

CAREX SAGEI (CYPERACEAE), THE CORRECT NAME FOR C. BARROSII

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Abstract. Wheeler, G. A. 2007. *Carex sagei* (Cyperaceae), the correct name for *C. barrosii*. *Darwiniana* 45(2): 231-235.

The holotype of *Carex sagei* comes from central Chile, and this name has long been treated as a synonym of *C. fuscula*. Recent study indicates, however, that *C. sagei* is referable to *Carex* section Ceratocystis, whereas *C. fuscula* belongs in section Spirostachyae. It is also demonstrated that *C. sagei* is the correct name for plants currently called *C. barrosii*. *Carex sagei* is known from Argentina, Chile, and the Falkland Islands (Islas Malvinas), where it frequents hydric habitats, such as marshes, wet meadows, and the margins of lakes, from near sea level to about 850 m.

Keywords. *Carex*, Cyperaceae, Ceratocystis, South America, taxonomy.

Resumen. Wheeler, G. A. 2007. *Carex sagei* (Cyperaceae), nombre correcto de *C. barrosii*. *Darwiniana* 45(2): 231-235.

El holotipo de *Carex sagei* proviene de Chile central, y su nombre ha sido tratado desde hace tiempo como sinónimo de *C. fuscula*. Un estudio reciente indicó, sin embargo, que *C. sagei* es assignable a *Carex* sección Ceratocystis, mientras que *C. fuscula* pertenece a la sección Spirostachyae. Se demuestra además que *C. sagei* es el nombre correcto de plantas actualmente denominadas *C. barrosii*. *Carex sagei* crece en Argentina, Chile, e Islas Malvinas (Falkland Islands), donde frecuenta hábitats palustres tales como pantanos, pastizales húmedos y márgenes de lagos, desde casi el nivel del mar hasta los 850 m s.m.

Palabras clave. *Carex*, Cyperaceae, Ceratocystis, Sudamérica, taxonomía.

INTRODUCTION

The genus *Carex* L. (Cyperaceae) is represented in austral South America with about 110 species, most of them growing in the mountains and cooler regions of the continent. The great naturalist Rodulfo A. Philippi (1808-1904), born in Germany and late director of the Chilean Museo Nacional de Historia Natural in Santiago (Taylor & Muñoz-Schick, 1994), described *Carex sagei* Phil. (Fig. 1) from plants collected by Carlos Sage “en la Araucanía” in central Chile (Muñoz-Pizarro, 1960: 32). Küenthal (1899, 1909) and subsequent authors (e.g., Léveillé, 1915; Barros, 1947, 1969; Guaglianone, 1996) placed the name under the synonymy of *C. fuscula* D'Urv., a

species invariably assigned to *Carex* sect. Spirostachyae (Drejer) L. H. Bailey. But recent examination of the holotype of *C. sagei* reveals that it is neither assignable to *C. fuscula* nor belongs in sect. Spirostachyae.

RESULTS AND DISCUSSION

Küenthal (1899, 1909) included members of sect. Ceratocystis Dumort. (his Extensae Fries) in sect. Spirostachyae, but recent workers (e.g., Jermy et al., 1982; Crins & Ball, 1988; FNA, 2003) have treated these two groups separately. The members of sect. Spirostachyae and sect. Ceratocystis form “two distinct but closely related

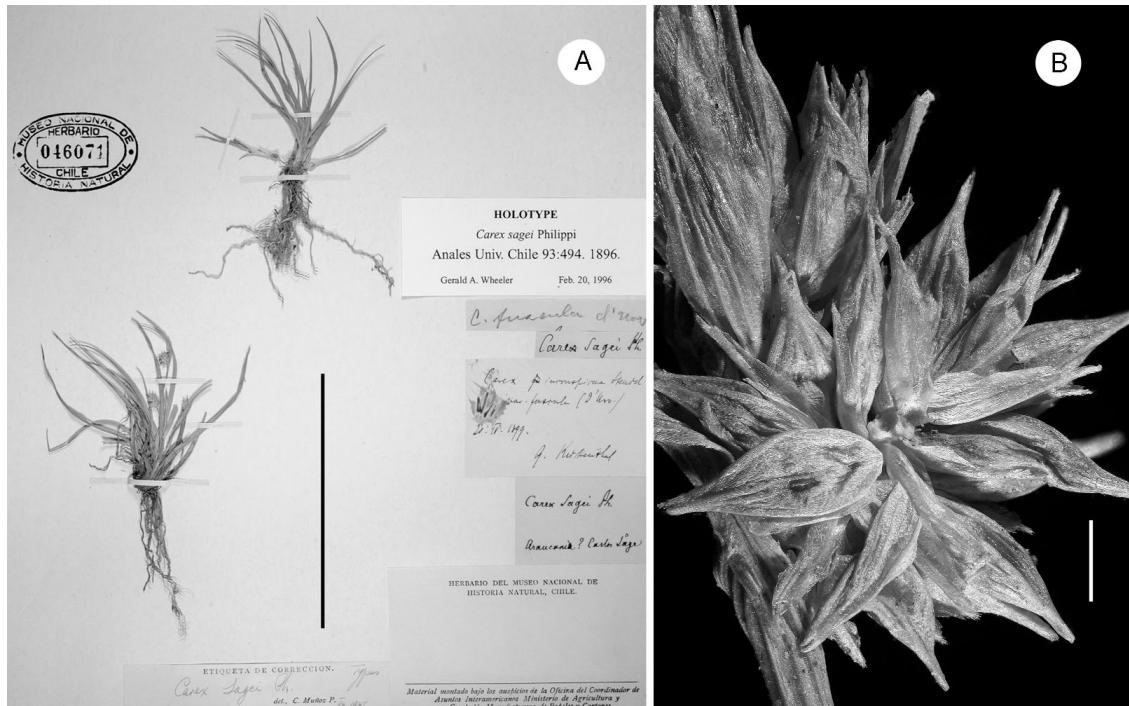


Fig. 1. *Carex sagei*. **A**, holotype (from C. Sage, s.n.). **B**, inflorescence (from C. Sage, s.n.). Bars: **A**, bar = 10 cm; **B**, bar = 1 mm.

sections" (Crins & Ball, 1988: 41), with indeed some clear-cut differences existing between them. For instance, reddish brown crystalline inclusions occur in epidermal cells of sect. Spirostachyae but are absent in sect. Ceratocystis. Also, members of sect. Spirostachyae have elliptical achenes and usually cylindrical spikes, whereas members of sect. Ceratocystis have obovate achenes and generally ovoid to subglobose spikes (Crins & Ball, 1988; FNA, 2003). It is also noteworthy that members of sect. Spirostachyae have glycoflavones in their foliage, whereas members of sect. Ceratocystis produce flavonols (Harborne, 1971; Manhart, 1990). The presence of flavonols in members of sect. Ceratocystis, a class of flavonoids otherwise rare in the genus (Harborne, 1971), seems to be, at least in part, responsible for the yellowish-green foliage of these species.

Carex fuscula, in section Spirostachyae, has reddish brown crystalline inclusions, conspicuous even to the unaided eye, in epidermal cells of both reproductive (Fig. 2C) and vegetative (Figs. 3B-C) structures. As shown in Fig. 2, numerous epider-

mal cells in the perigynia of *C. fuscula* (Fig. 2C) contain colored crystalline inclusions, whereas such inclusions are absent in perigynia from the type collections of *C. sagei* (Fig. 2A) and *C. barrosii* (Fig. 2B). Utilizing reflected (Fig. 3B) and transmitted (Fig. 3C) light, Fig. 3 shows that epidermal cells in the ventral sheaths of *C. fuscula* once again contain reddish brown crystalline inclusions, whereas such inclusions are absent from the ventral sheaths of *C. sagei* (Fig. 3A). Also of taxonomic importance, *C. fuscula* has essentially ribless perigynia (Fig. 2C), short- to long-peduncled cylindrical spikes, elliptical achenes, and short- to long-awned pistillate scales. Contrarily, examination of the holotype of *C. sagei* reveals that it has: ribbed perigynia (Figs. 2A); subglobose spikes on short peduncles (Fig. 1B), obovate achenes, and non-awned, acute to acuminate scales. Based on the morphological features just mentioned, it is abundantly clear that *C. sagei* is anomalous in sect. Spirostachyae. On the other hand, the characteristics of *C. sagei* strongly suggest it belongs in sect. Ceratocystis. Notably, chemical tests were

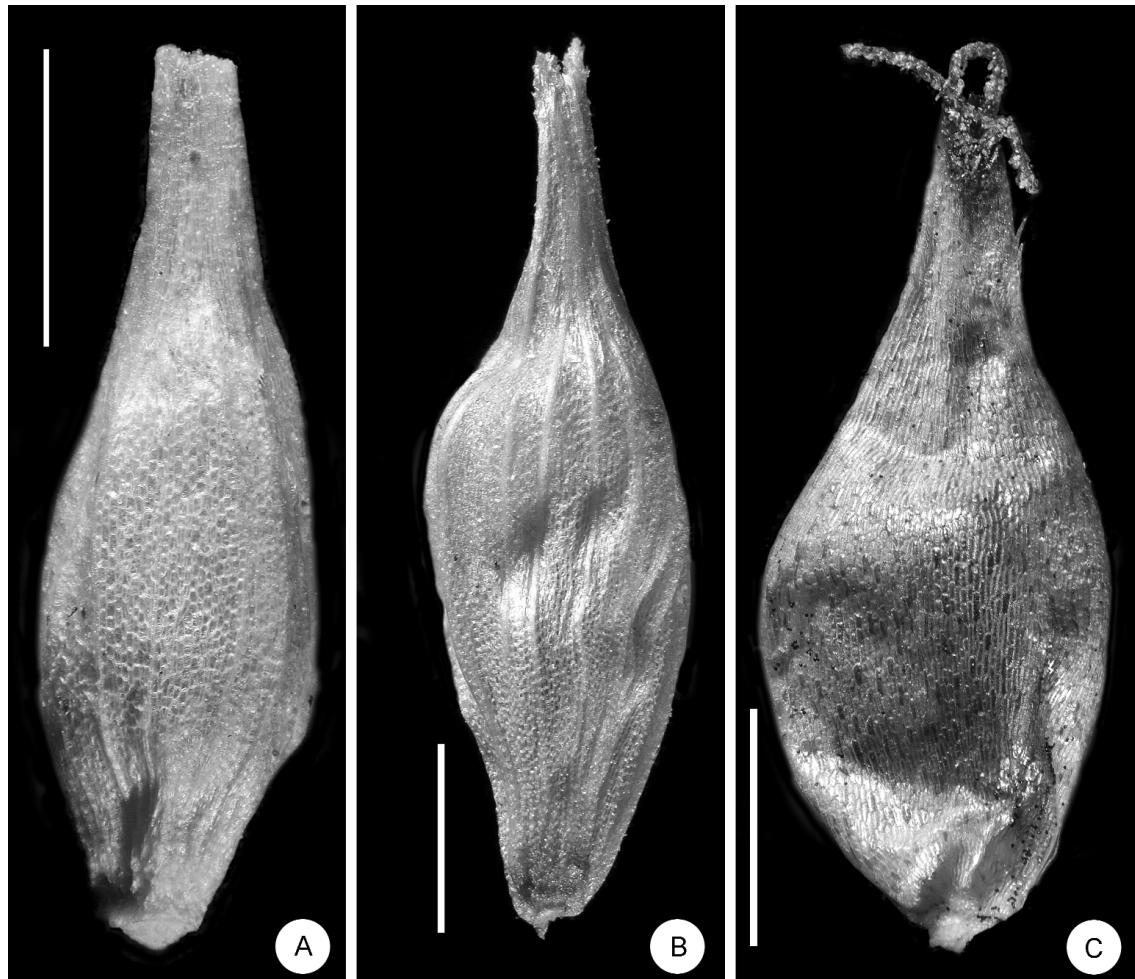


Fig. 2. *Carex*. **A**, *C. sagei*, perigynium (from C. Sage, s.n.). **B**, *C. barrosii*, perigynium (from W. J. Eyerdam & A. A. Beetle 24612). **C**, *C. fuscula*, perigynium (from A. Ruiz & F. A. Roig 15138). Bars = 1 mm.

not conducted on the holotype of *C. sagei* due to a paucity of plant material.

The type collection of *C. barrosii* Nelmes [W. J. Eyerdam & A. A. Beetle 24612 (holotype K; isotypes GH, MO, NA)] comes from the west shore of Lago Nahuel Huapi in Río Negro Province, Argentina, and most recent authors (e.g., Barros, 1969; Marticorena & Quezada, 1985; Wheeler, 1988; Guaglianone, 1996) recognize this entity as a good species (see Fig. 2B). It should be noted, however, that some workers (Kükenthal, 1909; Crins & Ball, 1988) consider the South American plants indistinct from *C. cataractae* R. Br., whose type comes from Tasmania. In the treatment below the South American entity is considered distinct

from the Australasian *C. cataractae* (sect. Ceratocystis).

In general aspect the three diminutive plants comprising the holotype of *C. sagei*, one of which (Fig. 1B) is stored in a packet not shown in Fig. 1A, superficially resemble *C. fuscula* var. *fuscula* (*sensu* Kükenthal, 1909). Of puissant taxonomic significance, however, the spikes (Fig. 1B), perigynia (compare Figs. 2A and 2B), achenes, pistillate scales, and epidermal cell structure (i.e., the absence of reddish brown crystalline inclusions; see Fig. 3A) of *C. sagei* are essentially identical to those same diagnostic features in the type collection of *C. barrosii*. Also in this regard, in an earlier paper (Wheeler, 1988) it was pointed out that

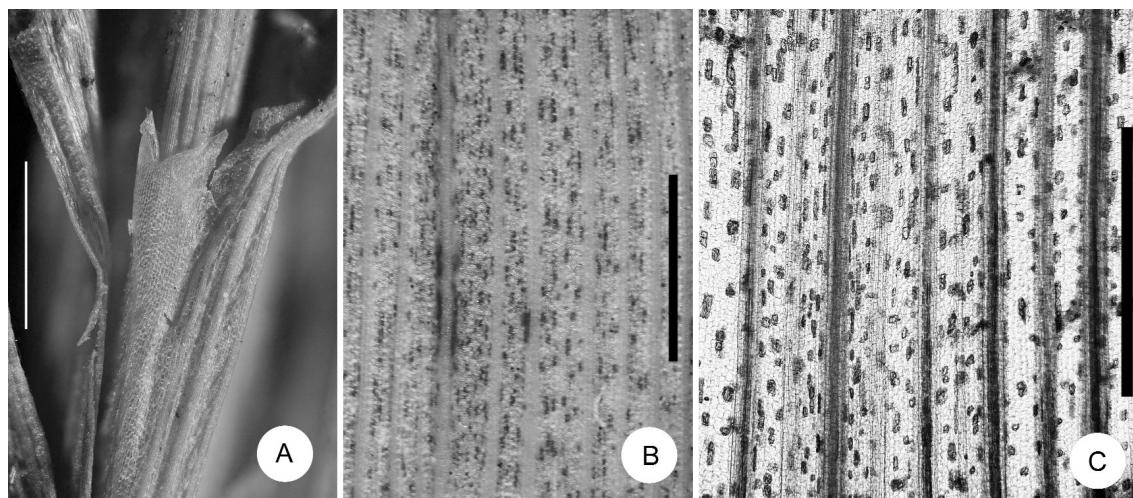


Fig. 3. *Carex*. **A**, *C. sagei*, ventral sheath (from C. Sage, s.n.). **B**, *C. fuscula*. **B**, portion of ventral sheath, in reflected light (from A. Ruiz & F. A. Roig 15138). **C**, portion of ventral sheath, in transmitted light (from A. Ruiz & F. A. Roig 15138). Bars = 1 mm.

some diminutive plants, which represented new reports of *C. sagei* (as *C. barrosii*) from Tierra del Fuego and the Falkland Islands (Islas Malvinas), were originally misidentified as *C. fuscula*.

Based on the morphological evidence presented above, and the ICBN “rule of priority,” the correct name for *C. barrosii* is *C. sagei*. Henceforth, the name *C. sagei* should appear in the floras of Argentina, Chile, and the Falkland Islands (Islas Malvinas).

Carex sagei Philippi, Anales Univ. Chile 93:494. 1896. TYPE: Chile, “Araucania,” sine data, *C. Sage* s.n. (holotype SGO-46071!).

Carex barrosii Nelmes, syn. nov., Kew Bull. 1955: 87. 1955. TYPE: Argentina, Prov. Rio Negro, west shore of Lago Nahuel Huapi, 850 m, 5-II-1939, W. J. Eyerdam & A. A. Beetle 24612 (holotype, K; isotypes, GH!, MO!, NA!).

Carex flava L. subsp. *brevirostrata* Kük., syn. nov., Bot. Jahrb. Syst. 27:545. 1899. TYPE: Chile, Concepción, s.d., Neger 22 (syntype B, destroyed). Chile, Río Maoso [sic], s.d., Reiche s.n. (syntype B, destroyed). [The correct spelling is Río Manso].

Carex sagei occurs in Argentina and Chile, where it ranges more or less continuously from

about 39°S. Lat. to 52°S. Lat., with disjunct sites also known from Tierra del Fuego and the Falkland Islands (Islas Malvinas); it is unknown, thus far, from Staten Island (Isla de los Estados). See distribution map for *C. sagei* (as *C. barrosii*) in Wheeler (1988: 130). Unfortunately, the exact location and date of collection for the holotype of *C. sagei* are unknown to me.

This species, which characteristically has yellowish-green foliage and yellowish to yellowish-brown perigynia, grows in cespitose clumps and frequents moist to wet sites, such as in marshes and meadows and along the margins of lakes. It grows from near sea level to about 850 m, and plants with mature fruit have been collected from November through March. *Carex sagei* is the only member of section Ceratocystis in austral South America, although a putative natural hybrid between *C. sagei* (as *C. barrosii*) and *C. inconspicua* Steud. has been reported (Wheeler & Zöllner, 1996:328, Figs. 10 & 11) from Valdivia Province (X Región, Los Lagos) in Chile.

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