BIBLIOTECA JOSÉ JERÓNIMO TRIANA No. 24

The genus *Eragrostis* (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru): morphological and taxonomic studies

Diego Giraldo-Cañas, Paul M. Peterson & Isidoro Sánchez Vega

UNIVERSIDAD NACIONAL DE COLOMBIA

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FACULTAD DE CIENCIAS
INSTITUTO DE CIENCIAS NATURALES

**Biblioteca José Jerónimo Triana No. 24 del Instituto de Ciencias Naturales,
Universidad Nacional de Colombia
Bogotá, Junio de 2012**

Catalogación en la publicación Universidad Nacional de Colombia

Giraldo Cañas, Diego Alonso, 1966-
The genus Eragrostis (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru) : morphological and taxonomic studies / Diego Giraldo-Cañas, Paul M. Peterson, Isidoro Sánchez Vega. – Bogotá : Universidad Nacional de Colombia. Facultad de Ciencias. Instituto de Ciencias Naturales, 2012
196 p., 5 cuadros. – (Biblioteca José Jerónimo Triana ; no. 24)

Incluye referencias bibliográficas

ISBN : 978-958-761-266-0

1. Eragrostis 2. Flora de Colombia 3. Flora de Ecuador 4. Flora de Perú 5. Gramíneas neotropicales I. Peterson, Paul M., 1954- II. Sánchez Vega, Isidoro1938- III. Tít. IV.Serie

CDD-21 584.9098 / 2012

THE GENUS *ERAGROSTIS* (POACEAE: CHLORIDOIDEAE) IN NORTHWESTERN SOUTH AMERICA (COLOMBIA, ECUADOR, AND PERU): MORPHOLOGICAL AND TAXONOMIC STUDIES

ISBN : 978-958-761-266-0

Director del Instituto: Jaime Aguirre Ceballos

Comité Editorial JJT: Jaime Aguirre Ceballos, Jaime Uribe, F. Gary Stiles

Diseño y Diagramación: Liliana Aguilar

Impreso y hecho en Bogotá, Colombia.

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Cítese como:
Giraldo Cañas, D., P.M. Peterson and I. Sánchez Vega. The genus *Eragrostis* (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru): morphological and taxonomic studies. 2012. Biblioteca José Jerónimo Triana No. 24. Universidad Nacional de Colombia. Facultad de Ciencias, Instituto de Ciencias Naturales, Bogotá D.C., Colombia. 194 pp.

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CONTENTS

PRESENTACIÓN

Una vez más, presento orgullosamente el resultado del interés científico al servicio y el conocimiento de la diversidad biológica colombiana y neotropical. Esta investigación se inscribe en la publicación dedicada al ilustre botánico colombiano José Jerónimo Triana y en la iniciativa editorial del Instituto de Ciencias Naturales de la Facultad de Ciencias de la Universidad Nacional de Colombia, entidad sobre la cual descansa la interminable labor para el reconocimiento de la flora y la fauna de nuestro país y el neotrópico.

La contribución que aquí presento constituye un interesante trabajo que involucra los aspectos modernos de los estudios taxonómicos y sistemáticos, para un destacado grupo de gramíneas, el género *Eragrostis* para el noroeste de Sudamérica, concretamente el estudio abarca a Colombia, Ecuador y Perú, el cual es el resultado de años de investigación de tres destacados agrostólogos, los doctores Paul M. Peterson (EE.UU.), Isidoro Sánchez Vega (Perú) y Diego Giraldo-Cañas (Colombia).

Los investigadores en la obra analizan diversos aspectos relativos a la clasificación, la nomenclatura, las afinidades genéricas y la variación macro y micromorfológica de los caracteres, en la que los autores consideraron 45 caracteres –entre macro y micromorfológicos así como anatómicos– los cuales son estructuras clave en las gramíneas.

La investigación está basada en el análisis de los especímenes depositados en los herbarios AAU, AMAZ, ANSM, BA, BAA, BAB, BM, CA, CAUP, COAH, COL, CORD, CPUN, CTES, CUZ, ENCB, F, GB, GH, HAO, HUA, HUT, K, LE, LIL, LINN, LP, MA, MEXU, MICH, MO, NY, P, PSO, QCA, RSA, S, SGO, SI, TAES, UC, UPS, US, USM, UTC, W y WIS, en la que se incluye, además, el estudio de material tipo para la mayoría de las especies consideradas. La obra contempla el análisis detallado de 37 especies para el área de estudio (24 nativas y 13 naturalizadas), de las cuales siete especies constituyen novedades corológicas.

Asimismo, se presentan varias novedades taxonómicas y nomenclaturales.

Al celebrar la aparición de este nuevo número de la serie *Biblioteca José Jerónimo Triana*, expreso a los autores mis sinceras felicitaciones y los exhorto a continuar con los estudios taxonómicos de este interesante grupo de plantas, las gramíneas.

Dr. Jaime Aguirre Ceballos
Director
Instituto de Ciencias Naturales

ABSTRACT

A morphological and taxonomic treatment of *Eragrostis* for northwest South America is given. The present revision intends to clarify the taxonomic and nomenclatural problems of the species of *Eragrostis* present in northwest South America. The classification, nomenclature, affinities, and macro and micromorphological variation of the genus are discussed. Forty-five morphological and micromorphological characters were selected for use in the descriptions and differentiation among the species. This study is based on the examination of herbarium specimens from AAU, AMAZ, ANSM, BA, BAA, BAB, BM, CA, CAUP, COAH, COL, CORD, CPUN, CTES, CUZ, ENCB, F, GB, GH, HAO, HUA, HUT, K, LE, LIL, LINN, LP, MA, MEXU, MICH, MO, NY, P, PSO, QCA, RSA, S, SGO, SI, TAES, UC, UPS, US, USM, UTC, W, and WIS, including the type specimens of most species studied. In addition, extensive field studies were performed to assess the diversity of the genus in this region of South America. Thirty-seven species are recognized in the study area (24 native and 13 introduced-naturalized); four of the species are cited for the first time for Colombia [*Eragrostis atrovirens* (Desf.) Trin. ex Steud., *Eragrostis barrelieri* Daveau, *Eragrostis gangetica* (Roxb.) Steud., *Eragrostis soratensis* Jedwabn.] and three for Peru [*Eragrostis acutiflora* (Kunth) Nees, *Eragrostis bahiensis* Schrad. ex Schult., and *Eragrostis secundiflora* J. Presl]. *Eragrostis condensata* (J. Presl) Steud. is endemic to Ecuador, while *Eragrostis magna* Hitchc. and *Eragrostis pilgeri* Fedde are endemic to Peru. Twenty-nine species are recorded in Colombia, 19 in Ecuador, and 26 in Peru. Keys for determining the species, descriptions, illustrations, geographical distributions, morphological and ecological observations, chromosome numbers, specimens studied, and synonymies are provided for all native and adventive species of *Eragrostis* in northwestern South America. *Eragrostis lasseri* Luces is placed as a synonym of *Eragrostis ciliaris* (L.) R. Br., and *Eragrostis nigricans* (Kunth) Steud. var. *punensis* Nicora is placed as a synonym of *Eragrostis mexicana* (Hornem.) Link subsp. *mexicana*. The lectotype for *Eragrostis barrelieri* Daveau is designated here. *Eragrostis patula* (Kunth) Steud. and *Eragrostis unioloides* (Retz.) Nees ex Steud. are excluded from the Colombian Flora since all specimens identified as *Eragrostis patula* are apparently misidentified and are usually referable to *Eragrostis tenuifolia* (A. Rich.) Hochst. ex Steud. A single specimen identified as *Eragrostis unioloides* as cited in the Flora of Antioquia (Colombia) was misidentified and it belongs to *Chascolytrum juergensii* (Hack.) Essi, Souza-Chies & Longhi-Wagner.

Key words. Chloridoideae, *Eragrostis*, Flora of Colombia, Flora of Ecuador, Flora of Peru, Neotropical grasses, Neotropical Poaceae.

RESUMEN

Se presenta un estudio morfológico y taxonómico de las especies del género *Eragrostis* del noroeste de Sudamérica. Con esta revisión se pretende clarificar los problemas taxonómicos y nomenclaturales de los taxones de *Eragrostis* presentes en el noroeste de Sudamérica. Se analizan diversos aspectos relativos a la clasificación, la nomenclatura, las afinidades genéricas y la variación macro y micromorfológica de los caracteres. Se consideraron 45 caracteres –entre macro y micromorfológicos– los cuales son de suma utilidad en la elaboración de las descripciones, así como para diferenciar y reconocer las diferentes especies. Esta investigación está basada en el análisis de los especímenes depositados en los herbarios AAU, AMAZ, ANSM, BA, BAA, BAB, BM, CA, CAUP, COAH, COL, CORD, CPUN, CTES, CUZ, ENCB, F, GB, GH, HAO, HUA, HUT, K, LE, LIL, LINN, LP, MA, MEXU, MICH, MO, NY, P, PSO, QCA, RSA, S, SGO, SI, TAES, UC, UPS, US, USM, UTC, W y WIS, en el que se incluye, además, el estudio de material tipo para la mayoría de las especies consideradas. Adicionalmente, se realizaron numerosas salidas de campo, con el fin de enriquecer las colecciones del género para esta área geográfica de Sudamérica. Se reconocen 37 especies para el área de estudio (24 nativas y 13 introducidas-naturalizadas), de las cuales siete especies constituyen novedades corológicas: *Eragrostis atrovirens* (Desf.) Trin. ex Steud., *Eragrostis barrelieri* Daveau, *Eragrostis gangetica* (Roxb.) Steud. y *Eragrostis soratensis* Jedwabn. se citan por primera vez para Colombia, mientras que *Eragrostis acutiflora* (Kunth) Nees, *Eragrostis bahiensis* Schrad. ex Schult. y *Eragrostis secundiflora* J. Presl se registran por primera vez para Perú. Merece destacarse que *Eragrostis condensata* (J. Presl) Steud. es endémica de Ecuador, mientras que *Eragrostis magna* Hitchc. y *Eragrostis pilgeri* Fedde son endémicas de Perú. Este género está representado en Colombia por 29 especies, en Ecuador por 19 y en Perú por 26. Se presentan las claves para reconocer las especies nativas y adventicias presentes en el noroeste de Sudamérica, así como también las descripciones de éstas, la iconografía, la distribución geográfica, los especímenes estudiados, los sinónimos, los números cromosómicos, y se comentan algunas observaciones morfológicas y ecológicas. Por otra parte, *Eragrostis lasseri* Luces se reduce a la sinonimia de *Eragrostis ciliaris* (L.) R. Br., y *Eragrostis nigricans* (Kunth) Steud. var. *punensis* Nicora se reduce a la sinonimia de *Eragrostis mexicana* (Hornem.) Link subsp. *mexicana*. Se designa el lectotipo para *Eragrostis barrelieri* Daveau. Las especies *Eragrostis patula* (Kunth) Steud. y *Eragrostis unioloides* (Retz.) Nees ex Steud. se excluyen de la flora colombiana. *Eragrostis patula* es frecuentemente considerada en floras locales de Colombia; sin embargo, los especímenes referidos a dicha especie pertenecen generalmente a *Eragrostis tenuifolia* (A. Rich.) Hochst. ex Steud. Entre tanto, *Eragrostis unioloides* ha sido citada para la Flora de Antioquia (Colombia) con base en un único ejemplar, pero realmente el espécimen corresponde claramente a *Chascolytrum juergensii* (Hack.) Essi, Souza-Chies & Longhi-Wagner.

Palabras clave. Chloridoideae, *Eragrostis*, Flora de Colombia, Flora de Ecuador, Flora de Perú, Gramíneas neotropicales, Poaceae neotropicales.

INTRODUCTION

INTRODUCTION

The Chloridoideae comprises approximately 140 genera and 1420 species (Liu *et al.* 2010, Peterson *et al.* 2010). This subfamily is floristically and agronomically important worldwide; most species of Chloridoideae grow open habitats with poor soils, and many occur in ruderal sites, city sidewalks, roadsides (Clayton & Renvoize 1986, Van den Borre & Watson 1997), and their distribution exhibits wide altitudinal gradients – from the sea level to 4000 m– and a broad variation in humidity and saline conditions, from pluvial environments to xeric habitats.

The core species in the subfamily share two structural synapomorphies: all exhibit Kranz or C_4 leaf anatomy and most have chloridoid bicellular microhairs (broad, short terminal cell the same thickness as the basal cell) present on leaf surfaces (Peterson *et al.* 2007, 2010, Ingram *et al.* 2011). However, two C_3 species, *Ellisochloa papposa* (Nees) P. M. Peterson & N. P. Barker and *E. rangei* (Pilg.) P. M. Peterson & N. P. Barker, in the tribe Centropodieae have been included in the Chloridoideae (Peterson *et al.* 2011). Other character trends in Chloridoideae include equidimensional silica bodies, a base chromosome number of $x = 10$, fruits (caryopses) with nonlinear hila that are usually punctiform or small, embryos with elongated mesocotyl internodes, and two non-membranous (fleshy) lodicules (Ellis 1987, Jacobs 1987, Soreng & Davies 1998, Hilu & Alice 2000, GPWG 2001). The Chloridoideae have appeared monophyletic in all molecular analyses; however the classification within the subfamily, until recently, has been controversial (see Hilu & Alice 2000, Peterson *et al.* 2010, 2011).

The genus *Eragrostis* is placed in tribe Eragrostideae, which includes three subtribes [Cotteinae (3 genera), Eragrostidinae (9 genera), and Uniolinae (5 genera)] that diverge as a clade in the Chloridoideae (Peterson *et al*. 2007, 2010). The Eragrostideae might have originated in Australia and/or Africa and then radiated to all parts of the world (Peterson *et al.* 2010).

Within the Eragrostideae there is considerable variation in morphology, anatomy, and cytology (Peterson *et al.* 1995, 1997). It is difficult, if not imposible to select diagnostic characteristics that exclusively delimit the Eragrostideae from other tribes in the Chloridoideae. However, the tribe commonly has paniculate inflorescences (occasionally racemose), laterally compressed or terete (rarely dorsiventrally oriented) spikelets, and disarticulation typically above the glumes (Peterson *et al.* 1995, 1997). Other character trends in the Eragrostideae include spikelets with many florets, lemmas with 3 to 13-nerves (occasionally 1-nerved), and many species adapted to xeric habitats.

In the New World the Eragrostidinae includes two native genera: *Eragrostis* Wolf with 153 species and *Steirachne* Ekman with two species (Peterson 2003, Peterson *et al.* 2007, 2010). The subtribe Eragrostidinae is characterized by having hairy or glabrous culm nodes; short basal microhair cells (15−75 µm) on the abaxial epidermis of the leaf blade; hairy or glabrous rachillas; spikelets that are laterally compressed or terete;

lower glumes 1−5-nerved; upper glumes 1−9-nerved shorter than or about the same length as the lower lemma; rachilla pronounced between the florets; florets 2−60 per spikelet usually with sterile florets (occasionally absent in *Eragrostis*); lemma apices that are entire; lemmas that are awnless, mucronate, or short-awned (only in the latter two genera); glabrous or scabrous lemmas that are (1−) 3−9-nerved and hyaline, membranous, chartaceous, coriaceous, or indurate; paleas that are hyaline membranous or chartaceous; lodicules that are truncate, rounded, or acuminate; and true cariopses with an adnate pericarp.

Eragrostis is the largest chloridoid genus estimated to have 423 species in the derived subtribe Eragrostidinae, occurring in tropical, subtropical, and warm temperate regions throughout the world (Clayton & Renvoize 1986, Peterson *et al.* 1995, 1997, Lazarides 1997, Veldkamp 2002, Ingram & Doyle 2007, Peterson & Sánchez Vega 2007, Watson & Dallwitz 2008, Ingram 2010), but evolution seems to have been most active in Africa, where many members of the genus occur (Clayton & Renvoize 1986). There are 212 species of *Eragrostis* in Africa, 153 species in the Americas, 74 species in Australia, 56 in tropical Asia, and 51 in temperate Asia (Peterson *et al.* 2010).

Recent phylogenetic analyses indicate that *Eragrostis* is paraphyletic with many smaller genera [*Acamptoclados* Nash, *Catalepis* Stapf & Stent, **Cladoraphis cyperoides* (Thunb.) S. M. Phillips, *Diandrochloa* De Winter, *Ectrosia* R. Br., *Harpachne* A. Rich., *Neeragrostis* Bush, *Pogonarthria* Stapf, *Psammagrostis* Gardener & Hubbard, and **Stiburus alopecuroides* (Hack.) Stapf] embedded within the *Eragrostis* clade (Ingram & Doyle 2007, Peterson *et al.* 2010, unpublished*).

The genus is characterized by having many-flowered spikelets where the disarticulation of the lemma and palea occurs separately, lemmas that are usually 3-nerved and unawned, longitudinally bowed-out paleas with ciliolate keels, paniculate inflorescences, and leaves with ciliate ligules (Peterson *et al.* 1997). *Eragrostis* is notorious for its troublesome infrageneric and specific delimitation (Veldkamp 2002, Ingram 2010). The characters used, e.g. presence of glands, mode of fragmentation (disarticulation) of the spikelet, number and size of the anthers, shape of the caryopses, etc., are often difficult to observe and assess (Veldkamp 2002).

In order to complete the revision of the genus *Eragrostis* for South America, we present a taxonomic study of northwestern South American species. The present study contributes knowledge of the South American grasses, and forms part of the Biodiversity Program and South American Flora Inventories.

MATERIALS AND METHODS

MATERIALS AND METHODS

Macromorphological analyses

This study is based on the examination of herbarium specimens from AAU, AMAZ, ANSM, BA, BAA, BAB, BM, CA, CAUP, COAH, COL, CORD, CPUN, CTES, CUZ, ENCB, F, GB, GH, HAO, HUA, HUT, K, LE, LIL, LINN, LP, MA, MEXU, MICH, MO, NY, P, PSO, QCA, RSA, S, SGO, SI, TAES, UC, UPS, US, USM, UTC, W, and WIS [abbreviations according to Holmgren *et al.* (1990)], including the type specimens of most species studied. In addition, extensive field studies were performed to assess the diversity of the genus in this geographic area of South America. The area studied included Colombia, Ecuador, and Peru. The protologues, local floras, and monographs were consulted to document all reports of *Eragrostis* from this area and adjacent countries, in order to understand the circumscriptions, relationships, and distributions of many South American taxa. Consequently, many specimens have been studied over many years.

The taxonomic analyses are based on extensive morphological and micromorphological comparisons. Forty-five morphological and micromorphological characters were selected as useful for the descriptions and differentiation among the species (see the Tables 1, 2, 3, and 4, and the descriptions). Our taxonomic treatment contains a key for determining species, descriptions, distributions, specimens examined, illustrations, and synonymy. Only synonyms used frequently in northwestern South American literature and those of South American origin are given. For further synonymy see Peterson & Boechat (2001), Peterson *et al.* (2001), and Soreng *et al.* (2008).

Micromorphological analyses

Phytoliths. Leaf blade samples from some of the studied species were obtained from dried herbarium specimens. Two leaf blades were taken from one specimen for studied species. Phytolith extraction from the leaf blades was accomplished through the calcination technique (Labouriau 1983). The ashes obtained from calcination were mounted on microscope slides with "Entellan New" and observed in a light microscope.

Reproductive structures. The modes of spikelet disarticulation and the form and ornamentation of spikelets and caryopses were determined based on herbarium material. Spikelets and caryopses of all recognized species of *Eragrostis* from northwestern South America were removed directly from herbarium specimens. To standardize the sampled developmental stage, caryopses were selected from spikelets in which florets were beginning to disarticulate, a condition that assures their maturity (Snow 1998).

Microscopy. Stereomicroscopy, light microscopy, and scanning electron microscopy (at the Electron Microscopy Laboratory at National University of Colombia, Bogotá D.C.) were conducted by direct mounting of the dry samples (leaves, spikelets, caryopses).

Some samples were sonicated in xylene for 20–30 minutes in order to remove the epicuticular waxes that can obscure surface features. The observations were focused on the presence or absence of characters, and no attempt was made to measure quantitative variation of the characters but the distribution and form of each character is discussed.

Micromorphological and anatomical terminology. The phytolith terminology was based on the morphological classification proposed by Twiss (1992), Zucol (2001), and Madella *et al.* (2005). Microhairs were classified on sight in the usual way as "panicoid", "chloridoid", or "intermediate" type, according to the shape and relative cell wall thickness of apical cells (see Tateoka *et al.* 1959, Johnston & Watson 1976, Amarasinghe & Watson 1990, Snow 1996). Extrafloral nectary (gland) terminology was based on Schmid (1988). Other terminologies on grass morphology were based on Gould & Shaw (1983) and Peterson *et al.* (1997).

Species concept. We use the morphological species concept (Crisci 1994, McDade 1995, Wiens & Servedio 2000, Uribe Meléndez 2008). We use the presence of one or more diagnostic characters that distinguish a given species from all others as a species criterion.

***Ant samples*. Ants** can be associated with some species of *Eragrostis*, and are usually these found in the radicular system. We collected ants with a small brush and placed them in alcohol (70%), and deposited the samples at "Instituto de Ciencias Naturales - ICN" (Universidad Nacional de Colombia, Bogotá D.C.). The taxonomic identifications were made by Claudia Marcela Ortiz, Fabián Camilo Prada Achiardi, and Fernando Fernández (ICN).

RESULTS
AND DISCUSSION

RESULTS AND DISCUSSION

Phytoliths

Silica bodies. Silica bodies were characterized by a high diversity of shapes, e.g. bilobate (dumb-bell), oblong, orbicular, ovoid, rectangle, rounded, saddle, square, and trapeziform (Fig. 1, 2, 3). However, polylobate and cross or quadra-lobate shapes were never observed. The bilobate silica bodies were more common and showed the highest form diversity [short shank, convex end; short shank, straight end; long shank, convex end; long shank, straight end (Fig. 1)]. ***Long cells***. The long cells are similar in shape in all species examined, generally with rectangular-shaped, with markedly sinuous walls (Fig. 4). ***Short cells***. The short cells are square, with smooth walls, and are either paired or in long rows (Fig. 4A). ***Stomatal complexes***. The stomata are common and elliptical (Fig. 5). ***Macrohairs***. The macrohairs are unicellular and have papillose base (Fig. 6F) (not papillose-based in *E. intermedia* Hitchc.). ***Microhairs***. See below for a more detailed explanation (chapter "Glands", Table 1, Fig. 6, 7). ***Prickle hairs***. The prickle hairs can be marginal or costal (Fig. 6). ***Papillae***. Not seen.

Glands

An overview of glands in grasses. Although glands and glandular trichomes are very common in some families (e.g. Lamiaceae), they have only occasionally been recorded in the Poaceae (Linder *et al.* 1990). Glandular structures in the Poaceae may be either bicellular trichomes (*microhairs*), multicellular glands (*nectaries*) (Linder *et al.* 1990), or glandular macrohairs (unicellular macrohairs) that secrete oils from the apex of each hair (e.g. glandular macrohairs on the leaves of *Melinis minutiflora* P. Beauv.) (Metcalfe 1960, Linder *et al.* 1990, and pers. obs.).

Three types of microhairs are known in the Poaceae (see Metcalfe 1960, Johnston & Watson 1976, Ellis 1979, 1987, Amarasinghe & Watson 1990, Linder *et al.* 1990, Snow 1996): the "chloridoid type" microhair, with a hemispherical distal cell, is virtually confined to the Chloridoideae; the "panicoid type", with a long, narrow cap cell, occurs mainly in Panicoideae, Bambusoideae, and Arundinoideae, and in a few genera of Chloridoideae; some chloridoid genera, in addition to *Amphipogon* R. Br. in the Arundinoideae, posses a third and rare type, the "Enneapogon type", this is also two-celled but much larger and undoubtedly glandular (Amarasinghe & Watson 1989, 1990, Linder *et al.* 1990, Snow 1996, Liu *et al.* 2010). All these bicellular microhairs posses ultrastructural characteristics common to known secretory tissues, implying secretory activity in all the morphological types found in the Poaceae (e.g. to secrete salts) (see Liphschitz & Waisel 1974, Amarasinghe & Watson 1989, Linder *et al.* 1990, Warwick & Halloran 1992).

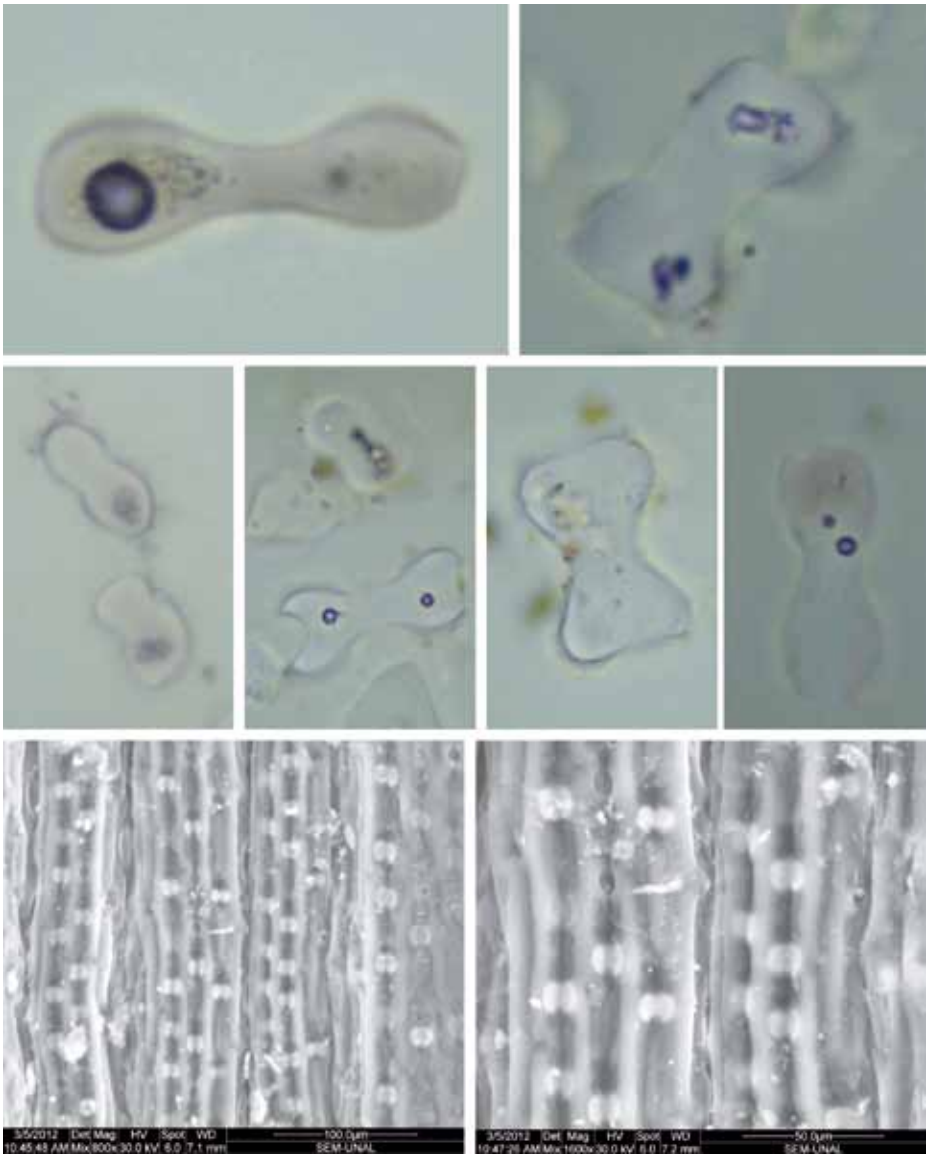


Fig. 1. Bilobate silica bodies. **A.** *Eragrostis bahiensis* (*Giraldo-Cañas 3498*); **B.** *E. gangetica* (*Giraldo-Cañas 3674*); **C.** *E. hypnoides* (*Giraldo-Cañas 3847-A*); **D.** *E. pectinacea* (*Giraldo-Cañas 3962*); **E.** *E. tenella* (*Giraldo-Cañas 3952*); **F.** *E. japonica* (*Giraldo-Cañas 3721-A*); **G–H.** *E. airoides* (*Giraldo-Cañas 4536*).

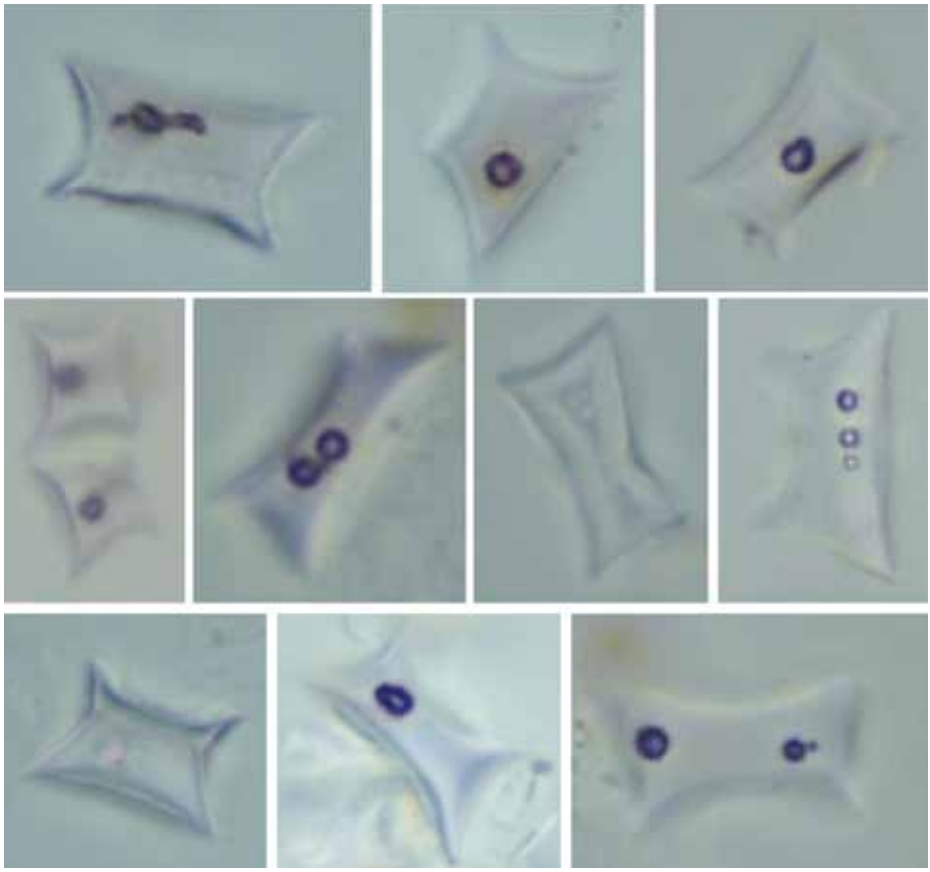


Fig. 2. Trapeziform silica bodies. **A–B.** *Eragrostis atrovirens* (*Giraldo-Cañas 3681*); **C.** *E. tenuifolia* (*Giraldo-Cañas 3908*); **D.** *E. hypnoides* (*Giraldo-Cañas 3847-A*); **E.** *E. ciliaris* (*Giraldo-Cañas 3621*); **F.** *E. gangetica* (*Giraldo-Cañas 3674*); **G.** *E. pectinacea* (*Giraldo-Cañas 3962*); **H.** *E. atrovirens* (*Giraldo-Cañas 3681*); **I.** *E. maypurensis* (*Giraldo-Cañas 3655*); **J.** *E. pilosa* (*Giraldo-Cañas 3847-A*).

Microhairs of different morphological types are of general occurrence in all the subfamilies of the Poaceae except the Pooideae (Johnston & Watson 1976, Ellis 1987), and are found on the epidermis of the leaf sheaths, leaf blades, glumes, lemmas, paleas, and lodicules (Metcalfe 1960, Ellis 1979, 1987, Amarasinghe & Watson 1990, Linder *et al.* 1990, Snow 1996, Giraldo-Cañas 2001, 2002, 2004, 2008).

Multicellular glands or nectaries are special structures devoted to nectar secretion and are diverse in shape, structure, and function (Scrivanti *et al.* 2008). According to their position, two main types are recognized: floral and extrafloral nectaries (Schmid 1988). Generally, floral nectaries are involved in pollination whereas the extrafloral nectaries are probably devoted to the protection of vegetative and reproductive structures from herbivory (Galetto & Bernardello 1992, Scrivanti *et al.* 2008). Floral nectaries

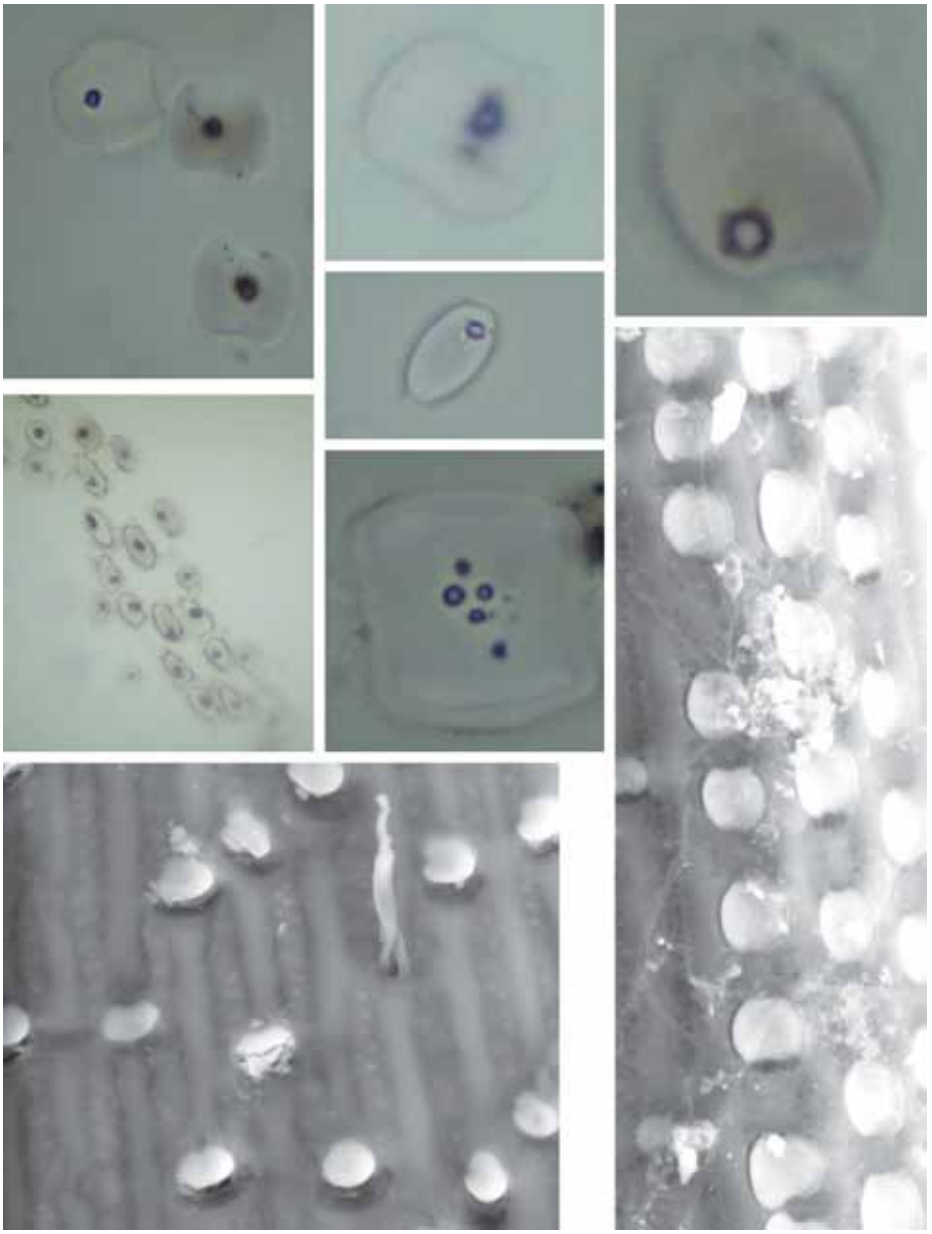


Fig. 3. Orbicular, ovoid, oblong, and square silica bodies. **A**. *Eragrostis gangetica* (*Giraldo-Cañas 3674*); **B**. *E. maypurensis* (*Giraldo-Cañas 3655*); **C**. *E. tenella* (*Giraldo-Cañas 3952*); **D**. *E. ciliaris* (*Giraldo-Cañas 3621*); **E**. *E. hypnoides* (*Giraldo-Cañas 3847-A*); **F**. *E. japonica* (*Giraldo-Cañas 3721-A*); **G**. *E. cilianensis* (*Giraldo-Cañas 5233*); **H**. *E. airoides* (*Giraldo-Cañas 4536*).

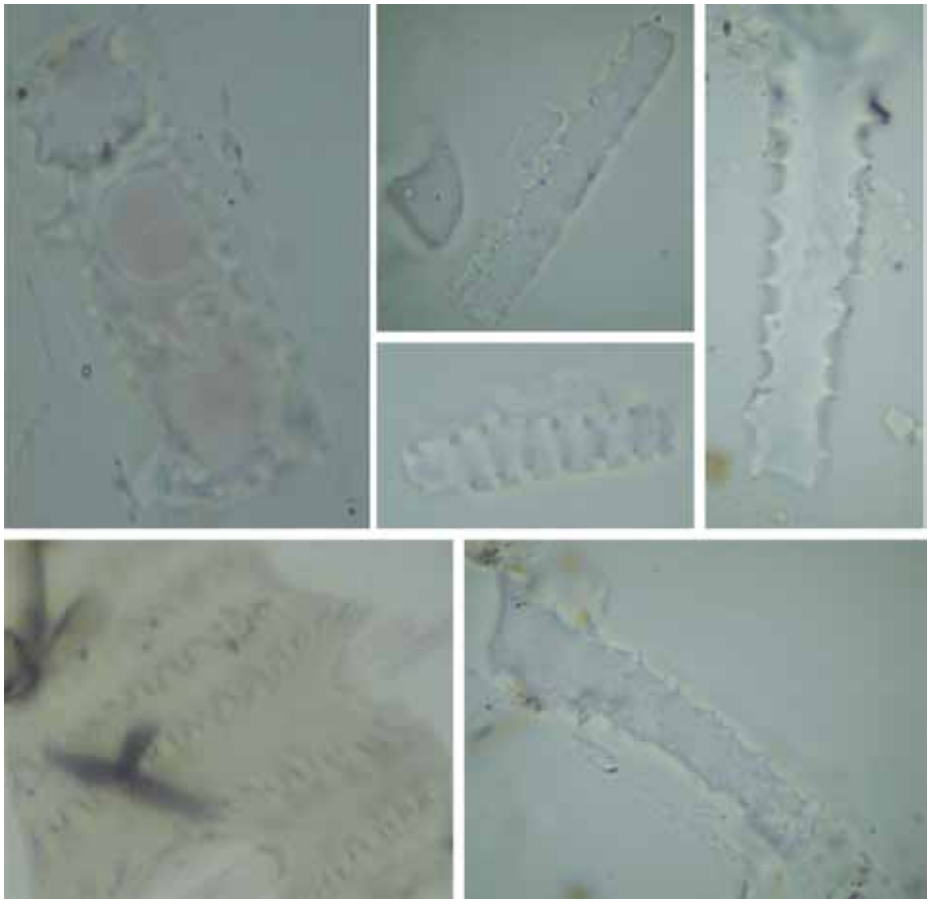


Fig. 4. Short and long cells. **A–B**. *Eragrostis gangetica* (*Giraldo-Cañas 3674*); **C**. *E. tenuifolia* (*Giraldo-Cañas 3908*); **D**. *E. tenella* (*Giraldo-Cañas 3952*); **E**. *E. tenuifolia* (*Giraldo-Cañas 3908*); **F**. *E. pilosa* (*Giraldo-Cañas 3847-A*).

recognized in monocotyledons are mainly gynopleural (septal) and perigonal (Smets *et al.* 2000), and these have not been found in the Poaceae so far (Scrivanti *et al.* 2008). Thus, all nectaries recorded in Poaceae are extrafloral.

Extrafloral nectaries are rare in the Poaceae, and their occurrence and structure have not been adequately documented. Therefore, the terminology and interpretation of these extrafloral nectaries is inconsistent (see Zuloaga & Sendulsky 1988, Linder *et al.* 1990). At least in Poaceae four different structures appear to belong to this category, and they all have been referred to as either glands or extrafloral nectaries (Nicora 1941, Metcalfe 1960, Linder *et al.* 1990, Scrivanti *et al.* 2008).

***Microhairs (bicellular trichomes) in* Eragrostis**. The species of *Eragrostis* that have been examined anatomically exhibit the three types of microhairs: *chloridoid* bicellular microhairs (with the broad, short terminal cell the same thickness as the basal cell),

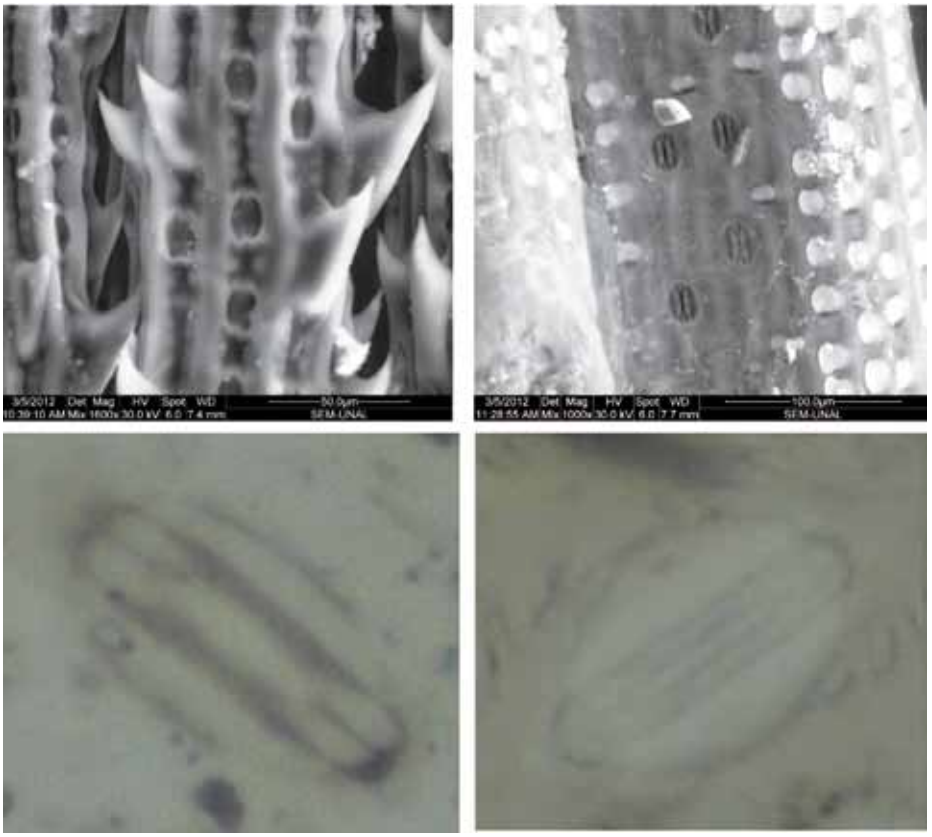


Fig. 5. Stomatal complexes. **A**. *Eragrostis airoides* (*Giraldo-Cañas 4536*); **B**. *E. cilianensis* (*Giraldo-Cañas 5233*); **C**. *E. pilosa* (*Giraldo-Cañas 3847-A*); **D**. *E. tenuifolia* (*Giraldo-Cañas 3908*).

panicoid bicellular microhairs (with a long, thin-walled terminal cell) (Tateoka *et al.* 1959, Metcalfe 1960, Roy 1964, Amarasinghe & Watson 1988, 1990, Lazarides 1997, Gómez Sánchez & Koch 1998, Watson & Dallwitz 2008, Liu *et al.* 2010, and pers. obs.), or *intermediate* type (Amarasinghe & Watson 1990) (Table 1, Fig. 6, 7). Thus, *Eragrostis* is a striking exception in Poaceae, with "chloridoid type", "panicoid type", and even intermediate forms in different species (Tateoka *et al.* 1959, Amarasinghe & Watson 1990, and pers. obs.). Amarasinghe & Watson (1990) found that in all species studied –except *E. tenella*, where it varies from "chloridoid type" to "panicoid type" on the same epidermal preparation–, microhair morphology in different parts of abaxial epidermal preparations was quite constant. In addition, these authors (Amarasinghe & Watson 1990) found that microhair morphology shows a strong correlation with the type of PCR sheath anatomy.

Table 1. Microhair morphology for some species of *Eragrostis* (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru).

Species	Type of microhair
Eragrostis acutiflora (Kunth) Nees	Panicoid
Eragrostis airoides Nees	Chloridoid
Eragrostis atrovirens (Desf.) Trin. ex Steud.	Panicoid
Eragrostis bahiensis Schrad. Ex Schult.	Panicoid
Eragrostis barrelieri Daveau	Chloridoid
Eragrostis cilianensis (All.) Vignolo ex Janch.	Chloridoid
Eragrostis ciliaris (L.) R. Br.	Panicoid
Eragrostis curvula (Schrad.) Nees	Intermediate
Eragrostis gangetica (Roxb.) Steud.	Panicoid
Eragrostis mexicana (Hornem.) Link	Chloridoid
Eragrostis pectinacea (Michx.) Nees	Chloridoid
Eragrostis pilosa (L.) P. Beauv.	Intermediate
Eragrostis prolifera (Sw.) Steud.	Chloridoid
Eragrostis tenella (L.) P. Beauv. Ex Roem. & Schult.	Chloridoid and panicoid
Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud.	Chloridoid
Eragrostis unioloides (Retz.) Nees ex Steud.	Panicoid

***Multicellular glands (extrafloral nectaries) in* Eragrostis**. The presence of nectaries is an important and consistent feature of some species and is very useful for identification purposes. Only eleven species showed nectaries (Table 2, Fig. 8, 9). In *Eragrostis* the nectaries are of epidermal origin and they are external. The nectaries are multicellular with sessile glands, and occur on culms just below the nodes, or on the nerves, keels, or margins of the leave blades, on branches of the inflorescence, and are found on pedicels, glumes, lemmas, or paleas. The nectaries may be pitted, crateriform, pustulose, oblong, or appear as colored depressions, clusters, bands, rings or spots of glandular tissue (Fig. 8, 9).

In *Eragrostis* there are two general types of nectaries [*extra-reproductive nctaries* (located on the culms or leaves) and *reproductive nectaries* (occur on the branches of the inflorescence, pedicels, glumes, lemmas, or paleas)] and five subtypes [two extra-reproductive nectaries (cauline and foliar nectaries) and three reproductive nectaries (inflorescence, pedicellar, and bracteal nectaries)] (Table 2) [nectary terminology based on Schmid (1988)].

All types of nectaries found in *Eragrostis* are extrafloral because they differ from floral nectaries in position and function (see Nepi 2007). However, they may be associated with floral structures: on the branches of the inflorescence, on the pedicels, on the glumes, on the lemmas, or on the paleas. Regardless of position, extrafloral nectaries

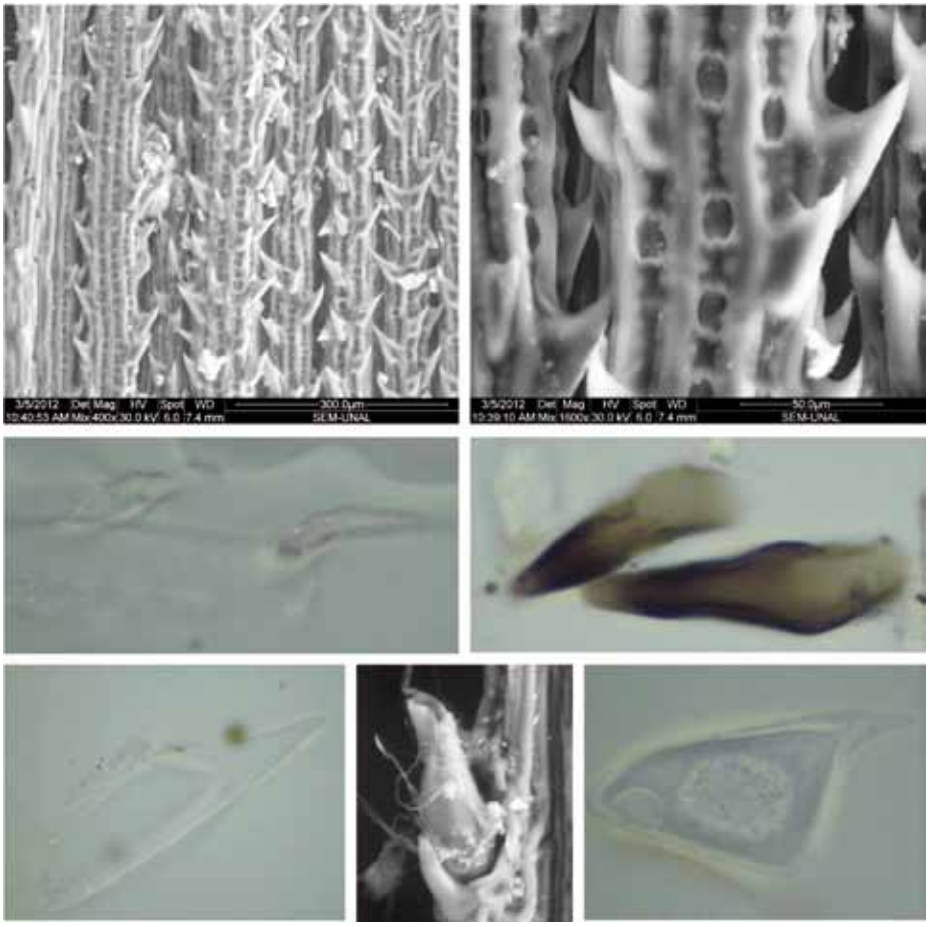


Fig. 6. Prickle hairs (A, B, E, G), microhairs (bicellular trichomes) (C, D), and macrohairs (unicellular trichomes) (F). **A–B**. *Eragrostis airoides* (*Giraldo-Cañas 4536*)*;* **C**. *E. acutiflora* (*Giraldo-Cañas 3958*); **D**. *E. bahiensis* (*Giraldo-Cañas 3498*); **E**. *E. tenella* (*Giraldo-Cañas 3952*); **F**. *Eragrostis airoides* (*Giraldo-Cañas 4536*); **G**. *E. gangetica* (*Giraldo-Cañas 3674*).

are never directly involved in pollination (Nepi 2007) since the pollination in *Eragrostis* is anemophilous and their main function is to feed the ants that are thought to protect the plant from herbivores (see Galetto & Bernardello 1992, Jolivet 1996, Nepi 2007, Nicolson 2007, Scrivanti *et al.* 2008). Some ants can be associated with nectaries [e.g. *Atta laevigata*, *Brachymyrmex* sp., *Crematogaster* sp., *Dorymyrmex* sp., *Linepithema* sp., *Monomorium* sp., *Solenopsis* spp.], and they can constitute large colonies in the

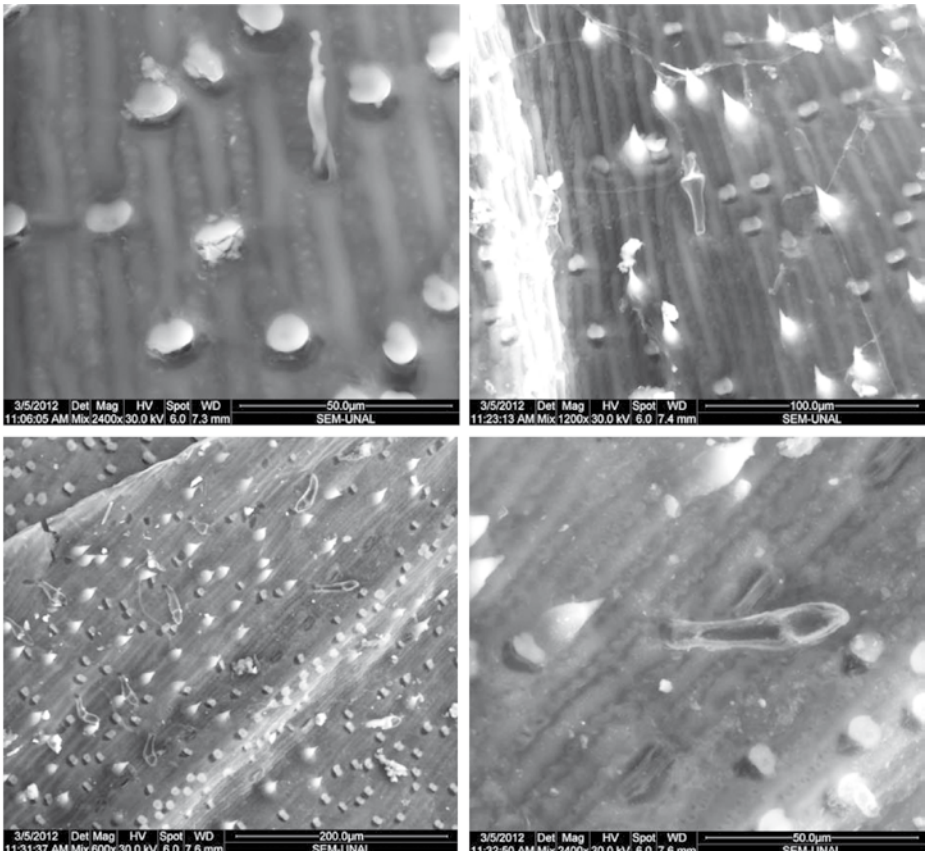


Fig. 7. Microhairs (bicellular trichomes). **A**. *Eragrostis airoides* (*Giraldo-Cañas 4536); **B–D**. E. cilianensis* (*Giraldo-Cañas 5233*).

radicular system of the plants (pers. obs.). In addition, ants can act as agents of dispersal (Van der Pijl 1982, Galetto & Bernardello 1992, Jolivet 1996) by virtue of the presence of nectaries which can often contain sugars (not verified here). This induces ants to carry the seed far away from the mother plant and this process facilitates seed dispersal (Morrone *et al.* 2000). However, *Eragrostis* species without nectaries can be associated with ants too [e.g. *E. ciliaris* (L.) R. Br., *E. pastoensis* (Kunth) Trin., *E. pectinacea* (Michx.) Nees, *E. tenuifolia* (A. Rich.) Hochst. ex Steud.] (pers. obs.).

Table 2. Presence, distribution, form, and type of glands (nectaries) in the species of *Eragrostis* (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru).

Species	Presence of nectaries	Form of nectaries	Type of nectary
Eragrostis andicola R. E. Fr.	- Culms. - Leaf sheaths, abaxial nerves of the blades. - Primary branches of the inflorescence. - Pedicels.	- Oblong glands. - Oblong glands. - Glandular bands. - Glandular bands.	- Cauline nectary. - Foliar nectary. - Inflorescence nectary. - Pedicellar nectary.
Eragrostis barrelieri Daveau	- Culms (below the nodes). - Inflorescence (rachises).	- A ring of glandular tissue. - Glandular spots or rings below the nodes of the rachises.	- Cauline nectary. - Inflorescence nectary.
Eragrostis cilianensis (All.) Vignolo ex Janch.	- Culms (below the nodes). - Occasionally on leaf sheaths and blades. - Glumes (usually along the keel). - Lemmas.	- Crateriform glands. - Crateriform glands. - Crateriform glands. - Crateriform glands.	- Cauline nectary. - Foliar nectary. - Bracteal nectary. - Bracteal nectary.
Eragrostis curvula (Schrad.) Nees	- Culms (sometimes below the nodes). - Primary branches of the inflorescence (sometimes). - Pedicels (sometimes).	- Glandular bands. - Inconspicuous to orange glandular lanceolate patches. - Inconspicuous to orange glandular lanceolate patches.	- Cauline nectary. - Inflorescence nectary. - Pedicellar nectary.
Eragrostis lurida J. Presl	- Culms (sometimes).	- Elliptical glands.	- Cauline nectary.
Eragrostis mexicana (Hornem.) Link	- Culms (sometimes below the nodes). - Leaf sheaths and blades (sometimes).	- A ring of glandular depressions. - Glandular pits.	- Cauline nectary. - Foliar nectary.
Eragrostis mokensis Pilg.	- Culms (often below the glabrous nodes).	- A glandular ring.	- Cauline nectary.
Eragrostis pilgeri Fedde	- Leaf sheaths (sometimes along the nerves. - Pedicels (sometimes at apex). - Glumes (sometimes). - Lemmas (sometimes on the nerves). - Paleas (sometimes on the keels).	- Minute whitish glands. - Minute, irregularly shaped, whitish gland. - Minute, white, raised glands. - Minute, whitish, raised glands. - Minute, whitish, raised glands.	- Foliar nectary. - Pedicellar nectary. - Bracteal nectary. - Bracteal nectary. - Bracteal nectary.

Species	Presence of nectaries	Form of nectaries	Type of nectary
Eragrostis pilosa (L.) P. Beauv.	- Culms (occasionally).	- Glandular pits.	- Cauline nectary.
Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult.	- Culms (occasionally below the nodes). - Primary branches of the inflorescence (sometimes below the branch bases). - Pedicels.	- Oblong glands. - Irregular glands. - Irregular glands.	- Cauline nectary. - Inflorescence nectary. - Pedicellar nectary.
Eragrostis viscosa (Retz.) Trin.	- Culms (below the nodes).	- A complete or partial ring of yellow glandular areas.	- Cauline nectary.

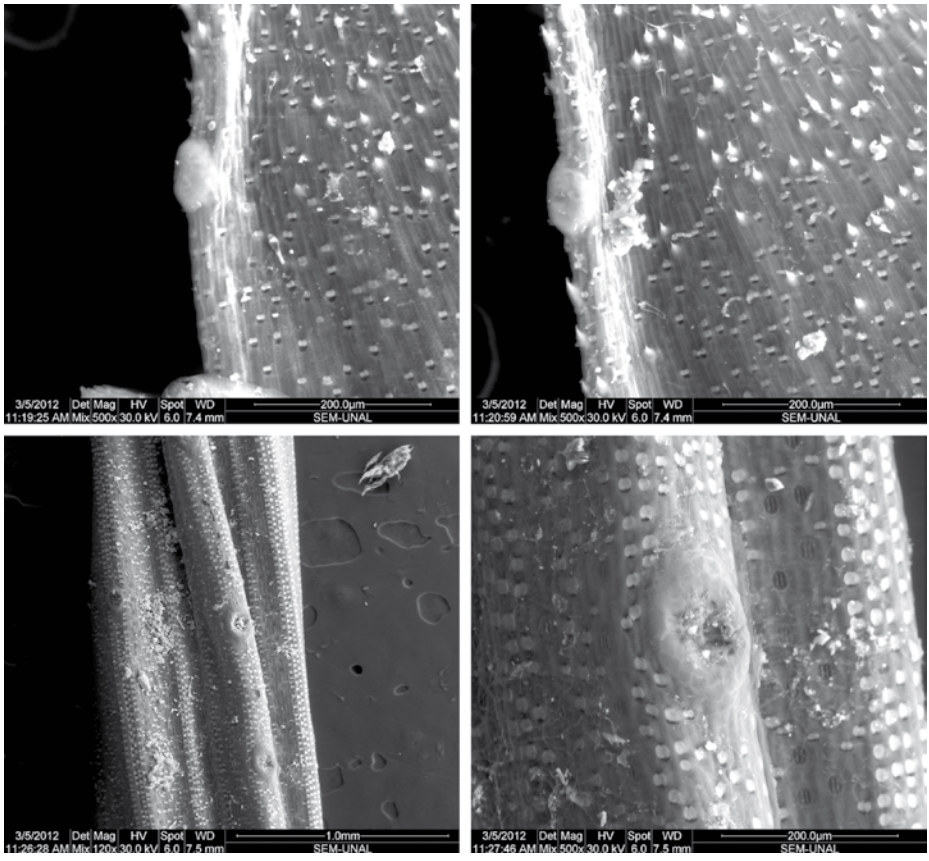


Fig. 8. Multicellular glands. **A–D**. *Eragrostis cilianensis* (*Giraldo-Cañas 5233*) (A-B: Lower glume; C-D: Abaxial surface of the leaf sheath).

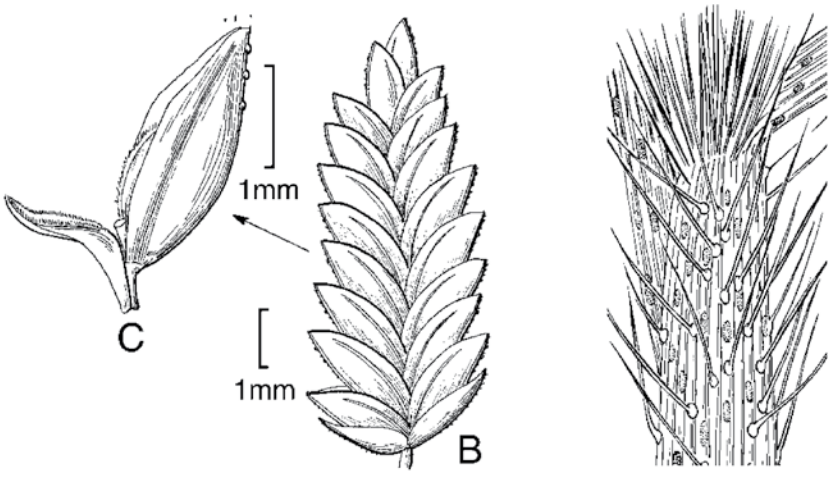


Fig. 9. Multicellular glands. **A–C**. *Eragrostis cilianensis* (spikelet) (*Giraldo-Cañas 5233*); **D**. *E. andicola* (leaf sheath) (*Macbride 2926*).

Spikelet morphology

Eragrostis is characterized by bisexual spikelets laterally compressed (sometimes subterete), with (1−) 2 to 45 florets (Table 3, Fig. 10, 11); the spikelet is indeterminate in growth and the number of florets developed varies from a few to numerous, sometimes considerably within the same species (Lazarides 1997), e.g. 8−40 in *E. bahiensis* Schrad. ex Schult., 10−40 in *E. cilianensis* (All.) Vignolo ex Janch., 6−27 in *E. gangetica* (Roxb.) Steud., 12−35 in *E. hypnoides* (Lam.) Britton, Sterns & Poggenb. and *E. maypurensis* (Kunth) Steud., 10−43 in *E. rufescens* Schrad. ex Schult., 10−45 in *E. secundiflora* J. Presl, and 12−42 in *E. unioloides* (Retz.) Nees ex Steud. (Table 3). In some species, the distal floret is vestigial or reduced to a naked rachilla internode. Each floret can have 2 or 3 stamens, and this feature is very useful for taxonomic identification (Table 3).

Table 3. Features of spikelet morphology of the species of *Eragrostis* (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru).

Species	Pedicel length (mm)	Spikelet length (mm)	Spikelet shape	Disarticulation	Number of florets	Number of stamens
Eragrostis acutiflora (Kunth) Nees	1−5	5−7(−10)	Narrowly elliptical, acute at both ends, strongly compressed	Entire floret above the glumes or the lemmas falling individually leaving the paleas on the rachilla	7−14(−21)	2
Eragrostis airoides Nees	2.4–11	1.3–2	Ovate to lanceolate	Acropetal, on the rachilla below the florets, glumes deciduous	1–3	3
Eragrostis andicola R. E. Fr.	1.8–5	4–9	Ovate-lanceolate	Acropetal, glumes first then lemmas, paleas persistent	3−12	3
Eragrostis atrovirens (Desf.) Trin. ex Steud.	1–10	6–10(–19)	Ovate-lanceolate	Acropetal, glumes first, then the florets	10−22	3
Eragrostis attenuata Hitchc.	1–1.5	2.5–4	Oblong to oval	Between the florets with rachilla joint attached	(1)3−4(6)	3
Eragrostis bahiensis Schrad. Ex Schult.	0.3–6	6–15(18)	Narrowly lanceolate	Usually on the rachilla below the florets, occasionally the lemmas falling separately, leaving the paleas on the rachilla	8–30(40)	2

Species	Pedicel length (mm)	Spikelet length (mm)	Spikelet shape	Disarticulation	Number of florets	Number of stamens
Eragrostis barrelieri Daveau	1−4	4−7 (11)	Narrowly ovate	Acropetal, paleas persistent	7−12 (20)	3
Eragrostis cilianensis (All.) Vignolo ex Janch.	0.2−3	6−20	Ovate-lanceolate	Acropetal, between the florets from the base upwards, usually the entire floret, rachillas persistent	10−40	3
Eragrostis ciliaris (L.) R. Br.	0.1−1	1.8−3.2	Elliptical-ovate to ovate-lanceolate	Basipetal, glumes persistent	6−11	2
Eragrostis condensata (J. Presl) Steud.	0.3−2.5	3.4−7.3	Narrowly lanceolate to oblong-ovate	The glumes first then the lemmas falling individually leaving the paleas on the rachilla	4−12	3
Eragrostis curvula (Schrad.) Nees	0.5−5	4−8.2(−10)	Linear-lanceolate	Irregular to acropetal, proximal rachilla segments persistent	3−10	3
Eragrostis gangetica (Roxb.) Steud.	2−10	(3) 4.3−12.5	Linear-lanceolate	Acropetal, glumes first then the lemmas, paleas persistent	(6) 8−27	2
Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb.	0.2−1	4−13	Linear-oblong, often arcuate	Acropetal, paleas persistent	12−35	2
Eragrostis intermedia Hitchc.	2−14	3−7	Narrowly lanceolate	Acropetal, paleas persistent	(3−)5−11	3
Eragrostis japonica (Thunb.) Trin.	0.5−1.5	2.2−3.8	Oblong to narrowly lanceolate	Basipetal, the rachillas and glumes persistent	4−12	2
Eragrostis lugens Nees	1.4−5(−7)	2−4.5(−5)	Narrow lanceolate	Acropetal, paleas and rachilla persistent	2−7	3
Eragrostis lurida J. Presl	0.1−1	2.5−6	Narrowly lanceolate to ovate, inflated to slightly compressed	Acropetal with glumes first, then lemmas falling individually, paleas persistent on the rachilla	3−10	3
Eragrostis magna Hitchc.	1–6	5–8(–10)	Narrowly oblong to ovate-lanceolate	The lemma first then the palea, rachilla persistent	(5)7−10	3

Species	Pedicel length (mm)	Spikelet length (mm)	Spikelet shape	Disarticulation	Number of florets	Number of stamens
Eragrostis maypurensis (Kunth) Steud.	0−1.5	8−15(−30)	Narrowly lanceolate to ovate lanceolate	Acropetal with the paleas and glumes persistent	12−35	2
Eragrostis mexicana (Hornem.) Link	1−6(−7)	(4−)5−10(−11)	Linear to linear-lanceolate or ovate to oblong	Acropetal	5−11(−15)	3
Eragrostis mokensis Pilg.	0.5−2.5	3−6.5(−7)	Broadly ovate-lanceolate	Acropetal, with the glumes first, then the lemmas and paleas falling as a unit	(4−)10−20	3
Eragrostis nigricans (Kunth) Steud.	0.4−2(−3)	2.6−3.8(−4.8)	Linear to narrowly lanceolate	Acropetal, with the glumes first, then the lemmas falling, paleas persistent	2−4(−5)	3
Eragrostis pastoensis (Kunth) Trin.	0.5−5	2−6	Lanceolate to oblong-ovate, inflated to slightly compressed	Acropetal, with the glumes first then the lemmas falling individually, paleas persistent	2−8	3
Eragrostis pectinacea (Michx.) Nees	1−7	3.5−11	Linear-oblong to narrowly lanceolate	Acropetal, paleas persistent	6−22	3
Eragrostis peruviana (Jacq.) Trin.	0.2–0.3	3–4.5	Ovate, strongly compressed	Entire florets with rachilla attached usually just above the glumes, glumes deciduous	4−8	3
Eragrostis pilgeri Fedde	1.2–7	3–6.1	Ovate	The glumes first then the lemmas falling individually leaving the paleas on the rachilla	3−8	3
Eragrostis pilosa (L.) P. Beauv.	0.8−10	(2−)3.5−6(−10)	Linear-oblong to narrowly ovate	Acropetal with the glumes first then the lemmas and paleas falling individually, paleas easily deciduous	(3) 5−17	3
Eragrostis polytricha Nees	1.4–10(−16)	(2.5−)3–5	Narrowly lanceolate to linear-oblong	Acropetal, paleas persistent	4–9	3

Species	Pedicel length (mm)	Spikelet length (mm)	Spikelet shape	Disarticulation	Number of florets	Number of stamens
Eragrostis prolifera (Sw.) Steud.	0.3–2.4	3.2–10(12)	Linear-lanceolate	Acropetal, glumes first, then the lemmas, paleas persistent	(5)8–25	2
Eragrostis rufescens Schrad. ex Schult.	1–2	(5–) 6−15(−21)	Linear-lanceolate	Acropetal, glumes first, then the lemmas, paleas persistent	10−43	2
Eragrostis secundiflora J. Presl	0−1(−3)	6−16(−23)	Ovate to linear-elliptic, flattened	Basipetal, florets falling intact and before the glumes	10−45	2
Eragrostis soratensis Jedwabn.	1.5–6	3.4–4.2	Ovate	Acropetal, glumes first then the lemmas, paleas weakly persistent	4−6(7)	3
Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult.	0.8−4(−7)	(1−)1.5−2.2	Ovate to oblong	Between the florets with a portion of the rachilla	4−8	3
Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud.	2−15	6−12(−14)	Linear	Acropetal with the glumes first then the lemmas falling, paleas mostly persistent	6−14	3
Eragrostis unioloides (Retz.) Nees ex Steud.	(0.5) 2−6 (8)	4−8 (10)	Ovate-lanceolate to deltoid, strongly compressed	Glumes disarticulated first, then entire florets from base, rachilla persistent	12−42	2
Eragrostis viscosa (Retz.) Trin.	0.5−5	(2−) 2.5−5.5	Ovate, compressed	Between the florets with a portion of the rachilla	5−9	3
Eragrostis weberbaueri Pilg.	0.2–0.3	4–6	Linear-ovate to oblong, tightly appressed	Acropetal, with glumes first then lemmas, paleas and rachilla persistent	6−11	3

The glumes, lemmas, and paleas present useful characteristics and vary in texture, indument, shape, and relative dimensions. The glumes are usually shorter than the adjacent lemmas, mostly 1(3)-nerved, are without lobes, and have obtuse to acute apices that are usually unawned. The lemmas are usually glabrous, obtuse to acute, 3(5)-nerved, usually keeled, unawned or mucronate; while the paleas are shorter than the lemmas, longitudinally bowed-out and 2-keeled; keels are usually short or long ciliate and the intercostal region is membranous or hyaline.

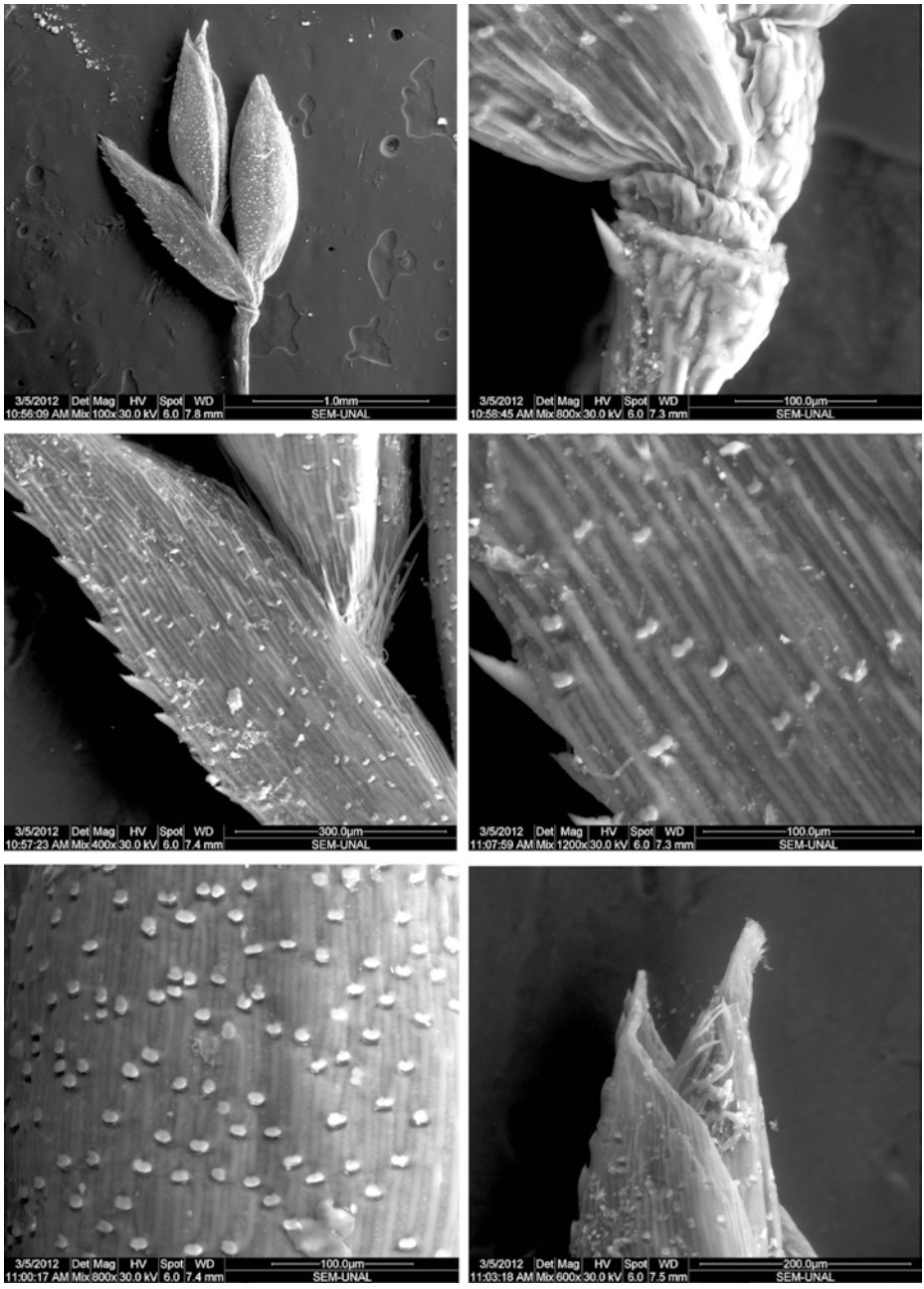


Fig. 10. Features of spikelet morphology of *Eragrostis airoides* (*Giraldo-Cañas 4536*). **A.** Spikelet; **B.** Pedicel and lower portion of spikelet; **C.** Lower glume; **D.** Lower glume ornamentation; **E.** Lemma ornamentation; **F.** Distal portion of spikelet.

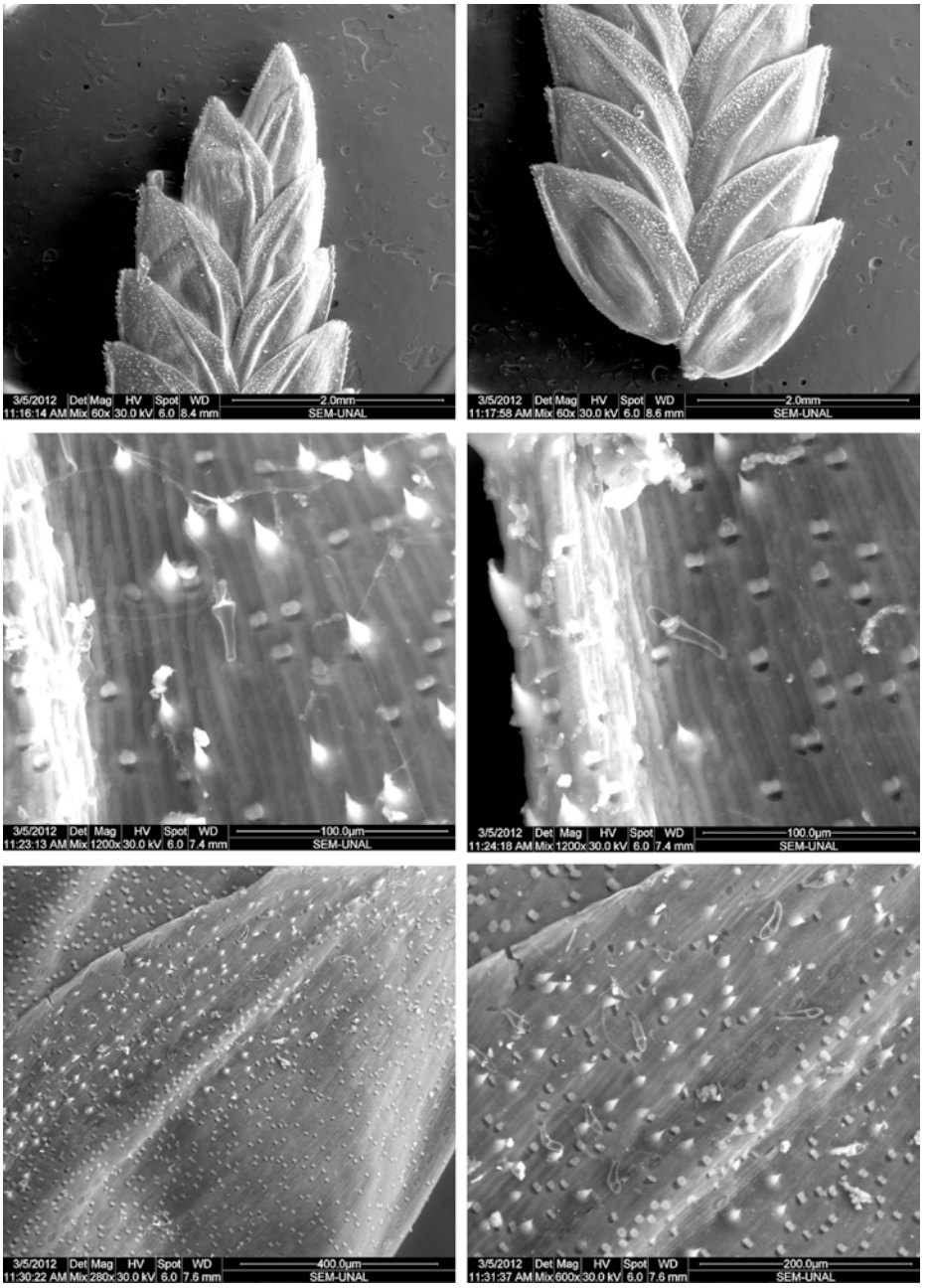


Fig. 11. Features of spikelet morphology of *Eragrostis cilianensis* (*Giraldo-Cañas 5233*). **A**. Distal portion of spikelet; **B**. Lower portion of spikelet; **C–D**. Lemma ornamentation; **E–F**. Lower glume ornamentation.

The rachilla can be prolonged beyond the uppermost female-fertile floret; the rachilla can terminate in an incomplete floret or can occasionally be naked. Another interesting feature of the rachilla is the degree to which it elongates with maturity (seed production) of the spikelet. Therefore, young and mature spikelets of the same species can vary considerably in appearance.

The mode of spikelet disarticulation is remarkably diverse and can originate: below the fertile florets, sometimes also below the glumes, acropetally on each spikelet with deciduous glumes and lemmas but persistent paleas, or basipetally on a spikelet with the glumes often persistent and the florets usually falling intact (Table 3). In most native New World taxa the lemmas fall acropetally (from the base towards the apex) from the persistent rachilla, and with the paleas persistent on the rachilla. Even though spikelet disarticulation characters have been used as a basis for infrageneric classifications within *Eragrostis*, they do not appear to delineate monophyletic groups (Ingram 2010).

Thus, the best combination of characters used to discriminate *Eragrostis* from other genera of the tribe Eragrostideae is disarticulation of the lemma and palea occurring separately, longitudinaly bowed-out paleas with ciliolate keels, and 3(5)-nerved lemmas.

Caryopsis morphology

The caryopsis contains many morphological features that are important aids in the identification of species, and this information can be used to infer hypothetical relationships among the grasses (Colbry 1957, Terrell & Peterson 1993, Boechat & Longhi-Wagner 2003, Peterson *et al.* 2007).

In *Eragrostis*, caryopsis can be terete, subterete, rectangular or trigonous in cross-section, and are sometimes compressed either dorsally (on a plane with the embryo) or laterally (Table 4). The shape of the grain can vary from spherical to much longer that broad (ellipsoid, obovoid, ovoid, rectangular-prismatic, etc.) (Fig. 12−18). The embryo is located on the dorsal (abaxial) surface of the grain and the hilum is the tiny scar left from the attachment of the funiculus found near the base on the ventral surface. The ventral (adaxial) surface can be rounded, flattened or sometimes have a sulcus or groove running longitudinally along the body. The surface of the grain can be smooth to variously sculptured and is often striate to reticulate. Color of the grain can vary from light brownish or whitish to reddish-brown, and the grains can be translucent to opaque.

In the grasses the surface or pericarp of the grain is almost always adnate, i.e., a true caryopsis; however, a few species of *Eragrostis* (see *E. japonica*) can have loose pericarps that are shed when the grain is moistened.

The most common caryopsis type found in northwestern South American *Eragrostis* is the rectangular-prismatic to irregularly triangular, laterally-flattened, striate to reticulate-walled, and ventrally-grooved grain (Table 4). This is found predominately in species that occupy the *altiplanos* such as *E. intermedia*, *E. lurida*, *E. magna*, *E.*

pastoensis, *E. pilgeri*, and *E. polytricha*, as well as in *E. andicola* R. E. Fr., *E. lugens* Nees, *E. soratensis*, *E. mexicana* (Hornem.) Link, *E. nigricans*, and *E. tenuifolia* (A. Rich.) Hochst. ex Steud. (of African origins). *Eragrostis pectinacea* (Michx.) Nees and *E. pilosa* are similar to the last group, although these two species have grains that are striate only and rectangular in cross section, so they are at least flattened ventrally but do not have a groove. *Eragrostis prolifera* has an ovoid caryopsis, flattened ventrally and finely striate (Fig. 12−18).

Eragrostis maypurensis (Kunth) Steud. is unique in possessing rhomboid reticulations without striations. *Eragrostis acutiflora, E. airoides, E. atrovirens* (Desf.) Trin. ex Steud., *E. attenuata*, *E. bahiensis*, *E. cilianensis*, *E. ciliaris*, *E. curvula* (Schrad.) Nees, *E. hypnoides*, *E. japonica*, *E. maypurensis*, *E. peruviana*, *E. tenella*, and *E. weberbaueri* are all circular or elliptical to ovate/obovate in cross section. *Eragrostis attenuata*, *E. barrelieri*, *E. ciliaris*, *E. curvula*, *E. japonica*, and *E. tenella* are striate or smooth with no evidence of reticulations (Fig. 12−18). *Eragrostis ciliaris*, *E. curvula, E. japonica*, *E. mokensis*, and *E. pilosa* all have somewhat dorsally flattened caryopses (Fig. 12−18). *Eragrostis curvula*, in addition to being strongly dorsally flattened, can sometimes possess a shallow and broad ventral groove. *Eragrostis rufescens* is unique in possessing an ovoid caryopsis that is smooth to finely striate, light reddish-brown with a dark mark near base of the embryo.

Table 4. Caryopsis morphology of the species of *Eragrostis* (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru).

Species	Length (mm)	Grain shape	Color	Special features
Eragrostis acutiflora (Kunth) Nees	0.5−0.9	Obovoid to ellipsoid	Light brownish to reddish-brown	Finely longitudinally striate
Eragrostis airoides Nees	0.4−0.5	Ovoid	Reddish-brown	Reticulate
Eragrostis andicola R. E. Fr.	0.5−1.0	Rectangular-prismatic	Light brown	Striate and reticulate, rectangular with nearly equal sides in cross section, without a readily apparent ventral groove or with a shallow ventral groove
Eragrostis atrovirens (Desf.) Trin. ex Steud.	0.6−0.9	Obovoid to ellipsoid	Reddish brown, opaque	Striate and minutely reticulate, circular in cross section, without a ventral groove
Eragrostis attenuata Hitchc.	0.6−0.8	Ellipsoid	Reddish brown	Striate, laterally flattened, elliptical in cross section, smooth, not grooved ventrally
Eragrostis bahiensis Schrad. Ex Schult.	0.6−0.8	Obovoid to ellipsoid	Reddish-brown	Terete, somewhat striate
Eragrostis barrelieri Daveau	0.4−0.7	Ellipsoid	Light brown	Somewhat striate

Species	Length (mm)	Grain shape	Color	Special features
Eragrostis cilianensis (All.) Vignolo ex Janch.	0.5−0.7	Globose to broadly-short ellipsoid	Reddish-brown	Striate and reticulate, circular to elliptical in cross-section
Eragrostis ciliaris (L.) R. Br.	0.4−0.5	Ovoid	Reddish-brown	Striate, slightly dorsally-flattened, elliptical in cross-section
Eragrostis condensata (J. Presl) Steud.	0.5−0.9	Obovoid to prism-shaped	Brownish	Irregularly reticulate to faintly striate to almost smooth, usually with a well developed groove on the adaxial side
Eragrostis curvula (Schrad.) Nees	1.0−1.7	Ellipsoid to obovoid	Light brown, bases often greenish	Strongly dorsally-flattened, ventral surface with a shallow, broad groove or ungrooved, smooth to striate
Eragrostis gangetica (Roxb.) Steud.	0.4−0.5	Ovoid	Light brown	Faintly striate and reticulate**,** circular in cross-section, without a ventral groove
Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb.	0.3−0.5	Ellipsoid	Light brown, somewhat translucent	Faintly striate and reticulate, laterally-flattened, elliptical in cross-section
Eragrostis intermedia Hitchc.	0.5−1.0	Rectangular-prismatic	Reddish-brown, opaque	Somewhat laterally compressed, with a well-developed adaxial groove, striate
Eragrostis japonica (Thunb.) Trin.	0.3−0.4	Obovoid	Reddish-brown	Smooth or minutely irregulary striate, slightly dorsally-flattened, pericarp often loose, elliptical in cross-section
Eragrostis lugens Nees	0.5−0.6	Obovoid to somewhat prism-shaped	Faintly reddish-brown to whitish, usually opaque	Terete to somewhat laterally flattened, with a weak ventral groove, striate and reticulate, irregularly obovate to triangular in cross-section
Eragrostis lurida J. Presl	0.6−0.8	Obovoid to ellipsoid	Light reddish-brown	Striate and reticulate, sometimes with a weak ventral groove, rectangular with the sides angled in cross-section
Eragrostis magna Hitchc.	1.2−1.8	Rectangular-prismatic	Reddish brown	Strongly laterally flattened, striate and reticulate, with a deep ventral groove, narrowly triangular in cross section
Eragrostis maypurensis (Kunth) Steud.	0.4−0.7	Ovoid	Reddish-brown, translucent	Rhomboid reticulate without striations, obovate to circular in cross-section
Eragrostis mexicana (Hornem.) Link	0.5−0.8(−1.0)	Ovoid to rectangular-prismatic	Reddish-brown, distal 2/3 opaque	Laterally flattened, shallowly to deeply grooved on the ventral surface, striate and reticulate, irregularly triangular in cross-section

Species	Length (mm)	Grain shape	Color	Special features
Eragrostis mokensis Pilg.	0.6−0.7	Ovoid	Reddish-brown	Striate and reticulate, flattened on tha adaxial surface
Eragrostis nigricans (Kunth) Steud.	(0.6−)0.7−1.1	Ovoid	Reddish-brown, translucent	Striate and reticulate, shallowly to deeply grooved on the ventral surface, irregularly rectangular in cross-section
Eragrostis pastoensis (Kunth) Trin.	0.4−0.9	Obovoid to prism-shaped	Light reddish-brown to translucent	Striate and reticulate, usually with a ventral groove, irregularly rectangular in cross-section
Eragrostis pectinacea (Michx.) Nees	0.5−1.1	Rectangular prismatic	Brownish	Striate and reticulate, slightly laterally flattened, rectangular with nearly equal sides in cross-section
Eragrostis peruviana (Jacq.) Trin.	0.4−0.7	Ovoid to ellipsoid	Reddish brown, sometimes whitish	Striate and reticulate, somewhat laterally flattened, elliptical-obovate to circular in cross section
Eragrostis pilgeri Fedde	0.7−0.9	Rectangular-prismatic	Dark reddish brown	Striate and reticulate, deeply grooved on the ventral surface, rectangular to triangular in cross section
Eragrostis pilosa (L.) P. Beauv.	0.5−1.0	Obovoid to prism-shaped	Light brown	Smooth to striate, dorsally flattened, rectangular in cross-section
Eragrostis polytricha Nees	0.5−0.8	Obovoid to somewhat prism-shaped	Reddish-brown, opaque to translucent	Finely striate laterally compressed, with a well-developed adaxial groove
Eragrostis prolifera (Sw.) Steud.	0.6−0.9	Ovoid	Reddish-brown	Finely striate, flattened ventrally
Eragrostis rufescens Schrad. ex Schult.	0.4−0.6	Ovoid	Light reddish-brown with a dark mark near base of the embryo	Smooth to finely striate
Eragrostis secundiflora J. Presl	0.8−1.3	Ellipsoid	Reddish-brown	Somewhat laterally flattened, smooth
Eragrostis soratensis Jedwabn.	0.6−0.8	Obovoid to prism-shaped	Reddish brown	Striate and reticulate, laterally flattened, ventral grooved, irregularly rectangular with lateral sides angled
Eragrostis tenella (L.) P. Beauv. Ex Roem. & Schult.	0.3−0.5	Ellipsoid	Light brown	Faintly striate, elliptical to circular in cross-section
Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud.	0.6−1.1	Ovoid	Brownish	Striate and reticulate, strongly laterally flattened, and curved on the adaxial side, with a deep ventral groove, narrowly triangular in cross-section

Species	Length (mm)	Grain shape	Color	Special features
Eragrostis unioloides (Retz.) Nees ex Steud.	0.6−0.9	Ellipsoid	Light brownish	Laterally compressed
Eragrostis viscosa (Retz.) Trin.	0.4−0.5	Ellipsoid	Light brown	Translucent
Eragrostis weberbaueri Pilg.	0.6−0.7	Ellipsoid	Reddish orange	Faintly striate and reticulate, circular to ovate in cross section

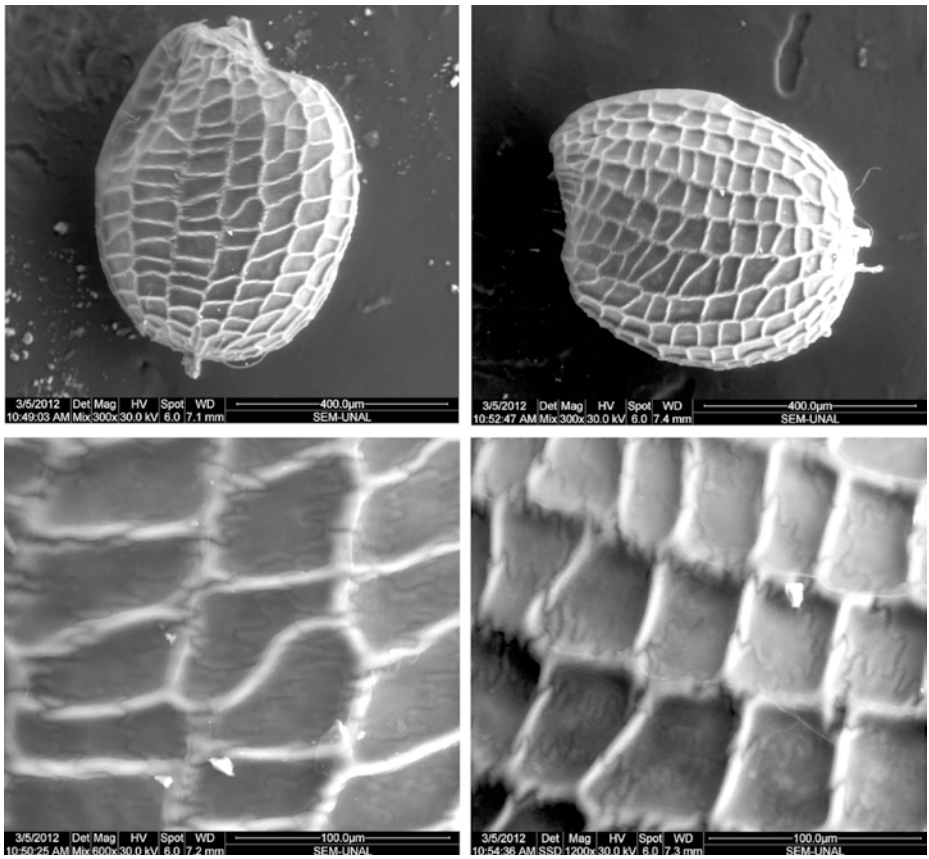


Fig. 12. Caryopsis of *Eragrostis airoides* (*Giraldo-Cañas 4536*). **A-B**. Lateral views; **C-D**. Reticulate surface of the caryopsis.

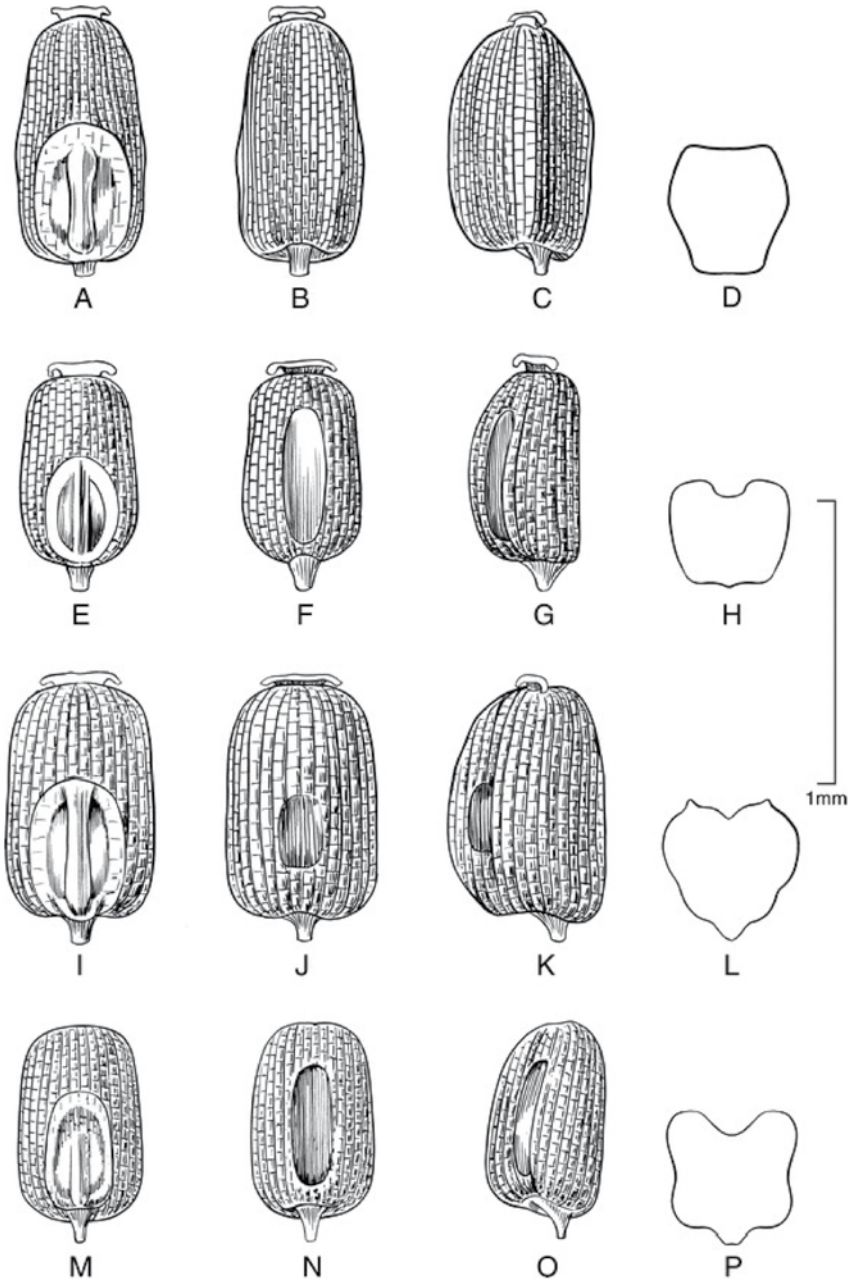


Fig. 13. Caryopses of *Eragrostis* species. **A–D**. *E. lurida* subsp. *lurida* (*Peterson & Refulio-Rodríguez 13993*); **E–H**. *E. pastoensis* (*Peterson & Refulio-Rodríguez 13982*); **I–L**. *E. lugens* (*Sánchez Vega 3218*); **M–P**. *E. nigricans* (*Dillon et al. 3258*). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).

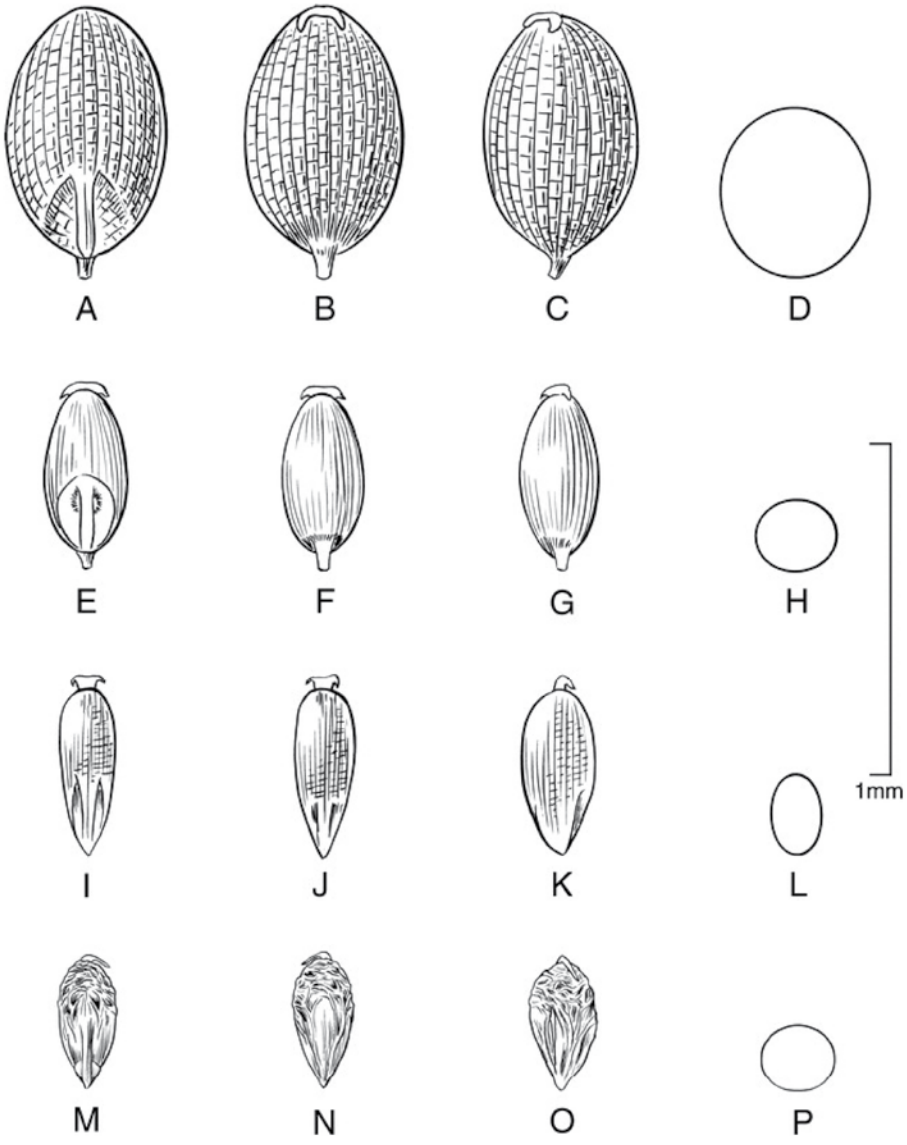


Fig. 14. Caryopses of *Eragrostis* species. **A–D**. *E. cilianensis* (*Ferreyra 6017*); **E–H**. *E. ciliaris* (*Sagástegui 10927*); **I–L**. *E. hypnoides* (*López & Sagástegui 4023*); **M–P**. *E. japonica* (*Asplund 14802*). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).

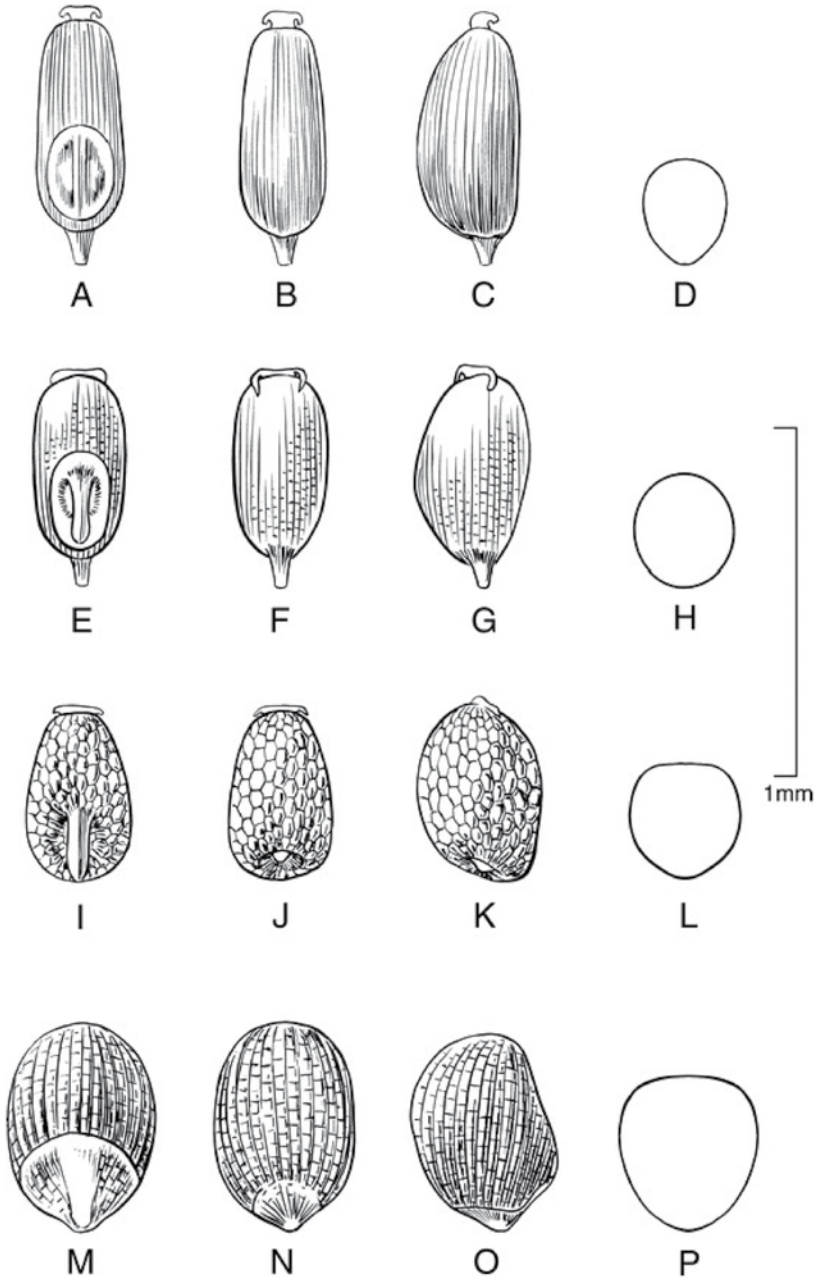


Fig. 15. Caryopses of *Eragrostis* species. **A–D**. *E. attenuata* (*Ferreyra 6366*); **E–H**. *E. weberbaueri* (*Columbus et al. 3523*); **I–L**. *E. maypurensis* (*Belshaw 3359*); **M–P**. *E. peruviana* (*Dillon et al. 3342*). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).); lateral views (C, G, K, O); cross sections (D, H, L, P).

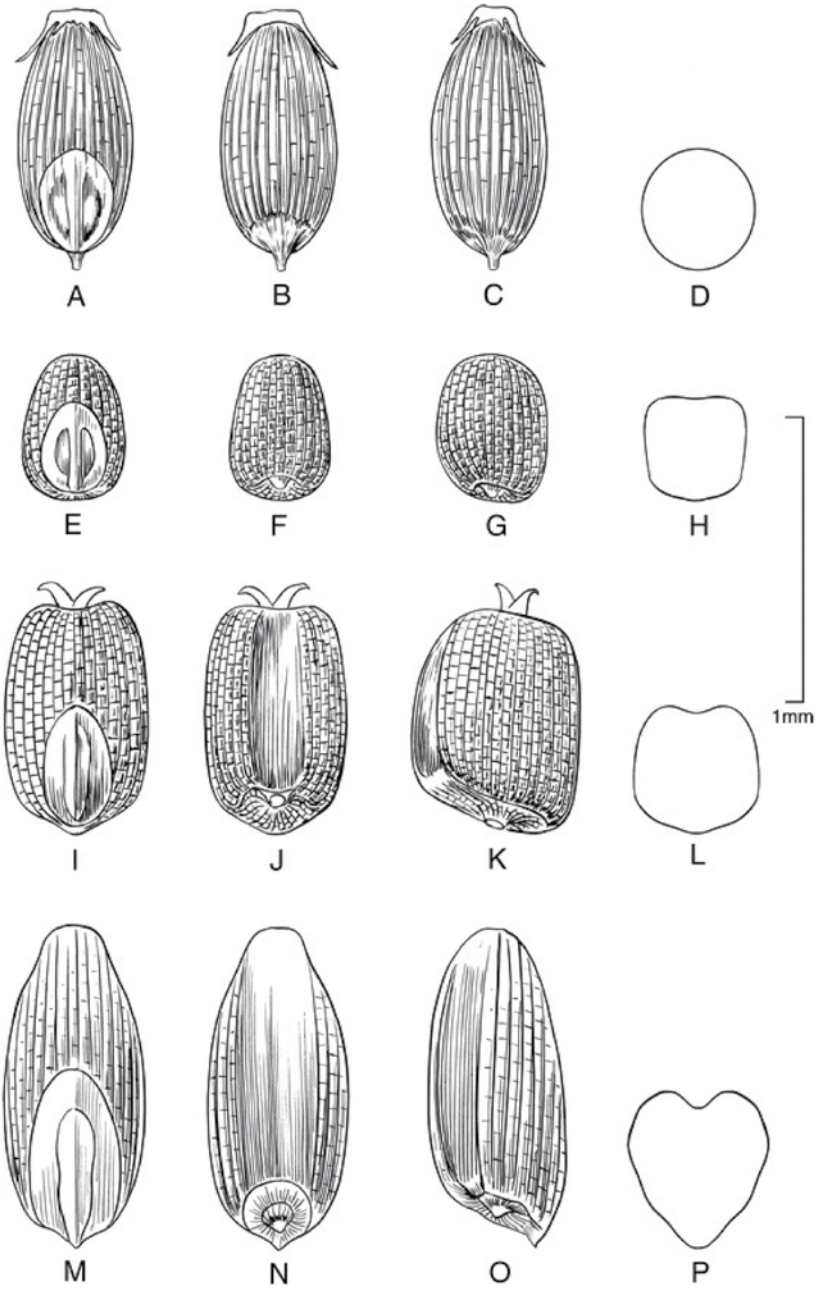


Fig. 16. Caryopses of *Eragrostis* species. **A–D**. *E. atrovirens* (*Sánchez-Vega 9651*); **E–H**. *E. andicola* (*Mabride 3516*); **I–L**. *E. pilgeri* subsp. *ancashensis* (*Peterson & Refulio-Rodríguez 13793*); **M–P**. *E. pilgeri* subsp. *pilgeri* (*Sánchez-Vega & Torrel 2380*). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P). B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).); lateral views (C, G, K, O); cross sections (D, H, L, P).

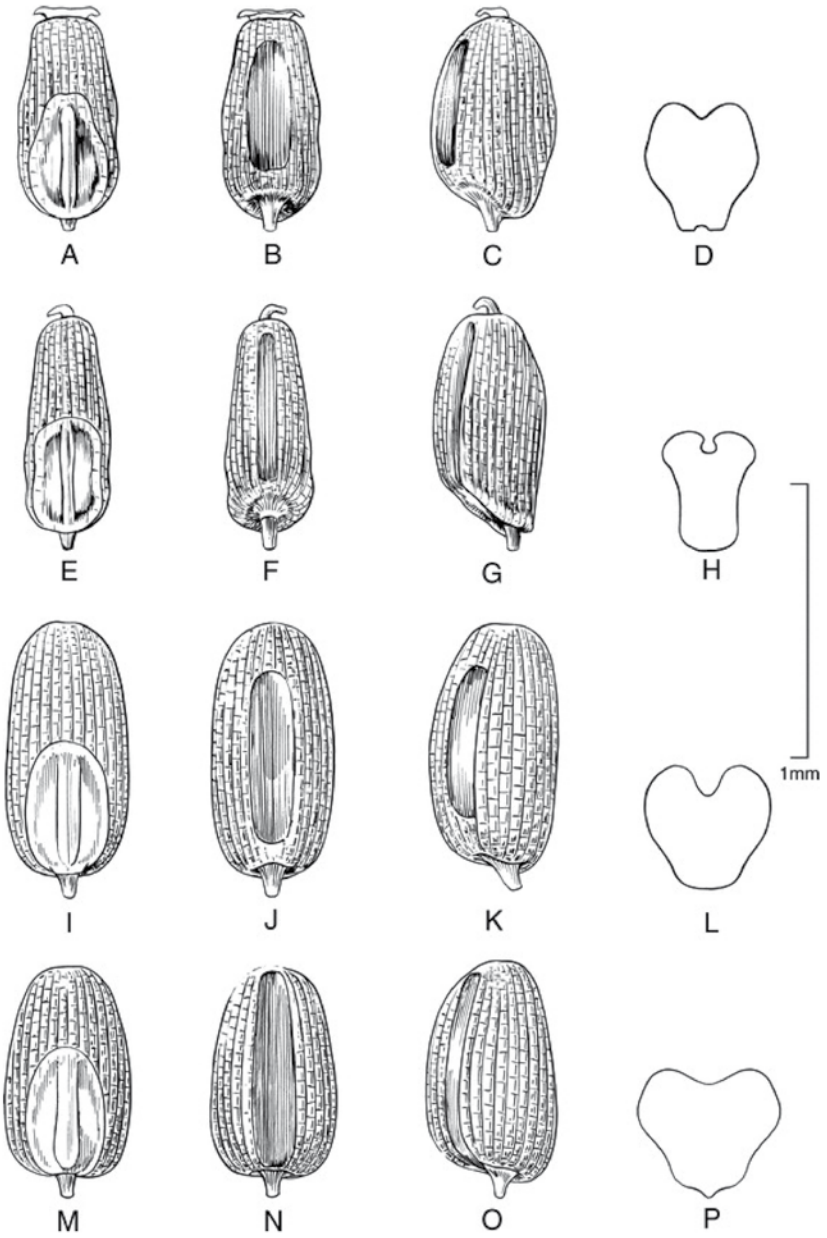


Fig. 17. Caryopses of *Eragrostis* species. **A–D**. *E. soratensis* (*Peterson et al. 14625*); **E–H**. *E. magna* (*MacBride 4069, Peterson & Refulio-Rodríguez 16515*); **I–L**. *E. mexicana* subsp. *mexicana* (*Sánchez-Vega 2301*); **M–P**. *E. mexicana* subsp. *virescens* (*Sánchez-Vega 4020*). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P), *Refulio-Rodríguez 13793*); **M–P**. *E. pilgeri* subsp. *pilgeri* (*Sánchez-Vega & Torrel 2380*). Dorsal views (A, E, I, M); ventral views (B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P). B, F, J, N); lateral views (C, G, K, O); cross sections (D, H, L, P).); lateral views (C, G, K, O); cross sections (D, H, L, P).

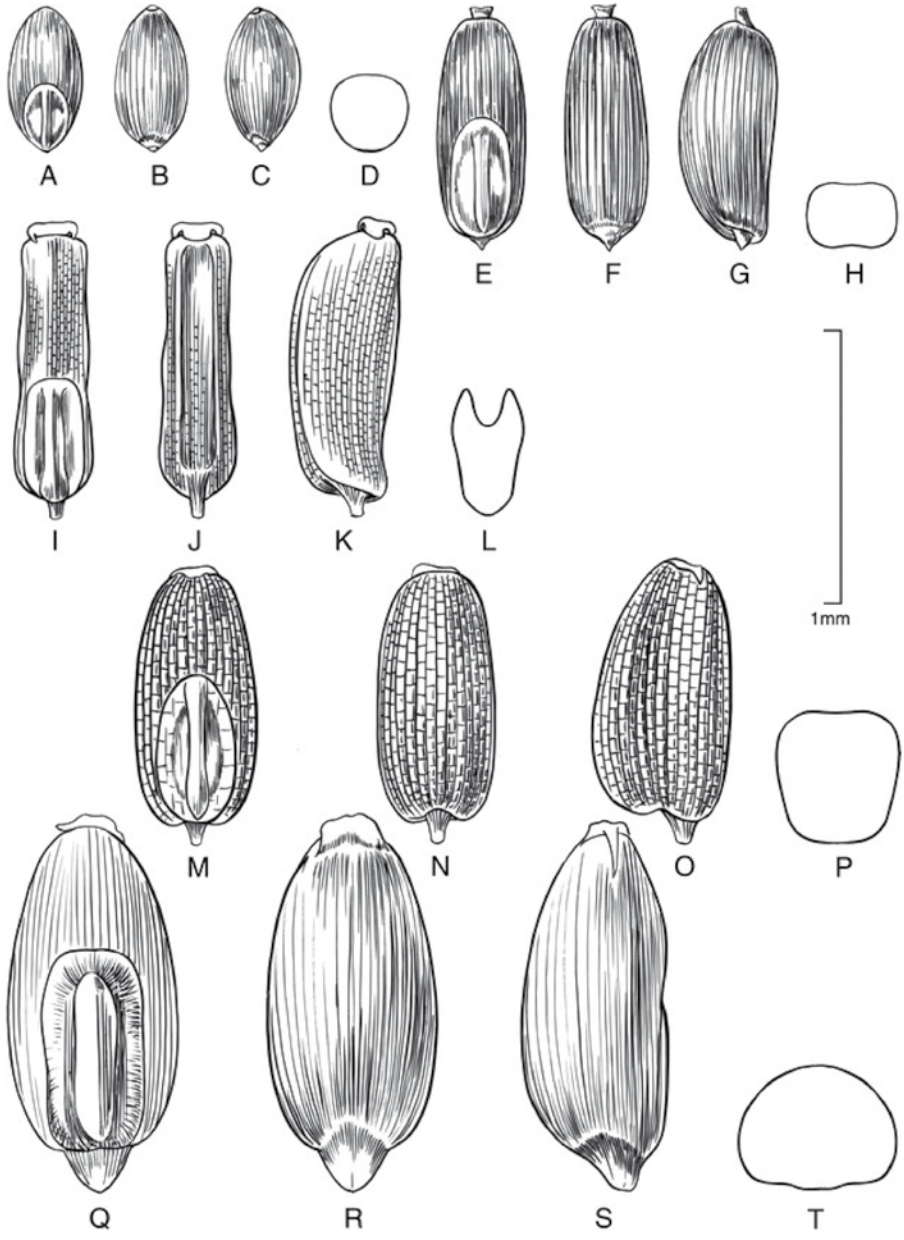


Fig. 18. Caryopses of *Eragrostis* species. A–D. *E. tenella* (*Llatas 1180*); **E–H**. *E. pilosa* (*Llatos 1107*); **I–L**. *E. tenuifolia* (*Núñez & Bengoa 8731*); **M–P**. *E. pectinacea* (*Peterson & Refulio-Rodríguez 13981*); **Q–T**. *E. curvula* (*Reeder & Reeder 7311*). Dorsal views (A, E, I, M, Q); ventral views (B, F, J, N, R); lateral views (C, G, K, O, S); cross sections (D, H, L, P, T).

Diversity of species of Eragrostis *in northwestern South America*

We report 37 species of *Eragrostis* in northwestern South America (29 species are recorded in Colombia, 19 in Ecuador, and 26 in Peru, Table 5); four of the species are cited for the first time for Colombia [*Eragrostis atrovirens* (Desf.) Trin. Ex Steud., *Eragrostis barrelieri* Daveau, *Eragrostis soratensis* Jedwabn., *Eragrostis gangetica* (Roxb.) Steud.], and three for Peru [*E. acutiflora* (Kunth) Nees, *Eragrostis bahiensis* Schrad. ex Schult., and *E. secundiflora* J. Presl]. *Eragrostis condensata* (J. Presl) Steud. is endemic to Ecuador, while *E. magna* Hitchc. and *E. pilgeri* Fedde are endemic to Peru. Twenty-four species are native, while 13 species are introduced-naturalized.

Table 5. Survey of the species of *Eragrostis* (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru). **: First record.

Species	Colombia	Ecuador	Peru	Status
Eragrostis acutiflora (Kunth) Nees	X	X	X **	Native
Eragrostis airoides Nees	X			Native
Eragrostis andicola R. E. Fr.			X	Native
Eragrostis atrovirens (Desf.) Trin. Ex Steud.	X**		X	Introduced-naturalized
Eragrostis attenuata Hitchc.			X	Native
Eragrostis bahiensis Schrad. ex Schult.	X	X	X **	Native
Eragrostis barrelieri Daveau	X**	X		Introduced-naturalized
Eragrostis cilianensis (All.) Vignolo ex Janch.	X	X	X	Introduced-naturalized
Eragrostis ciliaris (L.) R. Br.	X	X	X	Introduced-naturalized
Eragrostis condensata (J. Presl) Steud.		X		Endemic (Ecuador)
Eragrostis curvula (Schrad.) Nees	X		X	Introduced-naturalized and cultivated
Eragrostis gangetica (Roxb.) Steud.	X**			Introduced-naturalized
Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb.	X	X	X	Native
Eragrostis intermedia Hitchc.	X			Native
Eragrostis japonica (Thunb.) Trin.	X	X	X	Introduced-naturalized
Eragrostis lugens Nees	X	X	X	Native
Eragrostis lurida J. Presl	X	X	X	Native
Eragrostis magna Hitchc.			X	Endemic (Peru)
Eragrostis maypurensis (Kunth) Steud.	X		X	Native
Eragrostis mexicana (Hornem.) Link	X	X	X	Native
Eragrostis mokensis Pilg.	X			Introduced-naturalized
Eragrostis nigricans (Kunth) Steud.	X	X	X	Native
Eragrostis pastoensis (Kunth) Trin.	X	X	X	Native
Eragrostis pectinacea (Michx.) Nees	X	X	X	Native

Species	Colombia	Ecuador	Peru	Status
Eragrostis peruviana (Jacq.) Trin.			X	Native
Eragrostis pilgeri Fedde			X	Endemic (Peru)
Eragrostis pilosa (L.) P. Beauv.	X	X	X	Introduced-naturalized
Eragrostis polytricha Nees	X			Native
Eragrostis prolifera (Sw.) Steud.	X			Native
Eragrostis rufescens Schrad. ex Schult.	X			Native
Eragrostis secundiflora J. Presl	X		X **	Native
Eragrostis soratensis Jedwabn.	X **		X	Native
Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult.	X	X	X	Introduced-naturalized
Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud.	X	X	X	Introduced-naturalized
Eragrostis unioloides (Retz.) Nees ex Steud.		X		Introduced-naturalized
Eragrostis viscosa (Retz.) Trin.	X	X		Introduced-naturalized
Eragrostis weberbaueri Pilg.			X	Native
TOTAL (37 species)	29	19	26	

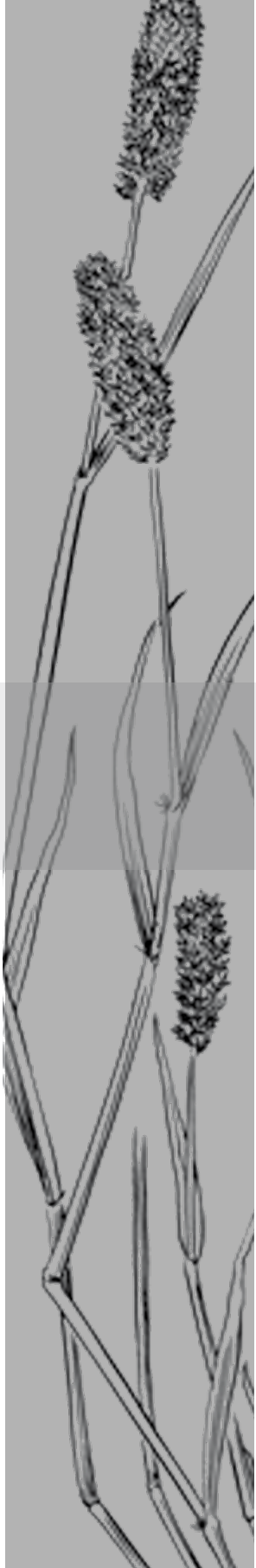
Ecology and geographic distribution

Most species of *Eragrostis* occupy open habitats with poor soils, and many occur in ruderal sites. They also are distributed over a wide altitudinal gradient and occur in different humidity conditions from sea level to 3600 (−4000) m, and from extremely wet environments to xeric habitats. The 37 species of *Eragrostis* in Colombia, Ecuador, and Peru are widely distributed among the coasts, the Andes, *altiplanos*, precambrian outcrops, plains and savannas, forest regions, cultivated fields, and city sidewalks. The annual species are more conspicuous along the sandy plains of the coasts, the interior of the Andean valleys, and in the dry Andean valleys at lower elevations. *Eragrostis cilianensis*, *E. ciliaris*, *E. hypnoides*, *E. japonica*, *E. maypurensis*, *E. tenella*, *E. gangetica*, and *E. viscosa* form part of the xerophytic vegetation on precambrian outcrops (Giraldo-Cañas 2010a).

The montane species of *Eragrostis* are an integral component of natural and disturbed, mid to high elevation ecosystems (see Giraldo-Cañas 2010b). *Eragrostis nigricans* and *E. pilosa* are usually found growing along margins of cultivated fields while many other species inhabit the edges of roads and trails. *Eragrostis lurida*, *E. magna*, *E. pastoensis, E. pilgeri*, and *E. weberbaueri* are principally found in the altiplanos and puna, and disappear in the páramos and jalcas. In the mountainous regions there is a greater number of perennial native species of *Eragrostis*. *Eragrostis hypnoides* is the only species commonly found along the coasts, Andes, llanos, precambrian outcrops, and in the Amazonian forest in areas that are periodically flooded, i.e., margins of rivers. In Peru, the *lomas* vegetation south of 8º latitude contains *E. attenuata*, *E. peruviana*, and *E. weberbaueri*.

Economic importance

Some species of *Eragrostis* are commonly early invaders of arable lands. The following species of *Eragrostis* are weedy around the World: *E. cilianensis, E. curvula, E. japonica, E. mexicana, E. pectinacea, E. pilosa, E. tenella, E. tenuifolia*, and *E. viscosa*. *Eragrostis tef* (Zucc.) Trotter and *E. curvula* are cultivated, and *E. superba* Peyr., a drought resistant species, is used primarily for reseeding denuded land (Watson & Dallwitz 2008). *Eragrostis tef* is a staple cereal in Ethiopia, which is potentially of wide interest (Clayton & Renvoize 1986, Ketema 1997, Watson & Dallwitz 2008), while *E. curvula* is cultivated as a pasture species (Clayton & Renvoize 1986, Echenique *et al.* 2008) and as an ornamental species (pers. obs.). *Eragrostis cilianensis, E. ciliaris, E. curvula, E. pastoensis, E. pilosa*, and *E. tenuifolia* are important pasture elements in Colombia, Ecuador, and Peru (Watson & Dallwitz 2008, and pers. obs.). Recently, Giraldo-Cañas (2010c) reported that *Eragrostis* is a very important ornamental group in Colombia, with six species used in outdoor gardening and as a major sod component.



Taxonomic treatment

Taxonomic treatment

Eragrostis Wolf, Gen. Pl. 23. 1776. Type: *Eragrostis minor* Host, Icon. Descr. Gram. Austriac. 4: 15. 1809 (lectotype designated by R. Ross, Acta Bot. Neerl. 15: 157. 1966).

Plants annual or perennial; usually synoecious, sometimes dioecious; caespitose, stoloniferous, or rhizomatous; flowering culms (2−)5−150 cm tall, not woody, erect, decumbent, or geniculate, sometimes rooting at the lower nodes, simple or branched; internodes solid or hollow; bud initiation intravaginal, rarely extravaginal; occasionally with glands below the nodes of the culms. **Leaf sheaths** open, often with tufts of hairs at the apices, hairs 0.3−9 mm long; **ligules** usually membranous and ciliolate or ciliate, cilia sometimes longer than the membranous base, occasionally of hairs or membranous and non-ciliate; **blades** flat, folded, or involute; occasionally with glands on the nerves, keels, or margins of leaves. **Inflorescences** terminal, sometimes also axillary, simple **panicles**, open to contracted or spike-like, terminal panicles usually exceeding the upper leaves; pulvini in the axils of the primary branches glabrous or hairy; branches not spike-like, not disarticulating; occasionally with glands on the branches of the inflorescence. **Spikelets** 1−30 × 0.5−4.5 mm, laterally compressed, with (1−) 2 to 45 florets; **disarticulation** below the fertile florets, sometimes also below the glumes, acropetal with deciduous glumes and lemmas but persistent paleas, or basipetal with the glumes often persistent and the florets usually falling intact; occasionally with glands on the glumes or lemmas; **glumes** usually shorter than the adjacent lemmas, usually 1(3)-nerved, not lobed, apices obtuse to acute, unawned; calluses glabrous or sparsely pubescent; **lemmas** usually glabrous, obtuse to acute, 3(5)-nerved, usually keeled, unawned or mucronate; **paleas** shorter than the lemmas, longitudinally bowed-out by the caryopses, 2-keeled, keels usually short or long ciliate, intercostal region membranous or hyaline; **stamens** 2 or 3; **ovaries** glabrous; **ovule** amphitropous, anatropous, or campylotropous; **styles** free to the bases. Cleistogamous spikelets occasionally present, sometimes on the axillary panicles, sometimes on the terminal panicles. **Caryopses** variously shaped; **hilum** short; **embryo** with an epiblast, scutellar tail, and elongated mesocotyl internode (formula P+PF), endosperm hard.

Etymology. The origin of the name is somewhat obscure. Nathaniel M. von Wolf (1776), who first named *Eragrostis*, made no statement concerning the origin of its name. Clifford (1996) and Clifford & Bostock (2007) provide three possible derivations: from "eros" (love), and "Agrostis" (the Greek name for an indeterminate herb); from the Greek "er" (early) and "agrostis*"* (wild), referring to the fact that some species of *Eragrostis* are early invaders of arable land; or the Greek "eri-" (a prefix meaning "very" or "much"), suggesting that the name means many-flowered "*Agrostis*." Watson & Dallwitz (2008) indicate that the derivation of *Eragrostis* is "from the Greek 'eros' (love) or 'era' (earth) and 'agrostis' (a grass), probably alluding to the characteristic, earthy (human) female aroma of the inflorescences of many species."

Base chromosome number and levels of ploidy. x = 10, $2n$ = 20, 40, 50, 60, 80, 100, and 108; 2, 4, 5, 6, 8, and 10 ploid (Roodt & Spies 2003, Watson & Dallwitz 2008).

The common base chromosome number for all chloridoid tribes is $x = 10$, and this is the predominant number found in the Cynodonteae, Eragrostideae, Triraphideae, and Zoysieae (Peterson *et al.* 2010). Lower base chromosome numbers are common in the Cotteinae ($x = 9, 10$), Eleusininae ($x = 9, 10$), Hilariinae ($x = 9$), Muhlenbergiinae ($x = 8, 9, 10$), Scleropogoninae ($x = 7, 8, 10$), and Sporobolinae ($x = 7, 8, 9, 10$) (Peterson *et al.* 2010). Within the subfamily Chloridoideae there is a high frequency of polyploids ranging from diploid to 20-ploid and many of these are thought to be alloploids suggesting extensive hybridization (Roodt & Spies 2003, Peterson *et al.* 2010). Sixty-nine percent of the species of *Eragrostis* are apparently polyploid(Hunziker & Stebbins 1987).

Hubbard (1934) stated that *Sporobolus* R. Br. shows a close relationship to *Eragrostis* (which has a paleopolyploid basic chromosome number of $x = 10$) and is probably derived from it (Roodt & Spies 2003). The close relationship between *Eragrostis* and *Sporobolus* is also noticeable at the morphological level where the major difference is the number of florets per spikelet (Clayton & Renvoize 1986). It was suggest that *Sporobolus* ($x = 6, 9, 10$) represents a specialized lineage within the genus *Eragrostis* with the differenciation of three basic chromosome numbers as opposed to the single basic chromosome number of *Eragrostis* (Roodt & Spies 2003). However, based on molecular DNA sequences, the *Eragrostis* clade is clearly sister to the Uniolinae (Peterson *et al.* 2010).

***Monophyly of* Eragrostis**. Based on nuclear and plastid DNA sequences, Ingram & Doyle (2003, 2004, 2007) tested the monophyly of *Eragrostis* and found that, with the inclusion of *Acamptoclados* Nash (*E. sessilispica* Buckley), *Diandrochloa* De Winter, *Neeragrostis* Bush, and *Pogonarthria* Stapf, the genus is indeed monophyletic. However, only 37 species of *Eragrostis* were included in their analysis, so any infrageneric interpretations were beyond the scope of their work. Based on analysis of seven DNA markers Peterson *et al.* (2010) found that embedded within the *Eragrostis* clade is *Ectrosia* R. Br., *Harpachne* A. Rich., *Neeragrostis* Bush, and *Psammagrostis* C.A. Gardner & C.E. Hubb.

Biochemical features. All species of *Eragrostis* that have been examined anatomically exhibit "Kranz" or C_4 leaf anatomy. Apparently, three C_4 biochemical types exist in *Eragrostis*: NAD-ME (nicotinamide adenine dinucleotide co-factor malic enzyme), PCK (phosphoenolpyruvate carboxykinase), and intermediate types (Prendergast *et al.* 1986, Amarasinghe & Watson 1990, Ingram 2010, Peterson *et al.* 2010). *Eragrostis walteri* Pilg. is anomalous, having non-kranz anatomy (i.e., C_3, see Ellis 1984; Clayton & Renvoize 1986). However, phylogenetic analysis of *rbcL* and ITS DNA sequences, suggest *E. walteri* is misplaced in the Chloridoideae and belongs within the Arundinoideae near *Molinia* Schrank (Ingram *et al*. 2011).

The subtribe Eragrostidinae. This subtribe includes two native genera in the New World: *Eragrostis* with 153 species and *Steirachne* with two species (Peterson 2003, Peterson *et al.* 2007, 2010). Frequently, both genera are confused, but *Steirachne* can be differentiated from *Eragrostis* by the following combination of characters: florets disarticulating as an unit with segments of the raquilla, the later often with an apical

tuft of hairs; florets with a setulose surface; florets loosely imbricate; cleistogamous spikelets present, often in the lower leaf sheats; glumes persistent; and caryopses that are narrowly elliptical and somewhat beaked at the apex (Peterson *et al.* 1997).

Morphologically, the two species of *Steirachne* [*S. barbata* (Trin.) Renvoize and *S. diandra* Ekman] are hardly separable from *Eragrostis acutiflora* (Kunth) Nees –the species more superficially related to *Steirachne*–, as all have acuminate to attenuate or subaristate, 3-nerved lemmas (Peterson *et al.* 2007). However, the lemmas of the two species of *Steirachne* have more pronounced setulose lemmas and elongate caryopsis (Renvoize 1984).

Key to separate *Eragrostis* and *Steirachne*

1. Paleas with keels unwinged; lemmas with apex obtuse or acute to less commonly subaristate; rachilla internodes not bearing tufts of hairs near the base of each floret; stamens 2 or 3; genus widespread ..... ***Eragrostis***
1'. Paleas with keels winged; lemmas with apex attenuate to subaristate; rachilla internodes bearing tufts of hairs near the base of each floret; stamens 2; genus from Brazil (northeastern), French Guina, Guyana, Suriname, and Venezuela..... ***Steirachne***

Infrageneric classification. Based on spikelet disarticulation, Clayton (1974) and Clayton & Renvoize (1986) have arrived at a first approximation to natural groups and have presented a key to sections *Psilantha* (K. Koch) Tzvelev, *Eragrostis*, *Lappula* Stapf, and *Platystachya* Benth. In most taxa native to the Western Hemisphere, disarticulation of the spikelet is acropetal (florets at the base maturing first) and the lemmas fall with the caryopses, leaving paleas attached to the rachilla (Table 3). The common mode of disarticulation for introduced species from Africa and Asia is basipetal, where the florets near the apex mature first (Table 3).

Van den Borre & Watson (1994) investigated 53 species of *Eragrostis* and found that anatomical characters, among others, support the recognition of two distinct groups: *Eragrostis* subgen. *Eragrostis* and *Eragrostis* subgen. *Caesiae* Van den Borre & L. Watson. The most comprehensive attempt so far is Lazarides' (1997) treatment of the Australian *Eragrostis*, in which he recognized six groups primarily based on spikelet disarticulation. Lazarides (1997) correlates his classification with Van den Borre & Watson (1994), who recognized subgenus *Eragrostis* and subgenus *Psilantha*, and with Amarasinghe & Watson (1990), who investigated microhair morphology within the genus. Cope's (1998) informal treatment of *Eragrostis* for the Flora of Zambesiaca is also comprehensive since he delineates nine species groups based on panicle, lemma, and palea morphology in addition to spikelet disarticulation. In spite of spikelet disarticulation characters have been the most common basis of infrageneric classifications for *Eragrostis*, they have not been useful in delineating monophyletic groups (Ingram 2010).

Based on caryopsis morphology, Boechat & Longhi-Wagner (2003) placed 49 of the 53 species of *Eragrostis* that occur in Brazil into the following six groups: smooth-walled

(six species), medianly reticulate (14 species), roughly reticulate (10 species), finely reticulate (nine species), alveolate (six species), and striate (four species). Overall morphological features led Peterson & Valdés Reyna (2005) to recognize the following four hypothesized lineages within 26 species of *Eragrostis* from northeastern Mexico: an Old World group, the E. *intermedia* Hitchc. complex, the *E. pectinacea* complex, and the *E. spectabilis* (Pursh) Steud.−*E. secundiflora* J. Presl group.

In addition, recent systematic treatments of *Eragrostis* from Argentina (Nicora 1998), Australia (Lazarides 1997), Bénin (Houinato *et al.* 2000), Bolivia (Renvoize 1998), Brazil (Boechat & Longhi-Wagner 2000, 2001), Chile (Escobar *et al.* 2011), China (Chen & Peterson 2006), Congo (Kami 1993), Costa Rica (Pohl 1980), Côte-d'Ivoire (Poilecot 1995), Cuba (Catasús Guerra 1997), Ecuador (Peterson 2001), France (Portal 2002), Guianas (Judziewicz 1991), Malesia (Veldkam 2002), Mesoamerica (Davidse 1994), Mexico (Beetle *et al.* 1991, Peterson & Valdés Reyna 2005), Niger (Poilecot 1999), Peru (Tovar 1993, Peterson & Sánchez Vega 2007), the United States and Canada (Peterson 2003), Venezuela (Graterol *et al.* 1989, Nozawa & Grande 2010), and Flora Zambesiaca () (Cope 1998) have given us a good understanding of the species limits and their distribution. Nevertheless, there is no definitive treatment of the infrageneric classification of the entire genus, but its taxonomy is evidently closely related to the mode of spikelet disarticulation, which is remarkably diverse (Clayton & Renvoize 1986) (Table 3). This character is probably subject to some degree of parallel evolution (Clayton & Renvoize 1986).

Comments. Some specimens of different species of *Eragrostis* [see Veldkamp (2002, 2003)] have spikelets infected by the smut *Bipolaris* sp., otherwise only known from *Sporobolus indicus* (L.) R. Br. s.l., which may be indicative of a common ancestor in the evolutionary history of the two lineages (Veldkamp 2002).

Key to the species of *Eragrostis* in Colombia

Key to the species of *Eragrostis* in Colombia

1. Plants annual, caespitose or mat-forming; without innovations.
2. Stamens 2.
3. Pedicels 2−10 mm long, mostly longer o equal than the spikelets .... ***E. gangetica***
3’. Pedicels 0.1−1 mm long, mostly shorter than the spikelets.
4. Palea keels prominently ciliate, the cilia 0.2−1 mm long; spikelets 1.8−3.3 mm long, 6−11-flowered; lower glume 0.7−1.2 mm long; upper glume 1−1.6 mm long; lemmas 0.8−1.3 mm long.....***E. ciliaris***
4’. Paleas keels smooth to scabrous, the scabridities less than 0.2 mm long; spikelets 6−15(−21) mm long, 10−43-flowered; lower glume 1.4−2.5 mm long; upper glume 1.5−2.6 mm long; lemmas 1.6−2.3 mm long.....***E. rufescens***
2’. Stamens 3; pedicels usually1−4(−7) mm long, as long as or longer than the spikelets.
5. Palea keels prominently ciliate, the cilia 0.2−1 mm long.
6. Plants viscid with particles of soil adhering to the sticky areas along the sheaths, culms, and blades; spikelets (2−)2.5−5.5 mm long .....***E. viscosa***
6’. Plants not viscid and without particles of soil adhering to vegetative portions.
7. Paleas orbicular, winged .....***E. mokensis***
7’. Paleas obtuse, acute to truncate, not winged.
8. Spikelets (1−)1.5−2.2 mm long .....***E. tenella***
8’. Spikelets 5−20 mm long ..... ***E. cilianensis***
5’. Paleas smooth to scabrous, the scabridities less than 0.2 mm long.
9. Plants mat-forming; panicles 1−3.5 cm long; erect portion of culms (2−)5−20 cm tall, the basal portion prostrate and rooting at the lower nodes ..... ***E. hypnoides***
9’. Plants not forming mats; panicles 3−55 cm long; culms 15−130 cm tall, not prostrate or rooting at the lower nodes.
10. Ligules membranous, glabrous .....***E. japonica***
10’. Ligules ciliate with a row of tiny white hairs.
11. Lemmas with 1−3 crateriform glands on the keels; spikelets 2−4 mm wide; disarticulation of entire florets from persistent rachilla ..... ***E. cilianensis***
11’. Lemmas without crateriform glands; spikelets 0.6−2.5(−3) mm wide; disarticulation of the lemmas only, palea and rachilla usually persistent.
12. Lemmas acuminate, the apices recurved, chartaceous; pulvini (axils of the primary .....branches) densely pilose, the hairs up to 4 mm long.....***E. maypurensis***
12’. Lemmas acute to obtuse, the apices never recurved, membranous; pulvini usually glabrous to sparsely ciliate, the hairs if present less than 1.5 mm long.
13. Caryopses with a shallow or deep adaxial groove.
14. Spikelets not arranged in glomerules, 5−11(−15)-flowered, (4−)5−10(−11) mm long; pedicels appressed to narrowly divergent, stiff.....***E. mexicana***
14’. Spikelets arranged in glomerules, 2−4(−5)-flowered, 2.6−3.8 mm long; pedicels spreading, divaricate and stout..... ***E. nigricans***
13’. Caryopses without an adaxial groove.

15. Inflorescence with glandular areas of spots or rings on the branches and on the rachis below the branches bases, the glands often shiny or yellowish ..... ***E. barrelieri***
15'. Inflorescence without glandular areas of spots or rings on the branches and on the rachis below the branches bases.
16. Lower glume 0.5−1.5 mm long, at least 1/2 as long as the lowest lemmas; spikelets 1.2−2.5 mm wide; panicle branches solitary or paired at the lowest 2 nodes; lemmas with moderately conspicuous lateral nerves..... ***E. pectinacea***
16'. Lower glume 0.3−0.6(−0.8) mm long, usually less than 1/2 as long as the lowest lemmas; spikelets 0.6−1.4 mm wide; panicle branches usually whorled at the lowest 2 nodes; lemmas with inconspicuous lateral nerves..... ***E. pilosa***
1'. Plants perennial, sometimes rhizomatous; forming innovations at the basal nodes.
17. Spikelets 1.2−1.7 mm long with 1 or 2 florets..... ***E. airoides***
17'. Spikelets 2−23 mm long with 2 to many florets.
18. Stamens 3; caryopses usually with a shallow or deep adaxial groove.
19. Glumes not keeled, very unequal, the lower 0.2−0.6 mm long ..... ***E. tenuifolia***
19'. Glumes keeled, equal to subequal, the lower 0.6−2.6 mm long.
20. Lemmas with lateral nerves conspicuous.
21. Caryopses 1−1.7 mm long; upper glume 2−3 mm long..... ***E. curvula***
21'. Caryopses 0.5−0.8 mm long; upper glume 1.1−2 mm long.
22. Panicles with the primary branches not floriferous near base; secondary branches composed of loosely overlapping spikelets; pedicels 1.4−7 mm long.... ***E. lugens***
22'. Panicles with the primary branches floriferous near base; secondary branches condensed into tightly glomerate lobes of spikelets; pedicels 0.1−1 mm long..... ***E. lurida***
20'. Lemmas with lateral nerves inconspicuous.
23. Secondary panicle branches with spikelets appressed to the main axis; pedicels 0.5−3(−5) mm long..... ***E. pastoensis***
23'. Secondary panicle branches with spikelets diverging 25−90º from the main axis; pedicels (1.5−) 4−16 mm long.
24. Caryopses with sides angled; ligules 0.3−1 mm long..... ***E. soratensis***
24'. Caryopses without sides angled and with adaxial groove; ligules 0.2−0.4 mm long.
25. Lemmas 1.2−1.8 mm long; blades densely hairy on adaxial surface; ..... anthers 0.3−0.5 mm long..... ***E. polytricha***
25'. Lemmas (1.6−)1.8−2.2 mm long; blades glabrous to sparsely hairy on adaxial surface; anthers 0.5−0.8 mm long..... ***E. intermedia***
18'. Stamens 2; caryopses without an adaxial groove.
26. Lemma apices acuminate-attenuate to subaristate; pulvini with hairs.
27. Spikelets 2.4−5 mm wide; glumes 1.7−4 mm long; lemmas 2−6 mm long .... ***E. secundiflora***
27'. Spikelets 1−3 mm wide; glumes 1−2.8 mm long; lemmas 2−2.6 mm long.
28. Lemma apex recurved, yellowish-orange to greenish; spikelets 7−30 mm long; pedicels 0.3−1 mm long, appressed to the branches; upper glume 1.5−2.8 mm long ..... ***E. maypurensis***
28'. Lemma apex straight, not recurved, greenish to purplish; spikelets 5−7(−10) mm long; pedicels 1−5 mm long, diverging 30−70º from the branch axis; upper glume 1.4−2 mm long..... ***E. acutiflora***

26’. Lemma apices acute, occasionally slightly narrowed but never acuminate-attenuate; pulvini glabrous, rarely with a few hairs.
29. Spikelets 2.4−5 mm wide; glumes 1.7−4 mm long; lemmas 2−6 mm long ..... ***E. secundiflora***
29’. Spikelets 0.7−2.4 mm wide; glumes 1−1.8(−2) mm long; lemmas 1.5−2.2 mm long.
30. Primary branches with spikelets congested or clustered near the base; spikelets 0.7−1.4 mm wide; anthers 0.2−0.3 mm long; caryopses flattened ventrally ..... ***E. prolifera***
30’. Primary branches naked near base, without a cluster of spikelets; spikelets 1.3−2.4 mm wide; anthers 0.4−0.9 mm long; caryopses not flattened ventrally.
31. Stamens 2, anthers 0.4−0.6 mm long. ***E. bahiensis***
31’. Stamens 3, anthers 0.7−0.9 mm long. ***E. atrovirens***

Key to the species of *Eragrostis* in Ecuador

Key to the species of *Eragrostis* in Ecuador

1. Plants annual, tufted, geniculate, or mat-forming; without innovations or buds in the lower sheaths.
2. Paleas prominently ciliate-pectinate on the keels, the hairs 0.2−0.8 mm long.
3. Panicles contracted, narrow, usually less than 1.5 cm wide; pulvini at base of panicle branches glabrous; pedicels usually 0.1−1.0 mm long.....***E. ciliaris***

3’. Panicles open, cylindrical to narrowly ovate or ovate-lanceolate, usually 1−9 cm wide; pulvini at base of panicle branches bearing a few ciliate hairs; pedicels usually (0.5) 1−5 (7) mm long.

4. Plants viscid with particles of soil adhering to the sticky areas along the sheaths, culms, and blades; spikelets (2) 2.5−5.5 mm long.....***E. viscosa***

4’. Plants not viscid and without particles of soils adhering to vegetative portions; spikelets (1) 1.5−2.2 mm long. .....***E. tenella***

2’. Paleas smooth to scabrous but never ciliate-pectinate on the keels, the hairs (if present) less than 0.1 mm long.

5. Plants extensively stoloniferous, creeping and forming flat mats; inflorescence 1−3.5 cm long; culms (2) 5−12 (20) cm tall on erect portions .....***E. hypnoides***

5’. Plants not stoloniferous, sometimes creeping and forming flat mats; inflorescence 3−40 cm long.; culms 8−130 cm tall.

6. Ligules membranous, glabrous .....***E. japonica***

6’. Ligules ciliate with a row of tiny white hairs.

7. Disarticulation of entire florets from the persistent rachilla; spikelets (1.6) 2−4 mm wide and 10−42-flowered.

8. Crateriform glands on leaf blade margins, spikelet pedicels, and keels of lemmas and glumes; stamens 3, yellow; lemmas 2−2.8 mm long ..... ***E. cilianensis***

8’. Crateriform glands not present on the leaf blade margins, spikelet pedicels, and keels of lemmas and glumes; stamens 2, purplish; lemmas 1.5−1.9 mm long..... .....***E. unioloides***

7’. Disarticulation of the lemmas only, palea and rachilla usually persistent; spikelets 0.6−2.5 mm wide and 2−22-flowered.

9. Inflorescence with glandular areas of spots or rings on the branches and on the rachis below the branch bases, the glands often shiny or yellowish... ***E. barrelieri***

9’. Inflorescence without glandular areas of spots or rings on the branches or rachis below the branches bases.

10. Caryopsis shallowly to deeply grooved along the adaxial (ventral) surface, strongly laterally compressed, ovoid to rectangular-prismatic, rectangular in cross section.

11. Panicles with spikelets arranged in glomerules that are widely spaced; spikelets 2.6−3.8 (4.8) mm long, 2−4 (5)-flowered; pedicels 0.4−2 (3) mm long, stiffly spreading, divaricate and stout..... ***E. nigricans***

11’. Panicles without spikelets arranged in glomerules, the spikelets more evenly spaced; spikelets 4−10 (11) mm long, 7−12 (20)-flowered; pedicels 1−6 (7) mm long, erect and ascending, somewhat appressed and stiff.....***E. mexicana***

10’. Caryopsis without grooves along the adaxial (ventral) surface, slightly flattened laterally, pyriform, obovoid to prism-shaped, rounded in cross section.

12. Lower glume more than half as long as the lowest lemma, 0.5−1.7 mm long; paleas very persistent; panicle branches solitary or paired on the lowest two nodes; lemmas with moderately conspicuous lateral nerves..... ***E. pectinacea***

12'. Lower glume less than half as long as the lowest lemma, 0.3−0.6 (0.8) mm long; paleas easily deciduous; panicle branches usually whorled on the lowest two nodes; lemmas with inconspicuous lateral nerves ..... ***E.pilosa***

1'. Plants perennial, caespitose; with innovations near the base and with or without buds in the basal sheaths.

13. Panicles condensed and spicate, the branches closely appressed, interrupted near base, less than 2 cm wide; pedicels generally less than 2.6 mm long.

14. Culms (45) 60−200 cm tall, 3−5 mm wide at base; blades (7) 20−50 (110) × 0.3−1 cm; anthers 0.5−1.4 mm long, purplish to yellowish..... ***E. condensata***

14'. Culms (5) 15−90 cm tall, 1−2.4 mm wide at base; blades generally 1.5−16.5 (40) × 0.1−0.4 cm wide; anthers 0.3−0.6 mm long, reddish-purple.

15. Secondary panicle branches composed of loosely overlapping spikelets; pedicels 0.5−5 mm long, mostly glabrous, sometimes with long scattered hairs; lemma with inconspicuous lateral nerves, lemma 1.2−2.1 mm long; blades scaberulous above, sometimes with scattered hairs up to 4 mm long ..... ***E. pastoensis***

15'. Secondary panicle branches condensed into tightly glomerate lobes of spikelets; pedicels 0.1−1 mm long, scabrous; lemma with conspicuous lateral nerves, lemma 1.6−2.4 mm long; blades scaberulous above without additional hairs ..... ***E. lurida***

13'. Panicles more open and if condensed then not spicate, the branches spreading to somewhat appressed, generally (2) 3−27 cm wide; pedicels generally 2.6−7 mm long.

16. Lemma apex acuminate to attenuate or subaristate, chartaceous; stamens 2, anthers 0.2−0.3 mm long ..... ***E. acutiflora***

16'. Lemma apex acute to obtuse, membranous or leathery; stamens 3 or 2; anthers 0.2−0.7 mm long.

17. Spikelets 6−15 (18) mm long, 6−30 (40)-flowered.

18. Stamens 3; glumes not keeled, very unequal, 0.3−1 mm long, the lower 0.3−0.6 mm long, the upper 0.5−1 mm long; pulvini in the axils of the primary branches ciliate and often reddish, the hairs up to 2 mm long; caryopsis ovoid and strongly flattened laterally, curved on the adaxial surface with a well developed groove..... ..... ***E. tenuifolia***

18'. Stamens 2; glumes keeled, subequal, 1−1.7 mm long, the lower 1−1.4 mm long, the upper 1.4−1.7 mm long; pulvini in the axils of the primary branches glabrous and usually yellowish; caryopsis obovoid to ellipsoid, terete in cross section, without a curved adaxial surface and groove..... ***E. bahiensis***

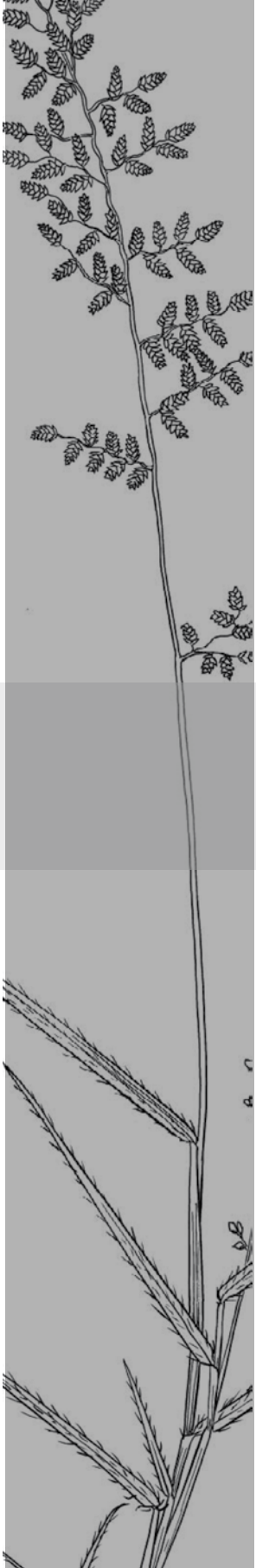
17'. Spikelets 2−6 mm long, 2−10-flowered.

19. Secondary panicle branches and pedicels spreading; pulvini in the axils of primary branches long-ciliate, the hairs up to 7 mm long ..... ***E. lugens***

19'. Secondary panicle branches and pedicels appressed; pulvini in the axils of primary branches glabrous or occasionally short-ciliate, the hairs less than 2 mm long.

20. Secondary panicle branches composed of loosely overlapping spikelets; pedicels 0.5−5 mm long, mostly glabrous, sometimes with long scattered hairs; lemma with conspicuous lateral nerves, lemma 1.2−2.1 mm long; blades scaberulous above, sometimes with scatterd hairs up to 4 mm long ..... ***E. pastoensis***

20'. Secondary panicle branches condensed into tightly glomerate lobes of spikelets; pedicels 0.1−1 mm long, scabrous; lemma with inconspicuous lateral nerves, lemma 1.6−2.4 mm long; blades scaberulous above without additional hairs .... ***E. lurida***



Key to the species of *Eragrostis* in Peru

Key to the species of *Eragrostis* in Peru

1. Plants annual, caespitose, stoloniferous or mat-forming to geniculate; without innovations at the basal nodes.
2. Palea keels prominently ciliate, the cilia 0.2−0.8 mm long.
3. Panicles open, narrowly ovate, 1−7 cm wide; primary branches ascending and spreading 20−100° from the rachises; spikelets (1−) 1.5−2.2 mm long..***E. tenella***

3'. Panicles cylindrical spiciform and/or spike-like, 0.2−1.5 (−3) cm wide; primary branches ascending and tightly appressed; spikelet 1.8−4.5 mm long.

4. Stamens 2; spikelets 1.8−3.2 mm long; cilia on the palea stiff and pectinate-thickened near base .....***E. ciliaris***

4'. Stamens 3; spikelets 3−4.5 mm long; cilia on the palea soft and silky, not pectinate-thickened near base ..... ***E. peruviana***

2'. Palea keels smooth or scabrous, the scabridities less than 0.2 mm long.

5. Plants extensively stoloniferous and mat-forming; panicles 1−3.5 cm long, terminal and axillary; culms (2−) 5−12 (−20) cm tall..... ***E. hypnoides***

5'. Plants not stoloniferous but occasionally mat-forming; panicles (3−) 4−40 cm long; culms 8−130 cm tall.

6. Ligules membranous, glabrous .....***E. japonica***

6'. Ligules membranous and ciliate, with a row of tiny white hairs.

7. Crateriform glands present on the keels of the lemma; these glands usually present on the keels of the glumes, margins of the blades, sheaths, and below the nodes of the culm..... ***E. cilianensis***

7'. Crateriform glands not present on the keels of the lemma, keels of the glumes, and margins of the blades, occasionally present below the nodes of the culm and sheaths.

8. Caryopses with a shallow or deep ventral (adaxial) groove.

9. Spikelets not arranged in glomerules, 5−11 (to 15)-flowered, (4−) 5−10 (−11) mm long; pedicels appressed to narrowly divergent, stiff..... ***E. mexicana***

9'. Spikelets arranged in glomerules, 2−4 (to 5)-flowered, 2.6−3.8 mm long; pedicels spreading, divaricate and stout..... ***E. nigricans***

8'. Caryopses without a ventral (adaxial) groove.

10. Stamens 2; lower glume 1−2.6 mm long; pedicels 0−5 mm long.; lemmas chartaceous with lateral nerves evident, green or reddish-purple.

11. Lower glume 1−1.4 mm long; pedicels 1−5 mm long.....***E. acutiflora***

11'. Lower glume 1.7−3 mm long; pedicels 0−3 mm long.

12. Disarticulation acropetal; caryopses 0.4−0.7 mm long, ovoid; lower glume usually longer than the upper, 2−2.6 mm long; pedicels 0−1.5 mm long, shorter than the spikelets.....***E. maypurensis***

12'. Disarticulation basipetal; caryopses 0.8−1.3 mm long, ellipsoid; lower glume usually shorter than the upper, 1.7−3 mm long, pedicels 0−3 mm long.....***E. secundiflora***

10'. Stamens 3; lower glume 0.3−1.5 mm long; pedicels 0.8−10 mm long; lemmas hyaline to membranous, lateral nerves and midnerve inconspicuous to moderately conspicuous, never green.

13. Lower glume 0.5−1.5 mm long, at least ½ as long as the lowest lemmas; paleas persistent; spikelets 1.2−2.5 mm wide; panicle branches solitary or paired at the lowest two nodes; lemmas with moderately conspicuous lateral nerves ..... ***E. pectinacea***

13'. Lower glume 0.3−0.6 (−0.8) mm long, usually less than ½ as long as the lowest lemmas; paleas readly deciduous; panicle branches usually whorled at the lowest two nodes; lemmas with inconspicuous lateral nerves ..... ***E. pilosa***

1'. Plants perennial or biennal, caespitose, forming innovations at the basal nodes.

14. Panicles 0.2−2 cm wide, contracted, cylindrical and narrowly spicate to spiciform, densely flowered, the primary branches ascending and tightly appressed.

15. Panicle rachis densely pilose, the hairs not rigid; culm nodes silky pilose, the hairs up to 3 mm long; blades densely silky pilose above and below .... ***E. weberbaueri***

15'. Panicle rachis glabrous; culm nodes glabrous or occasionally with a tuft of hairs, the hairs less than 1 mm long; blades glabrous, scabrous, with a few scattered hairs or short pilose but not densely silky.

16. Panicles 0.2−0.5 cm wide; lower glume 0.8−1 mm long; lemma apex obtuse; caryopses only striate, elliptical in cross section and without a ventral groove; anthers about 0.3 mm long..... ***E. attenuata***

16'. Panicles 0.5−2.0 cm wide; lower glume 1−1.5 mm long; lemma apex acute; caryopses striate and reticulate, rectangular in cross section and usually with a ventral groove or at least flattened ventrally; anthers 0.3−0.6 mm long.

17. Secondary panicle branches condensed into tightly glomerate lobes of spikelets; pedicels 0.1−1 mm long, scabrous; lemmas with conspicuous lateral nerves, lemmas 1.6−2.4 mm long; blades scaberulous above without additional hairs..... ***E. lurida***

17'. Secondary panicle branches composed of loosely overlapping spikelets; pedicels 0.5−5 mm long, sometimes with hairs; lemmas with inconspicuous lateral nerves, lemmas 1.2−2.1 mm long; blades scaberulous above, sometimes with scattered hairs up to 4 mm long ..... ***E. pastoensis***

14'. Panicles 2−27 cm wide, open, not contracted, the primary branches ascending and spreading to divaricate.

18. Lemmas 2−3.2 mm long; upper glume (1.8−) 2−3 mm long.

19. Anthers 0.4−0.7 (−0.8) mm long; paleas 1.2−2.4 mm long.

20. Secondary panicle branches composed of loosely overlapping spikelets; blades with scattered small oblong glands located above the nerves; sheaths with papillose-based haris; pedicels 1.8−5 mm long, divaricate at maturity with a single glandular band near the middle..... ***E. andicola***

20'. Secondary panicle branches condensed into tightly glomerate lobes of spikelets; blades without small oblong glands located above the nerves; sheaths without papillose-based hairs; pedicels 0.1−1 mm, ascending and appressed, without any glandular bands ..... ***E. lurida***

19'. Anthers 0.8−2.0 mm long; paleas 2−3.1 mm long.

21. Spikelets 1.2−2 mm wide; caryopses dorsally flattened, smooth to striate, elliptical in cross section, ventral surface with a shallow, broad groove or ungrooved .... ***E. curvula***

21'. Spikelets 2−4.5 mm wide; caryopses laterally flattened to rectangular-prismatic, rectangular to triangular in cross section, with a deep ventral groove.

22. Culms 80−150 cm tall, with short rhizomes near base; spikelets 2−2.4 mm wide; rachillas hairy only near apex, the hairs less than 0.2 mm long; blades 26−60 × 0.3−0.7 cm ..... ***E. magna***

22'. Culms 26−84 cm tall, without rhizomes; spikelets (2−) 2.2−4.5 mm wide; rachillas hairy along entire length, the hairs 0.4−1.8 mm long; blades (6−) 10−22 (−26) × 0.1−0.3 cm ..... ***E. pilgeri***

18'. Lemmas 1.2−2 (−2.2) mm long; upper glume 0.5−2 mm long.

23. Spikelets 6−12 (−19) mm long, 6−40-flowered.

24. Lower glume 1−1.4 mm long; upper glume 1.4−1.7 mm long; caryopses without a ventral groove; anthers 0.4−0.9 mm long.

25. Stamens 2; anthers 0.4−0.6 mm long; lower glume 1−1.4 mm long..... ***E. bahiensis***

25'. Stamens 3; anthers 0.7−0.9 mm long; lower glume 1.2−1.4 mm long ***E. atrovirens***

24'. Lower glume 0.3−0.6 mm long; upper glume 0.5−1 mm long; caryopses with a ventral groove; anthers 0.2−0.4 mm long ..... ***E. tenuifolia***

23'. Spikelets 2−6 mm long, 2−10-flowered.

26. Panicles 0.5−5 (−7) cm wide, narrowly ovate, the primary branches floriferous near base; secondary branches condensed into tightly glomerate lobes of spikelets; pedicels 0.1−1 mm long, ascending and appressed; lemmas with conspicuous lateral nerves ..... ***E. lurida***

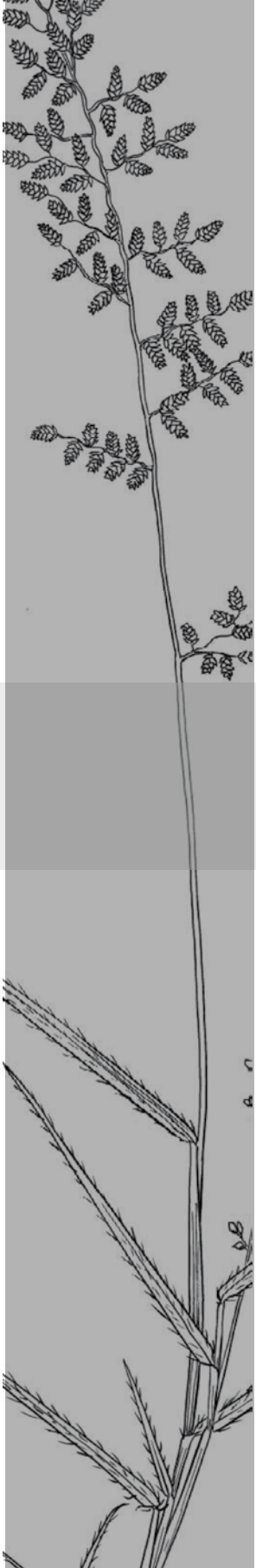
26'. Panicles 2−27 cm wide, open, ovate, the primary branches not floriferous near base; secondary branches composed of loosely overlapping spikelets; pedicels 0.5−6 (−7) mm long, appressed to spreading; lemmas with inconspicuous lateral nerves.

27. Spikelets 0.5−1.1 mm wide; lower glume 0.6−1 mm long; blades 1−2 (−2.2) mm wide, involute, rarely flat ..... ***E. lugens***

27'. Spikelets 1−1.8 mm wide; lower glume 1−1.4 mm long; blades 1−4 (−7) mm wide, flat or involute.

28. Culms 30−90 cm tall; blades 5−40 (−45) cm long; pedicels mostly appressed; sheaths ¾ as long as the internodes above ..... ***E. pastoensis***

28'. Culms 10−40 cm tall; blades 4−10 cm long; pedicels spreading; sheaths longer than internodes above..... ***E. soratensis***



Descriptions of the species

Descriptions of the species

Eragrostis acutiflora (Kunth) Nees, Fl. Bras. Enum. Pl. 2: 501−502. 1829. *Poa acutiflora* Kunth, Nov. Gen. Sp. 1: 161. 1815 [1816]. TYPE: COLOMBIA. On the Río Magdalena, *F. Humboldt & A. Bonpland 1603* (HOLOTYPE: P!; ISOTYPES: B-W, P, US-2891479 fragm. ex P!). **Fig. 19.**

Caespitose perennials. **Culms** 20−65 cm tall, erect to geniculate spreading, glabrous and shiny below the nodes. **Leaf sheaths** 1/3 to about as long as the internodes, glabrous, ciliate at the summit; **ligules** 0.1−0.3 mm long, ciliolate-membranous; **blades** 10−20(−25) × 0.15−0.42 cm, flat, occasionally involute, glabrous below, scaberulous above and sparsely ciliate near base. **Panicles** 8−32 × 2−14 cm, open to somewhat contracted; the ascending primary branches 1−10 cm long, somewhat densely flowered, spreading 20−80º from the rachises; pulvini in axils of primary branches pilose; **pedicels** 1−5 mm long, erect, spreading 30−70º from the branch axis, scaberulous. **Spikelets** 5−7(−10) × (1−)1.2−1.8(−2.2) mm, 7−14(−21)-flowered, narrowly elliptical, acute at both ends, strongly compressed, greenish straw-colored towards the center to reddish-purple tinged near the margins; **disarticulation** entire floret above the glumes or the lemmas falling individually leaving the paleas on the rachilla; **glumes** 1−2 mm long, narrowly lanceolate with scaberulous keels; **lower glume** 1−1.4 mm long; **upper glume** 1.4−2 mm long; **lemmas** 2−2.6 mm long, lanceolate to broadly ovate, chartaceous, keeled, scaberulous along keel, lateral nerves evident; apex acuminate to attenuate or subaristate, scaberulous, often reddish-purple; **paleas** 1.5−2.1 mm long, bowed out below, hyaline, scaberulous along keels; apex acute; **stamens** 2, anthers 0.2−0.3 mm long, reddish-brown. **Caryopses** 0.5−0.9 mm long, obovoid to ellipsoid, finely longitudinally striate, light brownish to reddish-brown.

Chromosome number. 2*n* = 40 (Peterson 2001).

Distribution and habitat. *Eragrostis acutiflora* ranges from Mexico and the Caribbean through Central America to South America, where it has been reported from Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Surinam, and Venezuela. Herein, we cited this species for the first time for Peru. It can be found growing in moist savannas, open disturbed areas, and sandy to gravelly roadsides; 0−2000 m.

Specimens examined

COLOMBIA. **Amazonas**: Corregimiento departamental La Pedrera, río Caquetá, alrededores de la quebrada La Tonina, 200-300 m, 18 Jul 1997, *D. Giraldo-Cañas 2703* (COAH, COL). **Antioquia**: Mun. Puerto Triunfo, localidad Doradal, a unos 5 km del puente sobre el río La Magdalena, carretera Medellín-Bogotá, *ca.* 200 m, Jan 2011, *D. Giraldo-Cañas 5008* (COL). Mun. Caucasia, 15 km de la troncal norte hacia Nechí, hacienda La Candelaria, 80 m, 5 Nov 1986, *L. Albert de Escobar 7240* (COL, HUA). Puerto Berrío, *ca.* 125 m, 11 Jan 1931, *W. A. Archer 1392* (US). Mutatá, 11 km Mutatá-Dabeiba, 250 m, *J. Betancur et al. 378* (COL, HUA, MO). Andes, aeropuerto, 1200

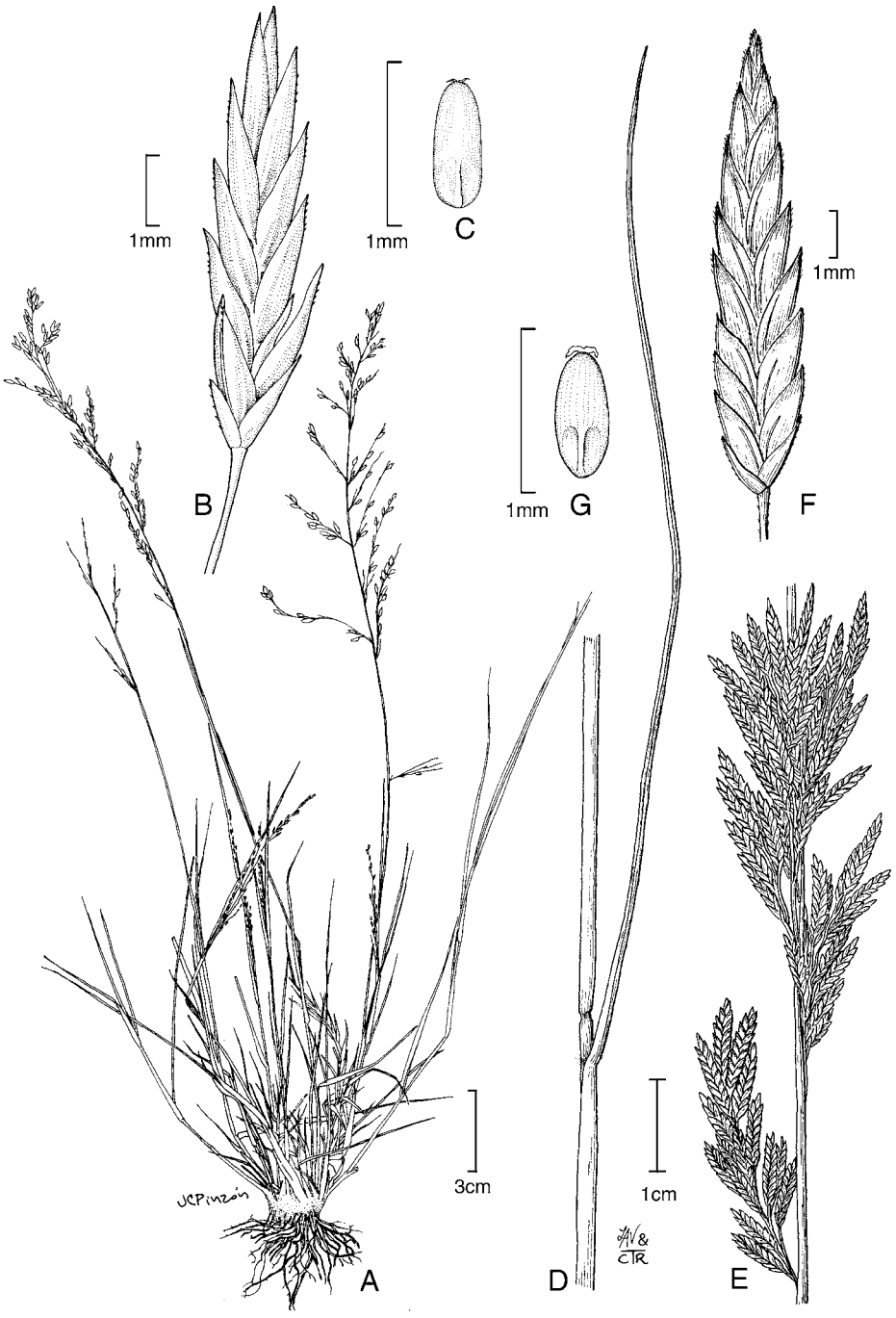


Fig. 19. ***Eragrostis acutiflora*** (*Fassett 25306*). **A**. Habit; **B**. Spikelet; **C**. Caryopsis, dorsal view. ***Eragrostis bahiensis*** (*Idrobo 4291*). **D**. Culm; **E**. Inflorescence; **F**. Spikelet; **G**. Caryopsis, dorsal view.

m, 17 Sep 1986, *R. W. Pohl & J. Betancur 15521* (HUA, MO, US). Mun. San Carlos, río San Carlos, 920 m, 13 Oct 1981, *C. I. Orozco 685* (COL). **Arauca**: Mun. Arauca, inmediaciones de las instalaciones de la Universidad Nacional de Colombia, hacienda El Cairo, carretera Arauca-Tame, km 9, 200−300 m, 13 Jun 2003, *D. Giraldo-Cañas 3503, 3510* (COL). 13 km al sur de Arauca, laguna El Venero, hato de Tiberio Sosa, 26 Sep 1977, *J. P. Jorgenson 51* (COL). Jurisdicción del Arauca, lado oriental de la laguna El Venero, 3 Aug 1976, *S. Ruiz 103* (COL). **Boyacá**: Mun. Santa María, carretera Santa María-Bogotá, sendero ecológico de la represa de Chivor, *ca.* 1000 m, 28-30 Sep 2008, *D. Giraldo-Cañas 4166* (COL). Mun. Puerto Boyacá, en potreros al lado de la carretera, a unos 10 km del puente sobre el río La Magdalena, carretera Medellín-Bogotá, *ca.* 200 m, Jan 2011, *D. Giraldo-Cañas 5012* (COL). **Caquetá**: Mun. La Montañita, corregimiento El Santuario, vereda Las Iglesias, reserva natural privada de la hacienda El Ceilán, 280 m, 27−30 Jun 2005, *D. Giraldo-Cañas 3936* (COAH, COL). Mun. Florencia, Barrio Villa Natalia, grietas de pavimentos y andenes, 280 m, 27−30 Jun 2005, *D. Giraldo-Cañas 3953* (COL). Mun. Florencia, carretera Florencia-Neiva, río Hacha, a la altura del primer puente, 280 m, 27-30 Jun 2005, *D. Giraldo-Cañas 3956, 3958* (COAH, COL). **Casanare**: Mun. El Yopal, sabanas alteradas no inundables, entre el nuevo hospital y la Brigada del Ejército Nacional, 400 m, 3 Nov 2007, *D. Giraldo-Cañas 4148, 4155* (COL). Playones del río Upia, carretera a Villanueva, 300 m, 18 Mar 1986, *J. L. Fernández Alonso 5907* (COL). El Yopal, hato Mate-pantano, 17 Oct 1982, *J. M. Idrobo 5180* (COL). Mun. Paz de Ariporo, corregimiento La Hermosa, finca Nicaragua, caño Pica Pico, 112 m, 25 Oct 2004, *J. G. Ramírez 8705* (COAH, COL). **Cauca**: Río Patía, 1000 m, 2 May 1935, *H. García-Barriga 4507* (COL). **Cesar**: Mun. Valledupar, sustratos arenosos en las riberas del río Guatapurí, 150-180 m, 30 Mar 2010, *D. Giraldo-Cañas 4506-a* (COL). **Chocó**: Hoya del río Atrato, Beté, 50−60 m, 5 Apr 1982, *E. Forero 8901* (COL). **Córdoba**: San Benito, 5 km carretera a San Juan, 35 m, 17 Jul 1973, *J. M. Idrobo 6664* (COL). **Cundinamarca**: Provincia Gualivá, Mun. Villeta, en cunetas encharcadas de la carretera Honda-Bogotá, *ca.* 800 m, 17-19 Jun 2006, *D. Giraldo-Cañas 4077* (COL). Provincia Medina, Entre Paratebueno y Maya, 19 Jun 1989, *F. O. Zuloaga 4100* (COL, MO, SI). **Guaviare**: Mun. San José del Guaviare, trocha Nuevo Tolima, en cercanías del Batallón José Joaquín París, 250 m, Mar 1996, *D. Giraldo-Cañas & R. López 2574* (COAH, COL, MO). **Huila**: Mun. El Agrado, quebrada La Yaguilda, 700 m, Sep 1986, *J. L. Fernández Alonso 6840* (COL). **La Guajira**: Mun. Maicao, en rastrojos urbanos en las afueras de Maicao, carretera Maicao-Uribia, *ca.* 15 m, 26 Mar 2010, *D. Giraldo-Cañas et al. 4491* (COL). Clausura Nopoipa, en el área inundable, 4,5 km de Uribia rumbo a Maicao, 19 Oct 1963, *C. Saravia 2892* (COL). **Magdalena**: Valle del río Cesar, cerca de Los Venados, 60 m, 30 Sep 1961, *A. Dugand 5810* (COL). **Meta**: Mun. Villavicencio, carretera Villavicencio-Aeropuerto, piedemonte de la Cordillera Oriental, sitio La Arenera, 2 km del puente sobre el río Guatiquía, 400 m, 10 Nov 2002, *D. Giraldo-Cañas 3346* (COAH, COL). Mun. Puerto López, Alto de Menegua, altillanura con un sustrato rocoso-arenoso, sin influencia de inundaciones y con un 50-60% de cobertura vegetal, 200 m, 20 Mar 2011, *D. Giraldo-Cañas 5048* (COL). Along Río Guatiquía, near Villavicencio, *ca.* 500 m, 18−19 Mar 1939, *E. P. Killip 34410* (US). Granja del ICA "La Libertad", en cultivo de arroz, 336 m, 4 Aug 1980, *H. A. Pabón s.n.* (COL: 205623). Carimagua, north west of the research station, *ca.* 350 m, 19 Sep 1992, *S. A. Renvoize 5422* (COL, US).

Santander: Region about Landázuri, 70 km N of Vélez, *ca.* 700 m, 9 Jun 1944, *N. C. Fassett 25306* (COL). **Tolima**: Mun. Honda, ribera de pequeña quebrada antes de su desembocadura en el río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4263, 4267* (COL). Mun. Mariquita, en borde de carretera, arriba del bosque municipal José Celestino Mutis, *ca.* 700 m, Nov 2009, *D. Giraldo-Cañas 4332* (COL). Ibagué, planta eléctrica de Mirolindo, 1200 m, 12 Mar 1965, *R. Echeverry 1189* (COL). **Valle del Cauca**: Mun. Buenaventura, entre Juanchaco y Ladrilleros, en las raíces adventicias de una palmera de coco, en playa, *ca.* 5 m, Jun-Jul 2010, *D. Giraldo-Cañas et al. 4630* (COL). Between Uribe and Sevilla, 1100 m, 2 Nov 1983, *J. R. I. Wood 4083* (COL). **Vaupés**: Mun. Mitú, sabanas y afloramientos graníticos precámbricos de Yapobodá, inmediaciones del Cerro Umukû, *ca.* 400 m, May 2010, *D. Giraldo-Cañas 4590* (COL).

ECUADOR. Los Ríos: 7 km W of Quevedo on road towards Portoviejo, 280 m, *P. M. Peterson 9049* (K, MICH, MO, QCA, UC, US, WIS). **Tungurahua**: 12 km E of Baños on road to Mera, 1700 m, *P. M. Peterson et al. 8809* (QCA, US).

PERU. San Martín: Palma del Espino, Santa Lucía, nuevo aeropuerto, 500 m, 20 Oct 1987, *J. M. Idrobo 11895* (COL).

Eragrostis airoides Nees, Fl. Bras. Enum. Pl. 2: 509−510. 1829. *Aira brasiliensis* Raddi, Agrostogr. Bras. 36. 1823. *Poa brasiliensis* Raddi, Agrostogr. Bras. 51. 1823. *Eragrostis brasiliensis* (Raddi) Nees, Fl. Bras. Enum. Pl. 2: 497–499. *Poa airoides* (Nees) Kunth, Enum. Pl. 1: 360. 1833. *Sporobolus brasiliensis* (Raddi) Hack., Bull. Herb. Boissier, sér. 2, 4 (3): 278. 1904. *Agrosticula brasiliensis* (Raddi) Herter, Revista Sudamer. Bot. 6 (5−6): 145. 1940. Type: BRAZIL. Rio de Janeiro, *G. Raddi s.n.* (holotype: PI; isotype: LE). **Fig. 20.**

Airopsis millegrana Griseb., Abh. Königl. Ges. Wiss. Göttingen 19: 252. 1874. Type: ARGENTINA. Tucumán: in monte Cuesta de Berico, *P .G. Lorentz & G. Hieronymus 842* (holotype: GOET; isotypes: BA-38791!, US-76315 fragm.!).

Eragrostis triflora Ekman, Ark. Bot. 11 (4): 42, t. 4, f. 1. 1912. Type: ARGENTINA. Misiones: Posadas, Bonpland Trans "Mitires Chico", 20 Jan 1908, *E. L. Ekman 714* (holotype: S; isotypes: BAA-1100 fragm.!, CORD!, SI!, US-602662!, US-77381 fragm.!).

Caespitose perennials with innovations, without rhizomes, not glandular. **Culms** 30–110 cm tall, erect, glabrous below the nodes. **Leaf sheaths** glabrous or pilose, hairs to 5 mm long; **ligules** 0.1–0.2 mm long; **blades** 8–22 × (0.1−)0.2–0.4(−0.5) cm, flat to folded, glabrous abaxially, scabridulous adaxially. **Panicles** 18–70 × 3–25 cm, diffuse, ovate; primary branches 4–20 cm, appressed or diverging 10–70° from the rachises, naked basally; pulvini glabrous; **pedicels** 2.4–11 mm long, divergent. **Spikelets** 1.3–2 × 0.8–1.8 mm, ovate to lanceolate, plumbeous, with 1–3 florets; **disarticulation** acropetal, on the rachilla below the florets, glumes deciduous; rachilla prolonged above the terminal floret; **glumes** lanceolate to ovate, membranous; **lower glume** 0.8–1 mm

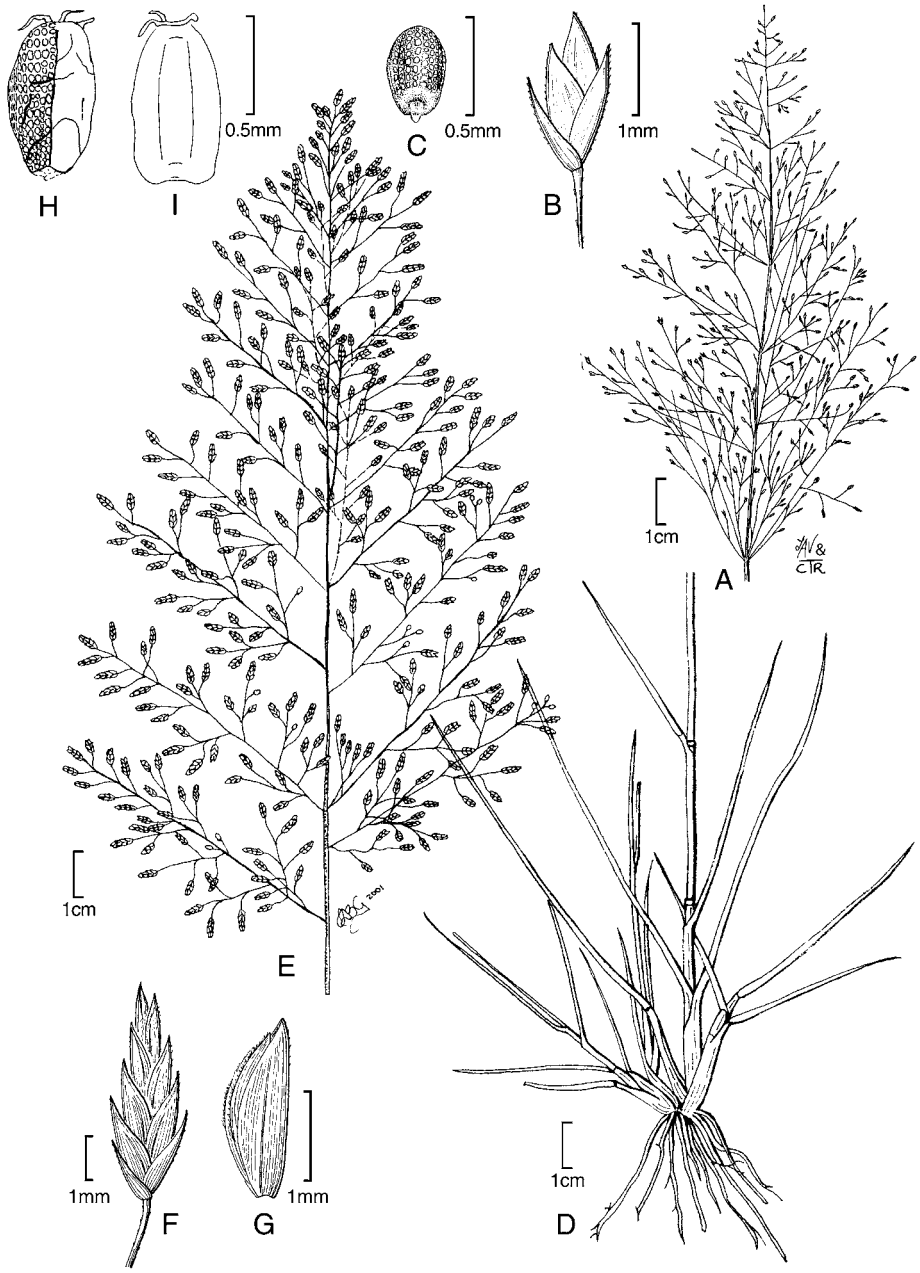


Fig. 20. ***Eragrostis airoides*** (*García 10*). **A**. Inflorescence; **B**. Spikelet; **C**. Caryopsis, ventral view. ***Eragrostis intermedia*** (*Groenendijk & Rietman 1534*). **D**. Habit; **E**. Inflorescence; **F**. Spikelet; **G**. Floret; **H**. Caryopsis, lateral view; **I**. Caryopsis, ventral view.

long; **upper glume** 1.1–1.4 mm long; **lemmas** 0.8–1.2 mm long, ovate, membranous, plumbeous, keels and lateral nerves inconspicuous, apices obtuse; **paleas** 0.8–1.2 mm long, membranous, bases not projecting beyond the lemmas, apices obtuse; **stamens** 3, anthers 0.3–0.5 mm long, purplish. **Caryopses** 0.4–0.5 mm long, ovoid, reticulate, reddish-brown.

Chromosome number. 2*n* = 36 [Dr. G. Davidse (MO), pers. comm.].

Distribution and habitat. *Eragrostis airoides* is a South American species known to occur in Argentina, Bolivia, Brazil, Colombia, Paraguay, Uruguay, Venezuela, the Caribbean, and introduced in Brazos Co., Texas; it is found in open grasslands, savannas, and cerrados (Boechat & Longhi-Wagner 2001). In Colombia this species grows in the Andean Region, between 1000 and 2000 m.

Comments. It is an enigmatic species, often treated as *Sporobolus brasiliensis* (Raddi) Hack., which it resembles in its chromosome base number of *x* = 9 and caryopsis morphology, but its frequent possession of spikelets with more than one floret and its mode of spikelet disarticulation argue for its retention in *Eragrostis*.

Specimens examined

COLOMBIA. **Cauca**: Chisquio, *ca.* 1700 m, 4 Apr 1940, *E. Asplund 10776* (US). Río Sucio to Río Piedras, west of Popayán, 1500−1800 m, 3 Jul 1922, *F. W. Pennell & E. P. Killip 8190* (US). Loma de Bichiquí, near Toribío, Río Páez Basin, Tierradentro, 2000 m, Feb 1906, *H. Pittier 1473* (US). **Norte de Santander**: Mun. Ocaña, carretera Ocaña-Ábrego, a unos dos km del casco urbano de Ocaña, en áreas rocosas y arenosas de coluvios, con fuerte erosión a manera de cárcavas, 1300 m, 3 Apr 2010, *D. Giraldo-Cañas 4536* (COL). Ábrego, 1300 m, 25 Feb 1943, *J. B. García & Cabrales 10* (COL). La Playa de Belén, área natural única Los Estoraques, carretera que conduce desde La Palya de Belén hacia el área natural única Los Estoraques, 1450−1550 m, 12 Jul 2010, *C. Parra 737, 738, 739* (COL). **Valle del Cauca**: Pavas, Cordillera Occidental, 1500-1700 m, *E. P. Killip 11636* (US). Unknown department: *J. C. Mutis 5542* (US).

Eragrostis andicola R. E. Fr., Nova Acta Regiae Soc. Sci. Upsal., ser. 4, 1 (1): 180. 1905. Type: ARGENTINA. Jujuy: Moreno, "in montibus saxosis apreicis siccis," 3500–3700 m, 15 Dec. 1901, *R. E. Fries 924* (lectotype: UPS!, designated by Peterson & Sánchez Vega, Ann. Missouri Bot. Gard. 94: 753. 2007; isolectotypes: BAA!, CORD, US-2891444 fragm. ex S!). **Fig. 21**.

Perennial, caespitose with thick roots. **Culms** 13–50 cm tall, erect, mostly glabrous and sometimes with small oblong glands located on the nerves, 1 node per culm. **Leaf sheaths** 1–1 1/2 times as long as the internode below, ciliate at the summit, collar, and usually the margins above to pilose throughout, the papillose-based hairs up to 4 mm, stiff; with small oblong glands located on the nerves; **ligules** 1–1.5 mm, ciliate; **blades** (3–)5–12 × 0.15–0.3 cm, flat to involute, strongly divaricate, with scattered

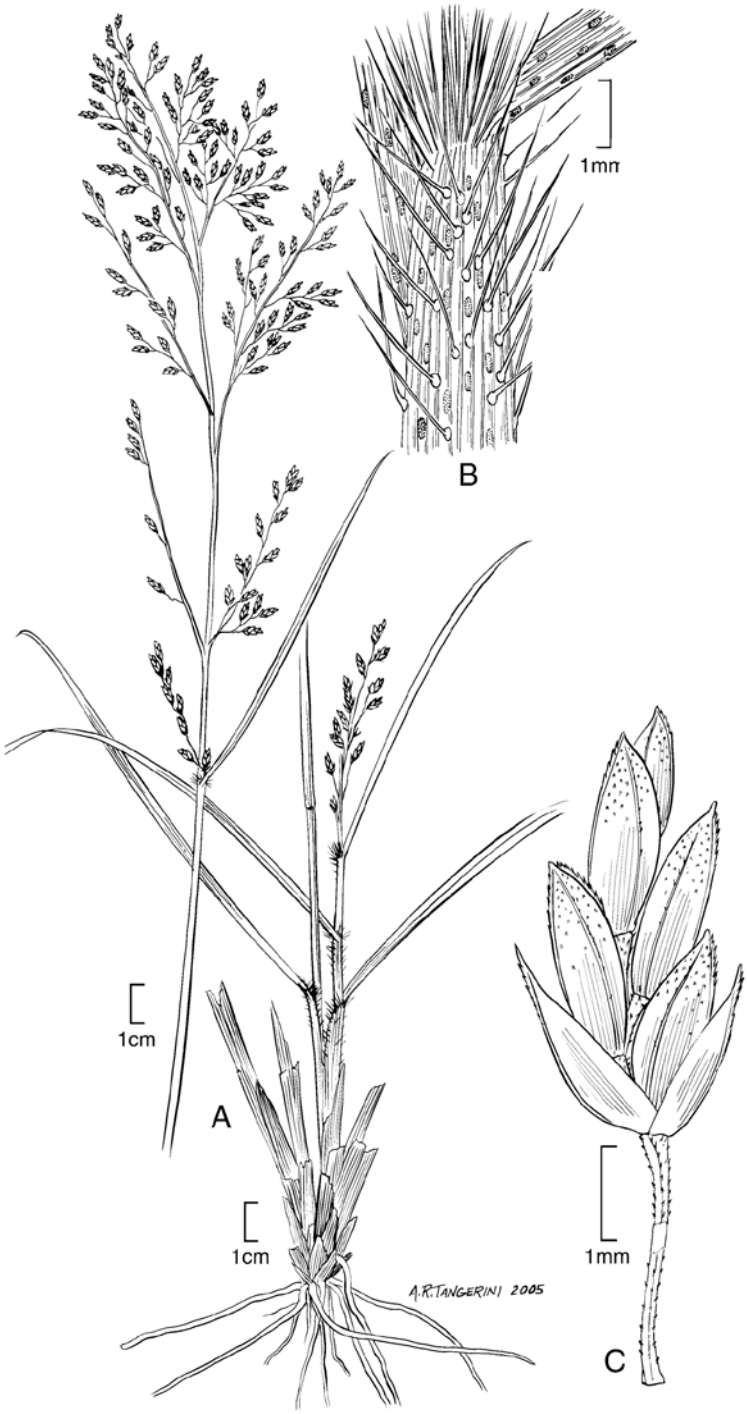


Fig. 21. ***Eragrostis andicola*** (*Macbride 2926, 3516*). A. Habit; **B**. Sheath and blade; **C**. Spikelet.

small oblong glands located above the abaxial nerves near the base, scaberulous above and pilose abaxially to glabrous, the papillose-based hairs up to 4 mm long. **Panicles** (6–)9–20 × 5–10 cm, oblong, open, primary branches 2–8 cm with glandular bands below the branch bases, 1 or 2 per node, the branches spreading 45°–90° from the rachises; secondary panicle branches composed of loosely overlapping spikelets; pulvini glabrous to sparingly ciliate; **pedicels** 1.8–5 mm, divaricate at maturity with a single glandular band near the middle, stout, scabrous. **Spikelets** 4–9 × 1.8–2.2 mm, 3- to 12-flowered, ovate-lanceolate, plumbeous to purplish; rachilla somewhat flattened with a few short, scattered hairs mostly near the base; **disarticulation** acropetal, glumes first then lemmas, paleas persistent; **glumes** 1.2–2.4 mm, subequal ovate to lanceolate, membranous, usually purplish with hyaline margins; **lower glume** 1.2–2 mm, narrower than the upper; **upper glume** (1.8–)2–2.4 mm; **lemmas** 2–2.8 mm, ovate, membranous, plumbeous, lateral nerves not evident, scaberulous along keel and near the apex; apex obtuse, occasionally mucronate, the mucro less than 0.2 mm; **paleas** 1.2–2.4 mm, shorter than the lemma, membranous, scaberulous; apex obtuse to truncate; **stamens** 3, anthers 0.4–0.6 mm, yellowish. **Caryopses** *ca.* 0.5–1 mm, rectangular-prismatic, striate and reticulate, rectangular with nearly equal sides in cross section, without a readily apparent ventral groove or with a shallow ventral groove.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Native to northwestern Argentina (Province of Jujuy) (Nicora 1998) and Peru from Departamentos Huánuco and Lima (Peterson & Sánchez Vega 2007); loose shale outcrops and gravelly river flats; 2100–2500 m.

Comments. The Peruvian specimens are taller than specimens from Argentina where Nicora (1998) lists the culms as being 13–30 cm. Otherwise, important diagnostic characters of this species include the pedicels with a single glandular band near the middle, blades with scattered, small oblong glands located abaxially above the nerves, and sheaths/blades with stiff, papillose-based hairs.

Specimens examined

PERU. **Huánuco**: *J. F. Macbride 3516* (F, US). **Lima**: Prov. Huarochirí, Matucana, *J. F. Macbride 2926* (F, US).

Eragrostis atrovirens (Desf.) Trin. ex Steud., Nom. Bot. (ed. 2) 1: 562. 1840. *Poa atrovirens* Desf., Fl. Atlant. 1: 73, t. 14. 1798. Type: ALGERIA. E Barbaria, *Desfontaines 160* (holotype: FI; isotypes: BAA-1006!, LE!, P!). **Fig. 22**.

Perennial, caespitose. **Culms** (70–)75–130 cm tall, erect to geniculate at base. **Leaf sheaths** 1/3–2/3 as long as the internodes, glabrous, long ciliate at summit, the hairs up to 4 mm; **ligule** 0.1–0.3 mm, ciliate; **blades** (5–)8–20 × (0.1–)0.2–0.3(–0.4) cm, flat to involute, glabrous below and scaberulous above, long ciliate at base. **Panicles** (7–)10–20(–28) × (2.5–)4–15 cm, open, ovate, primary branches (3–)5–10(–13) cm,

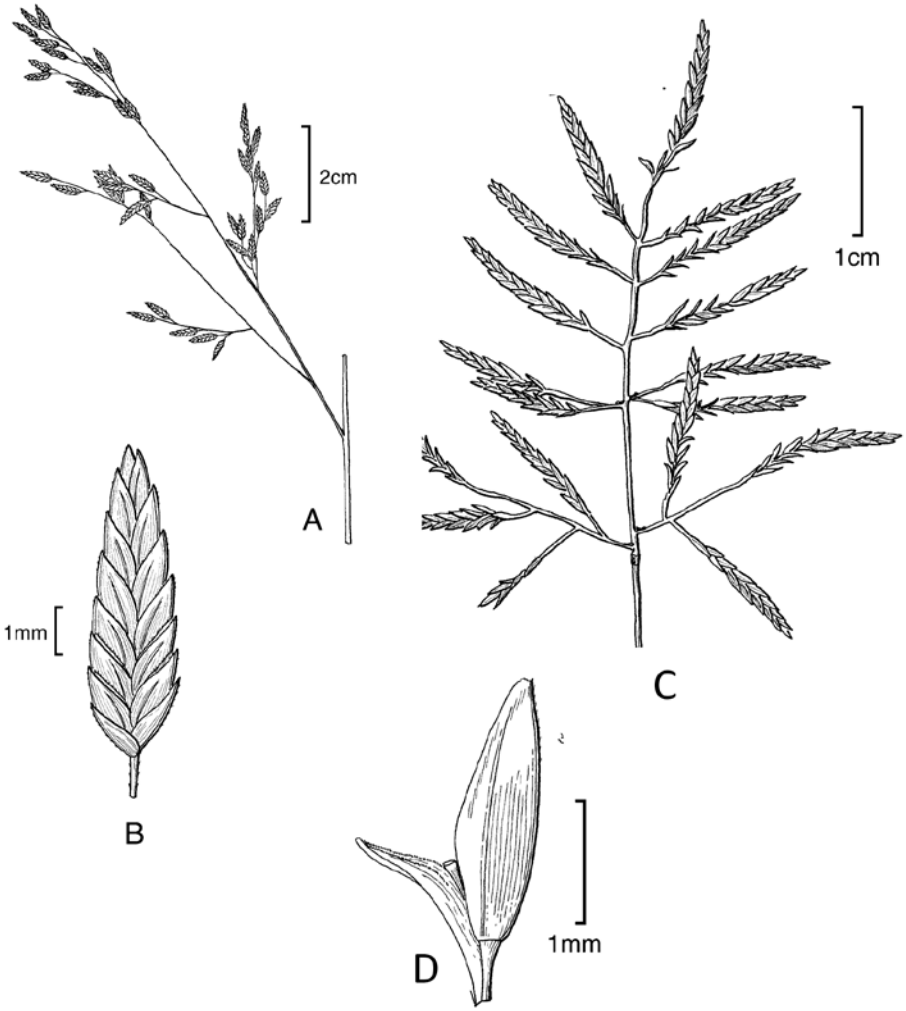


Fig. 22. ***Eragrostis atrovirens***. **A**. Panicle branch; **B**. Spikelet. ***Eragrostis barrelieri***. **C**. Panicle branch; **D**. Floret.

wiry, somewhat capillary, naked basally, branches diverging 20°–60° from the rachises; pulvini glabrous to sparingly ciliate, the hairs less than 2 mm; **pedicels** 1–10 mm, appressed, scaberulous. **Spikelets** 6–10(–19) × 1.4–2.4 mm, 10- to 22-flowered, ovate-lanceolate, plumbeous to purplish; **disarticulation** acropetal, glumes first, then the florets; **glumes** 1.2–1.7 mm, subequal, lanceolate to ovate, membranous; **lower glume** 1.2–1.4 mm, narrower than upper glume; **upper glume** 1.4–1.7 mm; **lemmas** (1.5–)1.7–2 mm, broadly ovate, leathery, lateral nerves evident, scaberulous along keel;

apex acute; **paleas** 1.4–1.9 mm, hyaline, scaberulous along keels; apex acute to obtuse; **stamens** 3, anthers 0.7–0.9 mm, reddish purple. **Caryopses** 0.6–0.9 mm, obovoid to ellipsoid, opaque, striate and minutely reticulate, circular in cross section, without a ventral groove, reddish brown.

Chromosome number. 2*n* = 20, 40, 60 (Bir & Sahni 1988).

Distribution and habitat. Native in northern Africa and Asia; introduced in U.S.A., Mexico, Central America, Caribbean, Bolivia, Chile, Argentina, Peru, and Venezuela (Nicora 1998, Peterson & Boechat 2001). Herein, we cited this species for the first time for Colombia. *Eragrostis atrovirens* grows in railways, roads, beaches, ditches, savannas, rocky river banks, and often in wet sandy soils; 0–700 m.

Specimens examined

COLOMBIA. Valle del Cauca: Mun. Buenaventura, entre Juanchaco y Ladrilleros, en sustrato sujeto a encharcamiento, *ca.* 5 m, Jun-Jul 2010, *D. Giraldo-Cañas et al. 4629* (COL). **Vichada**: Mun. Puerto Carreño, sabanas naturales no inundables entre el cerro El Bita (afloramientos rocosos del tipo "lajas") y las instalaciones del Comando Específico de Oriente "CEO" del Ejército Nacional de Colombia, 50 m, 6–9 Jan 2004, *D. Giraldo-Cañas & C. Parra 3681* (COL).

PERU. **Huánuco:** Prov. Leoncio Prado, Dist. Rupa Rupa, *I. Sánchez-Vega 9651* (CPUN, US). **Loreto:** Prov. Maynas, Iquitos, carretera to Santo Tomás, *M. Rimachi Y. 8470* (US).

Eragrostis attenuata Hitchc., Contr. U.S. Natl. Herb. 24 (8): 340. 1927. Type: PERU. Arequipa: sandy slopes of hills *ca.* 3 km back of Mollendo, 17 Nov. 1923, *A. S. Hitchcock 22424* (holotype: US-1164909!; isotypes: BAA-1007!, US-1164361!). **Fig. 23**.

Sporobolus scaber Phil., Fl. Atacam. 54. 1860. Type: CHILE. Cachinal de la Costa, 1900 m, *R. Philippi 118* (holotype: SGO-PHIL-118; isotypes: BAA-2928 fragm.!, SGO-45543, US-2891484 fragm. ex SGO-PHIL-118! & photo!).

Perennial, caespitose, forming innovations at the base. **Culms** 15–40(–60) cm tall, stiffly, erect to widely spreading, geniculate below, glabrous, not branched at the upper nodes, innovations extravaginal formed below. **Leaf sheaths** nearly as long as the internodes above, ciliate at the summit with fine white hairs at the throat and along margins, sometimes with similar hairs on the collar; **ligule** *ca.* 1 mm, ciliate; **blades** 3–7 × 0.2–0.3 cm, flat or involute when dry, short pilose, the hairs 0.4–1.5 mm, shiny, whitish, and minutely tuberculate at base. **Panicles** 10–25(–40) × 0.2–0.5 cm, closed, densely flowered, cylindrical and narrowly spicate, interrupted below, rachis glabrous, primary branches 1–1.5(–4) cm, ascending and tightly appressed, solitary, flowered to the base; **pedicels** 1–1.5 mm, short, appressed. **Spikelets** 2.5–4 × 0.9–1.1

Fig. 23. ***Eragrostis attenuata*** (*Dillon & Dillon 3879*). **A**. Habit; **B**. Panicle branch; **C**. Spikelet.

mm, (1 to)3- to 4(to 6)-flowered, oblong to oval, dark reddish purple, florets imbricate; **disarticulation** between the florets with rachilla joint attached; **glumes** 0.8–1.4 mm, unequal, hyaline, lanceolate to acuminate, slightly keeled; **lower glume** 0.8–1 mm; **upper glume** 1–1.4 mm, 1-nerved, scaberulous along the keel; **lemmas** 1.2–1.8 mm, ovate to ovate-lanceolate, scabrous throughout, keeled, lateral nerves conspicuous, scaberulous; apex obtuse; **paleas** 1.1–1.3 mm, nearly as long as lemma, keels minutely scaberulous; apex acute to obtuse; **stamens** 3, anthers *ca.* 0.3 mm. **Caryopses** 0.6–0.8 mm, ellipsoid, striate, laterally flattened, elliptical in cross section, reddish brown, smooth, not grooved ventrally.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Endemic along the coast of southern Peru south to northern Chile; occurs in lomas vegetation; 0–1000 m.

Specimens examined

PERU. **Arequipa:** Prov. Arequipa, Pampas de la Joya, *C. Vargas C. 017943* (CUZ). Prov. Camaná, *ca.* 32 km SE of Camaná, *M. O. Dillon & D. Dillon 3879* (F, US). Prov. de Caravelí, lomas de Arequipa, *R. Ferreyra 6478* (US, USM). Prov. Islay, near the Puerto Mollendo, *I. M. Johnston 3538* (US). **Ica:** Prov. Nasca, Lomas de Marcona, *R. Ferreyra 13371* (US, USM).

Eragrostis bahiensis Schrad. ex Schult., Mant. 2: 318. 1824. *Eragrostis pilosa* var. *bahiensis* (Schrad. ex Schult.) Kuntze, Revis. Gen. Pl. 3 (2,2): 353. 1898. Type: BRAZIL. *Maximilian Neowidensis s.n.* (holotype: LE). **Fig. 19**.

Eragrostis expansa Link, Hort. Berol. 1: 190. 1827. Type: URUGUAY. Montevideo, *F. Sellow s.n.* (holotype: B; isotypes: BAA-989 fragm. ex B!, US-2850751!).

Poa microstachya Link, Hort. Berol. 1: 185. 1827. *Eragrostis psammodes* var. *microstachya* (Link) Döll, Fl. Bras. 2 (3): 153. 1878. *Eragrostis microstachya* (Link) Link, Hort. Berol. 2: 294. 1933. Type: URUGUAY. Montevideo, *F. Sellow s.n.* (holotype: B; isotypes: BAA-989 fragm. ex B!, US-2850751!).

Eragrostis firma Trin., Mém. Acad. Imp. Sci. Saint-Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 4,2 (1): 74. 1836. Type: BRAZIL. São Paulo: inter plantas a St. Paulo (holotype: LE-TRIN-2342.01!; isotype: US-2891470 fragm.!).

Eragrostis blepharophylla Jedwabn., Bot. Arch. 5 (3−4): 197. 1924. Type: BRAZIL. *F. Sellow 3688* (holotype: ?; isotype: US-2891454 fragm.!).

Eragrostis macra Jedwabn., Bot. Arch. 5 (3−4): 200. 1924. Type: BRAZIL. Nov 1887, *A. F. M. Glaziou 16624* (lectotype: US-1280047!, designated by Boechat & Longhi-Wagner, Iheringia, Bot. 55: 147. 2001; isolectotypes: C, US-289924!, US-1280048!).

Eragrostis bahiensis Schrad. ex Schult. fo. *riparia* Burkart, Fl. Il. Entre Ríos 2: 189. f.66. 1969. Type: ARGENTINA. Entre Ríos: Concepción del Uruguay, Isla Almirón Chico, *Burkart & Crespo 22874* (holotype: SI; isotype: BAA-1010!).

Caespitose perennials with innovations, without rhizomes, not glandular. **Culms** 25–95(−110) cm tall, erect, glabrous. **Leaf sheaths** glabrous, summits hairy, hairs 1–3 mm; **ligules** 0.2–0.4 mm long; **blades** (8)12–40 × 0.2–0.5 cm, flat to involute, abaxial surfaces glabrous, adaxial surfaces scabridulous and glabrous or long ciliate basally. **Panicles** 15–30(45) × (4)8–17 cm, narrowly ovate, open to contracted; primary branches 5–15 cm long, diverging 20–90° from the rachises, often capillary, usually naked basally; pulvini glabrous; **pedicels** 0.3–6 mm long, mostly appressed, scabridulous, always shorter than the spikelets. **Spikelets** 6–15(–18) × 1.3–2(2.2) mm, narrowly lanceolate, plumbeous, occasionally with a reddish-purple tinge, with 8–30(40) florets; **disarticulation** usually on the rachilla below the florets, occasionally the lemmas falling separately, leaving the paleas on the rachilla; **glumes** lanceolate to ovate, membranous to subhyaline, keeled; **lower glume** 1–1.4 mm long; **upper glume** 1.4–1.7 mm long; **lemmas** 1.5–2.2 mm, broadly ovate, leathery, scabridulous, lateral nerves evident, apices acute; **paleas** 1.4–2.1 mm long, hyaline, bases not projecting beyond the lemmas, keels scabridulous, apices acute to obtuse; **stamens** 2, anthers 0.4–0.6 mm long, reddish-purple. **Caryopses** 0.6–0.8 mm long, obovoid to ellipsoid, terete, somewhat striate, reddish-brown, without a ventral groove.

Chromosome number. 2*n* = unknown.

Distribution and habitat. *Eragrostis bahiensis* grows in sandy soils near river banks, lake shores, and roadsides, at 0–1500 (–1850) m. Its range extends south from the Gulf Coast of the United States through Mexico to Bolivia, Paraguay, and Argentina. Herein, we cited this species for the first time for Peru.

Specimens examined

COLOMBIA. **Antioquia**: Mun. Cocorná, vereda La Piñuela, carretera Medellín-Bogotá, intersección con la carretera hacia San Francisco, 1000 m, 27 Feb 2005, *D. Giraldo-Cañas 3870* (COL). **Arauca**: Mun. Arauca, inmediaciones de las instalaciones de la Universidad Nacional de Colombia, hacienda El Cairo, carretera Arauca-Tame, km 9, 200-300 m, 13 Jun 2003, *D. Giraldo-Cañas 3498* (COL). **Cauca**: Mun. Popayán, sector norte de la ciudad, Villa del Viento, 1850 m, 20 May 2001, *B. R. Ramírez 14163* (CAUP, COL). **Chocó**: Mun. Quibdó, en un barranco del Barrio Medrano, en inmediaciones de la Universidad Tecnológica del Chocó, 90 m, 6 Nov 2005, *D. Giraldo-Cañas 3974* (COL, HUA). Mun. Quibdó, carretera Quibdó-Guayabal, 23 Feb 1985, *J. Espina 1474* (COL, MO). Hoya del río San Juan, río Tamaná, afluente del San Juan, debajo de Santa Rosa, *ca.* 150 m, 10 Apr 1979, *E. Forero et al. 4974, 4977* (COL, MO). Quibdó Airport, 50 m, 24 Oct 1985, *J. R. I. Wood 5117* (COL). **Meta**: Mun. Villavicencio, carretera Villavicencio-Aeropuerto, piedemonte de la cordillera Oriental, sitio La Arenera, *ca.* 2 km del puente sobre el río Guatiquía, *ca.* 400 m, 14-10 Nov 2002, *D. Giraldo-Cañas 3344* (COAH, COL, HUA). Along road to Hac. Rubiales, E of Puerto Gaitán, 90 m, 10 Jun 1995, *S. Lægaard & C. Mayorga 17494* (COL). Margen izquierda del río Guayabero, raudal de La Macarena, Angostura Nro. 1, 350 m, 20 Jan 1959, *P. Pinto & Bischler 327* (COL). **Putumayo**: Mun. Mocoa, alrededores de la población, 650 m, 20 Aug 1986, *B. R. Ramírez 651* (COL, PSO). **Tolima**: Mun. Honda,

en sustratos arenosos, ribera de pequeña quebrada antes de su desembocadura en el río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4305* (COL). Mun. Mariquita, a unos 200 m de la parte superior del bosque municipal "José Celestino Mutis", *ca.* 700 m, Nov 2009, *D. Giraldo-Cañas 4331* (COL). **Valle del Cauca**: Carretera Dagua-Buenaventura, km 32, 540 m, 6 Feb 1961, *J. M. Idrobo 4291* (COL, US).

ECUADOR. Napo: At Río Aquarico above San Pablo, 250 m, 17 Feb 1984, *S. Lægaard 51420* (COL).

PERU. San Martín: Palma del Espino, Santa Lucía, 500 m, 21 Oct 1987, *J. M. Idrobo 11900* (COL).

Eragrostis barrelieri Daveau, J. Bot. (Morot) 8: 289. 1894. Type: ITALY. Sicily, in sterilibus maritimis, *A. Todaro s.n.* [lectotype (designated here): MPU-012539 !]. **Fig. 22**.

Plants annual; tufted, without innovations. **Culms** (5)10–60 cm, erect or decumbent, much-branched near the base, with a ring of glandular tissue below the nodes, rings often shiny or yellowish. **Leaf sheaths** hairy at the apices, hairs to 4 mm long; **ligules** 0.2–0.5 mm long, ciliate; **blades** 1.5–10 × 0.1–0.3(0.5) cm, flat, abaxial surfaces glabrous, adaxial surfaces glabrous, sometimes scabridulous, occasionally with white hairs to 3 mm long, margins without crateriform glands. **Panicles** 4–20 × 2.2–8(10) cm, ovate, open to contracted, rachises with shiny or yellowish glandular spots or rings below the nodes; primary branches 0.5–6 cm long, diverging 20–100° from the rachises; pulvini glabrous; **pedicels** 1–4 mm long, stout, stiff, divergent, without glandular bands. **Spikelets** 4–7(11) × 1.1–2.2 mm, narrowly ovate, reddish-purple to greenish, occasionally grayish, with 7–12(20) florets; **disarticulation** acropetal, paleas persistent; **glumes** broadly ovate, membranous, 1-nerve; **lower glume** 0.9–1.4 mm long; **upper glume** 1.2–1.6 mm long; **lemmas** 1.4–1.8 mm long, broadly ovate, membranous, apices acute to obtuse; **paleas** 1.3–1.7 mm long, hyaline, keels scabrous, scabridities to 0.1 mm, apices obtuse to acute; **Stamens** 3, anthers 0.1–0.2 mm long, reddish-brown. **Caryopses** 0.4–0.7 mm long, ellipsoid, not grooved, smooth to faintly striate, light brown.

Chromosome number. $2n = 40$ (Peterson 2001).

Distribution and habitat. *Eragrostis barrelieri* is a European species that is now naturalized in some regions of America, primarily in the southwestern United States, Ecuador, and Argentina. It grows on gravelly roadsides, in gardens, and other disturbed, sandy sites, especially near railroad yards, at 1500–2500 m. Herein, we cited this species for the first time for Colombia.

Comments. The ring of glandular tissue is most conspicuous below the upper cauline nodes.

Specimens examined

COLOMBIA. Antioquia: Mun. Medellín, predios internos del Jardín Botánico "Joaquín Antonio Uribe", 1550 m, 2 Jan 2002, *D. Giraldo-Cañas et al. 3297* (COL).

ECUADOR. Carchi: 11 km S of Mira on road towards Ibarra, 1850 m, *P. M. Peterson et al. 9093* (K, MO, QCA, US). **Imbabura**: Road Chota-Juncal, 1500-1600 m, *Acosta Solís 14974* (F, US). **Pichincha**: Road San Antonio-La Providencia, 2400 m, *Acosta Solís 16524* (US).

Eragrostis cilianensis (All.) Vignolo ex Janch., Mitt. Naturwiss. Vereins Univ. Wien, n.s., 5: 110. 1907. *Poa cilianensis* All., Fl. Pedem. 2: 246. 1785. *Eragrostis megastachya* (Koeler) Link var. *cilianensis* (All.) Asch. & Graebn., Syn. Mitteleur. Fl. 2: 371. 1900. *Eragrostis cilianensis* (All.) F.T. Hubb., Philipp. J. Sci. 8 (3): 59−161. 1913. *Erosion cilianense* (All.) Lunell, Amer. Midl. Naturalist 4: 221. 1937. *Eragrostis multiflora* (Forssk.) Asch. var. *cilianensis* (All.) Maire, Bull. Soc. Hist. Nat. Afrique N. 30: 369. 1939. TYPE: ITALY. Ciliani, *Bellardi s.n.* (LECTOTYPE: TO-8242, designated by F. Vignolo, Malpighia 18: 380. 1904; ISOTYPES: BRI, K photo neg. 19571!). **Fig. 24**.

Caespitose annuals. **Culms** 15−45(−65) cm tall, erect or decumbent and prostrate, glabrous and shiny, sometimes with crateriform glands below the nodes. **Leaf sheaths** 2/3 the length of the internodes above, occasionally longer, glabrous, occasionally glandular, densely ciliate at the summit, the hairs often elongate up to 5 mm long; **ligules** 0.4−0.8 mm long, ciliate; **blades** (1−)5−20 × (0.1−)0.3−0.5(−1) cm, flat to loosely involute, mostly glabrous below, scaberulous above occasionally with widely spaced elongate hairs, sometimes glandular near margins. **Panicles** (3−)5−16(−20) × 2−8.5 cm, condensed to open, oblong to ovate, the primary branches 0.4−5 cm long, ascending, appressed or diverging 20−80° from the rachises; pulvini glabrous or ciliate; **pedicels** 0.2−3 mm long, erect, spreading to appressed. **Spikelets** 6−20 × 2−4 mm, 10−40-flowered, ovate-lanceolate, florets imbricate, plumbeous to greenish or hyaline; **disarticulation** acropetal, between the florets from the base upwards, usually the entire floret, rachillas persistent; **glumes** 1.2−2.6 mm long, subequal, broadly ovate to lanceolate, sub-hyaline, membranous, keeled, usually with crateriform glands along the keel, 1- or 3-nerved, scaberulous towards apex of keel; **lower glume** 1.2−2 mm long, usually 1-nerved; **upper glume** 1.2−2.6 mm long, often 3-nerved; **lemmas** 2−2.8 mm long, broadly ovate, membranous, lateral nerves evident, strongly keeled, keels with 1−3 crateriform glands; apex obtuse to acute; **paleas** 1.2−2.1 mm long, hyaline, keels scaberulous, sometimes ciliate, the cilia less than 0.3 mm long; apex obtuse to acute; **stamens** 3, anthers 0.2−0.5 mm long, yellow to light yellow. **Caryopses** 0.5−0.7 mm long, globose to broadly-short ellipsoid, striate and reticulate, circular to elliptical in cross-section, reddish-brown.

Chromosome number. 2*n* = 20, 40 (Bir & Sahni 1988).

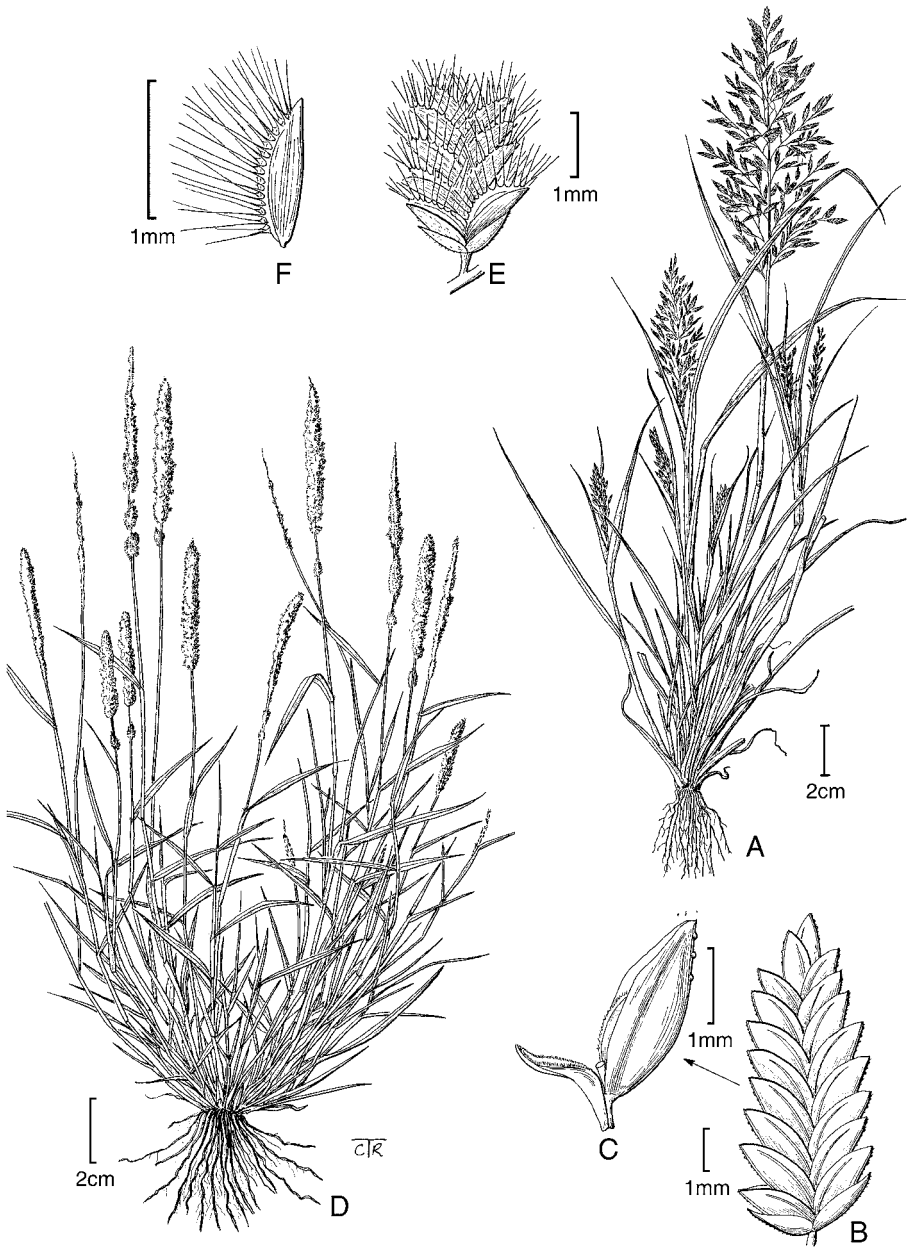


Fig. 24. ***Eragrostis ciliarensis*** (*Ferreyra 6017*). **A**. Habit; **B**. Spikelet; **C**. Floret with palea attached below; **D**. Caryopsis, dorsal view; **E**. Caryopsis, lateral view. ***Eragrostis ciliaris*** (*Schnetter & Schnetter 112*; *Sagástegui 10927*). **F**. Habit; **G**. Spikelet; **H**. Floret; **I**. Caryopsis, dorsal view; **J**. Caryopsis, lateral view.

Distribution and habitat. Native to Europe; introduced in southern Canada, U.S.A, Mexico, Central America, Caribbean, Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela (Peterson 2001, Peterson & Boechat 2001); a weed near cultivated fields, pastures, roadsides, and disturbed habitats; 0−3000 (−3900) m.

Comments. Like most species of *Eragrostis*, this one has spikelets that first appear with only the basal florets visible and continue to grow and develop more florets at the apex for some time (Pohl 1980, and pers. obs.). Because of this, young panicles with juvenile spikelets appear very different from mature ones (Pohl 1980, and pers. obs.). The plants have a fetid odor when fresh, presumably because of the secretions of the pustulose glands (Pohl 1980).

Specimens examined

COLOMBIA. **Bogotá D. C.**: Bogotá, La Picota, granja experimental, Tunjuelo, 2650 m, 6 Apr 1941, *H. García-Barriga 10519* (COL). **Boyacá**: *Ca.* 3 km W of Villa de Leyva, 2100 m, 4 Jun 1984, *J. R. I. Wood 4431* (COL). Border between **Cesar, Norte de Santander, and Santander**: 20 kilómetros al sur de Ábrego, Las Jurisdicciones, Cerro de Oroque, 3700−3960 m, 19−21 May 1969, *H. García-Barriga & R. Jaramillo-Mejía 19723* (COL, US). **Cundinamarca**: Provincia Sumapaz, Mun. Fusagasugá, en matorrales cerca de la carretera Bogotá-Fusagasugá, *ca.* 1500 m, 31 Jan 2010, *D. Giraldo-Cañas 4437* (COL). Provincia Alto Magdalena, Tocaima, 400 m, no date, *C. Saravia 4719* (COL). **Huila**: Mun. Garzón, carretera Garzón-Neiva, pastizal en sustratos rocoso-arenosos dominados por *Pappophorum, Bothriochloa, Chloris, Digitaria, Eragrostis, Dactyloctenium* y *Urochloa*, *ca.* 750 m, 11 Dec 2011, *D. Giraldo-Cañas 5223* (COL). Río Cabrera, 2 km below confluence of Río Ambicá, 3 km WSW of Colombia, 1000 m, 15 Dec 1942, *F. R. Fosberg 19318* (US). Garzón-Neiva, 400 m, no date, *F. C. Lehmann 8742* (US). **Nariño**: Mun. Pasto, Panamericana, puente del Juanambú, 1000 m, 7 Nov 1987, *B. R. Ramírez 1037* (COL, PSO). **Santander**: Vertiente oriental de la Cordillera Oriental, Mun. Los Santos, vía Los Santos a la vereda La Laguna, matorrales xerofíticos, 1296 m, 7 Jul 2006, *J. L. Fernández-Alonso & S. Albesiano 24311* (COL). **Tolima**: Mun. Saldaña, carretera Neiva-El Espinal, pastizal en sustratos arenosos dominados por *Pappophorum* y *Bothriochloa*, *ca.* 300 m, 11 Dec 2011, *D. Giraldo-Cañas 5233* (COL). **Valle del Cauca**: Río Calima, región del Chocó, margen derecha, lomas frente a Quebrada de la Brea, 30−50 m, 18 May 1946, *J. Cuatrecasas 21067* (COL, US). Cartago, Santa Ana de los Caballeros, 950 m,19 Nov 1946, *J. Cuatrecasas 23024* (COL, US). Mun. Yumbo, finca Río Grande, dry pasture around the houses, 1180 m, 12 Jun 1998, *D. Stancik 782* (COL). Mun. Yumbo, finca Río Grande, bosque El Ramón, 1600 m, 13 Jun 1998, *D. Stancik 783* (COL).

ECUADOR. Guayas: Santa Elena Península, *L. Holm-Nielsen et al. 2327* (AAU, COL, F, MO, S). **Imbabura**: Tababuela in Chota Valley, N of Ibarra, 1700 m, *S. Lægaard 51764* (AAU, COL, QCA).

PERU. **Arequipa:** Prov. Castilla, Paccai-chacra, *C. Vargas C. 019367* (CUZ). **Cajamarca:** Prov. Cajamarca, 40 km N of Cajabamba & 13 km S of Ichocan, *P. M. Peterson & N. F. Refulio-Rodríguez 14004* (US, USM); Prov. Contumazá, entre

Chilete y Tembladera, *I. Sánchez Vega & W. Ruiz V. 665* (CPUN); Prov. Jaén, 1 km N of Chamayo on Hwy. 5N toward Jaén, *P. M. Peterson & N. F. Refulio-Rodríguez 15045* (US, USM). **Ica:** Prov. Nasca, 15 km NW of Nasca along Hwy. 1, *J. T. Columbus et al. 3519* (RSA, US). **La Libertad:** Prov. Pacasmayo, entre Paiján y San Pedro, *D. N. Smith 4226* (US). **Lambayeque:** Prov. Chiclayo, Tucumán–Chongoyape, *A. Sagástegui A. et al. 11468* (US); Prov. Lambayeque, Jayacanca, borde de la carretera panamericana, 50 m, *N. Angulo 2452* (COL). Prov. Lambayeque, betw. Lambayeque and Motupe, *J. T. Columbus et al. 3439* (RSA, US). **Lima:** Prov. Chancay, al E del valle de Sayán, *T. H. Goodspeed 33034* (US). **Moquegua:** Prov. Moquegua, entre Moquegua y Torata, *A. Weberbauer 7438* (US). **Piura:** Prov. Huancabamba, 10 km N of Sondor & 3 km S of Huancabamba, *P. M. Peterson & N. F. Refulio-Rodríguez 15169* (US, USM); Pabur, Buenos Aires, *R. Ferreyra 6017* (US, USM); 15 km entre Piura y Sullana, E de la carretera Panamericana, *I. Sánchez Vega & J. Guevara B. 6188* (CPUN, HAO). **Tumbes:** Caleta Santa Cruz, entre Tumbes y Zorritos, *R. Ferreyra 10693* (US, USM).

Eragrostis ciliaris (L.) R. Br., Narr. Exped. Zaire 478. 1818. var. ***ciliaris***. *Poa ciliaris* L., Syst. Nat. (ed. 10) 875. 1759. *Megastachya ciliaris* (L.) P. Beauv., Ess. Agrostogr. 74, 167, 174. 1812. *Cynodon ciliaris* (L.) Raspail, Ann. Sci. Nat., Bot. 5: 302. 1825. *Eragrostis ciliaris* (L.) Nees, Fl. Bras. Enum. Pl. 2: 512−514. 1829. Type: JAMAICA. *Browne s.n.* (lectotype: LINN-87.66!, designated by Hitchcock, Contr. U.S. Natl. Herb. 12: 121. 1908). **Fig. 24**.

Eragrostis lasseri Luces, Bol. Soc. Venez. Ci. Nat. 15: 6. 1953. Type: VENEZUELA. En formaciones xerofilas *ca.* Maracaibo, 12 Jan 1948, *T. Lasser 2660* (holotype: VEN; isotype: MO!), **syn. nov.**

Caespitose annuals. **Culms** (3−)9−75 cm tall, erect or geniculate in the lower portion, not rooting at the lower nodes, glabrous. **Leaf sheaths** 1/2−3/4 as long as the internodes, hairy on the margins and at the apices, hairs to 4 mm long; **ligules** 0.2−0.5 mm long; **blades** 1.8−12(−15) × 0.2−0.5 cm, usually flat, occasionally involute, glabrous or ciliate basally. **Panicles** 1.7−17 × 0.2−1.5 cm, cylindrical, contracted, spike-like, branches forming glomerate lobes or sometimes more open, often interrupted in the lower portion; primary branches 0.4−4 cm, ascending, tightly appressed; pulvini usually glabrous, occasionally sparsely pilose; **pedicels** 0.1−1 mm long, erect or curved, shorter than the spikelets, glabrous. **Spikelets** 1.8−3.2 × 1−2 mm, 6−11-flowered, elliptical-ovate to ovate-lanceolate, yellowish-brown, sometimes with a purple tinge, densely packed next to one another forming glomerate lobes; **disarticulation** basipetal, glumes persistent; **glumes** 0.7−1.6 mm long, subequal, ovate to lanceolate, keels scabridulous, nerves commonly green, apices acute; **lower glume** 0.7−1.2 mm long; **upper glume** 1−1.6 mm long; **lemmas** 0.8−1.3 mm long, elliptical-ovate to lanceolate, membranous, keels scabridulous, lateral nerves evident; apex obtuse to acute; **paleas** 0.8−1.3 mm long, membranous, keels prominently ciliate, cilia 0.2−0.8 mm long, stiff and pectinate-thickened near base; apex obtuse to acute; **stamens** 2, anthers 0.1−0.3 mm long, purplish. **Caryopses** 0.4−0.5 mm long, ovoid, striate, slightly dorsally-flattened, elliptical in cross-section, reddish-brown.

Chromosome number. 2*n* = 20, 40 (Bir & Sahni 1988, Roodt & Spies 2003, Chen & Peterson 2006).

Distribution and habitat. Apparently native to the paleotropics; introduced and naturalized in Mexico, U.S.A., Central America, Caribbean, Argentina, Bolivia, Colombia, Ecuador, Guianas, Paraguay, Peru, and Venezuela (Nicora 1998, Peterson & Boechat 2001); growing along roadsides, on waste places, in xerothermic vegetation, saline habitats, and city sidewalks; 0−1600 m.

Specimens examined

COLOMBIA. **Antioquia**: Mun. Medellín, predios de la Plaza de Botero, 1550 m, 4 Jan 2003, *D. Giraldo-Cañas 3429* (COL). Mun. Santa Fe de Antioquia, en límites entre un bosque secundario muy alterado y un potrero, riberas pedregosas del río Tonusco, *ca.* 450 m, Jan 2011, *D. Giraldo-Cañas 4996* (COL). Medellín, Facultad de Agronomía, 1500 m, 10 Jul 1947, *W. H. Hodge 6933* (US). Medellín, 1550 m, 22 Apr 1927, *R. A. Toro 239* (US). **Arauca**: Mun. Arauca, inmediaciones de las instalaciones de la Universidad Nacional de Colombia, hacienda El Cairo, carretera Arauca-Tame, km 9, 200−300 m, 13 Jun 2003, *D. Giraldo-Cañas 3505* (COL). **Atlántico**: Entre Baranoa y Galapa, 80−100 m, 26 Nov 1960, *A. Dugand 5380* (COL, US). **Bolívar**: Along Mompós- Juana Sánchez trail, Island of Mompós, Lands of Loba, Apr−May 1916, *H. M. Curran 245* (US). Cartagena, 20 Nov 1912, *A. S. Hitchcock 9898* (US). Tierrabomba Island, Cartagena Bay, 4 Nov 1926, *E. P. Killip & A. C. Smith 14122* (MO, US). Cañabetal, río Magdalena, 90−100 m, 15 Jan 1918, *F. W. Pennell 3882* (MO, US). Cartagena, Caribbean Coast, 0−1 m, 1−3 Oct 1922, *F. W. Pennell 12007* (US). **Casanare**: Mun. El Yopal, en áreas urbanas del centro de la ciudad, 400 m, 31 Oct 2007, *D. Giraldo-Cañas 4133* (COAH, COL). Yopal, 400 m, year 1983, *J. R. I. Wood 3815* (COL). **Cesar**: Mun. Valledupar, Plaza Alfonso López, jardineras de la acera de la iglesia de La Concepción, 175 m, 30 Mar 2010, *D. Giraldo-Cañas 4507* (COL). Mun. Valledupar, jardines externos del Centro Comercial Plaza Guatapurí, 175 m, 17 Sep 2011, *D. Giraldo-Cañas 5136* (COL). **Córdoba**: Mun. Momil, finca El Paraíso, en potreros, 39 m, 23 Feb 2005, *D. Giraldo-Cañas 3853, 3855* (COL). **Cundinamarca**: Provincia Alto Magdalena, Mun. Nilo, hacienda La Guaira, río Pagüey, 350 m, 16 Oct 2004, *D. Giraldo-Cañas 3781* (COL). Provincia Alto Magdalena, Mun. Girardot, vía férrea entre Girardot y Flandes, ribera del río La Magdalena, 250 m, 17 Oct 2004, *D. Giraldo-Cañas 3787* (COL). Provincia Gualivá, Mun. Villeta, en grietas de aceras y pavimentos de la Plaza de Mercado, carrera 7ª, *ca.* 800 m, 17-19 Jun 2006, *D. Giraldo-Cañas 4078* (COL). Provincia Alto Magdalena, Mun. Nariño, 340 m, 1 Mar 1986, *J. L. Fernández Alonso 5514* (COL). **Huila**: Mun. Villavieja, desierto de La Tatacoa, 1 Nov 2010, *D. Giraldo-Cañas 4813-a* (COL). Mun. Villavieja, desierto La Tatacoa, 460 m, 28 May 2000, *B. R. Ramírez 13193* (CAUP, COL). Mun. Neiva, malecón del río Magdalena, grietas de las aceras del monumento La Gaitana, 440 m, 17 Oct 2011, *D. Giraldo-Cañas 5169* (COL). **La Guajira**: Mun. Maicao, en zonas de rastrojos subxerofíticos suburbanos, muy cerca de la mezquita Omar Ibn Al-Kattab, calle 12 con carrera 6ª, *ca.* 20 m, 29 Mar 2010, *D. Giraldo-Cañas 4505-a* (COL). Mun. Uribia, corregimiento Nazareth, playa Nueva York, 0-5 m, 6 Jan 2005, *J. Betancur et al. 11369*

(COL). Maicao, 31 Mar 1962, *C. Saravia 365* (COL, US). 2.6 km de Monevideo, rumbo a Nazareth, 5 Abr 1962, *C. Saravia & D. Johnson 467* (COL, US). Clausura Nopoipa, rumbo a Maicao, 4.5 km de Uribia, 13 Feb 1963, *C. Saravia 2229* (US, **note: *Saravia 2229* at COL is *E. viscosa***), *2229-A* (US, **note: *Saravia 2229-A* at COL is *E. maypurensis***). Serranía La Macuira, entre el arroyo y la duna Arehuara, 290 m, 4 Mar 1963, *C. Saravia 2367* (COL, US). Serranía La Macuira, 12 Apr 1964, *C. Saravia & M. E. de Saravia 3544* (COL, MO, US). Riohacha, 6 Feb 1914, *J. G. Sinclair s.n.* (US-865575). **Magdalena**: Río Frío, near sea level, 23 Jun 1906, *H. Pittier 1583* (US). Isla de Salamanca, cerca de la finca Mahoma, 18 Nov 1966, *M. Schnetter & R. Schnetter 112* (COL). Santa Marta, 1898-1901, *H. H. Smith 110* (COL, MO, US). **Meta**: Mun. Villavicencio, carretera Villavicencio-Aeropuerto, piedemonte de la cordillera Oriental, sitio La Arenera, *ca.* 2 km del puente sobre el río Guatiquía, *ca.* 400 m, 14-15 Dec 2002, *D. Giraldo-Cañas 3386* (COL). Mun. Puerto López, Alto de Menegua, en grietas de aceras, 200 m, 20 Mar 2011, *D. Giraldo-Cañas 5056* (COL). Reserva Nacional de La Macarena, margen izquierda del río Guayabero, al pie de las mesetas con el caño Losada, 300 m, 5 Mar 1959, *R. Jaramillo-Mejía 2108* (COL, MO, US). **Nariño**: Candelillas, 45 m, 10 Aug 1977, *P. Pinto 1923* (COL). **Norte de Santander**: Mun. Ábrego, carretera Ábrego-Ocaña, *ca.* 3 km del casco urbano de Ábrego, en taludes rocosos y arenosos al lado de la carretera, 1300 m, 1 Apr 2010, *D. Giraldo-Cañas 4519, 4523* (COL). **San Andrés, Providencia y Santa Catalina**: Isla de San Andrés, en grietas de aceras del centro de la ciudad, 10 m, 21-26 Jun 2010, *D. Giraldo-Cañas 4600* (COL). Isla de San Andrés, 22-27 Apr 1948, *G. R. Proctor 3265* (US). Alrededores de la cueva de Morgan, 24 Dec 1988, *J. H. Torres 3313-A* (COL). **Santander**: Mun. Bucaramanga, en grietas de una acera de la calle 34 con carrera 27, al subir hacia Las Cabeceras, 950 m, 4 Apr 2010, *D. Giraldo-Cañas 4552* (COL). Vía Málaga-Capitanejo, cerca del desvía para Enciso, quebrada La Insula, 1384 m, 29 Jun 2009, *J. L. Fernández-Alonso 28212* (COL). Granja agropecuaria Piedecuesta, al sur de Bucaramanga, 1000 m, 6 Oct 1966, *A. Robinson 3167* (US). Prope Billete Blanco, 4 May 1926, *G. Woronow & S. Juzepczuk 4671* (US). Bajo Magdalena, Isla de Venado, inter Billete Blanco et El Presidio, 7 May 1926, *G. Woronow & S. Juzepczuk 4748* (US). **Tolima**: Mun. Flandes, vía férrea entre Flandes y Girardot, ribera del río La Magdalena, 250 m, 17 Oct 2004, *D. Giraldo-Cañas 3792-A* (COL). Mun. Honda, en sustratos arenosos, ribera de pequeña quebrada antes de su desembocadura en el río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4268* (COL). Mun. Mariquita, en borde de carretera, arriba del bosque municipal José Celestino Mutis, *ca.* 700 m, Nov 2009, *D. Giraldo-Cañas 4333* (COL). Piedras, 430 m, 29 Feb 1876, *E. André 1868* (US). **Valle del Cauca**: Cisneros, río Dagua, 300-500 m, 5 May 1939, *E. P. Killip 35597* (COL, US). **Vaupés**: Mun. Mitú, en grietas de aceras del centro de la población, 200 m, May 2010, *D. Giraldo-Cañas 4578-A* (COL). **Vichada**: Región Guayanesa, Mun. Puerto Carreño, afloramientos rocosos del tipo lajas, entre Punta de Lajas y Cerro El Bita, ribera del río Orinoco, 40-100 m, 4−5 Jan 2004, *D. Giraldo-Cañas & C. Parra 3621* (COAH, COL). Unknown department: *J. C. Mutis 5482* (US); *Moritz s.n.* (US-557611).

ECUADOR. Cañar: Road to El Triunfo before Cumandá, 450 m, *S. Lægaard 52969-A* (AAU, COL, QCA). **Guayas**: Pacific coast, 400 m E of Punta Carnero, 0-5 m, *L. Holm-Nielsen et al. 2055* (COL). Beach ridges and road side along the Pacific Ocean, between Santa Elena and San Pablo, 3-5 m, *L. Holm-Nielsen et al. 2078* (COL).

PERU. **Cajamarca:** Prov. Cajamarca, entre Cajamarca y Cumbe Mayo, W de Cajamarca, *I. Sánchez Vega 4125* (CPUN); Prov. Jaén, 6 km W of Hwy. 5N up Río Tabaconas toward Tamborillo, *P. M. Peterson & N. F. Refulio-Rodríguez 15085* (US, USM); 1 km N of Chamayo on Hwy. 5N toward Jaén, *P. M. Peterson & N. F. Refulio-Rodríguez 15046* (US, USM); Prov. San Ignacio, confluencia del Río Tamboraza–Chinchipe, *E. Anderson 1057* (US). **Cusco:** Prov. Convención, Echarati, *C. Vargas C. 21288* (CUZ). **Huánuco:** Prov. Leoncio Prado, Tingo María, *H. A. Hallar 20709* (US). **Junín:** Prov. Chanchamayo, San Ramón, *O. Velarde 2840* (US). **La Libertad:** Prov. Trujillo, Mocan, Hacienda Casagrande, *A. Sagástegui A. 3976* (US). **Lambayeque:** Prov. Lambayeque, betw. Chochope and La Ramada, *J. T. Columbus et al. 3444* (RSA, US); El Remanzo, Olmos, *S. Llantos Q. s.n.* (HAO). **Loreto:** Prov. Maynas, Playa Timicurillo, *S. McDaniel & M. Rimachi 23073* (AMAZ); Vecindades de Iquitos, Mishuyacu, *E. Anderson 848* (US). **Piura:** Prov. Talara, entre Sullana y Talara, *A. Sagástegui A. 10927* (US). **Tumbes:** Prov. Tumbes, La Esperanza, near Tumbes, *A. Sagástegui A. 3063* (US). **Ucayali:** Prov. Contamana, *ca.* a la carretera del Oriente, *S. McDaniel 14049* (AMAZ).

Eragrostis condensata (J. Presl) Steud., Syn. Pl. Glumac. 1: 278. 1854. *Megastachya condensata* J. Presl, Reliq. Haenk. 1 (4-5): 284. 1830. Type: ECUADOR. *Haenke s.n.* (holotype: PR; isotype: US-78689!).

Caespitose perennials. **Culms** (45) 60−200 cm tall, erect, glabrous and somewhat shiny below nodes. **Leaf sheaths** overlapping, ¾ to as long as the internodes, usually densely pilose on the collar and down the margins, the grayish hairs up to 6 mm long, to almost glabrous; **ligules** 0.3−0.5 mm long, ciliate, a dense row of white hairs; **blades** (7) 20−50 × 0.3−1 cm, flat to loosely involute, mostly glabrous below and scattered pilose above, scaberulous above and towards the apex below, the hairs up to 4 mm long. **Panicles** (12) 18−65 × (0.3) 0.5−1.8 cm, condensed and spicate, sometimes interrupted below, tha ascending closely appresed, primary branches 0.1−5.5 cm long, scaberulous, usually with scattered somewhat appresed white hairs, the hairs up to 8 mm long, the hairs also located along the peduncle; pulvini in the axils of primary branches ciliate, the hairs up to 8 mm long; **pedicels** 0.3−2.5 mm long, erect, stout to wiry, ascending, scaberulous. **Spikelets** 3.4−7.3 × 1.2−2.6 mm, 4−12-flowered, narrowly lanceolate to oblong-ovate, compressed, slightly inflated, plumbeous, rachilla sometimes sparing ciliate; **disarticulation** with the glumes first then the lemmas falling individually leaving the paleas on the rachilla; **glumes** 1.1−1.8 mm long, ovate to lanceolate, membranous, sub-hyaline, keeled, sometimes scaberulous along the keel; **lower glume** 1.1−1.8 mm long; **upper glume** 1.4−1.8 mm long, sometimes 3-nerved; **lemmas** 1.7−2.9 mm long, broadly ovate, membranous, plumbeous, keeled, scaberulous along the keels, near the apex, and sometimes the margins, lateral nerves obscure, apex acute; **paleas** 1.6−2.7 mm long, bowed out, hyaline to plumbeous, scaberulous along the keels, apex obtuse; **stamens** 3, anthers 0.5−1.4 mm long, purplish to yellowish. **Caryopses** 0.5−0.9 mm long, obovoid to prism-shape, irregularly reticulated to faintly striate to almost smooth, usually with a well developed groove on the adaxial side.

Chromosome number. 2*n* = unknown.

Distribution and habitat. This species is endemic to Ecuador, and occurs on open, sandy slopes usually of volcanic origin between 1800 and 3400 m.

Specimens examined

ECUADOR. Azuay: 71 km SW of Cuenca on road to Loja, 12 km N of Río León bridge, 2000 m, *P. M. Peterson 9364* (ANSM, ENCB, K, MEXU, MICH, MO, QCA, TAES, UC, US, UTC, WIS). **Cañar**: Near Zhud, roadside, 2550 m, 6 Sep 1984, *S. Lægaard 52963* (AAU, COL, QCA). **Carchi**: vicinity of Hotel Rumichaca at border with Colombia, *ca.* 3000 m, *J. Luteyn & E. Cotton 10907* (MO). **Pichincha**: 1990−2347 m, *C. Cerón & L. Naranjo 2758* (MO).

Eragrostis curvula (Schrad.) Nees, Fl. Afr. Austral. Ill. 397. 1841. *Poa curvula* Schrad., Gött. Gel. Anz. 3: 2073. 1821. Type: SOUTH AFRICA. Cape Province: Cape of Good Hope, *Hess s.n.* (holotype: LE; isotype: LE-TRIN-2327.01! lower middle specimen). **Fig. 25**.

Caespitose perennials forming innovations at the base. **Culms** (45−)60−150 cm tall, erect, glabrous, sometimes glandular below the nodes, with a band of glands. **Leaf sheaths** 1/3−2/3 the length of the internodes, with scattered hairs, hairs to 9 mm long; **ligules** 0.6−1.3 mm long, ciliate; **blades** 12−50(−65) × 0.1−0.3 cm, flat to involute, abaxial surfaces glabrous, sometimes scaberulous, adaxial surfaces with scattered hairs basally, hairs to 7 mm long. **Panicles** 16−35(−40) × (4−)8−24 cm, ovate to oblong, open; primary branches 3−14 cm long, diverging 10–80° from the rachises, sometimes glandular, inconspicuous to orange glandular lanceolate patches; pulvini glabrous or not, the hairs up to 3 mm long; **pedicels** 0.5−5 mm long, appressed, flexible, sometimes glandular, inconspicuous to orange glandular lanceolate patches. **Spikelets** 4−8.2(−10) × 1.2−2 mm, 3−10-flowered, linear-lanceolate, plumbeous to yellowish; **disarticulation** irregular to acropetal, proximal rachilla segments persistent; **glumes** 1.2−3 mm long, subequal, lanceolate, hyaline; **lower glume** 1.2−2.6 mm long; **upper glume** 2−3 mm long; **lemmas** 2−3.2 mm long, ovate, membranous, lateral nerves conspicuous; apex acute; **paleas** 2−3.2 mm long, hyaline to membranous; apex obtuse; **stamens** 3, anthers 0.8−1.3 mm long, reddish-brown. **Caryopses** 1−1.7 mm long, ellipsoid to obovoid, strongly dorsally-flattened, ventral surface with a shallow, broad groove or ungrooved, smooth to striate, mostly translucent, elliptical in cross-section, light brown, bases often greenish.

Chromosome number. 2*n* = 40, 50, 60, 80 (de Wit 1954, Spies & Jonker 1987, Roodt & Spies 2003), 20, 42, 63, 80 (Chen & Peterson 2006).

Distribution and habitat. Native to southern Africa; introduced in the U.S.A, Mexico, Costa Rica, Argentina, Bolivia, Brazil, Chile, Colombia, Peru, Uruguay, and Venezuela (Nicora 1998, Peterson & Boechat 2001); rocky slopes, margins of woods, roadsides, and waste places; 10−2900 m. In Colombia, this species is known only from cultivated material.

Vernacular name. "Pasto llorón" (Pohl 1980, Echenique *et al.* 2008).

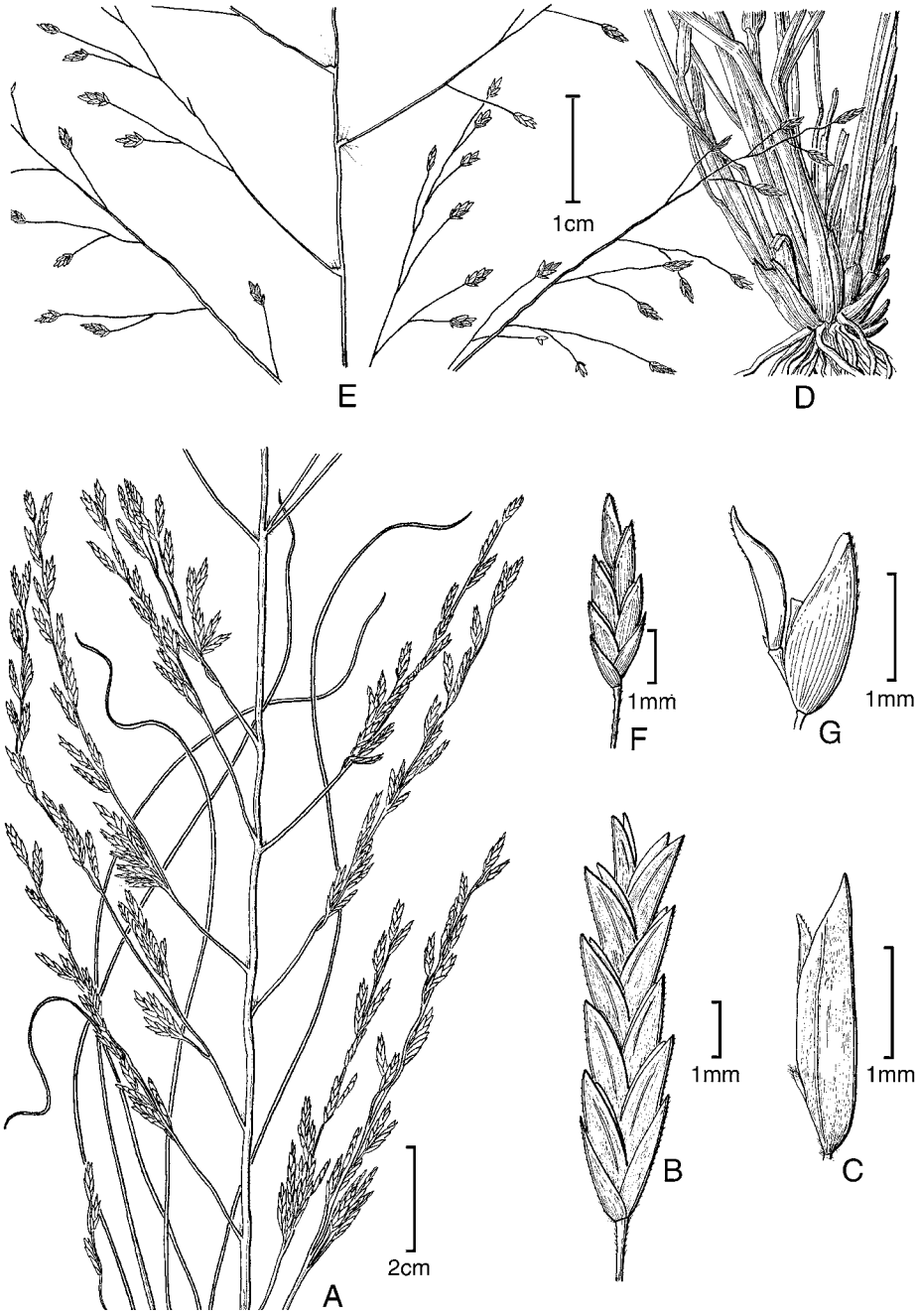


Fig. 25. ***Eragrostis curvula*** (*Reeder & Reeder 7311*). **A**. Inflorescence; **B**. Spikelet; **C**. Floret; **D**. Caryopsis, dorsal view; **E**. Caryopsis, lateral view. ***Eragrostis lugens*** (*Sánchez-Vega 3218*). **F**. Habit; **G**. Inflorescence; **H**. Spikelet; **I**. Floret with palea attached above; **J**. Caryopsis, lateral view.

Specimens examined

COLOMBIA. **Antioquia**: límites entre los municipios de Guarne y Rionegro, cultivada en las jardineras del intercambio vial entre la autopista Medellín-Bogotá y la vía al aeropuerto José María Córdoba de Rionegro, *ca.* 2200 m, Jan 2011, *D. Giraldo-Cañas 4950* (COL). **Valle del Cauca**: Palmira, cultivada (a partir de semillas de la Argentina) en la Granja Agrícola, 1000 m, 19 Jul 1963, *H. S. McKee 10489* (COL, US).

PERU. **Cajamarca:** Prov. Cajamarca, entre Cajamarca y Cumbe Mayo, W de Cajamarca, *I. Sánchez Vega 4125* (CPUN).

Eragrostis gangetica (Roxb.) Steud., Syn. Pl. Glumac. 1: 266. 1854. *Poa gangetica* Roxb., Fl. Ind., ed. 1820, 1: 341. 1820. Type: INDIA. Native of the banks of the Ganges, but scarce, *Roxburgh s.n.* (holotype: K, isotype: BM).

Plants annual, tufted, eglandular, without innovations. **Culms** 45−57 cm tall, erect, glabrous. **Leaf sheaths** glabrous, apices usually with 0.3−2 mm hairs; **ligules** 0.2 mm long, ciliate; **blades** 7−19 × 0.1−0.3 cm, flat to folded basally, involute apically, abaxial surfaces glabrous, adaxial surfaces scabridulous, sometimes with scattered hairs near the base. **Panicles** 13−25 × 1−13 cm, pyramidal or ovate to somewhat contracted, open; primary branches 0.5−12 cm long, 13−22 per culm, appressed or diverging up to 60º from the rachises, capillary, naked near the base; pulvini glabrous; **pedicels** 2−10 mm long, mostly appressed, capillary. **Spikelets** (3) 4.3−12.5 × *ca.* 1.5 mm, linear-lanceolate, yellowish, (6) 8−27-florets; **disarticulation** acropetal, paleas persistent; **glumes** lanceolate to ovate, membranous; **lower glume** 0.6 mm long; **upper glume** 1 mm long; **lemmas** 1.2 mm long, broadly ovate, membranous, lateral nerves conspicuous, apex acute; **paleas** 1 mm long, hyaline, keels scabridulous, apex obtuse; **stamens** 2, anthers 0.15−0.20 mm long, brownish. **Caryopses** 0.4−0.5 mm long, ovoid, not grooved, translucent, faintly striate and reticulate, light brown.

Chromosome number. 2*n* = 80 (Peterson 2003).

Distribution and habitat. This species is native to tropical Asia and Africa, naturalized in southern U.S.A., Belize, and Venezuela, and herein we report it for this first time for Colombia. *Eragrostis gangetica* occurs along roadsides, disturbed ground, savannas, and rocky outcrops or inselbergs below 500 m. This species is probably recently introduced and is uncommon.

Comments. *Eragrostis gangetica* is similar to *E. bahiensis*, but differs from that species in its annual habit and shorter spikelets, lemmas, anthers, and caryopses. Illustration of this species in Poilecot (1995, 1999).

Specimens examined

COLOMBIA. Vichada: Región Guayanesa, Mun. Puerto Carreño, afloramientos rocosos del tipo "lajas" entre Punta de Lajas y el cerro El Bita, ribera del río Orinoco, 40-100 m, 4–5 Jan 2004, *D. Giraldo-Cañas & C. Parra 3644, 3653* (COL). Mun.

Puerto Carreño, sabanas naturales no inundables entre el cerro El Bita (afloramientos rocosos del tipo "lajas") y las instalaciones del Comando Específico de Oriente "CEO" del Ejército Nacional de Colombia, 50 m, 6–9 Jan 2004, *D. Giraldo-Cañas & C. Parra 3674* (COL).

Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb., Prelim. Cat. 69. 1888. *Poa hypnoides* Lam., Tabl. Encycl. 1: 185. 1791. *Megastachya hypnoides* (Lam.) P. Beauv., Ess. Agrostogr. 74, 167, 175. 1812. *Neeragrostis hypnoides* (Lam.) Bush, Trans. Acad. Sci. St. Louis 13: 180. 1903. *Erosion hypnoides* (Lam.) Lunell, Amer. Midl. Naturalist 4: 221. 1915. TYPE: Tropical America. *D. Richard s.n.* (HOLOTYPE: P-LAM!; ISOTYPES: BAA-1041!, NY fragm.ex P!, US-2850742 fragm. ex P!). **Fig. 26**.

Annuals, stoloniferous, mat-forming, without innovations. **Culms** decumbent and rooting at the lower nodes, erect portion (2−)5−12(−20) cm tall, often branched, glabrous or hairy on the lower internodes. **Leaf sheaths** 1/3−1/2 as long as the internodes above, pilose on the margins, collars, and at the apices, hairs 0.1–0.6 mm long; **ligules** 0.3−0.6 mm long, ciliate; **blades** 0.5−2.5 × 0.1−0.2 cm, flat to involute, abaxial surface glabrous, adaxial surface appressed pubescent, hairs *ca.* 0.2 mm long. **Panicles** 1−3.5 × 0.7−2.5 cm, terminal and axillary, ovate, open to somewhat congested; primary branches 0.1−0.5 cm long, appressed to strongly divergent, glabrous; pulvini sparsely pilose or glabrous; **pedicels** 0.2−1 mm long, ciliate. **Spikelets** 4−13 × 1−1.5 mm, 12−35-flowered, linear-oblong, often arcuate, loosely imbricate, greenish-yellow to purplish; **disarticulation** acropetal, paleas persistent; **glumes** 0.4−1.2 mm long, subequal, linear-lanceolate to lanceolate, hyaline; **lower glume** 0.4−0.7 mm long; **upper glume** 0.8−1.2 mm long; **lemmas** 1.4−2 mm long, ovate, strongly 3-nerved, the nerves greenish; apex acuminate; **paleas** 0.7−1.2 mm long, hyaline, keels scaberulous; apex acute to obtuse; **stamens** 2, anthers 0.2−0.3 mm long, brownish. **Caryopses** 0.3−0.5 mm long, ellipsoid, faintly striate and reticulate, laterally-flattened, somewhat translucent, elliptical in cross-section, light brown.

Chromosome number. 2*n* = 20 (Davidse & Pohl 1972).

Distribution and habitat. Native to the Americas found in North, Central, and South America (excluding Chile), and the Caribbean (Nicora 1998, Peterson & Boechat 2001); found along muddy or sandy shores of lakes and rivers and moist disturbed sites; 0−1000 m.

Specimens examined

COLOMBIA. Amazonas: Loretoyacu, 1 Oct 1943, *C. O. Grassl 10091* (US). Trapecio amazónico, Amazon River, Leticia, 100 m, Sep 1946, *R. E. Schultes 8196* (COL, US). Trapecio Amazónico, Loretoyacu River, 100 m, Oct 1946, *R. E. Schultes & G. A. Black 8497-A* (COL, US). **Amazonas-Caquetá**: Río Caquetá, Araracuara, sabana de la Angostura, 400 m, 21 Dec 1951, *H. García-Barriga & R. E. Schultes 14155* (COL, US). **Amazonas-Vaupés**: Río Apaporis, Soratáma, 14 Feb 1952, *R. E. Schultes & I. Cabrera*

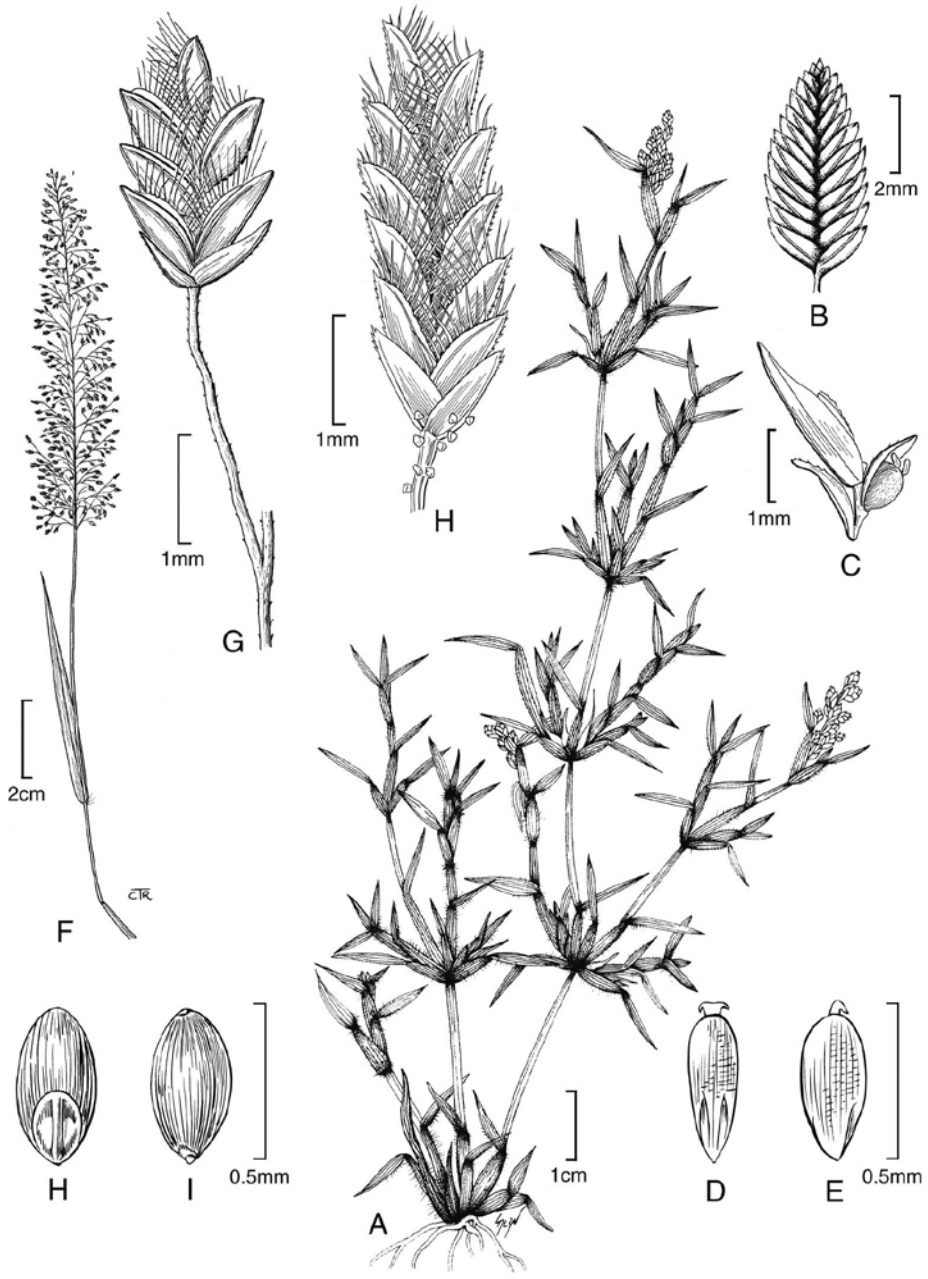


Fig. 26. ***Eragostis hypnoides*** (A-C: *Giraldo-Cañas et al. 3847-a*; D & E: *López & Sagástegui 4023*). **A**. Habit; **B**. Spikelet; **C**. Floret with two paleas attached below, one with a caryopsis; **D**. Caryopsis, dorsal view; **E**. Caryopsis, lateral view. ***Eragrostis tenella*** (*Llatas 1180*). **F**. Culm with Inflorescence; **G**. Spikelet; **H**. Caryopsis, dorsal view; **I**. Caryopsis, lateral view. ***Eragrostis viscosa*** (*Haught 4464*). **H**. Spikelet with sand grains attached to pedicel and lower glumes.

16103 (COL, US). **Antioquia**: Puerto Berrío, 125 m, 11 Jan 1931, *W. A. Archer 1384* (US). **Atlántico**: Al sur de Barranquilla, río Magdalena, en la isla en frente de Puerto Giraldo, 5−10 m, 29 Apr 1960, *L. E. Mora 1465* (COL). **Arauca**: Mun. Arauquita, vereda La Osa, bloque Caño Limón, plataforma petrolera Chipirón, 150 m, 31 Mar 2008, *G. A. Silva 745* (COL). **Bolívar**: Brazo de Chicagua, ciénaga detrás de Boquillas, 19 Jul 1973, *J. M. Idrobo 6696* (COL). Soplaviento, and vicinity, 5-10 m, 16 Nov 1926, *E. P. Killip & A. C. Smith 14604* (COL, MO, US). **Boyacá-Arauca**: Los Llanos, Río Casanare about 15 km above Rondón, 200 m, 15 Mar 1939, *O. Haught 2677* (US). **Caquetá**: Río Pepeya, Puerto Tokio, 250 m, 1 Mar 1976, *J. M. Idrobo 8597* (COL). **Casanare** (Boyacá): Los Llanos, along Meta, near Orocué, 140 m, 30 Mar 1939, *O. Haught 2721* (COL, MO, US). **Cauca**: Cerca de Puerto Tejada, 1000 m, 14 Aug 1968, *S. Espinal 2380* (COL). **Cesar**: Mun. Valledupar, sustratos arenosos en las riberas del río Guatapurí, 150-180 m, 30 Mar 2010, *D. Giraldo-Cañas 4507-a* (COL). **Córdoba**: Mun. Lorica riberas de los estanques de la Estación Piscícola de la CVS (Corporación autónoma regional del valle de los ríos Sinú y San Jorge), *ca.* 50 m, 22 Feb 2005, *D. Giraldo-Cañas et al. 3847-A* (COL, HUA, US). **Guaviare**: Angostura Nro. 2, margen derecha del río Guayabero, 200 m, 23 Feb 1969, *P. Pinto 1010* (COL). **Meta**: Margen izquierad del río Guayabero, 10 km abajo del caño Lozada, 350 m, 30 Jan 1959, *P. Pinto 365* (COL, US). **Santander**: Río Magdalena, boca del río Sogamoso, 110-120 m, 15 Jan 1918, *F. W. Pennell 3842* (US). **Tolima**: Mun. Honda, en sustratos arenosos, ribera de pequeña quebrada antes de su desembocadura en el río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4272* (COL). **Valle del Cauca**: Buga, no date, *M. A. Bonpland s.n.* (COL-253787). Northeast of Cali, near Río Cauca, 1000 m, 3 Mar 1939, *E. P. Killip & G. Varela 34701* (COL, US).

ECUADOR. Guayas: Milagro, 50 m, *A. S. Hitchcock 20168* (GH, US).

PERU. **Cajamarca:** Prov. San Ignacio, al N de San Ignacio, *I. Sánchez Vega 3965* (CPUN). **Loreto:** Prov. Maynas, Santa María near Yurimaguas, *R. Ferreyra 5023* (US, USM); Iquitos, *F. Ayala 00676* (AMAZ). Prov. Maynas, on Río Amazonas, well above Iquitos, 100-110 m, *F. R. Fosberg 29081* (COL). Vista Alegre, fleuve Amazone, *C. Sastre & R. Echeverry 625* (COL). **Tumbes:** Prov. Tumbes, margen del Río Tumbes, *A. López M. & A. Sagástegui A. 4023* (US). Along the Río Tumbes, in Tumbes, nearest the main plaza, *D. Simpson & J. Schunke 588* (COL). **Ucayali:** Prov. Coronel Portillo, Panaillo, margen derecha del Ucayali, 190 m, *A. Sagástegui A. & A. Aldave 5720* (COL, US).

Eragrostis intermedia Hitchc., J. Wash. Acad. Sci. 23 (10): 450. 1933. Type: U.S.A. Texas: Bexar Co., San Antonio, 3 Jul 1910, *A. S. Hitchcock 5491* (holotype: US-1535749!; isotypes: US-908993!, US-1535750!). **Fig. 20.**

Caespitose perennials, eglandular, with innovations. **Culms** (30−)40−90(−110) cm tall, erect, glabrous below the nodes. **Leaf sheaths** overlapping, ½ to about as long as the internodes below, sparsely pilose on the margins, apices hairy, hairs to 8 mm long, not papillose-based; **ligules** 0.2−0.4 mm long; **blades** (4−)10−20(−30) × 0.1−0.3 cm, flat or involute, abaxial surfaces glabrous, adaxial surfaces densely hairy behind

the ligules, elsewhere usually glabrous, occasionally sparsely hairy. **Panicles** 15−40 × (8.5−)15−30 cm, ovate, open; primary branches 4−25 cm long, diverging 20–90° from the rachises, capillary; pulvini hairy or glabrous; **pedicels** 2−14 mm long, divergent. **Spikelets** 3−7 × 1−1.8 mm, narrowly lanceolate, olivaceous to purplish, with (3−)5−11 florets; **disarticulation** acropetal, paleas persistent; **glumes** lanceolate to ovate, hyaline to membranous; **lower glume** 1.1−1.7 mm long, narrower than the upper glume; **upper glume** 1.3−2 mm long, apices acuminate to acute; **lemmas** 1.6−2.2 mm long, ovate, membranous, hyaline near the margins, lateral nerves inconspicuous, apices acute; **paleas** 1.4−2.1 mm long, hyaline, narrower than the lemmas, apices obtuse to acute; **stamens** 3; anthers 0.5−0.8 mm long, purplish. **Caryopses** 0.5−1.0 mm long, rectangular-prismatic, somewhat laterally compressed, with a well-developed adaxial groove, striate, opaque, reddish-brown.

Chromosome number. 2*n* = *ca.* 54, 60, 72, *ca.* 74, 80, 100, 120 (Peterson 2003).

Distribution and habitat. *Eragrostis intermedia* is a native American species, and grows in clay, sandy, and rocky soils, often in disturbed sites; 0−2800 m. Its range extends from the United States through Mexico and Central America to South America.

Comments. *Eragrostis intermedia* is similar to the more widespread *E. lugens*, but differs from that species in having wider spikelets, longer lemmas, and caryopses with a prominent adaxial groove. A numerical taxonomic study of the *Eragrostis intermedia* complex was done by Witherspoon (1975), who found strong phenotypic overlap of individuals in his principal component and UPGMA cluster analyses of *E. intermedia* with *E. palmeri* S. Watson*, E. erosa* Scribn. ex Beal, and *E. hirta* E. Fourn. Determination of these species is often problematic and examination of this group, which also includes *E. lugens* and *E. hirsuta* (Michx.) Nees, is needed to clarify species boundaries.

Specimens examined

COLOMBIA. Cundinamarca: Provincia Sabana Centro, Suesca-Nemocón, vereda Río Checua, hacienda Susatá, en cultivos de Acacia, áreas secas, 2600−2800 m, 7 Jul 2000, *J. L. Fernández et al. 18921-B* (COL), 23 Aug 2000, *J. L. Fernández et al. 19163* (COL). Provincia Almeidas, Mun. Suesca, hacienda Susatá, en matorral seco, 2650 m, 8 Sep 1999, *Groenendijk & Rietman 1229* (COL), 26 Nov 1999, *Groenendijk & Rietman 1277* (COL), 15 Nov 1999, *Groenendijk & Rietman 1325* (COL), 2 Aug 2000, *Groenendijk & Rietman 1534* (COL).

Eragrostis japonica (Thunb.) Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 1 (4): 405. 1830. *Poa japonica* Thunb., Fl. Jap. 51. 1784. *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult. var. *japonica* (Thunb.) Roem. & Schult., Syst. Veg. 2: 576. 1817. *Diandrochloa japonica* (Thunb.) A.N. Henry, Bull. Bot. Surv. India 9: 290. 1968. *Roshevitzia japonica* (Thunb.) Tzvelev, Novosti Sist, Vyss. Rast. 7: 50. 1970 [1971]. Type: JAPAN, *Herb. Thundberg 2252* (holotype: UPS, microfiche IDC 1036!, K photo!; isotype: BRI fragm.). **Fig. 27**.

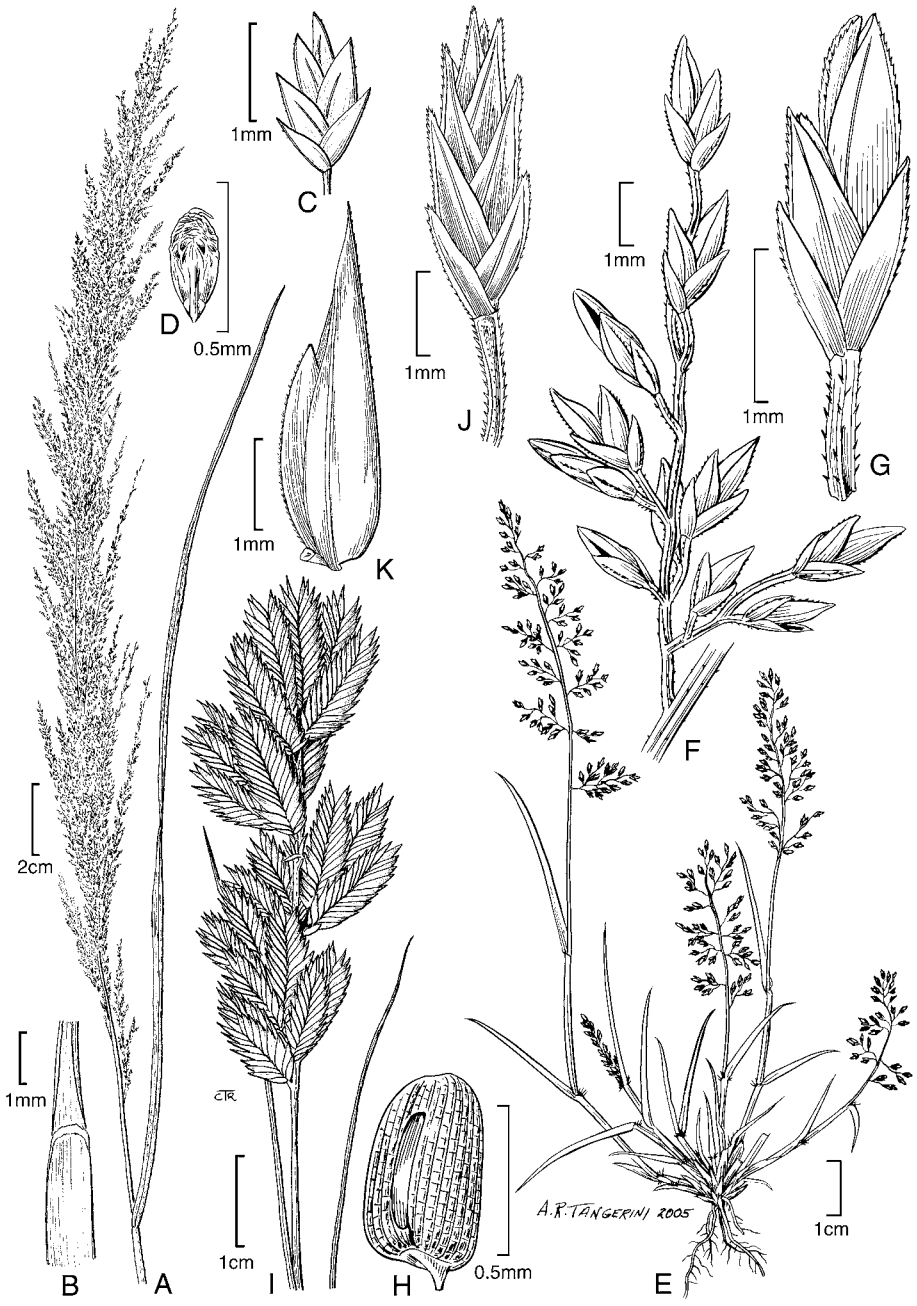


Fig. 27. ***Eragrostis japonica*** (*Asplund 14802*). **A**. Inflorescence with flag leaf; **B**. Ligule; **C**. Spikelet; **D**. Caryopsis, dorsal view. ***Eragrostis nigricans*** (*Peterson & Refulio-Rodríguez 13855*; *Dillon et al. 3258*). **E**. Habit; **F**. Panicle branch; **G**. Spikelet; **H**. Caryopsis, lateral view. ***Eragrostis secundiflora*** (*Anderson et al. 37109*). **I**. Inflorescence; **J**. Spikelet; **K**. Floret.

Poa glomerata Walter, Fl. Carol. 80. 1788. *Eragrostis glomerata* (Walter) L.H. Dewey, Contr. U.S. Natl. Herb. 2 (3): 543. 1894. *Megastachya glomerata* (Walter) Schult., Mant. 2: 327. 1824. *Diandrochloa glomerata* (Walter) Burkart, Bol. Soc. Argent. Bot. 12: 287. 1968. Type: U.S.A. South Carolina: *Walter s.n.* (holotype: BM!).

Caespitose annuals. **Culms** 25−100(−115) cm tall, erect, sometimes geniculate below, branching from the lower and middle nodes, glabrous and somewhat shiny below the nodes. **Leaf sheaths** 3/4 to 7/8 as long as the internodes above, glabrous at the summit and along the upper margins; **ligules** 0.4−0.6 mm long, a delicate membrane, glabrous; **blades** (4−)15−20(−25) × 0.15−0.6 cm, flat, glabrous below and scaberulous above, sometimes auriculate near the base. **Panicles** 15−40 × 0.8−5 cm, lanceoloid, contracted, interrupted below, the ascending, often appressed primary branches 2−10 cm long, spreading up to 30° from the rachises, the branches scaberulous and shiny, floriferous near base; pulvini glabrous; **pedicels** 0.5−1.5 mm long, erect and sinuous. **Spikelets** 2.2−3.8 × 0.8−1.3 mm, 4−12-flowered, oblong to narrowly lanceolate, yellowish-brown to whitish and hyaline; **disarticulation** basipetal, the rachillas and glumes persistent; **glumes** 0.6−1 mm long, subequal, ovate to ovate-lanceolate, hyaline, faintly keeled, scaberulous along the keel; **upper glume** without a midnerve; **lemmas** 0.9−1.2 mm long, ovate, hyaline, the lateral nerves conspicuous below, greenish, keeled, glabrous along the keel; apex acute; **paleas** 0.6−0.8 mm long, hyaline, scaberulous along the keel near the apex; apex acute, often bifid; **stamens** 2, anthers 0.1−0.2 mm long, whitish to light brown. **Caryopses** 0.3−0.4 mm long, obovoid, smooth or minutely irregularly striate, slightly dorsally-flattened, pericarp often loose, elliptical in cross-section, reddish-brown.

Chromosome number. 2*n* = 20, 60 (Christopher & Abraham 1974, Pohl & Davidse 1971 reported for *E. glomerata*).

Distribution and habitat. Native in tropical regions of Asia; introduced in the U.S.A., Mexico, Central America, Caribbean, Argentina, Bolivia, Brazil, Colombia, Ecuador, Guyana, Paraguay, Peru, Uruguay, and Venezuela (Nicora 1998, Peterson & Boechat 2001); occurs in moist areas along rivers and streams usually in sandy soils; 0−400 m.

Specimens examined

COLOMBIA. Amazonas: Río Caquetá, La Pedrera, 240 m, 1−4 Oct 1952, *H. García-Barriga 14586* (COL). **Atlántico**: En la margen derecha del río Magdalena, en frente de Barranquilla, 6 m, 13 May 1960, *L. E. Mora 1498* (COL). **Casanare**: Yopal, hacienda La Milagrosa, 300 m, 10 Nov 1974, *P. Carranza 11* (COL). **Cundinamarca**: No data, 23 Sep 2000, *C. Romero 108* (COL). **Magdalena**: Santa Marta, 1898-1899, *H. H. Smith 111* (COL, MO, US). **Meta**: Llanos, 190 m, 3 Jan 1973, *G. Davidse & F. Llanos 5504* (COL, MO). Llano de San Martín, 250 m, no date, *H. Karsten s.n.* (US-1126597). Llano de San Martín, 250 m, Jan 1856, *J. J. Triana 352* (COL, US). **Tolima**: Saldaña, vereda Baudá, vía Saldaña-Baudá, 360 m, 10 Jul 2002, *A. Osorio 255* (COL). **Vichada**: Región Guayanesa, localidad de Casuarito, afloramientos rocosos del tipo "lajas", cerca de los raudales de Atures, ribera del río Orinoco, 50-100 m, 11 Jan 2004, *D. Giraldo-Cañas & C. Parra 3721-A* (COL). Entrada del raudal San Borja, Ventanas, 100 m, 17 Mar 1971, *P. Pinto & C. Sastre 1317* (COL, US).

ECUADOR. Guayas: Milagro, 50 m, *A. S. Hitchcock 20570* (F, K, US).

PERU. **Cajamarca:** Prov. Jaén, 1 km N of Chamayo on Hwy. 5N towards Jaén, *P. M. Peterson & N. F. Refulio-Rodríguez 15053* (US, USM). **Huánuco:** Prov. Pachitea, Bosque Nacional de Iparia, *J. Schunque V. 2094* (COL, US). **La Libertad:** Prov. Trujillo, Mocan, Hacienda Casagrande, *A. Sagástegui A. 3977* (US). **Lambayeque:** Prov. Reque, Río Reque, *S. Llatas Q. 193* (US). **Loreto:** Iquitos, *E. Asplund 14802* (LIL, US). **Madre de Dios:** Parque Nacional del Manu, Cocha–Cashu, Río Manu, *R. Foster 9769* (US). **Piura:** Hacienda Buenos Aires, campos de arroz, *E. Anderson 569* (US).

Eragrostis lugens Nees, Fl. Bras. Enum. Pl. 2: 505−506. 1829. *Eragrostis pilosa* (L.) P. Beauv. var. *lugens* (Nees) Griseb., Abh. Königl. Ges. Wiss. Göttingen 24: 290. 1879. Type: BRAZIL, *F. Sellow s.n.* (lectotype: US-732957!, designated by Davidse, Fl. Mesoamericana 6: 271. 1994; isolectotypes: B, BAA-2932!). **Fig. 25**.

Caespitose perennials forming innovations at base. **Culms** 30−70 cm tall, erect, sometimes geniculate below, glabrous and somewhat shiny below the nodes. **Leaf sheaths** 1/2−2/3 as long as the internodes above, ciliate at the summit and along the upper margins; **ligules** 0.2−0.3 mm long, ciliate; **blades** (5−)8−22 × 0.1−0.2(−0.22) cm, involute, rarely flat, mostly glabrous above and below, scaberulous towards the apex and along margins, sometimes with scattered hairs along the margins, the hairs up to 7 mm long. **Panicles** 16−28 × 10−21 cm, open, ovate, the ascending primary branches 6−15 cm long, spreading up to 100° from the rachises, the branches scaberulous, not floriferous near base; secondary branches composed of loosely overlapping spikelets; pulvini ciliate, the hairs up to 7 mm long; **pedicels** 1.4−5(−7) mm long, erect, wiry, spreading. **Spikelets** 2−4.5(−5) × 0.5−1.1 mm, 2−7-flowered, narrow lanceolate, light plumbeous to reddish-purple; **disarticulation** acropetal, paleas and rachilla persistent; **glumes** 0.6−1.4 mm long, subequal, broadly ovate to narrowly lanceolate, hyaline, keeled, scaberulous along the keel, sometimes reddish-purple; **lower glume** 0.6−1 mm long; **upper glume** 1.1−1.4 mm long, usually broader than the lower; **lemmas** 1.2−1.8 mm long, broadly ovate, membranous, the distal margins hyaline, lateral nerves obscure to barely evident, keeled, scaberulous along the keel near apex; apex acute; **paleas** 1.1−1.7 mm long, membranous to partially hyaline, scaberulous along keels; apex obtuse; **stamens** 3, anthers 0.2−0.7 mm long, reddish-purple. **Caryopses** 0.5−0.6 mm long, obovoid to somewhat prism-shaped, terete to somewhat laterally flattened, with a weak ventral groove, striate and reticulate, usually opaque, irregularly obovate to triangular in cross-section, faintly reddish-brown to whitish.

Chromosome number. 2*n* = 40, 80 (Gould 1958).

Distribution and habitat. Native to the Americas with a broad distribution from the U.S.A., Mexico, Central America, Argentina, Bolivia, Brazil, Colombia, Ecuador, Peru, Uruguay, and Venezuela (Nicora 1998, Peterson & Boechat 2001); sandy dunes, river banks, near cultivated fields, and open slopes; 0−2800 m.

Specimens examined

COLOMBIA. Boyacá: Along Río Soapaga, 12 km of Belén, 2460 m, 7 Nov 1944, *F. R. Fosberg 22190* (US). **Cauca**: Chisquio, finca Los Derrumbos, 1700 m, 3 Feb 1940, *E. Asplund 10510* (US). El Ramal to Río Sucio, west of Popayán, 1600−1900 m, 3 Jul 1922, *F. W. Pennell & E. P. Killip 8135* (US). **Huila**: Cordillera Oriental, east of Neiva, 1500 m, 1−8 Aug 1917, *H. H. Rusby & F. W. Pennell 1023* (US). **Valle del Cauca**: Mozambique, north of La Cumbre, 16 Sep 1922, *E. P. Killip 11277* (US). Carretera al mar, west of Cali, Cordillera Occiedental, 1300 m, 13 Nov 1948, *E. P. Killip & F. C. Lehmann 39795* (US). Pavas, Cordillera Occidental, 1500−1800 m, 12 May 1922, *F. W. Pennell 5529* (US). Unknown department: *J. C. Mutis 5399* (MA, US), *5401* (COL, MA, US).

ECUADOR. Tungurahua: W of Baños at bridge over Río Chambo, 2050 m, *P. M. Peterson et al. 8772* (QCA, US). 6 km W of Baños, 2180 m, *P. M. Peterson et al. 8806* (K, MO, QCA, UC, US, WIS).

PERU. **Apurímac:** Prov. Abancay, Tablachaca, *C. Vargas C. 015695* (CUZ).

Eragrostis lurida J. Presl, Reliq. Haenk. 1 (4–5): 276. 1830. *Poa lurida* (J. Presl) Kunth, Enum. Pl. 1: 342. 1833. Type: PERU. *T. Haenke s.n.* (holotype: PR; isotypes: MO-2111146!, PR, US-2941523 fragm. ex PR!). **Fig. 28**.

Perennial, caespitose, with innovations at base. **Culms** (5–)15–75 cm tall, erect, sometimes slightly geniculate below, glabrous or occasionally with a tuft of hairs below the nodes, the hairs less than 1 mm, sometimes with an occasional elliptical orange gland. **Leaf sheaths** 3/4 to about as long as the internodes above, densely white ciliate at the summit and along the margins, sometimes with scattered hairs on the abaxial surface; **ligules** 0.5–0.9 mm long, ciliate; **blades** 1.5–16.5 × 0.15–0.35(–0.5) cm, flat to involute, glabrous and sometimes shiny below and scaberulous above. **Panicles** 3–35 × 0.5–5(–7) cm, narrowly ovate to spicate, contracted and condensed into tightly glomerate lobes, interrupted near base, spicate to narrowly ovate, rachis glabrous, the ascending primary branches 0.6–5 cm long, densely flowered, appressed or spreading 20°–80° from the rachises, floriferous near base; secondary branches condensed into tightly glomerate lobes of spikelets; pulvini ciliate or glabrous; **pedicels** 0.1–1 mm long, ascending and appressed, wiry, scabrous. **Spikelets** 2.5–6 × 1–2.1 mm, 3- to 10-flowered, narrowly lanceolate to ovate, inflated to slightly compressed, dark to light plumbeous, sometimes purple-tinged, rachilla often ciliate; **disarticulation** acropetal with glumes first, then lemmas falling individually, paleas persistent on rachilla; **glumes** 1–2 mm long, subequal, broadly ovate to lanceolate, membranous, margins hyaline, keeled, scaberulous along keel, sometimes 3-nerved; **lower glume** 1–1.5 mm long; **upper glume** 1.2–2 mm long; **lemmas** 1.6–2.4 mm long, broadly ovate, membranous, lateral nerves conspicuous, evident, keeled; apex acute, scaberulous, the minute prickle hairs appearing as whitish dots under 10–20x magnification; **paleas** 1.5–2.3 mm long, membranous to partially hyaline, scaberulous along the keels; apex truncate to obtuse;

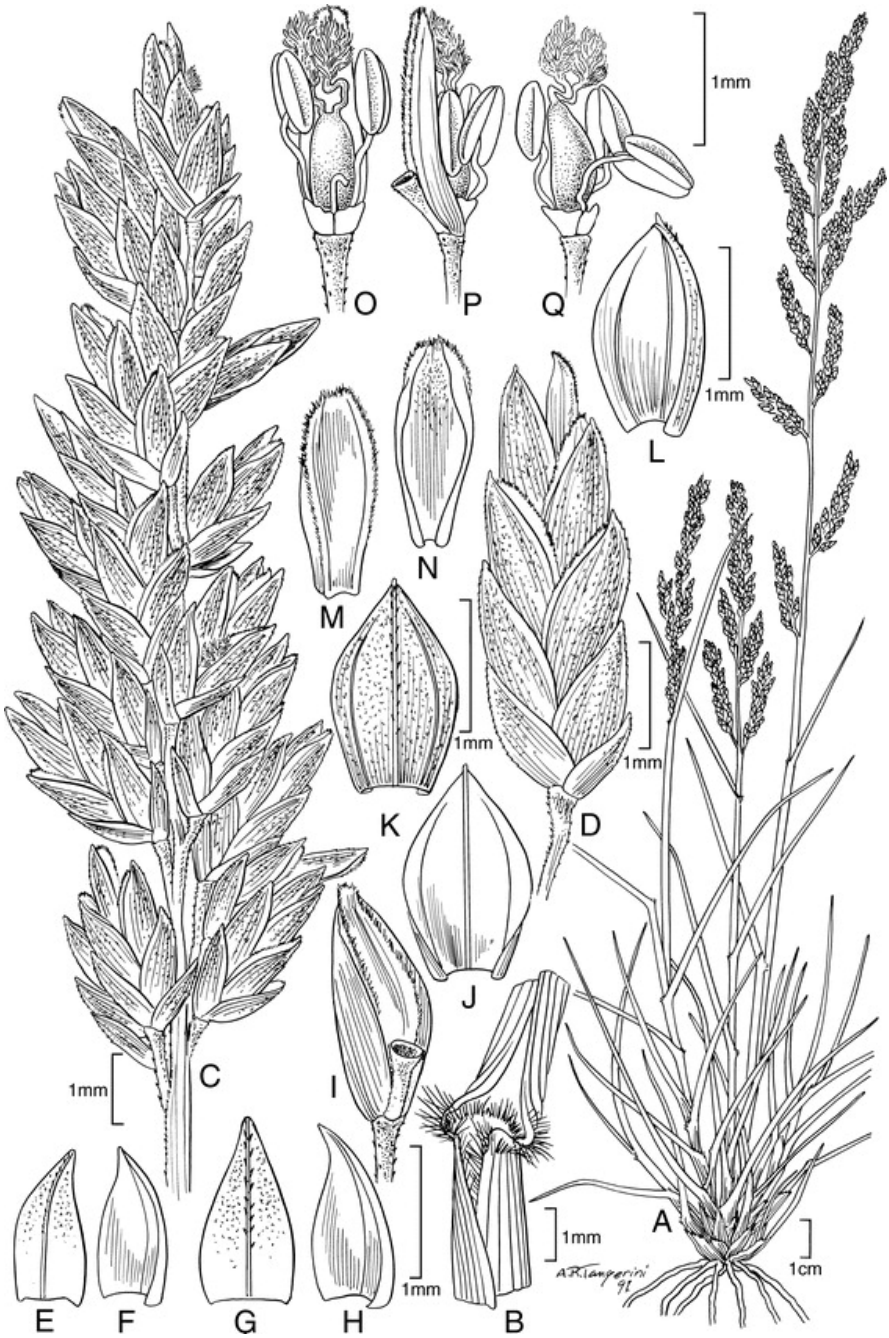


Fig. 28. ***Eragrostis lurida*** (*Peterson et al. 9103*, *Peterson & Judziewicz 9327*, *Peterson & Refulio-Rodríguez 13993*). **A**. Habit; **B**. Ligule; **C**. Inflorescence; **D**. Spikelet; **E**. Floret; **F**. Lemma, dorsal view; **G**. Palea, dorsal view; **H**. Palea enclosing the stamens, pistil, and lodicules, ventral view; **I**. Caryopsis, dorsal view; **J**. Caryopsis, lateral view.

stamens 3, anthers 0.4–0.6 mm long, reddish purple. **Caryopses** 0.6–0.8 mm long, obovoid to ellipsoid, striate and reticulate, sometimes with a weak ventral groove, rectangular with the lateral sides angled in cross section, light reddish brown.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Native to the central Andes from Bolivia, Colombia, Ecuador, and Peru; dry rocky hillsides, slopes, sandy roadsides, and rocky alluvial fans; 2000–3800 m.

Specimens examined

COLOMBIA. Cauca: Popayán, no date, *F. C. Lehmann 6997* (US). **Nariño**: Cumbal, *André 3524* (US). Unknown department: *J. C. Mutis 5517* (COL, MA, US).

ECUADOR. **Chimborazo:** Alausí, *A. S. Hitchcock 20713* (US). 8.7 km W of Alausí on road to Sibambe, 2580 m, *P. M. Peterson et al. 8818* (COL, K, MO, QCA, UC, US, WIS). **Cotopaxi:** 20 km N of Ambato & 21.5 km S of Latacunga, just off the Pan-American Hwy., *P. M. Peterson et al. 8787* (US). **Pichincha:** Malchingui, *M. Acosta-Solís 16342* (US). **Tungurahua:** Ambato, *A. S. Hitchcock 21728* (US).

PERU. **Ancash:** Prov. Bolognesi, 8 km E of Raquia & 2 km W of Cajacay on Ruta 02-104, *P. M. Peterson et al. 17881* (US, USM); Prov. Huari, 21 km S of Huari on rd. towards San Marcos at Río Mosna crossing, *P. M. Peterson & N. F. Refulio-Rodríguez 13856* (US, USM). **Apurímac:** Prov. Abancay, Tablachaca, *C. Vargas C. 015701* (CUZ, USM); Prov. Andahuaylas, near Huancarama, *C. Vargas C. 008836* (CUZ). **Ayacucho:** Prov. Huamanga, Cerro Acuchimay near Ayacucho, *O. Tovar 2447* (USM). **Cajamarca:** Prov. Cajabamba, 6 km S of Cajabamba on rd. towards Huamachuco, *P. M. Peterson & N. F. Refulio-Rodríguez 13993* (US, USM); Prov. Cajamarca, just N of Colina, *P. Gutte & G. Muller 9093* (USM); 1 km S of Huambocancha on rd. towards Cajamarca, *P. M. Peterson & N. F. Refulio-Rodríguez 14845*, *14847* (US, USM); 4 km N of San Juan on rd. to Cajamarca, *J. T. Columbus et al. 3511* (RSA, US); Prov. Cutervo, 13 km W of Cutervo on rd. towards Sócoto, *P. M. Peterson & N. F. Refulio-Rodríguez 15005* (US, USM). **Cusco:** Prov. Anta, near Chacán, *C. Vargas C. 017116* (CUZ); Prov. Cusco, Mishahuara, *C. Vargas C. 21997* (CUZ); Prov. Urubamba, Yahuarmaqui, *C. Vargas 9281* (US); Muych, *C. Vargas C. 014115* (CUZ). **Huancavelica:** Prov. Huancavelica, Izcuchaca, *O. Tovar 2447* (USM). Prov. Tayacaja, Hacienda Pilcos, below Colcabamba, *O. Tovar 1899* (US). **Huánuco:** Prov. Huánuco, near Huánuco, *O. Velarde 2546* (US). **Junín:** Prov. Huancayo, Huancayo, *ca.* 3317 m, *J. Soukup 1906* (COL, US). Prov. Huancayo, Huancayo en el Cerro La Libertad, *O. Velarde 2636* (US). Prov. Tarma, 1 km up rd. to Hacienda Maraynioc out of Palca, *P. M. Peterson & O. Tovar 14050* (US, USM). **Lima:** Prov. Lima, Dist. Lurín, *M. LaTorre 110* (USM).

Eragrostis magna Hitchc., Contr. U.S. Natl. Herb. 24 (8): 341. 1927. Type: PERU. Huánuco: Huacachi Estación near Muna, 2000 m, 20 May–1 June 1923, *J. F. MacBride 4069* (holotype: F-535136; isotype: US-1256382!). **Fig. 29**.

Fig. 29. ***Eragrostis magna*** (*Peterson & Refulio-Rodríguez 16515*; *Macbride 4069*). **A**. Habit; **B**. Panicle; **C**. Spikelet; **D**. Floret.

Perennial, caespitose with innovations and short rhizomes near base. **Culms** 80–150 cm tall, erect or ascending, robust, glabrous and somewhat shiny below the nodes, 3 or 4 nodes per culm, 4–8 mm in diam. at base. **Leaf sheaths** 2/3–3/4 the length of the internodes above, mostly glabrous or sparsely short-bearded at the summit; **ligules** *ca.* 0.25 mm long, ciliate; **blades** (26–)40–60 × (0.3–)0.4–0.7 cm, flat below and in the middle, involute toward the apex, glabrous and pilose on the lower margins above. **Panicles** (22–)30–50 × 6–16 cm, narrowly ovate, somewhat condensed and densely flowered; primary branches 12–24 cm, semi-verticillate, ascending, not floriferous near base, branches diverging 0°–90° from the rachises; pulvini pilose, the hairs up to 3 mm long; **pedicels** mostly 1–6 mm long, erect, sinuous. **Spikelets** 5–8(–10) × 2–2.4 mm, (5 to)7- to 10-flowered, narrowly oblong to ovate-lanceolate, brownish olivaceous to plumbeous; **disarticulation** with the lemma first then the palea, rachilla mostly terete, persistent with a short crown of hairs at the apex, the hairs less than 0.2 mm long; **glumes** 2–2.4 mm long, subequal, hyaline, 1(3)-nerved, keeled, apex acute to acuminate; **lower glume** 2–2.2 mm long, narrower than the upper; **upper glume** 2.1–2.4 mm long; **lemmas** 2.4–2.9 mm long, ovate to lanceolate, glabrous, membranous and hyaline on margins, margins involute on lower half, keeled toward apex, lateral nerves evident; apex acute to obtuse; **paleas** 2.4–2.9 mm long, about as long as the lemma, hyaline, scaberulous along the keels; apex truncate; **stamens** 3, anthers 1.2–1.5 mm long. **Caryopses** 1.2–1.8 mm long, rectangular-prismatic, strongly laterally flattened, striate and reticulate, with a deep ventral groove, narrowly triangular in cross section, reddish brown.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Endemic to the central Peruvian Andes and known only from a few collections; occurs on steep, rocky, often calcareous slopes in grasslands; 1900–2700 m.

Specimens examined

PERU. **Apurímac:** Prov. Aymaráes, 16 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodríguez 16515* (US, USM). **Cajamarca:** Prov. Chota, Distrito Cochabamba, 4 km sobre la carretera Cochabamba–Cutervo, *I. Sánchez Vega 2292* (CPUN, US). **Huánuco:** Prov. Huánuco, Hacachi, near Muña, *J. F. Macbride 4069* (F, US).

Eragrostis maypurensis (Kunth) Steud., Syn. Pl. Glumac. 1: 276. 1854. *Poa maypurensis* Kunth, Nov. Gen. Sp. 1: 161, 162. 1815 [1816]. *Megastachya maypurensis* (Kunth) Roem. & Schult., Syst. Veg. 2: 588. 1817. Type: VENEZUELA. Amazonas: Río Orinoco, Apr, *F. Humboldt & A. Bonpland s.n.* (holotype: P!; isotypes: COL!, BAA-1053 fragm!, P!, US-2850758 fragm. ex P-BONPL! & fragm. ex B-WILLD!). **Fig. 30**.

Caespitose annuals. **Culms** 25−45 cm tall, erect to ascending, often decumbent, many branched from the base forming a rosette, mostly with 2−3(−6) nodes. **Leaf sheaths** 1/2−2/3 as long as the internodes above, mostly glabrous, pilose at the summit and

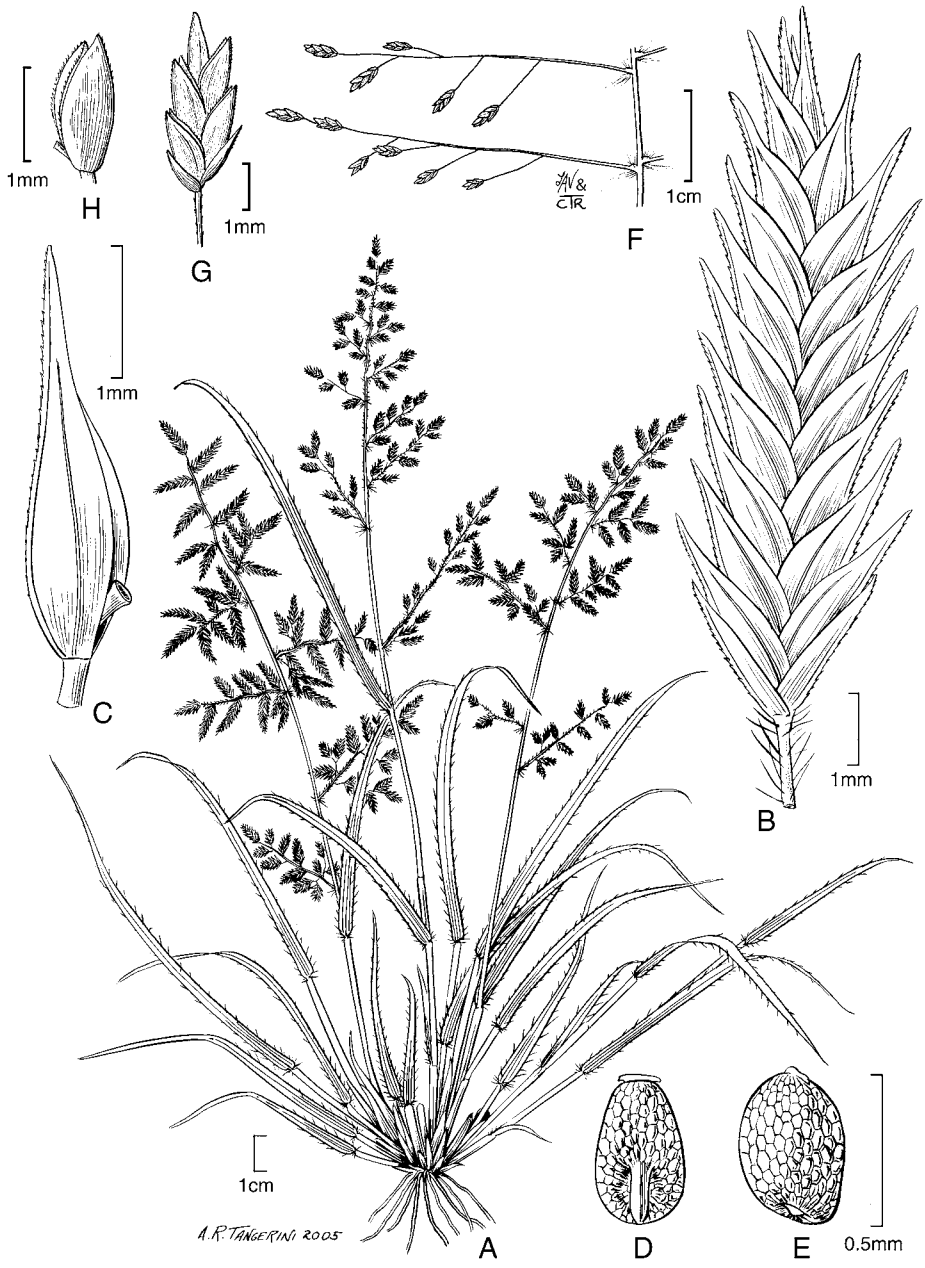


Fig. 30. ***Eragrostis maypurensis*** (*Swallen 3306*; *Belshaw 3359*). **A**. Habit; **B**. Spikelet; **C**. Floret; **D**. Caryopsis, dorsal view; **E**. Caryopsis, lateral view. ***Eragrostis polytricha***. **F**. Inflorescence; **G**. Spikelet; **H**. Floret.

along upper margins; **ligules** *ca.* 0.5 mm long, ciliate; **blades** 6−12 × 0.2−0.4 cm, flat to loosely involute towards the apex, scattered pilose near base and long margins to pilose abaxially and adaxially, the hairs 1.5−5 mm long, papillose-based. **Panicles** 6−14 × (1.5−)3−7.5 cm, open, narrowly ovate to oblong, more or less densely-flowered, primary branches 1.5−5 cm long, spreading, solitary at a node, floriferous to base, branches diverging 0−70° from the rachises; pulvini pilose, the hairs up to 4 mm long; **pedicels** 0−1.5 mm long, shorter than the spikelets, appressed, with a few scattered hairs. **Spikelets** 8−15(−30) × 1.8−2.5(−3) mm, 12−35-flowered, narrowly lanceolate to ovate lanceolate, florets imbricate often appearing to be borne in fascicles, reddish-purple to yellowish; **disarticulation** acropetal with the paleas and glumes persistent; **glumes** (1.5−)2−2.6 mm long, subequal, lanceolate-acuminate, strongly to weakly keeled, scaberulous along the keel; **lower glume** 2−2.6 mm long, usually longer than the upper; **upper glume** (1.5−)2−2.6 mm long; **lemmas** 1.8−3 mm long, ovate-acuminate, chartaceous, lateral nerves and midnerve evident usually green; apex acuminate and recurved; **paleas** 1.5−2.2 mm long, shorter than the lemma, hyaline; **stamens** 2, anthers 0.2−0.3 mm long, purplish. **Caryopses** 0.4−0.7 mm long, ovoid, translucent, rhomboid reticulate without striations, obovate to circular in cross-section, reddish-brown.

Chromosome number. 2*n* = 20 (Pohl & Davidse 1971).

Distribution and habitat. Native to the Americas from Mexico, Central America to South America in Bolivia, Brazil, Colombia, Peru, and Venezuela (Nicora 1998, Peterson 2001); a fairly common grass in the Amazonian region where it is found growing in savannas, sandy sites, along roadsides, and disturbed areas; 0−1500 m.

Vernacular name. "Colchón de pobre" (Casanare, Colombia, *J. M. Idrobo 5100*).

Specimens examined

COLOMBIA. Amazonas: Araracuara, camino entre el Hospital y el Aeropuerto, *ca.* 200 m, 12 Sep 1977, *L. E. Aguirre-Galvis 1061* (COL). Río Caquetá, cerca del aeropuerto, 200−250 m, 18 Jul 1977, *A. Fernández-Pérez 20061* (COL). **Antioquia**: Bello, 1500 m, 29 Jun 1930, *W. A. Archer 346* (US). **Casanare**: Esmeralda, 130 m, 19−20 Oct 1938, *J. Cuatrecasas 3863* (COL, US). Mun. El Yopal, sabanas alteradas no inundables, entre el nuevo hospital y la Brigada del Ejército Nacional, 400 m, 3 Nov 2007, *D. Giraldo-Cañas 4149, 4150, 4153* (COAH, COL). El Yopal, hato Mate Pantano, 10 Oct 1962, *J. M. Idrobo 5100* (COL). Tauramena, quebrada Tauramena, 550 m, 30 Nov 1960, *L. Uribe Uribe 3588* (COL). **Cauca**: Along Río Palo at El Palo, 15 Dec 1943, *E. L. Core 171* (US). Río Patía, 11 May 1935, *H. García-Barriga 4497* (COL, US). **Cundinamarca**: Provincia Sumapaz, Fusagasugá, 1680 m, 26 Mar 1961, *J. M. Idrobo 4507* (COL). **Guainía**: Bassin de L'Amazone, Río Negro a San Felipe, 200 m, 13−25 Nov 1952, *H. Humbert 27487* (US). Puerto Colombia, opposite Venezuelan town of Maroa, and vicinity, *ca.* 280 m, 31 Oct 1952, *R. E. Schultes 17927* (COL, US). **Guaviare**: Mun. San José del Guaviare, trocha Nuevo Tolima, 11 Nov 1996, *R. López & O. Rodríguez 1859* (COAH, COL). **Huila**: Five km north of Villavieja, upper basin of Río Magdalena, 400 m, 23 Jul 1950, *S. G. Smith 1256* (COL, US). **La Guajira**: Clausura Nopoipa, en el área inundable, 4,5 km

de Uribia rumbo a Maicao, 13 Feb 1963, *C. Saravia 2229-A* (COL, **note: *Saravia 2229-A* at US is *E. ciliaris***). **Magdalena**: Cerca de Gamarra (Santander), valle del río Magdalena, 100 m, 23 Dec 1948, *J. Araque-Molina & F. A. Barkley 18-Mg-072* (US). Santa Marta, 1898−1901, *H. H. Smith 132* (COL, MO, US). **Meta**: Mun. Villavicencio, carretera Villavicencio-Aeropuerto, piedemonte de la cordillera Oriental, sitio La Arenera, *ca.* 2 km del puente sobre el río Guatiquía, *ca.* 400 m, 14−15 Dec 2002, *D. Giraldo-Cañas 3384* (COAH, COL, HUA). 45 km al oeste de El Porvenir, en la carretera a Puerto Gaitán, *ca.* 350 m, 23 Jan 1989, *R. Bernal 1508* (COL). Río Meta, Cabuyaro, 235 m, 14 Oct 1938, *J. Cuatrecasas 3612* (COL, US). Río Meta, La Ochovera, 28 Oct 1938, *J. Cuatrecasas 4182* (COL, US). Villavicencio, Apiai, 500 m, 12 Nov 1938, *J. Cuatrecasas 4730* (COL, US). Llanos Orientales, Puerto López, al SE de Cabuyaro, alrededores de la laguna de Yurimena, 175−200 m, 16 Sep 1958, *R. Jaramillo-Mejía 1247* (COL, US). Carimagua, 200 m, 18 Sep 1992, *S. A. Renvoize 5399* (COL, US). San Juan de Arama, caño Curía, 440 m, 31 Dec 1986, *D. Rivera 1265* (COL). Loma Linda, al sureste de San Martín, 300 m, 15 Sep 1966, *A. Robinson 3079* (US). Villavicencio, 450 m, Jan 1856, *J. J. Triana 70* (US), *297* (US). **Nariño**: Carretera Pasto-Túquerres, alrededores del río Juanambú, 1380 m, 1−5 Dec 1962, *C. Saravia 1950* (COL). **Santander**: "Kilómetro 16", between Puerto Wilches and Puerto Santos, 110−115 m, 29 Nov 1926, *E. P. Killip & A. C. Smith 14825* (MO, US). Carretera Puerto Wilches-Sabana de Torres, km 46, 250 m, 16 Nov 1985, *J. H. Torres 2816, 2817* (COL). **Tolima**: Mun. Honda, en sustratos arenosos, ribera de pequeña quebrada antes de su desembocadura en el río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4265* (COL). Mun. Mariquita, a unos 200 m de la parte superior del bosque municipal "José Celestino Mutis", *ca.* 700 m, Nov 2009, *D. Giraldo-Cañas 4353* (COL). No data, *André 1924* (US). Melgar, 500−600 m, 4−5 Dec 1917, *F. W. Pennell 2903* (US). **Valle del Cauca**: Around Cali, western side of Cauca Valley, 1000−1200 m, Dec 1905, *H. Pittier 639* (US), *660* (US). **Vaupés**: Mun. Mitú, sabanas y afloramientos graníticos precámbricos de Yapobodá, inmediaciones del Cerro Umukû, *ca.* 400 m, May 2010, *D. Giraldo-Cañas 4564, 4590-a* (COL). **Vichada**: Región Guayanesa, Mun. Puerto Carreño, afloramientos rocosos del tipo lajas, entre Punta de Lajas y Cerro El Bita, ribera del río Orinoco, 40−100 m, 4−5 Jan 2004, *D. Giraldo-Cañas & C. Parra 3648, 3655* (COAH, COL). Río Orinoco, Puerto Carreño, 23−24 Oct 1938, *J. Cuatrecasas 4072* (COL, US). *Ca.* 10 km W of Las Gaviotas along road to Puerto Gaitán, 180 m, 30 Dec 1973, *G. Davidse & F. Llanos 5367-A* (COL, MO, US). Gualandayas, *ca.* 100 km E of Gaviotas, 100 m, 31 Dec 1983, *J. R. I. Wood 4213* (COL). Unknown department: *F. C. Lehmann 778* (US), *I. Linden 1554* (US), *Moritz s.n.* (US), *J. C. Mutis 6094* (US), *J. J. Triana 298* (US).

PERU. **Madre de Dios:** Prov. Tambopata, Puerto Maldonado, entre Aeropuerto Viejo y Puerto Maldonado, *P. J. Babour 5396* (AMAZ). **San Martín:** Alto Río Huallaga, *L. Williams 5791* (US); Dist. San Martín, along Río Shilcayo, 1–4 km NE of Tarapoto, *C. M. Belshaw 3359* (F, MICH, MO, UC, US, WIS).

Eragrostis mexicana (Hornem.) Link, Hort. Berol. 1: 190. 1827. *Poa mexicana* Hornem., Hort. Bot. Hafn. 2: 953. 1815. Type: MEXICO. Cultivated from seed collected in Mexico, *Sessé s.n.* (lectotype: MA!, designated by Peterson & Sánchez Vega, Ann. Missouri Bot. Gard. 94: 773. 2007). **Fig. 31**.

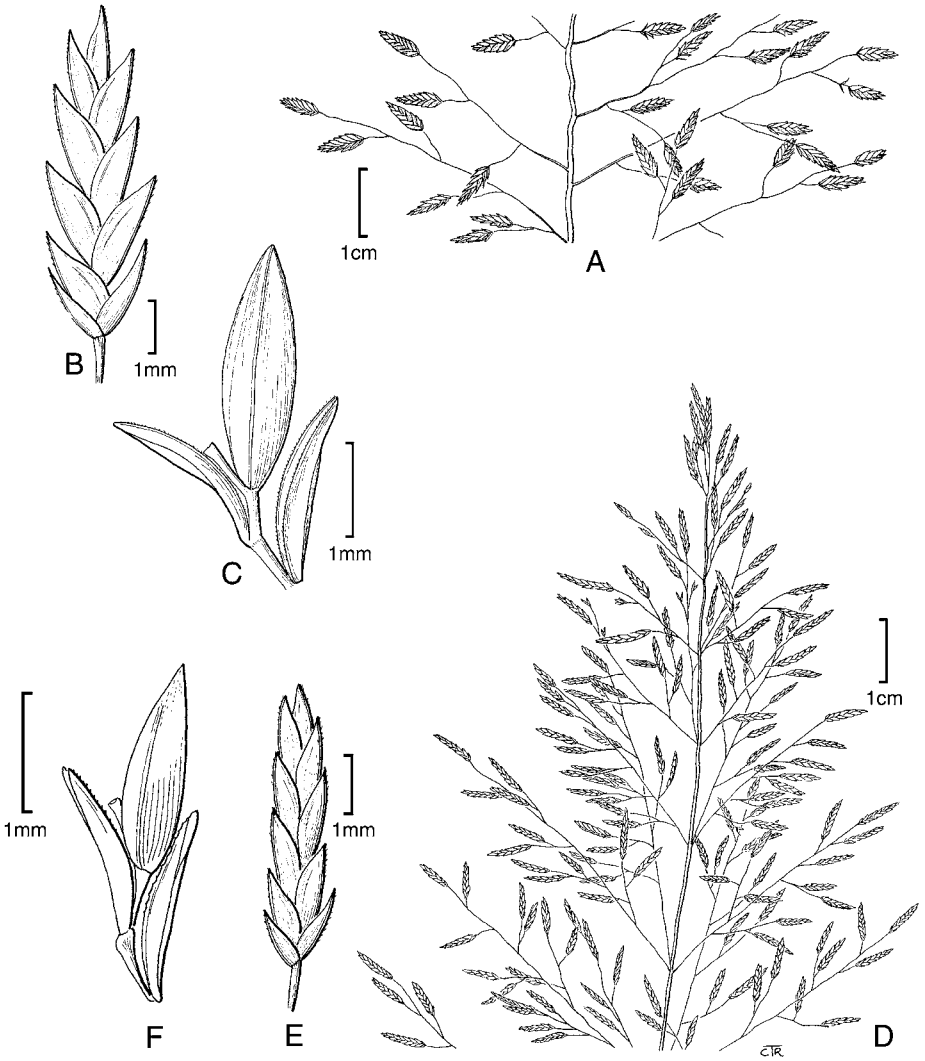


Fig. 31. ***Eragrostis mexicana* var. *mexicana*** (*Sánchez-Vega 4020*). **A**. Inflorescence; **B**. Spikelet; **C**. Floret with two paleas attached below; **D**. Caryopsis, lateral view. ***Eragrostis mexicana* var. *virescens***. **E**. Inflorescence; **F**. Spikelet; **G**. Floret with two paleas attached below.

Caespitose annuals. **Culms** 10−130 cm tall, erect, sometimes geniculate, glabrous, sometimes with a ring of glandular depressions below the nodes. **Leaf sheaths** 1/2−2/3 as long as the internodes, sometimes with glandular pits, pilose near the apices and on the collars, hairs to 4 mm long, papillose-based; **ligules** 0.2−0.5 mm long, ciliate; **blades** 5−25 × 0.2−0.7(−0.9) cm, flat, abaxial surfaces glabrous, adaxial surfaces scabridulous, occasionally pubescent near the base, occasionally with glands along the nerves abaxially. **Panicles** (5−)10−40 × (0.5−)4−18 cm, less than ½ the height of the plant,

ovate, rachises angled and channeled; primary branches 3−12(−15) cm long, solitary to whorled, appressed or diverging to 80° from the rachises; secondary branches somewhat appressed; pulvini glabrous; **pedicels** 1−6(−7) mm long, almost appressed to narrowly divergent, stiff. **Spikelets** (4−)5−10(−11) × 0.7−2.4 mm, 5−11(−15)-flowered, linear to linear-lanceolate or ovate to oblong, gray-green to purplish; **disarticulation** acropetal; **glumes** 0.7−2.3 mm long, subequal, ovate to lanceolate, membranous; **lemmas** 1.2−2.7 mm long, ovate, membranous, glabrous or with a few hairs, gray-green, lateral nerves evident, often greenish; apex acute; **paleas** 1−2.2 mm long, hyaline, keels scabrous; apex obtuse to truncate; **stamens** 3; anthers 0.2−0.5 mm long, purplish. **Caryopses** 0.5−0.8(−1) mm long, ovoid to rectangular-prismatic, laterally flattened, shallowly to deeply grooved on the ventral surface, striate and reticulate, irregularly triangular in cross-section, reddish-brown, distal 2/3 opaque.

Chromosome number. 2*n* = 60 (Pohl & Davidse 1971).

Distribution and habitat. *Eragrostis mexicana* is native to the Americas and grows along roadsides, near cultivated fields, city sidewalks, and in disturbed open areas, in *lomas* vegetation and inter-Andean slopes; 1000−3000 m. The species has been treated as two distinct subspecies by Koch & Sánchez Vega (1985) and Peterson & Sánchez Vega (2007), both of which occur in the northwestern of South America.

Key to the subspecies of *Eragrostis mexicana*

1. Spikelets ovate to oblong in outline, 1.5−2.4 mm wide; lower glume 1.2−2.3 mm long; . sum of the spikelet width and lower glume length 2.7−4.7 mm; culms and sheaths sometimes with glandular depressions.....***E. mexicana*** subsp. ***mexicana***
1'. Spikelets linear to linear-lanceolate, 0.7−1.4 mm wide; lower glume 0.7−1.7 mm long; sum of the spikelet width and lower glume length 1.5−3.1 mm; culms and sheaths without glandular depressions.....***E. mexicana*** subsp. ***virescens***

Eragrostis mexicana (Hornem.) Link subsp. ***mexicana***. **Fig. 31**.

Eragrostis limbata E. Fourn., Mexic. Pl. 2: 116. 1886. Type: MEXICO. 1833, *A.J.A. Bonpland 4573* (lectotype: P!, designated by R. McVaugh, Fl. Novo-Galic. 14: 168. 1983 but specific herbarium not indicated, Bonplands collections are housed at P; isotype: US-2941517 fragm!).

Eragrostis neomexicana Vasey ex L. H. Dewey, Contr. U.S. Natl. Herb. 2 (3): 542. 1894. Type: U.S.A. New Mexico: Organ Mountains, 1881, *G. Vasey 474* (lectotype: US-176631!, designated by S. D. Koch & I. Sánchez Vega, Phytologia 58: 379. 1985; isolectotypes: K!, US-822049!, US-909912!).

Eragrostis alba J. Presl, Reliq. Haenk. 1 (4-5): 279. 1830. *Poa alba* (J. Presl) Kunth, Enum. Pl. 1: 343. 1833. Type: PERU. *T. Haenke s.n.* (holotype: PR; isotypes: MO-2111118!, US-2942409 fragm. ex PR!).

Eragrostis nigricans (Kunth) Steud. var. *punensis* Nicora, Boissiera 54:65, f. 16. 1998. TIPO. Argentina. Prov. Jujuy: Dpto. Tumbaya, subida de Purmamarca al Abra de Pives, 3800 m, 24 Apr 1975, *Cabrera et al. 26382* (holotipo, SI!). **Syn. nov.**

Culms, **sheaths**, and **blades** sometimes with glandular depressions. **Spikelets** 1.5–2.4 mm wide, ovate to oblong; **lower glume** 1.2–2.3 mm long; sum of spikelet width and lower glume length 2.7–4.7 mm.

Distribution and habitat. This subspecies is native to the Americas and grows along roadsides, near cultivated fields, city sidewalks, and in disturbed open areas, in *lomas* vegetation and inter-Andean slopes; 1500–3000 m.

Specimens examined

COLOMBIA. **Boyacá**: Mun. Ráquira, cerca de los hornos de los artesanos, en inmediaciones del camino que conduce al desierto de La Candelaria, 2300 m, 19 Jul 2003, *D. Giraldo-Cañas 3555, 3555-B* (COL). Mun. Villa de Leyva, saliendo por el camino que conduce a Iguaque, en las afueras del casco urbano de Villa de Leyva, 2200 m, 18 Dec 2004, *D. Giraldo-Cañas 3825, 3835, 3836* (COL). Between Boavita and the Río Chicamocha, 1500 m, 25 Jun 1984, *J. R. I. Wood 4468* (COL). **Cauca**: Mun. Popayán, predios internos y jardineras abandonadas de la Facultad de Educación de la Universidad del Cauca, 1750 m, 7-11 Nov 2004, *D. Giraldo-Cañas 3803* (COL). Popayán, 1600−1800 m, Feb 1887, *F. C. Lehmann 4401* (US). **Cundinamarca**: Provincia Oriente, Mun. Choachí, carretera Choachí-Termales de Choachí, km 2, 1600 m, 12 Nov 2001, *D. Giraldo-Cañas 3284* (COL), 23 Jan 2011, *D. Giraldo-Cañas 4909* (COL). **Nariño**: Carretera Pasto-Túquerres, alrededores del río Juanambú, 1380 m, 1−5 Dec 1962, *C. Saravia 1954* (COL). **Quindío**: Mun. Armenia, Avenida Bolívar, Parque de La Vida, 1500 m, 29 Jul 2007, *D. Giraldo-Cañas & J. C. Ospina 4095* (COL, HUA). **Risaralda**: Mun. Santa Rosa de Cabal, en grietas del pavimento del centro de la población, 1700 m, Jun 2010, *D. Giraldo-Cañas 4607* (COL). **Santander**: Mun. Bucaramanga, en grietas de una acera de la calle 34 con carrera 27, al subir hacia Las Cabeceras, 950 m, 4 Apr 2010, *D. Giraldo-Cañas 4551* (COL). 2 km al sur de Suratá, 1900 m, 4 Aug 1966, *A. Robinson 3054* (US). **Tolima**: Mun. Fresno, en el borde de la carretera Fresno-Manizales, 1200 m, Nov 2009, *D. Giraldo-Cañas 4392* (COL). **Valle del Cauca**: Between Uribe and Sevilla, 1100 m, 2 Mar 1983, *J. R. I. Wood 4082* (COL).

ECUADOR. Chimborazo: 3 km NE of Huigra on road to Alausí, 1560 m, *P. M. Peterson 9357* (K, MO, QCA, US). **Loja**: 8 km S of Vilcabamba on road to Zumba, 1870 m, *P. M. Peterson 9402* (QCA, US). **Pichincha**: In Quito, 2850 m, *S. Lægaard 51693* (AAU, COL, QCA).

PERU. **Ancash:** Prov. Bolognesi, 8 km E of Raquia & 2 km W of Cajacay on Ruta 02-104, *P. M. Peterson et al. 17885* (US, USM); Prov. Huaraz, near Huaraz, *F. Castillo C. & Núñez L. s.n.* (HUT). **Arequipa:** Tingo, *F. W. Pennell 13109* (US). **Cajamarca:** Prov. Cutervo, Sócota, camino a San Andrés, *I. Sánchez-Vega 2301* (CPUN). **Junín:** Prov. Chanchamayo, Río Rondayacu, 45 km from San Ramón, *D. N. Smith et al. 2622* (US). **La Libertad:** Prov. Trujillo, Barraza, *A. Sagástegui A. 7789* (US); *A. Sagástegui & A. López 7837* (COL). **Lima:** Prov. Canta, 2 km SE of San José Canta, *P. M. Peterson & N. F. Refulio-Rodríguez 17987* (US, USM); Lurín, *J. F. Macbride 5954* (US).

Eragrostis mexicana subsp. ***virescens*** (J. Presl) S. D. Koch & Sánchez Vega, Phytologia 58 (6): 380. 1985. *Eragrostis virescens* J. Presl, Reliq. Haenk. 1 (4-5): 276. 1830. *Poa virescens* (J. Presl) Kunth, Enum. Pl. 1: 329. 1833. TYPE: CHILE. *T. Haenke s.n.* (HOLOTYPE: PR; ISOTYPES: B!, BAA-1107 fragm. ex B!, LE-TRIN-2413.01!, US-2942410 fragm!). **Fig. 31**.

Eragrostis leptantha Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 1 (4): 405. 1830. *Poa leptantha* (Trin.) Kunth, Enum. Pl. 1: 339. 1833. TYPE: BRAZIL. in siccis arenosesum pr. Moji [São Paulo], 23 Apr, [*Riedel s.n.*] *G. H. von Langsdorff s.n.* (HOLOTYPE: LE-TRIN-2361.01!; ISOTYPES: BAA-1043 fragm.!, K, LE, MO-2111141!, NY!, P!, US-2941514 fragm.!).

Eragrostis delicatula Trin., Mém. Acad. Imp. Sci. Saint-Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 2 (1): 73. 1836. *Eragrostis pilosa* (L.) P. Beauv. var. *delicatula* (Trin.) Hack., Anales Mus. Nac. Buenos Aires 11: 133. 1904. TYPE: BRAZIL. In cultis prope Rio de Janeiro, May−June 1823, *L. Riedel s.n.* (HOLOTYPE: LE-TRIN-2330.01!; ISOTYPES: LE, US-2891464 fragm.!).

Eragrostis scabra Phil., Fl. Atacam. 55. 1860. TYPE: CHILE. ATACAMA: prope Paposo, Dec 1851, *R. A. Philippi 1051* (HOLOTYPE: SGO-PHIL-357; ISOTYPES: B, BAA-1089 fragm. ex B!, US-556539 fragm. ex SGO-PHIL-357! & photo!).

Eragrostis rahmeri Phil., Verz. Antofagasta Pfl. 88. 1891. TYPE: CHILE. TARAPACÁ: Quebrada de Guaviña, 13 Mar 1885, *R. A. Philippi s.n.* (HOLOTYPE: SGO-PHI-359; ISOTYPES: BAA-1080 fragm.!, CORD!, SGO-37293; SGO-63537, SGO-62670, US-556538 fragm. ex SGO-PHIL-359!).

Eragrostis cordobensis Jedwabn., Bot. Arch. 5 (3−4): 208. 1924. TYPE: ARGENTINA. CÓRDOBA: prope urbem, 21 Apr 1881, *Galander 54b* (LECTOTYPE: BAA!, designated by Boechat & Longhi-Wagner, Iheringia, Bot. 55: 164. 2001; ISOLECTOTYPE: US-2767407!).

Culms, **sheaths**, and **blades** without glandular depressions. **Spikelets** 0.7–1.4 mm wide, linear to linear-lanceolate**; lower glume** 0.7–1.7 mm long; sum of spikelet width and lower glume length 1.5–3.1 mm.

Distribution and habitat. This subspecies is native to South America in Argentina, Bolivia, Brazil, Chile, Colombia, Paraguay, Peru, and Uruguay; introduced in Canada, Mexico, and U.S.A.; it grows along roadsides, near cultivated fields, city sidewalks, and in disturbed open areas, in *lomas* vegetation and inter-Andean slopes; 1000–2500 m.

Specimens examined

COLOMBIA. **Antioquia**: Mun. Sabaneta, parque central de la municipalidad, 1550 m, 3 Jan 2003, *D. Giraldo-Cañas 3428* (COL, HUA). **Cauca**: Mun. Popayán, sector norte de la ciudad, Villa del Viento, 1800 m, 7 Jan 2001, *B. R. Ramírez 13911* (CAUP, COL). **Quindío**: Mun. Filandia, camino principal de la Reserva Bremen, 1500 m, 20-25 Mar 2005, *D. Giraldo-Cañas 3887* (COL). Mun. Calarcá, entrada del jardín botánico del Quindío, 1500 m, 20−25 May 2005, *D. Giraldo-Cañas 3893* (COL, HUA). Mun. Circasia, parque principal, 1500 m, 20-25 Mar 2005, *D. Giraldo-Cañas 3898* (COL).

Santander: Entre el cañón del Chicamocha y el valle de Rupala, 1000 m, 14. Jun 1962, *C. Saravia 772* (COL). **Tolima**: Cordillera Central andina, Mun. Ibagué, jardineras y andenes de la Plaza de Bolívar, 1200 m, 11−12 Jun 2005, *D. Giraldo-Cañas 3903* (CAUP, COL, HUA). Mun. Fresno, en el borde de la carretera Fresno-Manizales, 1200 m, Nov 2009, *D. Giraldo-Cañas 4396* (COL). **Valle del Cauca**: Mun. Sevilla, en jardinera del parque Uribe, 1600 m, Jun-Jul 2010, *D. Giraldo-Cañas 4682* (COL).

PERU. **Ancash:** Fortaleza, *E. Anderson 464* (US). **Apurímac:** Prov. Abancay, 17 km NE of Abancay & 16 km W of Río Apurímac, *P. M. Peterson & N. F. Refulio-Rodríguez 16530* (US, USM); Prov. Aymaráes, 16 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodríguez 16514* (US, USM). **Arequipa:** Prov. Arequipa, Tiabaya, *F. W. Pennell 13152* (US); along Hwy. (Carretera Panamericana) 9.3 km SE of bridge over Río Síhuas, *J. T. Columbus et al. 3526* (RSA, US); Prov. Condesuyos, below Chuquibamba, *C. Vargas C. 019413* (CUZ); Prov. La Unión, below Cotawasi, *C. Vargas C. 019492* (CUZ). **Cajamarca:** Prov. Cajamarca, 40 km N of Cajabamba & 13 km S of Ichocan, *P. M. Peterson & N. F. Refulio-Rodríguez 14008* (US, USM). **Cusco:** Prov. Convención, Valle de Lucumayo, *C. Vargas C. 020025* (CUZ); Prov. Urubamba, Urquillos–Urubamba, *C. Vargas C. 1213* (CUZ). **La Libertad:** Prov. Trujillo, Cerro Campana, *ca.* 15 km al N de Trujillo, *M. O. Dillon 2731* (US). **Lima:** Prov. Canta, 8 km SW of San José Canta towards Huamantango, *P. M. Peterson & N. F. Refulio-Rodríguez 17994* (US, USM); Huaura Valley, 20 km below Churín, *E. Anderson 595* (US). **Piura:** Km 988 Panamericana, *E. Anderson 925* (US). **San Martín:** Prov. Rioja, at Puente de Río Serranoyacu, Km 405–406, *J. L. Luteyn et al. 15518* (NY, US). **Tacna:** Prov. Tacna, *C. Vargas C. 018075* (CUZ).

Eragrostis mokensis Pilg., Bot. Jahrb. Syst. 51 (3−4): 419. 1914. Type: EQUATORIAL GUINEA. Fernando Po: Grasland (Bergweiden) von Moka im Südosten der Insel, 1200−1800 m, Nov 1911, *J. Mildbraed 7102* (holotype: B; isotype: US-2941533!). **Fig. 32**.

Eragrostis moritzii Jedwabn., Bot. Arch. 4: 328. 1923. Type: VENEZUELA. Mérida: in der Alpinen Region, *J. W. K. Moritz 1570* (holotype: ?; isotype: US-2941535 fragm.!).

Caespitose annuals. **Culms** 10−30(−45) cm tall, erect or ascending, sometimes geniculate, branched at the base and lower nodes, often with a small glandular ring below the glabrous nodes. **Leaf sheaths** overlapping below to ½ the length of the internodes above, sparsely pilose at the summit and along margins below, the hairs up to 3 mm long and papillose-based; **ligules** 0.1−0.3 mm long; **blades** 3−8(−10) × 0.2−0.4 cm wide, flat, sparsely pilose with papillose-based hairs. **Panicles** 4−13 × 2.5−7(−10) cm, narrowly, ovate, open, the rachis angled; primary branches 2−7 cm long, ascending, stiff, spreading up to 90º from the rachises; secondary branches widely spreading; pulvini glabrous, smooth; **pedicels** 0.5−2.5 mm long, shorter than the spikelets. **Spikelets** 3−6.5(−7) × 2−2.5 (−3) mm, (4−)10−20-flowered, broadly ovate-lanceolate, the florets strongly imbricate, plumbeous to reddish-purple; **disarticulation**

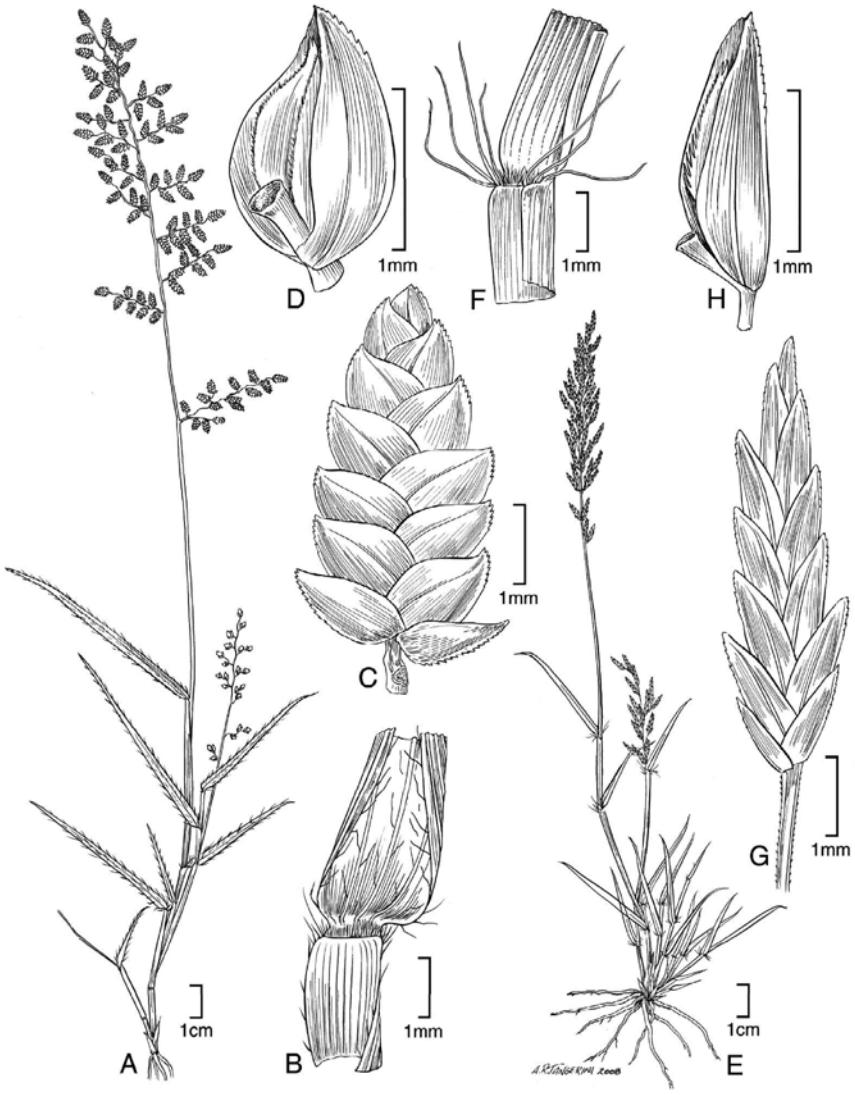


Fig. 32. ***Eragrostis mokensis*** (*Lehmann 635*). **A**. Habit; **B**. Ligule; **C**. Spikelet; **D**. Floret. ***Eragrostis rufescens*** (*Fosberg 22208*). **E**. Habit; **F**. Ligule; **G**. Spikelet; **H**. Floret.

acropetal, with the glumes first, then the lemmas and paleas falling as a unit; **glumes** 1−1.5 mm long, subequal, ovate, membranous, keeled, scaberulous along the keel, apex acute; **lemmas** 1.2−1.6 × 0.6−1.1 mm, orbicular, chartaceous, lateral nerves absent or obscure, apex keeled and obtuse; **paleas** 1.1−1.4 × 0.6−0.8 mm, orbicular, deciduous, winged, scaberulous, apex truncate; **stamens** 3; anthers 0.3−0.5 mm long, purplish. **Caryopses** 0.6−0.7 mm long, ovoid, striate and reticulate, flattened on the adaxial surface, reddish-brown.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Native to western Africa (Clayton 1972), *E. mokensis* has been reported from Brazil and Venezuela (Boechat & Longhi-Wagner 2001). This species occurs in rocky areas, along roadsides, and near cultivated fields and in waste areas often associated with *Melinus multiflora* P. Beauv. and other ruderal plants; 1700−2000 m.

Comments. *Eragrostis mokensis* is very similar in habit, panicle characteristics, and overall spikelet shape and color to *E. unioloides* (Retz.) Nees ex Steud. However, *E. mokensis* can be separated from the latter by having orbicular lemmas with obtuse apices (versus ovate lemmas with acute apices in *E. unioloides*), shorter pedicels (0.5−2.5 mm long versus 2−10 mm long in *E. unioloides*), somewhat narrower spikelets [2−2.5(−3) mm wide versus 2−3.4 mm wide], and florets with three stamens (two stamens reported in *E. unioloides*) (Clayton 1972)].

Specimen examined

COLOMBIA. Cauca: Highlands of Popayán, 1700−2000 m, 1889, *F. C. Lehmann BT-635* (COL, US).

Eragrostis nigricans (Kunth) Steud., Nom. Bot. ed. 2, 1: 563. 1840. *Poa nigricans* Kunth, Nov. Gen. Sp. 1: 159. 1816. *Megastachya nigricans* (Kunth) Roem. & Schult., Syst. Veg. 2: 586. 1817. Type: ECUADOR. Chillo & Sangolqui, Apr−May, *F. Humboldt & A. Bonpland 2291* (holotype: P-Bonpl!; isotypes: BAA-1062 fragm.!, COL!, K photo!, LE-TRIN-2371.01!, P!, US-2891495 fragm. ex LE-TRIN! &!, fragm. ex P!). **Fig. 27**.

Eragrostis tristis Jedwabn., Bot. Arch. 5 (3-4): 205. 1924. *Eragrostis nigricans* (Kunth) Steud. var. *tristis* (Jedwabn.) Pilg., Notizbl. Bot. Gart. Berlin-Dahlem 11: 778. 1933. Type: BOLIVIA. ad Huancapamba, 15 Feb 1910, *Pflanz 359* (lectotype: BAA-1101 fragm. ex B!, designated by Peterson & Sánchez Vega, Ann. Missouri Bot. Gard. 94: 775. 2007).

Eragrostis subatra Jedwabn., Bot. Arch. 5 (3−4): 202. 1924. Type: BOLIVIA. Prope La Paz, 1889, *M. Bang 80* [collector erroneously cited as Rusby in protologue] (holotype: B; isotypes: K!, US-822065!).

Caespitose annuals. **Culms** (10−)20−50(−80) cm tall, erect, sometimes geniculate below or postrate, mostly glabrous and somewhat shiny below the nodes. **Leaf sheaths** 1/3−2/3 as long as the internodes, sparsely pilose at the summit and along the distal margins, the hairs up to 2.5 mm long, sometimes the margins glabrous; **ligules** 0.4−0.6 mm long, ciliate; **blades** 6.5−10 × 0.2−0.5 cm, flat, occasionally loosely involute near apex, glabrous above and below, somewhat scaberulous near apex. **Panicles** (5−)7−24 × 2−7(−15) cm, oblong, somewhat condensed, the spikelets arranged in glomerules or not, the glomerules are widely spaced along the channeled rachis, primary branches

mostly 1−10 cm long, sinuous, ascending and spreading 20−90° from the rachises, or appressed and ascending, solitary to whorled below, scaberulous, secondary branches sinuous; pulvini glabrous to sparsely pilose, the hairs up to 1.5 mm long; **pedicels** 0.4−2(−3) mm long, stiffly spreading, or appressed and ascending, divaricate and stout, scaberulous. **Spikelets** 2.6−3.8(−4.8) × 1−1.2(2) mm, 2−4(−5)-flowered, linear to narrowly lanceolate, grayish-green to purplish-green; **disarticulation** acropetal, with the glumes first, then the lemmas falling, paleas persistent; **glumes** 1.0−1.4 mm long, subequal, ovate to lanceolate, membranous, keeled, scaberulous along the keel; **lemmas** 1.6−2.0(−2.2) mm long, ovate, membranous; grayish-green, glabrous or with a few scattered hairs, lateral nerves sometimes distinct; apex acute, sometimes scaberulous; **paleas** 0.9−1.4 mm long, hyaline, scaberulous along the keels; apex truncate; **stamens** 3, anthers 0.3−0.5 mm long, purplish. **Caryopses** (0.6−)0.7−1.4 mm long, ovoid, striate and reticulate, shallowly to deeply grooved on the ventral surface, translucent, irregularly rectangular in cross-section, reddish-brown.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Native to the Andean mountains in Argentina, Bolivia, Chile, Colombia, Ecuador, and Peru (Nicora 1998, Peterson & Boechat 2001); occurs on rocky slopes, near cultivated fields, and disturbed roadsides; 1000-3000 m.

Specimens examined

COLOMBIA. Santander: Minas San Juan, 5 km arriba de California, 2733 m, 4 Aug 1966, *A. Robinson 3032* (US). Carretera Bucaramanga−Cúcuta, 1700 m, 29 Sep 1966, *A. Robinson 3125* (US).

ECUADOR. Chimborazo: 4.5 km W of Riobamba on road to Guamote, 2900 m, *P. M. Peterson 9304* (MO, QCA, US). **Pichincha**: Quito, 2850 m, *S. Lægaard 51070, 51692* (COL). 1 km SE of Cayambe on road to Hda. Piemonte, 2700 m, *P. M. Peterson et al. 9074* (ANSM, ENCB, K, MEXU, MICH, MO, QCA, RSA, TAES, UC, US, UTC, WIS).

PERU. **Ancash:** Prov. Huari, Cordillera Blanca, 21 km S of Huari on rd. towards San Marcos, *P. M. Peterson & N. F. Refulio-Rodríguez 13855* (US, USM); 4 km W of Ponto on rd. towards Palca, *P. M. Peterson et al. 17927* (US, USM). **Apurímac:** Prov. Abancay, 17 km NE of Abancay & 16 km W of Río Apurímac, *P. M. Peterson & N. F. Refulio-Rodríguez 16534* (US, USM); Prov. Aymaráes, *ca.* al puente Cuícua, *O. Velarde 5688* (US); 16 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodríguez 16509* (US, USM); 24 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodríguez 16526* (US, USM). **Arequipa:** Prov. Arequipa, 21 km N of Yura on hwy. towards Patahuasí & 45 km NW of Arequipa, *P. M. Peterson & N. F. Refulio-Rodríguez 18235* (US, USM); S slope of Nevado Chachani, *J. T. Columbus et al. 3538* (RSA, US); Prov. Caravelí. Lomas Jahuay, *ca.* 33 km WNW from Chavina, *M. O. Dillon et al. 3258* (CPUN); Prov. Caylloma, 5 km W of Chivay on rd. toward Yanque, *P. M. Peterson & N. F. Refulio-Rodríguez 18294* (US, USM). **Ayacucho:** Prov. Ayacucho, *J. Soukup 5444* (US); Prov. Lucanas, 6 km E of Puquio on rd. toward Chaviña, *P. M. Peterson et al. 16291* (US, USM). **Cajamarca:**

Prov. Cajamarca, *ca.* de la localidad de Jesús, *I. Sánchez Vega 1061* (CPUN); 6 km S of Cajabamba on rd. towards Huamachuco, *P. M. Peterson & N. F. Refulio-Rodríguez 13995* (US, USM); Prov. Cutervo, entre San Andrés y Sócota, *J. Mostacero et al. 1713* (HUT); 13 km W of Cutervo on rd. towards Sócoto, *P. M. Peterson & N. F. Refulio-Rodríguez 15009* (US, USM). **Cusco:** Prov. Urubamba, Yahuarmaqui, *C. Vargas 009287* (US). **Huancavelica:** Entre Pampas y Salcabamba, *O. Tovar 3854* (US). **Huánuco:** Prov. Huanuco, Cayumba, *E. Asplund 13451* (US). **Ica:** 32 km E of Nasca on rd. toward Puquio, *P. M. Peterson & N. F. Refulio-Rodríguez 16424* (US, USM). **Junín:** Prov. Tarma, 1 km up rd. to Hacienda Maraynioc at Palca, *P. M. Peterson & N. F. Refulio-Rodríguez 14051* (US, USM). Huancayo, 3317 m, *J. Soukup 2986* (COL). **La Libertad:** Prov. Santiago de Chuco, 22 km E from Huamachuco on rd. towards Sarín, *P. M. Peterson & N. F. Refulio-Rodríguez 13979* (US). **Lima:** Prov. Canta, 2 km SE of San José Canta, *P. M. Peterson & N. F. Refulio-Rodríguez 17986* (US, USM); Prov. Lima, Huaura Valley, 10 km below Churín, *E. Anderson 599* (US). **Moquegua:** Torata, *A. Weberbauer 7405* (US). **Piura:** Prov. Huancabamba, 10 km N of Sondor and 3 km S of Huancabamba, *P. M. Peterson & N. F. Refulio-Rodríguez 15166* (US, USM). **Tacna:** Prov. Tarata, Dist. Tarata, *C. Vargas C. 009228* (CUZ); Candarave, *A. Weberbauer 7384* (US).

Eragrostis pastoensis (Kunth) Trin., Mém. Acad. Imp. Sci. Saint-Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 4 (2): 71. 1836. *Poa pastoensis* Kunth, Nov. Gen. Sp. 1: 160. 1815 [1816]. *Megastachya pastoensis* (Kunth) Roem. & Schult., Syst. Veg. 2: 587. 1817. Type: COLOMBIA. Pasto, Mt. Arand, *F. Humboldt & A. Bonpland 2149* (holotype: P-Bonpl!; isotypes: P!, P ex photo at K!, US-2767397 fragm. ex P-Bonpl!). **Fig. 33**.

Poa montufari Kunth, Nov. Gen. Sp. 1: 159. 1815 [1816]. *Eragrostis montufari* (Kunth) Steud., Nom. Bot. (ed. 2) 1: 563. 1840. *Megastachya montufari* (Kunth) Roem. & Schult., Syst. Veg. 2: 586. 1817. Type: ECUADOR. Pichincha: betw. Puembo & San Antonio de Lulumbamba, Apr−May, *F. Humboldt & A. Bonpland s.n.* (holotype: P-Bonpl.!; isotypes: BAA-1056!, P!, US-2891497 fragm. ex P-Bonpl.!).

Poa olmedoi Kunth, Nov. Gen. Sp. 1: 159-160. 1815 [1816]. *Megastachya olmedoi* (Kunth) Roem. & Schult., Syst. Veg. 2: 586. 1817. *Eragrostis olmedoi* (Kunth) Steud., Nom. Bot. (ed. 2) 1: 564. 1840. Type: PERU. Jul, *F. Humboldt & A. Bonpland s.n.* (holotype: P!).

Poa tenax Kunth, Nov. Gen. Sp. 1: 160. 1815 [1816]. *Eragrostis tenax* (Kunth) Steud., Nom. Bot. (ed. 2) 1: 564. 1840. *Megastachya tenax* (Kunth) Roem. & Schult., Syst. Veg. 2: 587. 1817. Type: ECUADOR. Apr−May, *F. Humboldt & A. Bonpland s.n.* (holotype: P!; isotype: US-2891490 fragm. ex P-Bonpl.!).

Poa setifolia Benth., Pl. Hartw. 262. 1846. *Eragrostis setifolia* (Benth.) Steud., Syn. Pl. Glumac. 1: 274. 1854*, nom. illeg. hom.* Type: ECUADOR. Quito, *Hartweg 1452* (holotype: K!; isotypes: US-2826937 fragm. ex K!, US-2850739 fragm. ex CG! & fragm. ex P!, fragm. ex P-Steud!).

Eragrostis lehmannii Pilg., Bot. Jahrb. Syst. 27 (1-2): 32. 1899. Type: ECUADOR. *Ca.* Baños ad flumen Tunguragua, 1800−2500 m, *F. C. Lehmann 5283* [error for *5823*] (holotype: ?; isotype: US-2767406 fragm!).

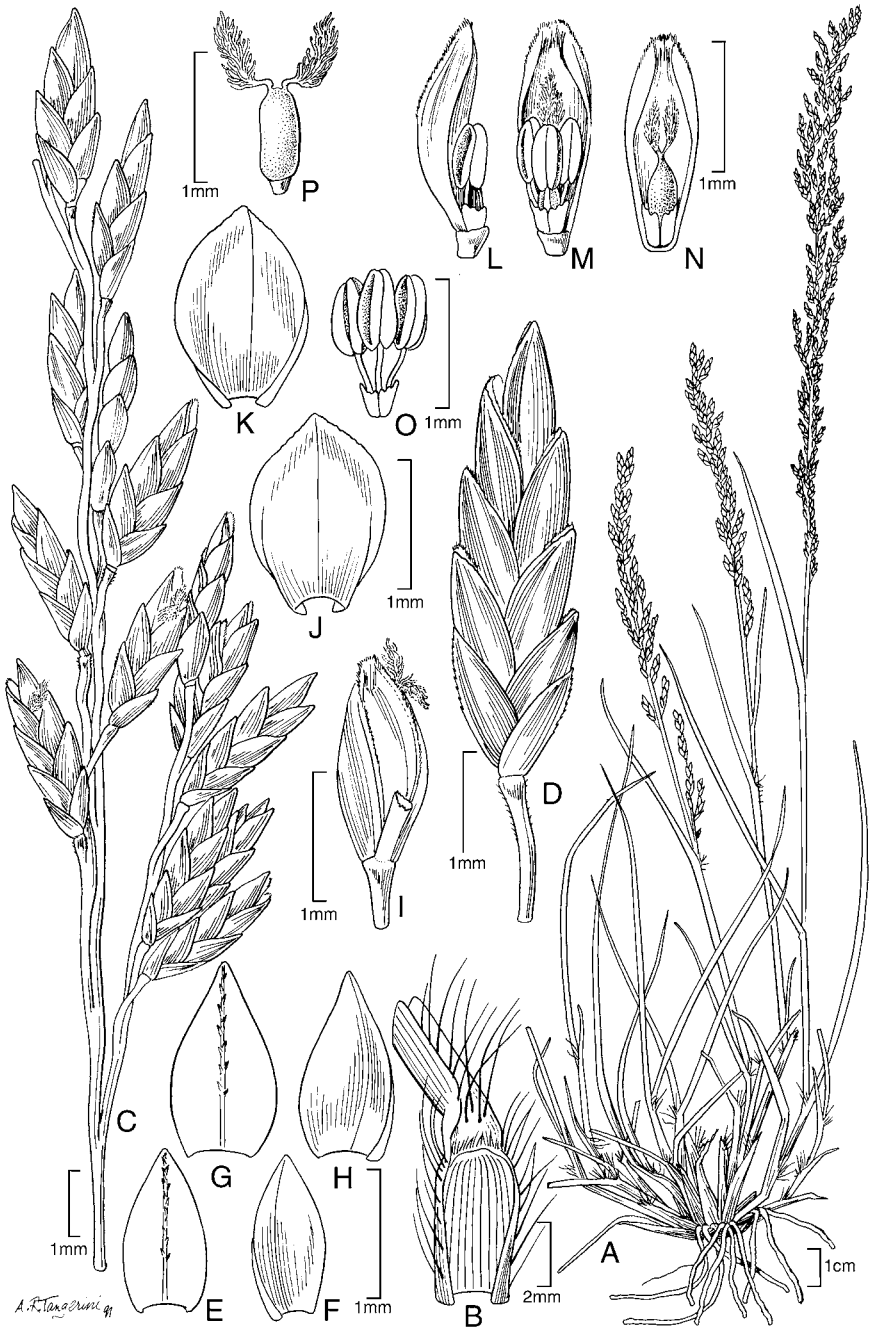


Fig. 33. ***Eragrostis pastoensis*** (*Peterson et al. 8910*, *Peterson & Judziewicz 9268*, *Peterson & Refulio-Rodríguez 13982*). **A**. Habit; **B**. Ligule; **C**. Inflorescence; **D**. Spikelet; **E**. Floret; **F**. Lemma, dorsal view; **G**. Palea, stamen, and lodicule, lateral view; **H**. Palea enclosing the stamens, pistil, and lodicules, ventral view; **I**. Caryopsis, dorsal view; **J**. Caryopsis, lateral view.

Eragrostis virescens J. Presl var. *trachyphylla* Hack., Anales Mus. Nac. Buenos Aires 13: 505. 1906. Type: ARGENTINA. Tucumán: *Stuckert herb. arg. 14866 ex Lillo Herb. arg. 3192* (holotype: W; isotype: US-2942411 fragm.!).

Eragrostis buchtienii Hack., Repert. Spec. Nov. Regni Veg. 6: 157. 1908. Type: BOLIVIA. Süd-Yungas: Simpayas bei Yanacachi, *O. Buchtien 428* (holotype: W; isotype: US-77388!).

Caespitose perennials with innovations. **Culms** 30−90 cm tall, erect, sometimes geniculate below, glabrous and somewhat shiny below the nodes. **Leaf sheaths** overlapping below, 3/4 as long as the internodes above, ciliate at the summit and along the upper margins; **ligules** 0.2−0.5 mm long, ciliate; **blades** 5−40(−45) × 0.1−0.4(−0.7) cm, involute or flat, glabrous to scaberulous below and scaberulous above, sometimes with scattered hairs, the hairs up to 4 mm long. **Panicles** 8−45 × (5−)10−27 cm, ovate, lanceolate to narrowly oblong, contracted or open, rachis glabrous, the ascending primary branches 8−20 cm long, appressed to widely spreading up to 80° from the rachises, the branches glabrous to scaberulous, not floriferous near base; secondary branches composed of loosely overlapping spikelets; pulvini ciliate or glabrous; **pedicels** 0.5−5 mm long, erect, mostly appressed, sometimes with hairs. **Spikelets** 2−6 × 1−1.8 mm, 2−8-flowered, lanceolate to oblong-ovate, inflated to slightly compressed, plumbeous, sometimes purple-tinged, rachilla sometimes sparingly ciliate; **disarticulation** acropetal, with the glumes first then the lemmas falling individually, paleas persistent; **glumes** 1−1.9 mm long, subequal, broadly ovate to lanceolate, membranous, sub-hyaline, keeled, scaberulous along the keel; **lower glume** 1−1.4 mm long, narrow lanceolate; **upper glume** 1.2−1.9 mm long, usually broader than the lower; **lemmas** 1.2−2.0(−2.1) mm long, ovate to broadly ovate, membranous, lateral nerves obscure, keeled, especially towards the apex, scaberulous along the keel; apex acute; **paleas** 1−2 mm long, membranous to partially hyaline, scaberulous along the keels; apex obtuse to truncate; **stamens** 3, anthers 0.3−0.6 mm long, reddish-purple. **Caryopses** 0.4−0.9 mm long, obovoid to prism-shaped, striate and reticulate, usually with a ventral groove, irregularly rectangular in cross-section, light reddish-brown to translucent.

Chromosome number. 2*n* = 70 (Bowden & Senn 1962, as *Eragrostis montufari*).

Distribution and habitat. Native to South America in Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela (Nicora 1998, Peterson & Boechat 2001); occurs on dry rocky hillsides, slopes, pastures, roadsides, barrancas and city sidewalks from 1400−3600 m.

Specimens examined

COLOMBIA. Bogotá D.C.: Bogotá, localidad de Usme, alrededores y riberas del río Tunjuelito, en imediaciones del casco urbano de Usme, 2800 m, 16 Sep 2001, *D. Giraldo-Cañas 3235* (COL). Bogotá, en las grietas del estacionamiento del Instituto de Ciencias Naturales, Campus de la Universidad Nacional de Colombia, 2600 m, 11 Dec 2003, *D. Giraldo-Cañas 3616* (COL). Region of Bogotá, no date, *B. Ariste-Joseph s.n.*

(US-1040145). Andes de Bogotá, 2700 m, Oct 1856, *J. J. Triana s.n.* (US-1865282). **Boyacá**: Mun. Villa de Leyva, camino entre la hacienda "Torcoroma de Arriba" y el cañón de Las Clusias, 2500 m, 18 Jul 2003, *D. Giraldo-Cañas 3535, 3539* (COL). Mun. Tunja, campus de la Universidad Pedagógica y Tecnológica de Colombia, 2700 m, 12 Nov 2003, *D. Giraldo-Cañas 3608* (COL). **Cundinamarca**: Provincia Sabana Centro, Mun. Nemocón, carretera principal entre la vereda Susatá y Nemocón, 2700 m, 4 Nov 2002, *D. Giraldo-Cañas 3320* (COL). Provincia Guavio, Guasca, 1 Aug 1919, *B. Ariste-Joseph A-368* (US). Provincia Soacha, Sabana de Bogotá, entre Sibaté y San Miguel, 2750 m, 15 Aug 1939, *J. Cuatrecasas 6640* (COL, US). Provincia Tequendama, Salto del Tequendama, 2500 m, 8 Mar 1939, *E. P. Killip 34006* (US), *34016* (US). Provincia Almeidas, hoya del río Checua Loma, 250 m SE de San José, arenas del Cacho, 2640 m, 8 Dec 1966, *Schrimpff 117* (COL). **Nariño**: Mun. Sapuyes, El Espino, 3200 m, 15 May 1964, *L. E. Mora 2984-B* (COL, PSO). Mun. Piedrancha, arriba de El Guabo, 2300 m, 15 May 1964, *L. E. Mora 3005* (COL, PSO). Mun. Pasto, corregimiento Chachagüí, 2000 m, 1 Jun 1989, *B. R. Ramírez 1579* (COL, PSO). **Norte de Santander**: Pamplona, 23 Mar 1935, *W. A. Archer 3232* (US). Highway between Pamplona and Málaga, 24 Mar 1935, *W. A. Archer 3241* (US). Vicinity of Pamplona, 2300-2400 m, 27 Feb 1927, *E. P. Killip & A. C. Smith 19782* (US). **Santander**: Vicinity of California, 2000 m, 11-27 Jan 1927, *E. P. Killip & A. C. Smith 16846* (US). Unknown department: *J. C. Mutis 5518* (US), *J. J. Triana 292* (US).

ECUADOR. Azuay: 7 km S of Chordeleg on road to Sígsig, 2220 m, *P. M. Peterson et al. 8934, 8936* (K, MO, QCA, UC, US, WIS). **Chimborazo**: Huigra, 1200 m, *A. S. Hitchcock 20758* (BAA, F, GH, US). **Loja**: 4 km E of Purunuma on road to Malacatos, 2300 m, *P. M. Peterson 9454* (US). **Pichincha**: Quito, ruderal near Avenida del Río Amazonas, 2850 m, *S. Lægaard 51390* (COL). Near bridge of Quito-Pifo road at Río Chiche, 2200 m, *S. Lægaard 52282* (COL).

PERU. **Amazonas:** Prov. Bongará, 4 km up Shipasbamba rd. from Camp. Ingenio, *P. C. Hutchinson & J. K Wright 3963* (US). **Ancash:** Prov. Huari, Cordillera Blanca, 21 km S from Huari on rd. towards San Marcos at Río Mosna, *P. M. Peterson & N. F. Refulio-Rodríguez 13859* (US, USM). **Apurímac:** Prov. Abancay, near Abancay Quisapata, *C. Vargas C. 008899* (CUZ); Prov. Abancay/Andahuaylas, 4.8 km SW of Abancay on rd. to Andahuaylas, *P. M. Peterson & N. F. Refulio-Rodríguez 16649* (US, USM); Prov. Aymaráes, 9 km SW of Cotaruse on rd. towards Puquio, *P. M. Peterson & N. F. Refulio-Rodríguez 16481* (US, USM); 21 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodríguez 16522*. **Ayacucho:** Prov. Huamanga, Ayacucho, *O. Velarde 6231* (US); *C. Vargas C. 5981* (CUZ). **Cajamarca:** Prov. Cajamarca, Cerro Huacarís, Valle de Cajamarca, *I. Sánchez Vega 747* (CPUN); 1 km S of Huambocancha, *P. M. Peterson & N. F. Refulio-Rodríguez 14846* (US); Prov. Chota, 7 km N of Chota on rd. towards Conchán, *P. M. Peterson & N. F. Refulio-Rodríguez 14974* (US, USM); Prov. Contumazá, Corlás, Cascas–Contumazá, *A. Sagástegui & S. Leiva G. 15514* (HAO); Prov. Cutervo, near Muñuño, *S. Llatas Q. 89* (HUT); 13 km W of Cutervo on rd. toward Sócoto, *P. M. Peterson & N. F. Refulio-Rodríguez 15006* (US, USM). **Cusco:** Prov. Urubamba, 20 km N of Ollantaytambo, *A. S. Hitchcock 22522* (US). **Huancavelica:**

Mejorada, entre Izcuchaca y Acoria, *O. Tovar 2455* (US, USM). **Junín:** Prov. Oxapampa, Oxapampa, *O. Velarde 5427* (US). **La Libertad:** Prov. Santiago de Chuco, 22 km E from Huamachuco on rd. towards Sarín, above Río Chusgón, *P. M. Peterson & N. F. Refulio-Rodríguez 13982* (US, USM). **Piura:** Prov. Huancabamba, along rd. to Jaén & Moyobamba, *J. T. Columbus et al. 3458* (RSA, US); 14 km E of Sondor on rd. toward Tabaconas, *P. M. Peterson & N. F. Refulio-Rodríguez 15161* (US, USM).

Eragrostis pectinacea (Michx.) Nees, Fl. Afr. Austral. Ill. 406. 1841. var. ***pectinacea***. *Poa pectinacea* Michx., Fl. Bor.-Amer. 1: 69. 1803. Type: U.S.A. Illinois: *Michaux s.n.* (holotype: P-MICH!; isotype: US-2851264 fragm. ex P!). **Fig. 34**.

Eragrostis diffusa Buckley, Proc. Acad. Nat. Sci. Philadelphia 14: 97. 1862. *Eragrostis purshii* Schrad. ex A. Gray var. *diffusa* (Buckley) Vasey, Contr. U.S. Natl. Herb. 1 (2): 59. 1890. Type: U.S.A. Texas: *S. B. Buckley* (lectotype: PH, designated by Hitchcock, Man. Grasses U.S. 849. 1935, without citing a specific sheet or a specific herbarium; isolectotype: US-91621!).

Caespitose annuals without glandular pits. **Culms** 10−80 cm tall, erect to geniculate or decumbent below, glabrous. **Leaf sheaths** overlapping below, 1/2−3/4 as long as the internodes above, hirsute at the apices, hairs to 4 mm long; **ligules** 0.2−0.5 mm long; **blades** 2−20 × 0.1−0.45 cm, flat to involute, abaxial surfaces glabrous and smooth, adaxial surfaces scabridulous. **Panicles** 5−25 × 3−12(−15) cm, ovoid to pyramidal, usually open, sometimes contracted, primary branches 0.6−8.5 cm long, appressed or slightly diverging to 20° from the rachises, solitary or paired at the lowest 2 nodes; pulvini glabrous or sparsely hairy; **pedicels** 1−7 mm long, flexible, appressed to widely divergent, sometimes capillary. **Spikelets** 3.5−11 × 1.2−2.5 mm, 6−22-flowered, linear-oblong to narrowly lanceolate, plumbeous, yellowish brown, or dark reddish purple; **disarticulation** acropetal, paleas persistent; **glumes** 0.5−1.7 mm long, subequal, subulate to ovate-lanceolate, hyaline; **lower glume** 0.5−1.5 mm long, at least 1/2 as long as the adjacent lemmas; **upper glume** 1−1.7 mm long, usually broader than the lower glumes; **lemmas** 1−2.2 mm long, ovate-lanceolate, hyaline to membranous, grayish green proximally, reddish purple distally, lateral nerves moderately conspicuous; apex acute; **paleas** 1−2 mm long, hyaline to membranous, keels scabridulous; apex obtuse; **stamens** 3; anthers 0.2−0.4 mm long, purplish. **Caryopses** 0.5−1.1 mm long, rectangular-prismatic, slightly laterally flattened, striate and reticulate, rectangular with nearly equal sides in cross-section, brownish.

Chromosome number. 2*n* = 60 (Koch 1974, Davidse 1981).

Distribution and habitat. Native to the Americas; found in North America, Central America, the Caribbean, and most of South America (not known from Chile); it grows in disturbed sites such as roadsides, railroad embankments, city sidewalks, gardens, and cultivated fields; 0−2600 m.

Vernacular name. “Hierba canto” (Huila-Colombia, *D. Giraldo-Cañas 3921*).

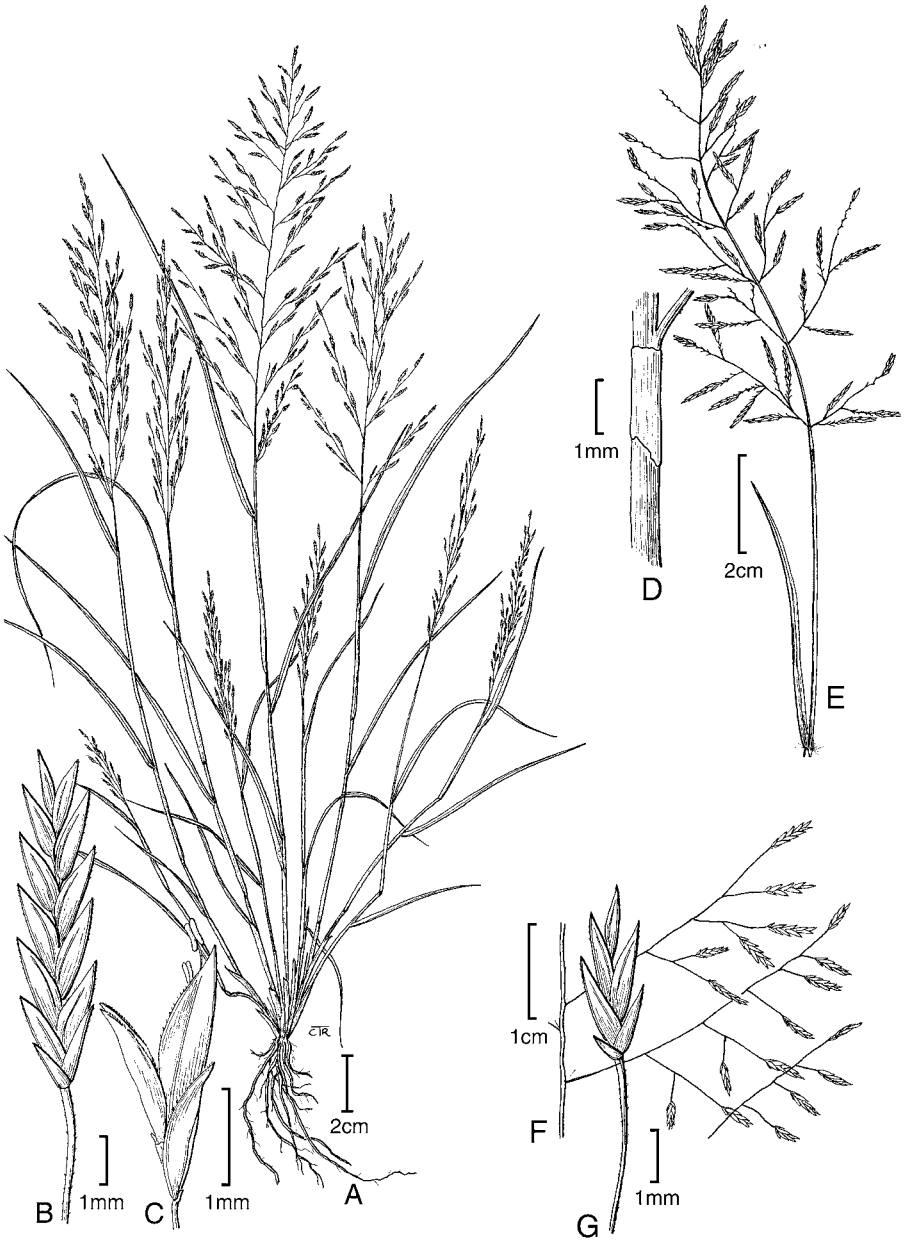


Fig. 34. ***Eragrostis pectinacea*** (*Peterson & Refulio-Rodríguez 13981*). **A**. Habit; **B**. Spikelet; **C**. Floret with two paleas attached below; **D**. Caryopsis, dorsal view; **E**. Caryopsis, lateral view. ***Eragrostis pilosa*** (*Llatos 1107*). **F**. Portion of culm with glandular area; **G**. Culm; **H**. Inflorescence; **I**. Spikelet; **J**. Caryopsis, dorsal view; **K**. Caryopsis, lateral view.

Specimens examined

COLOMBIA. **Antioquia**: Mun. Sabaneta, parque central de la municipalidad, 1550 m, 3 Jan 2003, *D. Giraldo-Cañas 3427* (COL). Valle de Aburrá, Mun. Itagüí, parque principal del Barrio Simón Bolívar, 1550 m, 4 Dec 2004, *D. Giraldo-Cañas 3819* (COL). Valle de Aburrá, Mun. Envigado, en grietas de andenes y pavimentos del estacionamiento del supermercado "Almacenes Éxito", 1550 m, 4 Dec 2004, *D. Giraldo-Cañas 3820, 3822, 3823* (COL, US). Mun. Guatapé, en grietas de la calle de El Malecón, *ca.* 2000 m, Jan 2011, *D. Giraldo-Cañas 4965* (COL). Mun. Santa Fe de Antioquia, en grietas de las aceras de la Plaza Menor, *ca.* 450 m, Jan 2011, *D. Giraldo-Cañas 4978* (COL). Medellín, 1500 m, 11 Jun 1930, *W. A. Archer 102* (US). Mun. Medellín, predios de la Universidad de Antioquia, 1450 m, 25 Sep 1986, *R. W. Pohl 15601* (HUA, MO, US). **Bogotá D. C.**: Bogotá, unidad deportiva El Salitre, área peatonal, Calle 63 con Avenida 68, 2600 m, 26 Jul 2005, *D. Giraldo-Cañas 3964* (COL, HUA, US). Bogotá, La Picota, 2600 m, Feb 1934, *E. Pérez-Arbeláez 4755* (COL, US). **Boyacá**: Mun. Santa María, en un área del casco urbano principal, 900 m, 27 Sep 2007, *D. Giraldo-Cañas 4121* (COL). Soatá, dry eastern slopes, 1800 m, 17 Sep 1938, *J. Cuatrecasas 1957* (COL, US). Cañón del Chicamocha, Mun. Tipacoque, vereda Ovachia, 1750 m, 12 Nov 1992, *A. Etter 655* (COL). 2 km from Soatá towards Tipacoque, 1800 m, 3 Nov 1985, *J.R.I. Wood 5132* (COL). **Caquetá**: Mun. Florencia, grietas de las aceras del centro de la ciudad, 280 m, 27−30 Jun 2005, *D. Giraldo-Cañas 3962* (COAH, COL, US). **Casanare**: Mun. El Yopal, en áreas urbanas del centro de la ciudad, 400 m, 31 Oct 2007, *D. Giraldo-Cañas 4132, 4135* (COL). **Cauca**: Mun. Popayán, predios internos y jardineras abandonadas de la Facultad de Educación de la Universidad del Cauca, 1750 m, 7−11 Nov 2004, *D. Giraldo-Cañas 3802, 3804* (COL). **Cesar**: Mun. Valledupar, plaza Alfonso López, jardineras externas de la acera de la iglesia de La Concepción, 150-180 m, 30 Mar 2010, *D. Giraldo-Cañas 4508* (COL). **Chocó**: Mun. Quibdó, en inmediaciones de la penitenciaría municipal, calle 26 con carrera 10, 90 m, 6 Nov 2005, *D. Giraldo-Cañas 3969, 3970* (COL, HUA). **Cundinamarca**: Provincia Río Negro, Mun. Pacho, carretera Pacho-La Capilla, alrededores del estadio municipal de fútbol, 1600 m, 13 Jan 2004, *D. Giraldo-Cañas 3724, 3727, 3732* (COL). Provincia Alto Magdalena, Mun. Nilo, hacienda La Guaira, río Pagüey, 350 m, 16 Oct 2004, *D. Giraldo-Cañas 3764, 3775, 3780* (COL). Provincia Alto Magdalena, Mun. Girardot, en rastrojos de la vía férrea entre Girardot y Flandes (Tolima), cerca de la ribera del río La Magdalena, 250 m, 17 Oct 2004, *D. Giraldo-Cañas 3784* (COL). Provincia Alto Magdalena, Mun. Nilo, carretera Nilo-Melgar, en coluvios de los cortes de la carretera, *ca.* 200 m, 19 Oct 2004, *D. Giraldo-Cañas 3794* (COL). Provincia Almeidas, Mun. Manta, en las grietas de las aceras del jardín infantil municipal, 1900 m, 20 Oct 2010, *D. Giraldo-Cañas 4474* (COL). Provincia Bajo Magdalena, Mun. Guaduas, en las grietas del atrio del templo principal del municipio, *ca.* 970 m, 21 Feb 2011, *D. Giraldo-Cañas 5039* (COL). Provincia Oriente, Mun. Quetame, carretera Villavicencio-Bogotá, entre Quetame y Cáqueza, en sustratos pedregosos de una explanada articial, 1600 m, 21 Mar 2011, *D. Giraldo-Cañas 5075* (COL). Provincia Alto Magdalena, entre Girardot y Tocaima, 326 m, Oct 1934, *H. García-Barriga 2417* (COL, US). Provincia Alto Magdalena, Tocaima, Dec 1932, *E. Pérez-Arbeláez 2418* (COL, US). **Huila**: Mun. San Agustín, parque arqueológico San Agustín, márgenes del camino principal del parque arqueológico, 1700 m, 1−5 Jul

2005, *D. Giraldo-Cañas 3919-A* (COL). Mun. San Agustín, parque arqueológico San Agustín, andenes del Centro Administrativo del parque arqueológico, 1700 m, 1−5 Jul 2005, *D. Giraldo-Cañas 3921* (COL). Mun. Timaná, en grietas de los andenes del casco urbano, 1500 m, 1−5 Jul 2005, *D. Giraldo-Cañas 3926* (COL). Mun. Garzón, carretera Garzón-Pitalito, *ca.* 800 m, 8 Dec 2011, *D. Giraldo-Cañas 5210* (COL). **Meta**: Mun. Villavicencio, en un área urbana, calles del parque Los Centauros, 400 m, 10 Nov 2002, *D. Giraldo-Cañas 3341* (COL, US). Mun. Puerto López, Alto de Menegua, en grietas de aceras, 200 m, 20 Mar 2011, *D. Giraldo-Cañas 5058* (COL). **Norte de Santander**: Mun. Ábrego, carretera Ábrego-Ocaña, *ca.* 3 km del casco urbano de Ábrego, en taludes rocosos y arenosos al lado de la carretera, 1300 m, 1 Apr 2010, *D. Giraldo-Cañas 4515, 4518, 4520* (COL). Mun. Ábrego, jardineras de la Plaza Central, 1380 m, 1 Apr 2010, *D. Giraldo-Cañas 4528* (COL). Mun. Ocaña, carretera Ocaña-Ábrego, a unos dos km del casco urbano de Ocaña, en áreas rocosas y arenosas de coluvios, con fuerte erosión a manera de cárcavas, 1300 m, 3 Apr 2010, *D. Giraldo-Cañas 4534, 4537, 4539* (COL). **Quindío**: Mun. Quimbaya, rastrojos abiertos en los límites con un cultivo de café, 1500 m, 20-25 May 2005, *D. Giraldo-Cañas 3878* (COL). Mun. Quimbaya, parque principal, aceras y pavimentos, 1500 m, 20-25 May 2005, *D. Giraldo-Cañas 3889* (COL, HUA). **Risaralda**: Mun. Pereira, en áreas abiertas y jardineras del parque metropolitano, 1400 m, Jun 2010, *D. Giraldo-Cañas 4611* (COL). Mun. Pereira, en grietas de jardineras externas del aeropuerto, 1400 m, Jun 2010, *D. Giraldo-Cañas 4616* (COL). **San Andrés, Providencia y Santa Catalina**: Isla de San Andrés, en rocas del sitio denominado como Hoyo Soplador, 5 m, 21-26 Jun 2010, *D. Giraldo-Cañas 4598* (COL). **Santander**: Mun. Barbosa, en grietas de pavimentos y aceras, cerca de la Plaza Principal, 1700 m, 20 Jul 2003, *D. Giraldo-Cañas 3563* (COL). Entre San Gil y el cañón del Chicamocha, 13 Jun 1962, *C. Saravia et al. 731* (COL). **Tolima**: Cordillera Central andina, Mun. Ibagué, jardineras y andenes de la Plaza de Bolívar, 1200 m, 11−12 Jun 2005, *D. Giraldo-Cañas 3910* (COL, HUA, US). Mun. Honda, en sustratos arenosos, ribera de pequeña quebrada antes de su desembocadura en el río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4264* (COL). Mun. Honda, en un pastizal de un sustrato arenoso, a unos 500 m del río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4295, 4325* (COL). Mun. Fresno, en borde de la carretera Fresno-Manizales, *ca.* 1250 m, Nov 2009, *D. Giraldo-Cañas 4393* (COL). **Valle del Cauca**: Mun. Buenaventura, en grietas de las jardineras externas del Hotel La Estación, 5 m, Jun-Jul 2010, *D. Giraldo-Cañas 4635, 4638* (COL). Mun. Cali, puente peatonal sobre el río Cali, entre el CAM y La Ermita, en grietas del pavimento, 990 m, Jun-Jul 2010, *D. Giraldo-Cañas 4640* (COL). Mun. Cali, en grietas de las aceras del parque principal del barrio San Antonio, *ca.* 1000 m, Jun-Jul 2010, *D. Giraldo-Cañas 4653, 4659* (COL). Mun. Sevilla, en jardinera del parque Uribe, 1600 m, Jun-Jul 2010, *D. Giraldo-Cañas 4681* (COL). Estación Piedras, entre Obando y Cartago, 980 m, 5 Feb 1961, *J. M. Idrobo 4249* (COL). **Vaupés**: Mun. Mitú, en grietas de aceras del centro de la población, *ca.* 250 m, May 2010, *D. Giraldo-Cañas 4567-a* (COL).

ECUADOR. Loja: 18.5 km W of Sozoranga on the road to Macará, 680 m, *P. M. Peterson 9485* (K, MO, QCA, UC, US, WIS). **Los Ríos**: 2 km S of Babahoyo, 300 m, *P. M. Peterson et al. 9033* (K, MO, QCA, UC, US, WIS). **Pichincha**: 13 km E of Alluriquín (32 km E of Santo Domingo) on new road to Quito, 980 m, *P. M. Peterson 9530* (US).

PERU. **Arequipa:** Prov. Caravelí, Lomas de Jahuay, 33 km NW de Chaviña, *M. Dillion et al. 3259* (CPUN, F). **Cusco:** Machu-Pichu, camino entre la ciudad inca de Machu-Pichu y el Puente del Inca, *ca.* 2000 m, *D. Giraldo-Cañas 3758* (COL). **La Libertad:** Prov. Santiago de Chuco, 22 km E of Huamachuco on rd. towards Sarín, above Río Chusgón, *P. M. Peterson & N. F. Refulio-Rodríguez 13981* (US, USM). **Lambayeque:** Prov. Lambayeque, Olmos, N side of Río Olmos, *J. T. Columbus et al. 3451* (RSA, US).

Eragrostis peruviana (Jacq.) Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 1 (4): 396. 1830. *Poa peruviana* Jacq., Collectanea 1: 107. 1786 [1787]. Type: PERU. *N. J. von Jacquin* (holotype: W; isotypes: LE, US-2851260 fragm.!). **Fig. 35**.

Koeleria multiflora Regel & Herter, Index Sem. (St. Petersburg) 23. 1858. Type: CHILE. Cultivated seed from Chile, *M. Philippe* s.n. (holotype: LE).

Eragrostis deserticola Phil., Fl. Atacam. 55. 1860. Type: CHILE. Atacama: *ca.* Hueso Parado, 1200 m, *R. A. Philippi 409* (holotype: SGO-PHIL-358; isotypes: BAA fragm.!, SGO-63452, US-556537 fragm. ex SGO-PHIL-358!).

Eragrostis peruviana (Jacq.) Trin. var. *brachythyrsa* Pilg., Bot. Jahrb. Syst. 37: 375. 1906. Type: PERU. Mollendo, in formatione "loma," 200–600 m, Oct. 1902, *A. Weberbauer 1462* (lectotype: B, designated by Nicora [as "holotypus"], Gayana, Bot. 51: 2. 1994; isolectotype: US-2851259 fragm.!).

Annual, caespitose. **Culms** (8–)27–37 cm tall, erect to prostrate, geniculate and many branched below, mostly glabrous below, nodes glabrous or with a few hairs, 3 to 5 nodes per culm. **Leaf sheaths** 1/2 to as long as the internodes, sparsely pilose, the hairs papillose-based up to 2.5 mm, ciliate at the summit; **ligules** 0.3–0.8 mm long, ciliate; **blades** 3–6(–9) × 0.15–0.3 cm, flat to involute, sparsely pilose, scaberulous above and along margins. **Panicles** 1.6–8.5 × 0.8–1.2(–3) cm, oblong, spiciform and densely flowered, interrupted below, greenish with a hint of purple, primary branches 0.5–3 cm long, ascending, tightly appressed, flowered to base; rachis puberulent and scabrous; pulvini glabrous; **pedicels** 0.2–0.3 mm long. **Spikelets** 3–4.5 × 1.7–2.2 mm, 4- to 8-flowered, ovate, greenish to stramineous, strongly compressed; **disarticulation** of entire florets with rachilla attached usually just above the glumes, glumes deciduous; **glumes** 1–1.6 mm long, subequal, ovate, hyaline, membranous, glabrous; apex acute, sometimes mucronate, the mucro less than 0.4 mm long; **lower glume** 1–1.2(–1.4) mm long; **upper glume** 1.3–1.6 mm long; **lemmas** 1.7–2.4 mm long, ovate, lateral nerves conspicuous, often green, scaberulous on the keel; apex acute often mucronate, the mucro less than 0.4 mm; **paleas** 0.8–1.5 mm long, hyaline, keels ciliate, the cilia 0.3–0.5 mm long, soft and silky; apex obtuse to truncate; **stamens** 3, anthers 0.2–0.3 mm long, reddish brown. **Caryopses** 0.4–0.6(–0.7) mm long, ovoid to ellipsoid, somewhat laterally flattened, striate and reticulate, elliptical-obovate to circular in cross section, reddish brown, sometimes whitish.

Chromosome number. $2n$ = unknown.

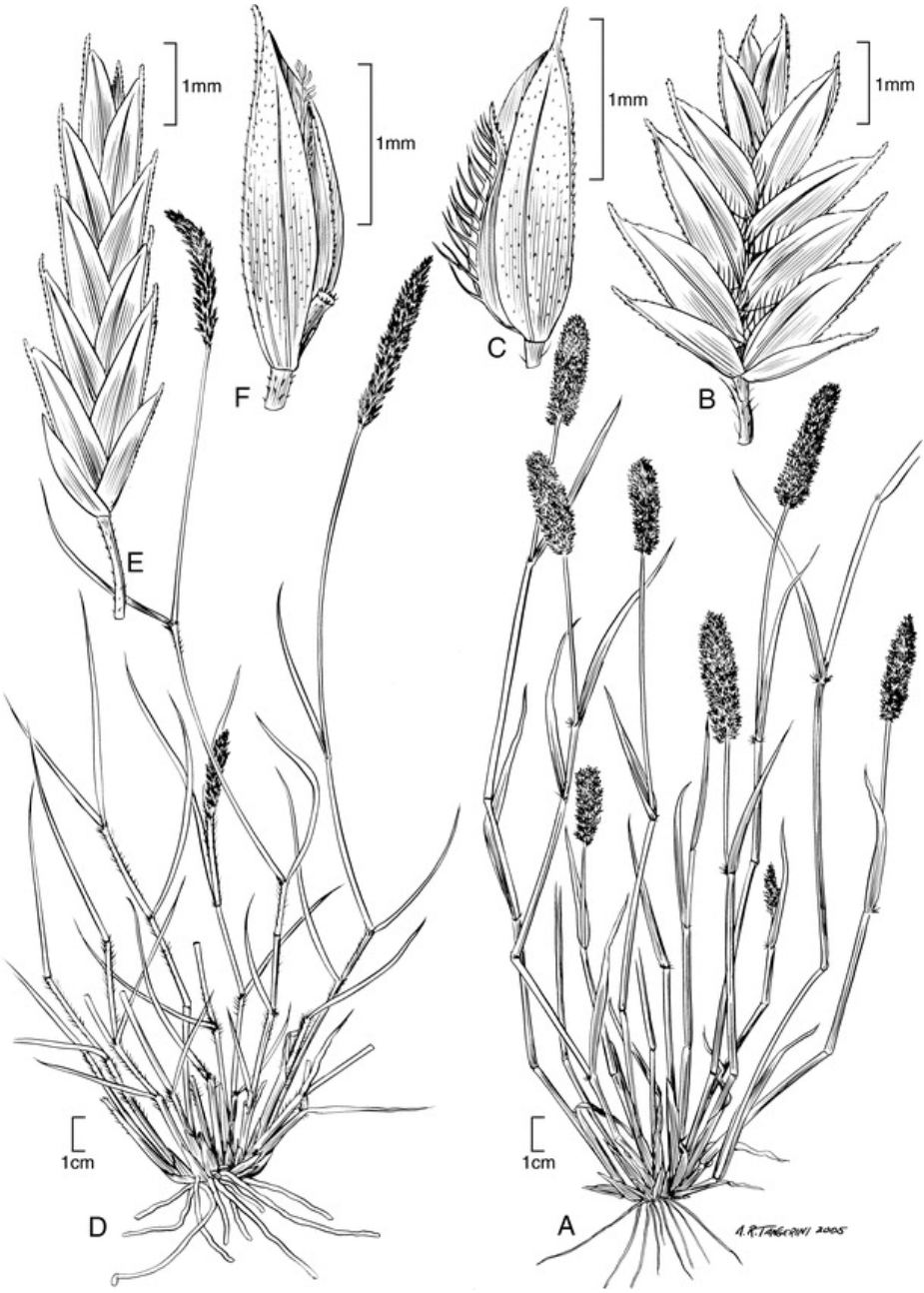


Fig. 35. ***Eragrostis peruviana*** (*Dillon et al. 3314*). **A**. Habit; **B**. Spikelet; **C**. Floret. ***Eragrostis weberbaueri*** (*Peterson & Refulio-Rodríguez 13917*). **D**. Habit; **E**. Spikelet; **F**. Floret.

Distribution and habitat. Endemic to the coast of Peru and northern Chile; occurs in *lomas* vegetation in sandy soils and hills in desert habitats; 0–1000 m (Nicora 1994).

Specimens examined

PERU. **Ancash:** Prov. Santa, Lomas de Casma, *R. Ferreyra 8030* (US, USM). **Arequipa:** Prov. Caravelí, Lomas de Atiquipa, *R. Ferreyra 6480* (US, USM); Prov. Mollendo, *C. Vargas C. s.n.* (CUZ). **Ica:** Prov. Nasca, Lomas de Marcona, al S de Nasca, *R. Ferreyra 13376* (US, USM). **La Libertad:** Prov. Trujillo, Cerro Cabezón, *A. Sagástegui A. et al. 10470* (US). **Lambayeque:** Prov. Chiclayo, Cerro Reque, *S. Llatas Q. 335* (CPUN). **Lima:** Prov. Lima, Chorrillos near Lima, *J. F. Macbride 5847* (US). **Moquegua:** Prov. Moquegua, Ilo, Lomas de Mostacilla, *C. Vargas C. 017979* (CUZ). **Tacna:** Prov. Tacna, *ca.* 21 km SE of Moquegua–Tacna at Km 1225 S of Lima, *M. O. Dillon et al. 3342* (CPUN, F, US).

Eragrostis pilgeri Fedde, Just's Bot. Jahresber. 3: 18. 1908. *Eragrostis andicola* Pilg., Bot. Jahrb. Syst. 37: 377. 1906, nom. illeg. Type: PERU. Ancash: Hacienda Cajabamba, entre Samanco y Caraz, 27 May 1903, *A. Weberbauer 3114* (lectotype: MOL, designated by Alegría & Granda, Sida 19: 1158. 2001; isolectotypes: BAA-999 fragm. ex B!, US-2766205 fragm.!). **Fig. 36**.

Perennials, caespitose with intravaginal innovations. **Culms** 26–84 cm tall, erect, terete near base, glabrous below the nodes; nodes mostly basal or 1 to 2 above; internodes glabrous. **Leaf sheaths** 6–16 cm long, longer than the lower internode if present, mostly glabrous or with scattered hairs near the summit, the hairs up to 1.3 mm long; upper sheaths sometimes with minute, whitish glands along the nerves; margins mostly smooth, usually with a large tuft of hairs near the summit, these hairs up to 3 mm long; collar visible, yellowish; **ligules** 0.4–0.7 mm long, ciliate, sometimes these hairs extending up to 2.5 mm, these breaking off at maturity; **blades** (6–)10–22(–26) × 0.1–0.25(–0.30) cm, flat above the ligule to tightly involute distally, apically acuminate, usually densely pilose to villous near base above and below to sparsely pilose to villous near base and glabrous above, the hairs up to 2.5 mm long. **Panicles** 10–20(–38) × 5–15 cm, ovate, open, primary branches mostly 1.5–11 cm long, naked near base, the loosely flowered branches spreading 20°–80° from the rachises with spreading secondary branches, 1 to 3 per node; pulvini in the axils of primary and secondary branches glabrous to sparsely villous, the hairs up to 5 mm long; **pedicels** 1.2–7 mm long, delicately spreading, sinuous to flexuous, scaberulous and sometimes with a minute, irregularly shaped, whitish gland at apex. **Spikelets** 3–6.1 × (2–)2.2–4.5 mm, florets 3 to 8, ovate, dark green with small plumbeous spots; rachilla flattened, with hairs more numerous at the base where the floret is attached and sometimes densely ciliate along the margins, the hairs 0.4–1.8 mm long; spikelets spreading 30°–45° from the rachilla axis; **disarticulation** with the glumes first then the lemmas falling individually leaving the paleas on the rachilla; **glumes** 2–2.8 mm long, about equal in length, shorter than the lower lemma, lanceolate to ovate, membranous, keeled, scaberulous along the keel and sometimes with minute, white, raised glands; apex acute to acuminate, often mucronate, the mucro up to 0.5

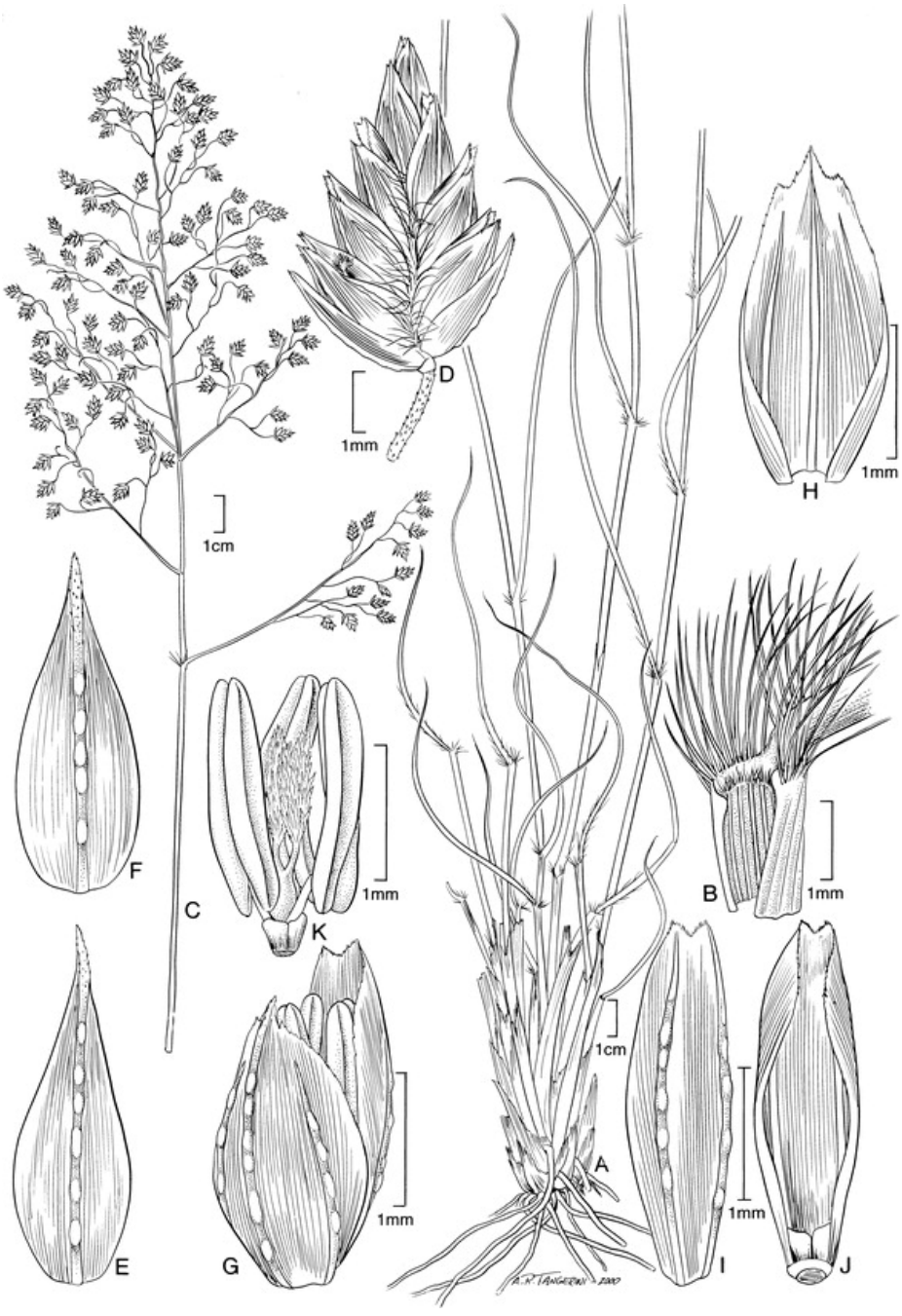


Fig. 36. ***Eragrostis pilgeri*** **subsp.** ***ancashensis*** (*Peterson & Refulio-Rodríguez 13793*). **A**. Habit; **B**. Ligule; **C**. Panicle; **D**. Spikelet; **E**. Lower glume; **F**. Upper glume; **G**. Floret; **H**. Lemma, ventral view; **I**. Palea, dorsal view; **J**. Palea enclosing the lodicules; **K**. Stamens, pistil, and lodicules.

mm; **lemmas** 2–3.2 mm long, broadly ovate, membranous, lateral nerves somewhat obscure, keeled, scaberulous along the keel and near the apex, the nerves sometimes with minute, whitish, raised glands; apex acute, often darker than below; **paleas** 2–3.1 mm long, elliptic, membranous, keels usually sometimes with minute, whitish, raised glands; apex truncate to obtuse, sometimes minutely erose; **stamens** 3, anthers 1.2–2 mm long, yellow to purplish at maturity. **Caryopses** 0.7–0.9 mm long, rectangular-prismatic, striate and reticulate, deeply grooved on the ventral surface, rectangular to triangular in cross section, dark reddish brown.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Endemic to Peru and known only from Ancash and Cajamarca Departments; steep rocky slopes, hillsides, and sandy slopes associated with xerophytic plants such as *Agave* L., *Commelina* L., *Lupinus* L., *Puya* Molina, *Vicia* L., *Viguiera* Kunth, and other shrubby Asteraceae; 2200–3200 m.

Comments. There has been much confusion with this species from its initial description by Pilger (1906) as *Eragrostis andicola* Pilg., a later homonym (not *E. andicola* R. E. Fr.), and subsequent naming by Fedde (1908) as *E. pilgeri* Fedde. Hitchcock (1927) also replaced *E. andicola* Pilg. with *E. pilgeriana* Hitchc., also a later homonym (not *E. pilgeriana* Dinter ex Pilg). More recently, Alegría Olivera & Granda Paucar (2001) lectotypified *E. pilgeri* and its synonyms and have questioned the validity of *E. ancashensis* P. M. Peterson, Refulio & Tovar. We actually agree with most of their assessment that *E. ancashensis* should not be recognized at the specific level, but we feel the presence of glands on the sheaths, pedicels, glumes, lemmas, and paleas is sufficient to warrant subspecific recognition.

Key to the subspecies of *Eragrostis pilgeri*

1. Glumes, lemmas, and paleas without glands or rarely with a few white glands on midvein of the glume only; pedicels rarely with a minute, irregularly shaped, white gland at apex .... ***E. pilgeri* subsp. *pilgeri***
1'. Glumes, lemmas, and paleas with numerous minute, white, raised glands along the veins; pedicels with a minute, irregularly shaped, white gland at apex..... ..... ***E. pilgeri* subsp. *ancashensis***

Eragrostis pilgeri Fedde subsp. ***pilgeri***

Eragrostis andicola fo. *humilior* Pilg., Bot. Jahrb. Syst. 37: 377. 1906. Type: PERU. Ancash: Hacienda Cajabamba, entre Caraz y Samanco, May 1903, *A. Weberbauer 3036* (lectotype: MOL, designated by Alegría & Granda, Sida 19: 1158. 2001).

Eragrostis carazensis Pilg., Bot. Jahrb. Syst. 56 (Beibl. 123): 27. 1920. Type: PERU. Ancash: Caraz, 2200−2500 m, 12 May 1903, *A. Weberbauer 2999* (lectotype: MOL, designated by Alegría & Granda, Sida 19: 1158. 2001; isolectotypes: BAA-1018 fragm. ex B!, US-2891460!).

Upper **leaf sheaths** usually without minute, white glands along the veins; **pedicels** rarely with a minute, irregularly shaped, white gland at apex. **Spikelets** with the rachilla densely or sparsely ciliate, the hairs mostly 0.4−1.8 mm long; **glumes** without or rarely with a few minute, white, raised glands along the keel; **lemmas** without glands; **paleas** without glands. Illustration of this subspecies in Peterson & Sánchez Vega (2007).

Specimens examined

PERU. **Ancash:** Prov. Corongo, 7 km NW of Bambus, *P. M. Peterson & N. F. Refulio-RodrÍguez 13915*, *13919* (US, USM); Prov. Huaylas, Huascarán National Park, Ausquispuquio, *D. N. Smith et al. 11959* (HUT); Puente Paria, *Proaño 63* (US). **Cajamarca:** Prov. Cajamarca, Cajamarca, cañada above town, *E. Anderson 661* (US).

Eragrostis pilgeri Fedde subsp. ***ancashensis*** (P. M. Peterson, Refulio & Tovar) P. M. Peterson & Sánchez Vega, Ann. Missouri Bot. Gard. 94 (4): 782. 2007. *Eragrostis ancashensis* P. M. Peterson, Refulio & Tovar, Sida 19 (1): 66. 2000. TYPE: PERU. ANCASH: Prov. Recuay, Cordillera Blanca, *ca.* 20 km E of Raquia on Rt. 02-014, on road to Huaraz, 10°08'55.8''S, 77°19'48.8''W, 3000 m, 20 Mar 1997, *P. M. Peterson & N. F. Refulio Rodríguez 13793* (HOLOTYPE: USM!; ISOTYPES: K!, MO!, NY!, RSA!, TAES!, UC!, US-3404098!, US-3404099!, WIS!). **Fig. 36**.

Eragrostis andicola fo. *robustior* Pilg., Bot. Jahrb. Syst. 37: 377. 1906. TYPE: PERU. ANCASH: Prov. Cajatambo, *A. Weberbauer 2746* (LECTOTYPE: MOL, designated by Alegría & Granda, Sida 19: 1158. 2001; ISOLECTOTYPE: US-2850747!).

Upper **leaf sheaths** usually with minute, whitish glands along the veins; **pedicels** with a minute, irregularly shaped, white gland at apex. **Spikelets** with a rachilla densely cilate, the hairs 0.8−1.8 mm long; **glumes** with numerous minute, white, raised glands along the keel; **lemmas** with minute, white, raised glands along the keel and lateral veins; **paleas** with white glands along the keels.

Specimens examined

PERU. Ancash: Prov. Recuay, Cordillera Blanca, *ca.* 20 km E of Raquia on Rt. 02-014, on road to Huaraz, 10°08'55.8''S, 77°19'48.8''W, 3000 m, 20 Mar 1997, *P. M. Peterson & N. F. Refulio Rodríguez 13793* (K, MO, NY, RSA, TAES, UC, US, USM, WIS). Prov. Cajatambo, *A. Weberbauer 2746* (US).

Eragrostis pilosa (L.) P. Beauv., Ess. Agrostogr. 71: 162, 175. 1812. subsp. ***pilosa***. *Poa pilosa* L., Sp. Pl. 1: 68. 1753. TYPE: "*Gramin paniculis elegantissimis, majus, locustis, purpureo-spadiceis, minoribus*" in Scheuchzer, Agrostographia: 193, t. 4, f. 3. 1719 (LECTOTYPE designated by Du Puy *et al.*, Fl. Australia: 472. 1993). [EPITYPE: ITALY, 9−10 Aug 1902, *A. Kneucker, Gram. Exsicc. XII, 344*, (EPITYPE: B!, designated by H. Scholz in Cafferty *et al.*, Taxon 49: 256. 2000; iso-US-557051!)]. **Fig. 34**.

Eragrostis multicaulis Steud., Syn. Pl. Glumac. 1: 426. 1854. TIPO. Japón. *Bürger s.n.* (lectotipo, L-908.97-2116, designado por Veldkamp, Blumea 47: 181. 2002).

Caespitose annuals. **Culms** 8−45(−70) cm tall, erect or geniculate spreading below, glabrous or occasionally with a few glandular pits. **Leaf sheaths** overlapping below, about 1/2 to as long as the internodes above, ciliate at the summit and collar or glabrous, the hairs up to 3 mm long; **ligules** 0.1−0.5 mm long, ciliate; **blades** 2−15(−20) × 0.1−0.25(−0.4) cm, flat, scaberulous above and glabrous below with a few hairs near the base. **Panicles** 4−20(−28) × 2−15(−18) cm, ellipsoid to ovoid, open, diffuse, the ascending, capillary often drooping, primary branches 1−10 cm long, spreading 10−80°(−110°) from the rachises, usually whorled on the lowest two nodes, glabrous to scaberulous; pulvini glabrous to occasionally sparsely ciliate; **pedicels** 0.8−10 cm long, erect to flexuous, appressed to spreading, scaberulous. **Spikelets** (2−)3.5−6(−10) × 0.6−1.3(−1.8) mm, (3−) 5−17-flowered, linear-oblong to narrowly ovate, plumbeous; **disarticulation** acropetal with the glumes first then the lemmas and paleas falling individually, paleas easily deciduous; **glumes** 0.3−1.2 mm long, narrowly ovate to lanceolate, hyaline, keeled, scaberulous along the keel; **lower glume** 0.3−0.6(−0.8) mm long; **upper glume** 0.7−1.2(−1.4) mm long, usually broader than the lower; **lemmas** 1.2−1.8 mm long, ovate-lanceolate, hyaline to membranous, grayish green below and reddish purple near the apex, keeled, scaberulous along the keel near apex, lateral nerves inconspicuous; apex acute; **paleas** 1−1.6 mm long, hyaline to membranous, scaberulous along the keels; apex obtuse; **stamens** 3, anthers 0.2−0.3 mm long, purplish. **Caryopses** 0.5−1 mm long, obovoid to prism-shaped, dorsally flattened, smooth to striate, rectangular in cross-section, light brown.

Chromosome number. 2*n* = 20, 36, 40 (Bir & Sahni 1988), 40, 60 (Chen & Peterson 2006).

Distribution and habitat. Native in Europe, naturalized in North, Central, and South America (excluding Surinam); occurs in disturbed habitats, often in wet sandy soils, along forest margins in sandy or gravelly sites and city sidewalks; 0−1700 m.

Vernacular names. "Maleza del arroz" (Tolima, Colombia, *F. A. Montealegre 11*).

Specimens examined

COLOMBIA. Antioquia: Mun. Puerto Triunfo, localidad Doradal, a unos 5 km del puente sobre el río La Magdalena, carretera Medellín-Bogotá, *ca.* 200 m, Jan 2011, *D. Giraldo-Cañas 5010* (COL). Medellín, 1500 m, 2 Jul 1930, *W. A. Archer 317* (US). Mun. Urrao, carretera a La Encarnación, 10 km al noroeste de Urrao, 1650 m, 10 Sep 1986, *R. W. Pohl & J. Betancur 15478* (HUA, MO, US). Vicinity of Medellín, 5 Jul 1927, *R. A. Toro 264* (US). **Arauca**: Mun. Arauca, inmediaciones de las instalaciones de la Universidad Nacional de Colombia, hacienda El Cairo, carretera Arauca-Tame, km 9, 200−300 m, 13 Jun 2003, *D. Giraldo-Cañas 3493* (COL). **Bolívar**: Along the Mompós-Juana Sánchez trail, Island of Mompós, lands of Loba, Apr-May 1916, *H. M. Curran 244* (US), *246* (US). **Boyacá**: Mun. Santa María, carretera Santa María-

Bogotá, sendero ecológico de la represa de Chivor, *ca.* 1000 m, 28-30 Sep 2008, *D. Giraldo-Cañas 4166-A* (COL). **Casanare**: Mun. El Yopal, en áreas urbanas del centro de la ciudad, 400 m, 31 Oct 2007, *D. Giraldo-Cañas 4131, 4138* (COAH, COL). **Cundinamarca**: Provincia Alto Magdalena, Mun. Nilo, hacienda La Guaira, río Pagüey, 350 m, 16 Oct 2004, *D. Giraldo-Cañas 3772* (COL). Provincia Tequendama, Between Anolaima and Cachipay, 17 Apr 1935, *W. A. Archer 3328* (US). Between Chinauta and Alto de Boquerón, 1100 m, 2 Oct 1985, *J. R. I. Wood 5093-D* (COL). **La Guajira**: Pájaro, 10 m, 28 Nov 1959, *J. Cuatrecasas & R. Romero-Castañeda 25474* (COL, US). Clausura Napaipa, rumbo a Maicao, 4.5 km de Uribia, 13 Feb 1963, *C. Saravia 2224* (COL, US). **Magdalena**: Santa Marta, 1898−1899, *H. H. Smith 2150* (COL, MO, US). **Meta**: Mun. Villavicencio, carretera Villavicencio-Aeropuerto, piedemonte de la cordillera Oriental, sitio La Arenera, *ca.* 2 km del puente sobre el río Guatiquía, *ca.* 400 m, 14−15 Dec 2002, *D. Giraldo-Cañas 3388* (COAH, COL, HUA). **Nariño**: Mun. Pasto, Panamericana, puente del Juanambú, 1000 m, 20 May 1989, *B. R. Ramírez 1489* (COL, PSO). **Norte de Santander**: Mun. Ocaña, carretera Ocaña-Ábrego, a unos dos km del casco urbano de Ocaña, en áreas rocosas y arenosas de coluvios, con fuerte erosión a manera de cárcavas, 1300 m, 3 Apr 2010, *D. Giraldo-Cañas 4543* (COL). **Santander**: Mun. Bucaramanga, en grietas de una acera de la calle 34 con carrera 27, al subir hacia Las Cabeceras, 950 m, 4 Apr 2010, *D. Giraldo-Cañas 4554* (COL). Granja Apropecuaria Piedecuesta, al sur de Bucaramanga, 1000 m, 6 Oct 1966, *A. Robinson 3165* (US). Mesa de los Santos, al sur de Bucaramanga, 1700 m, 30 Dec 1966, *A. Robinson 3207* (US). **Tolima**: Mun. Honda, en sustratos arenosos, ribera de pequeña quebrada antes de su desembocadura en el río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4266* (COL). Mun. Honda, en un pastizal de un sustrato arenoso, a unos 500 m del río Magdalena, *ca.* 300 m, Nov 2009, *D. Giraldo-Cañas 4324* (COL). Mun. Saldaña, carretera Neiva-El Espinal, pastizal en sustratos arenosos dominados por *Pappophorum* y *Bothriochloa*, *ca.* 300 m, 11 Dec 2011, *D. Giraldo-Cañas 5234* (COL). Ibagué, vereda Chucuni, finca Reinoso, 1100 m, 2 Jul 2006, *F. A. Montealegre 11* (COL). **Valle del Cauca**: Mun. Buenaventura, en grietas de las aceras de El Malecón, *ca.* 5 m, Jun-Jul 2010, *D. Giraldo-Cañas 4634* (COL). Mun. Buga, carretera Buga-Cali, en las afueras de Buga, en borde de carretera, *ca.* 1000 m, Jun-Jul 2010, *D. Giraldo-Cañas 4674* (COL). Cartago, Santa Ana de los Caballeros, 950 m, 19 Nov 1946, *J. Cuatrecasas 23023* (US), *23037* (COL, US). Between Uribe and Sevilla, 1100 m, 2 Nov 1983, *J. R. I. Wood 4084* (COL). **Vaupés**: Mun. Mitú, en grietas de aceras del centro de la población, *ca.* 250 m, May 2010, *D. Giraldo-Cañas 4568-a* (COL). **Vichada**: Región Guayanesa, Mun. Puerto Carreño, afloramientos rocosos entre Punta de Lajas y el Cerro El Bita, ribera del río Orinoco, 40−100 m, 4-5 Jan 2004, *D. Giraldo-Cañas & C. Parra 3630* (COL).

ECUADOR. Guayas: Playas, *Asplund 5028* (F, S, US). **Napo**: At Río Aquarico above San Pablo, 250 m, *S. Lægaard 51419* (COL). **Zamora-Chinchipe**: 6.8 km SW of Zamora on road to Loja, 1130 m, *P. M. Peterson et al. 8930* (MO, QCA, US).

PERU. **Cajamarca:** Prov. Cajamarca, Cajamarca, entre Cajamarca y Baños del Inca, *I. Sánchez-Vega & V. Torrel 2373* (CPUN, US). **Huánuco:** Prov. Huánuco, Cerro Huánuco, *O. Velarde 2525* (US). **Lambayeque:** Prov. Lambayeque, Cholocal, *ca.*

de Motupe, *R. Ferreyra 5866* (US, USM); N side of Río Olmos, *J. T. Columbus et al. 3451* (RSA, US). **Loreto:** Prov. Maynas, Iquitos, Isla Muy Muy, S of Iquitos, *H. Ellenberg 2882* (US); Padre Isla, entrada a Yarinacocha, *S. McDaniel & M. Rimachi 23051* (AMAZ). **Piura:** Al S de Piura, desvío a Chulucanas, *R. Ferreyra 5918* (US, USM). **Tumbes:** Zarumilla, *H. Ellenberg 1373* (US).

Eragrostis polytricha Nees, Fl. Bras. Enum. Pl. 2: 507−508. 1829. *Poa polytricha* (Nees) Kunth, Enum. Pl. 1: 331. 1833. Type: BRAZIL, *Sellow s.n.* (holotype: B; isotypes: BAA-2668 fragm. ex B!, US-77386 fragm.!). **Fig. 30**.

Eragrostis lugens Nees var. *villosa* Döll, Fl. Bras. 2 (3): 140. 1878. Type: BRAZIL. Minas Gerais: Caldas, 28 Mar 1868, *Exp. Regnell III 1405* (lectotype: S, designated by Boechat & Longhi-Wagner, Iheringia, Bot. 55: 117. 2001; isolectotype: US!).

Eragrostis floridana Hitchc., Amer. J. Bot. 2: 308. 1915. *Eragrostis trichocolea* Hack. & Arechav. var. *floridana* (Hitchc.) Witherspoon, Ann. Missouri Bot. Gard. 64: 328. 1977. Type: U.S.A. Florida: Hillsborough Co., near Tampa, Mar, *Curtiss 3494* (holotype: US-726520!; isotypes: BR, F, ISC, LE, M, MO!, NY!, PH, TAES, TENN, US-748356!, US-823092!).

Eragrostis fragilis Swallen, Fieldiana, Bot. 28 (1): 18. 1951. Type: VENEZUELA. Bolívar: Gran Sabana, between Kun and Uaduara-parú, in valley of Río Kukenán, S of Mount Roraima, 1065−1220 m, 1 Oct 1944, *J. A. Steyermark 59062* (holotype: US-1911657!; isotypes: F, VEN).

Caespitose perennials, eglandular, with innovations, without rhizomes. **Culms** 30–62 cm tall, erect, glabrous and shiny below the nodes. **Leaf sheaths** sometimes densely pilose dorsally and on the collars, margins and apices hairy, hairs to 5 mm and with papillose base; **ligules** 0.2–0.4 mm long; **blades** 5–20(–33) × 0.1–0.35 cm, involute to flat, both surfaces with scattered hairs, adaxial surfaces densely hairy behind the ligules, hairs to 7 mm long and with papillose base. **Panicles** 15–25 × 12–27 cm, ovate, open; primary branches 0.6–15 cm long, diverging up to 90° from the rachises, capillary, naked basally; pulvini hairy, hairs to 8 mm long; **pedicels** 1.4–10(−16) mm long, divergent, longer than the spikelet. **Spikelets** (2.5−)3–5 × 1.1–1.6 mm, 4–9-flowered, narrowly lanceolate to linear-oblong, plumbeous; **disarticulation** acropetal, paleas persistent; **glumes** broadly ovate to narrowly lanceolate, hyaline to membranous; **lower glume** 1.1–1.6 mm long; **upper glume** 1.2–1.8 mm long; **lemmas** 1.2–1.8 mm long, broadly ovate, membranous throughout, lateral nerves inconspicuous, apices acute; **paleas** 1.1–1.7 mm long, membranous to hyaline, narrower than the lemmas, apices obtuse; **stamens** 3, anthers 0.3–0.5 mm long, reddish-purple. **Caryopses** 0.5–0.8 mm long, obovoid to somewhat prism-shaped, laterally compressed, with a well-developed adaxial groove, finely striate, opaque to translucent, reddish-brown.

Chromosome number. 2*n* = 60, 80 (Peterson 2003).

Distribution and habitat. *Eragrostis polytricha* grows in sandy and rocky areas, usually in open savannas; 0–2650 m. It ranges from Mexico through Central America

to Argentina, Bolivia, Brazil, Chile, Colombia, Guyana, Paraguay, Uruguay, and Venezuela (Boechat & Longhi-Wagner 2001).

Specimens examined

COLOMBIA. Cundinamarca: Provincia Almeidas, Hoya del río Checua Loma, 250 m SE de San José, arenas del Cacho, 2640 m, 8 Dec 1966, *Schrimpff 122* (COL).

Eragrostis prolifera (Sw.) Steud., Syn. Pl. Glumac. 1: 278. 1854. *Poa prolifera* Sw., Prodr. 27. 1788. Type: GUADELOUPE, *Swartz s.n.* (holotype: S; isotype: K!). **Fig. 37**.

Eragrostis salzmannii Steud., Syn. Pl. Glumac. 1: 277. 1854. Type: BRAZIL. Bahia: *P. Salzmann s.n.* (holotype: ?; isotypes: K-photo!, US-911901!, US-2767414!).

Caespitose perennials, eglandular, with innovations, without rhizomes. **Culms** 85–130(150) cm tall, stiffly erect, glabrous below the nodes. **Leaf sheaths** glabrous or hairy at the apices, hairs to 4 mm long; **ligules** 0.1–0.2 mm long; **blades** 25–50 × 0.15–0.6 cm, flat to involute, glabrous abaxially, scabridulous adaxially, sometimes also with a few scattered hairs near the base. **Panicles** (10)20–50(60) × 2–8(10) cm, narrowly ovate, contracted to open; primary branches mostly 2–14 cm long, appressed or diverging up to 50°(−90°) from the rachises, spikelets congested near the base of the branches; pulvini glabrous; **pedicels** 0.3–2.4 mm long, appressed, always shorter than the spikelets. **Spikelets** 3.2–10(12) × 0.7–1.4 mm, (5)8–25-flowered, linear-lanceolate, stramineous to plumbeous, sometimes with a reddish tinge; **disarticulation** acropetal, glumes first, then the lemmas, paleas persistent; **glumes** subequal, ovate to lanceolate, hyaline; **lower glume** 1–1.5 mm long; **upper glume** 1.1–1.6 mm long; **lemmas** 1.1–1.8(2) mm long, ovate, membranous, apices acute; **paleas** 0.8–1.7 mm long, hyaline, narrower than the lemmas, apices obtuse to truncate; **stamens** 2, anthers 0.2–0.3 mm long, purplish. **Caryopses** 0.6–0.9 mm long, ovoid, flattened ventrally, finely striate, reddish-brown.

Chromosome number. 2*n* = 40 (Peterson 2003).

Distribution and habitat. *Eragrostis prolifera* grows on beaches, in stagnant waters, and along roadsides, at elevations below 20 m. Its range extends southward from U.S.A. through Mexico and Central America to Brazil, Colombia, and Venezuela (Boechat & Longhi-Wagner 2001). Boechat & Longhi-Wagner (2001) reported *E. prolifera* as occurring in Peru but no specimens were reported by Peterson & Sánchez Vega (2007) in a treatment of *Eragrostis* in Peru.

Specimens examined

COLOMBIA. Atlántico: Puerto Colombia, Sabanilla, 21 Nov 1912, *A. S. Hitchcock 9931* (US). **Bolívar**: Cartagena and vicinity, Dec 1928, *B. Elías 649* (COL, US). Cartagena, Mamonal, lechos de sedimentación, 0-20 m, 16 Nov 1990, *R. Álvarez et*

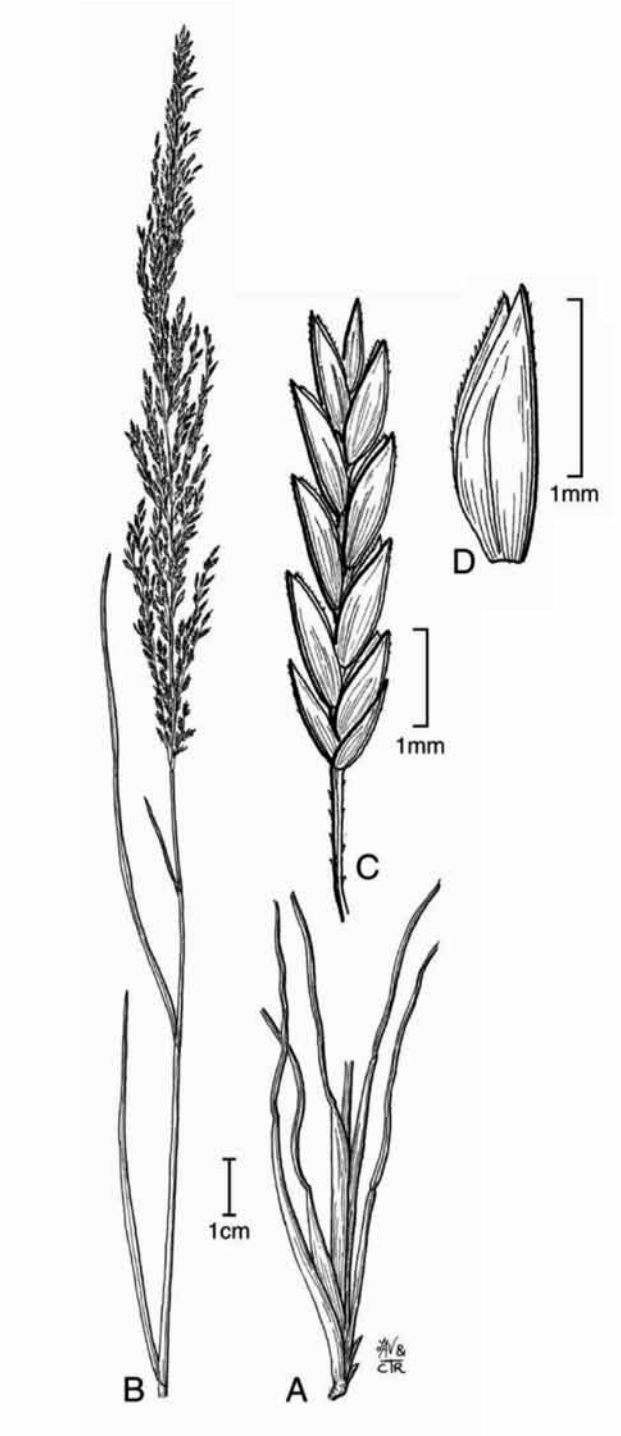


Fig. 37. ***Eragrostis prolifera***. **A**. Habit; **B**. Culm; **C**. Spikelet; **D**. Floret.

al. 12 (COL). Boca Grande, near Cartagena, 0–5 m, 3 Nov 1926, *E. P. Killip & A. C. Smith 14097* (COL, US), *14103* (MO, US). Cartagena, sand beach, 20 Nov 1912, *A. S. Hitchcock 9900* (US), *9902* (US). Cartagena, 0–2 m, 1–3 Oct 1922, *F. W. Pennell 12013* (US). Costa Caribe, Alrededores de Cartagena, 5 m, year 1942, *H. Apolinar 392* (COL). Islas del Rosario, 2 m, 14–17 Oct 1963, *P. Pinto 685, 687, 701* (COL). Cartagena, playas de Marbella, 0–5 m, 3 Feb 1962, *C. Saravia & D. Johnson 31, 66* (COL). **San Andrés, Providencia y Santa Catalina**: Santa Catalina Island, near the village, 0–5 m, 5 Feb 1985, *J. R. I. Wood 4729* (COL). **Sucre**: Mun. Tolú, arroyo Amansaguapos, golfo de Morrosquillo, Manglares, 0-5 m, 18 Sep 1990, *J. Betancur & M. Berrío 1970* (COL, HUA, MO).

Eragrostis rufescens Schrad. ex Schult. var. ***rufescens***, Mant. 2: 319. 1824. *Eragrostis inconstans* Nees var. *rufescens* (Schrad. ex Schult.) Nees, Fl. Bras. Enum. Pl. 2 (1): 495. 1829. Type: BRAZIL. *Maximilian Neowidens s.n.* (holotype: LE; isotype: BAA-1087!). **Fig. 32**.

Eragrostis polyneura Jedwabn., Bot. Arch. 5 (3- 4): 205. 1924. Type: BRAZIL. *A. F. M. Glaziou 18559* (holotype: ?; isotype: US-79710 fragm.!).

Eragrostis acicularis Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 1 (4): 406. 1830. Type: BRAZIL. Paraná: in arenosis ad ripas fluv., Rio Jacaré, Dec, *Riedel 1140* (holotype: LE-TRIN-2299.01!; isotypes: K, LE, P, SI, US-2891442!, US-2765424 fragm.!).

Eragrostis affinis Salzm. ex Steud., Syn. Pl. Glumac. 1: 277. 1854. Type: BRAZIL. Bahia: in maritimis, 1838, *T. Salzmann s.n.* (holotype: LE-TRIN-2572.01!; isotypes: K, LE-TRIN-2572.02!, MO, US-2767409!, US-911819!, US-1614948!).

Eragrostis multipes S. Moore, Trans. Linn. Soc. London, Bot. 4: 511. 1895. Type: BRAZIL. Brasilia: Hab. in cacumine montium Serra de Chapada prope Santa Anna de Chapada, Matto Grosso Exped, Spencer Le M. Moore, Botanist 131 (holotype: BM!).

Caespitose annuals with innovations, eglandular. **Culms** 5−45(−70) cm tall, erect or decumbent, often geniculate near base, glabrous below the nodes. **Leaf sheaths** shorter than the internodes, hairy at the apices, hairs to 4 mm long; **ligules** 0.1–0.3 mm long; **blades** 6−20 × (0.1−)0.2–0.35(−0.4) cm, flat to involute, glabrous abaxially, scabridulous adaxially and with scattered hairs, the hairs 2−4 mm long and more numerous near base. **Panicles** (3−)5–19 × 1–6.5(−8.5) cm, ovate to narrowly oblong, contracted to open; primary branches mostly 2–8 cm long, appressed or diverging up to 50° from the rachises; pulvini hairy to glabrous; **pedicels** 1–2 mm long, appressed, always shorter than the spikelets. **Spikelets** (5–)6−15(−21) × 1.5–2.2(−3) mm, 10−43-flowered, linear-lanceolate, imbricate, stramineous to plumbeous to reddish-purple tinged; **disarticulation** acropetal, glumes first, then the lemmas, paleas persistent; **glumes** 1.4−2.6 mm long, subequal, narrowly lanceolate, membranous, 1-keeled, 1-nerved; **lower glume** 1.4–2.5 mm long; **upper glume** 1.5–2.6 mm long; **lemmas** 1.6–2.3 mm long, ovate-acuminate, chartaceous to coriaceous, lateral nerves evident, apices acuminate; **paleas** (0.8–)1.2−1.5 mm long, hyaline, narrower than the

lemmas, apices obtuse to truncate; **stamens** 2, anthers 0.2–0.3 mm long, reddish-brown to dark-purplish. **Caryopses** 0.4–0.6 mm long, ovoid, smooth to finely striate, light reddish-brown with a dark mark near base of the embryo.

Chromosome number. 2*n* = 60 (Davidse 1994).

Distribution and habitat. *Eragrostis rufescens* var. *rufescens* is an American species distributed from Mesoamerica to Bolivia, Brazil, Paraguay, and Venezuela (Boechat & Longhi-Wagner 2001). This species grows in savanna grasslands in open, sandy areas along rivers and in flats that are periodically flooded, along roadsides, city sidewalks, and cultivated fields; 1500−2500 m.

Comments. Morphologically, *E. rufescens* is very similar to *E. pectinacea*. Nevertheless, *E. rufescens* has longer glumes (1.4−2.6 mm long versus 0.5−1.7 mm long in *E. pectinacea*), only two stamens (versus three in *E. pectinacea*), and ovoid caryopses (versus rectangular-prismatic in *E. pectinacea*).

Specimens examined

COLOMBIA. Antioquia: Medellín, 27 Apr 1927, *R. A. Toro 243* (COL, US). **Boyacá**: Cordillera Oriental, along Río Soapaga, 12 km E of Belén, 2460 m, 7 Nov 1944, *F. R. Fosberg 22208* (COL, US).

Eragrostis secundiflora J. Presl, Reliq. Haenk. 1 (4−5): 276. 1830. subsp. ***secundiflora***. *Poa secundiflora* (J. Presl) Kunth, Enum. Pl. 1: 342. 1833. Type: MEXICO. *T. Haenke s.n.* (holotype: PR; isotypes: photo K!, LE, MO-123764!, US-79720 fragm. ex PR!). **Fig. 27**.

Eragrostis compacta Salzm. ex Steud., Syn. Pl. Glumac. 1: 275. 1854. Type: BRAZIL. Bahia: *P. Salzmann s.n.* (holotype: P!; isotypes: K!, MO!, US-911749!, US-911748!).

Eragrostis yucatana L.H. Harv., Bull. Torrey Bot. Club 81 (5): 406. 1954. Type: MEXICO. Yucatán: near Progreso, 11−15 Aug 1932, *J. R. Swallen 2933* (holotype: US-1537194!).

Caespitose perennials with innovations, eglandular. **Culms** 30−75 cm tall, erect, glabrous below. **Leaf sheaths** overlapping below, ½ as long as the internodes above, mostly glabrous, hairy at the apices, hairs to 4 mm long; **ligules** 0.2−0.3 mm long; **blades** 10−25(−40) × 0.1−0.5 mm, involute, glabrous abaxially, scabridulous adaxially, sometimes also sparsely pilose. **Panicles** (3−)5−30 × 1−15 cm, from narrowly oblong, glomerate, and interrupted below to ovate and open; primary branches 0.5−12(−16) cm long, appressed or diverging up to 40° from the rachises, stiff; pulvini glabrous or sparsely hairy; **pedicels** 0−1(−3) mm long, appressed, flattened. **Spikelets** 6−16(−23) × 2.4−5 mm, ovate to linear-elliptic, flattened, stramineous, with reddish-purple margins or completely reddish-purple, with 10−45 florets; **disarticulation** basipetal,

florets falling intact and before the glumes; **glumes** ovate-lanceolate to lanceolate, membranous; **lower glume** 1.7−3 mm long; **upper glume** 2.2−4 mm long, apices acuminate; **lemmas** 2−6 mm long, ovate, membranous to leathery, apices usually acuminate or attenuate, sometimes acute; **paleas** 1.5−3 mm long, membranous to leathery, narrower than the lemmas, apices obtuse, sometimes bifid; **stamens** 2, anthers 0.2−0.5 mm long, brownish. **Caryopses** 0.8−1.3 mm long, ellipsoid, somewhat laterally flattened, smooth, reddish-brown.

Chromosome number. 2*n* = 40 (Peterson 2003).

Distribution and habitat. *Eragrostis secundiflora* subsp. *secundiflora* occurs throughout Mexico, and in South America it is found in Bolivia, Brazil, Guyana, Peru, and Venezuela. Herein it is cited for the first time for Peru [see Peterson & Sánchez Vega (2007)]. This species grows in sandy soils, dunes, grasslands, beaches, and roadsides; 0−1700 m.

Specimens examined

COLOMBIA. Casanare: Al sur de El Yopal, piedemonte andino, en abanico fluvial, sabana de *Trachypogon ligularis*, *ca.* 200 m, 12 Jul 1963, *J. Blydenstein & C. Saravia 1365* (COL). **Meta**: Al sur del río Guacavía, hacienda Gibraltar, en terraza aluvial, *ca.* 200 m, 9 Sep , *J. Blydenstein 1590* (COL). **Santander**: Mesa de los Santos, 1500 m, 11−15 Dec 1926, *E. P. Killip & A. C. Smith 15241* (US). Mesa de los Santos, al sur de Bucaramanga, 1700 m, 30 Dec 1966, *A. Robinson 3188* (US).

PERU. San Martín: Roque, mount La Campana, brushwood, 19 May 1925, *D. Melin 43* (S).

Eragrostis soratensis Jedwabn., Bot. Arch. 5 (3–4): 213. 1924. Type: BOLIVIA. La Paz: vicinis Soratá, colle Ticacirca, Feb 1858, *G. Mandon 1331* [lectotype: designated by Hitchcock, Contr. U.S. Natl. Herb. 1927: 343 (without citing a herbarium), W!; isolectotypes: BAA-1095 ex B!, BM, G, GOET, K!, P!, S, US-1126604!, W!]. **Fig. 38**.

Perennial, caespitose with extravaginal innovations. **Culms** 10–40 cm tall, erect to ascending, foliage mostly basal, glabrous, 1 or 2 nodes per culm. **Leaf sheaths** overlapping, longer than the internodes, glabrous, pilose at the summit and along margins, to pilose on upper half, the hairs up to 2 mm long; **ligules** 0.3–1 mm long, ciliate; **blades** 4–10 × 0.2–0.3 cm, flat to involute above, scabrous on the adaxial surface, sometimes pilose near base and along margins, glabrous abaxially. **Panicles** 10–20 × 12–19 cm, ovate to pyramidal, open, primary branches 6–12 cm long, 1 or 2 per node, naked near base, spreading 25°–90° from the rachises; secondary branches composed of loosely overlapping spikelets; pulvini glabrous or with a few hairs; **pedicels** 1.5–6 mm long, erect, spreading, scaberulous. **Spikelets** 3.4–4.2 × 1–1.6 mm, 4– 6(to 7)-flowered, plumbeous to purplish green; rachilla somewhat flattened with a few short hairs on the margins, the hairs less than 0.5 mm long; **disarticulation**

acropetal, glumes first then lemmas, paleas weakly persistent; **glumes** 1–1.4 mm long, subequal, ovate; **lower glume** 1–1.2 mm long; **upper glume** 1.2–1.4 mm long; **lemmas** 1.5–1.9 mm long, ovate, membranous, lateral nerves inconspicuous, scaberulous along the keel; apex acute, purplish; **paleas** 1.5–1.9 mm long, as long as the lemmas, hyaline; **stamens** 3, anthers 0.3–0.4 mm long, reddish brown. **Caryopses** 0.6–0.8 mm long, obovoid to prism-shaped, striate and reticulate, laterally flattened, ventrally grooved, irregularly rectangular with sides angled, reddish brown.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Native to highlands of the Andes; this species occurs in the *Altiplano* region of Bolivia and Peru near Lago Titicaca, and herein we report it for the first time for Colombia. *Eragrostis soratensis* grows on rocky slopes and flats in *puno* vegetation, and humid scrub and Andean prairies; 2500−4000 m.

Specimens examined

COLOMBIA. **Cundinamarca**: Provincia Soacha, Sabana de Bogotá, entre Sibaté y San Miguel, prado, 2750 m, 15 Aug 1939, *J. Cuatrecasas 6631* (COL, S, US).

PERU. **Ayacucho:** Prov. Huanca Sancos, 27 km NW of Putajasa and 3 km S of Sacsamarca, *P. M. Peterson et al. 16274* (US, USM). **Cusco:** Prov. Urubamba, start of the Inca Trail at Cusichaca, *B. Peyton & S. Tilney Peyton 224* (US); Ollantaytambo, *A. S. Hitchcock 22517* (US). **Puno:** Prov. Collao, 10 km NW of Pomata on rd. towards Ilave, *P. M. Peterson et al. 14625* (US, USM); Juliaca, *H. V. Harlan s.n.* (COL, US).

Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult., Syst. Veg. 2: 576. 1817. *Poa tenella* L., Sp. Pl. 1: 69. 1753. *Megastachya tenella* (L.) Bojer, Hortus Maurit. 369. 1837. Type: INDIA. *Anonymous* (lectotype: Herb. Linn. 87.33-LINN!, designated by Veldkamp, Blumea 47: 164. 2002, IDC microfiche US!). **Fig. 26**.

Poa amabilis L., Sp. Pl. 68. 1753. *Eragrostis amabilis* (L.) Wight & Arn., Bot. Beechey Voy. 251. 1838, *hom. illeg. Megastachya amabilis* (L.) P. Beauv., Ess. Agrostogr. 74, 167, 173. 1812. *Cynodon amabilis* (L.) Raspail, Ann. Sci. Nat., Bot. 5: 302. 1825. Type: SRI LANKA. *Herb. Hermann 2: 59, no. 46* [lectotype: BM!, designated by Veldkamp in Cafferty *et al.*, Taxon 49 (2): 254. 2000, IDC microfiche US!].

Poa plumosa Retz., Observ. Bot. 4: 20. 1786. *Eragrostis plumosa* (Retz.) Link, Hort. Berol. 1: 192. 1827. *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult. var. *plumosa* (Retz.) Stapf, Fl. Brit. India 7 (22): 315. 1897 (1896). *Eragrostis amabilis* (L.) Wight & Arn. var. *plumosa* (Retz.) E.G. Camus & A. Camus, Fl. Indo-Chine 7: 557. 1923. Type: INDIA. E. Tranquebaria, *König s.n.* (holotype: LD; isotype: K fragm.!).

Eragrostis ciliaris (L.) R. Br. var. *patens* Chapm. ex Beal, Grasses N. Amer. 2: 479. 1896. Type: U.S.A. Georgia: Wayne Co., Doctortown and Jesup, Sep−Oct 1880, *A. H. Curtiss 3493* (holotype: MSC; isotypes: NY!, US-748296!, US-821866!, US-909340!).

Caespitose annuals. **Culms** 5−40(−50) cm tall, erect to spreading, mostly glabrous and occasionally with oblong glandular areas below the nodes. **Leaf sheaths** 1/2 as long as the internodes, ciliate at the summit, collar, and along margins of the distal portion, the hairs to 4 mm long, stiff; **ligules** 0.2−0.3 mm long, ciliate; **blades** 2−8 × 0.2−0.4 cm, flat to involute, glabrous below and scaberulous above, occasionally with a few scattered papillose-based hairs below. **Panicles** 4−15 × 1−7 cm, open, narrowly ovate, primary branches 0.5−4 cm long, sometimes with irregular glandular areas below the branch bases, branches diverging 20−100° from the rachises; pulvini ciliate or glabrous; **pedicels** 0.8−4(−7) mm long, with irregular glandular areas, mostly pendant, drooping to erect or curved. **Spikelets** (1−)1.5−2.2 × 0.9−1.2 mm, 4−8-flowered, ovate to oblong, reddish-purple to greenish; **disarticulation** between the florets with a portion of the rachilla; **glumes** 0.4−1.1 mm long, unequal, ovate, hyaline, keeled, the nerve commonly green, scaberulous along the keel; **lower glume** 0.4−0.7 mm long; **upper glume** 0.7−1.1 mm long; **lemmas** 0.7−1.1 mm long, ovate to broadly oblong, membranous, lateral nerves evident, usually greenish, strongly keeled, scaberulous along keel; apex truncate to obtuse; **paleas** 0.6−1.1 mm long, hyaline, keels ciliate, the cilia 0.3−0.5 mm long; apex obtuse to truncate; **stamens** 3, anthers *ca.* 0.2 mm long, purplish. **Caryopses** 0.3−0.5 mm long, ellipsoid, faintly striate, elliptical to circular in cross-section, translucent, light brown.

Chromosome number. 2*n* = 20 (Baquar & Saeed 1969, Peterson 2001, Chen & Peterson 2006).

Distribution and habitat. Native to India; introduced in the U.S.A., Mexico, Central America, Caribbean, Brazil, Bolivia, Colombia, Ecuador, Guianas, Paraguay, Peru, and Venezuela (Nicora 1998, Peterson & Boechat 2001); occurs in open areas near cultivated fields, dry forests, city sidewalks, and along roadsides; 0−1600 (−2700) m.

Vernacular names. "Grama ilusión" (Atlántico, Colombia, *A. Dugand 5866*), "Paja ilusión" (Norte de Santander, Colombia, *Carvajalino & Díaz 43*).

Comments. Based on unpublished research by Otto Stapf, Bor (1960) pointed out that *Eragrostis amabilis* (L.) Wight & Arn. is the same species as *E. tenella*. Since Hooker (1896: 315, cited by Koch 1978) was the first to unite the two, and he used the latter name, *E. tenella* is the correct name for this species (Koch 1978).

Specimens examined

COLOMBIA. **Antioquia**: Mun. Medellín, predios internos del Jardín Botánico Joaquín Antonio Uribe, 1550 m, 2 Jan 2002, *D. Giraldo-Cañas 3293* (COL, HUA). Valle de Aburrá, Mun. Envigado, creciendo en las grietas de andenes y pavimentos del estacionamiento del supermercado "Almacenes Éxito", 1550 m, 4 Dec 2004, *D. Giraldo-Cañas 3821* (COL). Mun. Santa Fe de Antioquia, en grietas de las aceras de la Plaza Menor, *ca.* 450 m, Jan 2011, *D. Giraldo-Cañas 4979* (COL). Medellín, 1500 m, 11 Jun 1930, *W. A. Archer 101* (US), Oct 1945, *A. Fernández s.n.* (US-2765421). **Arauca**: Mun. Arauca, inmediaciones de las instalaciones de la Universidad Nacional

de Colombia, hacienda El Cairo, carretera Arauca-Tame, km 9, 200−300 m, 13 Jun 2003, *D. Giraldo-Cañas 3500, 3507* (COL). **Atlántico**: Barranquilla, campus de la Universidad del Norte, carretera Barranquilla-Puerto Colombia, km 5, 5−10 m, 11 Oct 2007, *D. Giraldo-Cañas 4123, 4127* (COL). Puerto Colombia, 15 Mar 1949, *A. Dugand 4308* (COL, US), 21 Nov 1912, *A. S. Hitchcock 9935* (US). Barranquilla, barrio Altos del Prado, 50−70 m, 1 Nov 1961, *A. Dugand 5866* (COL). **Bolívar**: Cartagena, near shore, 20 Nov 1912, *A. S. Hitchcock 9897* (US). **Caquetá**: Mun. Florencia, Barrio Villa Natalia, grietas de pavimentos y andenes, *ca.* 280 m, 27−30 Jun 2005, *D. Giraldo-Cañas et al. 3952* (COL). **Casanare**: Mun. El Yopal, en áreas urbanas del centro de la ciudad, 400 m, 31 Oct 2007, *D. Giraldo-Cañas 4129, 4134* (COL). **Cesar**: Mun. Valledupar, plaza Alfonso López, jardineras externas de la acera de la iglesia de La Concepción, 150-180 m, 30 Mar 2010, *D. Giraldo-Cañas 4510-a* (COL). **Córdoba**: Mun. Santa Cruz de Lorica, centro de Lorica, 150 m, 24 Feb 2005, *D. Giraldo-Cañas 3857* (COL). Mun. San Pelayo, carretera San Pelayo-Lorica, en huerta casera de fríjol, 150 m, 26 Feb 2005, *D. Giraldo-Cañas 3868* (COL). **Cundinamarca**: Provincia Alto Magdalena, Mun. Nilo, hacienda La Guaira, río Pagüey, 300 m, 16 Oct 2004, *D. Giraldo-Cañas 3769* (COL). Provincia Alto Magdalena, Mun. Girardot, vía férrea entre Girardot y Flandes, cerca de la ribera del río La Magdalena, 250 m, 17 Oct 2004, *D. Giraldo-Cañas 3785* (COL). Provincia Bajo Magdalena, Mun. Guaduas, en las grietas del atrio del templo principal del municipio, *ca.* 970 m, 21 Feb 2011, *D. Giraldo-Cañas 5038* (COL). **Huila**: Mun. Villavieja, desierto de La Tatacoa, 1 Nov 2010, *D. Giraldo-Cañas 4814-a* (COL). Mun. Neiva, malecón del río Magdalena, grietas de las aceras del monumento La Gaitana, 440 m, 17 Oct 2011, *D. Giraldo-Cañas 5171* (COL). **La Guajira**: Mun. Riohacha, en grietas de aceras y pavimentos del centro de la ciudad, *ca.* 10 m, *D. Giraldo-Cañas 4502* (COL). **Magdalena**: Santa Marta, distrito Taganga, parque distrital Dumbira, estribaciones del cerro Dumbira, sector bajo de la quebrada Dumbira, zona alterada con evidencias recientes de quema, 40-120 m, 1-25 Sep 2009, *V. Minorta-Cely 127* (COL). Santa Marta, sea level, 1898-1901, *H. H. Smith 2746* (COL, MO, US). **Meta**: Mun. Villavicencio, en área urbana, calles del parque Los Centauros, 400 m, 10 Nov 2002, *D. Giraldo-Cañas 3340* (COAH, COL). Mun. Puerto López, Alto de Menegua, en grietas de aceras, 200 m, 20 Mar 2011, *D. Giraldo-Cañas 5059* (COL). **Nariño**: Mun. Barbacoas, corregimiento de Junín, 1300 m, 3 Apr 1988, *O. de Benavides 9447* (PSO). Mun. Ipiales, Las Lajas, 2700 m, 7 Aug 1939, *H. García-Barriga 7841-A* (COL). **Norte de Santander**: Mun. Ábrego, jardineras de la Plaza Central, 1380 m, 1 Apr 2010, *D. Giraldo-Cañas 4527* (COL). Mun. Ocaña, grietas de aceras y pavimentos de la Plaza Central, 1200 m, 3 Apr 2010, *D. Giraldo-Cañas 4549* (COL). Cúcuta y El Rosario, Feb 1941, *Carvajalino & Díaz 43* (COL). **Quindío**: Mun. Quimbaya, parque principal, en jardineras, 1500 m, 20−25 May 2005, *D. Giraldo-Cañas 3891* (CAUP, COL, HUA). **Risaralda**: Mun. Pereira, en grietas de las jardineras externas del aeropuerto, *ca.* 1400 m, Jun 2010, *D. Giraldo-Cañas 4617* (COL). **Santander**: Mun. Bucaramanga, en grietas de una acera de la calle 34 con carrera 27, al subir hacia Las Cabeceras, 950 m, 4 Apr 2010, *D. Giraldo-Cañas 4555* (COL). Bucaramanga, 1100 m, 4 Aug 1944, *N. C. Fassett 25585* (US). San Gil, zonas de El Gallineral, 1400 m, 8 Apr 2009, *J. L. Fernández-Alonso 27947* (COL). San Gil, 1250 m, year 1983, *J. R. I. Wood 3884* (COL). **Tolima**: Mun. Flandes, vía férrea entre Flandes y Girardot, cerca de la ribera del río La Magdalena, 250 m, 17 Oct 2004,

D. Giraldo-Cañas 3791 (COL). Cordillerra Central andina, Mun. Ibagué, jardineras y andenes de la Plaza de Bolívar, *ca.* 1200 m, 11−12 Jun 2005, *D. Giraldo-Cañas et al. 3914* (COL). **Valle del Cauca**: Mun. Cali, en grietas de las aceras del parque principal del barrio San Antonio, *ca.* 1000 m, Jun-Jul 2010, *D. Giraldo-Cañas 4654* (COL). Plana del Valle, extremo N, Cartago, malezas en San Jerónimo, 980 m, 15 Nov 1946, *J. Cuatrecasas 22832* (COL, US). **Vaupés**: Mun. Mitú, en grietas de aceras del centro de la población, *ca.* 250 m, May 2010, *D. Giraldo-Cañas 4565-a* (COL). **Vichada**: Región Guayanesa, Mun. Puerto Carreño, afloramientos rocosos entre Punta de Lajas y el Cerro El Bita, ribera del río Orinoco, 40−100 m, 4-5 Jan 2004, *D. Giraldo-Cañas & C. Parra 3625* (COL).

ECUADOR. Manabi: Roadside 10 km S of Puerto López, 50 m, 27 Sep 1984, *S. Lægaard 53084-B* (COL). Puerto de Cayo, 5 m, 27 Sep 1984, *S. Lægaard 530846* (COL).

PERU. **Amazonas:** Prov. Bagua, Chiriaco–Nazareth, *F. Holle 20575* (USM). **Cajamarca:** Prov. Jaén, 1 km N of Chamayo on Hwy. 5N towards Jaén, *P. M. Peterson & N. F. Refulio-Rodríguez 15056* (US, USM); 6 km W of Hwy. 5N up Río Tabaconas towards Tamborillo, *P. M. Peterson & N. F. Refulio-Rodríguez 15087* (US, USM). **Lambayeque:** Prov. Lambayeque, betw. Chochope and La Ramada, *J. T. Columbus et al. 3442* (RSA, US); Prov. Lambayeque, El Porvenir (Olmos), *S. Llatas Q. 1180* (US). **Piura:** Prov. Piura, 15 km entre Piura y Sullana, *I. Sánchez Vega & J. Guevara 6191* (CPUN, US). **Tumbes:** Prov. Contralmirante Villar, SE de Zorritos, *R. Ferreyra 12268* (US).

Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud., Syn. Pl. Glumac. 1: 268. 1854. *Poa tenuifolia* A. Rich., Tent. Fl. Abyss. 2: 425. 1850 [1851]. TYPE: ETHIOPIA, in locis incultis Vallium prope Adoam, 18 Sep 1837, *G. H. W. Schimper 92* (LECTOTYPE: P!, designated by S. Phillips, Fl. Ethiopia 7: 122. 1995; ISOLECTOTYPES: GOET-5814, K!, L, W!, WAG, US-1127147 fragm.!). **Fig. 38**.

Caespitose perennials. **Culms** 25−75 cm tall, erect to geniculate spreading below, glabrous, 2−3 nodes per culm. **Leaf sheaths** overlapping below, 3/4 to as long as the internodes above, glabrous, pilose along the margins and at the summit, the hairs up to 2 mm long; **ligules** 0.2−0.3 mm long, ciliate; **blades** 3.5−20(−30) × 0.1−0.3 cm, flat to folded or loosely involute, glabrous to scaberulous above and glabrous below. **Panicles** 5−20 × 3−10(−12) cm, open, ovate to narrowly pyramidal, with a well developed peduncle up to 18 cm long, the relatively few-flowered primary branches 0.5−6 cm long, spreading 40−90° from the rachises, solitary, scaberulous; pulvini ciliate, often reddish, the hairs up to 2 mm long; **pedicels** 2−15 mm long, as long or longer than the spikelet, erect, capillary and stiff, scaberulous. **Spikelets** 6−12(−14) × 1.5−2.2 mm, 6- to 14-flowered, linear, plumbeous; **disarticulation** acropetal with the glumes falling first then the lemmas, paleas mostly persistent; **glumes** 0.3−1 mm long, very unequal, hyaline, not keeled, glabrous; **lower glume** 0.3−0.6 mm long, subulate to linear-lanceolate; **upper glume** 0.5−1 mm long, lanceolate, usually broader than the lower; **lemmas** 1.5−2.0 mm long, ovate, membranous, plumbeous, obscurely keeled,

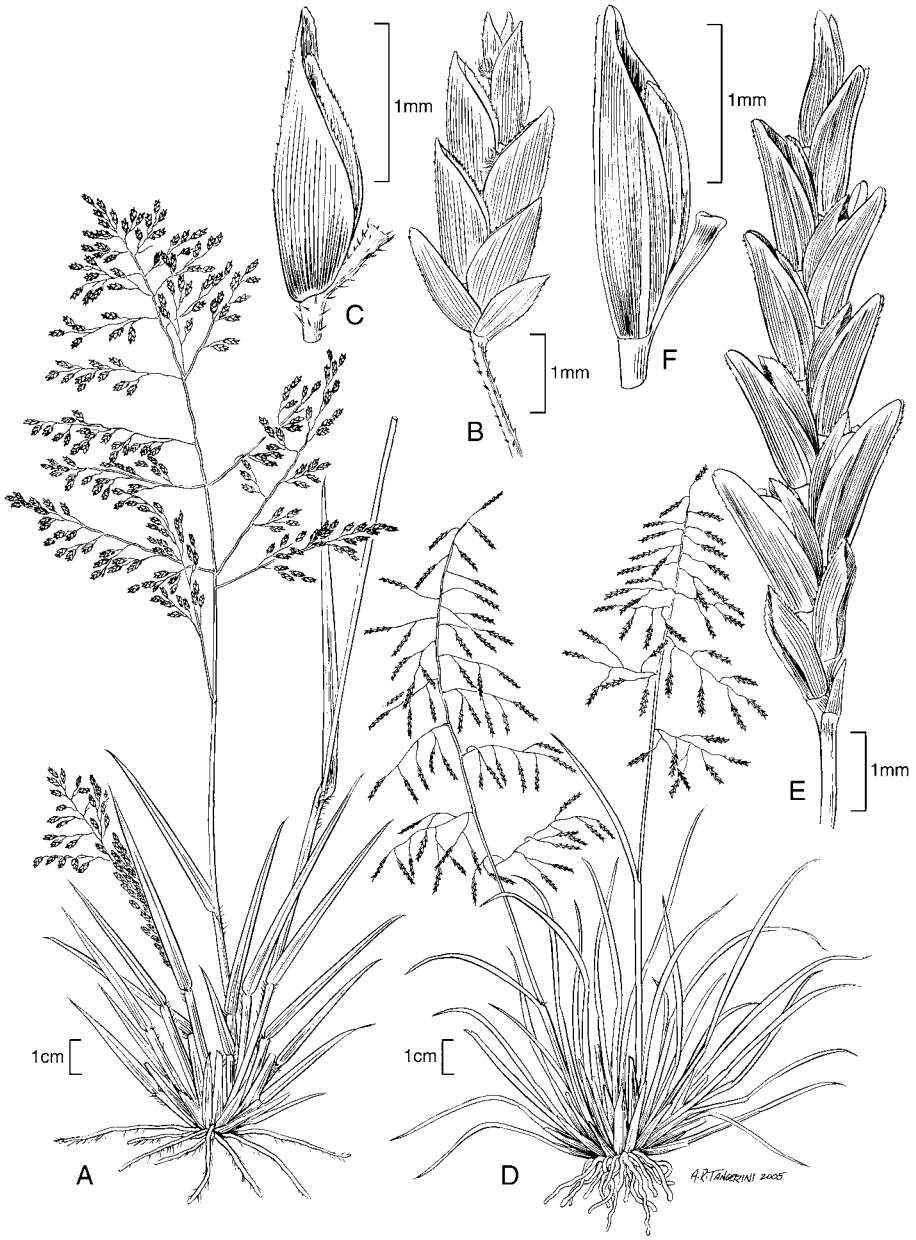


Fig. 38. ***Eragrostis soratensis*** (*Peterson et al. 14625*). **A**. Habit; **B**. Spikelet; **C**. Rachilla with floret. ***Eragrostis tenuifolia*** (*Peterson & Tovar 14049*). **D**. Habit; **E**. Spikelet; **F**. Rachilla with floret.

lateral nerves obscure, scaberulous near the apex; apex acute to obtuse; **paleas** 1.3−1.8 mm long, membranous, plumbeous, scaberulous along the keels; apex obtuse; **stamens** 3, anthers 0.2−0.4 mm long, red to white in age. **Caryopses** 0.6−1.1 mm long, ovoid, strongly laterally flattened, and curved on the adaxial side, striate and reticulate, with a deep ventral groove, narrowly triangular in cross-section, brownish.

Chromosome number. 2*n* = 20 (Roodt & Spies 2003), 40 (Pohl & Davidse 1971, Morton 1993).

Distribution and habitat. Native to North Africa and Asia, naturalized and rapidly spreading in the New World tropics from Mexico, Guatemala, El Salvador, Honduras, Costa Rica to Argentina, Bolivia, Chile, Colombia, Ecuador, Peru, and Venezuela; along roadsides, city sidewalks, soccer fields, abandoned gardens, and disturbed open areas; 0−3400 m.

Vernacular names. "Espartillo (Antioquia, Colombia, *D. Giraldo-Cañas 3424, 3426*), ""yerba de filo" (Nariño, Colombia, *G. López & M. de la Rosa 053F, 054F*), "yerba dura" (Nariño, Colombia, *G. López & M. de la Rosa 053F*).

Comments. The plants of this species form a wiry, tough turf that virtually excludes other species on areas such as playing fields, where they are trampled extensively (see Pohl 1980, and pers. obs.). A population of *Eragrostis tenuifolia* in the Cordillera Oriental of Colombia (Choachí, Cundinamarca: *D. Giraldo-Cañas 3288*) has stolons and no other individuals of this species are known to have these structures.

Eragrostis patula (Kunth) Steud. (= *Poa patula* Kunth) is commonly referred to the Colombian Flora in local treatments, but the Colombian specimens belong to *Eragrostis tenuifolia* (pers. obs.). The recent use of this name in Bolivia (Renvoize 1998), and Ecuador (Jørgensen & León-Yánez 1999), places this as a synonym of *E. tenuifolia*. However, after studying the isotype (fragment) at US, we are sure that this taxon is not a synonym of *E. tenuifolia*.

Specimens examined

COLOMBIA. Antioquia: Mun. Itagüí, barrio Simón Bolívar, carrera 50 con calle 64, 1550 m, 2 Jan 2003, *D. Giraldo-Cañas 3424, 3426* (COL). Mun. Jardín, sitio La Truchería, carretera Jardín-Riosucio, km 5, 1900 m, 5 Jan 2003, *D. Giraldo-Cañas 3432* (COL). Mun. Envigado, loma de El Escobero, 2 km antes de la intersección con la carretera Las Palmas, 1850 m, 26 Dec 2003, *D. Giraldo-Cañas 3619* (COL). Mun. Andes, aeropuerto, 1200 m, 17 Sep 1986, *R. W. Pohl & J. Betancur 15523* (COL, HUA, MO, US). Mun. Jardín, vereda Las Manguitas, 18 km oeste de Jardín, 1600 m, 19 Sep 1986, *R. W. Pohl & J. Betancur 15550* (COL, HUA, MO, US). **Boyacá**: Mun. Iza, en inmediaciones de Los Termales, 2500 m, 22 Jun 2003, *D. Giraldo-Cañas 3526* (COL). Mun. Villa de Leyva, camino entre la hacienda "Torcoroma de Arriba" y el cañón de Las Clusias, 2500 m, 18 Jul 2003, *D. Giraldo-Cañas 3553* (COL). Mun. Tunja, campus de la Universidad Pedagógica y Tecnológica de Colombia, 2700 m, 12

Nov 2003, *D. Giraldo-Cañas 3609* (COL). Mun. Santa María, carretera Santa María-Bogotá, sendero ecológico de la represa de Chivor, *ca.* 1000 m, 28-30 Sep 2008, *D. Giraldo-Cañas 4172* (COL). **Cauca**: Mun. Popayán, predios internos y jardineras abandonadas de la Facultad de Educación de la Universidad del Cauca, 1750 m, 7−11 Nov 2004, *D. Giraldo-Cañas 3810* (CAUP, COL). Popayán, airport, 1750 m, 2 Nov 1955, *A. Semple 59* (US). Mun. Coconuco, 2500 m, Jun 1948, *S. Yepes-Agredo 351* (COL, US). **Cesar**: Mun. Valledupar, plaza Alfonso López, jardineras externas de la acera de la iglesia de La Concepción, 150-180 m, 30 Mar 2010, *D. Giraldo-Cañas 4506* (COL). **Cundinamarca**: Provincia Oriente, Mun. Choachí, carretera Choachí-Termales de Choachí, km 2, *ca.* 1600 m, 12 Nov 2001, *D. Giraldo-Cañas 3288* (COL). Provincia Soacha, Mun. Soacha, autopista sur hacia Sibaté, km 17, en frente de la empresa Pisos Alfa, 2700 m, 3 Nov 2002, *D. Giraldo-Cañas 3312* (CAUP, COL). Provincia Sabana Centro, Mun. Nemocón, carretera entre la vereda Susatá y Nemocón, hacienda Susatá, 2700 m, 4 Nov 2002, *D. Giraldo-Cañas 3317* (COL, HUA). Provincia de Río Negro, Mun. Pacho, carretera Pacho-La Capilla, alrededores del estadio municipal de fútbol, 1600 m, 13 Jan 2004, *D. Giraldo-Cañas 3733* (COL). Provincia Oriente, Mun. Quetame, carretera Villavicencio-Bogotá, entre Quetame y Cáqueza, en sustratos pedregosos de una explanada articial, 1600 m, 21 Mar 2011, *D. Giraldo-Cañas 5078* (COL). Provincia Almeidas, Mun. Suesca, hacienda Susatá, 2650 m, 10 Jul 2004, *J. Groenendijk 1813* (COL). **Huila**: Mun. Pitalito, en grietas de andenes del casco urbano, 1550 m, 1-5 Jul 2005, *D. Giraldo-Cañas et al. 3930* (COL, HUA). **Nariño**: Mun. Genoy, carretera Genoy-Pasto, laderas del volcán Galeras, en áreas de canteras húmedas abandonadas (explotación de arenas y rocas) al pie de la carretera, *ca.* 2700 m, 22 abr 2009, *D. Giraldo-Cañas 4198* (COL). Mun. Imúes, Pilcuán, 1910 m, 26 Apr 1966, *G. López & M. de la Rosa 053F* (PSO), *054F* (COL). Mun. Túquerres, Chimangual, 2800 m, 22 Oct 1980, *G. López Jurado 677* (COL, PSO). Empatí, 1500-2000 m, 30 Apr 1939, *A. H. G. Alston 8297* (US). 5 km S of Tangua, 14 Jan 1963, *H. B. Cunningham 25* (US). Carretera Pasto-Túquerres, 2600 m, 30 Nov 1962, *C. Saravia 1812* (COL). **Norte de Santander**: Mun. Ábrego, jardineras de la Plaza Central, 1380 m, 1 Apr 2010, *D. Giraldo-Cañas 4529* (COL). Mun. Ocaña, carretera que conduce a la Universidad Francisco de Paula Santander, en áreas rocosas y arenosas, a unos 200 m de la entrada principal de la Universidad, inmediaciones del río El Algodonal, 1200 m, 2 Apr 2010, *D. Giraldo-Cañas 4533* (COL). Mun. Ocaña, carretera Ocaña-Ábrego, a unos dos km del casco urbano de Ocaña, en áreas rocosas y arenosas de coluvios, con fuerte erosión a manera de cárcavas, 1300 m, 3 Apr 2010, *D. Giraldo-Cañas 4541-A* (COL). **Quindío**: Mun. Armenia, jardineras de la Avenida del Museo Quimbaya, 1500 m, 20-26 Mar 2005, *D. Giraldo-Cañas 3874* (COL). Mun. Calarcá, entrada del jardín botánico del Quindío, 1500 m, 20−25 May 2005, *D. Giraldo-Cañas 3894* (COL). **Risaralda**: Mun. Pereira, en jardineras del parque metropolitano de Pereira, *ca.* 1400 m, Jun 2010, *D. Giraldo-Cañas 4614* (COL). **Santander**: Mun. Vélez, inmediaciones de la Feria de Ganado, 1700 m, 21 Jul 2003, *D. Giraldo-Cañas 3566* (COL). Mun. Bucaramanga, en grietas de una acera de la calle 34 con carrera 27, al subir hacia Las Cabeceras, 950 m, 4 Apr 2010, *D. Giraldo-Cañas 4553* (COL). **Tolima**: Cordillerra Central andina, Mun. Ibagué, jardineras y andenes de la Plaza de Bolívar, *ca.* 1200 m, 11-12 Jun 2005, *D. Giraldo-Cañas et al. 3904*, *3908* (COL). Mun. Honda, en sustratos arenosos, ribera de pequeña quebrada antes de su desembocadura en el río Magdalena,

ca. 300 m, Nov 2009, *D. Giraldo-Cañas 4317* (COL). Mun. Herveo, en pastizales de los bordes de la carretera a Manizales, cerca de Delgaditas, *ca.* 1700 m, Nov 2009, *D. Giraldo-Cañas 4425-b* (COL). **Valle del Cauca**: Mun. Cali, en grietas de las aceras del parque principal del barrio San Antonio, *ca.* 1000 m, Jun-Jul 2010, *D. Giraldo-Cañas 4658* (COL). Mun. Buga, en los jardines externos del Hotel Guadalajara, *ca.* 1000 m, Jun-Jul 2010, *D. Giraldo-Cañas 4671* (COL). Calima Valley, NW of Restrepo, 1500 m, 6 Jul 1962, *A. R. Bridgeman 50* (US). Palmira, Plana del Valle, predios de la Facultad de Agronomía de Palmira, 1000 m, 15 Jan 1964, *López Filgueiras 8498* (US). Mun. Yumbo, finca Río Grande, 1180 m, 12 Jun 1998, *D. Stancik 797* (COL). **Vichada**: Caño Urimica, 250 m, 19 Dec 1971, *I. Cabrera 1681* (COL).

ECUADOR. Chimborazo: 3 km SW of Sibambe on road to Chunchi, 2450 m, *P. M. Peterson et al. 8832* (ANSM, ENCB, K, MEXU, MICH, MO, QCA, TAES, UC, US, UTC, WIS). **Imbabura**: Cerro Imbabura, 2200 m, *L. Holm-Nielsen et al. 6267* (AAU, COL, F, MO, S). **Pichincha**: Quito, 2850 m, *S. Lægaard 51005* (COL). Near Guayllabamba, N of Quito, 2000 m, *S. Lægaard 51736* (AAU, COL, QCA).

PERU. **Ancash:** Prov. Bolognesi, 8 km E of Raquia and 2 km W of Cajacay on Ruta 02-014, *P. M. Peterson et al. 17883* (US, USM). **Apurímac:** Prov. Aymaráes, 21 km NW of Chalhuanca, *P. M. Peterson & N. F. Refulio-Rodríguez 16518* (US, USM). **Cajamarca:** Prov. Cutervo, near Sócoto, *I. Sánchez Vega 4559* (CPUN, HAO); 13 km W of Cutervo on rd. towards Sócoto, *P. M. Peterson & N. F. Refulio-Rodríguez 15012* (US, USM); Prov. San Ignacio, 21 km W of Huahuaya and 13 km E of Tamborapa, *P. M. Peterson & N. F. Refulio-Rodríguez 15110* (US, USM). **Cusco:** Machu-Pichu, camino entre la ciudad inca de Machu-Pichu y el Puente del Inca, *ca.* 2000 m, *D. Giraldo-Cañas 3762* (COL). Prov. Urubamba, Museo sitio Machupichu, *C. Vargas C. 017424* (CUZ); 69 km de Cusco, entre Tancacc y Ollanta, *P. Núñez V. & E. Bengoa 8731* (CUZ, US). **Junín:** Prov. Tarma, 1 km up rd. to Hac. Maraynioc out of Palca, *P. M. Peterson & O. Tovar 14049* (US, USM). **Piura:** Prov. Ayabaca, Añarte, ruta a Tondopa, *S. Llatas Q. 2151* (CPUN); Prov. Huancabamba, 10 km N of Sondor and 3 km S of Huancabamba, *P. M. Peterson & N. F. Refulio-Rodríguez 15168* (US, USM).

Eragrostis unioloides (Retz.) Nees ex Steud., Syn. Pl. Glumac. 1: 264. 1854. *Poa unioloides* Retz., Observ. Bot. 5: 19. 1788. Type: INDIA. Tranquebar, 1776, *König s.n.* (syntype: BM, isosyntypes: BM, LE).

Tufted annuals. **Culms** 10–60 cm tall, erect to spreading, the foliage mostly basal, glabrous below the nodes. **Leaf sheaths** overlapping below and ½ the length of the internode above, glabrous, sparsely pilose at the summit, the hairs 0.4–3 mm long; **ligules** 0.1–0.2 mm long, ciliate, a dense row of white hairs; **blades** (1.8) 3–12 (18) × 0.2–0.6 (0.8) cm, flat to loosely involute, glabrous below and scaberulous above with an occasional appressed hair. **Panicle** 5–17 × (0.5) 2–7 cm, ovate, open to contracted, the ascending primary branches 0.2–6.5 cm long, glabrous, loosely or densely flowered, appressed to spreading up 70º from the culm axis; pulvini in the axils of primary branches glabrous; **pedicels** (0.5) 2–6 (8) mm long, glabrous to scaberulous. **Spikelets** 4–8 (10)

× (1.6) 2–4 mm, 12–42 flowered, ovate-lanceolate to deltoid, strongly compressed, loosely imbricate, straw-coloured to purplish; glumes disarticulated first, then entire florets from base; rachilla persistent; **glumes** (0.5) 0.7–1.8 mm long, ovate-lanceolate to lanceolate, hyaline to membranous, keeled, scaberulous along the keel; **lemmas** (1.3) 1.5–1.8 (1.9) mm long, broadly ovate, membranous, keeled, smooth along the keel, lateral nerves evident, raised, apex obtuse to acute; **paleas** 1.4–1.9 mm long, bowed-out, hyaline, scaberulous along the keels, apex acute to obtuse; **stamens** 2, anthers 0.2–0.4 mm long, purplish. **Caryopses** 0.6–0.9 (1.0) mm long, ellipsoid, laterally compressed, light brownish.

Chromosome number. 2*n* = unknown.

Distribution and habitat. This species is native to Asia, naturalized in the Americas, from the U.S.A. and Mexico to Venezuela, Ecuador (not recorded in Colombia and Peru), Guianas, and the Caribbean. *Eragrostis unioloides* occurs along roadsides and disturbed ground usually below 1000 m. This species has been cited for the Flora of Antioquia (Colombia) (www.mobot.org/tropicos) on based specimen **Antioquia**: Guarne, sitio "Laguna de Guarne", sitios anegados con *Sphagnum* y Cyperaceae rodeados de matorrales perturbados, 6 km SE de El Tambo, en la vía a Mazo, 2480 m, 29 Jun 1995, *R. Callejas & A. Echeverri 11494* (MO!), but the correct determination for this collection is *Chascolytrum juergensii* (Hack.) Essi, Souza-Chies & Longhi-Wagner.

Comments. *Eragrostis unioloides* is very similar in habit, panicle characteristics, and overall spikelet shape and color to *E. mokensis* Pilg. However, *E. unioloides* can be separated from the latter by having ovate lemmas with acute to obtuse apices (versus orbicular lemmas with obtuse apices in *E. mokensis*), longer pedicels (0.5) 2–6 (8) mm long versus 0.5−2.5 mm long in *E. mokensis*), somewhat wider spikelets [(1.6) 2–4 mm wide versus 2−2.5(−3) mm wide], and florets with two stamens (three stamens reported in *E. mokensis*). Illustration of this species in Hitchcock (1950).

Specimens examined

ECUADOR. Pastaza: E of Puyo, 1000 m, *S. Lægaard 55884* (AAU).

Eragrostis viscosa (Retz.) Trin., Mem. Acad. Imp. Sci. St. Petersbourg Hist. Acad. 1: 397 1830. *Poa viscosa* Retz., Obs. Bot. 4: 20. 1786. Type: INDIA, Malabar, *König s.n.* (holotype: LD; isotype: BM!). **Fig. 26**.

Tufted annuals. **Culms** 13−50 cm tall, erect, sometimes spreading or geniculate at the lower nodes, viscid below the nodes with a complete or partial ring of yellow glandular areas below the nodes. **Leaf sheaths** 1/2 the length of the internodes to overlapping, viscid, ciliate at the summit, collar, and along margins of the upper portion, the hairs up to 4 mm long, stiff; **ligules** 0.2−0.5 mm long; **blades** 4−15 × 0.2−0.4 cm, flat, mostly glabrous with scattered papillose-based hairs, the hairs up to 4 mm long, the upper surface often viscid and covered with adherent soil particles. **Panicle** 6−22 × 2−9 cm,

open, cylindrical to ovate-lanceolate; ascending branches 0.5−6.5 cm long, spreading 20−90º from the rachises, viscid; pulvini in the axils of the primary branches sparsely ciliate or glabrous; **pedicels** 0.5−5 mm long, erect. **Spikelets** (2−) 2.5−5.5 × 1.2−2.2 mm, 5−9-flowered, ovate, compressed, reddish-purple to greenish-yellow, rachilla viscid; **disarticulation** between the florets with a portion of the rachilla; **glumes** 0.8−1.5 mm long, ovate to broadly ovate, hyaline to sub-hyaline, keeled, the nerve commonly green, scaberulous along the keel; **lower glume** 0.8−1.3 mm long; **upper glume** 1−1.5 mm long; **lemmas** 1.1−1.8 mm long, ovate the broadly oblong, membranous, lateral nerves evident, sometimes greenish, keeled, scaberulous along the keel; apex truncate to obtuse; **paleas** 1.1−1.8 mm long, bowed out, hyaline, pectinate-ciliate along the keels, the hairs 0.3−0.6 mm long; apex obtuse to truncate; **stamens** 3, anthers 0.2−0.4 mm long, purplish. **Caryopses** 0.4−0.5 mm long, ellipsoid, translucent, light brown.

Chromosome number. 2*n* = 40, 60 (Peterson 2001).

Distribution and habitat. This species is distributed from Mexico to Northern South America (Colombia, Ecuador, and Venezuela); and is found in semi-xerophitic open bushes, sandy soils, disturbed areas near cultivated fields, roadsides, and along river banks; 0−2000 m.

Specimens examined

COLOMBIA. La Guajira: Mun. Maicao, en rastrojos urbanos en las afueras de Maicao, carretera Maicao-Uribia, *ca.* 15 m, 26 Mar 2010, *D. Giraldo-Cañas et al. 4492* (COL). Near Riohacha, 30 m, 30 Nov 1944, *O. Haught 4464* (COL, US). 4 km de Uribia rumbo a Maicao, 29 Mar 1962, *C. Saravia & D. Johnson 328* (COL, US). Rumbo a Manaure, a 5 km de Uribia, 1 Feb 1963, *C. Saravia 2193* (COL). Clausura Nopoipa, rumbo a Maicao, 4.5 km de Uribia, 13 Feb 1963, *C. Saravia 2229* (COL, **note: *Saravia 2229* at US is *E. ciliaris***). **Magdalena**: Hoya del río Cesar, hoya del río Azucarbuena, región El Callao, hacienda Santa Marta, 200 m, 29−30 Oct 1959, *J. Cuatrecasas & R. Romero-Castañeda 24962* (COL, US). Valle del río Cesar, entre Vallito y Mata de Indio, 60 m, 12 Feb 1961, *A. Dugand 5595* (COL). **Norte de Santander**: Los Estoraques, La Playa, 14 Jan 1974, *M. J. Balick 132* (COL). Carretera Cúcuta-Pamplona, La Esperanza, 1400 m, 19 Nov 1949, *H. García-Barriga 13259* (COL). **Valle del Cauca**: Cordillera Occidental, Yanaconas al Silencio, montaña La Victoria, 1700-2000 m, 5-10 Dec 1962, *H. García-Barriga 17610* (COL).

ECUADOR. El Oro: Portovelo, Gold Mine near Zaruma, 600-1000 m, *A. S. Hitchcock 21268* (US). **Loja**: Km 3 Macará-Catacocha, 1100 m, *S. Lægaard 71222* (AAU, COL). **Los Ríos**: 7 km W of Quevedo on road towards Portoviejo, 280 m, *P. M. Peterson 9048* (K, MICH, MO, QCA, UC, US, WIS).

Eragrostis weberbaueri Pilg., Bot. Jahrb. Syst. 37: 375. 1906. Type: PERU. Ancash: Pampa Román entre Samanco y Caraz, 2300 m, 29 May 1903, *A. Weberbauer 3189* (holotype: B; isotype: BAA-1110 fragm. ex B!, US-2767411!). **Fig. 35**.

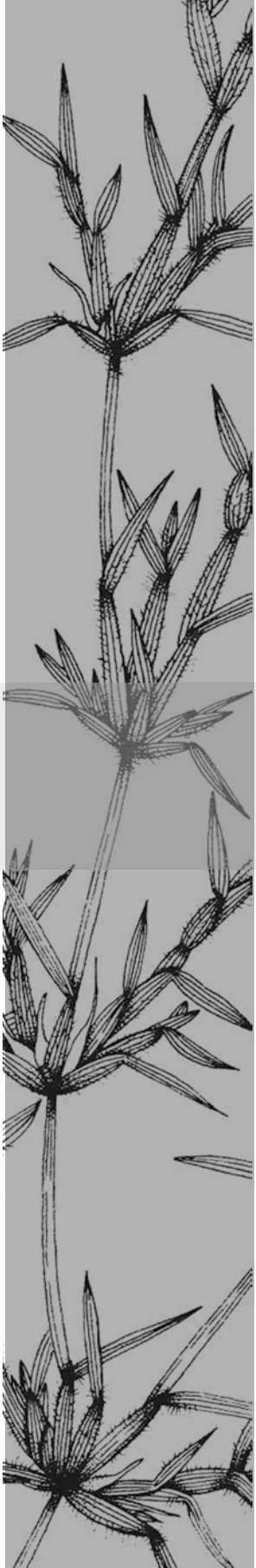
Perennial or biennial, caespitose. **Culms** 14–35 cm tall, erect, ascending to geniculate below, 3 nodes per culm, nodes silky pilose, the hairs up to 3 mm long, internodes with scattered hairs to glabrous. **Leaf sheaths** 1/2–2/3 as long as the internodes, striate, pilose, densely pilose near summit, the hairs colorless or white; **ligules** 0.7–1 mm long, ciliate, the hairs less than 1 mm long; **blades** 6–9 × 0.1–0.17 cm, flat at base, folded or involute above, usually densely silky pilose above and below. **Panicles** 3–8(–11) × 0.5–1 cm, spiciform, narrowly oblong, clavate, sometimes interrupted below, dark green to plumbeous, rachis densely pilose, the hairs not rigid, primary branches (0.7–)1–1.7 mm long, short, closely appressed, hairy; **pedicels** 0.2–0.3 mm long. **Spikelets** 4–6 × 1.2–1.5 mm, 6- to 11-flowered, linear-ovate to oblong, tightly appressed, plumbeous; **disarticulation** acropetal, with glumes first then lemmas, paleas and rachilla persistent; **glumes** 1–1.8 mm long, unequal, membranous; **lower glume** (0.8–)1–1.4 mm long; **upper glume** 1.3–1.8 mm long; **lemmas** 2–2.5 mm long, ovate, membranous to hyaline, scabrous near apex; apex acute; **paleas** 1.5–1.7 mm long, shorter than lemma and narrower, hyaline; **stamens** 3, anthers *ca.* 0.4–0.5 mm long, purple. **Caryopses** 0.6–0.7 mm long, ellipsoid, faintly striate and reticulate, circular to ovate in cross section, reddish orange.

Chromosome number. 2*n* = unknown.

Distribution and habitat. Native to the coast of northern Chile and Peru; occurs in *lomas* vegetation, and on the western slopes of the Andes, where taxa from higher elevations appear perennial and those from immediate coast appear to be annual or biennial; 0–3500 m.

Specimens examined

PERU. **Ancash:** Prov. Bolognesi, 8 km E of Raquia and 2 km W of Cajacay on Ruta 02-104, *P. M. Peterson et al. 178776* (US, USM); Prov. Corongo, 7 km NW of Yupan on rd. to Bambus, *P. M. Peterson & N. F. Refulio-Rodríguez 13917* (US, USM); River Valley Colca Fortaleza, *E. Anderson 454* (US). **Arequipa:** Prov. Arequipa, Cerros de Yura (Baños), *C. Vargas C. 7978* (CUZ); S slope of Nevado Chachani, *J. T. Columbus et al. 3535* (RSA, US); 21 km N of Yura on hwy. towards Pathuasí, *P. M. Peterson & N. F. Refulio-Rodríguez 18239* (US, USM); Prov. Camaná, entre Camaná y Arequipa, Km 161–162 Panamericana, *R. Ferreyra 2557* (US, USM); 23 km NE of Camaná, *J. T. Columbus et al. 3523* (RSA, US); Prov. Caravelí, 13 km S of Cahuacho on rd. towards Caravelí, *P. M. Peterson et al. 16398* (US, USM). **Ica:** 32 km E of Nasca on rd. towards Puquio, *P. M. Peterson & N. F. Refulio-Rodríguez 16425* (US, USM). **Lima:** Matucana, *F. Macbride & Featherstone 303* (US).



Excluded names

Excluded names

Eragrostis calotheca Trin., Mem. Acad. Imp. Sci. St.-Petersbourg, Ser. 6, Sci. Math. 1 (4) : 414. 1830. = ***Poidium calotheca* (Trin.) Matthei**

Eragrostis patula (Kunth) Steud., Nomencl. Bot. (ed. 2) 1: 564. 1840. *Poa patula* Kunth, Nov. Gen. Sp. 1: 158. 1815 [1816]. *Megastachya patula* (Kunth) Roem. & Schult., Syst. Veg. 2: 585. 1817. TYPE: ECUADOR. Crescit in apricis termperatis regni Quitensis juxta pagum Conocoto: 1360 hex., *F. Humboldt & A. Bonpland s.n.* (HOLOTYPE: P; ISOTYPE: US-2766206!).

The recent use of this name in Bolivia (Renvoize 1998), and Ecuador (Jørgensen & León-Yánez 1999), places this species as a synonym of *E. tenuifolia*. However, after studying the isotype (fragment) at US, we are sure that this taxon is not a synonym of *E. tenuifolia*, but its status is not yet determined. In addition, the voucher *F. Humboldt & A. Bonpland s.n.* (US) has oblong-ovate spikelets, while *E. tenuifolia* has linear spikelets.

Eragrostis patula is commonly included in local treatments of the Colombian Flora, but the Colombian specimens belong to *Eragrostis tenuifolia* (pers. obs.), therefore, we are not including *E. patula* in this treatment.

ACKNOWLEDGMENTS

ACKNOWLEDGMENTS

We wish to thank the curators at AAU, AMAZ, ANSM, BA, BAA, BAB, BM, CA, CAUP, COAH, COL, CORD, CPUN, CTES, CUZ, ENCB, F, GB, GH, HAO, HUA, HUT, K, LE, LIL, LINN, LP, MA, MEXU, MICH, MO, NY, P, PSO, QCA, RSA, S, SGO, SI, TAES, UC, UPS, US, USM, UTC, W, and WIS, for their valuable help; the Smithsonian Institution Fellowships and Grants for supporting a research visit by Diego Giraldo-Cañas and Isidoro Sánchez Vega to the United States National Herbarium; Research Opportunities, Atherton Seidel Foundation, José Cuatrecasas Fund, and Biodiversity Surveys and Inventories Program, all at the Smithsonian Institution, for financial support. Utah State University for permission to use illustrations that appeared in Flora of North America, Volume 25, prepared by Linda A. Vorobik and Cindy Roché; Alice R. Tangerini (US) for preparing some illustrations and electronic plates. Prof. Dr. Carlos Parra (COL), Prof. Dr. Jaime Aguirre Ceballos (COL), and Prof. Dr. Lauren Raz (COL) for their valuable comments. Prof. Gaspar Morcote Ríos (COL) for preparing the phytoliths samples. Juan Carlos Pinzón (COL), Carlos Bernal (COL), and Dubán Canal-Gallego (COL) for preparing some illustrations. Claudia Marcela Ortiz, Fabián Camilo Prada Achiardi, and Fernando Fernández (*Instituto de Ciencias Naturales, Universidad Nacional de Colombia*, Bogotá D.C.) for identification of the ant collections of D. Giraldo-Cañas. This monograph contributes to the project "*Estudios morfológicos, anatómicos y taxonómicos en gramíneas neotropicales*", of the *Universidad Nacional de Colombia* (Bogotá D.C.) by D. Giraldo-Cañas.

LITERATURE CITED

LITERATURE CITED

Alegría Olivera, J. J. & A. Granda Paucar. 2001. A new synonym for *Eragrostis pilgeri* (Poaceae: Eragrostideae). Sida 19: 1157–1161.

Amarasinghe, V. & L. Watson. 1988. Comparative ultrastructure of microhairs in grasses. Bot. J. Linnean Soc. 98: 303–319.

Amarasinghe, V. & L. Watson. 1989. Variation in salt secretory activity of microhairs in grasses. Aust. J. Plant Physiol. 16: 219–229.

Amarasinghe, V. & L. Watson. 1990. Taxonomic significance of microhair morphology in the genus *Eragrostis* Beauv. (Poaceae). Taxon 39: 59−65.

Baquar, S. R. & M. Saeed. 1969. Chromosome studies and polyploidy analysis in grasses of West Pakistan I. Caryologia 22: 103−111.

Beetle, A. A., E. Manrique Forceck, J. A. Miranda Sánchez, V. Jaramillio Luque, A. Chimal Hernández & A. M. Rodríguez Rodríguez. 1991. *Eragrostis* V. Wolf. In: Las Gramíneas de México, Tomo III. COTECOCA, S.A.R.H., México, D. F. Pp. 50−97.

Bir, S. S. & M. Sahni. 1988. Cytomorphological studies on members of genus *Eragrostis* V. Wolf. from Punjab Plain (north India). J. Cytol. Genet. 23: 118−131.

Boechat, S. C. & H. M. Longhi-Wagner. 2000. Padrões de distribuicão geográfica dos táxons brasileiros de *Eragrostis* (Poaceae, Chloridoideae). Revista Brasil. Bot., São Paulo 23: 177−194.

Boechat, S. C. & H. M. Longhi-Wagner. 2001. O gênero *Eragrostis* (Poaceae) no Brasil. Iheringia 55: 23−169.

Boechat, S. C. & H. M. Longhi-Wagner. 2003. Análise do fruto em espécies de *Eragrostis* Wolf (Poaceae). Iheringia 58: 131−166.

Bor, N. L. 1960. *The grasses of Burma, Ceylon, India, and Pakistan*. Pergamon Press, London.

Bowden, W. M. & H. A. Senn. 1962. Chromosome numbers in 28 grass genera from South America. Canad. J. Bot. 40: 1115−1124.

Catasús Guerra, L. Las gramíneas (Poaceae) de Cuba, I. Fontqueria 46: 1−259.

Chen, S. L. & P. M. Peterson. 2006. *Eragrostis*. In: Wu, Z.Y., P.H. Raven, & D.Y. Hong (eds.), Flora of China (Poaceae) 22: 471−479. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis.

Christopher, J. & A. Abraham. 1974. Studies of cytology and phylogeny of South Indian grasses II. Subfamily Eragrostoideae. Cytologia 39: 561−571.

Clayton, W. D. 1972. 202. Gramineae. In: J. Hutchinson, J.M. Dalziel & F.N. Hepper, eds. *Flora of west tropical Africa*. Crown Agents for Oversea Governments and Administrations, London. Pp. 349−512.

Clayton, W. D. 1974. *Eragrostis*. In: W.D. Clayton, S.M. Phillips & S.A. Renvoize, Gramineae (part 2), *Flora of Tropical East Africa*. A. A. Balkema, Rotterdam. Pp. 188−244.

Clayton, W. D. & S. A. Renvoize. 1986. *Genera Graminum: Grasses of the World*. Her Majesty's Stationary Office, London.

Clifford, H. T. 1996. *Etymological Dictionary of Grasses, Version 1.0 (CD-ROM)*. Expert Center for Taxonomic Identification, Amsterdam.

Clifford, H. T. & P. D. Bostock. 2007. *Etymological Dictionary of Grasses*. Springer-Verlag, Berlin.

Colbry, V. L. 1957. Diagnostic characteristics of the fruits and florets of economic species of North American *Sporobolus*. Contr. U.S. Natl. Herb. 34: 1−24.

Cope, T. A. 1998. A synopsis of *Eragrostis* Wolf (Poaceae) in the flora Zambesiaca area. Kew Bull. 53: 129−164.

Crisci, J. 1994. La especie: realidad y conceptos. In: J. Llorente Bousquets & I. Luna (compiladores), *Taxonomía biológica:* 53−64. Universidad Autónoma de México-Fondo de Cultura Económica, México D. F.

Davidse, G. 1981. Chromosome numbers of miscellaneous Angiosperms. Ann. Missouri Bot. Gard. 68: 222−223.

Davidse, G. 1994. *Eragrostis* Wolf. Flora Mesoamericana 6: 263−272.

Du Puy, D. J., I. R. H. Telford & E. Edgar. 1993. Poaceae. In: A. S. George, A. E. Orchard, H. J. Hewson & H. S. Thompson (eds.), Flora of Australia 50: 456−511.

Echenique, V., S. Pessino, M. Díaz, J. P. Selva, G. Luciani, D. Zappacosta, G. Cervigni, M. Meier, I. Garbus, S. Cardone, R. Miranda & G. Spangenberg. 2008. Aportes de la biotecnología al mejoramiento del pasto llorón (*Eragrostis curvula*). Rev. Argent. Prod. Anim. 28: 147−164.

Ellis, R. P. 1979. A procedure for standardizing comparative leaf anatomy in the Poaceae. II. The epidermis as seen in surface view. Bothalia 12: 641−671.

Ellis, R. P. 1984. *Eragrostis walteri*−A first record on non-Kranz leaf anatomy in the sub-family Chloridoideae (Poaceae). S. African J. Bot. 3: 380−386.

Ellis, R. P. 1987. A review of comparative leaf blade anatomy in the systematics of Poaceae: the past twenty-five years. In: T. R. Soderstrom, K. W. Hilu, C. S. Campbell & M. E. Barkworth (eds.), *Grass systematics and evolution*: 3−10. Smithsonian Institution Press, Washington D. C.

Escobar, I., E. Ruiz, V. L. Finot, M. A. Negritto & C. M. Baeza. 2011. Revisión taxonómica del género *Eragrostis* Wolf en Chile, basada en análisis estadísticos multivariados. Gayana Bot. 68: 49−85.

Fedde, F. 1908. Just's Bot. Jahresber 3*:*18.

Galetto, L. & L. M. Bernardello. 1992. Extrafloral nectaries that attract ants in Bromeliaceae: structure and nectar composition. Can. J. Bot. 70: 1101−1106.

Giraldo-Cañas, D. 2001. Estudios micromorfológicos y anatómicos en el género neotropical *Axonopus* (Poaceae: Panicoideae: Paniceae): I. Epidermis foliar. Caldasia 23: 119−133.

Giraldo-Cañas, D. 2002. Estudios micromorfológicos y anatómicos en el género neotropical *Axonopus* (Poaceae: Panicoideae: Paniceae): II. Antecio superior. Caldasia 24: 293−316.

Giraldo-Cañas, D. 2004. Características micromorfológicas y anatómicas de la espiguilla y el antecio superior del género *Digitaria* (Poaceae: Panicoideae: Paniceae). Caldasia 26: 1−35.

Giraldo-Cañas, D. 2008. Sistemática del género *Axonopus* (Poaceae: Panicoideae: Paniceae) y revisión de las especies de la serie *Barbigeri*. Biblioteca José Jerónimo Triana 17: 1−211. Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá D. C.

Giraldo-Cañas, D. 2010a. Las gramíneas (Poaceae) de la Guayana colombiana: análisis sobre su composición, riqueza, endemismo e invasión. Rev. Acad. Colomb. Cienc. 130: 5−16.

Giraldo-Cañas, D. 2010b. Distribución e invasión de gramíneas C_3 y C_4 (Poaceae) en un gradiente altitudinal de los Andes de Colombia. Caldasia 32: 65−86.

Giraldo-Cañas, D. 2010c. Gramíneas (Poaceae) ornamentales y usadas en artesanías en Colombia. Polibotánica 30: 163−191.

Gómez Sánchez, M. & S. D. Koch. 1998. Estudio anatómico comparativo de la lámina foliar de *Eragrostis* (Poaceae: Chloridoideae) de México. Acta Bot. Mexicana 43: 33−56.

Gould, F. W. 1958. Chromosome numbers in southwestern grasses. Amer. J. Bot. 45: 757−767.

Gould, F. W. & R. B. Shaw. 1983. *Grass Systematics*. Texas A & M University, New York.

Grass Phylogeny Working Group (GPWG). 2001. Phylogeny and subfamilial classification of the grasses (Poaceae). Ann. Missouri Bot. Gard. 88: 373−457.

Graterol, A., P. Torrecilla & B. Trujillo. 1989. Comentarios críticos sobre el género *Eragrostis* Wolf en Venezuela y clave para la identificación de sus especies. Ernstia 51: 16−28.

Hitchcock, A. S. 1927. The grasses of Ecuador, Peru, and Bolivia. Contr. U.S. Natl. Herb. 24: 291–556.

Hitchcock, A. S. 1950. *Manual of the grasses of the United States*. United States Department of Agriculture, Miscellaneous Publication No. 200, Goverment Printing Office, Washington D. C.

Holmgren, P., N. Holmgren & L. Barnett. 1990. *Index Herbariorum*. Part I: The Herbaria of the World. The New York Botanical Garden, New York.

Houinato, M., C. Delvaux & L. Pauwels. 2000. Les *Eragrostis* (Poaceae) du Bénin. Belg. J. Bot. 133: 21−35.

Hilu, K. W. & L. A. Alice. 2000. Phylogenetic relationships in subfamily Chloridoideae (Poaceae) based on *mat*K sequences: A preliminary assessment. In: S. W. L. Jacobs J. Everett (eds.), *Grasses: Systematics and Evolution*: 173−179. CSIRO Publishing, Melbourne.

Hubbard, C. E. 1934. Gramineae. In: J. Hutchinson (ed.), *Families of flowering plants* 2: 199−229. MacMillan, London.

Hunziker, J. H. & G. L. Stebbins. 1987. Chromosomal evolution in the Gramineae. In: T. R. Soderstrom, K. W. Hilu, C. S. Campbell & M. E. Barkworth (eds.), *Grass systematics and evolution*: 179−187. Smithsonian Institution Press, Washington D. C.

Ingram, A. L. 2010. Evolution of leaf blade anatomy in *Eragrostis* (Poaceae). Syst. Bot. 35: 755−765.

Ingram, A. L., P. A. Christin & C. P. Osborne. 2011. Molecular phylogenies disprove a hypothesized C_4 reversion in *Eragrostis walteri* (Poaceae). Ann. Bot. 107: 321−325.

Ingram, A. L. & J. J. Doyle. 2003. The origin and evolution of *Eragrostis tef* (Poaceae) and related polyploids: evidence from nuclear *waxy* and plastid *rps*16. Amer. J. Bot. 90: 116−122.

Ingram, A L. & J. J. Doyle. 2004. Is *Eragrostis* (Poaceae) monophyletic? Insights from nuclear and plastid sequence data. Syst. Bot. 29: 545−552.

Ingram, A. L. & J. J. Doyle. 2007. *Eragrostis* (Poaceae): Monophyly and infrageneric classification. Aliso 23: 595−604.

Jacobs, S. W. L. 1987. Systematics of the Chloridoid grasses. In: T. R. Soderstrom, K. W. Hilu, C. S. Campbell & M. E. Barkworth (eds.), *Grass systematics and evolution*: 277−286. Smithsonian Institution Press, Washington D. C.

Jørgensen, P. M. & S. León-Yánez. 1999. Catalogue of the vascular plants of Ecuador. Mongr. Syst. Bot. Missouri Bot. Gard. 75: 1−1182.

Johnston, C. R. & L. Watson. 1976. Microhairs: a universal characteristic of non-festucoid grass genera? Phytomorphology 26: 297−301.

Jolivet, P. 1996. *Ants and plants. An example of coevolution*. Backhuys Publishers, Leiden.

Judziewicz, E. J. 1991. 187. Poaceae (Gramineae). In: A. Görts-van Rijn, ed. *Flora of the Guianas*. Koeltz Scientific Books, Köenigstein, Germany.

Kami, E. 1993. Les *Eragrostis* du Congo. Belg. Journ. Bot. 126: 33−44.

Ketema, S. 1997. *Tef.* Eragrostis tef *(Zucc.) Trotter. Promoting the conservation and use of underutilized and neglected crops*. Institute of Plant Genetics and Crop Plant Research, Gatesleben-International Plant Genetic Resources Institute IP-GRI, Roma.

Koch, S. D. 1974. The *Eragrostis pectinacea-pilosa* complex in North and Central America (Gramineae: Eragrostideae). Illinois Biol. Monogr. 48: 1−75.

Koch, S. D. 1978. Notes on the genus *Eragrostis* (Gramineae) in the Southeastern United States. Rhodora 80: 390−403.

Koch, S. D. & I. Sánchez Vega. 1985. *Eragrostis mexicana, E. neomexicana, E. orcuttiana*, and *E. virescens*: the resolution of a taxonomic problem. Phytologia 58: 377−381.

Labouriau, L. G. 1983. Phytolith work in Brazil. A mini-review. The Phytolitharien Newsletter 2: 6−11.

Lazarides, M. 1997. A revision of *Eragrostis* (Eragrostideae, Eleusininae, Poaceae) in Australia. Austral. Syst. Bot. 10: 77−187.

Linder, H. P., J. F. Thompson, R. P. Ellis & S. M. Perold. 1990. The occurrence, anatomy, and systematic implications of the glands in *Pentaschistis* and *Prionanthium* (Poaceae, Arundinoideae, Arundineae). Bot. Gaz. 151: 221−233.

Liphschitz, N. & Y. Waisel. 1974. Existence of salt glands in various genera of the Gramineae. New Phytol. 73: 507–513.

Liu, Q., D. X. Zhang & P. M. Peterson. 2010. Lemma micromorphological characters in the Chloridoideae (Poaceae) optimized on a molecular phylogeny. S. African J. Bot. 76: 196−209.

Madella, M., A. Alexandre & T. Ball. 2005. International code for phytolith nomenclature 1.0. Ann. Bot. 96: 253–260.

McDade, L. A. 1995. Species concepts and problems in practice: insight from botanical monographs. Syst. Bot. 20: 606−622.

Metcalfe, C. 1960. *Anatomy of monocotyledons. I. Gramineae*. Clarendon Press, Oxford.

Morrone, O., A. S. Vega & M. Maier. 2000. Elaiosomes in Urochloa paucispicata (Poaceae: Panicoideae: Paniceae): anatomy and chemical composition. Flora 195: 303−310.

Morton, J. K. 1993. Chromosome numbers and polyploidy in the flora of Cameroon Mountain. Opera Bot. 121: 159−172.

Nepi, M. 2007. Nectary structure and ultrastructure. In: S. W. Nicolson, M. Nepi & E. Pacini (eds.), *Nectaries and nectar*: 129−166. Springer, Dordrecht.

Nicolson, S. W. 2007. Nectar consumers. In: S. W. Nicolson, M. Nepi & E. Pacini (eds.), *Nectaries and nectar*: 289−342. Springer, Dordrecht.

Nicora, E. G. 1941. Contribución al estudio histológico de las glándulas epidérmicas de algunas especies de *Eragrostis*. Darwiniana 5: 316−321.

Nicora, E. G. 1994. Las especies de *Eragrostis* afines a *E. peruviana* (Jacq.) Trin. (Gramineae) del norte de Chile y Perú. Gayana Bot. 51: 1–10.

Nicora, E. G. 1998. Revisión del género *Eragrostis* Wolf (Gramineae-Eragrostideae) para Argentina y países limítrofes. Boissiera 54: 8−109.

Nicora, E. G. & Z. Rúgolo de Agrasar. 1998. Tipos de Gramineae conservados en el herbario Gaspar Xuárez, Buenos Aires (BAA) procedentes de Berlín (B). Darwiniana 36: 163−199.

Nozawa, S. & J. R. Grande. 2010. Primer reporte de Eragrostis paniciformis (A. Braun) Steud. (Poaceae: Chloridoideae) para Venezuela. Ernstia 20: 81−88.

Peterson, P. M. 2001. *Eragrostis* Wolf. In: S. Lægaard & P.M. Peterson, 214(2). Gramineae (part 2) subfam. Chloridoideae. Flora of Ecuador 68: 25−55.

Peterson, P. M. 2003. *Eragrostis*. In: M. E. Barkworth, K. M. Capels, S. Long & M. B. Piep (eds.), Magnoliophyta: Commelinidae (in part): Poaceae, part 2. Flora of North America North of Mexico 25: 65−105. Oxford University Press, New York.

Peterson, P. M. & S. C. Boechat. 2001. *Eragrostis*. In: P. M. Peterson, R. J. Soreng, G. Davidse, T. S. Filgueiras, F. O. Zuloaga & E. J. Judziewicz (eds.), Catalogue of New World grasses (Poaceae: Chloridoideae). Contr. U.S. Natl. Herb. 41: 81−115.

Peterson, P. M., J. T. Columbus & S. J. Pennington. 2007. Classification and biogeography of New World grasses: Chloridoideae. Aliso 23: 580−594.

Peterson, P. M., K. Romaschenko, N. P. Barker & H. P. Linder. 2011. Centropodieae and *Ellisochloa*, a new tribe and genus in Chloridoideae (Poaceae). Taxon 60: 1113−1122.

Peterson, P. M., K. Romaschenko & G. Johnson. 2010. A classification of the Chloridoideae (Poaceae) based on multi-gene phylogenetic trees. Mol. Phylogenet. Evol. 55: 580−598.

Peterson, P. M. & I. Sánchez Vega. 2007. *Eragrostis* (Poaceae: Chloridoideae: Eragrostideae: Eragrostidinae) of Peru. Ann. Missouri Bot. Gard. 94: 745−790.

Peterson, P. M., R .J. Soreng, G. Davidse, T. S. Filguerias, F. O. Zuloaga & E. J. Judziewicz. 2001. Catalogue of New world grasses (Poaceae): II. subfamily Chloridoideae. Contr. U.S. Natl. Herb. 41: 1−255.

Peterson, P. M. & J. Valdés Reyna. 2005. *Eragrostis* (Poaceae: Chloridoideae: Eragrostideae: Eragrostidinae) from northeastern Mexico. Sida 21: 1365−1420.

Peterson, P. M., R. D. Webster & J. Valdés Reyna. 1995. Subtribal classification of the New World Eragrostideae (Poaceae: Chloridoideae). Sida 16: 529−544.

Peterson, P. M., R. D. Webster & J. Valdés Reyna. 1997. Genera of the New World Eragrostideae (Poaceae: Chloridoideae). Smithsonian Contr. Bot. 87: 1−50.

Pilger, R. 1906. Gramineae andinae. II. Bot. Jahrb. Syst. 37: 373–381.

Pohl, R. W. 1980. Family 15. Gramineae. Flora Costaricensis. Fieldiana Botany (New Series) 4: 1−608.

Pohl, R. W. & G. Davidse. 1971. Chromosome numbers of Costa Rica grasses. Brittonia 23: 293−324.

Poilecot, P. 1995. Les Poaceae de Côte-d'Ivoire: Manuel illustré d'identification des espèces. Boissiera 50: 5−734.

Poilecot, P. 1999. Les Poaceae du Niger: description, illustration, ecologie, utilisations. Boissiera 56: 5−766.

Portal, R. 2002. Eragrostis *de France et de l'Europe occidentale*. Private publication (no ISBN), Vals près Le Puy, France.

Prendergast, H. D. V., P. W. Hatterslley, N. E. Stone & M. Lazarides. 1986. C_4 acid decarboxylation type in *Eragrostis* (Poaceae): patterns of variation in chloroplast position, ultrastructure and geographical distribution. Plant, Cell and Environment 9: 333−344.

Renvoize, S. A. 1984. New combinations of grasses from Bahia. Kew Bull. 39: 184.

Renvoize, S. A. 1998. *Gramíneas de Bolivia*. The Royal Botanic Gardens, Kew.

Roodt, R. & J. J. Spies. 2003. Chromosome studies in the grass subfamily Chloridoideae. I. Basic chromosome numbers. Taxon 52: 557−566.

Roy, K. K. 1964. Anatomical studies of some species of *Eragrostis* P. Beauv. Bot. Bull. Academia Sinica 5: 54−62.

Schmid, R. 1988. Reproductive versus extra-reproductive nectaries. Historical perspective and terminological recommendations. Bot. Rev. 54: 179−232.

Scrivanti, L. R., G. Bernardello & A. M. Anton. 2008. The foveola of *Bothriochloa alta* (Poaceae: Andropogoneae): Extrafloral nectar or secretory gland of essential oils? Flora 203: 55−59.

Smets, E. F., L. P. Ronse Decraene, P. Caris & P. J. Rudall. 2000. Floral nectaries in monocotyledons: distribution and evolution. In: K. L. Wilson & D. A. Morrison (eds.), *Monocots, Systematics and evolution*: 230−240. CSIRO, Melbourne.

Snow, N. 1996. The phylogenetic utility of lemmatal micromorphology in *Leptochloa* s.l. and related genera in subtribe Eleusininae (Poaceae, Chloridoideae, Eragrostideae). Ann. Missouri Bot. Gard. 83: 504−529.

Snow, N. 1998. Caryopsis morphology of *Leptochloa* sesu lato (Poaceae, Chloridoideae). Sida 18: 271−282.

Soreng, R. J. & J. L. Davies. 1998. Phylogenetics and character evolution in the grass family (Poaceae): simultaneous analysis of morphological and chloroplast DNA restriction site character sets. Bot. Rev. 64: 1−85.

Soreng, R. J., G. Davidse, P. M. Peterson, F. O. Zuloaga, E. J. Judziewicz, T. S. Filgueiras & O. Morrone. 2008. Catalogue of New World grasses. (updated continuously). http://mobot.mobot.org/W3T/Search/nwgc.html, accessed 8 May 2008.

Spies, J. J. & A. Jonker. 1987. Chromosome studies on African plants. 4. Bothalia 17: 135−136.

Tateoka, T., S. Inoue & S. Kawano. 1959. Notes on some grasses IX: Systematic significance of bicellular microhairs of leaf epidermis. Bot. Gaz. 121: 80−91.

Terrell, E. E. & P. M. Peterson. 1993. Caryopsis morphology and classification in the Triticeae (Pooideae: Poaceae). Smithsonian Contr. Bot. 83: 1−25.

Tovar, O. 1993. Las gramíneas (Poaceae) del Perú. Ruizia 13: 1−480.

Twiss, P. C. 1992. Predicted world distribution of C_3 and C_4 grass phytoliths. In: G. Rapp & S. Mulholland (eds.), *Phytolith systematics*: 113–128. Plenum Press, New York.

Uribe Meléndez, J. 2008. Monografía de *Frullania* subgénero *Meteoriopsis* (Frullaniaceae, Marchantiophyta). Caldasia 30: 49−94.

Van den Borre, A. & L. Watson. 1994. The infrageneric classification of *Eragrostis* (Poaceae). Taxon 43: 383−422.

Van den Borre, A. & L. Watson. 1997. On the classification of the Chloridoideae (Poaceae). Austral. Syst. Bot. 10: 491−531.

Van der Pijl, L. 1982. *Principles of dispersal in higher plants*. Springer-Verlag, Berlin.

Veldkamp, J. F. 2002. Revision of *Eragrostis* (Gramineae, Chloridoideae) in Malesia. Blumea 47: 157−204.

Veldkamp, J. F. 2003. Miscellaneous notes on Thai Gramineae. Blumea 48: 495−501.

Warwick, N. W. M. & G. M. Halloran. 1992. Accumulation and excretion of sodium, potasium and chloride from leaves of accessions of *Diplachne fusca* (L.) P. Beauv. New Phytol. 121: 53−61.

Watson, L. & M. J. Dallwitz. 2008. *Grass genera of the World: descriptions, illustrations, identification, and information retrieval; including synonyms, morphology, anatomy, physiology, phytochemistry, cytology, classification, pathogens, World and local distribution, and references*. http://delta-intkey.com, accessed 8 May 2008.

Wiens, J. J. & M. R. Servedio. 2000. Species delimitation in systematics: inferring diagnostic differences between species. Proc. R. Soc. Lond. B 267: 631−636.

de Wit, J. M. J. 1954. Chromosome numbers of a few South African grasses. Cytologia 19: 97−103.

Witherspoon, J. T. 1975. *A numerical taxonomic study of the* Eragrostis intermedia *complex (Poaceae)*. Ph.D. Dissertation, University of Montana.

von Wolf, N. M. 1776. *Genera plantarum vocabulis characteristicis definita*. Published by the author, Königsberg.

Zucol, A. F. 2001. Fitolitos. III. Asociaciones fitolíticas de *Piptochaetium montevidense* (Stipeae: Arundinoideae: Poaceae). Una nueva metodología descriptiva. Bol. Soc. Argent. Bot. 36: 69–85.

Zuloaga, F. O. & T. Sendulsky. 1988. A revision of *Panicum* subgenus *Phanopyrum* section *Stolonifera* (Poaceae: Paniceae). Ann. Missouri Bot. Gard. 75: 420–455.

APPENDIX 1

Appendix 1. List of names and synonyms. Accepted names are presented in boldface and synonyms are italicized.

Agrosticula brasilensis (Raddi) Herter [= **Eragrostis airoides**]

Aira brasiliensis Raddi [= **Eragrostis airoides**]

Airopsis millegrana Griseb. [= **Eragrostis airoides**]

Cynodon amabilis (L.) Raspail [= **Eragrostis tenella**]

Cynodon ciliaris (L.) Raspail [= **Eragrostis ciliaris** var. **ciliaris**]

Diandrochloa glomerata (Walter) Burkart [= **Eragrostis japonica**]

Diandrochloa japonica (Thunb.) A. N. Henry [= **Eragrostis japonica**]

Eragrostis acicularis Trin. [= **Eragrostis rufescens** var. **rufescens**]

Eragrostis acutiflora (Kunth) Nees

Eragrostis affinis Salzm. ex Steud. [= **Eragrostis rufescens** var. **rufescens**]

Eragrostis airoides Nees

Eragrostis alba J. Presl [= **Eragrostis mexicana** subsp. **mexicana**]

Eragrostis amabilis (L.) Nees [= **Eragrostis tenella**]

Eragrostis amabilis (L.) Wight & Arn. [= **Eragrostis tenella**]

Eragrostis amabilis var. *plumosa* (Retz.) E. G. Camus & A. Camus [= **Eragrostis tenella**]

Eragrostis ancashensis P. M. Peterson, Refulio & Tovar [= **Eragrostis pilgeri** subsp. **ancashensis**]

Eragrostis andicola Pilg. [= **Eragrostis pilgeri**]

Eragrostis andicola R. E. Fr.

Eragrostis andicola fo. *humilior* Pilg. [= **Eragrostis pilgeri** subsp. **pilgeri**]

Eragrostis andicola var. *robustior* Pilg. [= **Eragrostis pilgeri** subsp. **ancashensis**]

Eragrostis atrovirens (Desf.) Trin. ex Steud.

Eragrostis attenuata Hitchc.

Eragrostis bahiensis Schrad. ex Schult.

Eragrostis bahiensis var. *boliviensis* Henrard [= **Eragrostis lurida** subsp. **lurida**]

Eragrostis bahiensis fo. *riparia* Burkart [= **Eragrostis bahiensis**]

Eragrostis barrelieri Daveau

Eragrostis blepharophylla Jedwabn. [= **Eragrostis bahiensis**]

Eragrostis brasiliensis (Raddi) Nees [= **Eragrostis airoides]**

Eragrostis buchtienii Hack. [= **Eragrostis pastoensis**]

Eragrostis carazensis Pilg. [= **Eragrostis pilgeri** subsp. **pilgeri**]

Eragrostis cilianensis (All.) F. T. Hubb. [= **Eragrostis cilianensis**]

Eragrostis cilianensis (All.) Vignolo ex Janch.

Eragrostis ciliaris (L.) Nees [= **Eragrostis ciliaris** var. **ciliaris**]

Eragrostis ciliaris (L.) R. Br.

Eragrostis ciliaris (L.) R. Br. var. **ciliaris**

Eragrostis ciliaris var. *patens* Chapm. ex Beal [= **Eragrostis tenella**]

Eragrostis compacta Sallzm. ex Steud. [= **Eragrostis secundiflora** subsp. **secundiflora**]

Eragrostis condensata (J. Presl) Steud.

Eragrostis contracta Pilg. [= **Eragrostis lurida** subsp. **contracta**]

Eragrostis contristata Nees & Meyen [= **Eragrostis lurida** subsp. **lurida**]

Eragrostis cordobensis Jedwabn. [= **Eragrostis mexicana** subsp. **virescens**]

Eragrostis curvula (Schrad.) Nees

Eragrostis delicatula Trin. [= **Eragrostis mexicana** subsp. **virescens**]

Eragrostis deserticola Phil. [= **Eragrostis peruviana**]

Eragrostis diffusa Buckley [= **Eragrostis pectinacea** var. **pectinacea**]

Eragrostis expansa Link [= **Eragrostis bahiensis**]

Eragrostis firma Trin. [= **Eragrostis bahiensis**]

Eragrostis floridoana Hitchc. [= **Eragrostis polytricha**]

Eragrostis fragilis Swallen [= **Eragrostis polytricha**]

Eragrostis gangetica (Roxb.) Steud.

Eragrostis glomerata (Walter) L. H. Dewey [= **Eragrostis japonica**]

Eragrostis hypnoides (Lam.) Britton, Sterns & Poggenb.

Eragrostis inconstans var. *rufescens* (Schrad. ex Schult.) Nees [= **Eragrostis rufescens** var. **rufescens**]

Eragrostis intermedia Hitchc.

Eragrostis japonica (Thunb.) Trin.

Eragrostis lasseri Luces [= **Eragrostis ciliaris**]

Eragrostis lehmannii Pilg. [= **Eragrostis pastoensis**]

Eragrostis leptantha Trin. [= **Eragrostis mexicana** subsp. **virescens**]

Eragrostis limbata E. Fourn. [= **Eragrostis mexicana** subsp. **mexicana**]

Eragrostis lugens Nees

Eragrostis lugens var. *villosa* Döll [= **Eragrostis polytricha**]

Eragrostis lurida J. Presl

Eragrostis lurida subsp. **contracta** (Pilg.) P. M. Peterson & Sánchez Vega

Eragrostis lurida J. Presl subsp. **lurida**

Eragrostis macra Jedwabn. [= **Eragrostis bahiensis**]

Eragrostis magna Hitchc.

Eragrostis maypurensis (Kunth) Steud.

Eragrostis megastachya var. *cilianensis* (All.) Asch. & Graebn. [= **Eragrostis cilianensis**]

Eragrostis mexicana (Hornem.) Link

Eragrostis mexicana (Hornem.) Link subsp. **mexicana**

Eragrostis mexicana subsp. **virescens** (J. Presl) S. D. Koch & Sánchez Vega

Eragrostis microstachya (Link) Link) [= **Eragrostis bahiensis**]

Eragrostis mokensis Pilg.

Eragrostis montufari (Kunth) Steud. [= **Eragrostis pastoensis**]

Eragrostis moritzii Jedwabn. [= **Eragrostis mokensis**]

Eragrostis multicaulis Steud. [= **Eragrostis pilosa** subsp. **pilosa**]

Eragrostis multiflora var. *cilianensis* (All.) Maire [= **Eragrostis cilianensis**]

Eragrostis multipes S. Moore [= **Eragrostis rufescens** var. **rufescens**]

Eragrostis neomexicana Vasey ex L. H. Dewey [= **Eragrostis mexicana** subsp. **mexicana**]

Eragrostis nigricans (Kunth) Steud.

Eragrostis nigricans (Kunth) Steud. var. *punensis* Nicora [= **Eragrostis mexicana** subsp. **mexicana**]

Eragrostis nigricans var. *tristis* (Jedwabn.) Pilg. [= **Eragrostis nigricans**]

Eragrostis olmedoi (Kunth) Steud. [= **Eragrostis pastoensis**]

Eragrostis pastoensis (Kunth) Trin.

Eragrostis patula (Kunth) Steud., status not yet determined.

Eragrostis pectinacea (Michx.) Nees var. **pectinacea**

Eragrostis pectinacea (Michx.) Steud. [= **Eragrostis pectinacea** var. **pectinacea**]

Eragrostis peruviana (Jacq.) Trin.

Eragrostis peruviana var. *brachythyrsa* Pilg. [= **Eragrostis peruviana**]

Eragrostis pilgeri Fedde

Eragrostis pilgeri Fedde subsp. **ancashensis** (P. M. Peterson, Refulio & Tovar) P. M. Peterson & Sánchez Vega

Eragrostis pilgeri Fedde subsp. **pilgeri**

Eragrostis pilgeriana Hitchc. [= **Eragrostis andicola**]

Eragrostis pilosa var. *delicatula* (Trin.) Hack. [= **Eragrostis mexicana** subsp. **virescens**]

Eragrostis pilosa var. *lugens* (Nees) Griseb. [= **Eragrostis lugens**]

Eragrostis pilosa (L.) P. Beauv. subsp. **pilosa**

Eragrostis pilosa var. *bahiensis* (Schrad. ex Schult.) Kuntze [= **Eragrostis bahiensis**]

Eragrostis pilosa var. *lugens* (Nees) Griseb. [= **Eragrostis lugens**]

Eragrostis plumosa (Retz.) Link [= **Eragrostis tenella**]

Eragrostis polyneura Jedwabn. [= **Eragrostis rufescens** var. **rufescens**]

Eragrostis polytricha Nees

Eragrostis prolifera (Sw.) Steud.

Eragrostis psammodes var. *microstachya* (Link) Döll [= **Eragrostis bahiensis**]

Eragrostis purshii var. *diffusa* (Buckley) Vasey [= **Eragrostis pectinacea** var. **pectinacea**]

Eragrostis rahmeri Phil. [= **Eragrostis mexicana** subsp. **virescens**]

Eragrostis rufescens Schrad. ex Schult.

Eragrostis rufescens Schrad. ex Schult. var. **rufescens**

Eragrostis salzmannii Steud. [= **Eragrostis prolifera**]

Eragrostis scabra Phil. [= **Eragrostis mexicana** subsp. **virescens**]

Eragrostis secundiflora J. Presl

Eragrostis secundiflora J. Presl subsp. **secundiflora**

Eragrostis setifolia (Benth.) Steud. [= **Eragrostis pastoensis**]

Eragrostis soratensis Jedwabn.

Eragrostis subatra Jedwabn. [= **Eragrostis nigricans**]

Eragrostis tenax (Kunth) Steud [= **Eragrostis pastoensis**]

Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult.

Eragrostis tenella var. *japonica* (Thunb.) Roem. & Schult. [= **Eragrostis japonica**]

Eragrostis tenella var. *plumosa* (Retz.) Stapf [= **Eragrostis tenella**]

Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud.

Eragrostis trichocolea var. *floridoana* (Hitchc.) Witherspoon [= **Eragrostis polytricha**]

Eragrostis triflora Ekman [= **Eragrostis airoides**]

Eragrostis tristis Jedwabn. [= **Eragrostis nigricans**]

Eragrostis unioloides (Retz.) Nees ex Steud.

Eragrostis virescens J. Presl [= **Eragrostis mexicana** subsp. **virescens**]

Eragrostis virescens var. *trachyphylla* Hack. [= **Eragrostis pastoensis**]

Eragrostis viscosa (Retz.) Trin.

Eragrostis yucatana L. H. Harv. [= **Eragrostis secundiflora** subsp. **secundiflora**]

Eragrostis weberbaueri Pilg.

Erosion cilianense (All.) Lunell [= **Eragrostis cilianensis**]

Erosion hypnoides (Lam.) Lunell [= **Eragrostis hypnoides**]

Koeleria multiflora Regel & Herter [= **Eragrostis peruviana**]

Megastachya amabilis (L.) P. Beauv. [= **Eragrostis tenella**]

Megastachya ciliaris (L.) P. Beauv. [= **Eragrostis ciliaris** var. **ciliaris**]

Megastachya condensata J. Presl [= **Eragrostis condensata**]

Megastachya glomerata (Walter) Schult. [= **Eragrostis japonica**]

Megastachya hypnoides (Lam.) P. Beauv. [= **Eragrostis hypnoides**]

Megastachya maypurensis (Kunth) Roem. & Schult. [= **Eragrostis maypurensis**]

Megastachya montufari (Kunth) Roem. & Schult. [= **Eragrostis pastoensis**]

Megastachya nigricans (Kunth) Roem. & Schult. [= **Eragrostis nigricans**]

Megastachya olmedoi (Kunth) Roem. & Schult. [= **Eragrostis pastoensis**]

Megastachya pastoensis (Kunth) Roem. & Schult. [= **Eragrostis pastoensis**]

Megastachya patula (Kunth) Roem. & Schult. [= *Eragrostis patula*, status not yet determined]

Megastachya tenax (Kunth) Roem. & Schult. [= **Eragrostis pastoensis**]

Megastachya tenella (L.) Bojer [= **Eragrostis tenella**]

Neeragrostis hypnoides (Lam.) Bush [= **Eragrostis hypnoides**]

Poa acutiflora Kunth [= **Eragrostis acutiflora**]

Poa airoides (Nees) Kunth [= **Eragrostis airoides]**

Poa amabilis L. [= **Eragrostis tenella**]

Poa atrovirens Desf. [= **Eragrostis atrovirens**]

Poa brasiliensis Raddi [= **Eragrostis airoides]**

Poa cilianensis All. [= **Eragrostis cilianensis**]

Poa ciliaris L. [= **Eragrostis ciliaris** var. **ciliaris**]

Poa curvula Schrad. [= **Eragrostis curvula**]

Poa gangetica Roxb. [= **Eragrostis gangetica**]

Poa glomerata Walter [= **Eragrostis japonica**]

Poa hypnoides Lam. [= **Eragrostis hypnoides**]

Poa japonica Thunb. [= **Eragrostis japonica**]

Poa leptantha (Trin.) Kunth [= **Eragrostis mexicana** subsp. **virescens**]

Poa lurida (J. Presl) Kunth [= **Eragrostis lurida** subsp. **lurida**]

Poa maypurensis Kunth [= **Eragrostis maypurensis**]

Poa mexicana Hornem. [= **Eragrostis mexicana**]

Poa microstachya Link [= **Eragrostis bahiensis**]

Poa montufari Kunth [= **Eragrostis pastoensis**]

Poa nigricans Kunth [= **Eragrostis nigricans**]

Poa olmedoi Kunth [= **Eragrostis pastoensis**]

Poa pastoensis Kunth [= **Eragrostis pastoensis**]

Poa patula Kunth [= *Eragrostis patula*, status not yet determined]

Poa pectinacea Michx. [= **Eragrostis pectinacea** var. **pectinacea**]

Poa peruviana Jacq. [= **Eragrostis peruviana**]

Poa pilosa L. [= **Eragrostis pilosa** subsp. **pilosa**]

Poa plumosa Retz. [= **Eragrostis tenella**]

Poa polytricha (Nees) Kunth [= **Eragrostis polytricha**]

Poa prolifera Sw. [= **Eragrostis prolifera**]

Poa secundiflora (J. Presl) Kunth [= **Eragrostis secundiflora** subsp. **secundiflora**]

Poa setifolia Benth. [= **Eragrostis pastoensis**]

Poa tenax Kunth [= **Eragrostis pastoensis**]

Poa tenella L. [= **Eragrostis tenella**]

Poa tenuifolia A. Rich. [= **Eragrostis tenuifolia**]

Poa unioloides Retz. [= **Eragrostis unioloides**]

Poa viscosa Retz. [= **Eragrostis viscosa**]

Roshevitzia japonica (Thunb.) Tzvelev [= **Eragrostis japonica**]

Sporobolus brasiliensis (Raddi) Hack. [= **Eragrostis airoides**]

Sporobolus scaber Phil. [= **Eragrostis attenuata**]

APPENDIX 2

Appendix 2. List of vernacular names.

Colchón de pobre	*Eragrostis maypurensis* (Kunth) Steud.
Espartillo	*Eragrostis tenuifolia* (A. Rich.) Hochst. ex Steud.
Grama ilusión	*Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult.
Hierba canto	*Eragrostis pectinacea* (Michx.) Nees
Maleza del arroz	*Eragrostis pilosa* (L.) P. Beauv.
Paja ilusión	*Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult.
Pasto llorón	*Eragrostis curvula* (Schrad.) Nees
Yerba de filo	*Eragrostis tenuifolia* (A. Rich.) Hochst. ex Steud.
Yerba dura	*Eragrostis tenuifolia* (A. Rich.) Hochst. ex Steud.

The genus *Eragrostis* (Poaceae: Chloridoideae) in northwestern South America (Colombia, Ecuador, and Peru): morphological and taxonomic studies fue terminado de imprimir el 3 de agosto de 2012 por Arfo Editores e Impresores Ltda. Cra 15 No. 54 - 32; del cual se imprimió un tiraje de 300 ejemplares, con una fuente de Times New Roman en papel Bond de 70 gr y la carátula en propalcote de 240 gr.

978-958-761-266-0