

**THE GENUS *SISYMBRIUM* IN SOUTH AMERICA, WITH SYNOPSES
OF THE GENERA *CHILOCARDAMUM*, *MOSTACILLASTRUM*, *NEUONTOBOTRYS*,
AND *POLYPSECADIUM* (BRASSICACEAE)**

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Abstract. Al-Shehbaz, I. A. 2006. The genus *Sisymbrium* in South America, with synopses of the genera *Chilocardamum*, *Mostacillastrum*, *Neuontobotrys*, and *Polypsecadium* (Brassicaceae). *Darwiniana* 44(2): 341-358.

Based on extensive molecular and morphological data, all of the native South American species previously assigned to *Sisymbrium* (tribe Sisymbrieae) are assigned to the genera *Chilocardamum*, *Mostacillastrum*, *Neuontobotrys*, and *Polypsecadium* of the tribe Schizopetaleae (Brassicaceae). A key distinguishing these four genera is presented. For each genus, a revised synopsis, an expanded generic description, a key to species, and an enumeration of all taxa is given. *Polypsecadium zoellneri* is described as a new species from northern Chile, and its distinguishing characters from its nearest relative *P. gilliesii* are discussed. The following 36 new combinations are proposed: *Chilocardamum castellanosii*, *C. longistylum*, *C. onuridifolium*, *Mostacillastrum andinum*, *M. carolinense*, *M. commune*, *M. dianthoides*, *M. ferreyrae*, *M. gracile*, *M. leptocarpum*, *M. morrisonii*, *M. oleraceum*, *M. orbignyanum*, *M. pectinifolium*, *M. sagittatum*, *M. subscandens*, *M. ventanense*, *M. weberbaueri*, *Neuontobotrys choiquense*, *N. frutescens*, *N. grayana*, *N. lanata*, *N. mendocina*, *N. polyphylla*, *N. tarapacana*, *Polypsecadium adscendens*, *P. arnottianum*, *P. brasiliense*, *P. effusum*, *P. gilliesii*, *P. litorale*, *P. llatasii*, *P. magellanicum*, *P. rusbyi*, *P. solidagineum*, and *P. tucumanense*.

Keywords. Brassicaceae, *Chilocardamum*, *Mostacillastrum*, *Neuontobotrys*, *Polypsecadium*, *Sisymbrium*, South America.

Resumen. Al-Shehbaz, I. A. 2006. El género *Sisymbrium* en Sudamérica, y sinopsis de los géneros *Chilocardamum*, *Mostacillastrum*, *Neuontobotrys* y *Polypsecadium* (Brassicaceae). *Darwiniana* 44(2): 341-358.

Sobre una amplia base de datos moleculares y morfológicos, todas las especies nativas de Sudamérica previamente incluidas en *Sisymbrium* (tribu Sisymbrieae), se reasignan a los géneros *Chilocardamum*, *Mostacillastrum*, *Neuontobotrys* y *Polypsecadium*, de la tribu Schizopetaleae (Brassicaceae). Se presenta una clave para diferenciar estos cuatro géneros, y para cada uno de ellos se incluye una sinopsis actualizada, una descripción ampliada, una clave para las especies y una enumeración de todos sus taxones. Se describe *Polypsecadium zoellneri*, una nueva especie del norte de Chile, y se discuten sus caracteres distintivos frente a *P. gilliesii*, la especie más próxima. Se proponen 36 nuevas combinaciones: *Chilocardamum castellanosii*, *C. longistylum*, *C. onuridifolium*, *Mostacillastrum andinum*, *M. carolinense*, *M. commune*, *M. dianthoides*, *M. ferreyrae*, *M. gracile*, *M. leptocarpum*, *M. morrisonii*, *M. oleraceum*, *M. orbignyanum*, *M. pectinifolium*, *M. sagittatum*, *M. subscandens*, *M. ventanense*, *M. weberbaueri*, *Neuontobotrys choiquense*, *N. frutescens*, *N. grayana*, *N. lanata*, *N. mendocina*, *N. polyphylla*, *N. tarapacana*, *Polypsecadium adscendens*, *P. arnottianum*, *P. brasiliense*, *P. effusum*, *P. gilliesii*, *P. litorale*, *P. llatasii*, *P. magellanicum*, *P. rusbyi*, *P. solidagineum* y *P. tarapacanam*.

Palabras clave. Brassicaceae, *Chilocardamum*, *Mostacillastrum*, *Neuontobotrys*, *Polypsecadium*, *Sisymbrium*, Sudamérica.

INTRODUCTION

Fournier (1865) was the first to monograph *Sisymbrium* L., but his delimitation of the genus was so broad that his 166 species are presently assigned to more than 25 genera (Warwick et al., 2006). Schulz (1924, 1936) retained about 80 species in

Sisymbrium and transferred nearly as many to several segregates. Most of Schulz's segregate genera were based on single characters, and subsequent authors (e.g., Romanczuk, 1981, 1982; Boelcke & Romanczuk, 1984; Al-Shehbaz, 1988, 1989, 1990a, 1990b; Weigend & Förther, 1999; Scappini et al., 2004) often questioned their vali-

dity and delimited *Sisymbrium* more broadly than did Schulz (1936). As delimited by all these authors, the only characters shared among the species of *Sisymbrium* are the presence of linear fruits and incumbent cotyledons. However, these two characters occur in more than 50 other genera of the Brassicaceae, and they alone are totally unreliable for the circumscription of genera. Based on critical morphological studies, a number of South American *Sisymbrium* species have already been transferred to genera such as *Eremodraba* O.E. Schulz (Al-Shehbaz, 1990a), *Dictyophragmus* O. E. Schulz (Al-Shehbaz, 1991, 2006), *Neuontobotrys* O.E. Schulz (Al-Shehbaz, 2004a), *Weberbaueria* Gilg & Muschl. (Al-Shehbaz, 2004b), *Chilocardamum* O.E. Schulz and *Mostacillastrum* O.E. Schulz (Appel & Al-Shehbaz, 2003), and *Pennellia* Nieuwl. (Bailey et al., 2007), but the vast majority of species remain in *Sisymbrium*.

Based on extensive molecular (Warwick et al., 2002, 2006) and morphological (Warwick & Al-Shehbaz, 2003) phylogenetic studies, *Sisymbrium* consists of about only 40 species, all except *S. linifolium* Nutt. (North America) are native to the Old World. *Sisymbrium* s.str. is characterized by having yellow flowers, strongly 2-lobed stigmas, often pinnately divided but never auriculate or amplexicaul cauline leaves, and simple or no trichomes. These synapomorphies are supported by the phylogenetic studies. By contrast, almost all of the South American species assigned thus far to *Sisymbrium* have white to lavender or purple flowers, entire stigmas, undivided and/or auriculate (rarely pinnately lobed) cauline leaves, and often branched trichomes, or rarely the plants are glabrous. On the basis of phylogenetic studies, the occurrence in a few South American species of yellowish flowers or slightly 2-lobed stigmas certainly evolved independently of that in the Old World species of *Sisymbrium*. As shown by Al-Shehbaz et al. (2006), the Old World *Sisymbrium* belong to the tribe Sisymbrieae DC., whereas all of the South American species previously placed in that genus belong to the tribe Schizopetaleae R.Br.

During work on the Brassicaceae for the Checklist of the Southern Cone, and based on the recent molecular phylogenies mentioned above and an on-going extensive molecular phylogeny of the tribe Schizopetaleae, it became evident that a com-

prehensive synopsis is needed for the species previously assigned to *Sisymbrium* in that region. Fortunately, this work was facilitated by my visit in 2005 to several key herbaria in Argentina and Chile, as well as by the examination of extensive South American material on loan from all of the major North American and European herbaria.

The present study assigns the native South American taxa formerly included in *Sisymbrium* to four genera of tribe Schizopetaleae: *Chilocardamum* O.E. Schulz, *Mostacillastrum* O.E. Schulz, *Neuontobotrys* O.E. Schulz, and *Polypsecadium* O.E. Schulz. This is due to the fact that molecular studies have demonstrated that *Sisymbrium* is not monophyletic, and is restricted to the Old World (with only one North American species). Therefore, the South American taxa are to be placed in those other cited genera, and consequently many (36) new combinations are proposed.

Key to genera

1. Seeds biseriate (rarely subseriate); stigma in fruit considerably wider than style (except in *P. litorale* and *P. llatasii*); cauline leaves long petiolate (petiole 1-7 cm long); plants 1-8 m tall (sometimes shorter in some plants of *P. arnottianum* and *P. magellanicum*) *Polypsecadium*
1. Seeds uniseriate; stigma in fruit often narrower than style (except *N. berningeri*); cauline leaves sessile or short petiolate (petiole rarely to 1 cm long); plants often less than 0.5 m (except a few spp. of *Mostacillastrum*) 2
- 2(1). Leaves grass-like, parallel-veined, entire; filament and petal bases often pubescent or minutely papillate; sepals pubescent with branched (dendritic or forked) trichomes *Chilocardamum*
2. Leaves not grass-like, reticulate-veined, entire to dentate or pinnately lobed; filament and petal bases glabrous (pubescent in some *Mostacillastrum*); sepals glabrous or pubescent with simple trichomes usually mixed with dendritic ones 3
- 3 (2). Plants glabrous or with simple trichomes, sometimes with stalked, 2-rayed (forked) trichomes; fruit septum usually 1-4-veined; fruits (2.5-)3.5-10 cm long, neither strongly falcate nor strongly recurved; fruiting pedicels divaricate to ascending (reflexed in some populations of *M. orbignyanum*) *Mostacillastrum*
3. Plants with dendritic trichomes at least on leaves and sepals, rarely glabrescent; fruit septum not veined; fruits to 0.5-3 cm long (to 5.5 cm in *N. robusta* and

N. frutescens), often strongly falcate and/or strongly recurved; fruiting pedicels strongly reflexed or recurved, rarely divaricate and straight

..... *Neuontobotrys*

CHILOCARDAMUM O.E. Schulz in Engler, Pflanzenr. IV. 105 (Heft 86): 179. 1924. Type species: *C. patagonicum* (Speg.) O. E. Schulz.

Dimitria Ravenna, Anal. Mus. Hist. Nat. Valparaiso 5: 91. 1972. Type species: *D. onuridifolia* Ravenna.

Herbs perennial, with a well-developed woody caudex covered with leaf remains of previous years. Trichomes stalked, dendritic, sometimes mixed with simple or 2-rayed ones. Stems erect, simple, rarely branched. Basal leaves sessile, rosulate, simple, entire, awl-shaped or linear and grass-like, thick, parallel-veined; cauline leaves sessile, not auriculate at base, similar to basal ones but smaller, glabrous or pubescent. Racemes several to many flowered, dense or lax, ebracteate, corymbose, elongated slightly in fruit; rachis straight; fruiting pedicels slender, ascending to divaricate. Sepals oblong, ascending to spreading, equal, pubescent with dendritic or forked trichomes; petals white, obovate to spatulate or oblong; claw distinct, basally pubescent or minutely papillate; stamens 6, slightly tetradynamous; filaments wingless, unappendaged, basally pubescent or minutely papillate, free; anthers oblong; nectar glands confluent, subtending bases of all filaments; ovules 30-54 per ovary. Fruit dehiscent, capsular siliques, linear, terete, sessile or short stipitate, unsegmented; valves with a prominent midvein and obscure lateral veins, glabrous, not torulose; replum rounded; septum complete; style distinct, to 4 mm long; stigma capitate, entire, narrower than style. Seeds uniseriate, wingless or rarely distally winged, oblong; cotyledons incumbent.

A genus of four species restricted to Patagonia.

Observations. Schulz (1924, 1936) distinguished *Chilocardamum* from *Sisymbrium* solely by having spreading instead of erect or ascending sepals, but this character alone is totally unreliable in generic delimitation because both states occur within many genera of the family (Appel & Al-Shehbaz, 2003). However, there are several signi-

ficant differences between the two genera that justify their recognition as independent. *Chilocardamum* has white flowers, entire stigmas, basally pubescent or minutely papillate filaments and petal claws, dendritic trichomes sometimes mixed with simple or two-rayed ones, and grass-like, linear or awl-shaped, thick, parallel-veined leaves. By contrast, *Sisymbrium* has yellow flowers, 2-lobed stigmas, basally glabrous filaments and petal claws, simple or no trichomes, and flat, thin, divided or toothed, reticulate-veined leaves. *Chilocardamum* is closely related to *Mostacillastrum* O.E. Schulz, from which it differs by having leaves with parallel (vs. reticulate) venation, dendritic trichomes (vs. exclusively simple trichomes, or plants glabrous), and pubescent or papillate (vs. glabrous) bases of filaments and petal claws.

Except for having a very short raceme, *Dimitria* Ravenna (Ravenna, 1972) is indistinguishable from *Chilocardamum* in every other morphological aspect. Appel and Al-Shehbaz (2003) united the two genera and recognized *Chilocardamum* as a Patagonian genus of four species, of which three remained in *Sisymbrium*.

Key to species of *Chilocardamum*

1. Leaves ciliate with simple and stalked 2-rayed trichomes (0.4-)0.6-1.3 mm long; fruiting racemes shorter or hardly exceeding basal leaves
..... *C. onuridifolium*
1. Leaves glabrous or with minute dendritic trichomes often less than 0.2 mm long; fruiting racemes often borne well above basal leaves. 2
- 2(1). Sepals reflexed or widely spreading; basal parts of petal claws and filaments pubescent with branched trichomes *C. patagonicum*
2. Sepals erect to ascending; basal parts of petal claws and filaments minutely papillate. 3
- 3(2). Seeds wingless; fruits 0.7-1 mm wide; sepals 3.5-4 mm long; petals 4-5 mm long
..... *C. longistylum*
3. Seeds winged at least distally; fruit 1.7-2.5 mm wide; sepals 2-2.5 mm long; petals 2-3.5 mm long
..... *C. castellanosii*

Chilocardamum castellanosii (O. E. Schulz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium castellanosii* O. E. Schulz, Repert. Spec. Nov. Regni Veg. 33: 190. 1933. TYPE: Argentina. Chubut: Trelew-Tecka, *Illin* 3715 (holotype BA, not seen).

Distribution. Argentina (Chubut, Río Negro).

Chilocardamum longistylum (Romanczuk)

Al-Shehbaz, comb. nov. Basionym: *Sisymbrium longistylum* Romanczuk, *Parodiana* 1(1): 12. 1981. TYPE: Argentina. Chubut: Depto. Tehuelches, Nueva Lubecka, Ea. Laurita, 18-XI-1946, *A. Soriano 2118* (holotype BAA!).

Distribution. Argentina (Chubut).

Chilocardamum onuridifolium (Ravenna) Al-

Shehbaz, comb. nov. Basionym: *Dimitria onuridifolia* Ravenna, *Anal. Mus. Hist. Nat. Valparaíso* 5: 92. 1972. *Sisymbrium onuridifolium* (Ravenna) Romanczuk, *Parodiana* 1(1): 7. 1981. TYPE: Argentina. Santa Cruz: Depto. Deseado, Tehuelches, ca. 300 m, 4-X-1929, *A. Donat 172* [neotype SI! designated by Romanczuk, *Parodiana* 1(1): 7. 1981].

Distribution. Argentina (Chubut, Santa Cruz).

Chilocardamum patagonicum (Speg.) O.E.

Schulz in Engler, *Pflanzenr.* IV. 105(Heft 86): 180. 1924. *Sisymbrium patagonicum* Speg., *Revista Fac. Agron. Univ. Nac. La Plata* 3(30-31): 492. 1897. TYPE: Argentina. Santa Cruz: near Lago Argentino, 1884, *C. Ameghino s.n.* (holotype LP, not seen; isotype BAA!).

Sisymbrium flexicaule Dusén, *Ark. Bot.* 7(2): 22. 1908. *Thelypodium flexicaule* (Dusén) Gilg & Muschl., *Bot. Jahrb. Syst.* 42: 438. 1909. TYPE: Argentina. Santa Cruz: Puerto San Julian, Richmond, 6-VI-1905, *P. Dusén 5490* (lectotype here designated, S!; isolectotypes K!, SI!, UPS!).

Distribution. Argentina (Chubut, Santa Cruz).

Observations. Of the two syntypes cited by Dusén (1908), the one designated herein as the lectotype (*Dusén 5490*) is more complete and is represented by more duplicates.

MOSTACILLASTRUM O. E. Schulz in Engler, *Pflanzenr.* IV. 105(Heft 86): 166. 1924. Lectotype species here designated. *M. stenophyllum* (Gillies ex Hook. & Arn.) O. E. Schulz.

Phlebiophragmus O. E. Schulz in Engler, *Pflanzenr.* IV. 105 (Heft 86): 165. 1924. Type species: *P. macrorrhizus* (Muschl.) O. E. Schulz.

Herbs perennial or rarely annual, with a woody caudex or base. Trichomes absent or simple, sometimes forked, never dendritic. Stems erect to ascending, rarely decumbent, simple or branched basally and/or apically. Basal leaves petiolate, rosulate or not, simple, entire or dentate to pinnately lobed, reticulately veined; cauline leaves petiolate or sessile, sometimes auriculate to sagittate, entire or dentate, rarely pinnately lobed to pinnatisect. Racemes several or many flowered, ebracteate, corymbose, elongated slightly or considerably in fruit; fruiting pedicels slender or thickened, ascending to divaricate, very rarely reflexed. Sepals ovate to oblong, deciduous, glabrous, erect to spreading, equal, base of inner pair not saccate; petals white, rarely lavender or yellowish, ascending or spreading, obovate, spatulate, or oblanceolate, apex obtuse; claw distinct, glabrous; stamens 6, slightly tetradynamous; filaments unappendaged, glabrous or rarely pubescent, free; anthers oblong; nectar glands confluent, subtending bases of all stamens; ovules 30-80(-140) per ovary. Fruits dehiscent siliques, linear, terete, unsegmented; valves with a prominent midvein and often distinct marginal veins, smooth or rarely torulose; replum rounded; septum complete, often distinctly 1-4-veined; style distinct; stigma capitate, entire or slightly 2-lobed, narrower in diameter than style. Seeds uniseriate, wingless, oblong to ovate, minutely or rarely coarsely reticulate, not mucilaginous when wetted; cotyledons incumbent.

A genus of 17 species distributed from southern Peru and Bolivia, south into Patagonian Argentina and Chile.

Observations. Schulz (1924, 1936) did not select a generic type from the three species he recognized in the genus, but he distinguished *Mostacillastrum* from the other related genera by having petal claws as broad as the blade. However, the only species that has such petals is *M. stenophyllum*, and it is designated herein as the lectotype.

Schulz (1924, 1936) separated *Mostacillastrum* from both *Sisymbrium* and *Phlebiophragmus* O. E. Schulz mainly by having petal claws as broad as

(vs. narrower than) the blade, and he distinguished *Phlebiophragmus* from *Sisymbrium* by having 2-4-veined (vs. veinless) fruit septum. However, two of the three species he recognized in *Mostacillastrum* have slender or filiform claws, and many species he assigned to *Sisymbrium* have fruit septum similar to those of *Phlebiophragmus*. An examination of extensive material of *Mostacillastrum* and *Phle-*

biophragmus immediately reveals that the two are indistinguishable in every morphological character. Both genera were simultaneously published by Schulz (1924). Appel & Al-Shehbaz (2003) placed *Phlebiophragmus* in the synonymy of *Mostacillastrum* and, therefore, this genus has priority (see Article 11.5 in McNeill & al., 2006 - Vienna Code). Fifteen new combinations are here proposed.

Key to species of *Mostacillastrum*

1. Uppermost leaves sessile, auriculate to sagittate 2
1. All leaves petiolate, neither auriculate nor sagittate. 7
- 2(1). All leaves linear to narrowly linear-lanceolate, entire. *M. dianthoides*
2. At least some leaves linear-oblong, ovate, to lanceolate, entire or dentate to pinnately lobed 3
- 3(2). Middle cauline leaves pinnately lobed, glabrous; plants of Peru *M. weberbaueri*
3. Middle cauline leaves entire or dentate, glabrous or pubescent; plants of Argentina and Chile 4
- 4(3). Plants subshrubs, stems woody at least above base; leaves glabrous, entire, linear-oblong *M. carolinense*
4. Plant herbaceous, sometimes with a woody caudex; leaves pubescent or glabrous, entire or dentate, variously shaped 5
- 5(4). Stems several to numerous from base; fruits tortuous, 1.5-3(-4.5) cm long *M. andinum*
5. Stems 1 or rarely few from base; fruits not tortuous, (4-)5-10 cm long 6
- 6(5). Fruiting pedicels thickened, 4-10(-13) mm long; fruits 4-6(-7) cm long; ovules 40-70 per ovary; seeds narrowly oblong (1.4-)1.6-2 mm long; at least middle cauline leaves pinnately lobed *M. commune*
6. Fruiting pedicels slender, (7-)10-22(-27) mm long; fruits (5-)7-11(-12) cm long; ovules 90-140 per ovary; seeds ovate, 0.7-1 mm long; middle leaves dentate or entire, rarely lobed. *M. sagittatum*
- 7(1). Basal and middle cauline leaves entire or dentate 8
7. Basal and middle cauline leaves pinnately lobed to pinnatisect. 12
- 8(7). Middle and upper cauline leaves linear to filiform; fruit septum obscurely 1-veined 9
8. Middle and upper cauline leaves ovate, lanceolate or oblanceolate; fruit septum prominently 1-3-veined. 10
- 9(8). Fruits (0.8-)1-2(-2.8) cm long; fruiting pedicels ascending to divaricate; sepals spreading; petals 4.5-7(-8) mm long, claw nearly as wide as blade *M. stenophyllum*
9. Fruits (3.5-)4-6(-7) cm long; fruiting pedicels strongly reflexed to divaricate; sepals ascending; petals 4-5 mm long, claw much narrower than blade *M. orbignyanum*
- 10(8). Plants annual; seeds 0.8-1.1 mm long, coarsely reticulate, with 150-200 muri on each side *M. ferreyrae*
10. Plant perennial; seeds 1.3-1.7 mm long, minutely reticulate, with 600-700 muri on each side 11
- 11(10). Plants glabrous; flowers yellowish; fruits 3-4.5 cm long *M. oleraceum*
11. Plants densely pubescent; flowers white; fruits 5-6.5 cm long. *M. morrisonii*
- 12(7). Fruit septum prominently 2-4-veined; seeds 0.7-1 mm long 13
12. Fruit septum somewhat broadly 1-veined; seeds 1.5-2.5 mm long. 14
- 13(12). Leaves pectinate, adaxially sulcate, with some branched trichomes; sepals 1.8-2.5 mm long; petals 2.5-3.5 mm long *M. pectinifolium*
13. Leaves pinnatifid to pinnatisect, adaxially flat, with simple trichomes; sepals 3-4 mm long; petals 4-5.5 mm long. *M. gracile*
- 14(13). Fruits erect, appressed to rachis; petals 2-3 mm long. *M. ameghionii*
14. Fruits not appressed to rachis; petals 3.5-5.5 mm long 15
- 15(14). Stems herbaceous; filaments and petal bases glabrous *M. leptocarpum*
15. Stems woody at base; filaments and petal bases pubescent. 16
- 16(15). Fruiting raceme corymbose, hardly elongated in fruit; leaves glabrous; Buenos Aires *M. ventanense*
16. Fruiting raceme elongated considerably in fruit; leaves usually pubescent with simple and branched trichomes; La Pampa to Patagonia *M. subscandens*

Mostacillastrum ameghinoi (Speg.) O. E. Schulz in Engler, Pflanz. IV. 105(Heft 86): 168. 1924. *Sisymbrium ameghinoi* Speg., Anales Mus. Nac. Hist. Nat. Buenos Aires 7: 217. 1902. TYPE: Argentina. Chubut: Río Chico, 1900, *C. Ameghino* (holotype LP, not seen; isotype B!).

Distribution. Argentina (Chubut, Santa Cruz).

Mostacillastrum andinum (Phil.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium andinum* Phil., Linnaea 28: 665. 1856. *Hesperis andina* (Phil.) Kuntze, Revis. Gen. Pl. 2: 934. 1891. TYPE: Chile. Laguna Malvarco, 1855, *P. Germain s.n.* (lectotype SGO 45137!), designated by Muñoz Pizarro, Las especies de plantas descritas por R. A. Philippi en el Siglo XIX, p. 63. Santiago de Chile: Universidad de Chile, 1960).

Sisymbrium corymbosum Phil., Linnaea 28: 666. 1856. *Sisymbrium amplexicaule* Phil. var. *corymbosum* (Phil.) Reiche, Fl. Chile 1: 73. 1896. *Hesperis corymbosa* (Phil.) Kuntze, Revis. Gen. Pl. 2: 934. 1891. TYPE: Chile. Santiago, *R.A. Philippi s.n.* (holotype SGO 49245!).

Sisymbrium andinum Phil. var. *latifolium* Phil., Anal. Univ. Chile 81: 188. 1892. TYPE: Chile. Valle Hermoso, Cordillera de Linares, I-1872, *R.A. Philippi s.n.* (holotype SGO 45136!).

Sisymbrium consanguineum Phil. ex Reiche, Fl. Chile 1: 75. 1896. *Sisymbrium corymbosum* Phil. var. *consanguineum* (Phil. ex Reiche) O.E. Schulz in Engler, Pflanz. IV. 105(Heft 86): 65. 1924. TYPE: Chile. Cordillera de Santiago, Valle Largo, II-1982, 2700 m, *R.A. Philippi s.n.* (holotype SGO 71623!).

Sisymbrium morenoanum Chodat & Wilczek, Bull. Herb. Boiss. Ser. 2, 2: 291. 1902. *Sisymbrium andinum* Phil. var. *morenoanum* (Chodat & Wilczek) O.E. Schulz in Engler, Pflanz. IV. 105(Heft 86): 64. 1924. TYPE: Argentina. Mendoza: Vallée du Río Atuel, Cajón de Burro, 2600 m, I-II-1897, *E. Wilczek 438* (holotype G!; isotype US!).

Sisymbrium morenoanum Chodat & Wilczek var. *robustum* Chodat & Wilczek, Bull. Herb. Boiss. Ser. 2, 2: 291. 1902. TYPE: Argentina. Mendoza: Pasto Mollar, Río Atuel, 2200 m, *E. Wilczek 437* (holotype G!).

Distribution. Argentina (Mendoza, Neuquén), Chile (Región IV, V, Metropolitana de Santiago).

Mostacillastrum carolinense (Scappini, C.A.

Bianco & Prina) Al-Shehbaz, Scappini, C.A. Bianco & Prina, comb. nov. Basionym: *Sisymbrium carolinense* Scappini, C.A. Bianco & Prina, Darwiniana 42: 304. 2004. TYPE: Argentina. San Luis: Depto. Pringles: La Carolina, 22-XI-2001, *E. Scappini & C. Bianco 5316* (holotype RIOCI!).

Distribution. Argentina (San Luis).

Mostacillastrum commune (Speg.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium sagittatum* Hook. & Arn. var. *commune* Speg., Anal. Soc. Ci. Argent. 47: 169. 1901. *Sisymbrium commune* (Speg.) Romanczuk, Parodiana 1(1): 21. 1981. TYPE: Argentina. Santa Cruz: "Secus río Sant Cruz", 1874, *C. Berg s.n.* [lectotype LP 10451, designated by Romanczuk, Parodiana 1(1): 22. 1981].

Sisymbrium sagittatum Hook. & Arn. var. *purpurascens* Speg., Anal. Soc. Ci. Argent. 47: 169. 1901. TYPE: Argentina. "Prope Chonkenk-aik, secus río Chiel", II-1898, *C. Ameghino s.n.* (holotype LP, not seen).

Sisymbrium sagittatum Hook. & Arn. var. *exauriculatum* Speg., Anales Mus. Nac. Hist. Nat. Buenos Aires 7: 215. 1902. *Sisymbrium andinum* Phil. var. *exauriculatum* (Speg.) O.E. Schulz in Engler, Pflanz. IV. 105(Heft 86): 64. 1924. TYPE: Argentina. "Prope Chonkenk-aik, secus río Chiel", 1898, *C. Ameghino s.n.* (holotype LP, not seen).

Sisymbrium sagittatum Hook. & Arn. var. *normalis* Speg., Anales Mus. Nac. Hist. Nat. Buenos Aires 7: 215. 1902. TYPE: Argentina. Not seen.

Distribution. Argentina (Chubut, Mendoza, Neuquén, Río Negro, San Juan, Santa Cruz), Chile (Región IV, V, Metropolitana de Santiago).

Mostacillastrum dianthoides (Phil.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium dianthoides* Phil., Anales Mus. Nac. Chile, Sect. 2 Bot. 8: 2. 1891. TYPE: Chile. Between Isma and Huasco, 3600 m, 28-II-1885, *F. Philippi 1828* (holotype SGO 63190!).

Sisymbrium arequipanum Al-Shehbaz, Ann. Missouri Bot. Gard. 76: 1176. 1989, syn. nov. TYPE: Peru. Arequipa: Pichu Pichu, sandy hillside, 5-I-1937, 13,500 ft, ca. 4110 m, *Dora Staford 6674* (holotype F!; isotype K!).

Distribution. Argentina (Jujuy), Chile (Región I, II), Peru (Arequipa).

Observations. Since the description of the Peruvian endemic *Sisymbrium arequipanum* (Al-Shehbaz, 1989), more material of *Mostacillastrum dianthoides* from Argentina, Chile, and Peru have become available for my study, and it is clear that a single species is involved.

Mostacillastrum ferreyrae (Förther & Weigend) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium ferreyrae* Förther & Weigend, Brittonia 51: 120. 1999. TYPE: Peru. Arequipa: Prov. Caravelí, Loma vegetation, ca. 3 km E of Km 655 of Pan-American Hwy South, sandy and rocky slopes 350-960 m, 4-X-1997, *M. Weigend* & *H. Förther* 97/739 (holotype MSB!; isotypes F!, NY!, USM, not seen).

Distribution. Chile (Región II), Peru (Arequipa).

Mostacillastrum gracile (Wedd.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium gracile* Wedd., Ann. Sci. Nat. Bot. Ser. 5, 1: 288. 1864. *Heterothrix gracilis* (Wedd.) O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 297. 1924. *Pennellia gracilis* (Wedd.) O.E. Schulz in Engler & Harms, Die Naturl. Pflanzenfam., ed. 2, 17B: 644. 1936. TYPE: Peru. Cordillera de Tacora, 1851, *H. A. Weddell* s.n. (lectotype, designated by Macbride, Publ. Field Mus. Nat. Hist. Bot. Ser. 13(2): 976. 1938, P!; isolectotypes BAA!, P!).

Thelypodium macrorrhizum Muschl., Bot. Jahrb. Syst. 40: 268. 1908. *Phlebiophragmus macrorrhizus* (Muschl.) O. E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 165. 1924. *Sisymbrium macrorrhizum* (Muschl.) J. F. Macbr., Candollea 5: 355. 1934. TYPE: Peru. Between Airampal and Pampa de Arrieros, Arequipa-Puno road, 3200-3400 m, 25-VIII-1902, *A. Weberbauer* 1395 (lectotype, here designated, B!).

Erysimum ramosissimum Muschl., Bot. Jahrb. Syst. 40: 273. 1908. *Phlebiophragmus macrorrhizus* var. *ramosissimum* (Muschl.) O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 166. 1924. *Sisymbrium macrorrhizum* var. *ramosissimum* (Muschl.) J.F. Macbr., Publ. Field Mus. Nat. Hist. Bot. Ser. 13(2): 978. 1938. TYPE: Peru. Pampa de Arrieros, between Arequipa and Puno, 3700-3800 m, 17-III-1905, *A. Weberbauer* 4847 (holotype B!).

Sisymbrium meyenii O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 76. 1924. *Phlebiophragmus macrorrhizus* var. *meyenii* (O.E. Schulz) O.E. Schulz, Bot. Jahrb. Syst. 66: 98. 1933. *Sisymbrium macrorrhizum* var. *meyenii* (O.E. Schulz) J.F. Macbr., Publ. Field Mus. Nat. Hist. Bot. Ser. 13(2): 978. 1938. TYPE: Peru. Puno: Pisacoma, *Meyen* s.n. (holotype B!).

Distribution. Chile (Región I, II, IV), Peru (Arequipa, Junín, Lima, Moquegua).

Observations. Muschler (1908) cited two collections in the original description of *Thelypodium macrorrhizum*, both of which were examined. The more complete specimen is designated herein as the lectotype.

Mostacillastrum leptocarpum (Hook. & Arn.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium leptocarpum* Hook. & Arn., Bot. Miscell. 3: 139. 1833. *Hesperis leptocarpa* (Hook. & Arn.) Kuntze, Revis. Gen. Pl. 2: 934. 1891. TYPE: Cordillera of Chile, *H. Cuming* 315 (holotype K!).

Sisymbrium gayanum Barn. in Gay, Fl. Chil. 1: 122. 1846. TYPE: Chile. Prov. Coquimbo: "entre las rocas del lugar llamado Malpaso, en la cordillera de Guanta", C. Gay 328 (holotype P!).

Sisymbrium hastatum Phil., Anales Univ. Chile 36: 160. 1870. *Sisymbrium andinum* Phil. var. *hastatum* (Phil.) O.E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 11: 229. 1931. TYPE: Argentina. Mendoza: en la falda de los Andes, I-1870, *E. Reed* s.n. (holotype SGO 63184!).

Sisymbrium andinum Phil. var. *juncalense* O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 63. 1924. TYPE: Chile. Juncal, Uspallata Pass, 2300 m, 5-V-1903, *O. Buchtien* s.n. (holotype B!; isotypes GH!, M!, S!, SI!, UC!, US!).

Distribution. Argentina (Mendoza, San Juan), Chile (Región IV, V, Metropolitana de Santiago).

Mostacillastrum morrisonii (Al-Shehbaz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium morrisonii* Al-Shehbaz, Ann. Missouri Bot. Gard. 77: 219. 1990. TYPE: Peru. Arequipa: 8 km S Mollendo, 28-IX-1938, *C. R. Worth* & *J. L. Morrison* 15729 (holotype UC!).

Distribution. Known only from the type gathering.

Mostacillastrum oleraceum (O.E. Schulz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium oleraceum* O.E. Schulz in Engler, Pflanz. IV. 105(Heft 86): 74. 1924. TYPE: Peru. Without locality, *Tafalla s.n.* (holotype B!).

Distribution. Peru (Cuzco).

Mostacillastrum orbignyana (E. Fourn.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium orbignyana* E. Fourn., Recherch. Crucif. 107. 1865. *Hesperis orbignyana* (E. Fourn.) Kuntze, Revis. Gen. Pl. 2: 935. 1891. TYPE: Bolivia. Without locality, *D'Orbigny 1349* (holotype P!, isotype BAA!).

Mostacillastrum elongatum O.E. Schulz in Engler, Pflanz. IV. 105(Heft 86): 167. 1924, syn. nov. *Sisymbrium elongatum* (O.E. Schulz) Romanczuk, Darwiniana 24: 105. 1982, not *S. elongatum* (Ehrhart) Engler, Exkurs.-Fl. Bayern 223. 1884. TYPE: Argentina. La Rioja: Sierra Famatina, Pié de la Cuesta, más arriba del Vallecito, 15-20-I-1879, *G. Hieronymous & G. Niederlein 715* (lectotype, here designated, B!; isolectotypes BAA!, G!).

Mostacillastrum elongatum O.E. Schulz var. *latissiliqueum* O.E. Schulz in Engler, Pflanz. IV. 105(Heft 86): 167. 1924. TYPE: Argentina. Catamarca: Rio Cuesta de la Escabra, *Schickendantz 106* (holotype B!; isotype BAA!).

Distribution. Argentina (Catamarca, Córdoba, Jujuy, La Pampa, La Rioja, Mendoza, Salta, San Juan, San Luis, Santiago del Estero, Tucumán), Bolivia (La Paz, Oruro, Potosí).

Observations. Schulz (1924), who did not examine the type of *Sisymbrium orbignyana*, indicated that the species might belong to *Phlebiophragmus*, but he did not transfer it to that genus nor did he maintain it in *Sisymbrium*. By contrast, Romanczuk (1982), also did not examine the type but placed its plants within *S. elongatum*. A comparison of all syntypes that Schulz cited under *Mostacillastrum elongatum* with the holotype of *S. orbignyana* reveals that the plants are indistinguishable in every aspect except for the orientation of fruiting pedicels. The type of *S. orbignyana* has reflexed fruits and

fruiting pedicels, whereas the lectotype of *M. elongatum* has both reflexed and up-curved fruiting pedicels. In my opinion, the orientation of fruiting pedicels alone does not justify the recognition of two taxa especially because this character varies within a given population. Of the three syntypes cited by Schulz (1924) for *M. elongatum*, the more complete specimen annotated by his hand writing is designated herein as the lectotype.

Mostacillastrum pectinifolium (Al-Shehbaz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium pectinifolium* Al-Shehbaz, Harvard Pap. Bot. 2: 14. 1990. TYPE: Peru. Arequipa: Morro Verde, 18 km above Yura by rail, 2820 m, 14-XI-1963, *R. M. Straw 2380* (holotype US!; isotype MO!).

Distribution. Chile (Región I, II), Peru (Arequipa, Tacna).

Mostacillastrum sagittatum (Hook. & Arn.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium sagittatum* Hook. & Arn., Bot. Misc. 3: 139. 1833. *Hesperis sagittata* (Hook. & Arn.) Kuntze, Revis. Gen. Pl. 2: 935. 1891. *Sophia sagittata* (Hook. & Arn.) Macloskie, Rep. Princeton Univ. Exp. Patagonia, Bot. 8: 449. 1905. TYPE: Chile. Región V: Valparaíso, *H. Cuming 429* (holotype K!).

Sisymbrium volckmannii Phil., Anales Univ. Chile 41: 669. 1872. TYPE: Chile. Región IX: Culpulhue, *D.G. Volckmann s.n.* (holotype SGO 63182!).

Sisymbrium ciliatum Phil., Anal. Univ. Chile 81: 186. 1892. *Sisymbrium sagittatum* Hook. & Arn. var. *ciliatum* (Phil.) Speg., Anal. Mus. Nac. Hist. Nat. Buenos Aires 7: 216. 1902. TYPE: Chile. Región III: cerca del puerto de Caldera, en la Quebrada de los Leones, *G. Geisse s.n.* (lectotype, here designated, SGO 71694!).

Sisymbrium fruticosum Reiche, Anales Univ. Chile 94: 622. 1896. TYPE: Chile. Liman, Sep. 1893, *F. Philippi s.n.* (holotype SGO 63211!).

Distribution. Chile (Región II, III, IV, V, Metropolitana de Santiago).

Observations. Of the two sheets of *S. ciliatum* that were collected by Geisse, SGO 71694 is selected as the lectotype because it is most complete and better fits the original description.

Mostacillastrum stenophyllum (Gillies ex Hook. & Arn.) O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 168. 1924. *Sisymbrium stenophyllum* Gillies ex Hook. & Arn., Bot. Misc. 3: 139. 1833; *Hesperis stenophylla* (Gillies ex Hook. & Arn.) Kuntze, Revis. Gen. Pl. 2: 935. 1891. TYPE: Argentina. "Córdoba. Las Achiras, province of Córdoba (3000 feet), El Porlezuelo de la Casa de Piedra, (7000 feet), Dr. Gillies", *Gillies s.n.* (lectotype, designated by Romanczuk, Darwiniana 24: 102. 1982, K!; isolectotype OXF, not seen).

Distribution. Argentina (Córdoba, La Rioja, Mendoza, San Luis, Santiago de Estero. Tucumán).

Mostacillastrum subscandens (Speg.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium subscandens* Speg., Anal. Soc. Ci. Argent. 47: 169. 1899. *Sophia subscandens* (Speg.) Macloskie, Rep. Princeton Univ. Exp. Patagonia, Bot. 8: 450. 1905. *Descurainia subscandens* (Speg.) Gilg & Muschl., Bot. Jahrb. Syst. 42: 487. 1909. TYPE: Argentina. Río Negro: "In dumetis secus Río Negro, prope Carmen de Patogones", II-1898, *C. Spegazzini s.n.* (holotype LP, not seen).

Erucastrum obtusangulum Hiernon., Bol. Acad. Nac. Ci. Cordoba 3(4): 7. 1880, non Rchb., Fl. Germ. Excurs. 2: 693. 1932. TYPE: Argentina. "Patagonia meseta", 18-IX-1874, *C. Berg 17* (holotype B!; isotype CORD, not seen).

Distribution. Argentina (La Pampa, Neuquén, Río Negro).

Mostacillastrum ventanense (Boelcke) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium ventanense* Boelcke in Cabrera, Fl. Prov. Buenos Aires 4(3): 355. 1967. Based on *S. perenne* Speg., Contr. Estud. Fl. Sierra de la Ventana 14. 1896, non Steudel, Nomencl. Ed. 2, 2: 594. 1841. TYPE: Argentina. Buenos Aires: Tornquist, Sierra de la Ventana, Cerro Tres Picos, XI-1895, *C. Spegazzini s.n.* (holotype LP, not seen).

Distribution. Argentina (Buenos Aires).

Mostacillastrum weberbaueri (O.E. Schulz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium weberbaueri* O.E. Schulz, Publ. Field Mus. Nat. Hist. Bot. Ser. 8: 80. 1930. TYPE: Peru. Moquegua: Mts. between Moquegua and Torata, rocky areas, 21 Mar. 1925, 1900 m, *A. Weberbauer 7425* (holotype F!).

Distribution. Known only from the type collection.

NEUONTOBOTRYS O. E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 176. 1924. Type species: *N. linearifolia* (Kuntze) Al-Shehbaz.

Plants subshrubs, woody at base, rarely perennial herbs. Trichomes often a mixture of simple, stalked forked, and dendritic, rarely absent or one type present. Stems erect to ascending, few to many, woody at base, often many branched above. Basal leaves absent; cauline leaves numerous, sessile, often fleshy and becoming leathery upon drying, petiolate or sessile and auriculate or not at base, rarely sagittate or amplexicaul, entire or coarsely dentate, rarely pinnatisect, reticulately veined. Racemes several to many flowered, lax, ebracteate, corymbose, elongated considerably in fruit; fruiting pedicels slender, strongly recurved or reflexed, rarely divaricate or ascending and straight, persistent. Sepals oblong, free, deciduous, erect to ascending, subequal, margin not membranous; petals yellow drying reddish, rarely white or pink, oblanceolate-linear, apex obtuse; claw slightly narrower than blade, glabrous; stamens 6, erect, slightly tetradynamous; filaments glabrous, free, dilated at base; anthers linear or linear-oblong, apiculate or not at apex; nectar glands confluent, subtending bases of all stamens; ovules 20-70 per ovary. Fruit dehiscent siliques, often short linear to linear-oblong, terete, unsegmented; valves thickened, leathery, with a prominent midvein and obscure to distinct lateral veins, glabrous or pubescent, smooth or rarely torulose; replum rounded; septum complete, veinless; style obsolete or distinct and to 2.5 mm long; stigma capitate, entire, narrower or very rarely wider than the style. Seeds uniseriate, wingless or rarely distally winged, oblong to ovoid, plump, not mucilaginous when wetted; cotyledons incumbent.

A genus of 11 species distributed from southern Peru southwards into Patagonian Argentina and Chile.

Key to species of *Neuontobotrys*

- 1. All leaves distinctly auriculate, sagittate, or amplexicaul at base 2
- 1. Leaves neither auriculate nor sagittate at base, rarely uppermost minutely auriculate in *N. berningeri* 6
- 2(1). Fruiting pedicels erect or ascending, rarely divaricate; fruits straight or slightly curved, often subappressed to rachis 3
- 2. Fruiting pedicels often strongly recurved or reflexed; fruits often strongly curved, not appressed to rachis. 4
- 3(2). Middle and upper cauline leaves entire, glabrous, glaucous *N. grayana*
- 3. Middle and upper cauline leaves dentate, often densely pubescent, rarely glabrescent, not glaucous *N. lanata*
- 4(2). Leaves entire, narrowly lanceolate, 1-2 mm wide; petals sparsely pubescent outside *N. elloanensis*
- 4. Leaves dentate, broadly ovate to ovate-lanceolate, 4-10(-20) mm wide; petals glabrous on outside. 5
- 5(4). Plants glabrescent; petals 4-6 mm long; anthers 1-1.2 mm long; seeds (2-)2.5-3 mm long; fruits 2.5-5 cm long *N. mendocina*
- 5. Plants densely pubescent; petals 6-8 mm long; anthers 1.7-2.7 mm long; seeds 1.2-1.8 mm long; fruits 0.7-2(-2.5) cm long. *N. tarapacana*
- 6(1). Leaves 1- or 2-pinnatisect. *N. choiquense*
- 6. Leaves entire or rarely dentate. 7
- 7(6). Leaves long petiolate, dentate or rarely subentire; plants with dendritic trichomes *N. frutescens*
- 7. Leaves sessile or subsessile, entire; plants glabrous or with simple or forked trichomes. 8
- 8(7). Fruits (2-)2.8-4.5(-5.5) cm long; seeds distally winged; sepals 6-9 mm long; petals 10-15 x 3-4 mm *N. robusta*
- 8. Fruits 0.8-2 cm long; seeds wingless; sepals 3-4(-5) mm long; petals 4-7 x 0.8-2 mm 9
- 9(8). Plants papillate; leaves flat, 2-5(-6) mm wide; fruits 2-3 mm wide; seeds 1.5-2.5 mm long. *N. polyphylla*
- 9. Plants pubescent with simple trichomes; leaves subterete, 1-1.5 mm wide; fruits 1-1.5 mm wide; seeds 0.6-0.9 mm long 10
- 10(9). Raceme 10-20-flowered; style slender, 1-2.5 mm long; stigma narrower than style; petals 4-5.5 mm long; leaves not auriculate. *N. linearifolia*
- 10. Raceme 20-40-flowered; style stout, to 1 mm long; stigma distinctly wider than style; petals ca. 7 mm long; coarser leaves minutely auriculate *N. berningeri*

Neuontobotrys berningeri O.E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 11: 392. 1932. *Sisymbrium berningeri* (O.E. Schulz) Baehni & J.F. Macbride, Candollea 7: 295. 1937. TYPE: Chile. Pachia-Aico, 15-IV-1927, *C. Troll 3327* (lectotype, designated by Al-Shehbaz, Novon 14: 254. 2004, B!; isotypes B!, M!).

Distribution. Chile (Región I).

Neuontobotrys choiquense (Romanczuk) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium choiquense* Romanczuk, Parodiana 1(1): 17. 1981. TYPE: Argentina. Mendoza: Depto. Malargüe, Portezuelo del Choique, 2400 m, XI-1948, *Martínez Crovetto & Piccinini 7215* (holotype BAB, not seen).

Distribution. Argentina (Mendoza, Neuquén).

Neuontobotrys elloanensis Al-Shehbaz, Novon 14: 254. 2004. TYPE: Chile. Región II (Antofagasta): Prov. El Loa, NE of Calama, along the road from near Chiu Chiu to Caspana, ca. 46 km from its turnoff from the Calma-Chiu Chiu road, arid scrubland, 22°20'36"S, 68°15'30"W, 3500 m, 10-IV-1994, *C. M. Taylor & A. Pool 11552* (holotype MO!).

Distribution. Chile (Región II).

Neuontobotrys frutescens (Gillies ex Hook. & Arn.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium frutescens* Gillies ex Hook. & Arn., Bot. Miscell. 3: 139. 1833. *Hesperis frutescens* (Gillies ex Hook. & Arn.) Kuntze, Revis. Gen. Pl. 2: 934. 1891. TYPE: Argentina. Mendoza: Jarillal, on way to Villavicencio, IX-1924, *Gillies s.n.* (holotype K!).

Sisymbrium catamarcense Romanczuk, Darwiniana 24: 136. 1982, syn. nov. TYPE: Argentina. Catamarca: Depto. Tinogasta, Quebrada La Troya, 1890 m, 23-II-1950, *J. Hunziker & O. Caso 4043* (holotype BAB, not seen; isotype BAA!).

Sisymbrium tomentosum Romanczuk, Darwiniana 24: 132. 1982, syn. nov. TYPE: Argentina. Catamarca: Depto. Tinogasta, between Chaschuil and Fiambalá, 20-II-1947, *O'Donell & Meyer 5132* (holotype LIL, not seen).

Sisymbrium tomentosum Romanczuk var. *pauciovulatum* Romanczuk, Darwiniana 24: 134. 1982, syn. nov. TYPE: Argentina. Catamarca: Depto. Tinogasta, Angostura de Guanchín, 25-I-1930, *Castellanos s.n.* (holotype BA 30/147, not seen).

Distribution. Argentina (Catamarca, La Rioja, Mendoza).

Observations. The differences between the taxa above rest primarily on leaf shape and density of indumentum. However, these are among the most unreliable features in the genus. For instance, *Neuontobotrys tarapacana* shows far greater variability than that for which Romanczuk (1982) gave as separate species status (as *Sisymbrium*) within the *N. frutescens* complex.

Neuontobotrys grayana (Baehni & J.F. Macbr.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium grayanum* Baehni & J.F. Macbr., Candollea 7: 295. 1937. *Sisymbrium amplexicaule* A. Gray, U.S. Expol. Exped., Phan. Pacific N. Amer., 15(1): 61. 1854, non *S. amplexicaule* Desf., Fl. Atlant. 2: 81. 1798, nec *S. amplexicaule* Phil., Fl. Atacam. 8: 10. 1860. *Hesperis amplexicaulis* Kuntze, Revis. Gen. Pl. 2: 934. 1891. TYPE: Peru. Andes, between Caball and Obrajillo, *Capt. Wilkes Expedition 1838-1842* (holotype GH!; isotype K!).

Sisymbrium amplexicaule A. Gray var. *tenuicaule* O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 58. 1924. *S. grayanum* Baehni & J.F. Macbr. var. *tenuicaule* (O.E. Schulz) Baehni & J.F. Macbr., Candollea 7: 296. 1937. TYPE: Peru, western slopes of the Andes, between 13° and 14°S, above Pisco, between Huauyanga and Pampano, V-1910, 1000-1200 m, *A. Weberbauer 5378* (holotype B!; isotypes F!, G!, GH!).

Distribution. Peru (Lima).

Neuontobotrys lanata (Walp.) Al-Shehbaz, comb. nov. Basionym: *Arabis lanata* Walp., Nov. Act. Nat. Cur. 19(Suppl. 1): 248. 1843. *Sisymbrium lanatum* (Walp.) O.E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 11: 641. 1932. TYPE: Peru. Tacora, ca. 15,000 ft., 1830-1832, *F. J. F. Meyen s.n.* (holotype B?, not seen).

Sisymbrium fragile Wedd., Ann. Sci. Nat. Bot. V. 1: 288. 1864. *Hesperis fragilis* (Wedd.) Kuntze, Revis. Gen. Pl. 2: 934. 1891. *Sisymbrium lanatum* (Walp.) O.E. Schulz var. *fragile* (Wedd.) O.E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 11: 642. 1932. TYPE: Peru. Tacora, *H. A. Weddell s.n.* (holotype P!).

Sisymbrium foliosum Phil., Linnaea 33: 10. 1864, non Hook.f. & Thomson, J. Proc. Linn. Soc., Bot. 5: 160. 1861. *Hesperis foliosa* Kuntze, Revis. Gen. Pl. 2: 934. 1891. *Sisymbrium donnarrosae* Martic., Gayana (Bot.) 57(2): 191. 2002 (2001). TYPE: Chile, Cordillera de Doña Rosa de los Andes de Coquimbo, *R. A. Philippi s.n.* (holotype SGO-63187!).

Sisymbrium andinum Phil. var. *pubescens* Phil. ex Reiche, Fl. Chile 1: 77. 1896. *Sisymbrium pubescens* (Phil. ex Reiche) O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 64. 1924. TYPE: Chile, *R. A. Philippi s.n.* (holotype SGO?, not seen).

Sisymbrium pubescens (Phil. ex Reiche) O.E. Schulz var. *glabrescens* O.E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 10: 469. 1928. TYPE: Chile. Prov. Tarapacá, Depto. Tarapacá, Cordillera Quebrada de Quipisca, Noasa, ca. 3500 m, III-1926, *E. Werdermann 1062* (holotype B!; isotypes CAS!, F!, G!, GH!, MO!, SI!, UC!, US!).

Distribution. Chile (Región I, II, III, IV, Metropolitana de Santiago), Peru (Arequipa, Tacna).

Observations. The name *Sisymbrium donnarrosae* was proposed by Marticorena (2001) to replace the later homonym *S. foliosum* Phil., but the earliest specific epithet for the species is *lanatum* (see above). An examination of the types or photos of authentic collections reveals that the above synonyms represent a single species, variable primarily in leaf pubescence and margin. Such highly variable leaf morphology lead Schulz (1924, 1928, 1932) to treat variants of this single species in *S. fragile*, *S. pubescens*, *S. foliosum*, and *S. lanatum*.

Neuontobotrys linearifolia (Kuntze) Al-Shehbaz, Novon 14: 254. 2004. Basionym: *Hesperis*

linearifolia Kuntze, Revis. Gen. Pl. 3(2): 6. 1898. Based on *Sisymbrium linifolium* Philippi, Vezeichn, Pfl. Tarap. 2. 1891, non (Nutt.) Nutt. in Torrey & A. Gray, Fl. N. Amer. 1: 91. 1838. *Neuontobotrys linifolia* O. E. Schulz, Pflanzenr. IV. 105(Heft 86): 176. 1924. TYPE: Chile. Cuesta de Jaiña, en los límites del valle Pampa del Tamarugal, *R. A. Philippi s.n.* (lectotype, here designated, SGO 49250!; isotypes BAA!, SGO 63214!).

Distribution. Chile (Región I, III).

Observation. Of the two sheets of *Sisymbrium linifolium* at SGO, the more complete one is designated herein as the lectotype.

Neuontobotrys mendocina (Romanczuk) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium mendocinum* Romanczuk, Darwiniana 24: 125. 1982. TYPE: Argentina. Mendoza: Depto. Malargüe, Portezuelo Colorado, 15-I-1941, *Castellanos s.n.* (holotype BA 36701, not seen).

Distribution. Argentina (Mendoza), Chile (Región Metropolitana de Santiago).

Neuontobotrys polyphylla (Phil.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium polyphyllum* Phil., Anales Mus. Nac. Chile 2: 2. 1891. TYPE: Argentina. Catamarca: “inter Vega del Diablo y Colorados”, 4000 m, I-1885, *F. Philippi s.n.* (holotype SGO 49258!).

Distribution. Argentina (Catamarca), Chile (Región I).

Neuontobotrys robusta (Chodat & Wilczek) Al-Shehbaz, Novon 14: 254. 2004. Basionym: *Sisymbrium robustum* Chodat & Wilczek, Bull. Herb. Boissier, ser. 2, 2: 290. 1902. TYPE: Argentina. Mendoza: Vallée du Rio Atuel, 2000(2100 m, I-II-1897, *E. Wilczek 450* (holotype G!; isotype BAA!).

Distribution. Argentina (Mendoza, Neuquén, San Juan).

Neuontobotrys tarapacana (Phil.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium tarapa-*

canum Phil., Anales Mus. Nac. Chile, Bot. 2: 3. 1891. TYPE: Chile. Pica, en el Médano, II-1885, *F. Philippi s.n.* (lectotype, here designated, SGO 71485!).

Sisymbrium philippianum I. M. Johnst., Rev. Chil. Hist. Nat. 33: 26. 1929. Based on *S. amplexicaule* Phil., Fl. Atac. 8: 10. 1860, non A. Gray, U.S. Explor. Exped. Wilkes, Bot. XV. 61. 1854. TYPE: Chile. Atacama, Pajonal, [23°46'S 3170 m], *R. A. Philippi s.n.* (lectotype, designated by Al-Shehbaz, Novon 14: 256. 2004, SGO 49243!; isotype BAA!).

Sisymbrium foliosum Phil., Linnaea 33: 10. 1864, non J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 5: 160. 1861. *Hesperis foliosa* Kuntze, Revis. Gen. Pl. 2: 934. 1891. TYPE: Chile, Cordillera de Doña Rosa de los Andes de Coquimbo, *R. A. Philippi s.n.* (holotype SGO 63187!).

Arabis tarapacana Phil., Anal. Mus. Nac. Chile, Bot. 2: 4. 1891. TYPE: Chile. Tarapacá, Sibaya, 17-III-1885, *C. Rahmer s.n.* (holotype SGO 63197!).

Cardamine deserticola Phil., Anal. Univ. Chile 81: 86. 1892. *Neuontobotrys deserticola* (Phil.) Al-Shehbaz, Novon 14: 256. 2004. TYPE: Chile. “Deserto Atacama ad fontem Acerillos”, X-1877, *O. Villanueva 1606* (holotype SGO 63889!; isotype BAA!).

Sisymbrium intricatissimum var. *brachycarpum* O.E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 10: 468. 1928. TYPE: Chile. Prov. Antofagasta: Depto. Taltal, Cord. Volcán Lullailaco, ca. 3500 m, II-1926, *E. Werdermann 1457* (holotype B!).

Sisymbrium intricatissimum var. *berningeri* O. E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 11: 392. 1932. TYPE: Chile. Tal de Río San Pedro, 1925, *O. Berninger E29* (holotype M, not seen).

Distribution. Argentina (Catamarca, Jujuy, La Rioja, Salta, San Juan), Chile (Región I, II, III).

Observations. The species is known in *Sisymbrium* as *S. philippianum* I.M. Johnst., a name proposed by Johnston (1929) to replace the latter homonym *S. amplexicaule* Phil. During my visit to SGO in 2005, I had the chance to examine all of Philippi types. It soon became abundantly clear that the earliest legitimate name for the species is *Sisymbrium tarapacanicum* Phil., not *Cardamine deserticola* Phil., as I (Al-Shehbaz, 2004a) previously concluded. Therefore, a new combination based on *S. tarapacanicum* is proposed above.

Muñoz Pizarro (1960) listed two specimens, SGO-49244 and SGO-63197, as type material of *Sisymbrium tarapacanicum*. The first is a fragmen-

tary, immature plant of the species considered here as *N. tarapacana*, and it carries locality data written with a pencil. A more complete specimen, SGO-71485, which carries the exact collection data given in the original publication and in Philippi's handwriting, was not listed by Muñoz Pizarro. In my opinion, this specimen should be selected as the type of the species. The collection SGO-63197 was also listed by Muñoz Pizarro as the type of *Arabis tarapacana* Phil.

POLYPSECADIUM O.E. Schulz in Engler, Pflanzenz. IV. 105(Heft 86): 176. 1924. Type species: *P. harmsianum* (Muschl.) O.E. Schulz.

Plants annual or perennial herbs, subshrubs, or shrubs. Trichomes absent or simple, rarely stalked and 2-4-rayed. Stems erect to ascending, branched above. Basal leaves absent; cauline leaves long-petiolate (petiole 1-7 cm long) or rarely uppermost auriculate or sagittate at base, coarsely dentate to pinnately lobed. Racemes many flowered, lax, ebracteate, corymbose, elongated considerably in fruit; fruiting pedicels slender, ascending, divari-

cate, strongly recurved or reflexed. Sepals oblong, free, deciduous, erect to ascending, subequal, margin not membranous; petals white to lavender or purple, obovate to spatulate, apex obtuse; claw distinct, glabrous; stamens 6, erect, slightly tetradynamous; filaments glabrous, free, dilated at base; anthers linear or linear-oblong, apiculate or not at apex; nectar glands confluent, subtending bases of all stamens, rarely lateral and tooth-like; ovules (22-)40-200(-240) per ovary. Fruit dehiscent siliques, linear, terete, unsegmented; valves with a prominent midvein, with obscure to distinct lateral veins, glabrous or rarely sparsely pubescent, smooth or rarely torulose; replum rounded; septum complete, veinless; style obsolete or distinct and to 5 mm long; stigma capitate, entire or 2-lobed, usually considerably wider than style. Seeds biseriate or subsiseriate, very rarely uniseriate, wingless or rarely distally winged, oblong to ovoid, plump, not mucilaginous when wetted; cotyledons incumbent.

A genus of 14 species distributed from Colombia south into Patagonian Argentina and Chile.

Key to species of *Polypsecadium*

1. Uppermost leaves strongly auriculate or sagittate at base 2
1. Uppermost leaves petiolate, if auriculate (some plants of *P. tucumanense*) then middle and lower leaves pinnately lobed 3
- 2(1). Petals purple; leaves densely strigose abaxially; Peru *P. effusum*
2. Petals white; leaves glabrous or sparsely pubescent abaxially; Colombia, Ecuador *P. solidagineum*
- 3(1). All cauline leaves uniformly dentate or denticulate 4
3. At least some cauline leaves irregularly dentate and/or pinnately lobed. 8
- 4(3). Style 2-5 mm long; plants 4-8 m tall; Colombia, Ecuador *P. adscendens*
4. Style obsolete or 0.5-1(-2) mm long; plants 1-3 m tall or shorter; Argentina, Bolivia, Chile 5
- 5(4). Fruits 4.5-8.5 cm long, torulose; seeds uniseriate *P. rusbyi*
5. Fruits 1-3(-4) cm long, not torulose; seeds biseriate 6
- 6(5). Fruits 1-2 cm long; fruiting pedicels 0.3-1 cm long; stigma considerably wider than style; Argentina, Bolivia *P. harmsianum*
6. Fruits 2.5-4 cm long; fruiting pedicels (1.2-)1.7-2.6(-3) cm long; stigma at most as wide as style 7
- 7(6). Plants perennial; uppermost leaves ovate, oblong, or lanceolate; seeds 1.8-2.2 mm long; ovules 22-32 per ovary; central Chile *P. litorale*
7. Plants annual; uppermost leaves linear to linear-lanceolate; seeds 1-1.3 mm long; ovules 60-80 per ovary; southern Peru *P. llatasii*
- 8(3). Fruiting pedicels erect to erect-ascending; fruits often tortuous *P. arnottianum*
8. Fruiting pedicels divaricate to descending; fruits not tortuous 9
- 9(8). Stems, leaves, and sometimes ovaries with 2-4-rayed trichomes; Patagonia *P. magellanicum*
9. Plants glabrous or with simple trichomes, rarely (*P. zoellneri*) leaf margin with few Y-shaped trichomes 10
- 10(9). Fruiting pedicels curved downwards; fruits often secund, 6-9 cm long; seeds apically winged *P. tucumanense*
10. Fruiting pedicels straight or curved upwards; fruits not secund, 1-4(-6) cm long; seeds wingless 11

- 11(10). Fruits 4-6 cm x 1.4-1.8 mm; margin of middle and lower leaves with some Y-shaped trichomes; north Chile *P. zoellneri*
 11. Fruits 1-3(-4.5) cm x 0.9-1.2 mm; margin of middle and lower leaves glabrous or with exclusively simple trichomes; north and central Argentina 12
 12(11). Petals 5-8 mm long; leaves ovate-triangular, often hastate at base; ovules 90-200 per ovary; seeds coarsely reticulate *P. grandiflorum*
 12. Petals 2.5-4.5 mm long; leaves lanceolate to ovate, not hastate, at least some pinnately lobed; ovules 26-52 per ovary; seeds minutely reticulate 13
 13(12). Seeds reddish brown; leaves glabrous; Brazil (Santa Catarina) *P. brasiliense*
 13. Seeds yellowish brown; at least middle and lower leaves ciliate; Argentina (Catamarca, Córdoba, Jujuy, La Rioja, San Luis, Tucumán) *P. gilliesii*

Polypsecadium adscendens (O.E. Schulz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium adscendens* O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 71. 1924. TYPE: Ecuador. Between Cotocollao and Pifo, *A. Sodiro 39* (holotype B!).

Distribution. Colombia (Boyaca), Ecuador (Pichincha).

Polypsecadium arnottianum (Gillies ex Hook. & Arn.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium arnottianum* Gillies ex Hook. & Arn., Bot. Miscell. 3: 138. 1833. *Hesperis arnottiana* (Gillies ex Hook. & Arn.) Kuntze, Revis. Gen. Pl. 2: 934. 1891. TYPE: Villavicencio, 5000 m, *Gillies s.n.* (lectotype GL, not seen, designated by Romanczuk, Darwiniana 24: 145. 1982; isotypes BAA!, K!).

Distribution. Argentina (Mendoza, San Juan).

Polypsecadium brasiliense (O.E. Schulz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium brasiliense* O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86) 76. 1924. TYPE: Brasilia, *Sello 4288* (holotype B!; isotype BAA!).

Distribution. Brazil (Santa Catarina).

Polypsecadium effusum (O.E. Schulz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium effusum* O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 72. 1924. TYPE: Peru. Huancavelica: Prov. Tayacaja, valley of Mantaro, opposite Surcubamba, 2800 m, 15-III-1913, *A. Weberbauer 6499* (holotype B!, isotypes BAA!, GH!).

Distribution. Peru (Huancavelica).

Polypsecadium gilliesii (Romanczuk) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium gilliesii* Romanczuk, Darwiniana 24: 141. 1982. TYPE: Argentina. San Luis: Depto. Gral. Pedernera, San José del Morro, Ea. La Morena, Cerro El Morro, 1700 m, *O. Boelcke & D. Moore 16634* (holotype SI!; isotype SI!).

Distribution. Argentina (Catamarca, Córdoba, Jujuy, La Rioja, San Luis, Tucumán).

Polypsecadium grandiflorum Romanczuk & Boelcke, Hickenia 1(56): 301. 1982. TYPE: Argentina. Tucumán: Quebrada de Los Sosa, 4-XII-1960, *A. Burkart 22111* (holotype SI!; isotypes BACP!, SI!).

Distribution. Argentina (Catamarca, Jujuy, Tucumán).

Polypsecadium harmsianum (Muschl.) O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 177. 1924. *Thelypodium harmsianum* Muschl., Bot. Jahrb. Syst. 40: 267. 1908. TYPE: Bolivia. Tarija: Tucumilla near Tarija, 30-XII-1903, 2800 m, *K. Fiebrig 2452* (holotype B!; isotypes G!, K!).

Thelypodium harmsianum Muschl. var. *dentatum* Muschl., Bot. Jahrb. Syst. 40: 268. 1908. *Polypsecadium harmsianum* (Muschl.) O.E. Schulz var. *dentatum* (Muschl.) O.E. Schulz in Engler, Pflanzenr. IV. 105(Heft 86): 177. 1924. TYPE: Bolivia. Tarija: Calderillo, 3200 m, 22-III-1904, *K. Fiebrig 3155* (holotype B!; isotypes BAA!, CONC!, G!, GH!, K!, P!, S!).

Sisymbrium ragoneseanum O.E. Schulz, Repert. Sp. Nov. Regni Veg. 38: 32. 1935. TYPE: Argentina. Salta: Depto. Anta, Sierra González, VI-1934, *A. Ragonese 278* (holotype B!; isotype BAA!).

Distribution. Argentina (Jujuy, Salta, Tucumán), Bolivia (Chuquisaca, Tarija, La Paz).

Polypsecadium litorale (Phil.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium litorale* Phil., *Linnaea* 28: 667. 1856. *Hesperis litoralis* (Phil.) Kuntz, *Rev. Gen. Pl.* 2: 934. 1891. TYPE: Chile, Tomé, XI-1855, *P. Germain s.n.* (holotype SGO 63186!).

Sisymbrium litorale var. *virgatum* O.E. Schulz in Engler, *Pflanzenr.* IV. 105(Heft 86): 72. 1924. TYPE: Chile. Los Chorillos, Concón, IX-1827, *Pöppig s.n.* (holotype W!; isotype BAA!).

Distribution. Chile (Región VIII).

Polypsecadium llatasii (Al-Shehbaz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium llatasii* Al-Shehbaz, *Ann. Missouri Bot. Gard.* 77: 219. 1990. TYPE: Peru. Lambayeque: Prov. Cerro Reque, 580 m, 28-IX-1986, *S. Llatas Quiroz 2102* (holotype F!; isotypes GH!, SI!).

Distribution. Peru (Lambayeque).

Polypsecadium magellanicum (Juss. ex Pers.) Al-Shehbaz, comb. nov. Basionym: *Brassica magellanica* Juss. ex Pers., *Syn. Pl.* 2: 207. 1807. *Sisymbrium magellanicum* (Juss. ex Pers.) Hook.f., *Fl. Antarct.* 2: 243. 1847. *Hesperis magellanica* (Juss. ex Pers.) Kuntze, *Revis. Gen. Pl.* 2: 934. 1891. *Arabis magellanica* (Juss. ex Pers.) Dusén, *Gefässpfl. Magell.* 177. 1900. TYPE: Argentina. "Detroit de Magellanes", *Commerçon s.n.* (holotype P!; isotypes BAA!, 2P!).

Cardamine patagonica Speg., *Revista Fac. Agr. La Plata* 3(30-31): 490. 1897. TYPE: Argentina. Río Santa Cruz, II-1882, *C. Spegazzini s.n.* (holotype LP, not seen).

Schizopetalon fuegianum Speg., *Anal. Mus. Nac. Hist. Nat. Buenos Aires* 5: 48. 1896. *Sisymbrium fuegianum* (Speg.) Speg., *Anal. Soc. Ci. Argent.* 47: 167. 1901. TYPE: Argentina, Aicina, *C. Spegazzini s.n.* (holotype LP, not seen).

Sisymbrium fuegianum (Speg.) Speg. var. *glabrum* Speg., *Anal. Soc. Ci. Argent.* 47: 168. 1901. *Sisymbrium magellanicum* (Juss. ex Pers.) Hook.f. f. *glabrum* (Speg.) O.E. Schulz in Engler, *Pflanzenr.* IV. 105(Heft 86): 51. 1924. TYPE: Argentina. Santa Cruz: Lago Argentino, Karraik, III-1898, *C. Ameghino s.n.* (holotype LP, not seen).

Sisymbrium fuegianum (Speg.) Speg. var. *hispidum* Speg., *Anal. Soc. Ci. Argent.* 47: 168. 1901. *Sisymbrium magellanicum* (Juss. ex Pers.) Hook.f. f. *hispidum* (Speg.) O.E. Schulz in Engler, *Pflanzenr.* IV. 105(Heft 86): 51. 1924. TYPE: Argentina. Santa Cruz: Lago Argentino, Karraik, III-1898, *C. Ameghino s.n.* (holotype LP, not seen).

Distribution. Argentina (Santa Cruz, Tierra del Fuego), Chile (Región XII).

Polypsecadium rusbyi (Britton) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium rusbyi* Britton, *Bull. Torrey Bot. Club* 16: 16. 1889. TYPE: Bolivia. Sorata, 10,000 ft, II-1886, *H.H. Rusby 1432* (holotype NY!).

Distribution. Bolivia (La Paz), Peru (Cuzco).

Polypsecadium solidagineum (Triana & Planch.) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium solidagineum* Triana & Planch., *Ann. Sci. Nat. Ser. IV*, 17: 64. 1862. *Hesperis solidaginea* (Triana & Planch.) Kuntze, *Revis. Gen. Pl.* 2: 935. 1891. TYPE: Colombia. Boqueron de la Mesa, 1845, *J. Goudot s.n.* (holotype P!).

Distribution. Colombia, Ecuador (Azuay, Chimborazo, Cotopaxi, Imbabura, Loja, Pichincha).

Observations. The species was reported by Pitier et al. (1945) from Venezuela, but that report was based on misidentified plants of *Exhalimobos hispidulus* (DC.) Al-Shehbaz & C.D. Bailey.

Polypsecadium tucumanense (O.E. Schulz) Al-Shehbaz, comb. nov. Basionym: *Sisymbrium arnottianum* Gillies ex Hook. & Arn. var. *tucumanense* O.E. Schulz in Engler, *Pflanzenr.* IV. 105(Heft 86): 75. 1924. *Sisymbrium tucumanense* (O.E. Schulz) Romanczuk, *Darwiniana* 24: 119. 1982. TYPE: Argentina. Tucumán: Sierra de Tucumán, cerca de la Ciénaga, 10-17-I-1874, *G. Hieronymous & P. G. Lorentz s.n.* (holotype B!; isotype BAA!).

Sisymbrium arnottianum Gillies ex Hook. & Arn. var. *dolichocarpum* O.E. Schulz, *Notizbl. Bot. Gart. Berlin-Dahlem* 11: 876. 1933. TYPE: Argentina. Tucumán: Sierra Calchaquíes, La Puerta, 4000 m, 30-I-1933, *A. Burkart 5246* (holotype B!; isotype SI!).

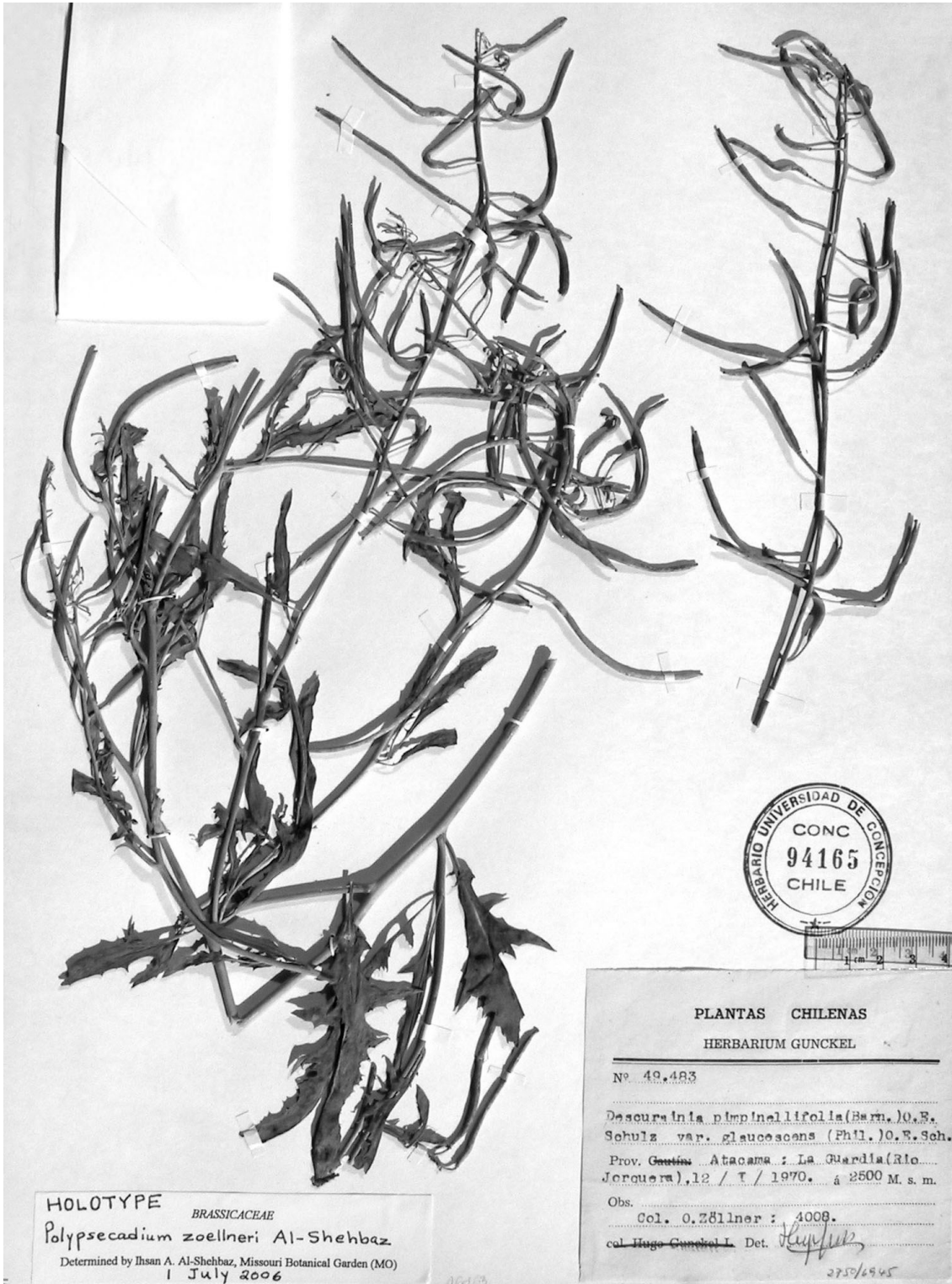


Fig. 1. Holotype of *Polypsecadium zoellneri* Al-Shehbaz.

Sisymbrium tucumanense (O.E. Schulz) Romanczuk var. *rigidocarpum* Romanczuk, Darwiniana 24: 120. 1982.
TYPE: Argentina. Tucumán: Depto. Chicligasta, Ea. Las Pavas, Puesto El Bayo, 3200 m, 12-III-1924, S. Venturi 3084 (holotype SI!; isotypes BAA!, GH!).

Distribution. Argentina (Tucumán).

Polypsecadium zoellneri Al-Shehbaz, sp. nov.
TYPE: Chile. Prov. Atacama, Región III: La Guardia, Río Jorquera, 27°50'S, 69°45'W, 2500 m, 12-I-1970, Otto Zöllner 4008 (holotype CONC!). Figure 1.

Herba perennis; folia caulina lanceolata, pinnatifida vel grosse dentata, ciliata, pilis simplicibus vel furcatis praedita. Racemi fructiferi ebracteati, elongati; pedicelli fructiferi divaricati, 6-12 mm longi. Flores ignoti. Fructus lineares, teretes, 4-6 cm x 1.4-1.8 mm. Semina biseriata, 1-1.3 x 0.7-1 mm; cotyledones incumbentes.

Plants perennial herbs, glabrous except for leaf margin. Stems erect, glabrous. Basal and lowermost cauline leaves not observed; middle cauline leaves with petioles to 1.5 cm long; blade lanceolate, 3-8 x 1-3 cm, pinnatifid to coarsely dentate, sparsely ciliate with simple and forked Y-shaped trichomes; uppermost leaves narrower, smaller, dentate, glabrous. Racemes corymbose, elongated considerably in fruit; fruiting pedicels 6-12 mm long, divaricate, straight, glabrous. Flowers not seen. Fruits linear, terete, 4-6 cm x 1.4-1.8 mm, straight or slightly curved upward, spreading to divaricate; valves not torulose, glabrous, with a prominent midvein and distinct marginal veins; septum complete, not veined; style obsolete; stigma obscurely 2-lobed. Seeds 78-88 per fruit, reddish brown, oblong to oblong-ovate, biseriate, 1-1.3 x 0.7-1 mm; cotyledons incumbent.

Polypsecadium zoellneri, which is named in honor of the Chilean botanist Otto Zöllner, is known thus far only from the type collection. It is most closely related to the Argentinean endemic *P. gilliesii*, from which it is readily distinguished by having larger and thicker fruits (4-6 cm x 1.4-1.8 mm vs. 1.5-3.5(-4.5) cm x 0.9-1.2 mm), reddish brown seeds 1-1.3 mm long (vs. yellowish brown seeds 0.7-1 mm long), and margins of lower and middle leaves with simple and forked (vs. exclusively simple) trichomes.

ACKNOWLEDGMENTS

I am profoundly grateful to Fernando O. Zuloaga, Norma B. Deginani, Adriana Bartoli, Roberto D. Tortosa, Julián A. Cámara Hernández, Clodimiro Marticorena, Alicia Marticorena, Mélica S. Muñoz, and Roberto Rodríguez for their support during my 2005 visit to BAA, CONC, SGO, and SI. I thank Nicholas J. Turland for the nomenclatural advice. I am indebted to Elena G. Scappini and Aníbal O. Prina for sending material of *Sisymbrium carolinense*. Last, but certainly not least, I am profoundly grateful to Silvia Denham for her editorial advice.

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