Taxonomic Novelties in Astragalus (Leguminosae) for South America

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A new species in Astragalus, endemic to Peru, is described for Leguminosae, Galegeae. Astragalus sagasteguii may be compared with the related A. dillinghami Macbride in Peru and A. diminutivus (Philippi) Gómez-Sosa in Bolivia and Argentina. The new combination Astragalus diminutivus I. M. Johnston newly synonymizes to A. diminutivus. Further, Astragalus dielsii Macbride is recognized as a variety to A. diminutivus. The geographical distribution of Astragalus diminutivus var. dielsii extends from Peru into Bolivia and Argentina. Morphological description and comparison, illustration, as well as habitat and geographical distribution are provided.

1. Astragalus sagasteguii Gómez-Sosa, sp. nov.

Depressed-pulvinate herb, 4–16 cm diam., acaulescent, the stoutly branched caudex 4–8 cm, stipules amplexicaul, membranous, densely sericeous-villous. Leaves to 1.4 cm long; leaflets 15 to 17, opposite, decrescent distally, folded, in outline elliptic-cuneate, apicu retuse, 1(1–2) (lores parvi, calyx 4 mm; vexillum ultra unguem obovatum 7–8 mm longum; legumen 0.3 × 0.2 cm, subglobosum, subbiloculare, cum margine dorsale in Hexo 1 mm latum et cum margine membranaceo inconspicuo 0.5 mm latum solum basi; semina 1 ad 2, reniformia.

Etymology. This species is dedicated to the type collector, Abundio Sagastegui Alba, professor
Table 1. Comparison of *A. sagasteguii*, *A. diminutivus* var. *diminutivus*, and *A. dillingharni*

<table>
<thead>
<tr>
<th></th>
<th><em>A. sagasteguii</em></th>
<th><em>A. diminutivus</em> var. <em>diminutivus</em></th>
<th><em>A. dillingharni</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leaves</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length (cm)</td>
<td>to 1.4</td>
<td>1-2</td>
<td>1.5-2</td>
</tr>
<tr>
<td><strong>Leaflets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>15 to 17</td>
<td>13 to 17(to 19)</td>
<td>9 to 13</td>
</tr>
<tr>
<td>Size (mm)</td>
<td>2.5-3 × (1-)1.5</td>
<td>1.5-2 × 0.6-1</td>
<td>4 × 2</td>
</tr>
<tr>
<td>Shape</td>
<td>elliptic-cuneate</td>
<td>elliptic to subcircular</td>
<td>ovate-lanceolate</td>
</tr>
<tr>
<td>Apex</td>
<td>retuse</td>
<td>obtuse to slightly retuse</td>
<td>acute</td>
</tr>
<tr>
<td>Pubescence</td>
<td>cinereous-villous on both surfaces</td>
<td>glabrous above/villous below</td>
<td>silvery-villous on both surfaces</td>
</tr>
<tr>
<td>Trichome length (mm)</td>
<td>0.5-1</td>
<td>0.5-1</td>
<td>1.5-2.5</td>
</tr>
<tr>
<td><strong>Flowers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>1(to 2)</td>
<td>1(to 2)</td>
<td>4 to 8</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>8-9</td>
<td>7-9</td>
<td>8-10</td>
</tr>
<tr>
<td>Calyx length (mm)</td>
<td>4</td>
<td>3-4</td>
<td>7</td>
</tr>
<tr>
<td>Legume</td>
<td>subbilocular septum to 0.5 mm only at base</td>
<td>unilocular</td>
<td>unknown</td>
</tr>
</tbody>
</table>

and director of the Natural History Museum (HAO) at Antenor Orrego University, Trujillo, Peru. He is an enthusiastic collector and student of the Peruvian flora.

**Habitat and distribution.** *Astragalus sagasteguii* occurs in “jalca” in the Andean mountains of Peru, which refers to the ecological zone along the Andean divide between the drier Paramo to the north and the wetter Puna to the south. Found above 3300 m, the jalca vegetation is predominantly grassland, and the predominant grass is “ichu” *Stipa ichu* (Ruiz & Pavón) Kunth. Native fauna include frogs, lizards, birds, small mammals, and deer.

**Climate.** The climate of the this new species is typical of Andean regions near the equator: cool and humid, with a distinct rainy season. Temperatures are relatively constant throughout the year, and seldom dip below freezing even at the highest mountain elevations. Conditions are often windy, especially at higher elevations. The climate is characterized by a distinct rainy season (October to April) followed by a dry period (May to September).

The genus *Astragalus* is represented by 23 species (Zarueehi, 1993) in the flora of Peru. The new species *A. sagasteguii* is in close relationship with *A. dillingharni* J. F. Macbride “depressed, compact... flowers crowded or few in the axes, about 1 cm long...”(Macbride, 1943: 396). Moreover, *A. dillingharni* is distinguished by its 4 to 8 flowers, leaflets ovate-lanceolate with acute apex, and a silver-villous pubescence with trichomes 1.5-2.5 mm long.

In addition, *Astragalus sagasteguii* appears to be related to *A. diminutivus* (Philippi) Gómez-Sosa from Peru, Bolivia, and Argentina, which it resembles by having a single flower that is 7-9 mm long. In contrast *A diminutivus* has smaller leaflets that are sericeous-pubescent, especially on the unilocular legume. (See Table 1 for a comparison of these three species.)

A critical examination of the type collections of *Phaca diminutiva* Philippi from northern Chile, *Astragalus diminutivus* I. M. Johnston from southern Bolivia, and *A. dielsii* J. F. Macbride from Lima, in northern Peru, reveals that the following new combination should be recognized.


Because of the very short original diagnosis of this taxon (Philippi, 1891) a more complete description of the type variety is given here.
Astragalus diminutivus (Philippi) Gómez-Sosa var. diminutivus

Herb cespitose, 2–8 cm diam., green-cinerous, caudex 1–2(–3) cm, with membranous stipules imbricate, white-pubescent, 2.5–3.5 mm long. Leaves 1–2 cm long, petiole 0.2–0.5 mm long; leaflets 13 to 17(to 19), elliptic to subcircular, 1.5–2 × 0.6–1 mm, obtuse to slightly retuse at apex, thickened, folded, glabrous above, villous-pubescent below, covered with trichomes 0.5–1 mm long. Bracts triangular-ovate, 1.5–3(–4.5) mm long; bracteoles the same length, filiform, both pubescent and ciliate; flowers 1(2) erect, sessile, blue to light blue; calyx pubescent, tube campanulate, 2–2.5 mm long, teeth subulate, 1–1.5 mm long; banner 6–8 × (2.5–)3–4.5 mm, obovate to widely obovate, emarginate at the apex, basally narrowed to claw; wings 3–6(–8) × 1–1.5 mm, rectangular, obtuse; keel 4.5–5 mm long; ovary shortly stipitate, pubescent, style glabrous, laterally compressed and inflexed at apex, stigma minutely-capitate; ovules 1(2–4). Legume membranaceous, evanescent, subglobose, 0.2–0.25 × 0.2–0.25 cm, unilocular, covered by remains of bracts and perianth; seed 1, subglobose, sometimes mottled, hilum apical, 2–2.5 × 2–2.5 mm.

Distribution and habitat. A regional endemic in western South America, cited for Peru and reported now with a southern range extension to Bolivia, Chile, and northwest Argentina, inhabiting higher elevations 3600–4300 m. Collector’s notes (R. Ehrich 75) indicate it occurs on sandy or clayey limestone.

Climate. This region is in the biogeographic province of Puna (Cabrera & Willink, 1973) between 15° and 27° S, with the Andean mountains to the west and the “Cordillera Real” mountain range to the east at elevations of 3200 to 4000 m. Moreover, the Puna is in the Neotropical subregion (Crisci et al., 2000). The climate of this region is dry and cold, with a large contrast in temperature and rainfall during the year. The principal rainfall occurs only in summer, varying from approximately 700 to 50 mm, decreasing along gradients from south to north and from east to west.

Additional specimens examined. BOLIVIA. Tarija: Lago Taxara, R. Ehrich 75 (LPB, SI). Potosí: Porco, Uyuni, E. Asplund 3137 & 3138 (UPS). La Paz: Pacajes, Gral. Campero, E. Asplund 2780 (UPS); Sur Chichas, Atchua, E. Asplund 3025 (UPS). ARGENTINA. Jujuy: Cochinoca, Abra de Rachaite, M. Mulguera et al. 1311 (SI); Casabindo, N. Degnanini et al. 520 (SI); Humahuaca, Mina Aguilar, arriba del Molino, H. Sleumer 3429 (LIE, SI); J. H. Hunsicker et al. 10503 (SI); Tres Cruces, A. Soriano 653 (SI); Susques, al pie del cerro Tuzle, A. Cabrera 8644 (SI), A. Cabrera 8748 (LP, SI); Abra Chorrillos, A. Cabrera et al. 31774 (SI); Rinconada, Ruta provincial 746, 13 km de Mina Pirquitas camino a Coranzulí, O. Morone et al. 2589 (SI).

The name Phaca diminutiva Philippi was cited by I. M. Johnston (1947: 407) as an “unplaced species,” because he had not seen the type specimen from Chile. In the same paper Johnston published Astragalus diminutivus, a new species for Bolivia and Argentina, with similar vegetative and floral characteristics to the ones that encompass P. diminutiva. The legume was described by Johnston (1947: 406) as “subglobose ca. 2 mm longis et 1.5 mm crassis subitus introflexis” or as a subbiloculare legume. A critical examination of the Astragalus deminutivus type collections at FM, GH, K, and P in addition to cited specimens of E. Asplund (UPS) reveals the legume is without inflexion of the sulcure, and thus the fruit is unilocular; these collections otherwise share the same characteristics as A. diminutivus. The Philippi type locality of Phaca diminutiva is noted between Aguas Calientes to Sojaquire, in northern Chile, east of the Salar of Atacama, at 5030–5070 m near the political boundary with Argentina, in Provinces of Jujuy and Salta, and in the vicinity of the Tropic of Capricorn, within in the same distributional area as A. diminutivus.

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Literature Cited


