

**NEW SPECIES IN *PSEUDOGNAPHALIUM* (ASTERACEAE: GNAPHALIEAE)  
OF MEXICO. II. MISCELLANEOUS**

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**ABSTRACT**

Six new species of *Pseudognaphalium* are described from Mexico and Central America:

***Pseudognaphalium filifolium*** Nesom, sp. nov. (Oaxaca, Chiapas, Guatemala, Honduras), contrasted with *P. greenmanii*,

***Pseudognaphalium nayaritense*** Nesom, sp. nov. (Nayarit),

***Pseudognaphalium pacificum*** Nesom, sp. nov. (Sonora south mostly along the Pacific slope to Guatemala and Honduras) — contrasted with *P. roseum*,

***Pseudognaphalium perelegans*** Nesom, sp. nov. (Oaxaca, Chiapas, Guatemala, Honduras), contrasted with *P. bourgovii*,

***Pseudognaphalium xiphophyllum*** Nesom, sp. nov. (southern Chihuahua), and

***Pseudognaphalium zautlense*** Nesom, sp. nov. (Puebla and Veracruz).

Each species is mapped and illustrated by examples of herbarium collections.

This is the second of a series of papers describing previously unrecognized species of *Pseudognaphalium* in Mexico and Central America. The first (Nesom 2023) describes species with an inverted sexual ratio of pistillate/bisexual florets. The species here are presented in alphabetical order and probably are not closely related among themselves.

**1. *PSEUDOGNAPHALIUM FILIFOLIUM*** Nesom, sp. nov. **TYPE: MEXICO. Chiapas.** Mpio. San Cristobal Las Casas, along road to Chanal, 16–20 km E of Cilil, slopes with *Pinus*, *Quercus*, and *Arbutus*, 2380 m, 3 Dec 1976, *Breedlove 42024* (holotype: LL; isotype: MEXU, Fig. 6).

Distinct in its annual duration, filiform, eglandular, bicolor leaves, and small involucre with tawny phyllaries. Similar to *Pseudognaphalium inornatum* in aspect but phyllaries white and leaves strongly bicolor, adaxially eglandular, and not decurrent. Similar to *P. greenmanii* in its linear, eglandular leaves and white involucre but distinct in its shorter leaves (2.5–4 cm vs. 7–15 cm long) and greater number of florets (pistillate 21–42, bisexual 5–12 vs. 55–65, 6–10).

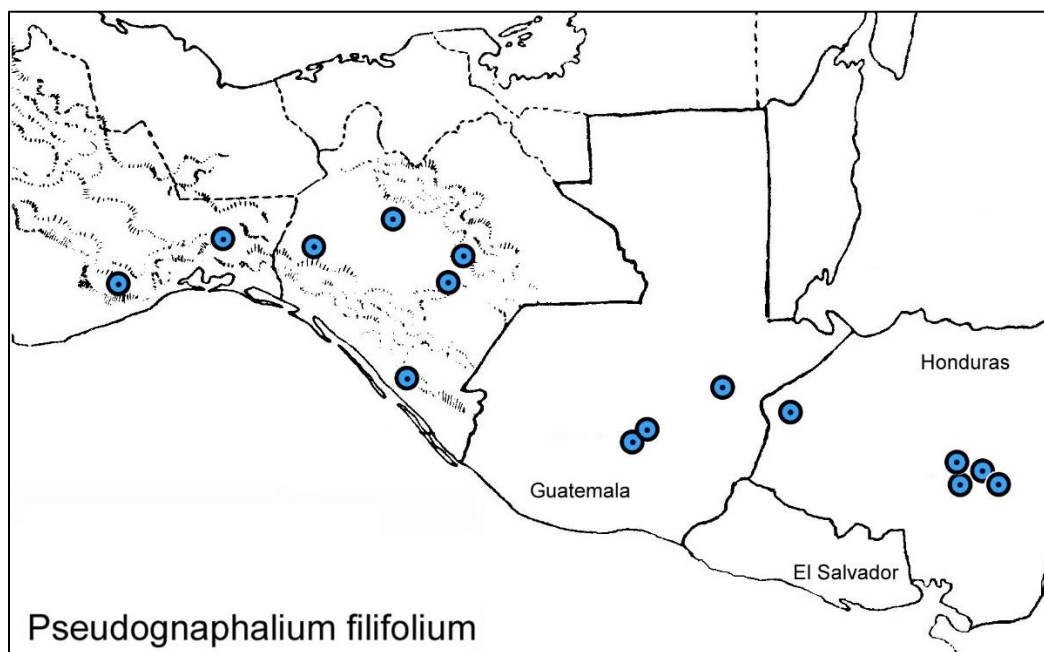
**Annual**, taproot slender, lignescent. **Stems** 30–50 cm tall, persistently sparsely to densely gray-white sericeous, eglandular. **Leaves** linear-filiform to linear-triangular, mostly 2.5–4 cm long, 1(–2.5) mm wide, margins revolute, base subclasping but not ampliate, not decurrent, strongly bicolor, dark green adaxially and sparsely invested with fine hairs, eglandular, abaxially white, densely matted-sericeous, eglandular. **Phyllaries** graduate in 3–4 series, creamy white to tawny white, hyaline, ovate, not keeled, apex acute, inner 5 mm long, stereome apex glandular and villous. **Pistillate florets** 21–42. **Bisexual florets** 5–12, corollas 3 mm long. **Achenes** ridged, smooth (not papillate).

Chiapas, Guatemala, Honduras. Pine, pine-oak, and pine-sweetgum woods; (700-)1000–2100 (–2300 in Guatemala) m; November–March(–June).

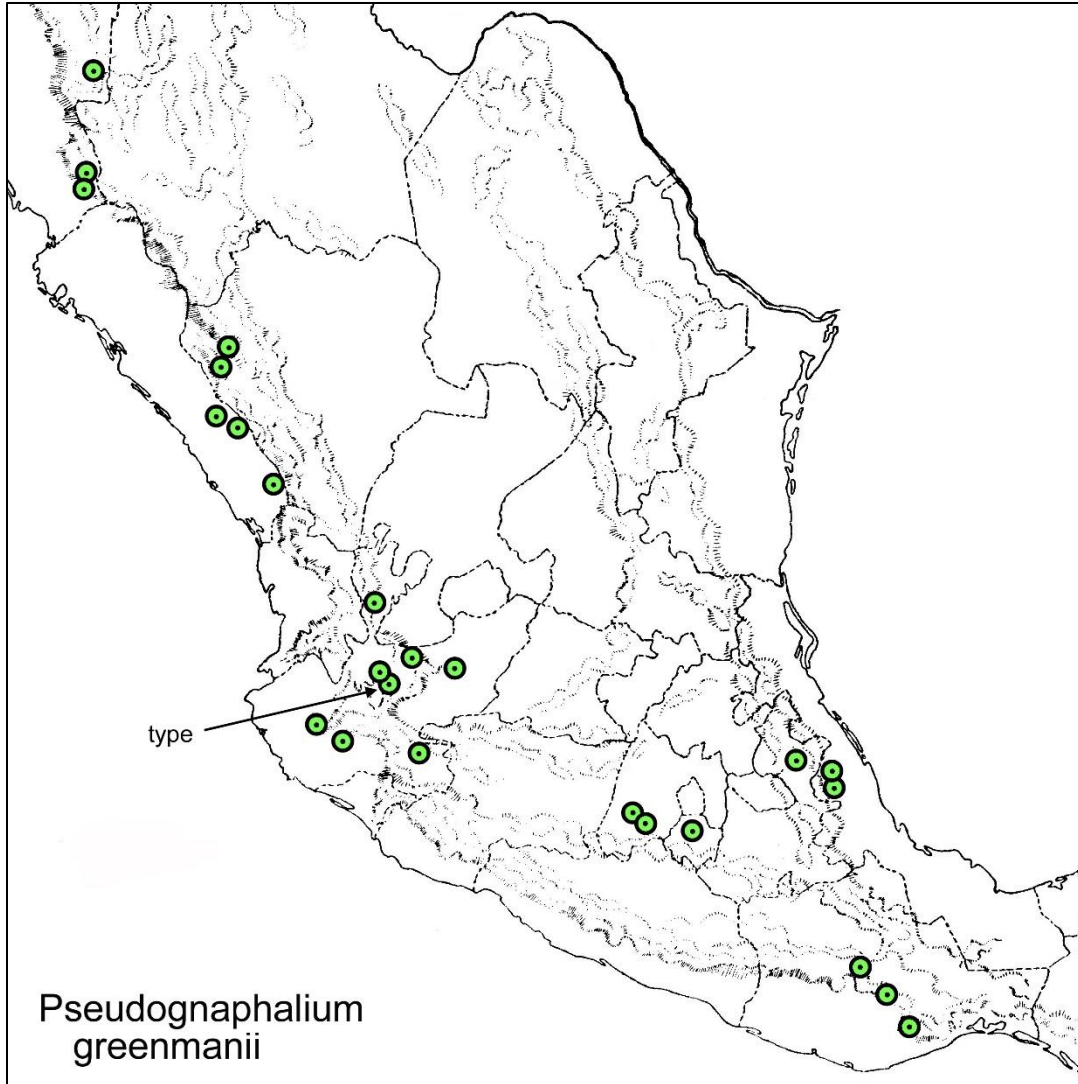
**Additional collections. GUATEMALA. Dept. Baja Verapaz.** Union Barrios, in high forest bordering road, 25 Feb 1972, *Contreras 11043* (LL-2 sheets, US); along CA 9, 1.3 km NE of turnoff to Salama en route to El Progreso, roadside, *Pinus-Liquidambar* forest, 1590 m, 29 Dec 1991, *Prather*

997 (TEX); [Dept. Guatemala]. El Tuerto près Guatemala, 1400 m, 22 Nov 1929, *Rodríguez 7192* (US); Dept. Zacapa, upper slopes, along Rio Repollal to summit of mountain, 2100-2400 m, 12-13 Jan 1942, *Steyermark 42506* (US). HONDURAS. Dept. Copán. Ca. 9 air km NNE of Copán, near lumber road on SE-facing slope, *Pinus oocarpa* with pyrophytic shrubs, 14 Jun 1977, *Poole 1086* (LL-2 sheets). Dept. El Paraíso. Slopes of Montaña de Yuscarán (Montserrat), dry pine woods, 700-900 m, 11 Mar 1951, *Morton 7904* (US); ca. 2 mi NW of Güinope, pine barren 1400 m, 5 Jan 1947, *Williams & Molina 11521* (US). Dept. Morazán. Slopes of Cerro de Uyaca, along trail between Hoya Grande and Valle Encantado, moist pine-oak forest, 1400-1500 m, 2 Dec 1948, *Standley 15304* (US); vicinity of Suyapa, hills above Suyapa, rocky slopes in pine woods, 1100-1200 m, 3 Nov 1951, *Swallen 11286* (US). MEXICO. Chiapas. Mpio. Cintalapa, near the microwave station at La Mina, 12 km S of Mex Hwy 190 near Rizo de Oro, crest of the sierra with *Pinus* and *Quercus* and riparian situations with Seasonal Evergreen Forest, 1000 m, 16 Oct 1971, *Breedlove 20531* (LL, MEXU); Mpio. Jitotol, 6-8 km W of Jitotol, adjacent to large double waterfall, steep slopes with *Pinus*, *Quercus*, and others, 1450 m, 16 Dec 1971, *Breedlove 23239* (F, LL); Mpio. San Cristobal Las Casas, along road to Chanal, 16-20 km E of Cilil, slopes with *Pinus*, *Quercus*, and *Arbutus*, 2380 m, 10 Nov 1976, *Breedlove 41402* (LL); Mpio. Teopisca, 5 km WSW of Teopisca on small dirt road slopes with *Pinus*, *Quercus*, and *Arbutus*, 1750 m, [involucre pink], 27 Nov 1976, *Breedlove 41840* (LL); Mpio. Mapastepec, Cipressal, Reserva El Triunfo, Poligono 1, montane forest 1850 m, Nov-Dec 1989, *Heath & Long 431A* (MEXU, TEX). Oaxaca. Mpio. Santa María Ecatepec, 3 km W of Santa María Ecatepec along road to Santo Domingo Chontelomatlán, ridge with *Pinus* and *Quercus*, 1830 m, 23 Oct 1986, *Breedlove 65322* (TEX); Mpio. San Miguel Chimalapa, un poco E de Benito Juárez por el camino a Chocomanatlán, primer arroyo, bosque de pino-encino, 1100 m, 5 Dec 1984, *Maya J. 972* (TEX). Map 1. Figures 1-5.

The type collection (*Breedlove 42024*, at MEXU) was identified by Freire et al. (2022) as *Pseudognaphalium inornatum* (DC.) Anderb., which differs in vestiture, leaf insertion, and involucre morphology and is a species of central Mexico. Pruski (2018) identified *Contreras 11043*, at MO as *P. greenmanii* (Blake) Anderb., which is similar to *P. filifolium* in its linear, eglandular leaves and white involucre, but as noted in the diagnosis, the latter has longer leaves and a greater number of florets. *Pseudognaphalium greenmanii* ranges from southeastern Sonora to Oaxaca (Map 2).



Map 1. Distribution of *Pseudognaphalium filifolium*.



Map 2. Distribution of *Pseudognaphalium greenmanii*.

**2. PSEUDOGNAPHALIUM NAYARITENSE** Nesom, **sp. nov.** **TYPE: MEXICO.** Nayarit. [Mpio. Del Nayar]. Between Santa Gertrudis and Santa Teresa, 8 Aug 1897, *J.N. Rose 2084* (holotype: US). Figures 7-8.

Similar to *Pseudognaphalium viscosum* in its stipitate-glandular stems and leaves (adaxially), bicolor leaves, hyaline phyllaries, and large number of florets; distinct in its broader, more widely spaced leaves, the distal with a prominently auriculate-clasping base. Distinct from *P. oxyphyllum* in its larger number of florets. Distinct from *P. pringlei* in its long-attenuate distal leaves and larger heads with more numerous florets. Distinct from *P. chartaceum* in its hyaline phyllaries and greater number of pistillate florets and fewer bisexual florets.

**Annual** (probably). **Stems** ca. 50–60 cm tall, densely and minutely stipitate-glandular, also persistently sparsely sericeous with fine hairs. **Leaves** (midcauline) narrowly oblanceolate to narrowly lanceolate, 4–9 cm long, 3–7 mm wide, margins flat, base auriculate-clasping, not decurrent, distal becoming triangular-lanceolate and shorter and apex long-attenuate, bicolor, adaxially dark green, minutely stipitate-glandular, adaxially gray-white sericeous-tomentose, eglandular. **Heads** few in

terminal clusters, forming a corymboid aggregate. **Phyllaries** ovate, hyaline, inner ca 3.5 mm long. **Pistillate florets** ca. 150. **Bisexual florets** ca. 29. **Achenes** not seen.

**Additional collections.** **Jalisco.** Mpio. Bolaños, "El mono," Predio "Las Berenjenas," Reserva Privada Las Berenjenas, 10 km NW de Bolaños, 21° 52' 58" N, 103° 52' 45" W, bosque encino pino medianamente alterado, 24 Nov 2002, *Domínguez Elva 12* (MEXU); Mpio. Bolaños, Camino al Cerro del Gallo, Predio "Las Berenjenas," Reserva Privada Las Berenjenas, 10 km NW de Bolaños, 21° 52' 32" N, 103° 51' 47" W, bosque de pino-encino, 5 May 2003, *Roldán 94* (MEXU). **Nayarit.** Mpio. Del Nayar, 28 km del entronque a San Juan Peyotán sobre la carr. Jesús María-Huejuquilla, bosque de *Pinus-Quercus*, 2290 m, 3 Sep 1991, *R. Ramírez 945* (MEXU). None of the collections here were cited by Freire et al. (2022). Figures 9-10.



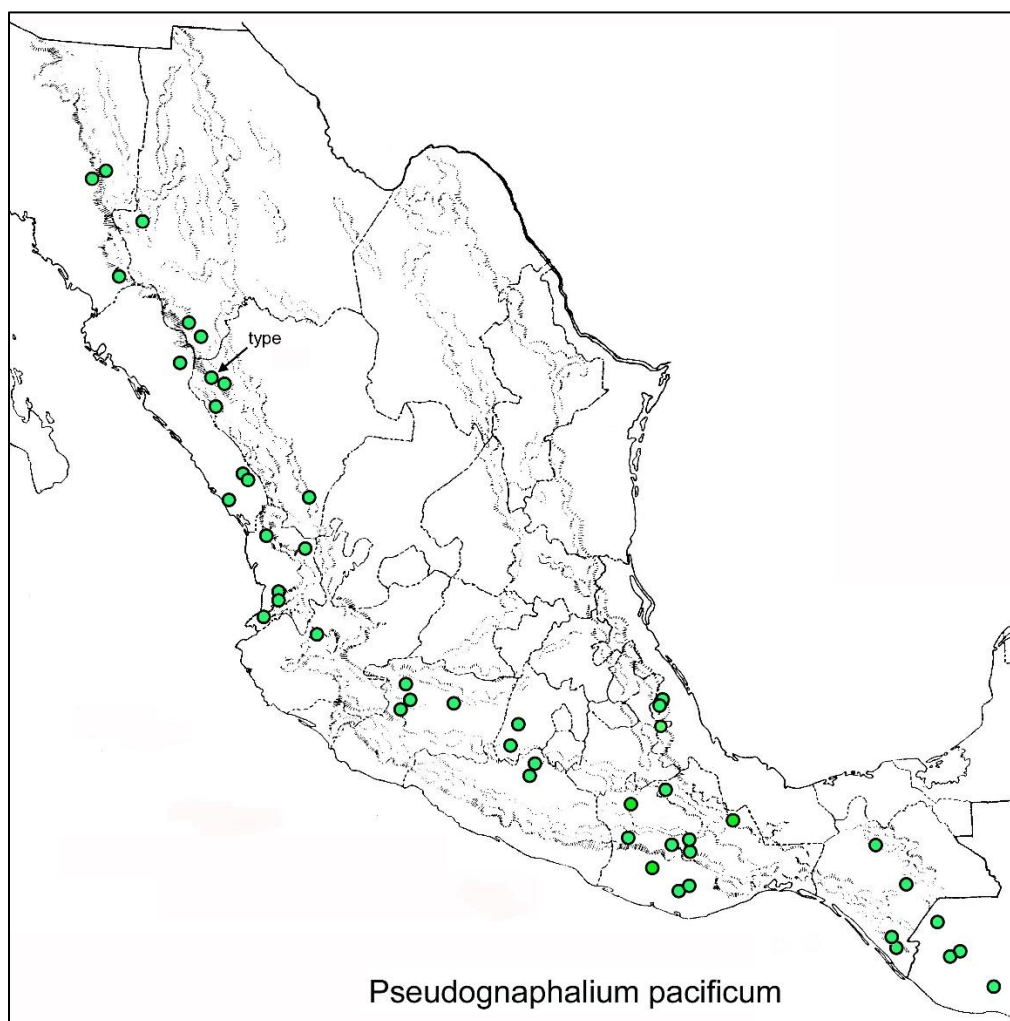
Map 3. Distribution of *Pseudognaphalium nayaritense*.

**3. PSEUDOGNAPHALIUM PACIFICUM** Nesom, **sp. nov.** **TYPE: MEXICO. Durango.** Mpio. Sianori, Sianori, dry habitat, Feb 1924, *J. Gonzalez Ortega* 5263 (holotype: GH; isotypes: MEXU, US).

Similar to *Pseudognaphalium roseum* in its thick stems, relatively large heads with white-opaque phyllaries, and weakly glabrescent adaxial leaf surfaces with persistent, thickened trichome bases; distinct in its long-decurrent leaves. The epithet alludes to the geographical affinity of the species to the Pacific slope.

**Annuals**, taprooted. **Stems** 0.5–0.6 m tall, thick, densely and persistently tomentose-sericeous with grayish-white hairs. **Leaves** narrowly lanceolate to oblanceolate, ascending, 4–8 cm long., 5–10(–15) mm wide, decurrent for the full internode or nearly so, not basally ampliate, weakly bicolored, the upper surface loosely woolly and tardily glabrescent, the thick bases of the non-glandular trichomes persistent and densely present, sometimes also with a few small glands. **Phyllaries** white-opaque and shiny, strongly graduate in 4–5 series. the inner 5–6 mm long, with a rounded-apiculate apex, the middle and inner with an apically glandular stereome. **Pistillate** flowers 50–75. **Hermaphroditic** flowers 5–13, corollas 2.9–3.1 mm long, lobes eglandular. **Achenes** 0.6 mm long, shallowly ridged, epidermal surfaces smooth (not papillate).

Sonora, Chihuahua, Sinaloa, Durango, Nayarit, Jalisco, Michoacán, Guerrero, Edo. México, Veracruz, Oaxaca, Chiapas, Guatemala, Honduras. Llanos, pine-oak and oak-pine woods; 800–2600 (–3300 in Guatemala) m; January–April(–May).



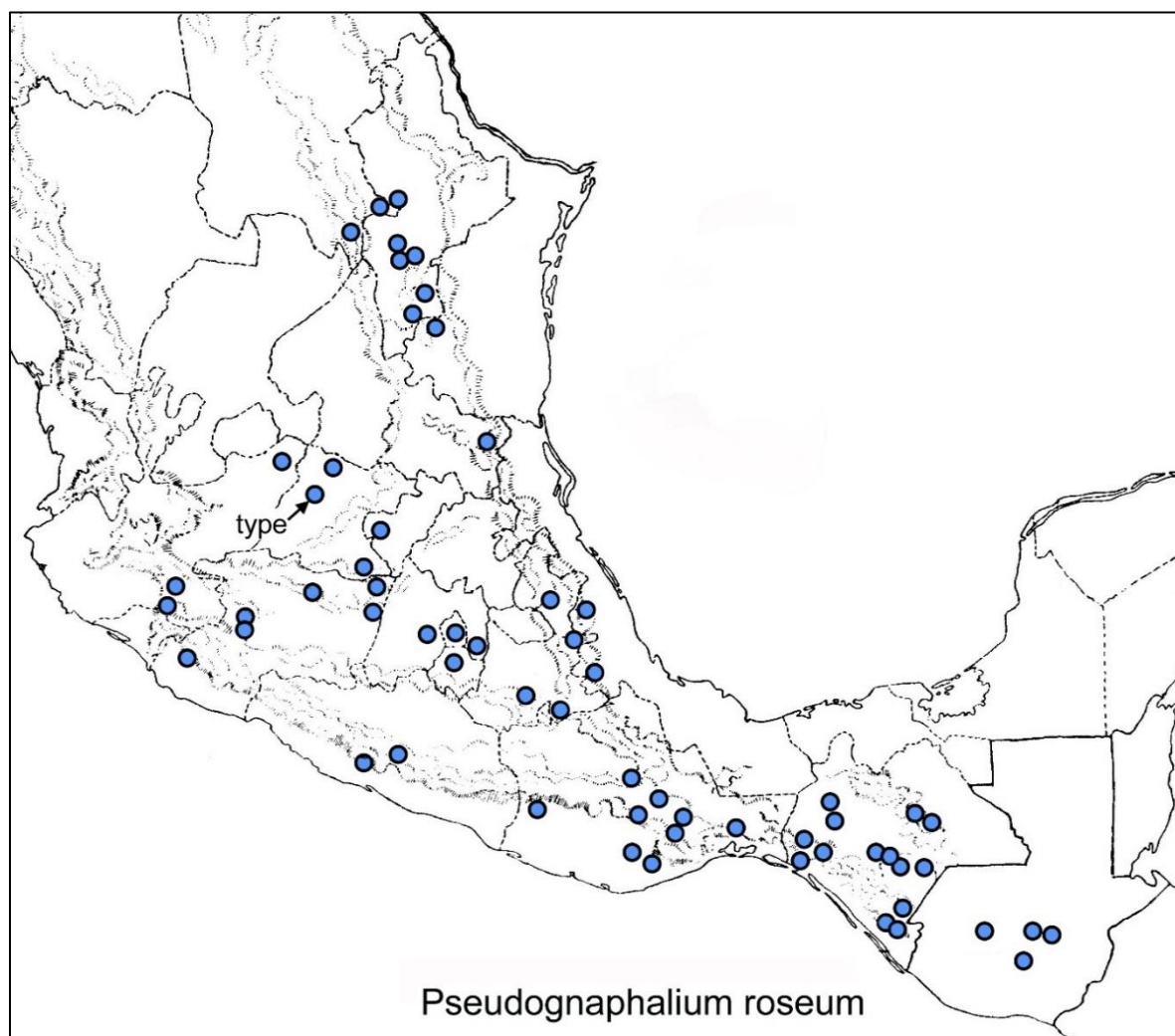
Map 4. Distribution of *Pseudognaphalium pacificum*. See text for Honduras record.

**Additional collections examined.** **GUATEMALA.** Dept. Chimaltenango, between Los Idolos and Chocoyos, road to Panajachel, forest, 2400 m, 12-23 Jan 1966, *Molina 16183* (US); El Quiché, W of Chihicastenango, pine forest of Pascual Abaj, 2500 m, 12-23 Jan 1966, *Molina 16279* (US); Huehuetenango, 8.5 km de Todos Santos, 3306 m, 1 Mar 2007, *Pruski 4276* (US); Sacatepéquez, Chillani, 1450 m, 3 Apr 1921, *Rojas 291* (US). **HONDURAS.** Dept. Morazán, vicinity of Suyapa, rocky slopes in pine woods above Suyapa, 1100-1200 m, 3 Nov 1951, *Swallen 11285* (US). **MEXICO.** **Chiapas.** Mpio Jitotol, 5 km SE of Jitotol along road to Bochil, open forest with *Pinus*, *Quercus*, *Nyssa*, *Liquidambar*, and *Brunnelia*, 1600 m, 9 Jan 1981, *Breedlove 49354* (MEXU); Escuintla, Buena Vista, Jan 1938, *Matuda 1956* (US); Mpio. Huixtla, 4-5 km N de Belisario Domínguez camino a Motozintla de Mendoza, bosque de pino-encino, 19 Sep 1983, *Téllez 6959* (MEXU-2 sheets, MO); Mpio. Amatenango del Valle, S of center of Amatenango del Valle, grassy slope with *Quercus*, 6100 ft, 11 Nov 1966, *Ton 1517* (US). **Chihuahua.** Near Parajes [Est. Parajes, 27° 22' N, 108° 10' W], occasional along railroad, 30 Dec 1963, *Flyr 83* (TEX); Sierra Charuco, Rancho Byerly, pine-oak, 5000-5800 ft, 17-25 Apr 1948, *Gentry 8049* (MEXU, US); 2 km SE of Cocheño, on road to Mesa Tarahumara, Rio Mayo region, pine-oak woods, 2200 m, 28 Aug 1986, *Martin et al. s.n.* (ARIZ); Llano Grande [not located], 12 May 1960, *Pennington 100* (TEX). **Durango.** San Ramón, 21 Apr-18 May 1906, *Palmer 154* (GH); 20 km S de Canelas, potrero en ladera con encino blanco, 11 Jan 1986, *Viscarra 176* (MEXU, US). Mpio. Tamazula, La Cumbre 6 km N de Guadalupe de Los Reyes, encinar con pinos, 1050 m, 17 Mar 1985, *Tenorio L. 8410* (MEXU). **Guerrero.** 4 km al S de Tetipac, sobre el camino Tetipac-Taxco, 12-05 1982, *Martínez S. 2884* (MEXU); Petlacala, Dist. Mina, pine forested slopes, 1700-1800 m, 15 Dec 1937, *Mexia 8957* (LL-2 sheets, US) and *Mexia 8958* (LL-3 sheets, US). **Jalisco.** Near Estación de Microondas en Tequila, 6 Jan 1986, *Téllez V. 9625* (MEXU). **Edo. México.** Temascaltepec, 1900 m, 18 Nov 1933, *Hinton 2427* (US); Cañada de Nanchititla, orilla de bosque de los pinos, 1600 m, 13 Dec 1970, *Matuda 38261* (US). **Michoacán.** Mpio. Lagunillas, lado SE del Cerro El Águila, subiendo por el poblado de Huatzanguio, bosque de pino-encino, 2620 m, 16 Feb 2008, *Cornejo T. 2550* (MEXU); arriba de Tacambaro-Rancho La Cascada, 18 Mar 1979, *Kishler s.n.* (MEXU); Entre Jicalan y Uruapan, 16 Jan 1941, *Langman 3270* (MEXU); aprox. 5 km S de Carapan, por la carr. a Uruapan, bosque mixto de pino-encino, ca. 2030 m, 21 Sep 1984, *Villaseñor 736* (MEXU). **Nayarit.** Tepic, [ca. 1837], *Barclay s. n.* (GH); Mpio. San Ignacio, 880 m, no date, *Ortega 135* (MEXU); El Tacote, 1925, *Ortega 5722* (US); SW of Tepic, 950-1000 m, open grassy arroyo, 18-19 Aug 1935, *Pennell 19799* (US); Jalisco, 10 Nov 1925, *Ferris 5918* (US); Mpio. Nayar, 6.5-11.5 km NE of Mesa del Nayar, 21 Oct 1989, *Flores F. 1716* (MEXU); Realizo [near Tepic-San Blas, ca. 1837], *Sinclair 6221* (GH). **Oaxaca.** Mpio. Tamazulápam del Espíritu Santo, "Tzää Cüpy," 14° 04' 22.8" N, 96° 07' 28.4" W, bosque de encino-pino, 1608 m, 17 Dec 2014, *Bernal-Ramírez 516* (MEXU); Alturas de Ejutla, 1300 m, 13 Dec 1906, *Conzatti 1632* (MEXU); along Hwy 175 between Oaxaca and Pochutla 77.8 mi S of Miahuatlán, 20.3 mi S of Suchixtepec, 9.9 m N of turnoff to Pluma Hidalgo, 1480-1530 m, 20 Jan 1979, *Croat 46077* (MO); Mpio. San Juan Quiotepec, Quiotepec, bosque de pino-encino, 1800 m, 15 Jan 1986, *García G. 3* (MEXU); Mpio. Santiago Nundichi, 1.5 km S de desv. Mixtepec-Yosoñama, bosque en ladera de cerro, 2420 m, 2 Nov 1984, *Manzanero M. 311* (MEXU); Río Cascobel, 12 Mar 1934, *Mell 2241* (US); Sierra de Felipe, 7000 ft, 17 Nov 1895, *Pringle 5682* (MEXU, NMC, US); Mpio. Candelaria Loxicha, 5.5 km en línea recta al NE de Candelaria Loxicha, bosque de *Pinus*, 1155 m, 8/3/2101, *Redonda Martínez 413* (MEXU) and 421 (MEXU); 14 km NW de Telixtlahuaca, veg. pino-encino, 7 Nov 1980, *Téllez 4116* (MEXU); Mpio. Lazaro Cardenas, 3.6 km E de Lazaro Cardenas, entrando por El Mezquite, pinar, 22 Jan 1988, *Torres C. 11229* (MEXU); Mpio. Santiago Textitlan, Paraje Río Palo, bosque de pino-encino, 1736 m, 19 Nov 2006, *Trujillo V. 906* (MEXU). **Puebla.** Mpio. Chichiquila, afueras de la localidad "El Palmar," talud de la carretera en zona de bosque de pino-encino con elementos tropicales, 1905 m, 1/09 2014, *Galbany Casals 2474* (MEXU). **Sinaloa.** Just W of El Palmito, Rancho el Liébré, pine forest hillside and deep barranca, ca. 7000 ft, 12 Mar 1980, *Lehto 24339* (ASU); Mazatlán, Jan 1923, *Ortega 5083* (US); Rte 40, Forestry Station 1 mi W of Mazatlan-side of El Palmito and Durango state line, forest opening along path, ca. 6200 ft, 19 Mar 1975, *Pinkava et al. P12907* (ASU); Mpio. Nayar, alrededor del Cangrejo, canada al N de la Mesa del Cangrejo, 22° 16' N, 104° 38' W, bosque de pino-encino, 1350-1500 m, 14 Nov 1990, *Ramírez R. 802* (MEXU); Mpio. Badiraguato, 11 km N of Surutato, on the Surutato-Santa Rita road, llano in grassy clearing of woods, 2000 m, 9 Mar 1985, *Vega Avina 1518* (MEXU, TEX). **Sonora.** Sierra de los Alamos. 26 Mar-8 Apr 1890, *Palmer 349* (GH, US); Sierra de Alamos, 19 Mar 1910, *Rose 13072* (US); Hwy 16 ca. 6.4 km W of San Nicolas, sterile pine woods, 1050 m,

13-14 Nov 1987, *Martin et al. s.n.* (ARIZ); Sahuaribo, moist pine-oak woods, 1550 m, waterfall, barranca drains to San Bernardo, 17 Mar 1992, *Martin et al. s.n.* (ARIZ); Tepopa, springs and waterfall at upper edge of short tree forest mixing with oaks, 18 Mar 1992, *Martin et al. 130* (TEX). **Veracruz.** Camino a Coatepec, Cordova y Gurria, [1888?], *Altamirano 77* (US); entre Altotonga y Tlapacoyan, comunidad herbacea en margen de bosque caducifolio con helechos, 9 Jan 2014, *Galbany-Casals 2466* (MEXU); Atzalán, "La Calavera," carr. Altotonga-Tlapacoyan, bosque caducifolio, 1500 m, 17 May 1973, *Ramirez & Dorantes 148 W* (TEX). Figures 11-14.

Phyllaries of *Pseudognaphalium pacificum* sometime are pinkish in the vicinity of Petlacala, Guerrero, and Temascaltepec, Mexico.

Among the collections cited here, Freire et al. (2022) cited three — *Villasenor 736* and *Torres 1129* as *Pseudognaphalium roseum* and *Ramirez R. 802* as *P. chartaceum*. *Pseudognaphalium pacificum* is closely similar to *P. roseum*, but the latter has a wider range (although *P. pacificum* extends much further north along the Pacific flank) and the two are sympatric in southern Mexico and Guatemala, with little or no evidence of intermediacy.



Map 5. Distribution of *Pseudognaphalium roseum*. Adventives occur in San Diego Co., California (see Fig. 0). The distribution continues southward through Central America to Panama. The population system in Coahuila-Nuevo León-Tamaulipas is under further study for evidence of evolutionary differentiation. Illustrations in Figs. 15-21.

**4. PSEUDOGNAPHALIUM PERELEGANS** Nesom, **sp. nov.** **TYPE: MEXICO. Chiapas.** Mpio. Jitotol, 6–8 km W of Jitotol, steep slopes with *Pinus*, *Quercus*, *Hauya*, *Erythrina*, *Lysiloma*, *Oreopanax*, and *Ostrya*, adjacent to large double waterfall, 1450 m, 25 Jul 1972, *D.E. Breedlove* 26376 (holotype: LL). Figures 22–24.

Similar to *Pseudognaphalium bourgovii* in its large, long-decurrent leaves, and tawny, hyaline-shiny phyllaries but distinct in its leaves (adaxial) with multicellular, viscid but not glandular hairs, larger involucre (5–6 mm high vs. 4 mm), and greater number of pistillate florets (80–102 vs 45–70).

**Annual**, taproot woody. **Stems** 60–150 cm tall, sparsely sericeous, minute, viscid hairs beneath the tomentum. **Leaves** narrowly obovate to narrowly lanceolate, midcauline mostly 2.5–7 cm long, 4–14 mm wide, margins not revolute or slightly so in the narrower (more distal), often sinuous, base not ampliate, subclasping and decurrent 5–15 mm, reduced in size distally, becoming linear-triangular and bracteate, strongly bicolor, adaxially pastel green and densely invested with minute, tawny, multicellular hairs without an expanded glandular tip, abaxially gray-green with persistent, matted tomentum of fine hairs, without the viscid hairs of the adaxial surface. **Phyllaries** 35–41, graduate in 4–5 series, tawny-white and somewhat hyaline, broadly ovate to oblong-ovate, weakly keeled or not, apex broadly acute, inner 5–6 mm long, sterome apex glandular, not hairy. **Pistillate florets** 85–110. **Bisexual florets** 4–12, corollas 3.5–4 mm long, lobes glandular. **Achenes** 0.5–0.6 mm long, shallowly 6-ridged, epidermal surfaces smooth (not papillate).

Oaxaca, Chiapas, Guatemala, Honduras; pine and pine-oak woods, fields, roadsides; ca. 1300–2500 m; June–October.

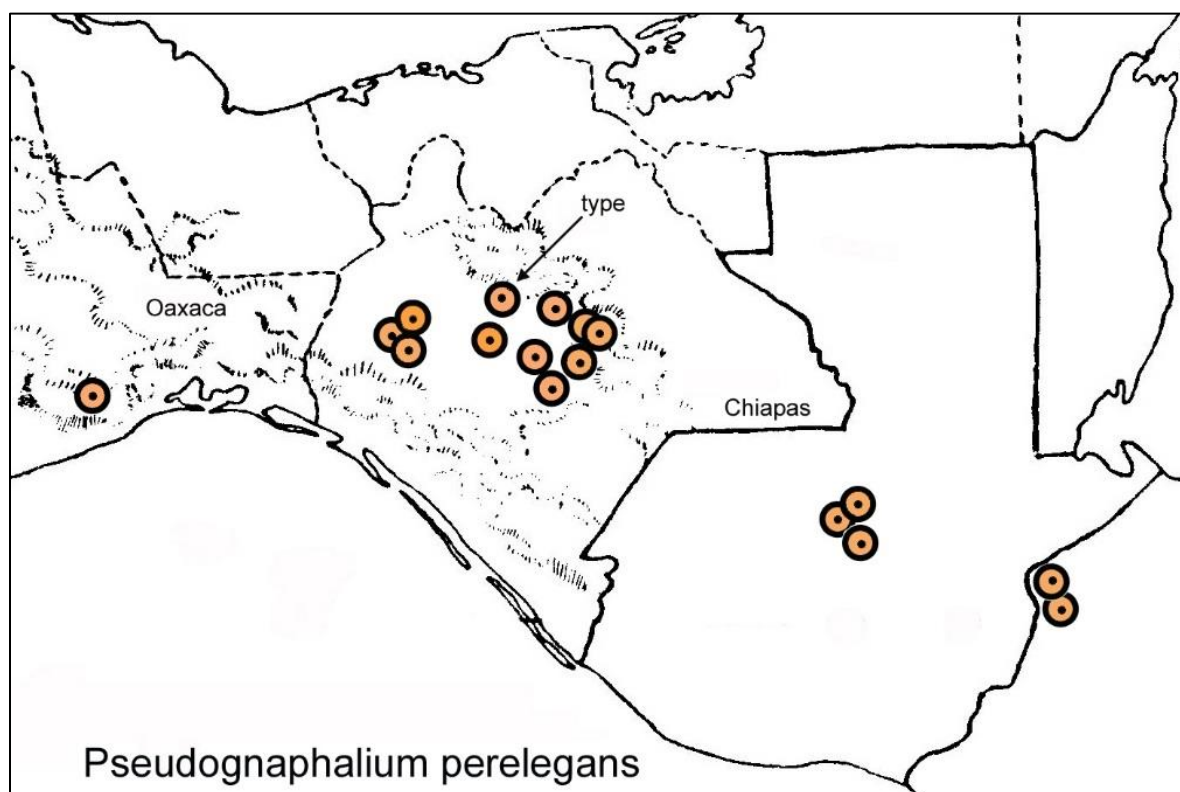
**Additional collections examined. GUATEMALA.** Dept. Alta Verapaz: ca. 2 mi NE of San Pedro Carchá, 12 Jul 1960, *King* 3324 (TEX); ca. 5 mi S of Cobán along National Rte 5, 11 Jul 1960, *King* 3303 (TEX); Alta Verapaz, ca. 9 km SW of Cobán, 5000 ft, 23 Jun 1976, *King* 7104 (MO, US); mountains near Hacienda of Chaucol, 11,000 ft, 2 Jan 1896, *Nelson* 3660 (US); Alta Verapaz, Cobán, 1400 m, May 1903, *von Tuerckheim* 528 (US); Alta Verapaz, Cobán, 4300 ft, Apr 1886, *von Tuerckheim* 92 (US); Alta Verapaz, Cobán, 1400 m, May 1903, *von Tuerckheim* 8241 (US); Alta Verapaz, Cobán, 6 Jul 1906, *von Tuerckheim II.1283* (US-2 sheets). **HONDURAS.** Dept. Ocotepeque, Cordillera Merendón, La Montañita, wet bank along creek, 1600 M, 31 Aug 1968, *Molina R.* 22580 (US); Dept. Copán, ca. 9 air km NNE of Copán, near lumber road on SE-facing slope, 14 Jun 1977, *Poole & Watson* 1069 (LL-2 sheets). **MEXICO. Chiapas.** Mpio. Tenejapa, paraje of Matsab, NE side of the hill called Matsab, steep heavily wooded slope with *Quercus*, *Drimys*, and *Magnolia*, 9200 ft, 25 Aug 1966, *Breedlove* 15316 (TEX); San Pablo Chalchihuitán [Chalchihuitán], 2 km al NO de Escuela de Balun Aco'a, 1550 m, 18 July 1988, *Hernández G.* 126 (MEXU); Mpio. Oxchuc, 30 km N de San Cristobál Las Casas, camino a Ococingo, bosque de pino, 1100 m, 9 Aug 1984, *Martínez S.* 6833 (MEXU); NW of Berriozabal, 6 Sep 1953, *Miranda* 7885 (MEXU-2 sheets); tableland about Ocuilapa, 3400–3800 ft, 21 Aug 1895, *Nelson* 3013 (US); Mpio. San Cristobal de las Casas, Estación Biologica Huitepec, 16° 44' 45" N, 92° 41' 46" W, ladera N, matorral de *Baccharis vaccinioides* rodeado de bosque de encino, 3 Mar 1994, *Ramírez M.* 440 (MEXU, TEX); Mpio. San Juan Cancuc, Yax Neil, lado de la carretera por Oxchuc, 4 km del Cancuc, milpas y montes, 4400 m, 25 Sep 1987, *Sántiz C.* 144 (TEX); 1.1 mi NW of Nabenchauck on Rte 190, rest area with shrine and fields on a steep S-facing road cut, oak-juniper forest, 2400 m, 8 Jan 1990, *Soule* 2148 (MO, TEX); Mpio. Tenejapa, Kulaktik, 1600 m, 15 Aug 1982, *Ton* 4454 (MEXU); Mpio. Tenejapa, Kulz'k'tik, 1400 m, 5 Aug 1983, *Ton* 6453 (MEXU-2 sheets); Mpio. Tenejapa, Paraje Kulaktik, 10 Oct 1983, *Ton* 6844 (MEXU-2 sheets); ca. 11 km N of Berriozabal, on road to Maravillas, 24 May 1985, *Villaseñor & Thomas* 799 (MEXU); 14 km N de Ocozacoautla, carretera de Apic Pac, 16° 52' 08" N, 93° 27' 09" W, veg. secundaria derivada de bosque tropical subcaducifolio, 987 m, 4 Aug 2013, *Villaseñor et al.* 1927 (MEXU). **Oaxaca.** 3 km W of Santo Tomas Teipan along road from Santa María Ecatepec to Santo Domingo Chontelomatlan, steep slope with *Pinus* and *Quercus*, 2195 m, 24 Oct 1986, *Breedlove* 65386 (TEX). Figures 25–30.



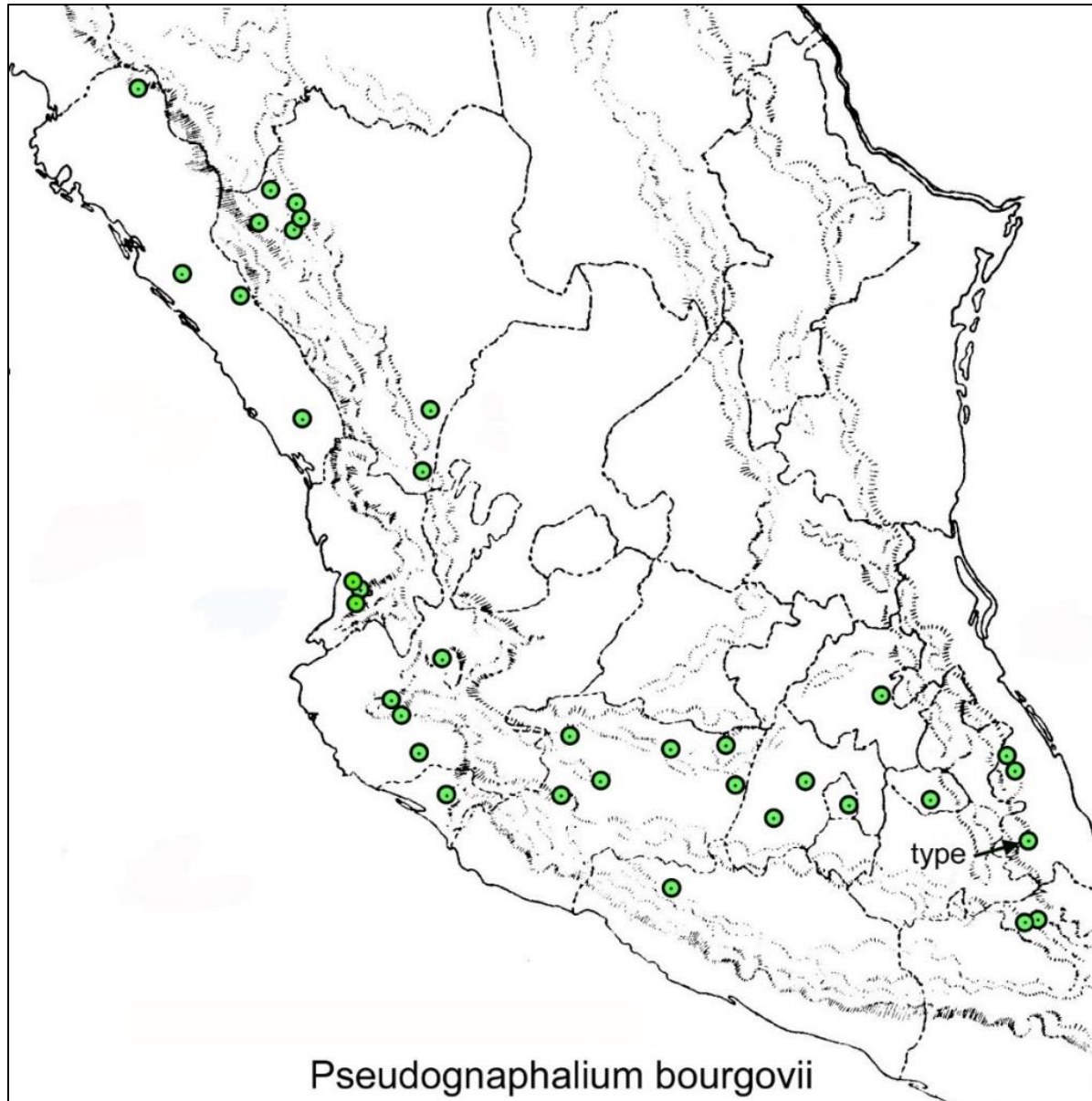
The similarity between *Pseudognaphalium bourgovii* (Map 7) and *P. perelegans* seems close enough to suggest that they are sister species. Consistent differences in morphology, however, and the geographic disjunction between them provide a rationale for regarding them as separate species.

1. Leaves (adaxial surface) eglandular and without viscid hairs; involucre 4 mm long; pistillate florets 45-70 ..... ***Pseudognaphalium bourgovii***
1. Leaves (adaxial surface) densely invested with minute, tawny, multicellular hairs without an expanded glandular tip; involucre 5-6 mm long; pistillate florets 85-102 ..... ***Pseudognaphalium perelegans***

Freire et al (2022) cited Villaseñor 799 and Hernández G. 126 as *Pseudognaphalium brachypterum*; they cited Martínez S. 6833, Miranda 7885, and Ton 4454, 6453, and 6844 as *P. bourgovii*. Others cited here from MEXU are IDed there as *P. bourgovii*. Pruski (2018) placed King 7104 from Guatemala among collections he identified as *P. brachypterum*, but he noted that they are distinct from the species in northeastern Mexico, there in its typical morphology.



Map 6. Distribution of *Pseudognaphalium perelegans*. See Map 7 for *P. bourgovii*.



Map 7. Distribution of *Pseudognaphalium bourgovii*.

- 6. PSEUDOGNAPHALIUM XIPHIPHYLLUM** Nesom, **sp. nov.** **TYPE: MEXICO. Chihuahua.** Mpio. Guadalupe y Calvo, NW side of Cerro Mohinora, ca. 12.5 mi SW of Guadalupe y Calvo past turnoff to peak, downslope on road to Sinaloa, 26° 00' N, 107° 03' W, area of oak-pine with fir and scattered madrones, 2470 m, 21 Aug 1988, A. McDonald 2507 with G. Nesom (holotype: TEX, Figs. 31-32; isotype: TEX 423899).

Distinctive in its very large (long, triangular), bicolor leaves with a clasping base and its involucre immediately subtended and surrounded by bracteal leaves.

**Perennial** (probably), roots not collected. **Stems** 50–80 cm long, lax and spreading, persistently white- to gray-white-sericeous with fine hairs, glabrescent proximally, minutely stipitate-glandular beneath the tomentum. **Leaves** oblong-triangular to narrowly triangular, midcauline (largest) 5–14 cm long, 10–20 mm wide, margins not revolute, base slightly ampliate or not, truncate and broadly clasping, not decurrent, apex acute, reduced in size distally and becoming linear-triangular, strongly

bicolor, dark green adaxially and minutely stipitate-glandular, otherwise glabrous or very sparsely villous, abaxially gray to white with persistent, close but loose tomentum (epidermis visible), minutely stipitate-glandular beneath the tomentum. **Phyllaries** graduate in 3–4 series, tawny, hyaline, oblong-ovate to ovate, not keeled, apex obtuse then abruptly attenuate to a fine apiculum, inner 4 mm long. **Pistillate florets** 85–103. **Bisexual florets** 21–25, corollas 3.5 mm long, lobes glandular. **Achenes** (mature not seen).



Map 9. Distribution of *Pseudognaphalium xiphiphyllum*. Known only from the type collection.

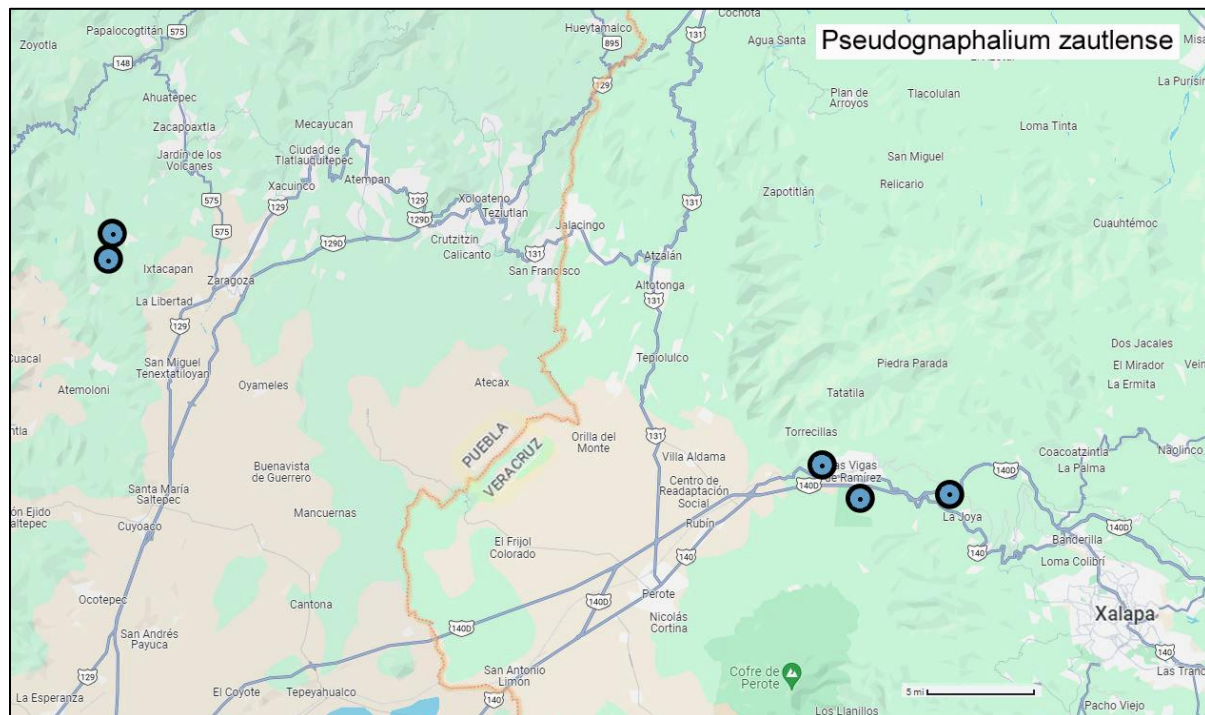
**7. PSEUDOGNAPHALIUM ZAUTLENSE** Nesom, *sp. nov.* **TYPE: MEXICO. Puebla.** Mpio. Zautla, Rosa de Castilla, en lugar llamado La Loma, sobre la calle Puebla a la altura del preescolar, hacia el oest de la comunidad, 19.78881, -97.65453, veg. secundaria de bosque de encino, en laderas, en sitios húmedos, bajo dosel, 2140 m, 15 Nov 2014, *M. Jimenez C. 30358* (holotype: TEX-Fig. 33; isotypes: HUAP-Fig. 34, US).

Distinct among the species of *Pseudognaphalium* with white-opaque phyllaries in its eglandular vestiture, white stems, narrowly oblanceolate to linear-lanceolate, basally attenuate and decurrent, bicolor leaves, and relatively few florets (pistillate outnumbering the bisexual).

Annuals, taprooted. **Stems** 35–90 cm tall, persistently tomentose-sericeous with grayish-white hairs, eglandular. **Leaves** narrowly oblanceolate (proximal) to narrowly oblong or linear (distal), basally attenuate, not ampliate or clasping spreading-ascending, mostly 6–8 cm long, 5–6 mm wide (distalmost becoming linear-lanceolate and 1–2 mm), decurrent 4–9 mm, distinctly bicolor, adaxial surfaces dark green, thinly pubescent but quickly glabrescent, eglandular. **Phyllaries** white to tawny white to tawny, dull-opaque, strongly graduate in 3–5 series. inner 4–5 mm long, with an acute apex. **Pistillate** flowers 30–35. **Hermaphroditic** flowers 5–7, corolla lobes eglandular. **Achenes** shallowly ridged, epidermal surfaces smooth.

Known from collections by Miriam Jiménez Chimil from the vicinity of Rosa de Castilla, Puebla, and from several nearby localities in Veracruz, separated by about 40 miles from the Puebla plants.

**Additional collection. Puebla.** Mpio. Zautla, Rosa de Castilla, en Okotepek, tomando la vereda rumbo a Mexkaltenoh, siguiendo el camino Texokotsalan, a hora y media del centro de Rosa de Castilla, en parte SE de la comunidad, 19.77425, -97.64375, veg. secundaria de bosque de pino, en laderas, bajo dosel, 2450 m, 11 Nov 2014, *M. Jimenez C. 30318* (HUAP). **Veracruz.** Mpio. Rafael Ramírez [Las Vigas de Ramírez], Rancho Las Bayas, 1 km adelante del pueblo de la Joya, 19° 37' N, 97° 02' W, bosque de pino-encino, secundario, 2380 m, 5 Apr 1978, *Calzada 4356* (MEXU); entre Perote y las Vigas de Ramírez por la carretera 140, un poco después de pasar Cruz Blanca, 19° 38' 10.6" N, 97° 09' 9.1" W, margen ruderal de la carretera en un bosque de pino-encino, 2440 m, 1 Sep 2014, *Galbany Casals GC-2468* (MEXU); entre Las Vigas de Ramírez y La Joya, por la carretera 140, 19° 37' 35.2" N, 97° 04' 20.8" W, en un pedregal volcanico en claro de bosque de pino, 2412 m, 1 Sep 2014, *Galbany Casals GC-2470* (MEXU). Figures 35-36.



Map 10. Distribution of *Pseudognaphalium zautlense*. Puebla and Veracruz.



Figure 1. *Pseudognaphalium filifolium*. Detail from *Breedlove* 65322 (Fig. 2).



Figure 2. *Pseudognaphalium filifolium*. Chiapas, Breedlove 65322 (TEX).

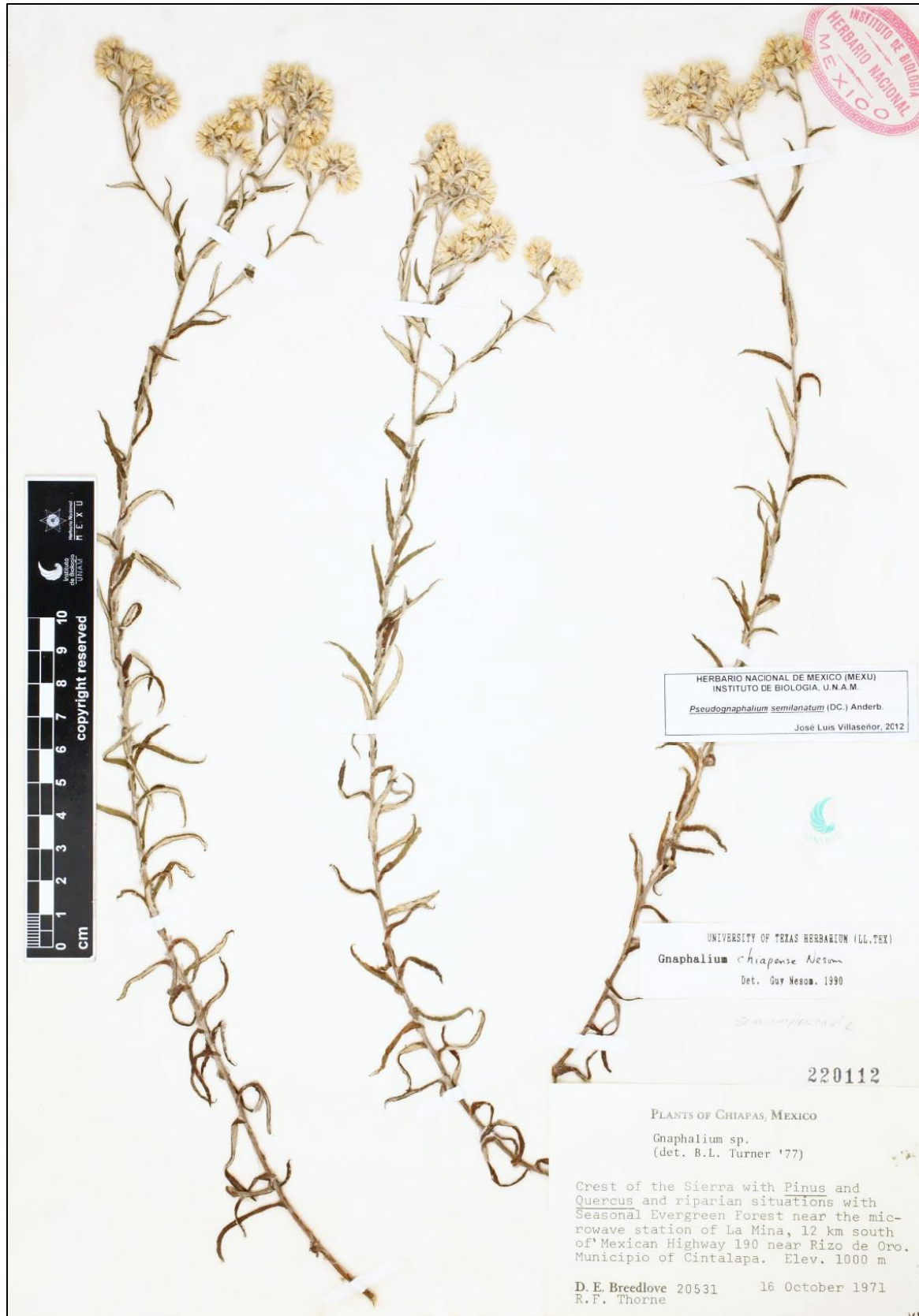


Figure 3. *Pseudognaphalium filifolium*. Chiapas, Breedlove 20531 (MEXU).



Figure 4. *Pseudognaphalium filifolium*. Detail from *Breedlove 20531*, Figure 3.





Figure 5. *Pseudognaphalium filifolium*. Details.

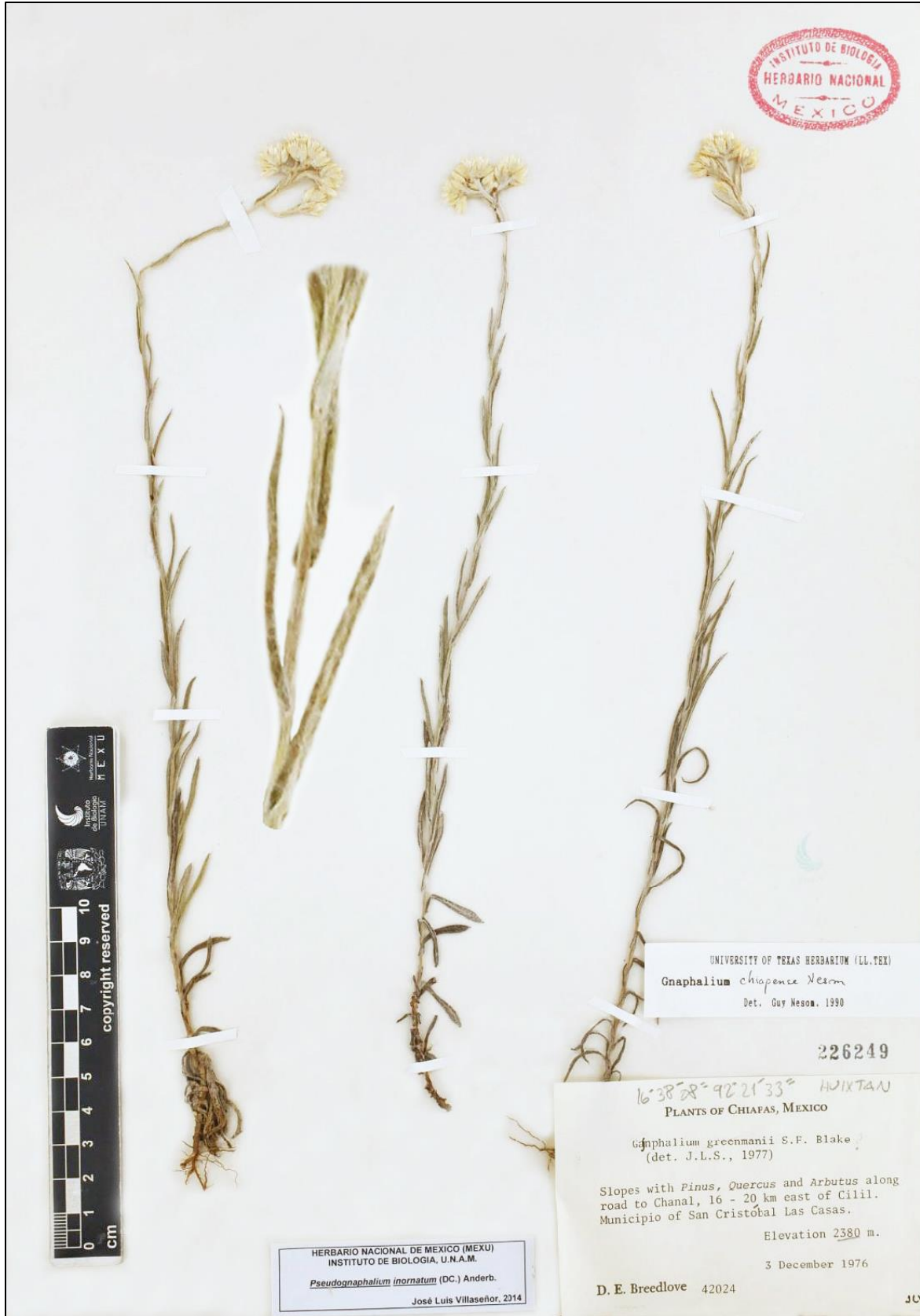


Figure 6. *Pseudognaphalium filifolium*. Chiapas, Breedlove 42024, holotype (MEXU).



Figure 7. *Pseudognaphalium nayaritense*. Mpio. Del Nayar, Nayarit, Rose 2084 (US, holotype).



Figure 8. *Pseudognaphalium nayaritense*. Detail from holotype, Fig. 7.



Figure 9. *Pseudognaphalium nayaritense*. Mpio. Del Nayar, Jalisco, Flores F. 945 (MEXU).



Figure 10. *Pseudognaphalium nayaritense*. Mpio. Bolaños, Jalisco, Domínguez Elva 12 (MEXU).



Figure 11. *Pseudognaphalium pacificum*. Sonora, Palmer 349 (US).



Figure 12. *Pseudognaphalium pacificum*. Edo. México, Matuda 30280 (US).





Figure 13. *Pseudognaphalium pacificum*. Chiapas, Breedlove 49354 (MEXU).



Figure 14. *Pseudognaphalium pacificum*. Honduras, Swallen 11285 (US).



Figure 15. *Pseudognaphalium roseum*. Distrito Federal, Pringle 11826 (US).



Figure 16. *Pseudognaphalium roseum*. Distrito Federal, Pringle 13996 (SMU).



Figure 17. *Pseudognaphalium roseum*. Jalisco, McVaugh 13574 (SMU).



Figure 18. *Pseudognaphalium roseum*. Mpio. Santa Catarina, Nuevo León, *Hinton 25982* (GBH).



Figure 19. *Pseudognaphalium roseum*. Mpio. Galeana, Nuevo León, Hinton 21263 (GBH).



Figure 20. *Pseudognaphalium roseum*. Mpio. Arteaga, Coahuila, Hinton 27764 (GBH).





Figure 21. *Pseudognaphalium roseum*. San Diego Co., California, Rebman 14986 (SD).



Figure 22. *Pseudognaphalium perelegans*. Chiapas, Breedlove 26376 (LL), holotype.



Figure 23. *Pseudognaphalium perelegans*. Chiapas, detail from holotype, Fig. 22.



Figure 24. *Pseudognaphalium perelegans*. Chiapas, detail from holotype, Fig. 22.



Figure 25. *Pseudognaphalium perelegans*. Chiapas, Breedlove 15316 (LL).



Figure 26. *Pseudognaphalium perelegans*. Oaxaca, Ulloa & Hernández 30 (MEXU).



Figure 27. *Pseudognaphalium perelegans*. Chiapas, Soule 2148 (TEX).



Figure 28. *Pseudognaphalium perelegans*. Chiapas, Mendez Ton 4454 (MEXU).





Figure 29. *Pseudognaphalium perelegans*. Chiapas, detail from *Mendez Ton 4454*, Fig. 28.



Figure 30. *Pseudognaphalium perelegans*. Chiapas, Martínez S. 6833 (MEXU).



Figure 31. *Pseudognaphalium xiphiphyllum*. Chihuahua, McDonald 2507 (TEX, holotype).



Figure 32. *Pseudognaphalium xiphiphyllum*. Detail from McDonald 2507 (TEX, holotype), Fig. 31.



Figure 33. *Pseudognaphalium zautlense*. Puebla, Jiménez Chimil 30358, holotype (TEX).



Figure 34. *Pseudognaphalium zautlense*. Puebla, Jiménez Chimil 30358, isotype (HUAP).

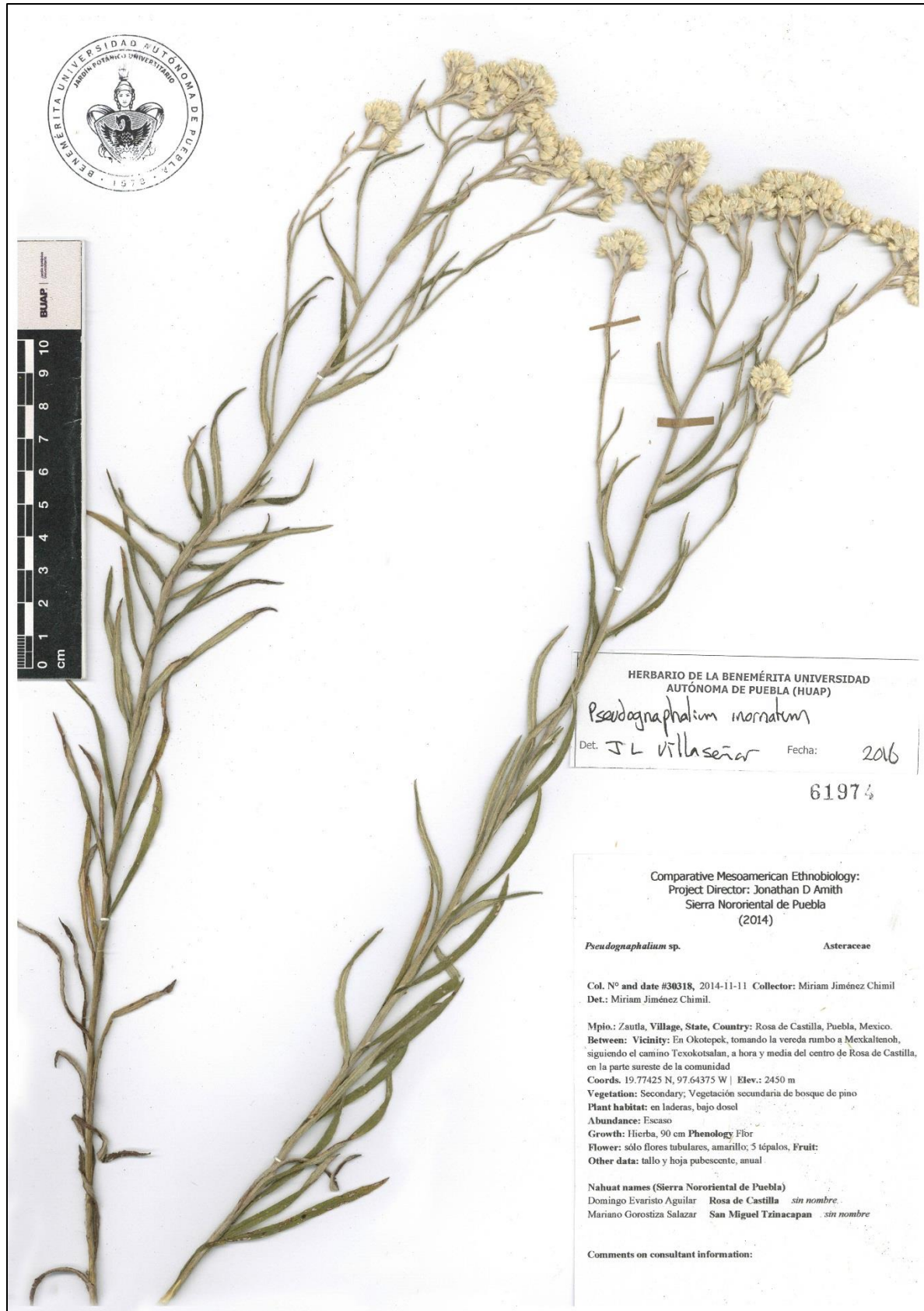


Figure 35. *Pseudognaphalium zautlense*. Puebla, Jiménez Chimil 30318 (HUAP).



Figure 36. *Pseudognaphalium zautlense*. Veracruz, Galbany Casals GC-2468 (MEXU).



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