

## NOVELTIES IN *GRINDELIA* (ASTERACEAE: ASTEREAEE) FROM SOUTH AMERICA

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**Summary:** Deble, L. P. & A. S. de Oliveira-Deble. 2010. Novelty in *Grindelia* (Asteraceae: Astereae) from South America. *Bonplandia* 19(1): 47-57. 2010. ISSN: 0524-0476.

Three new species of *Grindelia* Willd. are described and illustrated: *G. argentina*, *G. gaucha* and *G. atlantica*. The first two are related to *G. buphthalmoides* DC., and the last is allied with *G. orientalis* Bartoli, Tortosa & G. Rua. A key to separate the species of *Grindelia buphthalmoides* group is given and comments about this species, including a new synonym are also furnished.

**Key words:** taxonomy, new species, new synonym.

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Se describen e ilustran tres nuevas especies de *Grindelia* Willd.: *G. argentina*, *G. gaucha* and *G. atlantica*. Las primeras están relacionadas a *G. buphthalmoides* DC., mientras la última es afín a *G. orientalis* Bartoli, Tortosa & G. Rua. Una clave para separar las especies del grupo *Grindelia buphthalmoides* es proporcionada, así como también comentarios sobre estas especies, incluyendo una nueva sinonimia.

**Palabras clave:** taxonomía, nuevas especies, nueva sinonimia.

### Introduction

*Grindelia* Willd. is a genus of approximately 70 species, occurring within the neotropical, with disjunct distribution in xerophytic or halophytic areas in center-west of United States and south of Mexico in North America and in south of Peru, Bolivia, Chile, Uruguay, Paraguay, Argentina and south of Brazil, in South America (Cabrera, 1931; Steyermark, 1934; Bartoli & Tortosa, 1999).

During review of exsiccates, attention was drawn to several unusual specimens of *Grindelia*. Examination of herbarium material (including types) and using the last revision of the genus from South America (Bartoli & Tortosa, 1999) led us to recognize three new species and a new synonym.

Bartoli & Tortosa (1999) recognized twenty five species and two varieties in the last revision of the genus from South America, subsequent the authors described a new species from Patagonia (Bartoli & Tortosa, 2003). With the addition of these

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three new species and a new synonym, the genus now comprises twenty eight species in South America.

## Results

### 1. A new Argentinean species segregated of *Grindelia buphthalmoides*

*Grindelia buphthalmoides* DC. is characterized by glabrescent, narrowly obovate to obovate leaves, sessile or almost sessile capitula and pappus with circa 15 awns. This species was described by Candolle (1836) from Rio Grande do Sul state. Baker (1882) illustrated and cited additional collections from Uruguay. Cabrera (1931) and Bartoli & Tortosa (1999) recognized *G. buphthalmoides* from Argentina, but both works only cite the collection type «Gaudichaud 1.027» out of the Argentinean territory; however, this specimen have a few capitula and immature cypselas. Fortunately, additional Brazilian specimens are represented in herbaria including capitula with mature cypselas and a comparison of the Argentinean, Uruguayan and Brazilian exsiccates shows the necessity of deepen the knowledge about this group.

The material determined as *G. buphthalmoides* from Argentina shows many unusual morphologic characteristics includes apical leaves involving the capitula as a second involucre, herbaceous, broadly lanceolate outermost bracts and dimorphic cypselas (slightly flattened not winged in ray flowers and obovate to elliptic, strongly flattened, winged in disk flowers). The type and additional collections comparisons from Uruguay and Brazil clears the status of Argentinean species as new, being described below.

### *Grindelia argentina* Deble & Oliveira-Deble, *sp. nov.*

Fig. 1

*Grindelia buphthalmoides* auct. non DC. in Cabrera, A. L. Revista Mus. La Plata, secc. Bot. 33: 222. 1931.

*Grindelia buphthalmoides* auct. non DC. in Bartoli & Tortosa, Kurtziana 27 (2): 337. 1999.

*Grindeliae buphthalmoidi* DC. capitula sessilia, magna, setae pappi circa 15 affinis sed capitulis perquam saepis foliis superne caulinis, bracteis involucris externis foliaceis, late lanceolatis, apice attenuatis non reflectis (vs. non foliaceis, linear-lanceolatis, apice longe attenuatis, reflectis), flores disci permulta (250-300 vs. 130-150) et cypselis flores disci alatis, compressis, 6.3-7.5 mm longis (vs. cypselis angulatis, non alatis, 3.5-5.2 mm longis), differt.

*Typus:* Argentina. Buenos Aires, Part. Tornquist, Sierra de la Ventana, 09-XI-1907, C. M. Hicken 614 (holotypus SI!).

Shrub 0.8-2 m tall; stems erect, sparsely pubescent, branching sympodial, with 2-5 short branches in distal portion, up the apex dense leaf and bearing mostly solitary terminal and sessile capitula, appearing in clusters, a corymbiform capitulescence. Leaves oblong to obovate, 3.8-9.4 cm long, 1.8-4 cm wide, alternate, sessile, pinnately veined, concolorous, margin not revolute, with numerous, spinulose and curved teeth, apex obtuse to rounded, basally narrowed, frequently amplexicaul; leaf blades chartaceous, light brown, minutely glandular and sparsely capitate trichomes; upper leaves ovate to ovate-lanceolate, 1.3-2.5 cm long, 0.7-1.3 cm wide, margins with numerous or few, spinulose and curved teeth, apex acute to obtuse, base cordate and involving the capitula. Capitula sessile, with 26-41 ray flowers and 250-300 disk flowers, 5-6.5 cm diameter (including ray flowers). Involucre 13-16.5 mm long, 19-33 mm wide. Involucral bracts chartaceous and light brown, arranged in 6-7 series; herbaceous, pinnately veined, minutely trichomes in margins and sparsely trichomes glandular in outermost; darker and 4-10 parallel veined, trichomes glandular in the distal third in innermost. Outer bracts broadly lanceolate, 13-16.5 mm long, 4-6 mm wide. Median bracts lanceolate 12.5-14 mm long, 2.5-3.5 mm wide. Inner bracts elliptic-lanceolate to linear-lanceolate, 12-15 mm long, 1.5-3 mm wide. Clinanthium slightly

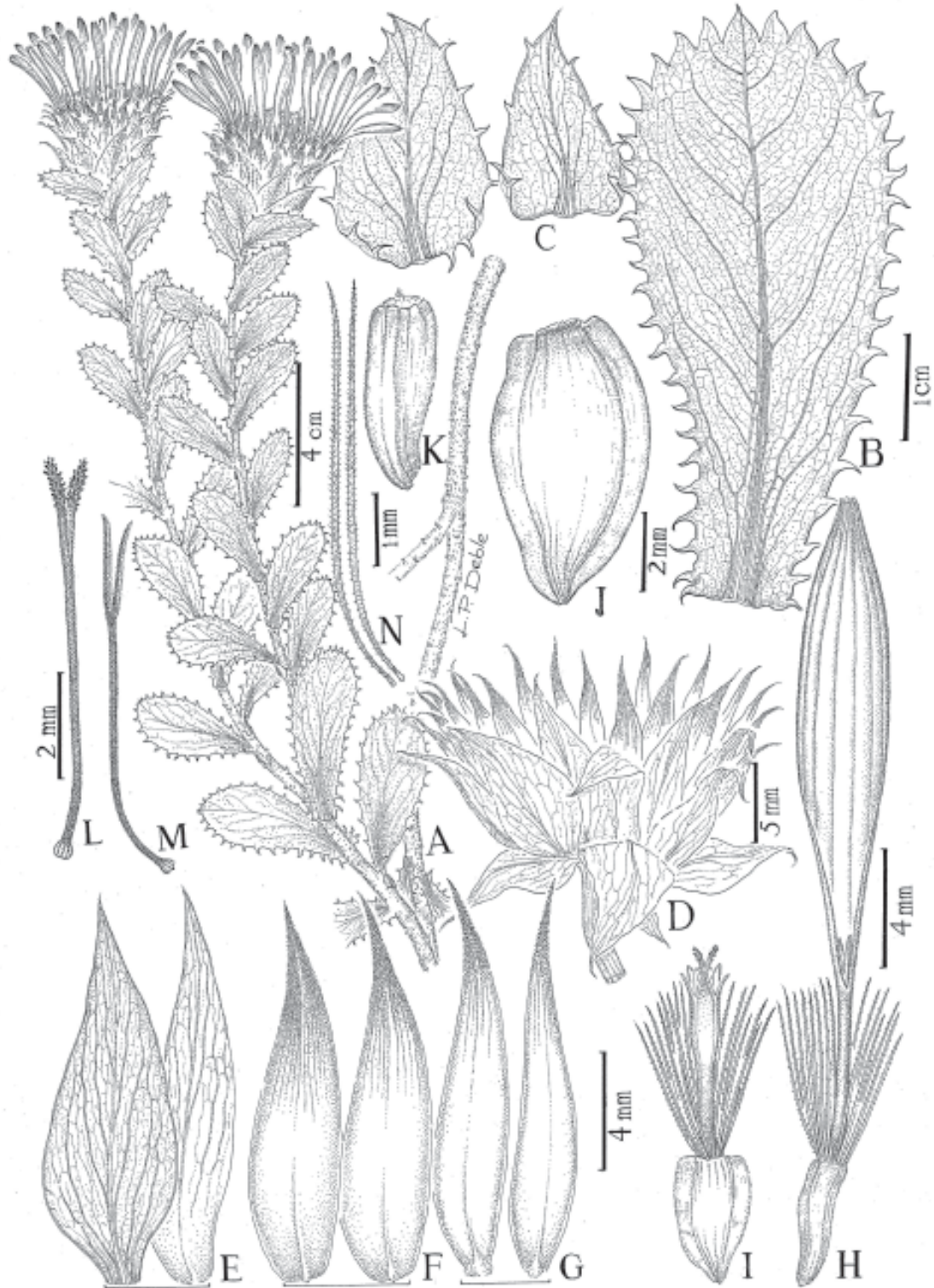


Fig. 1. *Grindelia argentina* Deble & Oliveira-Deble. A: branch. B: leaf. C: distal leaf. D: involucre. E-G: involucral bracts. E: outer. F: median. G: inner. H: ray flower. I: disk flower. J: cypselus of disk flower. K: cypselus of ray flower. L: style of disk flower. M: style of ray flower. N: awns of pappus (A-N, *Hicken 614* holotypus SI).

convex, alveolate. Ray flowers pistillate, fertile, yellow. Corolla 21-28.5 mm long, apically ligulate; ligula oblong, 15-21 mm long, 2.5-3.5 mm wide, apex slightly acute to obtuse; tube tubular, 5.3-7.2 mm long, 0.4-0.5 mm wide. Style not or slightly exceeding the tube, 5.5-7.5 mm long; branches 1.5-1.8 mm long, apex obtuse. Cypsela prismatic, 4.1-5.5 mm long, slightly flattened, not winged, dark-brown, glabrous. Disk flowers perfect, yellowish. Corolla tubular, 6-7.3 mm long; lobes 0.8-1 mm long. Style slightly exceeding the corolla, 6.5-7.8 mm long; branches 1.8-2.1 mm, with sweeping trichomes distinctly longer in the distal third, apex obtuse. Anthers 2.6-2.8 mm long. Cypsela strongly flattened, winged, obovate or broadly elliptic, 6.3-7.5 mm long. Pappus of ray and disk flowers 4.5-7 mm long; awns 13-18.

Distribution and habitat: *Grindelia argentina* occurs only in complex «Sierra Ventana» in south of Buenos Aires Province (Argentina) on upper stony grasslands and stone. Materials with flowers are collected between October-December, with fruits until April.

Conservation: *Grindelia argentina* is found in approximately 1,000 km<sup>2</sup>; the populations are restrict to upper of mountains and probably shows fragmented. Due to the restrict geographic distribution, and observed threats, it seems prudent to include *G. argentina* in the Vulnerable category of the IUCN Red List of endangered plant species according to the following criteria (IUCN, 2001): VU B1a, 2a, c(i,iii) + D1, 2.

Obs. I: *Grindelia argentina* is characterized by 4-8 apical leaves involving the capitula as a second involucre, by herbaceous outermost involucral bracts and by dimorphic cypselas, the last morphologic characteristic not occur in any other South America species. The allopatric species *Grindelia buphthalmoides* is probably most closely related to *G. argentina*, but differs by distal leaves not involving the capitula as a second involucre (vs. involving as a second involucre), by outermost involucral bracts not herbaceous (vs. herbaceous), with 1.2-1.8 mm wide (vs. 4-6 mm wide), by 130-150 disk

flowers (vs. 250-300 disk flowers) and by cypselas 3.5-5 mm long, subquadrangular, not winged in female and ray flowers (vs. 6.3-7.5 mm long, strongly flattened, winged in disk flowers).

Obs. II: Two unusual collections made in Sierra El Volcán (*Hunziker 10.132 SI!*) and Sierra Bachicha (*Grondona 7.604 BAB!*) were interpreted by Bartoli & Tortosa (1999) as *G. buphthalmoides*; however, both exsiccates display considerable variations in leaf size and shape, as well as very small capitula on short peduncles. These specimens essentially agree with *G. argentina*, but the populations are isolated approximately 300 km, and further study may prove them to be worthy of specific rank.

Obs. III: *Grindelia argentina* is sympatric with *G. pulchella* Dunal var. *discoidea* (Hook. & Arn.) Bartoli & Tortosa and *G. ventanensis* Bartoli & Tortosa; the last shows strongly flattened, winged, obovate or broadly elliptic cypselas; however is easy distinguished of *G. argentina* by prostrate habit and capitula supported by peduncle.

*Paratypes*: ARGENTINA, Buenos Aires, Part. Coronel Pringles, pie del cerro Bonete, 05-XI-1938, A. L. Cabrera 4.658 (SI); Part. Saavedra: Pigüé, cerros de Curumalán [Curumalal], 10-XI-1932, A. Burkart 4.734 (SI); Sierra Curumalal, Ea. Las Grutas, 13-X-1979, O. Boelcke 9.120 (SI); Sierra Curumalal, Ea. La Sofia, 17-XII-1981, Villamil 1.956 (SI); Part. Tornquist, Sierra de La Ventana, Spegazzini 1881 (SI); Sierra de la Ventana, 10-XI-1907, C. M. Hicken 614b (SI); Sierra de la Ventana, 12-X-1937, Rentzell 1.066 (SI); Sierra de la Ventana, 10-XI-1938, A. L. Cabrera 4.749 (SI); Sierra de la Ventana, 06-X-1939, A. L. Cabrera 5.303 (SI); valley south of pico de la Ventana, fr., 21-IV-1943, H. H. Bartlett 20.051 (SI); Sierra de la Ventana, 06-XII-1964, S. Crespo & N. M. Bacigalupo (SI 25.827); Sierra de la Ventana, hostería, 06-XII-1964, O. Boelcke & al. (SI).

## 2. A new species from Brazil related with *G. buphthalmoides*

Recently, Oliveira & al. (2005) cited

*Grindelia rupestris* from Brazil; however the analyses of additional collections was possible to recognize that the Brazilian material differs of the *G. rupestris* type, by smaller capitula supported by peduncle at maturity and outermost involucral bracts linear to linear-lanceolate, with 0.5-1 mm wide. We consider this species as new, being presently described.

***Grindelia gaucha* Deble & Oliveira-Deble, sp. nov.**

Fig. 2

*Grindeliae buphthalmoidi* DC., *foliis obovatis vel obovato oblongis, setae pappi circa 15 affinis sed capitulis minoribus, brevi pedunculatis ad pedunculatis, bracteis involucri externis 0.5-1 mm latis (vs. 1.2-1.8 mm latis), differt. A Grindeliae pulchellae* Dunal, *valde proxima, bracteis involucri pluriseriati (6-8-seriatis vs. 4-5-seriatis), pappi setis numerosi (12-18 vs. 3-6), optime distincta.*

*Typus:* Brazil. Rio Grande do Sul: São Leopoldo, «in summo», monte das Cabras, «in rupestribus dumetosis», *B. Rambo s.n.*, 31.10.1934 (*holotypus* PACA 1.748!).

Shrub 0.5-1.5 m tall; stems erect, sparsely pubescent, branching sympodial, sometimes with 2-3 short branches in distal portion; young stems sparsely to dense capitate trichomes. Leaves linear-oblong to oblanceolate, 1.4-3.8 cm long, 0.3-1 cm wide, alternate, sessile, pinnately veined, concolorous, margin not revolute, with numerous, spinulose and curved teeth, apex obtuse to acute, basally narrowed, sometimes amplexicaul; leaf blades chartaceous, greenish-brown to olive-brown minutely glandular and sparsely capitate trichomes; upper leaves lanceolate, 0.6-1.5 cm long, 0.2-0.5 cm wide, margins with numerous or few, spinulose and curved teeth, apex acute base narrowed, frequently amplexicaul; young leaves dense capitate trichomes. Capitula (short) pedunculate, with 17-23 ray flowers and ca. 100 disk flowers, 2.6-4 cm diameter

(including ray flowers). Involucre 6-9 mm long, 10-24 mm wide. Involucral bracts arranged in 6-8 series; chartaceous and greenish-brown, darker and densely punctuate glandular in the distal third, apex acute to acuminate, reflexed. Outer bracts linear to linear-lanceolate, 6-7.2 mm long, 0.5-1 mm wide. Median bracts linear-lanceolate to lanceolate 7-8.2 mm long, 1.2-2 mm wide. Inner bracts oblong-elliptic to elliptic, 7.5-9 mm long, 2-2.5 mm wide. Clinanthium slightly convex, alveolate. Ray flowers pistillate, fertile, yellow. Corolla 14-17.5 mm long, apically ligulate; ligula obovate-oblong, 10-13.5 mm long, 2.9-3.8 mm wide, apex obtuse to rounded; tube tubular, 3.5-4.5 mm long, 0.5-0.6 mm wide. Style not or slightly exceeding the tube, 4-5 mm long; branches ca. 1 mm long, apex obtuse. Disk flowers perfect, yellowish. Corolla tubular, 4.5-5.8 mm long; lobes 0.8-1 mm long. Style slightly exceeding the corolla, 5-6.3 mm long; branches ca. 1.5 mm, with sweeping trichomes distinctly longer in the distal third, apex obtuse. Anthers 2-2.2 mm long. Cypsela of ray and disk flowers subquadrangular, brownish, 3.5-4.5 mm long. Pappus of ray and disk flowers 3.5-5 mm long; awns 12-18.

Distribution and habitat: *Grindelia gaucha* occurs on arenitic stone and adjacent stony grasslands in São Leopoldo, Gravataí and Taquara cities, in northeast of Rio Grande do Sul state. Material with flowers and fruits are collected between October-December.

Conservation: *Grindelia gaucha* is found only in approximately 400 km<sup>2</sup>; the populations are fragmented and with few individuals. Due to the rarity, fragmentation of populations, and observed threats, it seems prudent to include *G. gaucha* in the Endangered category of the IUCN Red List of endangered plant species according to the following criteria (IUCN, 2001): EN B1a,b (i,ii,iii,iv), 2a,b (i,ii,iv) + D.

Etymology: The specific epithet is derived from the vernacular term “gaúcho”, which in Brazil designates the natives from the Rio Grande do Sul state.



Fig. 2. *Grindelia gaucha* Deble & Oliveira-Deble. A: branch. B: capitulum. C: leaves. D: involucre. E-G: involucral bracts. E: outer. F: median. G: inner. H: ray flower. I: disk flower. J: cypsel. K: style of ray flower. L: style of disk flower. M: awns of pappus. N: capitule trichomes (A, B, D, J, N, *Knob & Bordignon 6.537 paratypus* UNILASALLE; C, E-I, K-M, *Rambo s.n. holotypus* PACA).

Obs.: The allopatric species *Grindelia buphthalmoides* is most closely related to *G. gaucha*, but differs by capitula with 4-5 cm diameter (vs. 2.6-4 cm diameter), sessile or almost sessile (vs. supported by a peduncle at maturity), by involucre with 10-12 mm long (vs. 6-9 mm long), and by outermost involucral bracts with 1.2-1.8 mm (vs. 0.5-1 mm wide). Another similar species is the allopatric *Grindelia pulchella* Dunal, but this species shows involucral bracts arranged in 4-5 series (vs. 6-8 series) and 3-6 awns pappus (vs. 12-18 awns pappus).

*Paratypes*: **BRAZIL. Rio Grande do Sul**: Gravataí, morro Itacolomi, arbusto, 1-1.5 m alt., campo pedregoso, no topo do tabuleiro, X-1986, *M. Sobral* 5.219 (ICN); São Leopoldo, «in summo», monte das Cabras, «in rupestribus dumetosis», 07-XII-1948, *B. Rambo s.n.* (PACA 38.614); Taquara, Pega-Fogo, campo sujo, sobre morro arenítico, 0,5 m de alt., 31-X-2000, *A. Knob* 6.537 & *Bordignon* (CTES, UNILASALLE).

### 3. Geographic distribution comments and conservation to *Grindelia buphthalmoides*

In this treatment, *Grindelia buphthalmoides* is characterized by sessile or almost sessile capitula, homomorphic, prismatic and angulated cypselas. The capitula is not involved by distal leaves as a second involucre, having only one or two smaller leaves partially involving the capitula, but the involucral bracts are completely visible. Comments about *G. buphthalmoides*, including geographic distribution and synonymy are presently furnished.

#### *Grindelia buphthalmoides* DC.

De Candolle, A. P., Prodrômus 5: 316. 1836. *Typus*: Brazil, "prov. de Rio-Grande" [Rio Grande do Sul], "v. s. in h. Mus. Reg. Par. à Mus. Imp. Bras. sub. n. 1027 miss" Sellow s. n. [=M.I.B. 1027] (*holotypus* P not seen, photo SI! LP! *isotypus* R!).

*Grindelia rupestris* Bartoli, Tortosa & Marchesi, Brittonia 48 (1): 77. 1996. *Typus*: Uruguay, Departamento de Treinta y Tres, Quebrada de los Cuervos, 24-IX-1993, *D. Bayce*, *G. Speroni* & *I. Grell* (*holotypus* MVFA!). *syn. nov.*

Distribution and habitat: *Grindelia buphthalmoides* occurs only upper of mountains on stone. The geographic distribution includes the Rio Grande do Sul state in Brazil and the Treinta y Tres department in Uruguay; in Rio Grande do Sul this species is restricted to «Serra do Sudeste», having few collections known. In Uruguay, Baker (1882) cites two collections «King» and «Sellow 3.140». The first, from Maldonado (King, not seen), probably is *Grindelia orientalis* Bartoli, Tortosa & G. H. Rua. The last is from «Montevideo» and the designation «Montevideo» at that time is usual for all Uruguayan territory so much that *Grindelia buphthalmoides* possibly occurs only in Treinta y Tres department in northeast of Uruguay.

Conservation: The original geographic distribution of *Grindelia buphthalmoides* included approximately 15,000 km<sup>2</sup>; unfortunately new collections are unknown, although a great effort was made in search of species. Due to the rarity, missing populations, and observed threats, it seems prudent to include *G. buphthalmoides* in the Critically Endangered category of the IUCN Red List of endangered plant species according to the following criteria (IUCN, 2001): CR A1a,c + B2a, b(i,ii,iv,v) + C2a(ii).

Obs.: The type of *Grindelia rupestris* shows smaller leaves and more numerous pappus awns when compared with the type of *G. buphthalmoides*, but the analysis of exsiccates if observe a gradate variation and we believe that is impossible the distinction of the two taxa.

Additional specimens examined. **BRAZIL. Rio Grande do Sul**: *Gaudichaud* 1027 (R). Capão do Leão, Pedreira, s.d., *I. Edésio* (PEL). Santana da Boa Vista, Cerro do Diogo, 04-IX-1985, *Irgang* & *al. s.n.* (ICN 81.191); em vassoural sobre pedras na encosta do cerro, capítulos amarelos, IX-1985, *Sobral* & *al.* 4.276 (ICN). **URUGUAY**. s.l. *Sellow* 3.140 (R). **Treinta y Tres**: Quebrada de Los Cuervos, 24-IX-1993, *D. Bayce*, *G. Speroni* & *I. Grell* s.n. (MVFA 22.288).

#### 4. Key to species of *Grindelia* allied to *G. buphthalmoides*

1a. Capitula 5-6.5 cm diameter; involved by 4-8 apical leaves, appearing a foliose second involucre. Involucre 13-16 mm high. Outer bracts herbaceous, broadly lanceolate not reflexes in apex. Disc flowers, 250-300. Cypselas dimorphic; disk flowers cypselas strongly flattened, winged, obovate to elliptic, 6.3-7.5 mm.

*Grindelia argentina* Deble & Oliveira-Deble

1b. Capitula 2.6-5 cm diameter, rarely partially involved by 1-2 apical leaves. Involucre 6-12 mm high. Outer bracts not herbaceous, linear-lanceolate to lanceolate, long attenuate and reflexes in apex. Disc flowers 100-150. Cypselas homomorphic, subquadrangular 3.5-5.2 mm long.

2a. Leaves, including the vegetative branches, up to 8 cm long. Capitula sessile or almost sessile, 4-5 cm diameter. Involucre 10-12 mm high. Outermost involucral bracts 1.2-1.8 mm wide.

*Grindelia buphthalmoides* DC.

2b. Leaves, including the vegetative branches, up to 3.8 cm long. Capitula short pedunculate to pedunculate, 2.6-4 cm diameter. Involucre 6-9 mm high. Outermost involucral bracts 0.5-1 mm wide.

*Grindelia gaucha* Deble & Oliveira-Deble

#### 5. A new *Grindelia* from coast of Rio Grande do Sul state

Recently was analyzed by us an unusual collection made in «praia do Barro Duro», Pelotas city (*Jarenkow 1.101*); in exsiccate this material is similar with *Grindelia gaucha*, however mean «prostrate habit» in etiquette. We found the populations and was proved the prostrate habit and clears the relationships with *G. orientalis*; however the leaves are oblanceolate and the outermost involucral bracts linear to linear-lanceolate (vs. lanceolate). We consider this species as new, being presently described.

#### *Grindelia atlantica* Deble & Oliveira-Deble, *sp. nov.*

Fig. 3

*Grindeliae orientali* Bartoli, *Tortosa et G. Rua*, *habitus prostratus, setae pappi circa 5-10 affinis sed follis linear-oblanceolatis ad oblanceolatis (vs. obovatis ad spatulatis), 2.1-6.3 cm longis, 0.3-1.2 cm latis (vs. 1.8-3.5 cm longis, 0.5-1.5 cm latis), bracteis involucri externis linear-filiformis ad linear-lanceolatis (vs. lanceolatis ad elliptico-lanceolatis), 7.8-9.2 mm longis, 0.6-1 mm latis (vs. 6-7 mm longis, 1-1.2 mm latis), differt.*

*Typus:* Brazil. Rio Grande do Sul: Pelotas, praias do Barro Duro e Laranjal, subarbusto muito ramificado, prostrado, 0.1-0.2 m de altura, fl., *L. P. Deble & Oliveira-Deble 9.555*, 31-X-2007 (*holotypus* CTES!, *isotypi* SI! MBM!).

Shrub 0.1-0.3 m tall; stems 40-100 cm long, prostrate, radican, sparsely pubescent, branching sympodial, sometimes with 3-5 short branches in distal portion. Leaves linear-oblanceolate to oblanceolate, 2.1-6.3 cm long, 0.3-1.2 cm wide, alternate, sessile, pinnately veined, concolorous, margin not revolute, with numerous, spinulose and curved teeth, apex acute, basally narrowed; leaf blades chartaceous, greenish-brown to yellowish-brown, densely glandular and sparsely capitate trichomes; upper leaves lanceolate, 1.5-2 cm long, 0.4-0.5 cm wide, margins with numerous or few, spinulose and curved teeth, apex acute base obtuse. Capitula pedunculate, with 21-33 ray flowers and ca. 130 disk flowers, 4-5 cm diameter (including ray flowers). Involucre 10-14 mm long, 15-28 mm wide. Involucral bracts arranged in 6-7 series; chartaceous and greenish-brown, darker and densely punctuate glandular in the distal third, apex acute to acuminate, reflexed, margin glandular. Outer bracts linear-filiform to linear-lanceolate, 7.8-9.2 mm long, 0.6-1 mm wide. Median bracts linear-lanceolate





Fig. 3. *Grindelia atlantica* Deble & Oliveira-Deble. A: branch. B: leaves. C: involucre. D-F: involucral bracts. D: outer. E: median. F: inner. G: ray flower. H: disk flower. I: cypsel. J: awns of pappus. K: style of ray flower. L: style of disk flower (A-L, Deble & Oliveira-Deble 9.555 holotypus CTES).

7.5-9 mm long, 1-1.5 mm wide. Inner bracts elliptic-lanceolate, 7.2-8.5 mm long, 1.8-2.2 mm wide. Clinanthium slightly convex, alveolate. Ray flowers pistillate, fertile, yellow. Corolla 16-19 mm long, apically ligulate; ligula obovate-oblong, 11.5-14.5 mm long, 2.8-4.5 mm wide, apex obtuse to rounded; tube tubular, 4-4.5 mm long, 0.5-0.6 mm wide. Style not or slightly exceeding the tube, 4.5-6 mm long; branches 1.4-1.9 mm long, apex obtuse. Disk flowers perfect, yellowish. Corolla tubular, 4.8-5.5 mm long; lobes 0.8-1 mm long. Style (slightly) exceeding the corolla, 5-7.3 mm long; branches ca. 1.5-1.8 mm, with sweeping trichomes distinctly longer in the distal third, apex obtuse. Anthers 2 mm long. Cypsela of ray and disk flowers subquadrangular, brownish, 4-5 mm long. Pappus of ray and disk flowers 3-5 mm long; awns 5-10.

Distribution and habitat: *Grindelia atlantica* occurs on sand soils and dunes in Pelotas and Tramandaí cities in coast of Rio Grande do Sul state. In Pelotas this species is frequent in «Praia do Barro Duro» and «Laranjal» near to «Laguna dos Patos», while in Tramandaí *G. atlantica* occurs on dunes, near to Atlantic ocean; *G. atlantica* flower intensely during the spring, material with flowers and fruits may be collected between October-February.

Conservation: *Grindelia atlantica* is found in approximately 400 km<sup>2</sup>, the populations are vigorous, with many individuals and occurring inclusive in antropic areas; however since its area of occurrence is smaller than 5,000 km<sup>2</sup>, its area of occupancy is smaller than 500 km<sup>2</sup> it seems prudent to include *G. atlantica* in the Endangered category of the IUCN Red List of endangered plant species according to the following criteria (IUCN, 2001): EN B1a,c(i), 2a,b(iii,iv), c(iii).

Etymology: The specific epithet refers to Atlantic coast, place where grows the species.

Obs. I: The populations of *Grindelia*

*orientalis* are isolated more than 400 km of *G. atlantica*; both species are entirely related, although *G. orientalis* shows obovate to spatulate leaves (vs. linear-oblongate to oblongate leaves), with 1.8-3.5 cm long, 0.5-1.5 cm wide (vs. 2.1-6.3 cm long, 0.3-1.2 cm wide) and outermost involucral bracts lanceolate to elliptic-lanceolate (vs. linear-filiform to linear-lanceolate), with 6-7 mm long, 1-1.2 mm wide (vs. 7.8-9.2 mm long, 0.6-1 mm wide).

Obs. II: *Grindelia atlantica* is sympatric with *G. puberula* Hook. & Arn., both species form dense populations in «Praia do Barro Duro» and «Laranjal»; no hybrids were observed.

Paratypes: **BRAZIL. Rio Grande do Sul:** Pelotas, praias do Barro Duro e Laranjal, subarbusto muito ramificado, prostrado, 0.2 m de altura, fl., *L. P. Deble & Oliveira-Deble 9.556*, 31-X-2007 (CTES); idem, subarbusto prostrado, fl., fr., *L. P. Deble & Oliveira-Deble 10.054*, 20-II-2008 (CTES); idem, erva prostrada, em restinga, capítulos amarelos, *Jarenkow 1.101*, 19-XII-1988 (PEL); Tramandaí, em dunas próximo ao mar, fl., fr., *L. P. Deble & Oliveira-Deble 9.557*, 22-XI-2007 (CTES).

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