

STUDIES IN GRINDELIA. I¹

NEW SPECIES, VARIETIES, AND COMBINATIONS OF GRINDELIA

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In the course of an extended critical monographic study of the genus *Grindelia*, it has been found necessary to describe a number of new species, varieties, and forms, in addition to making new combinations. The following represent a part of such novitates, which will be elaborated and discussed in more detail in a future publication concerning the entire genus.

Grindelia squarrosa (Pursh) Dunal var. ***serrulata*** (Rydb.) Steyermark, comb. nov.

G. serrulata Rydb. in Bull. Torr. Bot. Club **31**: 646. 1904.

Grindelia rubricaulis DC. var. ***bracteosa*** (Howell) Steyermark, comb. nov.

G. bracteosa Howell in Madroño **2**: 22. 1931.

Grindelia rubricaulis DC. var. ***robusta*** (Nutt.) Steyermark, comb. nov.

G. robusta Nutt. in Trans. Amer. Phil. Soc. N. S. **7**: 314. 1841.

Grindelia rubricaulis DC. var. ***latifolia*** (Kellogg) Steyermark, comb. nov.

G. latifolia Kellogg in Proc. Cal. Acad. **5**: 36. 1873.

Grindelia rubricaulis DC. var. ***platyphylla*** (Greene) Steyermark, comb. nov.

G. robusta Nutt. var. *platyphylla* Greene, Pitt. **2**: 289. 1892.

Grindelia rubricaulis DC. var. ***elata*** Steyermark, var. nov., caulibus supra valde corymbifere ramosis, ramosculis floriferis elongatis adscendentibus valde divaricatis, glabris, 6–12 dm. altis; foliis in ramosculis floriferis plerumque reductis et

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adversum capitulos multum parvioribus, omnibus firmiter membranaceis vel subcoriaceis, grosse remote vel crebre dentatis vel serratis, dentibus latis acutis vel triangularibus saliente acuminatis vel parce serratis, foliis caulinis principalibus mediis et inferioribus 3.5–7.5 cm. longis, 0.7–1.8 cm. latis, 3–9 plo longioribus quam latioribus, lineari vel anguste oblongis vel oblanceolatis vel oblongo-lanceolatis, acutis vel obtusis, ad basem plerumque angustatis, illis in ramosculis floriferis 1–2.3 cm. longis, 0.2–1 cm. latis, plerumque 1½–3 plo longioribus quam latioribus, ovatis vel ovato-lanceolatis vel lanceolatis, acutis vel acuminatis, valde amplexicaulibus, omnibus glabris; involuero abundanter resinosissimo 6–7 seriato, bracteis valde reflexis vel revolutis, extremis plerumque congestis, subteretibus, subcoriaceis; ligulis 8–12 mm. longis; aristis plerumque 2.—Collected on clay hills, 7 miles southwest of Simi, Ventura Co., California, May 29, 1931, *J. T. Howell 6574* (Cal. Acad. Sci. Herb. No. 188491 TYPE, Mo. Bot. Gard. Herb. photograph).

***Grindelia camporum* Greene var. *australis* Steyermark, var. nov.**, caulibus 3–7 dm. altis, glabris, supra subcorymbifere vel subpaniculate ramosis, ramosculis floriferis brevibus crebre adscendentibus saepe prope summas ramosculorum congestis; foliis valde resinoso-punctatis, omnibus foliosis, subcoriaceis, foliis caulinis principalibus mediis et superioribus 3–7 cm. longis, 1–2.5 cm. latis, 2–4 plo longioribus quam latioribus, oblongis vel ovato-oblongis vel ovatis, apice apiculatis, valde amplexicaulibus, saepe saliente denticulatis vel spinuloso-denticulatis, dentibus brevibus, basibus latis, apicibus acutis vel spinulosis; disco 1–1.3 cm. alto, 1.2–2 cm. lato; involucri bracteis valde reflexis vel valde recurvatis vel revolutis.—Collected at base of dry slope, 3 miles east of Elizabeth Lake, Los Angeles Co., California, Sept. 4, 1928, *P. A. Munz & I. M. Johnston 11157* (Pomona Coll. Herb. TYPE).

***Grindelia camporum* Greene var. *abbreviata* Steyermark, var. nov.**, caule glabro; foliis subcoriaceis, abundanter resinoso-punctatis, ut videtur lucidis, adversum capitulos reductis; disco parvo, 0.8–1 cm. alto, 1–1.2 cm. lato; involucri

bracteis brevibus, 2–8 mm. longis, apicibus brevibus, 1.5–2.5 mm. longis, paullo patentibus vel adscendentibus; aristis circiter 4 mm. longis.—Collected on alkaline flats, Lancaster, Los Angeles Co., Sept. 23, 1927, *Hoffmann* (Herb. Santa Barbara Mus. TYPE).

Grindelia hirsutula Hook. & Arn. var. **subintegra** Steyermark, var. nov., caulibus et foliis plus minusve puberulis; foliis integris vel subintegris; involucri bracteis apicibus erectis vel adscendentibus, glabris.—Collected on grassy hillside, 2 miles east of Ojai, Ventura Co., July 1, 1933, *J. T. Howell 11414* (Mo. Bot. Gard. Herb. No. 1044105 TYPE, Cal. Acad. Sci. Herb. isotype); dry field, Ojai, Ventura Co., June 4, 1927, *Hoffmann* (Herb. Santa Barbara Mus.).

Grindelia Hallii Steyermark, sp. nov., caulibus tenuibus, 2.5–6 dm. altis; foliis subcoriaceis, abundanter et conspicue resinoso-punctatis, serrulatis vel saliente serratis vel integris, foliis caulinis mediis et inferioribus 2.5–7.5 cm. longis, 0.7–1.2 cm. latis, $3\frac{1}{2}$ – $7\frac{1}{2}$ plo longioribus quam latioribus, oblongis vel oblongo-oblanco-latis vel oblongo-lanceolatis, foliis caulinis superioribus et illis in ramosculis floriferis oblongo-lanceolatis vel lanceolatis; capitulis parvis, 1.5–2 cm. latis; disco parvo, campanulato-hemispherico, 0.7–1 cm. alto, 0.8–1.7 cm. lato; involucrio abundanter resinoso, involucri bracteis exterioribus et mediis apicibus brevibus erectis, adscendentibus, patentibus vel paullo reflexis acutis vel acuminatis, 2–8 mm. longis, lanceolatis vel lineari-lanceolatis; ligulis 10–20, 8–9 mm. longis, 2–3 mm. latis; achaeniis 4.5–5 mm. longis, circiter 2 mm. latis, laevibus vel sulcatis, apice uni-dentato vel oblique truncato; aristis tenuibus, integris, 2.5–4 mm. longis, $\frac{1}{2}$ – $\frac{3}{4}$ (plerumque $\frac{1}{2}$ – $\frac{2}{3}$) longitudinem disci floris aequantibus.—Collected in open meadows about Cuyamaca Lake, San Diego Co., California, June 30, 1903, *L. R. Abrams 3957* (N. Y. Bot. Gard. Herb. TYPE, Gray Herb., Mo. Bot. Gard. Herb., Field Mus. Herb., and Pomona College Herb., isotypes).

Grindelia arenicola Steyermark, sp. nov., caulibus prostratis e basi sublignea vel herbacea tenue, ramosculis floriferis supra

laxe corymbifere divaricateque ramosis vel ramosculis elongatis simplicibus monocephalatis, glabris, 3–5 dm. altis; foliis firmis vel subcoriaceis, abundanter et plus minusve valde resinosis, foliis caulinis principalibus saliente serrulatis, serratis vel dentatis saepe modo supra medium vel circiter apicem, illis in ramosculis floriferis saepe infra capitulos reductis congestis et integris, foliis caulinis principalibus mediis et inferioribus 3–6 cm. longis, 0.8–2 cm. latis, 3–4 plo longioribus quam latioribus, spatulatis vel oblongo-vel oblanceolato-spatulatis, plerumque obtusis, foliis radicalibus vel basilaribus cuneatis vel obovato-cuneatis, apice obtusis vel subtruncatis; disco 0.8–1.2 cm. alto, 1.2–2 cm. lato; involuero abundanter et valde resinoso, bractearum parte superiore laxe revoluta vel valde reflexa; ligulis 19–34, aureo-luteis, 11–14 mm. longis, 2.5–3 mm. latis; achaeniis 3–4.5 mm. longis, 1.3–1.6 mm. latis; aristis 3–5, plerumque moderatim serrulatis vel setuloso-serrulatis vel setulosis, 3–4.5 mm. longis.—Collected in swale-like hollows in sand dunes, Mendocino Coastal plain, 4.5 miles north of Ft. Bragg, Mendocino Co., California, Sept. 14, 1930, *J. T. Howell* 5473 (Cal. Acad. Sci. Herb. No. 187937 TYPE, Univ. Cal. Herb., Gray Herb. and Mo. Bot. Gard. Herb., isotypes).