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***Juncus pervetus* FERNALD, a misunderstood N American species**

S. Snogerup & B. Snogerup*

Abstract

J. pervetus FERNALD is an isolated relict taxon well separated from other N American as well as from the Old World ones. In contradiction to the usage in recent floras, it should be placed in subgenus *Septati*, being most closely related to the Old World species *J. subnodulosus* SCHRANK and *J. punctorius* L.f.

Key words: Flora of N America; *Juncus*, *J. pervetus*; taxonomy.

Zusammenfassung

J. pervetus FERNALD ist eine reliktdre Art, deutlich unterschieden von anderen nordamerikanischen als auch von altweltlichen Arten. Sie sollte in subgenus *Septati* eingeordnet werden, da die nchst verwandten die altweltlichen Arten *J. subnodulosus* SCHRANK und *J. punctorius* L.f. sind.

Introduction

In connection with a recent revision of *Juncus* subgen. *Juncus* (SNOGERUP 1993), the material described as *J. pervetus* by FERNALD (1917) was also examined. FERNALD (1917) placed it in subgenus *Juncus* as a close relative of *J. roemerianus* SCHEELEEE. His opinion has been followed by later American authors, e.g. by GLEASON (1963), who kept it as a separate species although only separated by a short differential diagnosis from *J. roemerianus*.

VIERHAPPER (1930) accepted it as a separate species but placed it in sect. *Septati* and referred to it as a close relative of *J. subnodulosus* SCHRANK.

WEIMARCK (1946) went one step further and degraded *J. pervetus* to a synonym of *J. subnodulosus* in his new section *Subnodulosi*. He also treated *Septati* and *Thalassii* (syn. *Juncus*) as sections and stated *Subnodulosi* to be intermediate between them.

According to our results, *J. pervetus* had to be excluded from the revision of subgenus *Juncus* (SNOGERUP 1993), and is therefore now briefly presented and referred to its proper place in the genus.

Results and discussion

Juncus L. subgen. *Septati* BUCHENAU, Abh. Nat. Ver. Bremen 4: 406 (1875).

Juncus pervetus FERNALD, Rhodora 19: 17 (1917) - Fig. 1.

* Prof. Sven Snogerup & Dr. Britt Snogerup, The Botanical Museum, University of Lund, Ö. Vallgatan 18, S-223 61 Lund, Sweden.

Type: (USA, Massachusetts) Forming a dense swale at the upper border of a salt marsh, east side of Lewis Bay, West Yarmouth, Yarmouth, October 14, 1916, Fernald & Butters 15064 [GH-Holo!, Iso-GH!, NEBC!], same collection as Pl. Exs. Grayanae 183 [Iso-GH!, LD!].

Other material seen: The material listed below is from USA, Massachusetts, Barnstable County, and probably all collected in or near the same place: Brackish marsh, West Yarmouth, 17. VII. 1908, Sinnott [NEBC]; Hyamine, brackish swale, 29. VIII. 1909, Sinnott [NEBC]; Type locality near Hyamine, Cape Cod, 5. VIII. 1928, Svenson [NEBC].

Perennial, forming extensive clones by a creeping and branching rhizome; rhizome usually 3 - 7 mm thick with internodes 3 - 20 mm, emitting flowering stems and vegetative shoots. Flowering stems 70 - 100 cm, 2 - 4 mm thick, terete, with 2 - 3 basal leafless sheaths and one cauline leaf placed in the upper part. Vegetative shoots consisting of one 80 - 100 cm long leaf like the cauline ones, surrounded at base by 2 - 3 leafless sheaths. Cauline leaves usually 25 - 35 cm, 1 - 2 mm thick, pluritubulose, imperfectly septate, i.e. septa present in each tube but not coordinated, auricles present, 0.5 - 1.5 mm, blunt. Inflorescence usually 5 - 10 x 3 - 5 cm, with patent lower main branches, of 25 - 60 c. 15 - 50-flowered almost spherical heads, lower bracts of branches usually short but leaflike, upper ones and those of individual flowers gradually smaller and scalelike, flowers without bracteoles. Tepals 2 - 2.5 mm, equal or outer ones slightly longer, lanceolate to oblong, obtuse, outer ones navicular, herbaceous with scarious margin, becoming light brown. Well-preserved flowers in anthesis not available; stamens 6, shorter than tepals; anthers c. 1 mm, longer than filaments; style c. 1 mm, stigmas c. 2 mm. Capsule at least with its beak slightly exceeding the tepals, c. 2.5 mm including the c. 0.5 mm long beak, trigono-ovoidal, acute, 3-locular, placentas narrow. Seeds few in each capsule, 0.5 mm, without appendages.

Dissection of the terete leaves of *J. pervetus* showed that these do not have the simple structure typical of subgenus *Juncus* with the centre filled with large, rounded cells. They are instead provided with several longitudinal tubes separated by parenchymatic walls. The individual tubes contain septa, but these are not coordinated between the tubes and therefore not easily observed upon superficial inspection of the leaf. The flowers are comparatively small, with stamens of the type most common in the genus, and arranged in heads with bracts but without bracteoles.

J. pervetus has a strong, creeping and branching rhizome that produces flowering culms as well as shoots carrying one long leaf only.

The above-mentioned characters are sufficient to prove that *J. pervetus* belongs to subgen. *Septati*. The presence of two different kinds of shoots from the rhizome shows that its closest relatives are certainly the two Old World species *J. subnodulosus* and *J. punctorius* L.f. Both are widespread. *J. subnodulosus* is distributed in Europe, NW Africa, N Anatolia and locally in Iraq. *J. punctorius* occurs in S, E and N Africa, Sinai, Arabia, S Iran and Pakistan.

J. pervetus is probably derived from the same ancient taxon that gave rise to the other two species, but is today restricted to a small area at Cape Cod in Massachusetts, USA. It is thus certainly to be regarded as a palaeoendemic, as postulated by Fernald (1917) when assigning it the name *pervetus*, i.e. the very old one. Its most peculiar character compared with its relatives is the type of irregular septation of the leaves, which sharply contrasts towards the well-coordinated septa visible from outside which characterize them.



Fig. 1: *J. pervetus*. A: Habit. B: Part of inflorescence. C: Flower. D, E: Tepals with stamens. F: Pistil in early fruit. G: Shoot with single leaf. A - E: Type collection. F: Sinott 29. VIII. 1909. G: Svenson 5. VIII. 1928. Drawing: Bent Johnsen, Copenhagen.

The other N American species most closely related to the *J. subnodulosus* group, and thus to *J. pervetus*, is certainly *J. militaris* BIGEL., which has a similar type of shoot system but is otherwise very different.

The leaf tips of *J. pervetus* are not pungent like those of e.g. *J. roemerianus*, as stated by FERNALD (1917). They are only acute to pointed, as in most *Juncus* species. The leaves in subgen. *Juncus* including *J. roemerianus* have, as one of the unique derived features of the subgenus, a sclerenchymatous, sharp tip functioning as a true spine.

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Autor(en)/Author(s): Snogerup Sven, Snogerup Britt

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