

A Taxonomic Revision of the Genus *Stipagrostis* Nees (Poaceae) in Egypt with a Resurrection of Two Taxa

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Abstract: A critical taxonomic revision of thirteen species and two varieties for the genus *Stipagrostis* Nees in Egypt is presented. The study was carried out on herbarium specimens and fresh material collected from different localities. Types, synonyms, short descriptions, key for identifying the investigated taxa based on morphological characters, and notes on habitat, local and global distribution, phenology, and conservation status are provided. In addition, the most taxonomic notes for each taxon are discussed. The results revealed the presence of two previously omitted taxa of *Stipagrostis plumosa* subsp. *seminuda* and *S. plumosa* var. *brachypoda*.

Keywords: Conservation status, Egypt, key, Morphology, Poaceae, *Stipagrostis*.

1. Introduction

Poaceae Barnhart (Gramineae) is a large and, economically, the most important family of flowering plants. It is the fifth-largest plant family after Asteraceae, Orchidaceae, Fabaceae, and Rubiaceae. Based on a recent molecular and morphological study, Soreng et al. [1] presented a modern worldwide phylogenetic classification of the 11,783 Poaceae species in 12 subfamilies, seven supertribes, 54 tribes, five supersubtribes, 109 subtribes, and 789 accepted genera. Poaceae is genuinely cosmopolitan, ranging from the polar circles to the equator and from the mountains to the sea. It has been estimated that grasses are the main component in some 25% of Earth's vegetation cover. Native grassland has developed on most continents, including North America, South America, South Africa, and Eurasia [2]. The genus *Stipagrostis* Nees is nested within the tribe Aristideae. According to POWO's database [3], 77 plant names were recorded to match the search criteria of *Stipagrostis*. The genus is limited to the drier areas of Africa and the Middle East to Central Asia and Western China. In Egypt, *Stipagrostis* has been treated only in broad floristic studies: e.g., [4-10], which lack proper synonymy lists, full-type citations, and detailed illustrations. In Egypt, *Stipagrostis* has been treated only in broad floristic studies: e.g., [4-10], which lack proper synonymy lists, full-type citations, and detailed illustrations. The number of species of *Stipagrostis* recorded in Egypt has increased over time (Table 1); Forsskål [11] recognized only one species in Egypt (*Aristida lanata* Forssk.). In comparison, Raffeneau-Delile [12] recorded two species in Egypt, namely *Aristida ciliata* Desf. and *Aristida obtusa* Delile. Boissier [13] added nine species to Delile's list. Then, Muschler [14] recorded 11 species. Whereas Ramis [15] also recorded 11 species. Täckholm [5] reported 21 taxa (15 species and six varieties) of *Stipagrostis*, while Boulos [7] described only 19 taxa (14 species and five varieties).

Recently, Ibrahim et al. [9] and Peterson et al. [10] recorded 14 species of *Stipagrostis* in the flora of Egypt.

2. Material and Methods

2.1. Sample collection

The present study is mainly based on herbarium materials and collections kept in the following Egyptian herbaria: CAI, CAIM, ASTU, ALEX, SHG, and K, in addition to fresh material collected from different localities representing the different habitats of *Stipagrostis* in Egypt. Acronyms of herbaria are according to [16] (continuously updated). The authors examined high-quality digital images of Egyptian material and the authentic type specimens kept in W, G, GOET, MPU, HBG, S, BM, and FL herbaria. In most cases, photos of type specimens were seen by the authors; such specimens are indicated by "!" in the list of specimens below. The conservation status for each taxon was checked through Red List categories [17].

2.2 Morphological examination of samples

The morphological characteristics of the studied taxa were examined by a Wild M8 Zewz stereomicroscope and photographed by an Olympus SC100 digital camera. Different characters were described or measured, including life span, plant length, stem length, leaf shape, leaf length, leaf width, leaf sheath, nodes, internodes, panicle length, spikelet length, central awn, lateral awns, and lower and upper glume.

Synopsis of the taxa of *Stipagrostis*:

Family: Poaceae Barnhart

Subfamily: Aristidoideae Caro

Tribe: Aristideae C. E. Hubbard

- | | |
|---|--|
| 1- <i>Stipagrostis ciliata</i> (Desf.) De Winter | 8- <i>Stipagrostis plumosa</i> (L.) Munro ex T. Anderson |
| 2- <i>Stipagrostis lanata</i> (Forssk.) De Winter | 9- <i>Stipagrostis multinerva</i> H. Scholz |
| 3- <i>Stipagrostis scoparia</i> (Trin. & Rupr.) De Winter | 10- <i>Stipagrostis hirtigluma</i> (Steud. ex Trin. & Rupr.) De Winter |
| 4- <i>Stipagrostis vulnerans</i> (Trin. & Rupr.) De Winter | 11- <i>Stipagrostis uniplumis</i> (Licht.) De Winter |
| 5- <i>Stipagrostis drarii</i> (Täckh.) De Winter | 12- <i>Stipagrostis paradisea</i> (Edgew.) De Winter |
| 6- <i>Stipagrostis raddiana</i> (Savi) De Winter | 13- <i>Stipagrostis obtusa</i> (Delile) Nees |
| 7- <i>Stipagrostis acutiflora</i> (Trin. & Rupr.) De Winter | |

Key to the taxa of *Stipagrostis* in the flora of Egypt

- 1- All three awns plumose at least in the upper part 2
- Only the central awn plumose, the laterals quite glabrous4
- 2- Awns consisting of one long feather and two shorter, slightly feathery lateral bristles *S. lanata*
- Awns consisting of three-subequal feathers.....3
- 3- lower glume longer than the upper one.....*S. scoparia*
- lower glume shorter than the upper one.....*S. vulnerans*
- 4- Culm with spreading hair- tufts at the nodes.....*S. ciliata*
- Culm without spreading hair at the nodes5
- 5- Internodes or at least the lower densely wooly.....6
- Internodes glabrous, scabrous or minutely pubescent.....10
- 6- Central awn plumose to the base.....7
- Central awn glabrous in the lower part.....8
- 7- Panicle lax, the spikelets spreading on long slender pedicles, central awn 2 cm long, lower glume shorter than the upper..... *S. drarii*
- Panicle narrow, dense, the spikelets spreading on short stiff pedicles, central awn 3.5–5 cm long, lower glume longer than the upper *S. raddiana*
- 8- Central awn feathery down to the joint of the lateral awns, or at least with some hairs at or below the branching..... *S. acutiflora*
- Central awn naked immediately above the lateral bristles and glabrous in the lower part.....9
- 9- Lower glume 3-nerved.....*S. plumosa*
- Lower glume 5-7- nerved.....*S. multinerva*
- 10- Feather obtuse, culm one noded, leaves short, crowded at the base*S. obtuse*
- Feather acute with exserted naked tip, culm several-noded.....11
- 11-Central awn glabrous in the lower part*S. paradisea*
- Central awn plumose to the base with the presence of pappus of hairs at the branching point of the awns.12
- 12- lower and upper glumes hairy.....*S. hirtigluma*
- lower glume hairy while the upper glabrous*S. uniplumis*

Table 1. Species of *Stipagrostis* were reported by different authors in publications relevant to the flora of Egypt, including the current study. + = present, - = absent, * = synonym.

	Forsk. (1775)	Delile (1826)	Boissier (1884)	Muschler (1912)	Rennis (1929)	Täckholm (1956)	Täckholm (1974)	El Hadidi & Fayed (1994/1995)	Boulos (2005)	Ibrahim et al. 2016	Boulos (2009)	Peterson et al. 2020	The current study
1- <i>Stipagrostis ciliata</i> (Desf.) De Winter	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida plumosa</i> Desf.	-	-	-	-	-	-	-	-	*	-	*	-	*
= <i>Aristida ciliata</i> Desf.	-	+	+	+	+	+	*	*	*	-	*	-	*
= <i>Aristida schimperii</i> Hochst. & Steud. ex Steud.	-	-	-	-	-	-	-	-	*	-	*	-	*
2- <i>Stipagrostis lanata</i> (Forsk.) De Winter	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida lanata</i> Forssk.	+	-	-	+	+	+	*	*	*	-	*	-	*
= <i>Aristida forskohlii</i> Tausch	-	-	+	-	-	-	-	-	*	-	*	-	*
3- <i>Stipagrostis scoparia</i> (Trin. & Rupr.) De Winter	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida scoparia</i> Trin. & Rupr.	-	-	-	+	+	+	*	*	*	-	*	-	*
4- <i>Stipagrostis vulnerans</i> (Trin. & Rupr.) De Winter	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida vulnerans</i> Trin. & Rupr.	-	-	-	-	-	+	*	*	*	-	*	-	*
= <i>Stipagrostis pungens</i> , sensu Täckh.	-	-	-	-	-	-	+	*	-	-	*	-	*
5- <i>Stipagrostis drarii</i> (Täckh.) De Winter	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida drarii</i> Täckh.	-	-	-	-	-	+	*	*	*	-	*	-	*
= <i>Stipagrostis arabifelicis</i> Bor	-	-	-	-	-	-	-	-	*	-	*	-	*
6- <i>Stipagrostis raddiana</i> (Savi) De Winter	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida raddiana</i> Savi	-	-	-	-	-	+	*	*	*	-	*	-	*
7- <i>Stipagrostis acutiflora</i> (Trin. & Rupr.) De Winter	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida acutiflora</i> Trin. & Rupr.	-	-	+	+	+	+	*	*	*	-	*	-	*
= <i>Aristida zittelii</i> Asch.	-	-	+	+	+	+	-	-	*	-	*	-	*
= <i>Stipagrostis zittelii</i> sensu Täckh.	-	-	-	-	-	-	+	*	*	-	-	-	*
8- <i>Stipagrostis plumosa</i> (L.) Munro ex T. Anderson subsp. <i>seminuda</i> (Trin. & Rupr.) H. Scholz	-	-	-	-	-	-	-	-	*	-	*	-	+
= <i>Aristida plumosa</i> var. <i>seminuda</i> Trin. & Rupr.	-	-	-	-	-	+	*	-	*	-	*	-	*
= <i>Aristida plumosa</i> var. <i>alexandrina</i> Trin. & Rupr.	-	-	-	-	-	+	*	-	*	-	*	-	*
= <i>Stipagrostis plumosa</i> var. <i>alexandrina</i> (Trin. & Rupr.) Täckh.	-	-	-	-	-	-	+	-	-	-	*	-	*
9- <i>Stipagrostis plumosa</i> (L.) Munro ex T. Anderson var. <i>brachypoda</i> (Tausch) Bor	-	-	-	-	-	-	+	-	*	-	*	-	+
= <i>Stipagrostis brachypoda</i> (Tausch) De Winter	-	-	-	-	-	-	-	-	*	-	*	-	*
= <i>Aristida brachypoda</i> Tausch	-	-	+	+	+	+	-	-	*	-	*	-	*
= <i>Aristida plumosa</i> var. <i>brachypoda</i> (Tausch) Trin et Rupr.	-	-	-	-	-	+	*	-	*	-	-	-	*
10- <i>Stipagrostis multinerva</i> H. Scholz	-	-	-	-	-	-	+	+	+	+	+	+	+
11- <i>Stipagrostis hirtigluma</i> (Steud. ex Trin. & Rupr.) De Winter	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida hirtigluma</i> Steud. ex Trin. & Rupr.	-	-	+	+	+	+	*	*	*	-	*	-	*
12- <i>Stipagrostis uniplumis</i> (Licht.) De Winter	-	-	-	-	-	-	-	+	+	+	+	+	+
= <i>Aristida pogonoptila</i> (Jaub. & Spach) Boiss.	-	-	+	-	-	-	-	-	*	-	*	-	*
= <i>Aristida uniplumis</i> Licht.	-	-	-	-	-	-	-	-	*	-	*	-	*
= <i>Arthratherum pogonoptilum</i> Jaub. & Spach	-	-	-	-	-	-	-	-	*	-	*	-	*
= <i>Stipagrostis papposa</i> (Trin. & Rupr.) De Winter	-	-	-	-	-	+	+	*	*	-	*	-	*
= <i>Stipagrostis pogonoptila</i> (Jaub. & Spach) De Winter	-	-	-	-	-	-	-	-	*	-	*	-	*
= <i>Aristida papposa</i> Trin. & Rupr.	-	-	-	-	-	+	+	-	*	-	*	-	*
13- <i>Stipagrostis paradisea</i> (Edgew.) De Winter	-	-	-	-	-	-	-	+	+	+	+	+	+
= <i>Aristida paradisea</i> Edgew.	-	-	-	-	-	-	-	*	*	-	*	-	*
= <i>Arthratherum caloptilum</i> Jaub. & Spach	-	-	-	*	-	-	-	-	*	-	*	-	*
= <i>Aristida caloptila</i> (Jaub. & Spach) Boiss.	-	-	+	+	+	-	-	-	*	-	*	-	*
14- <i>Stipagrostis obtusa</i> (Delile) Nees	-	-	-	-	-	-	+	+	+	+	+	+	+
= <i>Aristida obtusa</i> Delile	-	+	+	+	+	+	*	*	*	-	*	-	*

1. *Stipagrostis ciliata* (Desf.) De Winter, *Kirkia* 3: 133 (1963). Boiss., *Fl. Orient.* 5:494 (1884); Muchler, *Manual Fl. Egypt* 1:76 (1912); Ramis, *Fl. Aegypten*: 37 (1929); Andrews, *Fl. Sud.* 3:398 (1956); Täckh., *St. Fl. Egypt ed 1*: 550 (1956); N.L.Bor; *Fl. Iraq* 9:386 (1968); Täckh., *St. Fl. Egypt ed 2*: 725 (1974); Feinbrun-Dothan, *Fl. Pal.* 4:277 (1986); Sherif – Siddiqi, *Fl. Lib.* 240 (1988); El Hadidi- Fayed, *Fl. Egypt*: 205 (1994-1995); Boulos, *Fl. Egypt* 4: 225 (2005).

Type: The type of *Aristida schimperii* was collected in 1835 by Schimper (no. 161) from Egypt (Mt. Sinai). Stored in Botanical Garden of Hamburg University (HBG), HBG516714 (photo!); isotype: MPU, MPU024701 (photo!).

Synonyms:

= *Aristida plumosa* Desf., *Fl. Atlant.* 1: 109 (1798), non L. (1763).

= *Aristida ciliata* Desf., *Neues J. Bot.* 3: 255 (1809).

= *Aristida schimperii* Hochst. & Steud. ex Steud., *Syn. Pl. Glumac.* 1: 143 (1854), in syn.

Description: Monoecious, tufted Perennial grass, up to 65 cm, all internode glabrous; nodes bearded; Leaf-blades convolute, curved in dense basilar tufts, filiform, glabrous, margin entire, up to 20 cm long, 1 to 2 mm diameter (in the convolute state), upper surface scabrous but lower surface densely pubescent; sheaths scabrous, longer than the blade; oral hairs present; ligules with a fringe of long hairs. Panicle 8-25 cm long. Spikelet large; glumes unequal, lanceolate, 3- nerved, lower glume 9 to 13 mm long, glabrous, upper glume 12 to 15 mm long, glabrous; the body of lemma articulated at or just above the middle, the awns and column breaking off with the conical upper part of the lemma, 3-5 mm long, 3-awned, central awn plumose only in the upper half with a naked exerted tip, up to 55 mm long naked in the lower part, lateral awns naked, up to 20 mm long.

Distribution in Egypt: the species is widely distributed in the Nile region, including the Delta, Nile Valley, and Faiyum. The Red Sea coastal strip, The Mediterranean coastal strip, Gebel Elba and the surrounding mountainous regions, and all deserts of Egypt, including that of the Sinai Peninsula [5, 7].

Global distribution: Canary Island, Madeira, Morocco, Algeria, Tunisia, Libya, Palestine, Iraq, Iran, Afghanistan, Sudan [7].

Habitat: Sandy and gravelly soil in rocky open spots [7].

Phenology: Flowering from March to June [18].

Conservation status: Not threatened.

Taxonomic notes: Perhaps *Stipagrostis ciliata*, *S. plumosa*, and *S. multinerva* have the same awns characters (Fig. 1: a, h, i, j). *Stipagrostis ciliata* is characterized by spreading hair tufts at the node and large obtuse glumes. According to [7], *S. ciliata* was placed lonely in section *Schistachne*, which is strictly distinguished by an articulated body of lemma at or just above the middle.

2- *Stipagrostis lanata* (Forssk.) De Winter, *Kirkia* 3: 135 (1963); Forssk., *Fl. Aegypt-Arab.* 25 (1775); Boiss., *Fl. Orient*

5:496 (1884); Muchler, *Manual Fl. Egypt* 1:77 (1912); Ramis, *Fl. Aegypten*: 37(1929); Täckh., *St. Fl. Egypt ed 1*: 549 (1956); N.L.Bor; *Fl. Iraq* 9:394 (1968); Täckh., *St. Fl. Egypt ed 2*: 725 (1974); Feinbrun-Dothan, *Fl. Pal.* 4:278 (1986); El Hadidi- Fayed, *Fl. Egypt*: 205 (1994-1995); Boulos, *Fl. Egypt* 4: 227 (2005).

Type: According to [7], the *Aristida lanata* has yet to be found, though it was supposed to have been collected in Egypt. The type of *Aristida forskohlii* was collected in Egypt by Sieber. On the other hand, online databases showed another type specimen of *Aristida lanata* collected in 1771 by Forsskål, P. #sn, from Egypt (Rosetta). Stored in Swedish Museum of Natural History Department of Botany (S), S-G-592 (photo!).

Synonyms:

= *Aristida lanata* Forssk., *Fl. Aegypt.-Arab.* 25 (1775).

= *Aristida forskohlii* Tausch, *Flora* 19: 506 (1836).

Description: Monoecious, tuft, perennial grass, up to 42 cm, lower internode densely woolly; nodes dark; but sheaths glabrous

Leaf blade convolute, curved or straight, filiform, margin entire, up to 15 cm long, 0.5-1 mm diameter (in the convolute state), upper surface pubescent but lower surface hairy; sheaths pubescent; oral hairs present; ligules with a fringe of short hairs inside. Panicle 5-14 cm long. Spikelet small; glumes unequal, lanceolate, 1 to 3- nerved, lower glume 10-13 mm long, 1 to 3- nerved, scabrous; upper glume 12-16 mm long, 3- nerved, scabrous; lemma 5 mm long, 3- plumosed awns, central awn plumose except near its base with a naked exerted tip, up to 18 mm long, lateral awns less plumose up to 33 mm long.

Distribution in Egypt: The species is known from the Nile region, including the Delta, Nile Valley and Faiyum, the Mediterranean coastal strip, the Oases of the Western Desert, and all deserts of Egypt, including of Sinai Peninsula [5, 7].

Global distribution: Palestine and Syria [7].

Habitat: Sandy dunes and palm groves [7].

Phenology: Flowering from April to August [18].

Conservation status: Not threatened.

Taxonomic notes: *S. lanata* is similar to *S. scoparia* and *S. vulnerans* in having three plumose awns (Fig. 1: b, c, d). *S. lanata* strictly differs by having one long feather and two shorter, slightly feathery lateral bristles. While the rest confused taxa of *Stipagrostis* (*S. scoparia* and *S. vulnerans*)

3- *Stipagrostis scoparia* (Trin. & Rupr.) De Winter, *Kirkia* 3: 136 (1963); Muchler, *Manual Fl. Egypt* 1:80 (1912); Ramis, *Fl. Aegypten*: 38 (1929); St. Fl. Egypt ed 1: 549 (1954); Täckh., *St. Fl. Egypt ed 1*: 549 (1956); Täckh., *St. Fl. Egypt ed 2*: 725 (1974); Feinbrun-Dothan, *Fl. Pal.* 4:279 (1986); Sherif – Siddiqi, *Fl. Lib.*: 242 (1988); El Hadidi- Fayed, *Fl. Egypt*: 205 (1994-1995); Boulos, *Fl. Egypt* 4: 227 (2005).

Type: The type of *Aristida scoparia* was collected in 1827 by Aucher- Eloy (no. 2988) from Egypt (near the Pyramids, Giza).

Stored in Conservatory and Botanical Garden of the City of Genève (G), G00022042 (photo!); isolectotype: collected by Schimper (no. 36) in 1835, from Abu Zabel, Egypt, (WAG), WAG0360210 (photo!).

Synonym:

= *Aristida scoparia* Trin. & Rupr., Sp. Gram. Stipac. 176 (1842).

Description: Monoecious, tuft, perennial grass, up to 60 cm long, internodes and nodes glabrous; Leaf blade convolute, curved or straight, filiform, margin entire, up to 35 cm long, 0.5 mm wide (in convolute state), upper surface glabrous but lower surface hairy, sheathes glabrous; oral hairs present; ligules with a tuft of hairs inside. Panicle up to 30 cm long. Spikelets small; glumes unequal, lanceolate, 3- nerved, upper glume 17 mm long, 3- nerved, glabrous, lower glume 21 mm long, 3- nerved, glabrous; lemma 6 mm long, 3- awned, central and lateral awns subequal, plumose, up to 14 mm long.

Distribution in Egypt: the species is known from the Nile region, including the Delta, Nile Valley, and Faiyum, the Oases of the Western Desert, the Mediterranean coastal strip, and all the deserts of Egypt, including the Sinai Peninsula [5, 7].

Global distribution: Niger, Libya, Palestine, and Syria [7].

Habitat: Sandy soil [7].

Phenology: Flowering from April to June [18].

Conservation status: Not threatened.

Taxonomic notes: Out of all studied taxa, *Stipagrostis scoparia* and *S. vulnerans* share

some morphological characters such as suffrutescent culm and the awns consisting of three- subequal feathers (Fig. 1: c, d). However, *Stipagrostis scoparia* is uniquely recognized for its lax panicle, and the upper glume is shorter than the lower one.

4- *Stipagrostis vulnerans* (Trin. & Rupr.) De Winter, Kirkia 3: 136 (1963); Boiss., Fl. Orient 5:498 (1884); Muchler, Manual Fl. Egypt 1:80 (1912); Ramis, Fl. Aegypten: 37 (1929); Täckh., St. Fl. Egypt ed 1: 550 (1956); Täckh., St. Fl. Egypt ed 2: 725 (1974); Sherif – Siddiqi, Fl. Lib.: 241 (1988); El Hadidi- Fayed, Fl. Egypt: 205 (1994-1995); Boulos, Fl. Egypt 4: 227 (2005).

Type: The type of *S. vulnerans* was collected by Sieber (s.n.) from Egypt (Syene, Aswan). Stored in Swedish Museum of Natural History (S), S14-22927 (photo!).

Synonyms:

= *Aristida vulnerans* Trin. & Rupr., Sp. Gram. Stipac. 175 (1842).

= *Stipagrostis pungens*, sensu Täckh., Stud. Fl. Egypt, ed. 2: 725 (1974).

Description: Monoecious, tall woody perennial grass, up to 90 cm long, internodes and nodes glabrous; Leaf blade pungent, curved or straight, filiform, margin entire, up to 25 cm long, 1.5-2 mm wide (in convolute state), upper surface scabrous but lower surface hairy, sheathes glabrous; oral hairs present;

ligules with a tuft of hairs inside. Panicle up to 13 cm long. Spikelets small; glumes unequal, lanceolate, 1- nerved, upper glume 11-13 mm long, 1- nerved, with hairs on the nerve, lower glume 10-12 mm long, 1- nerved, with hairs on the nerve; lemma 4 mm long, 3- subequal plumose awns up to 13 mm long.

Distribution in Egypt: the species are rarely distributed to the Nile region, including the Delta, Nile Valley, Faiyum, the Oases of the Western Desert, and all the deserts of Egypt except that of Sinai [5, 7].

Global distribution: Chad and Libya [7].

Habitat: Sandy soil [7].

Phenology: Flowering from April to May [18].

Conservation status: Not threatened.

Taxonomic notes: *S. vulnerans* can easily be differentiated from most closely similar taxa (*S. scoparia*) by its short and broad pungent leaves, pubescent pedicles, and long upper glumes (Fig. 1: d). [4] recorded *Aristida*

vulnerans Trin. & Rupr and *A. pungens* Desf. as two separate species. While in 1974, she reported the same two species as *Stipagrostis*: *S. vulnerans* (Trin. & Rupr.) De Winter and *S. pungens* (Desf.) De Winter, respectively. [6] considered both taxa are synonyms for *S. vulnerans* (Table 1).

5- *Stipagrostis drarii* (Täckh.) De Winter, Kirkia 3: 133 (1963). Täckh., St. Fl. Egypt ed 1: 551 (1956); Täckh., St. Fl. Egypt ed 2: 726 (1974); El Hadidi- Fayed, Fl. Egypt: 205 (1994-1995) Boulos, Fl. Egypt 4: 229 (2005).

Type: The holotype of *Aristida drarii* was collected in 1939 by Mohammed Drar (no. 589) from Egypt (Sinai: Mitla pass, Isthmic desert: opposite Suez). Stored in Swedish Museum of Natural History Department of Botany (S), S-G-583 (photo!).

Synonyms:

= *Aristida drarii* Täckh., Svensk Bot. Tidskr. 36: 244 (1942).

= *Stipagrostis arabifelicis* Bor, Österr. Bot. Z. 114: 100 (1967).

Description: Monoecious, Perennial tufted grass, up to 80 cm, lower internode densely woolly; nodes glabrous; Leaf blades convolute, curved, filiform, glabrous, margin entire, up to 25 cm long, 1 to 2 mm diameter (in convolute state), upper surface scabrous but lower surface hairy; sheathes glabrous; oral hairs present; ligules with a fringe of long hairs inside. Panicle lax 8-12 cm long. Spikelets small, spreading on long slender pedicles; glumes unequal, lanceolate, 3- nerved, lower glume 9 to 11 mm long, scabrous, upper glume 10 to 13 mm long, glabrous; lemma 2-3 mm long, 3-awned, central awn plumose to the base up to 25 mm long, lateral awns naked, up to 10 mm long.

Distribution in Egypt: the species is restricted to the Sinai Peninsula [7].

Global distribution: Palestine, Arabia, Iraq [7].

Habitat: Desert sands [7].

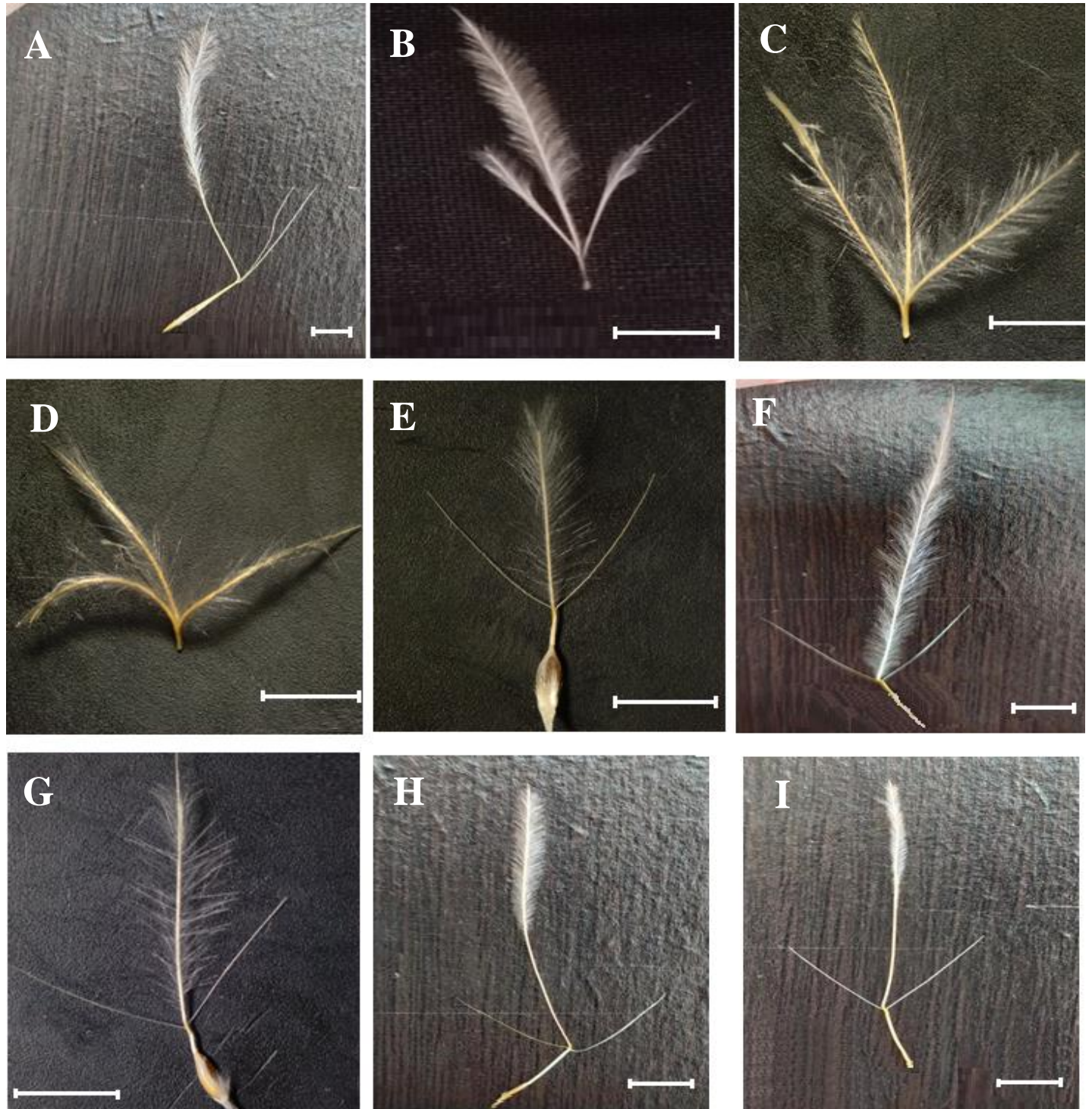


Fig. 1. Awns of *Stipagrostis*: (A) *S. ciliata*, (B) *S. lanata*, (C) *S. scoparia*, (D) *S. vulnerans*, (E) *S. drarii*, (F) *S. raddiana*, (G) *S. acutiflora*, (H) *S. plumosa* subsp. *seminuda*, (I) *S. plumosa* var. *brachypoda* (Scale bare = 5 mm).



Fig. 1 continued: Awns of *Stipagrostis*: (J) *S. multinerva*, (K) *S. hirtigluma*, (L) *S. uniplumis*, (M) *S. paradisea*, (N) *S. obtuse* (Scale bare = 5 mm).

Phenology: Flowering and fruiting in April and May [18].

Conservation status: Not threatened.

Taxonomic notes: *S. drarii* was recorded in the flora of Egypt for the first time by [4] as *Aristida drarii* (Table 1). The species is very close to *Stipagrostis raddiana*. Both taxa share some morphological characters: the central awn plumose to the base (Fig. 1: e, f) and the lower internodes densely woolly. While *S. drarii* can be easily differentiated from *S. raddiana* by having lax panicle, the spikelets spreading on long slender pedicles, central awn 2 cm long (Fig. 1e), and the lower glume shorter than the upper.

6- *Stipagrostis raddiana* (Savi) De Winter, Kirkia 3: 135 (1963); St. Fl. Egypt ed 1: 550 (1954); Täckh., St. Fl. Egypt ed 1: 550 (1956); N. L. Bor; Fl. Iraq 9:392 (1968); Täckh., St. Fl. Egypt ed 2: 726 (1974); Feinbrun-Dothan, Fl. Pal. 4:277 (1986); El Hadidi- Fayed, Fl. Egypt: 205 (1994-1995); Boulos, Fl. Egypt 4: 229 (2005).

Type: The type of *Aristida raddiana* was collected in 1842 by Raddi G., #s.n. from Egypt. Stored in Museo di Storia Naturale dell'Università, Firenze (FI), FI001117 (photo!).

Synonym:

= *Aristida raddiana* Savi, Mem. Mat. Fis. Soc. Ital. Sci. 21: 198 (1837).

Description: Monoecious, tuft, perennial grass, up to 50 cm long, lower internode woolly, nodes glabrous; sheaths glabrous, Leaf blade convolute, curved or straight, filiform, margin entire, up to 10 cm long, 0.5mm wide (in convolute state), upper surface hairy less than the lower surface; oral hairs present; ligules with a tuft of hairs inside. Panicle up to 20 cm long. Spikelets small; glumes unequal, lanceolate, 1- 3- nerved, upper glume 13-18 mm long, 1-3- nerved, glabrous, lower glume 15-20 mm long, 3- nerved, glabrous; lemma 2 mm long, 3- awned, central awn, plumose to the base with naked exerted tip, up to 65 mm long, lateral awns naked up to 5 mm long.

Distribution in Egypt: the species are widely distributed in the Nile region, including the Delta, Nile Valley, and Faiyum, the Oases of the Western Desert, all the Deserts of Egypt, including that of Sinai and Gebel Elba, and the surrounding mountainous region [7].

Global distribution: Palestine, Arabia, Iraq, Iran, and Afghanistan [7].

Habitat: Sandy and rocky deserts [7].

Phenology: Flowering from January to May [18].

Conservation status: Not threatened.

Taxonomic notes: *S. raddiana* can easily be differentiated from the closest taxa (*S. drarii*) by having a densely narrowly panicle, the spikelets spreading on short stiff of the pedicles, the central awn 3.5 – 5 cm long (Fig. 1f), and the lower glume longer than the upper one.

7- *Stipagrostis acutiflora* (Trin. & Rupr.) De Winter, *Kirkia* 3: 133 (1963); Nees in *Linnaea* 7: 290 (1832); Boiss., *Fl. Oeint.* 5:497 (1884); Muchler, *Manual Fl. Egypt* 1:79 (1912); Andrews, *Fl. Sud.* 3:398 (1956); Täckh., *St. Fl. Egypt* ed 1: 551 (1956); Täckh., *St. Fl. Egypt* ed 2: 726 (1974); Sherif – Siddiqi, *Fl. Lib.* 248 (1988); El Hadidi- Fayed, *Fl. Egypt*: 205 (1994-1995); Boulos, *Fl. Egypt* 4: 229 (2005).

Type: The type of *Aristida zittelii* was collected in 1874 by Ascherson, P. (no. 2499) from Egypt (between Assiut and Farafrah Oasis). Stored in herbarium of Göttingen University (GOET), GOET006951 (photo!).

Synonyms:

= *Aristida acutiflora* Trin. & Rupr., *Sp. Gram. Stipac.* 167 (1842).

= *Aristida zittelii* Asch., *Verh. Bot. Vereins Prov. Brandenburg* 21: 70 (1880).

= *Stipagrostis zittelii* sensu Täckh., *Stud. Fl. Egypt*, ed. 2: 725 (1974).

Description: Monoecious, tuft, perennial grass, up to 75 cm, lower internode densely woolly; nodes dark; but sheaths glabrous, Leaf blade convolute, curved or straight, filiform, margin entire, up to 15 cm long, 0.5-1 mm diameter (in convolute state), upper surface less densely pubescent than the lower surface; sheaths scabrous; oral hairs present; ligules with a fringe of short hairs inside. Panicle 5-17 cm long. Spikelet small; glumes unequal, lanceolate, 1 to 3- nerved, lower glume 7-8 mm long, 1-nerved, scabrous; upper glume 9-10 mm long, 3-nerved, scabrous; lemma 5 mm long, 3-awned, Central awn feathery down to the joint of the lateral awns with a naked exerted tip, up to 18 mm long naked in the lower part, lateral awns naked, up to 9 mm long.

Distribution in Egypt: the species is known from the Nile region, including the Delta, Nile Valley, and Faiyum; The Red Sea coastal strip; and all deserts of Egypt, including that of the Sinai Peninsula [5, 7].

Global distribution: Chad, Niger, Mauritania, Algeria, Tunisia, Libya, and Arabia [7].

Habitat: Sandy soil [7].

Phenology: Flowering in June [19].

Conservation status: Not threatened.

Taxonomic notes: In contrast to all Egyptian *Stipagrostis*, *S. acutiflora* is strictly differing by its leaves which are acute at the apex, and the feathery awn has equal, naked regions at apex and base (Fig. 1g). [4] recorded *Aristida acutiflora* Trin. & Rupr. and *Aristida zittelii* Asch. (syn.: *A. acutiflora* Trin. & Rupr. subsp. *zittelii* (Asch.) Maire & Weiller) as two separate species. While in 1974, she reported the same two species as *Stipagrostis*: *Stipagrostis acutiflora* (Trin. & Rupr.) De Winter and *Stipagrostis zittelii* (Asch.) De Winter, respectively. [6] and [7] considered *S. zittelii* (Asch.) De Winter as synonyms to *S. acutiflora* (Table 1).

8- *Stipagrostis plumosa* (L.) Munro ex T. Anderson, *J. Linn. Soc., Bot., Suppl.* 1:40 (1860); Boiss., *Fl. Orient* 5:495 (1884); Muchler, *Manual Fl. Egypt* 1:77 (1912); Ramis, *Fl. Aegypten*: 37 (1929); Täckh., *St. Fl. Egypt* ed 1: 551 (1956); N. L. Bor; *Fl. Iraq* 9:389 (1968); Täckh., *St. Fl. Egypt* ed 2: 726 (1974); Feinbrun-Dothan, *Fl. Pal.* 4:277 (1986); Sherif – Siddiqi, *Fl. Lib.*: 245 (1988); El Hadidi- Fayed, *Fl. Egypt*: 206 (1994-1995); Boulos, *Fl. Egypt* 4: 231 (2005).

Description: Monoecious, tufted perennial grass, up to 35 cm long, internodes woolly; nodes glabrous; Leaf blade convolute, curved or straight, filiform, margin entire, up to 15 cm long, 1 mm wide (in the convolute state), upper surface glabrous but lower surface pubescent, lower sheaths woolly or glabrous; ligules with a tuft of hairs. Panicle up to 12 cm long. Spikelet small; glumes unequal, lanceolate, 1- 3-nerved, upper glume 11-13 mm long, 1-3- nerved, glabrous, or scabrous, lower glume 8-11 mm long, 3- nerved, scabrous; lemma 4-5 mm long, 3- awned, central awn plumose with naked exerted tip, up to 40-60 mm long naked in the lower part, lateral awn naked up to 20 mm long.

Global distribution: Africa north of the Sahara, eastwards through Arabia, Turkey, and Palestine to Pakistan and northwest India [7].

Habitat: sandy and stony soil [7].

Phenology: Flowering from April to May [14].

Conservation status: Not threatened.

Taxonomic notes: by examining more than 50 herbarium sheets from different herbaria, the authors noticed that two taxa of *Stipagrostis plumosa* occurred in Egypt (Fig. 2): *S. plumosa* subsp. *seminuda* and *S. plumosa* var. *brachypoda*. According to [7], the two taxa were considered as variable synonyms to *Stipagrostis plumosa* (Table. 1). While in [4] *S. plumosa* subsp. *seminuda* and *S. plumosa* var. *brachypoda* were mentioned as accepted taxa. Henrard [20] status that *Aristida brachypoda* is related to the Linnean *A. plumosa* but differs chiefly in the glabrous sheath and in the characters of the spikelets.

Our study proved the morphological differences which demonstrated by [4, 20], and contrasted in the following key and shown in the illustrated Fig. 3:

8.1. *Stipagrostis plumosa* (L.) Munro ex T. Anderson **subsp. *seminuda*** (Trin. & Rupr.) H. Scholz, *Willdenowia* 6: (2) 295 (1971).

Type: The paratype of *Stipagrostis plumosa* subsp. *seminuda* was collected in 1835 by Schimper (no.174) from Egypt (near El Tor, Sinai). Stored in Naturhistorisches Museum Wien (W), W0000394 (photo!).

Synonyms:

= *Aristida plumosa* var. *seminuda* Trin. & Rupr., *Sp. Gram. Stipac.*: 166. (1842).

= *Aristida plumosa* var. *alexandrina* Trin. & Rupr., *Sp. Gram. Stipac.*: 166. (1842).

= *Stipagrostis plumosa* var. *alexandrina* (Trin. & Rupr.) Täckh., *Publ. Cairo Univ. Herb.* 5: 58 (1974).

Key for the two varieties of *Stipagrostis plumosa* in Egypt:

- 1- Lower leaf sheath woolly, upper glumes glabrous **subsp. *seminuda***
- All leaf sheathes glabrous, upper glumes scabrous **var. *brachypoda***



Fig. 2. *Stipagrostis plumosa* (L.) Munro ex T. Anderson subsp. *seminuda* (Trin. & Rupr.) H. Scholz -**Left**; *Stipagrostis plumosa* (L.) Munro ex T. Anderson var. *brachypoda* (Tausch) Bor -**Right**, (habit; herbarium specimens, ASTU).

Distribution in Egypt: the species is widely distributed in the most phytogeographical regions in Egypt: The Nile region, including the Delta, Nile Valley, and Faiyum, the Oases of the Western Desert, the Mediterranean coastal strip, all the deserts of Egypt, including that of Sinai Peninsula, the Red sea coastal strip, and Gebel Elba and surrounding mountainous regions [5].

8.2. *Stipagrostis plumosa* (L.) Munro ex T. Anderson var. *brachypoda* (Tausch) Bor, Taxon 16: 467 (1967).

Type: The lectotype of *Stipagrostis plumosa* var. *brachypoda* was collected by Sieber (s.n.) from Egypt (near Pyramids). Stored in Naturalis Biodiversity Center (L), L 0043638 (photo!).

Synonyms:

- = *Stipagrostis brachypoda* (Tausch) De Winter, *Kirkia* 3: 133 (1963).
- = *Aristida brachypoda* Tausch, *Flora* 19: 506 (1836).
- = *Aristida plumosa* v. *brachypoda* (Tausch) Trin et Rupr., *Sp. Gram. Stipac.* 166 (1842).

Distribution in Egypt: the preceding species except for Gebel Elba and surrounding mountainous regions [5].

9- *Stipagrostis multinerva* H. Scholz, Österr. Bot. Z. 117: 289 (1969); Täckh., St. Fl. Egypt ed 2: 727 (1974); Sherif – Siddiqi, Fl. Lib.: 246 (1988); El Hadidi- Fayed, Fl. Egypt: 206 (1994-1995); Boulos, Fl. Egypt 4: 233 (2005).

Type: The holotype of *Stipagrostis multinerva* was collected in 1936 by Harry St. John Bridger Philby, #22, from Yemen (Arain). Stored in Natural History Museum (BM), BM000797730 (photo!).

Synonyms:

= No synonyms are recorded for this name.

Description: Monoecious, tuft, perennial grass, up to 16 cm, lower internode densely woolly; nodes dark, glabrous; lower leaf sheathes woolly; Leaf blade convolute, linear, filiform, margin entire, up to 8 cm long, 1 mm diameter (in convolute state), upper surface scabrous but lower surface hairy; oral hairs present; ligules with a ring of short hairs.



Fig. 3. Differences between the two varieties of *S. plumosa*: (1) subsp. *seminuda*, (2) var. *brachypoda*. (A) sheath, (B) whole glumes, (C) enlargement part of upper glume.

Panicle about 6 cm long. Spikelet small, erect; glumes unequal, lanceolate, multinerved, lower glume 15 mm long, 5-7-nerved, scabrous; upper glume 20 mm long, 3-5-nerved, scabrous; lemma 6 mm long, 3-awned, central awn plumose only in the upper half with a naked exerted tip, up to 50 mm, lateral awns naked, up to 15 mm long.

Distribution in Egypt: the species is very rare and restricted in distribution to only the Sinai Peninsula [5, 7].

Global distribution: Arabia and Iran [7].

Habitat: Low dunes [7].

Phenology: Flowering from March to April [19].

Conservation status: Not threatened.

Taxonomic notes: *S. multinerva* has often been confused with *S. plumosa* due to their similar morphological appearance, central awn characteristic in which plumose only in the upper half with a naked exerted tip (Fig. 1: j, h, i), and the lower internode is densely woolly. However, *S. multinerva* can easily be distinguished by the presence of several nerves on the glumes rather than three nerves in other taxa under investigation.

10- *Stipagrostis hirtigluma* (Steud. ex Trin. & Rupr.) De Winter, *Kirkia* 3:136 (1963). Boiss., *Fl. Orient.* 5:496 (1884); Muchler, *Manual Fl. Egypt* 1:78 (1912); Ramis, *Fl. Aegypten*: 37 (1929); Andrews, *Fl. Sud.* 3:398 (1956); Täckh., *St. Fl. Egypt* ed 1: 550 (1956); Täckh., *St. Fl. Egypt* ed 2: 726 (1974); Feinbrun-Dothan, *Fl. Pal.* 4:278 (1986); El Hadidi- Fayed, *Fl. Egypt*: 205 (1994-1995) Boulos, *Fl. Egypt* 4: 233 (2005).

Type: The isotype of *Aristida hirtigluma* was collected in 1835 by Schimper (no. 165) from Egypt (Sinai, Wadi Hebran). Stored in Royal Botanic Gardens (K), K000366950 (photo!); isotype: W, W0000352 (photo!).

Synonym:

= *Aristida hirtigluma* Steud. ex Trin. & Rupr., *Sp. Gram. Stipac.* 171 (1842).

Description: Monoecious, annual, or short-lived Perennial grass, up to 70 cm, all internodes glabrous; nodes glabrous; Leaf-blades convolute, curved, filiform, scabrous, margin entire, up to 12 cm long, 1 to 2 mm diameter (in convolute state), upper surface pubescent but lower surface hairy; sheaths glabrous; oral hairs present; ligules with a fringe of long hairs. Panicle 7-15 cm long. Spikelet small; glumes unequal, lanceolate, 3- nerved, lower glume 7-12 mm long, hairy, upper glume 11-14 mm long, hairy; lemma 3-5 mm long, 3-awned, central awn plumose to the base up to 60 mm long, lateral awns naked, up to 15 mm long.

Distribution in Egypt: the species is known from the Oases of the Western Desert, Desert East of the Nile, including the Sinai Peninsula, the red sea coastal strip and Gebel Elba, and the surrounding mountainous region [5, 7].

Global distribution: Tropical and southern Africa, Arabia to Pakistan, and India [7].

Habitat: Desert sands and Rocky Mountains [7].

Phenology: Flowering from March to April [18].

Conservation status: Not threatened.

Taxonomic notes: *S. hirtigluma* has often been confused with *S. uniplumis* due to their morphological similarity of yellowish-white spikelet with a dark spot at the base and the presence of pappus of hairs at the branching point of the awns (Fig. 1: k, l). However, *S. hirtigluma* can be differentiated by having a callus with two collars of hairs and the lower and upper glumes hairy.

11- *Stipagrostis uniplumis* (Licht.) De Winter, *Kirkia* 3: 136 (1963); Boiss., *Fl. Orient* 5:496 (1884); Täckh., *St. Fl. Egypt*

ed 1: 550 (1956); Täckh., St. Fl. Egypt ed 2: 726 (1974); El Hadidi- Fayed, Fl. Egypt: 205 (1994-1995); Boulos, Fl. Egypt 4: 235 (2005).

Type: The isotype of *Aristida papposa* was collected in 1840 by Martio (no. 430) from Sudan (in savannas near Khartoum). Stored in Naturalis Biodiversity Center (WAG), WAG0389266 (photo!).

Synonyms:

= *Aristida pogonoptila* (Jaub. & Spach) Boiss., Fl. Orient. 5: 496 (1884).

= *Aristida uniplumis* Licht., Roem. & Schult., Syst. Veg. 2: 401 (1817).

= *Arthratherum pogonoptilum* Jaub. & Spach, Ill. Pl. Orient. 4: 56, t. 377 (1851).

= *Stipagrostis papposa* (Trin. & Rupr.) De Winter, Kirkia 3: 136 (1963).

= *Stipagrostis pogonoptila* (Jaub. & Spach) De Winter, Kirkia 3: 136 (1963).

= *Aristida papposa* Trin. & Rupr., Sp. Gram. Stipac. 173 (1842).

Description: Monoecious, short-lived perennial grass, up to 60 cm long, internodes and nodes glabrous; Leaf blade convolute, curved or straight, filiform, margin entire, up to 15 cm long, 0.5 mm wide (in the convolute state), upper surface scabrous but lower surface hairy, sheaths glabrous; oral hairs present; ligules with a tuft of hairs inside. Panicle up to 13 cm long. Spikelets small; glumes unequal, lanceolate, 3- nerved, upper glume 12 mm long, 3- nerved, glabrous, lower glume 10 mm long, 3- nerved, scabrous; lemma 2-3 mm long, 3- awned, central awn plumose to the base with naked exerted tip, up to 45 mm long, lateral awn naked up to 12 mm long.

Distribution in Egypt: the species is restricted in its distribution to the Desert east of the Nile except that of Sinai and Gebel Elba and the surrounding mountainous region [7]

Global distribution: Tropical and southern Africa through Arabia to Pakistan [7].

Habitat: Wadi beds [7].

Phenology: Flowering from April to June [18].

Conservation status: Not threatened.

Taxonomic notes: *S. uniplumis* is similar to *S. hirtigluma*, as mentioned above. While *S. uniplumis* easily recognized by the callus of the floret with a single continuous band of hairs, and the lower glume is hairy while the upper one is glabrous.

12- *Stipagrostis paradisea* (Edgew.) De Winter, Kirkia 3: 135 (1963); Boiss., Fl. Orient 5:497 (1884); Muchler, Manual Fl. Egypt 1:78 (1912); Ramis, Fl. Aegypten: 37(1929); El Hadidi- Fayed, Fl. Egypt: 206 (1994-1995); Boulos, Fl. Egypt 4: 235 (2005).

Type: The type of *Arthratherum caloptilum* was collected in 1902 by Kneucker (no.248) from Egypt (Sinai, wadi Firan). Stored in Royal Botanic Garden Edinburgh (E), E00440038 (photo!).

Synonyms:

= *Aristida paradisea* Edgew., Asiat. Soc. Bengal 16: 1219 (1847).

= *Arthratherum caloptilum* Jaub. & Spach, Ill. Pl. Orient. 4: 54, t. 336 (1851).

= *Aristida caloptila* (Jaub. & Spach) Boiss., Fl. Orient. 5: 497 (1884).

Description: Monoecious, tuft, Perennial grass, up to 15 cm long, internode glabrous; sheaths glabrous, Leaf blade convolute, curved or straight, linear, margin entire, up to 10 cm long, 0.5mm wide (in the convolute state), upper surface glabrous but lower surface hairy; oral hairs present; ligules with a tuft of hairs inside. Panicle up to 6 cm long. Spikelet small; glumes unequal, lanceolate, 3- nerved, upper glume 14 mm long, 3- nerved, glabrous, lower glume 19 mm long, 3- nerved, glabrous; lemma 4 mm long, 3- awned, central awn plumose except with a naked exerted tip and base, up to 30 mm long, lateral awns naked up to 11 mm long.

Distribution in Egypt: the species is narrowly distributed to the Nile region, including the Delta, Nile Valley, Faiyum, and Desert east of the Nile except that of Sinai [7].

Global distribution: Somalia, Arabia, Iran, Afghanistan [7].

Habitat: Rocky ground [7].

Phenology: Flowering from March to April [14].

Conservation status: Not threatened.

Taxonomic notes: *S. paradisea*, *S. hirtigluma*, and *S. uniplumis* share some morphological characters: internodes glabrous and feathers of central awns acute. However, *S. paradisea* is recognized by its glabrous central awn in the lower part (Fig. 1m). *S. paradisea* recording to the flora of Egypt for the first time in Materials for Excursion Flora of Egypt by El Hadidi & Fayed [6], Table 1.

13- *Stipagrostis obtusa* (Delile) Nees, Linnaea 7: 293 (1832); Boiss., Fl. Orient 5:494 (1884); Muchler, Manual Fl. Egypt 1:75 (1912); Ramis, Fl. Aegypten: 37(1929); Täckh., St. Fl. Egypt ed 1: 550 (1956); N.L.Bor, Fl. Iraq 9:388 (1968); Täckh., St. Fl. Egypt ed 2: 725 (1974); Feinbrun-Dothan, Fl. Pal.4:277 (1986); Sherif – Siddiqi, Fl. Lib.: 250 (1988); El Hadidi- Fayed, Fl. Egypt: 205 (1994-1995); Boulos, Fl. Egypt 4: 235 (2005).

Type: The holotype of *Aristida obtusa* was collected in 1800 by Delile from Egypt (Desert between Cairo and Suez). Stored in Herbarium of the University of Montpellier II (MPU), MPU007368 (photo!); isotype: NL, L.1215123 (photo!).

Synonym:

= *Aristida obtusa* Delile, Descr. Égypte, Hist. Nat. 175, t. 13, f. 2 (1814).

Description: Monoecious, tuft, perennial grass, up to 30 cm long, single-nodded; internode glabrous; lower sheaths wooly at the margins, Leaf blade convolute, curved or straight, filiform, margin entire, up to 10 cm long, 0.5 mm wide (in the convolute state), crowded at the base, upper surface scabrous but lower surface hairy; oral hairs present; ligules with a tuft of hairs inside. Panicle up to 15 cm long. Spikelet small; glumes subequal, lanceolate, 3- nerved, 8-14 mm long, 3- nerved, glabrous; lemma 2 mm long, 3- awned, central awn obtuse, plumose except near its base with a naked exerted tip, up to 35 mm long, lateral awns naked up to 15 mm long.

Distribution in Egypt: the species is known from the Nile region, including the Delta, Nile Valley, Faiyum, the Mediterranean coastal strip, and the Desert east of the Nile, including that of the Sinai Peninsula [7].

Global distribution: South and southern tropical Africa northwards to Ethiopia, thence westwards through much of Africa north of the Sahara and eastwards, through Arabia and Palestine to Pakistan [7].

Habitat: Sandy and gravelly soil [7].

Phenology: Flowering from March to May [18].

Conservation status: Not threatened.

Taxonomic notes: In contrast to all Egyptian *Stipagrostis*, *S. obtusa* is strictly differing by having one noded culm, leaves capillary curved in dense basilar tufts, and the awns feathers obtuse (Fig. 1n).

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