

## FOUR NEW GNAPHALIEAE (ASTERACEAE) FROM BAJA CALIFORNIA SUR

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### ABSTRACT

Four previously undescribed species of tribe Gnaphalieae are recognized from Baja California Sur — ***Gamochaeta capensis*** Nesom, **sp. nov.**, ***Gamochaeta rubrolinea*** Nesom, **sp. nov.**, ***Pseudognaphalium rebmanii*** Nesom, **sp. nov.**, and ***Pseudognaphalium cacachilense*** Nesom, **sp. nov.** Descriptions, illustrations, and maps are provided.

Study at herbarium SD brings to light previously undescribed species from Baja California Sur. Many of these collections were made by Jon Rebman, who laid them before me and said "Hey, look at these!"

**GAMOCHAETA CAPENSIS** Nesom, **sp. nov.** **TYPE: MEXICO. Baja California Sur.** Mpio. Los Cabos: Sierra San Lazaro, along road between Palmillo and San Pedro de la Soledad, wet canyon at the base of a large waterfall, selva baja, 620 m, 29 Sep 2015, *J. Rebman 30547* (holotype: SD, Figs. 1-4).

Distinct in its annual, fibrous-rooted habit, bicolor leaves densely glandular on the adaxial surface with long, vitreous hairs.

**Annuals**, fibrous-rooted. **Stems** 10–30 cm tall, erect, loosely sericeous-tomentose, glabrescent, eglandular. **Leaves** apparently without a persistent basal rosette, cauline oblanceolate, narrowed to a subpetiolar base, subclasping, not decurrent, 1.5–4 cm long, 5–10 mm wide, relatively even-sized up to the heads, bicolor, persistently gray-tomentose abaxially, eglandular beneath the tomentum, lightly tomentose adaxially but glabrescent and becoming green-glabrate, glandular with long, vitreous hairs. **Heads** sessile in terminal and axillary clusters on the distal half of the stem. **Phyllaries** in 4–5 series, triangular, sharply acute apically, inner 3.5 mm long, outer half as long, tawny translucent-white, inner with a prominent green stereome; receptacle deeply concave at maturity. **Hermaphroditic flowers** 3–4; corollas 1.8 mm long, yellow. **Pistillate flowers** ca. 100+. **Achenes** 0.4 mm long, sparsely minutely papillate.

**Additional collections. Baja California Sur.** Mpio. Los Cabos: Sierra La Laguna, Cañon de San Dionicio, Rancho El Refugio "Huerta," selva baja caducifolia, 359 m, 1 Jul 2008, *Dominguez León 4142* (SD); Sierra El Taste in the Cape region in the southern part of the Sierra La Laguna range, vicinity of Rancho Santo Domingo along a canyon with a stream, 960 m, Cape Mountain/Canyon vegetation, 31 Oct 2015, *Rebman 30916* (SD).

In its thin, erect stems and ephemeral duration, *Gamochaeta capensis* is similar to *G. stagnalis* (I.M. Johnston) Anderb. of the southwestern USA and Mexico (Sonora and closely adjacent Chihuahua, northern Baja California) (Nesom 2006), but the latter occurs only rarely in Baja California, long-disjunct from *G. capensis*, and has eglandular leaves.

**GAMOCHAETA RUBROLINEA** Nesom, *sp. nov.* **TYPE: MEXICO. Baja California Sur.** Mpio. La Paz: Rancho Encinalito, northeastern foothills of the Sierra de La Laguna, E of San Antonio de la Sierra, SW of San Bartolo, private ranch owned by Kathleen Mitchell and Scott Landis, along canyon bottom, 700 m, granite substrate, tropical deciduous forest/riparian with *Phragmites australis*, *Buddleja crotonoides*, *Baccharis salicifolia*, *Lysiloma divaricatum*, *Washingtonia robusta*, *Chloracantha spinosa*, *Pachycereus pecten-aboriginum*, and *Salix bonplandiana*, 5 Mar 2016, *J. Rebman 31112* (holotype: SD, Figs. 5-8).

Distinct in its annual, fibrous-rooted habit, eglandular and persistently gray-green leaves (both surfaces) and stems, and inner phyllaries with a pair of crimson-red lines extending distally from the stereome apex.

**Annuals**, fibrous-rooted. **Stems** 10–30 cm long, decumbent-ascending, persistently loosely sericeous, eglandular. **Leaves** mostly narrowly oblong-oblongate, not clasping or decurrent, 2–5 cm long, 2–5 mm wide, slightly decreasing in size distally, persistently loosely tomentose and gray-green on both surfaces, eglandular. **Heads** sessile in terminal and axillary clusters on the distal half of the stem. **Phyllaries** in 4–5 series, ovate (outer) to oblong-ovate (inner) with blunt to rounded apex, inner with a green stereome and a pair of crimson-red lines extending distally from the stereome apex, inner 3 mm long; receptacle not seen. **Hermaphroditic flowers** 2–3; corollas 2 mm long, yellow with red lobes. **Pistillate flowers** ca. 100+. **Achenes** 0.4 mm long, sparsely minutely papillate.

Known only from the type collection. The red-lined phyllaries are unique among *Gamochaeta* species known to me, and even apart from the phyllaries, this collection could not be identified as any North American species.

**PSEUDOGNAPHALIUM REBMANII** Nesom, *sp. nov.* **TYPE: MEXICO. Baja California Sur.** Mpio. Mulegé: Sierra Guadalupe, W of Mulegé, W of the Ex-Mision Guadalupe on the top of the Cumbra de San Pedro, volcanic substrate, ca. 1300 m, with *Aralia scopulorum*, *Nolina beldingii*, *Acacia kelloggiana*, 13 Oct 1999, *J. Rebman 6056* (holotype: SD, Figs. 11 and 12; isotype: UCR).

Similar to *Pseudognaphalium pringlei* (A. Gray) Anderb. in its clasping, non-decurrent, bicolor cauline leaves with a stipitate-glandular adaxial surface, small heads, and imbricate-papillate achenes but distinct in its relatively small basal (rosette) leaves, more numerous hermaphroditic flowers, and geographic and ecological separation.

**Annual** from a woody taproot. **Stems** 20–40 cm tall, erect from the base, lightly sericeous, tomentum glabrescent and exposing densely stipitate-glandular vestiture. **Leaves**: basal obovate, 0.5–1.5(–9) cm long, rosette not persistent; cauline mostly oblong-oblongate, 2–4.5(–6) cm long, 2–8 mm wide, decreasing in size near the inflorescence, clasping to subclasping, sometimes broadened at the base and weakly auriculate, not decurrent, weakly bicolor, persistently gray-tomentose abaxially and eglandular, glabrescent adaxially and becoming green, persistently stipitate-glandular. **Heads** sessile in terminal clusters. **Involucres** 2.5–3 mm wide (pressed). **Phyllaries** white-opaque, outer broadly ovate, becoming ovate inward, apex subacute, inner 5–5.5 mm long, innermost with a green, narrowly oblong, eglandular stereome. **Hermaphroditic flowers** 10–13 (15–16 in *Rebman 5763*). **Pistillate flowers** ca. 60–70. **Achenes** 0.6 mm long, surface minutely papillate (imbricate-papillate).

**Additional collections. Baja California Sur.** Mpio. La Paz: Sierra de la Victoria, open part of La Laguna Meadow, along a sandy stream way, 19 Aug 1955, *Chambers 904* (SD); Sierra de La Laguna, Valle de La Laguna, borde de arroyo, bosque de pino y encino, 1680 m, 25 Sep 2000, *León de la Luz 9658* (SD); Sierra de La Laguna, La Laguna, meadow, 1675-1725 m, 31 Aug 1977, *Snelling 770831.1* (SD); Sierra de la Laguna, NE of Todos Santos, vicinity of Valle La Laguna at top of the Sierra, NE of Cañon La Burrera and Rancho Corral Grande, granitic substrate, 1740 m, *Quercus* spp., *Pinus*, *Arbutus*, *Nolina*, 28 Oct 1998, *Rebman et al. 5763* (SD). Mpio. Mulegé: Sierra San Francisco,

N of San Ignacio Cerro Bola and Pico Santa Monica, just S of San Francisco de la Sierra, rocky volcanic slope and peak, ca. 1250-1500 m, with *Prunus lyonii*, *Polygala apopetala*, *Quercus oblongifolia*, 15 Oct 1997, *Rebman 4368* (SD);

The new species is compared in the diagnosis to *Pseudognaphalium pringlei* (Nesom 2021), but geography and the relatively dull-white-opaque phyllaries suggest that it is more closely related to *P. bioletii* Anderb. ex Nesom of California and Baja California, which also has clasping, non-decurrent, bicolor, glandular (adaxially) leaves — the isolation of *P. rebmanii* in Baja California Sur and its eglandular stems and smooth-surfaced achenes mark an evolutionary differentiation.

*Rebman 5763* (Fig. 13) from the Sierra de la Laguna has eglandular leaf surfaces and is more like *Pseudognaphalium cacachilense* in that respect, but it has significantly more bisexual florets than the latter and is out of range for it. It is identified here as *P. aff. rebmanii*, but further collections may show that 5763 represents a distinctive species.

**PSEUDOGNAPHALIUM CACACHILENSE** Nesom, **sp. nov.** **TYPE: MEXICO. Baja California Sur.** Mpio. La Paz: Sierra las Cacachilas, N of Hwy 286 between La Paz and San Juan de los Planes, W of El Sargento, on top of Cerro El Llano (El Tinaja) on a N-facing cliff area, granitic substrate, 1100 m, Cape Mountains vegetation with *Quercus tuberculata*, *Euphorbia hindsiana*, *Bernardia lagunensis*, *Dodonaea viscosa*, *Heliopsis anomala*, *Lopezia clavata*, *Mirabilis exserta*, *Archibaccharis peninsularis*, 13 Oct 2014, *J. Rebman 28938* (holotype: SD, Fig. 15).

Distinct in its perennial duration, eglandular stems and leaves, and bicolor leaves (gray-tomentose abaxially, green-glabrate adaxially), with auriculate-clasping, non-decurrent base. Different from *Pseudognaphalium rebmanii* in its eglandular adaxial leaf surfaces and fewer hermaphroditic flowers.

**Annual to short-lived perennial** from a woody taproot. **Stems** erect, single from the base, 0.2-0.5 m tall, persistently sericeous-tomentose, eglandular. **Leaves** cauline, basal not persistent, mostly narrowly oblanceolate, midcauline 6-9 cm long, 6-11 mm wide, decreasing slightly in size distally, auriculate-clasping at base, not decurrent, persistently gray-tomentose abaxially, green-glabrescent adaxially, eglandular. **Heads** in terminal clusters. **Invulcres** 3–4.5 mm wide (pressed). **Phyllaries** white, slightly translucent, broadly oblong-lanceolate to oblong-lanceolate with acute apex, inner 4–5 mm long, innermost with a green, oblong-lanceolate stereome. **Hermaphroditic flowers** 5–7, corollas 3 mm long, yellow. **Pistillate flowers** 25–40. **Achenes** 0.5–0.6 mm long, surface minutely papillate (imbricate-papillate).

**Additional collections.** **Baja California Sur.** Mpio. La Paz, Sierra las Cacachilas: Picacho, Puesto de Los Soldados, 24° 06' N, 110° 09' W, veg. selva baja caducifolia, 1240 m, 6 Feb 1993, *León s.n.* (SD); SE of La Paz and W of El Sargento, N of Hwy 286 between La Paz and San Juan de Los Planes, on the top of Cerro El Llano, granitic substrate, 1120 m, Cape Mountain/Oak Forest vegetation with *Quercus tuberculata*, *Bursera microphylla*, *Jatropha vernicosa*, *Croton magdalenae*, *Cordia curassavica*, *Salvia similis*, *Calliandra californica*, *Mimosa tricephala* var. *xanti*, 29 Oct 2013, *Rebman et al. 27260* (SD); N of Hwy 286 between La Paz and San Juan de los Planes, W of El Sargento, on top of Cerro El Llano (El Tinaja) on a N-facing cliff area, granitic substrate, 1100 m, Cape Mountains vegetation with *Quercus tuberculata*, *Euphorbia hindsiana*, *Bernardia lagunensis*, *Dodonaea viscosa*, *Heliopsis anomala*, *Lopezia clavata*, *Mirabilis exserta*, *Archibaccharis peninsularis*, 13 Oct 2014, *Rebman 28938* (SD); N of Hwy 286 between La Paz and San Juan de los Planes, W of El Sargento, at a camp called El Plan between Cerro Morro and El Picacho, granitic substrate, 970 m, Cape Mountains vegetation with *Brahea brandegeei*, *Quercus tuberculata*, *Jatropha vernicosa*, *Fouquieria diguetii*, *Euphorbia hindsiana*, *Euphorbia californica*, *Mimosa xanti*, *Bahiopsis tomentosa*, *Lysiloma divaricatum*, 17 Oct 2014, *Rebman 29023* (SD).

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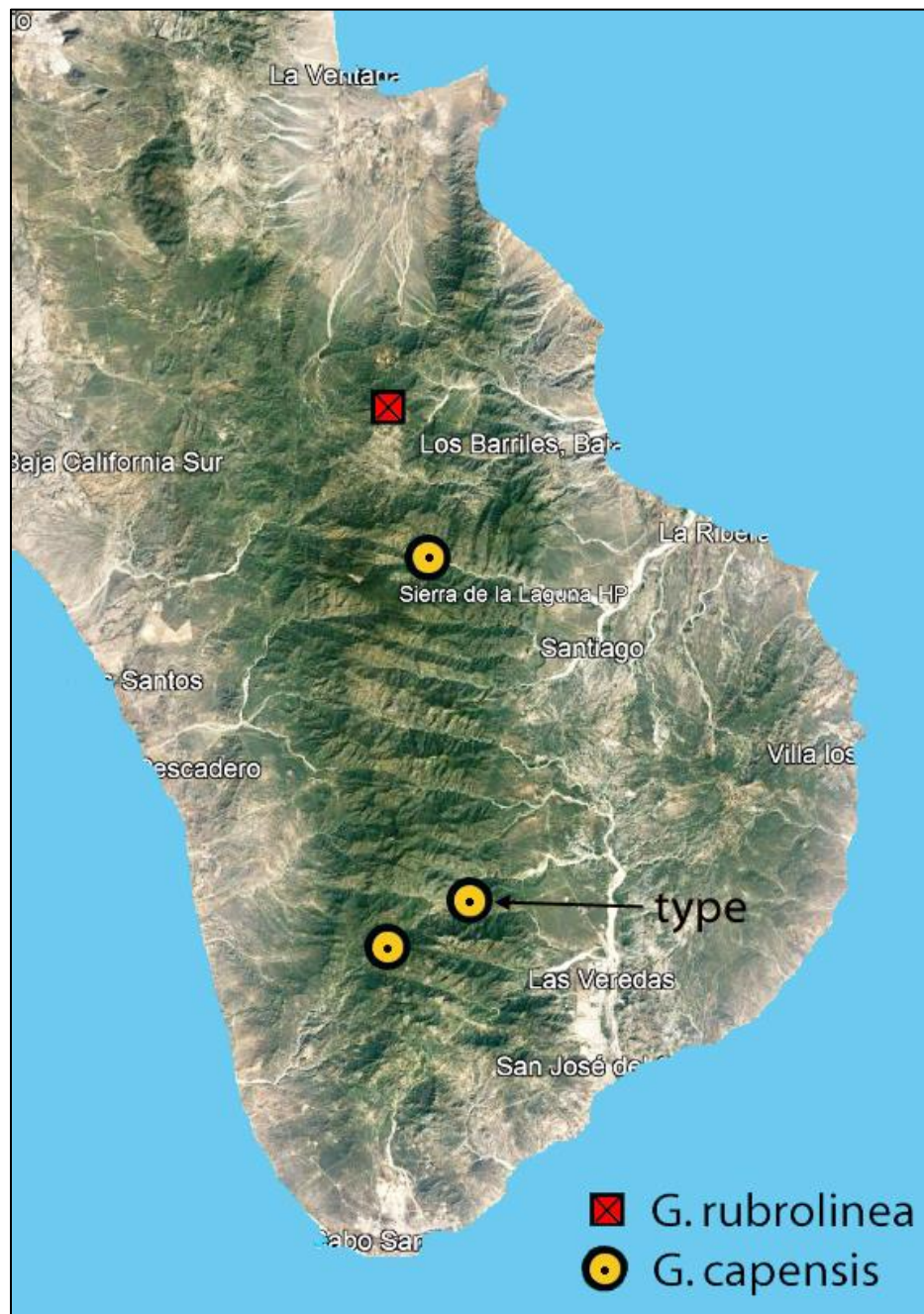


Figure 1. Distribution of *Gamochoaeta rubrolinea* and *G. capensis*.

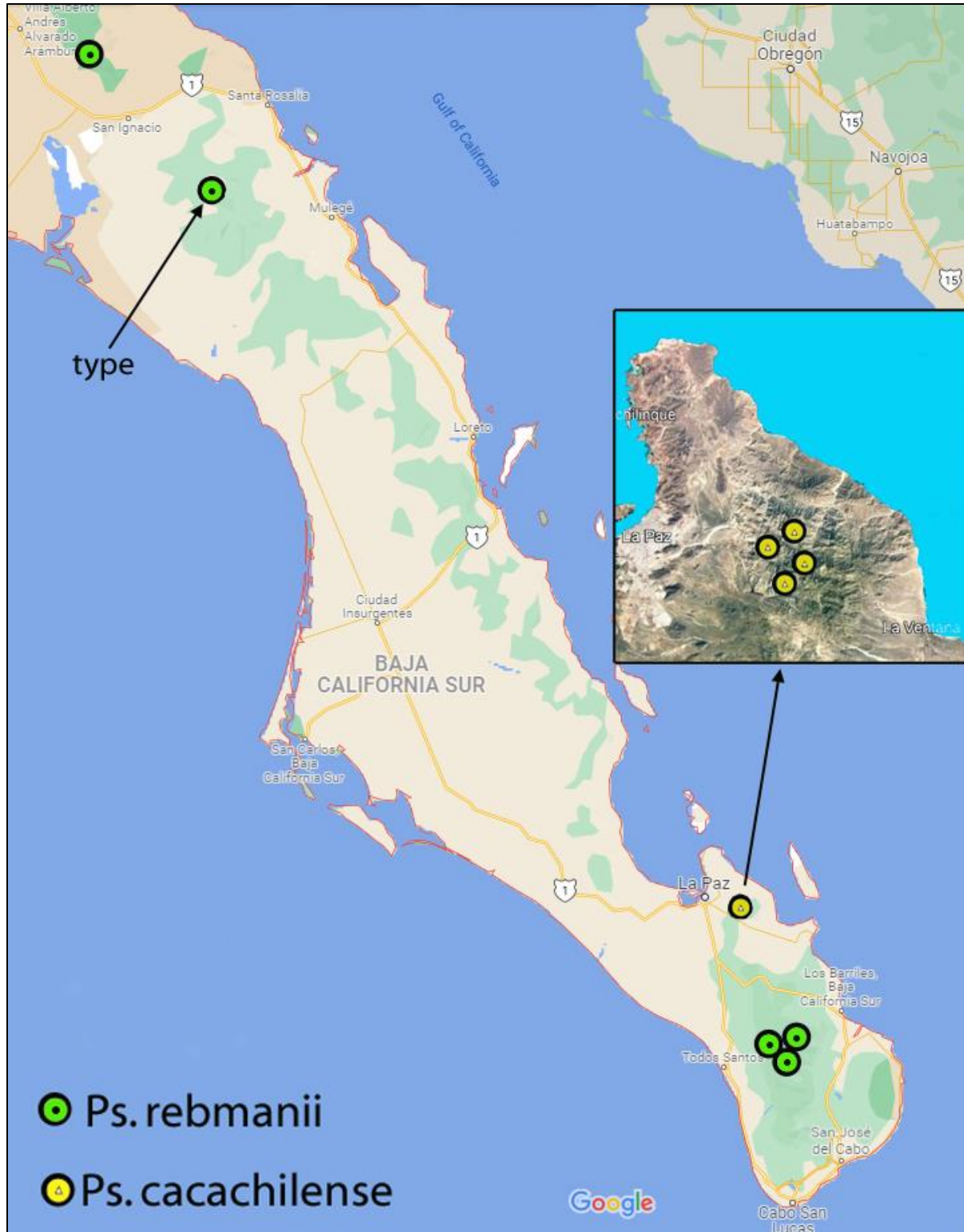


Figure 2. Distribution of *Pseudognaphalium rebmanii* and *P. cacachilense*.



Figure 3. *Gamochaeta capensis*. Rebman 30547 (holotype: SD).



Figure 4. *Gamochoeta capensis*. Detail from the holotype — adaxial leaf surface with long, vitreous hairs; abaxial surface with persistent arachnoid tomentum.



Figure 5. *Gamochaeta capensis*. Detail from the holotype.





Figure 6. *Gamochaeta capensis*. Detail from the holotype.



Figure 7. *Gamochaeta rubrolinea*. Rebman 31112 (holotype: SD).

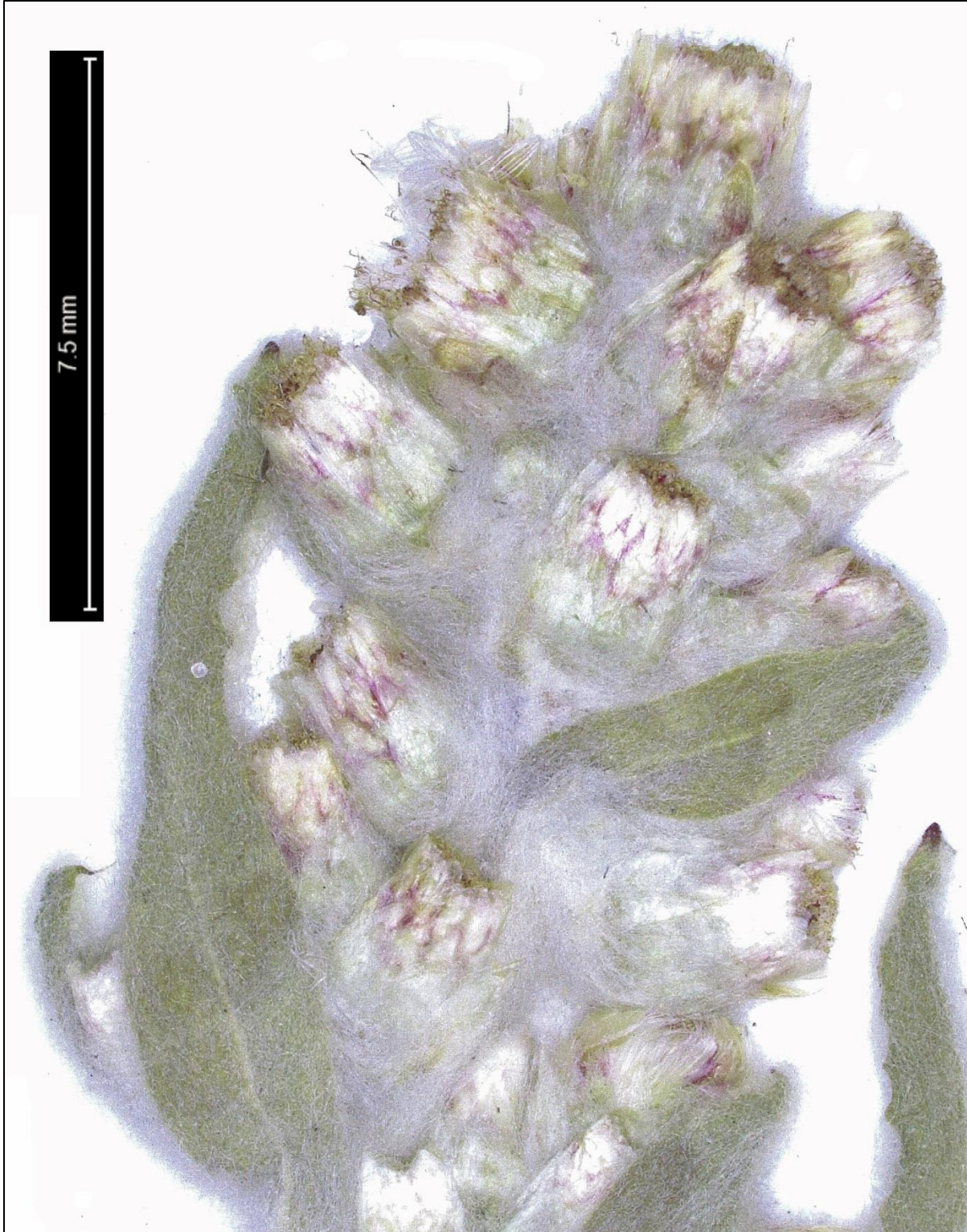


Figure 8. *Gamochaeta rubrolinea*. Detail from the holotype.



Figure 9. *Gamochaeta rubrolinea*. Detail from the holotype.



Figure 10. *Gamochaeta rubrolinea*. Detail from the holotype showing phyllary shape and apex.



Figure 11. *Pseudognaphalium rebmanii*. Rebman 6056 (holotype, SD).



Figure 12. *Pseudognaphalium rebmanii*. Detail from holotype (SD).



Figure 13. *Pseudognaphalium* aff. *rebmanii* (see comments in text). *Rebman 5763* (SD).





Figure 14. *Pseudognaphalium rebmanii*. Sierra de la Laguna, vicinity of La Cienega. Photo by Jon Rebman, 13 Nov 2019.



Figure 15. *Pseudognaphalium rebmanii*. Sierra de la Laguna, vicinity of La Cienega. Photo by Jon Rebman, 13 Nov 2019 .



Figure 16. *Pseudognaphalium cacachilense*. Rebman 28938 (holotype, SD).



Figure 17. *Pseudognaphalium cacachilense*. Rehman 27260 (SD).