

## ROSACEAE ROSE FAMILY

### Part One.

#### *Rubus* L. Raspberries, Blackberries, Thimbleberries

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Plants herbaceous or woody. LEAVES alternate (except *Coleogyne*), stipulate, simple to compound or dissected. INFLORESCENCES usually more or less cymose. FLOWERS perfect, actinomorphic, often bearing 5 bracteoles; hypanthium bearing sepals, petals, and stamens; sepals usually 5; petals usually 5, distinct, often showy; stamens usually 10-many in whorls of 5; receptacle sometimes enlarged; pistils 1-many, each of 1-5 carpels, the ovaries superior to inferior. FRUIT an achene, follicle, drupe, pome, hip, aggregate or accessory.  $x = 7-9, 14-17$ . —Ca. 100 genera, ca. 3,000 spp., worldwide, concentrated in temperate and subtropical n. hemisphere. Many cultivated for fruits (*Fragaria*, *Malus*, *Prunus*, *Pyrus*, *Rubus*, etc.) and as ornamentals (*Crataegus*, *Pyracantha*, *Rosa*, *Sorbus*, *Spiraea*, etc.).

*Rubus* is distinguished from other genera by its fruit, which is a raspberry-like aggregate of drupelets.

#### **Rubus** L. Raspberries, Blackberries, Thimbleberries

Woody shrubs or vines; stems (canes) usually only biennial and temporally dimorphic; first year canes (primocanes) usually vegetative; second year canes (floricanes) bearing flowers; prickles if present found on canes, leaves, and inflorescences. LEAVES pinnately or palmately compound, or palmately lobed; primocane leaves often larger and with more leaflets than floricane leaves; stipules conspicuous, usually persistent, adnate to the petiole in ours, broad or linear. INFLORESCENCES uniflorous or few-many-flowered cymes. FLOWERS perfect, perigynous; hypanthium small; sepals 5, ascending to reflexed, commonly mucronate or caudate; petals 5, oblanceolate or spatulate to ovate, white to reddish; stamens many, distinct, erect; pistils many, on a convex to conical torus that enlarges in fruit, the styles terminal. FRUIT a flat to conical aggregate of sweet, fleshy or dry drupelets which separate from the torus (raspberries) or not (blackberries, dewberries).  $x = 7$ . —200-700 spp., 6 in AZ, temperate and tropical-montane, especially complex in Eur. and e N. Amer. (Latin: Pliny, *rubus* for bramble or blackberry). Bailey, L. H. 1941-1945. *Gentes Herb.* 5:1-932. Taxonomy complicated by hybridization, polyploidy, and apomixis. Collectors should include floricanes, primocanes, and notes regarding growth habit. Both *R. neomexicanus* and *R. parviflorus* are reported to be extensively browsed by deer. Native Americans reportedly ate the young shoots of *R. parviflorus* and *R. idaeus*, and made a tea of *R. parviflorus* leaves. *Rubus discolor*, *R. idaeus*, and *R. leucodermis* include fruit cultivars.

1. Plants unarmed; leaves simple.
2. Styles glabrous; drupelets capped by a hard, pubescent cushion; leaves to (6-)8-18 cm wide, the lobes acute to acuminate; fruit palatable; leaves (in ours) abaxially slightly puberulent and often glandular ..... ***R. parviflorus***

- 2' Styles hairy; drupelets not capped by a pubescent cushion; leaves to (3-)5-9(-15) cm wide, the lobes usually obtuse to acute; fruit soon drying, hardly palatable; leaves soft-pubescent below ..... *R. neomexicanus*
- 1' Plants conspicuously armed with prickles; leaves compound.
3. Cymes simple or compound with 11-numerous flowers terminating the floricanes; hairs stellate ..... *R. discolor*
- 3' Cymes simple, 1-8-flowered, terminating side-branches of the floricanes, or in leaf axils; hairs simple.
4. Leaflets green above and below, only mildly discolorous; canes procumbent, vine-like ..... *R. arizonensis*
- 4' Leaflets green above and gray-white below, strikingly discolorous; canes erect to arched or sprawling.
5. Calyx unarmed; prickles of leaves and inflorescences stout, broad-based, laterally compressed, and strongly recurved; mature fruit usually dark red to nearly black; primocane leaves ternate but sometimes falsely appearing palmately 5-foliolate due to the lateral leaflets being deeply divided; floricanes leaves 3-foliolate ..... *R. leucodermis*
- 5' Calyx bristly with slender prickles; prickles of leaves and inflorescences slender, narrow-based, terete or subterete, at most only moderately recurved; mature fruit bright red; primocane leaves always ternate or pinnately compound; floricanes leaves (3-)5(-7)-foliolate ..... *R. idaeus*

**Rubus arizonensis** Focke (of Arizona). Arizona Dew-berry. —Procumbent few-branched woody vine, the flowering branches erect to ca. 1.5 dm tall, the old epidermis not flaking off; plants eglandular, glabrous to minutely villous; prickles very sharp, stout, broad-based, laterally flattened, hooked, down-turned. LEAVES widely spaced, imperfectly deciduous, green above, paler green below; leaflets usually lanceolate to obovate; margins serrate to doubly serrate; primocane leaves (5-)7-11(-15) cm long, 4-8(-11) cm wide, palmately 3-5-foliolate or pedately (having lateral leaflets deeply lobed) 3-foliolate; floricanes leaves 4-9 cm long, 2.5-9 cm wide, 3-foliolate. INFLORESCENCES simple cymes with 1-6(-8) flowers terminating short, erect, lateral branches, sometimes surpassing the leaves, bracteate, often leafy at the base. FLOWERS: sepals usually reflexed, often apiculate to caudate, 4-10 mm long, the main portion ovate to lanceolate, the margins tomentose; petals white, 8-12 mm long; pistils glabrous. FRUIT small, tasty, sub-spherical, coherent, fixed to the fleshy torus; drupelets dark red, glabrous, fleshy. —Shady places in riparian areas and near springs: all cos. except Apache, Coconino, Greenlee, Mohave, Navajo, Yuma; 450-1850 m (1400-6000 ft); Mar-Jun; w TX; n Mex.

**Rubus discolor** Weihe & Nees (bicolored leaves). Himalayan Blackberry. —Shrubs to 3 m tall; canes strongly angled in cross-section, much-branched, erect, arching, sprawling, or creeping, rooting at the primocane tips, commonly living over 2 years; plants usually eglandular with stellate hairs; prickles sharp, stout, broad-based, laterally flattened, slightly to moderately recurved. LEAVES more or less evergreen, green above, gray to white below; leaflets usually ovate to obovate; margins serrate to doubly serrate; primocane leaves 12-20 cm long, 9-14 cm wide, pinnately to pedately 3-foliolate or palmately 5-foliolate; floricanes leaves 9-18 cm long, 8-18 cm wide, pinnately to pedately 3-foliolate. INFLORESCENCES conspicuously bracteate compound or simple terminal cymes with 11-numerous flowers surpassing the leaves. FLOWERS: sepals reflexed, sometimes apiculate, 4-10 mm long, subtomentose, ovate to broadly lanceolate; petals white to pink, 9-16 mm long; ovaries slightly pubescent to glabrous; styles glabrous. FRUIT very large, excellently flavored, spherical to hemispherical, coherent, fixed to the fleshy torus; drupelets black, glabrous to slightly pubescent, fleshy.  $2n = 28$ . [*R. procerus* of authors not P. J. Müll.]. —Cultivated, escaped, and naturalized in shady riparian

areas: Cochise, Coconino, Gila, Graham, Maricopa, Santa Cruz, Yavapai cos.; 900-2000 m (3000-6500 ft); Apr-Aug(-Oct); sporadically established throughout N. Amer.; native of Eur.

**Rubus idaeus** L. (sylvan). Red Raspberry. —Canes 1-2 m long, erect to decumbent; old epidermis of floricanes flaking off; plants in ours pubescent and glandular; prickles many, slender, narrow-based, terete or subterete, at most only moderately down-curved, often gland-tipped. LEAVES deciduous, green above, gray to white below; leaflets usually lanceolate; margins irregularly serrate to doubly serrate, sometimes lobed; primocane leaves in ours 7-16 cm long, 5-15 cm wide, pinnately 3-9-foliolate; floricanes leaves 2-8(-11) cm long, 2-7 cm wide, pinnately 3-5(-7)-foliolate. INFLORESCENCES simple obscurely bracteate cymes with 1-4 flowers terminating short side-branches of the floricanes or in leaf axils, sometimes surpassing the leaves. FLOWERS: sepals ascending, caudate, 4-12(-20) mm long, the main portion deltoid to narrowly lanceolate; ovaries tomentose; styles glabrous. FRUIT large, tasty, spherical to sub-hemispherical, weakly coherent, separating from the torus; drupelets bright red, tomentulose, fleshy. —2 vars., 1 in AZ; circumboreal.

Var. **strigosus** (Michx.) Maxim. (strigose). American Red Raspberry—Young stems, petioles, and inflorescences with minute eglandular hairs, gland-tipped prickles to ca. 2 mm long, and stipitate glands. LEAVES grayish-tomentose below.  $2n = 14$  (and polyploids). [*R. strigosus* Michx., *R. strigosus* var. *arizonicus* (Greene) Kearney & Peebles, *R. idaeus* subsp. *strigosus* (Michx.) Focke, *R. idaeus* subsp. *melanolasius* Focke]. —Pine, fir, and spruce forests often in wet or rocky places: Apache, Cochise, Coconino, Gila, Graham, Greenlee, Pima, Yavapai cos.; 1850-3500 m (6000-11500 ft); (May-)Jun-Aug(-Sep); widespread in cooler parts of N. Amer. extending s into OR, IA, NC; n Mex.

**Rubus leucodermis** Douglas (white epidermis). Western Black Raspberry. —Shrubs to 3 m tall; canes much-branched, erect, arching, or sprawling, and rooting at primocane tips; young epidermis with a prominent delicate white bloom; old epidermis not flaking off; plants mostly eglandular and minutely pilose to villous; prickles stout, broad-based, laterally flattened; cane prickles pointed or curved only slightly downward; those of the leaves and inflorescences smaller, strongly down-curved. LEAVES deciduous, green above, white-tomentose below; leaflets usually ovate to lanceolate; margins singly to doubly serrate, occasionally lobed; primocane leaves 12-22 cm long, 10-18 cm wide, 3-foliolate to falsely appearing palmately 5-foliolate, the 2 lateral leaflets deeply divided with the 2 basal lobes imitating sessile, reflexed leaflets; floricanes leaves 6-8(-13) cm long, 3-4(-8) cm wide, 3-foliolate. INFLORESCENCES simple obscurely bracteate cymes with 1-3 flowers, terminating short side-branches of the floricanes, not surpassing the leaves. FLOWERS: sepals erect to reflexed, 5-12 mm long, lanceolate to linear, attenuate, tomentose; petals white, 3-6 mm long; ovaries conspicuously gray-tomentose until maturity; styles glabrous. FRUIT palatable, spherical to hemispherical, coherent, separating from the torus; drupelets finely canescent, usually dark purple to almost black, sometimes reddish or yellow-red, fleshy.  $2n = 14$ . —Usually riparian or wet areas in pine or mixed conifer forests: Gila, Coconino, Mohave cos.; 1800-2450 m (5900-800 ft); May-Jun; CA, NM n into B.C., Alta., Can.

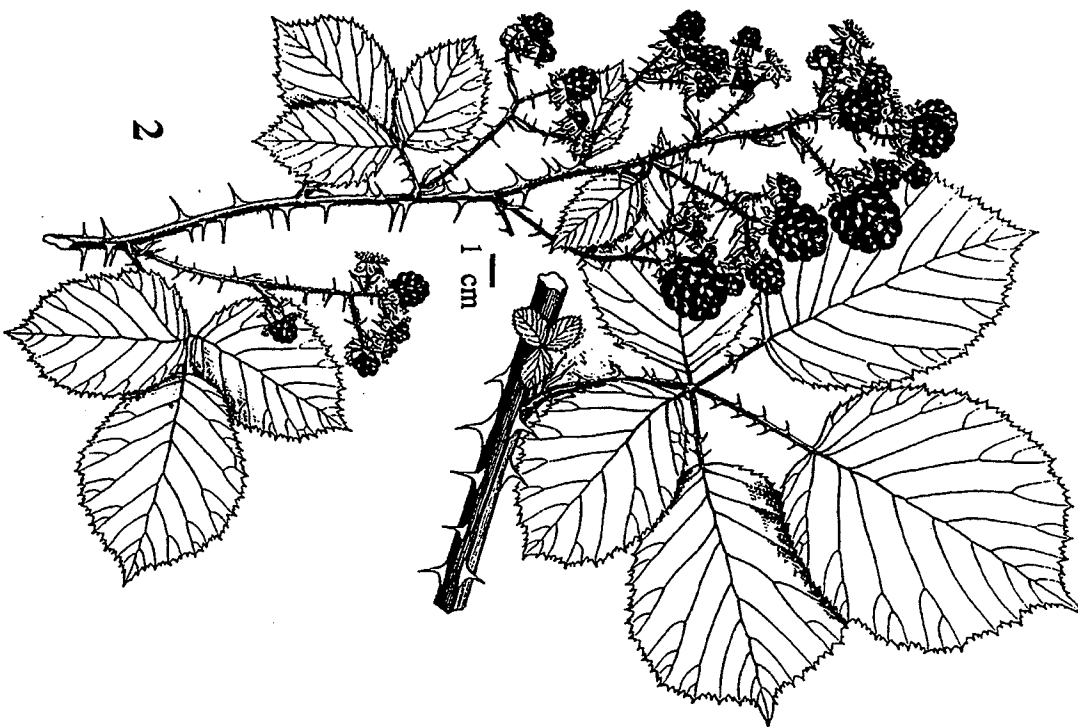
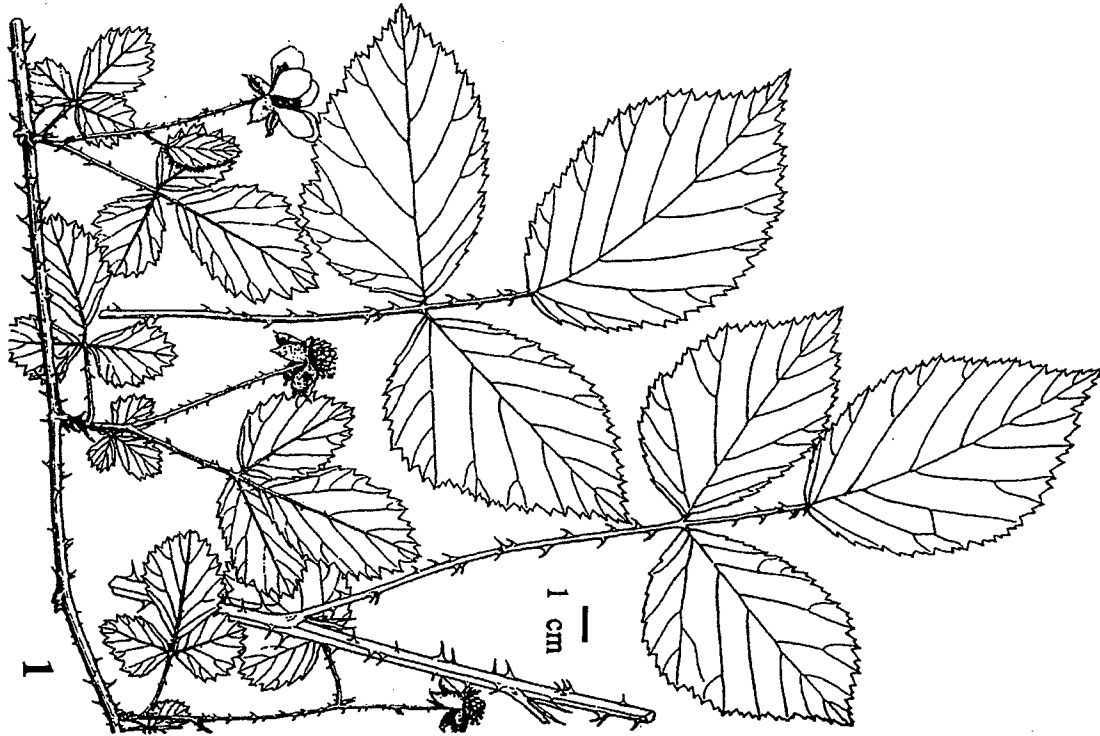
**Rubus neomexicanus** A. Gray (of New Mexico). Thimbleberry. —Erect shrub (0.5-)1-3(-4) m tall; stems perennial, the equivalent of primocanes and floricanes on the same branch; bark shredding; plants mostly eglandular; prickles absent. LEAVES deciduous, often larger on first-year's growth, simple, palmately lobed, irregularly serrate to dentate, cordate in outline, 4-9(-14) cm long, (3-)5-9(-15) cm wide, pubescent above, soft-pubescent below; lobes 3-5, these often again lobed, the primary lobes usually obtuse to acute. INFLORESCENCES mostly from second year's growth, terminating short branches or in leaf axils, obscurely bracteate with 1(-2) flowers. FLOWERS: sepals reflexed to ascending, caudate, 5-22 mm long, the main portion

lanceolate to ovate; petals white, (8-)11-33 mm long; ovaries glabrous; styles hairy. FRUIT hardly palatable, subhemispherical, weakly coherent, separating from the torus; drupelets red, glabrous, thinly fleshy, soon drying. [*R. exrubicundus* (Wooton & Standl.) L. H. Bailey] —Forested, often mesic, mountain slopes and canyons: Apache, Coconino, Cochise, Gila, Graham, Pima, Pinal, Santa Cruz, Yavapai cos.; 1400-2850 m (4600-9400 ft); Apr-Sep; NM, se UT; n Mex. May have potential as an ornamental.

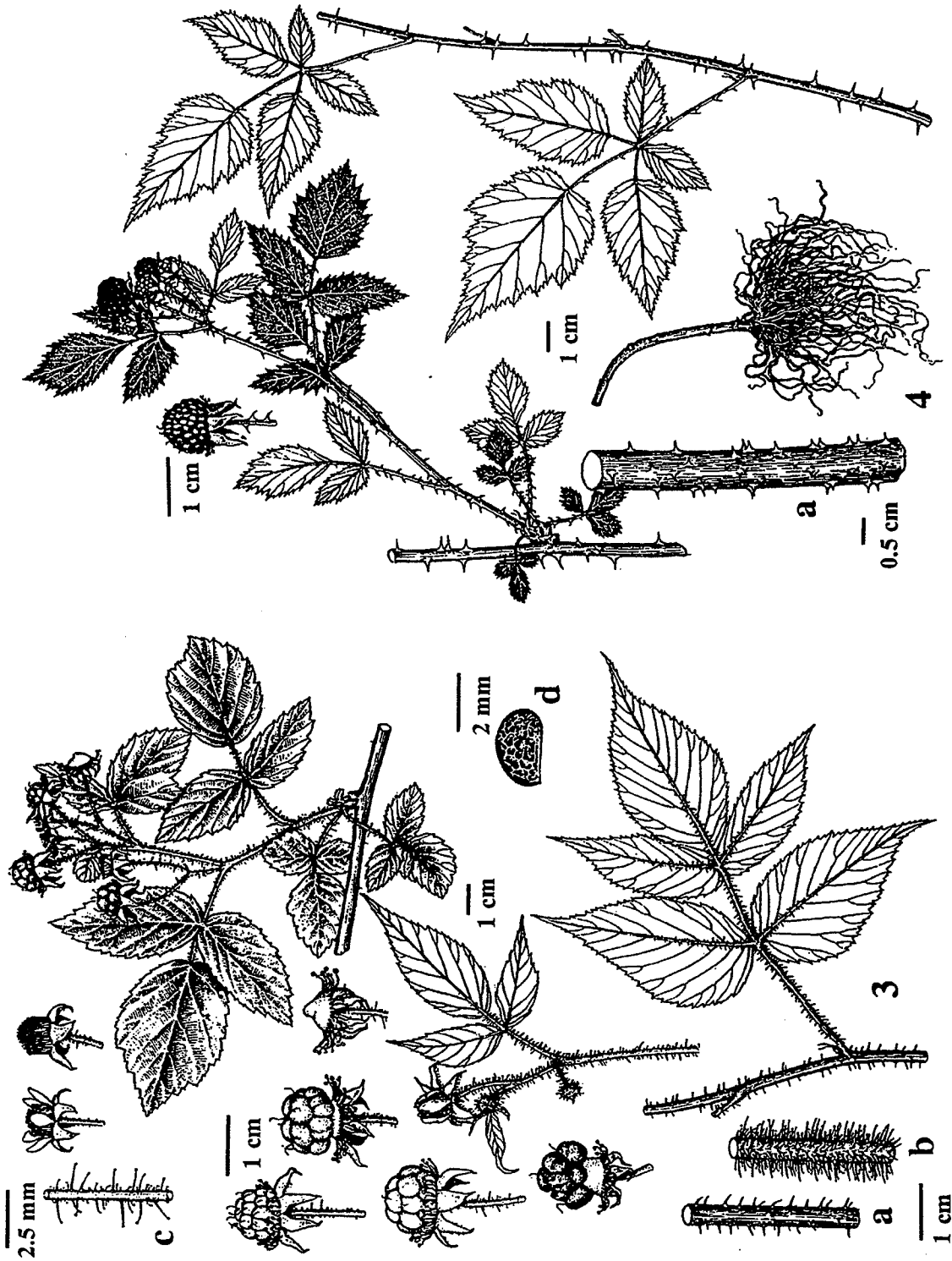
***Rubus parviflorus*** Nutt. (small-flowered: a misnomer). Thimbleberry. —Erect shrub, except herbaceous to suffrutescent in the Pinaleno and Chiracahua Mts., (0.1-)1-2(-3) m tall; stems not strongly differentiated into primocanes and floricanes; bark shredding; plants usually puberulent and stipitate-glandular; prickles absent. LEAVES deciduous, slightly larger on first-year's growth, simple, palmately lobed, irregularly serrate to dentate, broadly ovate-cordate, pubescent above, subglabrous and often glandular below, 4-15(-25) cm long, 5-30 cm wide; lobes (3-)5(-7), the lobes acute to acuminate. INFLORESCENCES simple bracteate cymes terminating floricate branches or in leaf axils with 1-9 flowers. FLOWERS: sepals spreading to ascending, caudate, 8-19 mm long, glandular-pubescent, the basal portion ovate to lanceolate; petals white, (8-)11-28 mm long; ovaries capped with a hard pubescent cushion; styles glabrous. FRUIT coherent, thimble-shaped, separating from the torus, in ours merely palatable; drupelets red, pubescent, thinly-fleshy.  $2n = 14$ . [*R. parviflorus* var. *parvifolius* (A. Gray) Fernald]. —Shady mesic forest areas: Apache, Cochise, Gila, Graham, Greenlee cos.; 2150-3250 m (7000-10800 ft); Jun-Sep; AK s into n Mex., CA e into MI. This species is highly variable, and many infraspecific taxa have been proposed.

#### ACKNOWLEDGMENTS

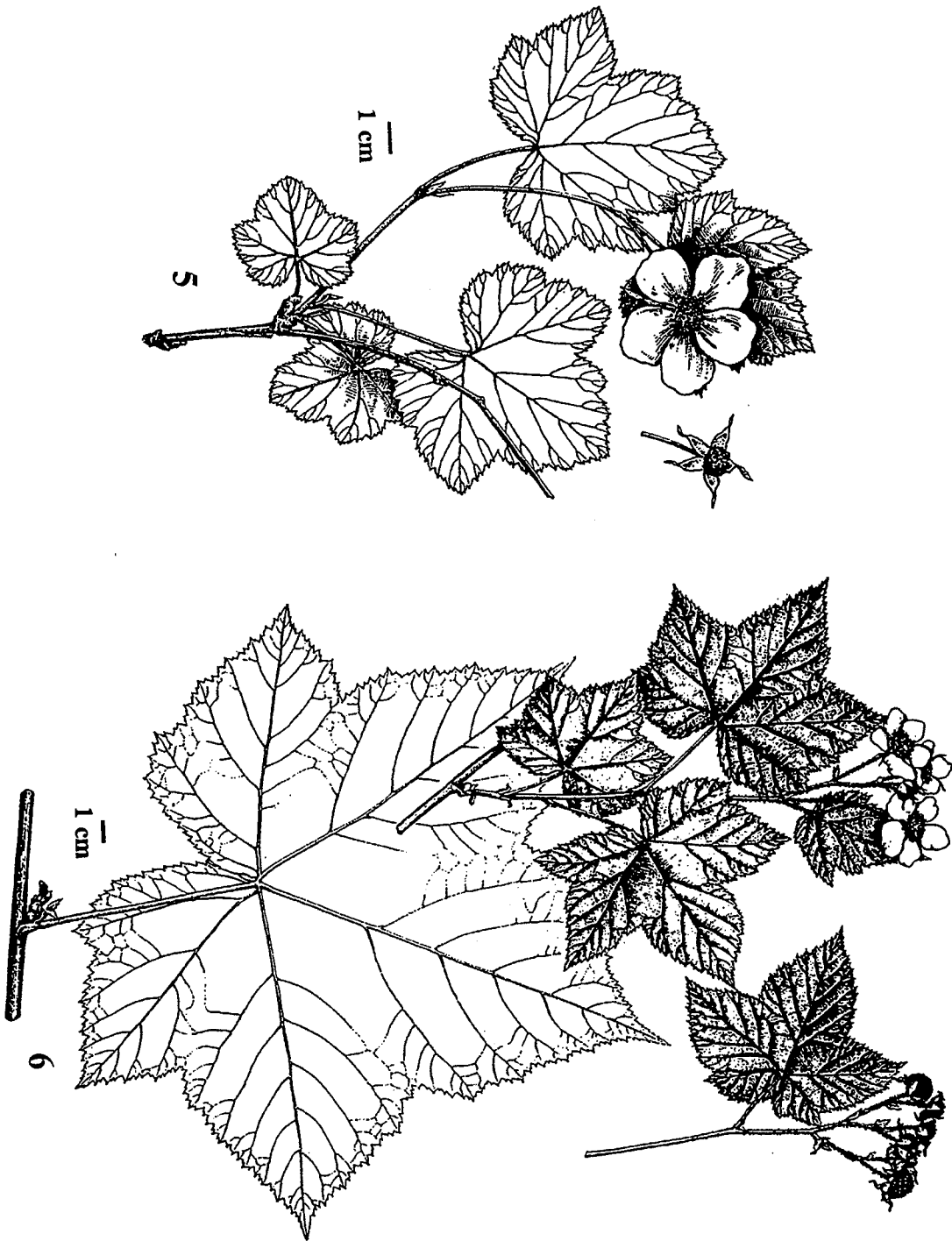
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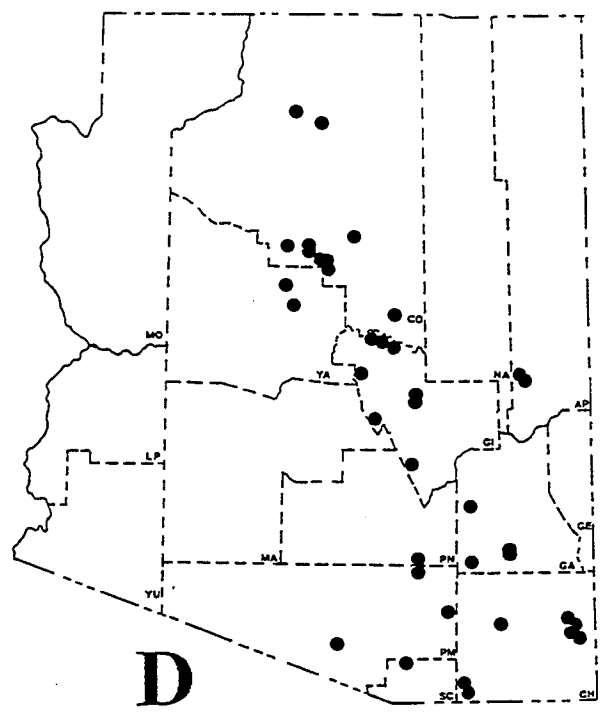
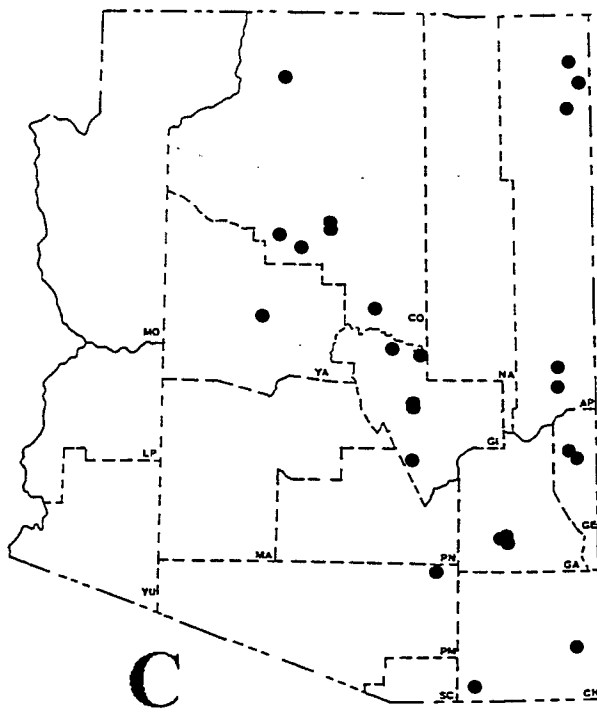
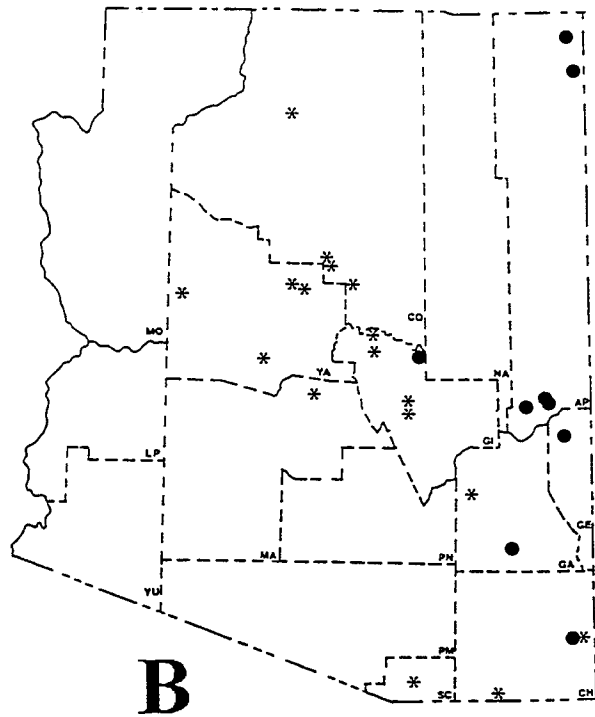
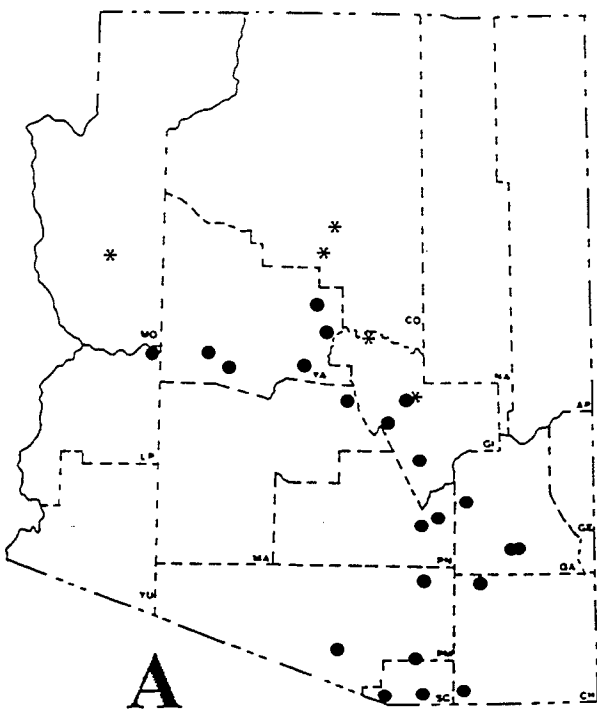
Rosaceae Fig. 1. *Rubus arizonensis* with two primocane leaves. Rosaceae Fig. 2. *Rubus discolor*. Figures 1 and 2 from L. H. Bailey, 1941-1945, *Genes Herbarium* 5:1-918. Artwork courtesy of the Bailey Hortorium Herbarium, Cornell University.



Rosaceae Fig. 3. *Rubus idaeus* var. *strigosus*. A, floricanes; B, primocane; C, pedicel; D, seed. Rosaceae Fig. 4. *R. leucodermis* with rooting primocane tip. A, enlarged primocane. Figures 3 and 4 from L. H. Bailey, 1941-1945, *Gentes Herbarum* 5:1-918. Artwork courtesy of the Bailey Hortorium Herbarium, Cornell University.



Rosaceae Fig. 5. *Rubus neomexicanus*. Rosaceae Fig. 6. *R. parviflorus*. Figures 5 and 6 from L. H. Bailey, 1941-1945, *Genes Herbarium* 5:1-918. Artwork courtesy of the Bailey Hortorium Herbarium, Cornell University.



**Rosaceae** Fig. 7. Distributions of: A, *Rubus arizonensis*, dots; and *R. leucodermis*, asterisks; B, *R. parviflorus*, dots; and *R. discolor*, asterisks; C, *R. idaeus* var. *strigosus*; D, *R. neomexicanus*.