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### ***Scirpus pseudosetaceus* Daveau (Cyperaceae), new to the Italian flora**

#### **Abstract**

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*Scirpus pseudosetaceus* Daveau, a West - Mediterranean species distributed in North Africa and the Iberian peninsula, is reported from Maremma (Tuscany) as new to the Italian flora. A comparison is also made in detail between *S. pseudosetaceus* and the most similar *Scirpus cernuus* Vahl, in order to point out their distinctiveness.

#### **Introduction**

*Scirpus pseudosetaceus* Daveau belongs to *Scirpus* sect. *Isolepis* (R. Br.) Griseb., which is present in Europe with three species: *S. cernuus* Vahl, *S. setaceus* L. and *S. pseudosetaceus* Daveau (De Filippis 1980).

*Scirpus pseudosetaceus* was discovered in Portugal near Lisbon by Daveau (1890) and soon after reported from North Africa (Battandier & Trabut 1895) and other localities of the Iberian peninsula (Daveau 1919).

The finding in FI of specimens from Maremma (Tuscany) adds a disjuncted North - Eastern outpost to the previously - known distribution area of *S. pseudosetaceus*.

*Scirpus pseudosetaceus* Daveau, Bol. Soc. Brot. 9: 85. 1890.

(≡) *Isolepis pseudosetacea* (Daveau) Lainz, Brotéria, Sér. trimestr. 27: 93. 1958.

*Type* — Not seen. Daveau (1890) indicated in the protologue: “In arenosis humidis prope oppidulum Bellas circa Olyssiponem mense Junii 1881 J. Daveau lecta”, where it appears that he collected this plant nine years before describing it under *S. pseudosetaceus*. Then he went back to the locus classicus and collected numerous specimens, sending them to many Herbaria (e.g. BM !, FI !, PAL !). These specimens do not represent the type material, though they are to be considered reliable elements for the correct individualization of *S. pseudosetaceus*.

*Iconography* — Daveau (1890) Pl. I a, b, c; Maire (1957) Fig. 599. - Fig. 1 (del. A. Maury, Florence).

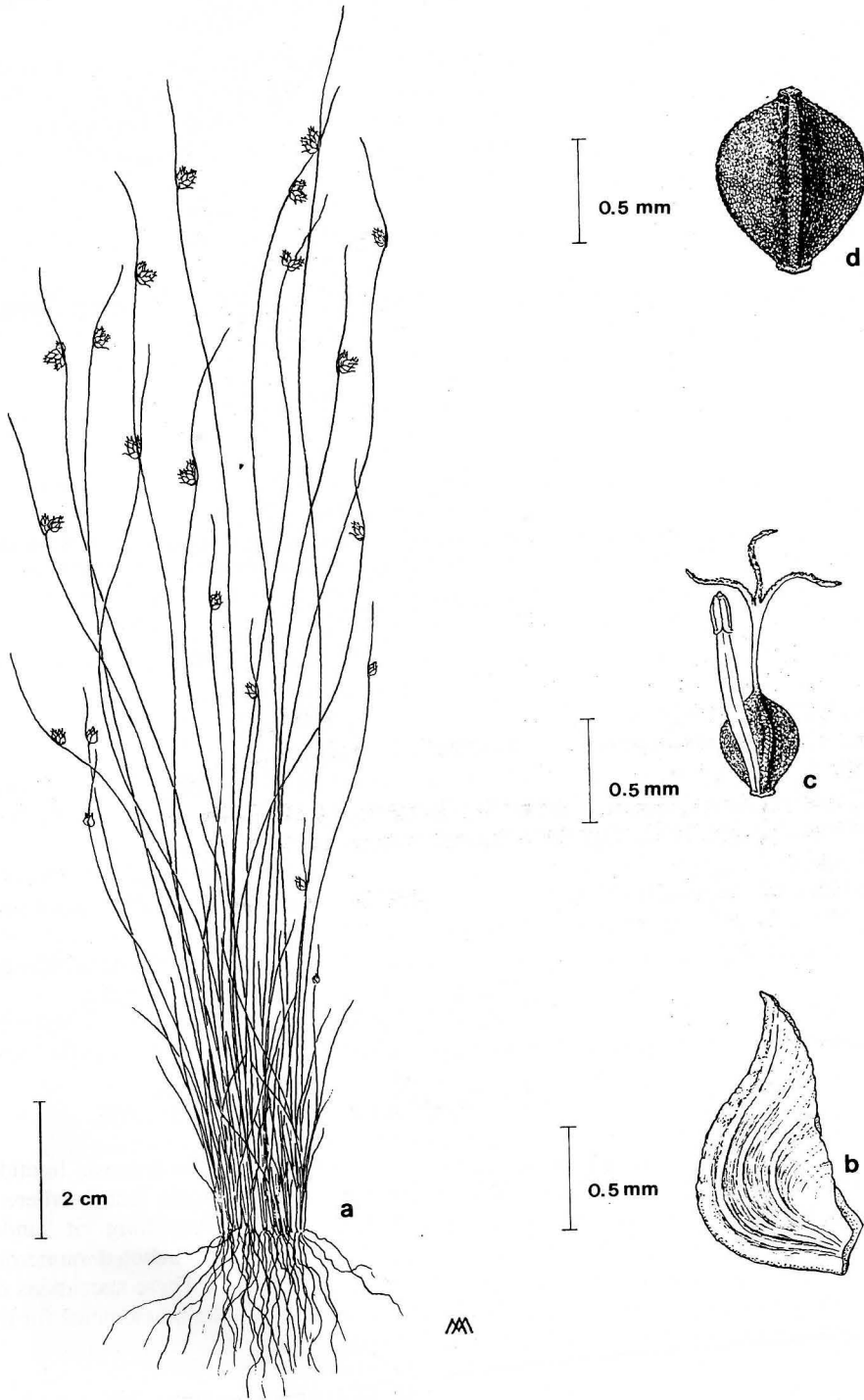


Fig. 1. *S. pseudosetaceus*: a, habit; b, floral bract; c, pistil with the stamen; d, nutlet.

*Description* — Annual caespitose herb. Roots filiform. Stems numerous, slender, cylindrical, striate, 1.5 - 15 cm long. Leaves with a sheathing base fused at the margins, with a linear, striate blade, up to 4 cm long. Inflorescence bracts 1-2, the lower up to 2 cm long, erect, similar to the leaf blades, simulating the prosecution of the stem; the upper patent to reflex, little longer than the floral bracts. Inflorescence of 1-3 sessile spikelets, 2-4 mm long, ovoid, compressed. Floral bracts 1.3-1.6 mm long, ovate, complicate, with evident, sigmoidal keel, mucronate, whitish or tawny, with green midvein and whitish - hyaline margins. Stamens 1(-2), with anthers 0.5 mm. Pistil 1.5 mm, with ovary 0.5 mm, style 0.3 - 0.35 mm, stigma trifid 0.3 - 0.45 mm. Nutlet ellipsoidal, triquetrous with concave sides, finely and densely papillose, apiculate, 0.9 x 0.75 - 0.8 mm, tawny, grey to black when ripe.

*Ecology* — It grows on moist siliceous sands, on the plain and on low mountains up to about 1100 m (Maire 1958).

*General distribution* — *S. pseudosetaceus* is a West - Mediterranean species, distributed over North - West Africa and Iberian peninsula (Valdés & al. 1987).

Since its discovery in Portugal (Daveau 1890) and its record from Northern Algeria (Battandier & Trabut 1895), herbarium specimens were found in MPU by Daveau (1919) from Morocco and Gibraltar, as well as from other localities of the Southern Iberian coasts (both in Portugal and Spain) and from the Sierra de Guadarrama (Central Spain), which marked the Northern limit of the area. Maire (1957) reported further North African localities (Fig. 2). Recent confirmation of this distribution is in Valdés & al. (1987).

*Distribution in Italy* — It is present in Tuscan Maremma. This isolation does not necessarily involve an accidental presence of *S. pseudosetaceus* in Italy, as a scattered distribution also characterizes this species in the remainder of its area. Already Maire, in 1958, defined *S. pseudosetaceus* "assez rare" for North Africa.

Furthermore, spreading of *S. pseudosetaceus* is presumably affected by the general disappearance of wet zones. Shallow, seasonally flooded swamps with pure dripping water, which represent the natural habitat of the slender species of sect. *Isolepis*, are surely among the most threatened.

*Herbarium specimens examined* — Italy: Tra Capalbio e Lago Acquato locis hyeme inundatis, 28 May 1892, *S. Sommier s.n.* (FI); La Marsiliana in Maremma, alla Piscina dell'Aquila, 1 May 1905, *S. Sommier s.n.* (FI).

Portugal: Prope Bellas, Lusitania, 1 Jul 1890, *Daveau 2892* (BM, PAL), *sp.pl.*; Sables humides près Bellas (loco dicto "do Machado"), Jun 1892, *Daveau s.n.* (FI, PAL), *sp.pl.*

*Observations* — Sommier ascribed all the material from Maremma to *S. cernuus*, which is associated with *S. pseudosetaceus* in the earlier locality (between Capalbio and Lago Acquato, 1892, FI !). This misinterpretation was probably due both to the close habit resemblance of *S. pseudosetaceus* to the former species, and to the fact that simply Sommier might not have known of the newly discovered species.

Daveau (1919) himself did not doubt the possibility of enlarging the distribution area of *S. pseudosetaceus* through the reexamination of herbarium specimens of *S. cernuus* and *S. setaceus*, which often grow with the rarer *S. pseudosetaceus*, even in Portugal (cited specimen, BM ! and Daveau 1919).

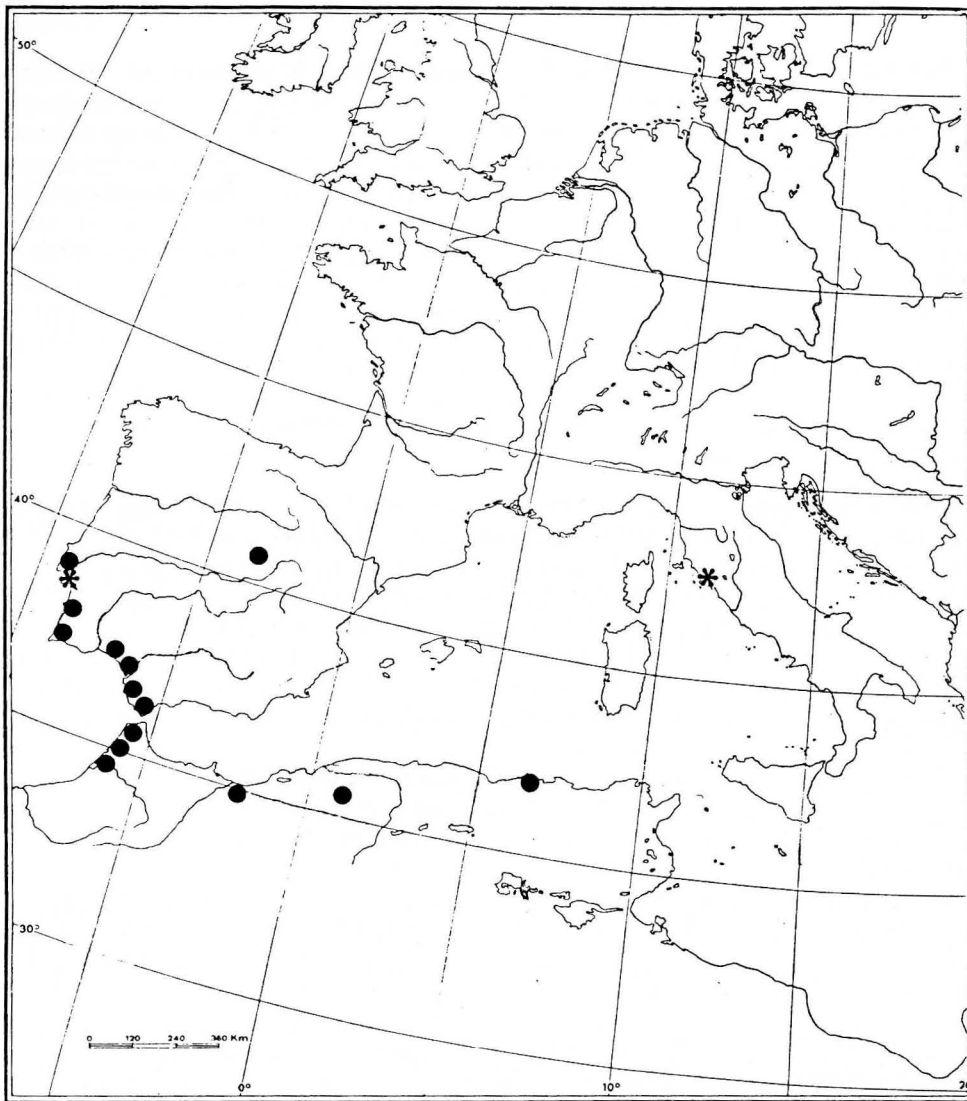


Fig. 2. General distribution of *S. pseudosetaceus*. Starlets (\*) = herbarium specimens; Dots (•) = records from literature (Daveau 1890, 1919, Battandier & Trabut 1895, Maire 1957, Valdés & al. 1987).

In spite of the similar appearance of the three European representatives of sect. *Isolepis*, mistaking *S. setaceus* for *S. pseudosetaceus* or *S. cernuus* is unlikely, in view of the deeply different fruit shape and epicarp surface, which easily permit to distinguish them (see e.g. Shuyler 1971). However, problems may rise between *S. pseudosetaceus* and *S. cernuus*. Epicarp surfaces of *S. pseudosetaceus* and *S. cernuus* need close and careful observation to be distinguished, otherwise specimens of *S. pseudosetaceus* may indeed be named as the more frequent *S. cernuus*.

Nevertheless, good diagnostic characters point out a sharp distinctiveness between *S. pseudosetaceus* and *S. cernuus*.

*S. pseudosetaceus* and *S. cernuus* bear fruits of different shape and epicarp surface, different floral bracts, different number of stamens and somewhat different inflorescences.

A synopsis of diagnostic morphological characters of *S. pseudosetaceus*, *S. cernuus* and *S. setaceus* is in Table 1.

Table 1. Morphological comparison among *S. pseudosetaceus*, *S. cernuus* and *S. setaceus*.

	<i>S. pseudosetaceus</i>	<i>S. cernuus</i>	<i>S. setaceus</i>
Inflorescence -Bract	mostly at least 4 - 5 times as long as the inflorescence	often shorter or as long as the inflorescence; sometimes longer	mostly 4 - 5 times as long as the inflorescence
Number of spikelets per stem	1 - 3 (stems with 2 - 3 most numerous)	1 - 3 (stems with 1 most numerous)	1 - 3 (stems with 2 - 3 most numerous)
Floral Bract	complicate and sigmoidal in outline	ovate, concave	ovate, concave
Number of stamens	1(-2)	3	2
Fruit Shape	Triquetrous (concave sides), ellipsoidal in outline	bluntly trigonous (convex sides) to swollen, obovoid, with a proximal dorsal hump	obovoid
Epicarp Surface	papillose: papillae flattened and closely ranked	papillose: papillae distinctly spaced out	prominently longitudinally ribbed and finely transversely striate

Fruits of *S. pseudosetaceus* and *S. cernuus* investigated by SEM procedures are here shown, in order to permit a more accurate comparison (Fig. 3).

Nutlets of *S. pseudosetaceus* came from La Marsiliana [1 May 1905, *Sommier s.n.* (FI)] and from seasonally flooded swamps between Capalbio and Lago Acquato [28 May 1892, *Sommier s.n.* (FI)]. Nutlets of *S. cernuus* came from S. Martino alle Scale, Sicily [38°5'N, 13°14'E, 725 m, 7 Jul 1995, *Nardi Pasta & Pignotti s.n.* (FI)]. Samples were mounted on aluminium stubs and sputter - coated with gold. Observations were conducted by means of a Philips XL 20 Scanning Electron Microscope.

SEM magnification highlights the differences in shape between the nutlets of *S. pseudosetaceus* and *S. cernuus*:

1. Concave sides in *S. pseudosetaceus* (Fig. 3d) against convex ones in *S. cernuus* (Fig. 3f);

2. Ellipsoidal outline in *S. pseudosetaceus*, against an obovoid shape in *S. cernuus*. A "hump" is also apparent along the basal part of the dorsal (abaxial) edge in the nutlet of *S. cernuus* (Fig. 3f).

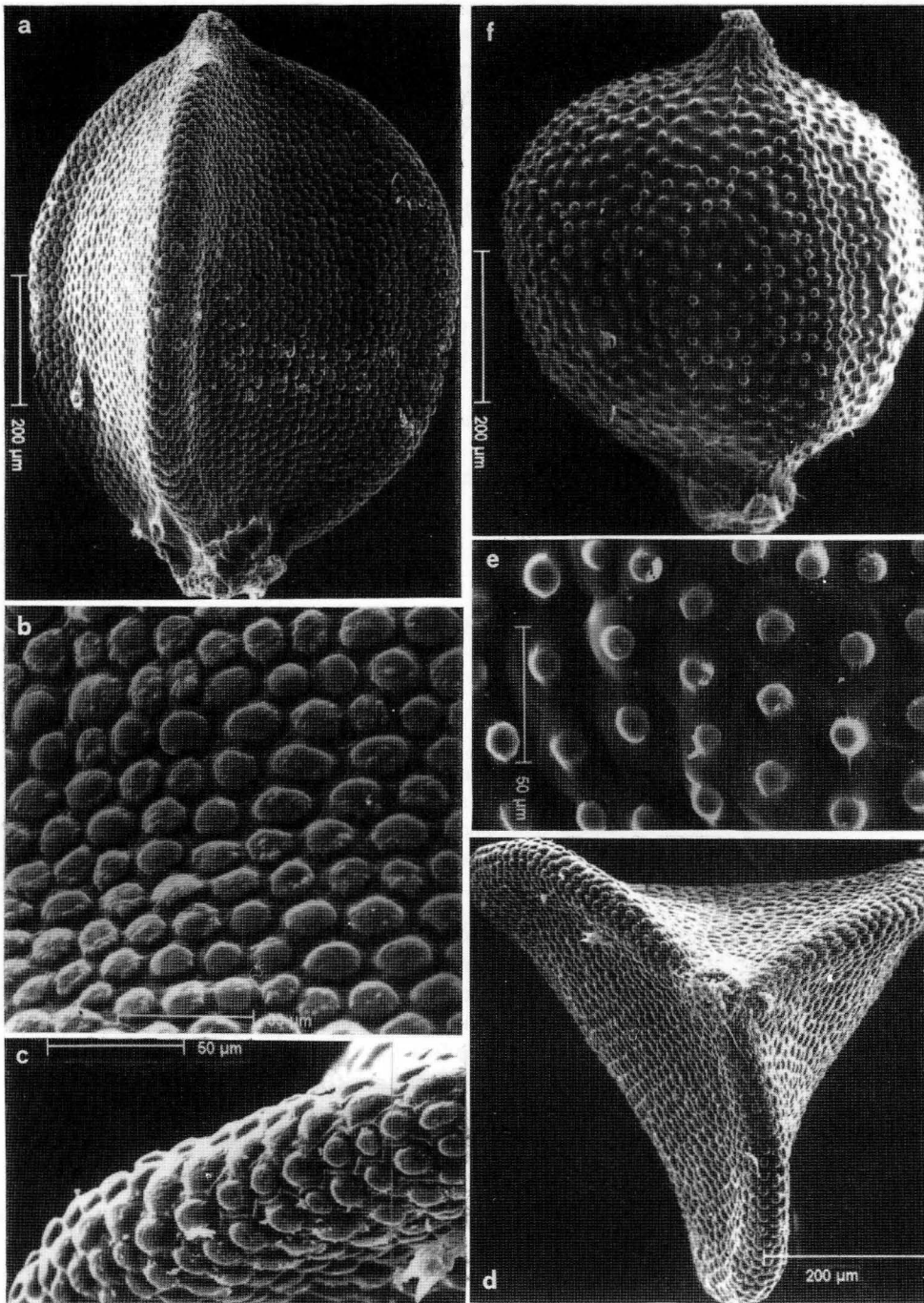


Fig. 3. Microphotographs of the nutlet of: **a-d**, *S. pseudosetaceus* and **e-f**, *S. cernuus*.

The differences in the epicarp surface of *S. pseudosetaceus* and *S. cernuus* are most clearly shown by SEM magnification. The epicarp of *S. pseudosetaceus* is formed by hexagonal cells (Fig. 3c). Each cell bears one papilla which is hemispherical to flattened in shape (Fig. 3b) and roughly follows the outline of the cell. Due to their large size, papillae appear closely ranked (Fig. 3a).

The epicarp of *S. cernuus* is also formed by hexagonal cells (Fig. 3e), each bearing a protrusion (see Schuyler 1971 for interpretation of this protrusion in the epidermal cells of the fruit in *Scirpus*), analogous to that of *S. pseudosetaceus* but much less wide. Due to their smaller size, papillae appear distinctly spaced out in *S. cernuus* (Figs. 3e, f).

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