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New *Aristida* and *Stipagrostis* taxa *(Gramineae)*

Abstract

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Three species, *Aristida fredscholzii* from Oman, *Stipagrostis affinis* from SE Egypt and NW Sudan and *S. fallax* from the Nanga Parbat region, N Pakistan, are described as new to science. The first record of *Stipagrostis libyca* from Sudan refers to a new subspecies, *S. libyca* subsp. *darfurensis*.

During determination and revision work on grasses in the Berlin-Dahlem herbarium (B) four taxa so far not known to science, viz. one species of *Aristida* L. and two species and one subspecies of *Stipagrostis* Nees, have been detected and are described here.

Aristida fredscholzii H. Scholz & Kürschner, **sp. nova**
Holotypus: Oman, Hajar al-Sharqih, Wadi Muharam S of Sumail, Sumail gap, 450 m, 28.3.1999, *H. Kürschner 99-39 & F. Scholz* (B; isotypus: herb. Kürschner). – Fig. 1a.

Affinis *Aristida abnormis* Chiov. sed spiculis minoribus ac lemmatis arista media minuta 0.5-1.5 mm longa differt.

Dedicated to Prof. Dr Fred Scholz (Freie Universität Berlin, Germany), geographer and outstanding expert in traditional landuse of Oman.

Gramen annuum; culmi leviter geniculati ca. 17 cm alti. *Foliorum vaginae* glabrae, ad orificium sparse barbatae; *laminae* convolutae 2-6 cm longae, extus laeves glabraeque. *Panicula* 5-8 cm longa, remote ramosa spiculis paucis. *Spiculae* glabrae; *glumae* subaequilongae, inferior 4-6 mm longa, anguste lanceolata, 1-nervis; *lemma* 5-9 mm longum, indistincte lateraliter compressum sine columna gradatim in aristam mediam minutam 0.5-1.5 mm longam attenuatum; *aristae* laterales nullae; *callus* 0.5 mm longus, ad 1.5 mm longe barbatus.

The nearly complete reduction of awns as well as the small glumes and lemmas of 4-6 and 5-9 mm, respectively, give *Aristida fredscholzii* a very strange appearance unlike any other

Aristida. The most closely related *A. abnormis* Chiov. has 7-8 mm long glumes and about 18 mm long lemmas. Its lemmas are composed of a straight fertile lower part and a more or less semicircled sterile and beak-like upper part gradually tapering into a twisted awn column. The awn column terminates in a well-developed central awn. At its base it has two laterals, which are often much reduced or even absent. The lemma morphology of *A. abnormis* sharply contrasts to that of *A. fredscholzii,* which is equipped with rather homogeneous lemmas, each usually directly topped by a mucro-like projection and two basal, scarcely visible points, which are obviously remnants of laterals. The new species represents a culmination of an evolutionary trend within the polyphyletic *Aristia* sect. *Streptachne* (R. Br.) Domin (= *A.* sect. *Uniseta* Hitchc.; Henrard 1929) towards a reduction of the awn. Except for the awn morphology the new species is very similar to *A. abnormis*, which occurs from Ethiopia to Pakistan and is also present in Oman (Cope 1985, Ghazanfar 1992), and it may possibly be a sympatric off-type of the latter.

Stipagrostis affinis H. Scholz, **sp. nova**
Holotypus: Egypt, Khor Gebl El Faraied [Geb. El-Farayid], Red Sea coast, 12.2.1961, *Täckholm & al. 813* (B; isotypi: B, CAI). – Fig. 1b.

A *Stipagrostis hirtigluma* (Steud. ex Trin. & Rupr.) de Winter panicula laxiore, spiculis et aristis brevioribus, columna ac arista mediana glabra vel arista mediana vario modo plumosa (pili breviores, 2-4 nec 4-5 mm longi), foliorum vaginis laevibus differt.

In 1973, Prof. Vivi Täckholm, Cairo University, kindly sent as gifts to the author the two sheets quoted. The remark on the labels reads: "*Aristida* nova sp. (aff. *A. hirtigluma*)". With some delay this has been confirmed and elaborated here.

Gramen annuum; culmi geniculato-erecti, ad 50 cm alti. *Foliorum vaginae* glabrae laevesque; *laminae* angustae, ca. 1 mm latae. *Panicula* laxe spiculata, 10-20 cm longa. *Spiculae* hirtellae vel glabrae; *glumae* inaequales acutae vel mucronatae, gluma inferior 6-8, superior 8-10 mm longa; *lemma* cum callo 0.5-0.6 mm longo, acuto, barbato, 3-4 mm longum. Omnes partes *aristae* geniculatae, glabrae vel arista mediana 1/3-1/1 longitudinis cum pilis 2-4 mm longis anguste plumosa, apice ad 4 mm longe excurrens; *columna* torta 7-25 mm longa, arista mediana duplo ad quadruplo longior, aristae laterales capillares 6-10 mm longae.

Additional material seen: Sudan, [N Darfur], Wadi Howar, 2.1998, *B. Zach* (B).

From *Stipagrostis hirtigluma* the new species is distinguished by an extraordinary and perplexing intra-individual polymorphism of its spikelets: the glumes are either hairy or glabrous, the large median awn is likewise glabrous or plumose to various degrees (heterodiaspory), and also the lemma callus varies somewhat within the individual panicles. Invariable features of *S. affinis,* in which it differs from *S. hirtigluma* (see Cope & Hosni 1991), comprise the glabrous column, the narrow outline and shape of the awn's feather, and (perhaps less so) the smooth, never "finely scaberulous" leaf sheaths (Launert 1971 for *S. hirtigluma*).

Stipagrostis fallax H. Scholz, **sp. nova**
Holotype: Pakistan, Nanga Parbat, Weg zwischen Tato und Raikot-Bridge, Steppenwaldgesellschaft, 2080 m, 28.8.1993, *Nüsser 568* (B). – Fig. 1c.
[– *Stipagrostis plumosa* sensu Dickoré & Nüsser (2000: 220-221) p.p., non (L.) Munro ex T. Anders.].

A *Stipagrostis brachypoda* (Tausch) de Winter glumis glabris laevibusque, aristae columna longiore, lemmatis callo breviore differt.

Gramen perenne; culmi erecto-geniculati, 30-45 cm alti, internodiis superioribus glabris, inferioribus sparse lanuginosis. *Foliorum vaginae* glabrae, apice plus minusve barbatae, inferiores

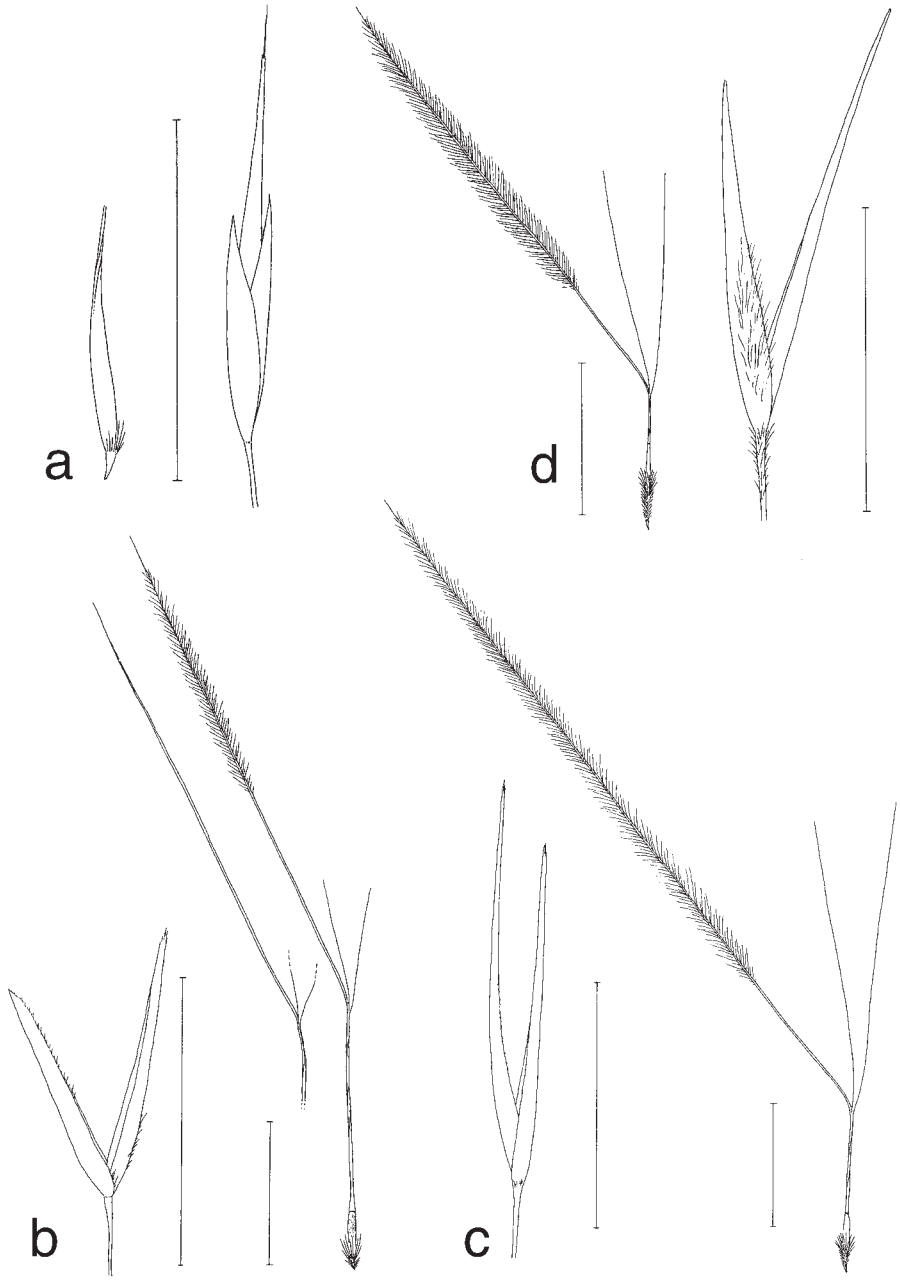

Fig. 1. a: *Aristida fredscholzii,* lemma and spikelet; b: *Stipagrostis affinis,* glumes and lemma with awn; c: *Stipagrostis fallax,* glumes and lemma with awn; d: *Stipagrostis libyca* subsp. *darfurensis,* lemma with awn and glumes. – Scale bars = 10 mm; all draw from the holotypes.

squamatae (sine laminis), laminae convolutae extus glabrae, intus scabrae. *Panicula* 10-15 cm longa, contracta, axibus et pedicellis indistincte scabridulis. *Spiculae* glabrae; *gluma* inferior 12-14 mm, superior 14-15 mm longa; *lemma* cum callo 4.5-5.5 mm longum; *callus* 1.2-1.5 mm longus, acutus, inferne dense tomentosus, superne 1-1.5 mm longe barbatus; *aristae columna* glabra, 7-10 mm longa; *arista* mediana 3-7 cm longa, in 3/4-4/5 partis superioris plumosa, aristae laterales 1.2-2.2 mm longae, glabrae.

Stipagrostis fallax belongs to the probably monophyletic group of species invariably characterized by a very distinctive type of papillae, which protect in quadruplets the stomata apparatus of the abaxial leaf blade epidermis (stomata flaps; "Spaltöffnungspapillen", Scholz 1972). Such epidermal structures are totally lacking in *S. brachypoda* (Tausch) de Winter, an endemic of the Upper Nile Valley District and N Sinai (Scholz 1972), but are present in *S. rigidifolia* H. Scholz, which is distinguished from *S. fallax* by longer glumes and lemma calli and a lower growth. Until late in the 1980s, *S. rigidifolia* was often confused with *S. brachypoda* (Cope 1982) and perhaps also with other species whose lower leaf sheaths are glabrous instead of woolly as, e.g., in *S. plumosa*. Presence or absence of a woolly leaf sheath indumentum and of stomata papillae are, however, not correlated with one another and have to be carefully evaluated in phenetic-based reconstructions of the phylogeny.

Stipagrostis libyca subsp. ***darfurensis*** H. Scholz, **subsp. nova**
Holotypus: Sudan, N Darfur, Libysche Wüste bei 18°25'N, 26°08'E, 27.1.1990, *N. Altmann P646-2* (B). – Fig. 1d.

Differt a subsp. *libyca* aristae columna longiore (ca. 3 mm nec 1-2 mm longa) atque foliorum laminis magis hirsuto-strigulosis.

Stipagrostis libyca (H. Scholz) H. Scholz was first described in 1968 from three localities in Libya as *Aristida libyca* and subsequently transferred to *Stipagrostis* (Scholz 1968, 1969). Usually it is a rather low-growing and very densely tufted but short-lived ephemeral ("annual") desert grass, which is widely distributed in the Central Sahara, extending to Egypt in the east (Scholz 1972, 1999). The new, southeasternmost record of the species is the first one from Sudan. The specimen shows all the essential features of the species (combination of glabrous lower leaf sheaths, hairy lower glume but glabrous upper one, short awn column, etc.). The minor differences stated above appear to indicate the existence of a separate subpopulation, which is here taxonomically classified as a subspecies of its own.

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