

TWO NEW RECORDS OF BOLBOSCHOENUS (CYPERACEAE) FROM IRAN

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Amini Rad, M. and Horudova, Z. 2007 08 01: Two new records of *Bolboschoenus* (Cyperaceae) from Iran. –*Iran. Journ. Bot.* 13(1): 57-62. Tehran.

In review of *Bolboschoenus* specimens, *B. planiculmis* and *B. schmidii* as new records for Flora Iranica area are described. Morphological characters, habitat, geographical distribution in the world and Iran are also presented.

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Key words. *Bolboschoenus*, Cyperaceae, new report, Iran.

گزارش گونه‌های جدید و جالب از تیره اویارسلام برای ایران
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در بررسی نمونه‌های هرباریومی (هرباریوم "IRAN" و هرباریوم "TARI") و نمونه‌های تازه جمع‌آوری شده از مناطق مختلف کشور متعلق به جنس *Bolboschoenus* از تیره *Cyperaceae*. گونه‌های *B. planiculmis* و *B. schmidii* به عنوان گزارش جدید برای محدوده فلور ایرانیکا معرفی می‌شوند. پراکنش جغرافیایی، رویشگاه و صفات متمایز کننده این دو گونه ارایه می‌گردد.

Introduction

The genus *Bolboschoenus* (Asch.) Palla, a segregate from *Scirpus* L., is widely distributed around the world, comprising about 15 species (Browning and Gordon-Gray 2000). The knowledge on taxonomy and distribution of *Bolboschoenus* species developed during last decades considerably; nevertheless, world-wide taxonomic revision is needed, as some species are not clearly defined (Browning et al 1997). In Flora Iranica (Kukkonen 1998), *B. maritimus* and *B. affinis* were reported from Iran and Amini Rad (2003) recorded *B. glaucus* as a new species for Iran. In this paper, *B. planiculmis* and *B. schmidii* are reported as new records from Iran.

Bolboschoenus planiculmis (F. Schmidt) T.V. Egorova, Rast. Centr. Azii 3: 20, 1967.

Syn.: *Scirpus planiculmis* F. Schmidt Reis. Amur-Land., Bot.: 190, 1868; *Scirpus koshewnikowii* Litv. ex Kots, Bull. Soc. Nat. Mosc. 57: 220, 1882; *Bolboschoenus koshewnikowii* (Litv. ex Kots) A. E. Kozhev., Sosud. Rast. Sovet. Dal'nego Vostoka 3: 189, 1988; *Scirpus compactus* var. *orientalis* Litv., 1919, in Spisok rast. Gerb. Russk. fl. 8, 56: 204, N

2792; *Scirpus biconcavus* Ohwi, Mem. Coll. Sci., Kyoto Imp. Univ., Ser. B 18: 110, 1944.

Gilan: Rasht, Rice Research Station, 31. 7. 2002, Amini Rad et Tehrani, No. 38640–IRAN; Langerud, Chamkhaleh, Hassanbekandeh village, 22. 6. 2004, Amini Rad, No. 37227–IRAN; Rasht, 10. 6. 1985, Moussavi (Reza), No. 34463–IRAN.

Perennial, 40-65 cm tall; rhizome richly branched with numerous, mostly small and spherical to ellipsoid tubers. Inflorescence headlike, formed of only sessile spikelets or of a central group of 3-7(-11) sessile spikelets and of 1-2 (-4) rays bearing single spikelets (Fig. 1). Styles bifid (rarely also flowers with trifid styles present in the same inflorescence). Perianth bristles caducous. Nuts obovate, 2.8-3.5 × 2-2.5 mm, mucronate, concave on abaxial side, ocher or light brown to rusty brown (Fig. 2a).

The best determination characters between taxa within the genus *Bolboschoenus* are the shape and anatomy of the nut, well visible in the transverse section of the nut. The nuts of *B. planiculmis* are biconcave or plano-concave; with well developed exocarp (approx. exocarp as thick as sclerenchymatic mesocarp), wider over angles than on concave faces, formed of elongated



Fig. 1. *Bolboschoenus planiculmis* – (locality Gilan: Langerud, Chamkhaleh, Hassanbekandeh village, 37227-IRAN).

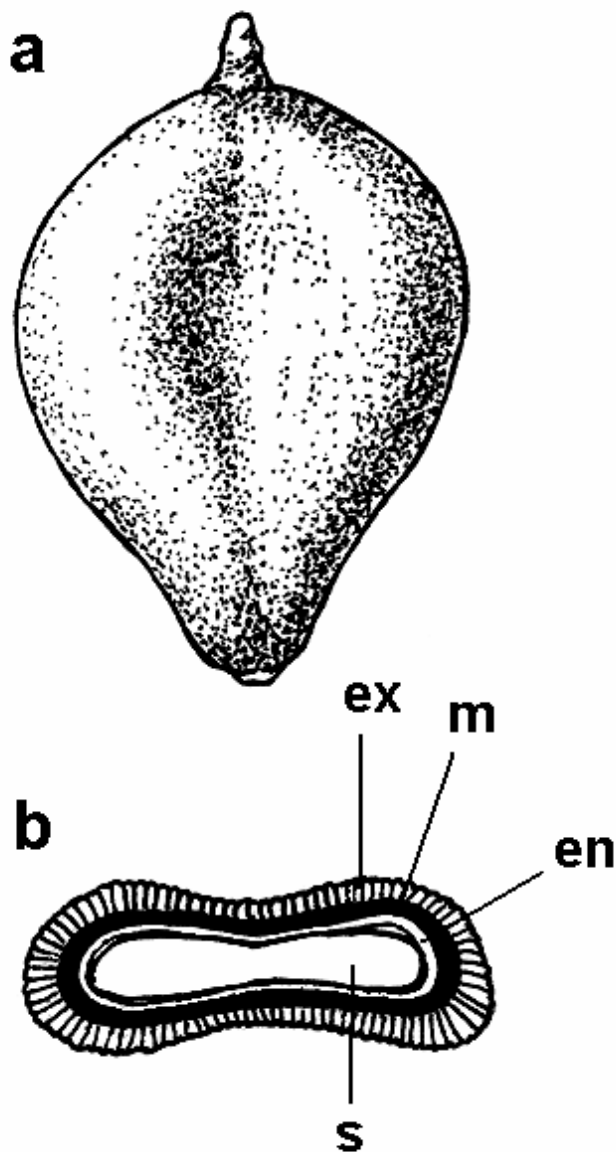


Fig. 2. Nut of *Bolboschoenus planiculmis* (locality Gilan: Rasht, Rice Research Station, 38640-Iran), a-view on abaxial side, b- transversal cross section. ex-exocarp, m-mesocarp (black), en-endocarp, s-seed.

cylindrical cells filled by air; endocarp is thin, formed of sclerenchyma as well as mesocarp (Fig. 2b).

Habitat: This species is found in lake margins, river banks, ditches, temporarily flooded depressions and probably as a weed in rice fields.

General distribution. Europe – Asia: from Central Europe through Russia to the Far East, Central Asia,

China, Japan and Iran (see Egorova and Tatanov 2003, Hroudová et al. 2007).

Bolboschoenus schmidii (Raymond) Holub, *Folia Geobot. Phytotax.* 8: 186, 1973.

Syn.: *Scirpus schmidii* Raymond in Koeie & Rech. f., *Dan. Biol. Skr.* 14: 15, 1965.

Hamadan: Shahnaz Dam, Yalfan (montis), 1980-2200 m, 12.7.1974, Termeh & Moussavi, No. 30712-IRAN. Khorasan: Mashhad to Chenaran, 2.6.1948, Rechinger et al., No. 17246-IRAN. Tehran: Tehran, Ca. 20 km S. of Damavand, between Tamisiun and Aselun, 1550-1650 m, 22.6.1985, Mozaffarian, No. 53923-TARI. Perennial, 30-80 cm tall; rhizome creeping, with small, spherical to ellipsoid tubers. Stem sharply trigonous, with edges scabrous. Leaves equal or longer than stem; sheaths 8-20 cm long, yellowish or green-gray; blades green or green-gray. Inflorescence head like, with 3-6 sessile spikelets, sometimes with 1-2 rays each bearing one spikelet (Fig. 3). Styles 3, but rarely some flowers with bifid styles also present in the same inflorescence. Perianth bristles 6, to 1/2 of nut length, partly caducous. Nuts 3.3-3.8×1.6-2.4 mm, obovate or elliptic, trigonous, whitish, ochre to brown, with thin exocarp, well developed thick sclerenchymatic mesocarp and thin sclerenchymatic endocarp (Fig. 4). Remark: Kukkonen (1988) put *B. schmidii* into the synonymy of *B. affinis*. *B. affinis* is similar to *B. schmidii* in inflorescence structure, but the both species differ substantially in the shape of nuts and pericarp structure. Taxonomic position and origin of *B. schmidii* requires further study (hybrid origin is not excluded). *Habitat*. Margins of standing waters and pools in mountains in high altitudes. *General distribution*. Central Asia (Kazakhstan, Uzbekistan, Turkmeniya), Afghanistan and Iran (Tatanov 2003).

Acknowledgements

The work was partly supported by the Grant Agency of Academy of Sciences of the Czech Republic (grant no.

A6005905) and Academy of Sciences of the Czech Republic (grant no. AV0Z 60050516).

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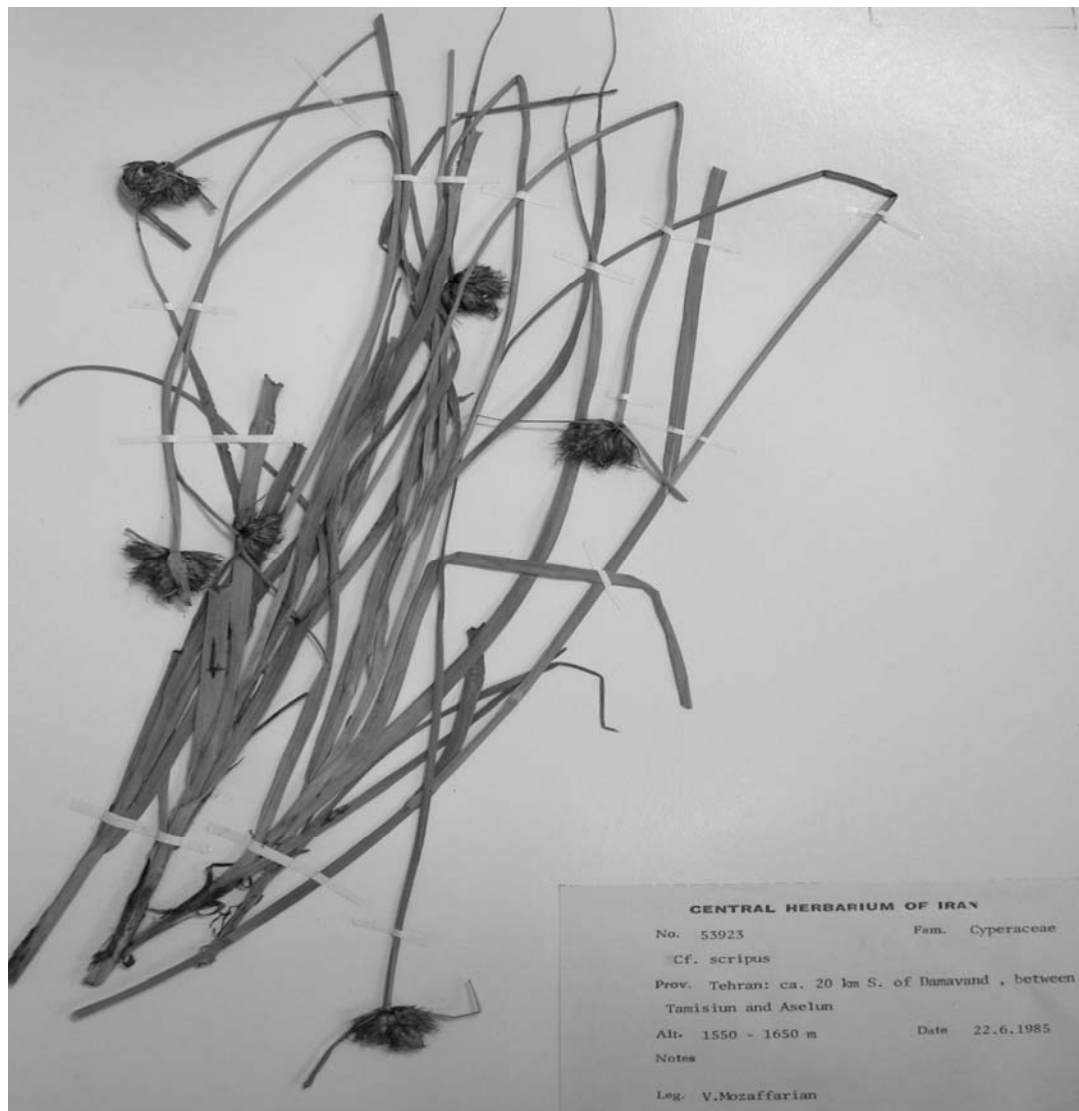


Fig. 3. *Bolboschoenus schmidii* – (locality Tehran: ca. 20 km S. of Damavand, between Tamisiun and Aselun, Mozaffarian 53923-TARI).

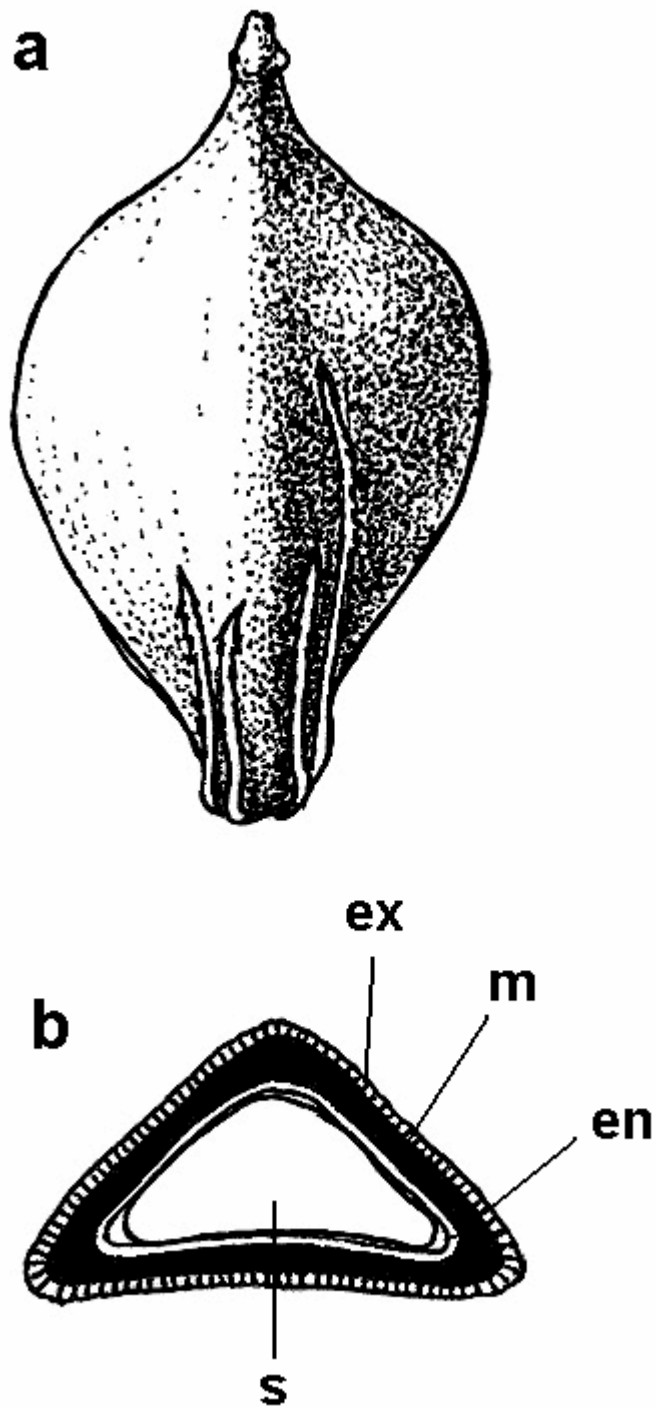


Fig. 4. Nut of *Bolboschoenus schmidii* (locality Hamadan: Shahnaz Dam, Yalfan (montis), 30712-IRAN), a – view on abaxial side, b – transversal cross section. ex – exocarp, m – mesocarp (black), en – endocarp, s – seed.