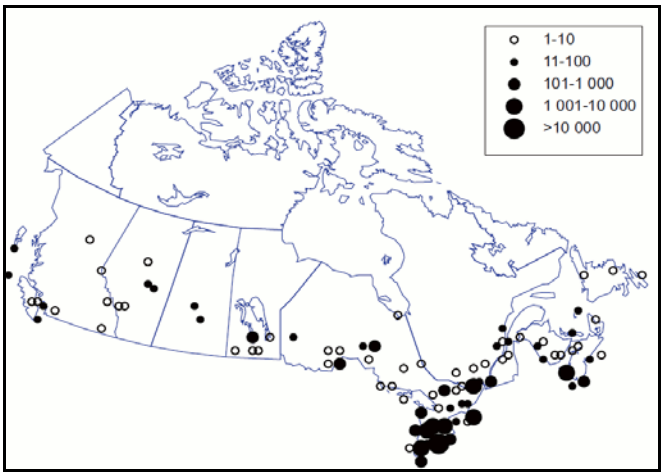
Encounter records: Golden-crowned Kinglet

1	0320-64195	U	M	20/10/62	Tilbury, ON	42°20'N 82°10'W	2 mo.
	TF	0	1	22/12/62	Campti, LA	31°50'N 93°00'W	1511 km S43°W
2	0107-32112	U	U	13/10/63	Island Beach, NJ	39°50'N 74°00'W	1 yr. 6 mo.
	DLB	7	89	23/04/65	Long Point, ON	42°30'N 80°10'W	596 km N58°W
3	1260-38563	U	M	11/10/71	Ashtabula Harbor, OH	41°50'N 80°40'W	2 yr. 6 mo.
	FLY	5	13	1974/04/99	Barrie, ON	44°20'N 79°40'W	290 km N16°E
4	1770-25597	AHY	M	08/10/88	Erie, PA	42°00'N 80°00'W	11 mo.
	RCL	7	89	30/09/89	Innis Point, ON	45°20'N 75°50'W	500 km N41°E
5	1900-51836	HY	M	02/10/91	Kalamazoo, MI	42°10'N 85°30'W	1 yr. 0 mo.
	RJA	7	89	23/10/92	Thunder Cape, ON	48°10'N 88°50'W	717 km N20°W

Summary of banding statistics: Golden-crowned Kinglet

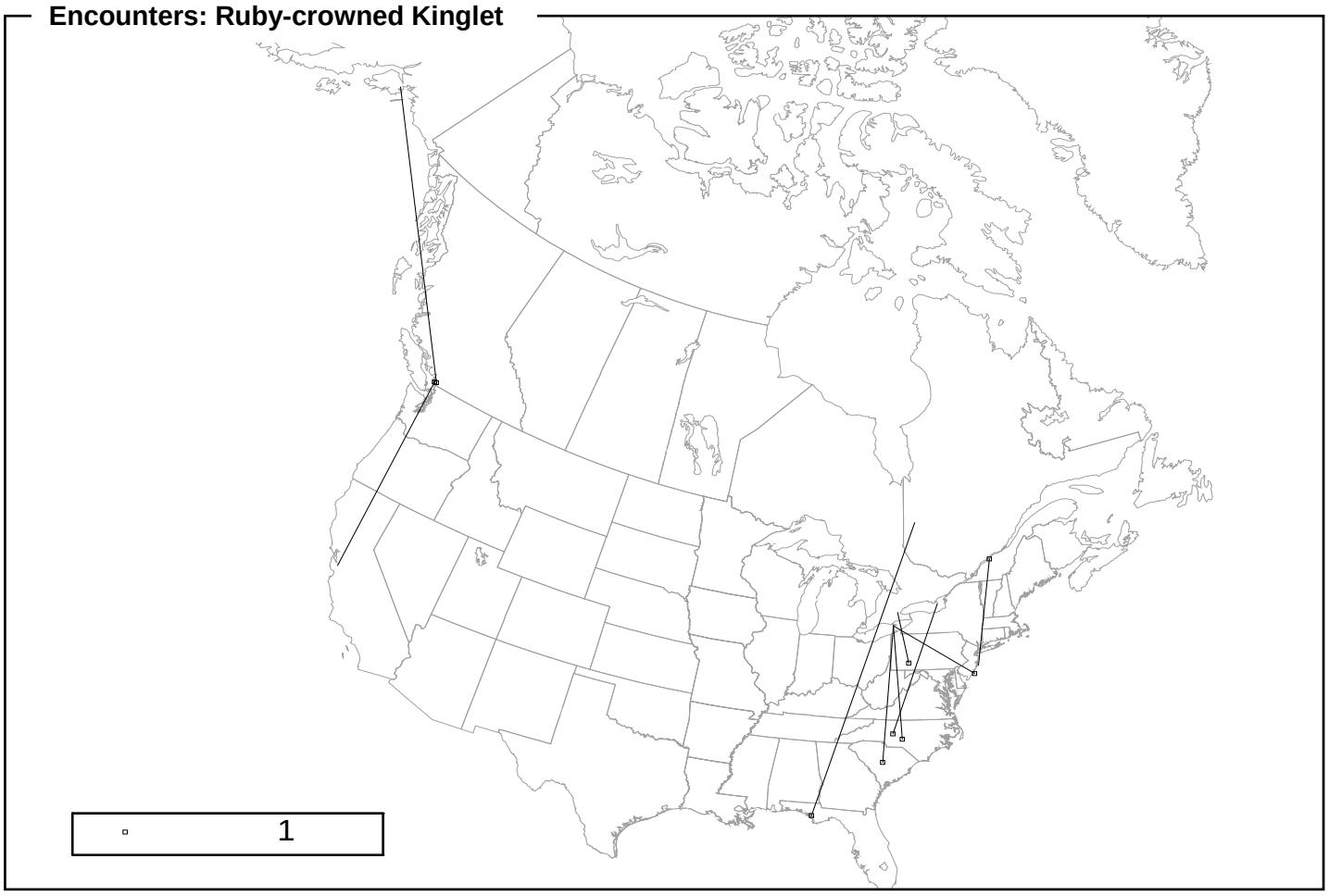
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*28 801*
No. encountered per 1000 banded (1955-1995)			*0.3*
Total no. encountered (1921-1995)	2	3	11
No. encountered from foreign bandings	1	1	4
Maximum period from banding to encounter (mo.)	12	13	30
No. of Canadian-banded birds moving > 0 km	0	1	5
Mean movement > 0 km of Canadian-banded birds (km)	0	227	335
Maximum movement from all encounters (km)	0	500	500
% recovered (encountered dead)	0	66	41
% direct recoveries	66	33	33
% encountered during banding operations	100	33	50

Banding effort: Golden-crowned Kinglet



Top banders: LPBO, MJW, RLW, PEPO, JBMi

Ruby-crowned Kinglet (*Regulus calendula*) 749.0



The Ruby-crowned Kinglet breeds virtually throughout Canada south of the treeline, except for the Prairie Provinces; it also breeds in the northeastern and western U.S. It winters mainly in the southern third of the U.S. and through Mexico to western Guatemala.

This species has one of the lowest encounter rates of any bird. This may be partly due to its extremely thin legs, which may allow even the smallest size of band to slip off. (The smallest band size was made even smaller in 1993, in part to address this problem in banding kinglets and gnatcatchers). Of the 10 records (all listed below), 9 involved significant movements. Winter encounters, including both sexes, occurred in North Carolina (records 1 and 2), South Carolina (record 3), Florida (record 4), and California (record 5). This pattern suggests that Canadian birds may not go as far south as Central America, although even lower encounter rates there might obscure such movements. A few long-distance encounters involved birds that were probably on their breeding grounds (record 6 in Alaska and record 7 in Quebec), while two others were both banded and encountered on migration (records 8 and 9). One of these birds moved an average of 60 km per day over six days (record 9).

Record 10 shows an unusual case of a bird retrapped on spring migration at the site where it was banded two autumns earlier.

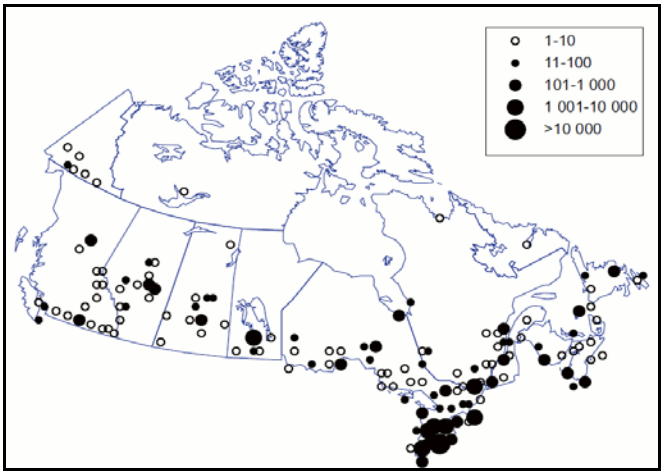
Encounter records: Ruby-crowned Kinglet

1	1720-45262	AHY	F	06/05/85	Long Point, ON	42°30'N	80°20'W	8 mo.
	LPBO	5	14	04/01/86	Ether, NC	35°20'N	79°40'W	800 km S4°E
2	1510-12270	U	F	20/10/78	Prince Edward Point, ON	43°50'N	76°50'W	4 mo.
	PEPO	5	0	26/02/79	Yadkin, NC	35°40'N	80°20'W	957 km S19°W
3	1100-77733	AHY	M	23/10/65	Long Point, ON	42°30'N	80°20'W	4 mo.
	LPBO	5	0	03/02/66	Cayce, SC	33°50'N	81°00'W	967 km S4°W
4	1350-27286	AHY	M	16/07/76	northwest of Guyenne, QC	48°50'N	78°30'W	6 mo.
	MJT	5	13	22/01/77	Bayou George, FL	30°10'N	85°30'W	2161 km S18°W
5	1560-89936	U	M	05/12/83	San José, CA	37°20'N	121°50'W	1 yr. 4 mo.
	LRM	5	12	24/04/85	Vancouver, BC	49°10'N	123°00'W	1321 km N4°W
6	1960-12668	HY	F	12/08/93	18 km south of Portage, AK	60°40'N	148°50'W	1 mo.
	JCD	3	13	24/09/93	Port Moody, BC	49°10'N	122°50'W	2076 km S64°E
7	1110-41224	HY	M	21/10/68	Island Beach, NJ	39°50'N	74°00'W	1 yr. 10 mo.
	TS	5	0	1970/08/FT	Cap-de-la-Madeleine, QC	46°20'N	72°20'W	736 km N10°E
8	1840-65402	HY	U	09/10/89	Long Point, ON	42°30'N	80°20'W	
	LPBO	5	13	1989/FA/99	Atlantic City, NJ	39°20'N	74°20'W	615 km S57°E
9	1890-86004	HY	M	02/10/93	Mountsberg, ON	43°20'N	80°00'W	6 dy.
	ADB	7	89	08/10/93	Ligoner, PA	40°10'N	79°10'W	359 km S11°E
10	0390-01041	AHY	U	10/10/38	Windsor, ON	42°10'N	83°00'W	1 yr. 7 mo.
	ErR	0	99	09/05/40	Windsor, ON	42°10'N	83°00'W	0 km

Summary of banding statistics: Ruby-crowned Kinglet

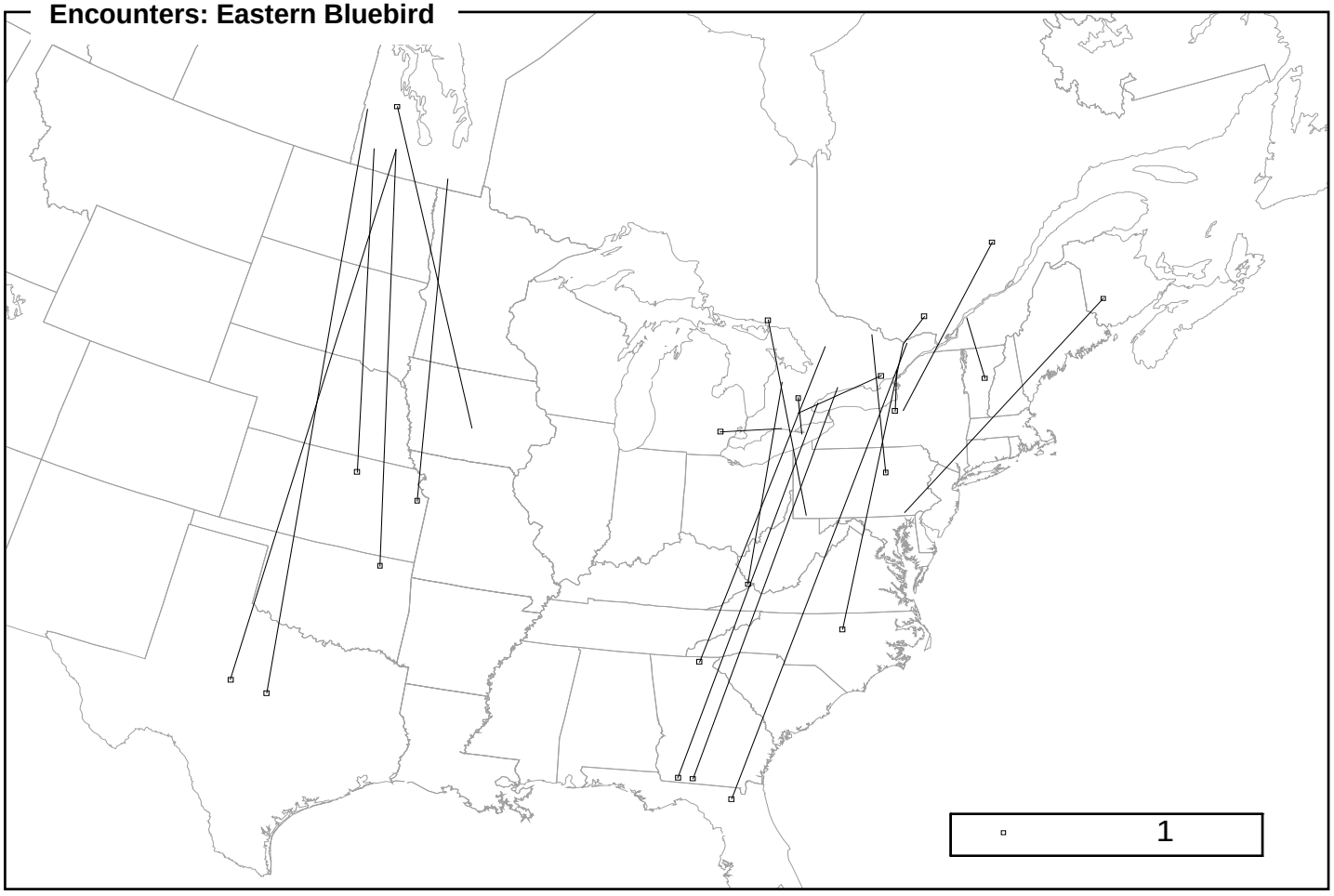
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*48 276*
No. encountered per 1000 banded (1955-1995)			*0.1*
Total no. encountered (1921-1995)	4	4	10
No. encountered from foreign bandings	2	0	3
Maximum period from banding to encounter (mo.)	22	19	22
No. of Canadian-banded birds moving > 0 km	2	3	6
Mean movement > 0 km of Canadian-banded birds (km)	487	1309	976
Maximum movement from all encounters (km)	2075	2160	2160
% recovered (encountered dead)	75	75	80
% direct recoveries	75	75	70
% encountered during banding operations	25	25	20

Banding effort: Ruby-crowned Kinglet



Top banders: LPBO, PEPO, MJW, TBO, IPBO

Eastern Bluebird (*Sialia sialis*) 766.0



The Eastern Bluebird breeds in southern Canada from Saskatchewan to Nova Scotia, as well as in the eastern U.S. It winters from the central regions of the eastern U.S. (occasionally north to Ontario and Quebec) south to the Gulf Coast.

Twenty-one (32%) of the encounters occurred during the same summer that banding took place. Only 7 of these showed any movement, which was very slight, and 11 more were returns to the original nest site.

There were only eight encounters in mid-winter (December-February); other birds encountered in the U.S. might have been on migration. Four birds banded as nestlings in Manitoba wintered in Texas (records 1and 2) and Kansas (record 3 and one other not listed). Four winter encounters of Ontario birds occurred in Kentucky, North Carolina, and Georgia (e.g., record 4 and presumably record 5, for which the encounter date was missing). Encounters of Ontario birds in Georgia and Florida in March also indicate a southern U.S. wintering distribution for these birds (records 6 and 7). The encounters lend some support to Pinkowski's (1971) suggestion that northern breeding populations have a leapfrog migration, wintering to the south of the more southerly breeding populations.

The map shows the very consistent bearings of the long-distance winter encounters. Some of the shorter, more east-west movements in the Great Lakes area may result from birds taking different routes around the Great Lakes in different years.

Several birds have been encountered in the breeding season at a considerable distance north of their birthplace (records 8-11), including the sole encounter from the Maritimes (record 8).

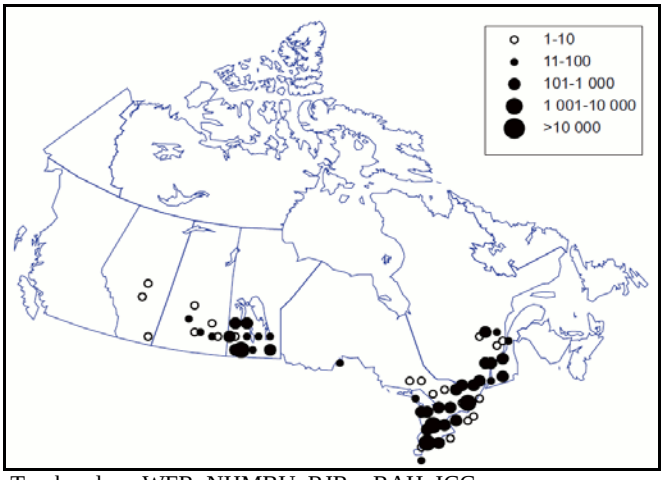
Encounter records: Eastern Bluebird

1	0780-57264	L	U	25/06/70	Ingelow, MB	49°50'N	99°30'W	7 mo.
	NHMBU	5	0	23/01/71	near Wingate, TX	32°00'N	100°00'W	1986 km S1°W
2	8011-26321	L	U	15/07/90	Shellmouth, MB	50°50'N	101°20'W	5 mo.
	JCF	5	0	27/12/90	Sidney, TX	31°50'N	98°40'W	2126 km S7°E
3	0820-13392	L	U	22/07/72	near Souris, MB	49°40'N	100°30'W	1 yr. 6 mo.
	NHMBU	5	0	14/01/74	Concordia, KS	39°30'N	97°30'W	1156 km S13°E
4	1041-84423	L	U	11/06/69	Caesaria, ON	44°00'N	78°40'W	7 mo.
	DB	5	0	1970/01/99	near Thomasville, GA	30°50'N	83°50'W	1534 km S19°W
5	0491-58418	J	U	26/05/50	Port Credit, ON	43°30'N	79°30'W	
	HMcD	0	98	1951/12/??	near Whigham, GA	30°50'N	84°20'W	1473 km S18°W
6	0381-09256	AHY	F	24/05/38	Novar, ON	45°20'N	79°10'W	10 mo.
	WVC	0	0	1939/03/99	Blairsville, GA	34°50'N	83°50'W	1234 km S20°W
7	0031-12462	J	U	24/06/36	Ottawa, ON	45°20'N	75°40'W	9 mo.
	TSH	0	1	03/03/37	Lake City, FL	30°10'N	82°30'W	1791 km S22°W
8	1411-29758	L	M	12/06/89	Buck, PA	39°50'N	76°10'W	1 yr. 1 mo.
	JG	7	33	22/07/90	11 km east of Millville, NB	46°00'N	67°00'W	1014 km N44°E
9	1221-48553	L	U	21/05/79	Alleman, IA	41°40'N	93°30'W	3 yr. 3 mo.
	DDM	7	4	18/08/82	Valley River, MB	51°10'N	100°00'W	1168 km N23°W
10	1441-55486	L	U	23/07/91	Constantia, NY	43°10'N	76°00'W	11 mo.
	DEE	7	89	29/06/92	Lac-Kénogami, QC	48°20'N	71°30'W	673 km N30°E
11	1411-61759	L	U	14/05/90	Jefferson, PA	39°50'N	80°00'W	1 yr. 1 mo.
	RKB	4	0	30/06/91	McKerrow, ON	46°10'N	81°40'W	718 km N10°W

Summary of banding statistics: Eastern Bluebird

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*15 638*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	45	19	66
No. encountered from foreign bandings	4	0	4
Maximum period from banding to encounter (mo.)	39	26	39
No. of Canadian-banded birds moving > 0 km	28	6	34
Mean movement > 0 km of Canadian-banded birds (km)	582	263	525
Maximum movement from all encounters (km)	2126	1234	2126
% recovered (encountered dead)	82	36	69
% direct recoveries	57	36	53
% encountered during banding operations	11	42	19

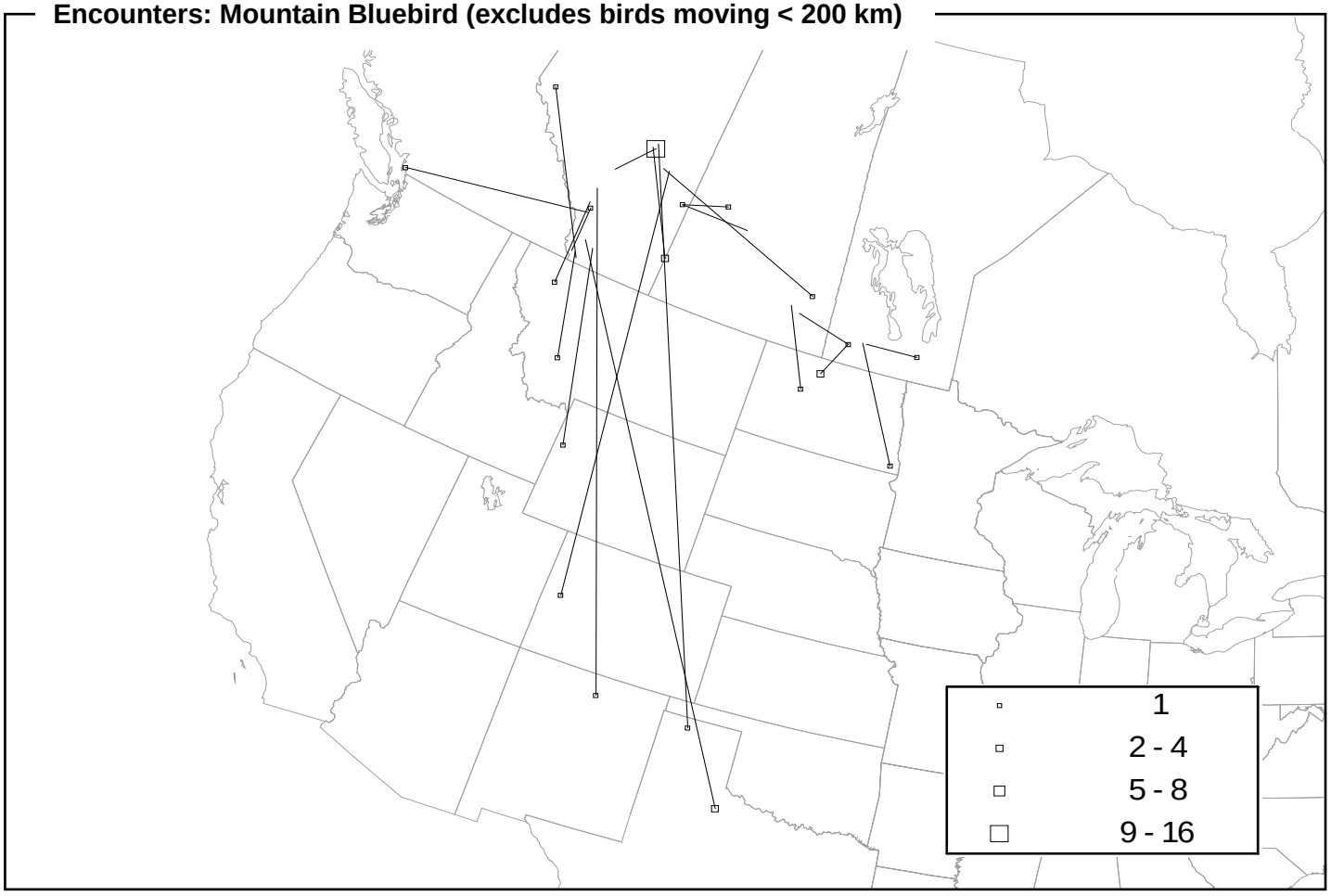
Banding effort: Eastern Bluebird



Top banders: WFR, NHMBU, RJRo, RAH, ICC

Mountain Bluebird (*Sialia currucoides*) 768.0

Encounters: Mountain Bluebird (excludes birds moving < 200 km)



The Mountain Bluebird breeds from southern Yukon, south and east to southwestern Manitoba and through the northwestern U.S. It winters from southern British Columbia (rarely) and the western U.S. to central Mexico and southern Texas.

Most banding has been done at nest boxes, and most encounters are of birds banded as nestlings. Most records show little or no movement. Thirty-eight (22%) of the encounters were of birds returning to their breeding sites in later years (e.g., records 1 and 2). Young dispersing from natal to breeding areas moved both east (e.g., record 3) and north (record 4).

Birds banded in Alberta were encountered on migration in Montana, Colorado, and Wyoming, as well as in the wintering range in New Mexico (record 5) and Texas (records 6-8). Birds banded in Manitoba and Saskatchewan were encountered in North or South Dakota both in early spring (five records) and in winter (record 9).

Fourteen (8%) of the encounters were due to cats (e.g., record 4). Although record 2 shows the longest period between banding and encounter, the after-hatch-year female caught at her nest in Alberta (record 1) was older. She was at least five years and one month old, close to the longevity record for North America of five years and 11 months (Klimkiewicz 1997).

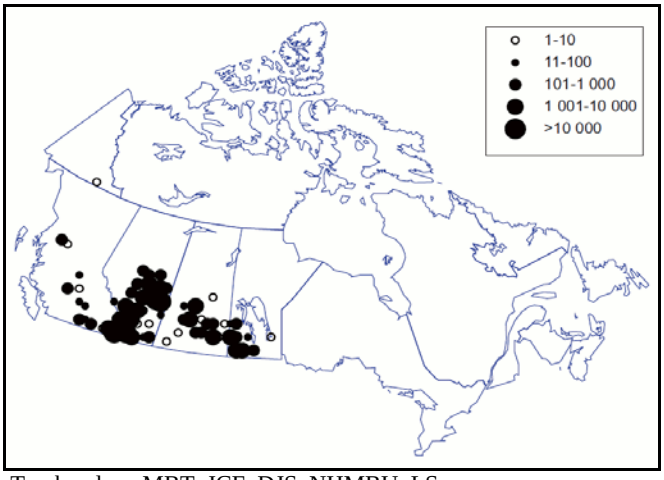
Encounter records: Mountain Bluebird

1	1271-86763	AHY	F	27/05/83	11 km east of Lacombe, AB	52°20'N	113°30'W	4 yr. 1 mo.
	JCF	1	33	08/06/87	11 km east of Lacombe, AB	52°20'N	113°30'W	0 km
2	0921-12553	L	U	14/06/83	11 km east of Lacombe, AB	52°20'N	113°30'W	4 yr.11 mo.
	JCF	3	31	18/05/88	11 km east of Lacombe, AB	52°20'N	113°30'W	0 km
3	0891-17637	L	U	15/06/82	18 km south of Bruce, AB	53°00'N	112°00'W	11 mo.
	JCF	5	0	18/05/83	Melville, SK	50°50'N	102°40'W	684 km S73°E
4	8011-41610	L	U	03/06/90	Twin Butte, AB	49°10'N	113°50'W	1 yr. 0 mo.
	AK	3	12	03/06/91	Grand Cache, AB	53°50'N	119°00'W	631 km N33°W
5	0961-61248	L	U	22/06/86	11 km west of Cremona, AB	51°30'N	114°30'W	
	DJS	5	21	1987/01/??	Carson, NM	36°20'N	105°40'W	1828 km S26°E
6	0381-08471	J	U	09/06/39	Camrose, AB	53°00'N	112°40'W	
	ALW	0	98	1939/11/??	Wingate, TX	32°00'N	100°00'W	2550 km S29°E
7	0741-83507	L	U	26/06/71	Bruderheim, AB	53°40'N	112°50'W	
	JCF	5	14	1972/FA/99	near Stratford, TX	36°10'N	102°00'W	2121 km S28°E
8	0971-59130	L	U	20/06/86	26 km west of Woodhouse, AB	49°50'N	113°50'W	7 mo.
	AK	5	0	18/01/87	Sneedville, TX	33°50'N	100°10'W	2104 km S37°E
9	0800-19382	L	U	01/07/72	18 km south of Carberry, MB	49°40'N	99°20'W	2 yr. 6 mo.
	NHMBU	7	21	01/01/75	11 km east of Bremen, ND	47°40'N	99°10'W	223 km S3°E

Summary of banding statistics: Mountain Bluebird

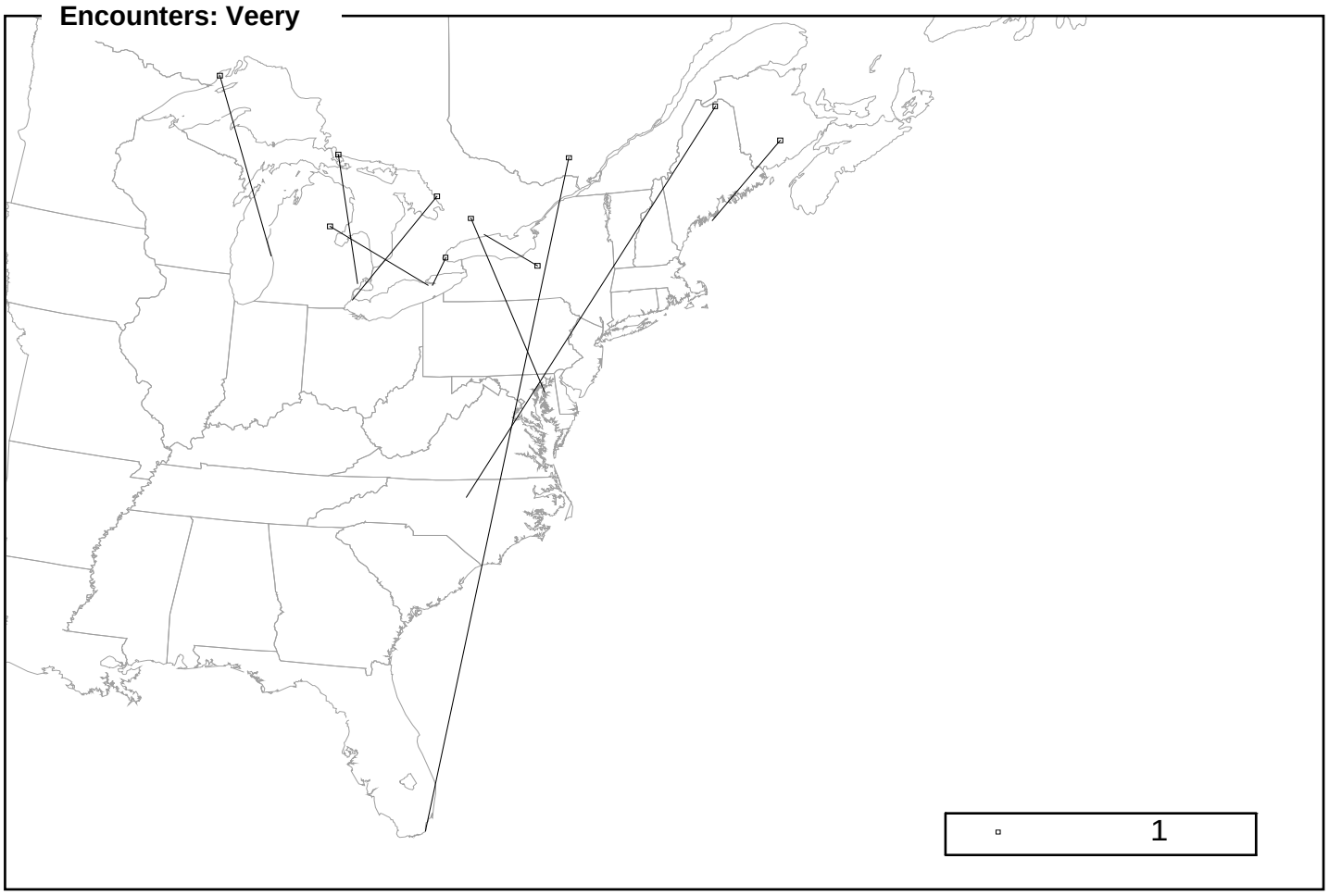
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*111 142*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	157	23	180
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	59	49	59
No. of Canadian-banded birds moving > 0 km	95	10	105
Mean movement > 0 km of Canadian-banded birds (km)	201	84	190
Maximum movement from all encounters (km)	2549	408	2549
% recovered (encountered dead)	84	69	82
% direct recoveries	34	30	34
% encountered during banding operations	3	13	4

Banding effort: Mountain Bluebird



Top banders: MBT, JCF, DJS, NHMBU, LS

Veery (*Catharus fuscescens*) 756.0



The Veery breeds throughout southern Canada south of the boreal forest zone from interior British Columbia east to Newfoundland; it also breeds in the northern U.S. (farther south in mountains). It winters in north-central South America from northern Colombia east across Venezuela to Guyana, south to Amazonian and central Brazil, and especially in northern Bolivia and southwestern Brazil (Moskoff 1995).

Four of the long-distance encounters are of birds banded on migration in the eastern U.S. and encountered on or near their breeding grounds in eastern Canada (e.g., records 1-3) . There are no records showing significant movement for western Canada (see record 4) and no winter encounters of Canadian birds.

Males appear to migrate earlier in spring than females, and adults and juveniles have a similar timing for the fall migration (Moskoff 1995).

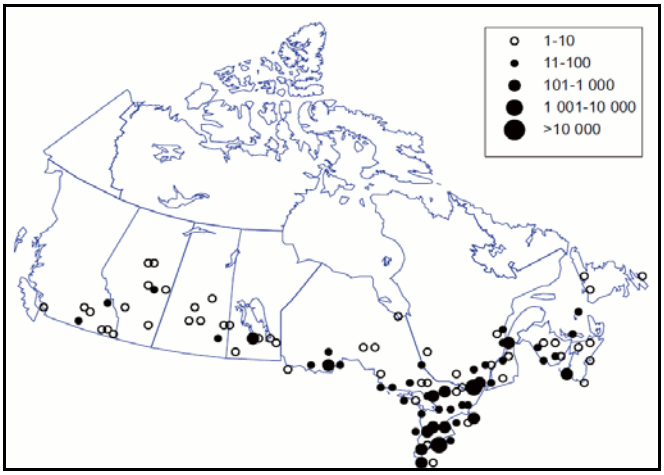
Encounter records: Veery

1	0261-07190	AHY	U	16/05/70	Muskegon State Park, MI	43°10'N 86°20'W	1 mo.
	LHW	3	13	29/06/70	Thunder Bay, ON	48°20'N 89°10'W	616 km N20°W
2	1091-41833	HY	U	04/10/70	Homestead Air Force Base, FL	25°20'N 80°20'W	8 mo.
	EJF	5	13	13/06/71	Labelle, QC	46°10'N 74°40'W	2373 km N11°E
3	1231-55647	U	U	09/09/79	Hillsboro, NC	36°00'N 79°00'W	5 yr. 8 mo.
	CHB	2	98	28/05/85	Clair, NB	47°10'N 68°30'W	1517 km N32°E
4	1091-33372	AHY	U	21/05/72	east of Delta, MB	50°10'N 98°20'W	3 yr. 2 mo.
	PW	7	89	14/07/75	Delta Beach, MB	50°10'N 98°10'W	12 km N90°E

Summary of banding statistics: Veery

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*9996*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	4	26	33
No. encountered from foreign bandings	3	3	7
Maximum period from banding to encounter (mo.)	36	38	38
No. of Canadian-banded birds moving > 0 km	0	8	9
Mean movement > 0 km of Canadian-banded birds (km)	-	85	87
Maximum movement from all encounters (km)	2373	628	2373
% recovered (encountered dead)	75	26	36
% direct recoveries	0	15	12
% encountered during banding operations	25	73	63

Banding effort: Veery

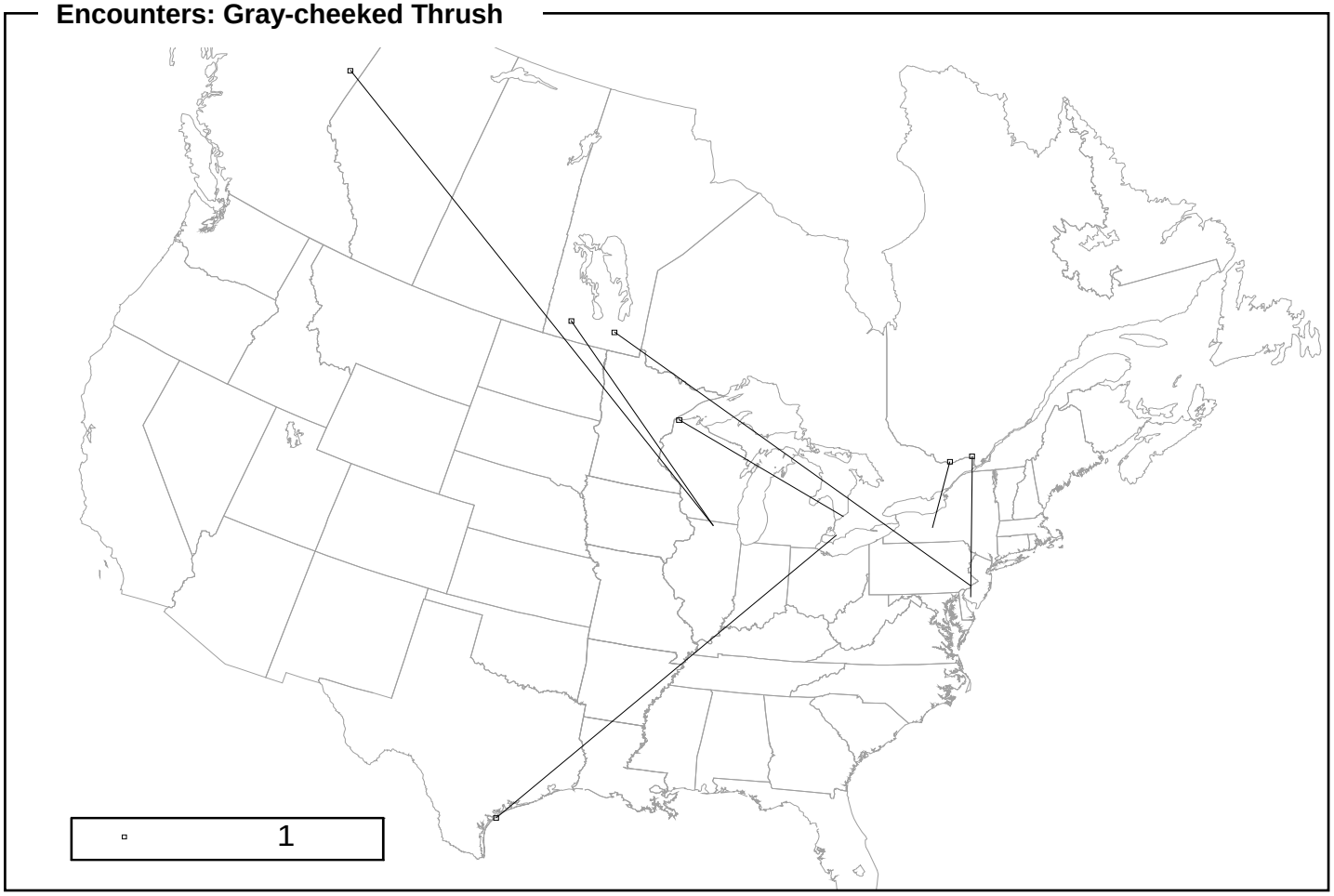


Top banders: LPBO, PEPO, TBO, IPBO, NMC

Gray-cheeked Thrush (*Catharus minimus*) 757.0 includes:

Bicknell's Thrush (*Catharus bicknelli*) 757.1

Encounters: Gray-cheeked Thrush



The Gray-cheeked Thrush breeds mainly in the taiga zone, north to the treeline and across Canada from Yukon and northwestern British Columbia east to Newfoundland; it also breeds in Alaska and Siberia. Bicknell's Thrush, only recently recognized as a distinct species (Ouellet 1993), breeds in southeastern Canada and the northeastern U.S. Both thrushes winter mainly in northern South America from Colombia, Venezuela, and Guyana south to eastern Peru and northwestern Brazil.

Seven of the eight encounters are of birds banded in fall, including five birds banded in the U.S. The birds in records 1 and 2, banded at the same location in Illinois, were encountered in May in British Columbia and Manitoba, respectively, and a Manitoba bird was banded in Pennsylvania in fall (record 3). This suggests that western breeders head east in fall before turning south toward the wintering grounds. Eastern breeders appear to have a more northeast-southwest axis of migration (records 4 and 5). The encounter date of record 6 suggests the bird could not have been migrating, indicating that it was nesting in the range of Bicknell's Thrush.

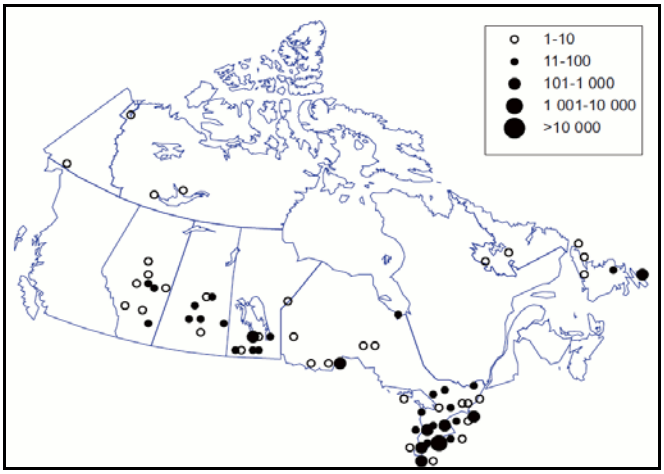
Encounter records: Gray-cheeked Thrush

1	0840-01578	AHY	U	29/09/73	Harrison, IL	42°20'N 89°10'W	
	CAE	5	12	1978/05/??	Fort St. John, BC	56°10'N 120°50'W	2731 km N45°W
2	1221-35588	AHY	U	18/09/82	Harrison, IL	42°20'N 89°10'W	8 mo.
	LGJ	5	0	15/05/83	Brandon, MB	49°50'N 99°50'W	1171 km N41°W
3	1070-35357	HY	U	03/10/68	Ambler, PA	40°00'N 75°10'W	1 yr. 7 mo.
	JMC	3	12	24/05/70	near St. Vital, MB	49°50'N 97°00'W	2028 km N50°W
4	1091-54155	HY	U	24/09/70	Bellona, NY	42°40'N 77°00'W	3 yr. 8 mo.
	MJL	5	13	22/05/74	Gauvreau Lake, QC	45°30'N 75°50'W	329 km N16°E
5	1231-00160	U	U	26/09/78	Mitchell Bay, ON	42°20'N 82°20'W	3 yr. 7 mo.
	MJW	5	0	27/04/82	Aransas Pass, TX	27°50'N 97°00'W	2089 km S44°W
6	0271-77177	HY	U	02/09/63	Cohansey, NJ	39°30'N 75°10'W	9 mo.
	ROB	0	13	25/06/64	Harrington, QC	45°40'N 74°30'W	689 km N04°E

Summary of banding statistics: Gray-cheeked Thrush

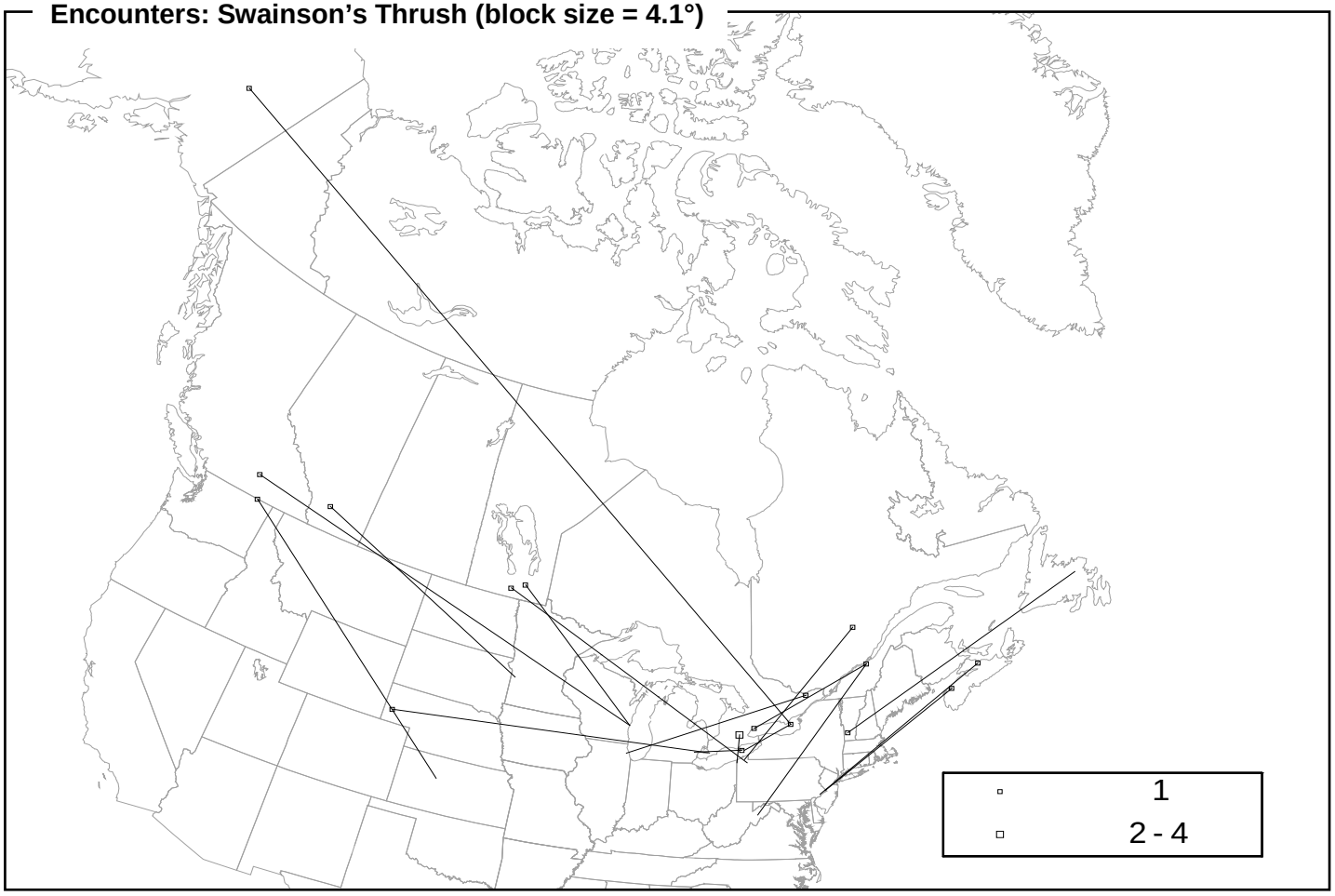
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*8090*
No. encountered per 1000 banded (1955-1995)			*0.4*
Total no. encountered (1921-1995)	3	3	8
No. encountered from foreign bandings	3	2	5
Maximum period from banding to encounter (mo.)	44	13	44
No. of Canadian-banded birds moving > 0 km	0	1	3
Mean movement > 0 km of Canadian-banded birds (km)	-	12	993
Maximum movement from all encounters (km)	2028	2731	2731
% recovered (encountered dead)	100	66	87
% direct recoveries	0	0	0
% encountered during banding operations	0	33	12

Banding effort: Gray-cheeked Thrush



Top banders: LPBO, PEPO, MJW, DDD, JOLR

Swainson's Thrush (*Catharus ustulatus*) 758.0



Swainson's Thrush breeds from Alaska east across forested Canada to Newfoundland, as well as in the eastern U.S. and much of the western U.S. It winters from northern Mexico south through Central America and north-central South America (east to Guyana and western Brazil, and south to Peru, Bolivia, northwestern Argentina, and Paraguay).

Of the 21 birds with significant movement, two (records 1 and 2) were encountered in interior British Columbia shortly after the breeding season. The banding locations were in Wisconsin and Kansas. These birds presumably belonged to the race *C. u. almae*, which nests in the area of encounter, or possibly *C. u. incanus*, which occupies an area farther north. By comparison, the bird in record 3, banded at the same location in Wisconsin as the bird in record 1 and also on fall migration, was encountered during the breeding season in Manitoba in the breeding range of *C. u. swainsoni*. Similar migration directions are shown in records 4 and 5. By contrast, the bird in record 6 was banded on fall migration in Pennsylvania (like that in record 4) but was encountered in Nova Scotia. The birds in records 7 and 8 were banded in fall in Ontario but encountered later in other years in Nebraska and Alaska, respectively, considerably west of the banding locations of the two birds encountered in British Columbia (records 1 and 2). These encounters suggest that all northern-breeding populations move toward the eastern portion of the continent before heading south toward Central America.

The adult in record 9, which was banded and encountered on spring migration, moved at least 81 km per day over 12 days. The bird captured by a cat in Alaska in late September (record 8) was surprisingly late in starting migration.

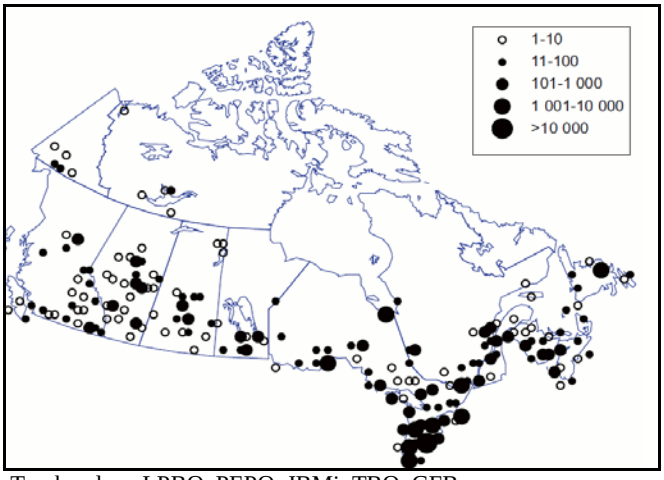
Encounter records: Swainson's Thrush

1	0311-17693	U	U	11/09/61	Adell, WI	43°30'N	87°50'W	1 yr. 11 mo.
	JTE	0	12	04/08/63	near Vernon, BC	50°10'N	119°10'W	2478 km N62°W
2	1141-44095	AHY	U	24/05/73	Ellis, KS	38°50'N	99°30'W	3 mo.
	RJW	5	12	21/08/73	near Red Mountain, BC	49°00'N	118°20'W	1879 km N47°W
3	0251-67197	U	U	14/09/57	Adell, WI	43°30'N	87°50'W	1 yr. 8 mo.
	HCM	0	0	21/05/59	near St. Vital, MB	49°50'N	97°00'W	992 km N42°W
4	0331-16503	U	U	21/09/63	Arbuckle, PA	41°50'N	79°50'W	
	JHS	0	1	1965/SP/99	Carman, MB	49°30'N	98°00'W	1645 km N53°W
5	0371-17339	U	U	25/05/37	Bellingham, MN	45°00'N	96°10'W	1 mo.
	CEP	0	0	1937/06/ST	near Vulcan, AB	50°20'N	113°10'W	1402 km N59°W
6	1071-92747	AHY	U	23/09/69	Chalfont, PA	40°00'N	75°10'W	2 yr. 9 mo.
	JMC	5	3	1972/06/99	Bayhead, NS	45°40'N	63°20'W	1152 km N53°E
7	0321-22755	AHY	U	10/09/67	Balmoral Marsh, ON	42°20'N	82°20'W	2 yr. 1 mo.
	MJW	5	0	1969/10/99	Gering, NE	41°40'N	103°30'W	1748 km N85°W
8	1201-27574	U	U	10/09/77	Prince Edward Point, ON	43°50'N	76°50'W	1 yr. 0 mo.
	PEPO	4	12	20/09/78	College, AK	64°50'N	147°40'W	4822 km N36°W
9	1191-72902	AHY	U	17/05/79	Erie, PA	42°00'N	80°00'W	12 dy.
	RCL	5	3	29/05/79	Saint-Henri-de-Taillon, QC	48°40'N	71°50'W	978 km N38°E
10	1171-68321	AHY	F	26/06/86	Port-au-Persil, QC	47°40'N	69°50'W	5 yr. 8 mo.
	RPLG	7	99	03/02/92	Port-au-Persil, QC	47°40'N	69°50'W	0 km

Summary of banding statistics: Swainson's Thrush

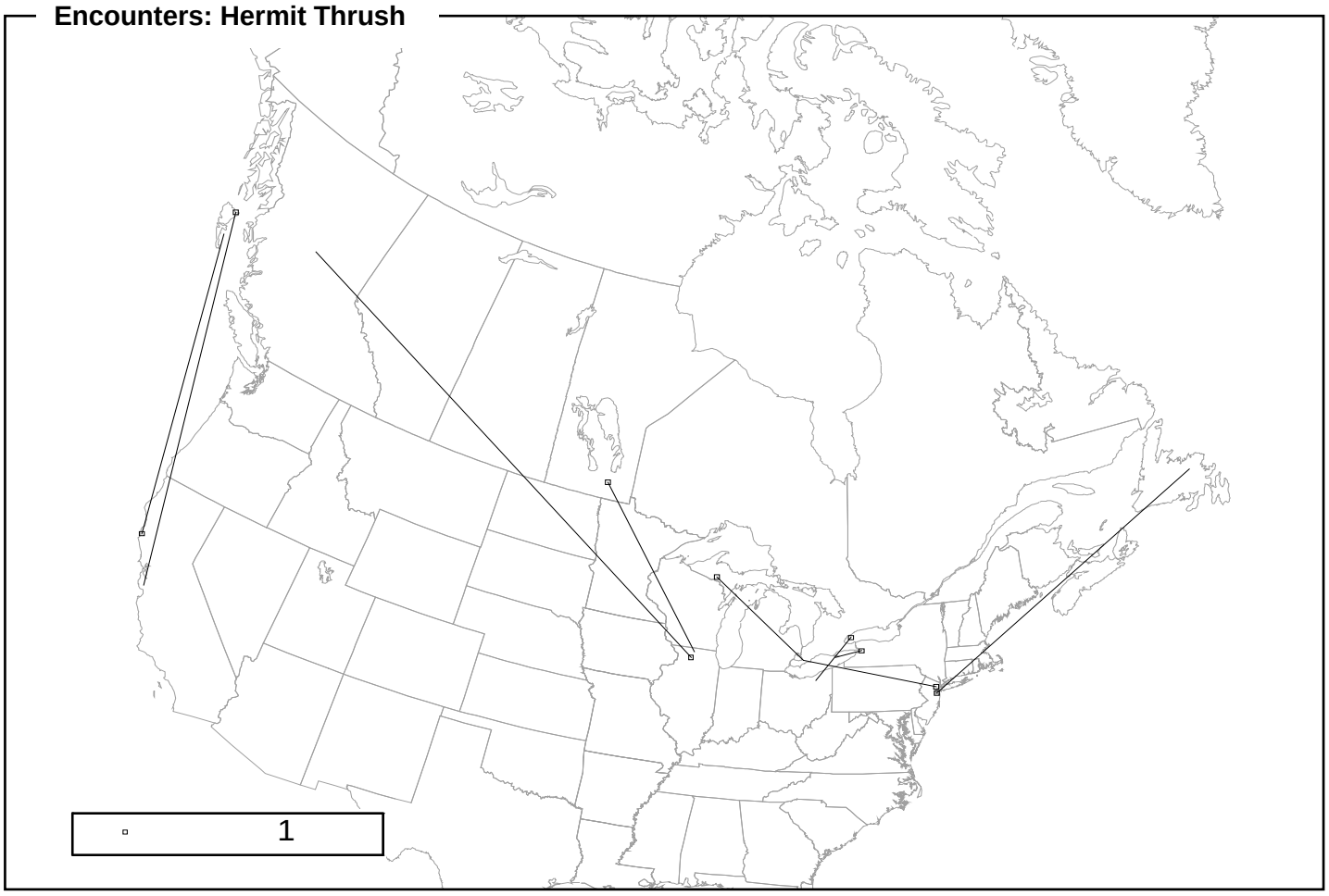
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*39 044*
No. encountered per 1000 banded (1955-1995)			*0.6*
Total no. encountered (1921-1995)	6	23	36
No. encountered from foreign bandings	0	7	12
Maximum period from banding to encounter (mo.)	25	68	68
No. of Canadian-banded birds moving > 0 km	4	4	10
Mean movement > 0 km of Canadian-banded birds (km)	617	520	942
Maximum movement from all encounters (km)	1546	1878	4822
% recovered (encountered dead)	83	47	63
% direct recoveries	83	21	30
% encountered during banding operations	16	52	36

Banding effort: Swainson's Thrush



Top banders: LPBO, PEPO, JBMi, TBO, GFB

Hermit Thrush (*Catharus guttatus*) 759.0



The Hermit Thrush breeds from central Alaska east across much of forested Canada to Newfoundland (it is absent only from the Prairie Provinces); it also breeds in the western and northeastern U.S. It winters in southern parts of British Columbia and along the U.S. Pacific coast, as well as in the southern U.S. and Mexico as far south as Guatemala.

This temperate-wintering species is considered a short-distance migrant because a large portion of the population winters in the U.S. Two encounters (e.g., record 1) are of birds, presumably the nanus subspecies, moving between their breeding grounds in coastal British Columbia and wintering areas in California. In contrast, a bird banded in north-central British Columbia following the breeding season was encountered in Illinois in late spring (record 2). A bird banded nearby in Illinois in October (record 3) was encountered in Manitoba in the spring. Encounters involving Ontario and Quebec showed relatively short movements (records 4-7), although dates of banding or encounter in the U.S. suggest the birds might not have been on their wintering areas. No Canadian birds have yet been found in the portion of the wintering range south of the U.S. The only encounter from Atlantic Canada (record 8) suggests that the crymophilus subspecies found in Newfoundland also moves considerable distances, although the extent of its wintering range is poorly known (Jones and Donovan 1996).

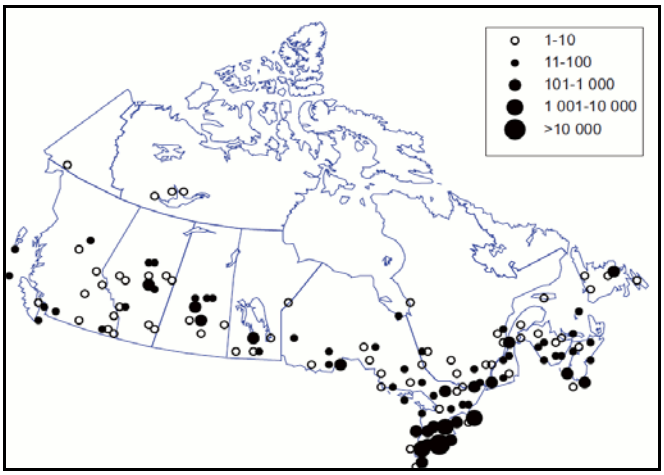
Encounter records: Hermit Thrush

1	1461-63426	HY	U	24/06/93	Reef Island, BC	52°50'N	131°30'W	5 mo.
	AJG	5	0	01/11/93	Mendocino, CA	39°10'N	123°40'W	1635 km S25°E
2	1251-70181	HY	U	02/08/81	48 km northwest of Fort St. James,	54°40'N	124°50'W	2 yr. 9 mo.
	JCF	5	0	18/05/84	Mount Morris, IL	42°00'N	89°20'W	2938 km S76°E
3	1361-77745	HY	U	02/10/88	Harrison, IL	42°20'N	89°10'W	1 yr. 7 mo.
	LGJ	5	13	04/05/90	Winnipeg, MB	49°50'N	97°00'W	1030 km N33°W
4	1231-88038	U	U	17/10/78	Maple Heights, OH	41°20'N	81°30'W	1 yr. 7 mo.
	JGE	7	89	03/05/80	Toronto, ON	43°30'N	79°20'W	300 km N36°E
5	1451-17958	HY	U	30/10/90	Long Point, ON	42°30'N	80°20'W	1 mo.
	LPBO	5	0	25/11/90	Williamsville, NY	42°50'N	78°40'W	141 km N74°E
6	1070-19940	AHY	U	21/04/73	Balmoral Marsh, ON	42°20'N	82°20'W	7 mo.
	MJW	5	13	01/11/73	Bloomingdale, NJ	40°50'N	74°10'W	700 km S79°E
7	1070-19484	U	U	09/10/71	Balmoral Marsh, ON	42°20'N	82°20'W	8 mo.
	MJW	5	13	20/06/72	Amash, MI	46°10'N	88°20'W	641 km N46°W
8	1271-91648	HY	U	03/08/82	Glenwood, NL	48°50'N	54°50'W	2 mo.
	GFB	5	0	23/10/82	Rahway, NJ	40°30'N	74°10'W	1782 km S66°W

Summary of banding statistics: Hermit Thrush

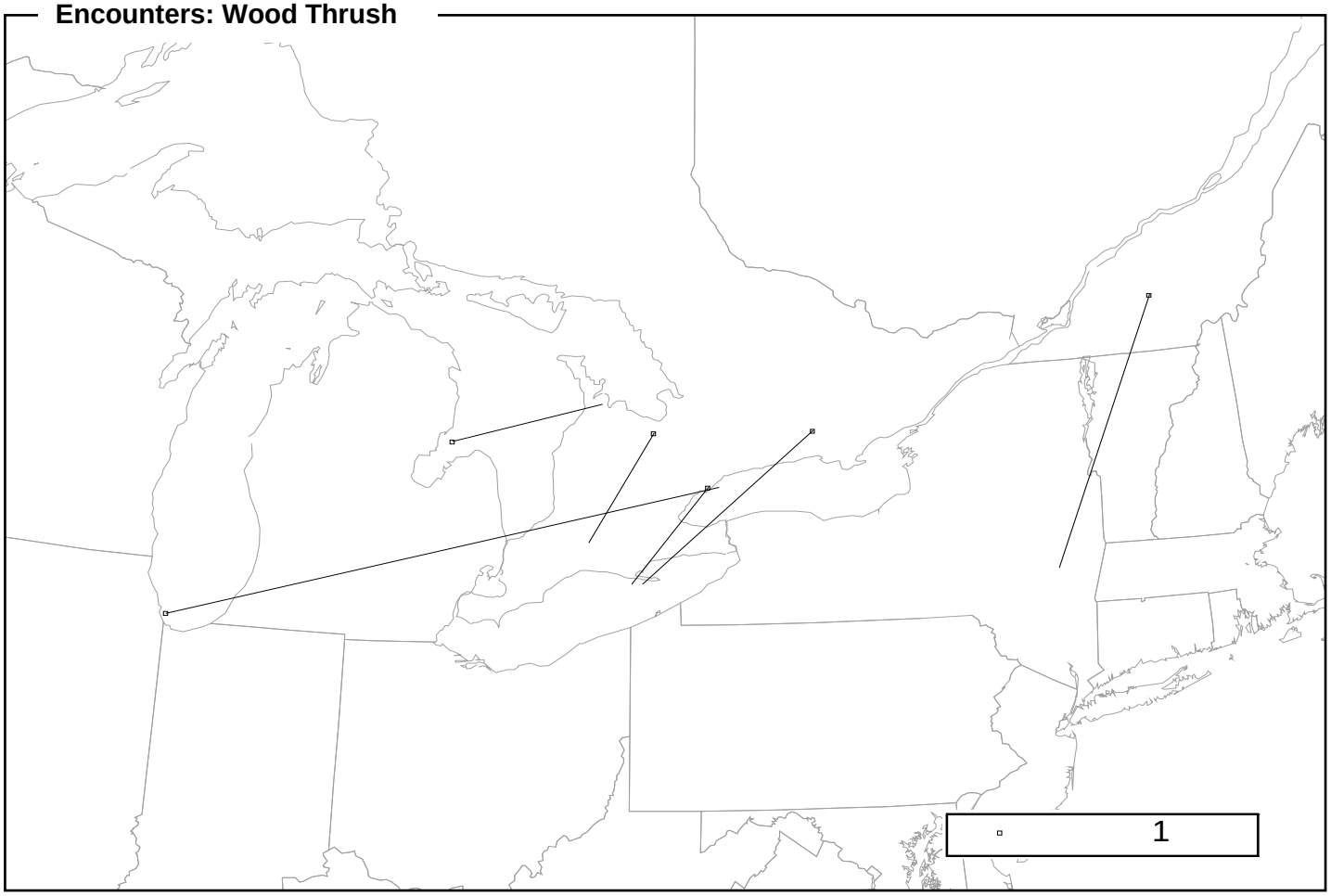
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*22 367*
No. encountered per 1000 banded (1955-1995)			*0.7*
Total no. encountered (1921-1995)	8	12	22
No. encountered from foreign bandings	2	0	3
Maximum period from banding to encounter (mo.)	33	24	33
No. of Canadian-banded birds moving > 0 km	5	1	7
Mean movement > 0 km of Canadian-banded birds (km)	1304	699	1123
Maximum movement from all encounters (km)	2937	699	2937
% recovered (encountered dead)	100	25	54
% direct recoveries	62	25	36
% encountered during banding operations	0	75	45

Banding effort: Hermit Thrush



Top banders: LPBO, TBO, PEPO, MJW, JBMi

Wood Thrush (*Hylocichla mustelina*) 755.0



The Wood Thrush breeds in the eastern U.S. and in Canada in southern Ontario, southwestern Quebec, and the Maritimes. It winters mainly from southern Texas south through Central America to Panama.

All six movements of over 100 km are mapped (including records 1-4). Roth et al. (1996) considered the westerly movement shown in record 1 to be an exception to typical migration patterns through the eastern U.S., which are north-south or parallel to the Atlantic coast. However, this bird was banded in its hatch year, and an element of juvenile dispersal may have been involved. There are no encounters of Canadian birds from the winter quarters.

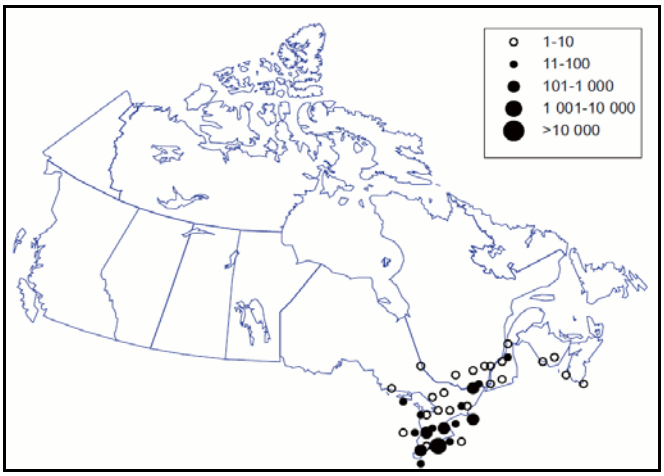
Encounter records: Wood Thrush

1	0502-85480	HY	U	10/08/65	Agincourt, ON	43°40'N 79°10'W	1 mo.
	LGL	7	13	29/09/65	Chicago, IL	41°50'N 87°30'W	711 km S76°W
2	0521-96879	AHY	U	12/05/66	Long Point, ON	42°30'N 80°20'W	3 yr.
	LPBO	4	0	16/05/69	northeast of Cambellford, ON	44°20'N 77°40'W	297 km N46°E
3	0701-34251	HY	U	23/09/71	Bruce Peninsula, ON	44°40'N 81°00'W	8 mo.
	JBMi	7	89	15/05/72	East Tawas, MI	44°10'N 83°20'W	194 km S74°W
4	0961-11818	AHY	U	02/09/83	South Berne, NY	42°30'N 74°00'W	1 yr. 9 mo.
	JSC	5	0	17/06/85	Lake Aylmer, QC	45°40'N 72°10'W	382 km N22°E

Summary of banding statistics: Wood Thrush

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3010*
No. encountered per 1000 banded (1955-1995)			*4*
Total no. encountered (1921-1995)	4	5	15
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	12	36	36
No. of Canadian-banded birds moving > 0 km	3	4	8
Mean movement > 0 km of Canadian-banded birds (km)	314	160	204
Maximum movement from all encounters (km)	710	381	710
% recovered (encountered dead)	25	80	40
% direct recoveries	50	0	20
% encountered during banding operations	50	0	46

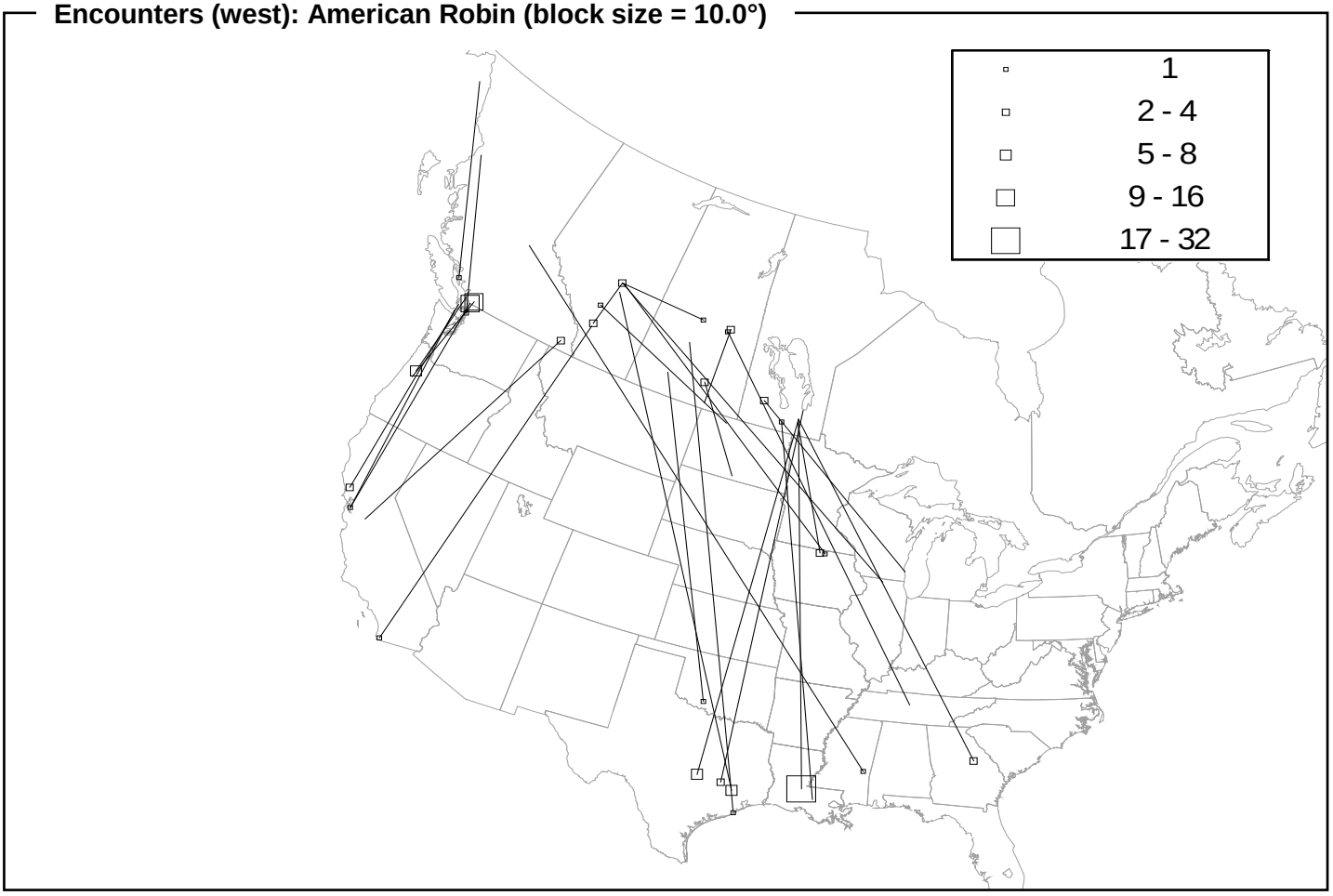
Banding effort: Wood Thrush



Top banders: LPBO, PEPO, JBMi, MJW, CMF

American Robin (*Turdus migratorius*) 761.0

Encounters (west): American Robin (block size = 10.0°)

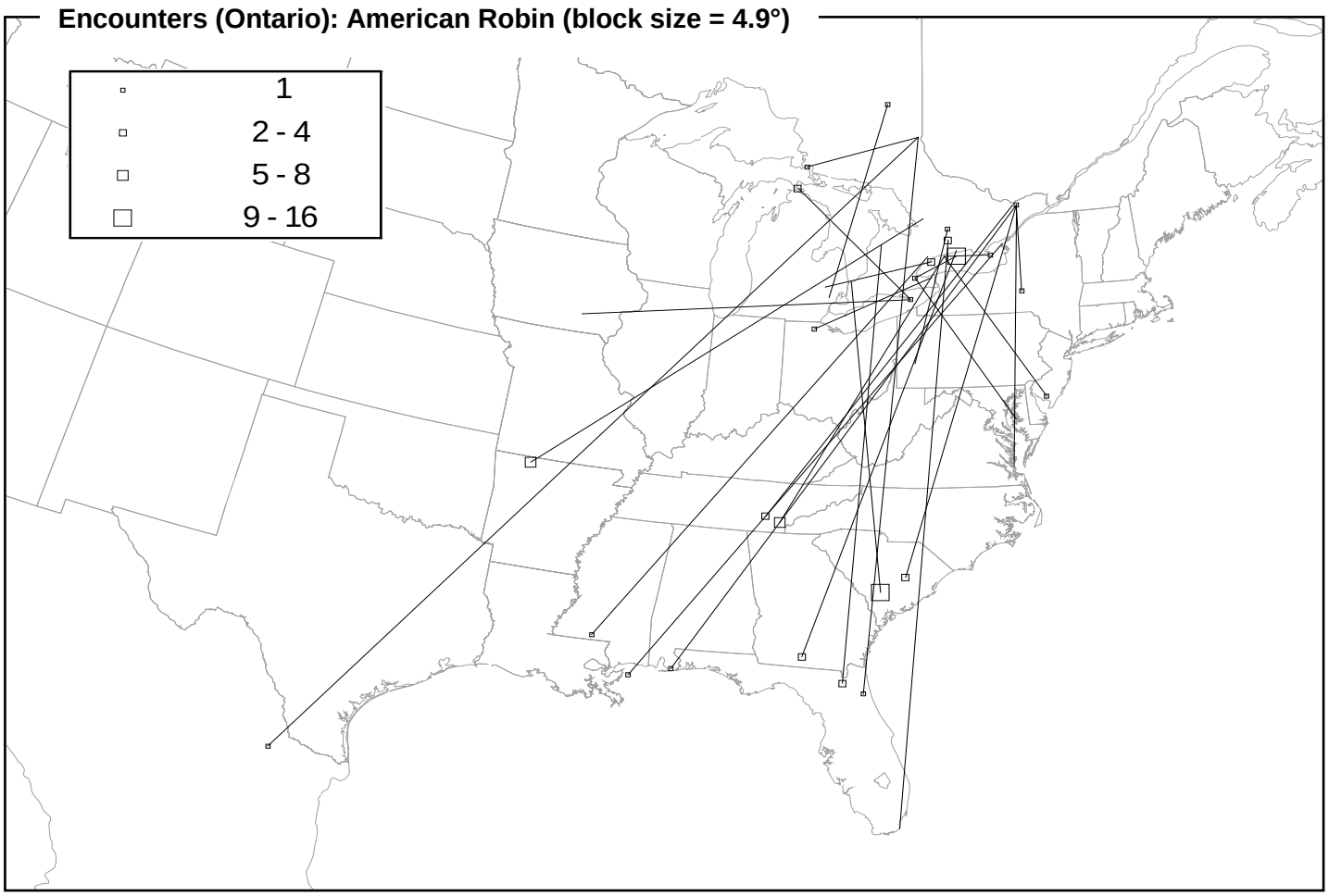


The American Robin breeds from the treeline in Alaska and northern Yukon across Canada and through the U.S. to southern Mexico. It winters in British Columbia, southern Ontario, Newfoundland, and in the northern U.S., but its main wintering range is in the southern two-thirds of the U.S. and south to Guatemala and the Bahamas.

The high number of encounters makes it necessary to summarize many records with a single line on the map, so many state-province connections are not depicted (see block sizes with encounter maps and introduction for explanation). Nonetheless, the maps clearly show the general direction of movements from different parts of Canada.

Of the 62 birds encountered in British Columbia, most were found from March to August, with three found in winter (December-February). Eleven encounters outside the province between October and March reflected movement down the Pacific coast to winter quarters in Washington, Oregon, and (especially) California (e.g., record 1), a route that also appears to be used by some Alaskan birds (record 2). Encounter patterns were clearly influenced by the density of human population in the Vancouver-Victoria and San Francisco areas (although the thinning process used for mapping obscures this fact); however, it seems clear that birds from coastal British Columbia do not winter much farther south than San Francisco, and that they largely confine themselves to coastal areas. A bird from central British Columbia encountered in Mississippi (record 3) and one connecting California to Alberta (record 4) appear to represent exceptional movements across the Rocky Mountains.

Of the 261 encounters of birds banded in the Prairie Provinces, 84% were within the Prairie Provinces between April and September. Winter (December-February) encounters were concentrated in Texas and Louisiana



(including record 5). Smaller numbers wintered farther east, overlapping to some extent with robins originating from Ontario and western Quebec. There was one winter encounter from Georgia (record 6) and one of uncertain date from Virginia (record 7).

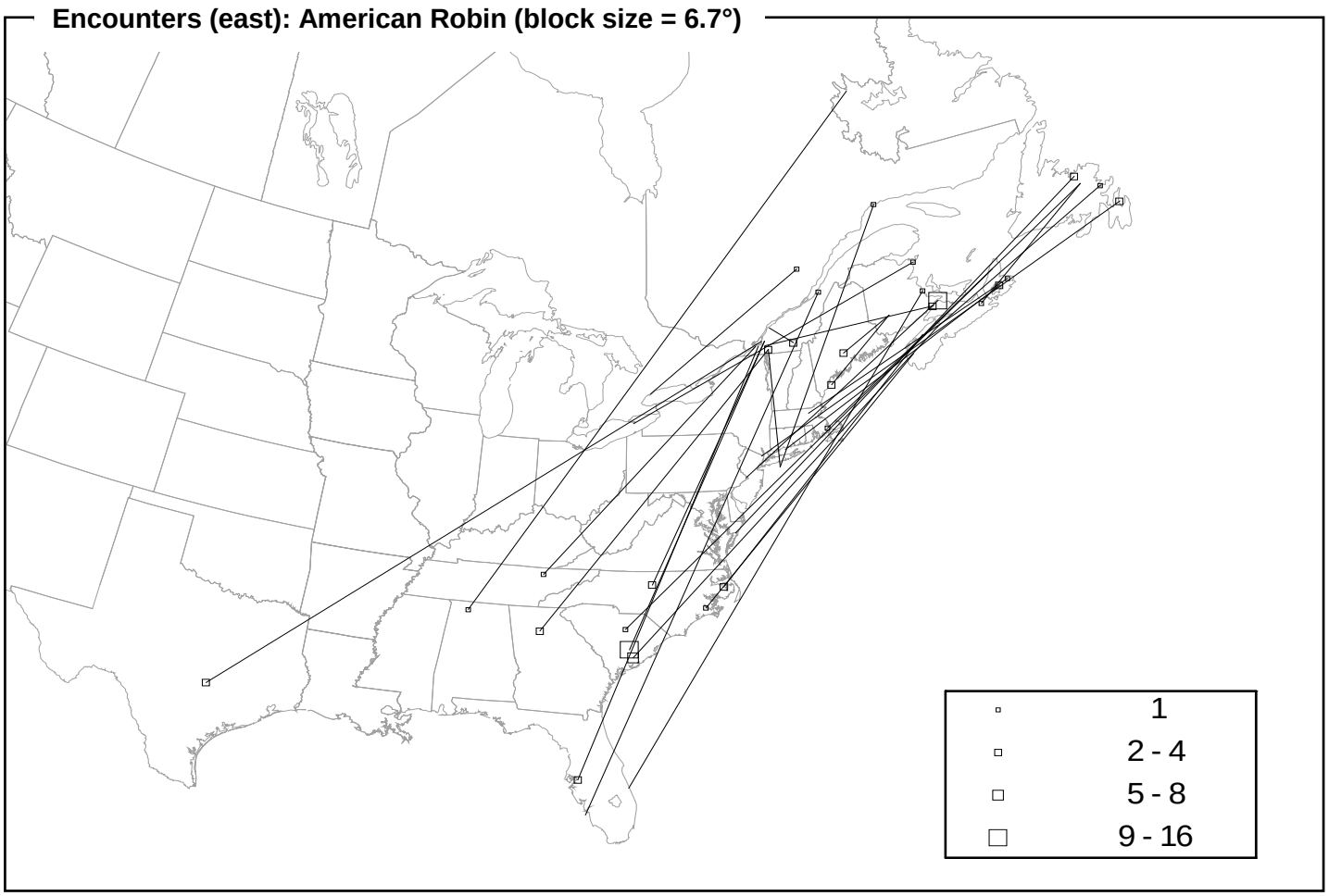
Of the 261 encounters of birds banded in the Prairie Provinces, 84% were within the Prairie Provinces between April and September. Winter (December-February) encounters were concentrated in Texas and Louisiana (including record 5). Smaller numbers wintered farther east, overlapping to some extent with robins originating from Ontario and western Quebec. There was one winter encounter from Georgia (record 6) and one of uncertain date from Virginia (record 7).

Although the American Robin is a common wintering bird in suitable habitat in Arizona, New Mexico, and western Texas, there is a striking lack of Canadian encounters from these areas. This observation suggests that populations wintering there are derived from shorter or altitudinal migrations from the breeding range within the Rocky Mountain states.

Of the 533 records involving Ontario and Quebec, 85% are for birds encountered within those provinces, nearly all between March and October (76% between April and July). Birds banded or encountered in December-February were nearly all found in the Carolinas and Gulf Coast states east of Texas (e.g., records 8-10), but two wintered in Canada. Records involving Mexico (record 11) and Texas (record 12 and one other) indicate that a few Ontario and Quebec birds go farther west for the winter.

Seventy percent of the 47 Maritimes birds were also encountered mainly within the region of banding, mostly between April and October. Encounters in December-February were spread along the eastern seaboard from Maine to Florida (including record 13). Overall there is a fair degree of separation in winter of breeding populations from different parts of Canada.

Five percent of the encountered birds were shot, although none have been obtained this way since 1972. The oldest Canadian robin (record 14) is about a year shy of the longevity record for this species (Klimkiewicz et al. 1983).


Encounters (east): American Robin (block size = 6.7°)
1
2 - 4
5 - 8
9 - 16

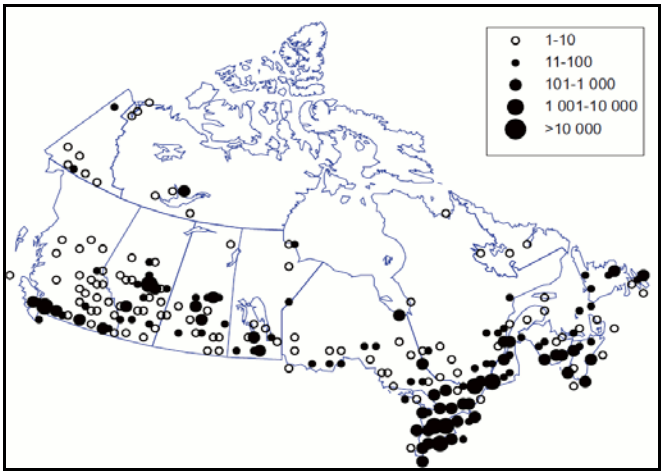
Encounter records: American Robin

1	0552-41562	AHY	U	05/01/58	Oakland, CA	37°40'N	122°10'W	4 mo.
	LLSt	0	12	30/05/58	Paradise Point, BC	50°50'N	119°10'W	1485 km N8°E
2	0522-99155	HY	U	26/06/73	Juneau, AK	58°20'N	134°30'W	4 mo.
	RBW	5	13	13/10/73	near Courtenay, BC	49°50'N	124°30'W	1147 km S39°E
3	0005-06942	AHY	M	27/05/29	Barkerville, BC	53°00'N	121°30'W	9 mo.
	TTMcC	0	0	01/02/30	Chunky, MS	32°10'N	88°50'W	3489 km S61°E
4	0023-64355	J	U	18/06/33	Midnapore, AB	50°50'N	114°00'W	9 mo.
	DP	0	0	08/03/34	La Mesa, CA	32°40'N	117°00'W	2037 km S8°W
5	0372-43716	HY	U	14/06/38	St. Albert, AB	53°30'N	113°30'W	1 yr. 7 mo.
	JEH	1	7	24/01/40	Independence, LA	30°30'N	90°30'W	3160 km S45°E
6	0033-23138	HY	U	07/06/32	Winnipeg, MB	49°50'N	97°00'W	8 mo.
	VWJ	0	0	1933/02/ST	southwest of Gibson, GA	33°10'N	82°50'W	2191 km S37°E
7	0482-42690	U	U	27/08/51	near Clavet, SK	52°00'N	106°40'W	
	AMcP	0	0	1953/01/??	near Stuart, VA	36°40'N	80°10'W	2688 km S61°E
8	0782-62139	AHY	U	06/01/75	Naples, FL	26°20'N	82°00'W	8 mo.
	DAM	4	0	07/09/75	near Saint-Aubert, QC	47°10'N	70°10'W	2541 km N21°E
9	0552-20603	AHY	M	21/06/58	east of Schefferville, QC	54°40'N	66°40'W	1 yr. 8 mo.
	JBa	0	1	11/02/60	near Leighton, AL	34°40'N	87°20'W	2741 km S44°W
10	0722-96312	AHY	U	30/01/69	near Royal Palm, FL	25°20'N	80°20'W	5 mo.
	EJF	5	45	18/06/69	Omemee, ON	44°20'N	78°30'W	2122 km N4°E
11	0502-85176	HY	U	27/07/55	Uno Park, ON	47°30'N	79°40'W	5 mo.
	TJA	0	1	06/12/55	Nuevo Leon State, MEXICO	26°00'N	99°40'W	c. 2966 km S43°W
12	0542-21657	HY	U	03/09/65	near Pointe-Claire, QC	45°20'N	73°40'W	
	RCM	3	0	1966/03/??	near Tyler, TX	32°30'N	95°20'W	2346 km S60°W
13	0343-34806	J	U	16/05/35	Wedgeport, NS	43°40'N	65°50'W	3 yr. 9 mo.
	IJP	0	98	09/02/39	near Statesboro, GA	32°20'N	81°40'W	1870 km S53°W
14	0502-93839	HY	U	19/07/56	north of Thorold, ON	43°10'N	79°10'W	12 yr. 10 mo.
	AD	7	89	24/05/69	Don Mills, ON	43°40'N	79°20'W	57 km N14°W

Summary of banding statistics: American Robin

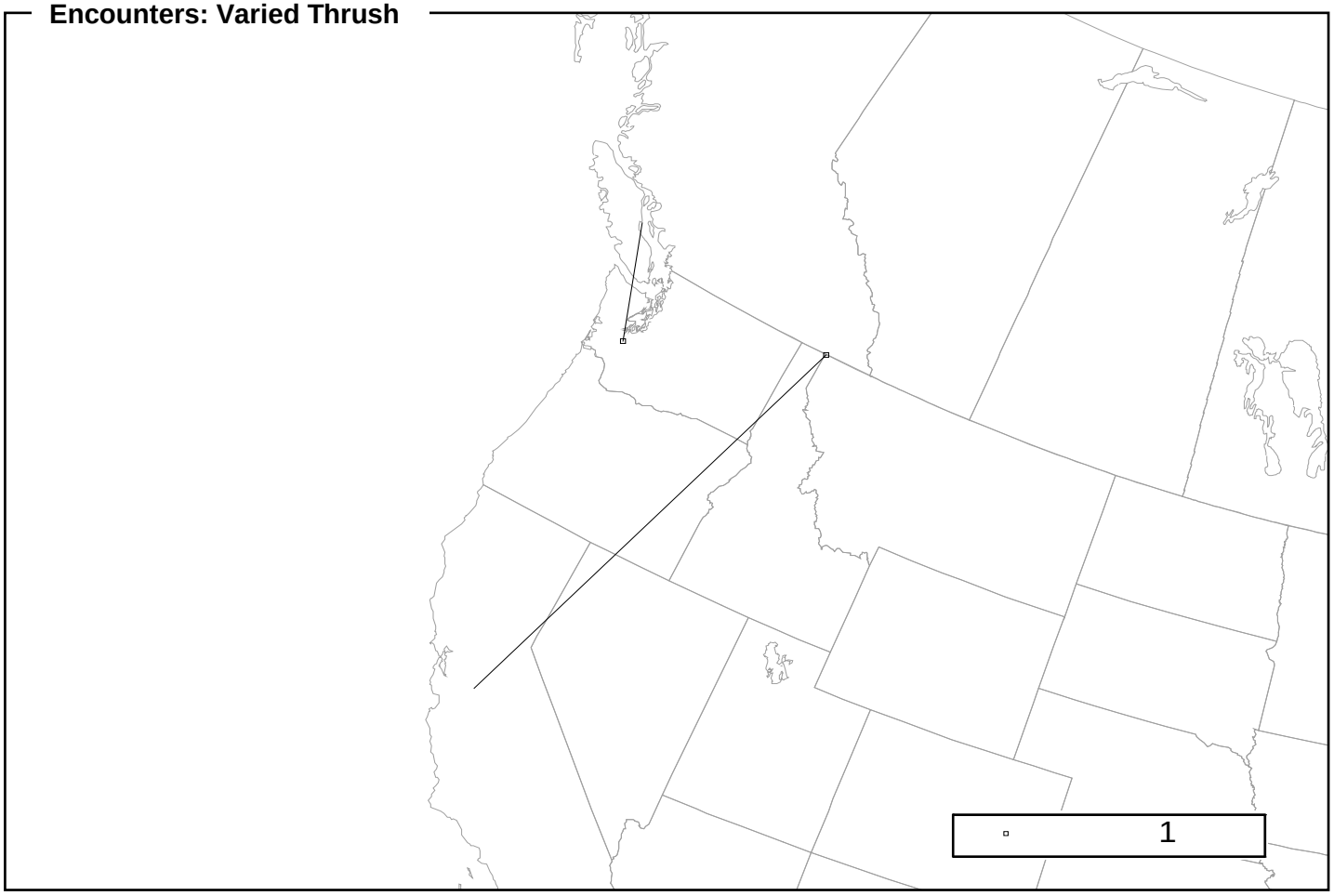
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*30 829*
No. encountered per 1000 banded (1955-1995)			*12*
Total no. encountered (1921-1995)	397	482	990
No. encountered from foreign bandings	15	44	85
Maximum period from banding to encounter (mo.)	154	98	154
No. of Canadian-banded birds moving > 0 km	157	92	278
Mean movement > 0 km of Canadian-banded birds (km)	891	840	874
Maximum movement from all encounters (km)	3159	3489	3489
% recovered (encountered dead)	89	52	69
% direct recoveries	48	20	32
% encountered during banding operations	8	46	28

Banding effort: American Robin



Top banders: LPBO, UBC, IPBO, ETJ, MB

Varied Thrush (*Ixoreus naevius*) 763.0



The Varied Thrush is a western species, nesting from Alaska, through Yukon, the western Northwest Territories, British Columbia, and southwestern Alberta, south down the Pacific coast to northern California. It winters from southern parts of Alaska and British Columbia, south to northern Baja California.

Most encounters were of birds banded in winter and encountered shortly after at the same site, all in southern British Columbia. Two birds moved over 50 km (records 1 and 2). Varied Thrushes are known to irrupt southward every three to five years (Wells et al. 1996), probably in response to changes in acorn abundance, and the long-distance encounters probably resulted from such irregular movements.

The bird in record 3 would hold the longevity record for the species if the encounter date were known, but the only information available was the date of the letter reporting the encounter (seven years and four months after banding). The accepted longevity record is four years and nine months (Klimkiewicz and Futcher 1989).

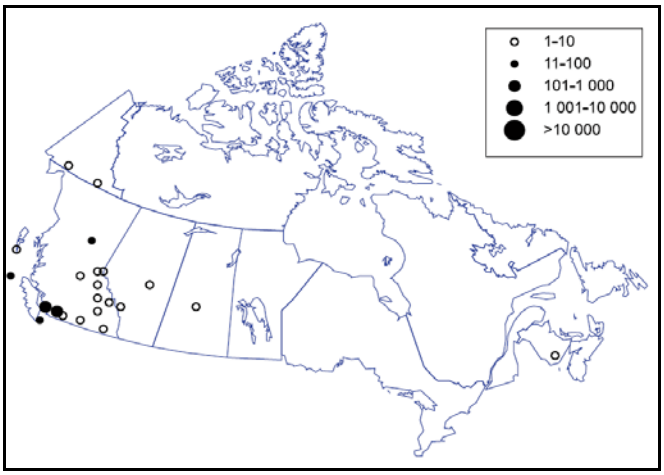
Encounter records: Varied Thrush

1	0682-40593	AHY	M	04/01/78	Modesto, CA	37°30'N 121°00'W	2 mo.
	CHF	5	0	1978/03/99	near Yahk, BC	49°00'N 116°00'W	1342 km N16°E
2	0002-65760	AHY	U	12/02/32	Courtenay, BC	49°40'N 124°50'W	2 yr. 11 mo.
	TP	0	89	20/01/35	near Tenino, WA	46°50'N 122°50'W	348 km S26°E
3	0542-03882	U	U	15/02/59	Port Moody, BC	49°10'N 122°50'W	
	DNR	5	21	1966/06/??	Ambleside Beach, BC	49°10'N 123°00'W	12 km N90°W

Summary of banding statistics: Varied Thrush

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*469*
No. encountered per 1000 banded (1955-1995)			*19*
Total no. encountered (1921-1995)	1	11	15
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	-	35	35
No. of Canadian-banded birds moving > 0 km	0	1	2
Mean movement > 0 km of Canadian-banded birds (km)	-	348	180
Maximum movement from all encounters (km)	-	1342	1342
% recovered (encountered dead)	100	81	73
% direct recoveries	100	63	53
% encountered during banding operations	0	9	20

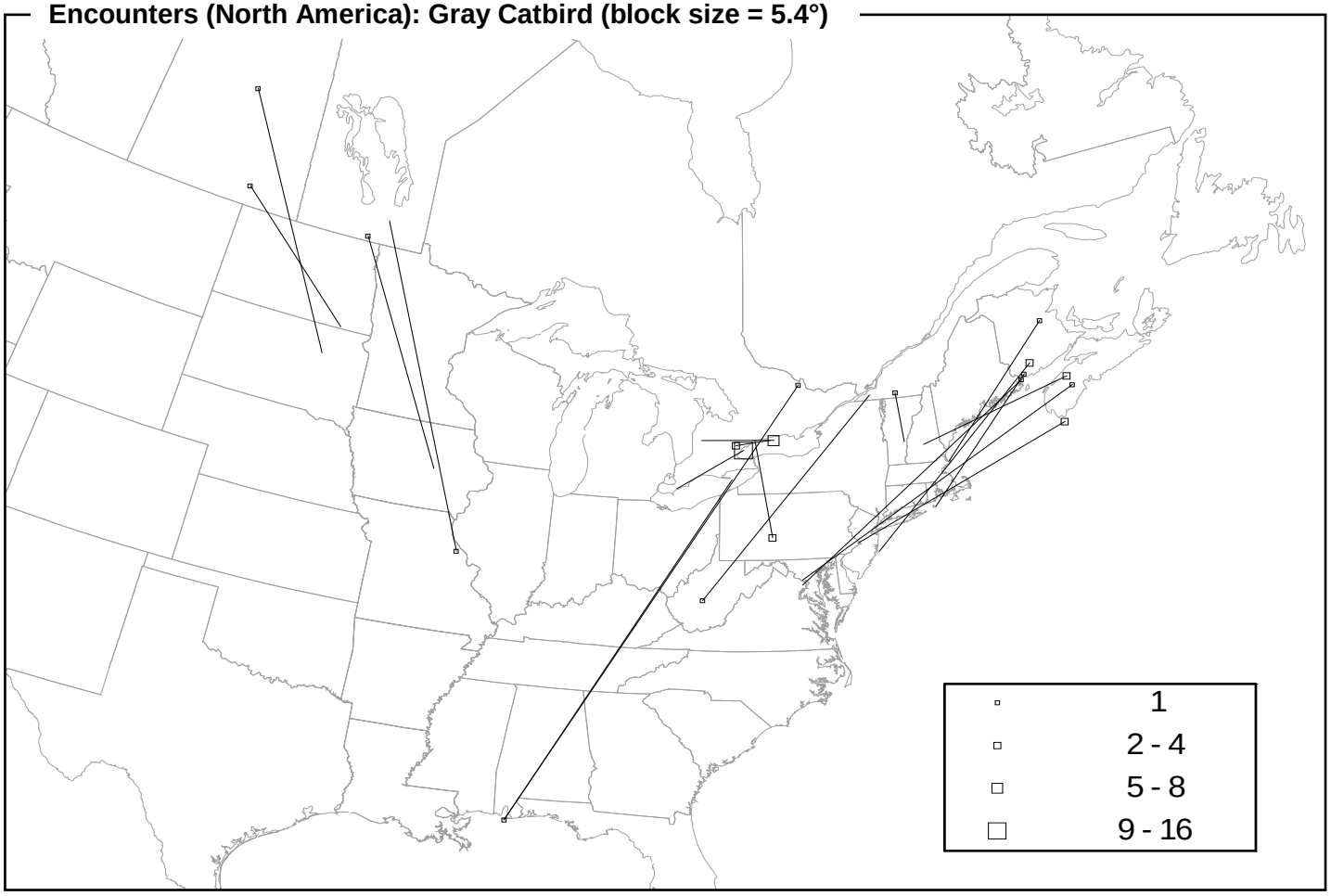
Banding effort: Varied Thrush



Top banders: CWS-BC, DBr, WMH, AM, DNR

Gray Catbird (*Dumetella carolinensis*) 704.0

Encounters (North America): Gray Catbird (block size = 5.4°)

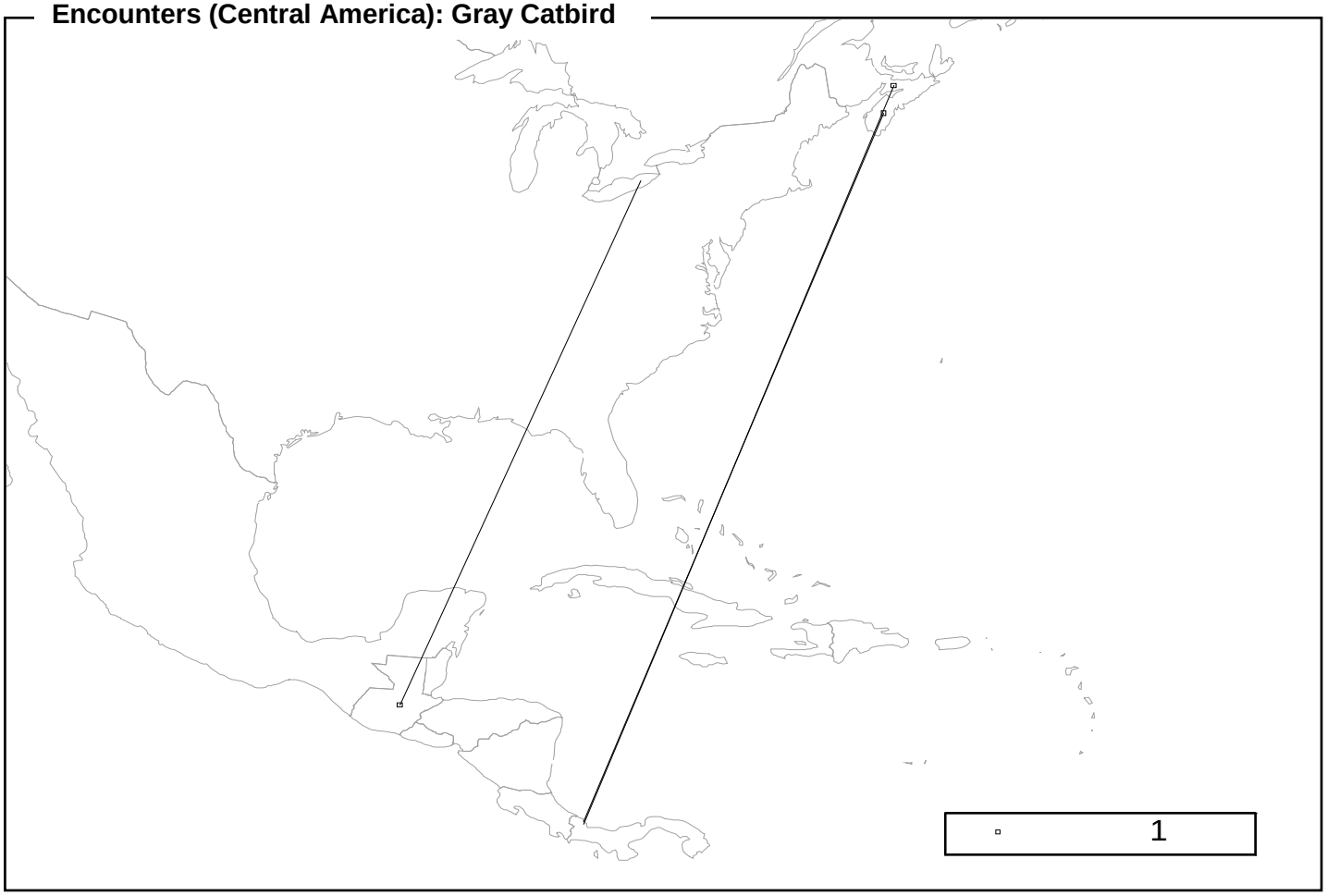


The Gray Catbird breeds in southern Canada from mainland British Columbia to Nova Scotia, chiefly south of the boreal forest zone; it also breeds in most of the U.S. except for the west coast and Southwest. It winters mainly from the southeastern U.S. and eastern Mexico through Central America to Panama, the Greater Antilles, Bermuda, and islands in the Caribbean Sea.

According to Cimprich and Moore (1995), many eastern catbirds migrate toward Florida and island-hop to Central and South America via Cuba, while others cross the Gulf directly, as illustrated by the two encounters involving coastal Alabama (see North America map). Records supporting this northeast-southwest migratory axis include 1 to 4, below. Two birds that were banded on their wintering ground in Western Panama were encountered in Nova Scotia in July of the same year (records 5 and 6), and several encounters were of birds banded in the New England states in the last two weeks of May and subsequently encountered in their breeding areas in Nova Scotia and New Brunswick (see North America map). An Ontario-banded migrant wintered in Guatemala (record 7). Western populations migrate on a south-southeast-north-northwest axis and presumably mingle with eastern birds in the southeastern U.S. (e.g., records 8 and 9).

The large symbol in Lake Erie on the North America map indicates that there are many short-distance encounters within southern Ontario, not necessarily all showing movement in exactly the same direction (see block size with encounter map and the explanation in section 4.2).

Encounters (Central America): Gray Catbird



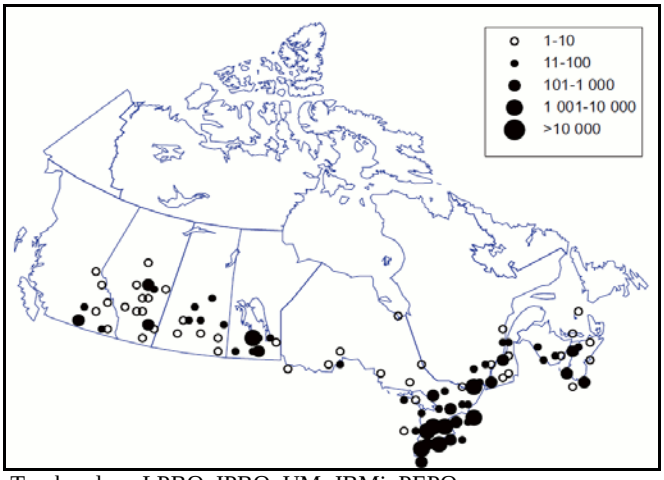
Encounter records: Gray Catbird

1	0281-04486	HY	U	18/08/62	Newton, PA	40°10'N	74°50'W	
	PHF	0	0	1962/10/??	Clark's Harbour, NS	43°20'N	65°30'W	851 km N62°E
2	0791-58118	HY	U	27/09/73	Darnestown, MD	39°00'N	77°10'W	1 yr. 10 mo.
	MTD	5	14	17/07/75	near Springfield, NS	44°30'N	64°50'W	1191 km N55°E
3	0351-14476	AHY	U	07/05/36	Canton, OH	40°40'N	81°20'W	1 yr. 2 mo.
	HB	0	0	1937/07/LT	Hampstead, QC	45°30'N	73°30'W	833 km N47°E
4	0781-35976	AHY	U	21/10/72	Dauphin Island, AL	30°10'N	88°00'W	11 mo.
	TAI	3	13	15/09/73	near Pembroke, ON	45°40'N	77°00'W	1973 km N26°E
5	0631-72845	U	U	18/10/63	Bocas del Toro Province, PANAMA	09°10'N	82°20'W	9 mo.
	PG	0	14	1964/07/99	near Oxford, NS	45°40'N	63°50'W	4431 km N20°E
6	0651-39092	U	U	19/12/63	Bocas del Toro Province, PANAMA	09°20'N	82°20'W	7 mo.
	PG	0	0	04/07/64	near Springfield, NS	44°30'N	64°50'W	4262 km N20°E
7	0921-32965	U	U	08/09/85	Long Point, ON	42°30'N	80°00'W	4 mo.
	LPBO	8	4	12/01/86	Coban, GUATEMALA	15°20'N	90°10'W	3177 km S21°W
8	0051-34848	U	U	20/05/34	Athol, SD	45°00'N	98°30'W	2 yr. 2 mo.
	JFB	0	98	1936/07/ST	Jumping Lake, SK	52°50'N	105°20'W	1004 km N27°W
9	0372-25642	HY	U	29/08/37	near St. Vital, MB	49°50'N	97°00'W	3 yr. 2 mo.
	CTR	0	98	01/10/40	Bowling Green, MO	39°20'N	91°10'W	1256 km S24°E
10	0591-58073	AHY	U	16/07/66	Cootes Paradise Marsh, ON	43°10'N	79°50'W	5 yr.11 mo.
	JBM	8	99	03/06/72	Cootes Paradise Marsh, ON	43°10'N	79°50'W	0 km

Summary of banding statistics: Gray Catbird

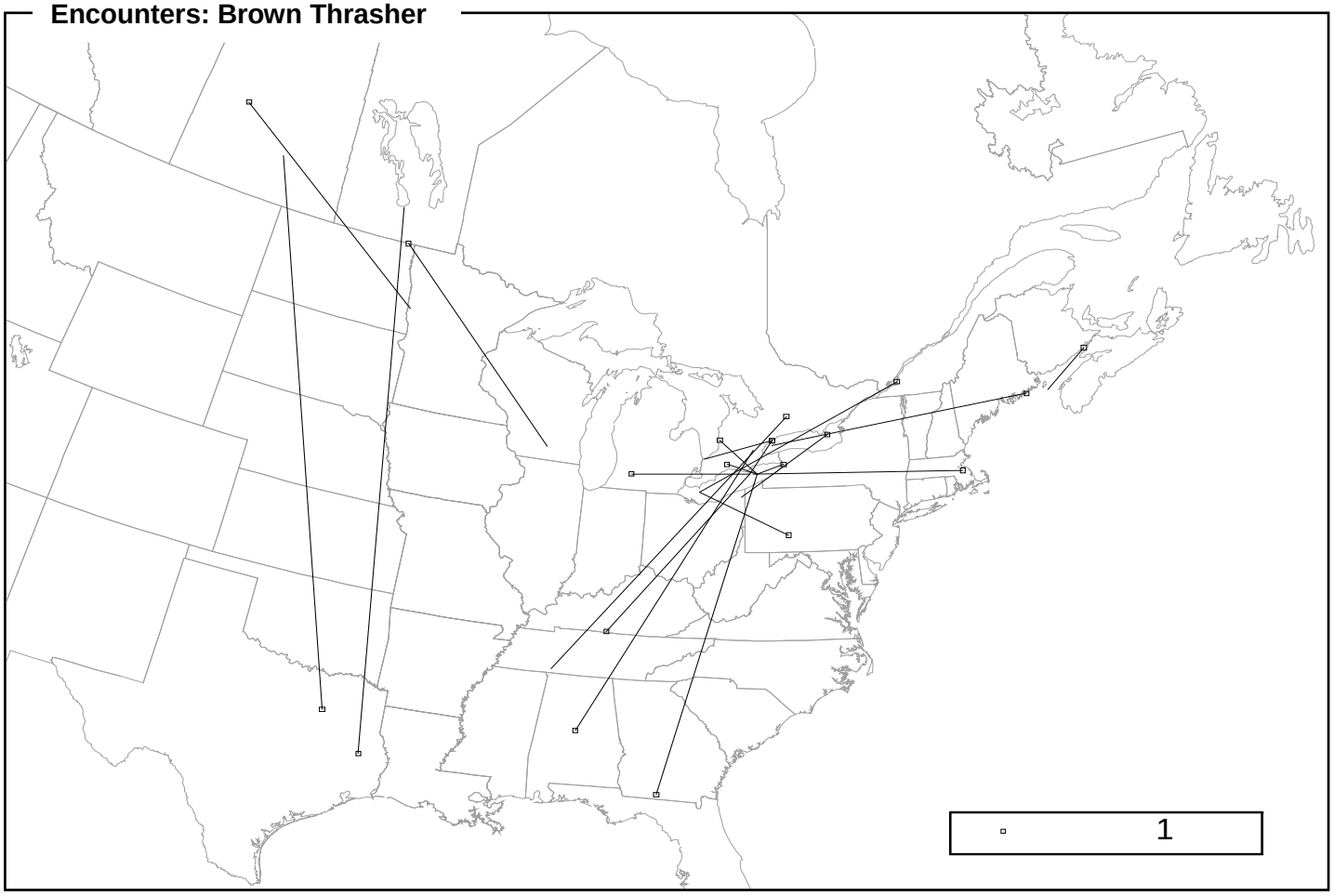
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*20 700*
No. encountered per 1000 banded (1955-1995)			*4*
Total no. encountered (1921-1995)	41	125	189
No. encountered from foreign bandings	10	10	24
Maximum period from banding to encounter (mo.)	44	71	71
No. of Canadian-banded birds moving > 0 km	12	19	36
Mean movement > 0 km of Canadian-banded birds (km)	314	205	305
Maximum movement from all encounters (km)	1547	1973	4431
% recovered (encountered dead)	70	37	47
% direct recoveries	43	16	23
% encountered during banding operations	26	62	51

Banding effort: Gray Catbird



Top banders: LPBO, IPBO, UM, JBMi, PEPO

Brown Thrasher (*Toxostoma rufum*) 705.0



The Brown Thrasher breeds in the eastern U.S. and in southern Canada from the east coast to the Prairie Provinces. It winters in the southern portion of its breeding range, in the southeastern U.S.

Birds from the Prairie Provinces showed the largest displacements, with a general heading of north-south to northwest-southeast (records 1-3). Ontario birds moved broadly on a northeast-southwest axis (records 4-6), although there were several east-west movements. One such bird was banded in Ontario in late April and encountered the next winter in Maine (record 7), and a second Ontario bird was encountered in New England four years after banding (record 8).

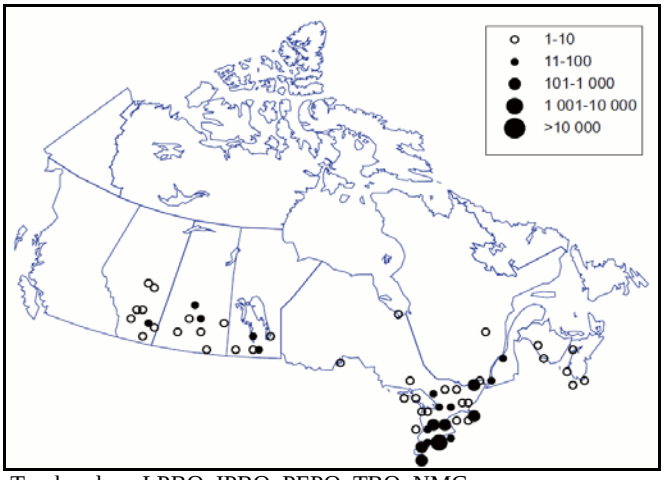
Encounter records: Brown Thrasher

1	0373-13031	HY	U	26/06/38	Regina Beach, SK	50°40'N 104°50'W	5 mo.
	FGB	0		11/27/1938	Crandall, TX	32°30'N/96°20'W	2139 km S22°E
2	0552-95901	HY	U	06/08/64	Delta, MB	50°10'N 98°10'W	1 yr. 4 mo.
	LWO	5	1	26/12/65	Lufkin, TX	31°10'N 94°40'W	2135 km S9°E
3	0373-12117	U	U	19/09/39	near Fargo, ND	46°50'N 96°40'W	3 yr. 10 mo.
	JTE	0	1	1943/07/99	near Perdue, SK	52°00'N 107°30'W	971 km N50°W
4	0372-12117	J	U	17/06/38	Hespeler, ON	43°20'N 80°10'W	1 yr. 4 mo.
	WB	0	1	1939/10/99	Wilton, AL	33°00'N 86°50'W	1289 km S29°W
5	0552-90642	HY	U	01/10/62	Long Point, ON	42°30'N 80°00'W	3 yr. 5 mo.
	LPBO	6	56	1966/03/FT	Barwick, GA	30°50'N 83°40'W	1339 km S15°W
6	0722-55434	U	U	11/10/68	near Olivehill, TN	35°10'N 88°00'W	7 mo.
	DEP	5	14	24/05/69	Coboconk, ON	44°30'N 78°40'W	1308 km N35°E
7	0502-99201	AHY	U	22/04/64	Toronto, ON	43°30'N 79°20'W	8 mo.
	RED	0	13	06/12/64	Addison, ME	44°30'N 67°40'W	940 km N79°E
8	0542-07544	U	U	18/05/64	Long Point, ON	42°30'N 80°10'W	4 yr. 6 mo.
	LPBO	5	14	15/11/68	Braintree, MA	42°10'N 71°00'W	755 km S90°E
9	0832-48277	HY	U	14/08/80	Prince Edward Point, ON	43°50'N 76°50'W	7 yr. 9 mo.
	PEPO	8	99	03/05/88	Prince Edward Point, ON	43°50'N 76°50'W	0 km

Summary of banding statistics: Brown Thrasher

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5125*
No. encountered per 1000 banded (1955-1995)			*6*
Total no. encountered (1921-1995)	11	27	49
No. encountered from foreign bandings	1	1	5
Maximum period from banding to encounter (mo.)	93	76	95
No. of Canadian-banded birds moving > 0 km	6	11	24
Mean movement > 0 km of Canadian-banded birds (km)	1166	250	505
Maximum movement from all encounters (km)	2139	940	2139
% recovered (encountered dead)	63	59	67
% direct recoveries	27	37	30
% encountered during banding operations	18	40	28

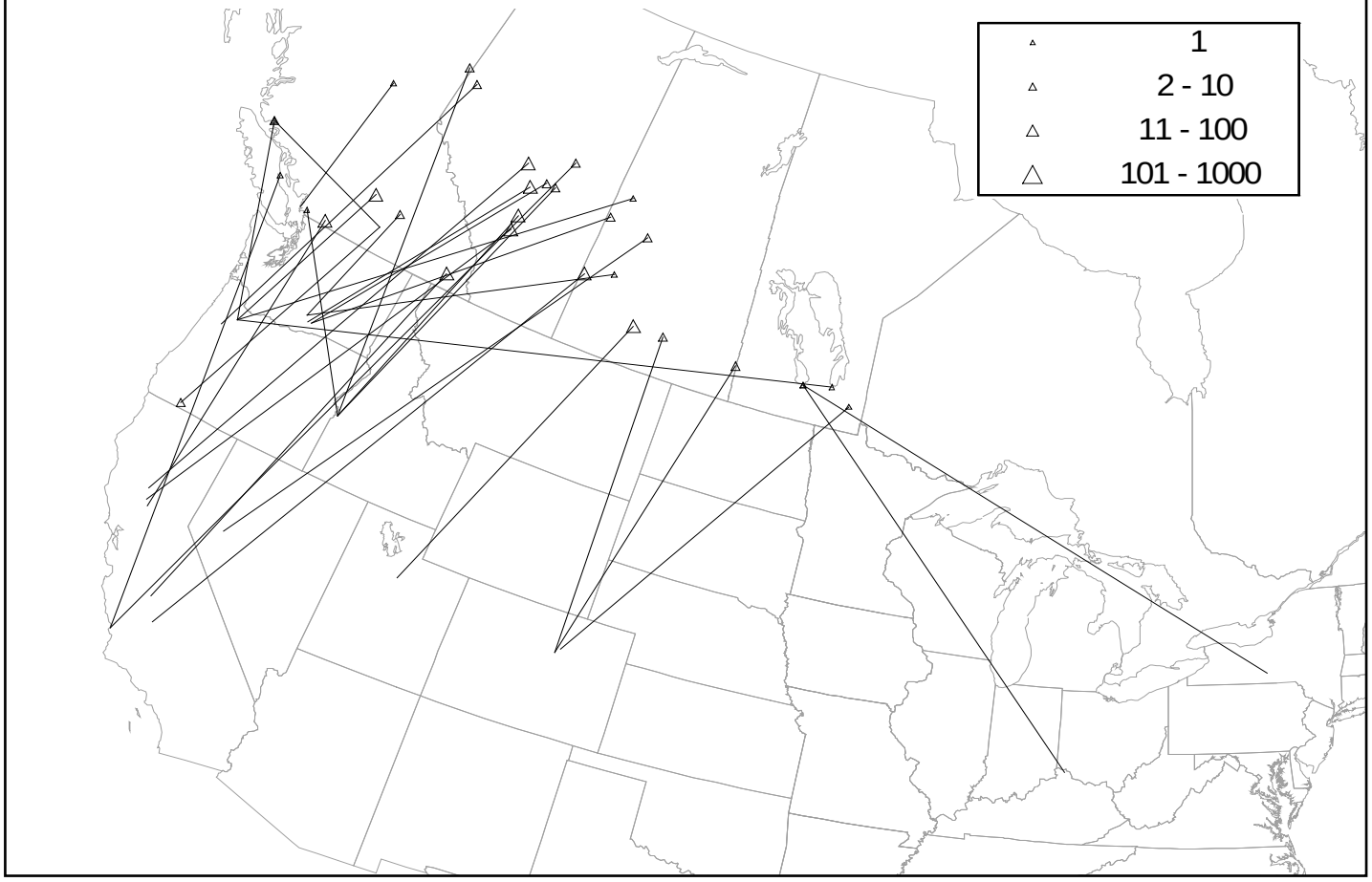
Banding effort: Brown Thrasher



Top banders: LPBO, IPBO, PEPO, TBO, NMC

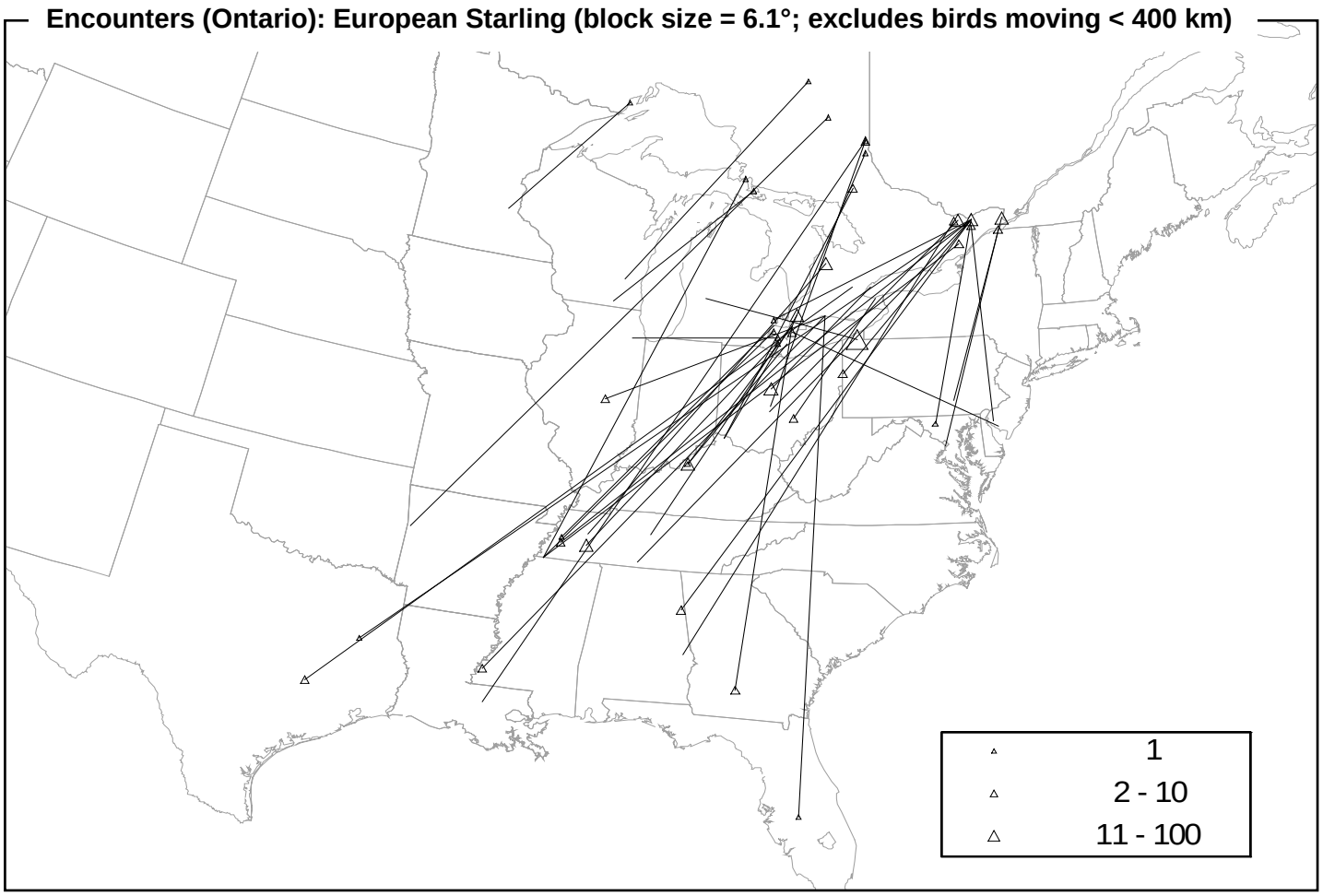
European Starling (*Sturnus vulgaris*) 493.0

Encounters (west): European Starling (block size = 7.1°, excludes birds moving < 400 km)



Following its introduction to New York from the Old World in 1890, the European Starling spread through much of Canada and is still expanding in range. Currently it breeds across the U.S. and southern Canada, as well as in southern Yukon and the Northwest Territories, and in northern British Columbia and Alberta. There are isolated breeding pockets in the eastern parts of the country well north of the main limit of distribution. The species winters within much of the breeding range, south to central Mexico, the Bahamas, and Cuba. It frequently winters farther north than the various species of icterid with which it commonly associates in communal roosts (Dolbeer 1982).

The species is of considerable economic importance because of the agricultural and urban impact of its enormous winter roosts, often including Brown-headed Cowbirds, Red-winged Blackbirds and Common Grackles. Banding data have considerable potential for population management, so there have been several analyses - for the whole of North America (Dolbeer 1982, Burtt and Giltz 1977) and for small areas (Johnson 1974, Weatherhead et al. 1980); see also earlier analyses by Kessell (1953), Bordner et al. (1968), and Richardson and Haight (1970). Results indicate that southern populations are mainly resident, whereas northern birds are partly migratory, that is, some birds migrate while others do not (which sometimes separates nest mates) and some individuals may move in some years but not others. First-year Euopean Starlings move farther south than older birds, but there are no differences between the sexes (Cabe 1993). Our results confirm these findings on partial migration - 101 starlings were encountered in Canada in one winter (December-February) and found in a U.S. state in a different winter. Approximately half the winter encounters of Canadian birds involved individuals that did not migrate south of the border.

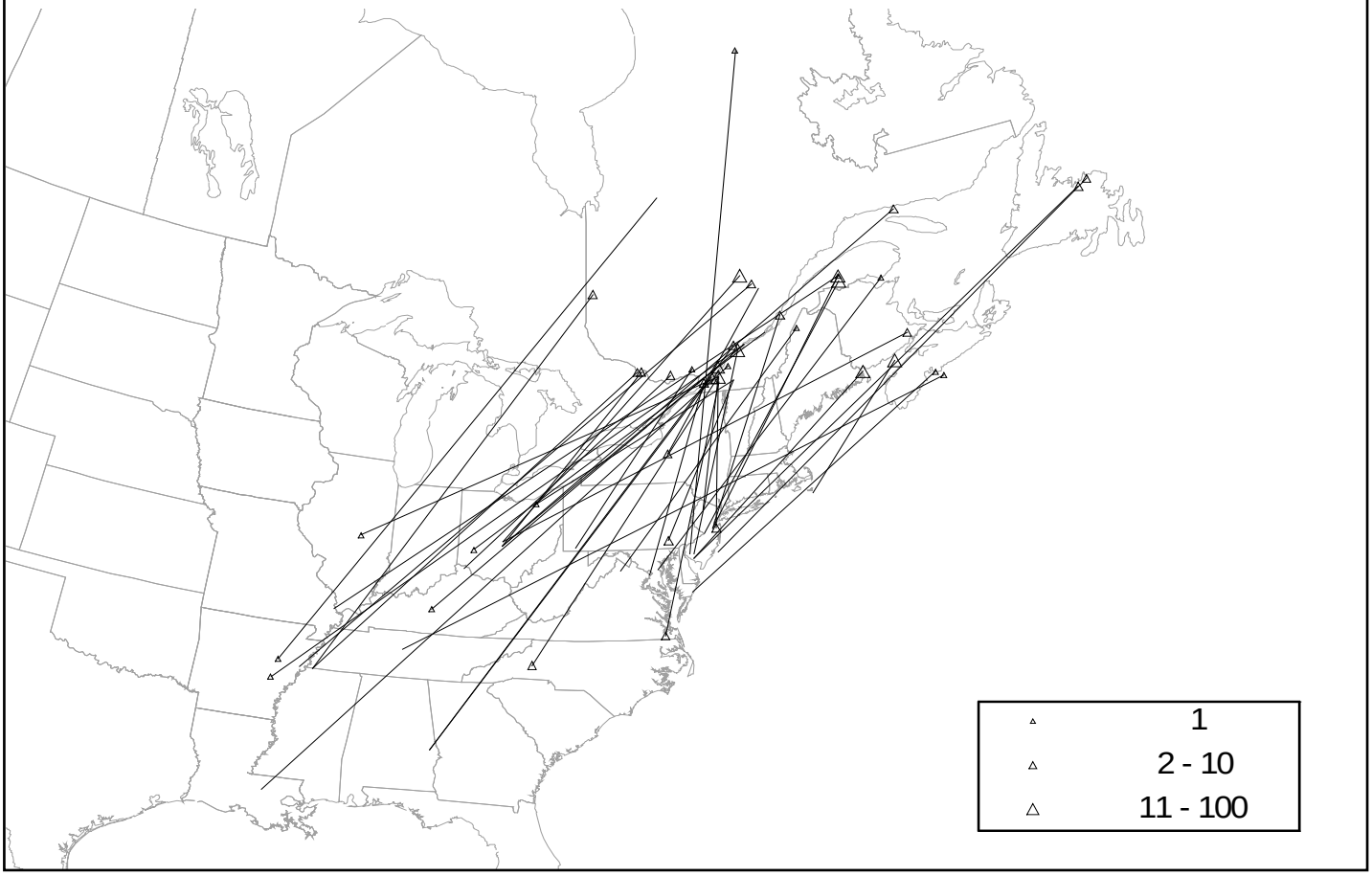


Because there are so many encounters for this species, the maps have to summarize the data to a large degree, and many individual records are not shown (see block size with encounter maps and explanation in introduction). No records are mapped that show movement of less than 400 km (the normal cut-off is 100 km). Nonetheless, the maps accurately depict the directionality of starling migration from Canada.

A striking feature of the encounter pattern is the southwest-northeast axis of movement shown by Prairie Province populations (such as records 1-5); this is unlike the southeast direction that most native species take from the Prairie Provinces (but see record 6). The southwest-northeast direction mimics that of starlings in Europe and eastern North America, and is perhaps explained by the recent colonization of western North America by starlings (mainly since 1950, Cabe 1993, Kessell 1953). In December-February, starlings from British Columbia and the Prairie Provinces are concentrated in the Pacific coast states, except that birds from the eastern Prairie Provinces head to more inland states such as Colorado. Ontario birds winter mainly in that province and the Great Lakes states, but others move to the mid-Atlantic states and as far south as the Gulf Coast (e.g., records 7-9). Starlings from Quebec also go as far as the Gulf Coast in winter (e.g., record 10), but many go a shorter distance to winter in northeastern states (e.g., record 11), where they overlap with birds from the Maritimes (records 12 and 13; but see record 14).

Because starlings nest readily in boxes, there are many records of old birds. The oldest Canadian bird (record 15) was much younger than the 21-year-old bird recorded in Germany (Cabe 1993), though not far off the North American record of 15 years and three months (Klimkiewicz 1997).

Encounters (east): European Starling (block size = 7.1°; excludes birds moving < 400 km)



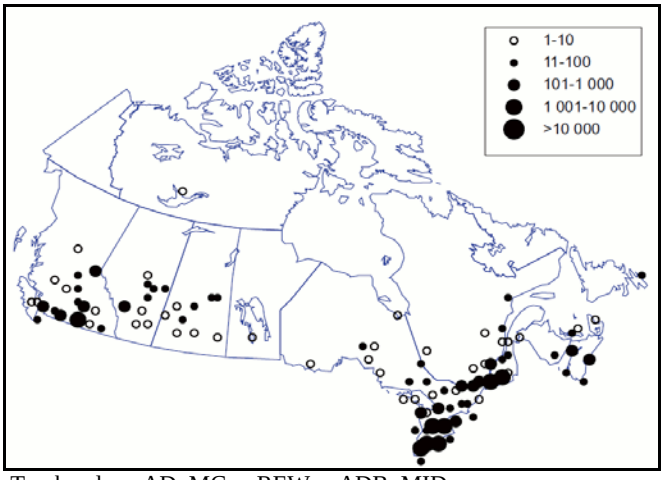
Encounter records: European Starling

1	0662-10905	AHY	U	27/01/64	Cayucos, CA	35°20'N	120°50'W	
	CFT	5	0	1965/SU/99	Beatty, SK	52°50'N	104°40'W	2326 km N28°E
2	0652-89039	AHY	M	10/02/65	near Molalla, OR	45°10'N	122°40'W	1 yr. 2 mo.
	JAN	5	1	15/04/66	near Spruce Point, AB	58°40'N	112°10'W	1662 km N22°E
3	0652-89714	AHY	F	08/02/65	near Molalla, OR	45°10'N	122°40'W	3 mo.
	JAN	0	0	12/05/65	near Matlock, MB	50°20'N	96°50'W	2006 km N64°E
4	0702-50357	AHY	M	13/02/68	near Strawberry, NV	39°30'N	115°50'W	1 yr. 8 mo.
	ABi	3	0	1969/10/LT	near Humboldt, SK	52°20'N	105°10'W	1646 km N26°E
5	0542-23266	U	U	27/01/63	Annacis, BC	49°10'N	122°50'W	3 mo.
	AM	0	21	15/04/63	near Rosemary, AB	50°40'N	112°00'W	793 km N74°E
6	0472-15027	AHY	M	13/01/50	Newfield, NY	42°20'N	76°30'W	5 mo.
	AAA	0	1	13/06/50	Delta, MB	50°10'N	98°10'W	1873 km N55°W
7	0412-00663	J	U	03/06/42	south of Ottawa, ON	45°20'N	75°40'W	7 mo.
	TSH	0	98	11/01/43	Jacksonville, TX	31°50'N	95°10'W	2255 km S55°W
8	0502-96861	L		07/06/57	Guelph, ON	43°30'N/80°10'W		1 yr. 7 mo.
	AD	0	53	10/01/59	Lake Somerville, TX	30°20'N	96°30'W	2057 km S50°W
9	0382-23900	AHY	U	17/03/39	St. Thomas, ON	42°40'N	81°10'W	11 mo.
	TNJ	0	1	04/02/40	Fort Meade, FL	27°40'N	81°40'W	1670 km S2°W
10	0582-11051	U	U	04/01/62	Baker, LA	30°30'N	91°10'W	
	GFS	0	0	1962/04/??	near Saint-Ours, QC	45°50'N	73°00'W	2322 km N38°E
11	0522-72736	AHY	U	02/01/55	Quinton, NJ	39°30'N	75°20'W	2 mo.
	RGD	0	13	26/03/55	Lake Doran, QC	56°20'N	70°50'W	1903 km N9°E
12	0562-74659	AHY	U	17/01/60	Brighams Cove, ME	43°50'N	69°50'W	8 yr. 6 mo.
	WCR	5	12	04/07/68	north of River Bridge, NS	46°10'N	60°30'W	779 km N67°E
13	0812-28796	SY	F	23/03/75	Beach Haven, NJ	39°30'N	74°10'W	3 mo.
	RWF	5	12	12/06/75	Gander Bay, Labrador, NL	49°20'N	54°30'W	1900 km N48°E
14	0652-57852	U	U	26/12/63	Columbus, OH	40°00'N	83°00'W	4 yr. 3 mo.
	MLG	5	3	08/03/68	Dover, NB	46°00'N	64°40'W	1630 km N60°E
15	0503-56514	AHY	U	11/03/51	Baie-d'Urfé, QC	45°20'N	73°50'W	13 yr. 11 mo.
	MB	5	0	1965/02/99	Baie-d'Urfé, QC	45°20'N	73°50'W	0 km

Summary of banding statistics: European Starling

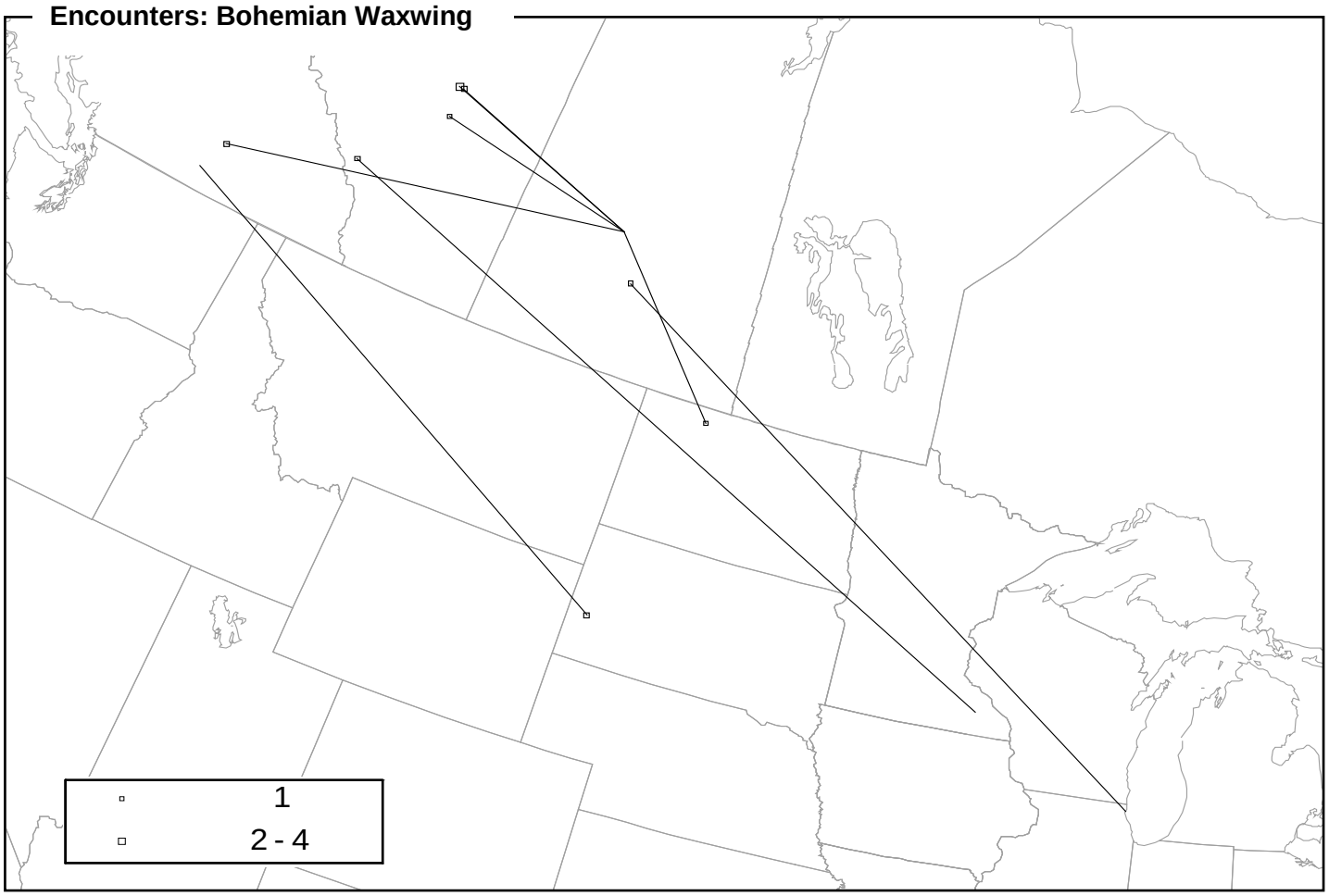
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*29 860*
No. encountered per 1000 banded (1955-1995)			*23*
Total no. encountered (1921-1995)	387	1504	2520
No. encountered from foreign bandings	56	669	1194
Maximum period from banding to encounter (mo.)	96	167	167
No. of Canadian-banded birds moving > 0 km	220	276	576
Mean movement > 0 km of Canadian-banded birds (km)	310	245	288
Maximum movement from all encounters (km)	2255	2326	2326
% recovered (encountered dead)	86	79	83
% direct recoveries	29	29	29
% encountered during banding operations	10	16	12

Banding effort: European Starling



Top banders: AD, MCo., REWa., ADB, MID

Bohemian Waxwing (*Bombycilla garrulus*) 618.0



The Bohemian Waxwing breeds from central Alaska and northern Yukon east to northern Manitoba and extreme northwestern Ontario, and south to the national border except in the Prairie Provinces. It winters in southern Canada (north to the Northwest Territories and northern British Columbia in the west), east (rarely) to the Maritimes, south through the west-central U.S. to Arizona and New Mexico, and east to New Jersey. The Bohemian Waxwing is legendary for the irregularity of its movements, and its appearance in eastern North America varies dramatically from year to year.

All but three of the encountered birds were banded in Saskatchewan, and almost two-thirds of these were encountered in the same area within three months. The most obvious feature of the small number of encounters showing movement is the strong east-west component in direction. None of the four birds banded at Saskatoon and encountered in central Alberta was banded or encountered in the same years as the others (see records 1 and 2).

The bird in record 3 holds the North American longevity record for this species (Klimkiewicz et al. 1983).

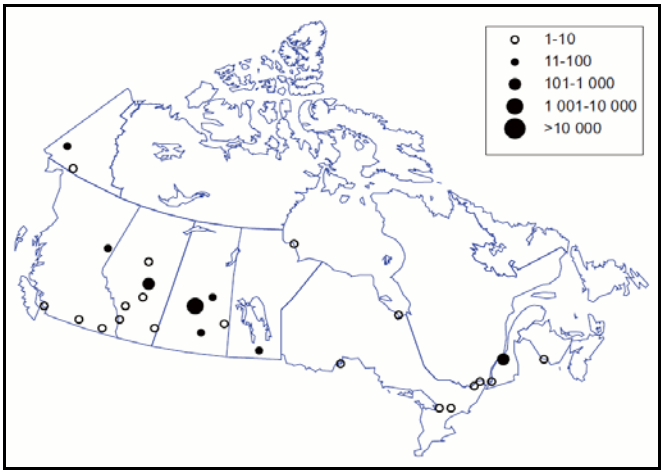
Encounter records: Bohemian Waxwing

1	0591-35113	AHY	U	02/03/65	Saskatoon, SK	52°00'N 106°30'W	1 yr.
	CSH	5	0	1966/SP/99	St. Albert, AB	53°30'N 113°30'W	500 km N68°W
2	0861-21432	AHY	U	03/04/78	Saskatoon, SK	52°00'N 106°30'W	11 mo.
	CSH	3	0	1979/03/ST	St. Albert, AB	53°30'N 113°30'W	500 km N68°W
3	0521-83313	AHY	U	19/02/68	Saskatoon, SK	52°00'N 106°30'W	5 yr. 2 mo.
	CSH	5	13	1973/04/99	near Vernon, BC	50°10'N 119°10'W	908 km S82°W
4	0571-21291	AHY	U	15/02/58	near Rochester, MN	44°00'N 92°20'W	1 yr. 3 mo.
	CMJ	0	0	1959/05/LT	7 km east of Banff, AB	51°10'N 115°20'W	1892 km N57°W
5	0031-53871	U	U	25/03/32	Gurnee, IL	42°20'N 87°50'W	1 mo.
	WIL	0	28	1932/04/FT	Craik, SK	51°00'N 105°40'W	1662 km N48°W
6	0041-19645	U	U	15/02/33	near Penticton, BC	49°30'N 119°30'W	1 yr. 1 mo.
	EMT	0	1	20/03/34	Mystic, SD	44°00'N 103°30'W	1362 km S69°E
7	0521-91526	U	U	09/04/62	Saskatoon, SK	52°00'N 106°30'W	11 mo.
	CSH	0	4	22/03/63	Kenmare, ND	48°40'N 102°00'W	490 km S43°E

Summary of banding statistics: Bohemian Waxwing

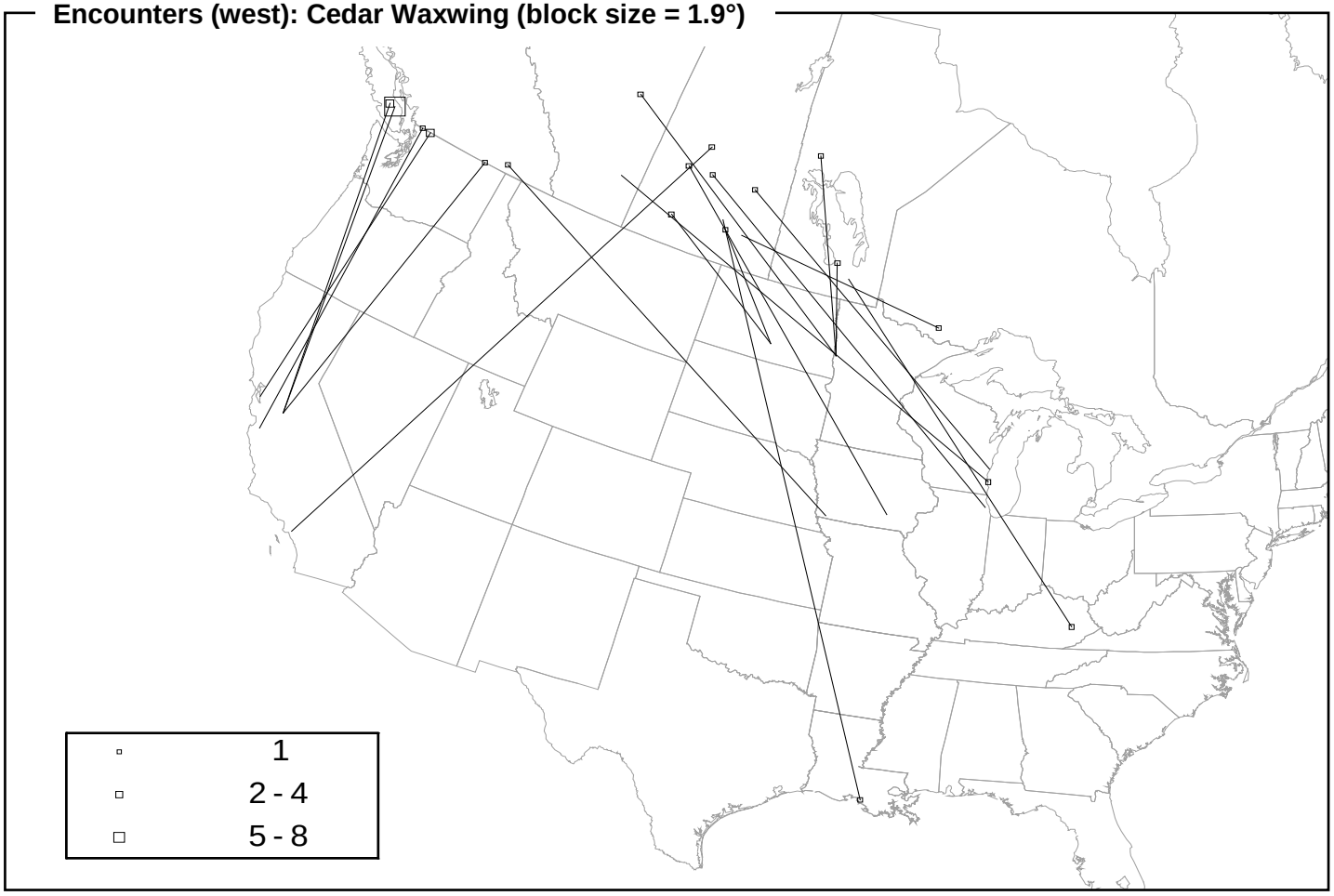
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5364*
No. encountered per 1000 banded (1955-1995)			*7*
Total no. encountered (1921-1995)	0	29	41
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	-	62	62
No. of Canadian-banded birds moving > 0 km	0	5	8
Mean movement > 0 km of Canadian-banded birds (km)	-	489	598
Maximum movement from all encounters (km)	-	1891	1891
% recovered (encountered dead)	-	89	90
% direct recoveries	-	75	80
% encountered during banding operations	-	0	0

Banding effort: Bohemian Waxwing



Top banders: CSH, JGi, LTS, JCF, EP

Cedar Waxwing (*Bombycilla cedrorum*) 619.0

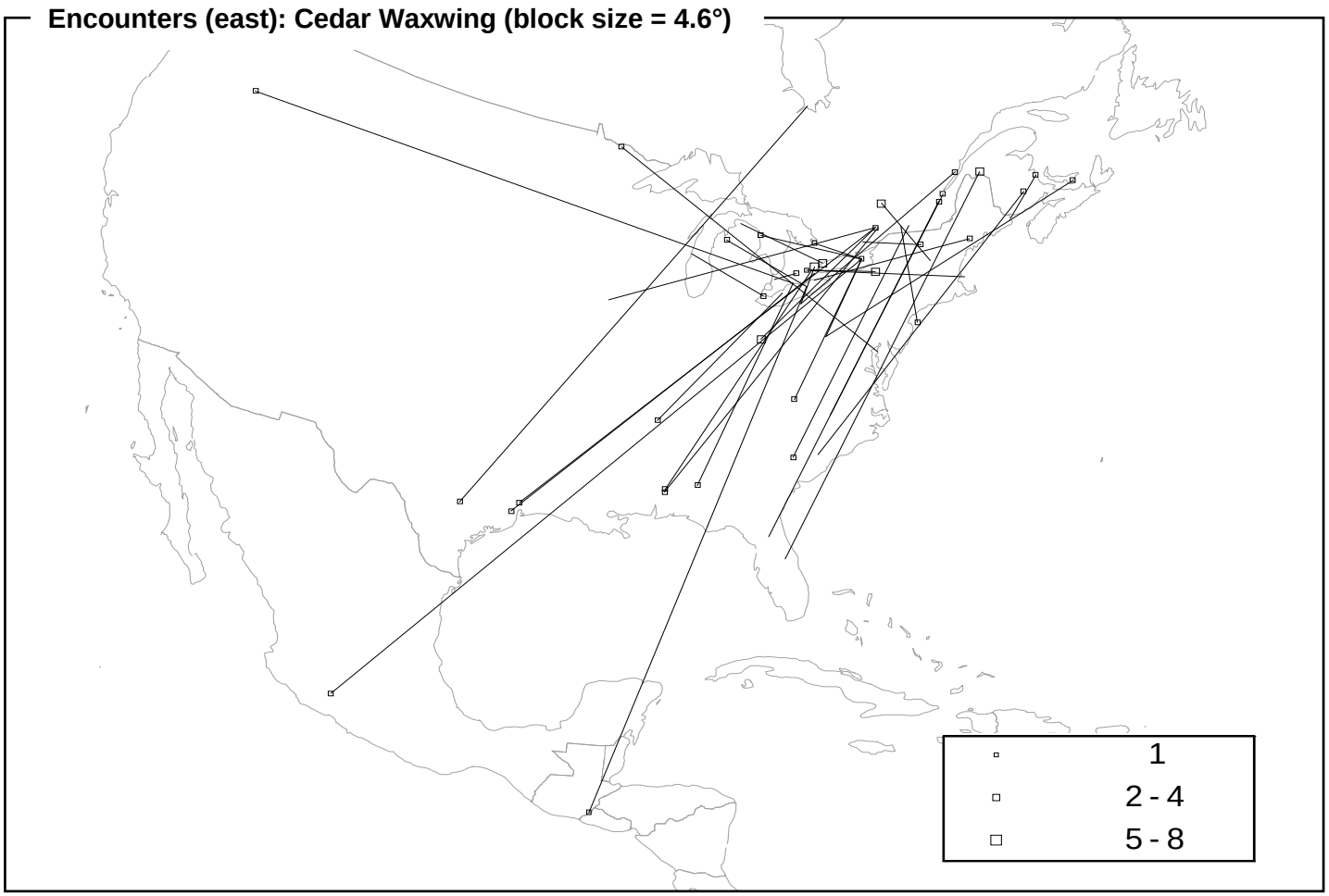


The Cedar Waxwing breeds across the northern U.S. and southern Canada but is absent from northern British Columbia, the Territories, and Labrador. It winters locally and irregularly in southern Canada (British Columbia, Ontario, Quebec, New Brunswick, and Nova Scotia), south through the U.S. to Panama and the Antilles.

The maps show fairly consistent directionality in the movements of birds encountered in different parts of Canada; however, there is low fidelity to wintering sites, and waxwings may move continuously throughout the winter season (Brugger et al. 1994, Witmer et al. 1997).

All 21 of the waxwings encountered during the breeding season in British Columbia were banded in spring in California (e.g., record 1); another banded in southern California in spring was encountered in the same September in Saskatchewan (record 2). Encounters in British Columbia were concentrated in the Vancouver-Victoria area (represented on the map by a single line), probably reflecting the distribution of the human population. Although most British Columbia birds appear to remain in the west, one waxwing encountered there had travelled from Iowa (record 3).

Most waxwings encountered on the Prairie Provinces moved on a northwest-southeast axis, passing through the Dakotas (e.g., records 4 and 5) and states on the south side of the Great Lakes (record 6), and wintering as far east as Kentucky (record 7) and south to Louisiana (record 8). By contrast, birds encountered in Quebec and the Maritimes travelled on a northeast-southwest axis. Birds that presumably breed in Quebec have been encountered in seven states, as far south as Texas and Florida (two records, including record 9). Ontario encounters include birds moving along both of these major axes (northwest-southeast and northeast-southwest), connecting the province to 15 states, mostly east of Texas (but see records 10 and 11),



as well as Mexico (record 12) and Guatemala (record 13). A good example of this apparent mixing of populations is supplied by two birds banded in October at St. Thomas, Ontario, within five days of each other; one was encountered four years later in Alabama (record 14), and the second one nine months later in Oregon (record 15, assuming the encounter record is an accurate one).

Cedar Waxwings are found farthest away from breeding areas in February, with no apparent difference in the distance travelled by first-year and older birds (Brugger et al. 1994)

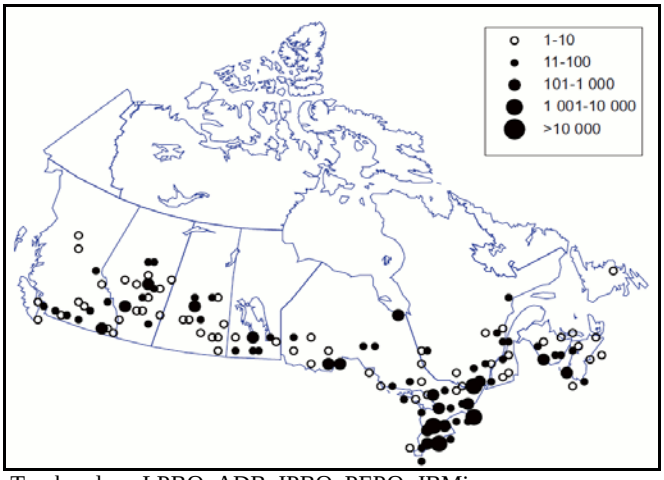
Encounter records: Cedar Waxwing

1	0281-82050	U	U	01/04/60	southeast of Modesto, CA	37°30'N	120°50'W	2 mo.
	CHF	0	12	09/06/60	near Cascade, BC	49°00'N	118°20'W	1296 km N8°E
2	0261-90018	AHY	U	18/04/60	east of Long Beach, CA	33°50'N	118°00'W	5 mo.
	ACF	0	14	10/09/60	west of Kilwinning, SK	53°10'N	107°00'W	2322 km N19°E
3	1041-28426	AHY	U	01/11/69	northeast of Auburn, IA	40°40'N	95°20'W	
	WCD	5	12	1970/06/??	Nelson, BC	49°20'N	117°10'W	1961 km N53°W
4	0760-54020	HY	U	08/06/68	near Bismarck, ND	46°40'N	100°10'W	10 dy.
	GMJ	2	98	18/06/68	near Regina, SK	50°20'N	104°30'W	518 km N36°W
5	0351-10483	HY	U	17/09/35	Fargo, ND	46°50'N	96°40'W	2 yr. 11 mo.
	OAS	0	0	17/08/38	near Smokey Lake, AB	54°00'N	112°20'W	1363 km N48°W
6	0291-49874	AHY	M	03/11/64	Arlington Heights, IL	42°00'N	87°50'W	10 mo.
	LGF	0	56	1965/09/FT	near Cheviot, SK	52°10'N	106°20'W	1793 km N45°W
7	0041-40722	J	U	12/08/32	Winnipeg, MB	49°50'N	97°00'W	4 yr. 6 mo.
	VWJ	0	0	09/02/37	Jacksons, KY	37°30'N	83°20'W	1754 km S44°E
8	0361-26666	HY	U	09/08/38	near Lumsden, SK	50°40'N	104°50'W	5 mo.
	FGB	0	1	12/01/39	Franklin, LA	29°40'N	91°30'W	2589 km S30°E
9	1071-37361	AHY	U	19/03/68	near Orlando, FL	28°30'N	81°20'W	
	AMK	5	0	1968/06/??	near Dégeli, QC	47°30'N	68°30'W	2389 km N24°E
10	0221-46507	AHY	U	29/08/65	Dundas Marsh, ON	43°10'N	79°50'W	7 mo.
	JBMi	5	0	12/03/66	Bellaire, TX	29°40'N	95°20'W	2039 km S48°W
11	1271-95296	AHY	U	22/07/83	27 km northeast of Moosonee, ON	51°20'N	80°20'W	3 yr. 8 mo.
	RIGM	3	0	16/03/87	New Braunfels, TX	29°40'N	98°00'W	2821 km S38°W
12	1231-15010	L	U	03/08/80	Prince Edward Point, ON	43°50'N	76°50'W	6 mo.
	PEPO	5	1	13/02/81	Michoacán State, MEXICO	19°00'N	102°00'W	c. 3625 km S48°W
13	1141-14941	AHY	U	22/05/76	Long Point, ON	42°30'N	80°20'W	
	LPBO	5	1	1977/02/??	Mita, GUATEMALA	14°10'N	89°40'W	3279 km S19°W
14	0221-12729	AHY	U	10/10/56	St. Thomas, ON	42°40'N	81°10'W	4 yr. 0 mo.
	MHF	0	1	01/10/60	Montgomery County, AL	32°10'N	86°??'W	
15	0221-03194	HY	U	05/10/56	near St. Thomas, ON	42°40'N	81°10'W	9 mo.
	MHF	0	0	26/07/57	Cove, OR	45°10'N	117°40'W	2915 km N72°W

Summary of banding statistics: Cedar Waxwing

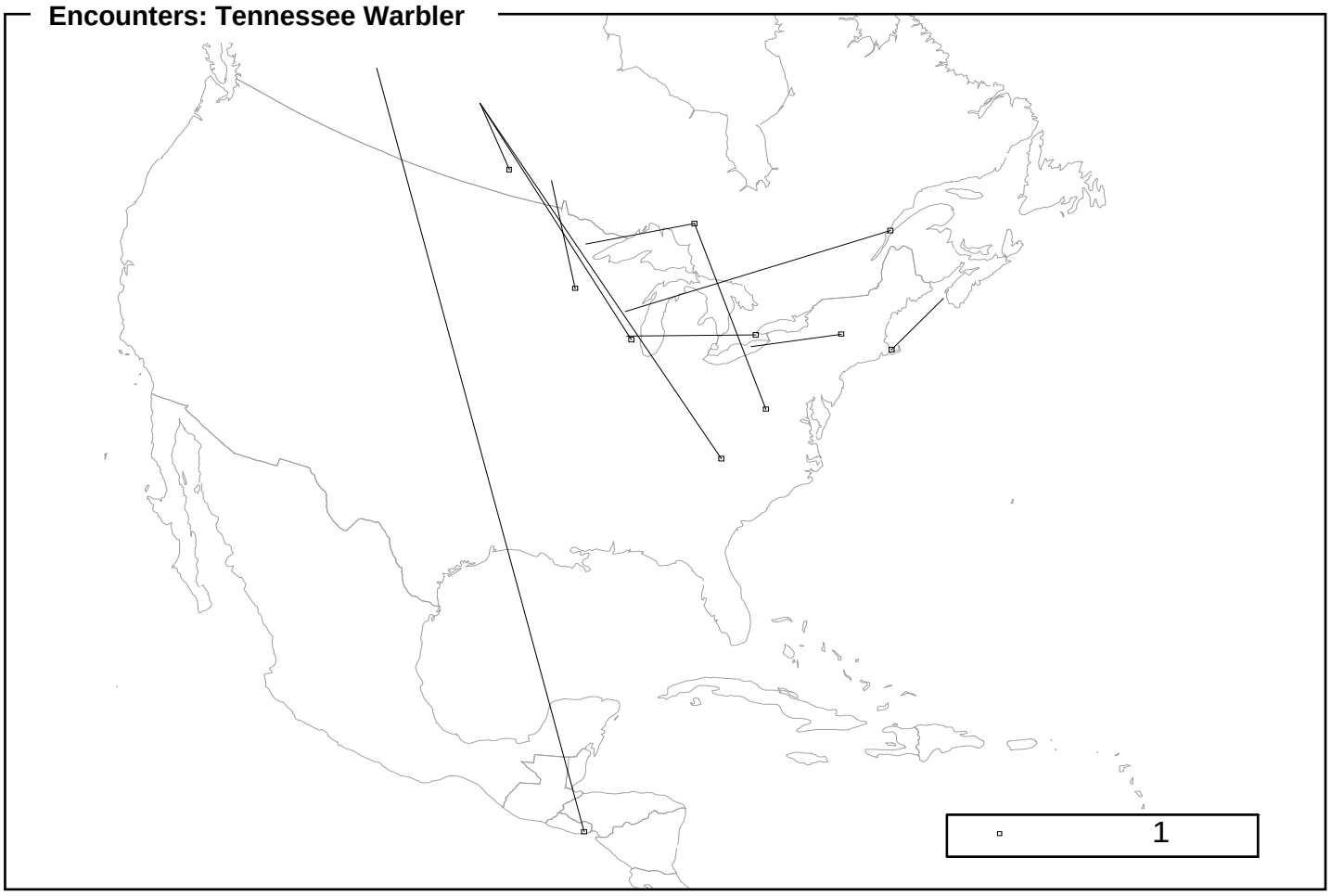
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*14 924*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	35	45	98
No. encountered from foreign bandings	10	25	53
Maximum period from banding to encounter (mo.)	54	48	54
No. of Canadian-banded birds moving > 0 km	14	20	34
Mean movement > 0 km of Canadian-banded birds (km)	1200	1039	1105
Maximum movement from all encounters (km)	3625	3278	3625
% recovered (encountered dead)	91	88	91
% direct recoveries	57	28	40
% encountered during banding operations	5	6	5

Banding effort: Cedar Waxwing



Top banders: LPBO, ADB, IPBO, PEPO, JBMi

Tennessee Warbler (*Vermivora peregrina*) 647.0



One of the most boreal of warblers, the Tennessee Warbler breeds in forest zones from Newfoundland and Maine across the northern Prairie Provinces to Alberta. It winters from southern Mexico to northern South America (western Venezuela and western Colombia).

The 11 encounters with non-trivial movements are mapped. All but one bird, by virtue of dates and locations, were both banded and encountered on migration rather than on breeding or wintering grounds. The exception (record 1) was banded on migration in Alberta and encountered on its wintering grounds in El Salvador. The other four birds banded in the Prairie Provinces (records 2-5) were all encountered in the U.S. and show a consistent northwest-southeast migration direction.

In contrast, birds encountered or banded in Ontario or Quebec (e.g., records 6 and 7) show a strong (and unusual) east-west component in their movements; more records are needed to clarify the true migratory direction of birds from these provinces. The single encounter from the Maritimes (record 8) was banded in Nova Scotia and recaptured in Massachusetts eight days later, having travelled at least 53 km per day.

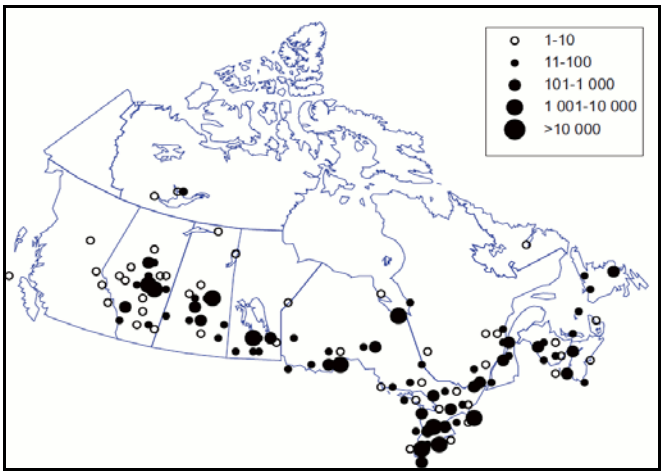
Encounter records: Tennessee Warbler

1	1540-09657	HY	U	26/08/82	Millet, AB	53°00'N	113°20'W	5 mo.
	JCF	0	1	22/01/83	Usulutan, EL SALVADOR	13°20'N	88°10'W	4945 km S36°E
2	0210-24204	U	U	23/08/52	White Fox, SK	53°20'N	104°00'W	2 mo.
	MGS	0	12	04/10/52	Roan Mountain, TN	36°10'N	82°00'W	2562 S51°E
3	0220-01698	U	U	19/09/52	White Fox, SK	53°20'N	104°00'W	
	MGS	0	12	1952/11/??	East Newdale, MB	50°20'N	100°00'W	431 km S53°E
4	0220-15905	U	U	12/08/55	White Fox, SK	53°20'N	104°00'W	9 mo.
	MGS	0	13	04/05/56	Delavan, WI	42°30'N	88°30'W	1659 km S54°E
5	1860-99797	HY	U	02/09/93	Greenwald, MB	50°20'N	96°30'W	13 dy.
	DC	4	0	15/09/93	St. Paul, MN	44°50'N	93°00'W	666 km S25°E
6	1150-36492	U	U	27/08/69	Chisholm, MN	47°20'N	92°50'W	4 yr.
	JM	7	12	06/08/73	Hornepayne, ON	49°10'N	84°40'W	636 km N77°E
7	1290-33229	AHY	U	14/05/72	Wautoma, WI	44°00'N	89°10'W	1 yr. 3 mo.
	MC	5	3	1973/08/99	Escoumins, QC	48°20'N	69°20'W	1598 km N66°E
8	1450-24480	AHY	U	20/09/77	Westport, NS	44°10'N	66°20'W	8 dy.
	RRA	7	89	28/09/77	Manomet, MN	41°50'N	70°30'W	427 km S54°W

Summary of banding statistics: Tennessee Warbler

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*36 971*
No. encountered per 1000 banded (1955-1995)			*0.3*
Total no. encountered (1921-1995)	7	4	17
No. encountered from foreign bandings	0	1	3
Maximum period from banding to encounter (mo.)	25	15	48
No. of Canadian-banded birds moving > 0 km	5	1	9
Mean movement > 0 km of Canadian-banded birds (km)	1471	427	1382
Maximum movement from all encounters (km)	4945	1598	4945
% recovered (encountered dead)	71	50	70
% direct recoveries	71	75	64
% encountered during banding operations	28	50	23

Banding effort: Tennessee Warbler



Top banders: ETJ, LPBO, MGS, BBO, KAH

Orange-crowned Warbler (*Vermivora celata*) 646.0

Encounters: Orange-crowned Warbler

The Orange-crowned Warbler breeds through most of forested Canada except for the Prairie Provinces, southern Ontario and Quebec, and the Maritimes; it also breeds in the western U.S. It winters from the southern U.S. south to Guatemala.

Three birds encountered in British Columbia on or near their breeding grounds were banded during fall, one in California (record 1) and two in Mexico (records 2 and 3). The exact coordinates for records 2 and 3 are not available, so the distance travelled is approximate. The other three records for this species are for birds both banded and reencountered during migration. One was found dead in a building or enclosure (record 4), and the others were recaptured and released by other banders (records 5 and 6). The bird in record 4 is not far short of the record age for the species of six years and nine months (Klimkiewicz et al. 1983).

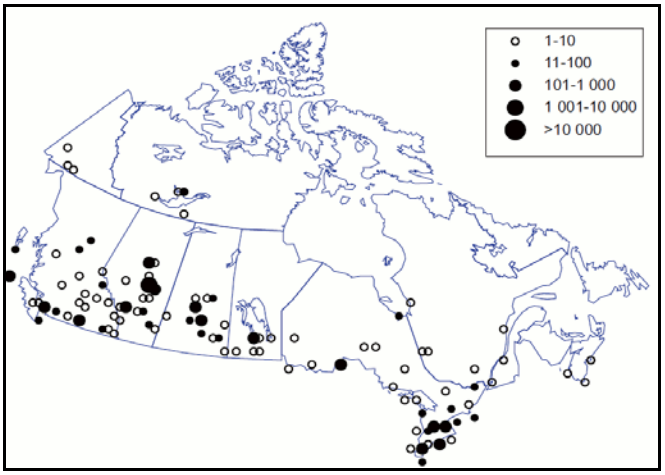
Encounter records: Orange-crowned Warbler

1	1870-73194	HY	U	28/09/91	San José, CA	37°20'N	121°50'W	9 mo.
	CCRS	3	0	13/06/92	Queen Charlotte, BC	53°10'N	132°00'W	1930 km N21°W
2	1180-73334	HY	U	03/10/68	Baja California State, MEXICO	27°00'N	113°00'W	7 mo.
	DFD	5	0	02/05/69	Beacon Hill, BC	48°20'N	123°20'W	c. 2538 km N18°W
3	1480-43137	U	U	27/11/77	Sonora State, MEXICO	30°00'N	110°00'W	
	SMR	5	0	1980/06/??	Sechelt, BC	49°20'N	123°40'W	c. 2441 km N24°W
4	1010-09807	HY	U	23/09/61	Ames, NE	41°20'N	96°30'W	5 yr. 7 mo.
	GLN	3	21	30/04/67	Lankenheath, SK	49°30'N	106°10'W	1176 km N49°W
5	1690-18044	HY	U	29/09/85	18 km north of Minetto, NY	43°30'N	76°20'W	3 yr. 8 mo.
	RNR	7	89	17/05/89	Nelles Corners, ON	42°50'N	79°50'W	294 km S77°W
6	1560-07857	HY	U	08/10/81	Toronto, ON	43°30'N	79°20'W	1 yr. 9 mo.
	TBO	7	89	05/07/83	Stoney Creek, ON	43°10'N	79°40'W	46 km S36°W

Summary of banding statistics: Orange-crowned Warbler

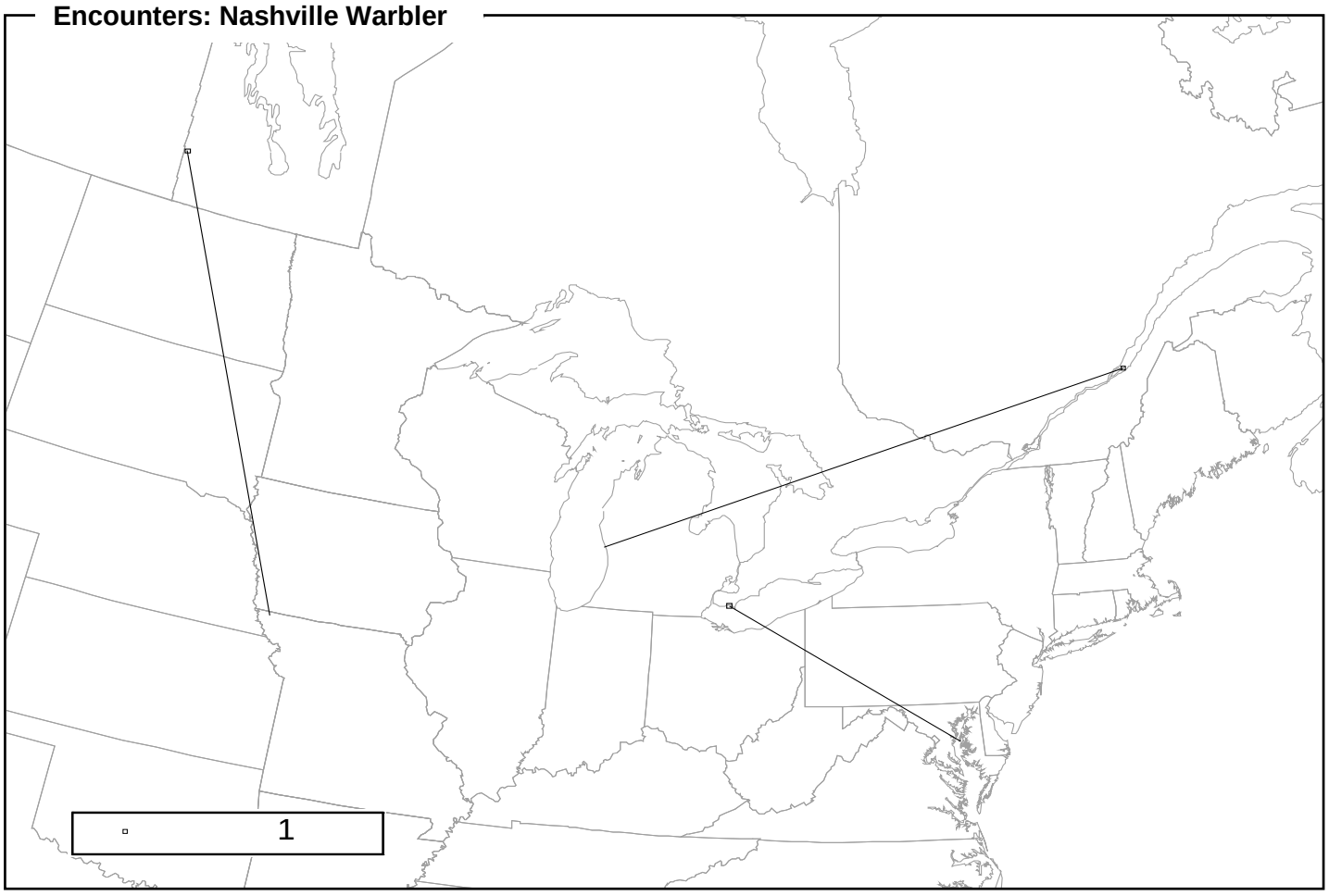
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5688*
No. encountered per 1000 banded (1955-1995)			*0.2*
Total no. encountered (1921-1995)	5	0	6
No. encountered from foreign bandings	4	0	5
Maximum period from banding to encounter (mo.)	67	-	67
No. of Canadian-banded birds moving > 0 km	1	0	1
Mean movement > 0 km of Canadian-banded birds (km)	45	-	45
Maximum movement from all encounters (km)	2537	-	2537
% recovered (encountered dead)	60	-	66
% direct recoveries	0	-	0
% encountered during banding operations	40	-	33

Banding effort: Orange-crowned Warbler



Top banders: ETJ, ARS, LPBO, UBC, CWS-BC

Nashville Warbler (*Vermivora ruficapilla*) 645.0



The Nashville Warbler is a disjunct breeder, breeding in the northwestern U.S. and southern British Columbia, and from central Manitoba across southern Canada and the northeastern U.S. to Nova Scotia. It winters from southern Texas and central Mexico to Guatemala.

The only encounters (all listed) are of birds banded on migration in the U.S. and encountered in Canada. Two were evidently encountered on migration as well (records 1 and 2; although the dates are inexact), but one (record 3) may have been on its breeding grounds when encountered. If the bird in record 1 was encountered on the date it was reported (the latter being the only information available), the bird would be only one month shy of the longevity record for the species (Klimkiewicz 1997).

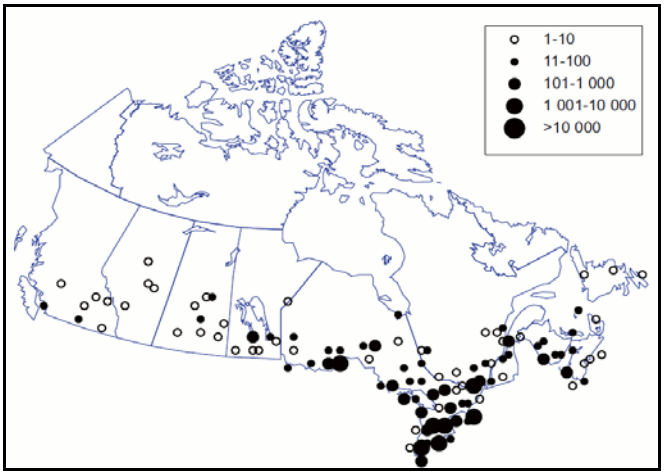
Encounter records: Nashville Warbler

1	1180-75260	HY	F	08/09/68	Carr Creek, MD	38°50'N 76°20'W	7 yr. 0 mo.
	DB	5	12	1975/09/99	Cottam, ON	42°00'N 82°40'W	642 km N55°W
2	1300-33396	AHY	U	06/05/73	southeast of Hamburg, MO	40°30'N 95°20'W	
	FLD	5	0	1974/SP/99	McAuley, MB	50°10'N 101°20'W	1173 km N21°W
3	1300-47113	U	U	29/08/72	west of Muskegon, MI	43°10'N 86°20'W	1 yr. 10 mo.
	LHW	5	0	04/06/74	Cap-Tourmente, QC	47°00'N 70°40'W	1301 km N65°E

Summary of banding statistics: Nashville Warbler

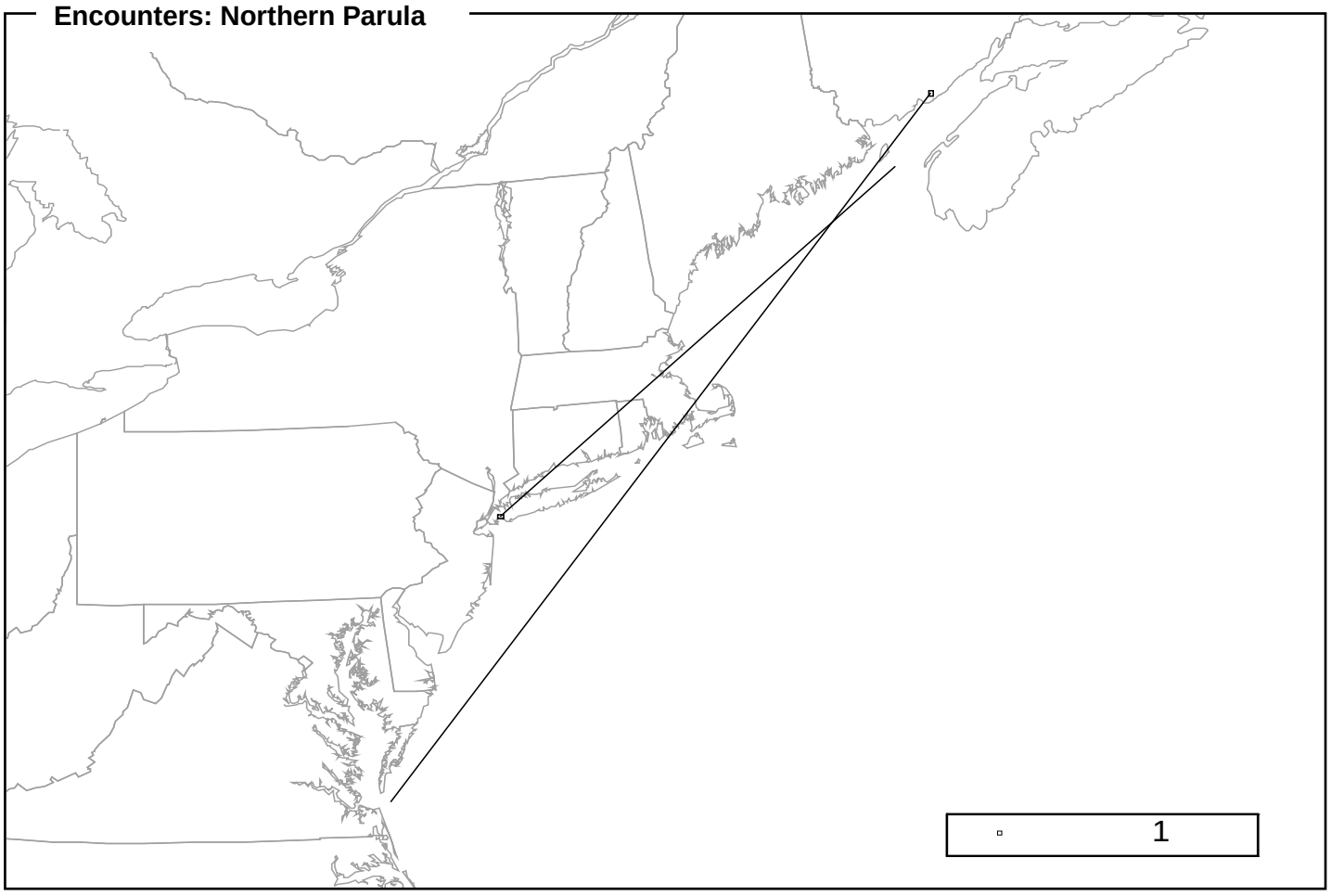
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*18 222*
No. encountered per 1000 banded (1955-1995)			*0*
Total no. encountered (1921-1995)	1	1	3
No. encountered from foreign bandings	1	1	3
Maximum period from banding to encounter (mo.)	84	-	84
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	641	1173	1300
% recovered (encountered dead)	100	100	100
% direct recoveries	0	0	0
% encountered during banding operations	0	0	0

Banding effort: Nashville Warbler



Top banders: LPBO, PEPO, MJW, IPBO, TBO

Norther Parula (*Parula americana*) 648.0



The Northern Parula breeds locally in the eastern U.S. and southern Canada from southeastern Manitoba east to Nova Scotia. It winters from central Mexico south through Central America to Guatemala, and from Florida and the Bahamas south through the West Indies to Guadeloupe.

The two records showing some movement are of birds banded on fall migration. One (record 1) was encountered late the following spring, possibly on its breeding grounds but perhaps still on northward migration. The other (record 2) was encountered the following fall, again on migration.

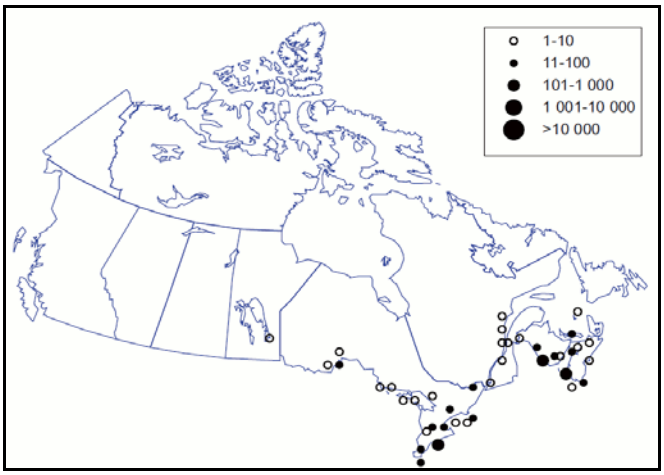
Encounter records: Northern Parula

1	1170-58390	HY	M	03/10/73	near Norfolk, VA	37°00'N 75°50'W	7 mo.
	CWH	3	0	22/05/74	French Village, NB	45°20'N 65°50'W	1248 km N39°E
2	1540-06653	HY	U	20/08/80	Kent Island, NB	44°30'N 66°40'W	1 yr. 2 mo.
	BC	5	28	10/10/81	New York, NY	40°40'N 73°50'W	726 km S56°W

Summary of banding statistics: Northern Parula

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*1115*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	2	1	3
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	14	1	14
No. of Canadian-banded birds moving > 0 km	1	0	1
Mean movement > 0 km of Canadian-banded birds (km)	726	-	726
Maximum movement from all encounters (km)	1248	0	1248
% recovered (encountered dead)	100	100	100
% direct recoveries	0	100	33
% encountered during banding operations	0	0	0

Banding effort: Northern Parula



Top banders: RRA, LPBO, BC, TD, GMBO

Yellow Warbler (*Dendroica petechia*) 652.0

Encounters: Yellow Warbler (block size = 1.0°; excludes birds moving < 200 km)

The Yellow Warbler breeds across most of the U.S. and Canada, north almost to the treeline. It winters from the southwestern U.S., through Florida and the Bahamas, south through Central America and the West Indies to South America (mainly east of the Andes) as far as Peru, Bolivia, and Amazonian Brazil.

Most encounters were of birds retrapped at the site of banding, and most were adults returning to the same nesting sites; only 26 encounters showed movements greater than 50 km. The map shows only the 19 encounters with movements greater than 200 km.

Eastern birds tend to migrate toward the southwest in fall (e.g., records 1–6 below), particularly those breeding in the Maritimes. Record 7 is noteworthy because this hatch-year bird travelled 1155 km from Long Point, Ontario, to Georgia in just 16 days, averaging 72 km per day. Yellow Warblers from the Prairie Provinces travel on a northwest–southeast axis (records 8 and 9).

The bird in record 10 once held the North American longevity record; it has since been superseded by a bird nearly 10 years old (Klimkiewicz 1997).

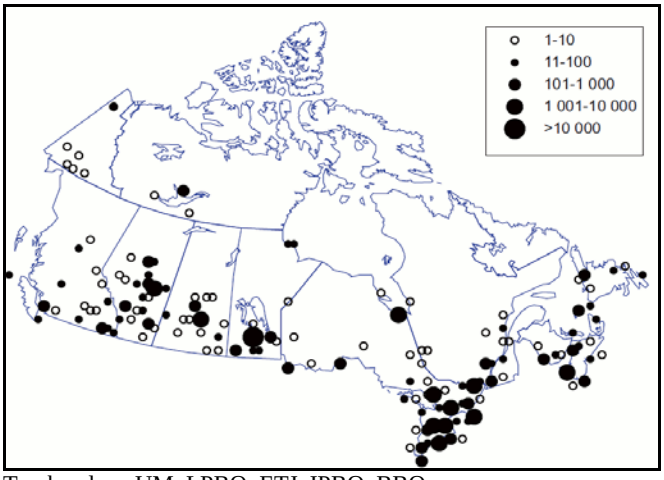
Encounter records: Yellow Warbler

1	0320-05344	HY	U	26/08/62	South Stream Wildlife Management	42°40'N 73°10'W	11 mo.
	BJB	0	0	08/07/63	near Truro, NS	45°20'N 63°10'W	853 km N66°E
2	1200-04304	AHY	M	08/05/70	Island Beach, NJ	39°50'N 74°00'W	1 mo.
	KWP	2	98	30/06/70	near West Pubnico, NS	43°40'N 65°40'W	812 km N56°E
3	1320-64838	AHY	F	24/05/73	Barnegat, NJ	39°40'N 74°10'W	1 yr. 3 mo.
	FHL	5	0	18/08/74	near Skinner's Pond, PE	46°50'N 64°00'W	1145 km N43°E
4	1280-41687	HY	U	15/09/75	6 km south of Massapequa Park, NY	40°30'N 73°20'W	10 mo.
	ROP	5	14	03/07/76	Glenwood, Labrador, NL	49°00'N 55°00'W	1724 km N51°E
5	1540-85770	SY	U	06/06/82	27 km northeast of Moosonee, ON	51°20'N 80°20'W	3 mo.
	RIGM	5	28	14/09/82	Milwaukee, WI	43°00'N 87°50'W	1086 km S34°W
6	1480-72820	HY	U	26/08/78	Long Point, ON	42°30'N 80°10'W	1 yr.10 mo.
	LPBO	5	0	1980/06/FT	Lake Pelletier, QC	48°10'N 79°00'W	637 km N8°E
7	1710-05160	HY	U	04/08/85	Long Point, ON	42°30'N 80°20'W	16 dy.
	LPBO	5	12	20/08/85	Fort Valley, GA	32°30'N 83°50'W	1155 km S17°W
8	1300-92740	AHY	M	19/05/79	Rochester, MN	44°00'N 92°20'W	2 yr. 3 mo.
	HLB	3	12	31/08/81	Humbolt, SK	52°10'N 105°00'W	1306 km N41°W
9	1450-24882	HY	U	24/07/78	Delta Marsh, MB	50°10'N 98°20'W	10 mo.
	UM	5	13	28/05/79	Omaha, NE	41°10'N 95°50'W	1020 km S12°E
10	1080-63662	AHY	M	14/05/66	Balmoral Marsh, ON	42°20'N 82°20'W	8 yr. 0 mo.
	GG	7	99	04/05/74	Balmoral Marsh, ON	42°20'N 82°20'W	0 km

Summary of banding statistics: Yellow Warbler

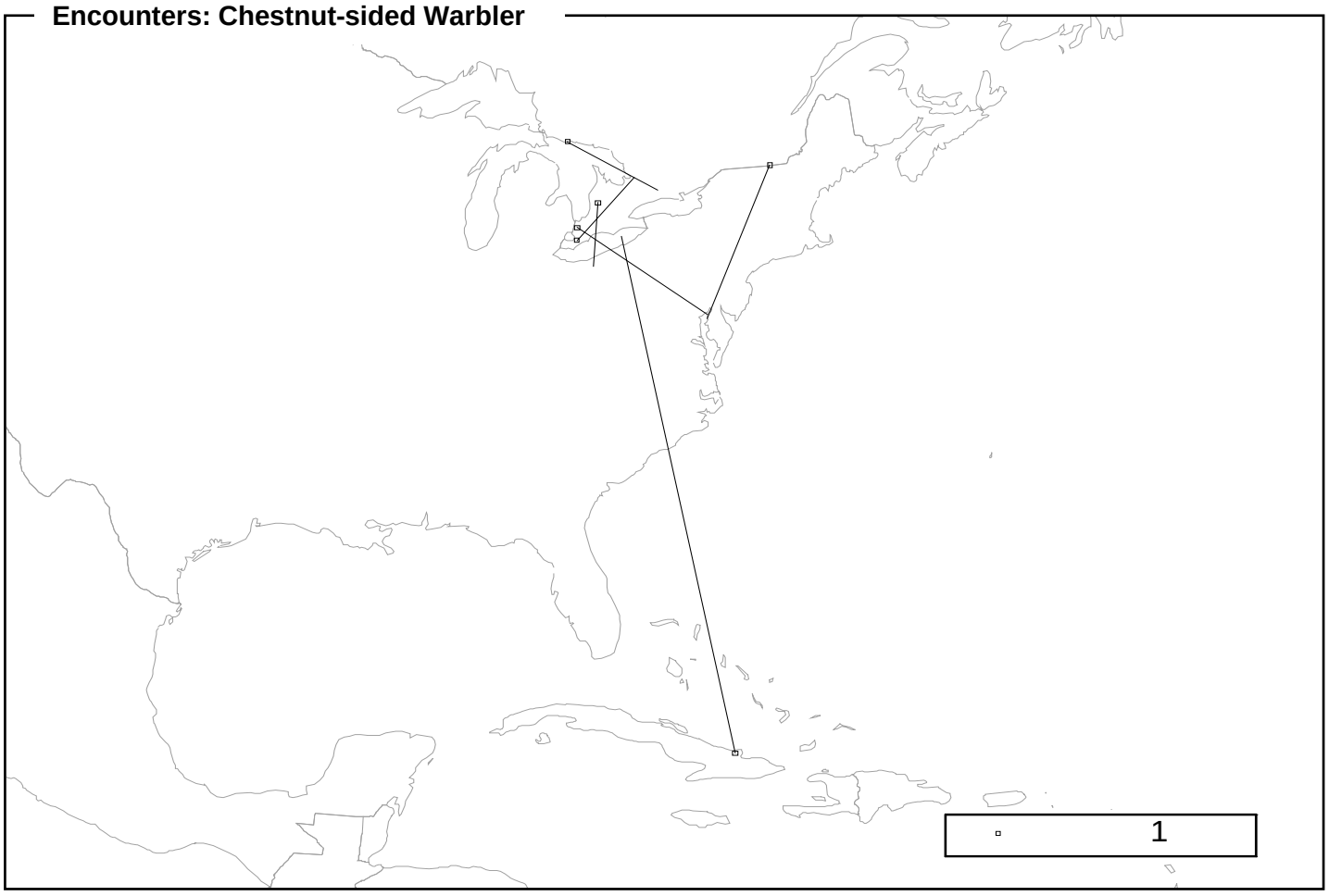
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*63 619*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	33	69	114
No. encountered from foreign bandings	2	7	9
Maximum period from banding to encounter (mo.)	96	96	96
No. of Canadian-banded birds moving > 0 km	14	17	41
Mean movement > 0 km of Canadian-banded birds (km)	291	156	167
Maximum movement from all encounters (km)	1723	1305	1723
% recovered (encountered dead)	51	26	33
% direct recoveries	9	5	8
% encountered during banding operations	48	72	65

Banding effort: Yellow Warbler



Top banders: UM, LPBO, ETJ, IPBO, BBO

Chestnut-sided Warbler (*Dendroica pensylvanica*) 659.0



The Chestnut-sided Warbler breeds from eastern Alberta east across southern Canada to Nova Scotia, as well as south to Wisconsin, Pennsylvania, and (in mountains) northern Georgia. It winters from southern Mexico to northwestern South America.

The six encounters showing significant movement are listed below, including one bird encountered in Cuba (record 1). Except for the bird in record 2, which may have been encountered on its breeding grounds, the other distant encounters were of birds both banded and encountered in migration seasons (records 1-6). Two were short-term encounters (records 3 and 4) of birds that had moved a minimum of 60 km and 30 km per day, respectively. The latter bird (record 4) had a surprising northwestern trajectory.

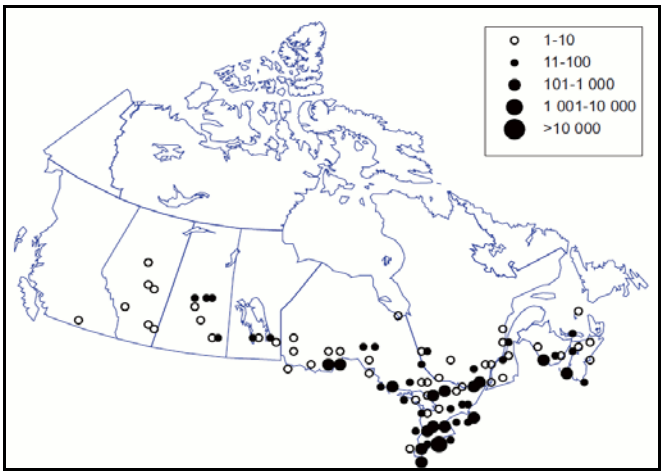
Encounter records: Chestnut-sided Warbler

1	1840-59267	HY	M	27/08/89	Long Point, ON	42°30'N	80°10'W	1 yr. 1 mo.
	LPBO	0	98	10/09/90	Gibara, CUBA	21°00'N	76°00'W	2425 km S11°E
2	1740-31050	HY	U	07/09/86	Fairlee, MD	39°10'N	76°10'W	9 mo.
	JGG	5	0	24/06/87	East of Abercorn, QC	45°00'N	72°30'W	716 km N24°E
3	0280-28237	HY	M	12/09/64	near Gravenhurst, ON	44°50'N	79°30'W	6 dy.
	RB	0	0	18/09/64	Balmoral Marsh, ON	42°20'N	82°20'W	360 km S40°W
4	1540-06174	HY	U	01/09/84	Bridgenorth, ON	44°20'N	78°20'W	14 dy.
	BKW	3	0	15/09/84	Dean Lake, ON	46°10'N	83°00'W	419 km N59°W
5	1150-69572	AHY	M	17/05/67	Abingdon, MD	39°20'N	76°10'W	1 yr. 0 mo.
	RLR	5	12	15/05/68	Corunna, ON	42°50'N	82°20'W	647 km N51°W
6	1320-02679	AHY	U	18/05/73	Maple Heights, OH	41°20'N	81°30'W	1 yr.
	JTS	7	89	17/05/74	near London, ON	43°50'N	81°20'W	279 km N03°E
7	0260-86955	AHY	M	28/08/58	Port Sydney, ON	45°10'N	79°10'W	4 yr. 1 mo.
	RJR	0	0	05/09/62	Port Sydney, ON	45°10'N	79°10'W	0 km

Summary of banding statistics: Chestnut-sided Warbler

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*9460*
No. encountered per 1000 banded (1955-1995)			*0.8*
Total no. encountered (1921-1995)	4	7	11
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	9	49	49
No. of Canadian-banded birds moving > 0 km	3	2	5
Mean movement > 0 km of Canadian-banded birds (km)	1067	27	651
Maximum movement from all encounters (km)	2424	647	2424
% recovered (encountered dead)	100	42	63
% direct recoveries	50	0	18
% encountered during banding operations	0	57	36

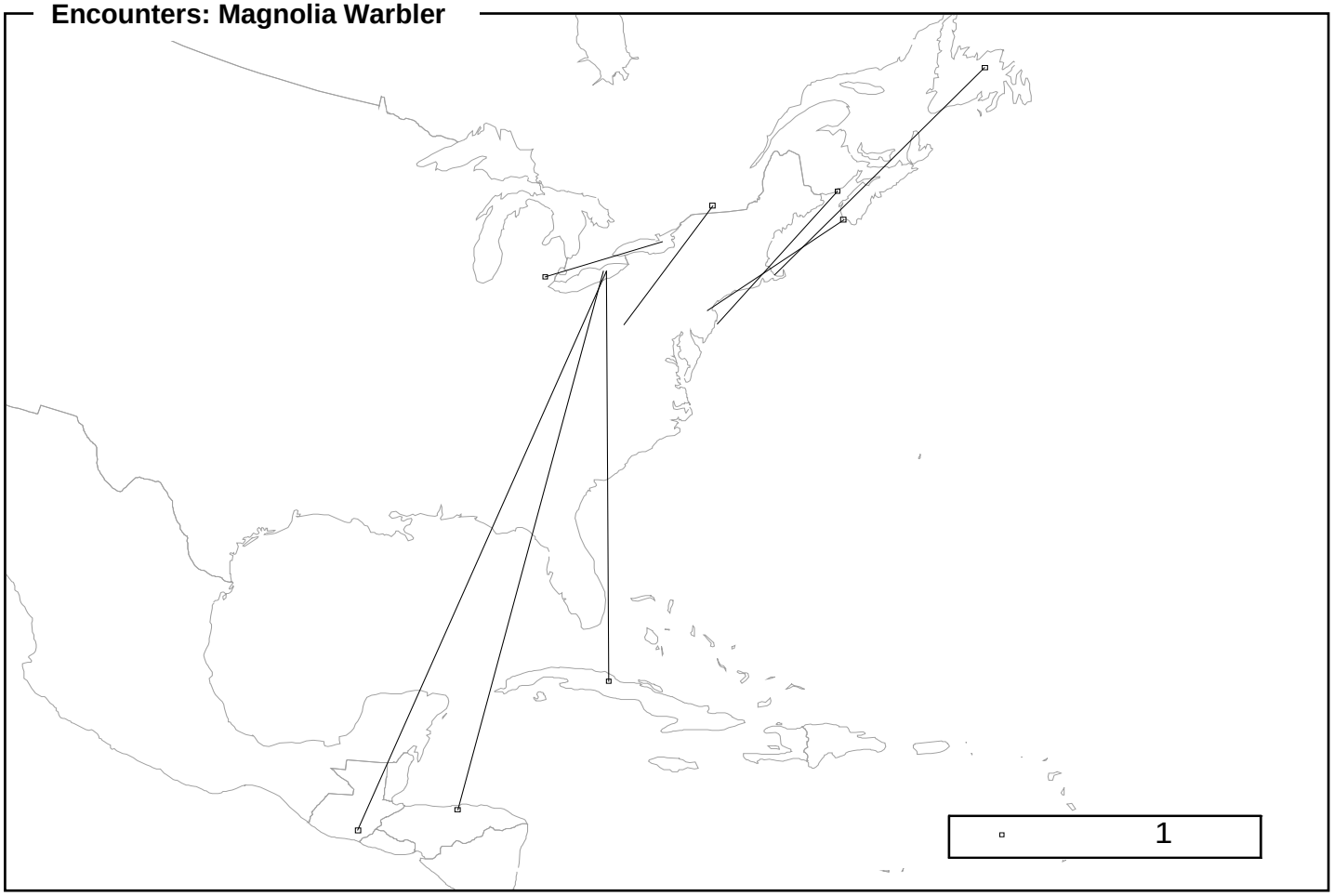
Banding effort: Chestnut-sided Warbler



Top banders: LPBO, PEPO, MJW, IPBO, TBO

Magnolia Warbler (*Dendroica magnolia*) 657.0

Encounters: Magnolia Warbler



The Magnolia Warbler breeds across the forested zones of Canada from the southern Northwest Territories and northeastern British Columbia to Newfoundland and the northeastern U.S. It winters from central Mexico south through Central America to Panama, and east through the West Indies to the Virgin Islands.

Of the 13 encounters, 8 showed some movement (all listed below). The birds in records 1 and 2 may have been wintering in Central America or may have been encountered while moving from farther south. These and the bird in record 3 (all the longest-distance encounters) were banded on migration at Long Point, Ontario. The birds in records 4 and 5 were probably in their breeding areas when encountered. Banding results for this species are consistent with the trans-Gulf migration route described by Hall (1994).

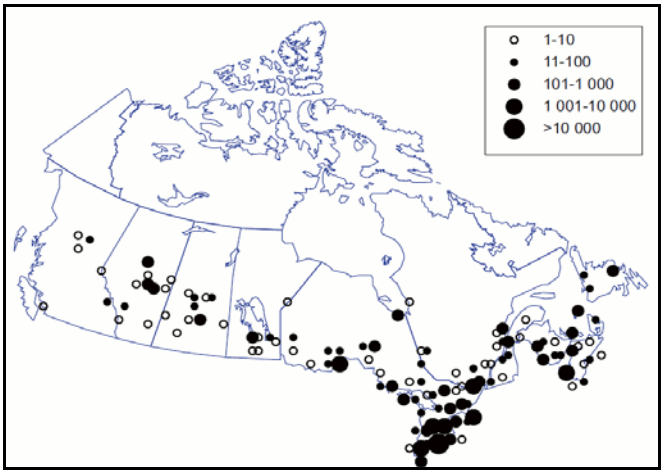
Encounter records: Magnolia Warbler

1	1200-51222	AHY	U	16/05/70	Long Point, ON	42°30'N 80°10'W	1 yr. 11 mo.
	LPBO	0	1	10/04/72	near Cuilapa, GUATEMALA	14°20'N 90°10'W	3279 km S20°W
2	1700-41261	ASY	M	25/05/84	Long Point, ON	42°30'N 80°20'W	1 yr.11 mo.
	LPBO	3	1	19/04/86	Japon, HONDURAS	15°40'N 86°10'W	3039 km S12°W
3	1840-59261	HY	U	27/08/89	Long Point, ON	42°30'N 80°10'W	1 yr. 1 mo.
	LPBO	9	28	09/09/90	inexact location, CUBA	22°??'N 80°??'W	c. 2226 km S0°E
4	1060-63145	U	U	19/09/63	near Barnegat Bay, NJ	39°50'N 74°00'W	9 mo.
	MW	0	12	11/06/64	Lancaster, NB	45°10'N 66°00'W	884 km N45°E
5	1350-83654	SY	M	01/06/76	Manomet, MA	41°50'N 70°30'W	4 yr. 0 mo.
	MBO	5	0	19/06/80	Glenwood, Labrador, NL	48°50'N 55°00'W	1438 km N52°E
6	1510-23965	HY	U	21/08/79	Prince Edward Point, ON	43°50'N 76°50'W	2 yr. 9 mo.
	PEPO	5	0	25/05/82	Ann Arbor, MI	42°10'N 83°40'W	586 km S74°W
7	1220-42479	HY	U	13/09/70	Powdermill Nature Reserve, PA	40°00'N 79°10'W	8 mo.
	CMNH	3	13	23/05/71	Kahnawake, QC	45°20'N 73°40'W	745 km N35°E
8	1050-92039	AHY	F	21/05/65	near New Brunswick, NJ	40°30'N 74°30'W	5 yr. 4 mo.
	NJ	5	0	21/09/70	near Overton, NS	43°50'N 66°00'W	793 km N59°E

Summary of banding statistics: Magnolia Warbler

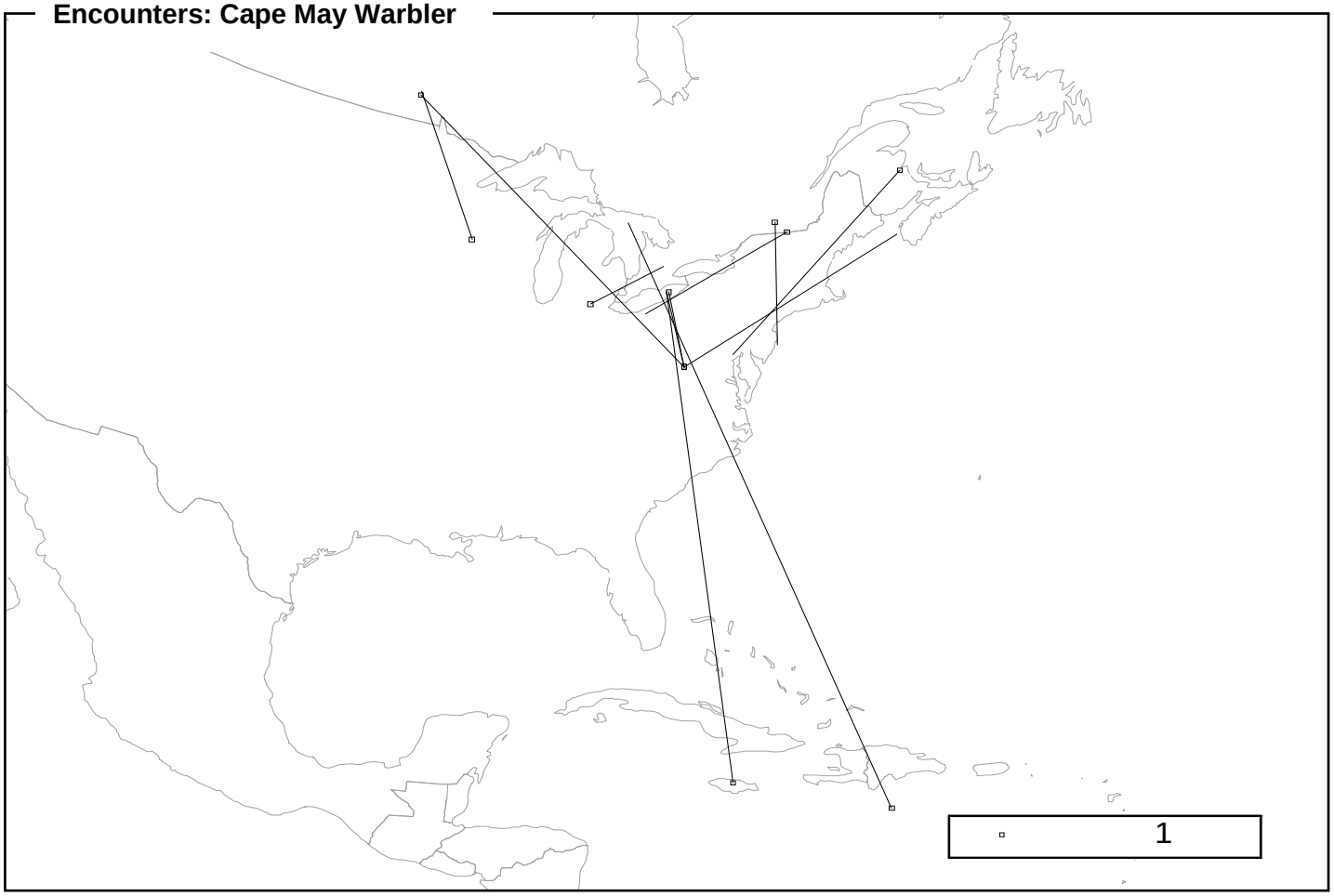
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*37 885*
No. encountered per 1000 banded (1955-1995)			*0.2*
Total no. encountered (1921-1995)	3	8	13
No. encountered from foreign bandings	1	2	4
Maximum period from banding to encounter (mo.)	33	64	64
No. of Canadian-banded birds moving > 0 km	2	2	4
Mean movement > 0 km of Canadian-banded birds (km)	1406	3158	2282
Maximum movement from all encounters (km)	2226	3279	3279
% recovered (encountered dead)	66	75	69
% direct recoveries	0	12	7
% encountered during banding operations	0	25	23

Banding effort: Magnolia Warbler



Top banders: LPBO, PEPO, MJW, TBO, RRA

Cape May Warbler (*Dendroica tigrina*) 650.0



The Cape May Warbler breeds in forested regions of Canada from the southwestern Northwest Territories and east-central British Columbia east to Nova Scotia and Maine. It winters in Florida and the West Indies, mainly in the Greater Antilles and the Bahamas.

Eleven of the 12 birds encountered showed significant movement (all listed below). The encounter date in record 1 suggests this adult could have been on its breeding ground. Two late fall encounters in the same year as banding (records 2 and 3) were at locations falling within the known wintering range. All other birds (records 4–11) were both banded and encountered during migration. The Manitoba bird found dead in Wisconsin six days later (record 4) had travelled at least 131 km per day. Other short-term fall encounters linked Ontario with Michigan (record 5) and West Virginia (record 6).

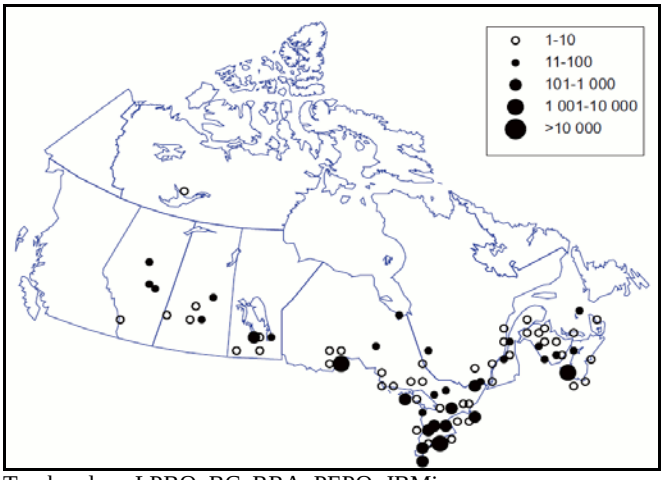
Encounter records: Cape May Warbler

1	0240-24267	AHY	M	05/05/55	Glencoe, MD	39°30'N	76°30'W	1 mo.
	SWS	0	14	01/06/55	Chatham, NB	47°00'N	65°20'W	1229 km N44°E
2	1440-22501	HY	M	26/08/76	Long Point, ON	42°30'N	80°10'W	3 mo.
	LPBO	5	1	23/11/76	Brown's Town, JAMAICA	18°20'N	77°20'W	2704 km S7°E
3	1540-05307	AHY	M	30/08/83	Evansville, ON	45°40'N	82°30'W	2 mo.
	RRT	5	0	18/10/83	AT SEA, south of HAITI	16°40'N	70°50'W	3406 km S22°E
4	1780-40572	HY	F	23/08/88	Matlock, MB	50°20'N	96°50'W	6 dy.
	DC	5	0	29/08/88	Alma, WI	44°10'N	91°50'W	783 km S31°E
5	1750-51790	HY	M	26/08/86	Fergus, ON	43°40'N	80°20'W	23 dy.
	DRL	5	12	18/09/86	Osseo, MI	41°50'N	84°30'W	397 km S60°W
6	1470-09984	HY	M	24/08/77	Long Point, ON	42°30'N	80°10'W	11 dy.
	LPBO	7	89	04/09/77	Jordon Run, WV	39°00'N	79°10'W	399 km S13°E
7	1540-93801	AHY	M	04/08/81	Westport, NS	44°10'N	66°20'W	1 yr. 0 mo.
	RRA	7	89	30/08/82	Jordon Run, WV	39°00'N	79°10'W	1212 km S66°W
8	1710-79313	HY	M	09/09/85	Jordon Run, WV	39°00'N	79°10'W	1 yr. 11 mo.
	EMO	5	12	99/08/87	Clandeboye, MB	50°10'N	96°50'W	1864 km N42°W
9	1560-41823	HY	M	10/09/81	Jordon Run, WV	39°00'N	79°10'W	8 mo.
	TS	7	89	14/05/82	Long Point, ON	42°30'N	80°00'W	396 km N10°W
10	1420-51287	HY	F	20/09/75	Island Beach, NJ	39°50'N	74°00'W	8 mo.
	MED	5	0	20/05/76	Montréal, QC	45°30'N	73°30'W	632 km N4°E
11	0860-15611	AHY	F	15/05/75	Willoughby, OH	41°30'N	81°20'W	3 yr. 4 mo.
	ABF	5	12	27/09/78	18 km north of Franklin, QC	45°00'N	72°50'W	791 km N58°E

Summary of banding statistics: Cape May Warbler

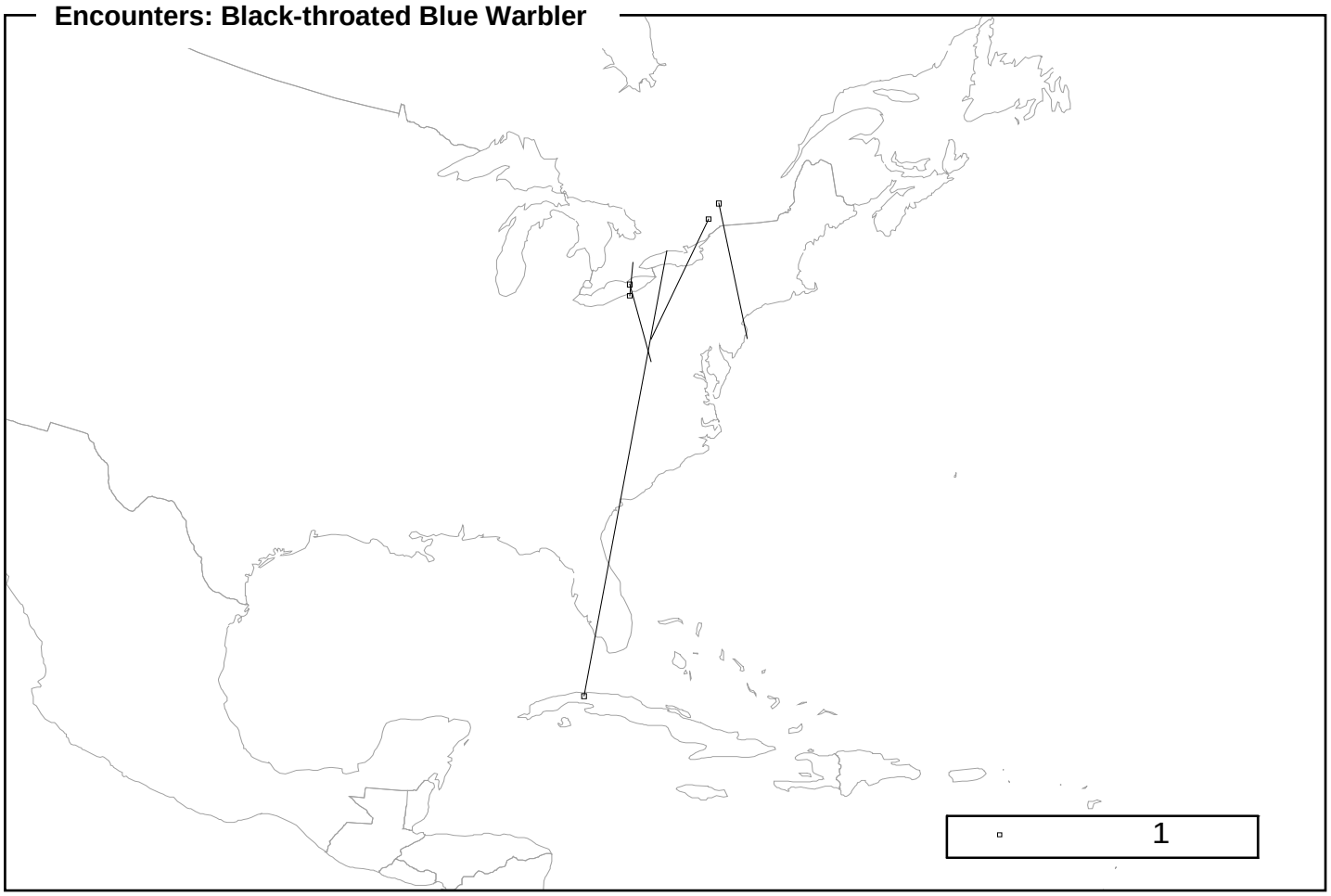
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*12 554*
No. encountered per 1000 banded (1955-1995)			*0.6*
Total no. encountered (1921-1995)	7	5	12
No. encountered from foreign bandings	3	2	5
Maximum period from banding to encounter (mo.)	23	40	40
No. of Canadian-banded birds moving > 0 km	4	2	6
Mean movement > 0 km of Canadian-banded birds (km)	1070	2308	1483
Maximum movement from all encounters (km)	2703	3405	3405
% recovered (encountered dead)	71	80	75
% direct recoveries	57	60	58
% encountered during banding operations	28	20	25

Banding effort: Cape May Warbler



Top banders: LPBO, BC, RRA, PEPO, JBMi

Black-throated Blue Warbler (*Dendroica caerulescens*) 654.0



The Black-throated Blue Warbler breeds in southeastern Canada from western Ontario to Nova Scotia, through the northeastern U.S. and farther south in the Appalachian Mountains. It winters from Florida and the Bahamas through the Greater Antilles and Cayman Islands.

All five encounters are listed below. The first was perhaps on its wintering grounds when shot, despite the relatively early encounter date. This bird had travelled at least 44 km per day.

The encounter date of record 2 (in Quebec) suggests this warbler was on its breeding grounds. All other encounters were of birds presumed to be on migration. Three of the five encountered warblers (records 2, 4, and 5) were killed by "striking stationary objects other than wires or towers" – most likely windows.

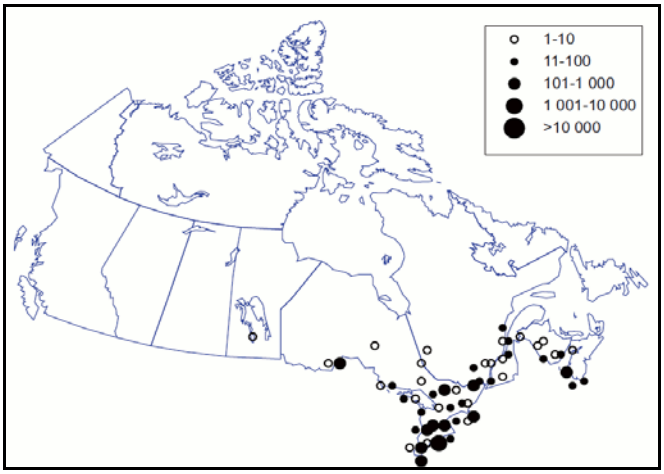
Encounter records: Black-throated Blue Warbler

1	0220-97230	HY	U	03/09/54	Bewdley, ON	44°00'N	78°10'W	1 mo.
	FS	0	1	26/10/54	Guanabaco, CUBA	23°00'N	82°10'W	2366 km S10°W
2	1670-55573	HY	M	14/09/85	Island Beach, NJ	39°50'N	74°00'W	10 mo.
	EAMa	5	13	05/07/86	Lac-Gagnon, QC	46°00'N	75°00'W	691 km N6°W
3	1820-77749	AHY	M	27/09/89	Jordon Run, WV	39°00'N	79°10'W	3 yr. 8 mo.
	JAW	7	89	09/05/93	Long Point, ON	42°30'N	80°20'W	402 km N14°W
4	1540-80136	HY	M	20/09/80	Guelph, ON	43°30'N	80°10'W	8 mo.
	BKW	5	13	05/05/81	13 km west of Shawnville, PA	42°00'N	80°20'W	168 km S5°W
5	1310-38406	AHY	F	18/05/74	Stahlstown, PA	40°00'N	79°10'W	3 yr. 0 mo.
	CMNH	4	13	18/05/77	Ottawa, ON	45°20'N	75°40'W	659 km N25°E

Summary of banding statistics: Black-throated Blue Warbler

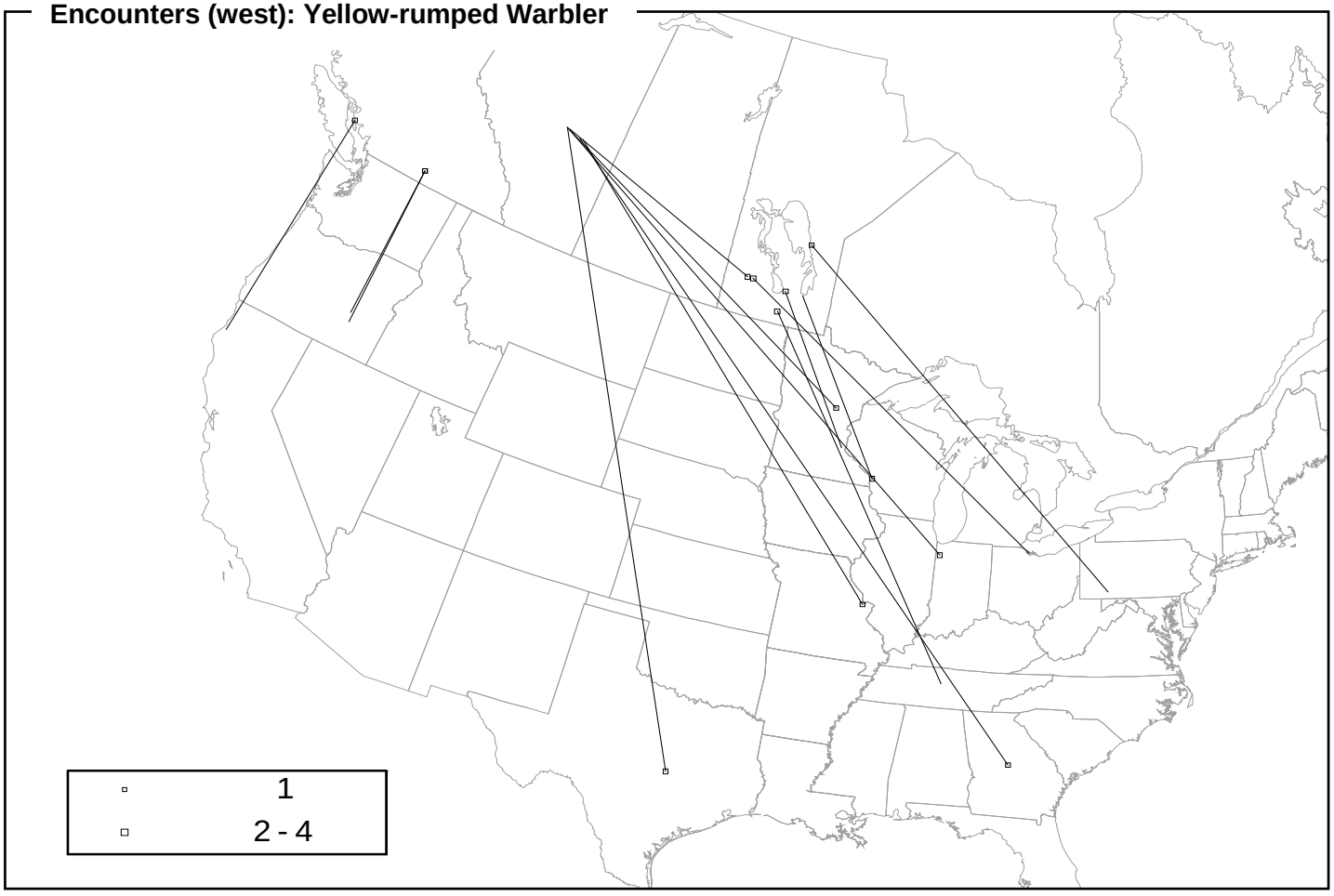
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*6176*
No. encountered per 1000 banded (1955-1995)			*0.2*
Total no. encountered (1921-1995)	3	2	5
No. encountered from foreign bandings	3	2	3
Maximum period from banding to encounter (mo.)	10	44	44
No. of Canadian-banded birds moving > 0 km	2	0	2
Mean movement > 0 km of Canadian-banded birds (km)	1266	-	1266
Maximum movement from all encounters (km)	2366	659	2366
% recovered (encountered dead)	100	50	80
% direct recoveries	33	0	20
% encountered during banding operations	0	50	20

Banding effort: Black-throated Blue Warbler



Top banders: LPBO, PEPO, MJW, TBO, RRA

Yellow-rumped Warbler (*Dendroica coronata*) 655.0 and 656.0

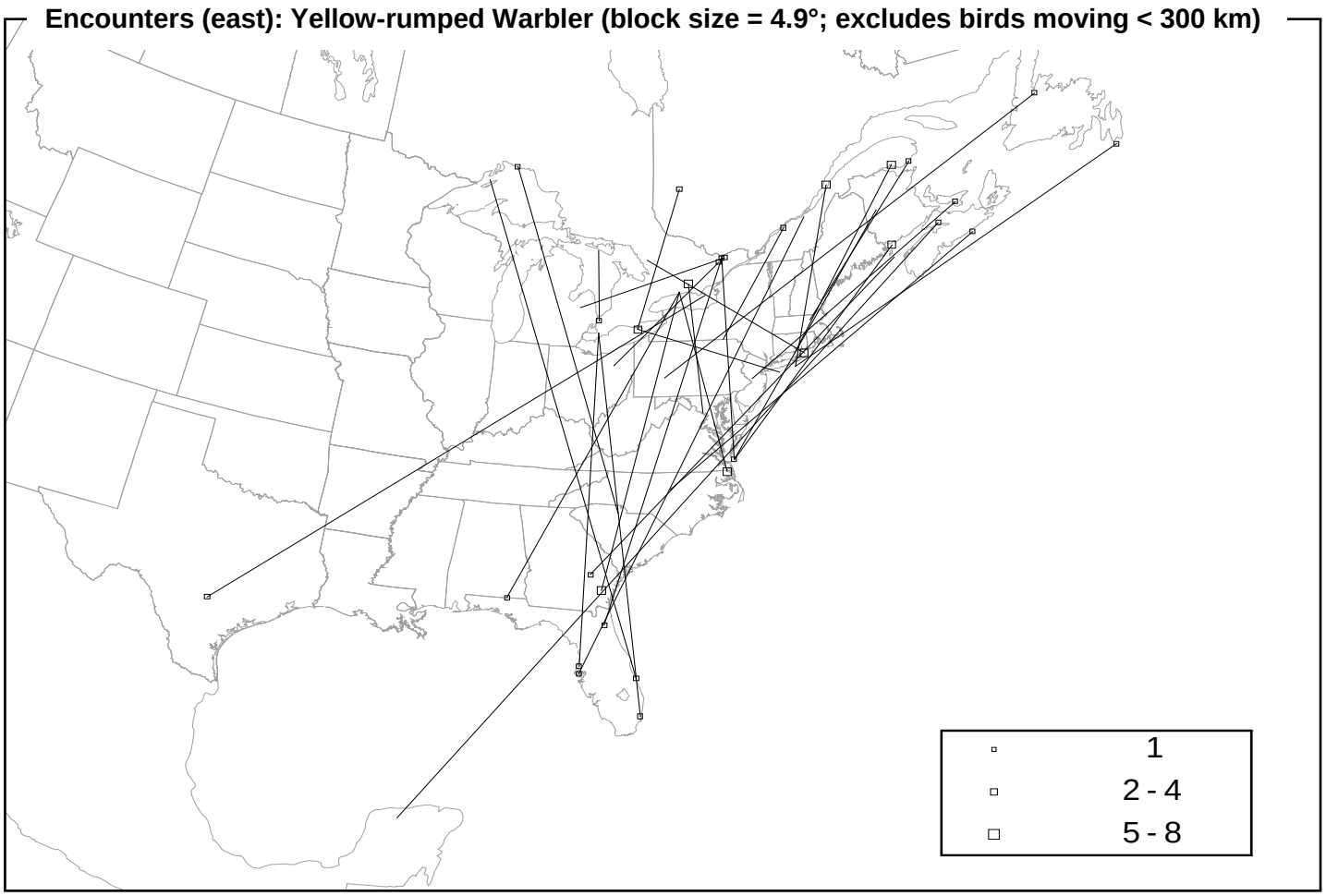


The two subspecies groups of Yellow-rumped Warblers, Myrtle (*D.c. coronata*, AOU 655.0) and Audubon's Warblers (*D.c. auduboni*, AOU 656.0), were recognized as separate species prior to 1973, and banders have continued to record the forms separately. This account covers the two together.

The Yellow-rumped Warbler breeds from Alaska and the western U.S. to Mexico; in Canada it breeds from the Yukon across the forested regions of all the provinces to Newfoundland. Audubon's Warbler occupies central and southern British Columbia and southwestern Alberta, where it overlaps and hybridizes with the Myrtle Warbler (Hunt and Flaspohler 1998). It winters from southwestern British Columbia (Audubon's) and the southern half of the U.S. to Panama and throughout the West Indies and other Caribbean Islands (Myrtle).

Only a few of the birds encountered, including the one in record 1, are of the western Audubon's subspecies.

Most records involving the Maritimes were of birds banded in the U.S. Both Maritimes and Quebec birds tend to move on a northeast-southwest axis (e.g., records 2-5). Birds that presumably bred in the Maritimes were encountered in December-February in Nova Scotia (1 bird), Georgia (record 3), and Mexico (record 4). The warbler found dead in Newfoundland nine days after banding in Pennsylvania (record 5) had travelled a remarkable 222 km per day on average.



Ontario accounted for most of the encounters. A few warblers from eastern Ontario moved northeast-southwest, like Maritimes birds (e.g., record 6). These may have been birds that bred in more eastern provinces, whereas birds that presumably bred in Ontario headed more north-south (e.g., record 7) or northwest-southeast, toward the mid-Atlantic states (see eastern map and note that many individual records are not shown due to the large block size, as explained in the introduction). Warblers encountered in northwestern Ontario moved southeast in fall (e.g., record 8), as did birds from the Prairie Provinces, which wintered in Tennessee (record 9), Georgia (record 10), and Texas (record 11).

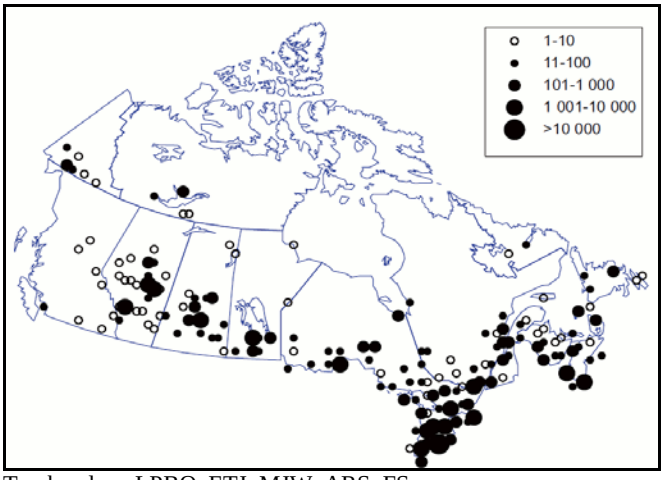
Encounter records: Yellow-rumped Warbler

1	1750-95039	HY	M	25/10/86	Arcata, CA	40°50'N	124°00'W	6 mo.
	CR	5	14	17/04/87	Cranberry Lake, BC	49°50'N	124°30'W	1003 km N2°W
2	0420-98882	AHY	F	26/05/53	near Québec, QC	46°40'N	71°10'W	
	DF	0	0	??/10/54	Belleair Bluffs, FL	27°50'N	82°40'W	2325 km S30°W
3	0320-19400	U	U	29/08/61	Kent Island, NB	44°30'N	66°40'W	6 mo.
	BC	0	1	09/02/62	Lyons, GA	32°10'N	82°20'W	1932 km S50°W
4	1530-61053	AHY	U	25/01/83	Mérida, Yucatán, MEXICO	20°50'N	89°30'W	
	DTR	3	13	99/SP/83	Springhill, NS	45°30'N	64°00'W	3600 km N34°E
5	1290-79225	AHY	F	06/05/74	east of Homer City, PA	40°30'N	79°00'W	9 dy.
	REM	5	0	15/05/74	Hampden, NL	49°30'N	56°50'W	2001 km N53°E
6	1540-79683	U	U	10/10/81	Prince Edward Point, ON	43°50'N	76°50'W	
	PEPO	5	0	FT/02/85	San Antonio, TX	29°20'N	98°20'W	2496 km S57°W
7	1240-36948	AHY	F	19/05/73	near Paincourt, ON	42°20'N	82°20'W	1 yr. 10 mo.
	MJW	5	0	99/03/75	Davie, FL	26°00'N	80°10'W	1829 km S7°E
8	1910-73964	HY	M	15/09/92	Thunder Cape, ON	48°10'N	88°50'W	1 yr. 6 mo.
	TCBO	5	0	31/03/94	Wabasso, FL	27°40'N	80°20'W	2397 km S21°E
9	0470-63307	U	U	09/01/50	Antioch, TN	36°00'N	86°40'W	4 mo.
	FCL	0	0	04/05/50	Carman, MB	49°30'N	98°00'W	1761 km N28°W
10	1860-67285	HY	U	08/09/90	Beaverhill Lake, AB	53°20'N	112°30'W	4 mo.
	BBO	3	12	19/01/91	Macon, GA	32°50'N	83°30'W	3240 km S57°E
11	1640-36897	HY	U	01/10/84	St. Albert, AB	53°30'N	113°30'W	2 yr. 2 mo.
	ETJ	5	0	05/12/86	Florence, TX	30°50'N	97°40'W	2827 km S33°E
12	0260-93051	AHY	M	07/06/64	Summit Depot, NB	47°40'N	68°10'W	4 yr. 0 mo.
	DSC	7	89	18/06/68	Sherman, NB	47°50'N	68°20'W	22 km N45°W

Summary of banding statistics: Yellow-rumped Warbler

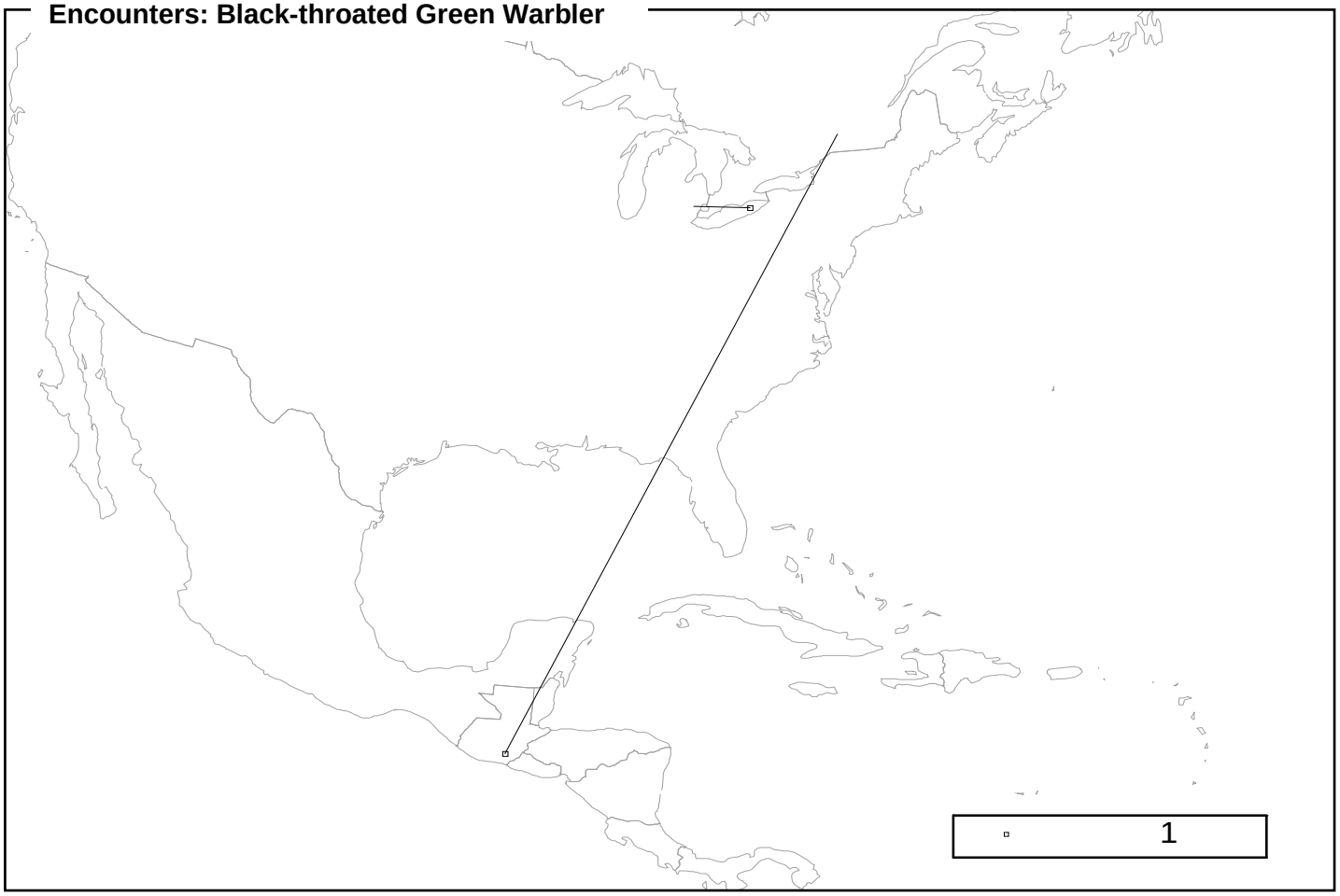
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*76 198*
No. encountered per 1000 banded (1955-1995)			*0.6*
Total no. encountered (1921-1995)	39	27	80
No. encountered from foreign bandings	17	8	29
Maximum period from banding to encounter (mo.)	44	48	48
No. of Canadian-banded birds moving > 0 km	18	14	41
Mean movement > 0 km of Canadian-banded birds (km)	920	1177	1125
Maximum movement from all encounters (km)	3239	3599	3599
% recovered (encountered dead)	61	66	66
% direct recoveries	35	29	37
% encountered during banding operations	35	33	31

Banding effort: Yellow-rumped Warbler



Top banders: LPBO, ETJ, MJW, ARS, FS

Black-throated Green Warbler (*Dendroica virens*) 667.0



The Black-throated Green Warbler breeds from north-central Alberta east within the forest zone to Newfoundland, and south through the Appalachians; it is absent from southern parts of Alberta, Saskatchewan, and Manitoba. It winters in southern Texas, eastern Mexico, and Central America to northern Venezuela, and from southern Florida south to the Greater Antilles.

Both records are of long-distance encounters. One bird (record 1) was encountered on its presumed wintering grounds. The other (record 2) was captured on fall migration at a site not far from its fall migration stopover of almost exactly two years earlier.

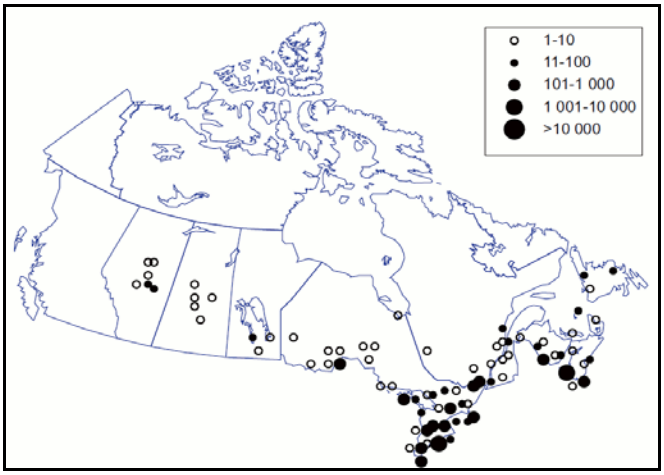
Encounter records: Black-throated Green Warbler

1	1240-42215	HY	U	01/09/72	Lost River, Fraser Lake, QC	45°50'N 74°30'W	4 mo.
	PHH	3	0	08/01/73	near Cuilapa, GUATEMALA	14°20'N 90°10'W	3802 km S28°W
2	1030-68875	HY	M	21/09/63	Pontiac, MI	42°30'N 83°20'W	2 yr. 0 mo.
	KHS	7	89	26/09/65	Long Point, ON	42°30'N 80°00'W	273 km N89°E

Summary of banding statistics: Black-throated Green Warbler

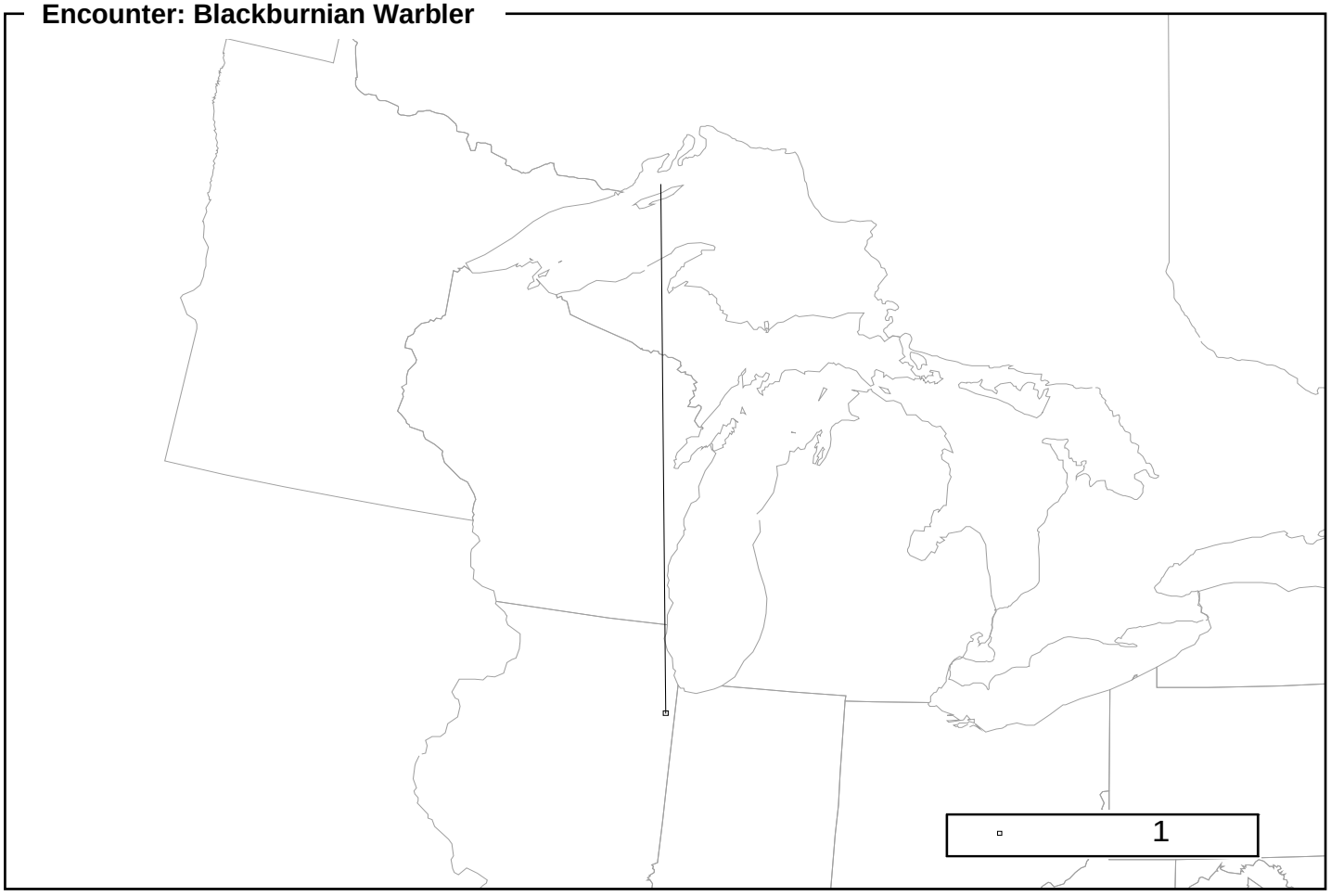
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*7914*
No. encountered per 1000 banded (1955-1995)			*0.1*
Total no. encountered (1921-1995)	2	0	2
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	24	-	24
No. of Canadian-banded birds moving > 0 km	1	0	1
Mean movement > 0 km of Canadian-banded birds (km)	3801	-	3801
Maximum movement from all encounters (km)	3801	-	3801
% recovered (encountered dead)	50	-	50
% direct recoveries	50	-	50
% encountered during banding operations	50	-	50

Banding effort: Black-throated Green Warbler



Top banders: LPBO, RRA, PEPO, FS, MJW

Blackburnian Warbler (*Dendroica fusca*) 662.0



The Blackburnian Warbler breeds from central Saskatchewan east within the boreal forests to Nova Scotia and south in the Appalachian Mountains. It winters in Venezuela and northwestern Colombia and on the east flank of the Andes through Peru to Bolivia.

There is only one Canadian encounter, both banded and encountered on spring migration.

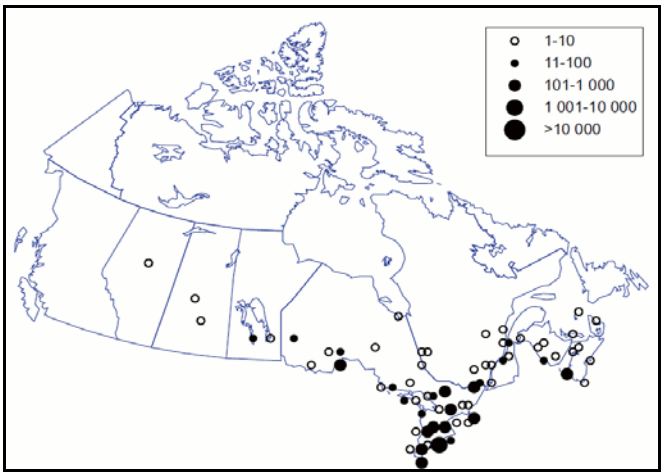
Encounter record: Blackburnian Warbler

1	1890-65306	ASY	M	20/05/92	Thunder Cape, ON	48°10'N 88°50'W	2 yr.
	TCBO	5	28	1994/05/ST	Monee, IL	41°20'N 87°40'W	766 km S7°E

Summary of banding statistics: Blackburnian Warbler

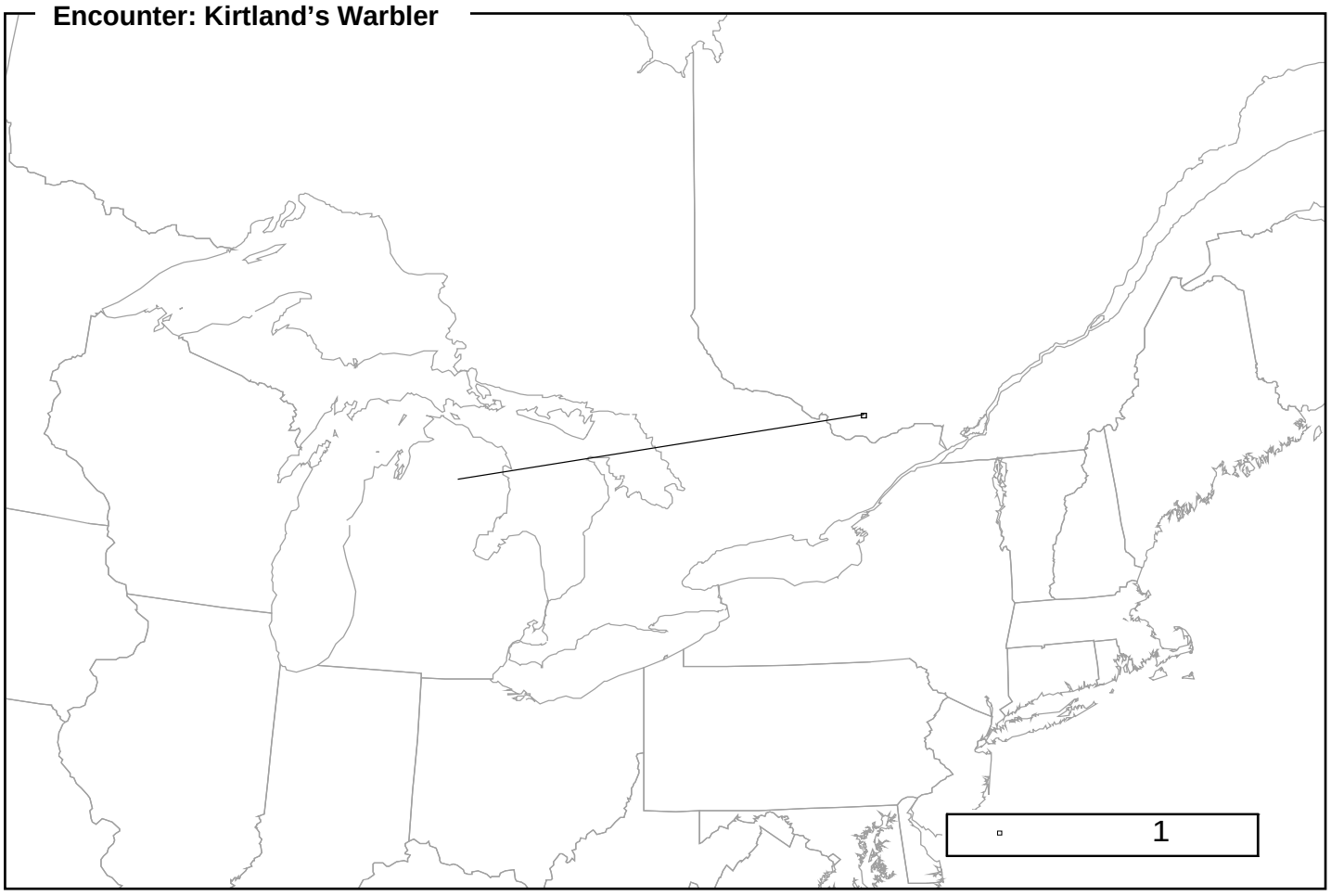
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5257*
No. encountered per 1000 banded (1955-1995)			*0.2*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	24	24
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	766	766
Maximum movement from all encounters (km)	-	766	766
% recovered (encountered dead)	-	100	100
% direct recoveries	-	0	0
% encountered during banding operations	-	0	0

Banding effort: Blackburnian Warbler



Top banders: LPBO, PEPO, FS, RRA, JBMi

Kirtland's Warbler (*Dendroica kirtlandii*) 670.0



Kirtland's Warbler breeds mainly in a restricted area of central Michigan, but there have been scattered migration and breeding season records from southern Ontario, Quebec, and Wisconsin. It winters in the Bahamas.

The only encounter was of a bird banded as a nestling in Michigan and captured four years later in Quebec (record 1).

.

This bird was banded by Lawrence Walkinshaw, a long-time student of the species on its nesting grounds, who also banded one of the two Kirtland's Warblers banded in Canada (near Pembroke, Ontario, in 1977). The other Canadian-banded bird was banded at Point Pelee, Ontario, in 1959

Encounter record: Kirtland's Warbler

1	0830-20521	L	U	22/06/74	Johannesburg, MI	44°50'N 84°20'W	3 yr.11 mo.
	LHW	7	89	29/05/78	Kazabazua, QC	45°50'N 76°00'W	661 km N77°E

Summary of banding statistics: Kirtland's Warbler

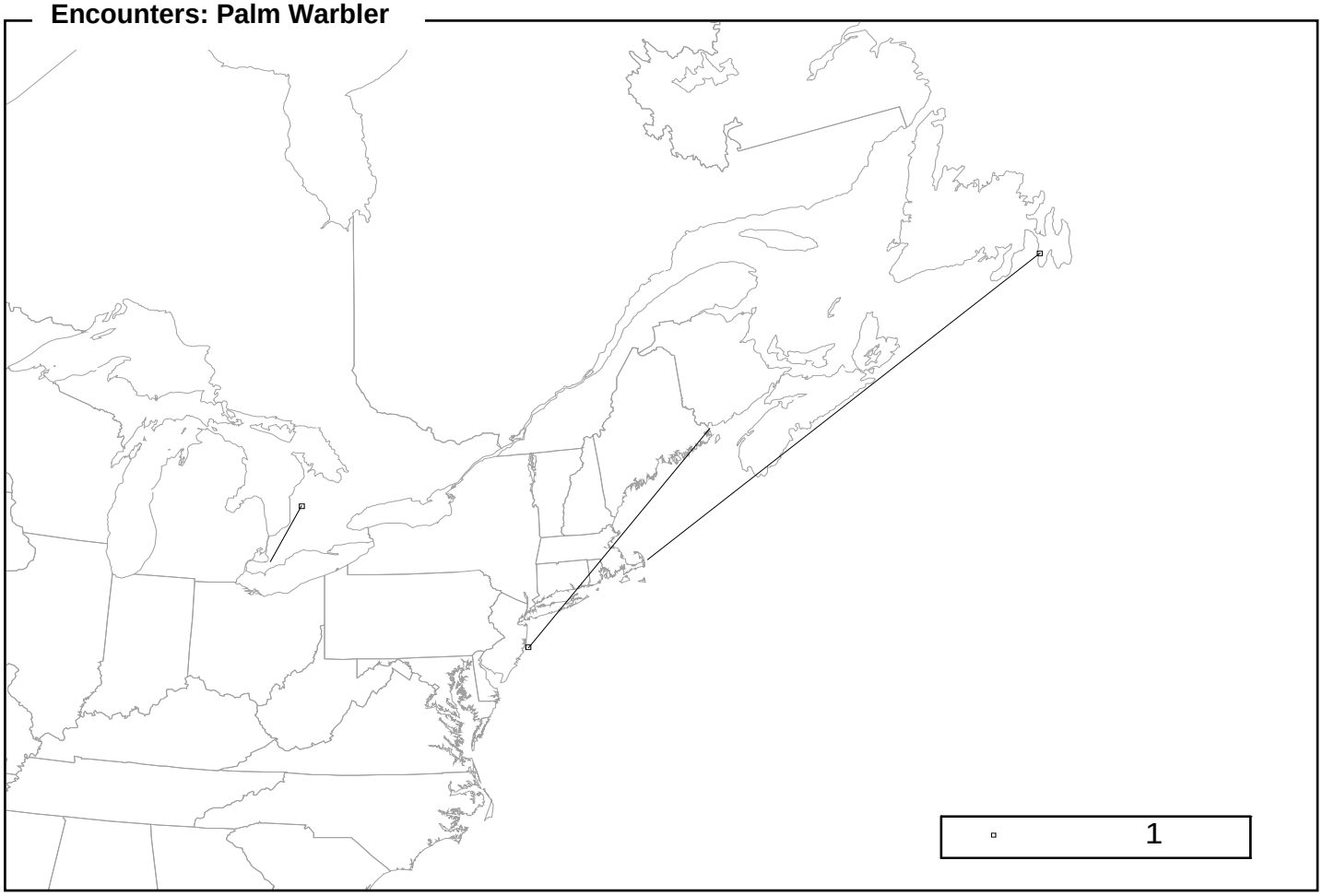
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*2*
No. encountered per 1000 banded (1955-1995)			*0*
Total no. encountered (1921-1995)	1	0	1
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	47	-	47
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	661	-	661
% recovered (encountered dead)	0	-	0
% direct recoveries	0	-	0
% encountered during banding operations	100	-	100

Banding effort: Kirtland's Warbler

Top banders: LHW, PPBO

Palm Warbler (*Dendroica palmarum*) 672.0 and 672.9

Encounters: Palm Warbler



The nominate *palmarum* form and the distinctive yellow *hypochrysea* form of the Palm Warbler are recorded separately by banders as the Western Palm Warbler (AOU 672.0) and the Yellow Palm Warbler (AOU 672.9). Palm Warblers breed almost entirely within Canada, from the western Northwest Territories south to central Alberta and Saskatchewan, and east through southern Canada (north to Cape Tatnam) to Newfoundland and southwestern Labrador. They winter from the southeastern coastal U.S., through the Greater Antilles and western Caribbean Islands, across to eastern Central America. The Yellow Palm Warbler inhabits the eastern part of the breeding range including southeastern Ontario, central Quebec, Labrador, and the Maritime provinces; it winters in the southeastern U.S., where it overlaps with the Western Palm Warbler (Wilson 1996).

All three long-distance encounters are listed below; all were for birds both banded and encountered on migration. Record 1 is an apparent case of reverse migration.

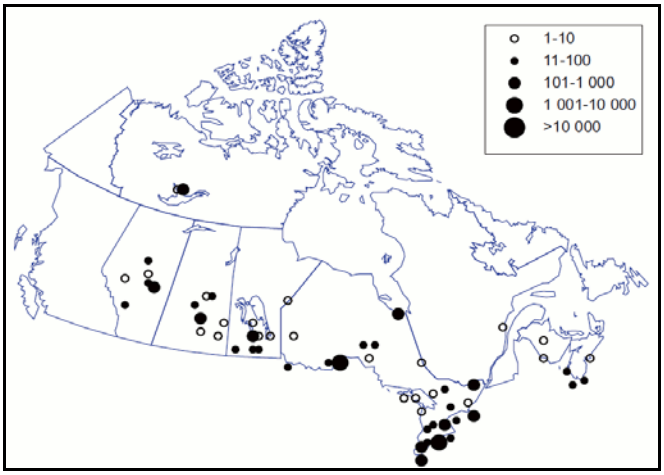
Encounter records: Palm Warbler

1	0060-44302	AHY	U	09/10/32	Great Pond, MA	41°50'N 69°50'W	1 mo.
	OLA	0	21	28/11/32	near Placentia, NL	47°10'N 54°00'W	1387 km N59°E
2	1990-54729	HY	U	30/09/94	South Robbinston, NB	45°00'N 67°00'W	7 mo.
	TD	7	89	30/04/95	Island Beach, NJ	39°50'N 74°00'W	813 km S47°W
3	1240-36818	AHY	U	05/05/73	Mitchell Bay, ON	42°20'N 82°20'W	1 yr. 0 mo.
	MJW	7	89	06/05/74	Whitechurch, ON	43°50'N 81°20'W	186 km N26°E

Summary of banding statistics: Palm Warbler

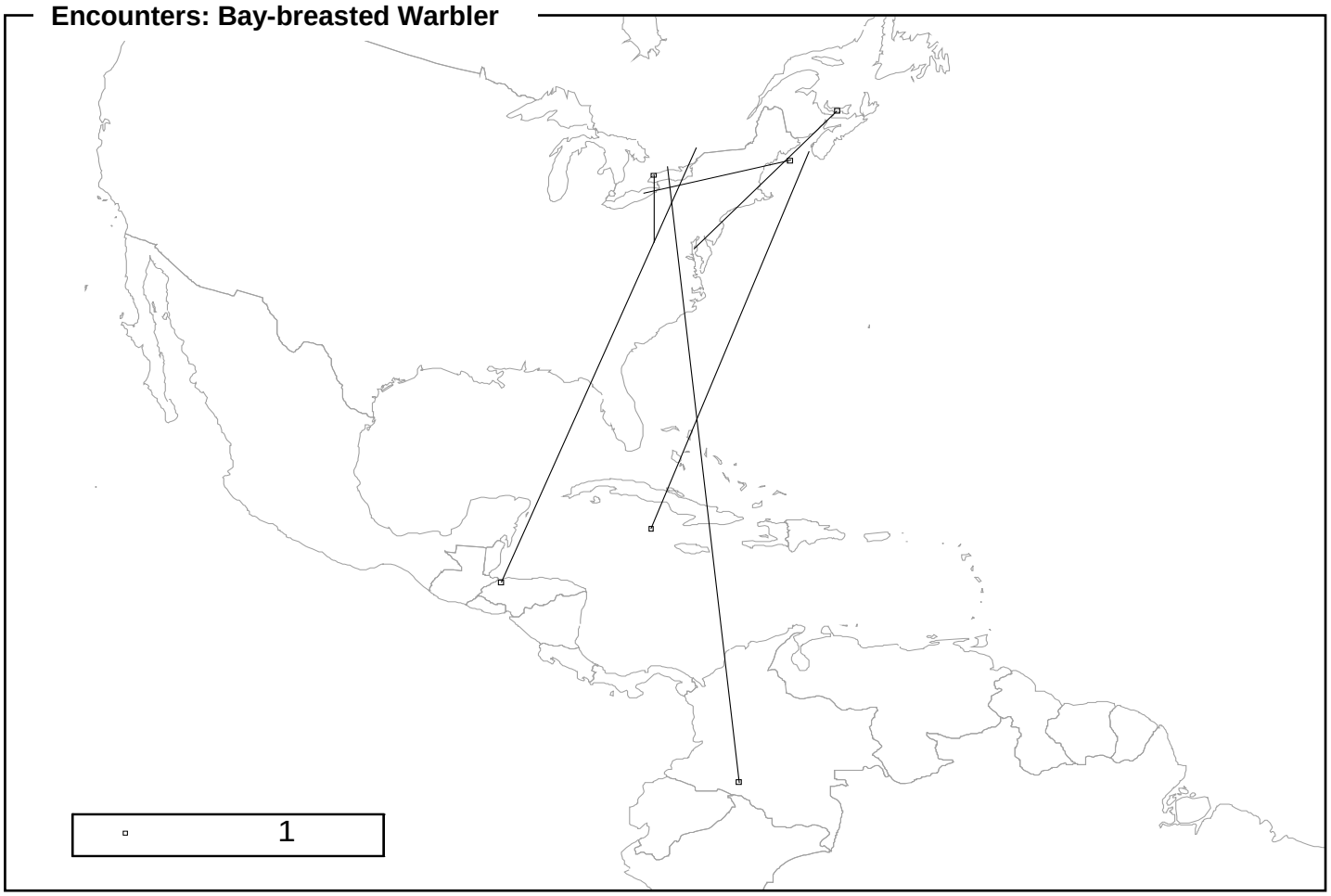
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*7972*
No. encountered per 1000 banded (1955-1995)			*0.4*
Total no. encountered (1921-1995)	1	3	4
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	7	12	12
No. of Canadian-banded birds moving > 0 km	1	1	2
Mean movement > 0 km of Canadian-banded birds (km)	812	185	499
Maximum movement from all encounters (km)	812	1386	1386
% recovered (encountered dead)	0	33	25
% direct recoveries	0	66	50
% encountered during banding operations	100	66	75

Banding effort: Palm Warbler



Top banders: LPBO, ARS, MJW, ETJ, TBO

Bay-breasted Warbler (*Dendroica castanea*) 660.0



The Bay-breasted Warbler breeds from the southwestern Northwest Territories and northeastern British Columbia east to Nova Scotia, north to the limits of boreal forest, and south to Minnesota and Maine; it is absent from the southern parts of British Columbia, Alberta, and Saskatchewan. It winters from Panama east through Colombia to northwestern Venezuela and Trinidad.

The encounter location of record 1, near the border of Peru, Ecuador, and Colombia, is somewhat to the south and the east of the usually accepted wintering range of the species (Meyer de Schauensee 1964, 1970). It is, however, in an area where Blackpoll Warblers commonly winter. The two species are similar in fall plumage, and the possibility of an identification error cannot be ruled out. The bird encountered in the Maritimes (record 2) was probably on its nesting grounds, but the other four (records 3-6) appear to have been both banded and encountered during migration, including those encountered in Cayman Brac (record 3) and Honduras (record 4).

The bird in record 5 is the oldest Bay-breasted Warbler on record (K. Klimkiewicz pers. comm.).

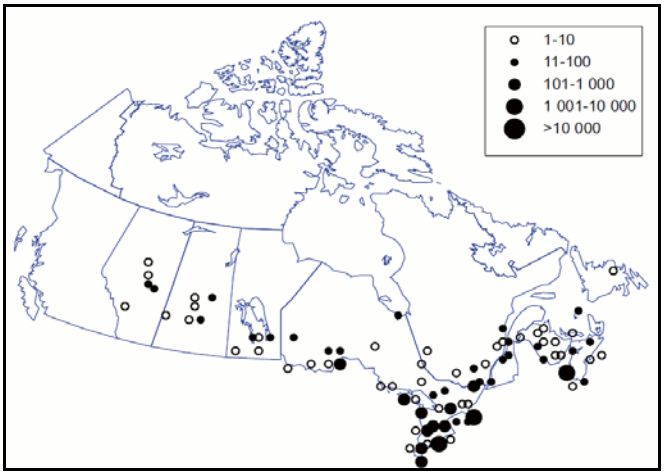
Encounter records: Bay-breasted Warbler

1	0220-09639	AHY	U	30/08/54	Peterborough, ON	44°10'N	78°10'W	
	FS	0	1	??/02/55	near Potos&#237, COLOMBIA	00°50'N	75°00'W	4834 km S5°E
2	1090-03399	U	U	01/10/64	Carr Creek, MD	38°50'N	76°20'W	8 mo.
	WTvV	0	0	06/06/65	New Glasgow, PE	46°20'N	63°20'W	1351 km N48°E
3	1470-07943	U	U	08/09/78	Westport, NS	44°10'N	66°20'W	7 mo.
	RRA	0	21	29/04/79	CAYMAN BRAC, south of CUBA	19°40'N	79°40'W	2995 km S29°W
4	1470-08411	HY	F	24/08/77	Ottawa, ON	45°20'N	75°40'W	2 mo.
	CHG	5	1	15/10/77	San Pedro Sula, HONDURAS	15°30'N	88°10'W	3521 km S23°W
5	1680-13081	HY	U	18/09/87	Hutton, MD	39°20'N	79°20'W	4 yr. 8 mo.
	FBP	3	0	14/05/92	Toronto, ON	43°40'N	79°20'W	482 km N0°W
6	1480-74005	HY	U	07/09/78	Long Point, ON	42°30'N	80°10'W	1 yr. 0 mo.
	LPBO	7	13	16/09/79	Mount Desert Rock, ME	43°50'N	68°00'W	998 km N77°E

Summary of banding statistics: Bay-breasted Warbler

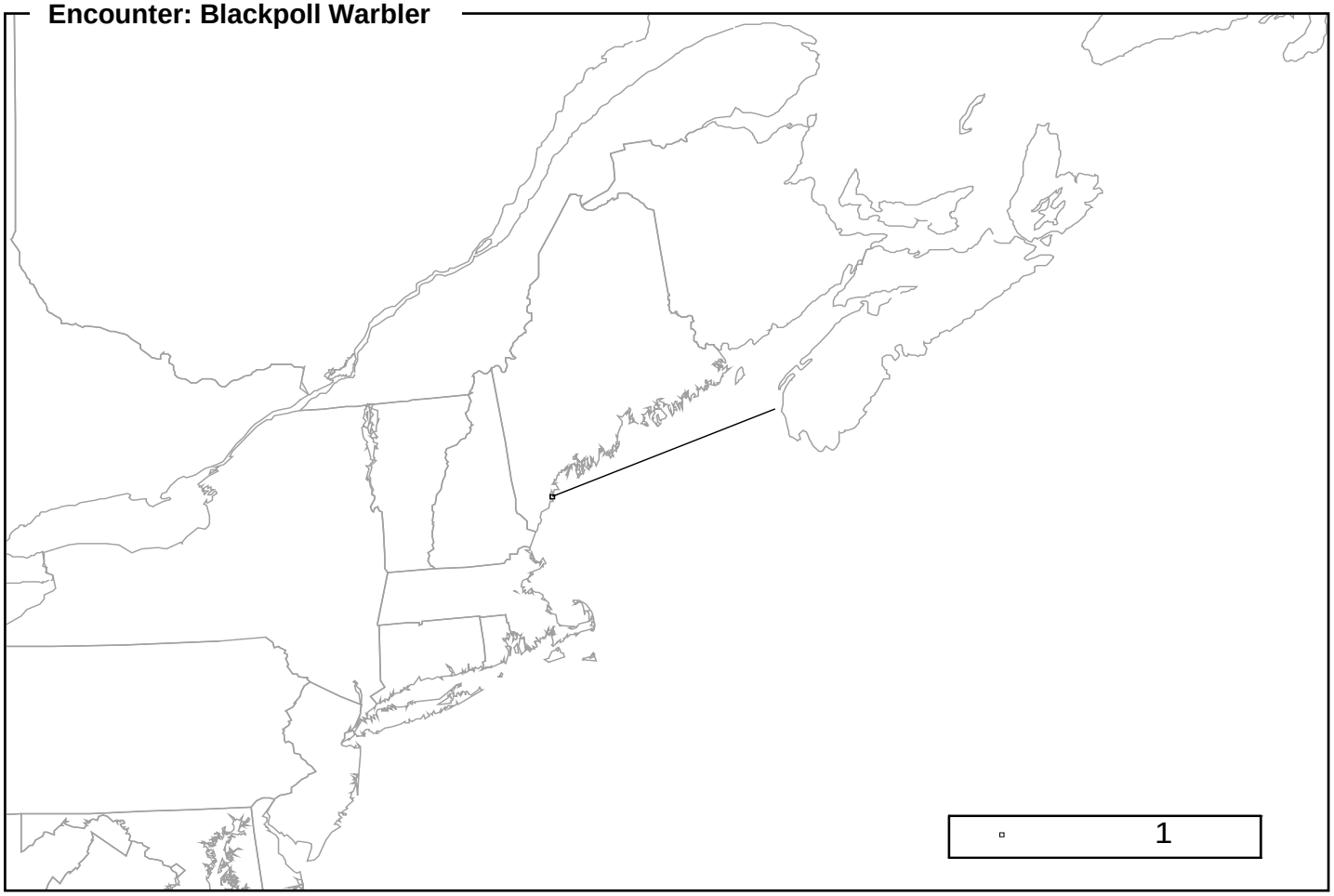
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*14 880*
No. encountered per 1000 banded (1955-1995)			*0.3*
Total no. encountered (1921-1995)	3	1	6
No. encountered from foreign bandings	1	0	2
Maximum period from banding to encounter (mo.)	56	-	56
No. of Canadian-banded birds moving > 0 km	2	1	4
Mean movement > 0 km of Canadian-banded birds (km)	2259	4834	3087
Maximum movement from all encounters (km)	3521	4834	4834
% recovered (encountered dead)	66	100	83
% direct recoveries	33	100	33
% encountered during banding operations	0	0	0

Banding effort: Bay-breasted Warbler



Top banders: LPBO, PEPO, JBMi, BC, RRA

Blackboll Warbler (*Dendroica striata*) 661.0



The Blackpoll Warbler breeds across Alaska and Canada in the northern coniferous forests from near the treeline in northern Yukon east across the northern portions of the provinces to Newfoundland; it also breeds in the northern Appalachians. It winters in northern South America from Colombia and eastern Peru to northwestern Brazil and Suriname.

The Blackpoll Warbler is unusual among warblers in that a significant amount of its migration takes place over the ocean, although there is debate about the main departure point along the Atlantic coast (Murray 1989, McNair and Post 1993). Only one encounter (record 1) showed significant movement, providing no insight to this debate. This bird moved 330 km southwest along the coast over an 11-day period in fall. Six other birds were both banded and encountered in the breeding season at or near the same site at least a year apart, suggesting fidelity to the breeding area.

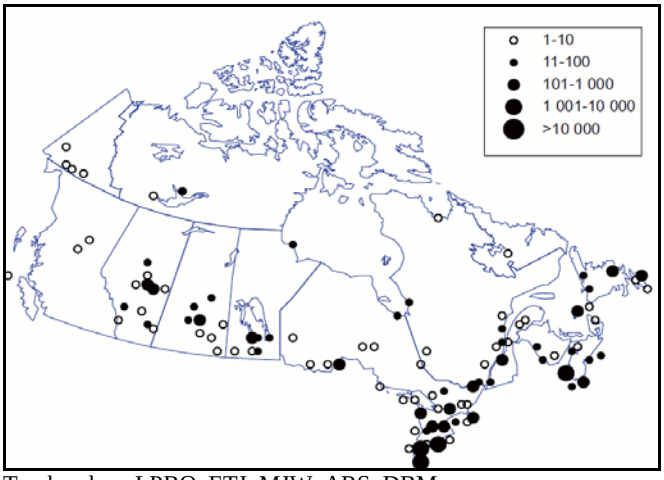
Encounter record: Blackpoll Warbler

1	1730-66154	HY	M	31/08/91	Westport, NS	44°10'N 66°20'W	11 dy.
	LAL	5	0	11/09/91	North Scarboro, ME	43°30'N 70°20'W	330 km S78°W

Summary of banding statistics: Blackpoll Warbler

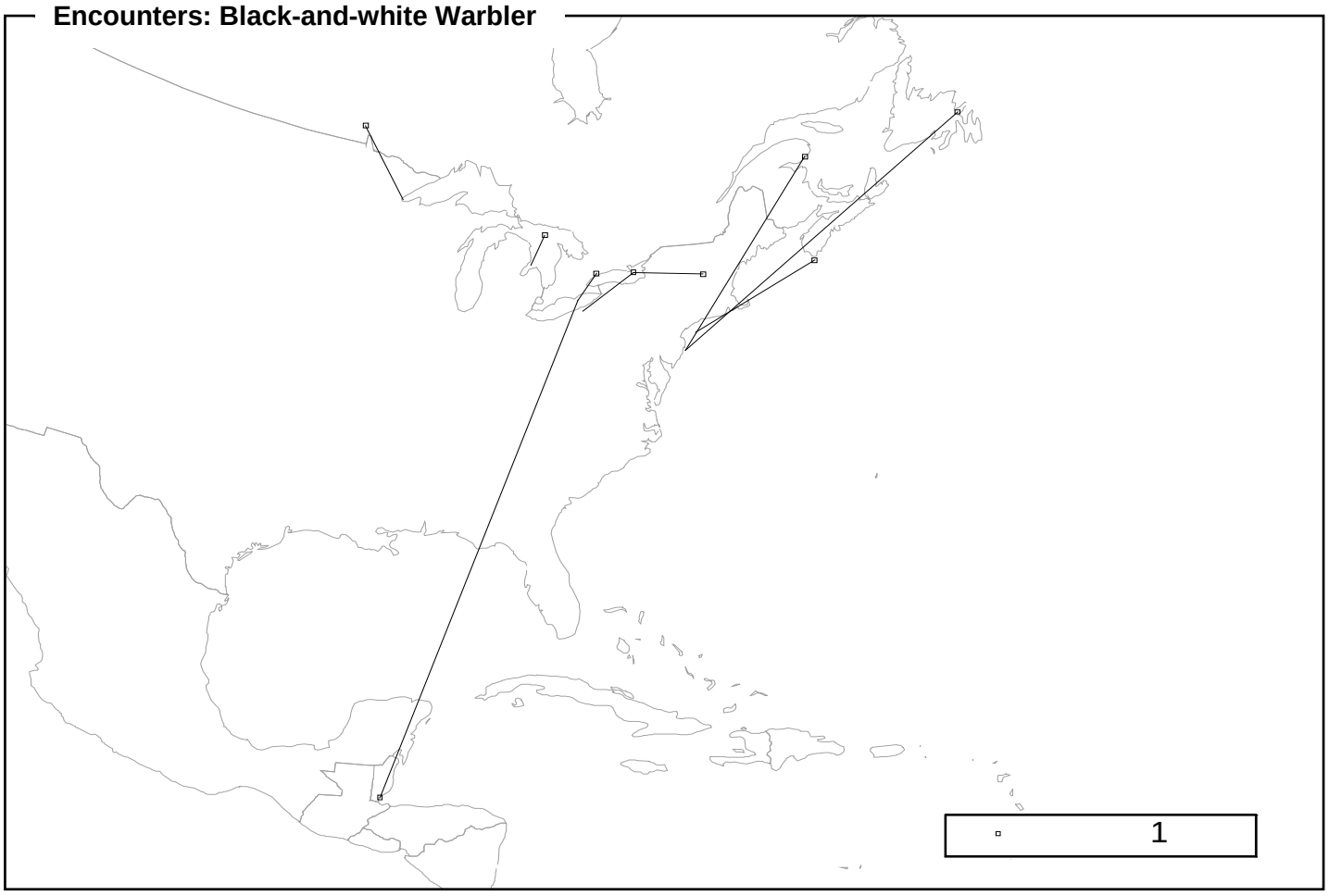
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*19 541*
No. encountered per 1000 banded (1955-1995)			*0.4*
Total no. encountered (1921-1995)	4	5	10
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	11	12	12
No. of Canadian-banded birds moving > 0 km	3	1	4
Mean movement > 0 km of Canadian-banded birds (km)	120	13	93
Maximum movement from all encounters (km)	329	13	329
% recovered (encountered dead)	75	40	50
% direct recoveries	50	20	40
% encountered during banding operations	25	60	40

Banding effort: Blackpoll Warbler



Top banders: LPBO, ETJ, MJW, ARS, DBM

Black-and-white Warbler (*Mniotilta varia*) 636.0



The Black-and-white Warbler breeds in the forested zones of the eastern U.S. and Canada, south from the southwestern Northwest Territories, and east from east-central British Columbia to Newfoundland; it is absent from the southern Prairie Provinces. The species winters from the southern Atlantic and Gulf Coast states through Central America and the West Indies to northern Venezuela, Colombia, and Ecuador.

Of the nine encounters mapped, six birds were banded in the U.S., presumably on migration, and encountered in Canada (e.g., records 1-4). The other three birds were banded in Ontario and encountered in Ontario, Vermont (record 5), and Belize (record 6). The latter two encounters were widely separated in distance, though both birds were found in late October; the bird found in Belize could still have been on migration to a wintering area farther south. There were no encounters from November through April.

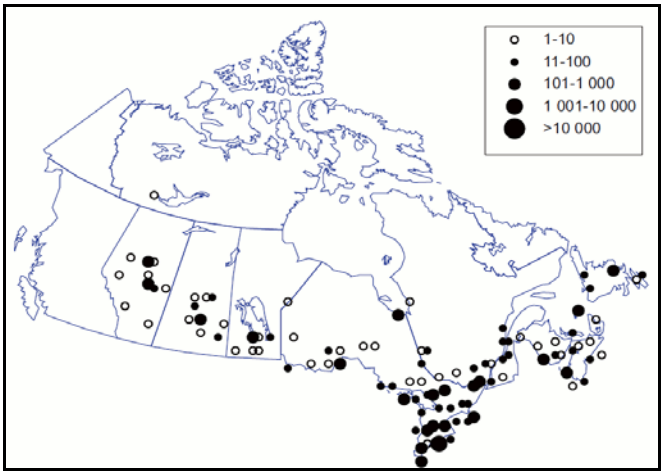
Encounter record: Black-and-white Warbler

1	1060-80273	HY	M	10/09/64	Island Beach, NJ	39°50'N	74°00'W	
	DLB	0	0	99/HS/64	near Newport, QC	48°20'N	64°40'W	1203 km N35°E
2	1120-21595	AHY	M	21/05/67	Duluth, MN	46°40'N	92°00'W	2 yr. 2 mo.
	BB	5	0	FT/07/69	Alf A Hole Refuge, MB	49°50'N	95°30'W	438 km N35°W
3	1130-21825	AHY	F	17/05/67	Amityville, NY	40°40'N	73°20'W	4 yr. 2 mo.
	WEL	5	14	05/07/71	Clarks Harbour, NS	43°20'N	65°30'W	712 km N63°E
4	1190-14479	AHY	M	25/05/69	Island Beach, NJ	39°50'N	74°00'W	
	DHC	5	12	??/08/71	Musgrave Harbour, NL	48°20'N	53°50'W	1861 km N53°E
5	1440-17394	AHY	F	17/05/77	Prince Edward Point, ON	43°50'N	76°50'W	5 yr. 5 mo.
	PEPO	5	0	26/10/82	Woodstock, VT	43°30'N	72°30'W	351 km S85°E
6	1750-15203	SY	M	05/05/86	Long Point, ON	42°30'N	80°20'W	3 yr. 5 mo.
	LPBO	5	1	24/10/89	Punta Gorda, BELIZE	16°10'N	88°50'W	3041 km S18°W

Summary of banding statistics: Black-and-white Warbler

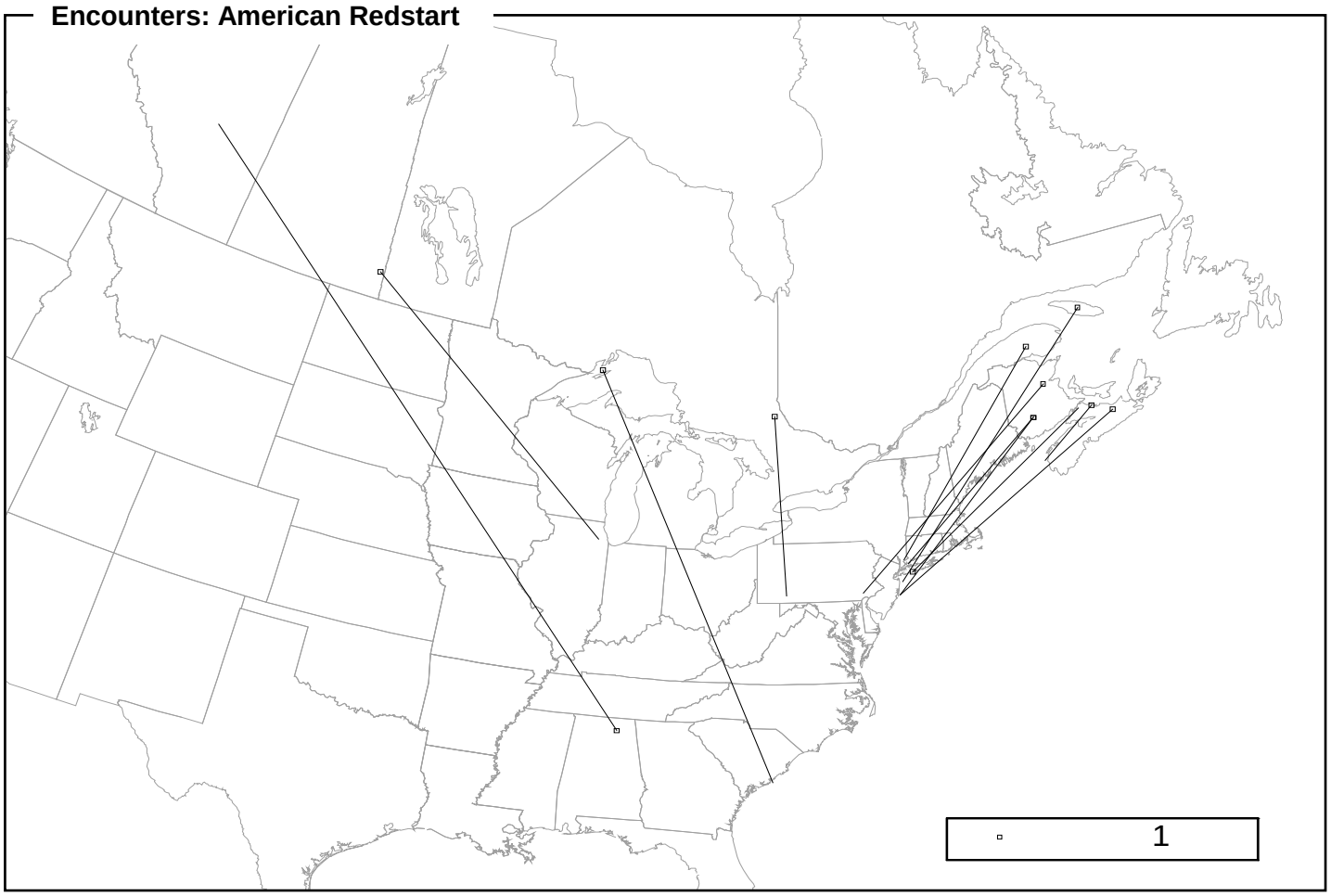
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*11 220*
No. encountered per 1000 banded (1955-1995)			*0.6*
Total no. encountered (1921-1995)	2	13	15
No. encountered from foreign bandings	1	5	6
Maximum period from banding to encounter (mo.)	21	65	65
No. of Canadian-banded birds moving > 0 km	1	3	4
Mean movement > 0 km of Canadian-banded birds (km)	176	1138	897
Maximum movement from all encounters (km)	1203	3041	3041
% recovered (encountered dead)	100	46	53
% direct recoveries	0	7	6
% encountered during banding operations	0	53	46

Banding effort: Black-and-white Warbler



Top banders: LPBO, IPBO, PEPO, RRA, GFB

American Redstart (*Setophaga ruticilla*) 687.0



The American Redstart breeds in the eastern and northern U.S. and throughout most of forested Canada, except in western British Columbia; it winters from central Mexico and Florida, south through Central America and the West Indies, to northern South America from northwestern Peru to Suriname.

Twenty of the records were of birds banded and encountered during the breeding season at study sites in New Brunswick.

None of the encounters to date is of a bird in the wintering range, where redstarts return to specific sites year after year (McNeil 1982). The encounter map clearly shows the change in the direction of migratory movement across the country: the axis of migration is northwest-southeast for birds from the Prairie Provinces (e.g., records 1 and 2), changing gradually to northeast-southwest for Maritimes birds. The bird encountered in eastern Ontario (record 3) was almost due north of its banding location in Pennsylvania. Most Maritimes and Quebec records (e.g., records 4-9) were of birds banded on the Atlantic coastal plain, which is hypothesized to be an important migration corridor for this species (Robbins et al. 1959, Ralph 1981). The bird in record 9, if encountered on 20 May (the latest possible date in the second third of the month), had travelled a minimum of 373 km per day over three days.

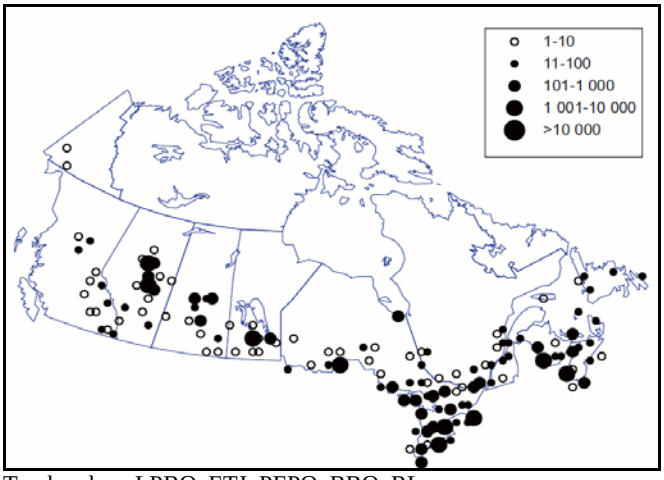
Encounter records: American Redstart

1	1110-96306	AHY	M	17/05/70	Carol Stream, IL	41°50'N 88°00'W	4 yr. 0 mo.
	RBH	7	21	23/05/75	West Moosomin, SK	50°00'N 101°40'W	1391 km N45°W
2	1660-92473	HY	U	18/08/85	Millet, AB	53°00'N 113°20'W	1 yr. 2 mo.
	EP	7	89	05/10/86	New Hope, AL	34°30'N 86°20'W	2960 km S57°E
3	1690-22849	AHY	M	14/09/84	Stahlstown, PA	40°00'N 79°10'W	5 yr. 9 mo.
	CMNH	3	14	14/06/90	Jumping Caribou Lake, ON	46°50'N 79°40'W	762 km N03°W
4	0310-33767	AHY	M	31/08/61	Byram, CT	41°00'N 73°30'W	1 yr. 11 mo.
	WG	0	14	02/07/63	Fredericton, NB	45°50'N 66°30'W	780 km N44°E
5	1520-26594	ASY	M	11/05/84	Island Beach, NJ	39°50'N 74°00'W	2 yr. 1 mo.
	KWC	5	0	13/06/86	Fredericton, NB	45°50'N 66°30'W	905 km N40°E
6	1490-40434	ASY	M	12/05/85	Island Beach, NJ	39°50'N 74°00'W	2 mo.
	GWS	5	0	31/07/85	New Glasgow, NS	45°30'N 62°30'W	1131 km N52°E
7	1020-59927	HY	M	06/10/62	Highlands, NJ	40°20'N 73°50'W	1 yr. 8 mo.
	RCF	0	53	17/06/64	Anticosti Island, QC	49°30'N 63°00'W	1328 km N36°E
8	1200-63647	AHY	M	14/05/69	Amawalk, NY	41°10'N 73°40'W	3 yr. 0 mo.
	JAS	5	0	99/05/72	near Carleton, QC	48°30'N 66°10'W	1007 km N33°E
9	1670-38941	ASY	M	17/05/84	Stahlstown, PA	40°00'N 75°40'W	max. 3 dy.
	CDG	5	12	ST/05/84	11 km west of Beaver Brook, NB	47°00'N 65°40'W	1120 km N43°E

Summary of banding statistics: American Redstart

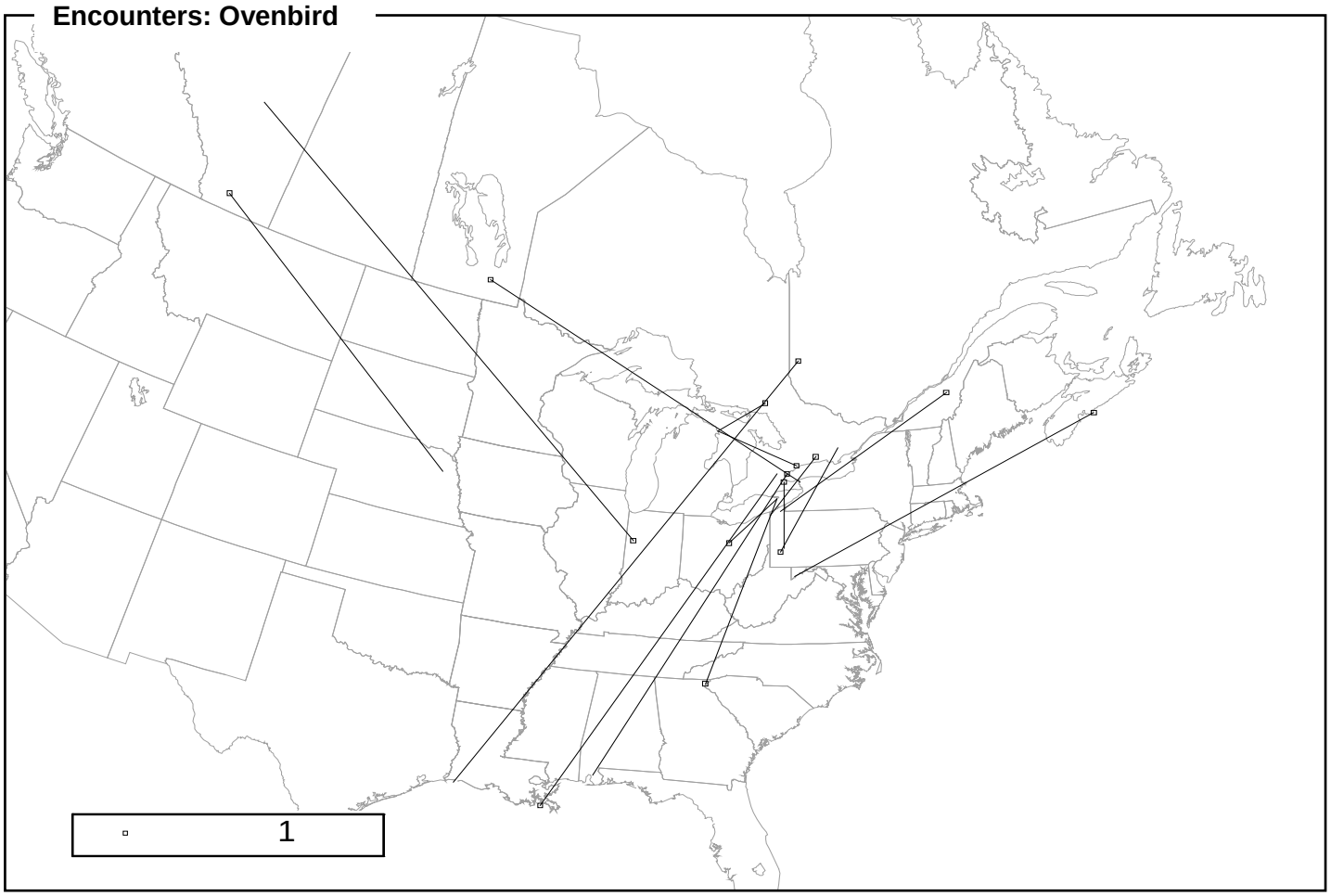
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*26 349*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	8	34	43
No. encountered from foreign bandings	2	7	9
Maximum period from banding to encounter (mo.)	48	69	69
No. of Canadian-banded birds moving > 0 km	3	2	6
Mean movement > 0 km of Canadian-banded birds (km)	1396	17	715
Maximum movement from all encounters (km)	2959	1391	2959
% recovered (encountered dead)	37	61	58
% direct recoveries	12	23	23
% encountered during banding operations	50	35	37

Banding effort: American Redstart



Top banders: LPBO, ETJ, PEPO, BBO, RL

Ovenbird (*Seiurus aurocapillus*) 674.0



The Ovenbird breeds in the northeastern U.S.; it also breeds from northeastern British Columbia and the southwestern Northwest Territories southeast to southern Manitoba and east through southern Canada to Newfoundland, as well as in small areas of southeastern Alberta and southwestern Saskatchewan. It winters from southern South Carolina and the Gulf Coast, through southern Mexico, Central America, and the West Indies, to Panama, northern Colombia, and northern Venezuela.

No encounter involved a bird on the wintering grounds, and the bird reported from Ontario in late November (record 1) may have been long dead when it was found (the finder provided no details). Several short-term encounters demonstrate rapid migration, with individual migrants averaging at least 79 km per day (record 2), 87 km per day (record 3), and 115 km per day (record 4).

Van Horn and Donovan (1994) describe two discrete migration paths for this species: birds west of the Appalachians follow the Mississippi flyway to Central America, while eastern Ovenbirds follow the Atlantic flyway to the Caribbean. Encounters from the Prairie Provinces, Ontario, and Quebec are consistent with the Mississippi flyway route (e.g., records 1-7). The only Ovenbird encountered in the Maritimes (record 8) may have been slightly off-course, however, because it was banded on the western edge of the Appalachians.

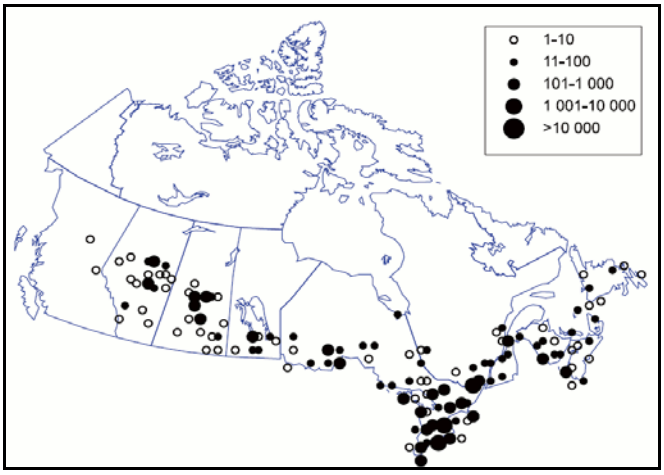
Encounter records: Ovenbird

1	0650-28457	HY	U	11/10/62	Bromley, AL	30°40'N 87°50'W	3 yr. 1 mo.
	DDS	3	0	20/11/65	near Georgetown, ON	43°30'N 79°40'W	1600 km N25°E
2	2021-46891	AHY	U	01/05/88	near Cameron, LA	29°40'N 93°30'W	30 dy.
	FRM	5	0	31/05/88	Sagard, QC	48°00'N 79°00'W	2388 km N27°E
3	0940-26247	U	M	31/08/82	St. Albert, AB	53°30'N 113°30'W	28 dy.
	ETJ	5	0	28/09/82	Swanington, IN	40°30'N 87°10'W	2445 km S64°E
4	0750-22536	AHY	U	20/05/71	Pilger, NE	42°00'N 97°00'W	13 dy.
	JL	5	14	02/06/71	Coalhurst, AB	49°40'N 112°50'W	1491 km N50°E
5	0880-38974	HY	U	30/08/78	Long Point, ON	42°30'N 80°10'W	6 yr. 1 mo.
	LPBO	3	0	26/09/84	Clayton, GA	34°50'N 83°20'W	897 km S19°W
6	0880-56495	HY	U	07/09/91	Youngstown, NY	43°10'N 79°00'W	8 mo.
	JJF	5	0	15/05/92	Winnipeg, MB	49°50'N 97°00'W	1561 km N55°W
7	2001-13072	AHY	U	14/05/87	Erie, PA	42°00'N 80°00'W	3 yr. 0 mo.
	RCL	5	13	99/05/90	Saint-Elzéar, QC	46°20'N 71°00'W	865 km N53°E
8	0890-20371	HY	U	05/10/86	Hutton, MD	39°20'N 79°20'W	1 yr. 8 mo.
	SAT	7	89	14/06/88	Halifax, NS	44°30'N 63°30'W	1429 km N61°E

Summary of banding statistics: Ovenbird

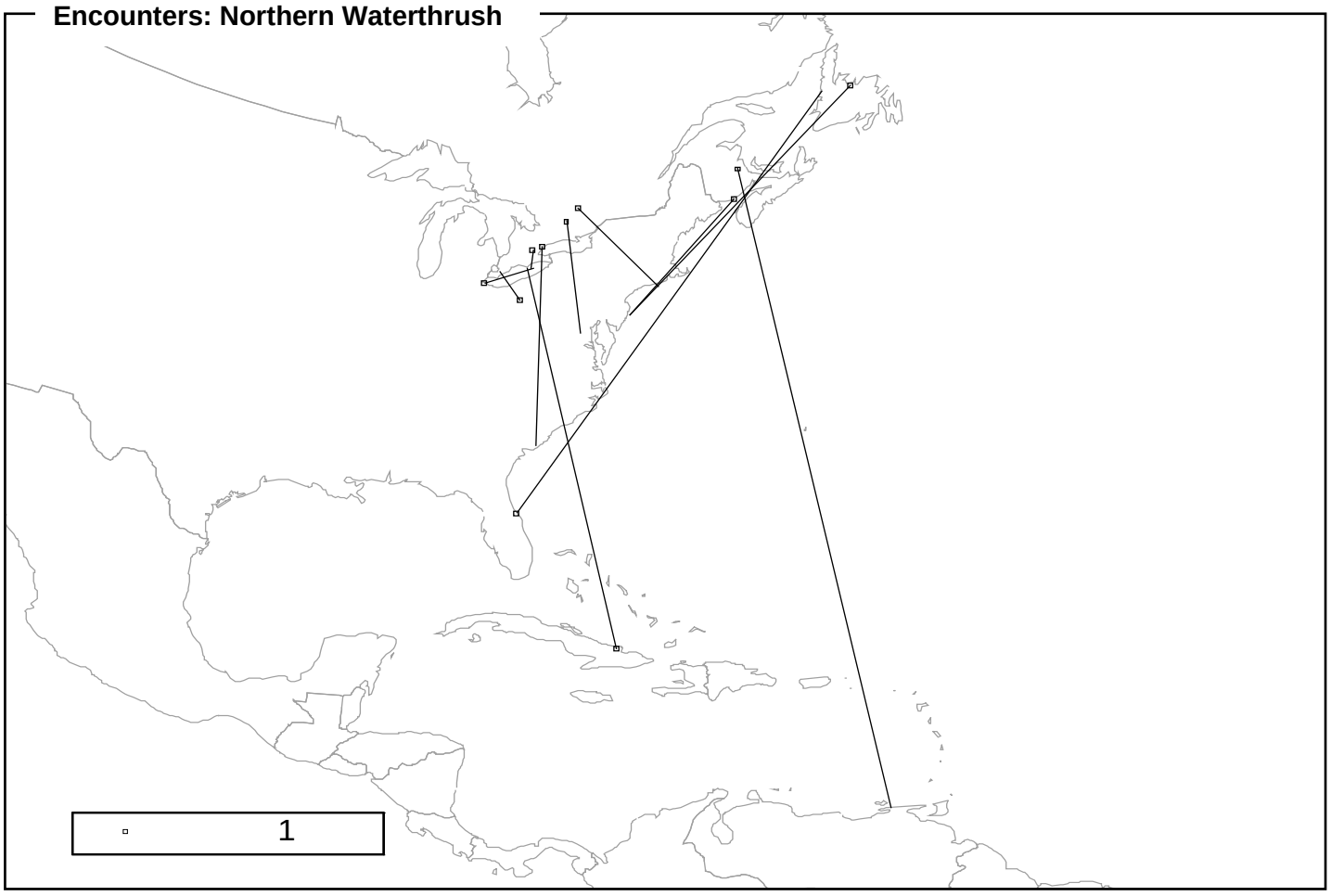
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*15 942*
No. encountered per 1000 banded (1955-1995)			*0.9*
Total no. encountered (1921-1995)	11	13	25
No. encountered from foreign bandings	4	6	10
Maximum period from banding to encounter (mo.)	73	72	73
No. of Canadian-banded birds moving > 0 km	6	2	9
Mean movement > 0 km of Canadian-banded birds (km)	466	403	672
Maximum movement from all encounters (km)	1812	2388	2444
% recovered (encountered dead)	81	76	80
% direct recoveries	18	23	24
% encountered during banding operations	18	23	20

Banding effort: Ovenbird



Top banders: LPBO, ETJ, IPBO, PEPO, TBO

Northern Waterthrush (*Seiurus noveboracensis*) 675.0



The Northern Waterthrush breeds throughout most of Alaska and Canada south of the treeline; it is absent only from southern Nunavut and most of the Prairie Provinces; it also breeds in the northeastern U.S. It winters from northern Mexico, southern Florida, and the Bahamas, south through Central America and the West Indies to Ecuador and northeastern Peru, and east to Suriname.

Waterthrushes from Ontario and Quebec show a more north-northwest-south-southeast component in their migration than most other warblers (e.g., records 1-3), lending support to Ralph's (1981) suggestion that the main migration corridor (at least for eastern populations) is along the Atlantic coastal plain. There are no encounters of birds west of the Great Lakes. The southernmost records (records 4 and 5) are in known wintering areas, but dates of encounter indicate that these birds may still have been migrating (see also record 6). A previously published long-distance encounter for this species (Belize to Ontario, Brewer and Salvadori 1978) was later shown to be erroneous, due to a mis-typed band number.

The bird in record 6 travelled at least 88 km per day in a month of fall migration, while the bird in record 7 travelled just under 200 km per day over a nine-day period in spring. The bird in record 8 holds the longevity record for this species (Klimkiewicz and Futcher 1989).

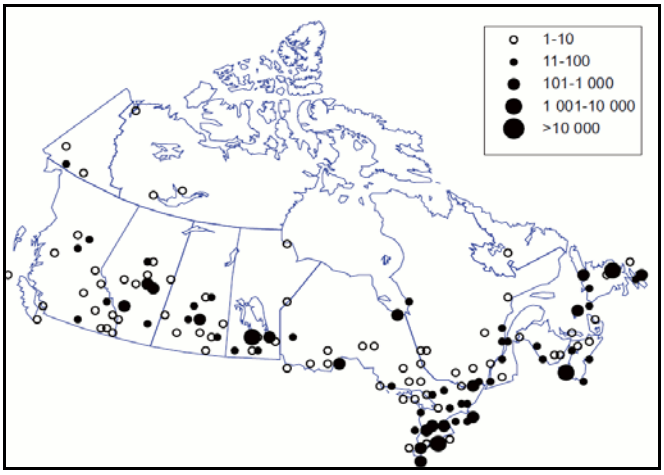
Encounter records: Northern Waterthrush

1	0560-56455	AHY	U	23/04/67	near Charleston, SC	32°50'N 80°00'W	1 yr. 1 mo.
	TAB	3	0	04/05/68	Etobicoke, ON	43°40'N 79°30'W	1207 km N2°E
2	0860-34753	AHY	U	06/05/75	Darnestown, MD	39°00'N 77°10'W	5 mo.
	MTD	5	13	TT/10/75	Bancroft, ON	45°00'N 77°50'W	670 km N04°W
3	1450-53267	HY	U	14/08/81	Great Gull Island, NY	41°10'N 72°00'W	2 yr. 9 mo.
	AMNH	5	13	11/05/84	Pembroke, ON	45°40'N 77°00'W	643 km N37°W
4	2021-66906	HY	F	12/08/90	13 km west of Port Rowan, ON	42°30'N 80°30'W	2 mo.
	LPBO	0	98	21/10/90	Gibara, CUBA	21°00'N 76°00'W	2430 km S11°E
5	2000-12273	U	U	07/10/85	Cariaco, VENEZUELA	10°40'N 63°40'W	10 mo.
	RMcN	5	12	99/08/86	Rogersville, NB	46°40'N 65°20'W	4011 km N2°W
6	2000-02051	HY	U	20/08/84	Rocky Harbour, NL	49°30'N 57°50'W	1 mo.
	BMa	5	13	23/09/84	16 km west of Ponce Park, FL	29°00'N 81°00'W	3008 km S49°W
7	0760-29813	AHY	U	28/05/70	Island Beach, NJ	39°50'N 74°00'W	9 dy.
	WP	3	13	06/06/70	near Roberts Arm, NL	49°20'N 55°40'W	1790 km N48°E
8	0880-38926	HY	U	21/08/78	Long Point, ON	42°30'N 80°10'W	8 yr. 9 mo.
	LPBO	7	89	11/05/87	Luna Pier, MI	41°40'N 83°20'W	278 km S72°W

Summary of banding statistics: Northern Waterthrush

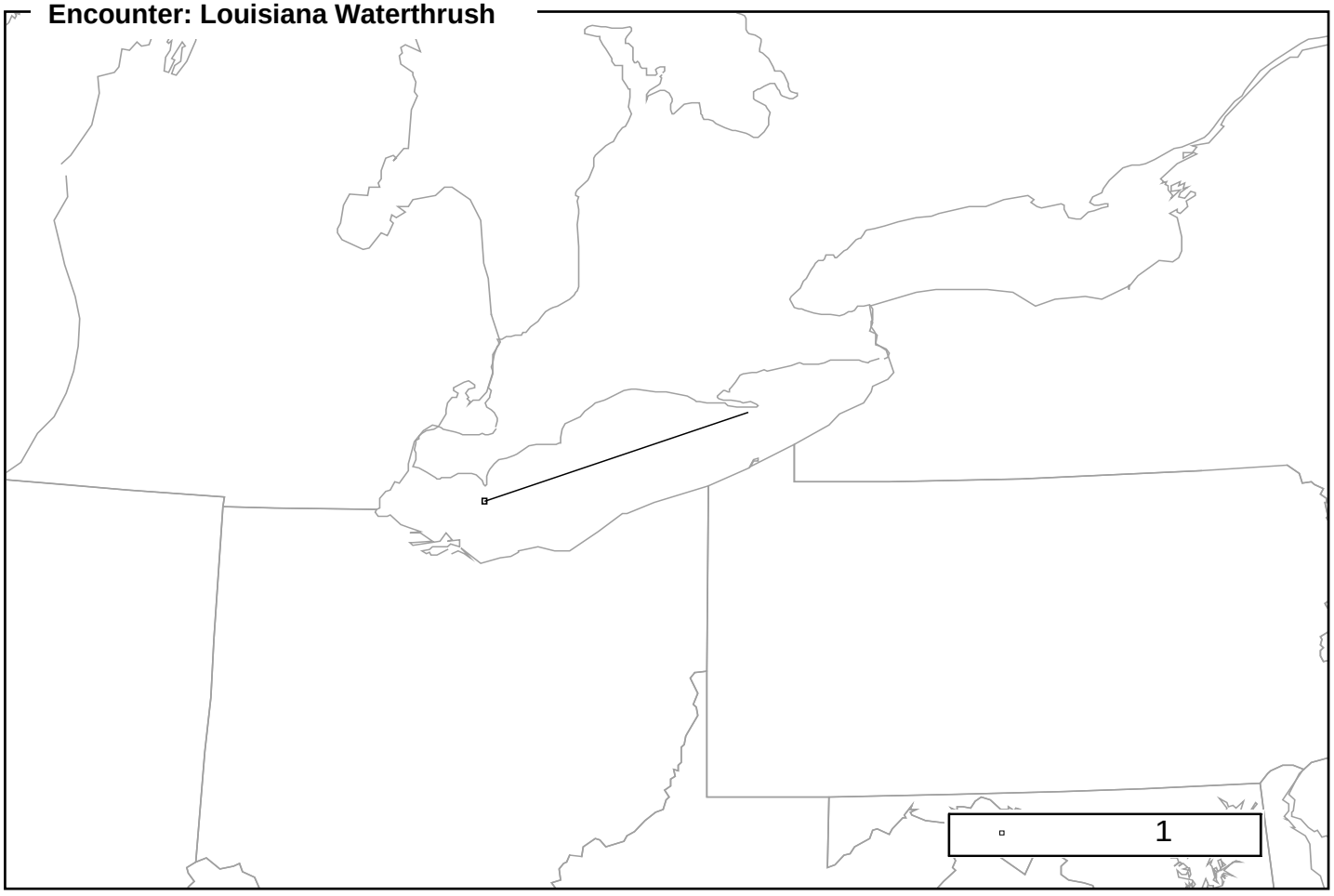
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*13 287*
No. encountered per 1000 banded (1955-1995)			*0.8*
Total no. encountered (1921-1995)	7	9	17
No. encountered from foreign bandings	1	4	6
Maximum period from banding to encounter (mo.)	105	59	105
No. of Canadian-banded birds moving > 0 km	4	3	7
Mean movement > 0 km of Canadian-banded birds (km)	1456	77	865
Maximum movement from all encounters (km)	3007	1789	4010
% recovered (encountered dead)	85	77	82
% direct recoveries	28	44	35
% encountered during banding operations	14	22	17

Banding effort: Northern Waterthrush



Top banders: LPBO, GFB, RRA, UM, KAH

Louisiana Waterthrush (*Seiurus motacilla*) 676.0



The Louisiana Waterthrush breeds in southernmost Ontario and locally throughout the eastern U.S. except for the Gulf and Atlantic coasts. It winters from northern Mexico, the Bahamas, and Greater Antilles south to northern Colombia and northwestern Venezuela.

The only record is of a bird that was banded and encountered the same spring in southern Ontario. Possibly the bird had overshot its preferred breeding range and was trying to return farther south. As shown in the summary table, few Louisiana Waterthrushes have been banded in Canada, and the fact that one has been encountered gives an unrealistically high encounter rate per 1000 banded.

Encounter record: Louisiana Waterthrush

1	0910-17308	AHY	U	27/04/82	Long Point, ON	42°30'N 80°10'W	11 dy.
	LPBO	5	0	08/05/82	Point Pelee, ON	41°50'N 82°30'W	206 km S70°W

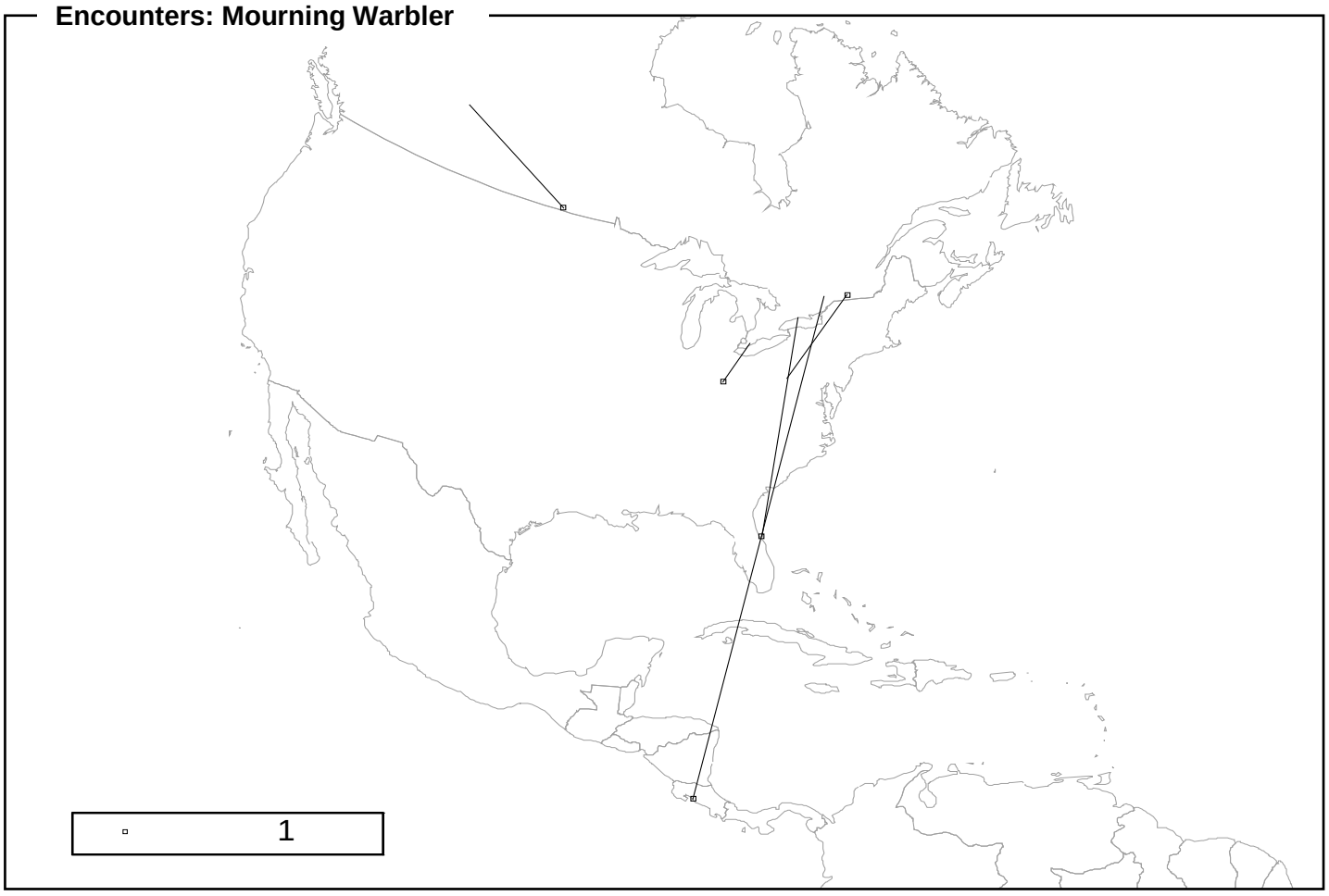
Summary of banding statistics: Louisiana Waterthrush

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*70*
No. encountered per 1000 banded (1955-1995)			*14*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	1	1
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	206	206
Maximum movement from all encounters (km)	-	206	206
% recovered (encountered dead)	-	100	100
% direct recoveries	-	100	100
% encountered during banding operations	-	0	0

Banding effort: Louisiana Waterthrush

Top banders: LPBO, JBMi, RBG, PEPO, GGa, FTL

Mourning Warbler (*Oporornis philadelphia*) 679.0



The Mourning Warbler breeds from central parts of Alberta and Saskatchewan east through southern Canada to Newfoundland and the northern states of the eastern U.S. It winters from southern Nicaragua and Costa Rica south to western Ecuador and western Venezuela.

Five encounters showed significant movement, all of which are listed below (records 1-5). The bird in record 1 may have reached its wintering area or still have been migrating when encountered in Costa Rica in early October. The bird in record 2 travelled an average of 88 km per day over an 11-day period.

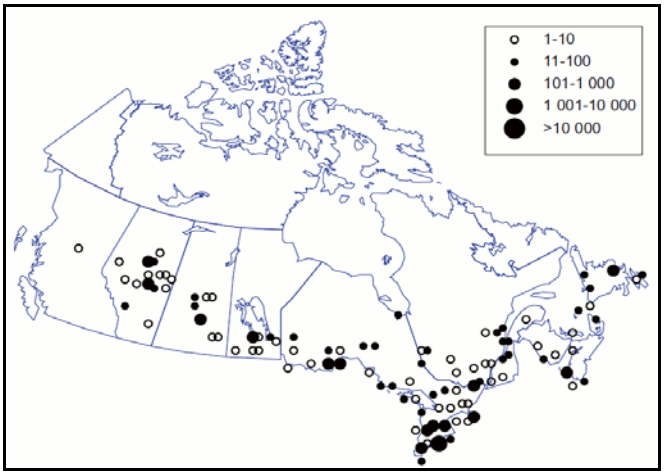
Encounter record: Mourning Warbler

1	1730-46913	HY	U	02/08/85	Innis Point, ON	45°20'N 75°50'W	2 mo.
	IPBO	5	50	04/10/85	Puntarenas, COSTA RICA	9°50'N 84°40'W	4041 km S15°W
2	1970-09156	HY	U	18/08/94	Beaverhill Lake, AB	53°20'N 112°20'W	11 dy.
	BBO	5	0	29/08/94	Whitewater, MB	49°10'N 100°10'W	965 km S66°E
3	0280-28777	HY	U	13/09/60	Bewdley, ON	44°00'N 78°10'W	8 mo.
	FS	0	0	02/05/61	Daytona Beach, FL	29°10'N 81°00'W	1670 km S10°W
4	0620-62887	AHY	M	26/05/62	Tilbury, ON	42°20'N 82°10'W	1 yr. 0 mo.
	RLW	0	0	25/05/63	Dayton, OH	39°40'N 84°10'W	341 km S30°W
5	1290-07543	AHY	M	26/05/73	Powdermill Nature Reserve, PA	40°00'N 79°10'W	1 yr. 0 mo.
	KCP	5	12	99/05/74	Beaconsfield, QC	45°20'N 73°50'W	737 km N35°E
6	0830-01938	AHY	M	20/08/80	11 km east of Manotick, ON	45°10'N 75°30'W	2 yr.10 mo.
	RIGM	7	89	07/06/83	Manotick, ON	45°10'N 75°40'W	13 km N90°W

Summary of banding statistics: Mourning Warbler

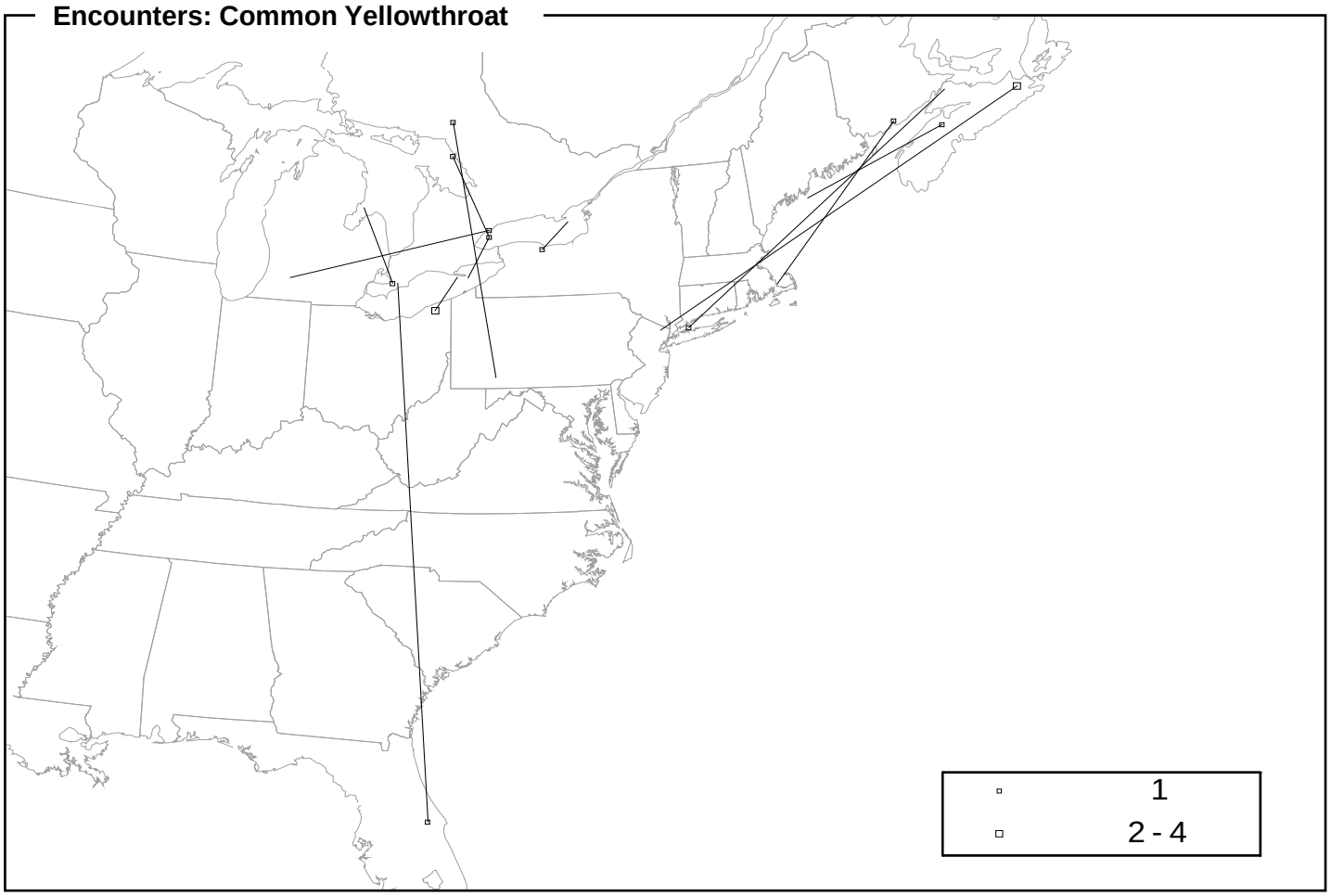
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*4918*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	3	4	8
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	8	34	34
No. of Canadian-banded birds moving > 0 km	3	3	7
Mean movement > 0 km of Canadian-banded birds (km)	2225	19	1010
Maximum movement from all encounters (km)	4041	736	4041
% recovered (encountered dead)	100	25	62
% direct recoveries	66	0	25
% encountered during banding operations	0	75	37

Banding effort: Mourning Warbler



Top banders: LPBO, JBMi, ETJ, PEPO, BBO

Common Yellowthroat (*Geothlypis trichas*) 681.0



The Common Yellowthroat breeds throughout the U.S. and forested parts of Canada. It winters from the southern U.S. south through Central America, the Greater Antilles, and the Bahamas to Panama.

All 17 encounters showing movements greater than 50 km involved the Maritimes (5 records, including 1-3) or southern Ontario (records 4-9). No birds were encountered in winter months, but two birds from Ontario were encountered on fall migration in Florida (record 6 and a second record omitted from the map because it lacked precise location). Other Ontario encounters also indicate a predominantly north-northwest-south-southeast orientation. The bird banded in Michigan in spring and encountered the next fall well to the east (record 7) was perhaps taking a different route through the Great Lakes in the two seasons. Two encounters (records 8 and 9) suggest direct crossings of large lakes.

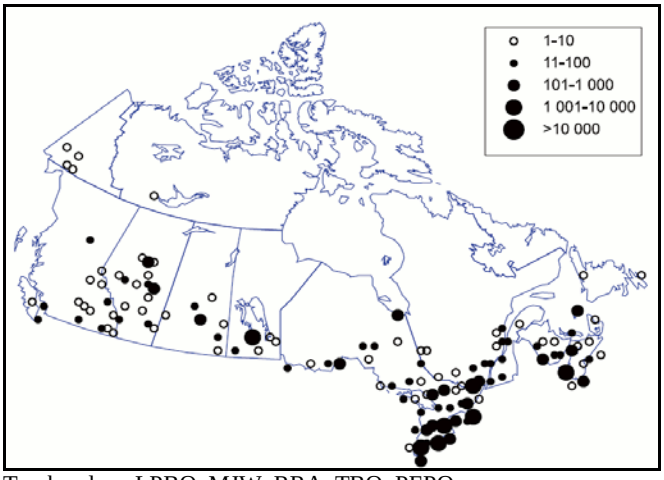
Encounter record: Common Yellowthroat

1	1230-35806	HY	U	07/08/73	Front Lake, NB	45°50'N	64°10'W	2 mo.
	ADS	3	0	01/10/73	Chimon Island, CT	41°00'N	73°20'W	915 km S57°W
2	1330-27160	AHY	M	22/05/74	Cape Cod Bay, MA	41°50'N	70°30'W	max. 10 dy.
	TLE	5	12	1974/05/99	Bayswater, NB	45°20'N	66°00'W	532 km N41°E
3	1690-78825	AHY	M	15/05/88	Oakland, NJ	41°00'N	74°10'W	4 yr. 1 mo.
	DPS	3	0	03/06/92	Antigonish, NS	45°30'N	61°50'W	1117 km N59°E
4	1010-82050	AHY	M	16/09/61	Saginaw Bay, Lake Huron, MI	44°10'N	83°20'W	4 yr. 8 mo.
	RDB	7	89	16/05/66	Balmoral Marsh, ON	42°20'N	82°20'W	220 km S22°E
5	1220-42217	HY	F	06/09/70	Powdermill Nature Reserve, PA	40°00'N	79°10'W	1 yr. 11 mo.
	KCP	5	0	01/08/72	Markstay, ON	46°20'N	80°30'W	713 km N8°W
6	0280-27791	AHY	F	26/05/68	near Chatham, ON	42°20'N	82°10'W	3 yr. 5 mo.
	MJW	5	0	08/10/71	Christmas, FL	28°30'N	81°00'W	1544 km S04°E
7	1510-33603	HY	M	20/09/81	Plainwell, MI	42°20'N	85°30'W	8 mo.
	RJA	3	0	15/05/82	Toronto, ON	43°40'N	79°20'W	523 km N71°E
8	1120-40480	HY	F	23/09/68	Long Point, ON	42°30'N	80°00'W	8 dy.
	LPBO	5	0	01/10/68	Cool Springs Reservation, PA	39°50'N	79°40'W	298 km S5°E
9	1840-73542	AHY	M	15/05/89	Prince Edward Point, ON	43°50'N	76°50'W	13 dy.
	CMF	5	13	27/05/89	Rochester, NY	43°10'N	77°40'W	100 km S42°W
10	0290-65833	AHY	F	14/05/61	Tilbury, ON	42°10'N	82°20'W	6 yr.
	RLW	7	89	20/05/67	Mitchell Bay, ON	42°20'N	82°20'W	19 km N0°W

Summary of banding statistics: Common Yellowthroat

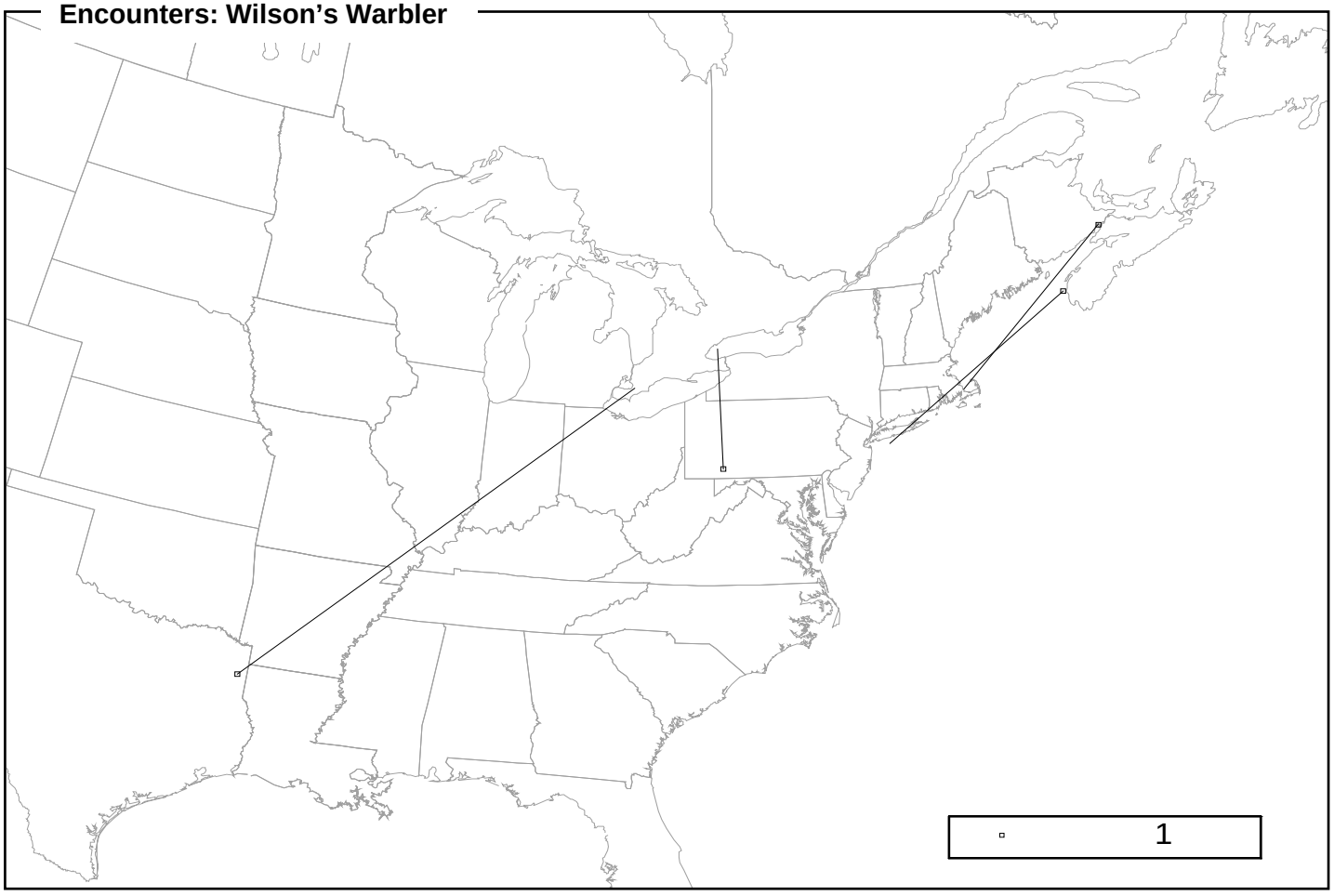
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*21418*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	7	31	40
No. encountered from foreign bandings	2	7	9
Maximum period from banding to encounter (mo.)	23	72	72
No. of Canadian-banded birds moving > 0 km	4	9	15
Mean movement > 0 km of Canadian-banded birds (km)	310	241	229
Maximum movement from all encounters (km)	914	1543	1543
% recovered (encountered dead)	85	29	37
% direct recoveries	57	16	22
% encountered during banding operations	14	70	62

Banding effort: Common Yellowthroat



Top banders: LPBO, MJW, RRA, TBO, PEPO

Wilson's Warbler (*Wilsonia pusilla*) 685.0



Wilson's Warbler breeds in Alaska and throughout most of Canada south of the treeline, except for the southern Prairie Provinces, southern Ontario and Quebec, and parts of Nova Scotia; it also breeds in Maine and parts of the northwestern U.S. It winters from northern Mexico south through Central America to western Panama.

All four encounters are listed below; all the birds were both banded and encountered during migration.

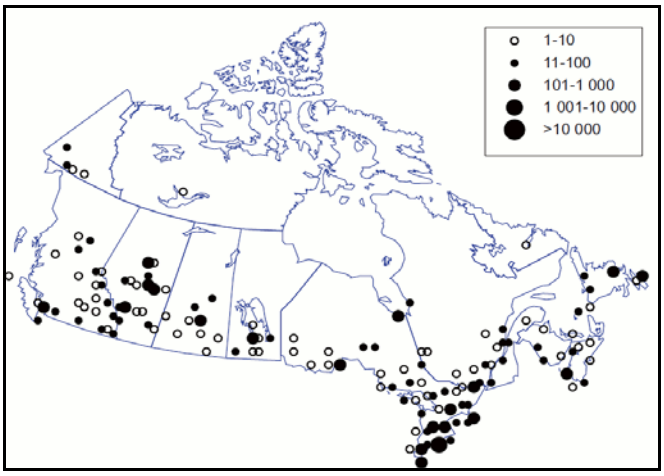
Encounter records: Wilson's Warbler

1	1080-74621	AHY	M	03/06/68	mouth of Humber River, ON	43°30'N	79°20'W	11 mo.
	RED	7	89	23/05/69	Powdermill Nature Reserve, PA	40°00'N	79°10'W	390 km S2°E
2	1240-43275	AHY	M	26/05/73	Mitchell Bay, ON	42°20'N	82°20'W	5 mo.
	MJW	3	3	01/10/73	Jefferson, TX	32°40'N	94°20'W	1507 km S48°W
3	1280-42370	AHY	M	24/05/79	6 km south of Massapequa Park, NY	40°30'N	73°20'W	4 mo.
	ROP	7	89	05/09/79	Westport, NS	44°10'N	66°20'W	706 km N52°E
4	1350-83518	AHY	F	28/05/76	Manomet, MA	41°50'N	70°30'W	1 yr. 3 mo.
	MBO	5	12	1977/08/99	18 km northeast of Amherst, NB	45°50'N	64°30'W	656 km N45°E

Summary of banding statistics: Wilson's Warbler

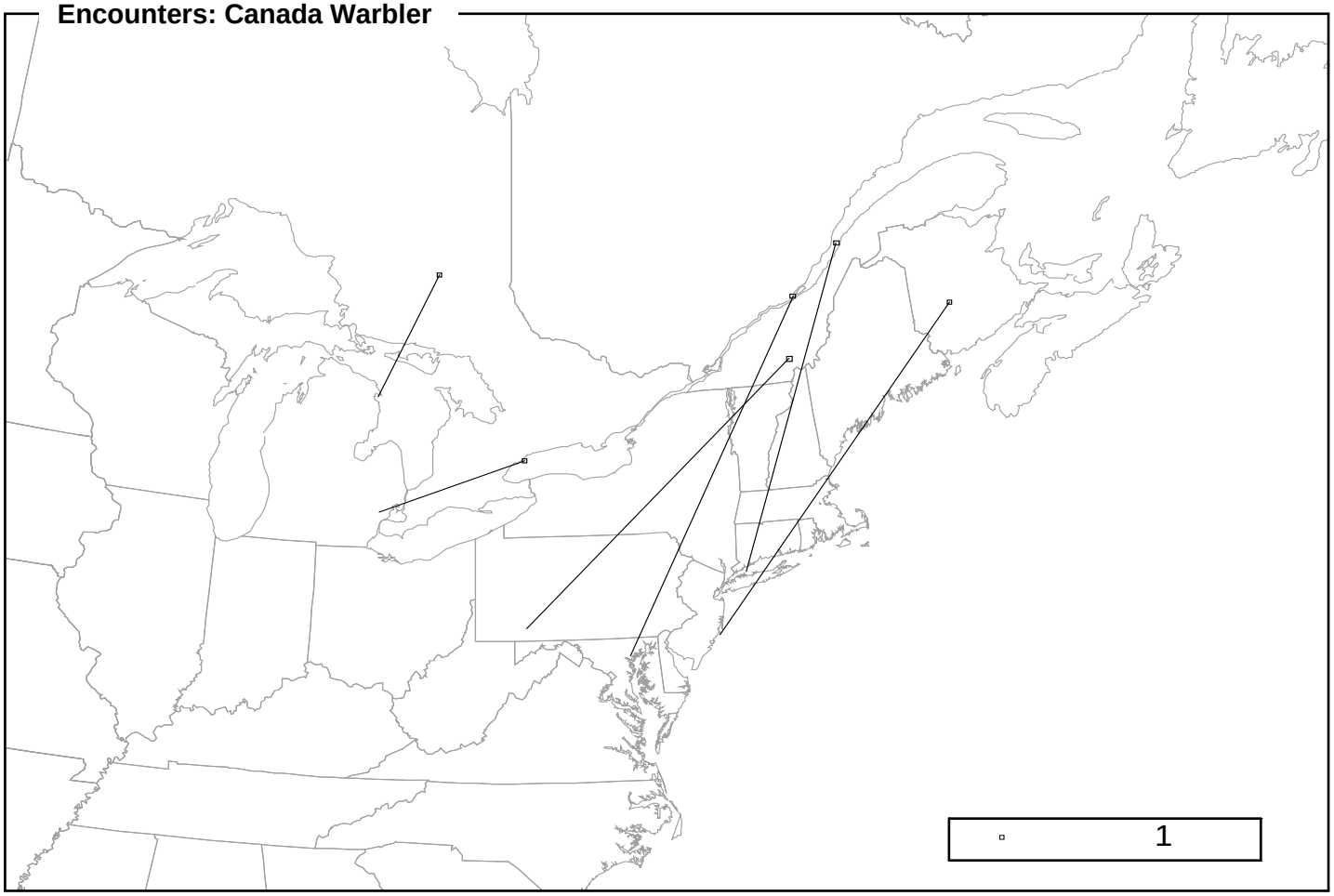
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*12 162*
No. encountered per 1000 banded (1955-1995)			*0.2*
Total no. encountered (1921-1995)	0	4	4
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	-	15	15
No. of Canadian-banded birds moving > 0 km	0	2	2
Mean movement > 0 km of Canadian-banded birds (km)	-	948	948
Maximum movement from all encounters (km)	-	1507	1507
% recovered (encountered dead)	-	50	50
% direct recoveries	-	50	50
% encountered during banding operations	-	50	50

Banding effort: Wilson's Warbler



Top banders: LPBO, ETJ, PEPO, MJW, TBO

Canada Warbler (*Wilsonia canadensis*) 686.0



The Canada Warbler breeds within the forest zones of Canada from north-central Alberta to Nova Scotia, as well as farther south in the Appalachian Mountains. It winters from Venezuela and northern Colombia south through Ecuador and central Peru.

The birds in all six distant encounters were banded in the U.S. (records 1-6), the first five of these during spring migration. Several were encountered during spring migration as well, but three may have been in their breeding areas (records 1-3). The bird in record 7 holds the longevity record for this species (Klimkiewicz and Futcher 1989).

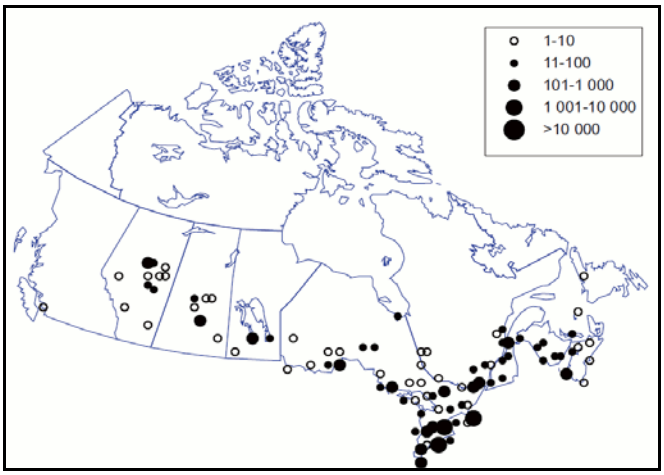
Encounter records: Canada Warbler

1	1050-66437	AHY	M	18/05/63	Laughlinton, PA	40°00'N	79°10'W	
	KCP	0	0	99/SU/63	Bishopton, QC	45°30'N	71°30'W	875 km N43°E
2	1340-62506	AHY	M	18/05/74	Barnegat, NJ	39°40'N	74°10'W	2 yr. 1 mo.
	FHL	5	0	03/06/76	Stanley, NB	46°10'N	66°40'W	946 km N38°E
3	1500-62236	AHY	M	23/05/78	Alpena, MI	45°00'N	83°20'W	15 dy.
	AEV	2	13	06/06/78	Gogama, ON	47°40'N	81°40'W	323 km N23°E
4	1140-16254	AHY	M	31/05/68	Berkley, MI	42°30'N	83°10'W	1 yr. 0 mo.
	WPN	5	0	29/05/69	Agincourt, ON	43°40'N	79°10'W	350 km N67°E
5	1580-42528	AHY	M	26/05/82	Norwalk, CT	41°00'N	73°20'W	2 yr. 3 mo.
	CAS	5	0	1984/08/99	Île aux Lièvres, QC	47°50'N	69°40'W	814 km N20°E
6	1540-45601	HY	F	05/09/82	Towson, MD	39°20'N	76°30'W	1 yr. 8 mo.
	JJS	5	0	28/05/84	Charlesbourg, QC	46°50'N	71°10'W	940 km N26°E
7	1300-28152	AHY	M	29/06/75	Port-au-Persil, QC	47°40'N	69°50'W	7 yr. 0 mo.
	RPLG	5	13	14/06/82	Port-au-Persil, QC	47°40'N	69°50'W	0 km

Summary of banding statistics: Canada Warbler

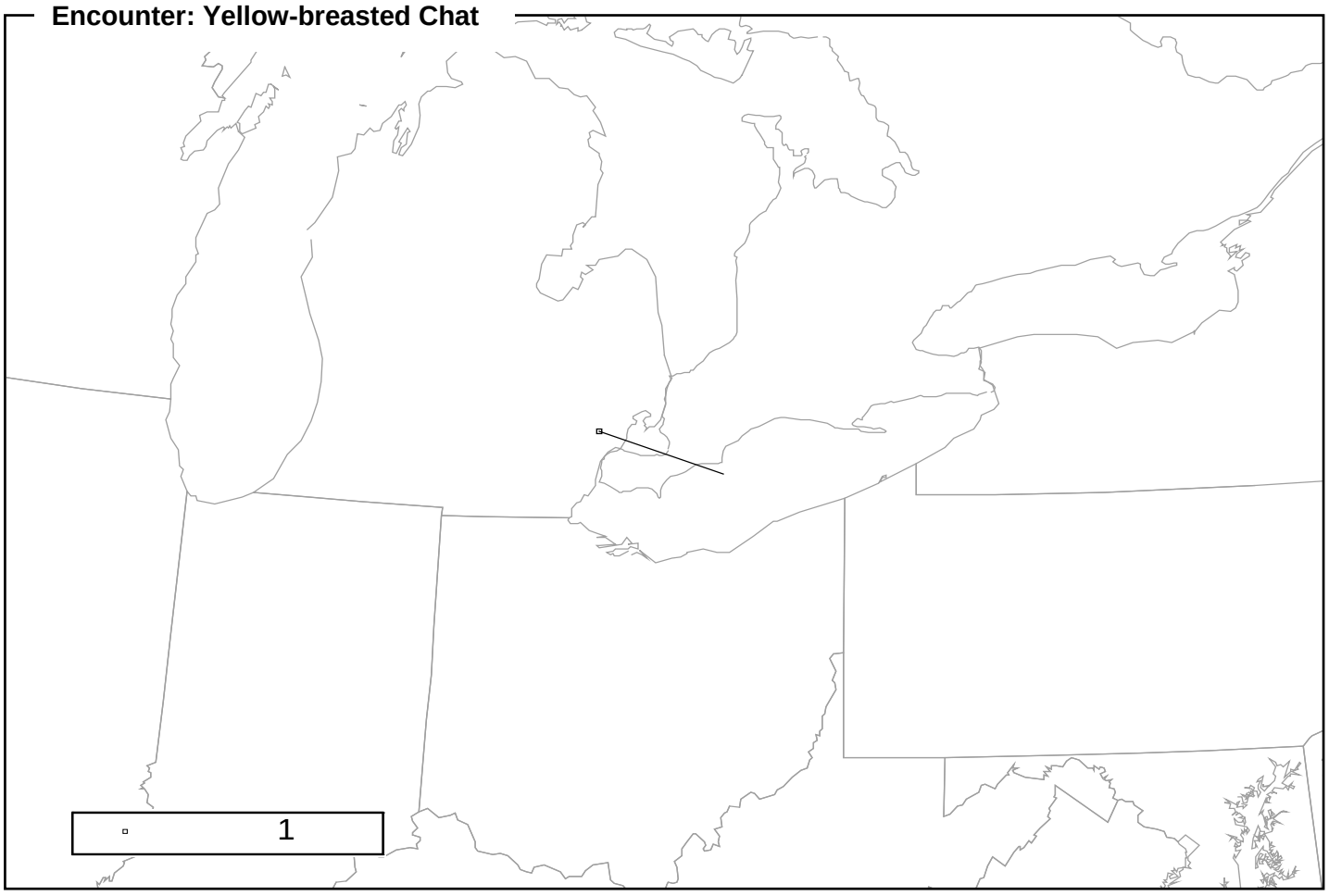
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*10 767*
No. encountered per 1000 banded (1955-1995)			*0.3*
Total no. encountered (1921-1995)	1	8	9
No. encountered from foreign bandings	1	5	6
Maximum period from banding to encounter (mo.)	20	84	84
No. of Canadian-banded birds moving > 0 km	0	2	2
Mean movement > 0 km of Canadian-banded birds (km)	-	18	18
Maximum movement from all encounters (km)	940	946	946
% recovered (encountered dead)	100	87	88
% direct recoveries	0	37	33
% encountered during banding operations	0	12	11

Banding effort: Canada Warbler



Top banders: LPBO, PEPO, TBO, MJW, RRA

Yellow-breasted Chat (*Icteria virens*) 683.0



The Yellow-breasted Chat breeds through most of the U.S. but only locally in southern Canada, in southern British Columbia, Alberta, Saskatchewan, and Ontario. It winters from central Mexico south to western Panama.

The only Canadian encounter is listed below.

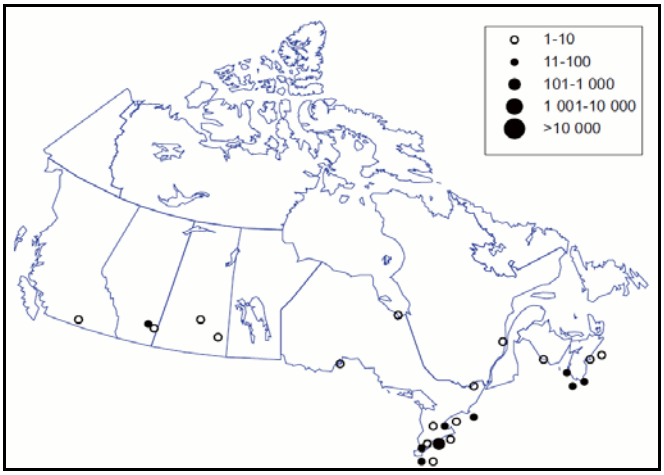
Encounter record: Yellow-breasted Chat

1	0521-72610	AHY	M	03/06/56	Rondeau Wildlife Management Area,	42°10'N 81°50'W	3 yr. 1 mo.
	FTL	7	89	10/07/59	Berkley, MI	42°30'N 83°10'W	116 km N71°W

Summary of banding statistics: Yellow-breasted Chat

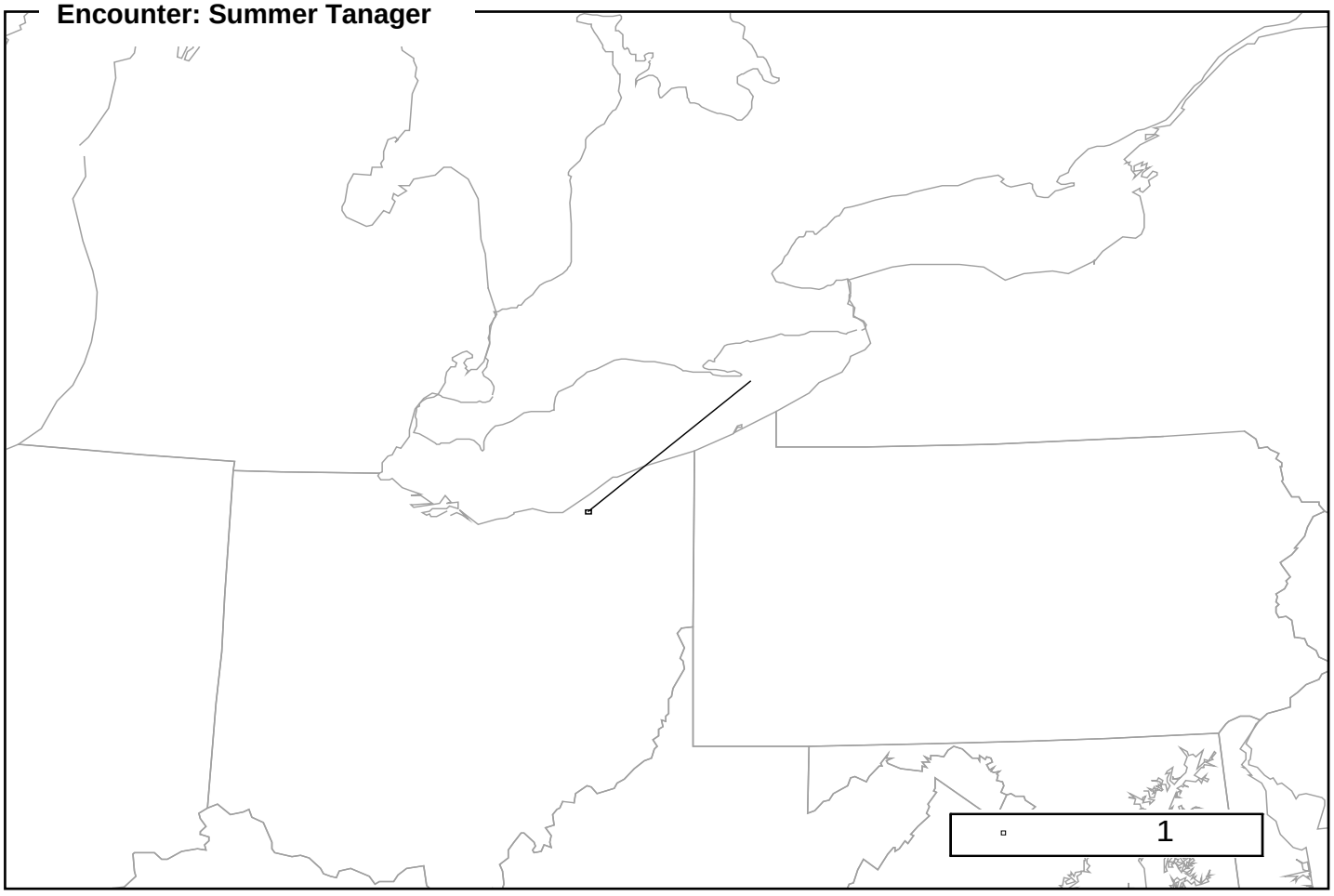
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*558*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	37	37
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	115	115
Maximum movement from all encounters (km)	-	115	115
% recovered (encountered dead)	-	0	0
% direct recoveries	-	0	0
% encountered during banding operations	-	100	100

Banding effort: Yellow-breasted Chat



Top banders: LPBO, DDD, ETJ, CKC, MJW

Summer Tanager (*Piranga rubra*) 610.0



The Summer Tanager breeds across the southern U.S. but occurs as a regular visitor in southern Ontario, New Brunswick, and Nova Scotia. It winters from central Mexico to Bolivia and western Brazil, as well as in southern California and casually elsewhere in the U.S.

The only Canadian record was of a bird that had apparently overshot the breeding range on spring migration. It was banded at Long Point, Ontario, and encountered nine days later on the south side of Lake Erie. The encounter rate per 1000 banded is unrealistically high (see summary table) - there are no encounters at all from the more numerous Canadian bandings of Scarlet and Western Tanagers, as noted in the next two accounts.

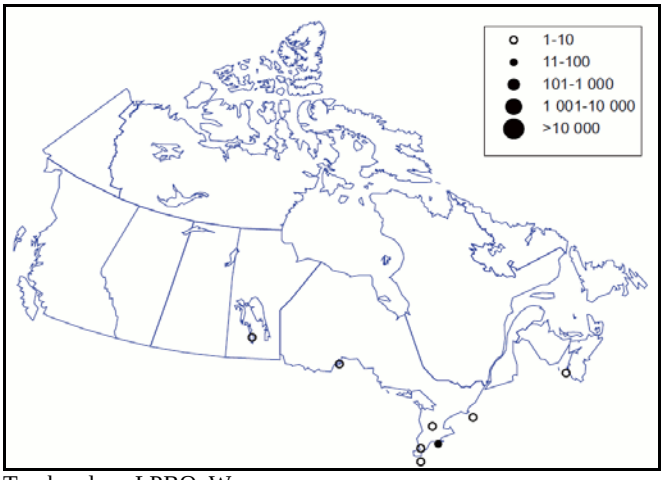
Encounter record: Summer Tanager

1	0921-32328	SY	M	21/05/84	Long Point, ON	42°30'N	80°00'W	9 dy.
	LPBO	5	0	30/05/84	13 km west of Waite Hill, OH	41°30'N	81°30'W	167 km S49°W

Summary of banding statistics: Summer Tanager

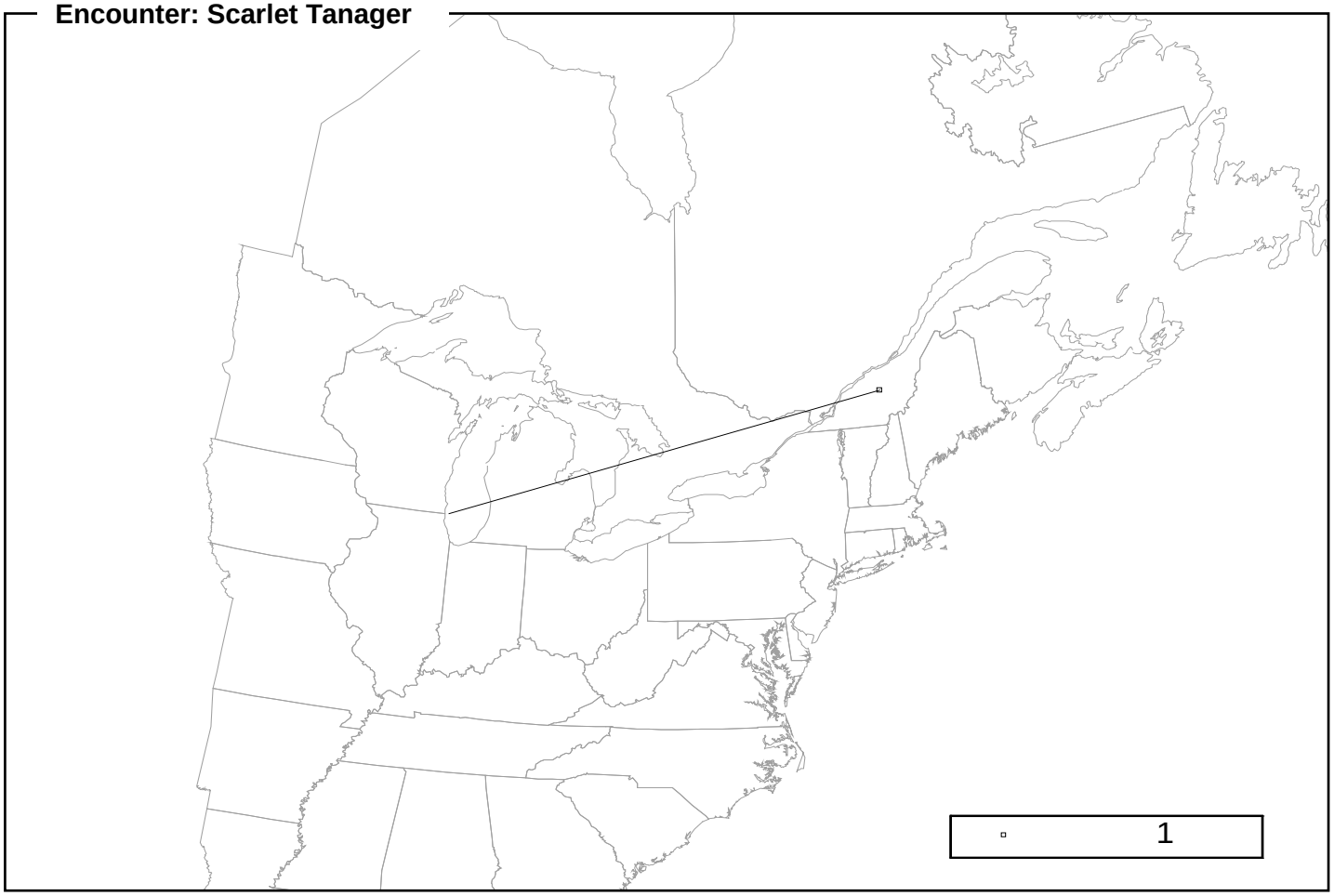
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*27*
No. encountered per 1000 banded (1955-1995)			*37*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	0	0
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	166	166
Maximum movement from all encounters (km)	-	166	166
% recovered (encountered dead)	-	100	100
% direct recoveries	-	100	100
% encountered during banding operations	-	0	0

Banding effort: Summer Tanager



Top banders: LPBO, Wca

Scarlet Tanager (*Piranga olivacea*) 608.0



The Scarlet Tanager breeds in the eastern U.S. except for the far south; it also breeds across southeastern Canada from southwestern Manitoba to New Brunswick. It winters in South America from Colombia to Bolivia.

Although many have been banded in Canada, the only Canadian encounter is of a bird banded in Wisconsin and encountered in Quebec in a subsequent spring. While not the oldest tanager known, this bird comes within about a year of the longevity record (Klimkiewicz 1997).

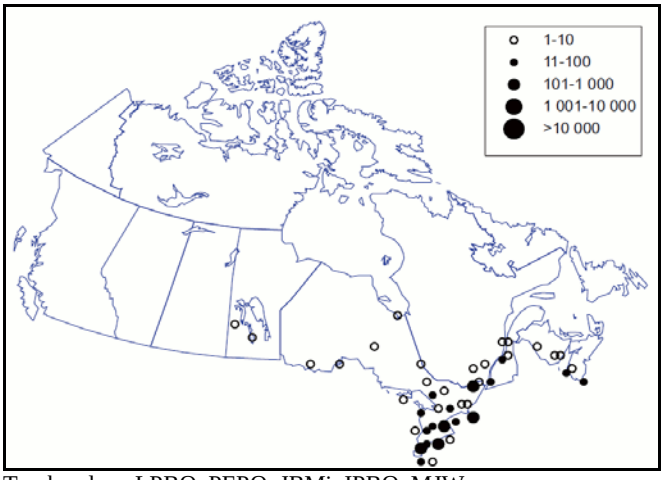
Encounter record: Scarlet Tanager

1	1241-78824	AHY	M	18/05/86	Kenosha, WI	42°30'N 87°40'W	8 yr. 0 mo.
	JFS	3	0	29/05/94	Norbertville, QC	46°00'N 71°40'W	1331 km N68°E

Summary of banding statistics: Scarlet Tanager

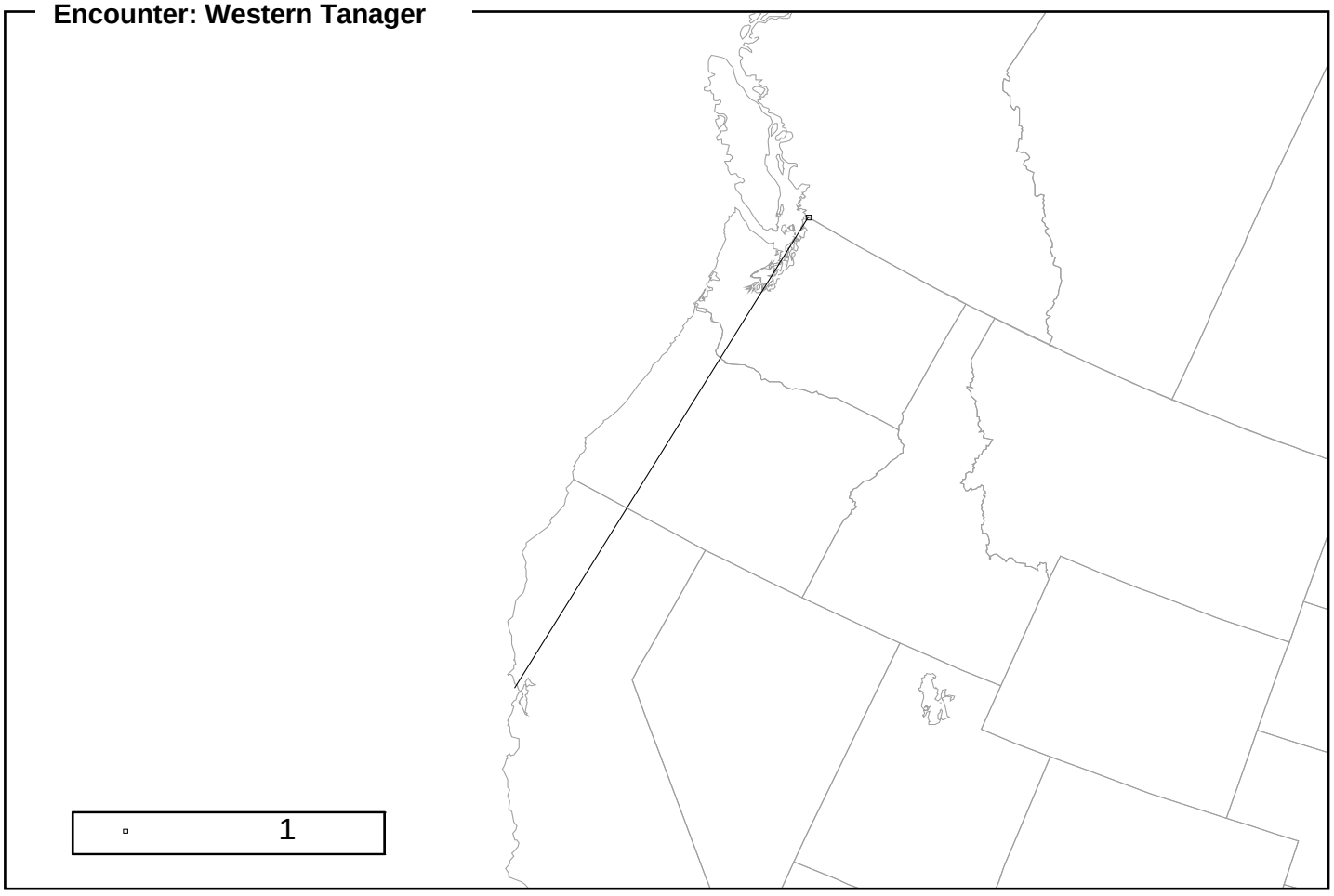
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*2259*
No. encountered per 1000 banded (1955-1995)			*0*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	-	96	96
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	-	1331	1331
% recovered (encountered dead)	-	100	100
% direct recoveries	-	0	0
% encountered during banding operations	-	0	0

Banding effort: Scarlet Tanager



Top banders: LPBO, PEPO, JBMi, IPBO, MJW

Western Tanager (*Piranga ludoviciana*) 607.0



The Western Tanager breeds in the western U.S.; in Canada it breeds throughout British Columbia north to the southern Northwest Territories, in northern and central Alberta, and in central Saskatchewan. It winters from Baja California and central Mexico south to Costa Rica.

The sole encounter was banded in fall migration in California and encountered the next spring on its return journey to Canada.

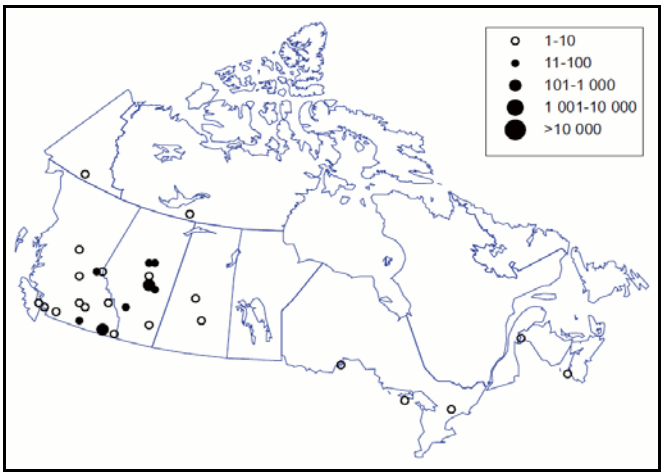
Encounter record: Western Tanager

1	1411-50303	HY	F	11/10/91	13 km west of San Anselmo, CA	37°50'N 122°40'W	7 mo.
	PRBO	5	13	06/05/92	Cloverdale, BC	49°00'N 122°40'W	1243 km N0°W

Summary of banding statistics: Western Tanager

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*423*
No. encountered per 1000 banded (1955-1995)			*0*
Total no. encountered (1921-1995)	1	0	1
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	7	-	7
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	1243	-	1243
% recovered (encountered dead)	100	-	100
% direct recoveries	0	-	0
% encountered during banding operations	0	-	0

Banding effort: Western Tanager

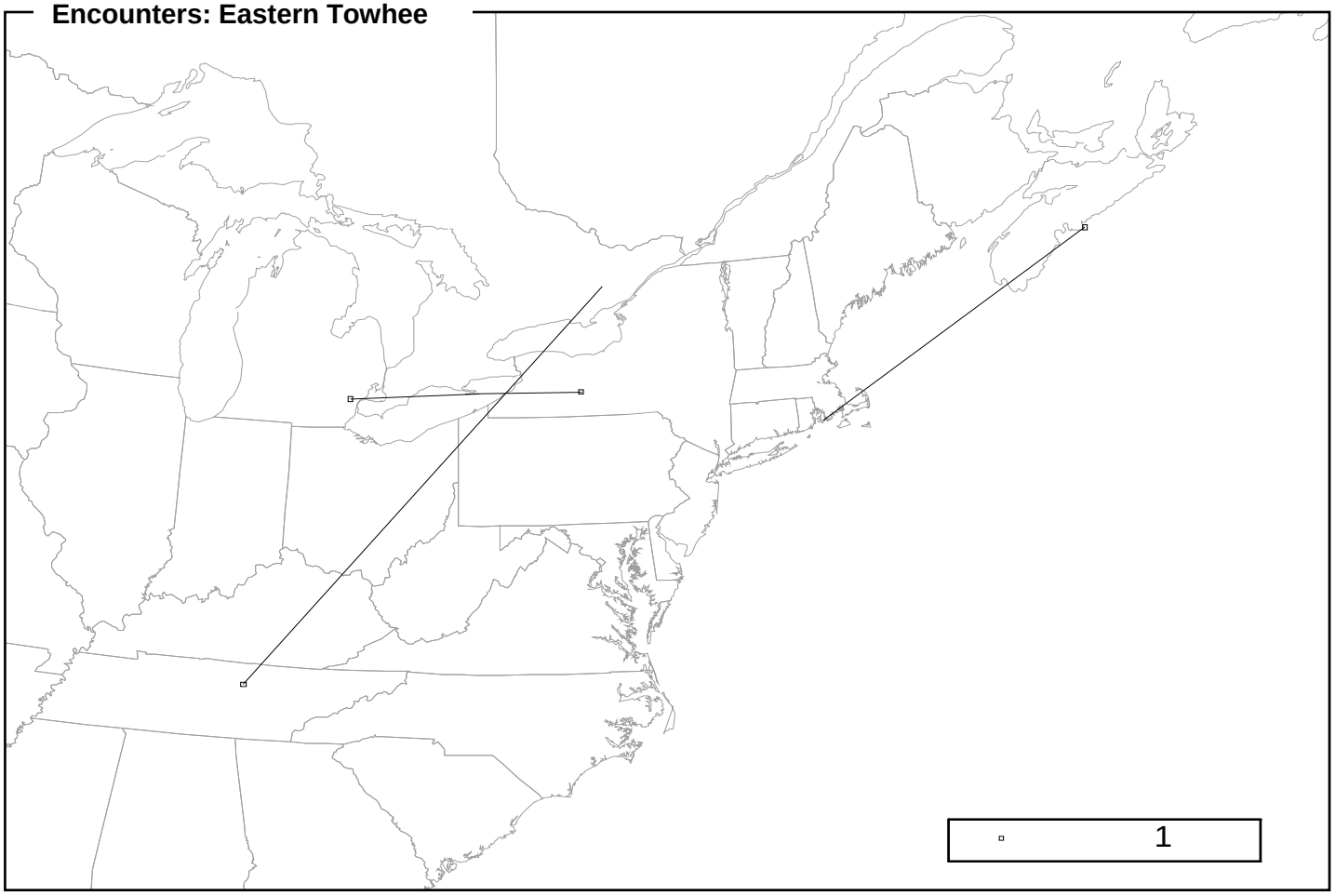


Top banders: ETJ, RFH, DC, BBO, UA

Eastern Towhee (*Pipilo erythrophthalmus*) 587.0 and

Spotted Towhee (*P. maculatus*) 588.0

Encounters: Eastern Towhee



The Eastern and Spotted Towhees were formerly considered a single species, the Rufous-sided Towhee, and the two are treated together in this account.

The Eastern Towhee breeds in the eastern U.S., southeastern Manitoba, southern Ontario, and extreme southern Quebec. It winters regularly but locally as far north as extreme southern Ontario but mainly from the mid-Atlantic states south to Florida and the Gulf Coast. Spotted Towhees breed in southern British Columbia, southern Alberta, southern Saskatchewan, and the western U.S. British Columbia birds are resident; Prairie Provinces birds move to the U.S. Southwest for the winter.

The summary table contains 85 records for birds that are assumed to be resident Spotted Towhees (based on location; e.g., record 1, which also showed the longest period between banding and encounter). All encounters showing substantial movement refer to the migratory Eastern Towhee and are listed below (records 2-5). The bird in record 2, which was reported by the finder as being "diseased," travelled northeast in the fall.

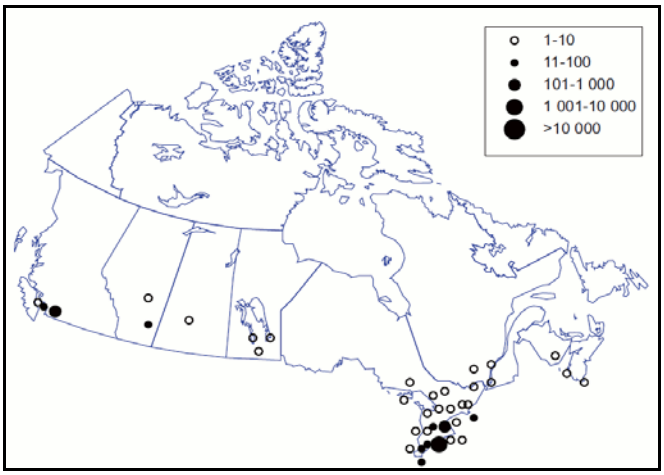
Encounter records: Eastern and Spotted Towhees

1	0002-65721	AHY	M	12/11/51	Comox, BC	49°40'N	124°50'W	5 yr. 2 mo.
	TP	0	99	22/01/57	Comox, BC	49°40'N	124°50'W	0 km
2	0561-20104	HY	M	17/08/57	Common Fence Point, RI	41°30'N	71°10'W	2 mo.
	JBa	0	20	17/10/57	Halifax, NS	44°30'N	63°30'W	707 km N59°E
3	0782-32114	AHY	M	02/05/90	Sharbot Lake, ON	44°40'N	76°40'W	11 mo.
	CMF	4	0	14/04/91	Cookeville, TN	36°10'N	85°30'W	1205 km S41°W
4	0552-90148	AHY	M	21/04/62	Long Point, ON	42°30'N	80°00'W	1 yr.
	LPBO	0	0	21/04/63	Farmington Hills, MI	42°20'N	83°20'W	275 km S87°W
5	0542-06752	U	F	11/05/60	Long Point, ON	42°30'N	80°00'W	1 yr.11 mo.
	LPBO	0	0	28/04/62	Jamestown, NY	42°00'N	79°10'W	88 km S51°E
6	0921-33332	AHY	F	25/04/85	Long Point, ON	42°30'N	80°20'W	3 yr. 1 mo.
	LPBO	7	89	02/05/88	Ingleside, NY	42°30'N	77°20'W	246 km N89°E

Summary of banding statistics: Eastern and Spotted Towhees

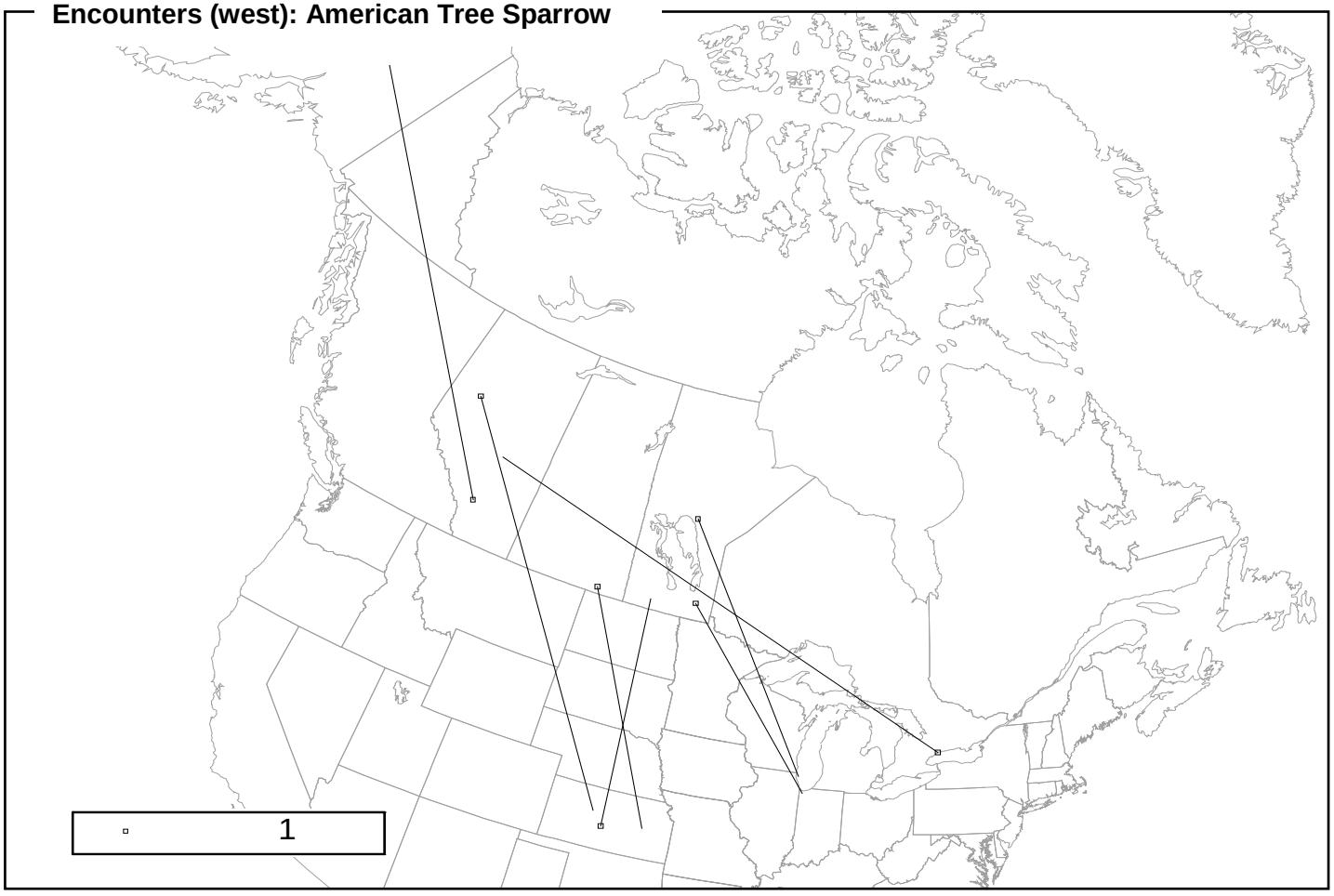
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3430*
No. encountered per 1000 banded (1955-1995)			*7*
Total no. encountered (1921-1995)	3	76	94
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	11	62	62
No. of Canadian-banded birds moving > 0 km	0	3	4
Mean movement > 0 km of Canadian-banded birds (km)	-	575	453
Maximum movement from all encounters (km)	707	1205	1205
% recovered (encountered dead)	33	26	26
% direct recoveries	66	27	29
% encountered during banding operations	66	72	72

Banding effort: Eastern and Spotted Towhees



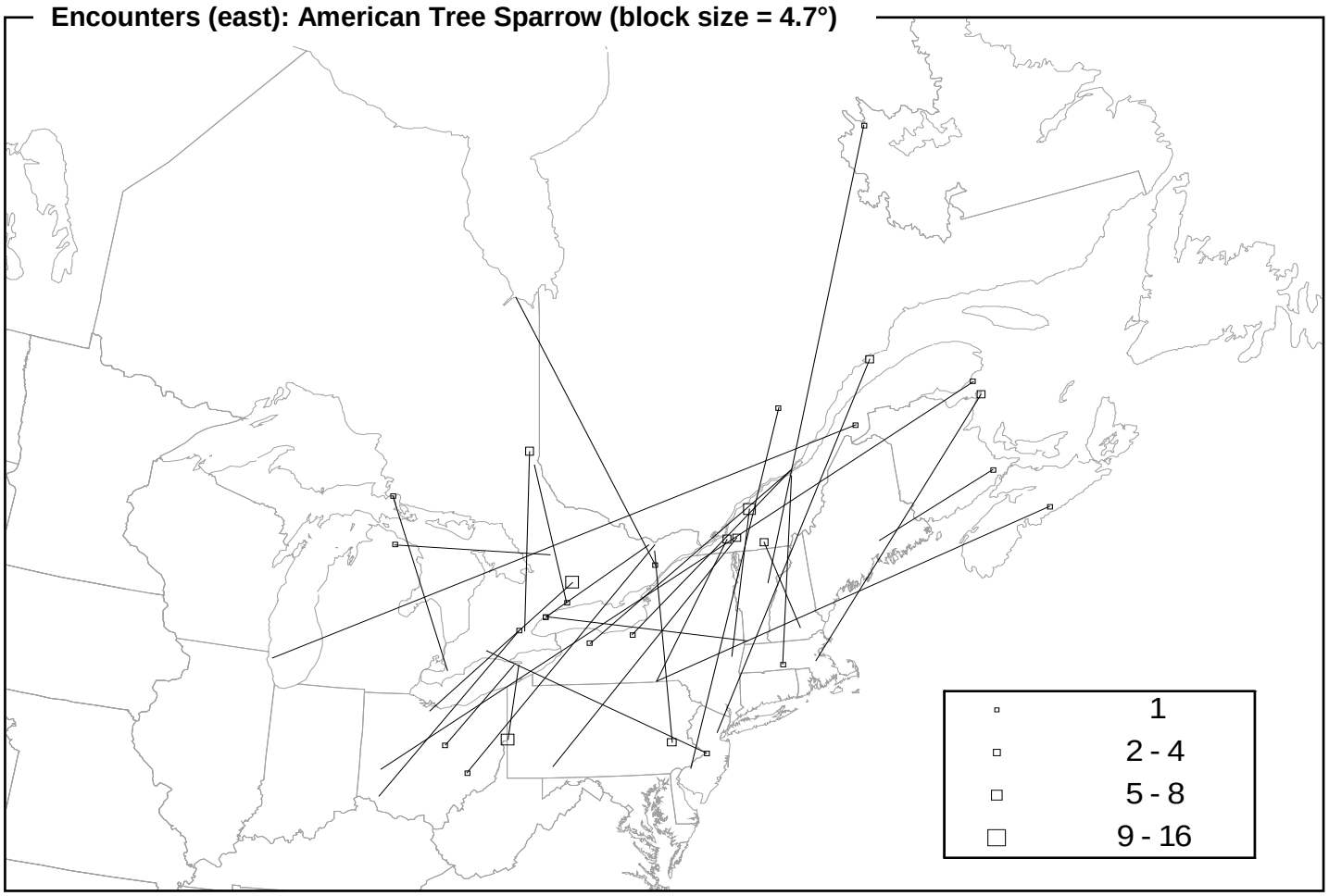
Top banders: LPBO, RBCM, DBr., UBC, CWS-BC

American Tree Sparrow (*Spizella arborea*) 559.0



The American Tree Sparrow breeds across Alaska and Canada from Yukon to Labrador, mainly in scrubby habitats near the treeline as far north as central Nunavut and north-central Quebec. It winters from southern Canada south to northern Arizona, northern Texas, Arkansas, Tennessee, and North Carolina.

The American Tree Sparrow is the most northern-nesting of all the North American sparrows, and very little banding has been done on the breeding grounds. However, two long-distance encounters (record 1 and a bird banded on James Bay) were of birds banded within the nesting range, and there is one encounter from the nesting range of a bird banded farther south (record 2). The encounter pattern of American Tree Sparrows is, even more than for most passerines, heavily biased by the density of human population. Most encounters were of birds banded on migration, and almost three-quarters of all records involved Ontario and Quebec.



Of the 210 mid-winter encounters (December-February), 78% were in Canada (e.g., record 3); the rest were scattered across the northern U.S., with the most southerly records in New Jersey, Pennsylvania, Ohio, Illinois (record 4), and Kansas (record 5). Tree Sparrows show great fidelity to wintering areas (e.g., record 3); at one Ontario site, one-third of the birds banded in winter were retrapped in subsequent winters (A.D. Brewer, pers. obs.). Males tend to winter farther north than females (Baumgartner 1942).

Western birds move on a northwest-southeast axis, some of them evidently passing through the Great Lakes area (records 6-10). Maritimes birds move instead on a northeast-southwest axis (record 11). Ontario and Quebec seem to form a transition zone (see map).

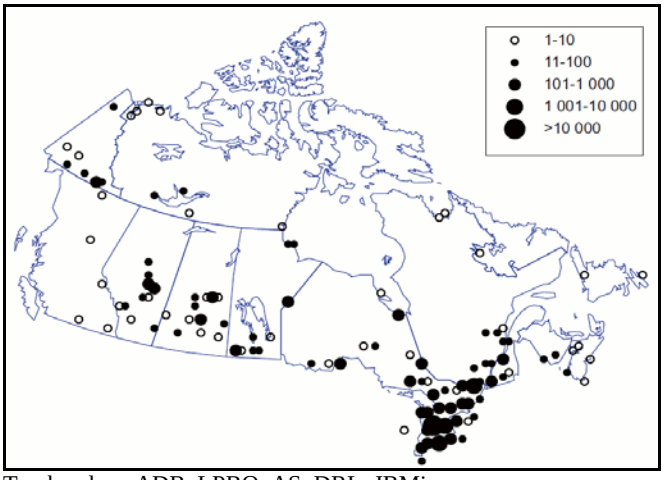
Encounter records: American Tree Sparrow

1	2131-96129	HY	U	18/09/93	College, AK	64°50'N	147°40'W	1 mo.
	THP	5	12	17/10/93	Calgary, AB	51°00'N	114°00'W	2467 km S68°E
2	0580-77710	U	U	23/02/58	near Plainfield, VT	44°10'N	72°20'W	2 yr. 8 mo.
	GCM	0	1	01/10/60	near Schefferville, QC	54°40'N	66°40'W	1238 km N17°E
3	0450-58012	HY	M	26/12/45	Hudson Heights, QC	45°20'N	74°10'W	3 yr. 1 mo.
	GGO	0	29	07/01/49	Hudson Heights, QC	45°20'N	74°10'W	0 km
4	0590-65667	U	U	14/01/58	Island Beach State Park, IL	42°20'N	87°40'W	7 yr. 5 mo.
	LJC	0	1	04/06/65	near Cabano, QC	47°40'N	68°50'W	1592 km N62°E
5	0050-33574	U	U	13/10/31	near Stockton, MB	49°30'N	99°30'W	2 yr. 2 mo.
	NC	0	0	22/12/33	Seward, KS	38°10'N	98°40'W	1263 km S03°E
6	0070-54118	U	U	03/04/34	Zion, IL	42°20'N	87°40'W	7 yr. 6 mo.
	GEH	0	0	20/10/41	south of Norway House, MB	53°50'N	97°40'W	1477 km N27°W
7	0520-18558	U	U	14/09/57	near Edmonton, AB	53°30'N	113°30'W	8 mo.
	ETJ	0	89	09/05/58	Ajax, ON	43°50'N	79°00'W	2722 km S81°E
8	0510-43352	U	U	20/03/54	East Chicago, IN	41°30'N	87°20'W	
	FGM	0	47	??/04/55	near Vivian, MB	49°50'N	96°20'W	1160 km N34°W
9	0750-17631	U	U	18/11/67	Hays, KS	38°50'N	99°20'W	6 mo.
	CAE	5	0	11/05/68	near Watino, AB	55°40'N	117°30'W	2308 km N30°W
10	0750-75221	U	U	23/11/67	near Emporia, KS	38°30'N	96°20'W	
	CWC	5	0	??/04/71	Midale Lake, SK	49°20'N	103°20'W	1329 km N23°W
11	0630-49065	U	U	26/11/61	Apalachin, NY	42°00'N	76°00'W	
	FVM	0	1	??/01/64	Meaghers Grant, NS	44°50'N	63°10'W	1083 km N69°E
12	0910-19533	AHY	U	10/03/85	Île Perrot, QC	45°20'N	73°50'W	8 yr. 8 mo.
	MB	7	99	30/11/93	Île Perrot, QC	45°20'N	73°50'W	0 km

Summary of banding statistics: American Tree Sparrow

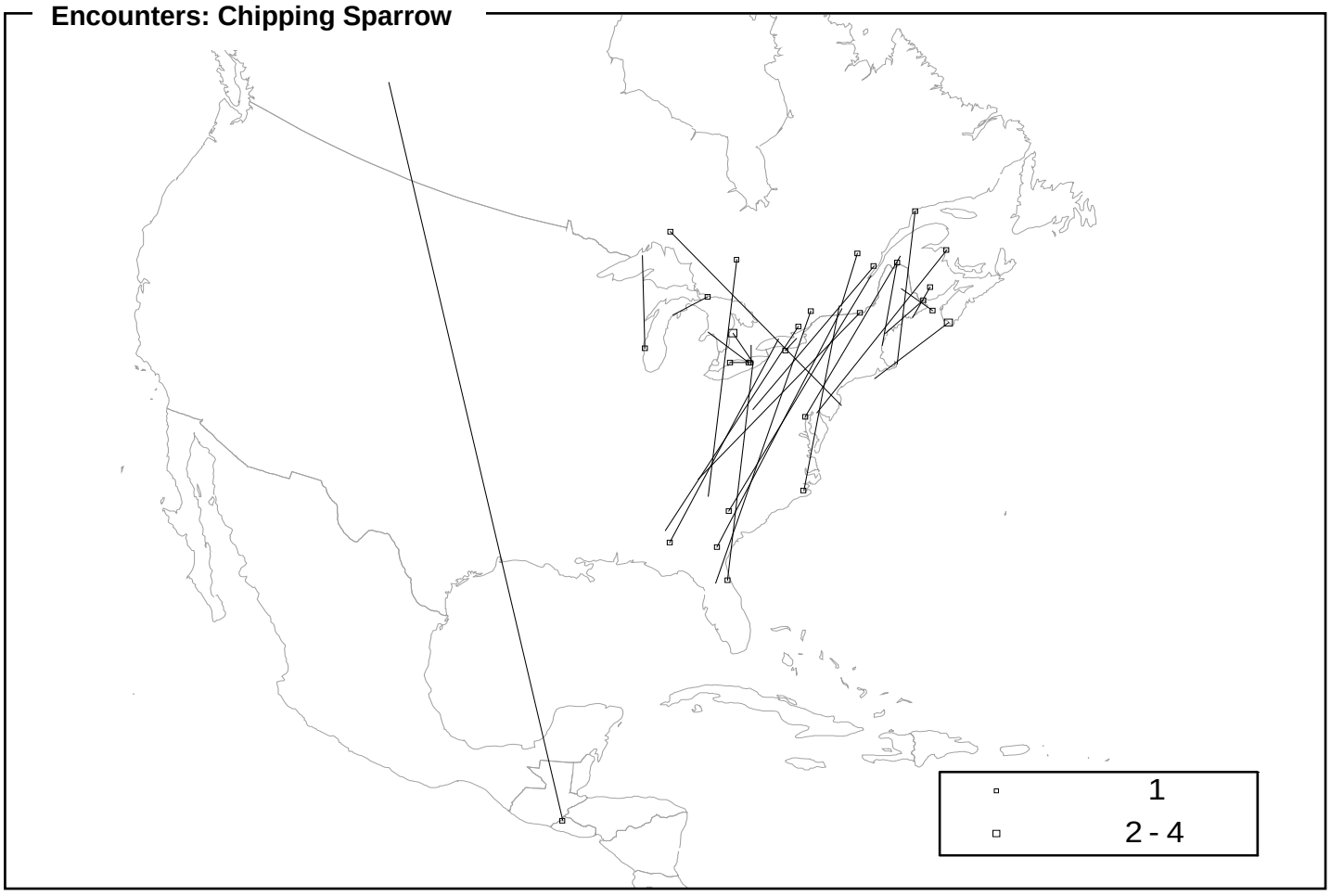
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*35 719*
No. encountered per 1000 banded (1955-1995)			*4*
Total no. encountered (1921-1995)	8	180	253
No. encountered from foreign bandings	1	29	50
Maximum period from banding to encounter (mo.)	38	104	115
No. of Canadian-banded birds moving > 0 km	5	29	44
Mean movement > 0 km of Canadian-banded birds (km)	278	243	309
Maximum movement from all encounters (km)	2467	1808	2721
% recovered (encountered dead)	50	30	36
% direct recoveries	50	25	26
% encountered during banding operations	37	65	57

Banding effort: American Tree Sparrow



Top banders: ADB, LPBO, AS, DRL, JBMi

Chipping Sparrow (*Spizella passerina*) 560.0



The Chipping Sparrow breeds across most of the U.S. (except Alaska), as well as in Canada to the northern limit of dense boreal forest. It winters in the southern tier of U.S. states to Central America.

Most birds (88%) showed no movement or were encountered within 50 km of the banding site. Fourteen moved more than 1000 km (10 of these are listed below), an additional 4 moved 500-1000 km, and 11 moved 100-500 km.

Maritimes and Quebec birds moved southwest for the winter (e.g., records 1-4); Ontario birds evidently move more south or southeast (see map; e.g., records 5-9). These patterns are supported by encounters of banded birds moving between Florida and several eastern states (Middleton 1998). Although Chipping Sparrows nest as far west as coastal British Columbia and are highly migratory in most of the western part of their range, there is only one long-distance encounter from western Canada (record 10). Encountered in El Salvador at a relatively early fall date, the bird was near the southern limit of the species' winter range.

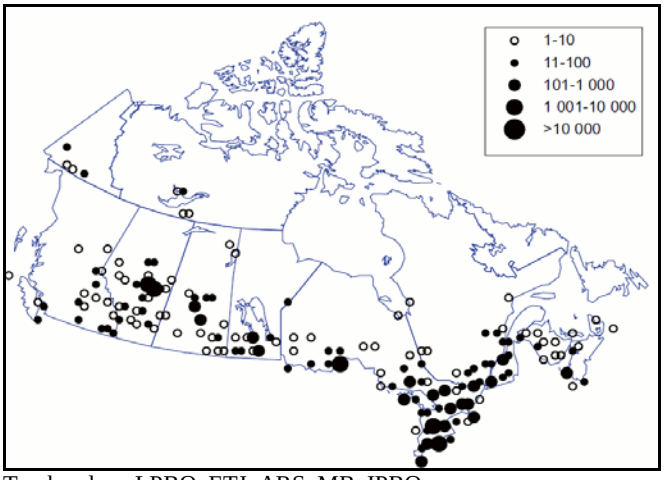
Encounter records: Chipping Sparrow

1	0280-22727	AHY	U	26/05/69	north of Edmunston, NB	47°50'N	68°20'W	2 yr. 7 mo.
	SHG	5	13	03/12/71	Cockeysville, MD	39°20'N	76°30'W	1151 km S38°W
2	0250-96857	U	U	01/05/58	Glasgow, DE	39°30'N	75°40'W	22 dy.
	JHP	0	21	23/05/58	near Shippegan, NB	47°40'N	64°40'W	1268 km N41°E
3	0440-50924	U	U	27/09/45	Beaupré, QC	47°00'N	70°50'W	
	RBL	0	1	1947/01/??	Batesburg, SC	33°50'N	81°30'W	1718 km S35°W
4	0520-04410	HY	U	18/08/54	Greenfield Park, QC	45°20'N	73°20'W	7 mo.
	MB	0	98	16/03/55	Baxley, GA	31°40'N	82°10'W	1702 km S30°W
5	0310-59757	AHY	F	24/02/63	near Hurtsboro, AL	32°30'N	85°20'W	4 mo.
	JLD	0	89	10/06/63	Godfrey, ON	44°30'N	76°40'W	1532 km N27°E
6	0390-30525	U	F	22/08/39	Port Hope, ON	43°50'N	78°10'W	5 mo.
	EBT	0	1	25/01/40	Eufala, AL	31°50'N	85°00'W	1463 km S26°W
7	1080-45356	AHY	U	20/03/66	southeast of Gainesville, FL	29°30'N	82°10'W	
	OLA	3	0	1968/FA/99	Ottawa, ON	45°20'N	75°40'W	1852 km N16°E
8	1080-67985	AHY	U	02/06/67	Long Point, ON	42°30'N	80°00'W	1 yr. 7 mo.
	LPBO	4	0	03/01/69	Hastings, FL	29°40'N	81°30'W	1435 km S6°W
9	0280-68103	U	U	10/09/58	Island Beach, NJ	39°50'N	74°00'W	8 mo.
	FT	0	0	26/05/59	Geraldton, ON	49°40'N	86°50'W	1488 km N38°W
10	1350-21290	HY	U	06/08/76	St. Albert, AB	53°30'N	113°30'W	2 mo.
	ETJ	5	1	10/10/76	Metapán, EL SALVADOR	14°10'N	89°30'W	4859 km S35°E
11	0480-88721	AHY	F	22/05/50	near White Fox, SK	53°20'N	104°00'W	5 yr.
	MGS	0	99	25/05/55	near White Fox, SK	53°20'N	104°00'W	0 km

Summary of banding statistics: Chipping Sparrow

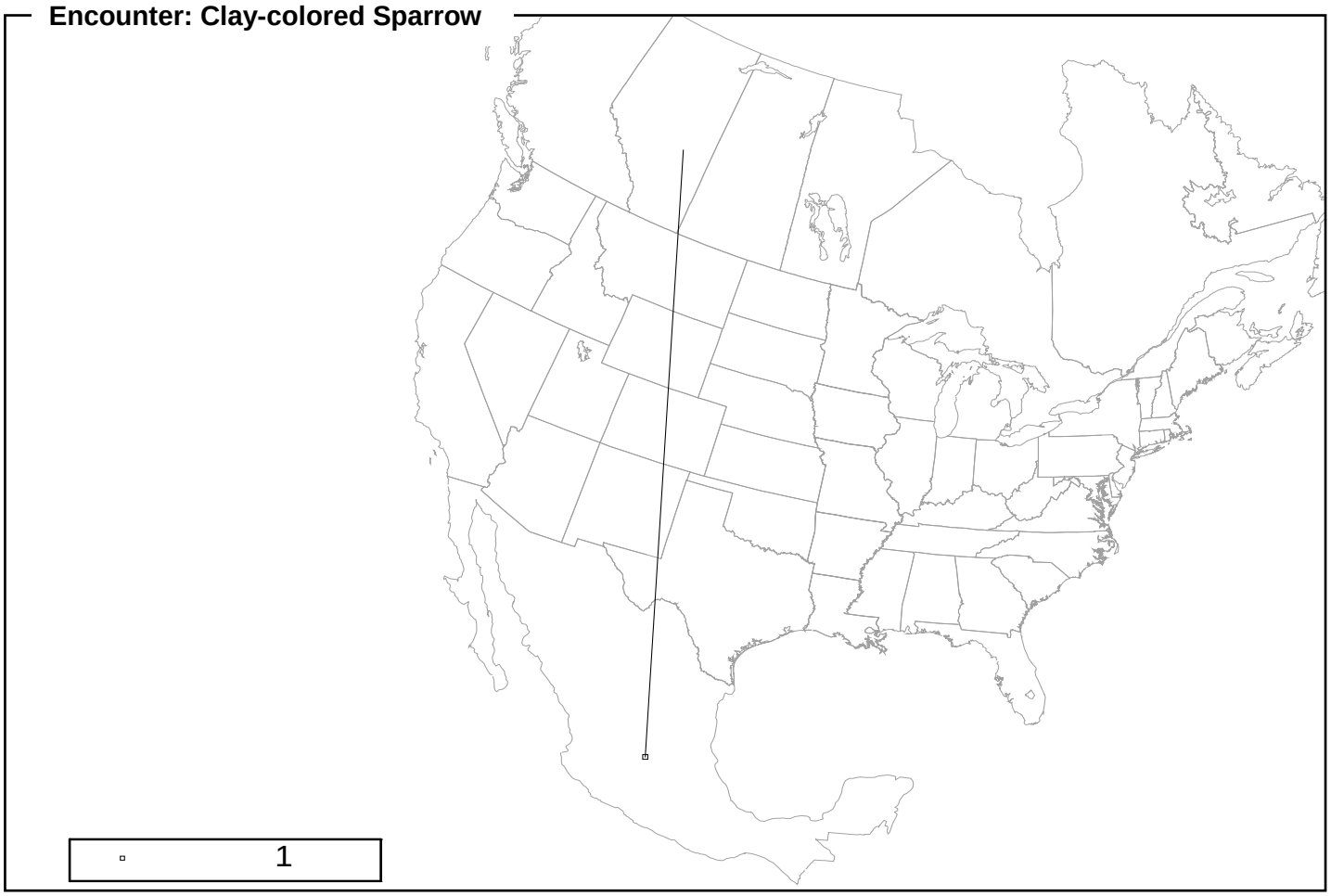
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*19 953*
No. encountered per 1000 banded (1955-1995)			*4*
Total no. encountered (1921-1995)	77	146	252
No. encountered from foreign bandings	0	9	16
Maximum period from banding to encounter (mo.)	47	60	60
No. of Canadian-banded birds moving > 0 km	9	14	25
Mean movement > 0 km of Canadian-banded birds (km)	910	290	617
Maximum movement from all encounters (km)	4858	1852	4858
% recovered (encountered dead)	40	27	32
% direct recoveries	18	17	17
% encountered during banding operations	59	72	67

Banding effort: Chipping Sparrow



Top banders: LPBO, ETJ, ARS, MB, IPBO

Clay-colored Sparrow (*Spizella pallida*) 561.0



The Clay-colored Sparrow breeds from central British Columbia north to the southern Northwest Territories and east to southern Ontario; it also breeds in the northeastern U.S. It winters in southern Texas and Mexico.

Except for the long-distance encounter listed below (record 1), all records were of birds returning to banding sites in the Prairie Provinces (e.g., records 2 and 3). The bird in record 3 was at least six years and 11 months old when recaptured, representing the current longevity record for the species (Klimkiewicz 1997).

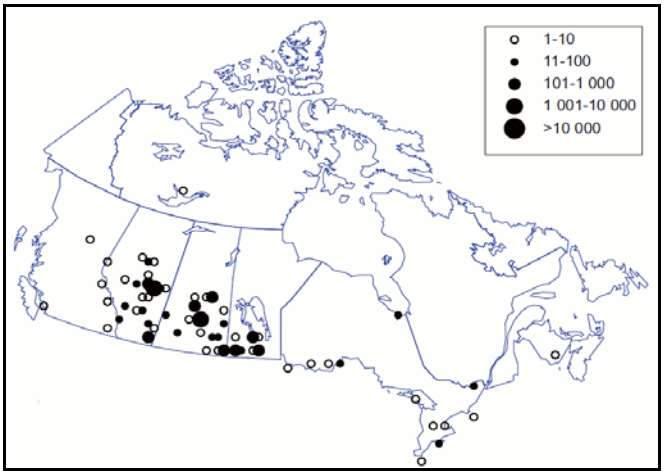
Encounter records: Clay-colored Sparrow

1	1560-15797	U	U	08/09/81	11 km north of Ryley, AB	53°20'N	112°30'W	1 yr. 6 mo.
	ETJ	5	1	FT/03/83	Dolores Hidalgo, Guanajuato, MEXICO	21°00'N	101°00'W	3731 km S20°E
2	0001-29846	U	U	31/05/24	11 km south of Lipton, SK	50°40'N	103°50'W	3 yr. 0 mo.
	RHC	0	99	25/05/27	11 km south of Lipton, SK	50°40'N	103°50'W	0 km
3	1780-31341	AHY	U	23/05/89	7 km west of Inland, AB	53°20'N	112°20'W	6 yr. 0 mo.
	ETJ	7	89	17/05/95	11 km north of Ryley, AB	53°20'N	112°30'W	11 km N90°W

Summary of banding statistics: Clay-colored Sparrow

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*8387*
No. encountered per 1000 banded (1955-1995)			*0.7*
Total no. encountered (1921-1995)	0	14	23
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	72	72
No. of Canadian-banded birds moving > 0 km	0	1	2
Mean movement > 0 km of Canadian-banded birds (km)	-	11	1870
Maximum movement from all encounters (km)	-	11	3730
% recovered (encountered dead)	-	7	8
% direct recoveries	-	0	0
% encountered during banding operations	-	92	91

Banding effort: Clay-colored Sparrow



Top banders: ETJ, BBO, ARS, UM, CSH

Field Sparrow (*Spizella pusilla*) 563.0

The Field Sparrow breeds in the eastern U.S., southern Manitoba (rarely), southern Ontario, and southwestern Quebec. It winters from Kansas east to Massachusetts, and south to northeastern Mexico and Florida, as well as casually in southern Ontario.

Only one of the four encounters showed movement (see below); the other three were encountered at the banding locations in southern Ontario.

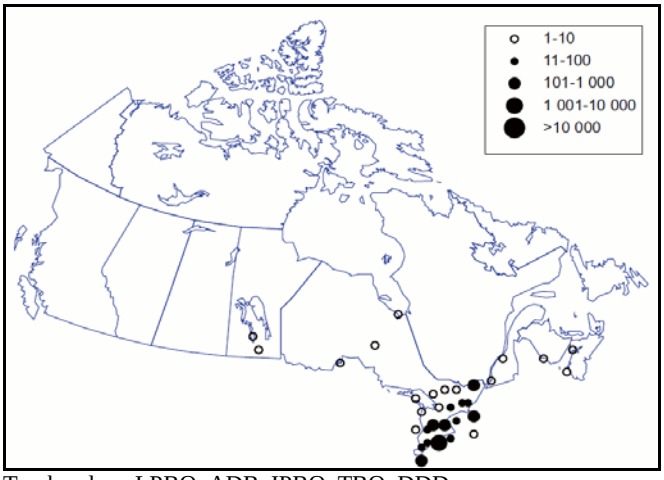
Encounter record: Field Sparrow

1	1080-71717	AHY	U	02/05/67	Don Mills, ON	43°40'N	79°20'W	1 yr. 10 mo.
	FTL	5	1	22/03/69	near Martinsville, TX	31°40'N	94°30'W	1884 km S48°W

Summary of banding statistics: Field Sparrow

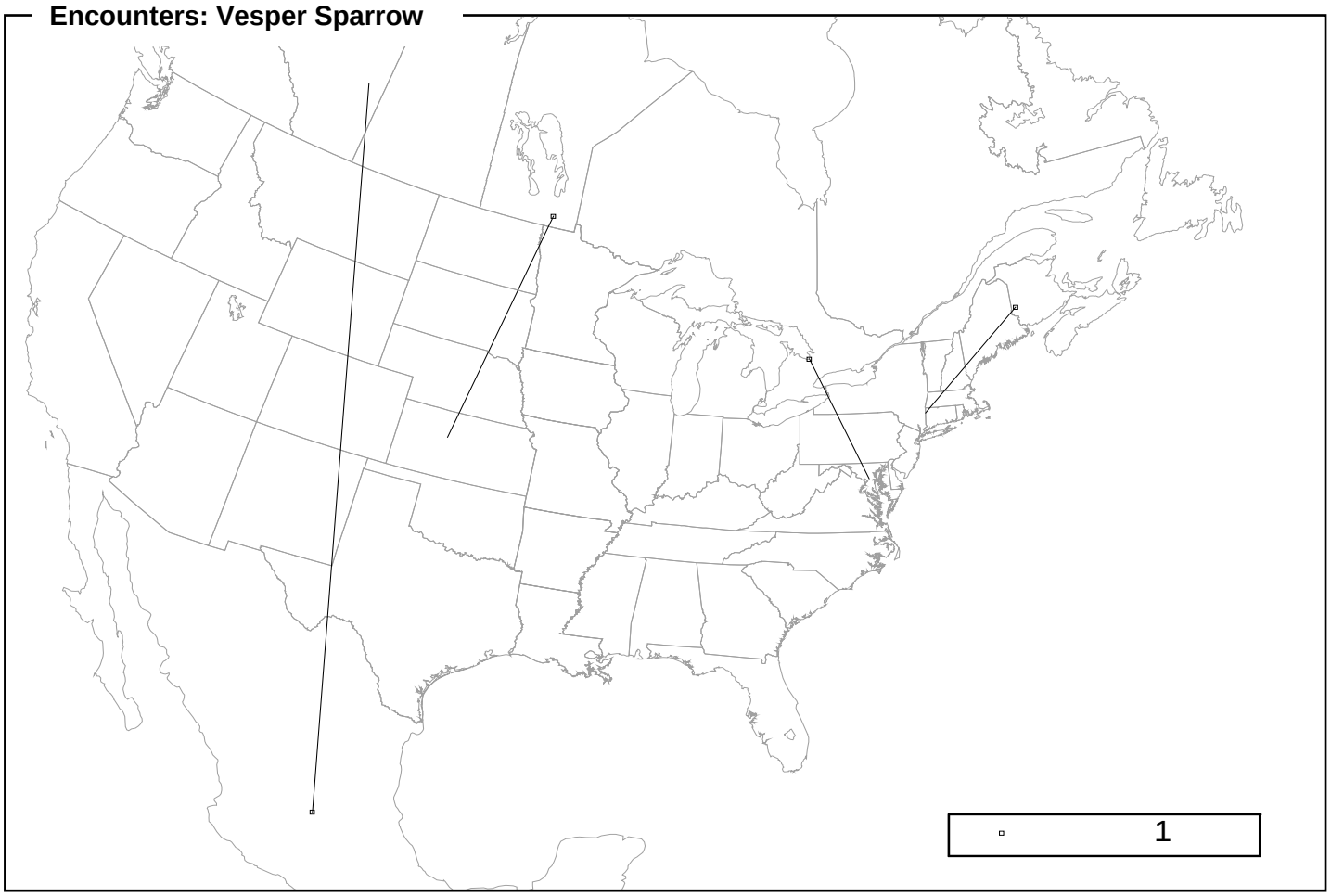
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*4922*
No. encountered per 1000 banded (1955-1995)			*0.6*
Total no. encountered (1921-1995)	0	1	4
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	22	22
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	1883	1883
Maximum movement from all encounters (km)	-	1883	1883
% recovered (encountered dead)	-	100	25
% direct recoveries	-	0	75
% encountered during banding operations	-	0	0

Banding effort: Field Sparrow



Top banders: LPBO, ADB, IPBO, TBO, DDD

Vesper Sparrow (*Pooecetes gramineus*) 540.0



The Vesper Sparrow breeds in the northern two-thirds of the U.S., as well as from interior British Columbia east across southern Canada to Nova Scotia. It winters in the southern third of the U.S. and in Mexico.

All the encounters showing significant movement are listed below (records 1-4). None occurred in the winter months (December-February), but the bird in record 1 (encountered in Mexico) must have been at or near its final wintering destination.

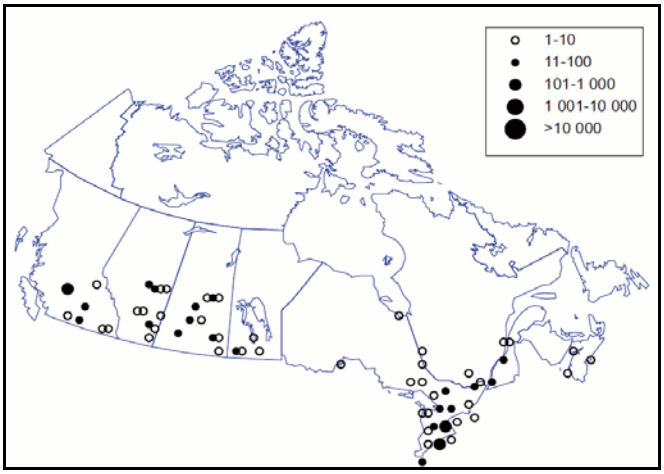
Encounter records: Vesper Sparrow

1	0370-20452	J	U	20/06/38	near Hughenden Lake., AB	52°30'N 111°10'W	5 mo.
	HWB	0	0	12/11/38	Guanajuato State, MEXICO	21°00'N 101°00'W	c. 3614 km S18°E
2	0291-48935	U		03/10/66	near Munjor, KS	38°50'N/99°20'W	8 mo.
	CAE	5	1	10/06/67	near Steinbach, MB	49°30'N 96°40'W	1206 km N9°E
3	0650-98848	AHY	U	30/03/63	Bowie, MD	39°00'N 76°50'W	
	VMK	0	96	??/08/64	Bluewater Beach, ON	44°30'N 80°00'W	666 km N22°W
4	1021-07412	AHY	U	12/10/67	south of Millerton, NY	41°50'N 73°30'W	
	FWT	5	0	99/SP/71	near Woodstock, NB	46°00'N 67°30'W	668 km N44°E
5	0021-43029	AHY	U	14/06/29	11 km south of Lipton, SK	50°40'N 103°50'W	1 yr. 11 mo.
	RHC	0	99	17/05/31	11 km south of Lipton, SK	50°40'N 103°50'W	0 km

Summary of banding statistics: Vesper Sparrow

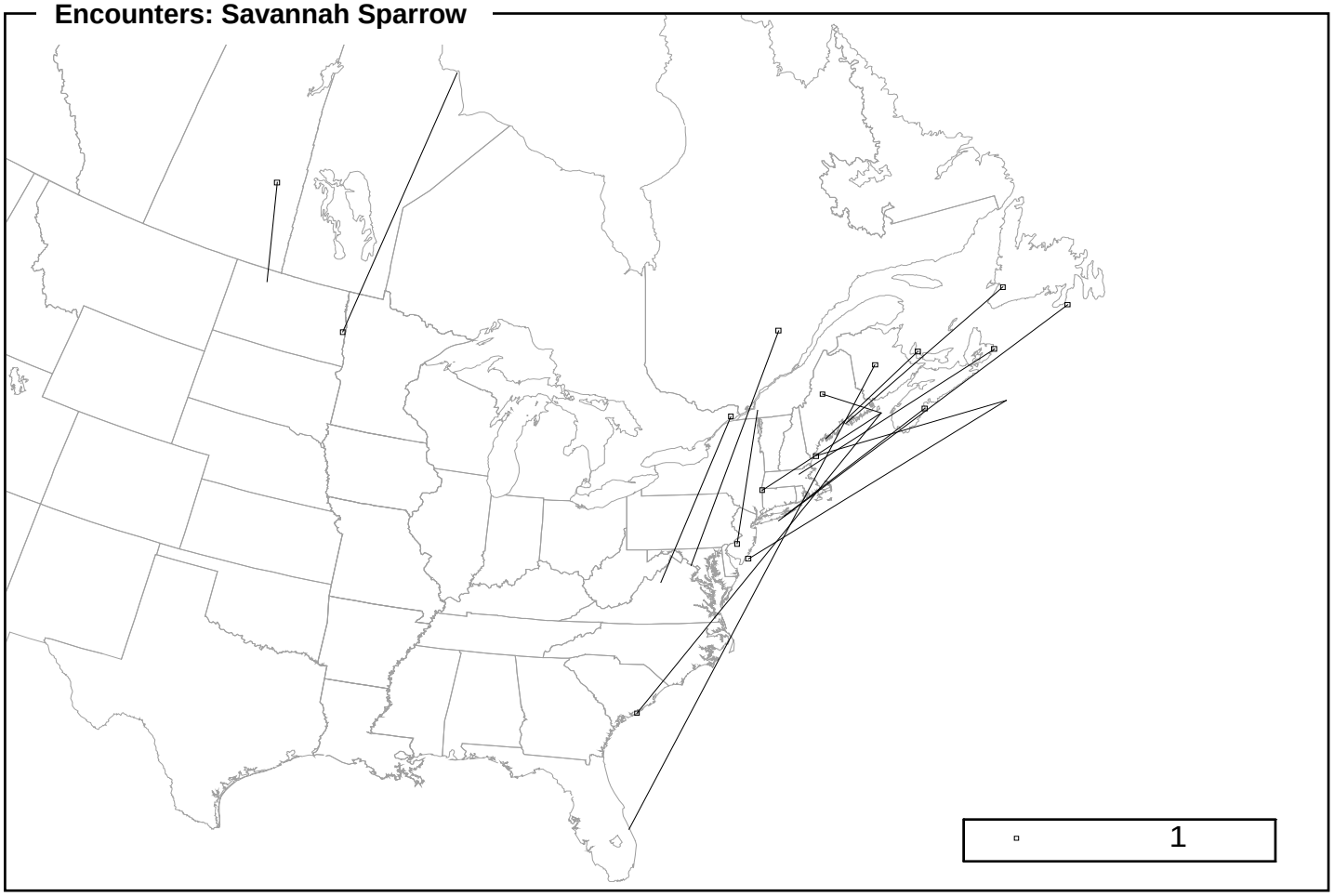
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*1289*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	2	11	18
No. encountered from foreign bandings	0	2	3
Maximum period from banding to encounter (mo.)	12	23	23
No. of Canadian-banded birds moving > 0 km	1	0	2
Mean movement > 0 km of Canadian-banded birds (km)	3614	-	1813
Maximum movement from all encounters (km)	3614	667	3614
% recovered (encountered dead)	100	27	44
% direct recoveries	50	9	22
% encountered during banding operations	0	72	55

Banding effort: Vesper Sparrow



Top banders: LPBO, JLu, CWS-BC, BMat, ETJ

Savannah Sparrow (*Passerculus sandwichensis*) 541.0 and 542.0



The Savannah Sparrow breeds throughout Canada and the northern half of the U.S., except for the Arctic islands and northern Nunavut. It winters along all of the western coast of North America from southwestern British Columbia south, as well as in the southern half of the U.S. south to Honduras; it also winters in the Bahamas, Cuba, and Grand Cayman and Swan Islands (Wheelwright and Rising 1993).

Five of the 17 subspecies of Savannah Sparrow occur in Canada, including the Ipswich Sparrow (formerly considered a separate species), which breeds exclusively on Sable Island, off Nova Scotia. All the Canadian subspecies are migratory. Although only two banded Ipswich Sparrows have been encountered elsewhere (including record 1), this readily recognized subspecies is known to winter on the Atlantic coast between Nova Scotia and Georgia. There these birds mix with other Savannah Sparrows from the Maritimes (e.g. records 2-5). The only encounter indicating the wintering (December-February) range of a probable Canadian breeder was of a bird banded in Florida and found later in New Brunswick (record 2). Quebec birds may winter in the same coastal areas as Maritimes birds (record 6, see map).

It is striking that there are essentially no encounters involving Ontario, given the numbers banded there (See effort map). The only Ontario encounter (record 7) is doubtless of a Quebec breeder (see encounter map) and gives no clue as to where Ontario breeders may spend the winter. The two encounters of western birds (record 8 and one banded om the west coast of Hudson Bay) also give no clue as to wintering area, but suggest a more north-south movement than is typical of western populations of forest-dwelling species such as warblers.

Encounter records: Savannah Sparrow

1	0321-19703	AHY	F	25/06/70	Sable Island, NS	43°50'N 60°00'W	10 mo.
	IAMcL	5	45	12/04/71	Beesley's Point, NJ	39°10'N 74°30'W	1313 km S72°W
2	0720-04068	AHY	U	10/02/70	near Porpoise Point, FL	27°30'N 80°20'W	
	HCW	2	56	??/07/70	inexact location, NB	46°??'N 66°??'W	c. 2460 km N27°E
3	0040-02306	U	U	10/07/35	Kent Island, NB	44°30'N 66°40'W	8 mo.
	BC	0	0	14/03/36	Johns Island, SC	32°40'N 80°00'W	1751 km S46°W
4	0050-59044	U	U	03/10/31	Ayer, MA	42°30'N 71°30'W	9 mo.
	WPW	0	98	05/07/32	Bateston, Cape Breton, NS	46°00'N 59°50'W	1007 km N63°E
5	0720-60482	U	U	29/10/65	Bellport Bay, NY	40°40'N 72°50'W	8 mo.
	WST	5	12	07/06/66	near Burin, NL	46°50'N 55°10'W	1573 km N58°E
6	0790-56619	AHY	U	10/03/71	west of Rockville, MD	39°00'N 77°20'W	4 mo.
	PWW	5	0	06/07/71	Saint-Coeur-de-Marie, QC	48°30'N 71°40'W	1151 km N21°E
7	0460-32085	AHY	U	30/09/49	near Crimora, VA	38°20'N 78°50'W	
	MMC	0	14	??/06/53	Avonmore, ON	45°10'N 74°50'W	830 km N22°E
8	0620-54574	U	U	20/09/59	Coulee, ND	48°30'N 102°00'W	
	RTG	5	21	??/05/60	Chelan, SK	52°30'N 103°20'W	455 km N11°W
9	0500-15253	HY	U	30/06/51	Bewdley, ON	44°00'N 78°10'W	5 yr. 0 mo.
	FS	0	99	01/06/56	Bewdley, ON	44°00'N 78°10'W	0 km

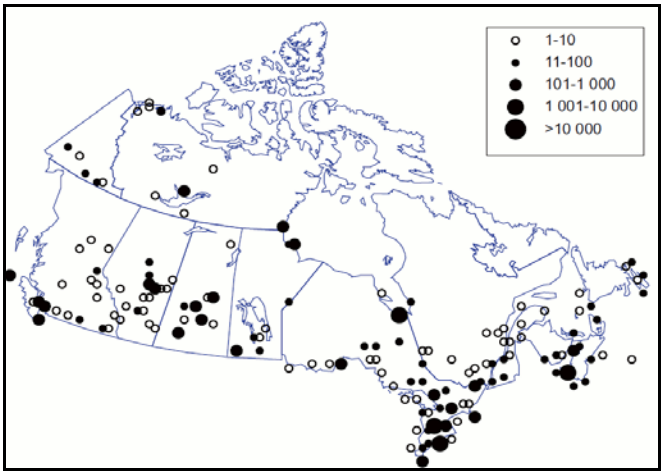
Long-term studies of Savannah Sparrows show fidelity to breeding sites (Wheelwright and Mauck 1998). Birds banded as nestlings did not return to their natal area to breed in Quebec (Bedard and LaPointe 1984); however, on islands in New Brunswick, 11% of nestlings returned as yearlings to nest (Wheelwright and Mauck 1998; see also record 9).

The annual survival of adults is 35 – 45% in both sexes (Wheelwright et al. 1994). The higher proportion of young versus adult birds encountered dead (see summary table) is consistent with demographic studies, which show high juvenile mortality and lower return rates for one-year-olds compared with older birds.

Summary of banding statistics: Savannah Sparrow

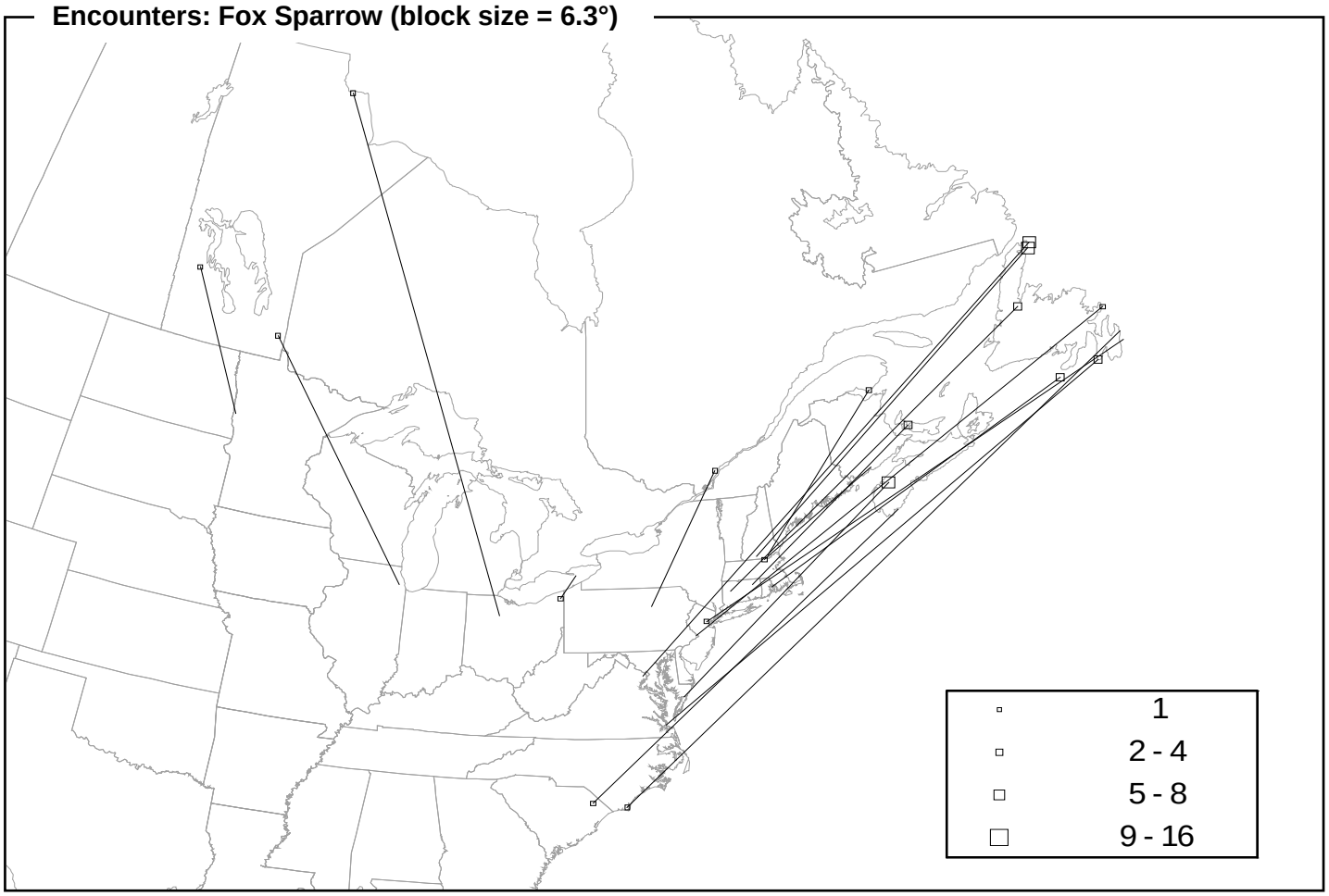
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*26 623*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	20	39	69
No. encountered from foreign bandings	0	5	9
Maximum period from banding to encounter (mo.)	60	38	60
No. of Canadian-banded birds moving > 0 km	9	7	18
Mean movement > 0 km of Canadian-banded birds (km)	346	288	383
Maximum movement from all encounters (km)	128	2460	2460
% recovered (encountered dead)	75	41	53
% direct recoveries	65	20	33
% encountered during banding operations	25	58	46

Banding effort: Savannah Sparrow



Top banders: BC, RIGM, LPBO, CF-G, CWS-BC

Fox Sparrow (*Passerella iliaca*) 585.0



The Fox Sparrow breeds chiefly between the northern limit of dense forest and the treeline of Alaska and Canada; it also breeds south through British Columbia, western Alberta, and much of the western U.S. It winters in southern parts of eastern Canada and the Maritimes (rarely), south to Georgia and Texas, and from southern Alaska and southern British Columbia south to northern Baja California.

None of the 30 birds encountered in British Columbia moved; most were recaptured at banding sites where they were overwintering. Encounters of Prairie Province birds occurred during migration (records 1 and 2), except that the bird in record 3 was encountered on the breeding grounds. Although few, these encounters suggest that Fox Sparrows breeding west of Hudson Bay spend the winter in the southeastern U.S.

The only encounter from Ontario (record 4) was of a bird banded at Long Point that was recaptured three days later, directly across Lake Erie in Ohio. The two encounters in southern Quebec were banded and encountered on migration (e.g., record 5).

The preponderance of records for Maritimes birds reflects the presence of the human population in the breeding area, as well as in the wintering area. Most birds were banded in the U.S. on migration along the east coast (e.g., records 6-10). There were a few winter encounters (December-February): one each in Maryland, New Jersey, Pennsylvania, and South Carolina (record 11), and two in North Carolina (records 12 and 13; the latter is not shown on the map because of thinning - see introduction). These and other mapped records indicate that Maritimes breeders move southwest to winter in the middle portion of the U.S. Atlantic coast.

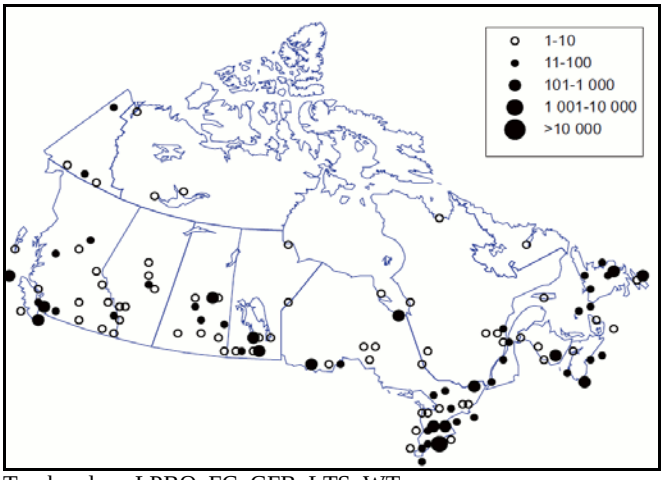
Encounter records: Fox Sparrow

1	0021-71006	U	U	02/10/29	Fargo, ND	46°50'N	96°40'W	6 mo.
	OAS	0	1	11/04/30	near Ethelbert, MB	51°30'N	100°20'W	584 km N26°W
2	8061-33521	HY	U	24/10/92	Elmhurst, IL	41°50'N	87°50'W	3 yr. 0 mo.
	CBO	3	13	02/10/95	Rennie, MB	49°50'N	95°30'W	1070 km N31°W
3	0991-74935	HY	U	16/10/88	Alvada, OH	41°00'N	83°20'W	2 yr. 8 mo.
	HTB	4	16	20/06/91	Churchill, MB	58°40'N	94°10'W	2109 km N18°W
4	0741-82484	HY	U	29/10/72	Long Point, ON	42°30'N	80°00'W	3 dy.
	LPBO	7	89	01/11/72	Jefferson, OH	41°40'N	80°40'W	108 km S11°W
5	0581-91116	AHY	U	05/04/60	Hillsgrove, PA	41°20'N	76°40'W	6 mo.
	WKB	0	0	30/10/60	Joliette, QC	46°00'N	73°20'W	585 km N26°E
6	0281-21355	AHY	U	13/03/61	Oakton, DC	38°50'N	77°10'W	6 yr. 6 mo.
	MBP	2	98	04/09/67	near Quirpon, NL	51°30'N	55°20'W	2204 km N43°E
7	0291-82998	AHY	U	08/03/64	Oakton, DC	38°50'N	77°10'W	1 mo.
	MBP	0	98	19/04/64	near Pushthrough, NL	46°40'N	56°10'W	1917 km N56°E
8	0391-90383	AHY	U	28/03/40	Philadelphia, PA	39°50'N	75°00'W	
	PFJ	0	98	??/04/40	Lardoise, NS	45°30'N	60°40'W	1329 km N57°E
9	0291-82005	AHY	U	08/03/61	Oakton, VA	38°50'N	77°10'W	1 yr. 1 mo.
	MBP	8	13	02/04/62	Brule, NS	45°40'N	63°10'W	1379 km N52°E
10	0581-31845	U	U	22/11/63	Willington, CT	41°50'N	72°10'W	5 mo.
	WJP	0	89	15/04/64	Ellerslie, PE	46°30'N	63°50'W	843 km N49°E
11	0362-32844	AHY	U	29/03/38	Shelburne, NS	43°40'N	65°10'W	9 mo.
	MH	0	98	31/12/38	Marion, SC	34°10'N	79°20'W	1616 km S54°W
12	0591-58957	U	U	17/09/67	St. John's, NL	47°30'N	52°40'W	4 mo.
	WT	5	14	14/01/68	Bolivia, NC	34°00'N	78°00'W	2592 km S64°W
13	0531-51094	AHY	U	14/02/60	Raleigh, NC	34°40'N	78°30'W	2 mo.
	HTD	0	12	17/04/60	Canso, NS	45°10'N	61°00'W	1815 km N49°E

Summary of banding statistics: Fox Sparrow

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*6499*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	4	56	78
No. encountered from foreign bandings	3	22	41
Maximum period from banding to encounter (mo.)	36	50	50
No. of Canadian-banded birds moving > 0 km	1	4	6
Mean movement > 0 km of Canadian-banded birds (km)	107	1009	1123
Maximum movement from all encounters (km)	2126	2204	2592
% recovered (encountered dead)	75	53	62
% direct recoveries	25	30	32
% encountered during banding operations	25	46	37

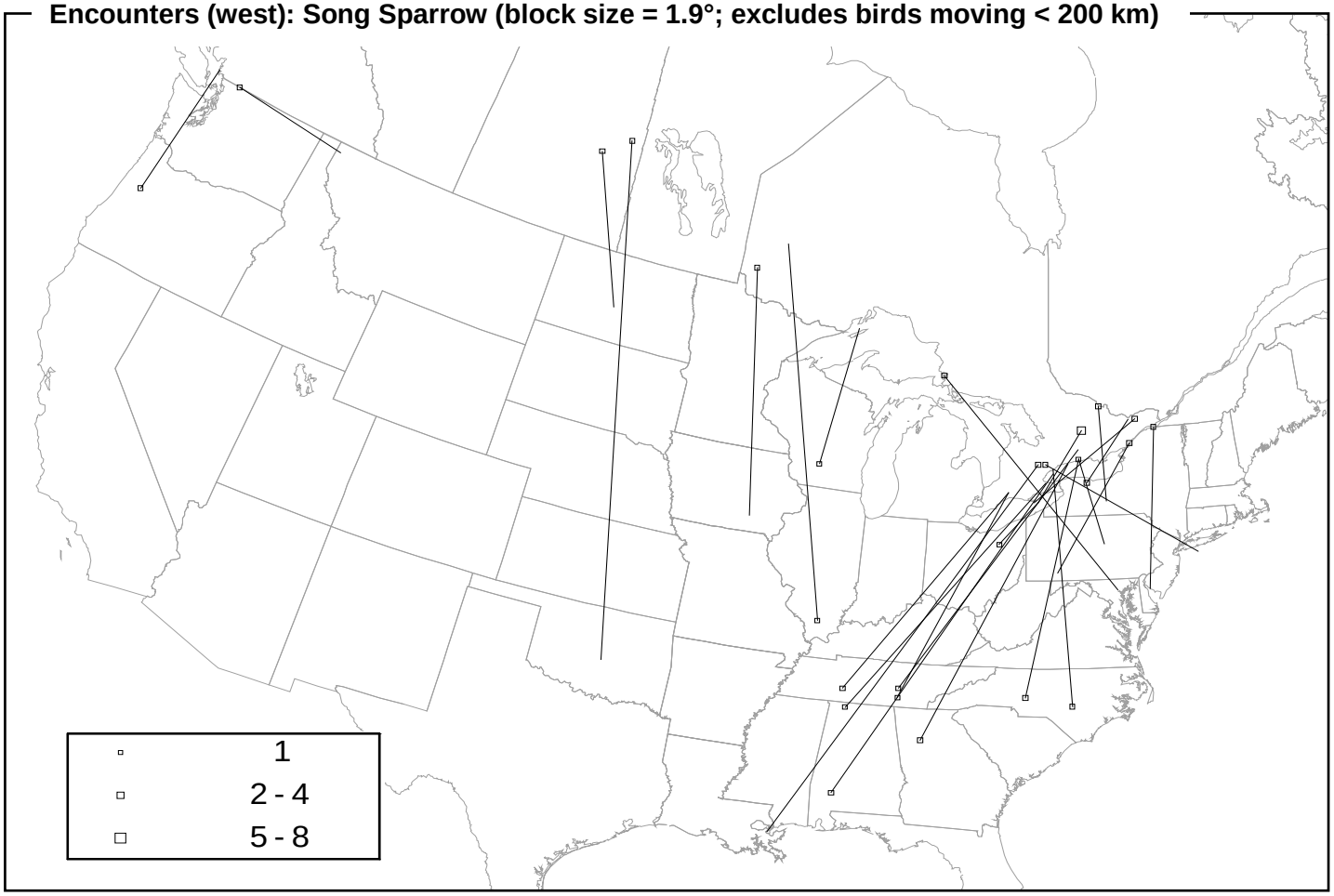
Banding effort: Fox Sparrow



Top banders: LPBO, FC, GFB, LTS, WT

Song Sparrow (*Melospiza melodia*) 581.0

Encounters (west): Song Sparrow (block size = 1.9°; excludes birds moving < 200 km)

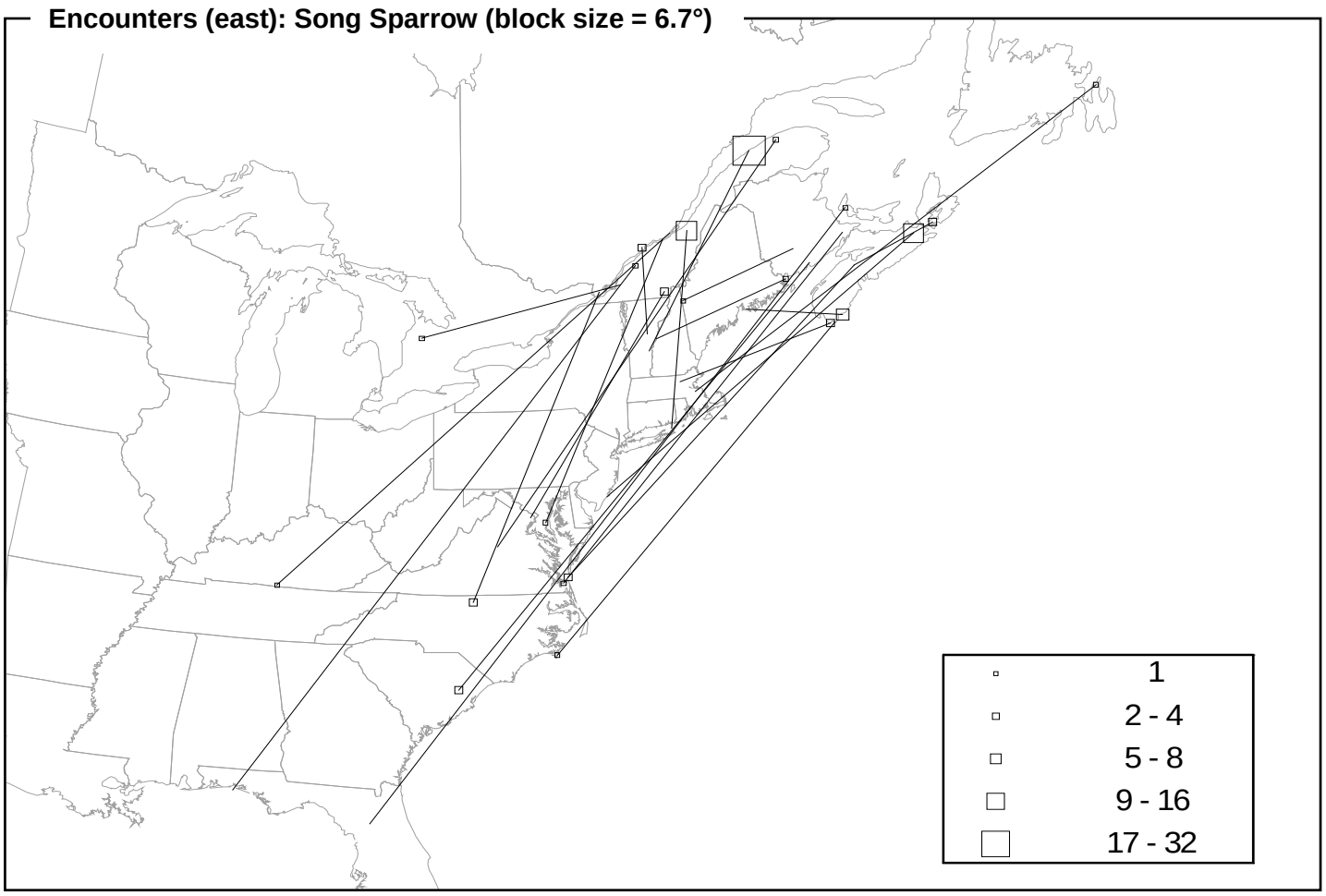


The Song Sparrow breeds across the forest zones of Canada, including the Prairie Provinces, but is absent from eastern Newfoundland and most of Yukon and the Northwest Territories; it also breeds through most of the U.S. except in south-central and southeastern states. It winters on the Pacific coast from southern Alaska south, in southern Ontario and Quebec, in the Maritimes, and south through most of the U.S. to central Mexico.

Over 60% of the encounters were of birds banded in Ontario or Quebec, and 19% were banded in British Columbia. Overall, 70% of reported encounters were returns to the banding site. The high proportion of encounters that show no movement (87%) reflects the species' fidelity to the breeding site (e.g., record 1, which also shows the longest period between banding and encounter).

Only 4 of 181 encounters involving British Columbia showed movement over 100 km, including one linking the province with Washington, one with Oregon (record 2), and one with Montana (probably a case of juvenile dispersal). Of the winter encounters (December-February), 97% were in British Columbia. There were only two distant encounters of Prairie Province birds, one banded in Oklahoma (record 3) and one in North Dakota (neither one in mid-winter). However, there are several encounters of western Ontario birds (see western map) that also show relatively north-south movement.

Of the 70 birds from Ontario and Quebec that were encountered in December-February, 48% were encountered in Canada, 11% in the northern U.S., and 11% in the southern U.S. (e.g., records 4 and 5; see also records 6 and 7, which were also



in southern states but in the migration season). About 40% of the Maritimes sparrows encountered in mid-winter were encountered in Nova Scotia and the rest were in the northeastern U.S. However, encounters farther south in late fall and early spring (e.g., records 8-10) show that some proportion of Maritimes birds must also winter in the southern U.S.

The encounter location of record 11 is notable for being outside the normal breeding range (Godfrey 1986). Several of the encounters demonstrated significant movement over short periods (records 12 and 13, plus another that showed movement of 124 km over 11 days).

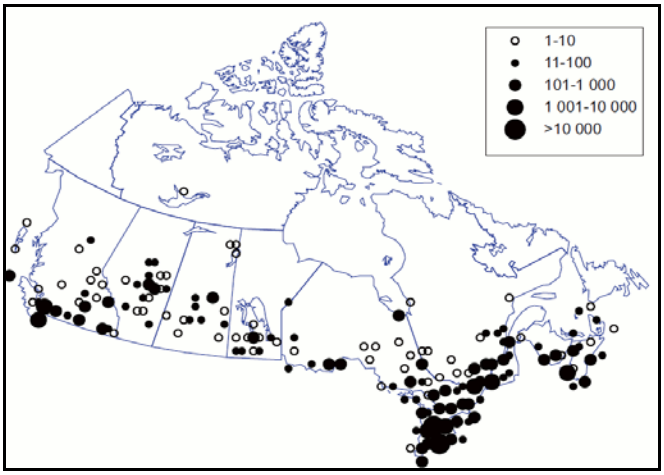
Encounter records: Song Sparrow

1	0341-22852	U	U	20/07/32	Komoka, ON	42°50'N	81°20'W	7 yr. 10 mo.
	JH	0	99	10/05/40	Komoka, ON	42°50'N	81°20'W	0 km
2	0321-20072	U	U	30/09/67	11 km north of Stevenson, BC	49°10'N	123°10'W	3 mo.
	BBW	5	0	ST/12/67	Corvallis, OR	44°30'N	123°10'W	519 km S0°W
3	1041-99709	HY	U	13/11/66	Stella, OK	35°10'N	97°10'W	8 mo.
	JSW	5	12	20/07/67	Hudson Bay, SK	52°50'N	102°20'W	2008 km N10°W
4	0221-43327	U		13/09/59	near Peterborough, ON	44°20'N	78°10'W	
	DCL	5	15	??/02/66	near Walling, TN	35°40'N	85°30'W	1149 km S35°W
5	1161-47580	HY	U	23/12/77	Shalimar, FL	30°20'N	86°30'W	6 mo.
	SJS	5	1	24/06/78	Pierreville, QC	46°00'N	72°40'W	2116 km N31°E
6	0051-10490	U	U	23/09/34	Komoka, ON	42°50'N	81°20'W	1 mo.
	JHi	0	3	26/10/34	Chattanooga, TN	35°20'N	85°30'W	906 km S25°W
7	0221-19444	AHY	U	23/04/60	near Pointe Lévis, QC	46°50'N	71°10'W	3 yr. 7 mo.
	AG	0	1	24/11/63	Mount Hermon, KY	36°40'N	85°40'W	1648 km S52°W
8	0670-33112	U	U	25/11/68	southwest of Gainesville, FL	29°30'N	82°20'W	4 yr. 1 mo.
	CGY	5	21	23/12/72	Bloomfield, PE	46°40'N	64°10'W	2475 km N34°E
9	0050-61321	U	U	03/10/38	East Memramcook, NB	46°00'N	64°30'W	2 mo.
	RMcM	0	0	29/12/38	East Ocean View, VA	36°50'N	76°10'W	1408 km S48°W
10	0760-09450	U	U	16/11/68	18 km north of Chalmette, LA	30°00'N	89°50'W	3 yr. 5 mo.
	JCK	5	0	14/04/72	Orangeville, ON	43°50'N	80°00'W	1768 km N27°E
11	0360-64900	U	U	23/07/37	Ponkapog, MA	42°10'N	71°00'W	4 yr. 1 mo.
	RW	0	0	18/08/41	Hants Harbour, NL	48°00'N	53°10'W	1540 km N59°E
12	0231-93801	AHY	U	29/03/60	Port Clyde, ME	43°50'N	69°10'W	10 dy.
	JET	0	89	08/04/60	Lower Ohio, NS	43°50'N	65°20'W	308 km N89°E
13	0261-43661	U		08/04/58	Charlottesville, VA	38°00'N	78°20'W	max. 21 dy.
	ABD	0	47	??/04/58	near Sainte-Anne-des-Monts, QC	49°00'N	66°20'W	1558 km N34°E

Summary of banding statistics: Song Sparrow

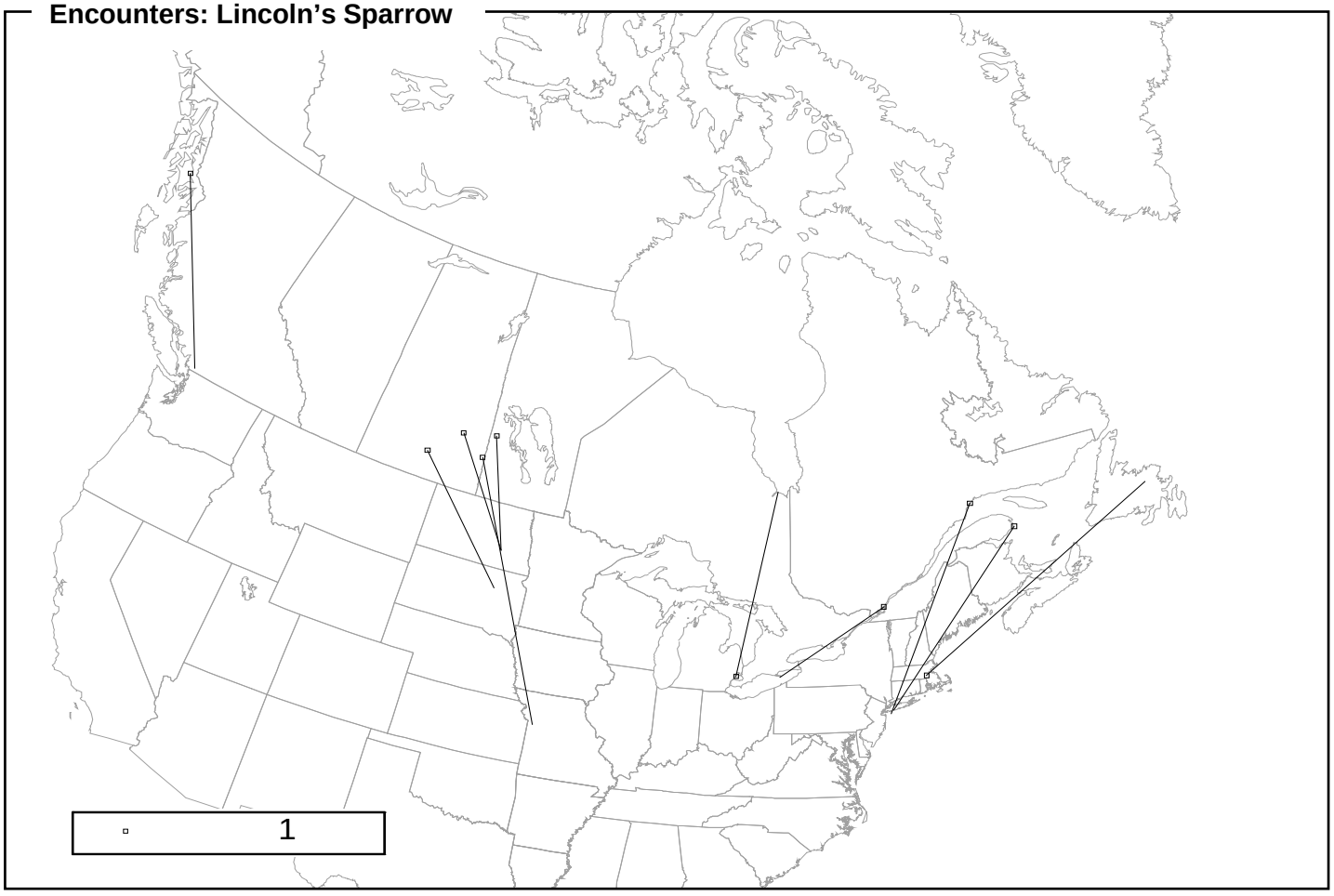
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*62 349*
No. encountered per 1000 banded (1955-1995)			*4*
Total no. encountered (1921-1995)	160	575	940
No. encountered from foreign bandings	10	33	79
Maximum period from banding to encounter (mo.)	74	66	94
No. of Canadian-banded birds moving > 0 km	19	26	69
Mean movement > 0 km of Canadian-banded birds (km)	423	465	489
Maximum movement from all encounters (km)	2116	1647	2474
% recovered (encountered dead)	35	20	28
% direct recoveries	25	27	27
% encountered during banding operations	63	78	70

Banding effort: Song Sparrow



Top banders: LPBO, ADB, UBC, IPBO, DRL

Lincoln's Sparrow (*Melospiza lincolnii*) 583.0



Lincoln's Sparrow breeds across most of Canada south of the treeline, except in the southern Prairie Provinces and in the western U.S. It winters in coastal areas south from southwestern British Columbia and in the southern tier of U.S. states south to Costa Rica.

Most encounter records involving British Columbia showed no movement, but one bird was encountered in Alaska (record 1). Prairie Province encounters were of birds banded on spring migration in Missouri, South Dakota, and North Dakota, including three short-term encounters (see records 2 and 3, the latter moving an average of 102 km per day over two weeks). A bird banded in Manitoba in late autumn and encountered in Iowa that winter (record 4) does not appear on the map because the exact location was not reported.

A young bird banded on the James Bay coast in Ontario in August was encountered in Michigan the following spring (record 5), almost directly south of the banding site. Quebec and Maritimes birds travel on a slightly more northeast-southwest route (records 6-9).

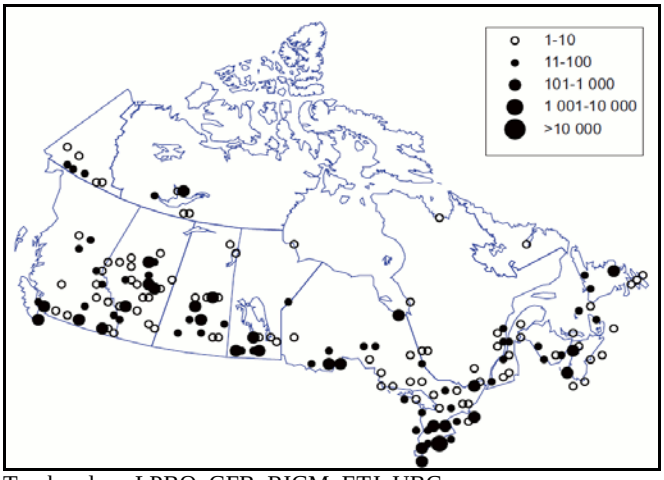
Encounter records: Lincoln's Sparrow

1	0880-75814	AHY	U	05/09/78	Haney, BC	49°10'N 122°30'W	9 mo.
	RBCM	7	89	06/06/79	18 km north of Wrangell, AK	56°30'N 132°20'W	1049 km N35°W
2	0020-95144	AHY	U	12/05/29	Jamestown, ND	46°50'N 98°40'W	12 dy.
	MG	0	0	24/05/29	north of Foam Lake, SK	51°40'N 103°30'W	643 km N31°W
3	0960-27202	AHY	U	28/04/83	Independence, MO	39°00'N 94°20'W	14 dy.
	MLM	3	0	12/05/83	Langenburg, SK	50°50'N 101°40'W	1437 km N21°W
4	0370-59177	AHY	U	29/08/37	near Belmont, MB	49°30'N 99°30'W	4 mo.
	NC	0	12	ST/12/37	unknown location, IA	??°??'N ???°??'W	
5	0830-13954	HY	U	21/08/79	27 km northeast of Moosonee, ON	51°20'N 80°20'W	9 mo.
	RIGM	5	1	11/05/80	Clemens, MI	42°30'N 82°50'W	1001 km S12°W
6	0880-80901	HY	U	04/08/79	Glenwood, Labrador, NL	48°50'N 54°50'W	2 mo.
	GFB	3	0	18/10/79	Sherborn, MA	42°10'N 71°20'W	1481 km S66°W
7	0341-47728	U	U	08/05/35	west of Amityville, NY	40°40'N 73°30'W	5 mo.
	BV	0	12	FT/10/35	Bridgeville, QC	48°30'N 64°10'W	1142 km N37°E
8	0730-05076	AHY	U	24/05/69	Long Point, ON	42°30'N 80°10'W	
	LPBO	5	0	??/10/69	Lachenaie, QC	45°40'N 73°30'W	639 km N54°E
9	0780-07189	HY	U	02/10/69	near Far Rockaway, NY	40°30'N 73°40'W	1 yr. 9 mo.
	JRC	5	14	99/07/71	near Port-Cartier, QC	50°00'N 66°50'W	1184 km N24°E
10	2010-97074	U	U	15/10/85	Long Point, ON	42°30'N 80°00'W	3 yr. 2 mo.
	LPBO	7	89	28/12/88	St. Thomas, ON	42°40'N 81°10'W	97 km N79°W

Summary of banding statistics: Lincoln's Sparrow

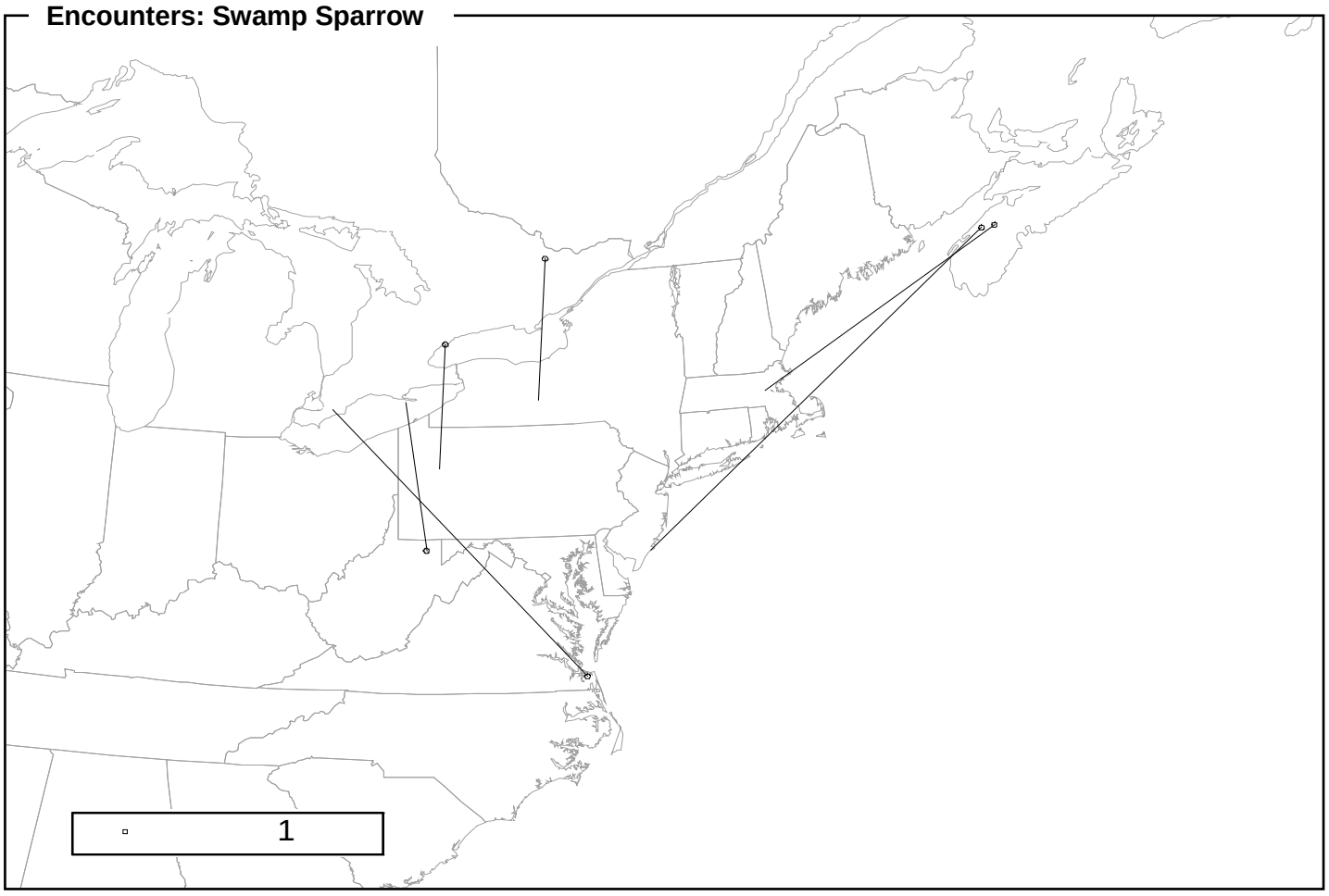
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*13 658*
No. encountered per 1000 banded (1955-1995)			*0.4*
Total no. encountered (1921-1995)	6	14	27
No. encountered from foreign bandings	1	4	7
Maximum period from banding to encounter (mo.)	21	34	38
No. of Canadian-banded birds moving > 0 km	2	3	6
Mean movement > 0 km of Canadian-banded birds (km)	1241	566	713
Maximum movement from all encounters (km)	1481	1436	1481
% recovered (encountered dead)	100	71	77
% direct recoveries	66	57	62
% encountered during banding operations	0	21	18

Banding effort: Lincoln's Sparrow



Top banders: LPBO, GFB, RIGM, ETJ, UBC

Swamp Sparrow (*Melospiza georgiana*) 584.0



The Swamp Sparrow breeds in the southern Northwest Territories and across most provinces, but it is absent from most of British Columbia, southern Alberta, southern Saskatchewan, and northern Quebec. It also breeds in the northeastern U.S. It winters from the extreme southern parts of eastern Canada south to the Gulf Coast, as well as in Texas, Arizona, and northeastern Mexico.

All six encounters showing movement are listed below, including the one with longest period between banding and encounter (record 1). One bird (record 2) was encountered two days after banding, having travelled an average of 140 km per day. Ontario birds tend to move directly north-south (records 1-3; record 4 could possibly have been a western breeder that travelled southeast to winter in Virginia). Maritimes birds followed the Atlantic coastline (records 5 and 6).

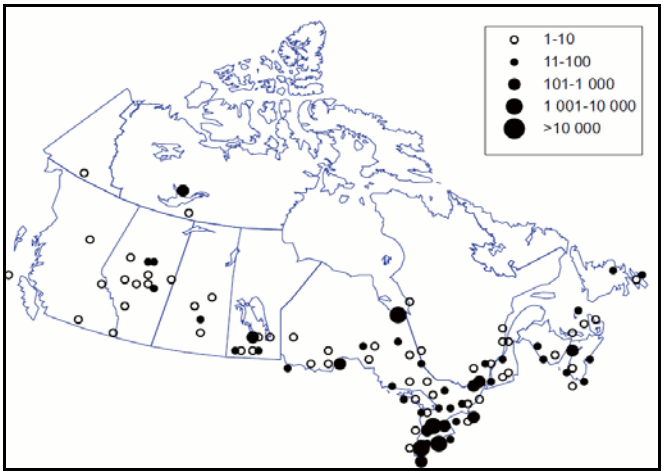
Encounter records: Swamp Sparrow

1	2011-94832	HY	U	09/10/89	Long Point, ON	42°30'N 80°20'W	2 yr. 0 mo.
	LPBO	3	0	20/10/91	Morgantown, WV	39°30'N 79°50'W	337 km S7°E
2	0920-36149	AHY	U	02/05/81	Knox, PA	41°10'N 79°30'W	2 dy.
	WLF	5	0	04/05/81	Toronto, ON	43°40'N 79°20'W	279 km N3°E
3	0020-54831	AHY	U	07/10/26	Bluff Point, NY	42°00'W 77°00'W	1 yr. 7 mo.
	VB	0	0	02/05/28	near Renfrew, ON	45°20'N 76°40'W	317 km N5°E
4	0630-88112	AHY	U	25/05/65	Balmoral Marsh, ON	42°20'N 82°10'W	10 mo.
	MJW	5	0	02/02/66	East Ocean View, VA	36°50'N 76°10'W	799 km S42°E
5	0580-03754	HY	U	13/10/61	Acton, MA	42°20'N 71°20'W	1 yr. 0 mo.
	JBa	0	14	01/10/62	near Bridgewater, NS	44°50'N 64°50'W	593 km N60°E
6	0580-47533	U	U	14/11/61	Absecon, NJ	39°20'N 74°30'W	
	WES	0	12	99/FA/63	Bridgetown, NS	44°50'N 65°10'W	984 km N48°E

Summary of banding statistics: Swamp Sparrow

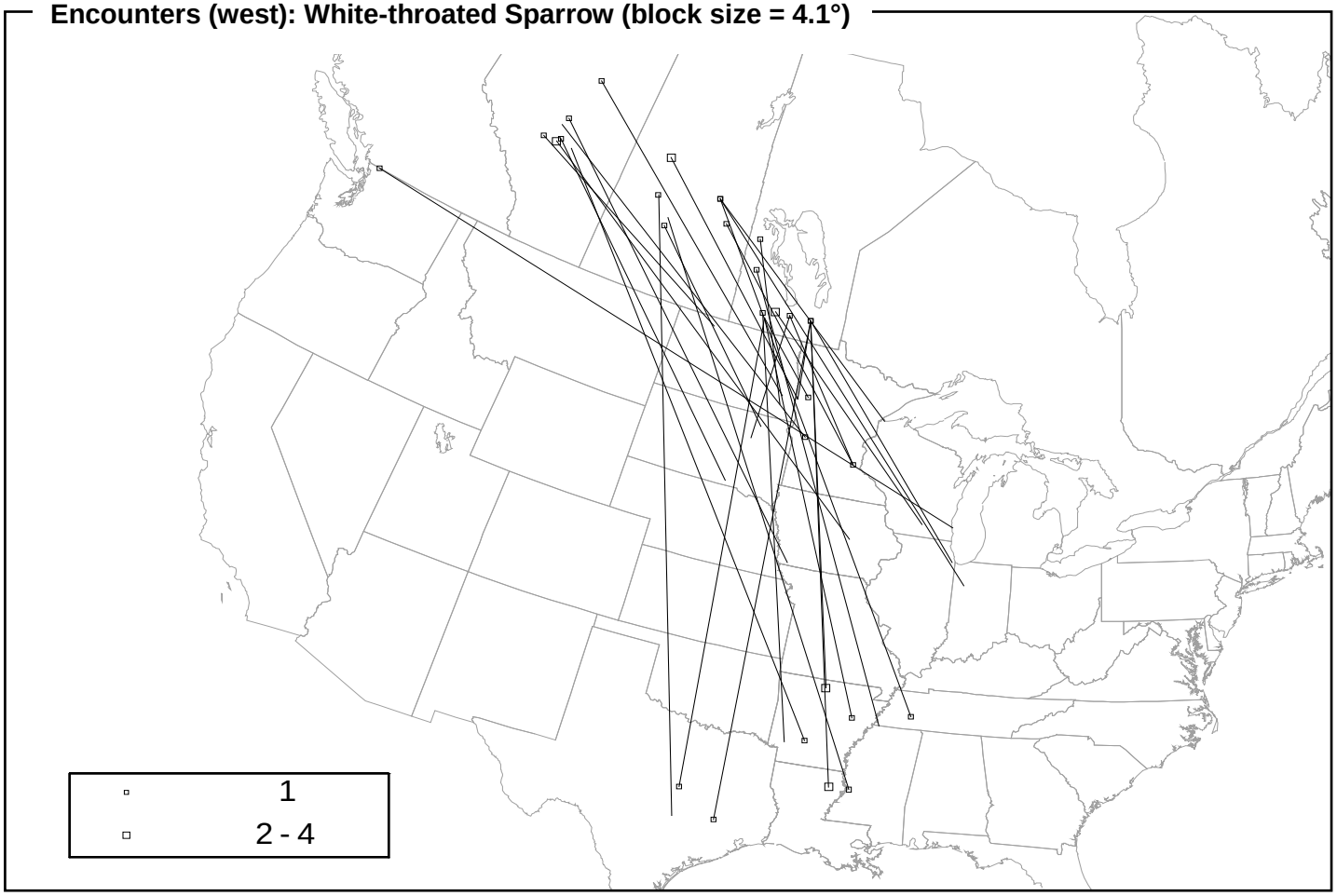
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*13 250*
No. encountered per 1000 banded (1955-1995)			*0.3*
Total no. encountered (1921-1995)	4	6	12
No. encountered from foreign bandings	1	2	4
Maximum period from banding to encounter (mo.)	24	19	24
No. of Canadian-banded birds moving > 0 km	2	1	3
Mean movement > 0 km of Canadian-banded birds (km)	179	799	386
Maximum movement from all encounters (km)	593	799	983
% recovered (encountered dead)	75	66	75
% direct recoveries	25	50	41
% encountered during banding operations	25	33	25

Banding effort: Swamp Sparrow



Top banders: LPBO, MJW, ADB, RIGM, CCR

White-throated Sparrow (*Zonotrichia albicollis*) 558.0

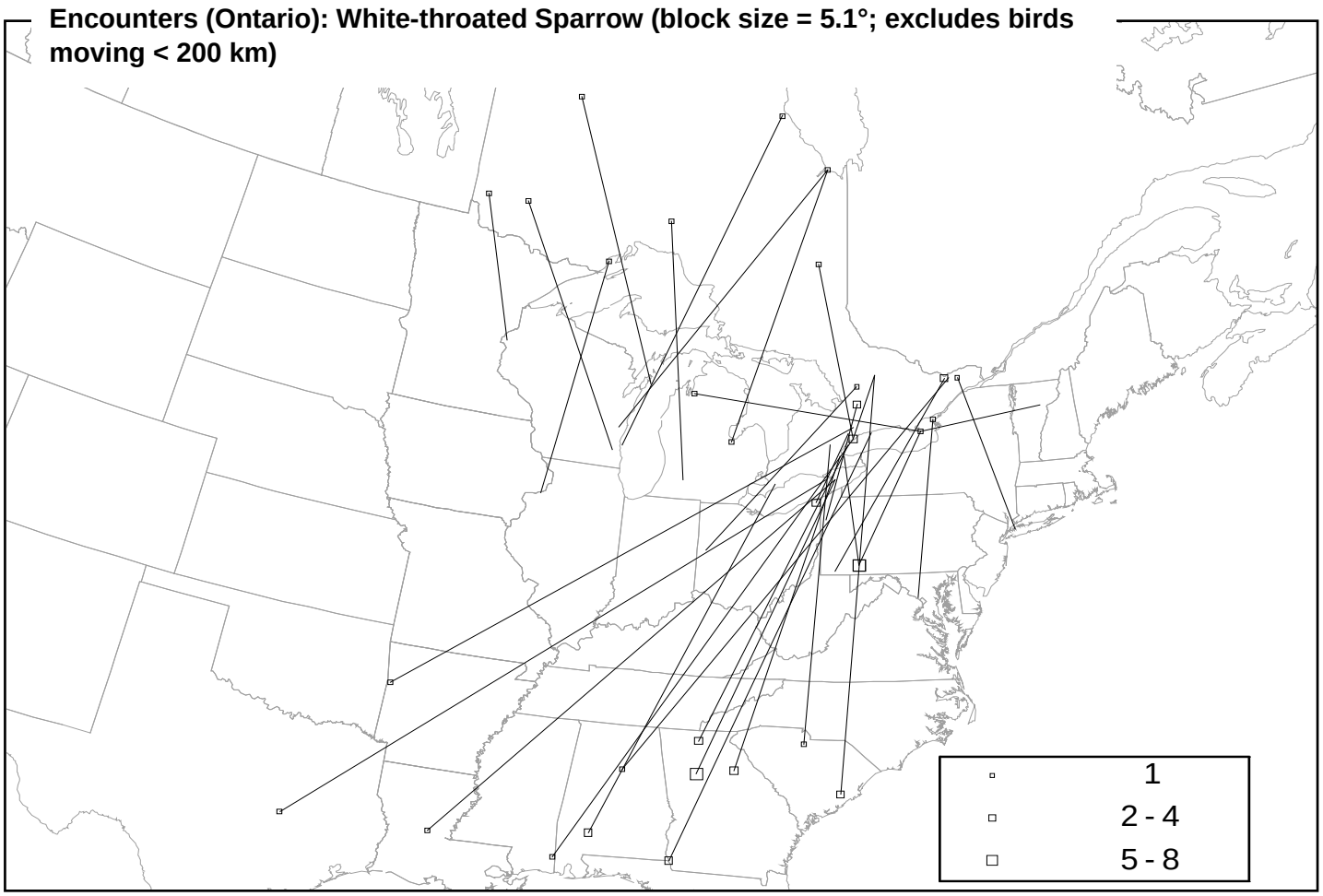


The White-throated Sparrow breeds in Canadian forest, north almost to the treeline and west to southeastern Yukon and northeastern British Columbia; it also breeds in the northeastern U.S. It winters mainly in the eastern U.S., its range extending from southern Ontario to Nova Scotia and south to Florida. It also winters in the southwestern U.S. from New Mexico to Texas and very sparsely from coastal California to Oregon.

The maps exclude many individual records, due to the record-thinning process (see block size with encounter maps and explanation in introduction), but they do depict normal patterns of movement.

Although most birds that moved were encountered during migration, 45 were encountered in winter (December-February). These encounters show Prairie Province birds moving on a northwest-southeast axis and overwintering primarily in Arkansas and nearby states (e.g., records 1 and 2; see also 3 and 4 for examples of birds moving in the same direction).

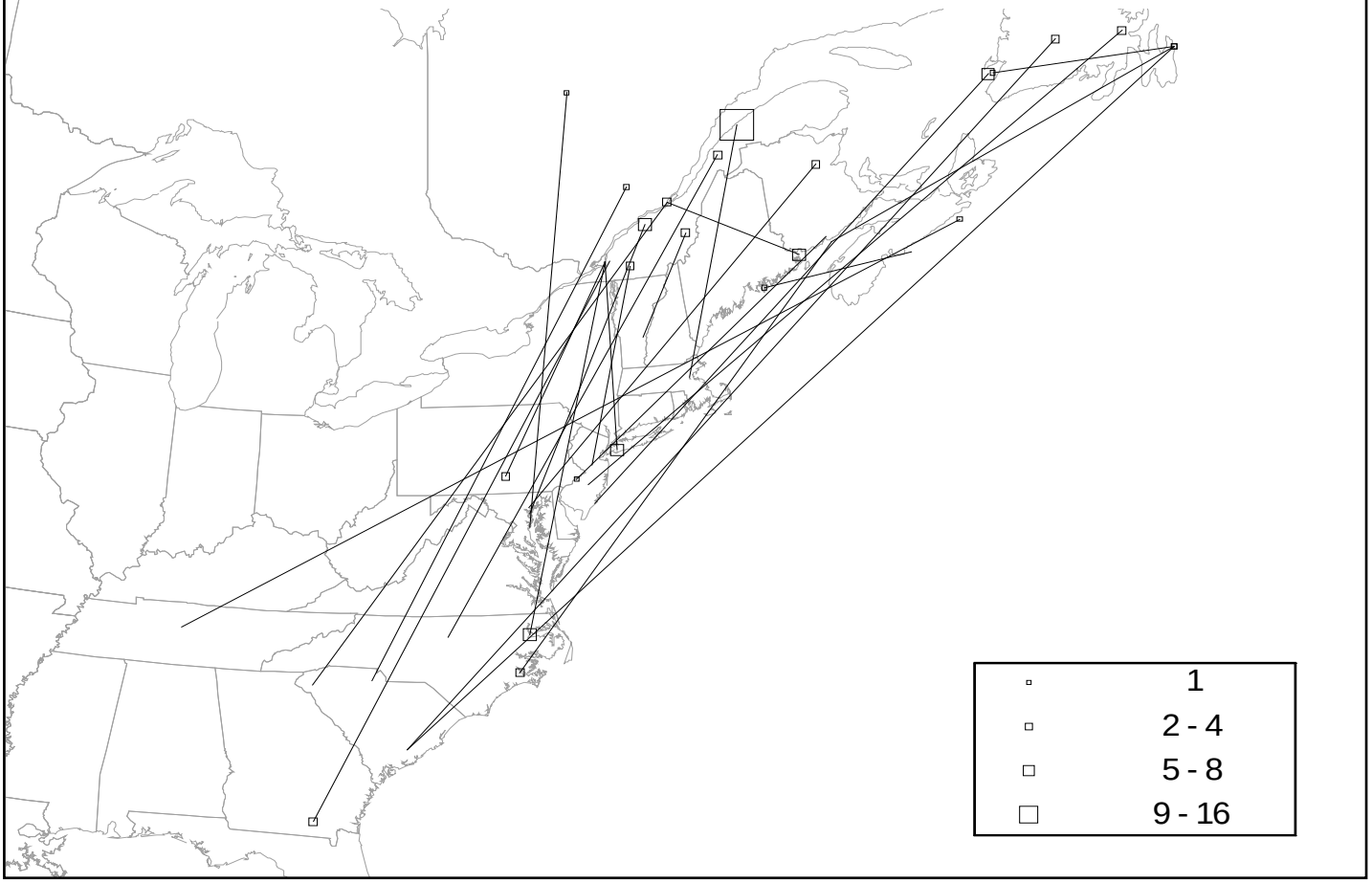
Eight birds were encountered in northern Ontario (north of 48°), all of which appeared to move almost directly north-south (see map). These were likely Ontario breeders, whereas birds banded in southern Ontario that moved strongly northeast-southwest were probably Quebec breeders. The latter tended to concentrate in winter in the vicinity of Alabama (see record 5 in Texas), but some stayed in Ontario and in states in between. Quebec birds migrate through a band of northern states parallel to the states traversed by Ontario birds (e.g., record 6), wintering as far south as Georgia but with a preponderance in the Carolinas.



White-throated Sparrows from the Maritimes also reach the Carolinas (records 7 and 8) and Tennessee (record 9), but more commonly they winter in the northeastern states and occasionally in the Maritimes.

Fourteen sparrows were encountered within 30 days of banding that had moved more than 100 km; the bird in record 10 travelled a remarkable 673 km in one day, and another moved an average of 153 km per day over six days. Record 11 is an atypical record of a bird well south of the breeding range in British Columbia when encountered in June.

Encounters (east): White-throated Sparrow (block size = 6.6°; excludes birds moving < 200 km)



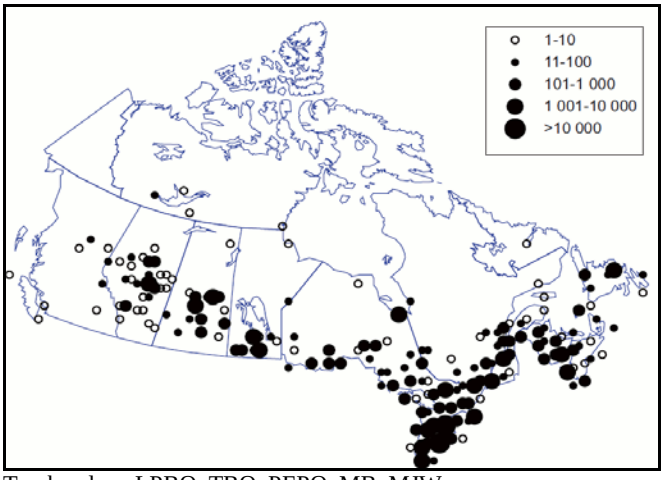
Encounter records: White-throated Sparrow

1	1041-78031	HY	U	09/09/68	Saskatoon, SK	52°00'N	106°30'W	
	CSH	5	1	??/12/69	Chotard Lake, MS	32°20'N	90°50'W	2530 km S36°E
2	0391-06651	AHY	U	16/09/38	Winnipeg, MB	49°50'N	97°00'W	1 yr. 4 mo.
	ABG	0	0	LT/01/40	Lindsay, LA	30°40'N	91°10'W	2189 km S15°E
3	1291-89055	AHY	M	01/04/81	Austin, TX	30°10'N	97°40'W	1 mo.
	GWL	5	12	13/05/81	Speers, SK	52°40'N	107°30'W	2630 km N15°W
4	1021-50143	HY	U	08/10/64	Garwin, IA	42°00'N	92°40'W	1 yr. 7 mo.
	GHR	3	13	16/05/66	Breton, AB	53°00'N	114°20'W	2025 km N45°W
5	1451-17576	AHY	M	13/10/90	Long Point, ON	42°30'N	80°20'W	6 mo.
	LPBO	5	0	21/04/91	Rosebud, TX	31°00'N	96°50'W	1944 km S54°W
6	0201-81356	AHY	U	21/01/56	Birdsville, MD	38°50'N	76°30'W	
	ES	0	56	99/HS/60	near Chibougamau, Provincial Park, QC	49°50'N	74°20'W	1236 km N7°E
7	0051-07151	U	U	19/01/34	Summerville, SC	33°00'N	80°10'W	7 mo.
	WPW	0	4	FT/08/34	near Quidi Vidi Lake, NL	47°30'N	52°40'W	2816 km N47°E
8	0411-33434	HY	U	02/08/43	Saint John, NB	45°10'N	65°50'W	4 mo.
	WOA	0	0	15/12/43	Beulaville, NC	34°50'N	77°40'W	1527 km S45°W
9	1041-06076	AHY	U	19/04/65	Nashville, TN	36°00'N	86°40'W	3 mo.
	KAG	5	0	58/07/65	Coddles Island, NS	45°00'N	61°30'W	2341 km N57°E
10	1101-58291	AHY	U	01/05/77	Mitchell Bay, ON	42°20'N	82°20'W	1 dy.
	MJW	5	0	02/05/77	18 km north of Massena, NY	45°00'N	74°50'W	673 km N61°E
11	0390-50742	AHY	U	07/10/39	Milwaukee, WI	43°00'N	87°50'W	1 yr. 8 mo.
	ECB	0	1	08/06/41	Abbotsford, BC	49°00'N	122°10'W	2712 km N64°W
12	0581-24025	HY	U	02/08/61	east of Saint John, NB	45°10'N	65°50'W	8 yr. 3 mo.
	WOA	5	1	29/11/69	near Quidi Vidi Lake, NL	47°30'N	52°40'W	1043 km N71°E

Summary of banding statistics: White-throated Sparrow

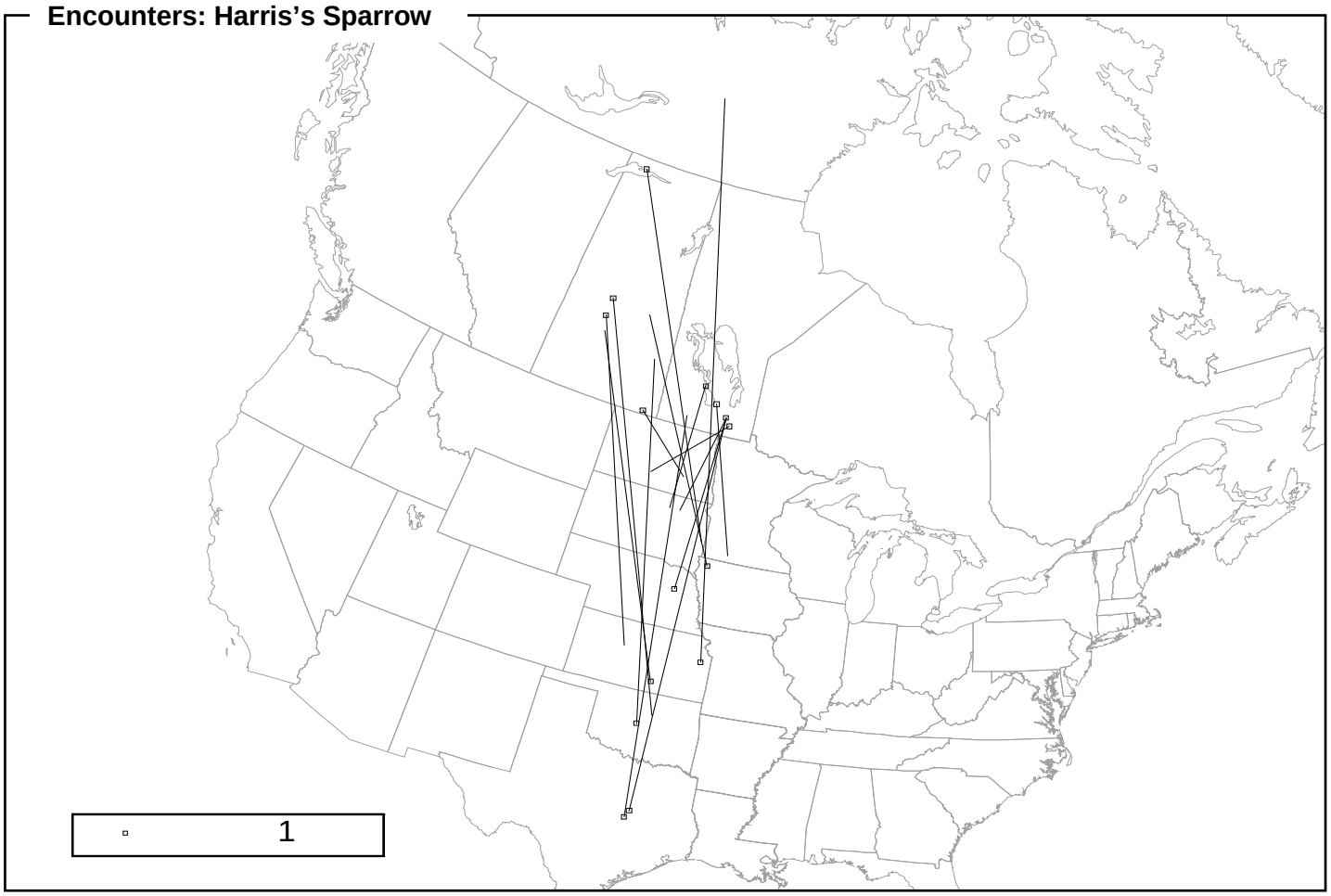
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*112 552*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	110	228	451
No. encountered from foreign bandings	18	46	103
Maximum period from banding to encounter (mo.)	99	86	99
No. of Canadian-banded birds moving > 0 km	33	71	126
Mean movement > 0 km of Canadian-banded birds (km)	797	809	794
Maximum movement from all encounters (km)	3553	2712	2815
% recovered (encountered dead)	55	46	53
% direct recoveries	34	30	33
% encountered during banding operations	43	50	44

Banding effort: White-throated Sparrow



Top banders: LPBO, TBO, PEPO, MB, MJW

Harris's Sparrow (*Zonotrichia querula*) 553.0



Harris's Sparrow is Canada's only endemic songbird. It breeds in the Northwest Territories, western Nunavut, northeastern Saskatchewan, and northern Manitoba. The species winters mainly in a narrow band of the midwestern U.S. from South Dakota to Texas, with smaller numbers scattered from southern British Columbia through the western U.S.

The nine encounters showing movement over 1000 km are listed below; six others moved between 100 km and 1000 km (see map). All encounters were in the migration or wintering seasons except for record 1 (banded as a local). Record 2 (in northern Saskatchewan in late May) shows an encounter just short of the documented breeding range (Norment and Shackleton 1993). The encounter map shows that most birds move in a narrow north–south corridor between breeding and wintering areas.

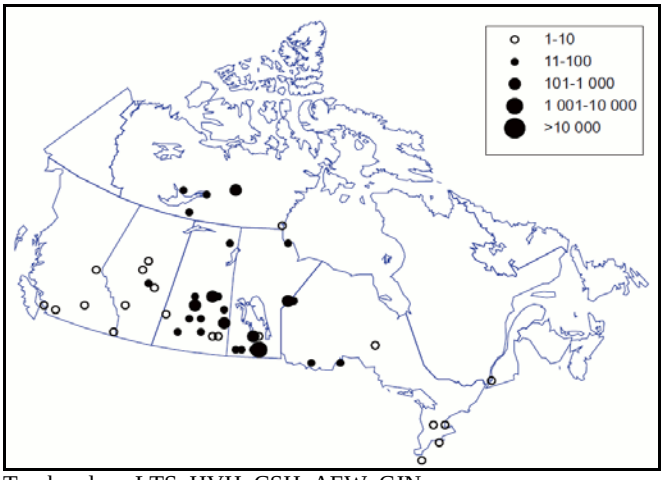
Encounter records: Harris's Sparrow

1	8011-36684	L	U	07/07/91	Thelon Game Sanctuary, NT	63°40'N	104°20'W	
	CJN	5	56	??/12/93	Lawrence, KS	38°50'N	95°10'W	2831 km S17°E
2	0691-39262	ASY	U	12/05/73	Brookings, SD	40°10'N	96°40'W	1 yr. 0 mo.
	NJH	5	0	20/05/74	near Fond-du-Lac, SK	59°30'N	108°20'W	1880 km N21°W
3	0341-00665	U	U	15/05/34	near St. Vital, MB	49°50'N	97°00'W	7 mo.
	PK	0	0	99/12/34	Bellmead, TX	31°30'N	97°00'W	2041 km S0°W
4	0431-43474	AHY	U	01/10/47	Treesbank, MB	49°30'N	99°30'W	4 mo.
	NC	0	98	02/02/48	Eddy, TX	31°10'N	97°10'W	2050 km S6°E
5	0501-32143	HY	U	21/11/52	Stillwater, OK	36°00'N	97°00'W	
	AMB	0	21	??/05/54	Debden, SK	53°30'N	106°50'W	2093 km N18°W
6	0521-61992	HY	U	19/09/56	White Fox, SK	53°20'N	104°00'W	21 dy.
	MGS	0	0	05/10/56	Hull, IA	43°10'N	96°00'W	1276 km S31°E
7	0521-68035	HY	U	30/09/55	near Good Spirit Lake, SK	51°30'N	102°40'W	1 yr. 6 mo.
	WA	0	47	01/03/57	Lake Overholser, OK	35°30'N	97°40'W	1825 km S15°E
8	0841-33401	AHY	U	27/04/85	Yocemento, KS	38°50'N	99°20'W	1 yr. 1 mo.
	CAE	5	0	06/05/86	18 km south of Blaine Lake, SK	52°40'N	106°50'W	1644 km N18°W
9	0521-83420	HY	U	26/09/68	near Saskatoon, SK	52°00'N	106°30'W	4 yr. 3 mo.
	CSH	5	45	99/12/72	Clearwater, KS	37°30'N	97°30'W	1761 km S27°E

Summary of banding statistics: Harris's Sparrow

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3057*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	9	5	19
No. encountered from foreign bandings	2	4	8
Maximum period from banding to encounter (mo.)	51	13	51
No. of Canadian-banded birds moving > 0 km	5	1	8
Mean movement > 0 km of Canadian-banded birds (km)	1716	2050	1596
Maximum movement from all encounters (km)	2830	2050	2830
% recovered (encountered dead)	88	80	89
% direct recoveries	44	60	57
% encountered during banding operations	11	20	10

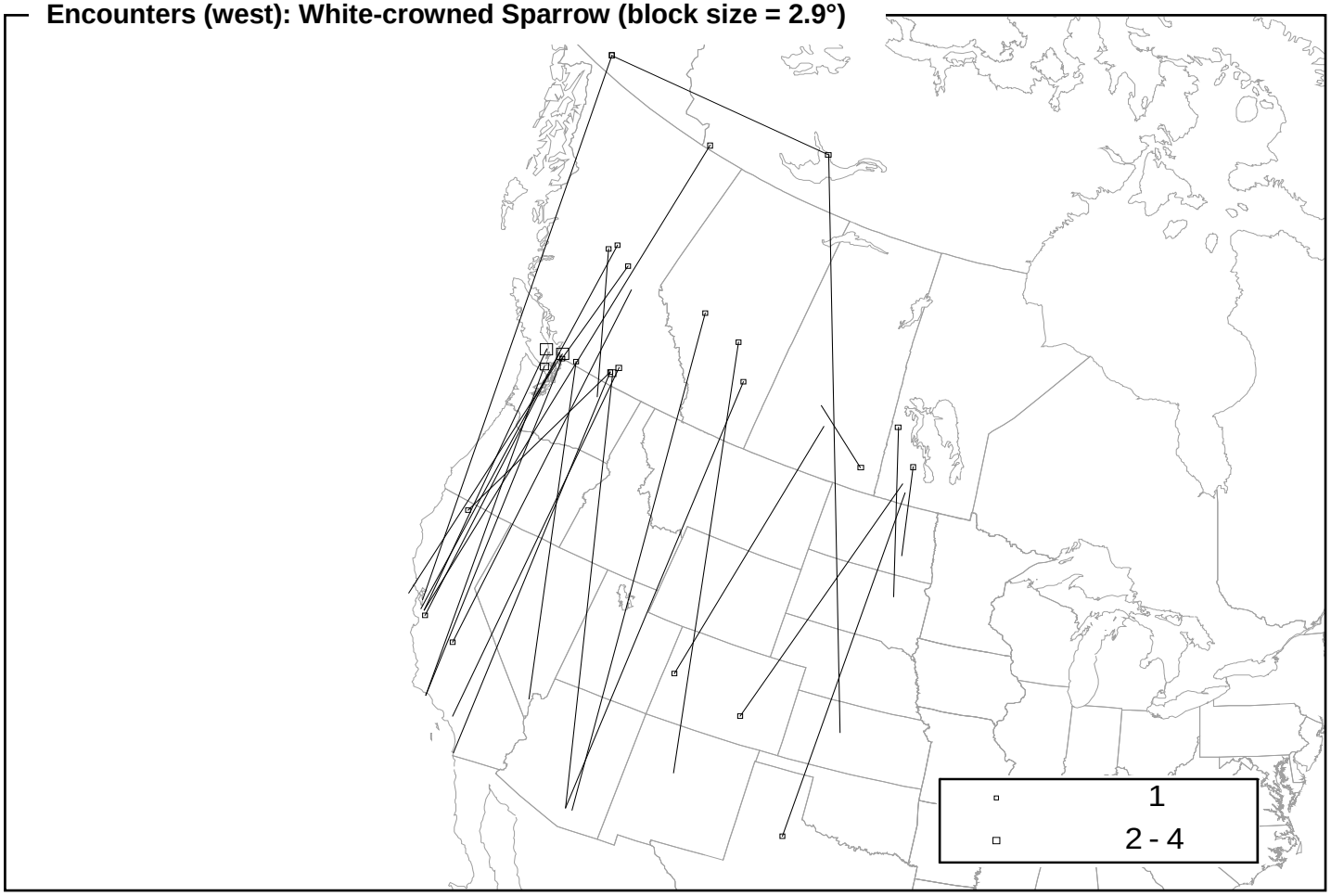
Banding effort: Harris's Sparrow



Top banders: LTS, HVH, CSH, AEW, CJN

White-crowned Sparrow (*Zonotrichia leucophrys*) 554.0

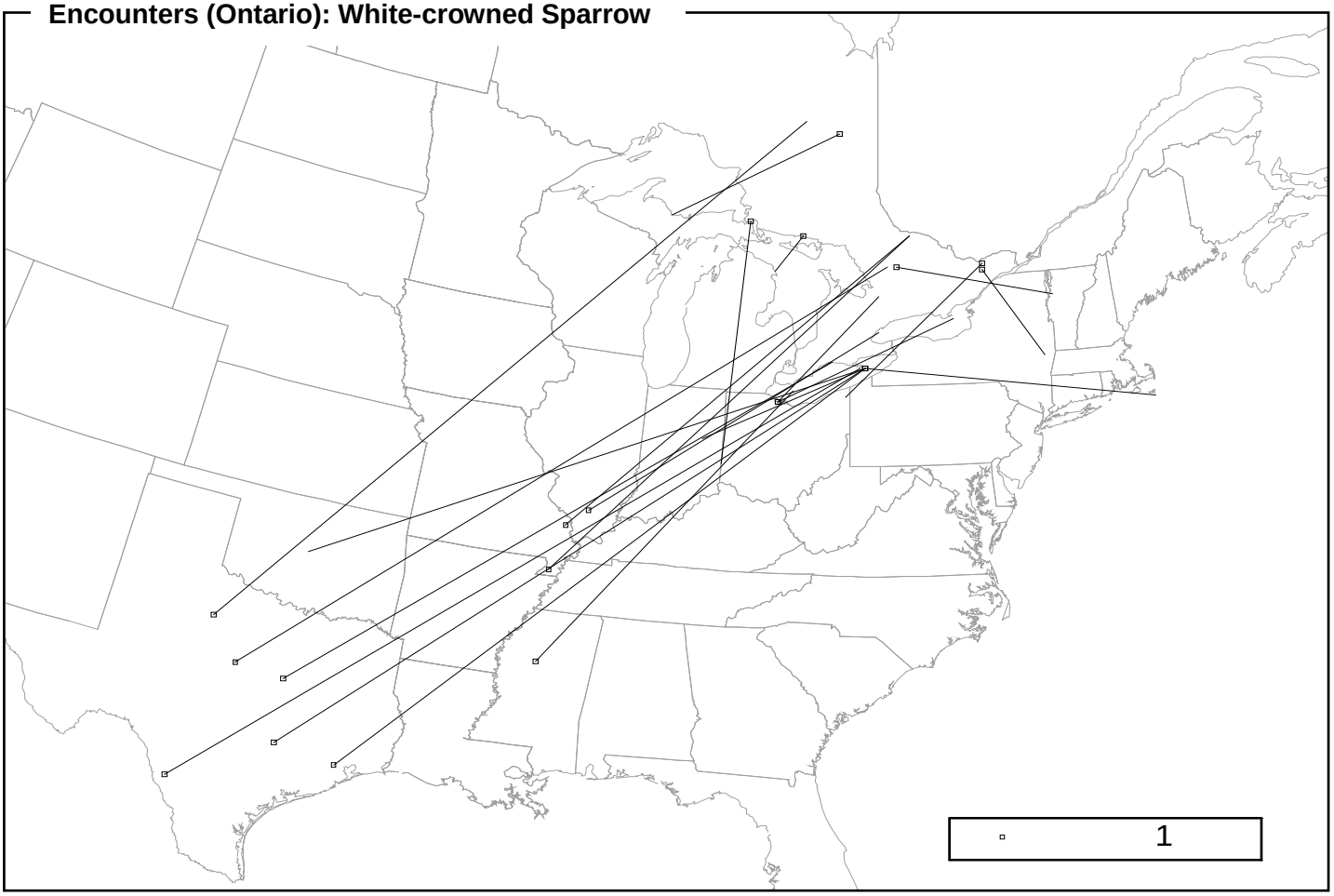
Encounters (west): White-crowned Sparrow (block size = 2.9°)



The White-crowned Sparrow breeds in northern Canada and Alaska, as well as through British Columbia and the western U.S. Five subspecies have been described, four of them migratory (Chilton et al. 1995). Although often recorded separately by banders, several subspecies are hard to distinguish and some encounters suggest errors. The subspecies are treated together in this account.

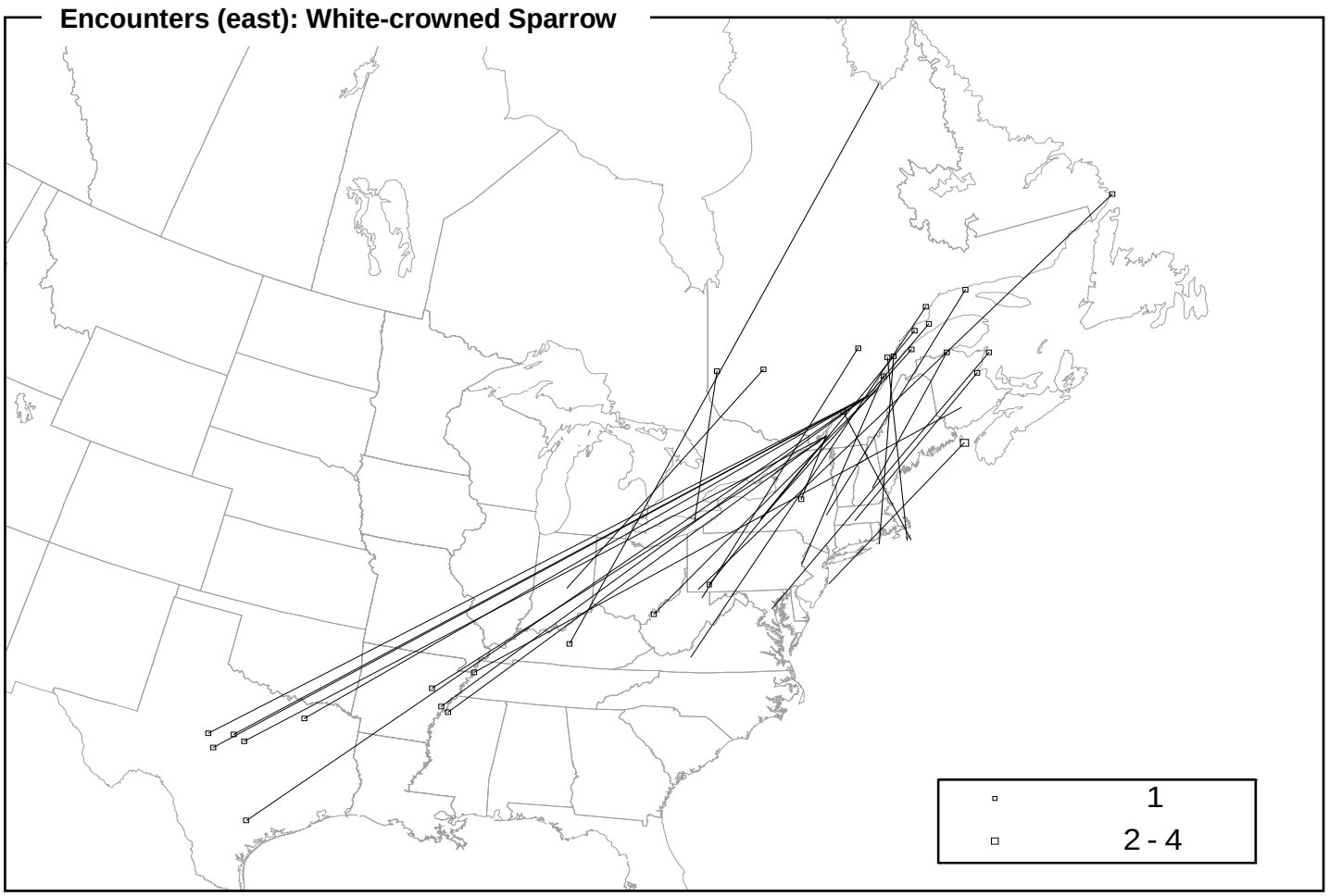
Two subspecies breed only in small parts of Canada. The Puget Sound Sparrow (*Z. l. pugetensis*), which breeds on southern Vancouver Island and the adjacent mainland, is partly migratory, with migrants heading due south to coastal California. The Mountain White-crowned Sparrow (*Z. l. oriantha*), which breeds in Canada only in southwestern Alberta, winters in the southwestern U.S. and northern Mexico (Chilton et al. 1995). The much more widespread Gambel's Sparrow (*Z. l. gambelii*) breeds in eastern British Columbia, Alaska, Yukon, and the Northwest Territories to northern Ontario (Fort Severn). This subspecies also migrates due south, passing through British Columbia and the Prairie Provinces to winter in the southwestern U.S. from California to western Texas, and producing the longest-distance western encounters (records 1-7, with record 1 showing the longest period between banding and encounter).

The nominate race (*Z. l. leucophrys*) breeds in the subarctic from northern Ontario to northern Newfoundland, so it has been banded primarily during migration or in winter (see banding effort map), but see record 8. Birds encountered in Ontario and Quebec overlap broadly in winter (December-February), in an area extending from Missouri east to Kentucky (e.g., record 8) and southward to the Gulf Coast from Texas (records 9 and 10) to Mississippi. Ontario birds are shifted slightly west of Quebec birds, and if encounters in both provinces were not so concentrated along the St. Lawrence-lower Great Lakes corridor, separation of wintering areas might be more obvious.



White-crowned Sparrows are conspicuously rare in the southeastern U.S. in winter. Most birds encountered on the Atlantic coast in fall are probably off-course, because they often reorient in subsequent years (e.g., records 11 and 12). The bird in record 12 was one of two banded on Nantucket Island within a day of each other; the second was also encountered the next spring, in Quebec.

One bird (record 13) moved an average of 175 km per day over seven days - close to the average of 108-118 km per day suggested for White-crowns migrating to Alaska (DeWolfe et al. 1973), but far short of the record 500 km recorded for one night's journey (Cortopassi and Mewaldt 1965).


Encounters (east): White-crowned Sparrow
1
2 - 4

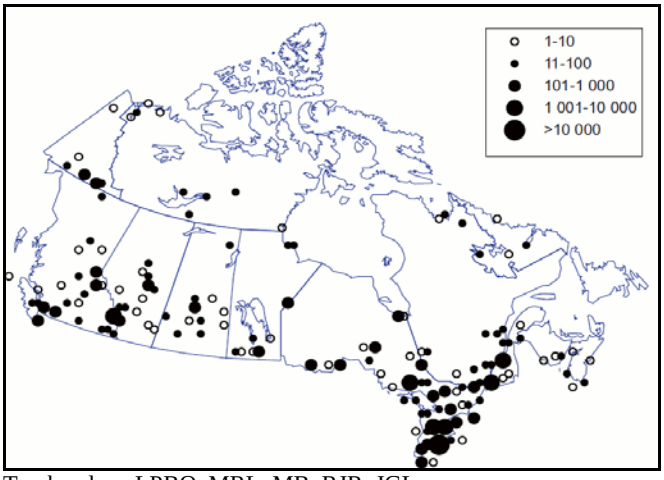
Encounter records: White-crowned Sparrow

1	0001-35125	U	U	16/09/24	Davidson, SK	51°10'N	105°50'W	8 yr. 4 mo.
	B&RL	8	4	30/01/33	Grand Junction, CO	39°00'N	108°30'W	1370 km S10°W
2	1071-94212	HY	U	26/10/71	near San José, CA	37°20'N	121°50'W	6 mo.
	LRM	8	28	29/04/72	Fort Liard, NT	60°10'N	123°20'W	2544 km N2°W
3	0281-36199	AHY	U	19/02/61	Cortade, AZ	32°10'N	111°00'W	3 mo.
	FON	0	45	01/05/61	near Penticton, BC	49°30'N	119°30'W	2055 km N18°W
4	0391-41015	U	U	21/09/39	Stockton, MB	49°30'N	99°30'W	2 yr. 7 mo.
	NC	0	1	19/04/42	Dickens, TX	33°40'N	100°40'W	1765 km S04°W
5	0301-96580	AHY	U	26/01/63	near San Leandro, CA	37°40'N	122°10'W	
	HLC	0	14	??/05/64	near Whitehorse, YT	60°40'N	135°00'W	2714 km N15°W
6	1131-31392	SY	U	16/03/73	south of Hags, KS	38°40'N	99°20'W	2 yr. 3 mo.
	CAE	2	3	25/06/75	Yellowknife, NT	62°20'N	114°20'W	2816 km N32°W
7	1351-11597	AHY	U	05/06/89	Yellowknife, NT	62°20'N	114°20'W	
	CWS-YT	5	0	??/04/91	Whitehorse, YT	60°40'N	135°00'W	1108 km S90°W
8	0221-14706	U	U	29/08/56	near Kuujjuaq, QC	58°20'N	67°50'W	1 yr. 5 mo.
	LL	0	0	04/01/58	Hodgenville, KY	37°30'N	85°40'W	2655 km S37°W
9	1381-01858	AHY	U	17/05/39	Kapuskasing, ON	49°20'N	82°20'W	
	RVW	0	1	??/12/39	Judd, TX	33°10'N	99°50'W	2309 km S45°W
10	0431-44104	HY	U	04/10/47	Charlesbourg, QC	46°50'N	71°10'W	5 mo.
	MB	0	0	13/03/48	near Runge, TX	28°50'N	97°40'W	3046 km S58°W
11	1061-26277	HY	U	28/10/67	Block Island, RI	41°10'N	71°30'W	7 yr. 7 mo.
	SSD	5	0	99/05/75	near La Richardière, QC	48°10'N	69°30'W	795 km N11°E
12	0251-78960	U	U	13/10/58	Nantucket Island, MA	41°10'N	70°00'W	7 mo.
	JVD	0	89	17/05/59	Long Point, ON	42°30'N	80°00'W	842 km N77°W
13	1131-82992	AHY	U	06/05/75	Morgantown, WV	39°30'N	79°50'W	7 dy.
	GAH	3	0	13/05/75	Bégin, QC	48°40'N	71°20'W	1224 km N31°E

Summary of banding statistics: White-crowned Sparrow

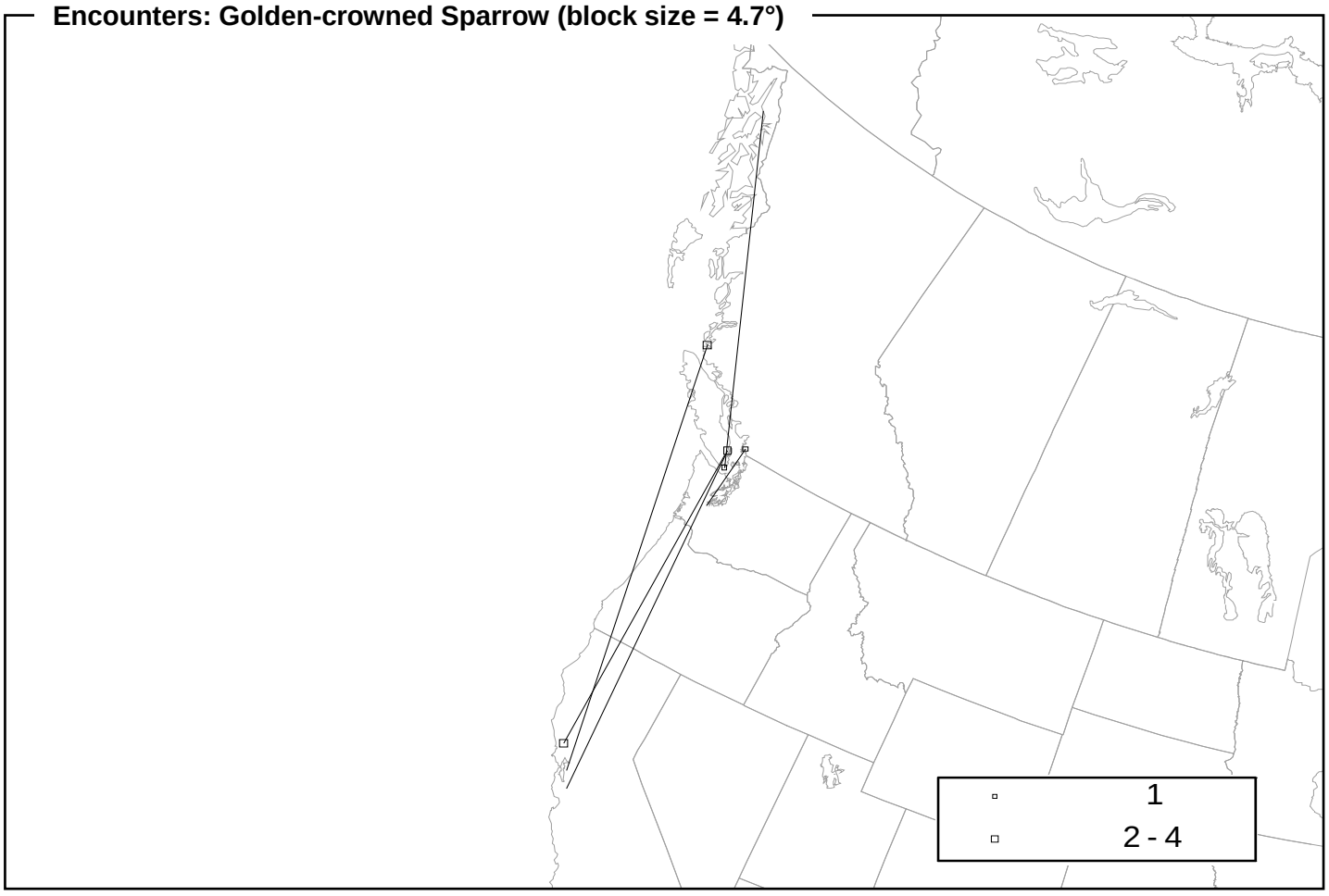
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*34 505*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	52	96	168
No. encountered from foreign bandings	21	25	54
Maximum period from banding to encounter (mo.)	91	79	100
No. of Canadian-banded birds moving > 0 km	5	30	40
Mean movement > 0 km of Canadian-banded birds (km)	1486	1452	1505
Maximum movement from all encounters (km)	3046	2980	3046
% recovered (encountered dead)	71	60	65
% direct recoveries	48	36	40
% encountered during banding operations	25	37	32

Banding effort: White-crowned Sparrow



Top banders: LPBO, MRL, MB, RJR, JGL

Golden-crowned Sparrow (*Zonotrichia atricapilla*) 557.0



The Golden-crowned Sparrow is a west coast species breeding from western Alaska and south-central Yukon to southern British Columbia and southwestern Alberta. It winters from southern British Columbia south to northern Mexico along the Pacific coast.

All encounters showing movement of 1000 km or more are listed (records 1-7). Only two others showed movement over 100 km. Most of the 38 encounters were of birds recaptured at the site of banding in the portion of British Columbia where Golden-crowns overwinter (e.g., record 8, the bird with longest period between banding and encounter).

Encounter records: Golden-crowned Sparrow

1	0031-90710	AHY	U	13/10/32	Cowichan Station, BC	48°40'N	123°40'W	1 yr. 4 mo.
	JAF	0	0	17/02/34	Guerneville, CA	38°30'N	122°50'W	1134 km S4°E
2	1361-93869	AHY	M	18/04/90	Auke Bay, AK	58°20'N	134°30'W	1 yr.10 mo.
	RBW	5	12	11/02/92	Victoria, BC	48°20'N	123°20'W	1334 km S38°E
3	0221-12112	AHY	U	01/10/56	Ambleside Beach, BC	49°10'N	123°00'W	1 mo.
	JGS	0	13	04/11/56	Albany, CA	37°50'N	122°10'W	1263 km S3°E
4	0301-37212	HY	U	05/01/62	Albany, CA	37°50'N	122°10'W	4 mo.
	CGT	0	1	04/05/62	Goose Bay, BC	51°20'N	127°40'W	1564 km N14°W
5	0311-72823	AHY	U	24/11/62	Santa Cruz, CA	36°50'N	122°00'W	1 yr. 5 mo.
	HRS	0	1	99/04/64	Cassidy, BC	49°00'N	123°50'W	1363 km N6°W
6	0381-38558	U	U	06/02/39	south of Monterey, CA	36°30'N	121°50'W	3 mo.
	JML	0	98	10/05/39	Namu, BC	52°00'N	128°00'W	1793 km N14°W
7	0631-34017	AHY	U	10/11/63	San José, CA	37°20'N	121°50'W	2 yr. 5 mo.
	LRM	8	21	29/04/66	Chemainus, BC	48°50'N	123°40'W	1289 km N6°W
8	0221-01852	AHY	M	28/11/54	Albert Head, BC	48°20'N	123°20'W	4 yr. 4 mo.
	MLB	0	0	01/03/59	Albert Head, BC	48°20'N	123°20'W	0 km

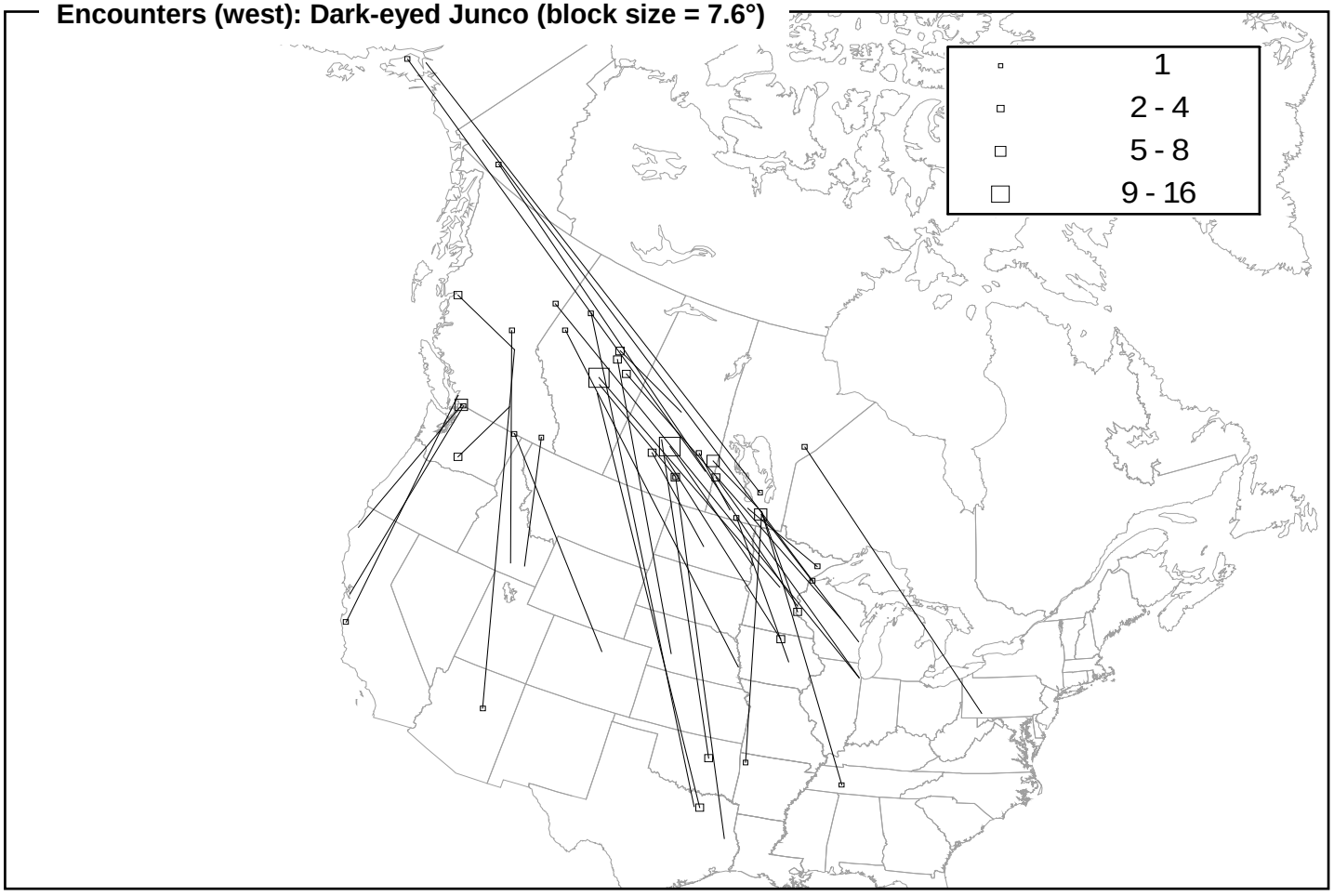
Summary of banding statistics: Golden-crowned Sparrow

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*1068*
No. encountered per 1000 banded (1955-1995)			*11*
Total no. encountered (1921-1995)	13	19	38
No. encountered from foreign bandings	1	4	6
Maximum period from banding to encounter (mo.)	10	52	52
No. of Canadian-banded birds moving > 0 km	1	3	5
Mean movement > 0 km of Canadian-banded birds (km)	12	812	686
Maximum movement from all encounters (km)	1563	1362	1792
% recovered (encountered dead)	15	42	34
% direct recoveries	53	21	42
% encountered during banding operations	84	55	64

Banding effort: Golden-crowned Sparrow

Top banders: DBr, CWS-BC, UBC, BBW, WMH

Dark-eyed Junco (*Junco hyemalis*) 567.0 and 567.1

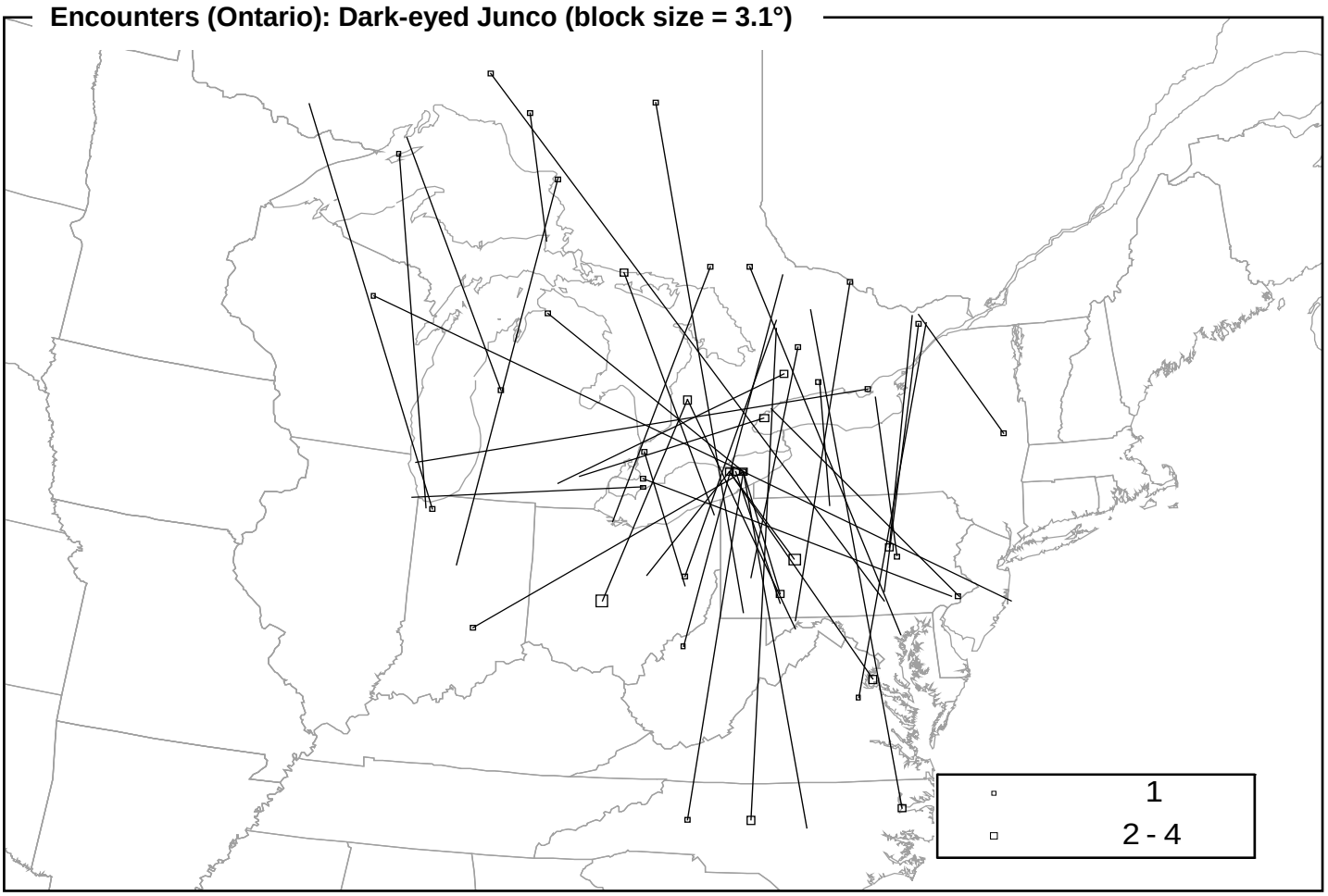


TBanders recognize four forms of the Dark-eyed Junco, two of which, the Slate-colored Junco (*J.h. hyemalis*) and Oregon Junco (*J.h. oreganus*), regularly occur in Canada. These two are treated together here.

The Slate-colored Junco breeds across the northeastern U.S. and Canada north to the treeline, except for southern British Columbia and the southern Prairie Provinces. It winters in considerable numbers across southern Canada, from British Columbia to Newfoundland, and south to northern Mexico, the Gulf Coast, and Florida. The Oregon form replaces the Slate-colored in much of the western U.S., as well as from coastal and central British Columbia to central and southern Alberta and in southwestern Saskatchewan. It winters in British Columbia and the northwestern U.S. south to northern Mexico and east to Minnesota, Kansas, and Oklahoma, as well as in small numbers east to southern Ontario and southwestern Quebec. The two forms interbreed where their ranges overlap.

More than half of all birds recorded were banded and encountered in British Columbia, at all times of year, and 95% of these showed no movement. All the British Columbia birds encountered in the U.S. from Idaho west (see map) were banded as Oregon Juncos (e.g., records 1-3). Although the encounters from this province in Colorado and Arizona (record 4) may also have involved Oregon Juncos, they were not reported as such. (Note that the odd, branched pattern of certain British Columbia encounters on the map is a chance configuration of individual records.)

Slate-colored Juncos encountered in the Prairie Provinces and Alaska were concentrated during December through February in the central regions of the continent, from Manitoba and Illinois south to Texas, with 60% south of Nebraska-Iowa (records 5 and 6; see also records 7-9 for examples of birds moving in the same northwest-southeast direction). However, the bird in record 10 wintered much farther east.

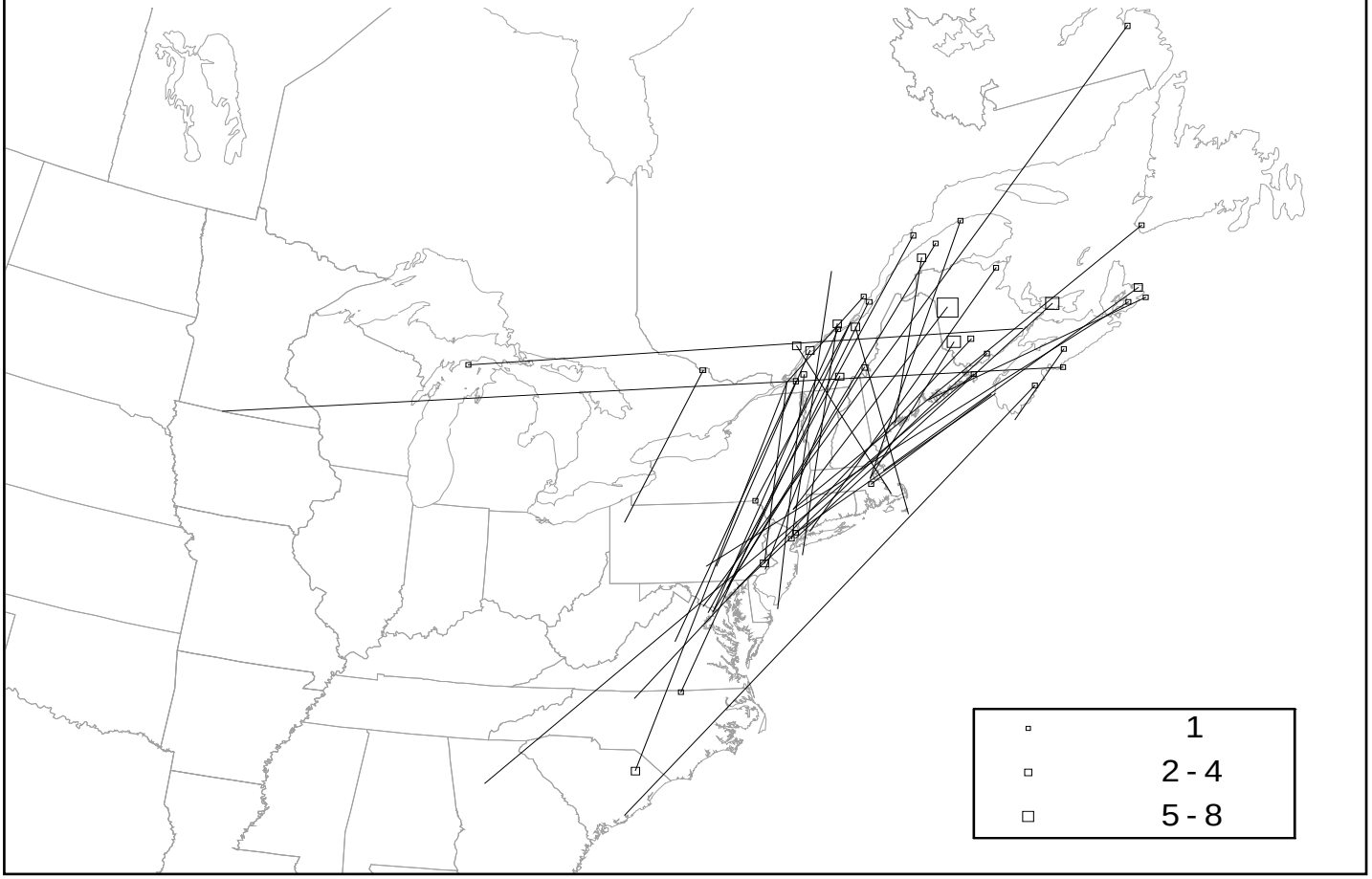


Of the Ontario birds banded or encountered in winter (December-February), nearly two-thirds wintered in the province, while the remainder were spread across the Great Lakes states eastward to the coastal states from Pennsylvania to North Carolina. In contrast to the eastern and western maps, the Ontario map shows a wide range of directions of movement, suggesting that Ontario migrants may summer both to the east and west of the province; however, there are as yet no summer encounters that confirm this hypothesis.

Maritimes Juncos either wintered in the Maritimes (35%) or were found in December-February in coastal states from Massachusetts to Georgia (records 11 and 12), but see record 13, which shows a bird that appears to have strayed far to the west (assuming the encounter details are correct). There were only eight mid-winter encounters involving Quebec, all in coastal states where juncos from the Maritimes also winter.

Juncos show strong wintering site fidelity: two-thirds of the birds encountered in southern Ontario in winter were banded at the same site in previous winters. The predominant age and sex group shifts with the latitude of the wintering site: young males predominate in northern wintering areas, adult males farther south, young females farther south still, and adult females farthest south (Nolan and Ketterson 1990). Birds that winter in different places in different winters tend to move farther south in subsequent years (Ketterson and Nolan 1982).

Encounters (east): Dark-eyed Junco (block size = 4.1°; excludes birds moving < 200 km)



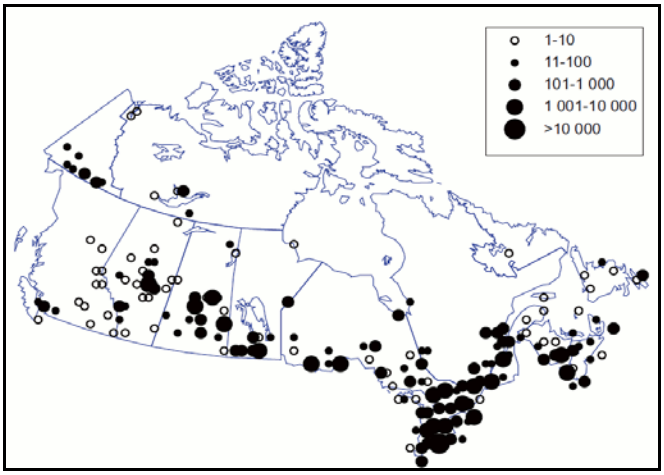
Encounter records: Dark-eyed Junco

1	0210-16833	AHY	M	29/03/65	18 km north of Malta, ID	42°40'N	113°20'W	
	JH	0	3	??/04/65	near Prince George, BC	53°50'N	122°40'W	1420 km N26°W
2	0220-56344	AHY	U	23/01/54	Oakland, CA	37°40'N	122°10'W	1 yr. 0 mo.
	HKT	0	0	15/01/55	Aldergrove, BC	49°00'N	122°20'W	1262 km N1°W
3	0260-83910	AHY	F	26/04/59	Horseshoe Bay, BC	49°20'N	123°10'W	7 mo.
	DMB	0	89	02/11/59	Jamesburg, CA	36°20'N	121°30'W	1453 km S6°E
4	0040-88327	J	U	02/08/34	Barkerville, BC	53°00'N	121°30'W	6 mo.
	TTMcC	0	89	04/02/35	inexact location, AZ	35°??'N	111°??'W	
5	0460-27011	AHY	U	27/02/53	Nacogdoches, TX	31°30'N	94°30'W	1 yr. 2 mo.
	TCL	0	0	18/04/54	near Regina, SK	50°20'N	104°30'W	2254 km N18°W
6	0460-68941	AHY	U	13/01/49	Kansas City, MO	39°00'N	94°30'W	
	HHe	0	0	99/FA/52	Cucumber Lake, AB	53°50'N	112°00'W	2116 km N33°W
7	0720-49203	L	U	08/07/66	Silver Creek, YT	61°00'N	138°20'W	
	CC	3	13	99/FA/66	Duluth, MN	46°40'N	92°00'W	3341 km S83°E
8	1120-87341	AHY	U	28/03/68	Sedalia, CO	39°20'N	104°50'W	1 mo.
	CHS	3	12	30/04/68	near Rosthern, SK	52°40'N	106°10'W	1448 km N4°W
9	0260-02797	AHY	U	03/10/59	Yorkton, SK	51°10'N	102°20'W	1 yr. 9 mo.
	CSH	0	98	10/07/59	north of Soldotna, AK	60°30'N	151°00'W	3131 km N52°W
10	1130-88925	HY	U	12/11/66	near Somerset, PA	40°00'N	79°10'W	10 mo.
	CMNH	7	89	26/09/67	Island Lake, MB	53°50'N	94°40'W	1930 km N32°W
11	1080-15865	AHY	F	14/01/78	Atlanta, GA	33°40'N	84°20'W	3 mo.
	DAC	5	0	26/04/78	Grand Manan, NB	44°50'N	66°50'W	1947 km N45°E
12	0230-51776	AHY	U	07/02/61	near Hendon, VA	39°00'N	77°20'W	3 yr. 4 mo.
	JVD	0	0	99/06/64	west of Port Hope Simpson, Labrador,	53°20'N	57°10'W	2213 km N37°E
13	0200-44537	AHY	M	04/04/53	Jackson, MN	43°30'N	94°50'W	9 yr. 3 mo.
	GHC	0	0	13/07/62	Armdale, NS	44°30'N	63°30'W	2496 km N76°E

Summary of banding statistics: Dark-eyed Junco

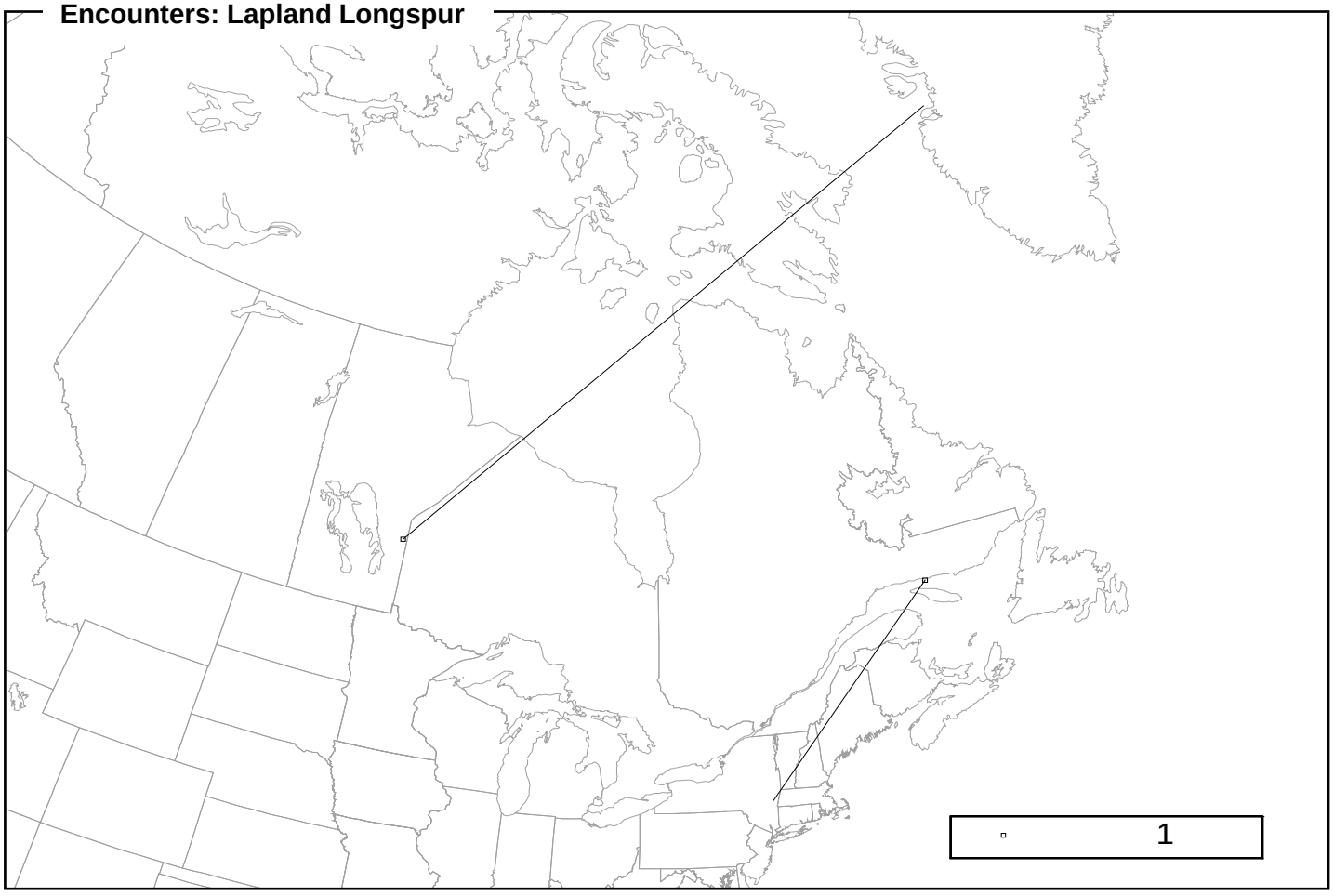
	Age at banding		
	Hatch year	**After hatch year**	**All ages**
No. of Canadian bandings (1955-1995)			*107 623*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	72	689	918
No. encountered from foreign bandings	17	98	162
Maximum period from banding to encounter (mo.)	113	111	113
No. of Canadian-banded birds moving > 0 km	23	70	106
Mean movement > 0 km of Canadian-banded birds (km)	629	699	647
Maximum movement from all encounters (km)	3341	3330	3341
% recovered (encountered dead)	59	32	38
% direct recoveries	38	33	34
% encountered during banding operations	40	66	61

Banding effort: Dark-eyed Junco



Top banders: LPBO, NMC, MB, JBMi, ETJ

Lapland Longspur (*Calcarius lapponicus*) 536.0



The Lapland Longspur has a holarctic breeding distribution. In Canada it breeds north of the treeline from northern Yukon through most of the Northwest Territories and Nunavut to northern Labrador, including most of the Arctic islands; it also breeds along Hudson Bay coasts. It winters from southern Canada to southeastern California, Arkansas, and Maryland.

West et al. (1968) defined three general spring migration routes for longspurs breeding in western North America: a coastal route along the Pacific shore of British Columbia and Alaska, an intermountain route in the mountain trenches of British Columbia and southern Yukon and Alaska, and, finally, a Prairie route through the Prairie Provinces of Alberta and eastern British Columbia going west and north to the Yukon drainage.

The two distant encounters for this species (records 1 and 2) probably all involve longspurs breeding in Greenland and wintering in North America. In addition to the Danish-banded bird from western Greenland that was encountered in Manitoba (record 1), two birds from southeast Greenland have been encountered in North America one in Quebec and one in Minnesota (Cramp and Perrins 1994). The Quebec bird, encountered on the east coast of James Bay in December, 1975, was banded 2600 km to the northeast in Ammassalik, west Greenland in Aug. 1975 (Lyngs, 2003; full details not obtained.) The bird in record 2 could also have been headed to Greenland (although perhaps going only to Labrador). The band encounters yield no information about the migration routes of longspurs that breed in the eastern Canadian Arctic.

Nearly all the remaining encounters involved recapture of birds banded in previous years at a study site on the McConnell River, Northwest Territories (e.g., record 3).

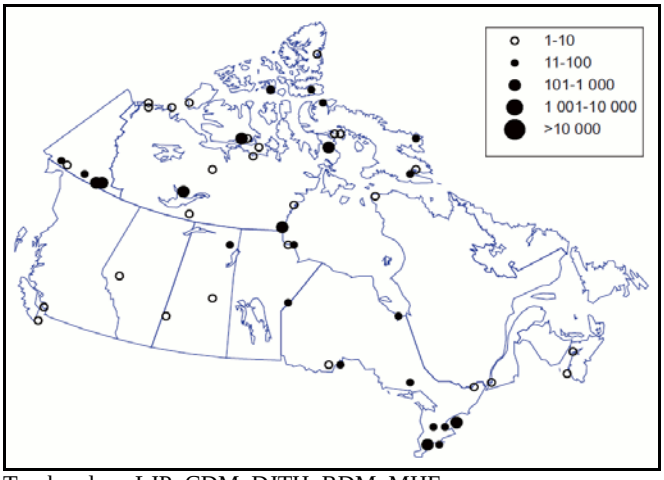
Encounter records: Lapland Longspur

1	Cop 772906	U	U	01/07/55	Egedesminde district, GREENLAND	68°40'N 52°10'W	3 mo.
		0	97	01/10/55	Little Grand Rapids, MB	52°00'N/95°20'W	2915 km S72°W
2	1341-27814	AHY	U	13/02/88	Kinderhook, NY	42°20'N 73°40'W	1 yr. 2 mo.
	RPG	5	0	99/04/89	Havre Saint-Pierre, QC	50°10'N 63°30'W	1170 km N38°E
3	0321-16282	AHY	F	27/07/71	30 km southwest of Eskimo Point.,	60°50'N 94°20'W	1 yr.11 mo.
	CDM	3	10	09/06/73	30 km southwest of Eskimo Point, NT	60°50'N 94°20'W	0 km

Summary of banding statistics: Lapland Longspur

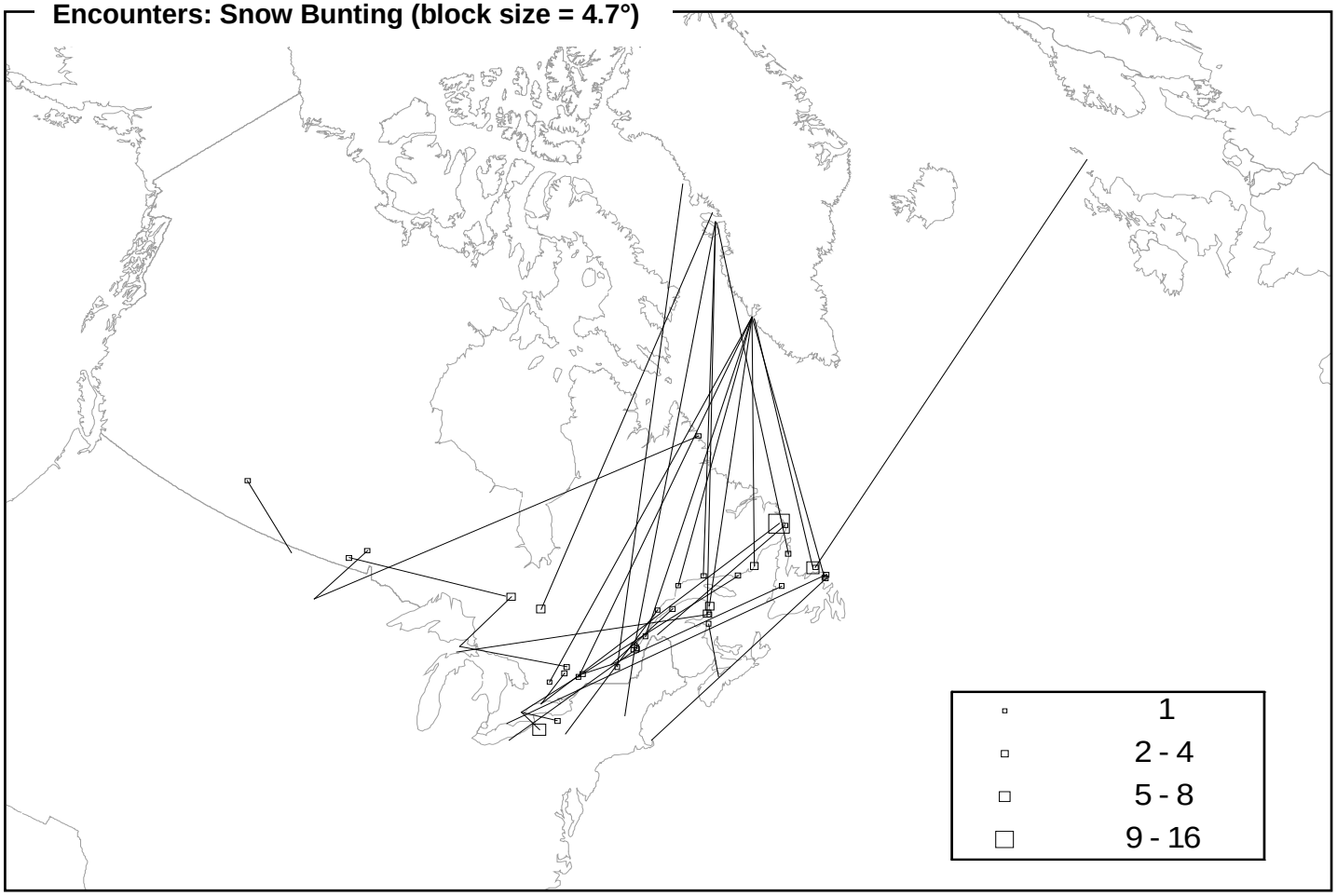
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3123*
No. encountered per 1000 banded (1955-1995)			*13*
Total no. encountered (1921-1995)	7	34	43
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	13	23	23
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	0	1169	2914
% recovered (encountered dead)	14	20	23
% direct recoveries	0	0	2
% encountered during banding operations	85	79	76

Banding effort: Lapland Longspur



Top banders: LJP, CDM, DJTH, RDM, MHF

Snow Bunting (*Plectrophenax nivalis*) 534.0



The Snow Bunting is a circumpolar species, breeding north of the treeline in Europe, Asia, and North America. In Canada the breeding range extends from Hudson Bay north through the Arctic archipelago to the northern tip of Ellesmere Island. It winters in southern Canada from the St. Lawrence Valley to coastal British Columbia, and in northern states from Washington through Kansas to North Carolina; it rarely winters farther south.

As a result of extensive banding in Greenland, there have been 27 encounters of birds with Danish bands in Canada (12 in Quebec, 6 in Newfoundland, 5 in Labrador, 3 in Ontario, and 1 in New Brunswick; see records 1-3 below). Most U.S. encounters of Greenland birds are also east of the Great Lakes, but there is one record in Minnesota and several in Michigan (Cramp and Perrins 1994). All Greenland birds encountered in North America are from the west coast of that island, the principle banding locations being north of Disko Island (about 70°N) and around Godthåb (about 64°N). Eastern Greenland birds apparently winter in central Russia in the vicinity of the Urals (Cramp and Perrins 1994), so encounter record 4 is particularly interesting. It was described by Spencer (1961) as "the first British-ringed Passerine to be encountered in the New World. It seems probable that the bird originated in Greenland and wintered on different sides of the Atlantic in successive winters."

Encounters of Snow Buntings from North American bandings were nearly all of birds both banded and encountered in winter or on migration, with the exception of record 5 (encountered in the breeding range) and four birds banded and encountered in summer at study sites in the Arctic. Three birds banded in December or January were encountered the same winter 133-241 km farther south, suggesting movement within winters; however, there are also several examples of buntings retrapped at the same wintering sites between one and three years later. Bryens (1944) reported 51 of 596 Snow Buntings returning to his Michigan banding site in a later winter; one bird

was retrapped in nine different winters. Encounter records 6 to 8 below indicate that spring migration is well underway by April. However, the bird in record 10 (evidently a breeder from western Canada) was killed well south of the breeding range in mid-May

The obvious heavy bias toward encounters from both the Danish and North American banding schemes along the north shore of the St. Lawrence (e.g., record 9) may be partly attributable to traditional trapping of Snow Buntings in that area for food.

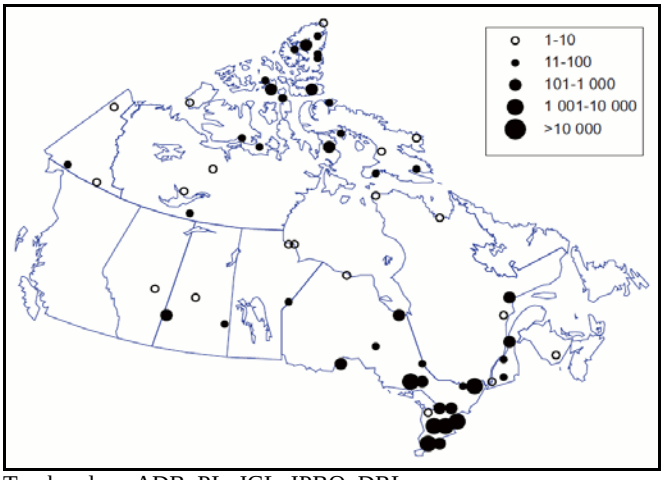
Encounter records: Snow Bunting

1	Cop 871889	AHY	U	27/04/51	Sarqaq-Dalen, GREENLAND	70°00'N 52°00'W	3 yr. 9 mo.
	PJ			15/02/55	Bear Valley, ON	46°50'N/79°40'W	2983 km S65°W
2	Cop 852087	HY	U	18/07/58	Narssak, GREENLAND	64°00'N 51°30'W	1 yr. 9 mo.
	JD	5	1	25/04/60	Fogo Island, NL	49°40'N 54°10'W	1603 km S7°W
3	Cop8100551	U	U	13/08/69	Godthσb, GREENLAND	64°10'N 51°10'W	8 mo.
	E&OH	0	1	16/04/70	Port-Cartier, QC	50°00'N 66°40'W	1824 km S38°W
4	BTO K81654	AHY	M	07/04/59	Fair Isle, UNITED KINGDOM	59°30'N 01°40'W	11 mo.
				01/05/60	Fogo Island, NL	49°40'N 54°10'W	3455 km N85°W
5	0051-32806	U	U	29/12/33	Jamestown, ND	46°50'N 98°40'W	1 yr. 6 mo.
	CEB	0	0	99/06/35	Saglek Bay, Labrador, NL	58°10'N 62°30'W	2712 km N49°E
6	1400-61701	AHY	M	13/02/42	Blaney Park, MI	46°00'N 85°50'W	2 mo.
	KC	0	0	06/04/42	Sainte-Thérèse-de-Gaspé, QC	48°20'N 64°20'W	1642 km N73°E
7	0520-31779	AHY	U	04/02/61	near Toronto, ON	43°50'N 79°10'W	
	LGL	0	47	??/04/61	near St. Anthony, NL	51°20'N 55°30'W	1952 km N56°E
8	0821-03823	AHY	U	12/01/74	Cornhill Beach, MA	42°00'N 70°00'W	3 mo.
	CRS	8	56	27/04/74	Badgers Quay, NL	49°00'N 53°30'W	1500 km N53°E
9	0530-97379	U	U	04/02/54	Canaan, NH	43°30'N 72°00'W	2 yr. 2 mo.
	AMcA	0	3	09/04/56	near Pointe-au-Pic, QC	47°30'N 70°00'W	472 km N19°E
10	0321-51863	U	U	18/10/65	west of Kenmare, ND	48°40'N 102°10'W	2 yr. 7 mo.
	RTG	5	12	04/05/68	Near Madison, SK	51°10'N 109°00'W	563 km N58°W
11	0381-95998	AHY	U	22/03/40	Toronto, ON	43°40'N 79°20'W	2 yr. 1 mo.
	HHS	0	26	04/04/42	near Flower's Cove, NL	51°20'N 57°00'W	1874 km N55°E
12	0891-29308	AHY	M	11/02/88	Sparta, ON	42°40'N 81°00'W	9 mo.
	RAH	5	0	05/11/88	Pichards Island, Labrador, NL	49°10'N 53°20'W	2247 km N62°E

Summary of banding statistics: Snow Bunting

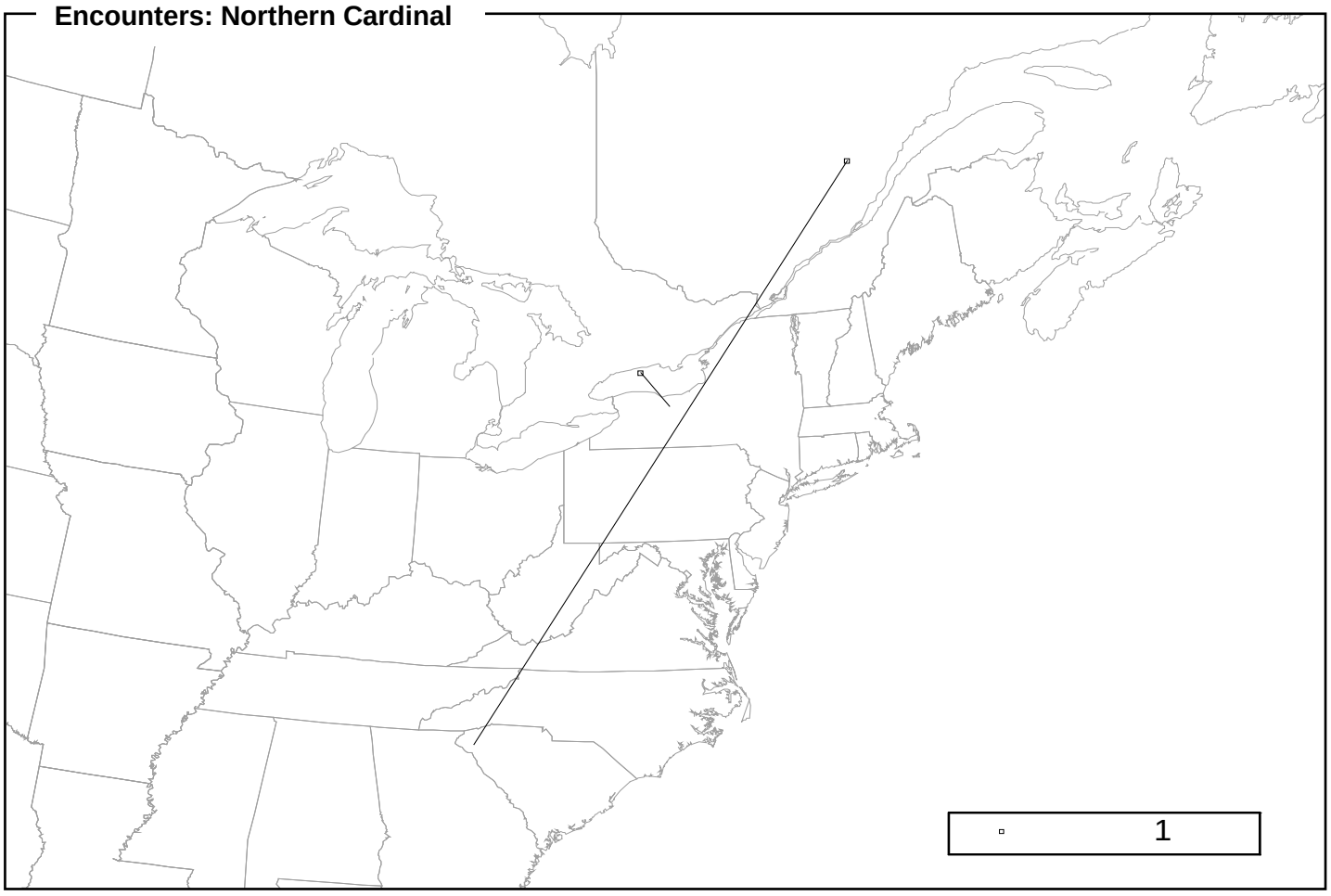
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*19 026*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	5	41	78
No. encountered from foreign bandings	1	7	39
Maximum period from banding to encounter (mo.)	26	43	46
No. of Canadian-banded birds moving > 0 km	4	26	31
Mean movement > 0 km of Canadian-banded birds (km)	69	1003	867
Maximum movement from all encounters (km)	471	2246	3455
% recovered (encountered dead)	100	58	78
% direct recoveries	60	43	35
% encountered during banding operations	0	29	15

Banding effort: Snow Bunting



Top banders: ADB, PL, JGL, IPBO, DRL

Northern Cardinal (*Cardinalis cardinalis*) 593.0



The Northern Cardinal breeds in the eastern U.S., southern Ontario (north to Ottawa), and extreme southern Quebec. It is an occasional breeder in southern Manitoba (Winnipeg) and appears casually in southern Saskatchewan, southwestern Quebec, and Nova Scotia; since its first recorded nesting in Canada, at Point Pelee in 1901 (Godfrey 1986), it has expanded its range substantially northward and continues to do so. It is a permanent resident in most of range, but northern populations are partly migratory.

Over half the records involved birds banded and encountered at three study sites in Ontario, including the bird with the longest period between banding and encounter (record 1). The three cross-border encounters are listed below (records 2-4; the last bird is not on the map because it moved less than 100 km). Although many cardinals overwinter in the Canadian breeding range, it is possible that some migrate long distances (record 2); however, the encounter location of record 2 is at the very northern edge of the current breeding range in Quebec, and some of the original banding data are missing. Thus it is possible that the species designation is incorrect.

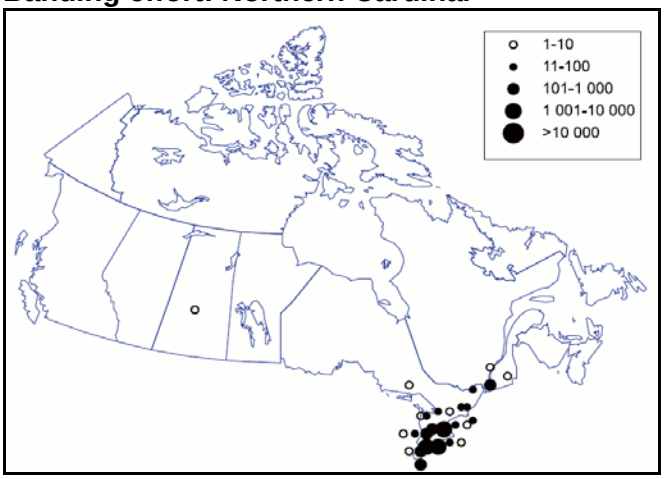
Encounter records: Northern Cardinal

1	0571-00095	AHY	F	06/06/70	Toronto, ON	43°40'N	79°20'W	8 yr. 2 mo.
	CHR	5	0	01/08/78	Toronto, ON	43°40'N	79°20'W	0 km
2	0741-45448	U	U	08/03/70	Clemson, SC	34°40'N	82°50'W	1 yr. 5 mo.
	REW	5	4	FT/08/71	near Chicoutimi, QC	48°30'N	71°00'W	1823 km N29°E
3	0671-97146	HY	F	30/08/72	Egypt, NY	43°00'N	77°20'W	4 mo.
	FTM	5	13	28/12/72	Cobourg, ON	43°50'N	78°10'W	115 km N36°W
4	0261-05617	U	F	16/08/58	Berkely, MI	42°30'N	83°10'W	9 mo.
	WPN	7	89	06/05/59	near Point Pelee Marsh, ON	41°50'N	82°30'W	92 km S37°E

Summary of banding statistics: Northern Cardinal

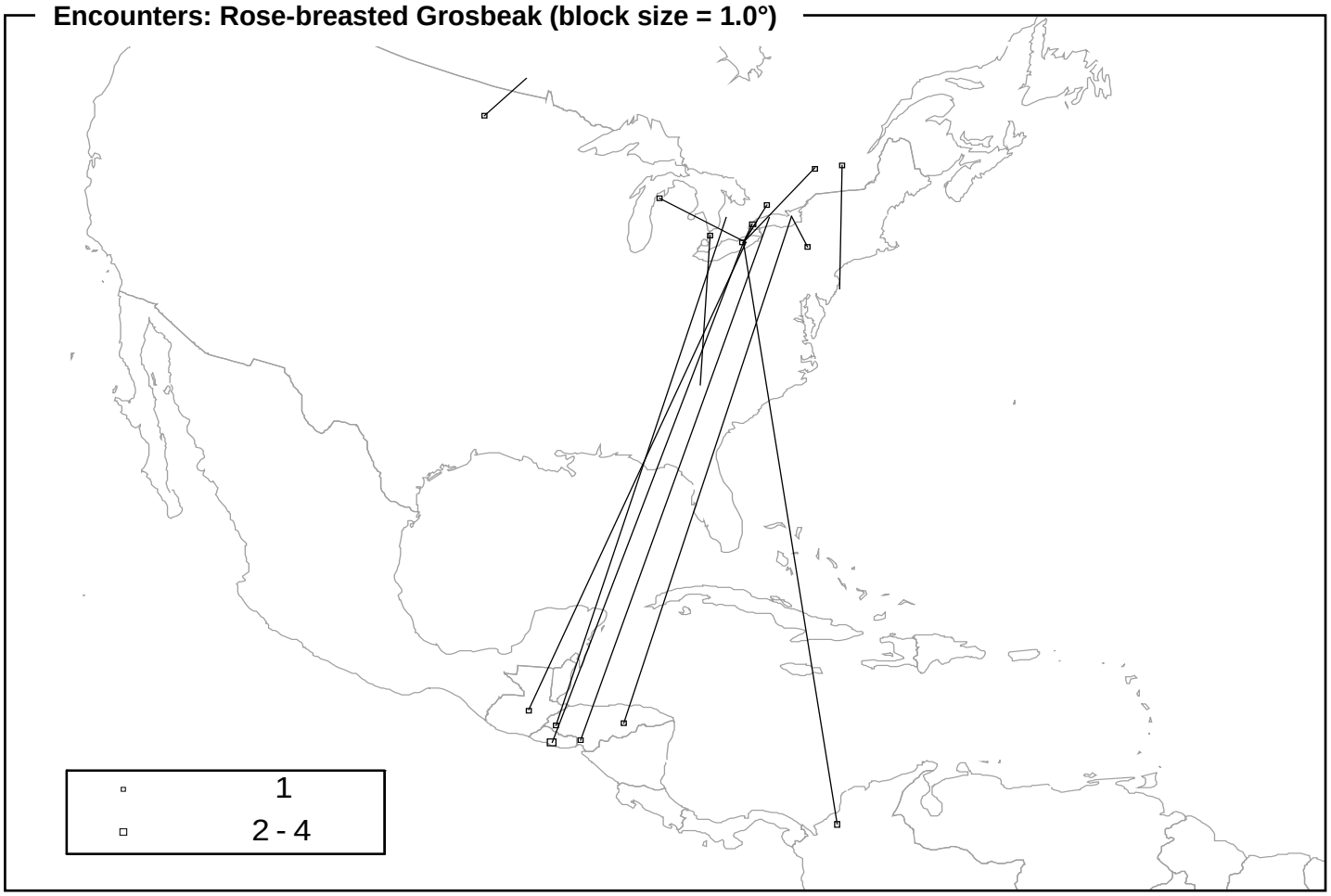
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*5000*
No. encountered per 1000 banded (1955-1995)			*34*
Total no. encountered (1921-1995)	47	79	194
No. encountered from foreign bandings	1	1	4
Maximum period from banding to encounter (mo.)	45	98	98
No. of Canadian-banded birds moving > 0 km	7	10	25
Mean movement > 0 km of Canadian-banded birds (km)	19	25	21
Maximum movement from all encounters (km)	114	1532	1823
% recovered (encountered dead)	44	36	35
% direct recoveries	57	21	29
% encountered during banding operations	55	60	63

Banding effort: Northern Cardinal



Top banders: DMS, LPBO, CHR, ADB, TBO

Rose-breasted Grosbeak (*Pheucticus ludovicianus*) 595.0



The Rose-breasted Grosbeak breeds in the north-central and northeastern U.S.; in Canada it breeds from the southwestern Northwest Territories, northwestern British Columbia, and the northern half of Alberta, through central Saskatchewan and southern Manitoba, across the southern parts of Ontario and Quebec to the Maritimes (Cape Breton). It winters mainly from central Mexico south to Ecuador, Colombia, and Venezuela.

All three encounters in winter (December-February) are of female birds banded in southern Ontario and encountered in Honduras (e.g., record 1). Two other encounters of females in the wintering range, one from El Salvador (record 2) and one from Guatemala (record 3), did not have exact encounter dates. The male encountered in November in Colombia (record 4) could still have been in transit to a point farther south, because Rose-breasted Grosbeaks in northern Colombia are present mainly in passage, during early November and from mid-February to mid-March (Johnson 1980).

Two grosbeaks encountered during the breeding season in the same area of Quebec had been banded in widely different parts of the migration route on spring migration (Ontario and New Jersey; see map). There were two very short-term encounters of migrating birds (records 5 and 6) indicating migration speeds of 37 km and 56 km per day, respectively.

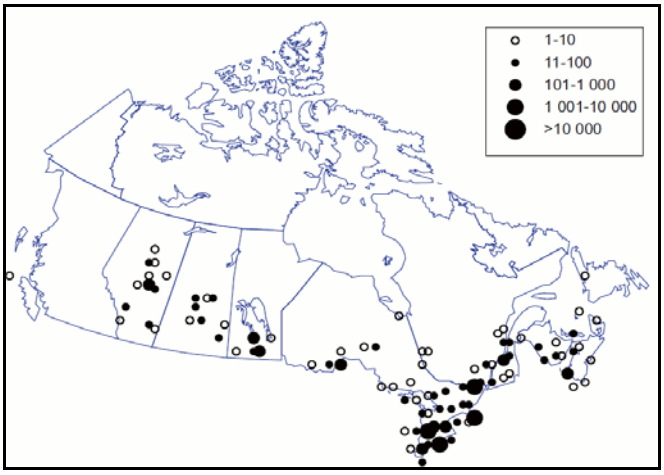
Encounter records: Rose-breasted Grosbeak

1	0891-14680	U	F	05/09/81	13 km west of Port Hope, ON	43°50'N 78°20'W	4 yr. 4 mo.
	PL	5	1	17/01/86	Aramecina, HONDURAS	13°40'N 87°40'W	3474 km S18°W
2	0861-09233	U	F	07/09/78	Long Point, ON	42°30'N 80°10'W	
	LPBO	0	56	??/01/80	inexact location, EL SALVADOR	13°??'N 89°??'W	c. 3338 km S17°W
3	0701-37948	HY	F	26/09/70	Long Point, ON	42°30'N 80°00'W	
	LPBO	0	56	??/04/76	Cobán, GUATEMALA	15°20'N 90°10'W	3177 km S21°W
4	0621-08578	AHY	M	18/05/66	Long Point, ON	42°30'N 80°10'W	4 yr. 6 mo.
	LPBO	9	4	11/11/70	near Monteria, COLOMBIA	08°40'N 75°50'W	3790 km S8°E
5	0691-40033	AHY	F	18/05/67	Sarnia, ON	43°00'N 82°20'W	2 dy.
	WAL	7	89	20/05/67	Mitchell Bay, ON	42°20'N 82°20'W	74 km S0°W
6	0521-96015	U	F	10/05/63	Long Point, ON	42°30'N 80°00'W	1 dy.
	LPBO	0	89	11/05/63	Erie, PA	42°00'N 80°00'W	56 km S0°W
7	0701-31921	AHY	F	22/05/87	Winnipeg, MB	49°50'N 97°00'W	4 yr.
	KTS	5	0	19/05/71	near Sykeston, ND	47°20'N 99°20'W	327 km S33°W
8	0501-43354	AHY	F	09/05/65	near Toronto, ON	43°40'N 79°10'W	6 yr.
	LGL	7	89	09/05/71	Long Point, ON	42°30'N 80°10'W	153 km S32°W

Summary of banding statistics: Rose-breasted Grosbeak

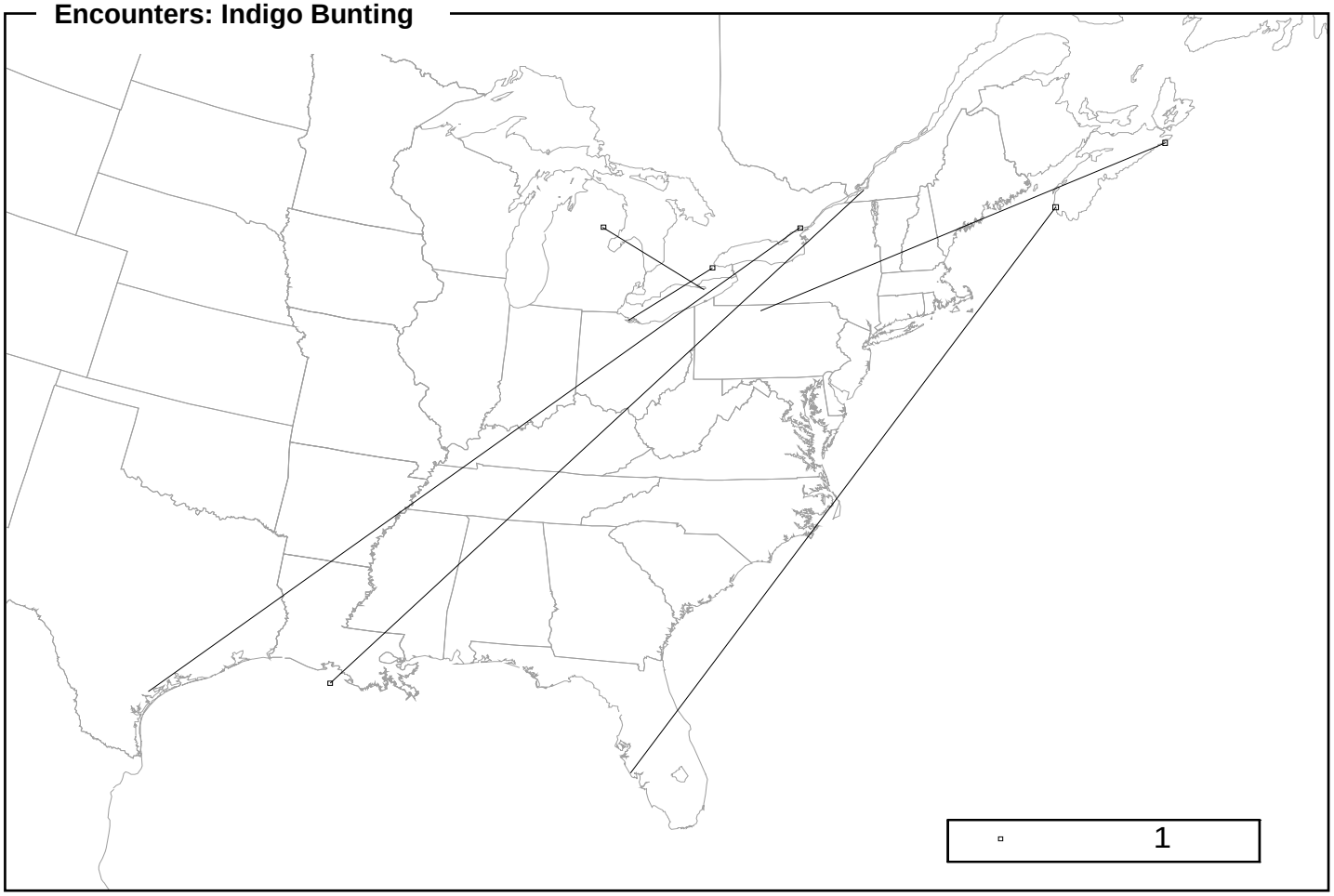
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*11 390*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	6	28	39
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	43	72	72
No. of Canadian-banded birds moving > 0 km	4	16	23
Mean movement > 0 km of Canadian-banded birds (km)	1781	565	1001
Maximum movement from all encounters (km)	3342	3790	3790
% recovered (encountered dead)	100	57	64
% direct recoveries	33	39	38
% encountered during banding operations	0	35	30

Banding effort: Rose-breasted Grosbeak



Top banders: LPBO, JBMi, PEPO, IPBO, NMC

Indigo Bunting (*Passerina cyanea*) 598.0



The Indigo Bunting breeds in the eastern and southwestern U.S.; in Canada it breeds in southern Manitoba, central and southern Ontario, and into southwestern Quebec. It winters mainly from central Mexico south through Central America and the Greater Antilles to Panama and northwestern Colombia.

All encounters with significant movement are listed below, including the one showing the greatest period between banding and encounter (record 1). The bird banded in Florida in January and subsequently encountered in Nova Scotia (record 2) was clearly part of the small population that winters in Florida and Texas. However, most buntings winter south of the U.S., and the other southern U.S. encounters (records 1 and 3) were probably of birds migrating from farther south. Encounters of presumed breeders from Ontario and Quebec show a strong southwest–northeast axis of movement (records 1, 3, and 4), similar to the direction of Maritimes birds (records 2 and 5). The bird in record 6 may possibly have migrated on different sides of Lake Huron in different years.

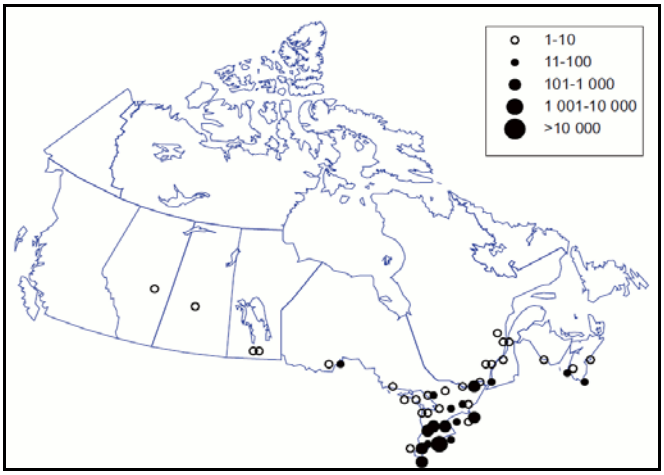
Encounter records: Indigo Bunting

1	0610-12717	AHY	M	28/05/61	Kahnawake, QC	45°20'N 73°40'W	4 yr. 11 mo.
	LAG	5	0	LT/04/66	Marsh Island, LA	29°10'N 91°50'W	2396 km S48°W
2	0990-18706	ASY	M	09/01/84	Nokomis, FL	27°00'N 82°20'W	2 yr. 4 mo.
	ABF	5	0	26/05/86	18 km south of Freeport, NS	44°00'N 66°10'W	2384 km N33°E
3	0840-42607	AHY	F	29/04/74	north of Taft, TX	28°00'N 97°20'W	2 mo.
	JHR	5	0	18/06/74	Battersea, ON	44°20'N 76°20'W	2606 km N40°E
4	0940-76203	AHY	F	23/05/81	Lacarne, OH	41°30'N 83°00'W	2 yr. 2 mo.
	MCS	5	0	06/07/83	Hamilton, ON	43°10'N 79°50'W	320 km N53°E
5	2101-51553	U	U	14/09/92	Coneville, PA	41°50'N 78°00'W	7 mo.
	DWH	3	0	28/04/93	Larrys River, NS	45°10'N 61°20'W	1393 km N69°E
6	0910-17392	SY	M	13/05/82	Long Point, ON	42°30'N 80°10'W	1 yr. 2 mo.
	LPBO	5	45	12/07/83	13 km west of Rose City, MI	44°20'N 84°10'W	382 km N56°W

Summary of banding statistics: Indigo Bunting

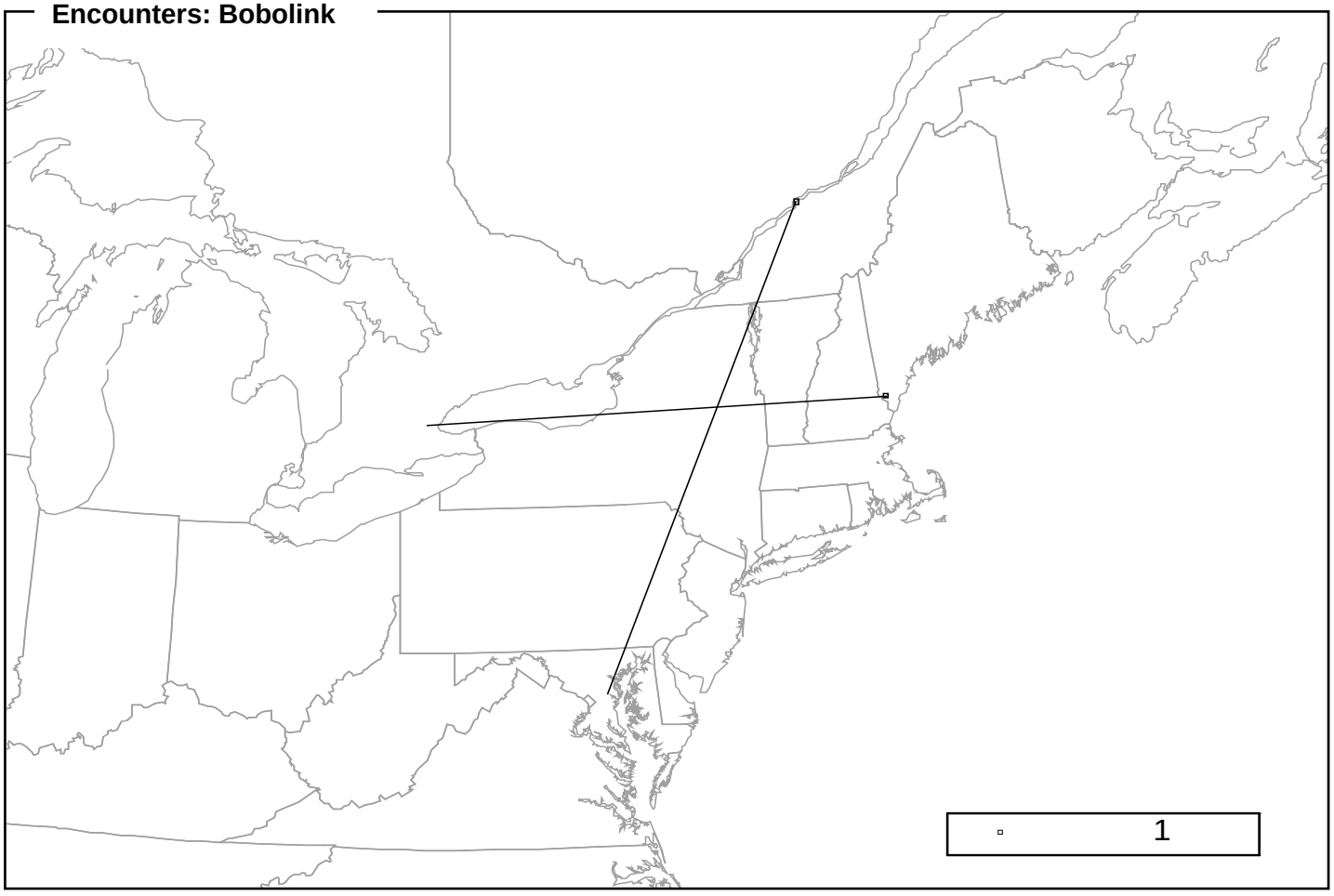
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*3244*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	0	8	9
No. encountered from foreign bandings	0	3	4
Maximum period from banding to encounter (mo.)	-	59	59
No. of Canadian-banded birds moving > 0 km	0	3	3
Mean movement > 0 km of Canadian-banded birds (km)	-	936	936
Maximum movement from all encounters (km)	-	2605	2605
% recovered (encountered dead)	-	75	77
% direct recoveries	-	12	11
% encountered during banding operations	-	25	22

Banding effort: Indigo Bunting



Top banders: LPBO, ADB, JBMi, FTL, MJW

Bobolink (*Dolichonyx oryzivorus*) 494.0



The Bobolink breeds in the northern half of the U.S.; in Canada it breeds across southern interior British Columbia, the southern Prairie Provinces, southwestern Ontario, southern Quebec, and the Maritimes. It winters in southern South America (mostly east of the Andes) from Peru, through eastern Bolivia and western Brazil, south through northern Argentina.

Four of the six encounters (e.g., records 1 and 2) were banded as hatch-year birds in August and encountered in or close to the breeding season in later years. These birds had moved 19 km, 92 km, 92 km, and 742 km, suggesting a broad range of juvenile dispersal distances. Record 3 presumably involves a bird banded on its first southward migration and encountered the following breeding season; it was the only Bobolink encountered that was not banded at Mountsberg, Ontario. Four of the six birds were caught by cats (e.g., records 1-3). The bird in record 4 was banded as an adult, so was about a year older when it died than the bird in record 2, the bird with the longest period between banding and encounter.

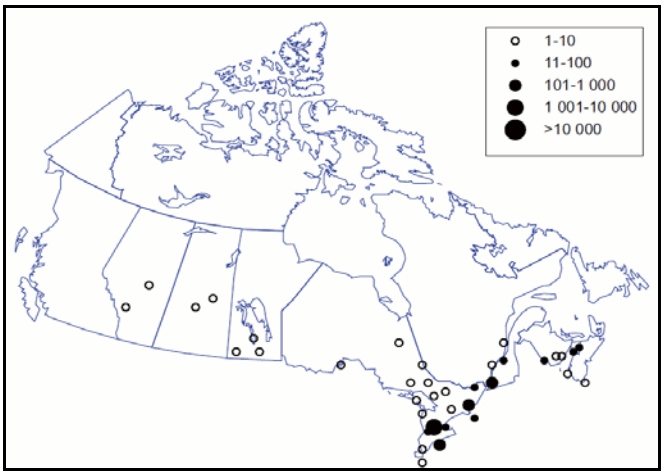
Encounter records: Bobolink

1	0961-58772	HY	F	08/08/87	Mountsberg, ON	43°20'N	80°00'W	10 mo.
	ADB	7	12	01/06/88	West Lebanon, ME	43°20'N	70°50'W	742 km N87°E
2	0961-57747	HY	M	18/08/86	Mountsberg, ON	43°20'N	80°00'W	3 yr.11 mo.
	ADB	3	12	29/07/90	Newmarket, ON	44°00'N	79°20'W	92 km N36°E
3	0731-17205	HY	M	14/09/67	Fort Meade, MD	39°00'N	76°40'W	2 yr. 10 mo.
	BM	5	12	29/07/70	Les Becquets, QC	46°30'N	72°10'W	912 km N22°E
4	0891-88226	AHY	F	18/08/84	Mountsberg, ON	43°20'N	80°00'W	3 yr.10 mo.
	ADB	5	14	02/06/88	Carlisle, ON	43°20'N	79°50'W	13 km N90°E

Summary of banding statistics: Bobolink

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*4907*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	5	1	6
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	47	46	47
No. of Canadian-banded birds moving > 0 km	4	1	5
Mean movement > 0 km of Canadian-banded birds (km)	235	13	191
Maximum movement from all encounters (km)	911	13	911
% recovered (encountered dead)	80	100	83
% direct recoveries	0	0	0
% encountered during banding operations	0	0	40

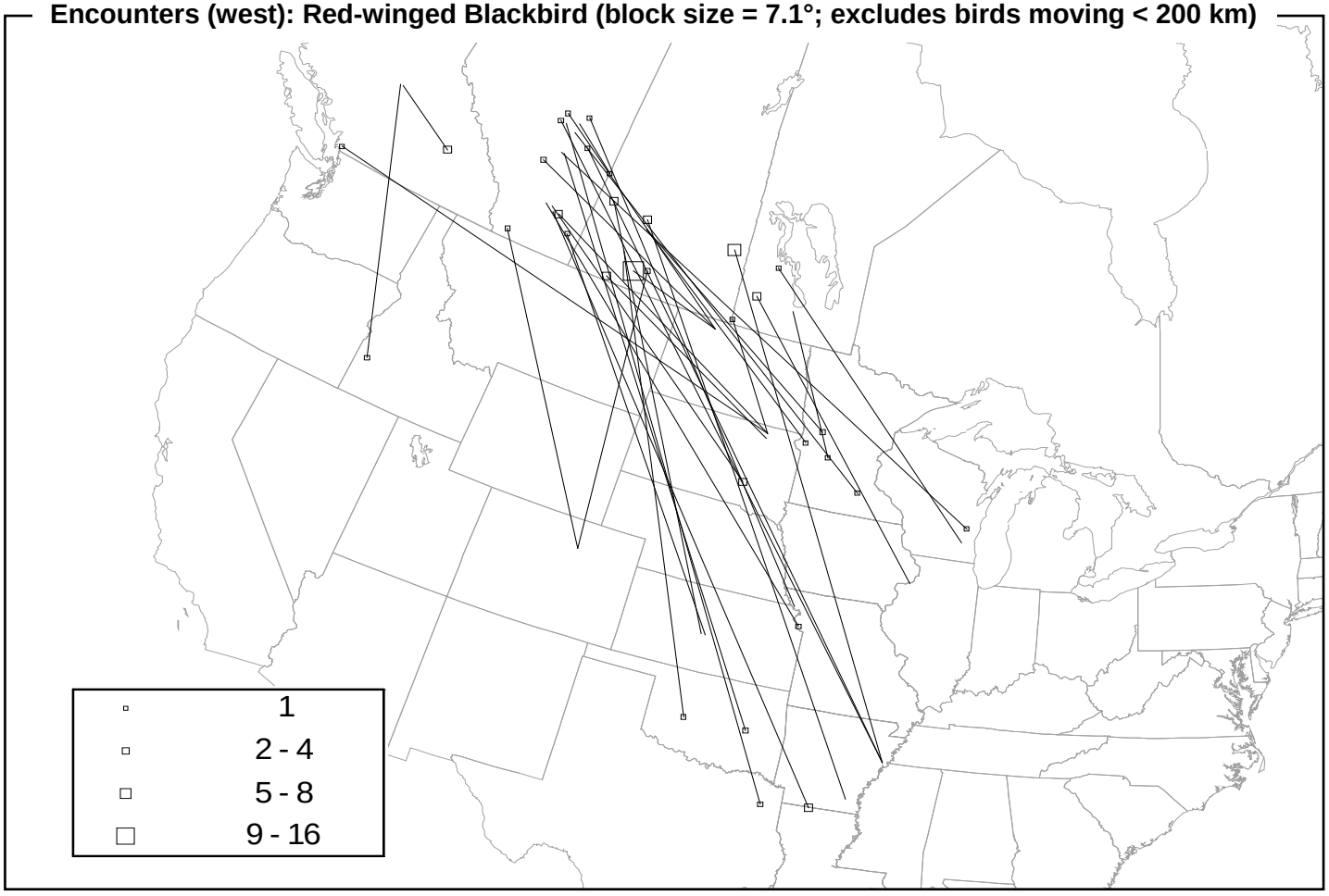
Banding effort: Bobolink



Top banders: ADB, PM, FTL, LPBO, DRL

Red-winged Blackbird (*Agelaius phoeniceus*) 498.0

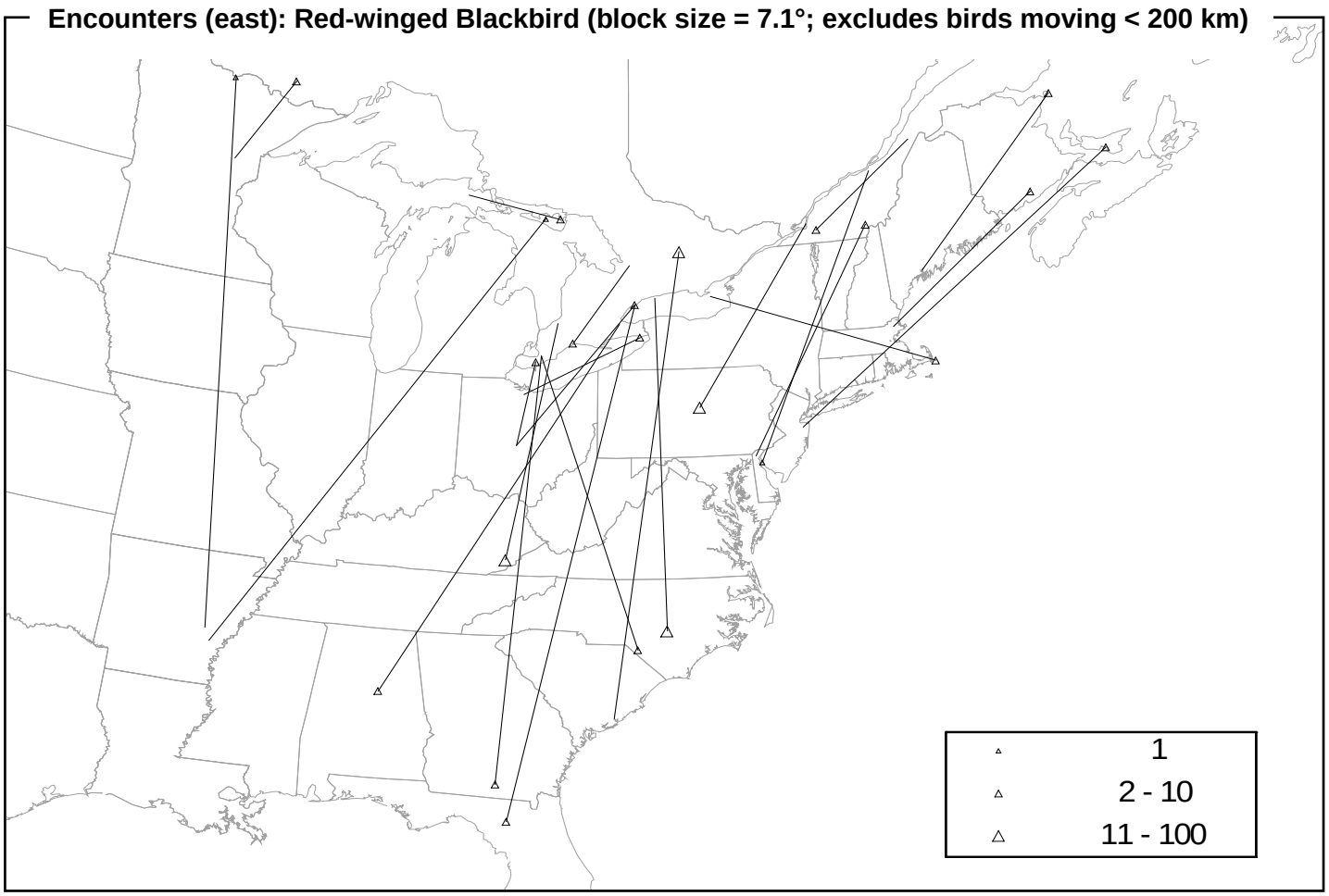
Encounters (west): Red-winged Blackbird (block size = 7.1°; excludes birds moving < 200 km)



The Red-winged Blackbird breeds virtually throughout the U.S. and forested regions of Canada, as well as in the Prairie Provinces. Northern populations winter in southern Ontario, through most of the U.S., and as far south as Mexico.

Dolbeer (1978, 1982) thoroughly analyzed encounters from throughout North America. He showed that Red-winged Blackbirds migrate farther in their first year than later, and that although birds from widely different breeding areas mingle in winter roosts, they return to the same breeding areas each summer. Most birds do not begin their fall migration until October or November, after completing their postnuptial moult. Most damage to crops (occurring in late summer) can therefore be attributed to birds breeding locally. This is not necessarily the case in the Prairies, though; Dolbeer showed that Prairie birds begin to move south in August and September, before the moult is complete. Nonetheless, banding results have shown that control measures taken at winter roosts will have little effect on reducing crop damage in any particular farming region.

Banding effort in Canada has been low relative to both the population density of the species in this country and the banding effort in the U.S. (Dolbeer 1978). Most bandings and encounters (80%) were about evenly divided between spring and summer (March-July). One-third of the encounters were of birds returning to the banding site, and 23% were of shot birds (e.g., records 1-7). Unlike raptors, for which shooting has declined since the 1960s as a source of band encounter, blackbirds continue to be shot, presumably for pest control.



The maps for this species summarize data by eliminating many individual records (see block size with encounter maps and introduction for explanation). No movements under 200 km are shown on the map (the normal cut-off is 100 km).

Mid-winter (December-February) encounters in southwestern British Columbia document a resident population there, while other areas of that province clearly have migratory populations (see western encounter map). Birds from the Prairie Provinces have been found wintering from Colorado and Kansas to Texas and Arkansas (records 2-5); but mapped encounters from migration seasons suggest that many of these birds may also winter farther east (e.g., record 6). Sixty-four percent of the birds encountered had been banded in Ontario; these birds wintered primarily in coastal and adjacent states from Maryland to Florida and Alabama (records 7-9). However, Quebec birds concentrated in winter in coastal states in the northern half of the U.S. Atlantic coast (e.g., record 10), where they overlapped with red-wings from the Maritimes.

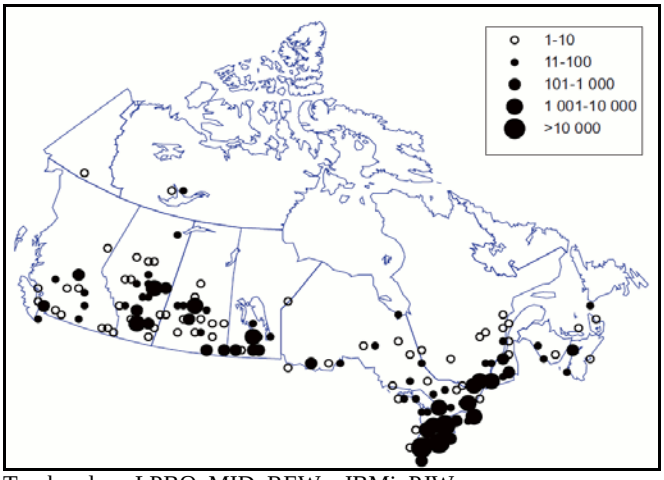
Encounter records: Red-winged Blackbird

1	0852-64408	AHY	M	09/02/87	Chincoteague, VA	37°50'N 75°20'W	3 mo.
	JHB	5	1	04/05/87	Seal Cove, NS	44°30'N 66°50'W	1028 km N41°E
2	0022-72887	U	U	17/06/31	near Brooks, AB	50°30'N 111°50'W	7 mo.
	JEH	0	1	03/01/32	Union County, AR	33°??'N 93°??'W	c. 2285 km S47°E
3	0032-52553	J	U	09/07/33	near Buffalo Lake, AB	52°30'N 112°50'W	1 yr. 6 mo.
	JEH	0	1	01/01/35	Pharoah, OK	35°20'N 96°00'W	2320 km S41°E
4	0372-25313	HY	U	29/06/37	near Edmonton, AB	53°30'N 113°20'W	1 yr. 6 mo.
	FHP	0	1	20/12/38	near Pittsburg, TX	32°50'N 94°50'W	2729 km S40°E
5	0392-40471	AHY	U	07/02/40	near Ladelle, AR	33°30'N 91°40'W	1 yr. 2 mo.
	CMO	0	1	27/04/41	Ardath, SK	51°30'N 107°10'W	2363 km N27°W
6	0024-66914	J		04/07/34	near Buffalo Lake, AB	52°30'N/112°50'W	2 yr. 2 mo.
	GP	0	1	04/09/36	Eden, WI	43°40'N 88°20'W	2056 km S71°E
7	0861-99750	AHY	F	13/02/79	Hermanville, MD	38°10'N 76°20'W	6 yr. 3 mo.
	EJW	5	13	31/05/85	Lansdowne, ON	44°20'N 76°00'W	687 km N2°E
8	0571-00002	AHY	F	04/05/69	Toronto, ON	43°40'N 79°20'W	2 yr. 8 mo.
	CHR	5	1	02/01/72	O'Brien, FL	30°00'N 82°50'W	1553 km S13°W
9	0621-05973	AHY	F	08/07/66	Mitchell Bay, ON	42°20'N 82°20'W	6 mo.
	LPBO	5	3	22/01/67	Slocomb, AL	31°00'N 85°30'W	1293 km S14°W
10	0812-92965	SY	M	05/02/81	Beach Haven, NJ	39°30'N 74°10'W	4 yr. 7 mo.
	RWF	5	0	99/09/85	Greenfield Park, QC	45°20'N 73°20'W	653 km N6°E
11	0832-42713	ASY	M	07/05/79	Mountsberg, ON	43°20'N 80°00'W	11 yr. 11 mo.
	AS	5	0	04/04/91	Mountsberg, ON	43°20'N 80°00'W	0 km

Summary of banding statistics: Red-winged Blackbird

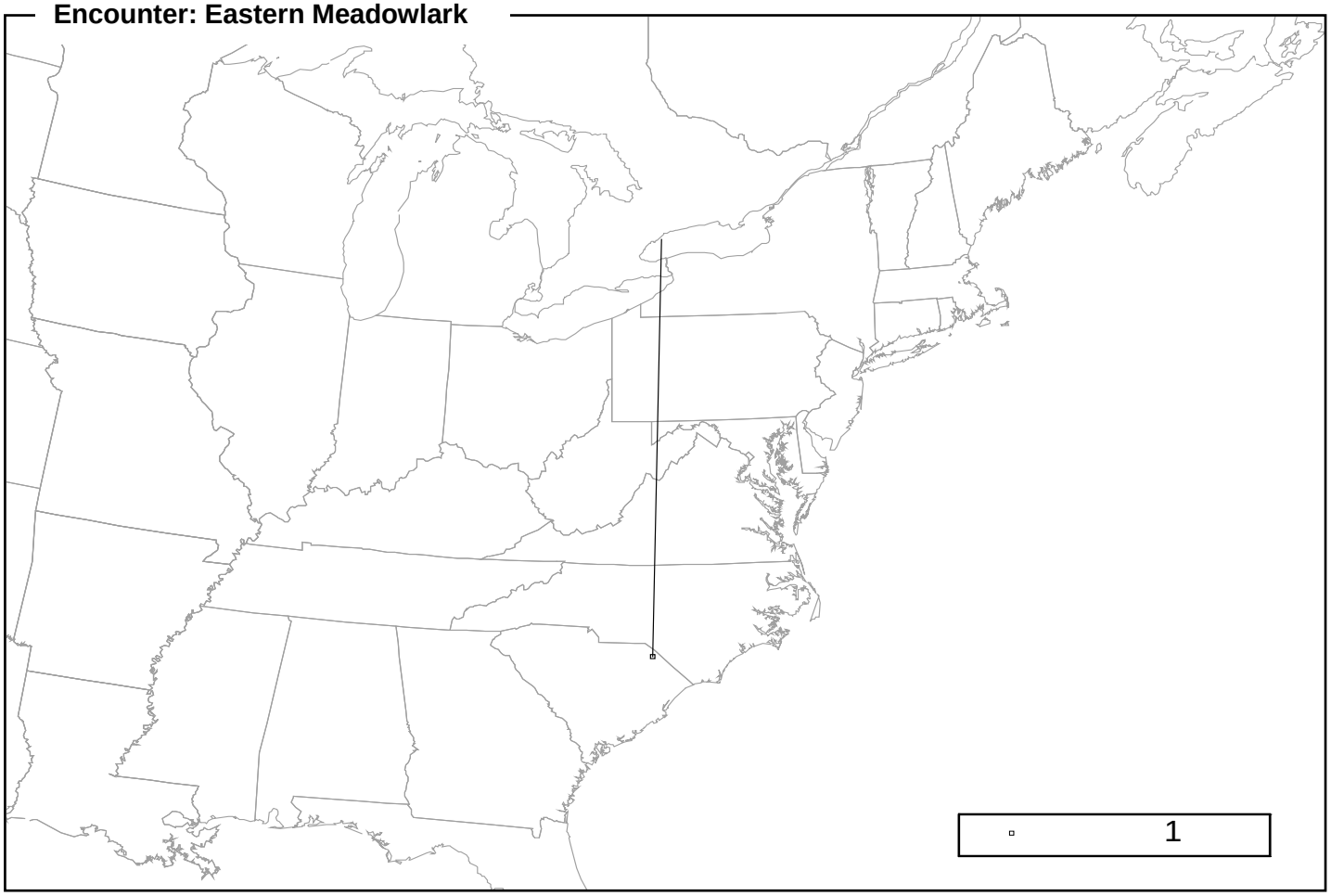
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*78 481*
No. encountered per 1000 banded (1955-1995)			*9*
Total no. encountered (1921-1995)	343	649	1053
No. encountered from foreign bandings	60	69	149
Maximum period from banding to encounter (mo.)	110	143	143
No. of Canadian-banded birds moving > 0 km	155	202	375
Mean movement > 0 km of Canadian-banded birds (km)	344	274	310
Maximum movement from all encounters (km)	2729	2511	2741
% recovered (encountered dead)	65	55	59
% direct recoveries	23	20	21
% encountered during banding operations	33	42	38

Banding effort: Red-winged Blackbird



Top banders: LPBO, MID, REWa, JBMi, PJW

Eastern Meadowlark (*Sturnella magna*) 501.0



The Eastern Meadowlark breeds in the eastern and southwestern U.S., as well as in Canada from southern Ontario east to New Brunswick. It winters from extreme southern Ontario south to Mexico.

The only encounter of a bird that moved is shown on the map (record 1); it was wintering in South Carolina. The other seven birds were encountered at the site of banding (e.g., record 2).

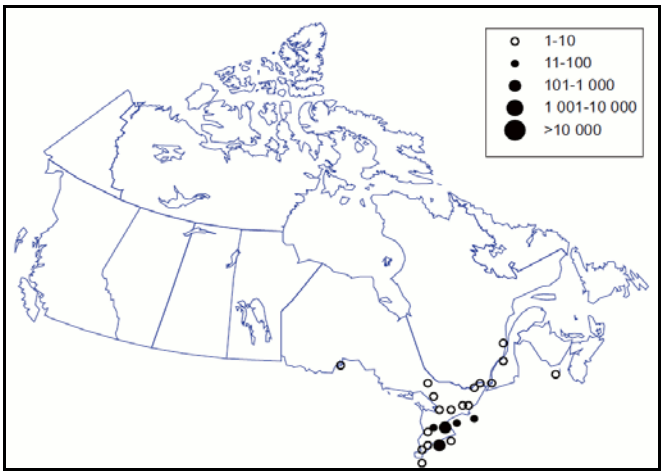
Encounter records: Eastern Meadowlark

1	0523-67504	AHY	M	27/04/58	Agincourt, ON	43°40'N	79°10'W	8 mo.
	RBr	0	1	12/12/58	Clio, SC	34°30'N	79°30'W	1021 km S2°W
2	0523-67503	AHY	M	27/04/58	Agincourt, ON	43°40'N	79°10'W	1 yr. 3 mo.
	RBr	0	0	22/07/59	Agincourt, ON	43°40'N	79°10'W	0 km

Summary of banding statistics: Eastern Meadowlark

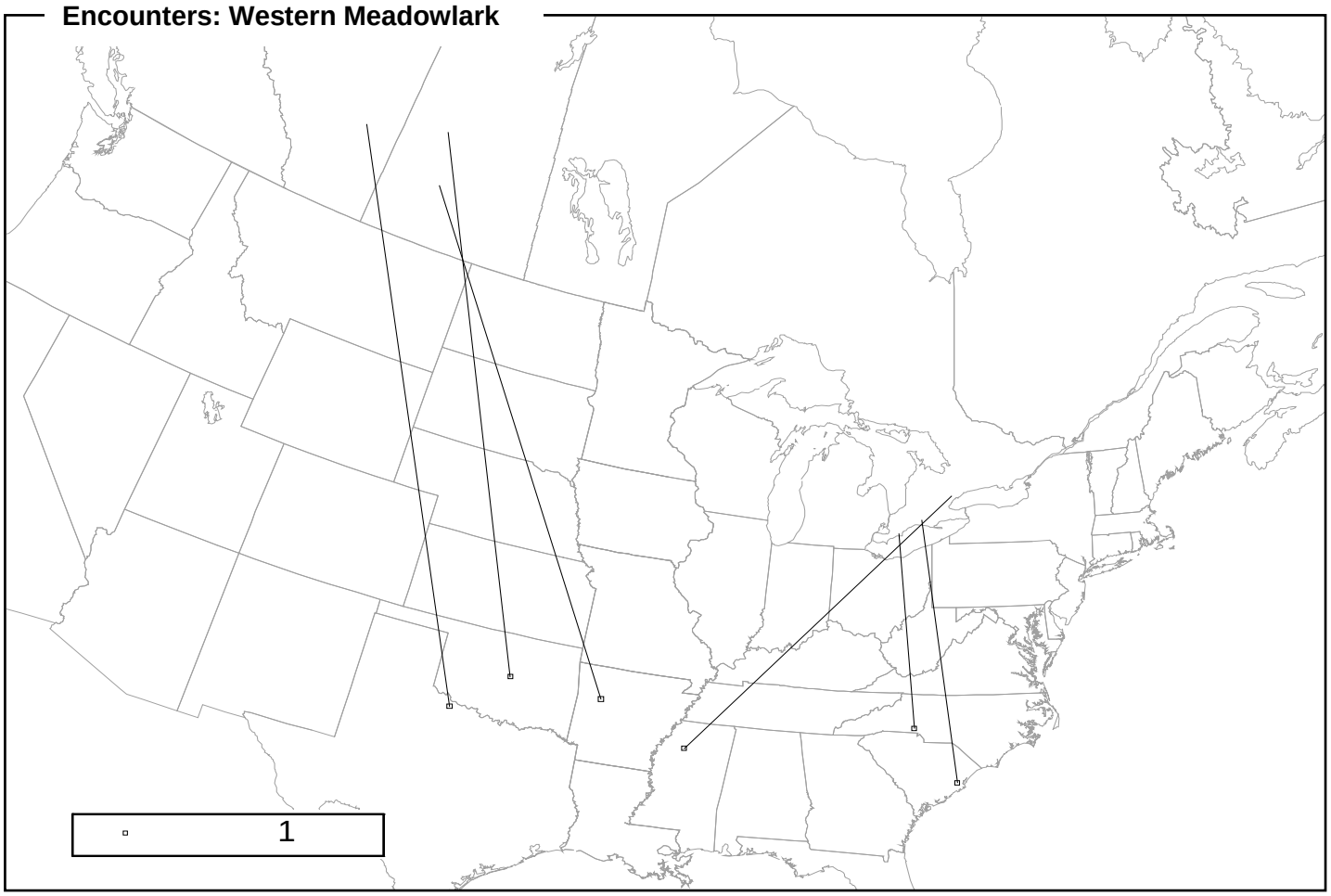
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*608*
No. encountered per 1000 banded (1955-1995)			*7*
Total no. encountered (1921-1995)	4	3	8
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	-	15	15
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	1020	1020
Maximum movement from all encounters (km)	0	1020	1020
% recovered (encountered dead)	75	100	87
% direct recoveries	100	33	62
% encountered during banding operations	0	0	0

Banding effort: Eastern Meadowlark



Top banders: RWK, LPBO, JBF, PEPO, ADB, UT

Western Meadowlark (*Sturnella neglecta*) 501.1



The Western Meadowlark breeds in western and central states of the U.S., as well as from central and southern British Columbia to southern Manitoba, with a disjunct population in western Ontario; it also breeds rarely in local areas of southern Ontario and southwestern Quebec. It winters from southern British Columbia and the central U.S. states south to central Mexico and the Gulf Coast, as far east as Tennessee and possibly farther (Lanyon 1994).

Birds from the Prairie Provinces move southeast in fall (records 1–3), with at least some of them wintering in the U.S. rather than Mexico (e.g., record 1).

The encountered birds from Ontario (records 4–6) were all banded as part of a special study of breeding birds, at a season when this species is easily separated from Eastern Meadowlarks by song. Two of them (records 4 and 5) are especially notable because they did not go to the usual wintering range (as did the bird in record 3), but rather to an area used by Eastern Meadowlarks. Lanyon (1994) noted that the eastern extent of the wintering area for Western Meadowlarks was difficult to determine, because the two species are very hard to tell apart in winter. These band encounters indicate that there may be a small and hitherto unsuspected wintering population on the southern Atlantic seaboard.

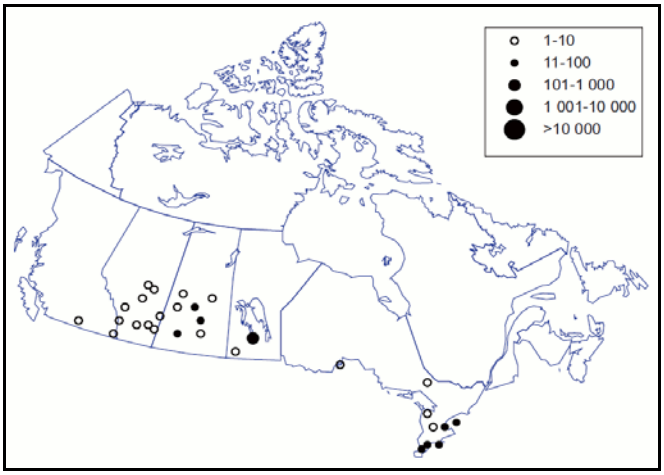
Encounter records: Western Meadowlark

1	0363-19833	J	U	08/06/38	Rabbit Lake, SK	53°00'N 107°40'W	8 mo.
	HM	0	1	21/02/39	Arcadia, OK	35°30'N 97°10'W	2115 km S27°E
2	0383-60759	J	U	13/07/39	Macrorie, SK	51°10'N 107°00'W	3 mo.
	FJHF	0	1	23/10/39	Coal Hill, AR	35°20'N 93°30'W	2067 km S37°E
3	0393-02446	J	U	16/07/40	Castor, AB	52°10'N 111°50'W	2 yr. 1 mo.
	MM	0	0	19/08/47	near Vernon, TX	34°00'N 99°10'W	2261 km S32°E
4	0603-35319	AHY	F	29/06/59	Blenheim, ON	42°20'N 82°00'W	9 mo.
	JBF	0	0	16/03/60	Lincolnton, NC	35°20'N 81°10'W	783 km S6°E
5	0603-35383	AHY	M	29/06/60	Nilestown, ON	42°50'N 81°00'W	2 yr. 7 mo.
	JBF	0	1	11/01/63	Andrews, SC	33°20'N 79°30'W	1066 km S8°E
6	0543-05755	HY	U	09/06/59	Sandhill, ON	43°40'N 79°40'W	
	JBF	0	0	??/12/61	Charleston, MS	34°00'N 90°00'W	1398 km S43°W

Summary of banding statistics: Western Meadowlark

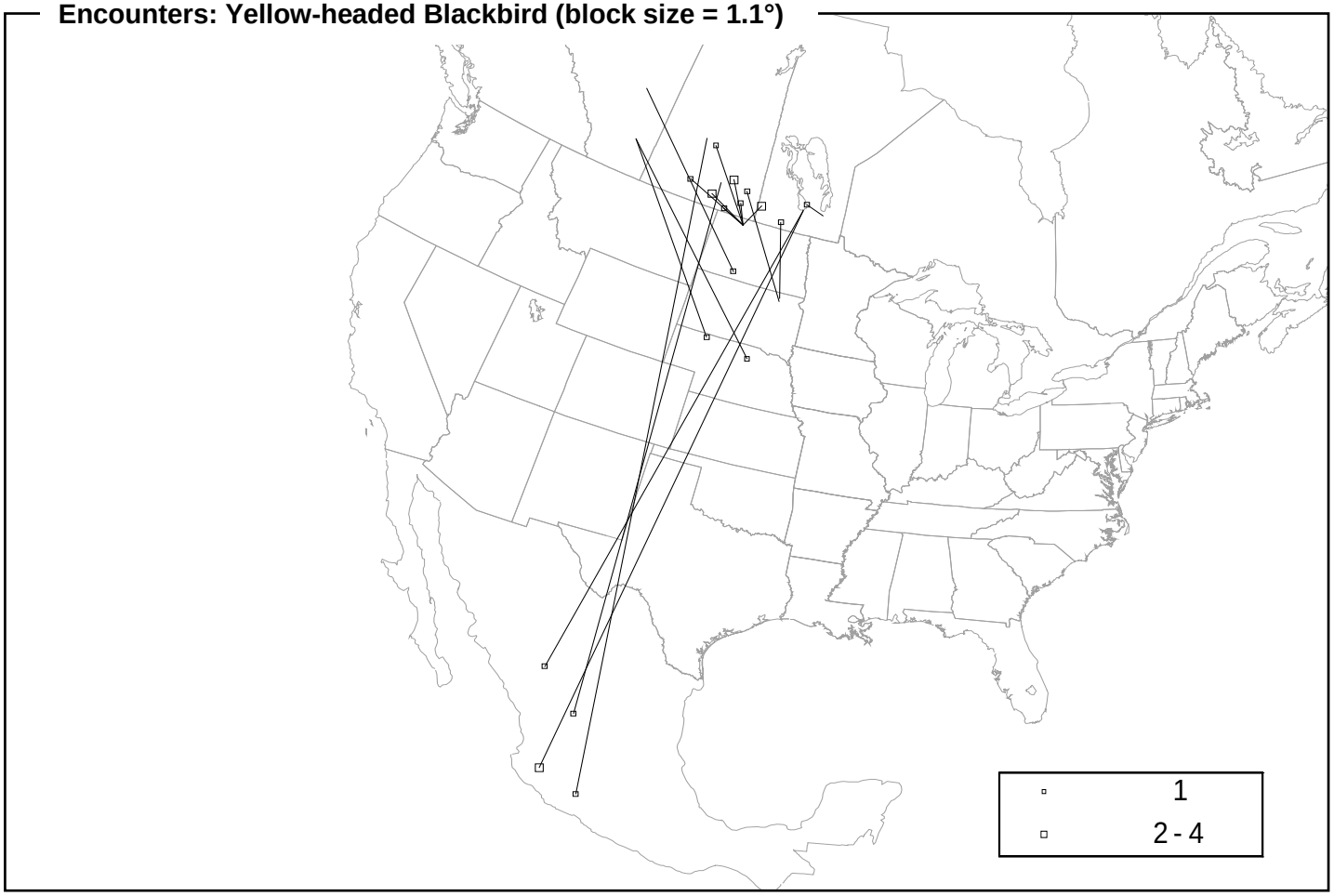
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*443*
No. encountered per 1000 banded (1955-1995)			*11*
Total no. encountered (1921-1995)	8	4	12
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	31	31	31
No. of Canadian-banded birds moving > 0 km	5	2	7
Mean movement > 0 km of Canadian-banded birds (km)	1570	924	1385
Maximum movement from all encounters (km)	2261	1065	2261
% recovered (encountered dead)	87	75	83
% direct recoveries	50	50	50
% encountered during banding operations	0	25	8

Banding effort: Western Meadowlark



Top banders: UT, JBF, WM, ETJ, ARS, MRL

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*) 497.0



The Yellow-headed Blackbird breeds from central-interior British Columbia east to the extreme western and southern parts of Ontario, as well as in the western and north-central U.S. It winters from the southwestern U.S. east to southern Texas and south to south-central Mexico.

Ten encounters involved birds banded in an intensive study in North Dakota (e.g., record 1). This work documented the timing of migration and showed that blackbirds from the northern prairies winter in Mexico (Royall et al. 1971). The annual survival for adult males was estimated at just over 50% (Bray et al. 1979)

Three adult birds banded in Alberta were among the encounters. One (record 2) was found in Nebraska in January, far north of the normal wintering range, but possibly it had been dead for some time. The Alberta birds moved on the same northwest-southeast axis as the majority of birds that were encountered within the northern prairies (e.g., records 3 and 4). However, long-distance movements were more north-south, as shown by the five Canadian-banded birds encountered in Mexico (records 5-9; none of them with exact encounter coordinates). Three of these birds were shot (records 5-7) and one was snared (record 8). Another 11 Canadian-banded birds were encountered within about 100 km of their banding sites.

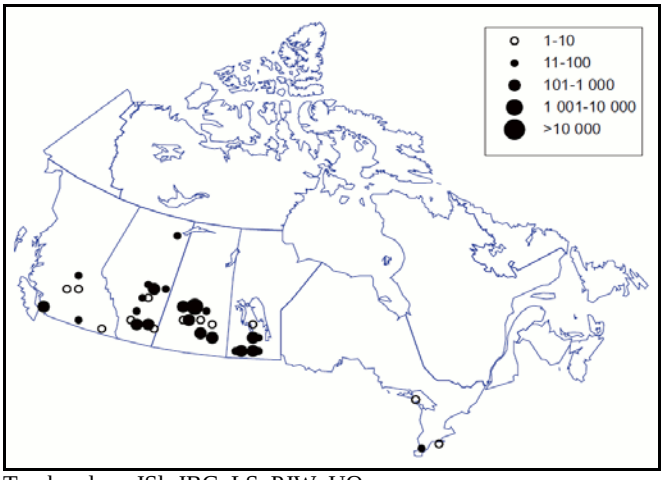
Encounter records: Yellow-headed Blackbird

1	0682-10255	HY	F	14/08/64	Kenmare, ND	48°40'N	102°00'W	6 yr.
	RTG	6	0	FT/08/70	Bromhead, SK	49°10'N	103°40'W	133 km N73°W
2	1013-61171	AHY	M	02/09/76	Wardlow, AB	50°50'N	111°30'W	4 mo.
	CBSC	5	0	20/01/77	18 km south of Newport, NE	42°20'N	99°10'W	1333 km S50°E
3	0382-05071	AHY	M	11/05/38	Columbia, SD	43°30'N	98°10'W	2 yr. 1 mo.
	SW	0	0	99/06/40	Broadview, SK	50°20'N	102°30'W	625 km N41°W
4	0652-88552	SY	M	18/05/64	Hecla Management Area., SD	45°40'N	98°10'W	3 yr. 2 mo.
	DWRC	3	12	01/07/67	Ninette, MB	49°20'N	99°30'W	419 km N19°W
5	0523-66143	AHY	U	06/05/62	Delta, MB	50°10'N	98°10'W	9 yr. 1 mo.
	DWRS	5	1	21/06/71	Jalisco State, MEXICO	20°00'N	104°00'W	c. 3398 km S11°W
6	0692-15409	L	U	30/06/69	near Saskatoon, SK	52°10'N	106°40'W	
	JBG	3	1	??/04/74	Michoacán State, MEXICO	19°00'N	102°00'W	c. 3714 km S8°E
7	0762-29501	L	U	19/06/73	near Regina, SK	50°20'N	104°30'W	2 mo.
	LS	5	1	99/08/73	Zacatecas State, MEXICO	23°00'N	103°00'W	c. 3045 km S3°E
8	0542-09235	HY	M	21/08/64	Delta, MB	50°10'N	98°10'W	
	JKL	6	4	??/05/65	Durango State, MEXICO	25°00'N	105°00'W	c. 2863 km S14°W
9	0522-52029	AHY	M	15/08/54	Delta, MB	50°10'N	98°10'W	7 mo.
	SHL	0	98	01/03/55	Jalisco State, MEXICO	20°00'N	104°00'W	c. 3398 km S11°W

Summary of banding statistics: Yellow-headed Blackbird

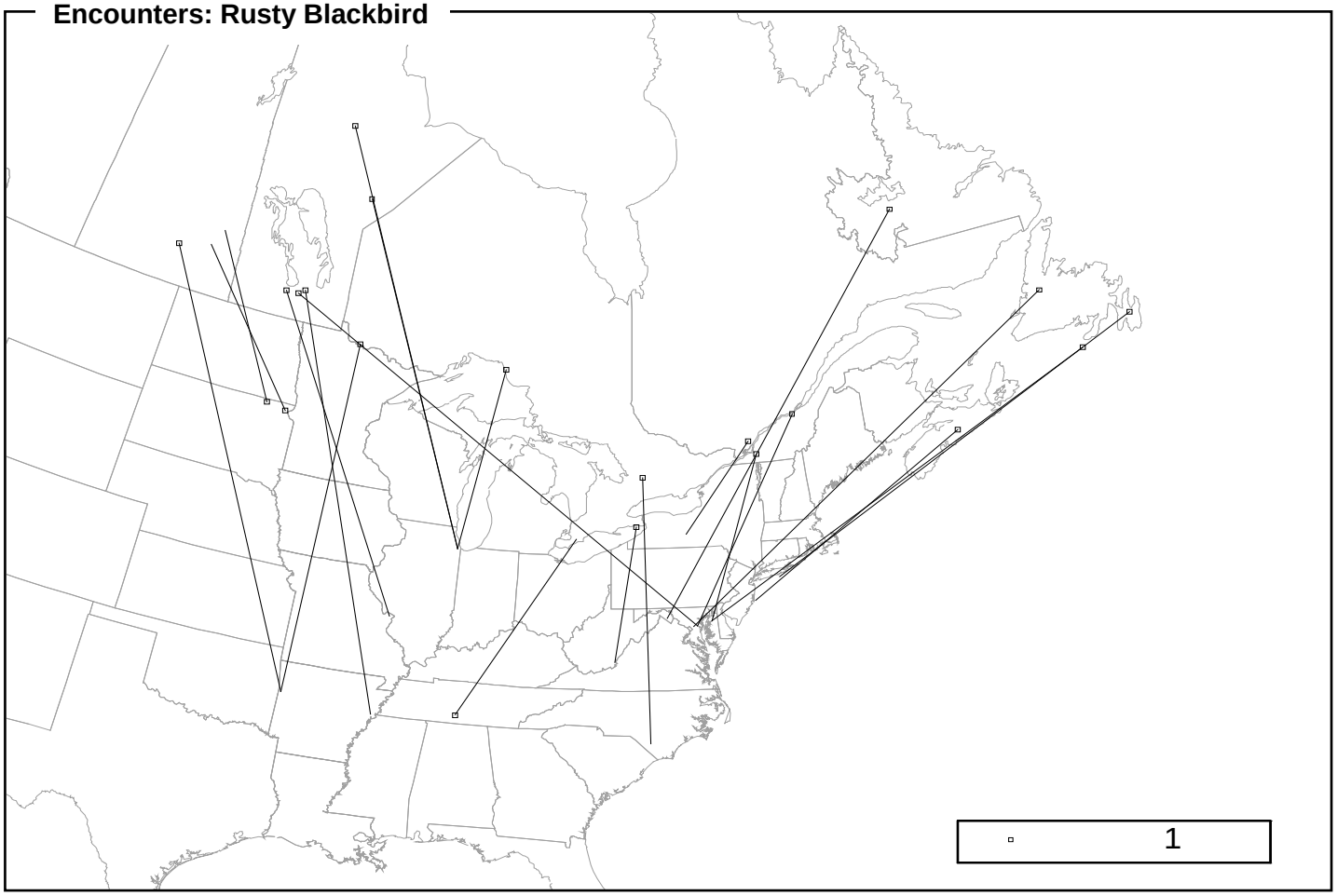
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*7956*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	16	14	31
No. encountered from foreign bandings	6	6	12
Maximum period from banding to encounter (mo.)	98	109	109
No. of Canadian-banded birds moving > 0 km	8	8	17
Mean movement > 0 km of Canadian-banded birds (km)	856	1326	1195
Maximum movement from all encounters (km)	3714	3397	3714
% recovered (encountered dead)	93	100	96
% direct recoveries	25	28	25
% encountered during banding operations	6	0	3

Banding effort: Yellow-headed Blackbird



Top banders: JSl, JBG, LS, PJW, UO

Rusty Blackbird (*Euphagus carolinus*) 509.0



The Rusty Blackbird breeds across Alaska and Canada south of the treeline, except in the extreme south. It winters mainly in the eastern U.S., south of New England and the northern tier of midwestern states, and as far west as eastern Nebraska and eastern Texas; it also breeds locally in southern Canada (Avery 1995).

Western breeders tend to move toward the western half of the wintering range on a southeast–northwest axis (e.g., record 1), although some birds go farther east (records 2 and 3) and probably mingle in winter with more eastern breeders. The latter move on a southwest–northeast axis (e.g., records 4–9). Most encounters were of birds banded in the U.S. in winter or on migration. There have been no encounters since 1975, perhaps reflecting a drop in banding parallel to a marked population decline.

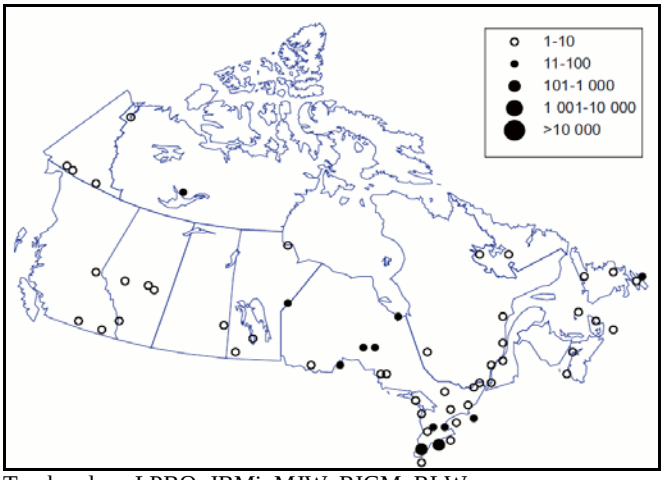
Encounter records: Rusty Blackbird

1	0023-96132	AHY	U	26/04/31	Fort Smith, AR	35°20'N	94°20'W	2 yr. 4 mo.
	SHW	0	1	17/08/33	Lumsden, SK	50°30'N	104°50'W	1889 km N23°W
2	0352-17154	AHY	M	07/04/36	Blue Island, IL	41°40'N	87°40'W	3 yr. 3 mo.
	FL	0	4	18/07/39	near Pelletier Lake, MB	56°30'N	97°00'W	1782 km N19°W
3	0542-53639	U	M	15/01/57	Bowie, MD	39°00'N	76°40'W	
	FCS	0	1	??/05/58	near Reaburn, MB	50°00'N	97°50'W	2067 km N47°W
4	0562-22128	AHY	M	01/11/59	Chatham, ON	42°20'N	82°10'W	3 mo.
	RLW	0	3	07/02/60	Lynnville, TN	35°20'N	87°00'W	884 km S30°W
5	0022-33838	HY	M	14/10/29	Bluff Point, NY	42°30'N	77°00'W	1 yr. 7 mo.
	VB	0	1	12/05/31	Sainte-Julienne, QC	45°50'N	73°40'W	457 km N35°E
6	0562-14149	U	U	13/10/63	Chestertown, MD	39°10'N	76°00'W	6 yr.
	GLG	6	3	01/10/69	Greenfield Park, QC	45°20'N	73°20'W	721 km N17°E
7	0562-14154	U	F	15/10/63	Chestertown, MD	39°10'N	76°00'W	3 yr. 7 mo.
	GLG	5	0	06/05/67	SAINT-PIERRE & MIQUELON	46°40'N	56°10'W	1813 km N56°E
8	0712-93768	U	U	19/10/69	Bunker Hill, WV	39°20'N	78°00'W	9 mo.
	CM	5	13	LT/07/70	Churchill Falls, Labrador, NL	53°30'N	64°10'W	1894 km N29°E
9	0572-24062	HY	M	31/10/59	Laurel, MD	39°00'N	76°50'W	
	DB	0	12	??/07/60	near Grand Lake, NL	49°10'N	57°20'W	1917 km N47°E

Summary of banding statistics: Rusty Blackbird

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*938*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	6	11	26
No. encountered from foreign bandings	4	7	18
Maximum period from banding to encounter (mo.)	19	39	72
No. of Canadian-banded birds moving > 0 km	2	3	5
Mean movement > 0 km of Canadian-banded birds (km)	372	538	472
Maximum movement from all encounters (km)	1917	1888	2067
% recovered (encountered dead)	100	100	88
% direct recoveries	16	45	34
% encountered during banding operations	0	0	7

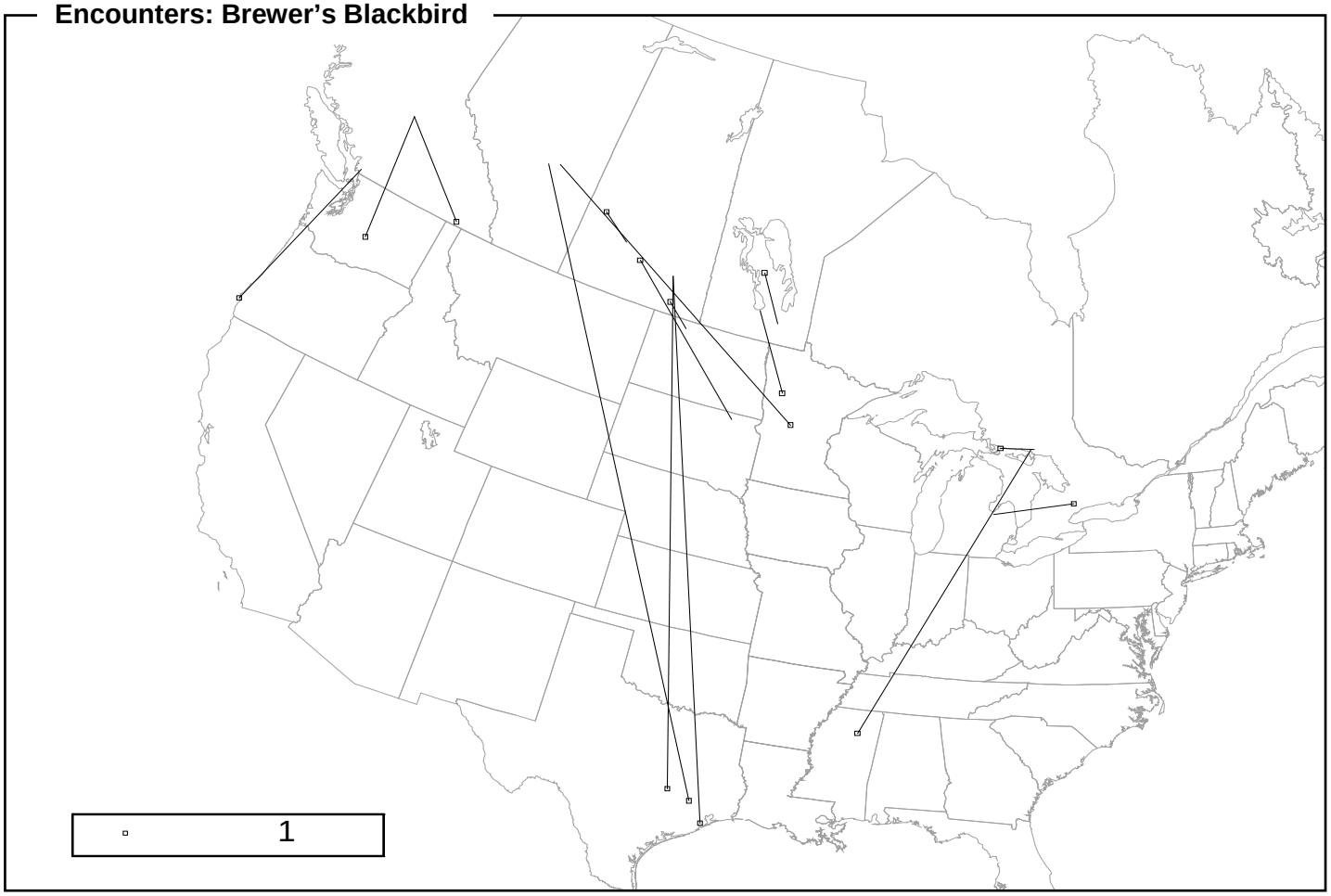
Banding effort: Rusty Blackbird



Top banders: LPBO, JBMi, MJW, RIGM, RLW

Brewer's Blackbird (*Euphagus cyanocephalus*) 510.0

Encounters: Brewer's Blackbird



Brewer's Blackbird breeds from southern and central British Columbia east to southwestern Ontario; it also breeds in the western U.S. It winters from southwestern British Columbia south to southern Mexico, as well as in the southern half of the eastern U.S.

There were three encounters of birds banded in British Columbia that showed significant movement. One bird was encountered in the same province during July, 500 km southeast of the banding site; the other two were encountered in December and January, in Washington (record 1) and Oregon, respectively. The longest-distance encounter involving British Columbia was 735 km. This contrasts with the much greater distances covered by Prairie Province birds migrating to their winter quarters (e.g., records 2–4).

Brewer's Blackbirds expanded their range eastward in the late 1940s, reaching into northern and central Ontario during the middle and late 1960s (Gordon 1987). Records 5 to 7 and possibly record 8 illustrate this expansion.

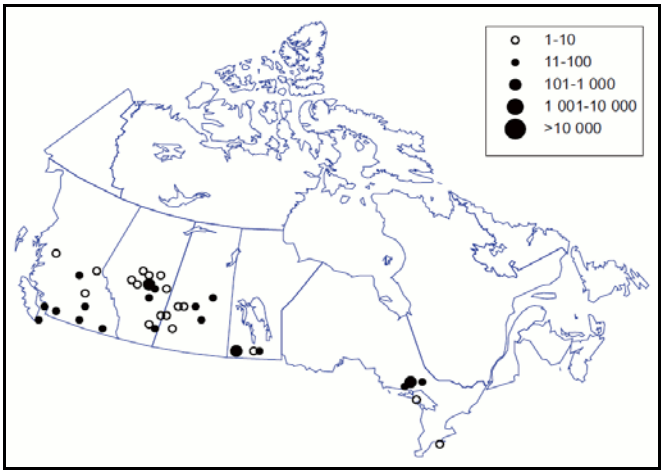
Encounter records: Brewer's Blackbird

1	0542-02769	L	U	04/06/66	Onward, BC	52°00'N 122°00'W	4 yr. 6 mo.
	JARo	5	1	99/12/70	Ellensburg, WA	47°00'N 120°30'W	567 km S12°E
2	0004-25039	HY	U	13/06/29	Indian Head, SK	50°30'N 103°40'W	3 yr. 5 mo.
	GLa	0	0	30/11/32	Rockdale, TX	30°30'N 96°50'W	2298 km S17°E
3	0373-08024	HY	U	14/06/37	Indian Head, SK	50°30'N 103°40'W	7 mo.
	GLa	0	1	01/01/38	Algoa, TX	29°20'N 95°10'W	2462 km S20°E
4	0482-02107	J	U	05/07/48	Wetaskiwin, AB	52°50'N 113°20'W	6 mo.
	FHP	0	0	12/01/49	south of Magnolia, TX	30°10'N 95°50'W	2897 km S36°E
5	0562-88544	L	U	13/06/71	Gough Lake, ON	46°10'N 81°50'W	3 yr. 7 mo.
	ROMo	5	12	04/01/75	Robbs, MS	34°00'N 89°10'W	1490 km S27°E
6	0582-87223	L	U	10/06/61	near Quanicassee, MI	43°30'N 83°40'W	
	WAL	0	0	??/06/62	Glenville, ON	44°00'N 79°30'W	340 km N79°E
7	0562-81442	L	U	13/06/70	McKerrow, ON	46°10'N 81°40'W	
	JR	4	45	99/SU/71	Nesterville, ON	46°10'N 83°30'W	141 km 0°W
8	0382-29815	J	U	26/06/38	Camrose, AB	53°00'N 112°40'W	2 yr. 4 mo.
	ALW	0	1	06/10/40	inexact location, MN	46°??'N 95°??'W	c.1316 km S70°E

Summary of banding statistics: Brewer's Blackbird

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*1182*
No. encountered per 1000 banded (1955-1995)			*14*
Total no. encountered (1921-1995)	17	22	44
No. encountered from foreign bandings	1	3	6
Maximum period from banding to encounter (mo.)	54	36	54
No. of Canadian-banded birds moving > 0 km	11	10	23
Mean movement > 0 km of Canadian-banded birds (km)	1079	77	588
Maximum movement from all encounters (km)	2897	375	2897
% recovered (encountered dead)	100	86	93
% direct recoveries	58	18	36
% encountered during banding operations	0	13	6

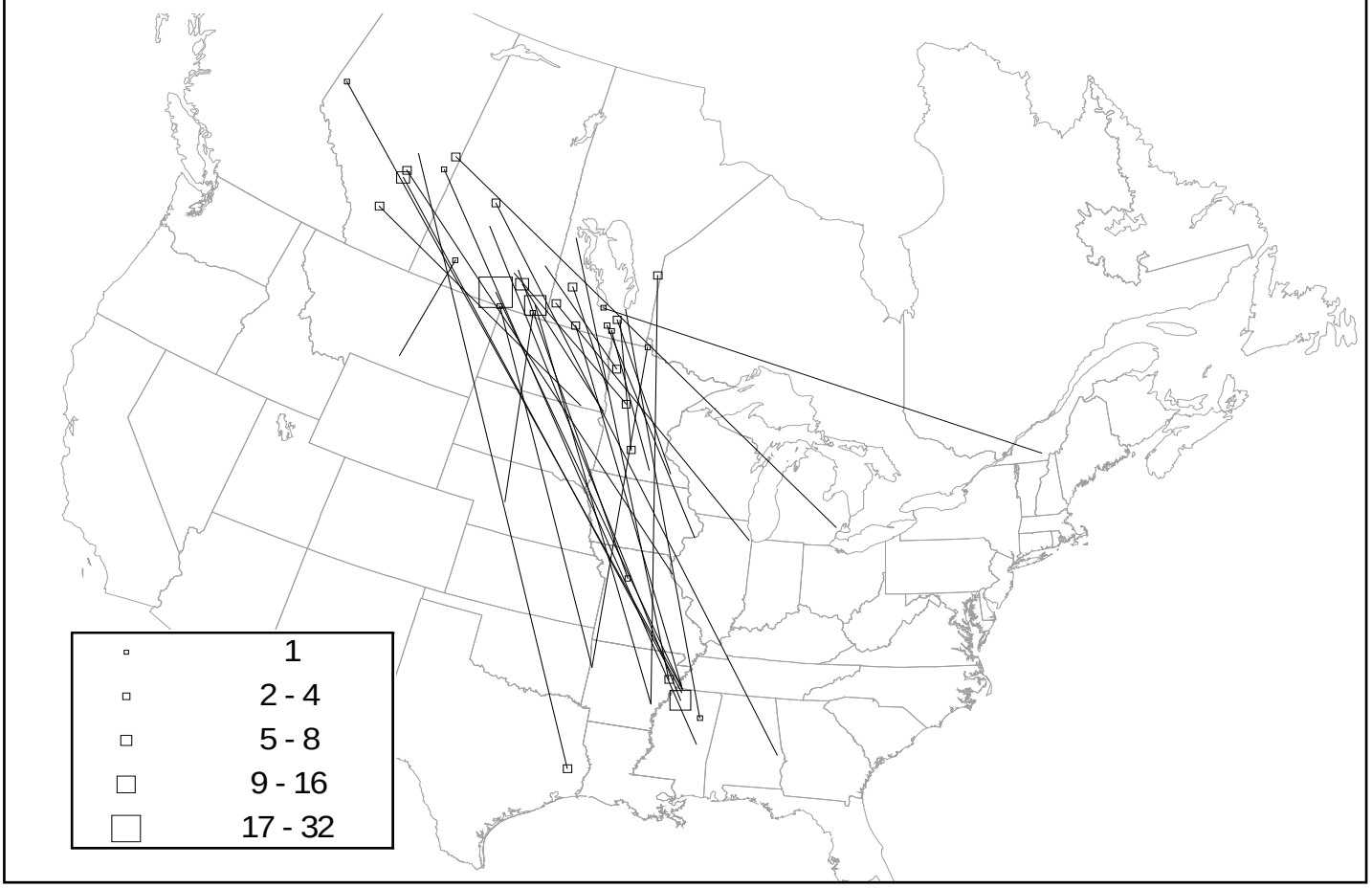
Banding effort: Brewer's Blackbird



Top banders: ROM, ETJ, DRH, RWC, JCF

Common Grackle (*Quiscalus quiscula*) 511.0

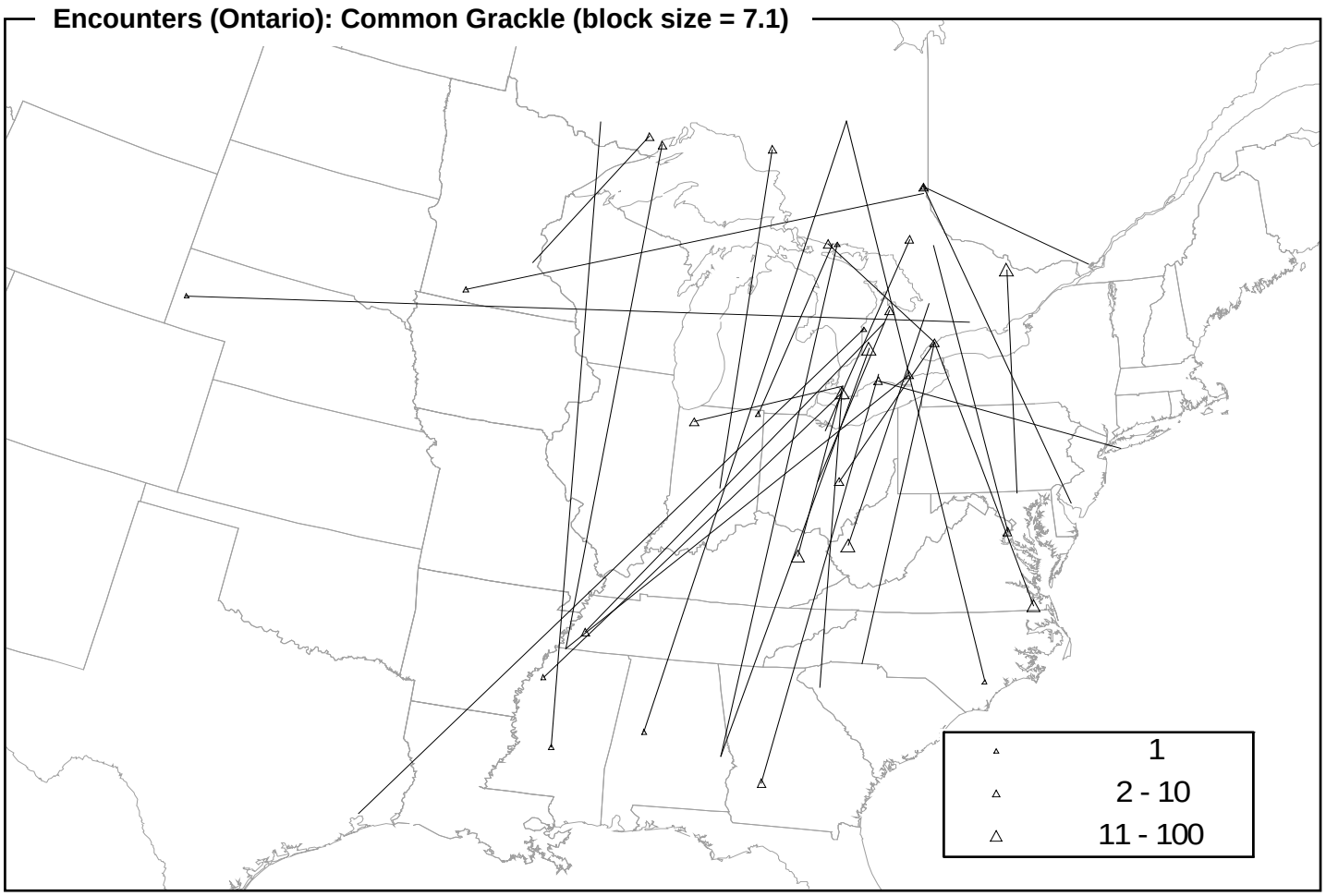
Encounters (west): Common Grackle (block size = 6.6°; excludes birds moving < 400 km)



The Common Grackle breeds through most of the eastern and central U.S., as well as in forested regions of Canada, except for British Columbia. It winters in the eastern and central U.S., north to southern Ontario and New England, and south to the Gulf Coast and southern Florida.

The western map shows a northwest-southeast axis of movement for migrants from the Prairie Provinces. About 40% of winter encounters (December-February) were in Gulf Coast states from Texas to Alabama (records 1-4), another 45% were in Arkansas and Tennessee (record 5), and a few were in Canada and Minnesota. The winter range of Prairie Province birds overlaps with a portion of the winter range of Ontario birds, which occupies a broad area from southern Ontario and the Great Lakes states, south to the Gulf Coast states (e.g., record 6, with only one encounter each in Texas and Florida, record 7), and east to the Atlantic coast south to Georgia. Over half the winter encounters of Ontario birds occurred in Gulf Coast states, but this figure is biased due to the heavy banding effort in Alabama in the mid-1960s. Quebec and Maritimes breeders migrate on a southwest-northeast axis, wintering mainly in coastal states from Maine to Virginia (records 8 and 9).

The pattern of Canadian encounters fits well with the analysis conducted by Dolbeer (1982), who also showed that more southerly nesting grackles have shorter migration distances than Canadian breeders. Females migrate an average of 100 km farther south than males, and hatch-year males migrate 100-300 km farther than adult males.



The record in north-central Quebec (see eastern map) shows a bird banded as a juvenile in May 1937 at a site well north of the acknowledged breeding range (see Peer and Bollinger 1997), so possibly represents an error. However, the bird encountered in northeastern Quebec (record 10) is within the known range. Record 11 shows another anomalous encounter; this bird was banded in August of its first year in Ontario and was recaptured in the breeding season six years later in Nebraska; it possibly represents a case of unusually distant juvenile dispersal.

Encounters (east): Common Grackle (block size = 5.1°; excludes birds moving < 400 km)

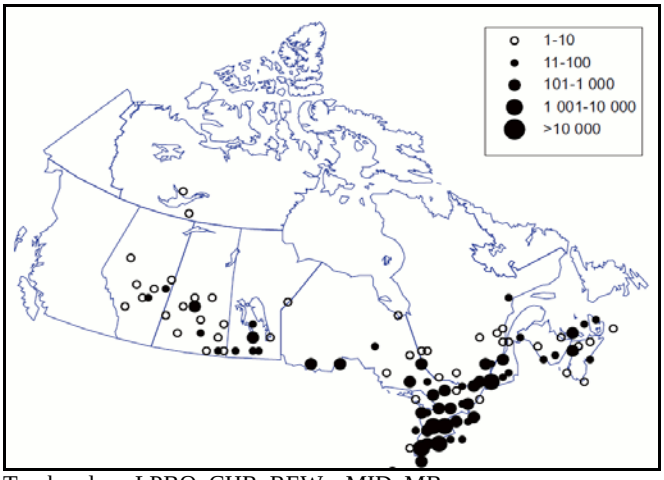
Encounter records: Common Grackle

1	0763-12742	U	U	01/02/64	near Hatchechabbee, AL	32°30'N	85°20'W	
	ACWRU	0	98	??/09/64	near Leask, SK	53°00'W	106°40'W	2848 km N30°W
2	0623-02861	HY	U	21/02/58	Philadelphia, MS	32°40'N	89°00'W	
	CPP	0	0	??/06/58	Melfort, SK	52°50'N	104°30'W	2565 km N24°W
3	0382-08382	J	U	24/06/38	Lamont, AB	53°40'N	112°40'W	7 mo.
	TER	0	1	24/01/39	Chester, TX	30°50'N	94°30'W	2931 km S37°E
4	0024-04610	AHY	F	27/04/30	11 km south of Lipton, SK	50°40'N	103°50'W	2 yr. 8 mo.
	JC	0	1	01/12/32	Lost Prairie Lake, TX	31°40'N	95°30'W	2224 km S21°E
5	1163-72254	AHY	F	21/01/75	Memphis, TN	35°00'N	90°00'W	1 yr. 4 mo.
	BBC	5	0	03/05/76	18 km south of Beaverlodge, AB	55°00'N	119°20'W	3164 km N36°W
6	1173-77636	AHY	M	01/05/76	Memphis, TN	35°00'N	90°00'W	15 yr.11 mo.
	BBC	7	89	22/04/92	Long Point, ON	42°30'N	80°20'W	1182 km N42°E
7	0623-22073	U	M	01/07/65	Long Point, ON	42°30'N	80°20'W	4 yr. 5 mo.
	LPBO	5	1	07/12/69	16 km east of Darlington, FL	30°50'N	85°50'W	1388 km S22°W
8	0852-64275	AHY	F	26/01/85	Chincoteague, VA	37°50'N	75°20'W	4 yr. 4 mo.
	JHB	5	0	05/05/89	Lac-Kénogami, QC	48°20'N	71°30'W	1209 km N14°E
9	0033-83876	AHY	M	22/12/44	Fort Meade, MD	39°00'N	76°40'W	5 mo.
	UPRR	0	1	05/05/45	Shemogue, NB	46°00'N	65°10'W	1222 km N47°E
10	0484-32893	HY	U	17/09/50	Île-Perrot, QC	45°20'N	73°50'W	1 yr. 7 mo.
	MB	0	98	ST/04/52	Saint-Augustin, QC	51°10'N	58°30'W	1305 km N55°E
11	0503-50612	HY	U	05/08/50	Peterborough, ON	44°10'N	78°10'W	5 yr. 9 mo.
	FS	0	89	21/05/56	Mitchell, NE	41°50'N	103°40'W	2084 km N88°W

Summary of banding statistics: Common Grackle

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*36 589*
No. encountered per 1000 banded (1955-1995)			*38*
Total no. encountered (1921-1995)	493	1607	2442
No. encountered from foreign bandings	48	218	418
Maximum period from banding to encounter (mo.)	123	191	191
No. of Canadian-banded birds moving > 0 km	237	564	892
Mean movement > 0 km of Canadian-banded birds (km)	247	271	275
Maximum movement from all encounters (km)	2930	3164	3164
% recovered (encountered dead)	82	77	80
% direct recoveries	27	23	25
% encountered during banding operations	16	20	17

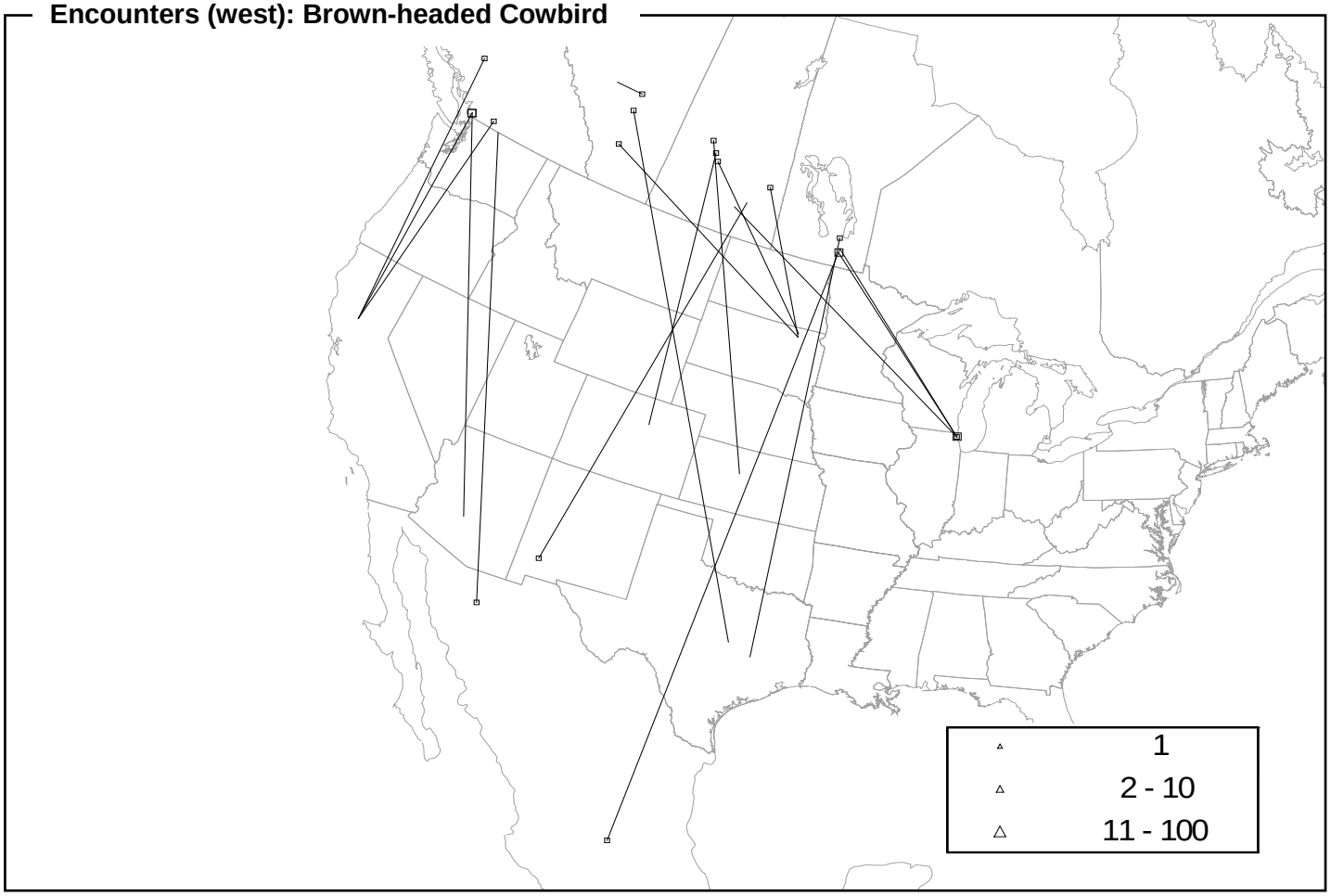
Banding effort: Common Grackle



Top banders: LPBO, CHR, REWa, MID, MB

Brown-headed Cowbird (*Molothrus ater*) 495.0

Encounters (west): Brown-headed Cowbird

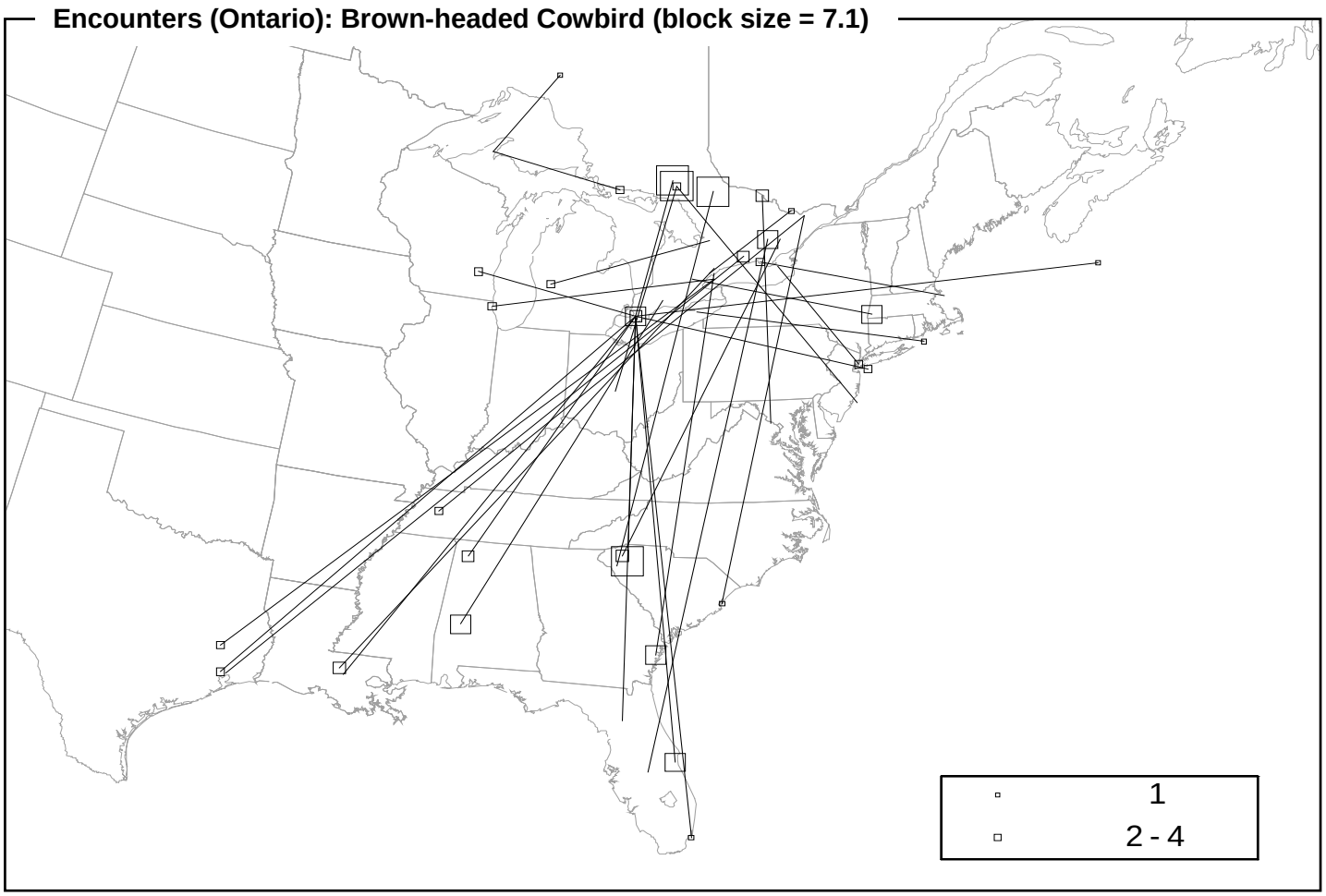


The Brown-headed Cowbird breeds throughout the U.S., except for Alaska; it breeds southward from the southwestern portion of the Northwest Territories, northern British Columbia, and northern Alberta, through central Saskatchewan, and east to southern Newfoundland. It winters in the southwestern U.S. and most of the east, as far north as southern Ontario, New Brunswick, and Nova Scotia.

Note that the maps omit many individual encounters (see block size with encounter maps and section 4.2 for explanation). The maps nonetheless illustrate typical movement patterns.

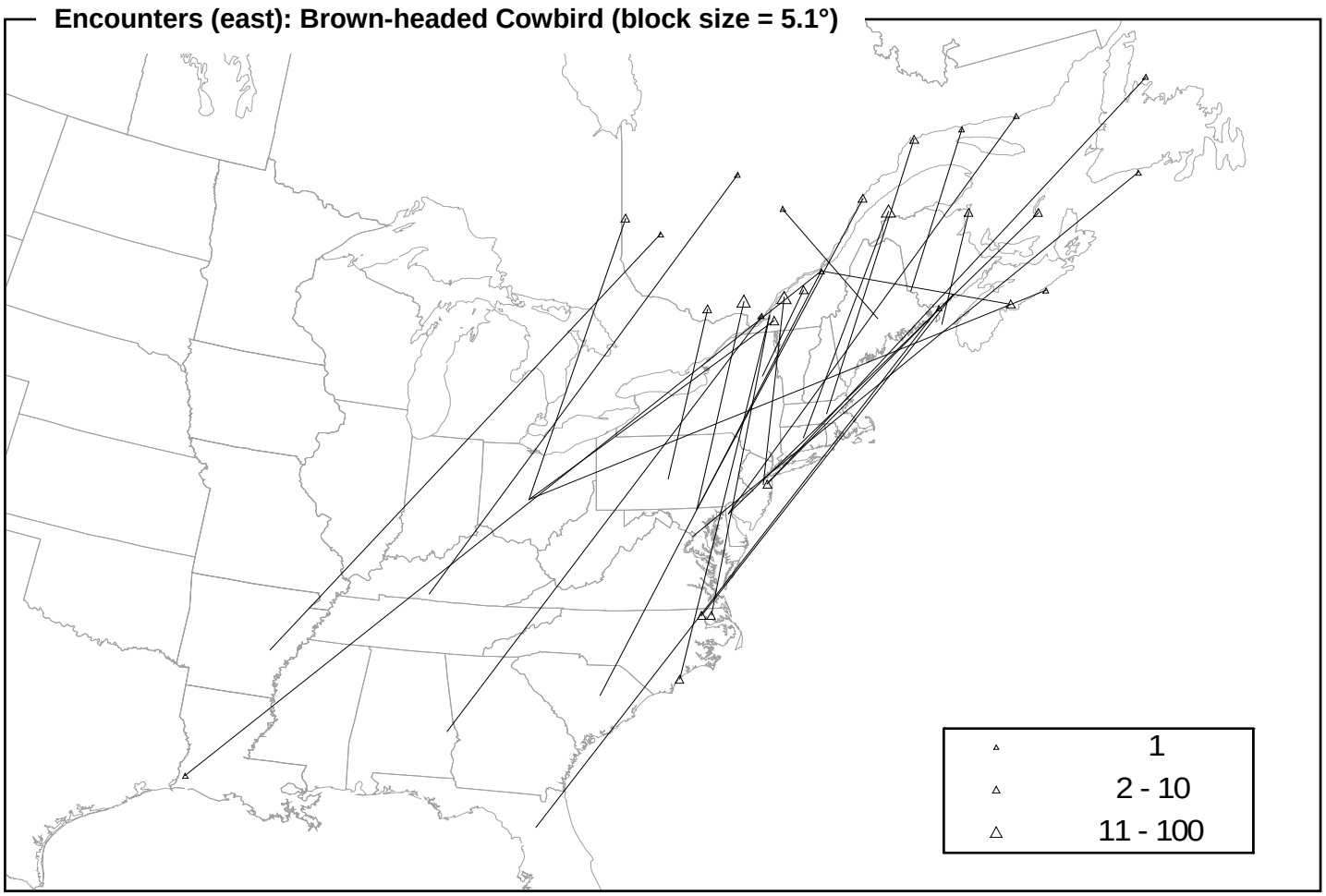
Over half the encounters occurred in April or May, although banding was distributed fairly evenly through the year. Of the 1187 birds encountered, about 28% were returns to the banding site, 24% were found dead, and 20% had been shot. Record 1 below shows a case of reverse migration, and record 2 shows a bird that moved unusually far east. This bird was captured by hand at sea, presumably on a boat, approximately due south of Halifax, Nova Scotia, and due east of Boston, Massachusetts. Details sent by the finder support the validity of this record (M. Gustafson pers. com.).

The very few data from British Columbia show movement to and from wintering (December-February) areas in California, Arizona (record 3), and Mexico (record 4). There has been relatively little banding effort in the Prairie Provinces; what has taken place has yielded mainly local encounters and no mid-winter records. However, several long-distance encounters link this region with New Mexico (record 5; this bird was found in July but possibly had long been dead), Texas (record 6), and Mexico (record 7). The northwest-southeast axis of movement in other encounters (see western map) suggest that cowbirds from the Prairie Provinces may also winter in the southeastern U.S.



More than half the Canadian encounters were banded or encountered in Ontario. Cowbirds from that province were found in December through February in Ontario (17%), states just south of the Great Lakes (31%), the Gulf Coast states (32%, e.g., records 8 and 9), and states in between (record 10). Only a small number were found in New England coastal states. Although these proportions are biased by a concentration of band encounters in Ohio, resulting from intensive banding activity there (Burtt and Giltz 1977), the delineation of wintering range is clear. By contrast, few Quebec cowbirds winter in the Gulf states (but see records 11 and 12), and nearly 70% of those encountered in December-February were in east coast states from New Jersey north. There, they overlapped with Maritimes birds, which were found mainly in the same area or in Nova Scotia (although they sometimes move farther, e.g., record 13).

The encounter patterns described above agree well with detailed analyses (Burtt and Giltz 1977, Dolbeer 1982); however, the results from Burtt and Giltz (1977) showed that birds banded in the Great Plains headed primarily north-northeast in spring (like the birds in records 5 and 6, but unlike those in record 7 and others shown on the western map). There is no differential migration between the sexes or age groups, and no fidelity to a particular wintering site between years (Dolbeer 1982).


Encounters (east): Brown-headed Cowbird (block size = 5.1°)
1
2 - 10
11 - 100

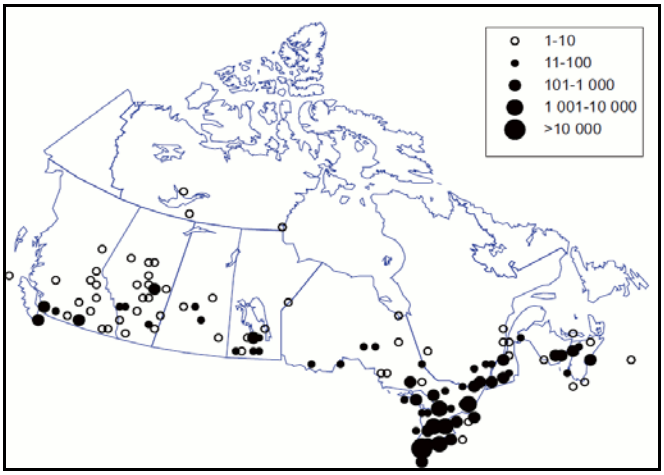
Encounter records: Brown-headed Cowbird

1	0372-29717	U	M	23/05/38	near St. Vital, MB	49°50'N	97°00'W	1 mo.
	WIL	0	89	18/06/38	Gurnee, IL	42°20'N	87°50'W	1093 km S44°E
2	0691-77820	AHY	M	24/07/66	Balmoral Marsh, ON	42°20'N	82°20'W	10 mo.
	MID	7	28	02/05/67	AT SEA, south of NS	42°40'N	64°30'W	1461 km N83°E
3	0662-58422	AHY	M	25/02/66	Laveen, AZ	33°20'N	112°10'W	3 yr. 4 mo.
	DWRC	7	3	03/06/69	Annacis, BC	49°10'N	122°50'W	1971 km N23°W
4	0521-81886	AHY	F	10/07/62	Chawanten Mountain, BC	49°00'N	120°40'W	6 mo.
	DDD	0	0	26/01/63	Sonora State, MEXICO	30°00'N	110°00'W	c. 2300 km S27°E
5	0004-77642	AHY	M	13/06/29	Muscow, SK	50°40'N	103°50'W	1 mo.
	RHC	0	0	02/07/29	near San Lorenzo, NM	32°40'N	107°50'W	2030 km S11°W
6	8071-27349	ASY	M	23/04/93	18 km north of Killeen, TX	31°10'N	97°40'W	1 mo.
	DMH	5	0	21/05/93	Ponoka, AB	52°40'N	113°30'W	2715 km N24°W
7	0032-53310	AHY	M	22/05/33	St. Vital, MB	49°50'N	97°00'W	6 mo.
	JPK	0	1	ST/11/33	Guanajuato State, MEXICO	21°00'N	101°00'W	c. 3229 km S8°W
8	0031-98851	AHY	M	29/02/32	Barbers Hill, TX	29°50'N	94°50'W	1 yr. 4 mo.
	ARSh	0	0	18/06/33	Keene, ON	44°10'N	78°10'W	2169 km N38°E
9	0022-18453	U	M	09/02/30	Lake Wales, FL	27°50'N	81°30'W	2 mo.
	HH	0	4	13/04/30	Cloyne, ON	44°40'N	77°10'W	1913 km N10°E
10	0392-32002	U	U	17/02/39	DeWitt, AR	34°10'N	91°20'W	
	CMO	0	98	??/10/54	Fighting Island, ON	42°10'N	83°00'W	1150 km N37°E
11	0342-48864	U	M	24/05/37	Lévis, QC	46°40'N	71°10'W	1 yr. 7 mo.
	WIL	0	1	26/12/38	Edgerly, LA	30°10'N	93°30'W	2660 km S54°W
12	0521-73891	AHY	F	02/05/67	Charlesbourg, QC	46°50'N	71°10'W	2 yr. 9 mo.
	AG	5	1	99/02/70	Ellerbee, FL	30°10'N	82°10'W	2083 km S31°W
13	0701-63597	HY	F	15/11/67	northwest of Gainesville, FL	29°30'N	82°20'W	
	GFS	5	1	??/06/68	Blacks Harbour, NB	45°00'N	66°40'W	2206 km N34°E
14	0701-68269	AHY	M	20/07/67	Mitchell Bay, ON	42°20'N	82°20'W	10 yr. 8 mo.
	MID	7	89	23/03/78	Scottsville, KY	36°50'N	86°20'W	702 km S31°W

Summary of banding statistics: Brown-headed Cowbird

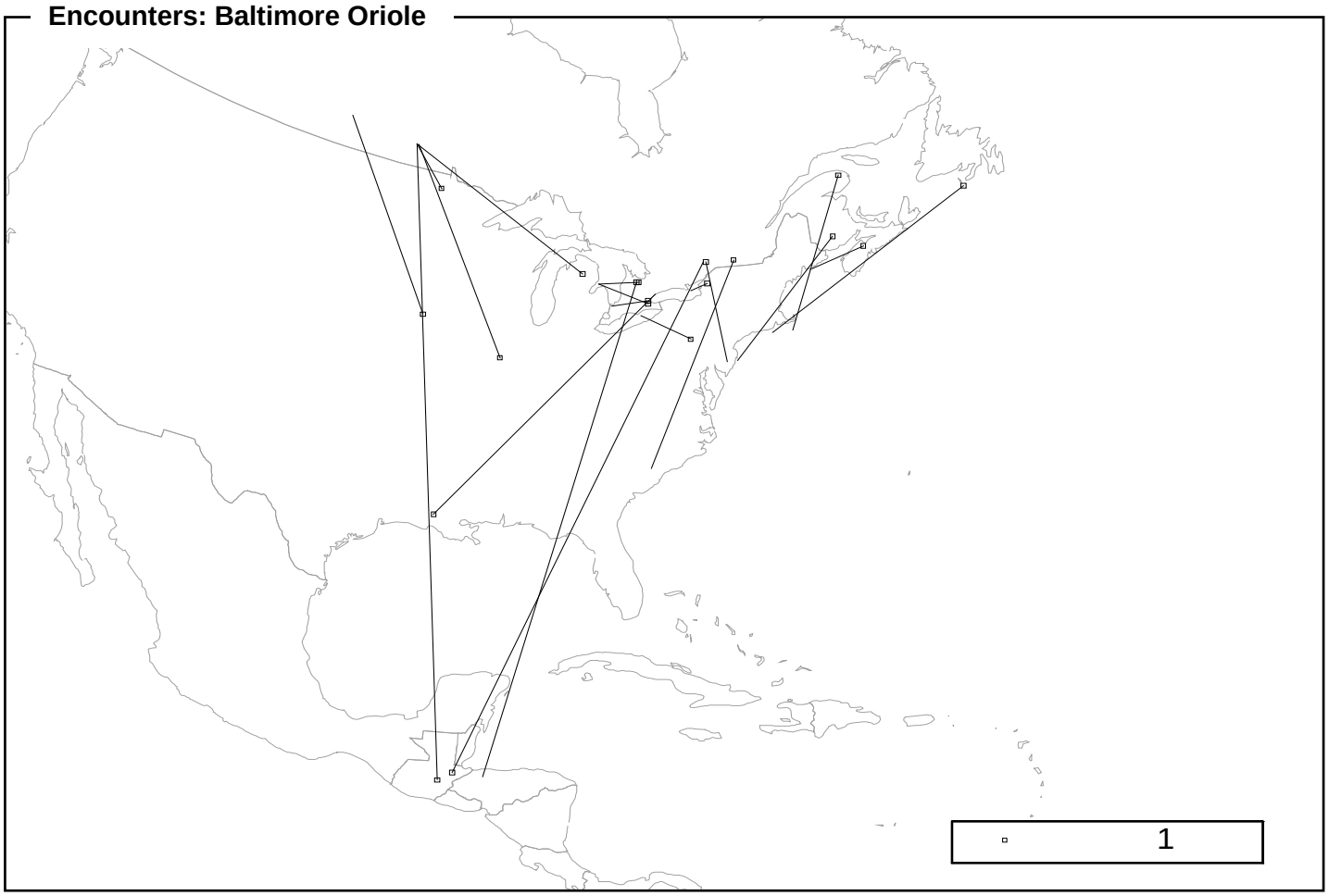
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*61 609*
No. encountered per 1000 banded (1955-1995)			*10*
Total no. encountered (1921-1995)	97	857	1146
No. encountered from foreign bandings	18	241	392
Maximum period from banding to encounter (mo.)	69	128	128
No. of Canadian-banded birds moving > 0 km	49	303	376
Mean movement > 0 km of Canadian-banded birds (km)	461	495	506
Maximum movement from all encounters (km)	2206	3229	3229
% recovered (encountered dead)	58	58	60
% direct recoveries	21	33	31
% encountered during banding operations	35	40	37

Banding effort: Brown-headed Cowbird



Top banders: MID, REWa, LPBO, PJW, AS

Baltimore Oriole (*Icterus galbula*) 507.0



The Baltimore Oriole breeds in the eastern U.S. and from central Alberta and Saskatchewan east through southern Canada to central Nova Scotia. It winters mainly from central Mexico south to Colombia and Venezuela, in the West Indies from Cuba east to the Virgin Islands, and uncommonly in Florida and on the Atlantic coast north to Virginia.

Sealy (1985) analyzed encounters of this species on its wintering grounds in Central America, which included orioles from the Prairie Provinces (e.g., record 1) and Ontario (record 2; see also record 3, although the latter has no exact dates of encounter). However, some Canadian orioles evidently winter closer to home: one Ontario bird was banded in New Jersey in winter (record 4), and one from Quebec was banded in South Carolina (record 5). The bird in record 6, encountered in Louisiana in May, could well have wintered farther south. Many others were both banded and encountered on migration, providing no clues as to wintering area (e.g., records 7 and 8).

Record 9 is especially interesting. The Baltimore Oriole is only a vagrant in Newfoundland (Godfrey 1986), and this bird seems to have been disoriented, because it was travelling north in fall. The reverse fall movement of the bird in record 10, from Nantucket to the Gaspé, is also remarkable. Baltimore Orioles have been recorded in Europe fairly frequently in recent years; the encounters in records 9 and 10, both of birds banded on offshore islands on the Atlantic coast, perhaps illustrate how these journeys get started.

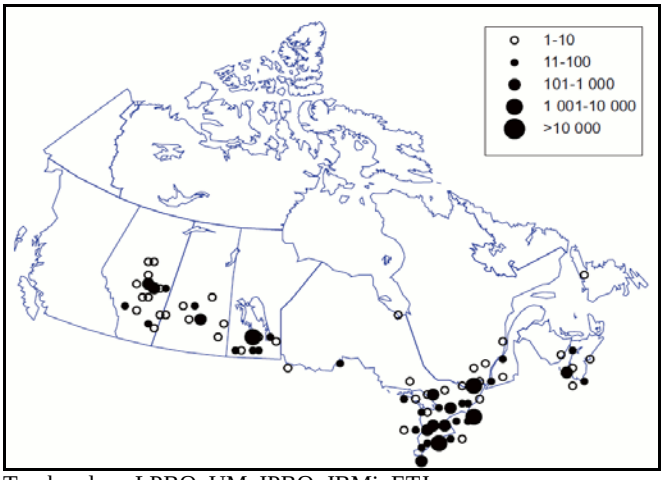
Encounter records: Baltimore Oriole

1	0861-03511	SY	M	18/06/77	Delta Marsh, MB	50°10'N 98°20'W	
	UM	2	56	??/01/81	unknown site, GUATEMALA	16°??'N 90°??'W	c. 3877 km S14°E
2	0641-26200	AHY	M	08/12/63	El Progreso, HONDURAS	15°20'N 87°50'W	6 mo.
	KSH	0	0	25/06/64	near Wodehouse, ON	44°20'N 80°40'W	3298 km N10°E
3	0921-29427	AHY	M	13/06/83	Innis Point, ON	45°20'N 75°50'W	
	IPBO	2	98	??/06/86	El Estor, GUATEMALA	15°30'N 89°20'W	3554 km S25°W
4	0761-69675	AHY	F	08/01/72	Vincentown, NJ	39°50'N 74°40'W	1 yr. 4 mo.
	CGV	3	0	30/05/73	Ottawa, ON	45°20'N 75°40'W	618 km N7°W
5	0871-12064	AHY	M	28/02/78	Effingham, SC	34°00'N 79°40'W	3 mo.
	ECC	5	3	24/05/78	Châteauguay, QC	45°20'N 73°40'W	1361 km N20°E
6	0351-26062	U	U	04/09/36	Toronto, ON	43°40'N 79°20'W	8 mo.
	HHS	0	0	FT/05/37	Bayou Waukasha, LA	30°30'N 92°00'W	1843 km S42°W
7	0021-50685	J	U	01/07/38	Muscow, SK	50°40'N 103°50'W	2 mo.
	JC	0	12	03/09/38	Atlantic, IA	41°20'N 95°00'W	1241 km S37°E
8	0521-86911	AHY	M	26/05/69	Delta, MB	50°10'N 98°10'W	3 yr. 4 mo.
	JBF	4	54	02/09/72	Springfield, IL	39°40'N 89°30'W	1352 km S33°E
9	0641-67010	HY	F	13/10/63	Block Island, RI	41°10'N 71°30'W	1 mo.
	MES	0	0	11/11/63	AT SEA, off NL	46°40'N 56°10'W	1370 km N58°E
10	0751-47117	HY	M	25/09/71	Esther Island, MA	41°10'N 70°10'W	1 mo.
	EFA	6	20	28/10/71	inexact location, Gaspé, QC	49°??'N 65°??'W	c.1059 km N22°E
11	0006-91257	HY	M	10/08/30	near Winnipeg, MB	49°50'N 97°00'W	6 yr. 9 mo.
	PK	0	12	26/05/37	near Winnipeg, MB	49°50'N 97°00'W	0 km

Summary of banding statistics: Baltimore Oriole

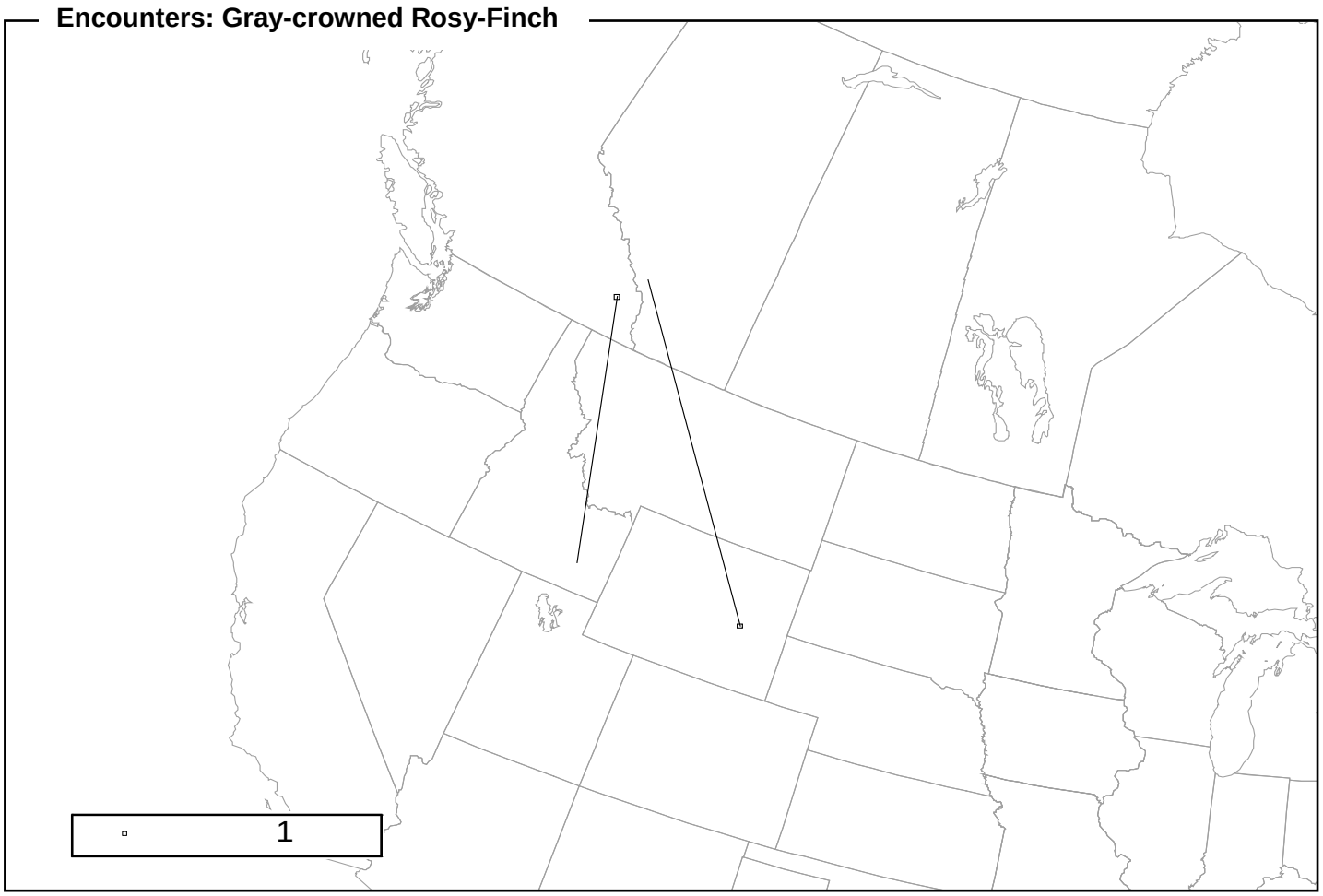
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*13 019*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	13	55	76
No. encountered from foreign bandings	3	8	11
Maximum period from banding to encounter (mo.)	81	73	81
No. of Canadian-banded birds moving > 0 km	4	9	18
Mean movement > 0 km of Canadian-banded birds (km)	617	1030	775
Maximum movement from all encounters (km)	1905	3876	3876
% recovered (encountered dead)	38	43	46
% direct recoveries	46	18	22
% encountered during banding operations	53	56	52

Banding effort: Baltimore Oriole



Top banders: LPBO, UM, IPBO, JBMi, ETJ

Gray-crowned Rosy-Finch (*Leucosticte tephrocotis*) 524.0



The Rosy-Finch complex is currently split into three species. The Gray-crowned Rosy-Finch is the most northerly form, breeding from Alaska to mountains in Idaho and Wyoming. Some populations are resident or altitudinal migrants; others are latitudinal migrants (King and Wales 1964). Gray-crowns winter within the breeding range and into Alberta and southern Saskatchewan, south to the Rocky Mountain states; occasionally they stray east to the Mississippi.

Both encounters are listed, and both showed substantial movement. The bird in record 1 apparently overwintered in widely separated locations in successive years.

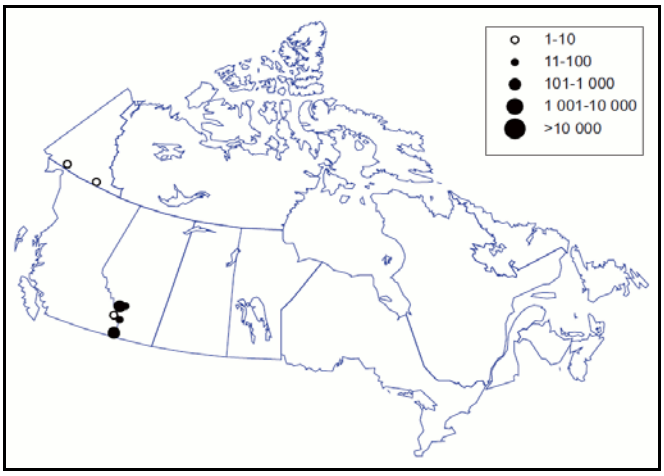
Encounter records: Gray-crowned Rosy-Finch

1	1061-92646	AHY	U	04/02/73	near Inkom, ID	42°50'N	112°20'W	1 yr.
	LRP	5	45	01/02/74	near Canal Flats, BC	50°10'N	115°50'W	859 km N17°W
2	1501-41375	AHY	U	10/04/92	Kananaskis, AB	51°00'N	115°00'W	11 mo.
	DRP	5	13	13/03/93	Glenrock, WY	42°50'N	105°50'W	1144 km S41°E

Summary of banding statistics: Gray-crowned Rosy-Finch

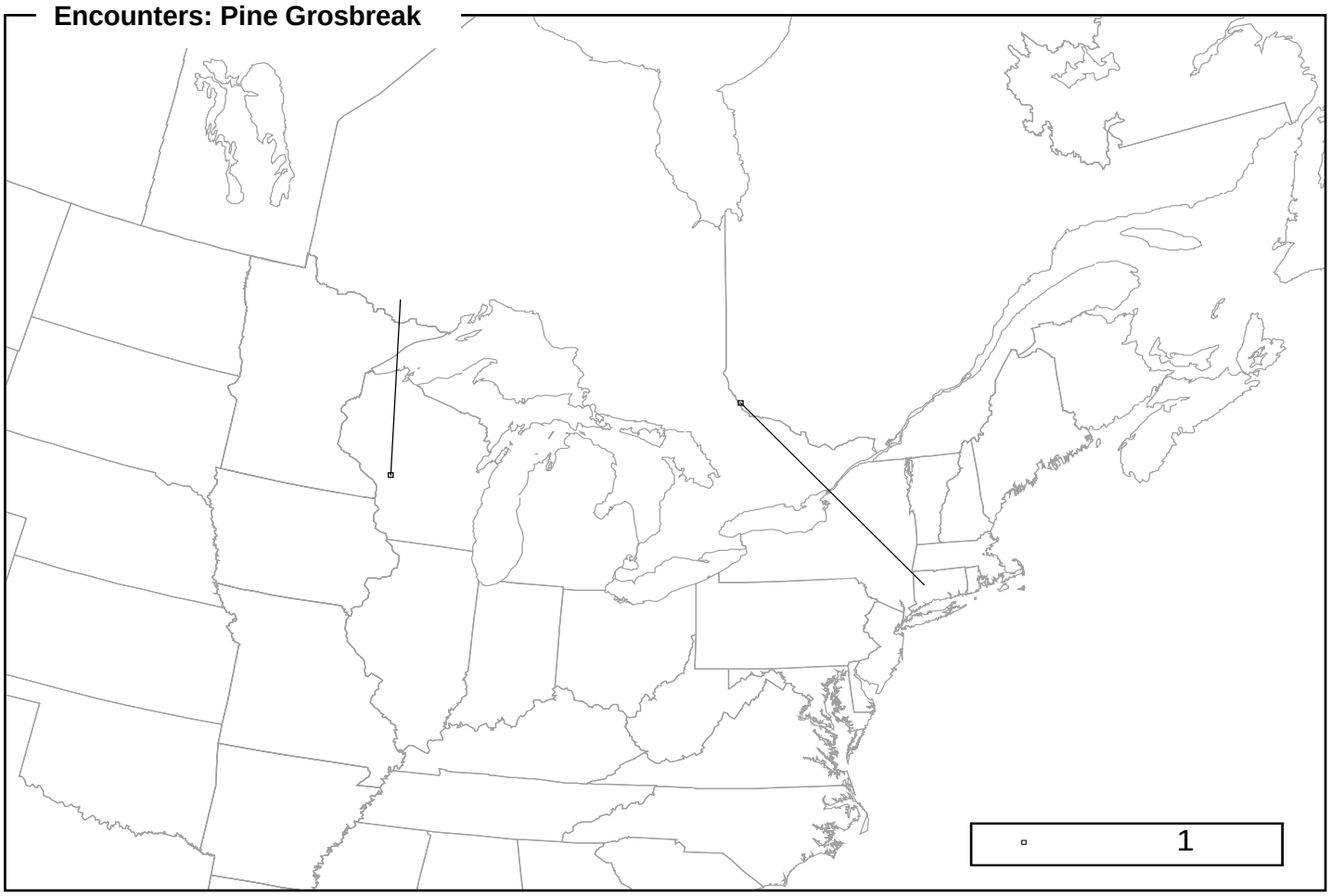
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*788*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	0	2	2
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	-	12	12
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds (km)	-	1143	1143
Maximum movement from all encounters (km)	-	1143	1143
% recovered (encountered dead)	-	100	100
% direct recoveries	-	50	50
% encountered during banding operations	-	0	0

Banding effort: Gray-crowned Rosy-Finch



Top banders: DRP, MRL, DC, LJP, AMP

Pine Grosbeak (*Pinicola enucleator*) 515.0



The Pine Grosbeak is holarctic in distribution, breeding in the boreal forests of Alaska and Canada, from northern Yukon east to Newfoundland; it also breeds through much of British Columbia and the Rocky Mountains. Populations in the Territories withdraw southward in winter; others are resident except for occasional invasions as far as the mid-latitudes of the U.S.

Most encounters indicate year-round residency, although one bird moved 22 km between winters and another moved the same distance between breeding seasons. The encounters listed below are the only ones that showed significant movement. The bird in record 1 is notable not only for having moved the longest distance, but also for being the oldest North American-banded Pine Grosbeak on record (Klimkiewicz and Futcher 1989), with a minimum age of nine years and nine months.

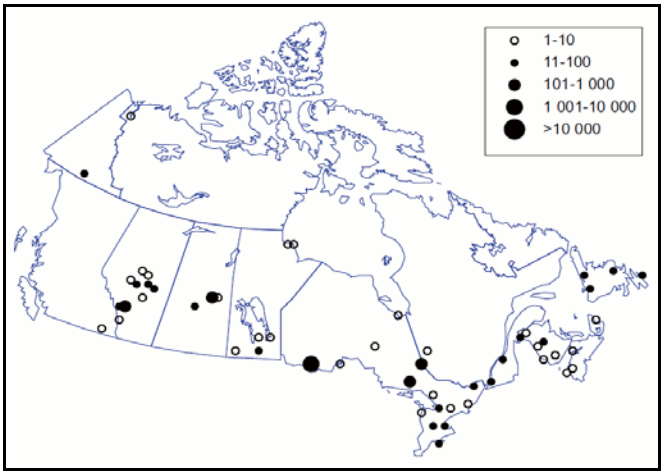
Encounter records: Pine Grosbeak

1	0562-28345	AHY	M	14/12/61	Gosheen, CT	41°40'N 73°10'W	8 yr. 3 mo.
	GL	5	45	15/03/70	Témiscaming, QC	46°40'N 79°00'W	725 km N38°W
2	0881-29555	AHY	F	03/02/79	Atikokan, ON	48°40'N 91°30'W	2 yr. 0 mo.
	DHE	7	89	14/02/81	Irvining, WI	44°10'N 90°50'W	504 km S6°E

Summary of banding statistics: Pine Grosbeak

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*2044*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	0	10	12
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	-	99	99
No. of Canadian-banded birds moving > 0 km	0	2	3
Mean movement > 0 km of Canadian-banded birds (km)	-	262	182
Maximum movement from all encounters (km)	-	725	725
% recovered (encountered dead)	-	40	41
% direct recoveries	-	30	25
% encountered during banding operations	-	60	58

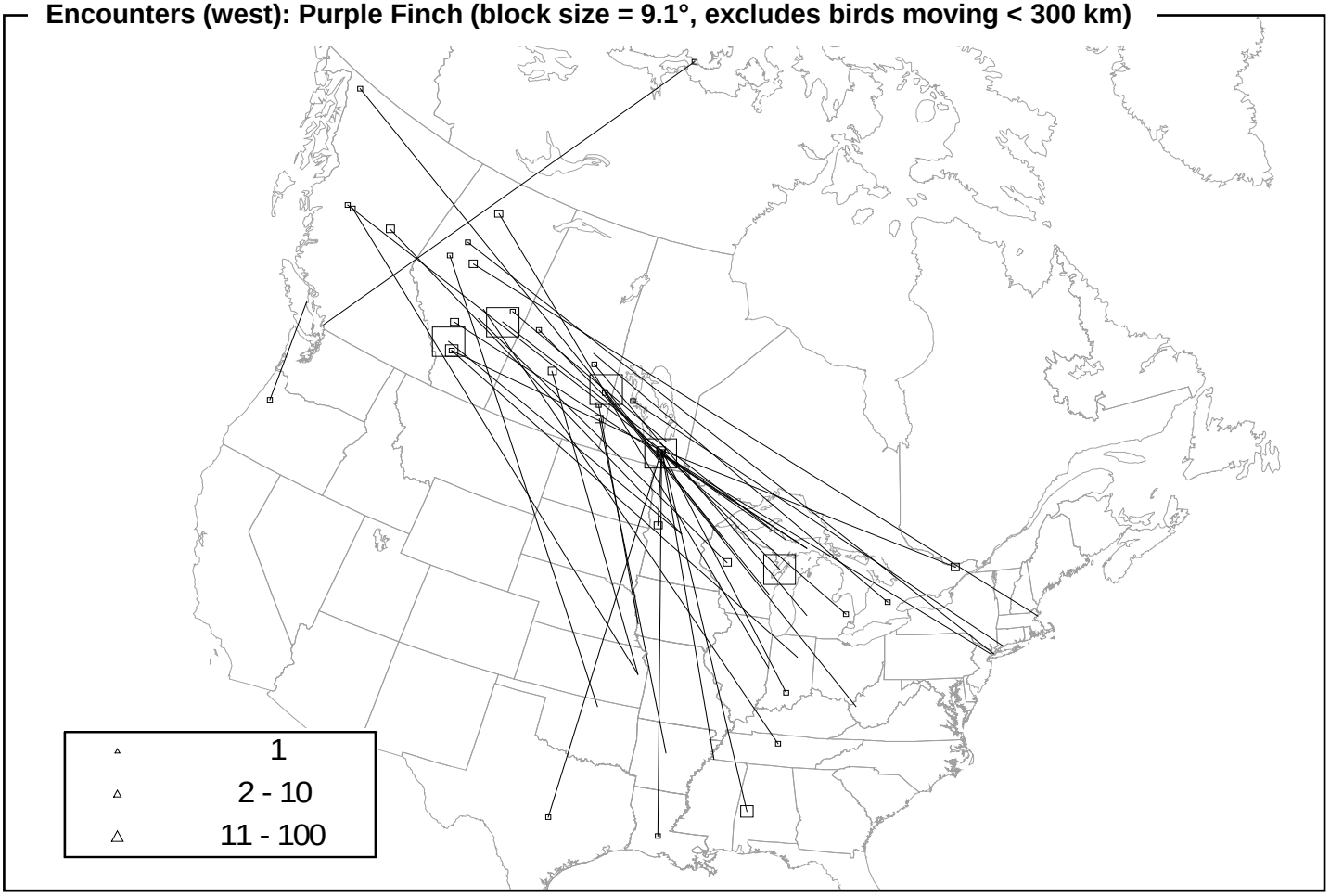
Banding effort: Pine Grosbeak



Top banders: DHE, ADa, JGL, DC, Bmu

Purple Finch (*Carpodacus purpureus*) 517.0

Encounters (west): Purple Finch (block size = 9.1°, excludes birds moving < 300 km)

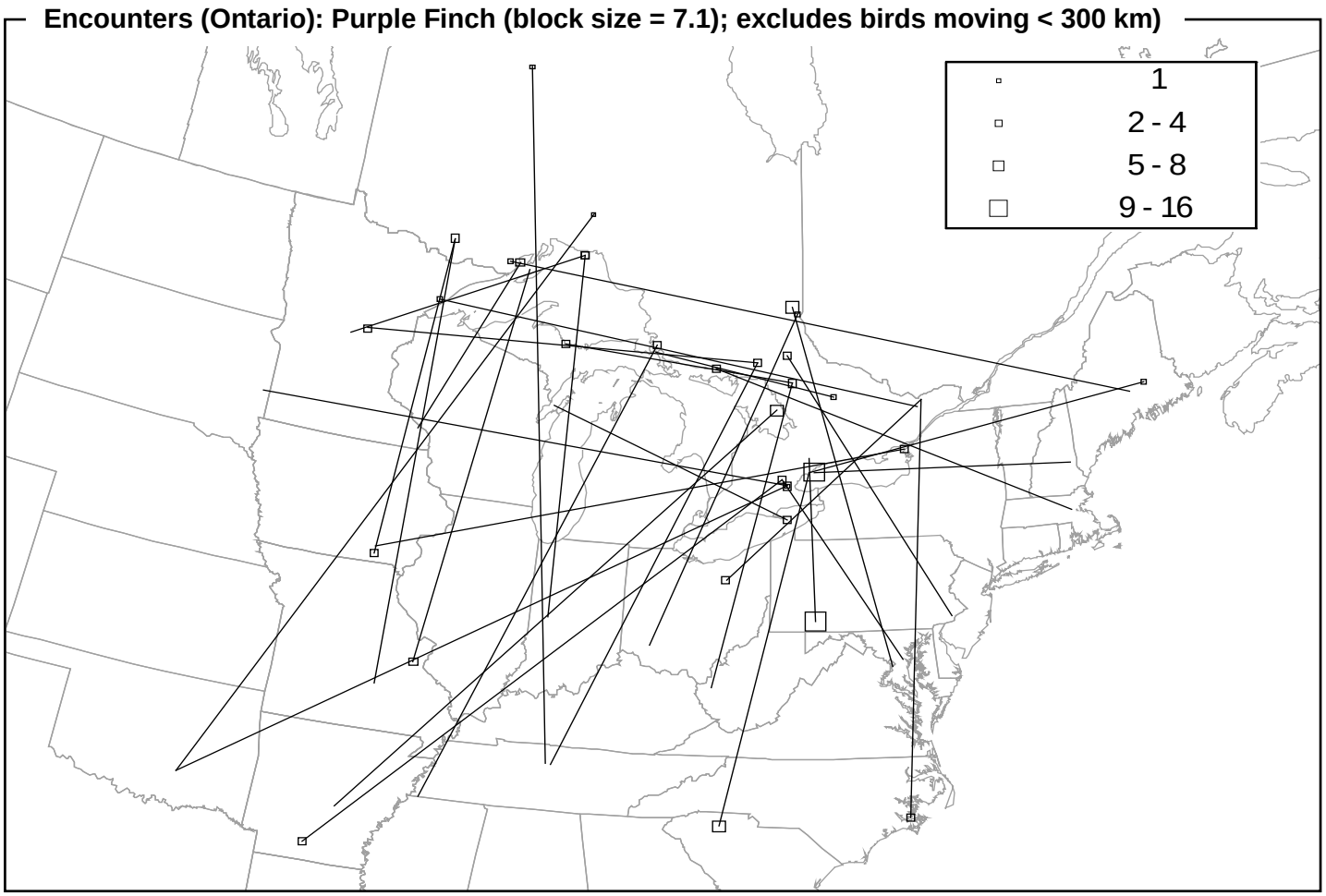


The Purple Finch breeds across most of the forested zones of Canada from British Columbia (except the southern interior) and southern Yukon to Newfoundland; it also breeds on the U.S. Pacific coast and in the northeastern states. It winters from southern Canada (locally) south on the west coast to northern Mexico, as well as in the eastern U.S. except for most of Florida.

Because of the large number of encounters, the maps omit records for birds that moved less than 300 km (instead of the usual 100 km cut-off). Even so, block size remains large, and all maps are heavily thinned (see introduction for explanation).

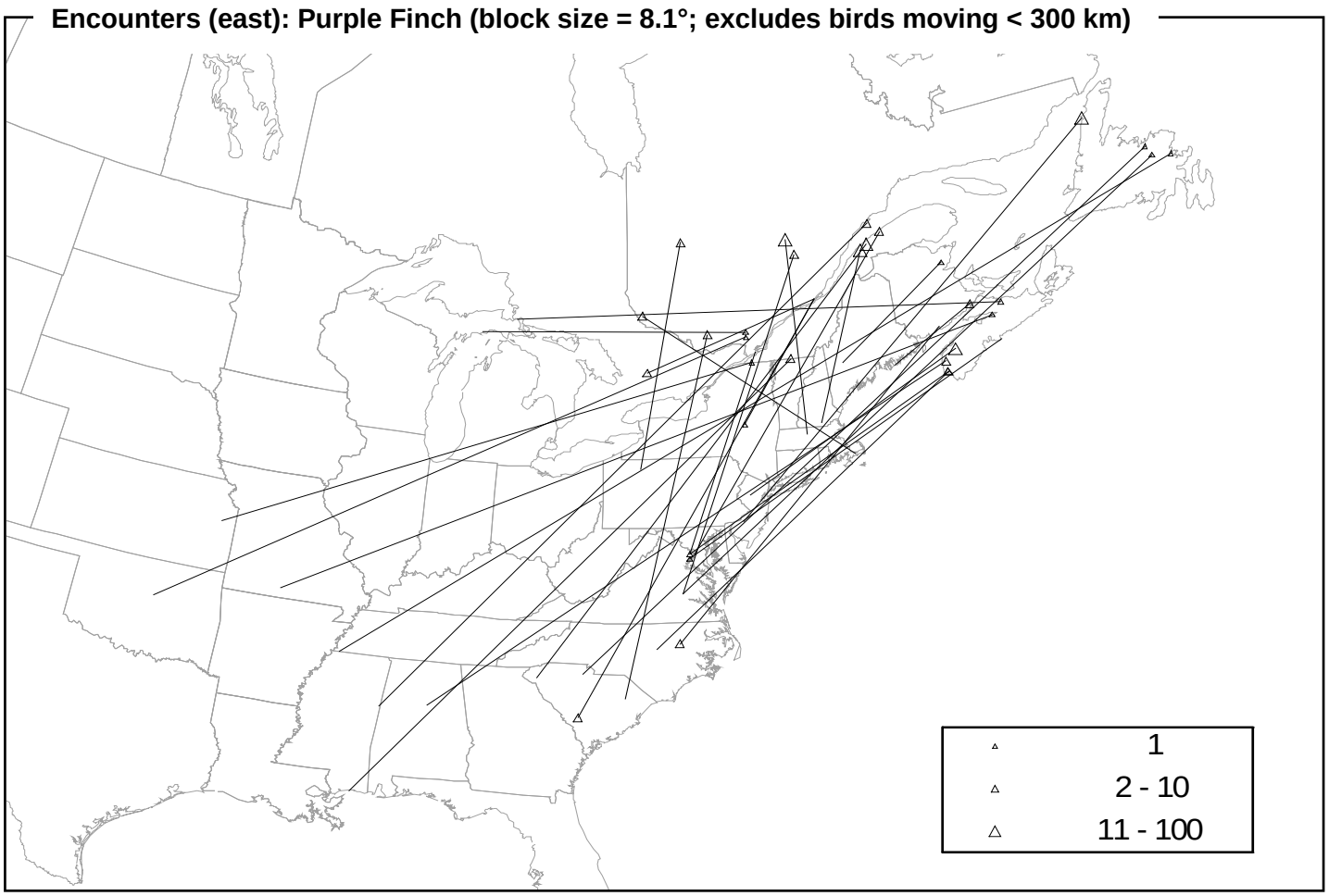
Wootton (1996) summarized some of the many analyses of band encounters, which support the patterns of encounter described below. Western Purple Finches have a stable wintering range. However, eastern birds show approximately biennial irruptions in which birds move to a variable extent (Wootton 1996), showing little tendency to return to the same site the next winter (Yunick 1983).

Most (92%) of the finches banded in southern British Columbia remained there for the winter (December–February); but record 1 shows that birds may winter in different areas in different years. Finches from central British Columbia and the Prairie Provinces were found in winter mainly in states along the Mississippi River, from the Great Lakes to the Gulf Coast (record 2), but some went as far as the northeastern U.S. (record 3). Other encounters indicate similar destinations, although they did not take place in mid-winter (records 4–9). Assuming the encounter details are correct, record 10 is surprising. The bird was evidently a northwestern bird that wintered on the Pacific coast. This is unusual in itself, but the bird was also encountered far north of the breeding range, in the Arctic. (An Inuit hunter shot the bird and gave the band to the biologist who reported it.)



Over half the Ontario birds stayed there for the winter, but some also moved to the lower Mississippi area, and others overlapped in northeastern states with finches from the Prairie Provinces. Although some of the Ontario birds wintering in the northeastern states may originally have come from the Prairie Provinces (being encountered in Ontario as transients), there are records of birds encountered in Ontario in June or July (i.e., local breeders) that were found in winter in Vermont and North Carolina. Quebec and Maritimes birds wintered largely on the Atlantic coast from Nova Scotia to Georgia, mostly in mid-coastal states (records 11–13), but some of these eastern Canadian birds wintered farther west, from Arkansas and Tennessee south to the Gulf Coast (records 14 and 15).

All 38 Purple Finches that were banded as adults in June–July and encountered in the same period of another year were at the same location or very nearby, suggesting fidelity to the breeding site. The records for these birds involve three provinces.


Encounters (east): Purple Finch (block size = 8.1°; excludes birds moving < 300 km)
1
2 - 10
11 - 100

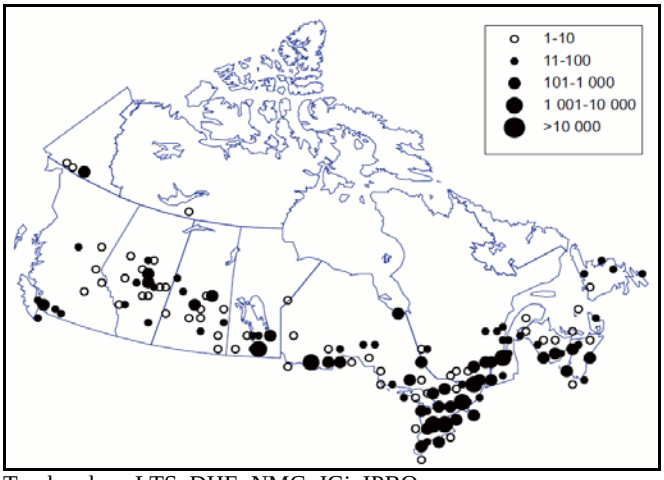
Encounter records: Purple Finch

1	0360-44551	U	U	31/01/37	Courtenay, BC	49°40'N	125°00'W	3 yr. 2 mo.
	TP	0	0	15/03/40	Dallas, OR	44°50'N	123°10'W	556 km S15°E
2	0331-82891	AHY	M	11/01/64	near Ponca City, OK	36°40'N	97°00'W	2 yr. 4 mo.
	JKS	3	1	20/05/66	near Sturgeon Lake, AB	55°10'N	117°40'W	2595 km N31°W
3	0500-56098	U	U	15/01/51	Demarest, NJ	40°50'N	73°50'W	1 yr. 4 mo.
	BSB	0	0	06/05/52	near Peace River, AB	56°10'N	117°10'W	3544 km N46°W
4	0200-21377	AHY	M	27/03/59	Danvers, MA	42°30'N	70°50'W	
	TC	0	1	??/07/62	Lesser Slave Lake, AB	55°20'N	115°50'W	3512 km N50°W
5	0550-80330	U	M	23/03/63	Hartford, CT	41°40'N	72°40'W	1 yr. 1 mo.
	EAB	0	50	18/04/64	near Peace River, AB	56°10'N	117°10'W	3552 km N48°W
6	0590-27211	HY	U	19/08/58	near Edmonton, AB	53°30'N	113°30'W	2 yr. 7 mo.
	ETJ	0	89	19/03/61	Dalton, WI	43°30'N	89°10'W	2096 km S68°E
7	0660-13443	AHY	U	08/04/63	Germfask, MI	46°10'N	85°50'W	1 yr. 1 mo.
	HRP	0	0	21/05/64	near Hotchkiss, AB	57°20'N	117°10'W	2460 km N48°W
8	0690-37023	AHY	M	24/03/63	Anston, WI	44°30'N	88°00'W	2 mo.
	RJL	0	0	31/05/63	near Prince George, BC	53°50'N	122°40'W	2695 km N55°W
9	0880-36436	AHY	U	15/05/78	Winnipeg, MB	49°50'N	97°00'W	2 yr.10 mo.
	LTS	5	0	05/03/81	Burnet, TX	30°40'N	98°10'W	2136 km S3°W
10	0520-11511	AHY	F	12/04/54	Vancouver, BC	49°10'N	123°00'W	
	WMH	5	1	??/09/67	Cambridge Bay, NT	69°00'N	105°00'W	2414 km N17°E
11	0510-21958	AHY	F	28/02/53	near Pennypack Park, PA	39°50'N	75°00'W	2 yr. 3 mo.
	TB	0	98	19/05/55	near Port Au Choix, NL	50°40'N	57°20'W	1828 km N43°E
12	0830-89233	AHY	U	21/01/78	Hillsboro, NC	36°00'N	79°00'W	8 yr. 7 mo.
	CHB	7	89	10/08/86	Charlesbourg, QC	46°50'N	71°10'W	1370 km N26°E
13	0750-30904	AHY	U	22/01/69	near Warner Robins, GA	32°30'N	83°30'W	9 mo.
	PGM	5	12	99/10/69	near Riverport, NS	44°20'N	64°20'W	2119 km N46°E
14	2010-20368	AHY	U	23/12/85	Memphis, TN	35°00'N	90°00'W	7 yr. 8 mo.
	BBC	7	28	11/08/93	Glovertown, Labrador, NL	48°40'N	54°00'W	3310 km N52°E
15	0560-13661	AHY	F	04/12/65	Huntsville, AL	34°40'N	86°30'W	2 yr. 6 mo.
	MLL	5	14	99/06/68	near Port Milford, NS	45°00'N	61°50'W	2388 km N54°E

Summary of banding statistics: Purple Finch

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*34 773*
No. encountered per 1000 banded (1955-1995)			*5*
Total no. encountered (1921-1995)	41	591	756
No. encountered from foreign bandings	21	317	420
Maximum period from banding to encounter (mo.)	56	103	103
No. of Canadian-banded birds moving > 0 km	11	89	124
Mean movement > 0 km of Canadian-banded birds (km)	1344	810	879
Maximum movement from all encounters (km)	2096	3520	3552
% recovered (encountered dead)	56	55	57
% direct recoveries	24	25	25
% encountered during banding operations	36	40	38

Banding effort: Purple Finch



Top banders: LTS, DHE, NMC, JGi, IPBO

Cassin's Finch (*Carpocacus cassinii*) 518.0

Cassin's Finch breeds from south-central British Columbia and southwestern Alberta, south to northwestern California and the Great Basin, and to northern New Mexico. It winters within the breeding range and south to central Mexico.

The only Canadian record, listed below, was of a bird banded in the U.S. and encountered at an unknown date in British Columbia.

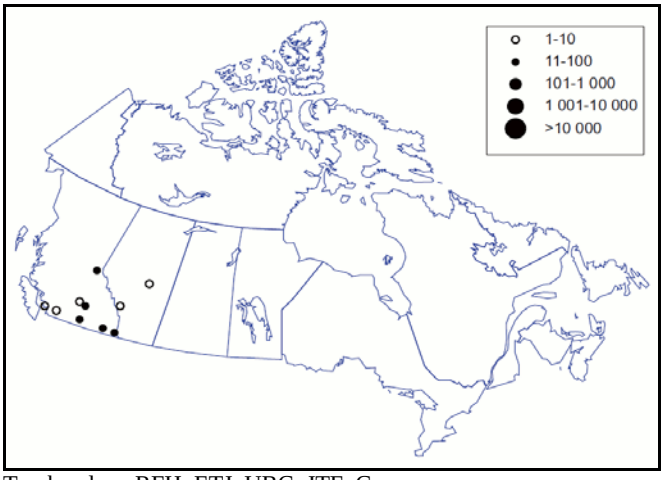
Encounter record: Cassin's Finch

1	1231-67193	ASY	M	18/03/87	Fort Collins, CO	40°30'N	105°00'W	1 yr.
	RR	4	13	99/03/88	Pritchard, BC	50°40'N	119°40'W	1603 km N40°W

Summary of banding statistics: Cassin's Finch

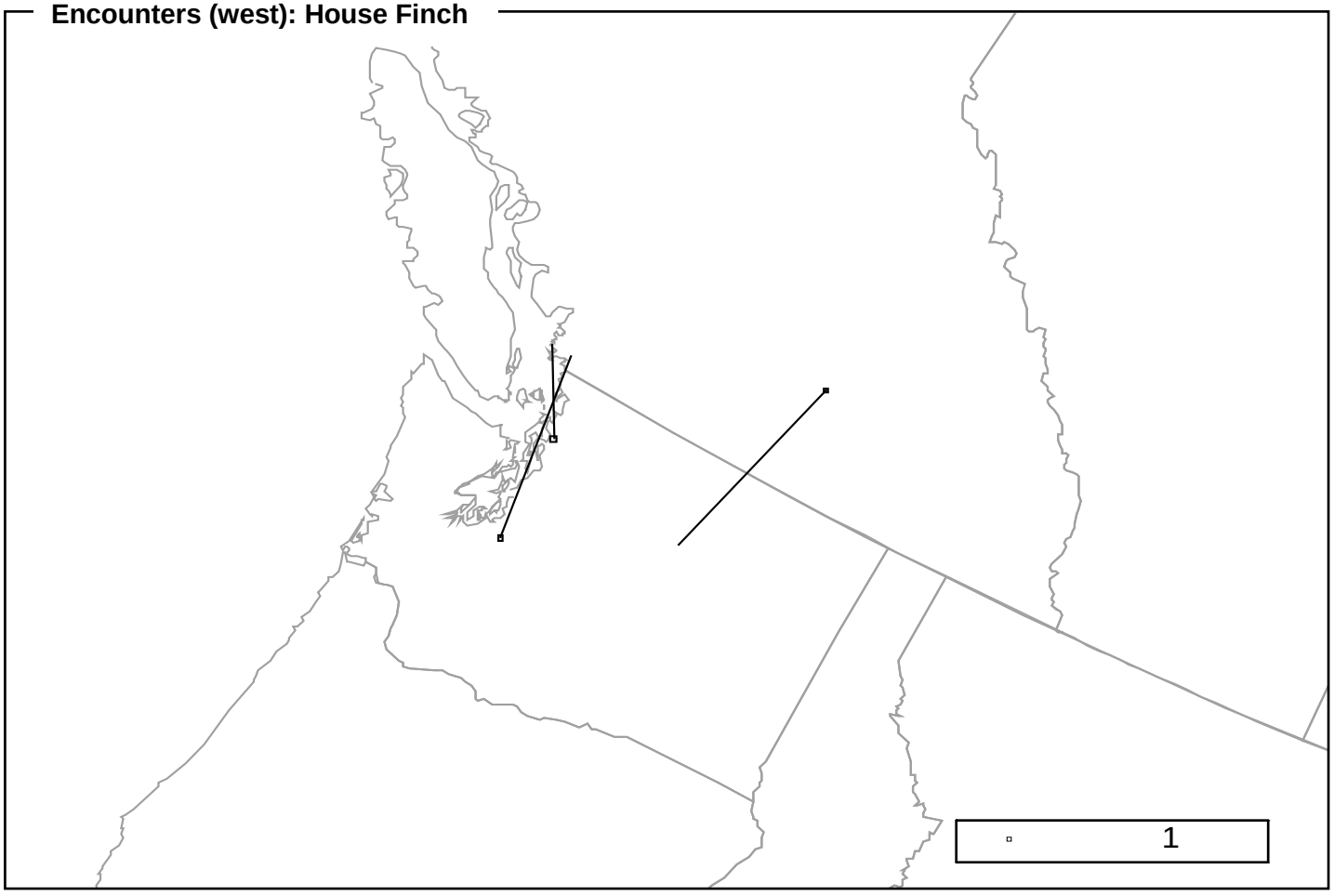
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*182*
No. encountered per 1000 banded (1955-1995)			*0*
Total no. encountered (1921-1995)	0	1	1
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	-	12	12
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds (km)	-	-	-
Maximum movement from all encounters (km)	-	1602	1602
% recovered (encountered dead)	-	100	100
% direct recoveries	-	0	0
% encountered during banding operations	-	0	0

Banding effort: Cassin's Finch



Top banders: RFH, ETJ, UBC, JTF, Cco

House Finch (*Carpodacus mexicanus*) 519.0

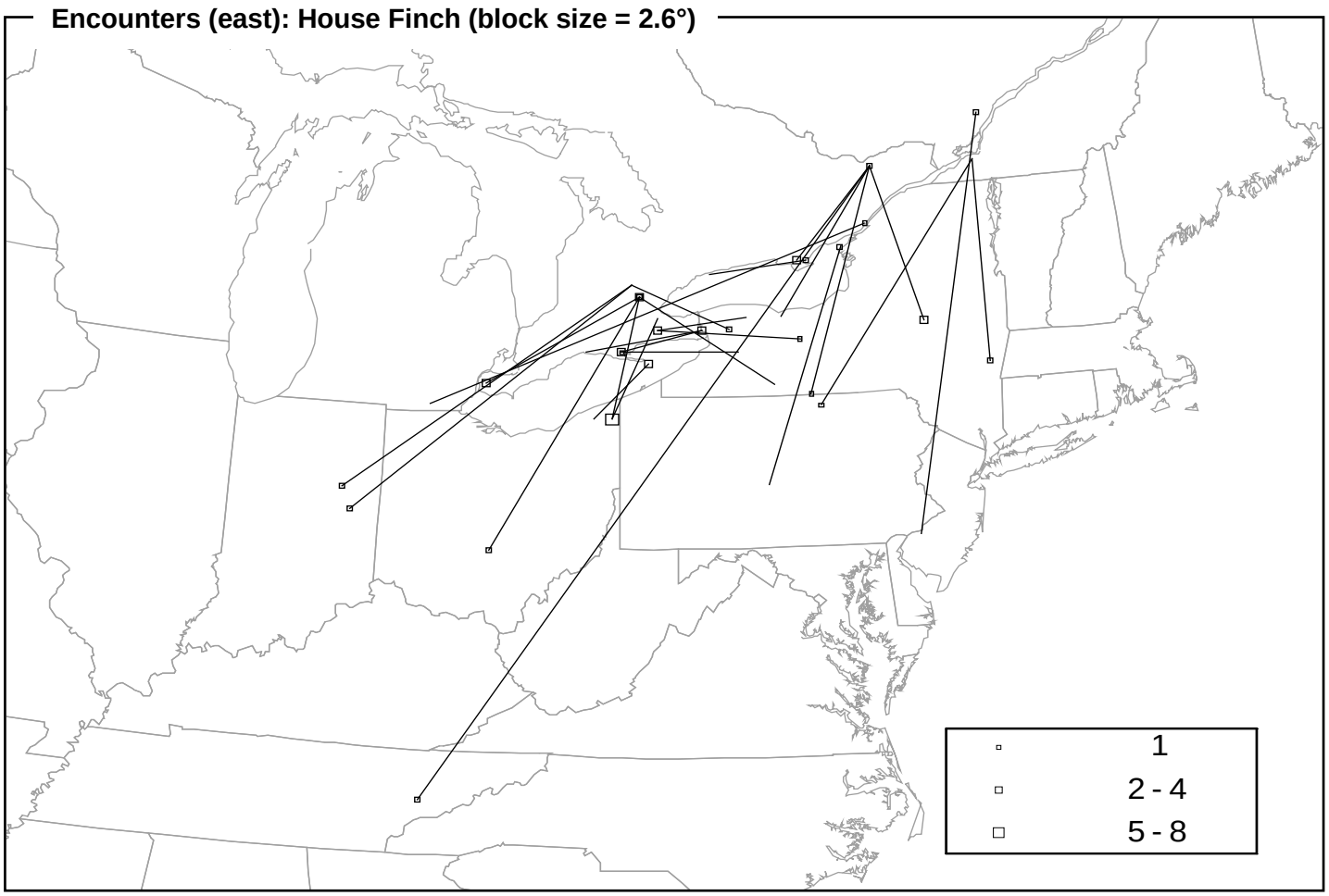


Until the mid-1970s, the House Finch was a western U.S. bird, confined in Canada to southwestern British Columbia. After its introduction into New York in the 1940s, the species expanded spectacularly through the eastern U.S., reaching southern parts of Ontario, Quebec, and New Brunswick during the late 1970s and 1980s. It is resident in the west and partly migratory in the east, wintering within the breeding range.

Until 1975, the Canadian population seemed to be relatively sedentary: over 99% of the records are for birds banded and also encountered in British Columbia near Vancouver. Ninety percent of these showed no movement (records 1 and 2), and only two moved over 100 km (records 3 and 4).

After 1975, this situation changed dramatically - every encounter but one since then has involved birds banded or encountered in central Canada. The species is more mobile in its eastern range where it is a partial migrant, with males wintering farther north than females (Belthoff and Gauthreaux 1991). This mobility and migratory behaviour is illustrated by a considerable number of encounters of over 100 km that involve Ontario (more than 40) and Quebec (3 encounters including record 5) since the early 1980s. Nonetheless, of 35 Ontario birds encountered in winter (December-February), 31 were in Ontario and only 4 were farther south (2 in New York, 1 in Ohio, and 1, record 6, in Tennessee). Other examples, encountered in the U.S. in fall, presumably wintered south of Ontario as well (e.g., records 7-9).

Analyses that included U.S. encounters suggest a north-northeast-south-southwest axis of movement for birds from about Ohio eastward (as shown on the map for southern Ontario), and a more directly north-south axis for birds from the western Great Lakes (Stewart 1989, Hamilton 1991).


Encounters (east): House Finch (block size = 2.6°)
1
2 - 4
5 - 8

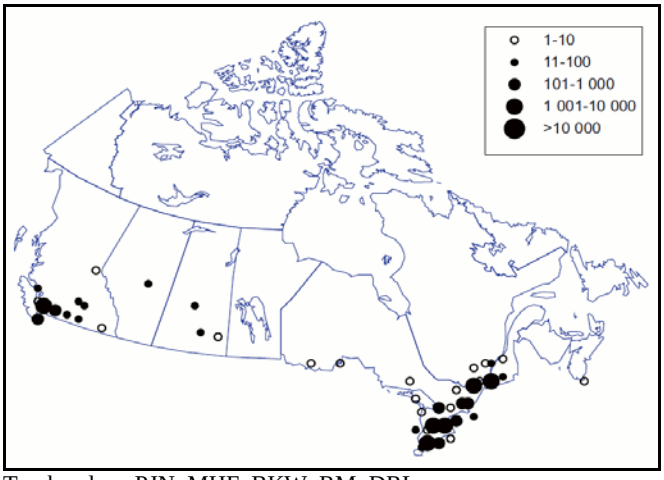
Encounter record: House Finch

1	0610-13205	AHY	F	08/04/59	Ambleside Beach, BC	49°10'N	123°00'W	8 yr. 3 mo.
	WJM	5	12	30/07/67	Ambleside Beach, BC	49°10'N	123°00'W	0 km
2	0620-74628	HY	U	05/06/66	Caulfield Cove, BC	49°10'N	123°10'W	2 yr. 11 mo.
	BBW	5	13	14/05/69	Caulfield Cove, BC	49°10'N	123°10'W	0 km
3	0620-74618	U	U	05/06/66	Caulfield Cove, BC	49°10'N	123°10'W	9 mo.
	BBW	5	14	03/03/67	Avon, WA	48°20'N	122°20'W	111 km S34°E
4	0630-87896	AHY	F	20/06/65	Annacis, BC	49°10'N	122°50'W	
	RWC	5	0	??/12/65	Auburn, WA	47°10'N	122°10'W	228 km S13°E
5	0920-41829	HY	U	14/07/84	Darby, PA	39°50'N	75°10'W	1 yr. 9 mo.
	EWM	5	13	26/04/86	Kildare, QC	46°00'N	73°30'W	700 km N11°E
6	2021-85132	U	U	30/09/89	Ottawa, ON	45°20'N	75°40'W	4 mo.
	PJN	5	0	06/01/90	Knoxville, TN	35°50'N	83°50'W	1261 km S36°W
7	0920-31682	HY	U	04/07/86	Adrian, MI	41°50'N	84°00'W	10 mo.
	ALC	5	0	99/05/87	Athens, ON	44°30'N	75°50'W	726 km N63°E
8	2010-96988	HY	U	16/08/88	Guelph, ON	43°30'N	80°10'W	3 yr. 3 mo.
	BKW	5	13	24/11/91	Ashville, OH	39°40'N	82°50'W	481 km S28°W
9	2031-53535	HY	U	15/07/90	Fergus, ON	43°40'N	80°20'W	4 mo.
	DRL	7	89	18/11/90	Muncie, IN	40°10'N	85°20'W	568 km S48°W

Summary of banding statistics: House Finch

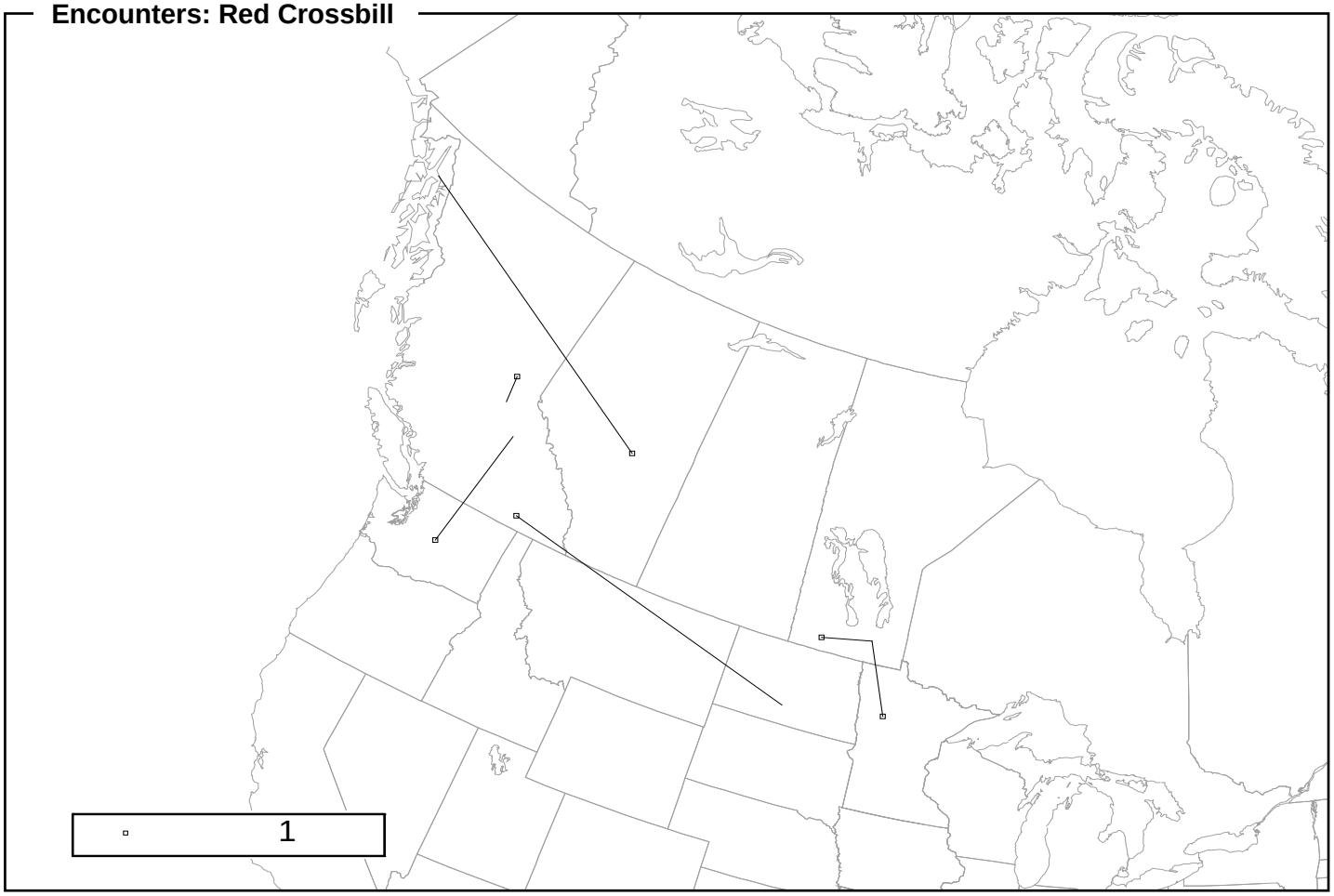
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*26 582*
No. encountered per 1000 banded (1955-1995)			*10*
Total no. encountered (1921-1995)	95	100	355
No. encountered from foreign bandings	6	9	17
Maximum period from banding to encounter (mo.)	62	99	99
No. of Canadian-banded birds moving > 0 km	42	19	76
Mean movement > 0 km of Canadian-banded birds (km)	147	89	135
Maximum movement from all encounters (km)	726	282	1261
% recovered (encountered dead)	48	35	30
% direct recoveries	56	27	38
% encountered during banding operations	49	64	69

Banding effort: House Finch



Top banders: PJN, MHF, BKW, RM, DRL

Red Crossbill (*Loxia curvirostra*) 521.0



The Red Crossbill has been known to breed throughout the western U.S. and in boreal coniferous forests from Yukon and British Columbia east to Newfoundland; however, the breeding range can be highly erratic from season to season. This species winters within the breeding range and irregularly (in irruption years) in the northern U.S., occasionally as far south as Texas and Florida (Adkisson 1996).

Although classified as resident in Canada, this species is highly nomadic in all seasons, apparently influenced by the availability of its staple food, conifer seeds. Individuals have been recaptured at the same site up to two years later (Adkisson 1996), but crossbills are known to change breeding sites according to the location of heavy cone crops in a given year. Irruptions into the eastern U.S. are less common than in siskins and redpolls (about once every 10 years in some areas, Adkisson 1996) and involve far fewer individuals.

The list below includes all encounters of birds that moved over 100 km; it also includes all records of birds encountered a year or more after banding. The bird in record 1 holds the longevity record for North America (Klimkiewicz and Futcher 1989), with an estimated minimum age of four years and two months (the same estimated age as for the bird in record 2).

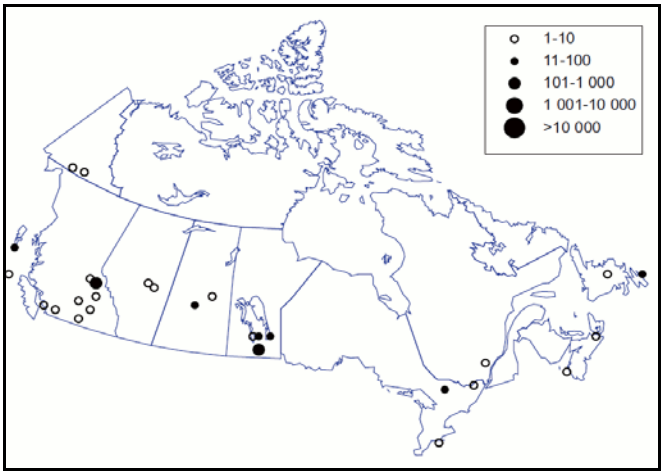
Encounter records: Red Crossbill

1	0005-76253	AHY	M	15/05/28	Barkerville, BC	53°00'N 121°30'W	3 yr. 3 mo.
	TTMcC	0	12	11/08/31	near Dewey, BC	54°00'N 121°50'W	113 km N11°W
2	1251-53031	AHY	F	20/08/90	Wells Gray Provincial Park, BC	52°00'N 120°00'W	3 yr. 0 mo.
	CWS-BC	7	89	21/08/93	Blewett, WA	47°20'N 120°30'W	521 km S4°W
3	1101-44323	U	M	31/12/72	near St. Vital, MB	49°50'N 97°00'W	4 mo.
	LTS	7	4	20/04/73	near Wawanesa, MB	49°30'N 99°40'W	196 km S80°W
4	1110-44479	AHY	M	16/01/73	near St. Vital, MB	49°50'N 97°00'W	1 mo.
	LTS	3	13	26/02/73	Naytahwaush, MN	47°10'N 95°30'W	317 km S21°E
5	1011-88857	U	U	09/11/69	southeast of Bismarck, ND	46°40'N 100°40'W	1 yr. 11 mo.
	GMJ	5	12	99/10/71	Taghum, BC	49°30'N 117°30'W	1288 km N70°W
6	1241-80277	AHY	U	13/05/91	Auke Bay, AK	58°20'N 134°30'W	1 yr. 0 mo.
	RBW	5	12	08/05/92	St. Albert, AB	53°30'N 113°30'W	1409 km S77°E

Summary of banding statistics: Red Crossbill

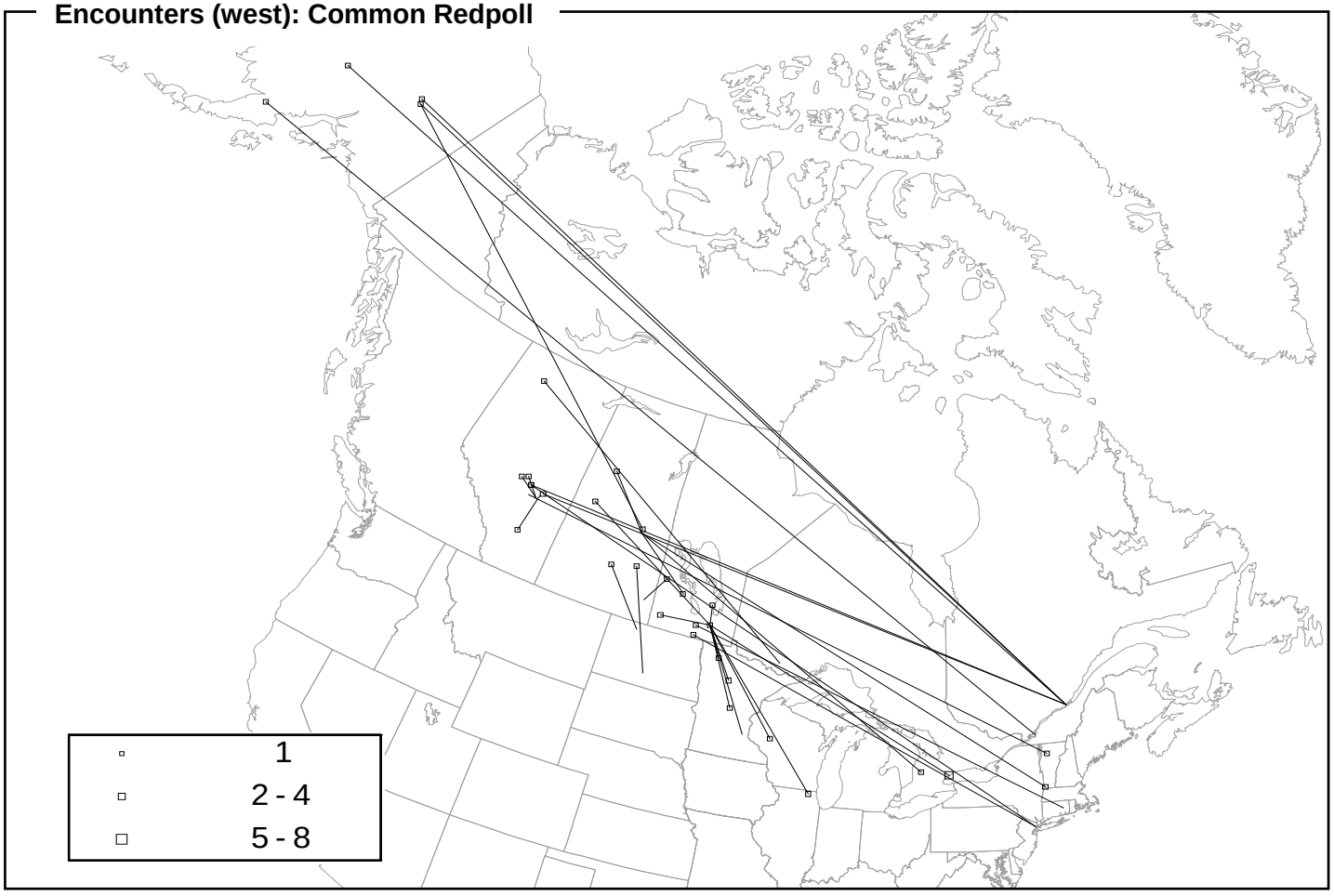
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*1103*
No. encountered per 1000 banded (1955-1995)			*16*
Total no. encountered (1921-1995)	0	15	32
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	-	39	39
No. of Canadian-banded birds moving > 0 km	0	8	22
Mean movement > 0 km of Canadian-banded birds (km)	-	139	74
Maximum movement from all encounters (km)	-	1408	1408
% recovered (encountered dead)	-	73	71
% direct recoveries	-	80	81
% encountered during banding operations	-	26	15

Banding effort: Red Crossbill



Top banders: LTS, HMi, RJR, MMMN, Jla

Common Redpoll (*Carduelis flammea*) 528.0

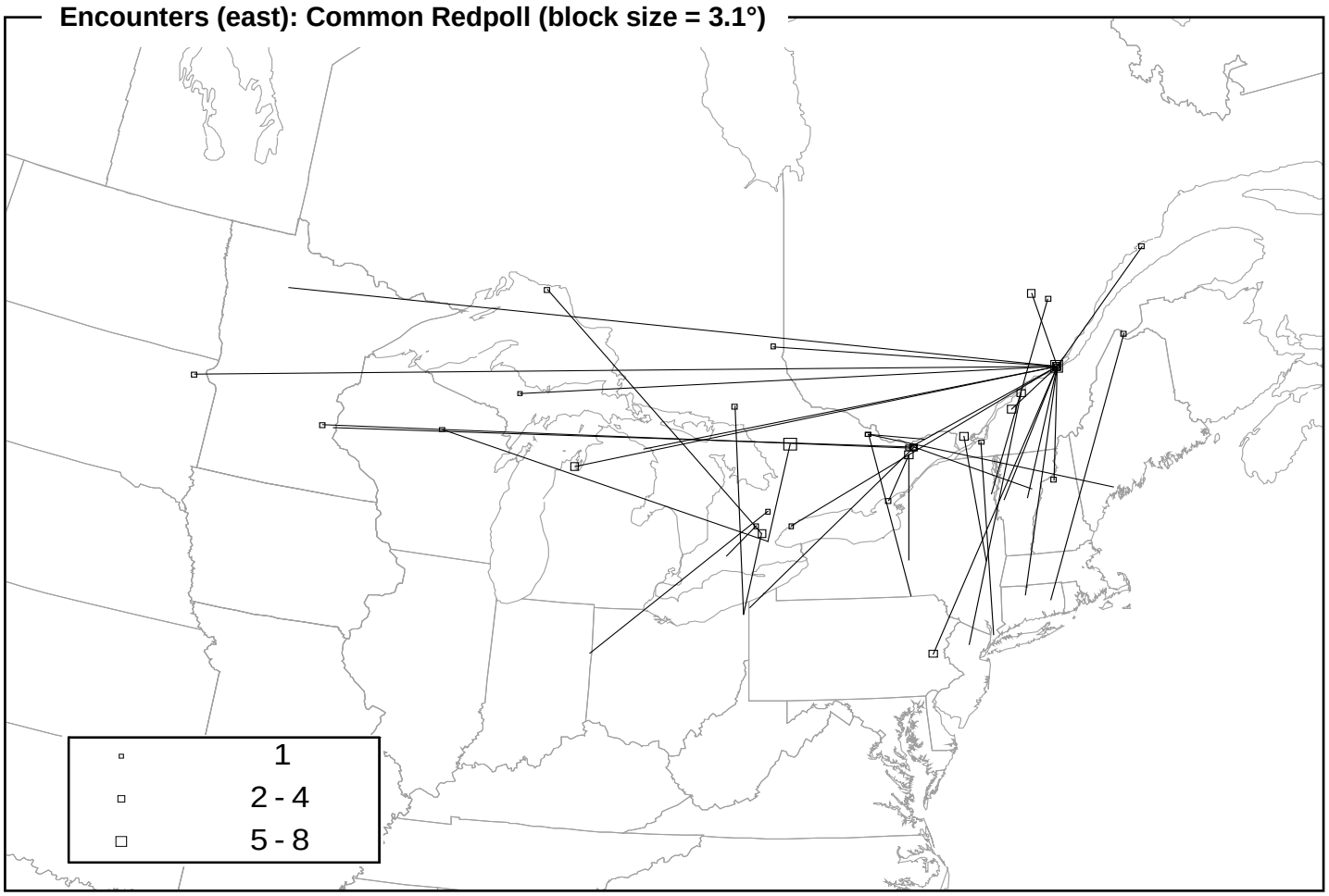


The Common Redpoll is a circumpolar species that breeds across Alaska and northern Canada from Yukon to Newfoundland, north to northeastern Baffin Island. It winters from the southern breeding range south, irregularly to the northern and central U.S., and occasionally to southern states.

Approximately biennial increases in numbers banded and encountered, and in numbers observed in the U.S., were attributed by Kennard (1976), Bock and Lepthien (1976), and Troy (1983) to bumper crops of birch seeds (Betula spp.), which tend to occur in alternate years. Most redpolls are banded in late winter and early spring, often at bird feeders, and about half the birds were encountered during banding operations.

Of 41 birds both banded and encountered in December-February, 13 were encountered within the same winter, all in the same province where banded. The remaining 28 were encountered in a later year, only 2 of which were in different jurisdictions: 1 moving from Minnesota to Quebec, and 1 from Quebec to Pennsylvania. Although there are obvious differences in wintering areas between irruption and non-irruption years, there may be less nomadism among redpolls than among Pine Siskins.

The pattern of western encounters shows a west-northwest-east-southeast axis of movement (e.g., records 1-12), suggesting that redpolls from the western Arctic winter in eastern Canada and the northeastern U.S., at least during irruption years. However, some northwest-southeast directionality can be seen



in the Prairie Provinces. The east-west component could be partly an artefact of the human population distribution, because there is almost no chance of encountering birds after they have moved north to breeding areas, except in Alaska. Moreover, the strongly east-west displacement might only occur in years of maximum irruption. A high proportion of both bandings and encounters occur in such years; for example, the birds in records 1 to 3 were all found in eastern North America in 1956, and those in records 9 and 10 were western birds banded at the same Quebec site in 1992.

The eastern map depicts additional cases of east-west movement (e.g., record 13). These cases suggest that western birds might winter on different sides of the Great Lakes in different years (e.g., a bird banded in Minnesota in February was encountered in eastern Quebec in January three winters later). This map also shows north-south movement, presumably of redpolls breeding east of Hudson Bay. These birds may winter mainly east of the Great Lakes, mingling in irruption years with birds from the western Arctic.

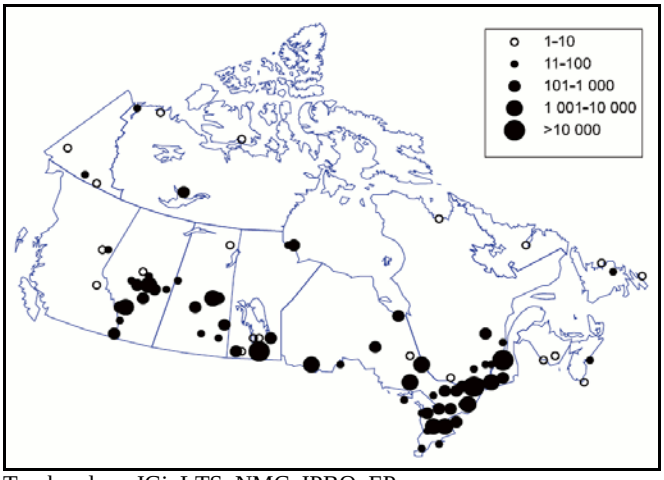
Encounter records: Common Redpoll

1	0220-05991	U	U	05/03/54	near White Fox, SK	53°20'N 104°00'W	2 yr. 0 mo.
	BMat	0	0	18/03/56	Bennington, VT	42°50'N 73°10'W	2546 km S75°E
2	0230-84322	U	U	23/03/56	Ridgewood, NJ	40°50'N 74°00'W	2 yr. 1 mo.
	EGM	0	0	10/04/58	Edmonton, AB	53°30'N 113°30'W	3251 km N51°W
3	0520-18656	AHY	M	01/03/56	near Montréal, QC	45°30'N 73°30'W	1 yr. 3 mo.
	JGu	0	0	10/06/57	Levelock, AK	59°00'N 156°00'W	5434 km N43°W
4	1200-50345	AHY	M	15/03/70	near St. Vital, MB	49°50'N 97°00'W	2 yr. 1 mo.
	LTS	7	89	14/04/72	Toronto, ON	43°40'N 79°20'W	1507 km S70°E
5	1200-55665	AHY	U	01/05/70	near St. Vital, MB	49°50'N 97°00'W	1 yr. 8 mo.
	LTS	4	13	99/01/72	Hebron, IL	42°20'N 88°20'W	1069 km S42°E
6	0310-65245	U	U	09/03/60	Ridgewood, NJ	40°50'N 74°00'W	2 yr. 0 mo.
	HGMcE	0	0	16/03/62	Morden, MB	49°10'N 98°00'W	2092 km N56°W
7	0320-36096	U	F	01/04/60	Coventry, CT	41°40'N 72°10'W	
	NOS	0	3	??/04/62	near Carman, MB	49°40'N 98°00'W	2184 km N57°W
8	0440-18916	AHY	U	08/03/46	near White Fox, SK	53°20'N 104°00'W	11 mo.
	MGS	0	1	14/02/47	Wingham, ON	43°50'N 81°10'W	1973 km S67°E
9	1860-55947	AHY	U	26/04/92	Charlesbourg, QC	46°50'N 71°10'W	2 yr. 0 mo.
	JGi	4	13	25/04/94	Fairbanks, AK	65°00'N 148°10'W	4836 km N37°W
10	1860-53821	AHY	U	25/02/92	Charlesbourg, QC	46°50'N 71°10'W	2 yr. 1 mo.
	JGi	7	89	13/03/94	Pyas Lake, SD	45°30'N 97°10'W	2001 km N85°W
11	1620-00320	AHY	U	07/03/82	Atikokan, ON	48°40'N 91°30'W	4 yr. 0 mo.
	DHE	5	28	21/03/86	High Level, AB	58°30'N 117°00'W	1991 km N47°W
12	1540-26310	AHY	M	30/11/85	College, AK	64°50'N 147°50'W	1 yr. 3 mo.
	UAM	7	89	22/02/87	18 km north of White Fox, SK	53°30'N 104°00'W	2726 km S84°E
13	1750-38041	AHY	U	10/04/86	Charlesbourg, QC	46°50'N 71°10'W	5 yr.11 mo.
	JGi	5	0	29/03/92	Rose Lawn, WI	44°30'N 88°10'W	1345 km S85°W

Summary of banding statistics: Common Redpoll

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*98 123*
No. encountered per 1000 banded (1955-1995)			*1*
Total no. encountered (1921-1995)	1	197	254
No. encountered from foreign bandings	0	35	42
Maximum period from banding to encounter (mo.)	-	71	71
No. of Canadian-banded birds moving > 0 km	0	94	100
Mean movement > 0 km of Canadian-banded birds (km)	-	597	598
Maximum movement from all encounters (km)	-	5434	5434
% recovered (encountered dead)	100	45	43
% direct recoveries	100	66	57
% encountered during banding operations	0	50	53

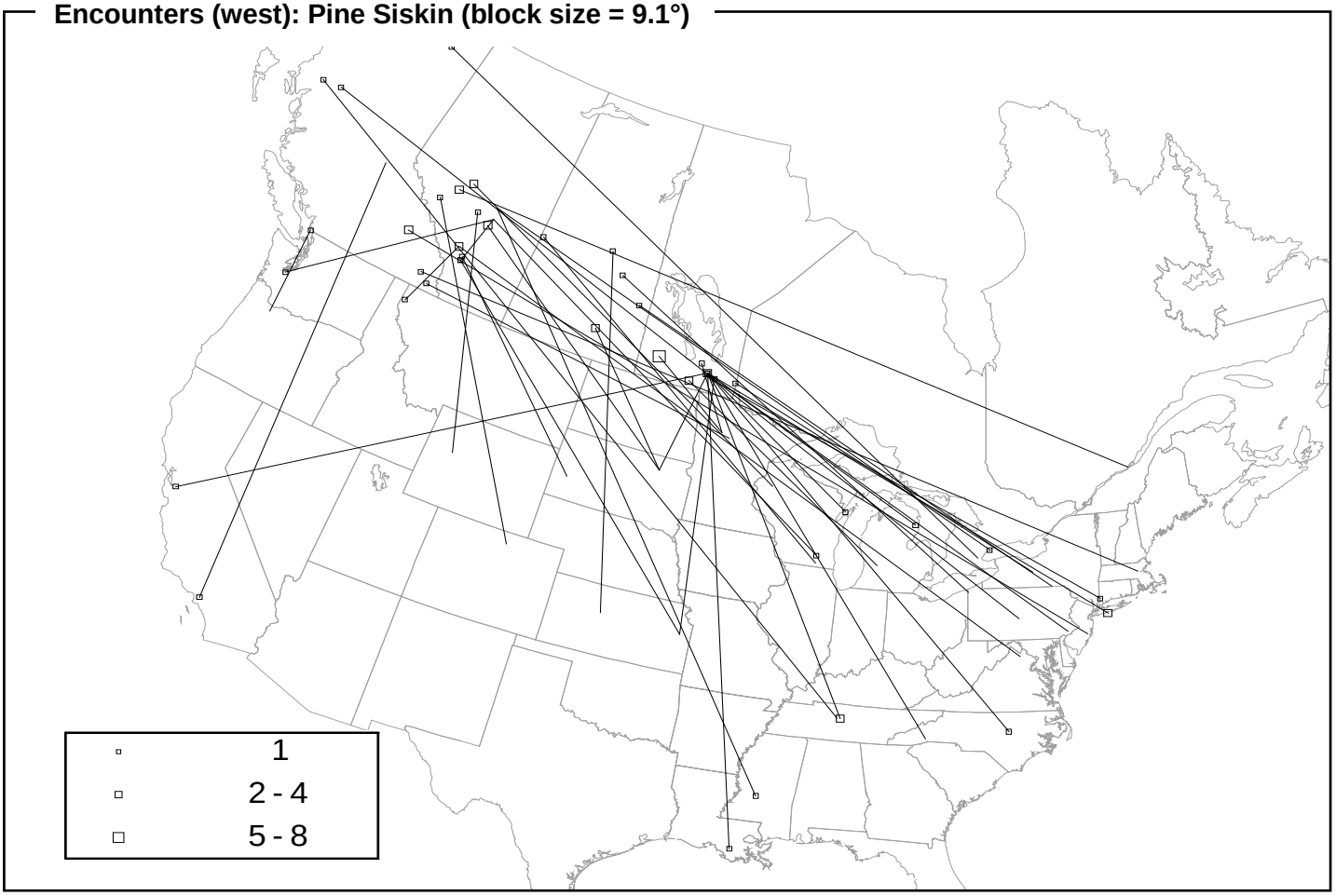
Banding effort: Common Redpoll



Top banders: JGi, LTS, NMC, IPBO, EP

Pine Siskin (*Carduelis pinus*) 533.0

Encounters (west): Pine Siskin (block size = 9.1°)

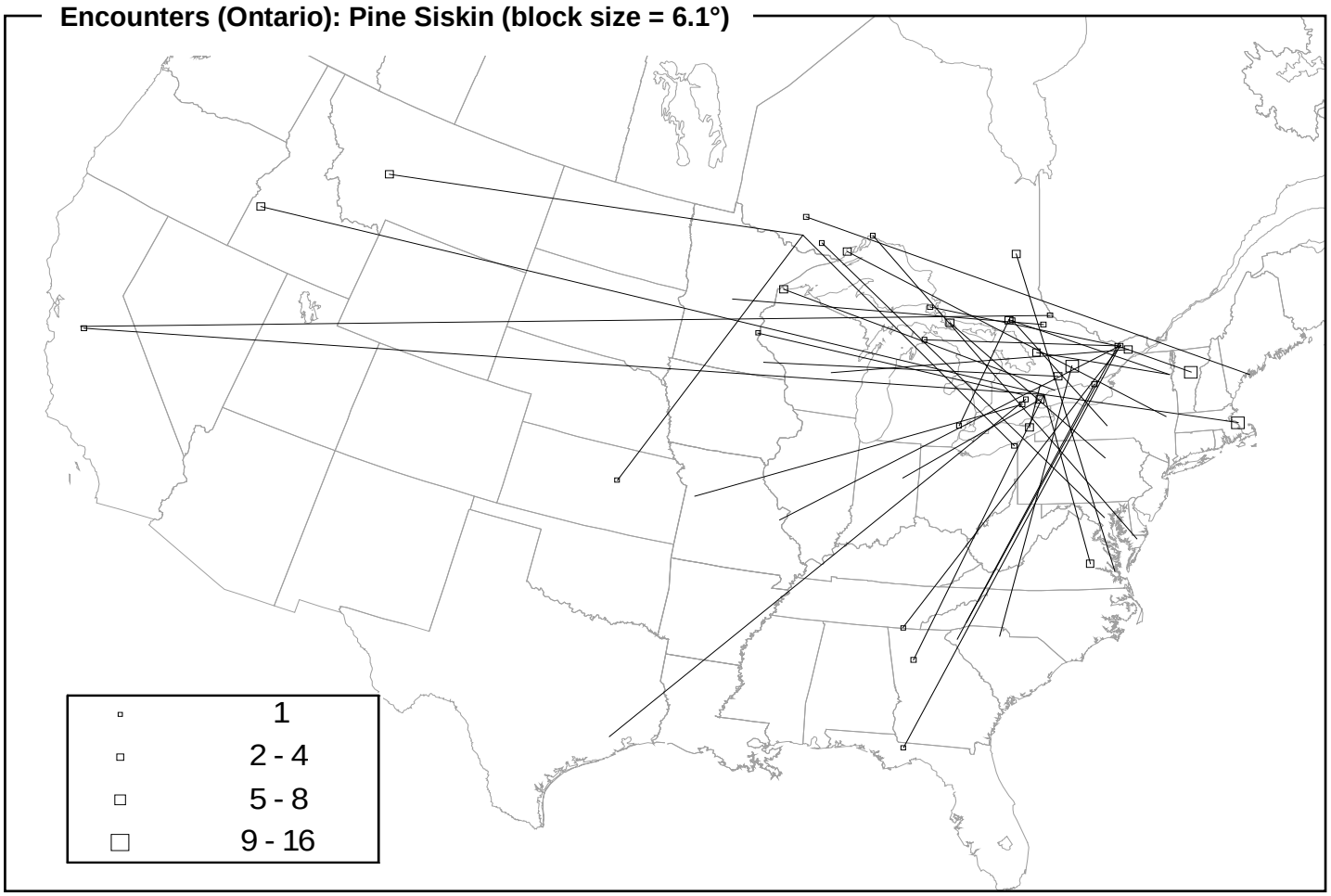


The Pine Siskin breeds across southeastern Alaska and Canada as far north as the limit of dense boreal forest, but not in the southern Prairie Provinces. It also breeds in the western and northeastern U.S. It winters in the breeding range and irregularly throughout the U.S.

The maps (the western map, in particular) exclude many individual encounters (see block size with encounter maps and explanation in section 4.2).

Siskins are highly irruptive, invading the more southern portions of the wintering range in approximately alternate years, but to a varying extent each time (Dawson 1997). A high proportion of Canadian siskin encounters involve years of maximum invasion, and about half represent recaptures during banding operations. Most birds are banded in late winter or early spring, often at bird feeders.

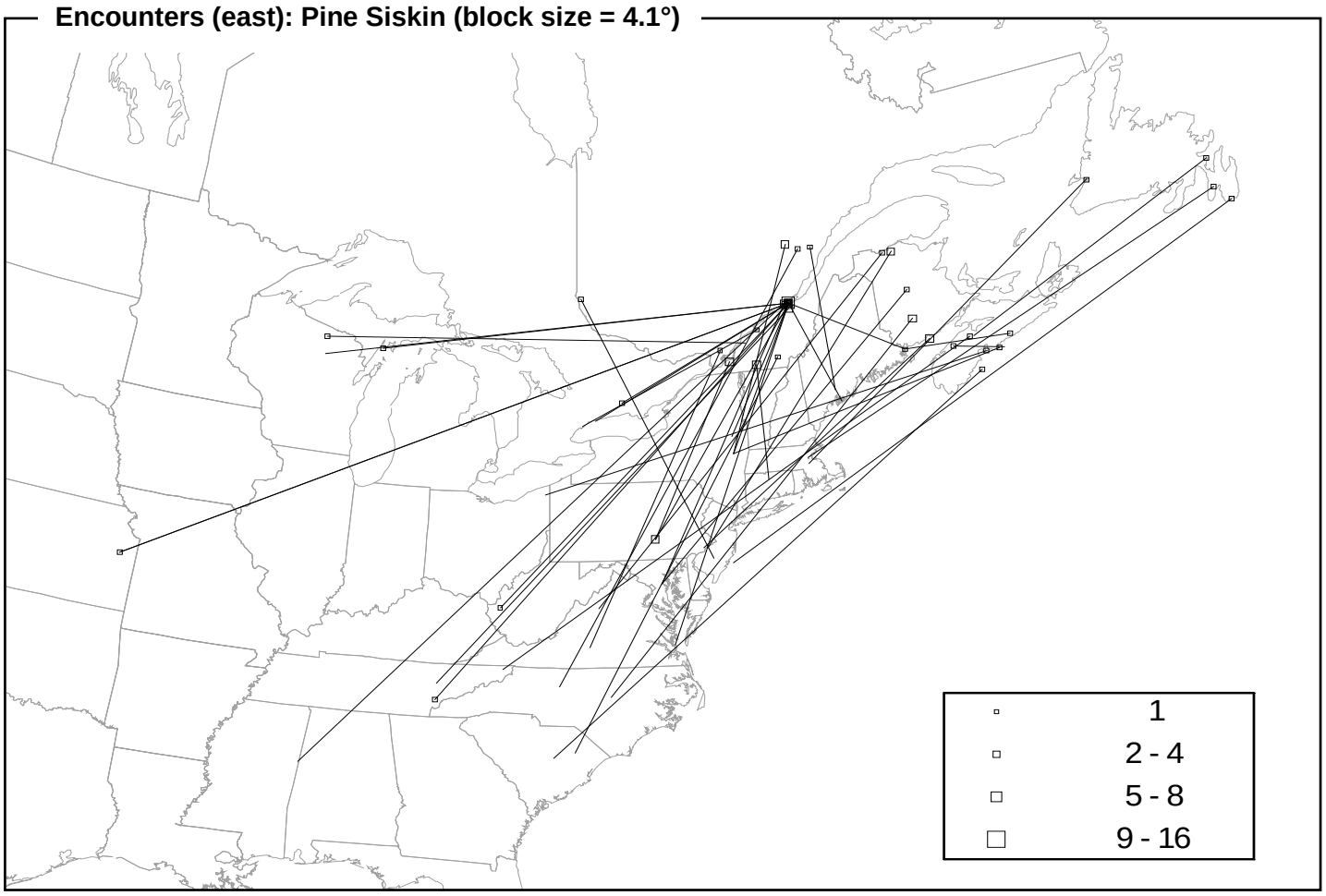
Yunick (1997) reported on 13 encounters from the banding of over 4000 siskins at a site in New York during the 1989-1990 irruption. Ten birds moved on a north-south or northeast-southwest axis within the eastern U.S. and Canada, and three moved east-southeast-west-northwest (covering distances of 1356-3470 km). All other encounters and retraps at that station involving non-irruption years showed movement restricted to eastern North America. Yunik's analysis suggests typical migratory directions (east-southeast-west-northwest for western Canadian breeders and southwest-northeast for eastern breeders), which in irruption years bring birds to overlapping wintering sites in the eastern U.S.



This conclusion is supported by the nine Canadian records of siskins banded in winter (December-February) and encountered in a different winter. One from British Columbia spent a different winter in Tennessee (record 1); three that were in Quebec during one winter spent different winters in Maine, Virginia, and Pennsylvania; and five wintering in Ontario were encountered in different winters in Wisconsin, Kansas, South Carolina, and Missouri.

Of the British Columbia birds with winter encounters (December-February), three wintered in the province, one in Oregon, and three in Atlantic coastal states (e.g., record 2). The birds in records 3-5, though not encountered in winter, illustrate similar orientations (north-south or east-southeast-west-northwest), with the bird in record 4 moving an average of 89 km per day over 17 days. Prairie Province birds also wintered primarily to the east-southeast, from the Dakotas, Kansas, and Tennessee to Alabama and Louisiana (record 6), as well as farther east to Virginia and North Carolina (see also records 7-9 for similar orientations). However, one bird from Manitoba evidently wintered in California (record 10).

Ontario birds wintered more directly south and southeast, mainly in Great Lakes states as far south as Texas (record 11) and Louisiana, as well as in the northeastern U.S. Several cases involving Ontario showed strong east-west movement (e.g., record 12; see also record 10), giving no clue as to whether these birds might be western or eastern breeders. Possibly this and similar California encounters (see map) result from western Canadian birds heading south in some winters and east-



southeast in others. Quebec siskins had a winter distribution similar to that of Ontario birds but shifted slightly eastward (see record 13 for an example of similar orientation), and Maritimes birds wintered primarily in the northeastern U.S. (see records 14 and 15 for birds with similar orientation; the bird in record 15 must have wintered unusually far south).

Breeding season distribution has also been described as erratic (Dawson 1997), in part because some siskins have been banded as adults in May-July and encountered in the same months of another year in a different state or province. There are seven such encounters involving Canadian birds, showing an average movement of 1375 km. However, the timing of the return to breeding areas and the timing of breeding itself are also variable (Dawson 1997), so even May records may sometimes represent migration localities rather than breeding sites. The strongest suggestion of shifts between breeding areas comes from records 16 and 17.

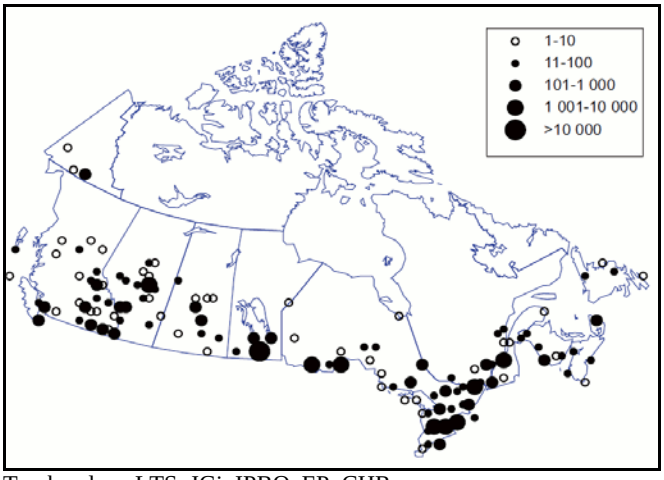
Encounter records: Pine Siskin

1	1850-00351	U	U	28/12/89	Nashville, TN	36°00'N 86°50'W	1 yr. 0 mo.
	DFV	5	14	16/12/90	Terrace, BC	54°30'N 128°30'W	3780 km N44°W
2	1460-43096	AHY	U	20/01/78	Poquoson, VA	37°00'N 76°20'W	1 yr. 7 mo.
	SM	5	13	25/08/79	Prince George, BC	53°50'N 122°40'W	3983 km N47°W
3	1330-25611	SY	U	16/03/74	North Sudbury, MA	42°20'N 71°20'W	1 yr. 1 mo.
	MBO	5	0	25/04/75	Kimberley, BC	49°40'N 115°50'W	3482 km N61°W
4	1230-83376	AHY	U	25/05/70	Bemidji, MN	47°20'N 94°50'W	17 dy.
	JPL	5	13	11/06/70	near Elko, BC	49°20'N 115°10'W	1516 km N74°W
5	0030-54805	U	U	15/07/28	Barkerville, BC	53°00'N 121°30'W	3 yr. 9 mo.
	JW	0	0	01/04/32	Eagle Rock, CA	34°00'N 118°10'W	2132 km S8°E
6	1200-43148	U	U	16/08/69	St. Vital, MB	49°50'N 97°00'W	5 mo.
	LTS	5	0	22/01/70	Amelia, LA	29°40'N 91°00'W	2301 km S15°E
7	1030-41475	U	U	22/08/71	near Edmonton, AB	53°30'N 113°20'W	7 mo.
	ETJ	7	89	25/03/72	Don Mills, ON	43°40'N 79°20'W	2700 km S80°E
8	0280-16262	AHY	U	02/06/63	St. Adolphe, MB	49°40'N 97°00'W	10 mo.
	DRH	0	13	22/04/64	Brewster, NY	41°20'N 73°30'W	2043 km S72°E
9	1160-47385	U	U	29/07/69	St. Vital, MB	49°50'N 97°00'W	8 mo.
	LTS	7	89	01/03/70	Garner, NC	35°40'N 78°30'W	2173 km S50°E
10	1240-31766	AHY	U	11/05/72	St. Vital, MB	49°50'N 97°00'W	1 yr. 7 mo.
	LTS	5	0	06/03/74	Irvington, CA	37°30'N 121°50'W	2407 km S65°W
11	1540-60743	AHY	U	01/02/81	Alief, TX	29°40'N 95°30'W	4 yr. 1 mo.
	BH	7	89	17/03/85	Guelph, ON	43°30'N 80°10'W	2055 km N37°E
12	0290-69092	AHY	U	24/03/63	Toronto, ON	43°40'N 79°20'W	11 mo.
	CHR	0	89	14/02/64	Ceres, CA	37°30'N 120°50'W	3537 km S87°W
13	1200-86330	AHY	U	07/04/70	near Winston Salem, NC	36°00'N 80°10'W	1 yr. 3 mo.
	FSH	5	14	18/07/71	south of L'Anse-Saint-Jean, QC	48°20'N 70°30'W	1585 km N27°E
14	0200-28754	AHY	U	08/04/50	Auburndale, MA	42°20'N 71°10'W	1 yr. 3 mo.
	CJP	0	12	26/07/51	near Placentia, NL	47°10'N 53°50'W	1468 km N63°E
15	0250-54478	AHY	M	05/03/66	Garner, NC	35°40'N 78°30'W	4 mo.
	JMC	5	14	17/07/66	Fredericton, NB	45°50'N 66°30'W	1515 km N38°E
16	1740-00376	AHY	M	09/07/90	18 km south of Dubois, WY	43°20'N 109°30'W	1 yr.11 mo.
	MLA	5	13	04/06/92	11 km west of Breton, AB	53°00'N 114°30'W	1138 km N17°W
17	1830-38795	AHY	U	28/07/91	11 km west of Dogpound, AB	51°20'N 114°30'W	2 yr. 0 mo.
	DC	4	12	22/07/93	Troy, MT	48°20'N 115°50'W	347 km S17°W
18	0005-76403	AHY	U	16/07/28	Barkerville, BC	53°00'N 121°30'W	5 yr. 11 mo.
	TTMcC	0	99	01/06/34	Barkerville, BC	53°00'N 121°30'W	0 km

Summary of banding statistics: Pine Siskin

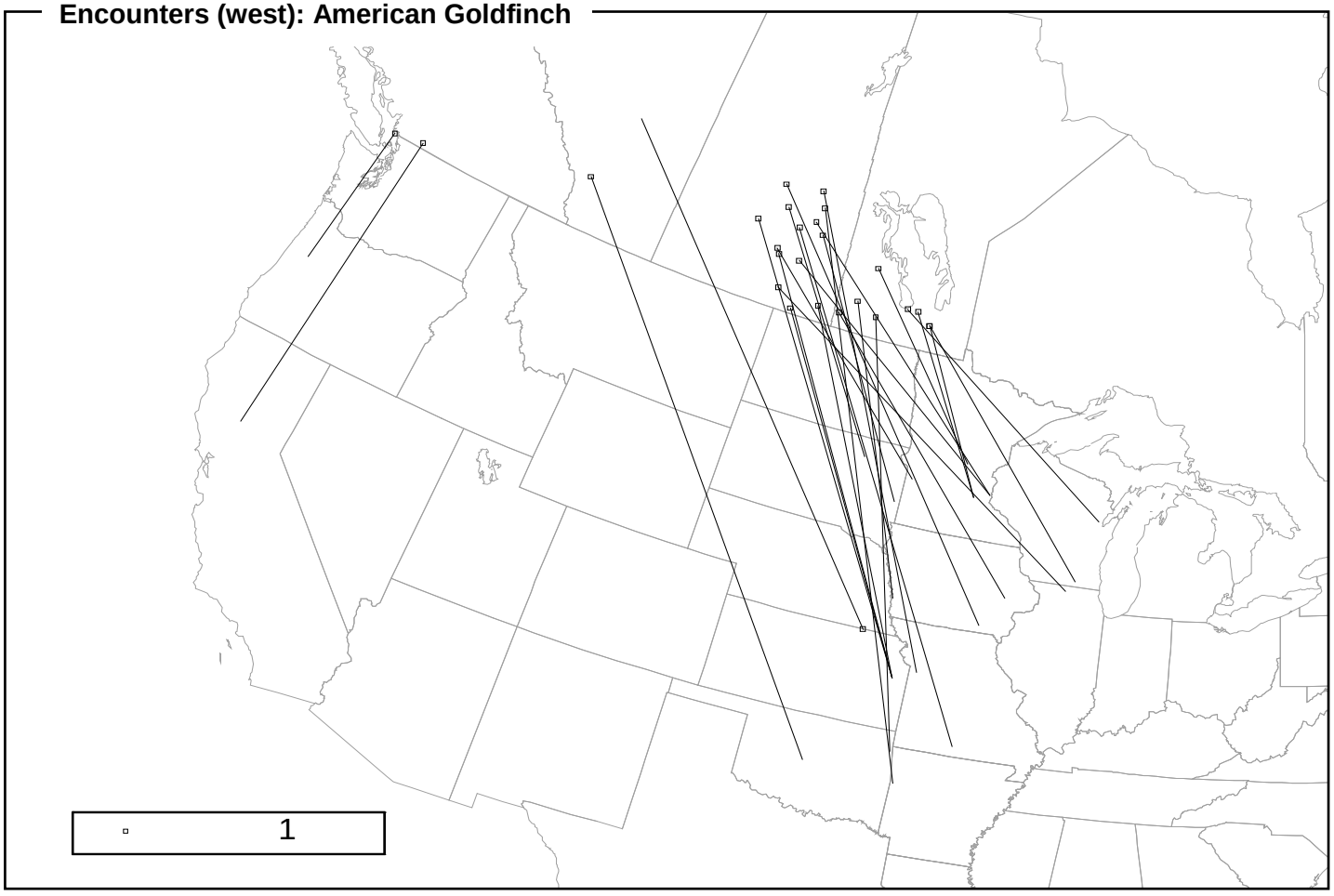
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*54 925*
No. encountered per 1000 banded (1955-1995)			*2*
Total no. encountered (1921-1995)	6	213	267
No. encountered from foreign bandings	3	125	135
Maximum period from banding to encounter (mo.)	29	71	71
No. of Canadian-banded birds moving > 0 km	3	65	90
Mean movement > 0 km of Canadian-banded birds (km)	1428	743	907
Maximum movement from all encounters (km)	2121	3983	3983
% recovered (encountered dead)	66	48	46
% direct recoveries	16	48	47
% encountered during banding operations	33	45	47

Banding effort: Pine Siskin



Top banders: LTS, JGi, IPBO, EP, CHR

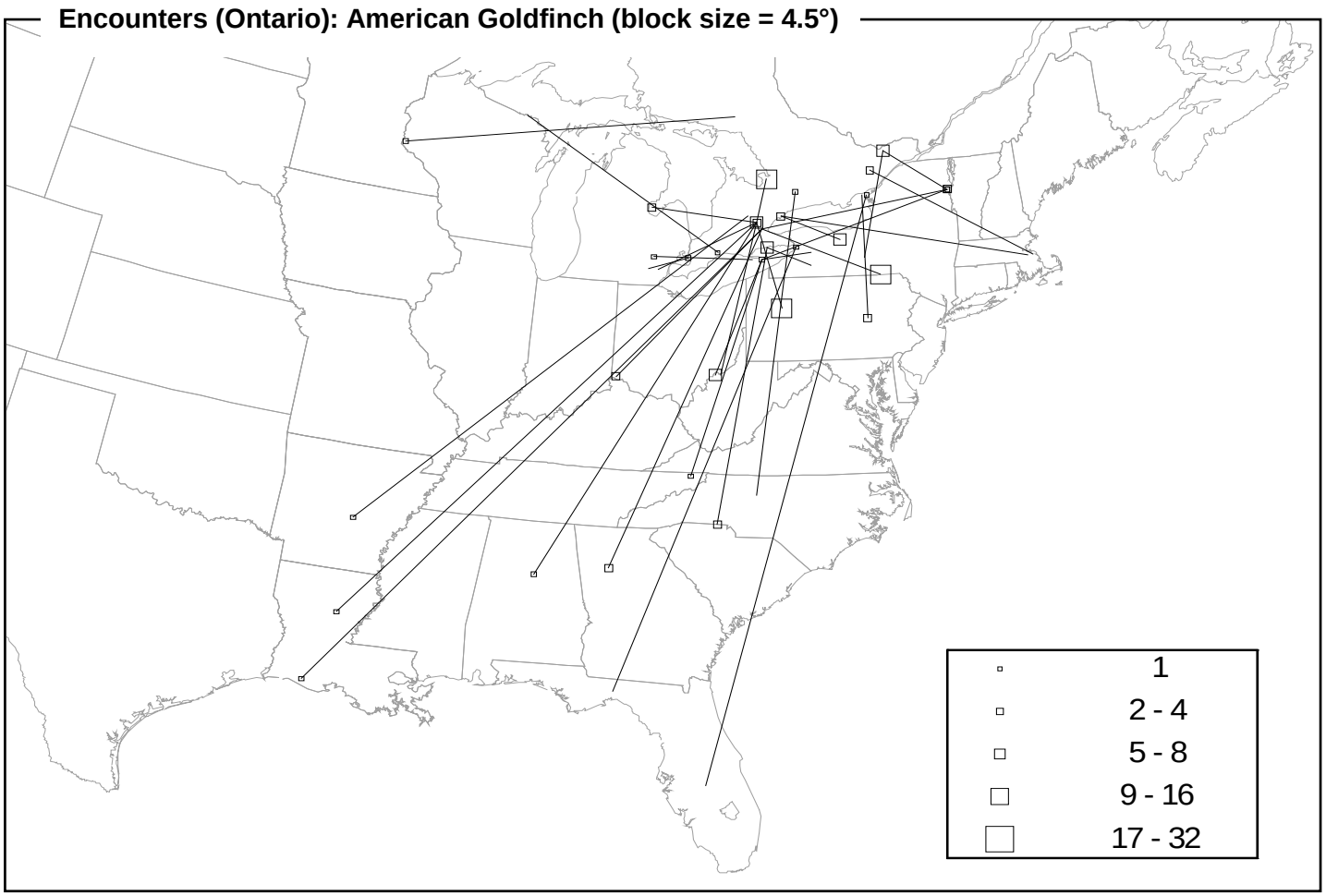
American Goldfinch (*Carduelis tristis*) 529.0



The American Goldfinch breeds in the northern half of the U.S., as well as across southern Canada, from southern British Columbia, north-central Alberta, and central Saskatchewan east to Newfoundland. It winters from extreme southern Canada throughout the U.S. to northern Mexico.

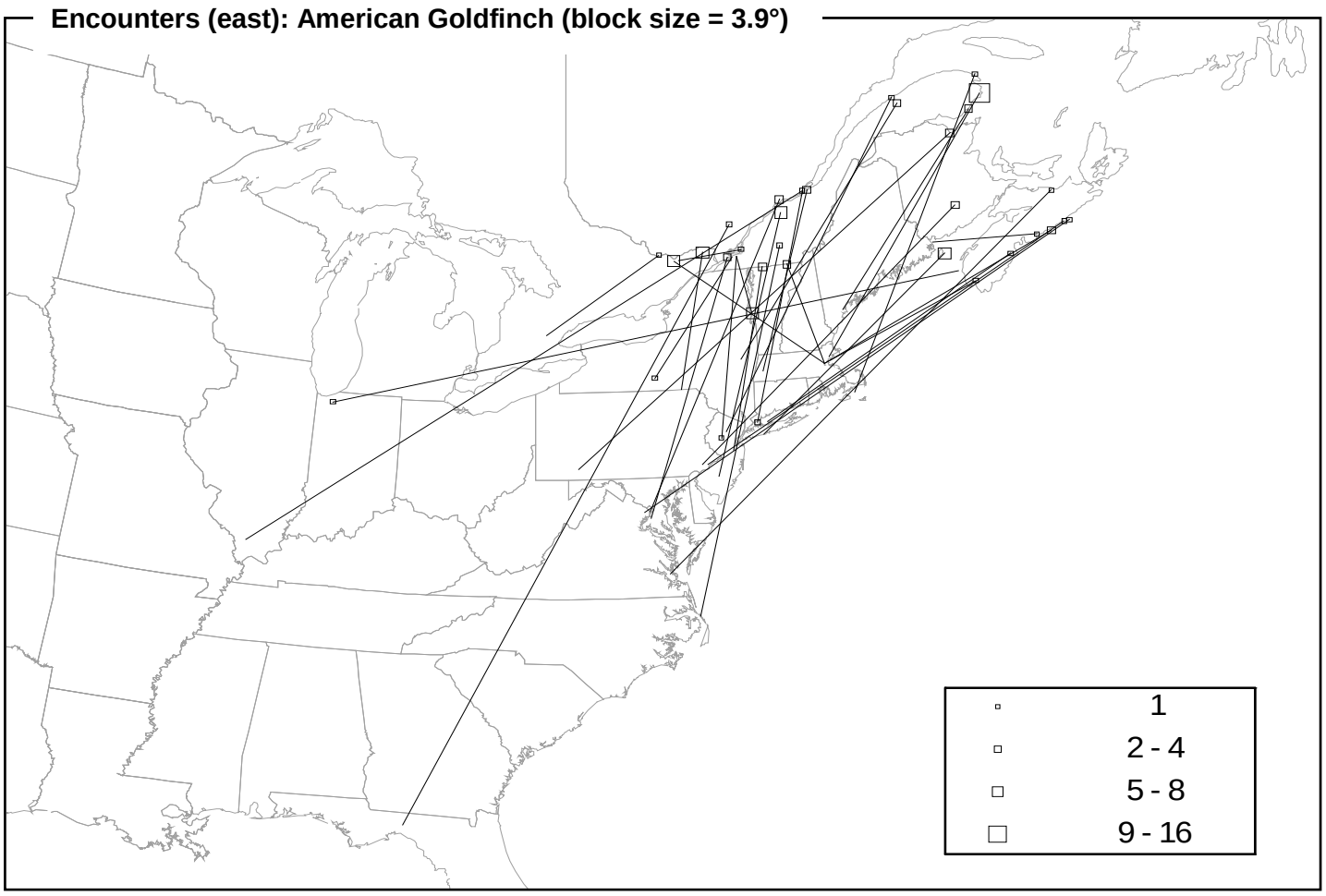
Most Canadian goldfinches migrate, although southern populations are largely resident (Middleton 1993). Many of the Canadian encounters arose from an intensive banding study in Guelph, Ontario (Middleton and Webb 1984), and over a third of all encounters are recaptures by banders. Females have been shown to migrate farther south than males, and adult males move farther than young males (Prescott and Middleton 1990).

Encounters show that British Columbia birds move to California for the winter (December-January; records 1 and 2). Those from the Prairie Provinces move southeast to winter in central U.S. states (e.g., Nebraska and Arkansas; see examples of birds encountered in migration that moved in similar directions, records 3-6). A high proportion of goldfinches banded in southern Ontario also overwinter in that province, but others move to states just south of the Great Lakes and east to the Atlantic. A few go as far as the Gulf Coast (record 7; see also record 8). Quebec and Maritimes birds winter primarily in Atlantic coastal states, from Massachusetts to Virginia (record 9), with a few heading farther south (record 10). Many other



Martitimes and Quebec birds on the east coast were encountered there during migration (records 11-14).

A sample of 14 goldfinches banded in one winter (December-February) and encountered in a different winter (all involving Ontario) showed that 9 finches spent both winters in Ontario, but the other 5 spent one of the two seasons in, respectively, Maryland, New York, Pennsylvania, Kentucky, and Alabama. This species does show fidelity to the breeding area, however (as evidenced by six birds encountered in June-July at the same place where they were banded as adults in June-July of an earlier year).


Encounters (east): American Goldfinch (block size = 3.9°)
1
2 - 4
5 - 8
9 - 16

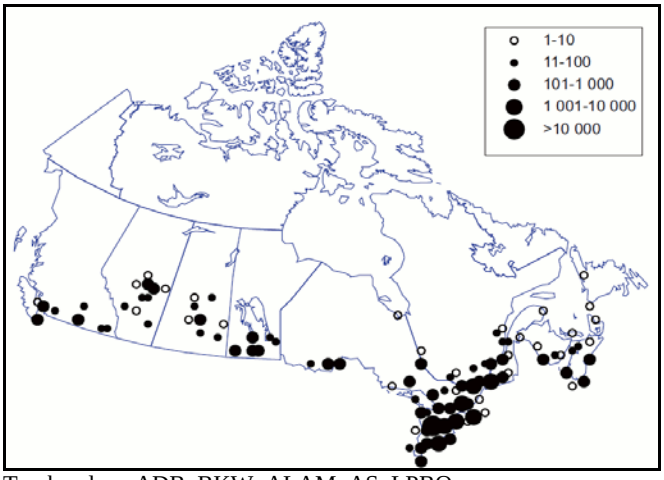
Encounter records: American Goldfinch

1	1030-13466	U	U	06/02/63	Big Lake Farms, CA	39°20'N	122°00'W	
	TEB	5	14	??/08/65	Agassiz, BC	49°10'N	121°40'W	1095 km N1°E
2	1030-13963	U	U	19/02/65	Big Lake Farms, CA	39°20'N	122°00'W	3 mo.
	TEB	0	14	04/05/65	Fort Langley, BC	49°00'N	122°30'W	1077 km N2°W
3	0380-36723	AHY	F	06/03/38	Fort Smith, AR	35°20'N	94°20'W	3 yr. 3 mo.
	SHW	0	98	10/06/41	Chelan, SK	52°30'N	103°20'W	2039 km N18°W
4	1180-14043	AHY	U	02/03/69	Lake De Montreville, MN	45°00'N	92°50'W	1 yr. 4 mo.
	MOR	5	14	08/07/70	Kelvington, SK	52°00'N	103°50'W	1105 km N41°W
5	0430-37708	U	M	22/05/45	Bellingham, MN	45°00'N	96°10'W	1 mo.
	CEP	0	0	18/06/45	Bulyea, SK	50°50'N	104°50'W	915 km N42°W
6	1730-09289	AHY	M	03/03/94	Yukon, OK	35°30'N	97°40'W	3 mo.
	DRG	5	0	04/06/94	Black Diamond, AB	50°40'N	114°10'W	2146 km N33°W
7	1890-84462	SY	M	25/08/93	Mountsberg, ON	43°20'N	80°00'W	6 mo.
	ADB	5	0	10/02/94	Lake Misere, LA	29°50'N	92°50'W	1886 km S41°W
8	0750-92697	HY	F	10/11/68	Tallahassee, FL	30°20'N	84°10'W	8 mo.
	PHH	3	45	06/07/69	Fort Erie, ON	42°50'N	78°50'W	1470 km N17°E
9	0270-69038	AHY	M	15/12/57	South Lincoln, MA	42°20'N	71°10'W	5 yr. 8 mo.
	FVC	0	0	14/08/63	Eel Brook, NS	43°50'N	65°50'W	465 km N67°E
10	1650-45533	AHY	F	04/02/84	Chaires, FL	30°20'N	84°00'W	1 yr. 5 mo.
	RFN	5	1	08/07/85	11 km west of Saint-Côme, QC	46°10'N	73°50'W	1970 km N24°E
11	1030-07307	AHY	M	08/04/63	Dover, NJ	40°50'N	74°30'W	2 mo.
	GC	0	14	24/06/63	near Matane, QC	48°50'N	67°30'W	1047 km N29°E
12	1090-17870	AHY	M	16/04/66	Allen's Pond, MA	41°30'N	71°00'W	4 mo.
	MO	5	3	ST/08/66	near Seacowpond, PE	47°00'N	63°50'W	837 km N41°E
13	1170-22258	AHY	M	12/10/68	Powdermill Nature Reserve, PA	40°00'N	79°10'W	9 mo.
	CMNH	5	0	25/07/69	near Petit Rocher, NB	47°40'N	65°40'W	1376 km N47°E
14	1180-92182	AHY	U	17/03/69	Fort Eustis, VA	37°10'N	76°30'W	3 yr. 5 mo.
	MAB	5	14	24/08/72	Caribou, NS	45°40'N	62°40'W	1489 km N46°E
15	1750-28081	HY	M	23/11/85	Guelph, ON	43°30'N	80°10'W	8 yr.
	BKW	7	4	11/11/93	inexact location, PA	40°10'N	79°??'W	

Summary of banding statistics: American Goldfinch

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*84 841*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	66	273	383
No. encountered from foreign bandings	16	110	148
Maximum period from banding to encounter (mo.)	96	77	96
No. of Canadian-banded birds moving > 0 km	37	100	147
Mean movement > 0 km of Canadian-banded birds (km)	214	282	271
Maximum movement from all encounters (km)	1470	2146	2146
% recovered (encountered dead)	54	60	59
% direct recoveries	40	40	39
% encountered during banding operations	43	35	36

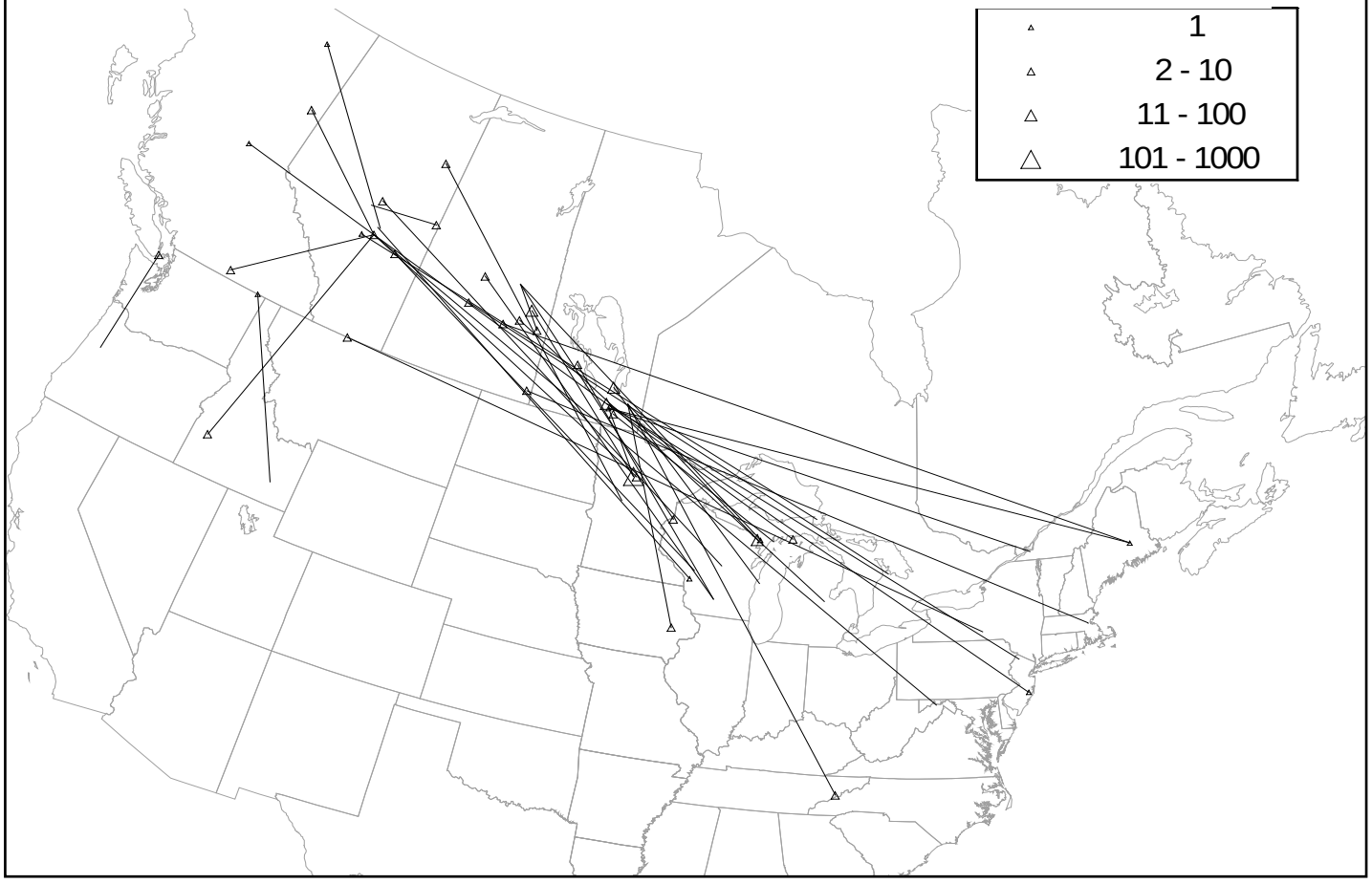
Banding effort: American Goldfinch



Top banders: ADB, BKW, ALAM, AS, LPBO

Evening Grosbeak (*Coccothraustes vespertinus*) 514.0

Encounters (west): Evening Grosbeak (block size = 8.6°; excludes birds moving < 400 km)

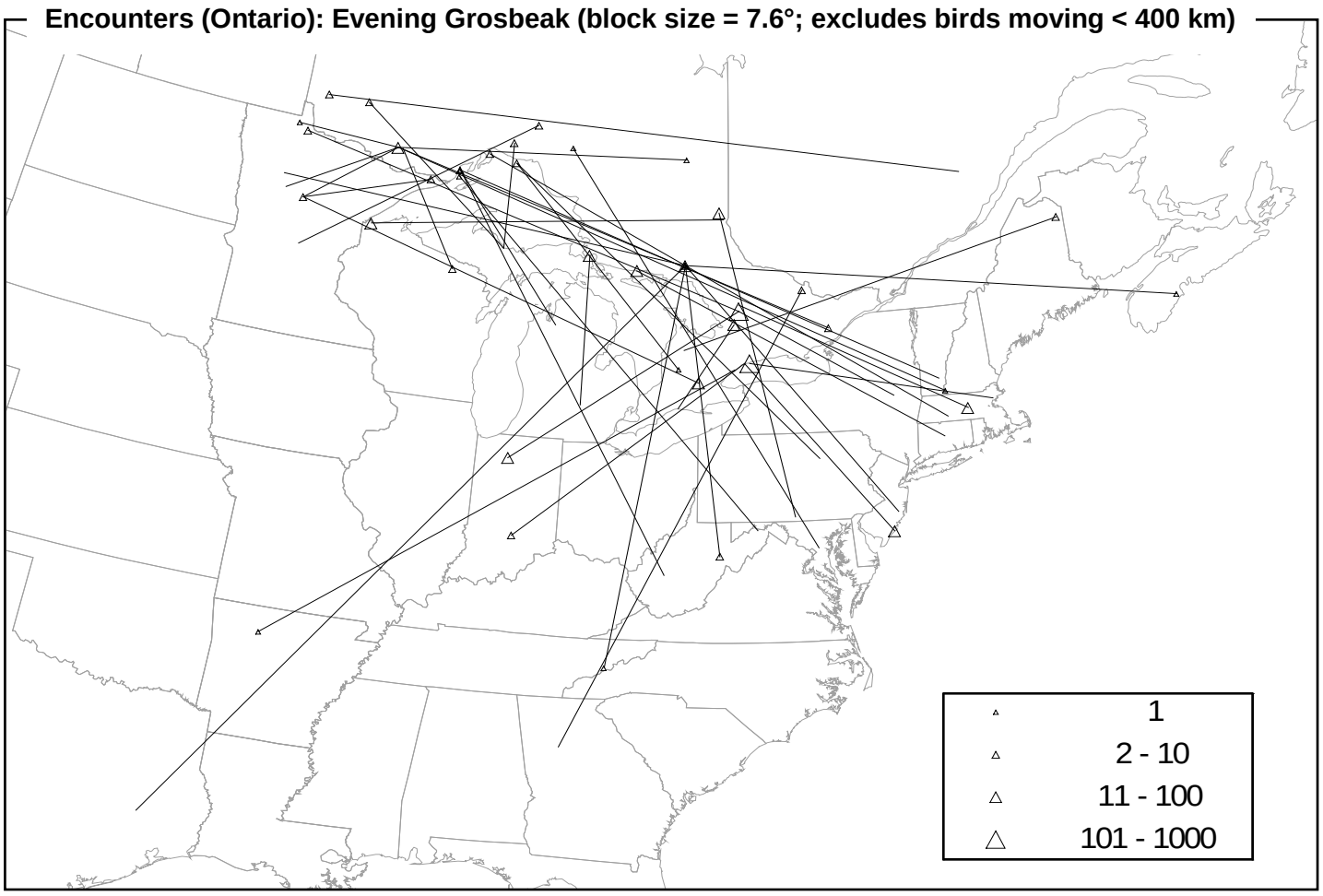


The Evening Grosbeak breeds in the western U.S., as well as across southern Canada (except for the Prairie Provinces), north to central British Columbia and northern Alberta in the west, and to Anticosti Island in the east. It winters throughout the breeding range and irregularly throughout the U.S. except in the extreme south. This species, formerly primarily western, has expanded its breeding range eastward in this century.

The large number of encounters for this species requires a great deal of selection for mapping, so many hundreds of individual records are not shown (see block size and other details with encounter maps, and introduction for explanation. Note that nine degrees is as wide as the southern border of Saskatchewan).

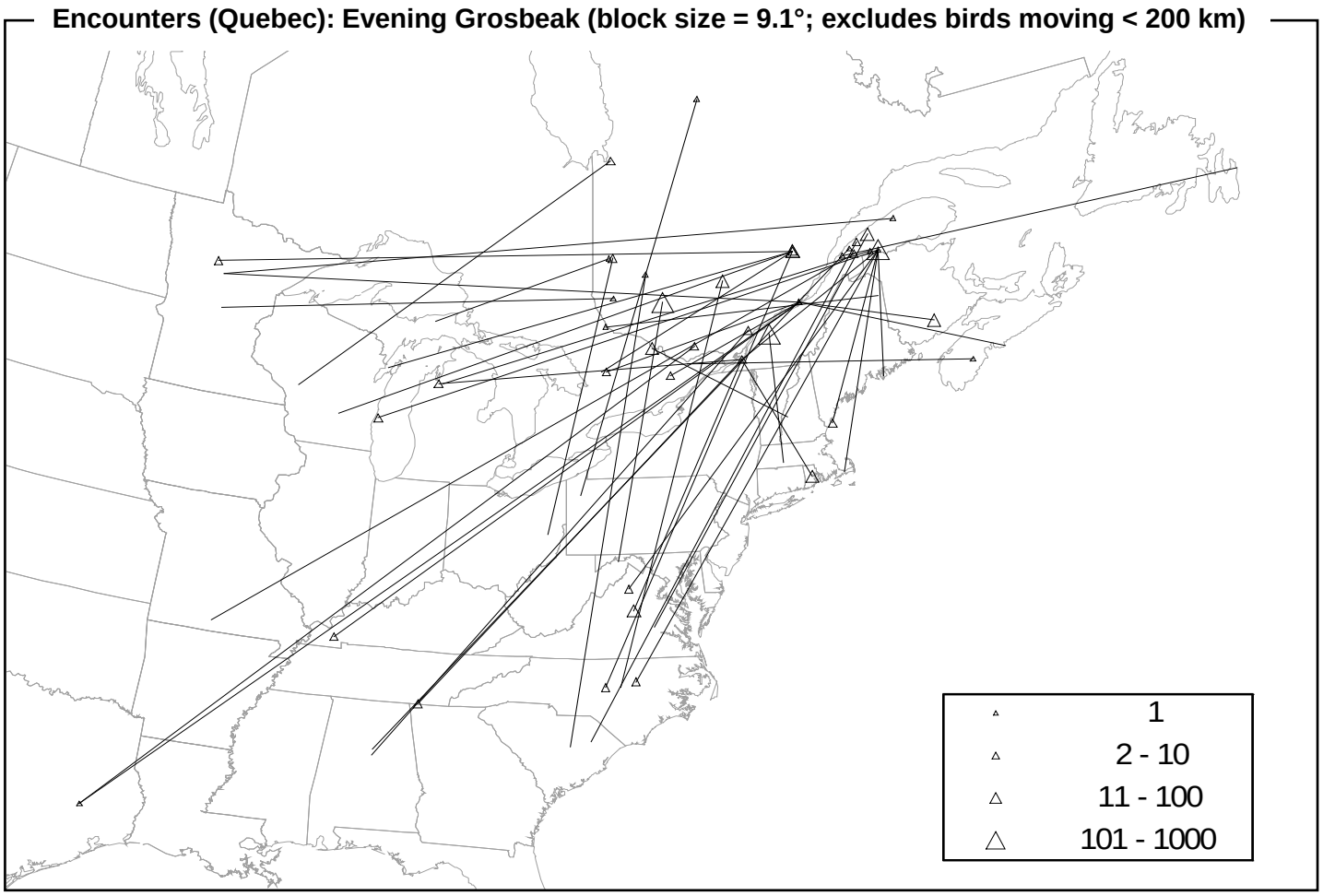
Grosbeaks are irruptive migrants, at least east of the Rocky Mountains (Bock and Lepthien 1976), with eastern birds showing little fidelity to wintering sites (Balph and Lindahl 1978, Yunick 1983). Males winter farther north than females, to varying extents from year to year; but there is no apparent geographic separation by age (Prescott 1991).

Probably because much banding takes place at bird feeders, there are over 2000 records of birds either banded or encountered in mid-winter (December-February). In each region of Canada except for Ontario, about 20-30% of these birds were found wintering in Canada, while the remainder wintered in the U.S. Of records involving Ontario, about 60% were wintering there.



Fully 310 encounters involved grosbeaks banded in one winter and encountered in another jurisdiction in a different winter (indicating the different distances travelled from year to year and illustrating general patterns of movement). Only two birds wintering in British Columbia in one year spent different winters elsewhere (both in Alberta). (Records involving British Columbia in other seasons also show limited movement, with the birds travelling only as far as Alberta, Idaho, and Oregon). Birds that wintered on the Prairie Provinces in one year spent other winters primarily in Minnesota, Wisconsin, and Michigan, although a few wintered in the Pacific Northwest (including the two in British Columbia just mentioned). Some Prairie Province birds also moved farther east, to New York (record 1) and the New England states (record 2), although occasionally they went more directly south (record 3).

Birds wintering in Ontario spent other winters in states from Michigan east to the coast (overlapping broadly with birds from the Prairie Provinces), and one got as far as North Carolina (record 4, not shown on the map due to extensive thinning). Records 5 and 6 show additional examples of birds that must have wintered in the southern U.S. in at least one year. Grosbeaks encountered in winter in Quebec and the Maritimes spent other winters mainly in Appalachian Mountain states, especially southern New England to

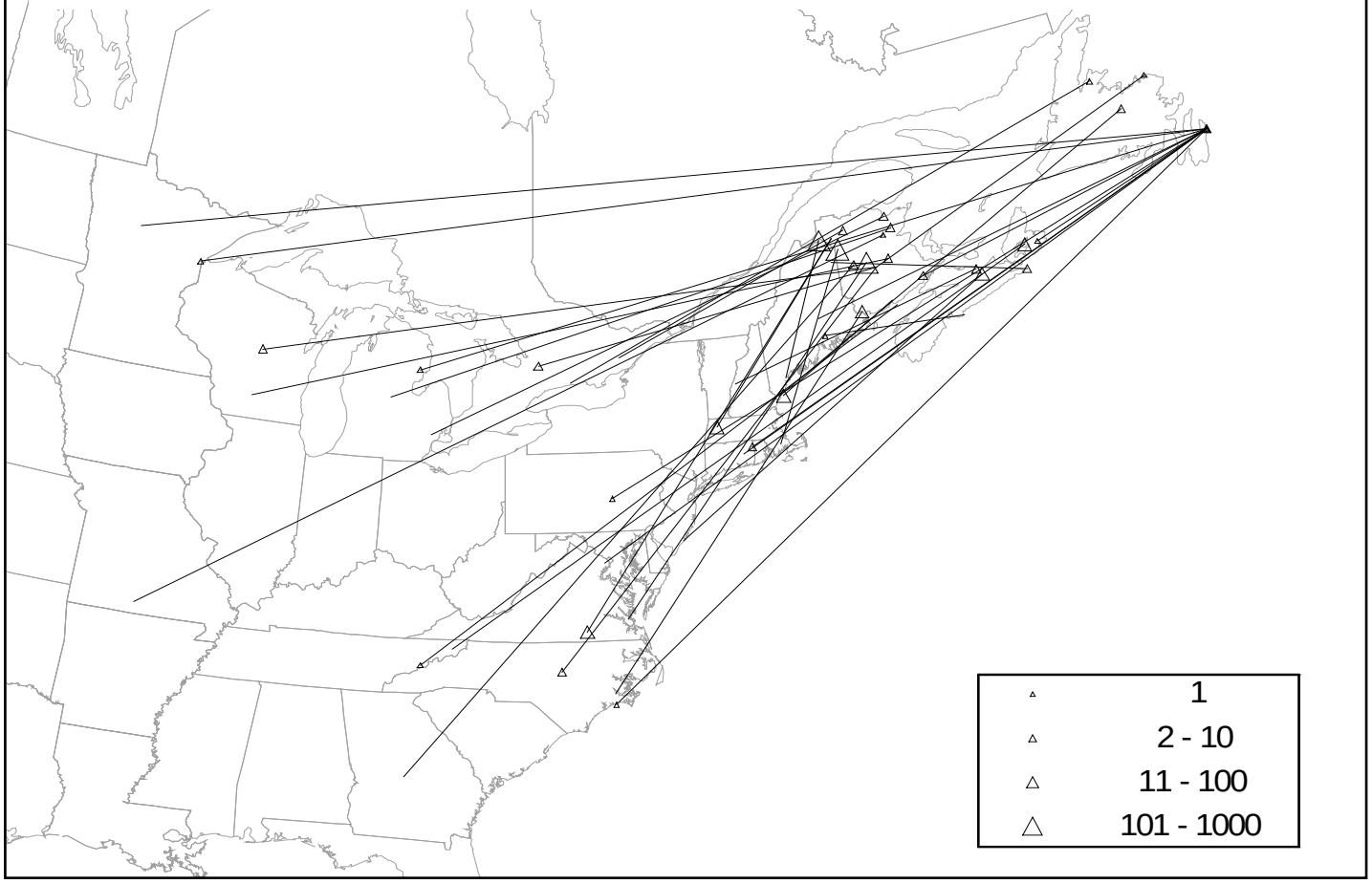


Virginia. However, one was encountered in Georgia (record 7), while others were encountered in Wisconsin and Michigan. (Possibly the latter two were breeders from the Prairie Provinces.) Other Quebec and Maritimes records are for birds that appear to have wintered in regions extending from quite far west (records 8-10) to the Atlantic coast (records 11 and 12).

Some encounters suggest low fidelity to the breeding site. There were 10 encounters in June-July of grosbeaks banded as adults in June-July of an earlier year. One of these was in Virginia, still south of the breeding range, and may simply have been slow in migrating that year. Of the other nine, two were at the same breeding site, three were within 100 km, and four had moved 322-946 km (from Minnesota to Manitoba, Michigan to Quebec, Ontario to Quebec, and New Brunswick to Ontario; see record 13).

The bird in record 11 holds the longevity record for this species (Klimkiewicz and Futcher 1989).

Encounters (Maritimes): Evening Grosbeak (block size = 8.1°; excludes birds moving < 200 km)



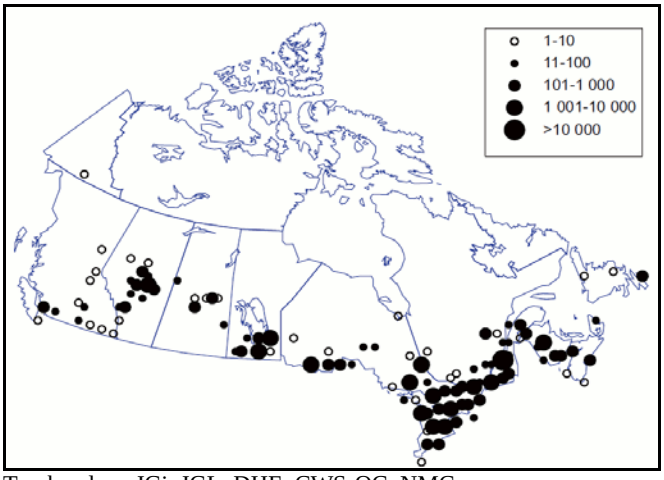
Encounter records: Evening Grosbeak

1	0601-77138	AHY	M	14/04/61	Ithaca, NY	42°20'N	76°20'W	
	OWD	0	0	??/01/62	Milk River, AB	49°00'N	112°00'W	2843 km N63°W
2	0741-17642	AHY	F	25/02/72	Central Village, MA	41°30'N	71°00'W	4 yr. 1 mo.
	PLR	7	89	03/03/76	St. Albert, AB	53°30'N	113°30'W	3402 km N52°W
3	0591-33401	AHY	F	23/03/66	St. Norbert, MB	49°40'N	97°00'W	
	LTS	3	20	99/WI/68	Heavener, OK	34°50'N	94°30'W	1664 km S8°E
4	0591-59356	U	M	25/12/68	Elmwood, ON	44°10'N	81°00'W	3 yr. 1 mo.
	HHK	7	89	08/01/72	Hillsboro, NC	36°00'N	79°00'W	925 km S11°E
5	0621-69125	AHY	F	28/04/62	near Atlanta, GA	33°40'N	84°20'W	8 yr. 11 mo.
	AJM	7	4	16/03/71	near Pembroke, ON	45°40'N	77°00'W	1475 km N23°E
6	0521-88173	AHY	F	05/03/59	Toronto, ON	43°40'N	79°20'W	2 yr. 10 mo.
	PEM	0	0	10/01/62	near Lurton, AR	35°50'N	93°10'W	1467 km S58°W
7	0961-42460	AHY	F	01/02/85	Charlesbourg, QC	46°50'N	71°10'W	1 yr.11 mo.
	JGi	7	3	99/01/87	Evans, GA	33°30'N	82°00'W	1743 km S35°W
8	0921-15197	AHY	M	29/01/83	Norbertville, QC	46°50'N	71°10'W	1 yr. 3 mo.
	CWS-QC	7	89	16/04/84	Huntsville, TX	30°40'N	95°30'W	2755 km S58°W
9	0701-47626	AHY	F	09/04/67	Bemidji, MN	47°20'N	94°50'W	1 yr. 11 mo.
	JEM	7	89	18/03/69	near Quidi Vidi Lake, NL	47°30'N	52°40'W	3137 km N74°E
10	0521-54389	HY	U	12/08/69	East of Saint John, NB	45°10'N	65°50'W	5 mo.
	WOA	7	89	21/01/70	Chestnut Hill, TN	35°50'N	83°10'W	1792 km S61°W
11	0581-31643	AHY	M	25/12/59	Coventry, CT	41°40'N	72°10'W	14 yr. 9 mo.
	WJP	5	14	15/09/74	Nictau, NB	47°10'N	67°00'W	737 km N32°E
12	0621-49427	AHY	M	02/03/64	Dun Loring, VA	38°50'N	77°10'W	
	MBP	5	45	??/03/69	near Quidi Vidi Lake, NL	47°30'N	52°40'W	2198 km N56°E
13	0731-06942	AHY	M	20/06/70	Boiestown, NB	46°20'N	66°20'W	1 yr. 0 mo.
	GHP	5	45	25/06/71	Algonquin Park, ON	45°30'N	78°30'W	946 km S89°W

Summary of banding statistics: Evening Grosbeak

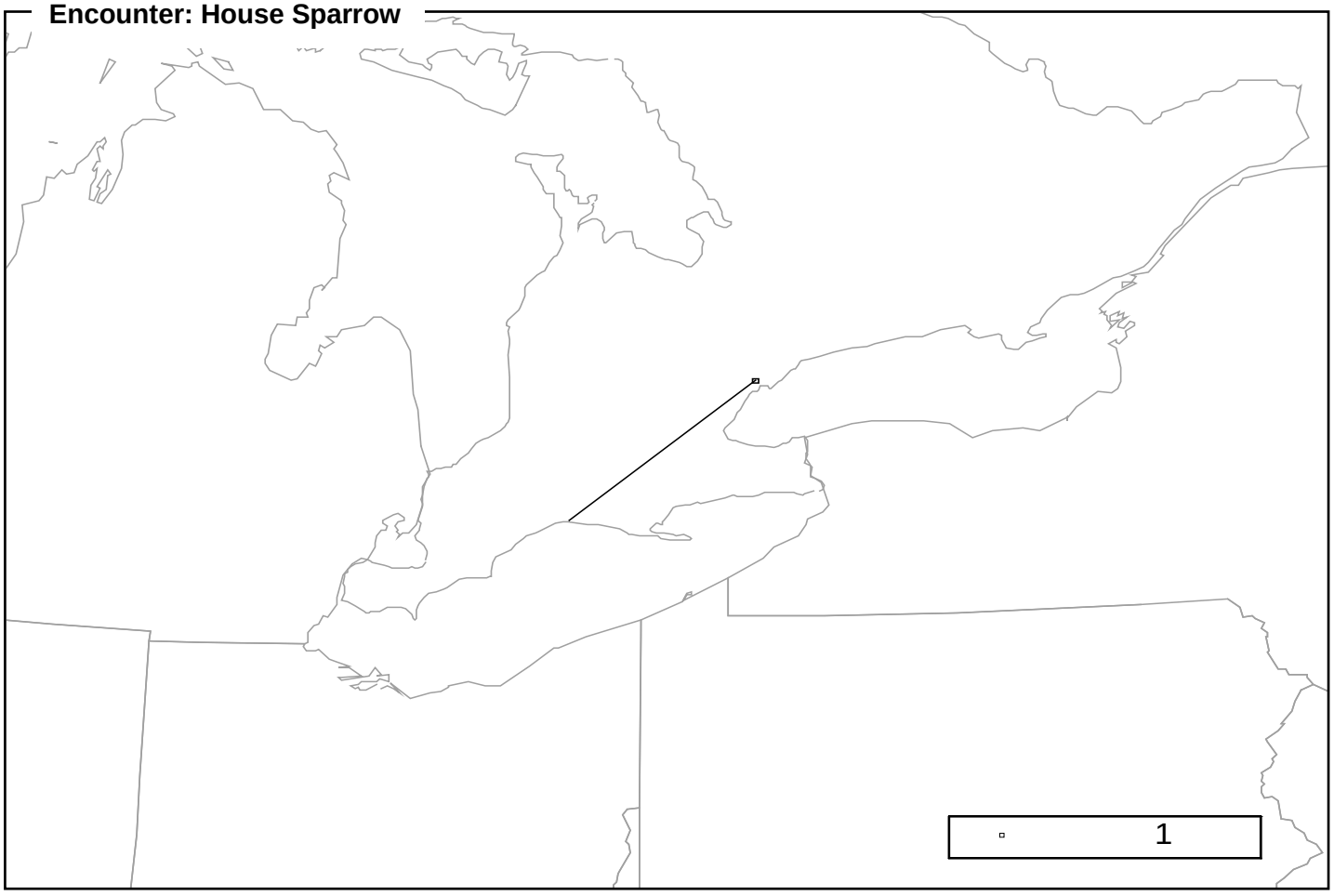
	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*69 079*
No. encountered per 1000 banded (1955-1995)			*17*
Total no. encountered (1921-1995)	94	3012	3867
No. encountered from foreign bandings	52	1926	2605
Maximum period from banding to encounter (mo.)	127	177	177
No. of Canadian-banded birds moving > 0 km	36	926	1077
Mean movement > 0 km of Canadian-banded birds (km)	404	552	543
Maximum movement from all encounters (km)	2254	3401	3401
% recovered (encountered dead)	64	61	62
% direct recoveries	25	27	26
% encountered during banding operations	24	33	32

Banding effort: Evening Grosbeak



Top banders: JGi, JGL, DHE, CWS-QC, NMC

House Sparrow (*Passer domesticus*) 688.2



The House Sparrow was introduced to North America in about 1850, and it is now a permanent resident throughout most settled parts of Canada and the U.S.

Only three birds moved over 25 km, going 33 km, 43 km, and 175 km (record 1).

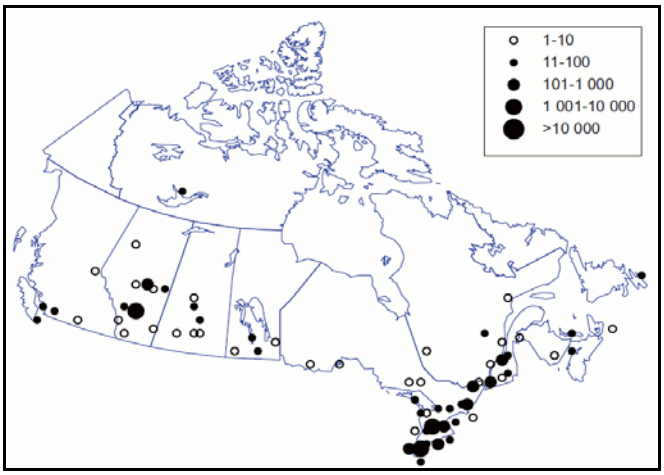
Encounter records: House Sparrow

1	0402-28002	U	U	30/04/42	St. Thomas, ON	42°40'N	81°10'W	
	TNJ	0	0	??/03/47	Etobicoke, ON	43°40'N	79°30'W	175 km N50°E
2	1351-08248	AHY	M	12/10/85	Kingston, ON	44°10'N	76°30'W	4 yr. 3 mo.
	CMF	5	0	03/01/90	Wolfe Island, ON	44°10'N	76°20'W	13 km N90°E

Summary of banding statistics: House Sparrow

	Age at banding		
	Hatch year	After hatch year	All ages
No. of Canadian bandings (1955-1995)			*14 802*
No. encountered per 1000 banded (1955-1995)			*3*
Total no. encountered (1921-1995)	17	21	47
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	24	51	51
No. of Canadian-banded birds moving > 0 km	4	11	21
Mean movement > 0 km of Canadian-banded birds (km)	15	18	27
Maximum movement from all encounters (km)	18	27	175
% recovered (encountered dead)	100	90	93
% direct recoveries	58	38	44
% encountered during banding operations	0	4	4

Banding effort: House Sparrow



Top banders: ECM, WBM, OMH, ALAM, LPBO

Literature Cited

Adkisson, C.S. 1996. Red Crossbill (*Loxia curvirostra*). *In* The birds of North America, No. 256 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Alerstam, T. 1990. Bird migration. Cambridge University Press, Cambridge, U.K.

American Ornithologists' Union. 1983. Check list of North American birds. 6th edition. American Ornithologists' Union, Washington, D.C.

American Ornithologists' Union. 1998. Check-list of North American birds. 7th edition. The American Ornithologists' Union, Washington, D.C.

American Ornithologists' Union 1983. Check-list of North-American birds. 6th edition. Allen Press. Lawrence, Kansas.

Avery, M.L. 1995. Rusty Blackbird (*Euphagus carolinus*). *In* The birds of North America, No. 200 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Balph, M.H.; Lindahl, A.M. 1978. Winter philopatry of Evening Grosbeaks in northern Utah. N. Amer. Bird Bander 3:149-151.

Baumgartner, A.M. 1942. Sex ratio in Oklahoma Tree Sparrows. Bird-Banding 13:181-182.

Beason, R.C. 1995. Horned Lark (*Eremophila alpestris*). *In* The birds of North America, No. 195 (A. Poole and F. Gill, eds). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Bedard, J.; LaPointe, G. 1984. Banding returns, arrival times, and site fidelity in the Savannah Sparrow. Wilson Bulletin 96:196-205.

Belthoff, J.R; Gauthreaux, S.A., Jr. 1991. Partial migration and differential winter distribution of House Finch in eastern United States. Condor 93:374-382.

Blem, C.R.; Blem, R.L. 1988. Autumn migration of Common Nighthawks in the Virginia Piedmont. Raven 57:36-38.

Bock, C.E.; Lepthien, L.W. 1976. Synchronous eruptions of boreal seed eating birds. Am. Nat. 110:559-571.

Bordner, D.L.; Wood, M.; Davis, D.E. 1968. Geographical distribution of starlings banded at State College, Pennsylvania. Bird Banding 39:117-122.

Bray, O.E.; Gammell, A.M.; Anderson, D.R. 1979. Survival of Yellow-headed Blackbirds banded in North Dakota. J. Field Ornithol. 50:252-255.

Brewer, A.D.; Salvadori, A. 1978. Bird-banding in Ontario 1965-1970. Ontario Bird Banding 11:30-99.

Briskie, J.V. 1994. Least Flycatcher (*Empidonax minimus*). *In* The birds of North America, No. 99 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Brooks, E.W. 1987. A summary of Black-capped Chickadee recoveries during spring migration. N. Amer. Bird Bander 12:19-20.

Brooks, E.W. 1989. Movement of Black-capped Chickadees from winter area toward breeding grounds analyzed through banding re encounters. N. Amer. Bird Bander 14:112-114.

Brooks, E.W. 1991. Fall movement of Black-capped Chickadees analyzed through banding re encounters. N. Amer. Bird Bander 16:1-8.

Browning, M.R. 1995. Do Downy Woodpeckers migrate? J. Field Ornithol. 66:12-21.

Brugger, K.E.; Arkin, L.N.; Gramlich, J.M. 1994. Migration patterns of Cedar Waxwings in the eastern United States. J. Field Ornithol. 65:381-387.

Bryens, O.M. 1944. Additional returns and recoveries of the Snow Bunting. Bird-Banding 15:18-22.

Burnside, F.L. 1987. Long-distance movements of Loggerhead Shrike. J. Field Ornithol. 58:62-65.

Burtt, H.E.; Giltz, M.L. 1977. Seasonal direction patterns of movements and migrations of starlings and blackbirds in North America. Bird Banding 48:259-271.

Butler, R.W. 1988. Population dynamics and migration routes of Tree Swallows, Tachycineta bicolor, in North America. J. Field Ornithol. 59:395-402.

Cabe, P.R. 1993. European Starling (*Sturnus vulgaris*). *In* The birds of North America, No. 48 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Calder, W.A. 1993. Rufous Hummingbird (*Selasphorus rufus*). *In* The birds of North America, No. 53 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Campbell, R.W.; Dawe, N.K.; McTaggart-Cowan, I.; Cooper, J.M.; Kaiser, G.W.; McNall, M.C.E. 1990. The Birds of British Columbia. Volume 2: Nonpasserines –Diurnal Birds of Prey through Woodpeckers, Vancouver(C.-B.), Royal British Columbia Museum et Service canadien de la faune, Environment Canada, 1990.

Carpenter, T.W.; Carpenter, A.L.; Smith, S.R. 1990. Spring migration of Blue Jays at Whitefish Point, Michigan as studied through banding. J. Field Ornithol. 61:419-425.

Chilton, G.; Baker, M.C.; Barrentine, C.D.; Cunningham, M.A. 1995. White-crowned Sparrow (*Zonotrichia leucophrys*). *In* The birds of North America, No. 183 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Cimprich, D.A.; Moore, F.R. 1995. Gray Catbird (*Dumatella carolinensis*). *In* The birds of North America, No. 167 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Clapp, R.B.; Klimkiewicz, M.K.; Futcher, A.G. 1983. Longevity records of North American birds: Columbidae through Paridae. J. Field Ornithol. 54:123-127.

Cortopassi, A.J.; Mewaldt, L.R. 1965. The circumannual distribution of White-crowned Sparrows. Bird Banding 36:141-165.

COSEWIC. 1993. Canadian species at risk 1993. Committee on the Status of Endangered Wildlife in Canada, Ottawa, Ontario.

Cramp, S.; Perrins, C.M. (sr. eds.). 1994. The birds of the Western Palearctic. Vol. IX: buntings and New World warblers. Oxford University Press, Oxford.

Dawson, W.R. 1997. Pine Siskin (*Carduelis pinus*). In The birds of North America, No. 280 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

DeGraaf, R.; Rappole, J.H. 1995. Neotropical migratory birds. Cornell University Press, Ithaca, New York.

Dennis, J.V. 1981. A summary of banded North American birds encountered in Europe. N. Amer. Bird Bander 6:88-96.

Dennis, J.V. 1990. Banded North American birds encountered in Europe: an update. N. Amer. Bird Bander 15: 130–133.

DeWolfe, B.B.; West, G.C.; Peyton, L.J. 1973. The spring migration of Gambel's Sparrow through southern Yukon Territory. Condor 75:43-59.

Dexter, R.W. 1969. Banding and nesting studies of the Chimney Swift: 1944-1968. Ohio J. Sci. 69:193-213.

Dolbeer, R.A. 1978. Movement and migration patterns of Red- winged Blackbirds: a continental overview. Bird Banding 49:17-34.

Dolbeer, R.A. 1982. Migration patterns for age and sex classes of blackbirds and starlings. J. Field Ornithol. 53:28-46.

Dunks, J.H.; Tomlinson, R.E.; Reeves, H.M.; Dolton, D.D.; Braun, C.E.; Zapatka, T.P. 1982. Migration, harvest, and population dynamics of Mourning Doves banded in the Central Management Unit, 1967-77. U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl. No. 249, Washington, D.C.

Godfrey, W.E. 1986. The birds of Canada. Revised edition. National Museums of Canada, Ottawa, Ontario.

Gordon, A.G. 1987. Brewer's Blackbird. Pages 478-479 in M.D. Cadman, P.F.J. Eagles, and F.M. Helleiner (eds.), Atlas of the breeding birds of Ontario. University of Waterloo Press, Waterloo, ON.

Gustafson, M.E.; Hildenbrand, J.; Métras, L. 1997. The North American bird banding manual (electronic version). Version 1.0. U.S. Fish and Wildlife Service, Washington, D.C. Available at http://www.pwrc.usgs.gov/bbl/manual/manual.htm.

Hall, G.A. 1994. Magnolia Warbler (Dendroica magnolia). In The birds of North America, No. 136 (A. Poole and F. Gill, eds). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Hamilton, T.R. 1991. Seasonal movement of House Finches in the Midwest. N. Amer. Bird Bander 16:119-122.

Hitchcock, H.B. 1945. Recoveries of banded Chimney Swifts. Can. Field Nat. 59:148-149.

Hunt, P.D.; Flaspohler, D.J. 1998. Yellow-rumped Warbler (*Dendroica coronata*). *In* The birds of North America, No. 376 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Hussell, D.J.T. 1981. Migrations of the Least Flycatcher in southern Ontario. J. Field Ornithol. 52:97-111.

Hussell, D.J.T. 1982. Longevity and fecundity records in the Tree Swallow. N. Amer. Bird Bander 7:154

Hussell, D.J.T. 1984. Direct Canada Mexico recovery of a banded Least Flycatcher. J. Field Ornithol. 55:116-117.

Hussell, D.J.T. 1991. Additional comments on Black-capped Chickadee recoveries during spring migration. N. Amer. Bird Bander 16:40-41.

Hussell, D.J.T. 1996. The influx of Black-capped Chickadees at Long Point, Ontario in the spring of 1962: a 35-year perspective on an unusual event. J. Field Ornithol. 67:614-622.

Hussell, D.J.T.; Anderson, S.J. 1999. Longevity record for the Tree Swallow. N. Amer. Bird Bander 24:6-8.

Hussell, D.J.T.; Shepherd, D.; Wallace, G.E.; McCracken, J.D.; 1993. Supplementary address bands increase recovery rates. N. Amer. Bird Bander 18:133-141.

Hussell, D.J.T.; Stamp, R.W. 1965. Movements of Black-capped Chickadees at Long Point, Ontario during the spring of 1962. Bird Banding 36:71-86.

Johnson, S.R. 1974. Analysis of starling and myna movements in the Pacific Northwest. Bird Banding 45:197-205.

Johnson, T.B. 1980. Resident and North American migrant bird interactions in the Santa Marta Highlands, Northern Colombia. Pages 239-247 in A. Keast and E.S. Morton (eds.), Migrant birds in the Neotropics. Smithsonian Institute Press, Washington, D.C.

Jones, P.W.; Donovan, T.M. 1996. Hermit Thrush (*Catharus guttatus*). *In* The birds of North America, No. 261 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadephia, PA, and The American Ornithologists' Union, Washington, D.C.

Kennard, J.H. 1976. A biennial rhythm in the winter distribution of the Common Redpoll. Bird Banding 47:231-237.

Kerlinger, P. 1995. How birds migrate. Stackpole Books, Mechanicsburg, Pennsylvania.

Kerlinger, P.; Cherry, J.D.; Powers, K.D. 1983. Records of migrant hawks from the North AtlanticOcean. Auk 100: 488–490.

Ketterson, E.D.; Nolan, V., Jr. 1982. The role of migration and winter mortality in the life history of a temperate zone migrant, the Dark-eyed Junco, as determined from demographic analyses of winter populations. Auk 99(2):243-259.

King, J.R.; Wales, E.E., Jr. 1964. Observations on migration, ecology, and population flux of wintering Rosy Finches. Condor 66:24-31.

Klimkiewicz, M.K. 1997. Longevity records of North American birds. Version 97.1. Patuxent Wildlife Research Center, Bird Banding Laboratory, Laurel, MD.

Klimkiewicz, M.K.; Clapp, R.B.; Futcher, A.G. 1983. Longevity records of North American birds: Remizidae through Parulinae. J. Field Ornithol. 54:287-294.

Klimkiewicz, M.K.; Futcher, A.G. 1989. Longevity records of North American birds: Supplement 1. J. Field Ornithol. 60: 469-494.

Lanyon, W.E. 1994. Western Meadowlark (*Sturnella neglecta*). *In* The birds of North America, No. 104 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Lincoln, F.C. 1935. The waterfowl flyways of North America. U.S. Dept. Agric. Circular No. 342:1-12.

Lincoln, F.C. 1944. Chimney Swifts' winter home discovered. Auk 61:604-609.

McCarty, J.P. 1996. Eastern Wood-Pewee (*Contopus virens*). In The birds of North America, No. 245 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

McNair, D.B.; Post, W. 1993. Autumn migration route of Blackpoll Warblers: evidence from southeastern North America. J. Field Ornithol. 64:417-425.

McNeil, R. 1982. Winter resident repeats and returns of austral and boreal birds stranded in Venezuela. J. Field Ornithol. 53:125-132.

Meyer de Schauensee, R. 1964. The birds of Colombia. Livingston Publishing Co., Wynnewood, Pennsylvania.

Meyer de Schauensee, R. 1970. A guide to the birds of South America. Livingston Publishing Co., Wynnewood, Pennsylvania.

Middleton, A.L.A. 1993. American Goldfinch (*Carduelis tristis*). In The birds of North America, No. 80 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Middleton, A.L.A. 1998. Chipping Sparrow (*Spizella passerina*). *In* The birds of North America, No. 334 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Middleton, A.L.A.; Webb, P. 1984. Longevity of the American Goldfinch. J. Field Ornithol. 55:383-386.

Miller, G.; Dunn, E. 1977. Fall report. Long Point Bird Observatory Newsletter 9(3):3-6.

Mirarchi, R.E.; Baskett, T.S. 1994. Mourning Dove (*Zenaida macroura*). *In* The birds of North America, No. 117 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Moore, W.S. 1995. Northern Flicker (*Colaptes auratus*). *In* The birds of North America, No. 166 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Morrison, M.L.; Yoder-Williams, M.P. 1984. Movements of Steller's Jays in western North America. N. Amer. Bird Bander 9:12-15.

Moskoff, W. 1995. Veery (*Catharus fuscescens*). *In* The birds of North America, No. 142 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Moskoff, W.; Robinson, S.K. 1996 Philadelphia Vireo (*Vireo philadelphicus*). *In* The birds of North America, No. 214 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Mulvihill, R.S.; Leberman, R.C.; Wood, D.S. 1992. A possible relationship between reversed sexual size dimorphism and reduced male survivorship in the Ruby-throated Hummingbird. Condor 94:480-489.

Murphy, M.T. 1996. Eastern Kingbird (*Tyrannus tyrannus*). *In* The birds of North America, No. 253 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Murray, B.G., Jr. 1989. A critical review of the transoceanic migration of the Blackpoll Warbler. Auk 106:8-17.

Nolan, V., Jr.; Ketterson, E.D. 1990. Timing of autumn migration and its relation to winter distribution in Dark-eyed Juncos. Ecology 71:1267-1278.

Norment, C.J.; Shackleton, S.A. 1993. Harris' Sparrow (*Zonotrichia querula*). *In* The birds of North America, No. 64 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Ouellet, H. 1993. Bicknell's Thrush: taxonomic status and distribution. Wilson Bull. 105(4):545-572.

Peer, B.D.; Bollinger, E.K. 1997. Common Grackle (*Quiscalus quiscula*). *In* The birds of North America, No. 271 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Peterson, R.T. 1980. A field guide to the birds. 4th edition. Houghton Mifflin Co., Boston, Massachusetts.

Pinkowski, B.C. 1971. An analysis of banding recovery data on Eastern Bluebirds banded in Michigan and three neighboring states. Jack Pine Warbler 49:33-50.

Pittaway, R. 1994. Why do male Belted Kingfishers winter farther north than females? Ontario Birds 12:27-28.

Poulin, R.G.; Grindal, S.D.; Brigham, R.M. 1996. Common Nighthawk (*Chordeiles minor*). *In* The birds of North America, No. 213. (A. Poole and F. Gill, eds). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Pradosudov, V.V.; Grubb, T.C., Jr. 1993. White-breasted Nuthatch (*Sitta carolinensis*). *In* The birds of North America, No. 54 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Prescott, D.R.C. 1991. Winter distribution of age and sex classes in an irruptive migrant, the Evening Grosbeak (*Coccothraustes vespertinus*). Condor 93:694-700.

Prescott, D.R.C.; Middleton, A.L.A. 1990. Age and sex differences in winter distribution of American Goldfinches in eastern North America. Ornis Scand. 21:99-104.

Preston, C.R.; Beane, R.D. 1993. Red-tailed Hawk (*Buteo jamaicensis*). *In* The birds of North America, No. 52 (A. Poole and F. Gill, eds.). The Academy ofNatural Sciences, Philadelphia, Pennsylvania, and TheAmerican Ornithologists' Union, Washington, D.C.

Quilliam, H.R. 1973. History of the birds of Kingston, Ontario. 2nd edition. Kingston Field Naturalists, Kingston, ON.

Ralph, C.J. 1981. Age ratios and their possible use in determining autumn routes of passerine migrants. Wilson Bull. 93:164-188.

Richardson, W.J.; Haight, M.E. 1970. Migration departures from starling roosts. Can. J. Zool. 48:31-39.

Rimmer, C.C.; Darmstadt, C.H. 1996. Non-breeding site fidelity in Northern Shrikes. J. Field Ornithol. 67:360-366.

Rimmer, C.C.; McFarland, K.P. 1998. Tennessee Warbler (*Vermivora peregrina*). *In* The birds of North America, no. 350 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Robbins, C.S.; Bridge, D.; Feller, R. 1959. Relative abundance of adult male redstarts at an inland and a coastal locality during fall migration. Maryland Bird Life 15:23-45.

Robinson, T.R.; Sargent, R.R.; Sargent, M.B. 1996. Ruby-throated Hummingbird. (*Archilochus colubris*). *In* The birds of North America, No. 204 (A. Poole and F. Gill, eds). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Roth, R.R.; Robinson, M.S.; Underwood, T.J. 1996. Wood Thrush (*Hylocichla mustelino*). *In* The birds of North America, No. 246 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Royall, W.C., Jr.; De Grazio, J.W.; Guarino, J.L.; Gammell, A. 1971. Migration of banded Yellow-headed Blackbirds. Condor 73:100-106.

Salt, W.R.; Salt, J.R. 1976. The birds of Alberta. Hurtig, Edmonton, Alberta.

Sealy, S.G. 1985. Where do Northern ("Baltimore") Orioles spend the winter? N. Amer. Bird Bander 10:12-17.

Smith, K.G. 1979. Migrational movements of Blue Jays west of the 100th meridian. N. Amer. Bird Bander 4:49-52.

Smith, N.G. 1980. Hawk and vulture migrations in the neotropics. Pages 61–63 in Migrant birds in the neotropics: ecology, behavior, distribution, and conservation (A. Keast and E.S. Morton, eds.).Smithsonian Institution Press, Washington, D.C.

Spencer, R. 1961. Report on bird ringing for 1960. British Birds; Ringing Supplement 1961.

Stein, R.C. 1963. Isolating mechanisms between populations of Traill's Flycatchers. Proc. Amer. Phil. Soc. 107:21-50.

Stewart, A.C.; Shepard, M.G. 1994. Steller's Jay invasion in southern Vancouver Island, British Columbia. N. Amer. Bird Bander 19:90-95.

Stewart, P.A. 1982. Migration of Blue Jays in eastern North America. N. Amer. Bird Bander 7:107-112.

Stewart, P.A. 1988. Comments on "A summary of Black-capped Chickadee recoveries during spring migration." N. Amer. Bird Bander 13:44.

Stewart, P.A. 1989. Movements of House Finches banded in New York and Pennsylvania. N. Amer. Bird Bander 14:118-119.

Stouffer, P.C.; Caccamise, D.F. 1991. Roosting and diurnal movements of radio-tagged American Crows. Wilson Bull. 103:387-400.

Taylor, W.K.; Crawford, R.L.; Kershner, M.; Gravel, S. 1983. House Wren migration compared with other wrens: an emphasis on Florida. J. Field Ornithol. 54:17-28.

Telfer, E.S. 1993. Recovery plan for the Loggerhead Shrike. Unpublished report. Canadian Wildlife Service, Edmonton.

Tomlinson, R.E. 1993. Migration. Pages 57-80 in T.S. Baskett, M.W. Sayre, R.E. Tomlinson, and R.E. Mirarchi (eds.), Ecology and management of the Mourning Dove. Stackpole Books, Harrisburg, PA.

Tozer, R.G.; Richards, J.M. 1974. Birds of the Oshawa-Lake Scugog Region, Ontario. Alger Press, Oshawa, ON.

Troy, D.M. 1983. Recaptures of redpolls: movements of an irruptive species. J. Field Ornithol. 54:146-151.

Van Horn, M.A.; Donovan, T.M. 1994. Ovenbird (*Seiurus aurocapillus*). *In* The birds of North America, No. 88 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadephia, PA, and The American Ornithologists' Union, Washington, D.C.

Weatherhead, P.J.; Clark, R.G.; Bider, J.R.; Titman, R.D. 1980. Movements of blackbirds and starlings in southwestern Quebec and eastern Ontario in relation to crop damage and control. Can. Field Nat. 94:75-79.

Weeks, H.P., Jr. 1994. Eastern Phoebe (*Sayornis phoebe*). *In* The birds of North America, No. 94 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Wells, J.V.; Rosenberg, K.V.; Tessaglia, D.L.; Dhondt, A.A. 1996. Population cycles in the Varied Thrush (*Ixoreus naevius*). Can. J. Zool. 74:2062-2069.

West, G.C.; Peyton, L.J.; Irving, L. 1968. Analysis of spring migration of Lapland Longspurs to Alaska. Auk 85:639-653.

Wheelwright, N.T.; Mauck, R.A. 1998. Philopatry, natal dispersal and inbreeding avoidance in Savannah Sparrows. Ecology 79:755-767.

Wheelwright, N.T.; Rising, J.D. 1993. Savannah Sparrow (*Passerculus sandwichensis*). *In* The birds of North America, No. 45 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Wheelwright, N.T.; Trussell, G.; Devine, J.; Anderson, R. 1994. Sexual dimorphism and population sex ratios in juvenile Savannah Sparrows. J. Field Ornithol. 65:520-529.

Wilson, W.H., Jr. 1996. Palm Warbler (*Dendroica palmarum*). *In* The birds of North America, No. 238 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadephia, PA, and The American Ornithologists' Union, Washington, D.C.

Winkler, D.W. 1996. California Gull (*Larus californicus*). *In* The birds of North America, No. 259 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C.

Witmer, M.C.; Mountjoy, D.J.; Elliot, L. 1997. Cedar Waxwing (*Bombycilla cedrorum*). *In* The birds of North America, No. 309 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Wootton, J.T. 1996. Purple Finch (*Carpodacus purpureus*). *In* The birds of North America, No. 208 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Yosef. R, 1996. Loggerhead Shrike (*Lanius ludovicianus*). *In* The birds of North America, No. 231 (A.Poole and F.Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Yunick, R.D. 1983. Winter site fidelity of some northern finches (Fringillidae). J. Field Ornithol. 54:254-258.

Yunick, R.P. 1997. Geographical distribution of re-encountered Pine Siskins captured in upstate, eastern New York during the 1989-1990 irruption. N. Amer. Bird Bander 22:10-15.

Appendix 1
Chronological summary of Canadian banding statistics

	No. Banded					No. banded in Canada, encountered elsewhere		No. banded elsewhere, encountered in Canada	
	1955-1965	1966-1975	1976-1985	1986-1995	1955-1995 total	1921-1954	1955-1995	1921-1954	1955-1995
Band-tailed Pigeon	30	135	0	34	199	0	6	1	56
Mourning Dove	409	572	1879	3 668	6 528	7	80	3	37
White-winged Dove	0	0	0	1	1	0	0	0	0
Yellow-billed Cuckoo	116	54	103	50	323	1	1	0	0
Black-billed Cuckoo	252	185	441	237	1115	0	8	0	3
Belted Kingfisher	123	111	403	176	813	21	7	0	4
Hairy Woodpecker	488	209	581	721	1 999	49	47	0	2
Downy Woodpecker	1 411	702	1 660	2 832	6 605	69	78	0	3
Black-backed Woodpecker	13	3	7	7	30	0	0	0	0
Three-toed Woodpecker	5	5	1	11	22	0	0	0	0
Yellow-bellied Sapsucker	961	864	1092	798	3 715	4	8	0	0
Red-naped Sapsucker	5	1	0	285	291	0	0	0	0
Red-breasted Sapsucker	9	0	0	51	60	1	2	0	0
Williamson's Sapsucker	0	0	0	2	2	0	0	0	0
Pileated Woodpecker	5	10	14	119	148	3	0	0	0
Red-headed Woodpecker	155	349	244	154	902	1	5	0	2
Lewis's Woodpecker	0	0	0	0	0	1	0	0	0
Red-bellied Woodpecker	1	6	14	22	43	0	0	0	0
Northern Flicker (Yellow-shafted)	2001	1 321	2 843	1 818	7 983	81	50	0	9
Northern Flicker (Red-shafted)	181	4	8	44	237	0	0	0	0
Chuck-will's-widow	0	0	2	0	2	0	0	0	0
Whip-poor-will	67	87	68	60	282	0	3	0	1
Common Poorwill	0	0	4	68	72	0	3	0	0
Common Nighthawk	74	152	53	232	511	1	4	0	0
Chimney Swift	24	104	12	13	153	1 606	5	269	32
Vaux's Swift	0	0	0	1	1	0	0	0	0
Ruby-throated Hummingbird	25	2	316	332	675	2	0	0	1
Rufous Hummingbird	1	0	5	905	911	0	0	0	1
Calliope Hummingbird	0	0	4	0	4	0	0	0	0
Scissor-tailed Flycatcher	0	0	0	1	1	0	0	0	0

Chronological summary of Canadian banding statistics (*cont'd*)

	No. Banded					No. banded in Canada, encountered elsewhere		No. banded elsewhere, encountered in Canada	
	1955-1965	1966-1975	1976-1985	1986-1995	1955-1995 total	1921-1954	1955-1995	1921-1954	1955-1995
Eastern Kingbird	432	488	2121	1 172	4 213	6	7	0	2
Western Kingbird	58	28	60	81	227	1	0	0	0
Great Crested Flycatcher	201	209	973	629	2 012	0	3	0	0
Eastern Phoebe	824	1 770	1 232	2 492	6 318	14	9	0	4
Say's Phoebe	8	8	3	14	33	2	0	0	0
Olive-sided Flycatcher	24	25	110	78	237	0	1	0	0
Eastern Wood-Pewee	732	608	2 163	1 532	5 035	0	2	0	2
Western Wood-Pewee	51	36	86	130	303	1	0	0	0
Yellow-bellied Flycatcher	1 019	852	4 056	2 180	8 107	1	1	0	0
Cordilleran Flycatcher	19	0	0	0	19	0	0	1	0
Pacific-slope Flycatcher	26	26	6	80	138	0	0	0	0
Acadian Flycatcher	54	12	47	43	156	0	0	0	0
Willow Flycatcher	0	4	49	48	101	0	0	0	0
Alder Flycatcher	0	70	318	1344	1 732	0	0	0	0
Alder/Willow Flycatcher	667	1 033	4 145	5 292	1 1137	0	7	1	3
Least Flycatcher	2 599	4 544	1 4621	1 6150	3 7914	1	13	0	3
Hammond's Flycatcher	4	7	22	67	100	0	0	0	0
Dusky Flycatcher	7	20	54	65	146	0	0	0	0
Gray Flycatcher	0	0	1	0	1	0	0	0	0
Horned Lark	169	742	1212	421	2 544	15	3	2	0
Black-billed Magpie	978	909	459	674	3 020	70	82	1	1
Blue Jay	3 461	7 166	6 883	9 497	27 007	130	350	13	145
Steller's Jay	193	16	87	339	635	55	19	0	0
Gray Jay	317	235	794	851	2 197	27	45	0	1
Common Raven	163	2 100	2 945	472	5 680	6	477	0	1
Chihuahuan Raven	0	0	1	0	1	0	0	0	0
American Crow	1 062	1 067	1 874	864	4 867	535	189	68	18
Northwestern Crow	85	57	538	154	834	6	50	1	0
Clark's Nutcracker	11	0	0	2	13	1	0	0	0
European Starling	8 227	8 904	8 934	3 795	29 860	629	697	302	893

Chronological summary of Canadian banding statistics (*cont'd*)

	No. Banded					No. banded in Canada, encountered elsewhere		No. banded elsewhere, encountered in Canada	
	1955-1965	1966-1975	1976-1985	1986-1995	1955-1995 total	1921-1954	1955-1995	1921-1954	1955-1995
Crested Myna	50	87	0	2	139	0	6	0	0
Bobolink	736	98	1 019	3 054	4 907	0	5	0	1
Brown-headed Cowbird	96 27	34 246	7 064	10 672	61 609	161	593	23	369
Bronzed Cowbird	58	3	0	0	61	0	1	0	0
Yellow-headed Blackbird		1 648	3 661	1 966	7 956	2	17	1	11
Red-winged Blackbird	11 683	28 961	22562	15 275	78 481	163	741	15	134
Eastern Meadowlark	156	112	296	44	608	4	4	0	0
Western Meadowlark	153	81	172	37	443	7	5	0	0
Hooded Oriole	0	0	0	1	1	0	0	0	0
Orchard Oriole	65	8	109	98	280	0	0	0	0
Baltimore Oriole	1 309	1 340	6 425	3 908	12 982	34	30	2	11
Bullock's Oriole	2	1	18	16	37	0	0	0	0
Rusty Blackbird	224	314	244	156	938	5	3	7	11
Brewer's Blackbird	335	594	116	137	1182	21	17	1	5
Common Grackle	10 175	11 256	6 323	8 835	36 589	635	1 388	105	313
Evening Grosbeak	17 655	10 209	32 904	8 311	69 079	69	1 193	234	2 370
Pine Grosbeak	86	161	896	901	2 044	5	6	0	1
Purple Finch	4 745	7 921	13 169	8 938	34 773	158	177	76	344
Cassin's Finch	33	69	19	61	182	0	0	0	1
House Finch	2 465	308	1 011	22 798	26 582	71	267	0	17
Red Crossbill	340	712	8	43	1 103	12	18	0	2
White-winged Crossbill	212	31	207	368	818	3	0	0	0
Rosy Finch	1	1	52	734	788	0	1	0	1
European Goldfinch	0	0	0	1	1	0	0	0	0
Hoary Redpoll	44	451	680	310	1 485	1	1	0	0
Common Redpoll	4 695	19 531	28 442	45 455	98 123	73	139	2	40
American Goldfinch	5 232	11 096	33 045	35 468	84 841	11	223	15	133
Pine Siskin	4 820	10 910	9 042	30 153	54 925	38	94	1	134
Snow Bunting	1 008	833	11 415	5 770	19 026	6	33	13	26
Lapland Longspur	307	1 766	687	363	3 123	0	41	0	2

Chronological summary of Canadian banding statistics (*cont'd*)

	No. Banded					No. banded in Canada, encountered elsewhere		No. banded elsewhere, encountered in Canada	
	1955-1965	1966-1975	1976-1985	1986-1995	1955-1995 total	1921-1954	1955-1995	1921-1954	1955-1995
Smith's Longspur	2	14	0	216	232	0	0	0	0
Chestnut-collared Longspur	2	350	4	690	1 046	0	1	0	0
McCown's Longspur	0	69	0	31	100	0	0	0	0
Vesper Sparrow	566	199	211	313	1 289	11	4	0	3
Savannah (Ipswich) Sparrow	0	867	1 517	359	2 743	0	0	0	0
Savannah Sparrow	4 668	3 375	7 132	8 705	23 880	15	45	2	7
Baird's Sparrow	1	63	5	149	218	0	0	0	0
Grasshopper Sparrow	36	44	86	59	225	0	0	0	0
Henslow's Sparrow	8	3	11	3	25	0	0	0	0
Le Conte's Sparrow	6	11	55	78	150	0	1	0	0
Saltmarsh Sharp-tailed Sparrow	32	0	0	0	32	0	0	1	0
Nelson's Sharp-tailed Sparrow	2	2	52	34	90	0	0	0	0
Seaside Sparrow	0	0	2	0	2	0	0	0	0
Lark Sparrow	3	25	40	9	77	0	0	0	0
Harris's Sparrow	1 662	801	112	482	3 057	3	8	5	3
White-crowned Sparrow	10 111	4 459	7 558	9 843	31 971	58	56	19	36
Puget Sound White-crowned Sparrow	0	0	0	37	37	0	0	0	0
Gambel's White-crowned Sparrow	843	436	122	1 096	2 497	0	0	0	0
Nuttall's White-crowned Sparrow	0	0	0	0	0	2	0	4	0
Golden-crowned Sparrow	503	174	96	295	1 068	21	12	1	5
White-throated Sparrow	29 303	17 328	36 307	29 614	112 552	142	178	24	78
American Tree Sparrow	5 785	3 817	11 978	14 139	35 719	70	132	12	38
Chipping Sparrow	3 525	1 484	5 255	9 689	19 953	153	83	3	13
Clay-colored Sparrow	1 172	881	919	5 415	8 387	17	6	0	0
Brewer's Sparrow	4	6	6	265	281	0	0	0	0
Field Sparrow	1 004	705	1 646	1 567	4 922	1	3	0	0
Dark-eyed (Slate-colored) Junco	27 337	12 266	27 036	32 710	99 349	562	194	43	120
Oregon Junco	4 817	781	557	1 715	7 870	0	0	0	0
Cassin's Sparrow	0	0	0	1	1	0	0	0	0
Song Sparrow	13 365	6 837	16 649	25 498	62 349	614	247	27	52

Chronological summary of Canadian banding statistics (*cont'd*)

	No. Banded					No. banded in Canada, encountered elsewhere		No. banded elsewhere, encountered in Canada	
	1955-1965	1966-1975	1976-1985	1986-1995	1955-1995 total	1921-1954	1955-1995	1921-1954	1955-1995
Lincoln's Sparrow	2 530	1 714	4 832	4 582	13 658	14	6	4	3
Swamp Sparrow	2 182	2 590	3 913	4 565	13 250	4	4	1	3
Fox Sparrow	1 673	1 377	1 288	2 161	6 499	26	11	15	26
Eastern Towhee	687	561	847	606	2701	69	24	0	1
Spotted Towhee	398	80	15	236	729	0	0	0	0
Northern Cardinal	1 625	998	876	1 501	5 000	21	169	1	3
Rose-breasted Grosbeak	977	2 028	5 264	3 121	11 390	7	29	0	3
Black-headed Grosbeak	11	0	11	42	64	0	0	0	0
Blue Grosbeak	0	1	3	1	5	0	0	0	0
Indigo Bunting	862	365	929	1 088	3 244	0	5	0	4
Lazuli Bunting	51	4	0	112	167	0	1	0	0
Varied Bunting	0	0	0	1	1	0	0	0	0
Painted Bunting	0	0	1	1	2	0	0	0	0
Dickcissel	16	9	3	5	33	0	1	0	0
Lark Bunting	2	9	2	4	17	0	0	0	0
Western Tanager	119	35	182	87	423	0	0	0	1
Scarlet Tanager	341	545	971	402	2 259	0	0	0	1
Summer Tanager	8	2	10	7	27	0	1	0	0
Purple Martin	2 053	1 646	7 319	6 597	17 615	17	81	0	2
Cliff Swallow	954	273	435	1753	3415	46	36	0	1
Barn Swallow	5 192	4 101	6 252	3017	18 562	86	26	2	6
Tree Swallow	6 081	24 736	46 595	81 668	159 080	181	427	1	21
Violet-green Swallow	80	6	60	783	929	4	0	0	1
Bank Swallow	17 081	6 052	14 260	3 723	41 116	50	231	1	4
Northern Rough-winged Swallow		100	362	223	1 086	1	1	0	0
Bohemian Waxwing	991	2 699	1 069	605	5 364	3	36	1	1
Cedar Waxwing	1 499	913	6 197	6 315	14 924	12	33	17	36
Northern Shrike	70	66	97	138	371	3	8	1	0
Loggerhead Shrike	74	317	82	6 863	7 336	8	19	0	0
Red-eyed Vireo	2 351	2 335	8 827	5 812	19 325	2	18	0	1

Chronological summary of Canadian banding statistics (*cont'd*)

	No. Banded					No. banded in Canada, encountered elsewhere		No. banded elsewhere, encountered in Canada	
	1955-1965	1966-1975	1976-1985	1986-1995	1955-1995 total	1921-1954	1955-1995	1921-1954	1955-1995
Philadelphia Vireo	336	382	1 552	1 096	3 366	0	2	0	0
Warbling Vireo	309	252	1 939	2 678	5 178	0	9	0	0
Yellow-throated Vireo	19	30	60	34	143	0	0	0	0
Blue-headed Vireo	366	369	1 290	1 073	3 098	0	2	1	0
Black-capped Vireo	0	0	0	1	1	0	0	0	0
White-eyed Vireo	12	9	62	62	145	0	0	0	0
Hutton's Vireo	0	1	0	7	8	0	1	0	0
Bell's Vireo	1	0	0	0	1	0	0	0	0
Black-and-white Warbler	1 134	1 110	4 641	4 335	11 220	2	7	0	6
Prothonotary Warbler	8	4	45	23	80	0	0	0	0
Swainson's Warbler	0	0	2	1	3	0	0	0	0
Worm-eating Warbler	8	4	14	15	41	0	0	0	0
Blue-winged Warbler	10	19	92	235	356	0	0	0	0
Brewster's Warbler	3	1	6	19	29	0	0	0	0
Lawrence's Warbler	0	0	3	4	7	0	0	0	0
Golden-winged Warbler	24	37	134	155	350	0	0	0	0
Nashville Warbler	2 423	2 671	6 984	6 144	18 222	0	0	0	3
Orange-crowned Warbler	447	746	1 204	3 291	5 688	0	1	0	5
Tennessee Warbler	4 596	4 202	17 751	10 422	36 971	3	11	0	3
Northern Parula	90	75	568	382	1 115	0	2	0	1
Cape May Warbler	1 130	980	6 871	3 573	12 554	0	7	0	5
Yellow Warbler	3 610	4 294	23 131	32 584	63 619	20	85	0	9
Black-throated Blue Warbler	712	758	2 187	2 519	6 176	1	1	0	3
Yellow-rumped (Myrtle) Warbler	9 983	10 496	23 635	31 392	75 506	3	48	1	28
Yellow-rumped (Audubon's) Warbler	186	48	122	336	692	0	0	0	0
Magnolia Warbler	4 043	3 508	16 738	13 596	37 885	0	9	0	4
Cerulean Warbler	25	8	22	21	76	0	0	0	0
Chestnut-sided Warbler	1 280	1 116	3 329	3 735	9 460	0	8	0	3
Bay-breasted Warbler	1 490	1 355	10 060	1 975	14 880	0	4	0	2
Blackpoll Warbler	3 606	3 033	6 771	6 131	19 541	2	8	0	0

Chronological summary of Canadian banding statistics (*cont'd*)

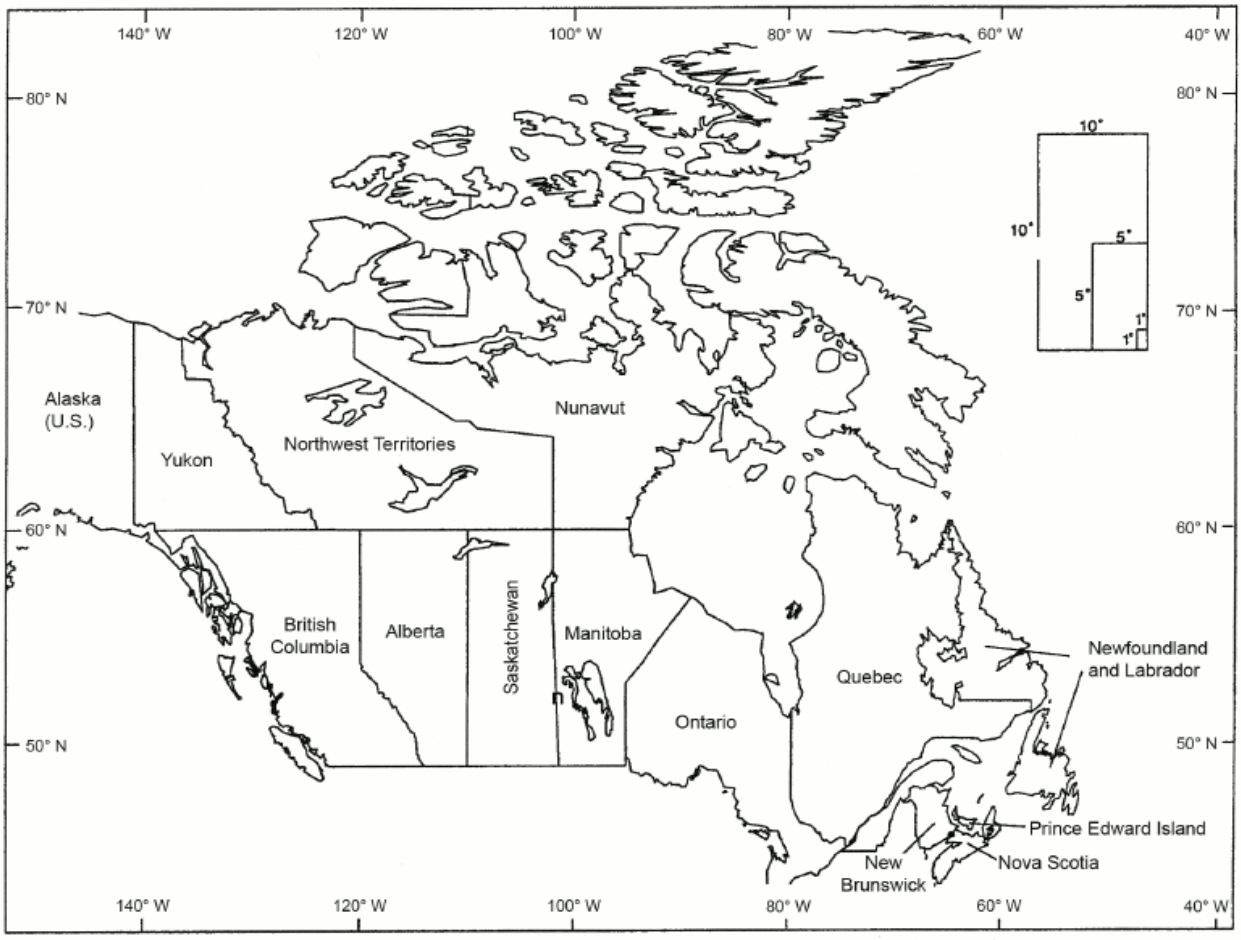
	No. Banded					No. banded in Canada, encountered elsewhere		No. banded elsewhere, encountered in Canada	
	1955-1965	1966-1975	1976-1985	1986-1995	1955-1995 total	1921-1954	1955-1995	1921-1954	1955-1995
Blackburnian Warbler	695	500	2777	1 285	5 257	0	1	0	0
Yellow-throated Warbler	14	18	19	6	57	0	0	0	0
Black-throated Gray Warbler	37	0	1	4	42	0	0	0	0
Black-throated Green Warbler	1 287	910	3 256	2 461	7 914	0	1	0	1
Townsend's Warbler	2	1	7	100	110	0	0	0	0
Kirtland's Warbler	1	0	1	0	2	0	0	0	1
Pine Warbler	44	51	98	99	292	0	0	0	0
(Western) Palm Warbler	1 377	816	1 364	3 407	6 964	0	3	1	0
(Yellow) Palm Warbler	79	369	377	183	1 008	0	0	0	0
Prairie Warbler	7	5	21	33	66	0	0	0	0
Ovenbird	2 256	2 069	5 852	5 765	15 942	1	14	0	10
Northern Waterthrush	1 062	1 250	6 426	4 549	13 287	0	11	0	6
Louisiana Waterthrush	8	4	32	26	70	0	1	0	0
Kentucky Warbler	6	4	19	16	45	0	0	0	0
Connecticut Warbler	162	131	191	147	631	0	0	0	0
Mourning Warbler	493	416	1 871	2 138	4 918	0	7	0	1
MacGillivray's Warbler	81	43	107	254	485	1	0	0	0
Common Yellowthroat	2 642	2 475	7 844	8 457	21 418	1	30	0	9
Yellow-breasted Chat	174	99	152	133	558	0	1	0	0
Hooded Warbler	16	7	41	452	516	0	0	0	0
Wilson's Warbler	1 330	1 358	4 843	4 631	12 162	0	2	0	2
Canada Warbler	1 224	1 102	5 065	3 376	10 767	0	3	0	6
American Redstart	2 245	2 264	9 809	12 031	26 349	3	31	0	9
House Sparrow	837	2 656	10 070	1 239	14 802	3	44	0	0
American Pipit	85	55	81	48	269	1	0	0	0
Sprague's Pipit	5	232	0	48	285	0	0	0	0
American Dipper	2	96	94	6	198	0	0	0	0
Northern Mockingbird	41	29	44	66	180	0	0	0	0
Gray Catbird	4 019	2 254	6 930	7 497	20 700	80	84	3	22
Brown Thrasher	1 343	1 166	1 458	1 158	5 125	15	29	1	4

Chronological summary of Canadian banding statistics (*cont'd*)

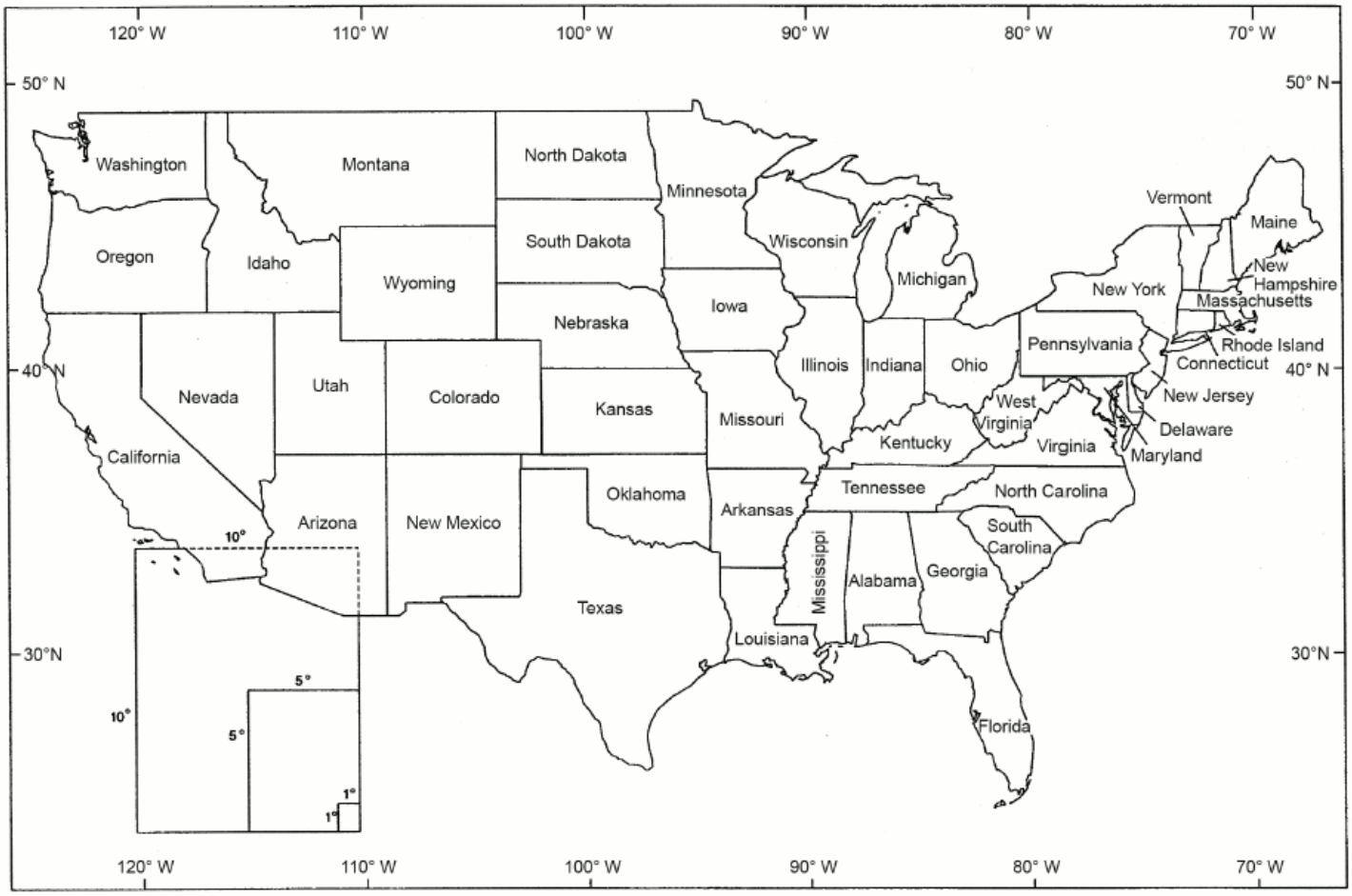
	No. Banded					No. banded in Canada, encountered elsewhere		No. banded elsewhere, encountered in Canada	
	1955-1965	1966-1975	1976-1985	1986-1995	1955-1995 total	1921-1954	1955-1995	1921-1954	1955-1995
Rock Wren	0	1	0	8	9	0	0	0	0
Carolina Wren	23	10	25	150	208	1	0	0	0
Bewick's Wren	42	13	16	41	112	1	0	0	0
House Wren	901	885	3 413	8 166	13 365	133	16	0	3
Winter Wren	588	1 069	1 748	2 382	5 787	1	0	0	1
Sedge Wren	4	1	6	9	20	0	0	0	0
Marsh Wren	232	462	2834	887	4 415	0	1	0	0
Brown Creeper	4 214	3 634	8 636	9 148	25 632	0	10	0	3
White-breasted Nuthatch	812	567	1 036	1 212	3 627	29	19	1	1
Red-breasted Nuthatch	811	1 101	3 303	2 909	8 124	6	3	0	0
Pygmy Nuthatch	18	0	0	0	18	0	0	0	0
Tufted Titmouse	4	6	1	7	18	0	0	0	0
Black-capped Chickadee	7 103	5 413	16 550	32 127	61 193	472	355	1	8
Mountain Chickadee	4	0	127	156	287	18	1	0	1
Boreal Chickadee	127	378	729	470	1 704	5	1	0	0
Chestnut-backed Chickadee	44	6	4	146	200	3	2	0	0
Bushtit	7	0	5	169	181	0	0	0	0
Golden-crowned Kinglet	5 046	5 312	9 575	8 868	28 801	0	8	0	4
Ruby-crowned Kinglet	5 278	5 777	15 746	21 475	48 276	1	6	0	3
Blue-gray Gnatcatcher	96	46	185	127	454	0	0	0	0
Townsend's Solitaire	30	13	31	22	96	0	0	0	0
Wood Thrush	357	437	1 218	998	3 010	3	11	0	1
Veery	1 195	1 470	4 010	3 321	9 996	2	24	0	7
Gray-cheeked Thrush	2 420	1 411	1 923	2 336	8 090	0	3	1	5
Swainson's Thrush	6 900	5 842	15 132	11 170	39 044	0	24	1	11
Hermit Thrush	3 141	2 904	7 197	9 125	22 367	4	15	0	3
American Robin	7 397	5 187	8 835	9 410	30 829	540	365	14	71
Fieldfare	0	1	0	0	1	0	0	0	0
Varied Thrush	272	43	3	151	469	4	9	0	2
Northern Wheatear	26	0	1	0	27	0	0	0	0
Eastern Bluebird	331	3 505	1 981	9 821	15 638	24	38	0	4
Western Bluebird	4	0	1	1 966	1 971	0	3	0	0
Mountain Bluebird	67	17 361	17 885	75 829	111 142	11	168	0	0

Appendix 2
Maps of Western Hemisphere political boundaries

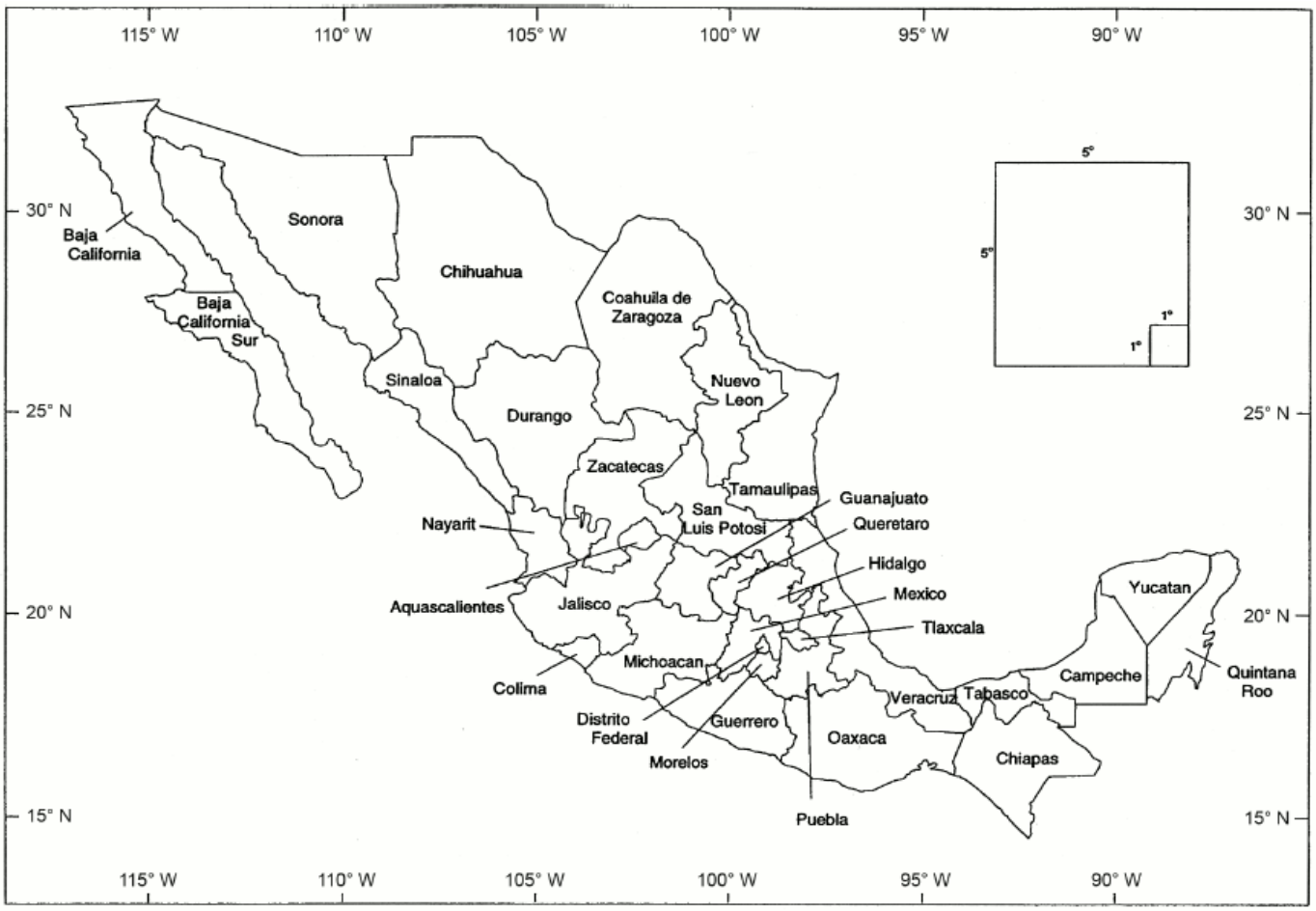
Canadian provinces and territories (latitude-longitude blocks of various sizes are shown for reference)



Continental U.S. states (latitude-longitude blocks of various sizes are shown for reference)



Mexican states (latitude-longitude blocks of various sizes are shown for reference)



Countries of Central and South America (latitude-longitude blocks of various sizes are shown for reference)

Appendix 3
Key to codes used in listings of individual encounters

Note: *Unless labelled as non-standard, codes are those used in The North American Bird Banding Manual (Gustafson et al. 1997).*

Age

U	Unknown (see note below)
L	Local (young prior to age of sustained flight)
J	Juvenile (obsolete code discontinued in 1962; bird could be either L or HY)
HY	Hatch year (capable of sustained flight and banded in calendar year of birth)
AHY	After hatch year (known to have hatched in an unknown calendar year prior to that of banding)
SY	Second year (known to have hatched in calendar year previous to banding year)
ASY	After second year (at least ASY, but true age unknown)
TY	Third year (known to have hatched two calendar years prior to that of banding)
ATY	After third year (at least ATY, but true age unknown)

Note: *The system of aging birds by calendar year (HY, AHY, etc.) came into effect in 1967. For records prior to that date, the definitions of "subadult" and "adult" did not correspond exactly to SY and AHY, because the time at which birds changed from one category to the other was not clearly defined. Using current codes, a bird can be given the U code for age only in the fall, when HY and AHY birds of some species are indistinguishable. Prior to 1967, however, it was possible to use the U code for birds banded in the first 5–6 months of the year (when "subadults" and "adults" may be indistinguishable)*

.

Sex

M	Male
F	Female
U	Unknown

Inexact coordinates

(non-standard codes)

??	If shown for both degrees and minutes, no coordinates were reported. If shown only for minutes, location was inexact.

Present condition

0	Unknown, status of band unknown
1	Unknown, band left on bird
2	Unknown, band removed
3	Dead, status of band unknown
4	Dead, band left on bird
5	Dead, band removed
6	Alive – released, status of band unknown
7	Alive – released, band left on bird
8	Alive – released, band removed
9	Alive – in captivity, status of band unknown
10	Alive – in captivity, band left on bird
11	Alive – in captivity, band removed
12	Alive – in captivity/release status unknown, status of band unknown
13	Alive – in captivity/release status unknown, band left on bird
14	Alive – in captivity/release status unknown, band removed

Data summaries in this atlas series treated birds with "unknown" present condition as "dead." Present condition codes were not in use prior to 1965, so birds encountered earlier than that were considered "dead" unless the "how obtained" code (see below) was 28, 29, 33, 36, 41, 46, 48, 52, 53, 87–89, or 99.

How obtained

(* indicates discontinued code)

0	Found dead
1	Shot
2	Caught or found dead due to starvation
3	Caught due to injury
4	Caught by or due to traps not meant to catch birds for banding
5*	Killed by carnivore not cat
6	Caught by or due to rodent
7	Caught by or due to miscellaneous birds
8	Caught by or due to shrike
9	Caught by or due to hawks, owls, or other raptors (including found in pellets)
10	Banding mortality (due to traps, handling, etc.)
11	Caught by or due to dog
12	Caught by or due to cat
13	Caught due to striking stationary object not wires or towers
14	Caught due to striking or being struck by motor vehicle 15 Caught or found dead due to weather conditions
16	Collected for scientific study or specimen
17	Drowned
18	Caught or found dead due to botulism
19	Caught by or due to reptile
20	Caught due to disease
21	Caught or found dead in building or enclosure
22*	Died from “fright”
23	Caught or found dead due to oil or tar
24	Caught or killed due to fall from nest
25	Caught or killed due to poisoning (excluding by lead, avicides, or pesticides)
26	Caught by or due to entanglement in fishing gear
27	Caught or found dead due to being struck by moving train
28	Caught by hand
29	Sight record: identified by special markers other than metal band
30	Died in nest
31	Caught by or due to miscellaneous animal
32	Caught due to parasite infestation
33	Caught or observed at or in nest
34	Caught by or found dead due to fish (including bands found in fish)
35*	Caught by or due to clam
36	Caught due to exhaustion
37*	Caught due to electric shock
38*	Caught due to fire
39	Caught or found dead due to striking or being struck by moving aircraft
40	Caught or found dead due to lead poisoning
41*	Held for propagating
42	Caught due to striking or being struck by moving farm machinery
43	Caught or found dead due to trichomoniasis
44	Caught or found dead due to avian control operations
45	Found dead or injured on highway (without information on cause)
46	Caught due to joining flock of domestic or captive birds
47*	Band removed (no other information)
48*	Held in captivity
49	Caught at, on, or in nest by predator
50	Band with skeleton or bone only
51	Banding mortality (killed by predators, weather, etc., while in trapping or holding devices)
52	Sight record: band read on free bird
53	Captured for scientific purposes (not collected), then released
54	Caught due to striking communication towers, wires, etc.
55	Caught due to pesticides
56	No information in letter other than that band or bird obtained
57	Caught due to entanglement in other than fishing gear (e.g., string, vines, etc.)
58	Located by electronic sensors (location is for receiver — not necessarily for bird)
87*	Sight record in different 10′ block than where banded
88*	Found nesting in different 10′ block than where banded
89	Previously banded bird trapped and released in banding operations in a different 10′ block than where banded

91	Illegally taken: reported by enforcement agents
96*	Band only
97	Miscellaneous: method not covered by other codes
98	Band or number only obtained; no other information (see 56)
99	Previously banded bird trapped and released during banding operation in same 10′ block where banded

Inexact date codes: month

(non-standard codes)

SU	Summer
SP	Spring
WI	Winter
FA	Fall
HS	Hunting season
??	Unknown month

Inexact date codes: day

(non-standard codes)

FT	First 10 days in month
ST	Second 10 days in month
LT	Last 10 or 11 days in month
99	Unknown day of month
??	Date of encounter indicates date of postmark on letter, and there is no information on actual date the bird was encountered.

Banders' initials

Initials	**Bander**
AB A.	Bunker
ADS	A.D. Smith
AEP	Alberta Environmental Protection
AH	A. Haak
AHM	A.H. Macpherson
AJG	A.J. Gaston
AMW	A.M. Woodbury
APM	Alberta Provincial Museum
AR	A. Reed
ARC	A.R. Clarke
ARL	A.R. Lock
AWD	A.W. Diamond
BC	Bowdoin College
BCPM	British Columbia Provincial Museum
BCW	British Columbia Wildlife Wing
BKM	B.K. Matlack
CEH	C.E. Huntington
CHR	C.H. Richards
CKC	C.K. Coldwell
CSH	C.S. Houston
CSR	C.S. Robbins
CTW	C.T. Wolfling
CWN	Canadian Wildlife Service (Environment Canada [EC]) – Newfoundland office
CWSAR	Canadian Wildlife Service (EC) – Atlantic Region
CWSB	Canadian Wildlife Service (EC) – Burlington office
CWSER	Canadian Wildlife Service (EC) – Eastern Region
CWSOR	Canadian Wildlife Service (EC) – Ontario Region
CWSPYR	Canadian Wildlife Service (EC) – Pacific and Yukon Region
CWSQR	Canadian Wildlife Service (EC) – Quebec Region
DAH D.	A. Hancock
DBS	D.B. Stuart
DFP	D.F. Parmelee
DLP	D.L. Pattie
DMC	D. Macmillan
DM	D. Miller
DNN	D.N. Nettleship
DRH	D.R. Hatch
EDW	E.D. Wood
EH	E. Hamer
EK	E. Kuyt
FC	F. Cooke
FEL	F.E. Ludwig
FGB	F.G. Bard
FGC	F.G. Cooch
FGS	F.G. Scheider
FJW	F.J. Williams
FLF	F.L. Farley

FRW	F.R. Whitman
FSW	F.S. Whiteside
GC	G. Chapdelaine
GFV	G.F. VanTets
GG	G. Galicz
GH	G. Hogan
GK	G. Kaiser
GLH	G.L. Holroyd
HEM	H.E. McArthur
HDH	H.D. Haberyan
HFL	H.F. Lewis
HHK	H.H. Krug
HHS	H.H. Southam
HIF	H.I. Fisher
HKBS	Hawk Cliff Banding Station
HO	H. Ouellet
IAM	I.A. McLaren
IMC	I.M. Cowan
ISS	I.S. Sturgis
JB	J. Bédard
JBG	J.B. Gollop
JCM	J.C. Miller
JEP	J.E. Paget
JF	J. Finnie
JFP	J.F. Parnell
JG	J. Guay
JH	J. Hatch
JHB	J.H. Buckalew
JKL	J.K. Lowther
JKP	J.K. Proctor
JMH	J.M. Harvey
JMP	J.M. Poulin
JMPo	J.M. Porter
JPL	J.P. Ludwig
JPR	J.P. Ryder
JSW	J.S. Weske
KLD	K.L. Diem
KV	K. Vermeer
LDK	L.D. Kuhn
LGL	L.G. Lambert
LJP	L.J. Peyton
LMM	L.M. Moos
LMT	L.M. Tuck
LPBO	Long Point Bird Observatory
LT	L. Tyler
MCH	M.C. Henry
MTM	M.T. Myres
MUN	Memorial University of Newfoundland
NBFW	New Brunswick Fish and Wildlife
NMNH	National Museum of Natural History
NPWRC	Northern Prairie Wildlife Research Centre
NSDNR	Nova Scotia Dept. of Natural Resources
OH	O. Hawksley
OLA	O.L. Austin
OMNRK	Ontario Ministry of Natural Resources – Kenora
OSP	O.S. Pettingill, Jr.
PDB	P.D. Boersma
PEIFW	Prince Edward Island Fish & Wildlife
PEPO	Prince Edward Point Bird Observatory
PRBO	Point Reyes Bird Observatory
RAJ	R.A. Johnson
RBC	R.B. Clapp
RBCM	Royal British Columbia Museum
RDE	R.D. Elliot
REL	R.E. Leech
RGB	R.G. Brown
RHD	R.H. Drent
RIGM	R.I.G. Morrison
RKH	R.K. Harper
RPY	R.P. Yunik
RRA	R.R. Anderson
RRS	R.R. Sheehan
RTG	R.T. Gammell
RWC	R.W. Campbell
RWF	R.W. Ferris
SFU	Simon Fraser University
SLW	S.L. White
SWK	S.W. Kress
TBO	Toronto Bird Observatory
TK	T. Knol
TSH	T.S. Hennessy
TWB	T.W. Barry
UAB	University of Alberta
UBC	University of British Columbia
UM	University of Manitoba

VM	Vertebrate Museum, University of British Columbia
WAM	W.A. Montevecchi
WED	W.E.U. Diffendall
WEM	W.E. McKay
WHD	W.H. Drury
WIL	W.I. Lyon
WJM	W.J. Maher
WMD	W.M. Duval
WOA	W.O. Astle
WPN	W.P. Nickell
WR	W. Rowan
WT	W. Threlfall
YTG	Yukon Territorial Government

Appendix 4
Additional details on data coding and analyses

1. Distance and bearing

Distance and bearing were calculated using equations in Cowardin (1977), where:

BLAT = banding latitude
BLON = banding longitude
RLAT = encounter latitude
RLON = encounter longitude
P = *BLON* – *RLON*

Note: if Southern Hemisphere, set latitude to negative
if Eastern Hemisphere, set longitude to negative
if $P > 180$, then set $P = P - 180$

Distance (*D*) between banding and encounter in degrees was calculated as:

$$D = acos\{[sin(BLAT)sin(RLAT)] + [cos(BLAT)cos(RLAT)cos(P)]\}$$

where *acos* denotes the inverse cosine function. The distance is then converted to kilometres by multiplying by 6 378.15

The bearing (*C*) was calculated as:

$$C = ahav\{sec(BLAT)csc(D)[hav(\pi/2 - RLAT) - hav|D - \pi/2 + BLAT|]\}$$

where *hav* and *ahav* denote the haversine and inverse haversine functions:

$$hav(A) = 0.5(1 - cos(A))$$
$$ahav(A) = acos(1 - 2A)$$

2. Direct recoveries

Encounters fitting into the categories marked with a D below were considered "direct" recoveries, whereas all others were considered "indirect." Note that direct recoveries include birds assumed to be dead (see note under "present condition" in Appendix 3) plus all birds encountered at the site of banding within 90 days.

		Banding month											
Year	Recovery month	J	F	M	A	M	J	J	A	S	O	N	D
Banding yr.	J	D	-	-	-	-	-	-	-	-	-	-	-
	F	D	D	-	-	-	-	-	-	-	-	-	-
	M	D	D	D	-	-	-	-	-	-	-	-	-
	A	D	D	D	D	-	-	-	-	-	-	-	-
	M	D	D	D	D	D	-	-	-	-	-	-	-
	J	D	D	D	D	D	D	-	-	-	-	-	-
	J	D	D	D	D	D	D	D	-	-	-	-	-
	A	D	D	D	D	D	D	D	D	-	-	-	-
	S	-	-	-	D	D	D	D	D	D	-	-	-
	O	-	-	-	D	D	D	D	D	D	D	-	-
	N	-	-	-	D	D	D	D	D	D	D	D	-
	D	-	-	-	D	D	D	D	D	D	D	D	D
Banding yr. + 1	J	-	-	-	D	D	D	D	D	D	D	D	D
	F	-	-	-	D	D	D	D	D	D	D	D	D
	M	-	-	-	D	D	D	D	D	D	D	D	D
	A	-	-	-	-	-	-	-	-	-	-	-	D
	M	-	-	-	-	-	-	-	-	-	-	-	D
	J	-	-	-	-	-	-	-	-	-	-	-	D
	J	-	-	-	-	-	-	-	-	-	-	-	D
	A	-	-	-	-	-	-	-	-	-	-	-	D