

A new *Juncus* of the section *Tenageia* from Morocco and Egypt

Nová sítina ze sekce *Tenageia* z Maroka a Egypta

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Kirschner J., Rejdali M. & Drábková L. (2004): A new *Juncus* of the section *Tenageia* from Morocco and Egypt. – *Preslia*, Praha, 76: 371–376.

A new annual species, *Juncus maroccanus*, of the section *Tenageia*, closely allied to *Juncus foliosus* Desf., is described from N Morocco. It differs from the latter in having smooth, glossy seeds, capsule shorter than perianth and shortly mucronate. The new species is known from a macrolocality in the Ksar-el-Kebir region, where it grows in non-saline sandy seepage sites. Another, much older specimen was collected in 1835 by W. Schimper in the Sinai Peninsula, Egypt. Syntype specimens of *Juncus rhiphaenus* Pau et Font Quer were examined and found to be conspecific with *Juncus foliosus*.

Key words: annual species, *Juncaceae*, Morocco, taxonomy

Introduction

The western Mediterranean is an important centre for annual species of *Juncus*. The most common and diverse group in the area is the sect. *Tenageia* Dum. (eight or more species) but annuals of the section *Ozophyllum* Dum. (*Juncus tingitanus* Maire et Weiller and *Juncus pygmaeus* Thuill.) and *Juncus capitatus* Weig. of the section *Caespitosi* Cout. also occur there (Kirschner et al. 2002b, c). That is why annual rushes were chosen for a detailed study during a collaborative expedition of taxonomists from the Institute of Botany, Academy of Sciences of the Czech Republic, and IAV, Rabat, to Morocco in 2002.

The study forms a part of the *Juncaceae* phylogeny project (Drábková et al. 2002, 2003) and was conducted at very favourable circumstances for the taxonomic evaluation of the material. First, the section *Tenageia* was well studied by a number of prominent specialists whose summaries were published relatively recently (Snogerup 1971, 1985, Holub 1976, Loenhoud & Sterk 1976, Stasiak 1978, Cope & Stace 1978, 1983, 1985, Mičieta 1983, Mičieta & Mucina 1983). Secondly, the expedition to Morocco took place just after the completion of a monograph on the family (Kirschner et al., 2002a, b, c). The above studies show that apparently very similar taxa can be distinguished by a number of qualitative and quantitative characters, and treated as separate species. The present study uses methods similar to those employed by Cope & Stace (1978) to distinguish the taxa.

The section *Tenageia* is very diverse in Morocco, and the number of localities visited and size of the populations sampled allowed a detailed taxonomic and karyological study of the group. Among the Moroccan taxa and populations studied there was a series of samples that appeared to fall outside the morphological range of other taxa in the section. The characters clearly show that it is a new species in the section *Tenageia*, closely allied to *Juncus foliosus* Desf. The present paper is limited to a description and brief discussion of this new species.

Among the names that can be assigned to *Juncus foliosus* or similar plants, there is one that was not studied in detail for the monograph on *Juncaceae* (Kirschner 2002c). It is *Juncus rhiphaenus* Pau et Font Quer, published validly on a printed label accompanying an exsiccate [Pau et Font-Quer, in P. Font-Quer, Iter Maroc. (Sched. 1929), no. 64 (1930); *Juncus tenageia* var. *rhiphaenus* (Pau et Font-Quer) Maire, Cavanillesia 4: 97 (1931); *Juncus bufonius* var. *rhiphaenus* (Pau et Font-Quer) Maire et Weiller, in R. Maire, Fl. Afr. Nord. 4: 264 (1957)]. The syntype material of *Juncus rhiphaenus* was recently studied in the BM and MA. The plants [Morocco, Rif, Asib de Ktama, 1450 m, P. Font-Quer (It. Maroc.) 64] were assigned to *Juncus foliosus* as they have distinctly striate seeds.

Juncus maroccanus Kirschner, spec. nova

Holotypus: Expedition to Morocco, Spain and France, no 83: Morocco, Distr. Larache (= El-Araïch): ca 5 km S of Tleta-Rissana Village, near the road to the township of Ksar-el-Kebir. 35°11.15' N, 5°58.69' W, 8 June 2002. Leg. J. Kirschner, J. Štěpánková & Z. Kaplan. Deposited in Herbarium of Institute of Botany, Academy of Sciences, Czech Republic (PRA). Isotypi: IAV, PRA.

Paratypi: The same locality, under no. 82 (IAV, PRA).

Diagnosis: Plantae annuae, graciles. Folia subcanaliculata. Inflorescentia terminalis, composita, laxa, floribus subsolitariis vel 2–3 aggregatis, ad basin bracteolaribus duabus obtectis. Tepala anguste lanceolata, acuta vel acuminata 2.5–4.0 mm longa, intus stria mediana atrobrunnea notata, extus stria mediana pallide viridi, demum straminea vel argyraceo-straminea conspicue atomarginata. Stamina 6, antherae plerumque 1.5–2.0 mm longae, filamentis 3–5plo longiores. Capsula obscure castanea vel brunnea, plerumque 2.3–3.0 mm longa, breviter sed distincte mucronata, perigonio subaequans vel distincte brevior. Semina pallide brunnea, late ovoidea, conspicue laevia et nitida, 0.35–0.40 mm longa et 0.28–0.32 mm lata.

Description: Annuals 8–15 cm tall, roots fasciculate, thin. Leaves basal and cauline, subcanaliculate to almost flat, less than 1.5 mm wide in our material, apex acute, sheath margin membranous, gradually narrowing, auricles absent. Basal bract leaf-like, shorter than inflorescence. Inflorescence terminal, lax; branches ± straight, often erecto-patent to almost patent; flowers solitary or in 2–3-flowered clusters, each supported by a pair of ovate translucent whitish-yellowish bracteoles 1.1–1.4 mm long. Tepals subequal, narrowly lanceolate, acute to acuminate, with broad, almost transparent, scarious to membranous margins, middle part adaxially dark castaneous-brown to blackish brown, abaxially initially greenish, later pale stramineous or silvery-stramineous, outer middle stripe narrower than the inner and therefore distinctly blackish bordered, outer tepals 3–4 mm long,

Table 1. – A comparison of *Juncus maroccanus* and *J. foliosus*. Measurements for both species were made on material from Morocco. See also Fig. 1.

Character	<i>Juncus maroccanus</i>	<i>Juncus foliosus</i>
Seed length (mm)	0.35–0.40	0.45–0.55
Seed width (mm)	0.28–0.32	0.28–0.35
Seed length / width ratio	1.25	1.56
Seed-coat surface	smooth, glossy	distinctly 20–26-striate, finely reticulate
Capsule vs. perianth	capsule shorter than perianth	capsule shorter to longer than perianth
Capsule mucro	0.2–0.3 mm long	absent or up to 0.1 mm
Capsule length (mm)	2.3–3.0	2.9–4.7
Plant size (cm)	8–15	(10–) 15–25 (–45)

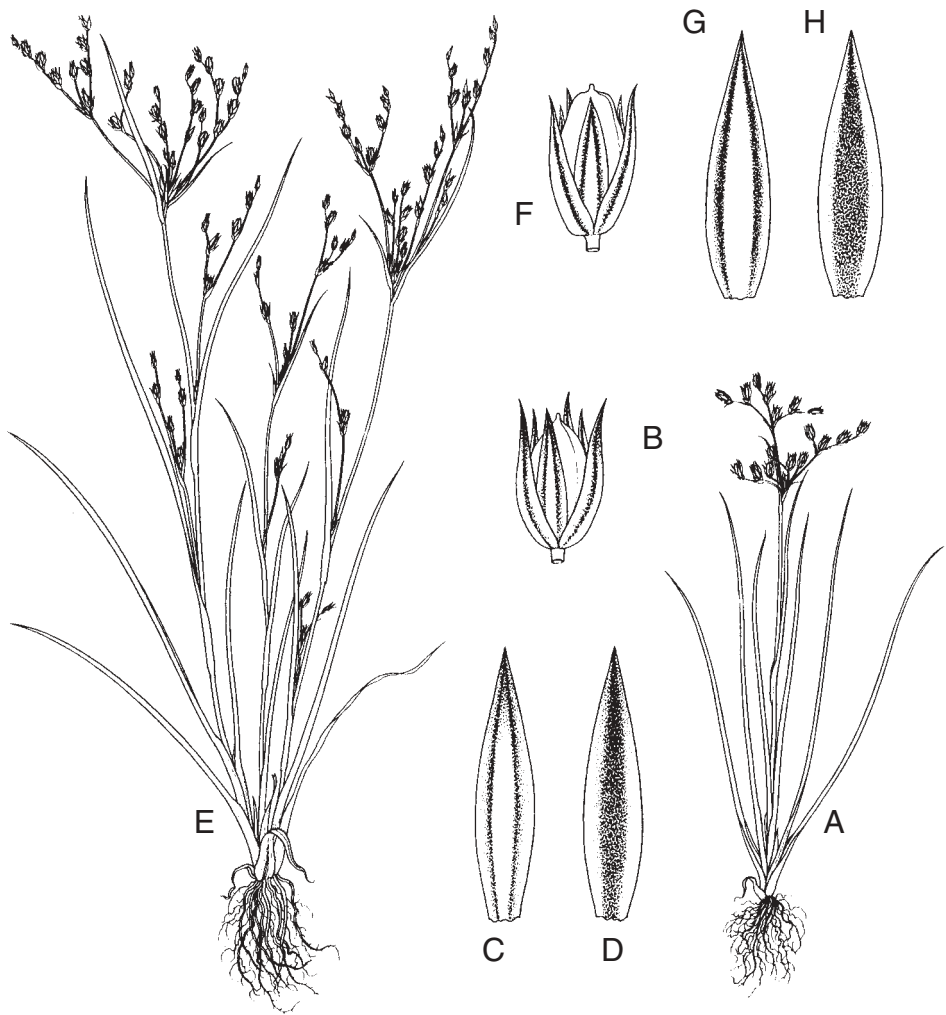


Fig. 1. – *Juncus maroccanus*: A. general habit, B. perianth and capsule, C, D. perianth segments (tepals). *Juncus foliosus*: E. general habit, F. perianth and capsule, G, H. perianth segments (tepals). Orig. E. Smrčinová

ca. 1 mm wide, middle stripe ca. 0.4 mm wide adaxially, inner tepals 2.5–3.7 mm long. Stamens 6, anthers usually 1.5–2.0 mm long, 3–5 × as long as 0.4–0.55 mm long filaments; style (including young capsule mucro) usually 0.5–0.8 mm long, stigmas usually erecto-patent, 0.8–1.3 mm long. Capsule ovoid, indistinctly trigonous above, trilocular, castaneous-brown, subequalling or shorter than perianth, 2.3–3.0 mm long, abruptly narrowed in a mucro 0.2–0.3 mm long. Seeds pale brownish, broadly ovoid, 0.35–0.40 mm long, 0.28–0.32 mm wide, smooth (without visible striation), glossy (Fig. 1A–D; Fig. 2A).

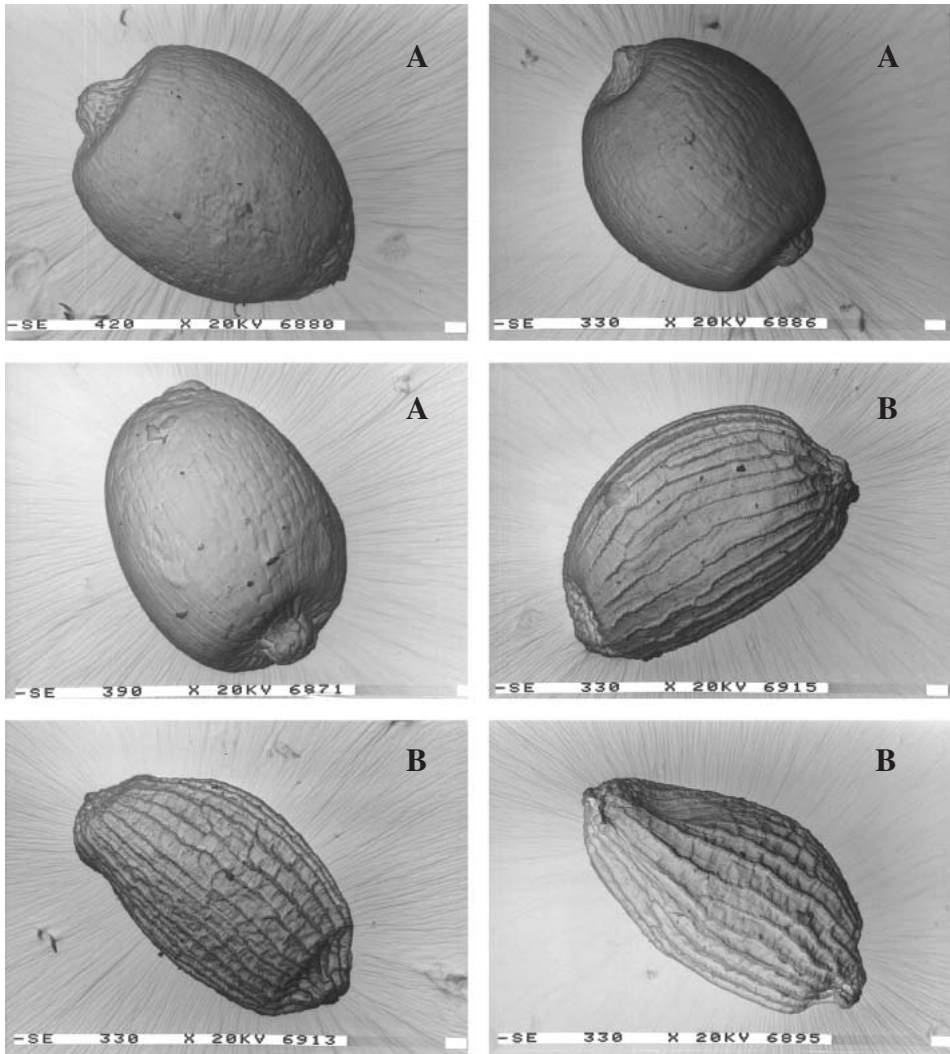


Fig. 2. – SEM pictures of the ornamentation on the seed surface of A. *Juncus maroccanus* and B. *Juncus foliosus*.

Specimina cetera examinata: [Egypt, Sinai Peninsula, the Gebel Sinai and Jabal Kathrina region] Ad fontes in rupestribus prope Nafeh in Arab. petr., 16. Mai, leg. W. Schimper [Unio itin. 1835, no 113, as *Juncus foliosus*] (PRC).

Note 1: The other specimens seen from those distributed under no. 113 mostly belong to other taxa (*Juncus hybridus*, *Juncus bufonius* agg., probably also *Juncus foliosus*).

Note 2: The locality 'Nafeh' was not safely identified. W. Schimper, from late March, 1835, collected plants in the region around the monastery of St. Catharina at the foot of Mt Sinai [Dayr al Qiddisah Katrina]. The *Juncus* collection was made on 16 May; on May 10, he collected a *Reseda* (no 103) 'ad radices montis Sinai' while on May 19 he gathered another *Reseda* (no. 241) 'in praeruptis St. Catharinae', always in the same territory. Nafeh is therefore expected to be in that region, too.

Juncus maroccanus is similar to *Juncus foliosus* in many respects: in the section, they are the only two taxa with an abaxially blackish bordered tepal midrib. The blackish border

develops because the broad dark middle part of the inner surface of the tepals is only partially covered by the outer middle stripe and the blackish colour is visible through the transparent membranous margins. The two species have a similar general habit (although the material indicates the former is much more slender), i.e. flowers confined to the terminal part of the plants, usually solitary or in groups of 2–3 flowers.

Main differences between the two species are summarized in Table 1. The most conspicuous difference is in the seed-coat surface, which is distinctly 20–26-striate in *Juncus foliosus* and smooth in *Juncus maroccanus*. The other diagnostic features, the relative length of capsule, capsule mucro, size of seeds etc. are less distinct or require a detailed examination.

The surface ornamentation (sculpture) of the seeds is a stable and distinct diagnostic character which is frequently used to distinguish *Juncus* taxa at the level of species and section. There are numerous publications on the sculpturing of the seed of rushes; the facts are summarized by Cope & Stace (1983), with emphasis on the variation in the section *Tenageia*. There are only two species in the section characterized by a markedly striate (costate) and distinctly reticulate (lineolate) seed-coat pattern: *J. rechingeri* Snogerup and *J. foliosus* Desf.

In Morocco, we also observed a difference in the habitats of the two species. *Juncus foliosus*, a common species in the region, grows in subsaline or mineral rich muddy or wet sites (margins of ponds, streams, wet abandoned fields, marshes) while *Juncus maroccanus* was found in a non-saline, oligotrophic seepage site.

In addition to the old gathering from the Sinai Peninsula, Egypt, *Juncus maroccanus* is known from a single macrolocality in the Ksar el Kebir region, N Morocco. The locality is a shallow flat valley formed by a brook, with a broad sandy zone near the road. There are numerous shallow sand-pits surrounded by fine gravel on the moderate slope, which have temporarily wet sides due to seepage. The place is very rich in annual rushes confined to non-saline habitats: *Juncus capitatus*, *J. tingitanus*, *J. minutulus*. Another common species is *Illecebrum verticillatum*. Typically, plants of subsaline sites are absent from the locality (e.g. *Juncus foliosus*, *Juncus hybridus*).

Acknowledgements

J. K. was supported by grant no. 206/02/0355 from the Grant Agency of the Czech Republic and by the grant no. AVOZ6005908 from the Academy of Sciences of the Czech Republic. The authors are indebted to Jitka Štěpánková and Zdeněk Kaplan (Průhonice) for their invaluable help and support during the Moroccan expedition. We are grateful to Ahmed Ouhammou of Faculté des Sciences, Laboratoire d'Ecologie Végétale, Semlalia Marrakesh for his support and kind guidance during a part of the expedition. Thanks are due to the keepers of the herbarium collections consulted, primarily those of BM, K, E, W, WU, MA, P, PRC and PR. L. D. is grateful to A. Gabasová for her help with preparing the seed for electron microscopy. Tony Dixon (Norwich) kindly improved our English.

Souhrn

Práce přináší popis nového druhu rodu *Juncus* ze sekce *Tenageia*, *Juncus maroccanus*. Tato sítna je blíže příbuzná *Juncus foliosus* Desf. a dosud je známa jen ze severního Maroka a z Egypta. *Juncus maroccanus* se liší od *J. foliosus* hlavně hladkými, lesklými semeny a tobolkou, která je kratší než perigon a má nasazenou špičku. Na jediné známé lokalitě v oblasti Ksar-el-Kebir se vyskytuje na nezasolených zvlhčovaných píscích, spolu s druhy podobných ekologických preferencí, jako jsou *Illecebrum verticillatum* nebo *Juncus capitatus*. Byly též zkoumány typové položky jména *Juncus rhiphaenus* Pau et Font Quer, pocházející též ze severního Maroka a z Egypta. Tyto rostliny patří k druhu *Juncus foliosus*.

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Received 14 January 2004
Revision received 31 March 2004
Accepted 3 April 2004