

Eyebrights of Somerset



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with grateful thanks to Fred Rumsey for photos and assistance

A presentation for Somerset Rare Plants Group in Feb 2016, updated Sept 2018

General points

- **Eyebrights are hemi-parasitic**
- **Eyebrights are annuals**
- **7 species** of *Euphrasia* in Somerset (+1 extinct)
- **14 hybrids** recorded in Somerset (so far!)
- “*Euphrasia* is a genus which cannot easily be divided into well-behaved species” (A.J. Silverside)
- **Collect a specimen:** pull up **5** typical undamaged plants per type to study/press

What characters to look for?

- **Hairs on leaves**
 - Glandular
 - long-stalked (stalk >10x head) or
 - short-stalk (stalk <10x head)
 - Eglandular
- **Flower size**
- **Node of first flowering**
- **Branching pattern**
- **Internode** : length of internode in ratio to leaf size
- **Capsules** : shape & size relative to calyx
- **Leaves** : Shape of leaf and direction of marginal teeth
(examine stem (cauline) leaves and floral leaves)
- **Coloration** of foliage and flowers

Glandular Hairs



Eglandular Hairs

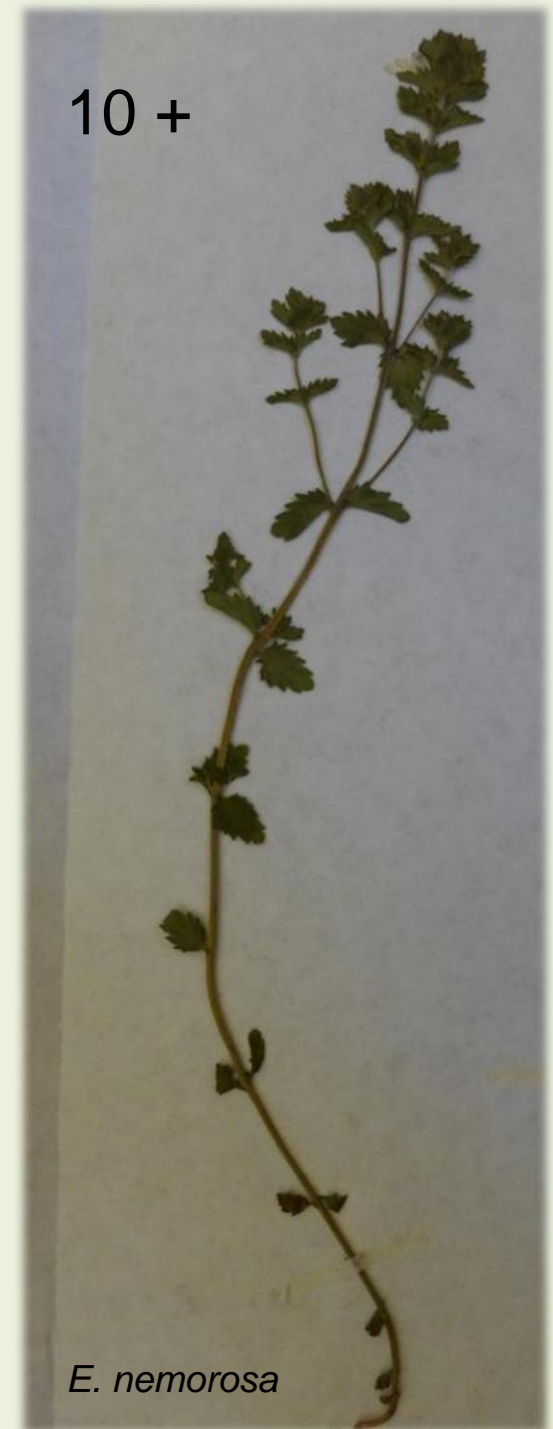


Flower size :
measure from base of tube to tip of upper lip



Colour and shape, particularly of the lower lip, are also useful

Node of first flowering



NB Don't count the cotyledon node and only go up main stem

Branching Pattern

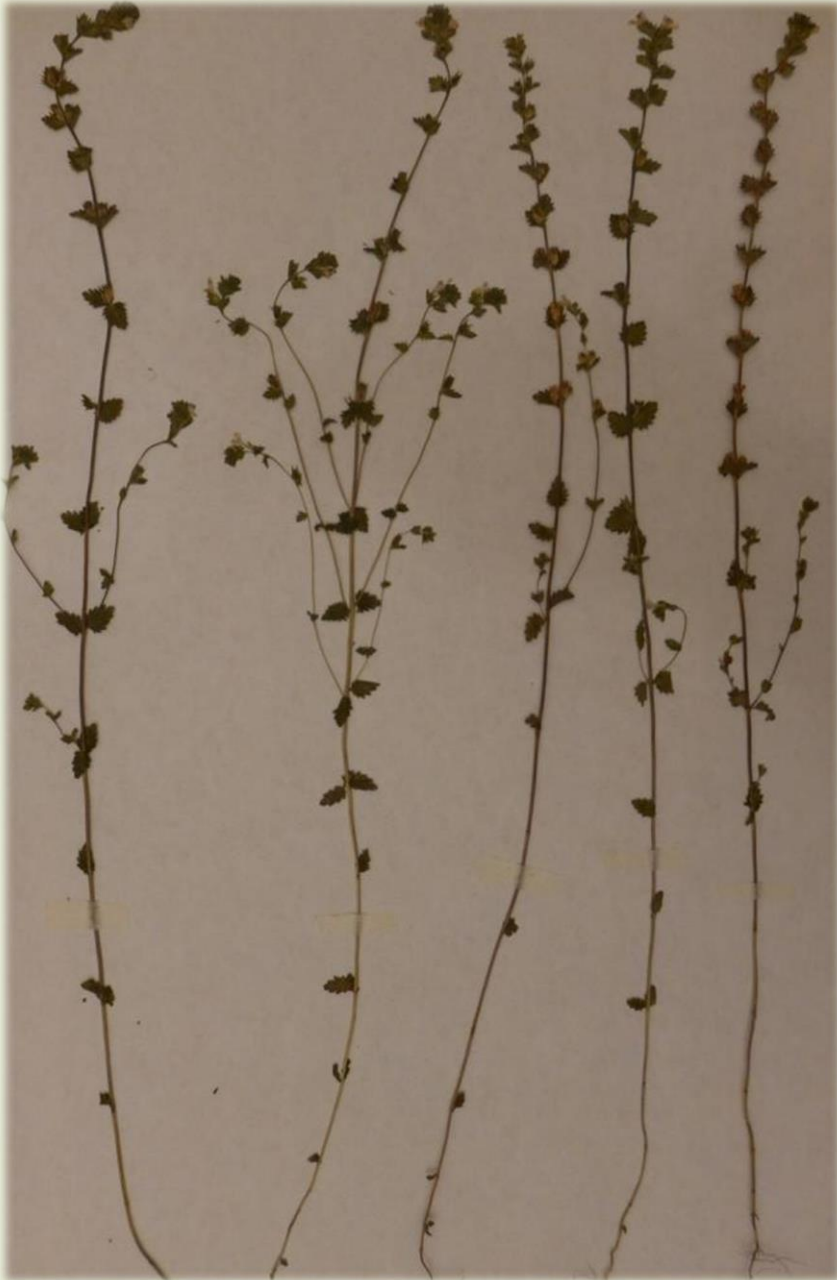


Stiff upright branches and stem



Flexuose branches and main stem

Internode to Leaf Length Ratio



NB Key may refer to Cauline Internodes or Floral Internodes

Capsule characters



Look at: Shape of capsule and Shape of capsule apex,
also Relative length of capsule and calyx

Leaf characters



Look at: Shape, size, teeth, colour, arrangement

Coloration: note colour of flower, stem, leaves



Eyebrights recorded in Somerset

E. anglica

E. arctica

E. confusa

E. nemorosa

E. pseudokernerii

E. tetraquetra

E. micrantha (last seen 1987)

[*E. scottica* last seen 1918]

E. anglica x *arctica*

E. anglica x *confusa*

E. anglica x *micrantha*

E. anglica x *nemorosa*

E. arctica x *confusa*

E. arctica x *micrantha*

E. arctica x *nemorosa*

E. arctica x *pseudokernerii*

E. confusa x *micrantha*

E. confusa x *nemorosa*

E. confusa x *scottica*

E. confusa x *tetraquetra*

E. nemorosa x *pseudokernerii*

E. nemorosa x *tetraquetra*

Euphrasia anglica

- **Long glandular hairs**
(the only sp with these)
- **Fairly large flowers**
(6.5-8.5, usually >7mm)
- **Low first flowering node**
(5-8)
- **Branches flexuose**
- **Lower floral leaves wide**
(teeth sub-acute)
- **Habitat – acid grassland**
or dampish heath/mires



Euphrasia arctica

- Usually with **short glandular hairs**
- **Flowers fairly large** (6-10mm)
- **Low first flowering node**
(4-8, usually <6)
- **Broad floral leaves**
with acute teeth
- **Floral leaves larger** than
cauline leaves
- **Branches long**, from low down
- **Habitat – damp meadows**
and rich pastures



Euphrasia confusa

- Generally **smallish** branched plant
- **Branches slender, flexuose**
- **Branch lvs smaller lower down**
- **Flowers** can be large (5-9mm)
- **Flowers usually alternate**
- Flowering from node 7
- Foliage usually matt
- **Basal teeth may be forwardly directed**
- Floral leaf teeth **obtuse/acute**
- **Habitat** short well-drained acid to basic grasslands



Euphrasia nemorosa

- Usually quite **tall well-branched plants** (10-30cm)
- **Branches relatively stout**, regular and ascending
- Branch lvs **not** smaller below
- **Flowers not large** (5-7.5mm)
- **Flowers usually opposite**
- **Flowering from node 10+**
- **Foliage usually quite glossy**
- **Basal teeth** of floral leaves never forwardly directed
- **Teeth acuminate to aristate**
- **Habitat – widely distributed**



Euphrasia pseudokernereri

- Usually quite branched plant
- Flowering at **very high node**
(10 + but often 12 +)
- **Flowers large** (7-11mm)
- Conspicuous **wide lower lip**
- Floral leaves with very **long aristate tips to teeth**
- **Flowering late** in the year
- **Habitat** dry chalk or limestone grasslands



Euphrasia tetraquetra

- Usually with **short glandular hairs**
- **Squat, shortly branched, square-shooted plant**
- **Very short internodes**
- **Flowers smallish**
(usually 5-7mm)
- **Low first flowering node**
(5-9 but usually <6)
- **Flowering early in year**
- **Habitat – exposed coastal cliff tops** and inland on limestone of Mendips



Euphrasia micrantha

- Slender, little-branched plant
- Branches short and ascending
- Long internodes (>leaves)
- Flowering from node 6 up
- Flowers fairly small (to 6.5mm)
- Flowers pinkish-purple
- Lower lip with narrow longer central lobe.
- Foliage purplish, esp. above
- Habitat: usually associated with *Calluna*
- Very rare, Exmoor only, last seen in 1987



Euphrasia scottica

NB Extinct (1918), Exmoor only



- Slender usually unbranched plant
- Long internodes (>leaves)
- Flowering from node 6 or lower
- Flowers fairly small (to 6.5mm)
- Flowers white
- Lower lip with short central lobe
- Leaves purplish beneath,
greener on upper surface
- Habitat: wet mires and runnels

Identifying Hybrids

- Hybrids are **frequent** in *Euphrasia*
- Many hybrids are **fertile**
- The **parents are not always present**
- Hybrids may be **single** plants or **swarms**
- Hybrids are usually **intermediate**
- Getting to **know the species** helps you to notice and identify hybrids
- **Collect plants you think may be hybrids**
(unless the population is very small)

E. confusa* x *micrantha



E. arctica* x *micrantha



E. arctica* x *pseudokernereri

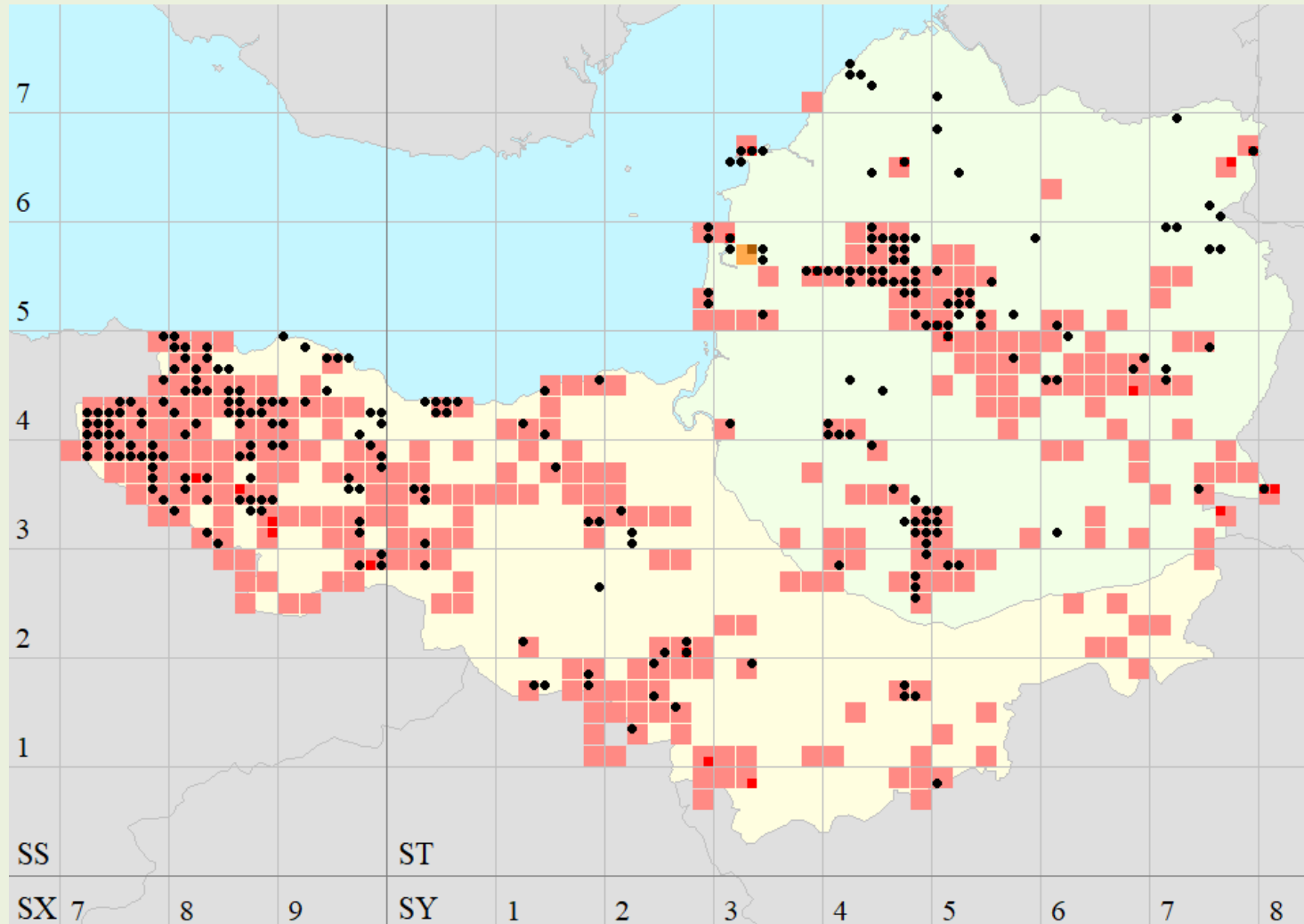


E. anglica* x *arctica



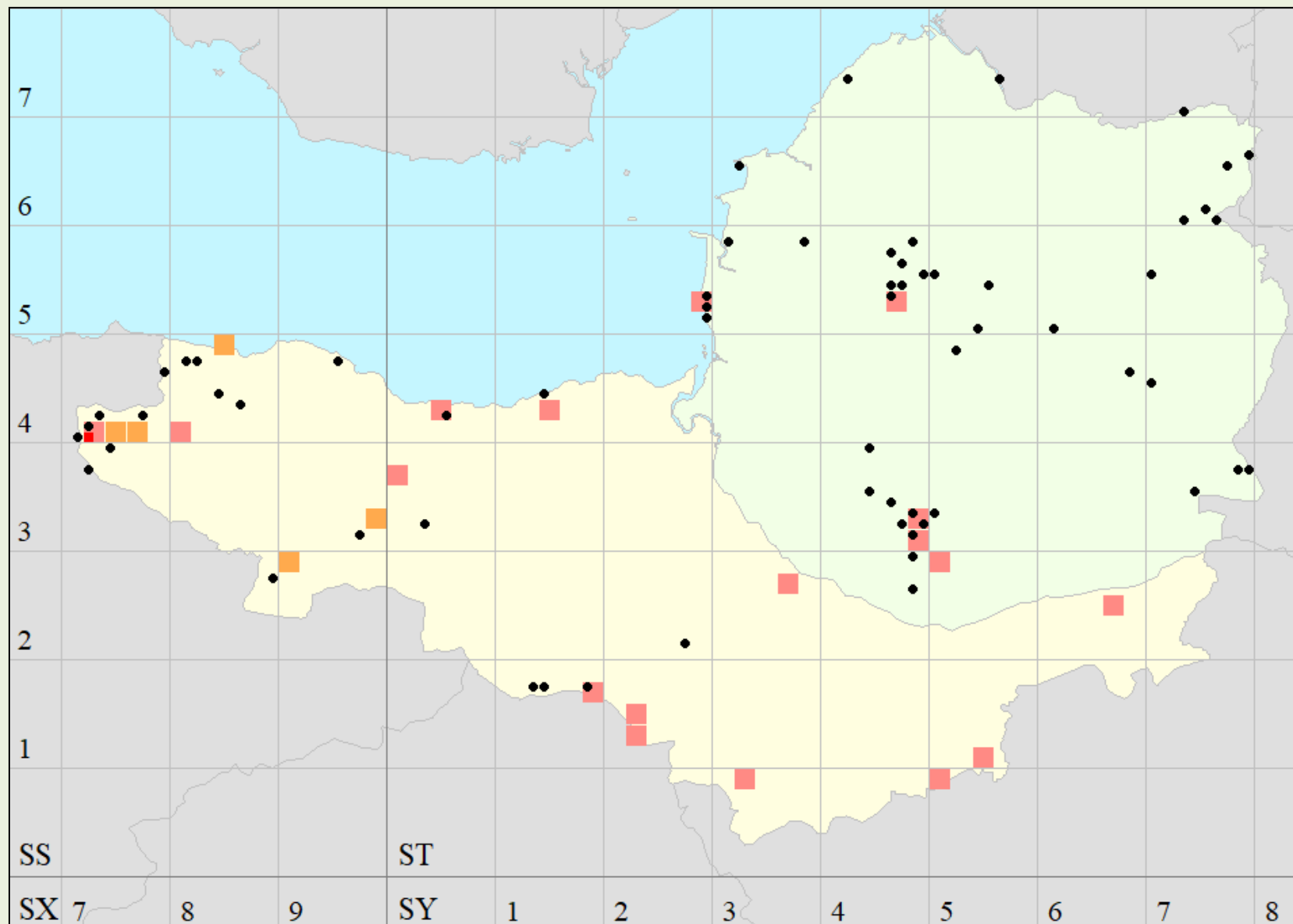
Distribution of Eyebrights in Somerset

They don't grow everywhere and this map suggests a decline in the last 20 years. Individual species have distinct distributions



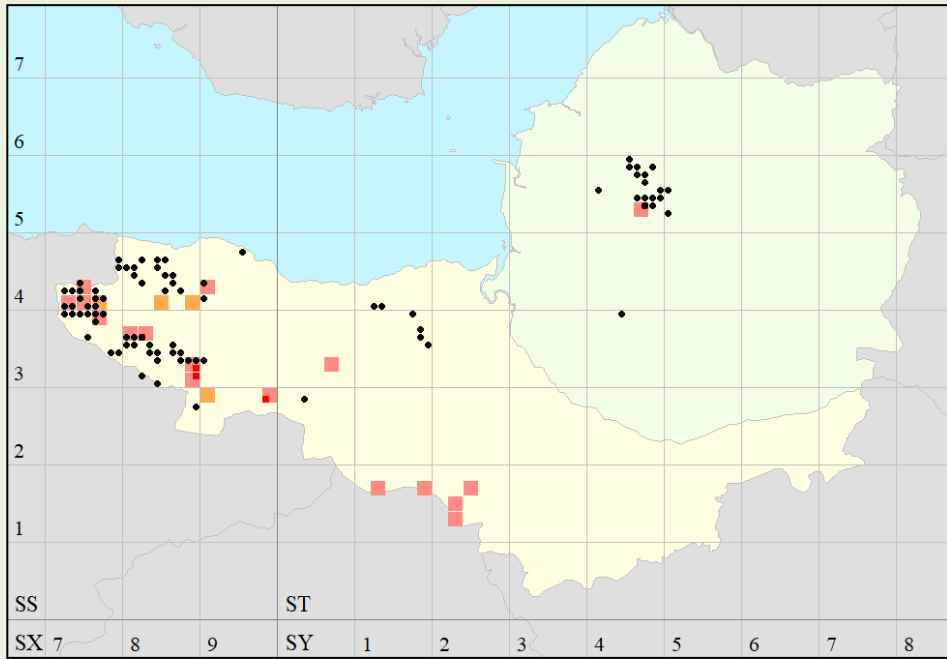
Distribution of *Euphrasia agg.* in Somerset, mapped using MapMate. Black dots are post-2000 records; red squares are 1987-1999 records; sepia squares are pre-1987 records. (Map created 31.08.2018)

Euphrasia nemorosa

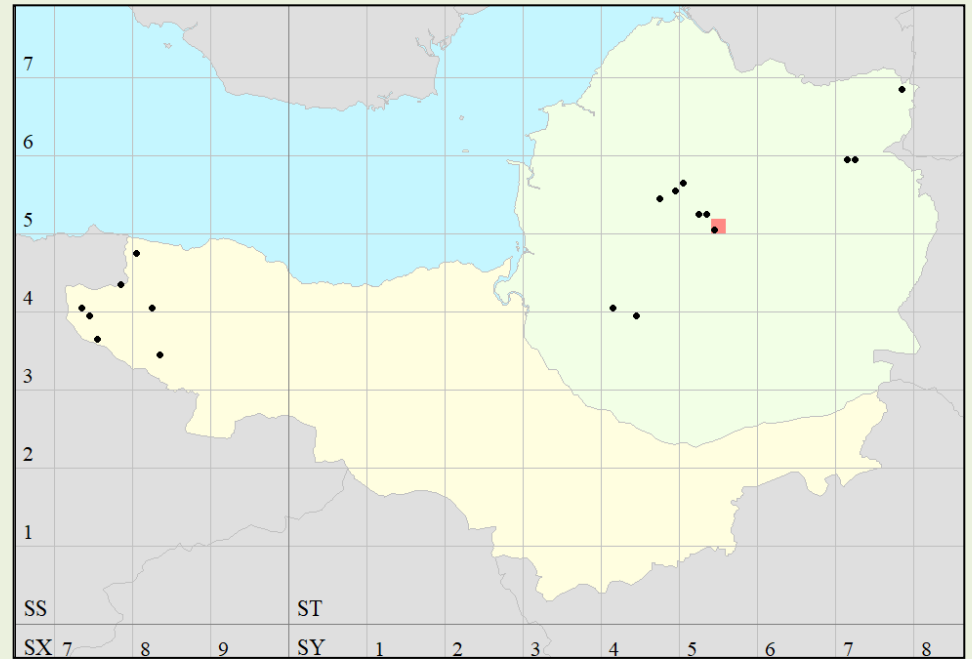


Distribution of *Euphrasia nemorosa* in Somerset, mapped using MapMate. Black dots are post-2000 records; red squares are 1987-1999 records; sepia squares are pre-1987 records. (Map created 31.08.2018)

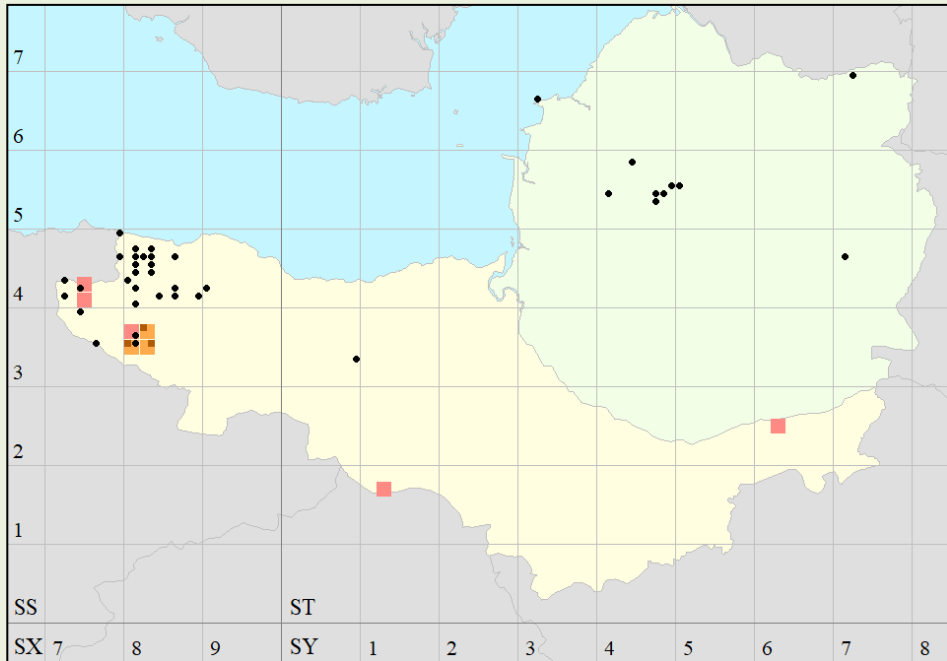
Euphrasia anglica



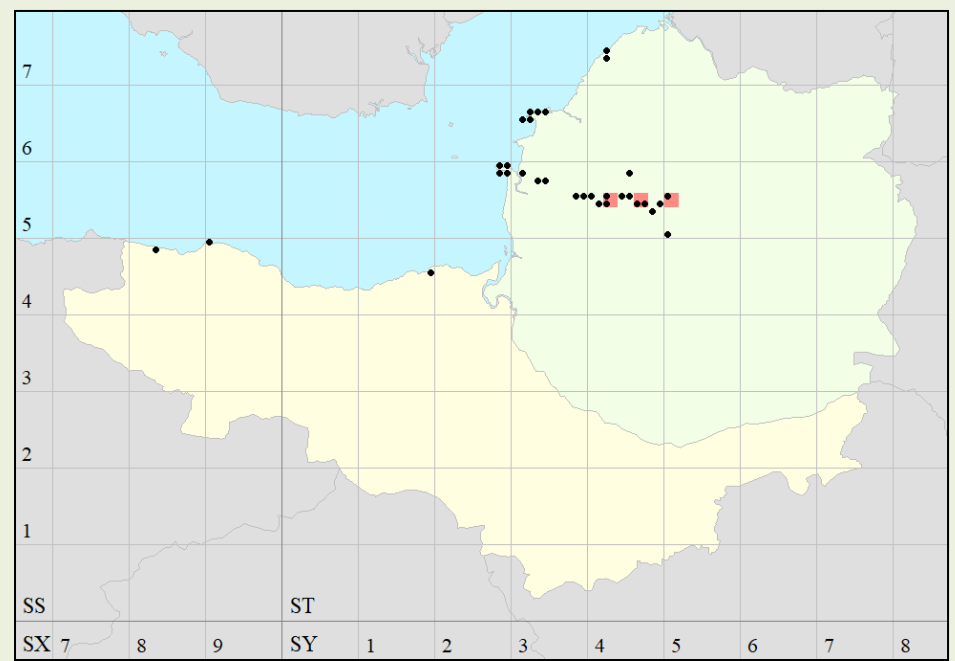
Euphrasia arctica



Euphrasia confusa



Euphrasia tetraquetra



All 22 taxa are included in the RPR:

Reasons for inclusion in the Somerset Rare Plant Register are shown in the columns to the right of each name

TAXON	GB STATUS	England STATUS	GB Rare / Scarce	UKBAP / S41	VC 5 Rare / Scarce	VC 6 Rare / Scarce
<i>Euphrasia anglica</i>	EN	EN		UKBAP/S41	Not Scarce	Not Scarce
<i>Euphrasia anglica x arctica</i>					Rare	Rare
<i>Euphrasia anglica x confusa</i>					Scarce	Extinct
<i>Euphrasia anglica x micrantha</i>					Rare	Absent
<i>Euphrasia anglica x nemorosa</i>					Absent	Rare
<i>Euphrasia arctica</i>	DD	DD			Scarce	Scarce
<i>Euphrasia arctica x confusa</i>					Scarce	Scarce
<i>Euphrasia arctica x micrantha</i>					Rare	Absent
<i>Euphrasia arctica x nemorosa</i>					Scarce	Scarce
<i>Euphrasia arctica x pseudokernerii</i>					Absent	Rare
<i>Euphrasia confusa</i>	DD	VU			Not Scarce	Scarce
<i>Euphrasia confusa x micrantha</i>					Scarce	Absent
<i>Euphrasia confusa x nemorosa</i>					Scarce	Scarce
<i>Euphrasia confusa x scottica</i>					Rare	Absent
<i>Euphrasia confusa x tetraquetra</i>					Absent	Scarce
<i>Euphrasia micrantha</i>	DD	EN			Rare	Absent
<i>Euphrasia nemorosa</i>	LC	NT			Not Scarce	Not Scarce
<i>Euphrasia nemorosa x pseudokernerii</i>					Absent	Rare
<i>Euphrasia nemorosa x tetraquetra</i>					Absent	Rare
<i>Euphrasia pseudokernerii</i>	EN	VU	Scarce	UKBAP/S41	Error	Rare
<i>Euphrasia scottica</i>	LC	LC			Extinct	Absent
<i>Euphrasia tetraquetra</i>	DD	NT			Rare	Not Scarce

NB A record for *E. rostkoviana* is considered to be an Error

Summary

- **7 species** of *Euphrasia* in Somerset (+ 1 extinct sp)
- **14 hybrids** recorded in Somerset
- **Examine** your population for variation
 - Are all plants similar? What is the habitat?
 - If distinct types can be recognised, are they occurring in different habitats?
- **Make a detailed record:** grid reference, habitat
- **Collect specimens:** pull up **5** typical undamaged plants per type to study/press
- **But don't collect any** if the population is very small

THE END



Euphrasia nemorosa at Brown's Folly (FJR)