

2497. *Rosa spinosissima*2498. *Rosa woodsii*2499. *Rubus idaeus*

wide, depressed-globose, leathery, the surface red, glabrous or occasionally with a few short, bristly hairs. Achenes 15–40, 4–6 mm long. $2n=14$. May–September.

Introduced, uncommon, known thus far only from Greene and Butler Counties (native of Asia, introduced in the northeastern U.S. west to Minnesota and Missouri, sporadically west to Oregon and Washington; Canada). Railroads and roadsides.

This is a common garden rose and numerous cultivars have been developed. The petals are sweetly scented and are sometimes used in potpourri. It seldom escapes from cultivation in Missouri (but is considered an invasive exotic in a few northern states and provinces). The doubled cultivars tend to produce relatively few achenes.

11. *Rosa setigera* Michx. (prairie rose, climbing rose)

R. setigera var. *tomentosa* Torr. & A. Gray

Pl. 540 a, b; Map 2496

Stems 100–200(–600) cm long, sometimes tip-rooting, trailing or more commonly climbing on and through other vegetation, occasionally loosely twining, the tips often arched downward, usually relatively slender, green to light brown, glabrous or occasionally finely hairy, the prickles paired at the nodes and individual between the nodes, 5–9 mm long, 3–5 mm wide, broadened at the base, curved or occasionally some of them straight, stout, flattened, rarely unarmed. Leaves 8–12 cm long, the petiole and rachis usually finely hairy and with stalked glands, occasionally glabrous, sometimes also with small prickles. Stipules 12–15 mm long, the margins entire, but sparsely stalked-glandular, sometimes somewhat curved under, the auricle flared, 3–4 mm long. Leaflets 3 or 5, 30–50 (–100) mm long, 15–40 mm wide, the terminal leaflet with a stalk 10–16 mm long, the blade ovate to elliptic-ovate, broadly angled or rounded at the

base, angled or more commonly tapered to a sharply pointed tip, the margins simply or doubly toothed with 18–42 teeth per side, these relatively coarse, gland-tipped, the upper surface glossy, green to dark green, usually glabrous, the under-surface lighter green, glabrous or finely hairy (sometimes finely woolly), sometimes also glandular. Inflorescences on lateral branches from second year's stems and axillary toward tips of current year's growth, of solitary flowers or more commonly more or less flat-topped clusters or small panicles of 3–6(–15) flowers, the flower stalks 15–25 mm long, with stalked glands but usually lacking prickles, with 1 to several bracts, these slender, often shed early. Flowers not doubled, the hypanthium 4–6 mm long, with usually dense stalked glands, the mouth 0.5–1.0 mm in diameter. Sepals 10–18 mm long, 2–4 mm wide, all similar, the margins entire, the undersurface finely woolly and stalked-glandular, becoming reflexed and shed soon after flowering. Petals 18–25(–30) mm long, pink to reddish pink, rarely white. Pistils 20–25, the styles fused, glabrous, extending 5–6 mm beyond the mouth of the hypanthium, thus protruding noticeably. Hips 6–10 mm long, 6–9 mm wide, globose to subglobose, more or less fleshy, the surface red, glabrous or with scattered stalked glands. Achenes 17–22, 4–5 mm long. $2n=14$. May–July.

Scattered nearly throughout the state (eastern U.S. [except some far-eastern states] west to Nebraska and Texas; introduced along the Atlantic Seaboard; Europe). Bottomland forests, mesic upland forests, banks of streams and rivers, margins of ponds, lakes, and sinkhole ponds, upland prairies, glades, bases, ledges, and tops of bluffs, edges of fens, and rarely swamps; also pastures, old fields, fencerows, ditches, old quarries, old mines, railroads, and roadsides.

Although the flowers of *R. setigera* appear perfect, they are functionally either staminate or pis-

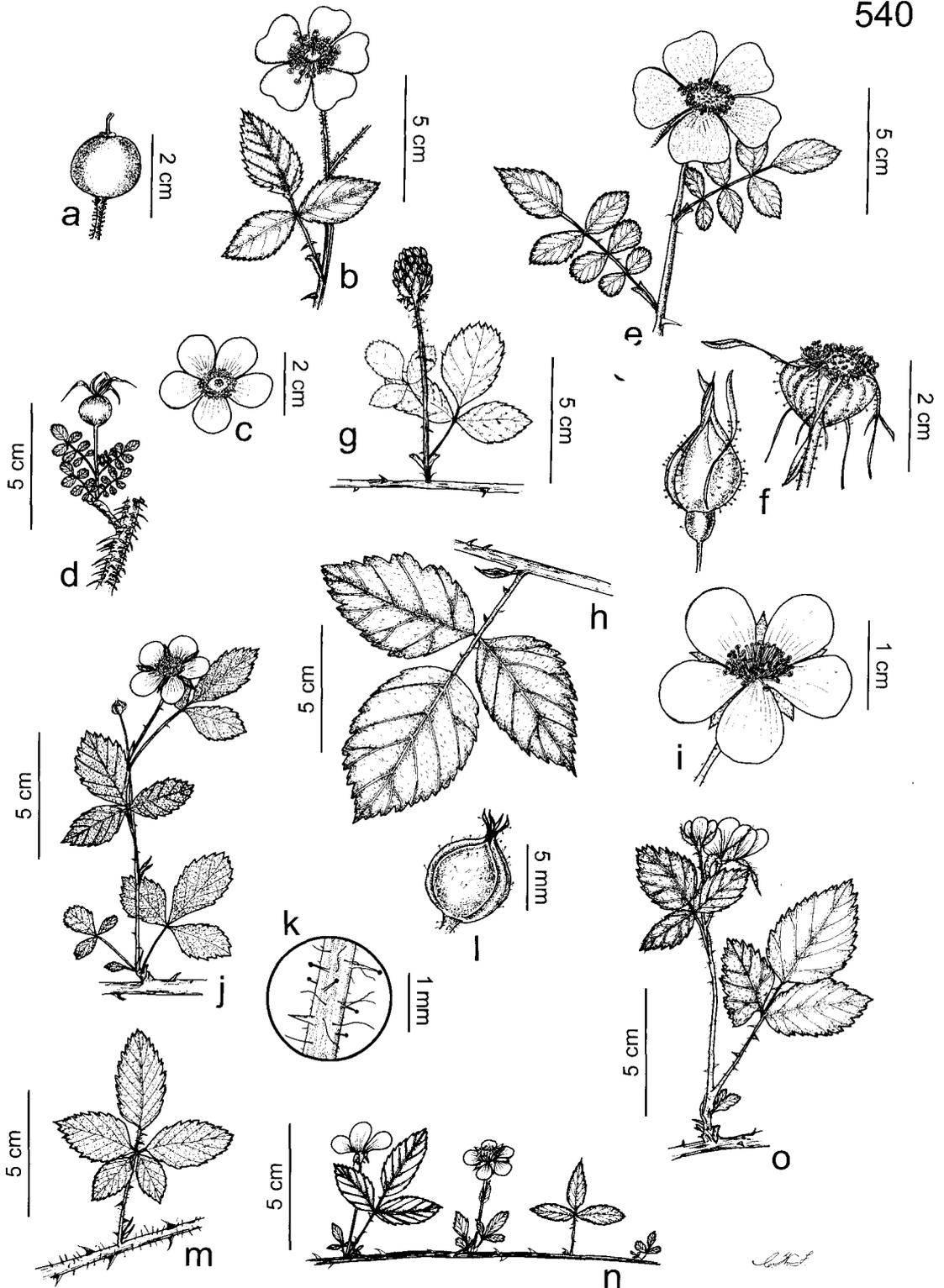


Plate 540. Rosaceae. *Rosa setigera*, a) fruit, b) flowering branch. *Rosa spinosissima*, c) flower, d) fruiting branch. *Rosa carolina* ssp. *carolina*, e) flowering branch, f) bud and fruit. *Rubus enslenii*, g) floricane node with leaves and fruits, h) primocane node with leaf, i) flower. *Rubus leviculus*, j) floricane branch with inflorescence, k) detail of flower stalk showing prickles, hairs and stalked glands, l) bud. *Rubus trivialis*, m) primocane node with leaf, n) flowering branch with flowers. *Rubus steelei*, o) floricane branch with inflorescence.

erect or ascending to occasionally spreading or reflexed after flowering, mostly persistent at fruit maturity. Petals (15–)20–32 mm long, pink to deep pink. Pistils (16–)20–40(–50), the styles free, hairy, not or very slightly extending beyond the mouth of the hypanthium, the mass of stigmas thus not elevated, closing the hypanthium mouth. Hips (8–)10–20 mm long, (5–)10–20 mm wide, globose or subglobose to ovoid, fleshy, the surface orangish red to purplish red, glabrous, not glandular. Achenes 15–35, 3.0–4.5 mm long. $2n=14$. May–June.

Introduced, known thus far from a single historical collection from Daviess County (western U.S. east to Wisconsin and Texas, eastward locally to Illinois; Canada, Mexico; introduced sporadically farther east in the U.S.). Railroads.

This species was reported from Missouri by Fernald (1950) and Gleason and Cronquist (1963, 1991), but was excluded from the state's flora by Steyermark (1963), who indicated that the specimens attributed to this species were instead examples of *R. carolina*. However, during his research toward the *Rosa* treatment for the as-yet unpublished Rosaceae in Volume 9 of the *Flora of North America*, Walter Lewis (Washington University) discovered a historical Daviess County specimen (*Kellogg 26131*, collected on 28 May 1934 near Pattonburg) at the Missouri Botanical Garden herbarium.

Rosa woodsii has been regarded as a close relative of *R. blanda* and is widespread in the western and northern United States, as well as portions of Canada and Mexico. The species is said to differ from *R. blanda* mainly on the basis of its well-developed prickles between the nodes, even toward the stem tips. However, in their studies of molecular phylogeny of the genus *Rosa*, Joly and Bruneau (2006) concluded that *R. blanda* and *R. woodsii* represent an interbreeding set of populations whose taxonomy should be reassessed. They noted that hybrids between the *R. blanda* and *R. woodsii* morphotypes (*R. ×dulcissima* Lunell) are fertile. The controversy surrounding the *R. blanda/woodsii* complex requires further study; the present treatment provisionally accepts the traditional classification of the two taxa as separate species.

Rosa woodsii has been divided into a series three to five weak infraspecific taxa, based on such characters as overall plant size, density and distribution of prickles and presence or absence of stalked glands. The Missouri sheet is referable to ssp. *woodsii* by these criteria. It should be noted that plants of *R. woodsii* might key to *R. arkansana* in the key to species above, but in *R. arkansana* at least some of the inflorescences always develop at the tips of current year's stems, whereas in *R. blanda* and *R. woodsii* the inflorescences always develop at the tips of side branches from second year's stems.

25. *Rubus* L. (raspberry, blackberry, bramble)

Contributed by Mark P. Widrechner

Plants shrubs (perennial herbs elsewhere), sometimes suckering or reproducing vegetatively from rooted stem tips. Stems (referred to as canes) biennial or (in sect. *Rubus*) occasionally persisting longer, prostrate, climbing, arched, or erect, all those found in Missouri armed with prickles, sometimes also with long, stiff bristles (except for horticultural selections); first year's stems generally vegetative (called primocanes), unbranched or few-branched (moderately branched in a few species); second year's stems fertile (called floricanes), usually dying back to the rootstock at the end of the second growing season. Leaves rarely evergreen. Stipules small to conspicuous, persistent, leaflike, fused to the petiole laterally or attached at the junction of the stem and petiole. Leaf blades palmately or pinnately compound, the margins toothed and sometimes lobed, the surfaces often hairy, sometimes with gland-tipped hairs or bristles, the main veins sometimes also with prickles. Inflorescences typically axillary on floricanes, of branched or simple clusters, racemes, panicles, or occasionally solitary flowers. Flowers perfect (imperfect elsewhere), with a noticeable hypanthium. Sepals 5, fused basally, persistent at fruiting, erect, horizontally spreading, or reflexed. Petals usually 5 (rarely more in horticultural selections), white or less commonly pale pink to rose pink, glabrous or hairy, the margins usually entire, rarely lobed (in *R. laciniatus*). Stamens numerous, the filaments attached at the mouth of the hypanthium. Pistils many, attached to an enlarged receptacle, this hemispheric, or becoming conic or cylindrical as the fruits mature, each with 1 carpel and 2

ovules, 1 of these aborting as the fruit develops. Style 1, threadlike or occasionally narrowly club-shaped, glabrous or hairy. Fruits drupelets positioned on the enlarged receptacle to form an aggregate, which either separates freely from the receptacle when ripe (raspberries) or is shed with the receptacle attached (blackberries). About 800 species (although species concepts and the resulting estimates differ widely), worldwide, particularly abundant in temperate regions of the northern hemisphere.

Rubus is a large genus that is diverse in the midwestern United States. Like *Crataegus*, its reputation for hybridization, polyploidy, and apomixis has given it a well-deserved reputation as a taxonomically difficult genus. Additionally the prickly canes that change appearance from the first to second growing seasons have caused many collectors to avoid the plants. *Rubus* is thus underrepresented in herbaria and many of the specimens that are present are relatively incomplete. Plants often thrive in disturbed, successional habitats, sometimes in mixed-species thickets. A number of mixed collections in various herbaria involve the primocanes of one species and the floricanes of a second species growing at the same site.

The genus produces a number of important fruit crops, including raspberries, blackberries, and loganberries. In addition to being consumed as fresh fruits, the fruits are used extensively in baked goods, jams, jellies, preserves, and as juices and flavorants. The fruits also are an important food source for wildlife. A few species are cultivated as ornamentals.

Whenever possible, users of this treatment should examine primocane leaves for identification characters involving leaves. References to primocane leaves and leaflets in the descriptions that follow are based on fully expanded leaves. It should be noted that in leaves with five leaflets, the apical or middle leaflet is called the central leaflet, the adjoining pair of lateral leaflets are termed the middle leaflets, and the pair positioned closest to the petiole are known as basal leaflets. Floricane foliage is primarily found on inflorescence branches, but can also be found on sterile branches. Large, sterile branches that sometimes form near the base of floricanes are called parcifronds and can easily be confused with primocanes. Floricane leaves on sterile branches generally resemble those of primocanes, but often are smaller and have only 3 leaflets. Floricane foliage on inflorescence branches is denoted in the species descriptions below as bracts or leafy bracts.

In the present treatment, inflorescences are described and measured from well-developed examples on floricanes. Inflorescences can also emerge directly from the crown, generally when a primocane has been damaged or winter-killed. These atypical inflorescences are called novirames, can flower out of season, and are extremely difficult to identify to species.

North American herbaria hold thousands of fragmentary *Rubus* specimens that cannot be determined to species. When vouchering *Rubus*, it is important to collect pieces of both the primocane and floricane, with the primocane displaying both sides of fully-expanded leaves and the floricane displaying well-developed inflorescences, collected at any time between the start of flowering and the formation of ripe fruits. These pieces should be kept together, either by mounting on the same sheet or through appropriate labeling. On labels, it is also useful to note the overall plant habit and the presence or absence of rooting at the tips of the canes.

The genus *Rubus* generally is divided into five subgenera and numerous sections. The relationships among the sections are poorly understood, and it is not clear if the traditional classification circumscribes natural subgroups. The nomenclature of the sections is also still somewhat controversial, as Liberty Hyde Bailey (1858–1954; the leading specialist on the genus in the first half of the twentieth century) initially treated these as unranked groups and by the time that he validated the sectional names, some might already have been published by other authors. Thus the names applied to the sections should be treated as provisional, pending further review of the literature on *Rubus*. Grouping the species into morphologically based subgenera and sections, as is done in the present treatment, has the advantage of saving space by requiring that characters shared among species within a section be listed only once in the section description. Users are cautioned to read the subgeneric and sectional descriptions carefully in addition to the species descriptions for help in confirming the identity

of plants being determined. The following key to the subgenera and sections of *Rubus* uses a combination of characters from primocanes and floricanes, but can be navigated with only one type of cane, with the exception of couplet 4, which requires inflorescences.

1. Leaves whitish beneath; petals inconspicuous, generally 4–7 mm long, spatulate to obovate, greenish white, white, or rose pink; ripe fruits readily falling intact from the receptacle 1. SUBG. IDAEOBATUS
1. Leaves green to gray beneath (except for *R. armeniacus* in Sect. *Rubus*, which is whitish beneath); petals showy, generally 7–25 mm long, obovate to nearly orbicular, white to light pink (primarily in sect. *Rubus*); ripe fruits not separating from the receptacle (2. SUBG. RUBUS)
 2. Canes arching to prostrate; primocanes with indeterminate growth resulting in whiplike tips that can take root when contacting soil; floricanes with inflorescences borne irregularly along the canes based on access to light, the most fully developed inflorescences often found in the middle third of the canes; prickles downward-angled to downward-curved, 1–5 mm long; leaves nearly glabrous to softly pubescent beneath
 3. Canes bearing prickles and sometimes glands with translucent or pale stalks; leaves nearly glabrous to softly pubescent beneath, deciduous 2C. SECT. FLAGELLARES
 3. Canes bearing prickles and stiff, dark red hairs, some tipped with glands; leaves nearly glabrous beneath, more or less persistent through winter 2F. SECT. VEROTRIVIALES
 2. Canes erect to arching; primocanes with determinate growth resulting in condensed nodes at tips that do not take root; floricanes with inflorescences typically borne in the terminal third of the cane, the most fully developed inflorescences often found a few nodes below the tips; prickles straight or downward-curved, if curved then 3–8 mm long or occasionally longer; leaves softly pubescent beneath
 4. Inflorescences racemose, paniculate, or flaring in a broomlike form, often branched
 5. Inflorescences paniculate; canes branched; primocane leaves either white-felted beneath or green, margins deeply toothed to irregularly divided into slender jagged lobes; linear or filiform stipules clearly lateral, diverging 3–6 mm or more from the base of the petiole 2D. SECT. RUBUS
 5. Inflorescences paniculate or racemose, varying on the same cane from large, branched, and broomlike to reduced and unbranched, both cylindrical and more-or-less flat-topped; canes with no or few vegetative branches; primocane leaves green beneath, the margins sharply toothed; lanceolate stipules basal to somewhat lateral, diverging 0–3 mm from the base of the petiole 2E. SECT. SETOSI
 4. Inflorescences racemose, cylindrical or flaring toward the apex, rarely branched
 6. Primocane tips, inflorescences, and often also the flower stalks with stalked glands (typically 0.5–1.5 mm long, obvious at 10× magnification) 2A. SECT. ALLEGHENIENSES
 6. Plants lacking stalked glands
 7. Primocane leaflets softly pubescent, but not typically gray-felted beneath, petals white 2B. SECT. ARGUTI
 7. Primocane leaflets gray-felted beneath, petals light pink (but fading to white) 2D. SECT. RUBUS

1. Subgenus *Idaeobatus* (Focke) Focke (raspberry)

Primocane leaves pinnately or palmately compound, felted-hairy beneath. Stipules persistent, fused to the petiole. Fruits freely falling intact from the receptacle. Sepals long-tapered to a filiform tip. About 135 species, throughout the northern hemisphere, also in New Guinea and Australia, most diverse in China.

1. Canes erect to arching, not rooting at the tips, ripe fruits purplish red (rarely yellow) 1. *R. IDAEUS*
1. Canes arching to ascending from a spreading base, often rooting at the tips, ripe fruits red, purple, or purplish black (rarely amber)
 2. Canes with slender, straight prickles and red to purple hairs, many gland-tipped 4. *R. PHOENICOLASIUS*
 2. Canes with slender, downward-angled to downward-curved prickles or broad-based prickles, lacking red to purple hairs or stalked glands
 3. Primocanes purple (or rarely yellowish green) in winter, often glaucous; primocane central leaflets ovate to elliptic, tapered to a sharply pointed tip, cordate to truncate at the base; ripe fruits purplish black (or rarely amber) 2. *R. OCCIDENTALIS*
 3. Primocanes reddish brown in winter, not glaucous; primocane central leaflets obovate to broadly subrhombic, angled or tapered to a bluntly pointed tip, angled at the base; ripe fruits red 3. *R. PARVIFOLIUS*

1. *Rubus idaeus* L. var. *strigosus* (Michx.)

Maxim. (red raspberry)

R. idaeus ssp. *sachalinensis* (H. Lév.) Focke

R. strigosus Michx.

Pl. 543 a, b; Map 2499

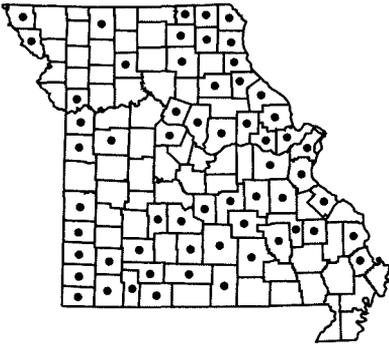
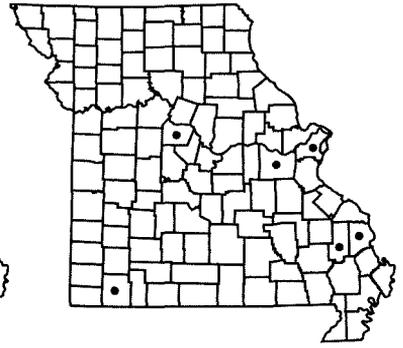
Canes to 170 cm long, erect to high-arching, to 150 cm tall, not rooting at the tips, but

forming colonies from rhizomes. Primocanes light green, tan, or light purple, 3–5 mm in diameter. Bristles and prickles dense, 15–50 bristles or prickles per cm of cane, the prickles fine and needlelike, straight to downward-angled, 1.0–3.5 mm long, some bristles and prickles gland-tipped. Petioles with gland-tipped hairs and bristles. Stipules 5–10 mm long, threadlike. Primocane leaves pinnately compound with 3–5 leaflets, the margins sharply toothed, sometimes doubly toothed, the upper surface glabrous to thinly hairy, the undersurface silvery gray to grayish green-felted. Central primocane leaflets 6–12 cm long, 5–8 cm wide, elliptic to ovate, occasionally 3-lobed, base rounded to cordate, tapered to a sharply pointed tip, the leaflet stalk generally $\frac{1}{4}$ – $\frac{1}{3}$ as long as the leaflet blade in examples with 3 leaflets; lateral leaflets ovate to elliptic, rounded to cordate at the base, tapered to a sharply pointed tip, sessile or nearly so. Inflorescences in simple to complex clusters, in extreme cases paniculate, 7–35 cm long, with 1–18 flowers often concentrated near the tip and 3–8 leafy bracts, these mostly with 3 leaflets; flower and inflorescence stalks thinly to

densely covered with gland-tipped hairs and bristles, the flower stalks branched on the most vigorous inflorescences. Sepals 5–9 mm long, 2–3 mm wide, triangular-ovate, often with gland-tipped hairs. Petals 4–6 mm long, narrowly obovate, white. Fruits 13–17 mm long, 13–17 mm wide, conic, purplish red (or rarely yellow) when ripe, the drupelets often separating. $2n=14$. May–June.

Introduced, known thus far only from historical specimens from Barry and Jackson Counties (northeastern U.S. and adjacent Canada south to North Carolina, Tennessee, Illinois, and Iowa and west to Nebraska and North Dakota). Habitat unknown, but presumably brushy disturbed areas.

The only records supporting the naturalization of red raspberries in Missouri come from Courtney, in Jackson County, where B. F. Bush collected them in 1927 and 1932, and from a 1974 collection by J. T. Shelton of a young red raspberry seedling along a logging road in Barry County. Steyermark (1963) included these specimens as examples of *R. strigosus*, herein treated as a variety of *R. idaeus* native to eastern North America. This variety is not widely cultivated, but has contributed to the parentage of some domestic raspberry cultivars. No specimens have been located to support Steyermark's (1963) report that native red raspberries occur in Atchison or Holt Counties. Cultivars of the domesticated Eurasian red raspberry (var. *idaeus*) are widely cultivated in Missouri, but are not known to naturalize in the state.

2500. *Rubus occidentalis*2501. *Rubus parvifolius*2502. *Rubus phoenicolasius*

2. *Rubus occidentalis* L. (black raspberry)

Pl. 542 j, k; Map 2500

Canes to 400 cm long, erect, to 200 cm tall when young, but ultimately arching and often rooting at the tips. Primocanes bluish green in summer, turning purple (or rarely yellowish green) in winter, often glaucous, 3–6 mm in diameter. Prickles sparse to moderate, 0.2–1.7 prickles per cm of cane, broad-based and downward-curved, 3–5 mm long. Petioles armed with broad-based, downward-curved prickles 1–2 mm long. Stipules 4–8 mm long, threadlike. Primocane leaves palmately compound with 3(5) leaflets, the margins coarsely and doubly toothed, the upper surface glabrous to thinly hairy, the undersurface white-felted. Central primocane leaflets 7–12 cm long, 4–9 cm wide, ovate to elliptic, cordate to rounded at the base, angled or tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{4}$ – $\frac{1}{2}$ as long as the leaflet blade; lateral leaflets ovate to ovate-elliptic, rounded to broadly angled at the base, tapered to a sharply pointed tip, the middle pair (when present) stalked, the basal pair nearly sessile, occasionally with asymmetric basal lobes. Inflorescences simple to complex clusters, in extreme cases paniculate, 8–40 cm long, with (3–)5–19(–27) flowers and (3–)5–13 leafy bracts, these nearly all with 3 leaflets; flower and inflorescence stalks with fine hairs, needlelike prickles (that at 10 \times magnification seem to be made of ivory), and occasional small, broad-based prickles, the flower stalks branched on the most vigorous inflorescences. Sepals 5–9 mm long, 2–3 mm wide, triangular-ovate to triangular-elliptic. Petals 2–5 mm long, narrowly obovate, white. Fruits 12–15 mm long, 12–15 mm wide, hemispheric, purplish black (rarely amber) when ripe. $2n=14$. April–June.

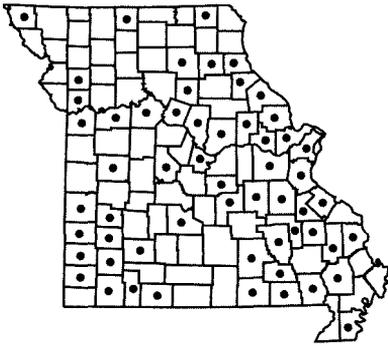
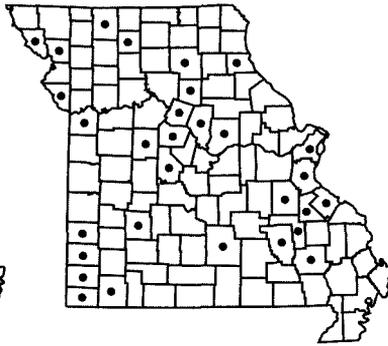
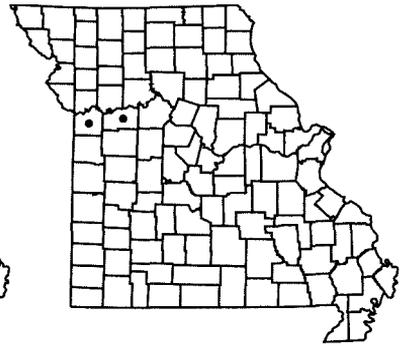
Scattered nearly throughout the state (northeastern U.S. and adjacent Canada south to South Carolina, Georgia, and Arkansas and west to Oklahoma, Nebraska, and North Dakota). Mesic up-

land forests, bottomland forests, bases and ledges of bluffs, banks of streams, upland prairies, loess hill prairies, and savannas; also pastures, fence-rows, ditches, railroads, and roadsides.

3. *Rubus parvifolius* L. (Japanese raspberry)

Map 2501

Canes to 300 cm long, low-arching to prostrate, to 70 cm tall, often rooting at the tips and occasionally at other nodes. Primocanes green to purplish green in summer, turning reddish brown in winter, 2.0–3.5 mm in diameter. Prickles moderate to dense, 0.5–4.0 prickles per cm of cane, slender and downward-angled or downward-curved, 1–2 mm long. Petioles armed with slender, downward-curved prickles 1–2 mm long. Stipules 8–18 mm long, linear-lanceolate and sometimes cleft into 2 lobes. Primocane leaves with 3 leaflets or pinnately compound with 5 leaflets, margins coarsely and broadly toothed, the upper surface glabrous, the undersurface white-felted. Central primocane leaflets of leaves with only 3 leaflets 3.5–8.5 cm long, 3.0–7.5 cm wide, obovate to broadly subrhombic, often lobed, angled at the base, angled or tapered to a bluntly pointed tip, the leaflet stalk about $\frac{2}{5}$ – $\frac{1}{2}$ as long as the leaflet blade when only 3 leaflets are present; lateral leaflets rhombic (or elliptic when 5 leaflets are present), nearly sessile. Inflorescences simple to complex clusters, in extreme cases paniculate, 15–45 cm long, with (3–)10–19 flowers and 4–10 leafy bracts, these mostly with 3 leaflets; flower and inflorescence stalks with stiff hairs, and small needlelike and broad-based prickles, the flower stalks branched on vigorous inflorescences. Sepals 6–10 mm long and 3–4 mm wide at flowering, expanding to 8–12 mm long and 4–5 mm wide at fruiting, triangular-ovate. Outer surface of sepals prickly. Petals 4–6 mm long, spatulate, rose pink. Fruits 10–15 mm long, 10–17 mm wide, hemispheric to short-conic when well formed (some

2503. *Rubus allegheniensis*2504. *Rubus alumnus*2505. *Rubus rosa*

populations produce few drupelets, if any), bright, glossy red when ripe. $2n=14, 21, 28$. May.

Introduced, known thus far only from Greene County (native to Asia, Australia; naturalized in Illinois, Iowa, Massachusetts, Missouri, Virginia). Edges of mesic upland forests; also roadsides and open, disturbed areas.

This unusual member of subgen. *Idaeobatus* was first collected by Michael Currier in 1989, but was not correctly determined for another nine years. The species is first reported from Missouri in the present account. The population, which is near the Dickerson Park Zoo in Springfield, has continued to expand locally. In Iowa, populations of this species also have been noted as expanding, and may invade prairies and savannas (Drobney and Widrlechner, 2010).

4. *Rubus phoenicolasius* Maxim. (wineberry)

Map 2502

Canes to 400 cm long, erect, to 200 cm tall when young, but ultimately arching and often rooting at the tips. Primocanes dark purple, 4–7 mm in diameter, densely covered with stiff purple hairs, many gland-tipped, and occasional prickles. Prickles moderate, 1.0–2.3 prickles per cm of cane, slender and straight, 5–8 mm long. Petioles densely covered with stiff purple hairs, many gland-tipped, and downward-curved prickles to 3 mm long. Stipules 5–14 mm long, linear, glandular. Primocane leaves with 3 leaflets, the margins doubly toothed, the upper surface appearing wrinkled

(having deeply impressed veins), grayish and hairy, the undersurface densely white-felted but with dark red veins bearing gland-tipped hairs. Central primocane leaflets 6.5–11.5 cm long, 5.5–12.0 cm wide, broadly ovate, often 3-lobed, cordate to nearly truncate at the base, abruptly tapered to a short, sharply pointed tip, the leaflet stalk about $\frac{1}{4}$ – $\frac{2}{5}$ as long as the leaflet blade; lateral leaflets much smaller, oblong or oval, nearly sessile. Inflorescences paniculate, 30–42 cm long, with 6–22 flowers and 6–8 leafy bracts, these mostly with 3 leaflets; flower and inflorescence stalks densely covered with stiff hairs, many gland-tipped, inflorescence stalks also bearing slender, straight prickles. Sepals 7–8 mm long, 2.5–3.5 mm wide, lanceolate, the outer surface with gland-tipped hairs. Petals 4–5 mm long, spatulate, minutely toothed near the tip, white to pale pink. Fruits 10–15 mm long, 10–15 mm wide, hemispheric, enclosed in the calyx when young, orangish red. $2n=14$. May–June.

Introduced, uncommon and sporadic south of the Missouri River (native of Asia; naturalized in the eastern U.S.). Bottomland forests, disturbed openings of mesic upland forests, and bases and ledges of bluffs; also railroads and roadsides.

Although it was first-collected in 1949 in Cape Girardeau County, *R. phoenicolasius* was not included in Steyermark's (1963) treatment of the genus in Missouri. The species is first-reported from Missouri in the present account. In some other states, it is considered an invasive exotic.

2. Subgenus *Rubus* (blackberry, dewberry)

Primocane leaves palmately compound. Stipules persistent, fused to the petiole laterally or basally. Fruits purplish black except in horticultural selections (see discussion of *R. louisianus* A. Berger in the treatment of *R. argutus*), remaining attached to the receptacle when ripe.

About 600 species, throughout the northern hemisphere, extending south to the higher elevations of South America, most diverse in Europe and eastern North America.

Subgenus *Rubus* has been divided into many sections, eight of which are native to eastern temperate North America and five (thus far) to Missouri. Sectional delimitations are somewhat artificial, in some cases relying only on differences in presence vs. absence of hairs or of gland-tipped vs. nonglandular hairs.

2a. Section Alleghenienses L.H. Bailey (highbush blackberry)

Canes erect to high-arching the first year, generally more clearly arched the second year; clonal by root-suckering, but rarely observed to tip-root. Prickles broad-based, straight or somewhat downward-curved. Primocane leaves with (3)5 leaflets. Sepals tapered to long-tapered at the tips, the outer surface often bearing stalked glands. Petals white. Some part of the plant always bearing stalked glands, most often the flower stalks. About 6 species, eastern U.S. and adjacent Canada.

Alice et al. (in press) treat members of this section under a broadly circumscribed *R. allegheniensis*. On the other hand, Steyermark (1963) divided Missouri's representatives of sect. *Alleghenienses* into two taxa: *R. allegheniensis*, with narrow, cylindrical inflorescences, and *R. orarius* Blanch., with wider, upward flaring ones. Yet, W. H. Blanchard's (1906) description of *R. orarius* is so vague that this species could be placed in three different sections, and he designated no holotype. L. H. Bailey (1944) treated it in sect. *Alleghenienses*, but also stated that it might as easily be included in either sect. *Arguti* or sect. *Canadenses* L.H. Bailey. He did not designate a lectotype. Davis et al. (1969) discussed it in their revision of sect. *Arguti*. All of these authors, along with Fernald (1921), restricted *R. orarius* to Maine, Massachusetts, and Nova Scotia. Specimens that would key out as *R. orarius* in Steyermark (1963) are treated herein as *R. alumnus* and *R. rosa*, two polyploid taxa.

- 1. Inflorescences narrowly racemose, usually appearing almost leafless (the bracts much smaller than the leaves), at least twice as long as wide; sepals 5–7(–8) mm long and 2.0–3.5 mm wide 5. *R. ALLEGHENIENSIS*
- 1. Inflorescences racemose, flaring widely toward the tip, or leafy and less than twice as long as wide; calyx lobes at least 7 mm long and 3 mm wide
 - 2. Primocane central leaflets ovate to elliptic-oblong, usually about 2/3 as wide as long 6. *R. ALUMNUS*
 - 2. Primocane central leaflets broadly ovate, usually at least 3/4 as wide as long 7. *R. ROSA*

5. *Rubus allegheniensis* Porter (Allegheny blackberry)
R. allegheniensis var. *plausus* L.H. Bailey
R. villosus Thunb. var. *engelmannii* Focke
 Pl. 541 c–e; Map 2503

Canes to 370 cm long and 100–250 cm tall, (3–)4–6(–9) mm in diameter; primocanes occasionally with scattered gland-tipped hairs toward the apex but lacking nonglandular hairs. Prickles sparse to dense, 0.1–3.0 per cm of cane, 4–6(–8) mm long. Petioles with sparse to dense nonglandular hairs and sometimes gland-tipped hairs, armed with broad-based, downward-curved prickles to 3 mm

long. Stipules 6–12(–16) mm long, linear to linear-lanceolate. Primocane leaflet margins sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets 8.5–13.5 cm long, 4–9 cm wide, ovate to elliptic-ovate or elliptic, cordate to subcordate at the base, tapered to long-tapered to a sharply pointed or filiform tip, the leaflet stalk about 1/4–1/3 as long as the leaflet blade; middle leaflets ovate to ovate-elliptic, rounded to subcordate at the base, tapered to a sharply pointed tip, stalked; basal leaflets ovate-elliptic to elliptic, angled to rounded at the base, tapered to a sharply pointed

tip, nearly sessile to stalked, asymmetrically lobed when only 3 leaflets are present. Inflorescences narrowly racemose, 8–22 cm long, 3–7 cm wide (at least twice as long as wide), with 7–25 flowers and 2–6 bracts, these usually much smaller than the leaves and mostly simple; flower and inflorescence stalks with short, dense, nonglandular hairs, longer gland-tipped hairs, and sometimes slender or broad-based prickles. Sepals 5–7(–8) mm long, 2.0–3.5 mm wide, triangular-elliptic. Petals 10–16 mm long, obovate to broadly obovate. Fruits 8–18 mm long, 8–15 mm wide, more or less globose to short-cylindric. $2n=14$. April–June.

Scattered to common nearly throughout the state (northeastern U.S. and adjacent Canada south to South Carolina, Tennessee, and Arkansas, and west to Oklahoma, Nebraska, and Minnesota; introduced in Europe). Upland prairies, banks of streams and rivers, margins of ponds and lakes, sloughs, bottomland forests, mesic upland forests, bases, ledges, and tops of bluffs, savannas, and glades; also old fields, fallow fields, fencerows, old mines, levees, railroads, roadsides, and open, disturbed areas.

Rubus villosus var. *engelmannii*, a synonym of *R. allegheniensis* (Widrechner, 1998), was described from collections first made in Missouri, although Focke (1914) designated no type. *Rubus allegheniensis* has been reported to naturalize in Europe (Edees and Newton, 1988; Zielinski, 2004).

6. *Rubus alumnus* L.H. Bailey

R. pubifolius L.H. Bailey

Pl. 541 a, b; Map 2504

Canes to 300 cm long and 150–250 cm tall, 5–7 mm in diameter; primocanes occasionally with scattered, gland-tipped hairs toward the tip but lacking nonglandular hairs. Prickles moderate, 0.7–1.5 per cm of cane, 4–8 mm long. Petioles with sparse to dense nonglandular hairs and sometimes gland-tipped hairs, armed with broad-based, downward-curved prickles to 4 mm long. Stipules 7–21 mm long, linear to linear-lanceolate. Primocane leaflet margins sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets 8.5–15.5 cm long, 5–10 cm wide, elliptic to elliptic-oblong, cordate to subcordate at the base, tapered to a sharply pointed tip, the leaflet stalk about $1/4$ – $1/3$ as long as the leaflet blade; middle leaflets ovate to ovate-elliptic, angled to rounded at the base, tapered to a sharply pointed tip, stalked; basal leaflets elliptic, angled at the base, tapered to a sharply pointed tip, nearly sessile. Inflorescences racemose, flaring broadly toward the apex, 6–18 cm long, 6–10 cm wide, with

5–19 flowers, appearing leafy with 2–7 bracts, about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks with dense nonglandular hairs, gland-tipped hairs, and scattered needlelike prickles. Sepals 6–10 mm long, 3–5 mm wide, triangular to narrowly triangular. Petals 10–22 mm long, broadly obovate. Fruits 12–21 mm long, 9–18 mm wide, short-cylindric. $2n=21$, 28. May–June.

Scattered, mostly south of the Missouri River (northeastern U.S. west to Kansas, Iowa, and Minnesota). Bottomland forests, mesic upland forests, banks of streams and rivers, bottomland prairies, upland prairies, bases, ledges, and tops of bluffs; also pastures, old fields, fallow fields, roadsides, and open, disturbed areas.

Rubus alumnus was described by L. H. Bailey (1923) from Missouri, with the type material collected by B. F. Bush in Jackson County. *Rubus pubifolius*, a synonym of *R. alumnus* (Widrechner, 1998), was also described from a Missouri type (L. H. Bailey 1945) collected by J. H. Kellogg near Eagle Rock, in Barry County.

7. *Rubus rosa* L.H. Bailey

Map 2505

Canes to 270 cm long and 150–250 cm tall, 5–8 mm in diameter, primocanes with gland-tipped hairs, at least toward the apex. Prickles moderate to dense, 0.3–3.0 per cm of cane, 6–8 mm long. Petioles with sparse to dense nonglandular hairs and often gland-tipped hairs, armed with broad-based, downward-curved prickles to 4 mm long. Stipules 12–20 mm long, linear to lanceolate. Primocane leaflets soft and clothlike, the margins sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets 9.5–17.0 cm long, 8.5–13.0 cm wide, broadly ovate or suborbicular, cordate to rounded at the base, tapered to a sharply pointed tip, the leaflet stalk about $1/3$ as long as the leaflet blade; middle leaflets ovate to oblong, rounded to subcordate at the base, tapered to a sharply pointed tip, stalked; basal leaflets elliptic, angled at the base, tapered to a sharply pointed tip, nearly sessile. Inflorescences mostly racemose, occasionally flaring and with some secondary branching, especially near the base, 5–36 cm long, 6–13 cm wide, with 5–24 flowers and 1–6 bracts, these often leafy and mostly with 3 leaflets; flower and inflorescence stalks with nonglandular hairs, gland-tipped hairs, and variously shaped prickles. Sepals 7–10(–16) mm long, 3–5 mm wide, triangular. Petals 13–18 mm long, obovate to broadly obovate. Fruits 12–20 mm long, 8–16 mm wide, short-cylindric to short-conic. $2n=21$, 28. May.

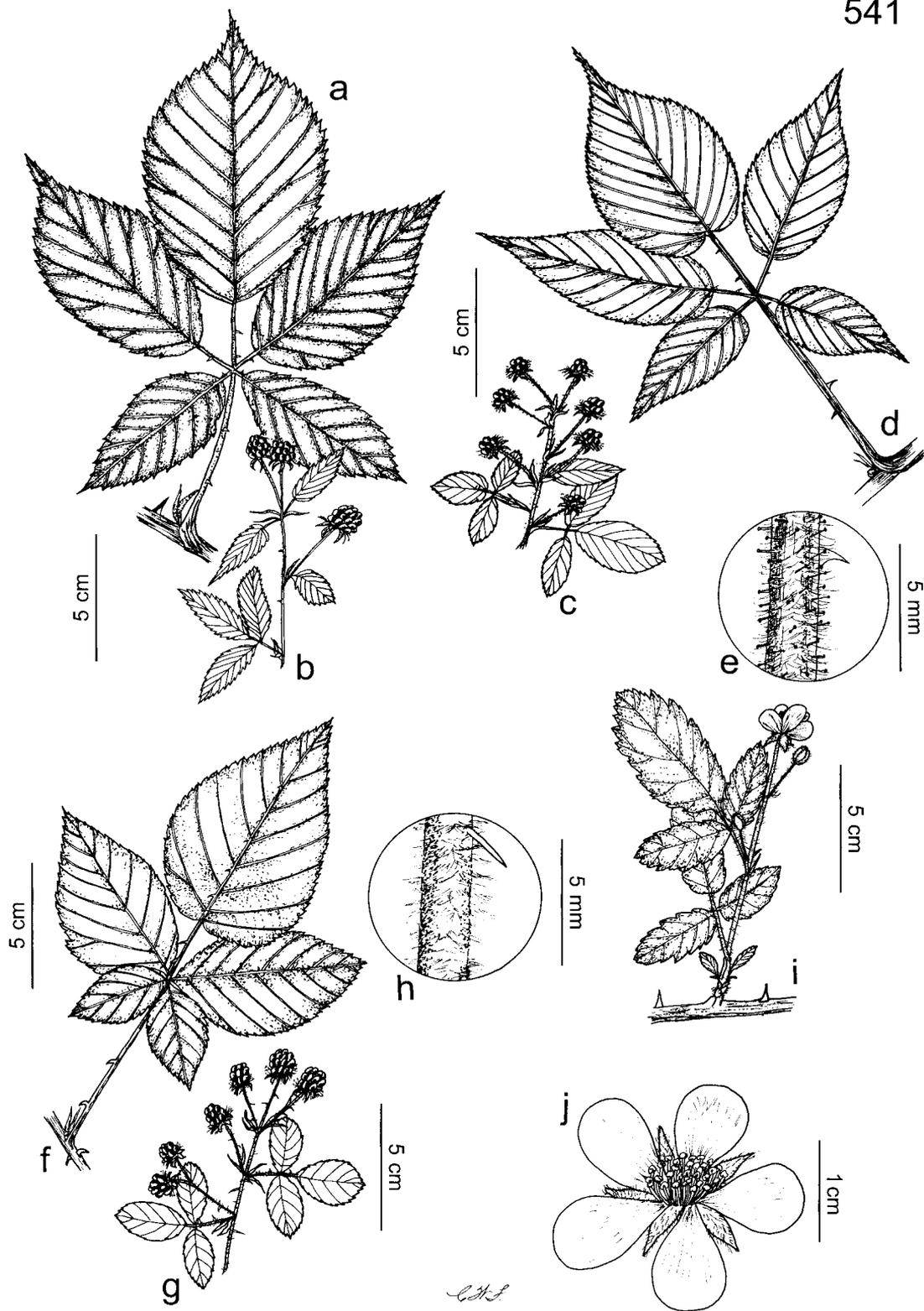
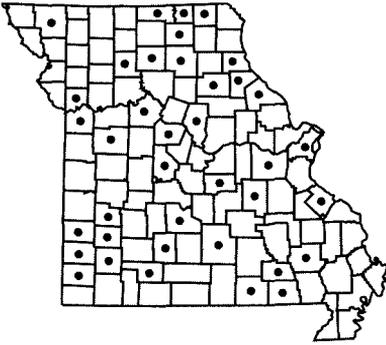
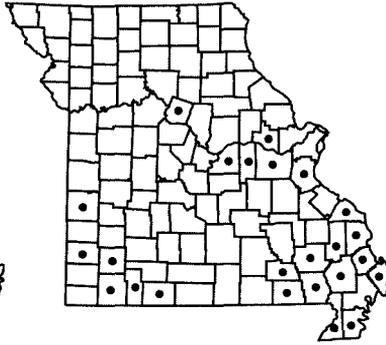


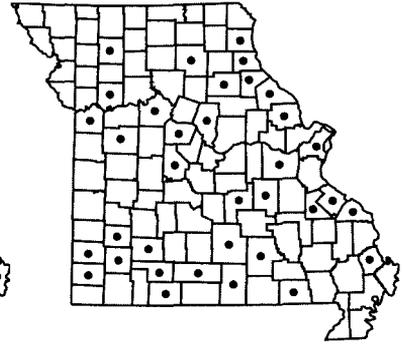
Plate 541. Rosaceae. *Rubus alumnus*, **a**) primocane node with leaf, **b**) apical portion of inflorescence with fruits. *Rubus allegheniensis*, **c**) apical portion of inflorescence with fruits, **d**) primocane node with leaf, **e**) inflorescence axis. *Rubus frondosus*, **f**) primocane node with leaf, **g**) apical portion of inflorescence with fruits, **h**) inflorescence axis. *Rubus curtipes*, **i**) floricane node with flowers and buds, **j**) flower.



2506. *Rubus ablatus*



2507. *Rubus argutus*



2508. *Rubus frondosus*

Possibly introduced, uncommon, known thus far only from historical collections from Jackson County (northeastern U.S. and adjacent Canada west to Nebraska and Minnesota). Bottomland forests and bottomland prairies.

Large-fruited selections of *R. rosa* have been cultivated and may escape or persist from gardens. Few collections of *R. rosa* have been made in Missouri, and it is not clear whether any of these represent native populations that predate European settlement.

2b. Section Arguti Rydb. (highbush blackberry)

Canes typically glabrous, erect to arching the first year, generally more clearly arched the second year; clonal by root-suckering, but rarely observed to tip-root. Prickles broad-based, straight or somewhat downward-curved. Primocane leaves mostly with 5 leaflets, sometimes with only 3 leaflets. Sepals never bearing gland-tipped hairs. Petals white. About 50 species, primarily in the eastern U.S. and adjacent Canada.

Alice et al. (in press) take a very different approach to this geographically and morphologically diverse section, treating most members as synonyms of a single, highly variable taxon, *R. pensilvanicus* Poir. Steyermark (1963) recognized four taxa within sect. *Arguti*. The treatment and descriptions of *R. argutus* and *R. mollior* herein resemble those of Steyermark. Steyermark's other two taxa, *R. ostryifolius* Rydb. and *R. pensilvanicus*, are excluded. Davis et al. (1969) concluded that the combination of fragmentary type material along with Britton's (1901) vague description makes it impossible to understand *R. ostryifolius*, and indicated that L. H. Bailey (1945) probably misinterpreted it in his treatment of sect. *Arguti*. Most collections that had been treated as *R. ostryifolius* are included here under *R. ablatus* and *R. laudatus*. *Rubus pensilvanicus* is native to the eastern United States and resembles its widespread congener, *R. frondosus*, but lacks that species' broadly ovate central leaflets and its short, leafy inflorescences.

1. Primocane central leaflets ovate-elliptic to nearly orbicular; floricanes generally arching to low-arching, 50–130 cm tall; inflorescences leafy-racemose
 10. R. FRONDOSUS
1. Primocane central leaflets narrowly elliptic, elliptic, or obovate; floricanes generally erect to arching, 70–400 cm tall; inflorescences various
 2. Primocane central leaflets narrowly elliptic, at least twice as long as wide; inflorescences condensed at the ends of weak, leafy racemes or small, flaring clusters, the bracteal leaflets with jaggedly incised margins 9. R. ARGUTUS
 2. Primocane central leaflets elliptic to obovate, less than twice as long as wide; inflorescences with substantial flower stalks and bracteal leaflets with regularly toothed margins

3. Primocane central leaflets generally widest above the midpoint, grayish green beneath; inflorescences, with 5–11 flowers often condensed at the ends of stout, usually well-armed racemes 12. *R. MOLLIOR*
3. Primocane central leaflets generally widest at or below the midpoint, softly pubescent beneath but not noticeably grayish green; inflorescences with 5–16 (–20) flowers, typically racemose (but some populations of *R. laudatus* in southwestern Missouri have short, flaring inflorescences)
4. Primocane central leaflets tapered or long-tapered to a sharply pointed or filiform tip; inflorescences narrowly racemose 8. *R. ABLATUS*
4. Primocane central leaflets angled or short-tapered to a pointed tip; inflorescences racemose to widened at apex 11. *R. LAUDATUS*

8. *Rubus ablatus* L.H. Bailey

Pl. 542 f, g; Map 2506

Canes to 250 cm long and 100–200 cm tall, 4–6 mm in diameter. Prickles sparse to moderate, 0.3–1.5 per cm of cane, 4–7 mm long. Petioles with sparse to dense nonglandular hairs, armed with broad-based, downward-curved to downward-angled prickles to 3 mm long. Stipules 10–15 mm long, linear-lanceolate to threadlike. Primocane leaflet margins sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Primocane central leaflets 7–13 cm long, 4.5–8.5 cm wide, elliptic-ovate, elliptic, or elliptic-oblong, subcordate to truncate at the base, long-tapered to a sharply pointed or filiform tip, the leaflet stalk about $\frac{1}{4}$ – $\frac{2}{5}$ as long as the leaflet blade; middle leaflets elliptic, rounded at the base, long-tapered to a sharply pointed or filiform tip, stalked; basal leaflets elliptic, angled at the base, tapered to a sharply pointed tip, sessile to short-stalked, asymmetrically lobed when only 3 leaflets are present. Inflorescences racemose, 6–15 cm long, 4–7 cm wide, with 5–16(–20) flowers and (1)2–4 bracts, these about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks with nonglandular hairs and occasional needlelike prickles. Sepals 5–7 mm long, 2.5–4.0 mm wide, triangular to oblong, tapered to a sharply pointed tip or abruptly tapered to a short, slender point. Petals 8–14 mm long, obovate. Fruits 8–15 mm long, 8–15 mm wide, short cylindrical to globose. May.

Scattered nearly throughout the state but apparently absent from the Mississippi Lowlands Division (north-central U.S. from Kansas north to Minnesota and east to Ohio and West Virginia). Mesic upland forests, upland prairies, savannas, and ledges of bluffs; also pastures, fencerows, and railroads.

Rubus ablatus was described by L. H. Bailey (1945) from Missouri, with the type material collected by B. F. Bush from a prairie in Morgan County. It has many characteristics that suggest an *R. allegheniensis* lacking gland-tipped hairs,

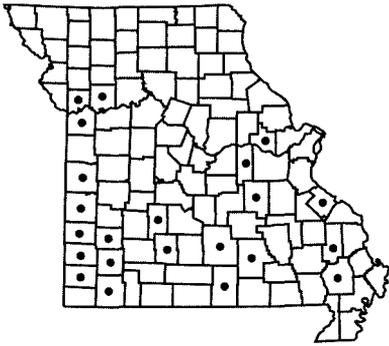
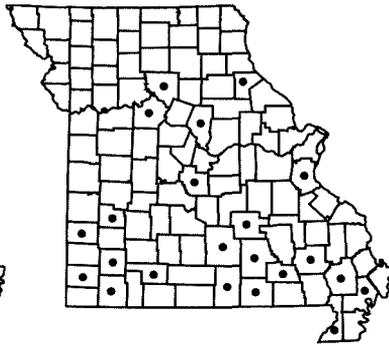
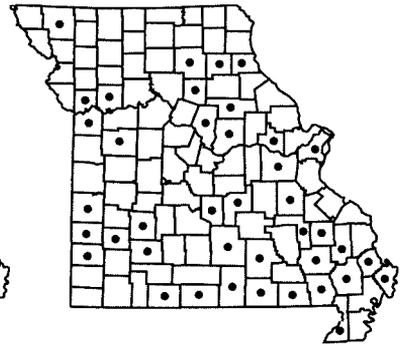
and specimens of *R. allegheniensis* with few (or overlooked) gland-tipped hairs could easily be misdetermined as *R. ablatus*.

9. *Rubus argutus* Link

Pl. 542 h, i; Map 2507

Canes to 450 cm long and 120–400 cm tall, 3–7 mm in diameter. Prickles sparse, 0.3–1.0 per cm of cane, 4–5 mm long, sometimes strongly downward-curved near the tip of the cane. Petioles with sparse to dense nonglandular hairs, armed with downward-curved prickles to 2 mm long. Stipules 6–13 mm long, linear to threadlike. Primocane leaflet margins finely to sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets 5.0–13.5 cm long, 2.5–5.5 cm wide, narrowly elliptic, often less than $\frac{1}{2}$ as wide as long, rounded to angled at the base, angled (or occasionally tapered) to a sharply pointed tip, the leaflet stalk about $\frac{1}{10}$ – $\frac{1}{4}$ (– $\frac{1}{3}$) as long as the leaflet blade; lateral leaflets resembling but smaller than the central leaflet, the middle pair stalked, the basal pair nearly sessile. Inflorescences typically racemose or clustered, (4.5)–6.0–12.0 cm long, 3–5 cm wide, with 2–5 (–11) flowers and 3–7 bracts, these typically jaggedly toothed, about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks rather delicate, with nonglandular hairs and occasional needlelike or small, downward-curved prickles. Sepals 4–5 mm long, 2.5–3.0 mm wide, ovate-triangular, tapered to a sharply pointed tip or abruptly tapered to a short, slender point. Petals 7–13 mm long, narrowly obovate. Fruits 9–14 mm long, 7–12 mm wide, short cylindrical. $2n=14, 21$. May–June.

Scattered, mostly south of the Missouri River (southeastern U.S. west to Texas and Oklahoma). Bottomland forests, mesic upland forests, banks of streams and spring branches, swamps, ledges and tops of bluffs, glades, and upland prairies; also pastures, fencerows, margins of crop fields, and roadsides.

2509. *Rubus laudatus*2510. *Rubus mollior*2511. *Rubus aboriginum*

A white-fruited, horticultural variant, cv. 'Crystal White', closely resembles *R. argutus*, but has been recognized as a distinct species, *R. louisianus* A. Berger by some botanists. Specimens from Oregon and Texas Counties may represent escapes of cv. 'Crystal White' from cultivation, but such plants would key to *R. argutus* in the present treatment and can only be distinguished from the range of variation present in *R. argutus* when fruits are present.

10. *Rubus frondosus* Bigelow (Yankee blackberry)

R. pratensis L.H. Bailey

Pl. 541 f-h; Map 2508

Canes to 200 cm long and 70–130 cm tall, 3–7 mm in diameter. Prickles moderate, 0.5–1.2(–2.0) per cm of cane, 2.5–5.0 mm long. Petioles with sparse to dense nonglandular hairs, armed with fine, needlelike, downward-angled prickles to 3 mm long. Stipules 10–18 mm long, linear to linear-lanceolate. Primocane leaflet margins sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets (7–)8–14 cm long, (5–)6–11 cm wide, nearly orbicular to ovate-elliptic, cordate to subcordate at the base, tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{6}$ – $\frac{3}{10}$ as long as the leaflet blade; middle leaflets rhombic to elliptic or elliptic-obovate, angled to rounded at the base, tapered to a sharply pointed tip, stalked; basal leaflets elliptic, angled at the base, tapered or short-tapered to a sharply pointed tip, sessile. Inflorescences racemose, sometimes flaring toward the apex, but typically compact, 3.0–17.5 cm long, 5–11 cm wide, with 1–11 flowers and 3–9 bracts, these leafy, about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks with nonglandular hairs and rarely with needlelike prickles. Sepals 6–10 mm long, 3–4 mm wide, triangular-elliptic, tapered to a sharply pointed tip or abruptly tapered to a short, slender point. Pet-

als 8–14 mm long, obovate. Fruits 10–15 mm long, 10–16 mm wide, globose. May–June.

Scattered nearly throughout the state (northeastern U.S. and adjacent Canada west to Kansas, Iowa, and Minnesota). Bottomland forests, mesic to dry upland forests, banks of streams, bases, ledges, and tops of bluffs, and upland prairies; also pastures, old fields, old quarries, cemeteries, railroads, and roadsides.

Rubus pratensis, a synonym of *R. frondosus* (Widrechner, 1998), was described based on a Missouri type (L. H. Bailey, 1945) collected by B. F. Bush from a prairie in Cooper County. A white-fruited form from Howell County was described as *R. pensilvanicus* Poir. f. *albinus* E.J. Palmer & Steyerf.

11. *Rubus laudatus* A. Berger

R. bushii L.H. Bailey

R. sertatus L.H. Bailey

R. virilis L.H. Bailey

Map 2509

Canes to 270 cm long and 100–200 cm tall, 4–10 mm in diameter. Prickles sparse to moderate, 0.2–1.2 per cm of cane (except in southwestern Missouri and Kansas, where more densely armed populations are found with up to 3 prickles per cm), 4–6 mm long. Petioles with sparse to dense nonglandular hairs, armed with broad-based downward-curved to downward-angled prickles to 3 mm long. Stipules 12–16 mm long, linear. Primocane leaflet margins finely toothed, the upper surface thinly hairy, the undersurface velvety hairy, in developing leaves appearing grayish. Central primocane leaflets 7.5–13.0 cm long, 3–7 cm wide, elliptic-ovate, elliptic, elliptic-oblong, or narrowly-elliptic, subcordate to rounded at the base, angled or short-tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{4}$ – $\frac{1}{3}$ as long as the leaflet blade; lateral leaflets elliptic, angled at the base, angled to a sharply pointed tip, the middle pair stalked, the basal pair nearly sessile. Inflo-

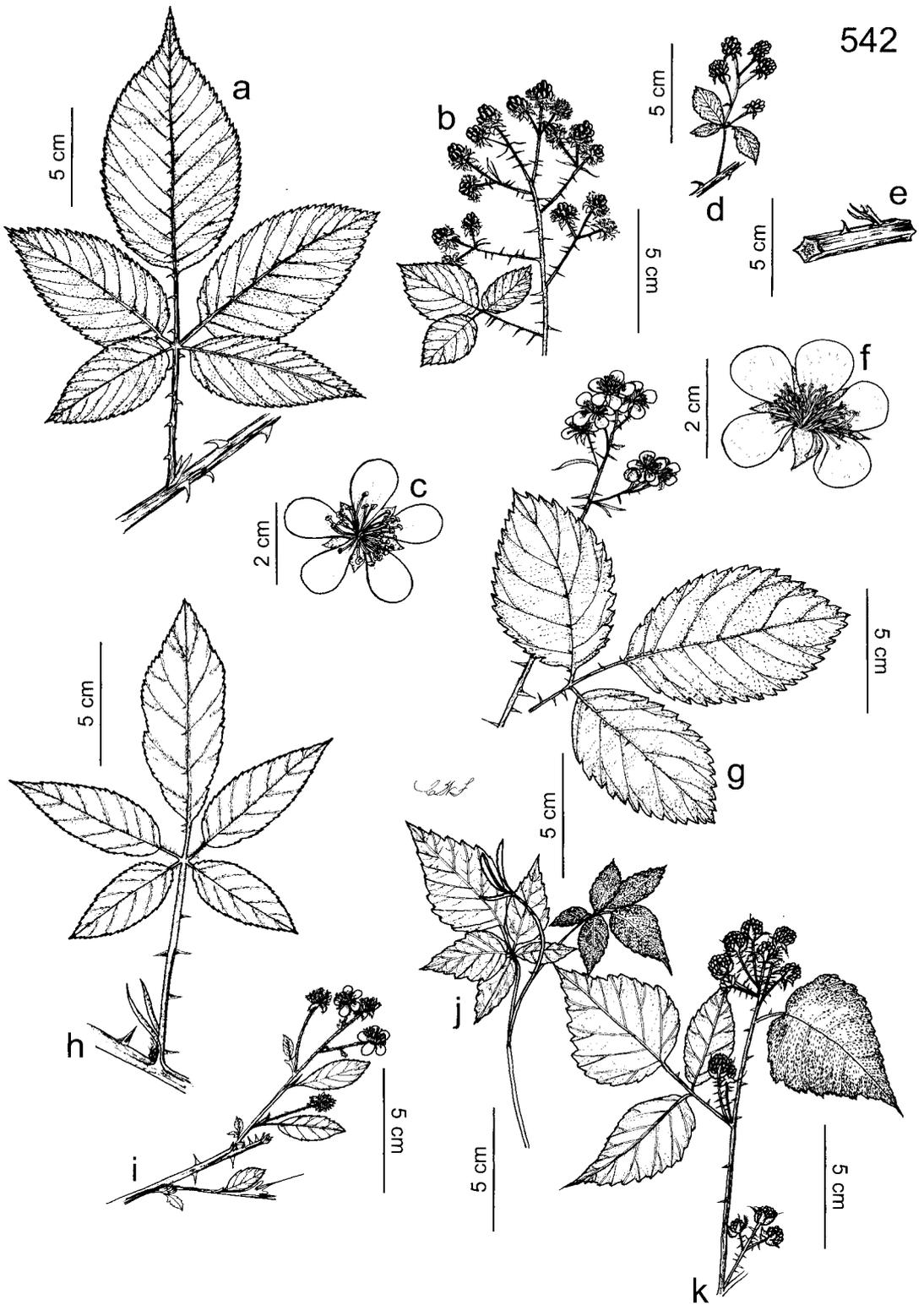


Plate 542. Rosaceae. *Rubus armeniacus*, **a**) primocane node with leaf, **b**) apical portion of inflorescence with fruits and bract, **c**) flower. *Rubus serissimus*, **d**) floricane node with fruits, **e**) section of primocane showing angled cross-section. *Rubus ablatus*, **f**) flower, **g**) apical portion of inflorescence and detached floricane leaf. *Rubus argutus*, **h**) primocane node with leaf, **i**) portion of floricane with inflorescence. *Rubus occidentalis*, **j**) tip of primocane, **k**) portion of floricane with fruits.

rescences typically racemose, 5.0–15.5 cm long, 4–6 cm wide, with 5–13 flowers (western populations can bear short, flaring inflorescences with as few as 4 flowers, especially near the floricanes tips) and 1–5 bracts, these sometimes leafy, about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks with nonglandular hairs, and occasional needlelike prickles (western populations sometimes bear downward-curved, broad-based prickles). Sepals 5–7 mm long, 2.5–4.0 mm wide, narrowly triangular, tapered to a sharply pointed tip. Petals 12–22 mm long, obovate. Fruits 12–20 mm long, 8–14 mm wide, ovoid to cylindrical. May.

Scattered, mostly south of the Missouri River (central U.S. from Pennsylvania south to Virginia, Arkansas and Texas west to Oklahoma and Kansas; introduced in Australia). Bottomland forests, mesic upland forests, upland prairies, and banks of streams and rivers; also pastures, old fields, fencerows, ditches, railroads, and, roadsides.

Large-fruited selections of *R. laudatus* have been cultivated and may escape or persist from gardens. The species is known to have become naturalized in Australia (Evans et al., 2007). It was originally described by Berger (Hedrick et al., 1925) from the cv. 'Bundy', which was selected by T. B. Bundy from Wayne County, Missouri. *Rubus bushii*, *R. sertatus*, and *R. virilis*, three synonyms of *R. laudatus*, also were described from Missouri types. The type of *R. bushii* was collected by E. J. Palmer from Jasper County in 1929 (L. H. Bailey, 1932), that of *R. sertatus* by Bush from Jackson County in 1926 (L. H. Bailey, 1945), and that of *R. virilis* by J. H. Kellogg from Texas County in 1933 (L. H. Bailey, 1945).

12. *Rubus mollior* L.H. Bailey

Map 2510

Canes to 250 cm long and 100–180 cm tall, 4–9 mm in diameter. Prickles moderate, 0.7–2.2 per cm of cane, 5–7 mm long. Petioles with dense nonglandular hairs, armed with broad-based downward-curved prickles to 3 mm long. Stipules 7–10 mm long, linear. Primocane leaflet margins finely toothed, the upper surface thinly hairy, the undersurface velvety hairy, often appearing grayish with a rusty midvein. Central primocane leaflets 7.5–11.0 cm long, 4.0–6.5 cm wide, elliptic-obovate or oblong-obovate, rounded at the base, short-tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{5}$ – $\frac{3}{10}$ as long as the leaflet blade; lateral leaflets elliptic-obovate, rounded to angled at the base, abruptly short-tapered to a sharply pointed tip, the middle pair stalked, the basal pair nearly sessile. Inflorescences typically racemose, 9–12 cm long, 4–7 cm wide, with 5–9 flowers and 3–7 bracts, these fairly small at flowering, but sometimes becoming leafy and prominent as the fruits develop, hiding the fruits later in development; flower and inflorescence stalks with nonglandular hairs and occasional needlelike prickles. Sepals 5–6 mm long, 2–4 mm wide, triangular-ovate to elliptic, abruptly tapered to a short, slender point. Petals 10–12 mm long, obovate. Fruits 10–15 mm long, 7–12 mm wide, globose to cylindrical. May.

Scattered, mostly south of the Missouri River (Missouri, Arkansas, Oklahoma, and Kansas). Bottomland forests, mesic upland forests, swamps, upland prairies, and margins of ponds and lakes; also fencerows.

Rubus mollior is nearly an Ozark endemic.

2c. Section *Flagellares* L.H. Bailey (dewberry)

Canes arching to prostrate the first year, generally low-arching to prostrate the second year; clonal by both root-suckering and tip-rooting. Prickles mostly broad-based, typically downward-curved (exceptions noted below). Primocane leaves with 3–5(–7) leaflets. Petals white. About 50 species, predominantly apomictic polyploids, primarily in the eastern U.S. and adjacent Canada.

Alice et al. (in press) take a very different approach to this geographically and morphologically diverse section, treating most of these species as synonyms of a single taxon, *Rubus flagellaris*. Steyermark (1963) recognized three species in Missouri within this section. His treatment of the members of this section designates all populations that bear gland-tipped hairs as *R. invisus* (L.H. Bailey) Britton. Good examples of glandular members of sect. *Flagellares* in Missouri are scarce but they clearly can be separated into two distinct taxa with small primocane leaves, typically with 3 leaflets: *R. deamii* and *R. levicululus* (distinguished in the key to species below). *Rubus invisus*, native to the east of Missouri, has larger primocane leaves, usually with 5 leaflets, and open inflorescences with up to 7 flowers on long,

ascending stalks. Steyermark's (1963) nonglandular taxa, *R. enslenii* and *R. flagellaris*, were separated on the basis of the shape of their floricanes leaflets, a problematic and often variable character.

Rubus occidualis (L.H. Bailey) L.H. Bailey (*R. flagellaris* var. *occidualis* L.H. Bailey) was described from Iowa and is best considered as a synonym of *R. roribaccus*. However, plants that keyed to *R. flagellaris* var. *occidualis* in Steyermark's (1963) treatment are herein divided among five species under the second lead of couplet 7. Similarly, the type specimen of *R. flagellaris* f. *roseus* Steyerm., which was said to differ from typical var. *occidualis* in its pinkish-tinged petals, cannot be determined to species within sect. *Flagellares* with confidence.

Rubus hancinianus L.H. Bailey, a large, mounding member of sect. *Flagellares* that is endemic to Kansas and Oklahoma, has been reported from Jackson County, Missouri (Davis et al., 1968). The collection upon which this report was based (*A.M. Fuller, H.A. Davis & T. Davis F-65-11, 13791*, accessioned in the herbaria at the Carnegie Museum of Natural History and the Milwaukee Public Museum) has inflorescences typical of *R. meracus* and *R. roribaccus*, but with primocane leaflets of a form intermediate between those two taxa. Although it is clearly not *R. hansonianus*, the collection is not sufficient to show the distinction between the other two species in question.

1. Leaflets thinly hairy beneath at maturity, not soft to the touch at maturity
 2. Primocane leaves with 3 leaflets; inflorescences generally 5–8 cm long, with 1 flower 17. *R. ENSLENII*
 2. Primocane leaves with 3 and/or 5 leaflets; inflorescences generally 5–20 cm long, with 1–12 flowers
 3. Canes 2–3 mm in diameter with prickles 1–2 mm long; primocane leaves mostly with 3 leaflets; inflorescences with 1–6 flowers 23. *R. STEELEI*
 3. Canes 3–5 mm or more in diameter with prickles 2–4 mm long; primocane leaves mostly with 5 leaflets; inflorescences with 4–12 flowers
 4. Primocanes with 1–3 prickles per cm; central primocane leaflets gradually tapered to relatively long-tapered at the tip 14. *R. CELER*
 4. Primocanes with 3–5 prickles per cm; central primocane leaflets shouldered, abruptly tapered at the tip 18. *R. FLAGELLARIS*
1. Leaflets densely hairy beneath at maturity, soft to the touch at maturity
 5. Inflorescences bearing stalked glands (obvious at 10× magnification)
 6. Primocane central leaflets ovate to elliptic, with a subcordate base; at least some inflorescences with 3–6 flowers 16. *R. DEAMII*
 6. Primocane central leaflets elliptic, with an angled to rounded base; inflorescences with 1 or 2 flowers 19. *R. LEVICULUS*
 5. Inflorescences lacking stalked glands
 7. Canes robust, forming a large, mounding tangle, cane diameter frequently exceeding 4 mm; inflorescences with 4–8 flowers, mostly racemose 22. *R. SATIS*
 7. Canes whiplike, low-arching to prostrate; cane diameter mostly 2.5–5.0 mm; inflorescences with 1–10 flowers, not racemose
 8. Inflorescences condensed in a terminal cluster with flower stalks at most 3.5 cm long 15. *R. CURTIPES*
 8. Inflorescences 1-flowered or in loose clusters with long, ascending flower stalks often exceeding 3.5 cm long
 9. Primocane central leaflets with jagged-incised margins; inflorescences usually with 1 flower; sepals often with a prominent spatulate tip 1–3 mm long 13. *R. ABORIGINUM*

9. Primocane central leaflets with regularly toothed margins; inflorescences usually with 2–8 flowers; sepals tapered to a sharply pointed tip, with a leafy tip or abruptly tapered to a short, slender point

10. Primocane central leaflets elliptic, rounded at base 20. *R. MERACUS*

10. Primocane central leaflets ovate, cordate at base 21. *R. RORIBACCUS*

13. *Rubus aboriginum* Rydb.

R. mundus L.H. Bailey

Map 2511

Canes to 350 cm long and 40 cm tall, 2.5–5.0 mm in diameter. Prickles usually moderate, rarely dense, 1–3(–6) per cm of cane, 1.5–3.0 mm long (but cultivated selections exist that lack cane prickles). Petioles with sparse to dense nonglandular hairs, armed with downward-curved to downward-angled prickles to 2 mm long. Stipules 12–21 mm long, linear to lanceolate. Primocane leaflets 3, 5, or rarely 7, the margins irregularly jagged, often doubly toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets (5.5–)6.0–9.5 cm long and (4.0–)4.5–7.0 (–7.5) cm wide, ovate to elliptic or elliptic-obovate, subcordate to rounded at the base, tapered to a sharply pointed tip, the leaflet stalk extremely variable in length relative to the leaflet blade; middle leaflets ovate to elliptic or rhombic, rounded to angled at the base, angled to tapered to a sharply pointed tip, stalked; basal leaflets ovate to elliptic, angled at the base, angled to a sharply pointed tip, nearly sessile, often asymmetrically lobed when only 3 leaflets are present. Inflorescences 3–15(–22) cm long, with 1–5 flowers on long, ascending stalks and 1–6 leafy bracts, these mostly with 3 leaflets; flower and inflorescence stalks with nonglandular hairs and sometimes with needle-like prickles. Sepals 6–8 mm long, 3–4 mm wide, triangular, often with a prominent spatulate tip 1–3 mm long. Petals 10–22 mm long, broadly obovate. Fruits 10–30 mm long, 12–20 mm wide, subglobose to cylindrical. $2n=56$. April–June.

Scattered, mostly south of the Missouri River (southeastern U.S. west to Kansas, Oklahoma and Texas). Bottomland forests, mesic upland forests, swamps, banks of streams and rivers, bottomland prairies, upland prairies, and fens; also old fields, fallow fields, fencerows, railroads, and roadsides.

Large-fruited and unarmed selections of *R. aboriginum* have been cultivated and may escape or persist from gardens. In addition to rooting at the tips, the canes of this species sometimes also root at the nodes, an unusual character in the section. Another unusual character is the presence of extra petals. A collection of *R. aboriginum* with 10 petals was made by J. Pinkston in Macon County in 1997 and is accessioned at the herbarium of Missouri State University.

14. *Rubus celer* L.H. Bailey

Map 2512

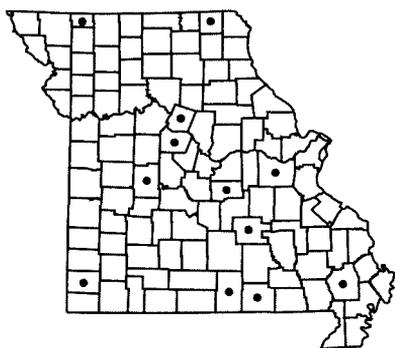
Canes to 200 cm long and 50 cm tall, 3–5 mm in diameter. Prickles usually moderate, 1–3 per cm of cane, 2–3 mm long. Petioles with sparse nonglandular hairs, armed with downward-curved to downward-angled prickles to 2 mm long. Stipules 10–16 mm long, linear. Primocane leaflets mostly 5, sometimes 3, the margins sharply toothed, the upper surface glabrous, the undersurface thinly hairy, especially along the veins. Central primocane leaflets 6.0–8.5 cm long and 4–6 cm wide, ovate-elliptic to elliptic, rounded at the base, tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{4}$ as long as the leaflet blade; middle leaflets elliptic-obovate, angled at the base, angled to a sharply pointed tip, stalked; basal leaflets elliptic-obovate, angled at the base, angled to a sharply pointed tip, and sessile when 5 leaflets are present, tapered to a sharply pointed tip, short-stalked, and often asymmetrically lobed when only 3 leaflets are present. Inflorescences (7–)10–20(–32) cm long, with 4–12 flowers on long, ascending stalks (often with a more-or-less flat-topped arrangement) and 4–7 leafy bracts, these mostly with 3 leaflets; flower and inflorescence stalks with spreading, nonglandular hairs and sometimes with small, downward-curved prickles. Sepals 6–7 mm long, 3–4 mm wide, triangular-ovate, abruptly tapered to a short, slender point. Petals 10–13 mm long, obovate. Fruits 13–20 mm long, 11–20 mm wide, globose to short-cylindrical. May–June.

Uncommon, mostly in the eastern half of the state (northeastern U.S. and adjacent Canada west to Wisconsin, Iowa, and Missouri). Upland prairies; also pastures, fencerows, ditches, roadsides, and open, sandy, disturbed areas.

15. *Rubus curtipes* L.H. Bailey

Pl. 541 i, j; Map 2513

Canes to 200 cm long and 50 cm tall, 2.5–4.0 mm in diameter. Prickles moderate to dense, 1–4(–7) per cm of cane, 1.0–3.5 mm long. Petioles with nonglandular hairs, armed with downward-curved prickles to 2 mm long. Stipules 8–15 mm long, linear to narrowly elliptic, sometimes notched. Primocane leaves with 3 and/or 5 leaflets, margins irregularly to doubly serrate, up-

2512. *Rubus celer*2513. *Rubus curtipes*2514. *Rubus deamii*

per surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets 4.5–8.0 cm long and (3.5)–4.0–5.5(–6.5) cm wide, ovate to elliptic, base subcordate to rounded, tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{3}$ as long as the leaflet blade; middle leaflets rhombic or elliptic to obovate, base angled, angled to tapered to a sharply pointed tip, stalked; basal leaflets elliptic to elliptic-obovate and sessile, when 5 leaflets, ovate and stalked, often asymmetrically lobed, when 3 leaflets, base angled, angled to a sharply pointed tip. Inflorescences, 5–10 cm long, with 1–7 flowers condensed in clusters near the apex, with 1–6 leafy bracts, about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks with dense nonglandular hairs, with the longest flower stalk at most 3.5 mm long. Sepals 6–8 mm long and 3–4 mm wide, triangular-ovate to oblong, abruptly tapered to a short, slender point. Petals 10–12 mm long, obovate. Fruits 10 mm long, 10 mm wide, globose. April–May.

Uncommon, south of the Missouri River (northeastern U.S. west to Wisconsin, Iowa, and Missouri). Mesic upland forests, glades, and tops of bluffs; also old fields and railroads.

Another member of sect. *Flagellares*, *R. plicatifolius* Blanch., resembles *R. curtipes* in having condensed inflorescences with small flowers held on short flower stalks, but typically *R. plicatifolius* has less hairy leaves that appear slightly corrugated or pleated at each major vein. *Rubus plicatifolius* is known from eastern and southern Iowa. A single, incomplete specimen is accessioned at the Iowa State University herbarium that was collected northwest of Chillicothe (Livingston County) (*S. Sparling* 818 on 25 May 1951) may represent a native Missouri population. This species should be searched for in northern Missouri at well-drained, open sites, such as on railroad ballast.

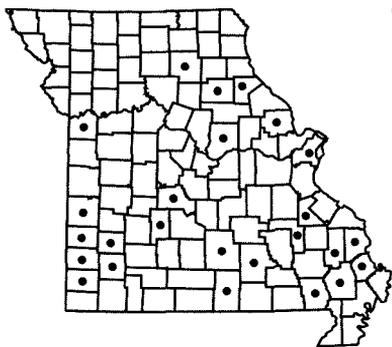
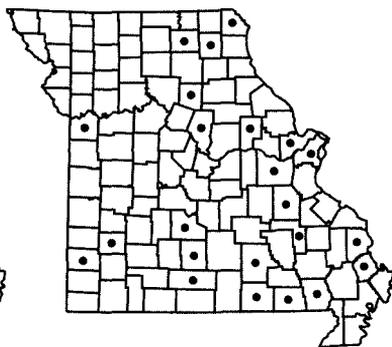
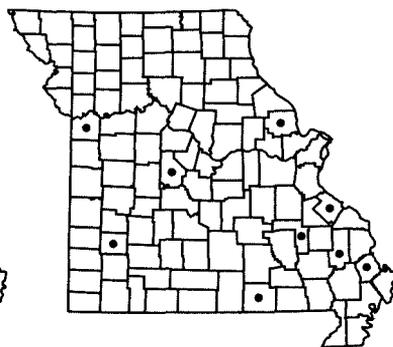
16. *Rubus deamii* L.H. Bailey

Map 2514

Canes to 250 cm long and 50 cm tall, 3–5 mm in diameter. Primocanes rarely with gland-tipped hairs. Prickles moderate to dense, (2)–3–5(–8) per cm of cane, (1)–2–3 mm long. Petioles with nonglandular hairs, occasional gland-tipped hairs and downward-curved prickles to 2 mm long. Stipules 8–12 mm long, linear-lanceolate, glandular. Primocane leaves mostly with 3 leaflets, rarely with 5, margins irregularly, doubly serrate, upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets (4.0)–5.0–6.5(–7.0) cm long and (2.5)–3.0–4.0(–4.5) cm wide, ovate to elliptic, base rounded to subcordate, tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{6}$ – $\frac{1}{4}$ as long as the leaflet blade; middle leaflets ovate to elliptic; basal leaflets ovate, often asymmetrically lobed, base rounded, angled to a sharply pointed tip. Inflorescences (4)–6–11(–12) cm long, with 1–6 flowers on ascending stalks, with (1)2 or 3(–5) leafy bracts, about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks with nonglandular and glandular hairs, and small downward-angled, needlelike prickles. Sepals 7–8 mm long and 3.0–3.5 mm wide, oblong, tapered to a sharply pointed tip or abruptly tapered to a short, slender point. Petals 8–14 mm long, obovate. Fruits 9–10 mm long, 9–10 mm wide, globose. April–May.

Uncommon, known thus far mostly from solitary specimens from five scattered counties (central U.S. from Virginia and West Virginia west to Indiana, Kentucky, and Tennessee, disjunct in Missouri). Bases of sandstone bluffs.

The Missouri record dates to 1933 to a specimen of primocane and florican material gathered by Julian Steyermark near Chimney Rocks in a bluffy area with large sandstone boulders. The specimens originally were determined as *R. invisus* (see discussion under the sect. *Flagellares* treatment above).

2515. *Rubus enslenii*2516. *Rubus flagellaris*2517. *Rubus leviculus***17. *Rubus enslenii* Tratt.***R. nefrens* L.H. Bailey

Pl. 540 g-i; Map 2515

Canes to 180 cm long, typically prostrate, 2–3 mm in diameter, sometimes so delicate as to seem herbaceous. Prickles moderate, 1–2 per cm of cane, 1–2 mm long. Petioles armed with downward-curved prickles to 1.5 mm long. Stipules 8–10 mm long, linear. Primocane leaves almost always with 3 leaflets, rarely a few with 5 leaflets, the margins finely toothed to more coarsely and sharply toothed, the upper surface glabrous, the under-surface thinly hairy. Central primocane leaflets (4–)5–6(–7) cm long and (2.0–)2.5–4.5(5.0) cm wide, elliptic-rhombic, rounded at the base, tapered to a pointed or sharply pointed tip, the leaflet stalk about $\frac{1}{8}$ – $\frac{1}{5}$ as long as the leaflet blade; basal leaflets ovate-elliptic, often asymmetrically lobed, angled at the base, short-tapered to a sharply pointed tip, sessile. Inflorescences (4.5–)5.0–8.0 (–12.0) cm long, with 1 or 2(–4) flowers on long, ascending stalks, with (1)2 or 3(–5) narrow, leafy bracts, about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks nearly glabrous or with relatively few nonglandular hairs, sometimes with small downward-angled or downward-curved prickles. Sepals 6–10 mm long, 2.5–4.0 mm wide, elliptic, with expanded, leafy tips or abruptly tapered to a short, slender point. Petals 8–12 mm long, obovate. Fruits 8–12 mm long, 8–12 mm wide, short-conic to short-cylindric. April–May.

Scattered nearly throughout the state, more abundantly south of the Missouri River (southeastern U.S. west to Kansas and Oklahoma) Bottomland forests, mesic upland forests, banks of streams and rivers, ledges of bluffs, margins of sinkhole ponds, and upland prairies; also pastures and old fields.

Rubus nefrens is here treated as a synonym of *R. enslenii* (Widrechner, 1998). It was described

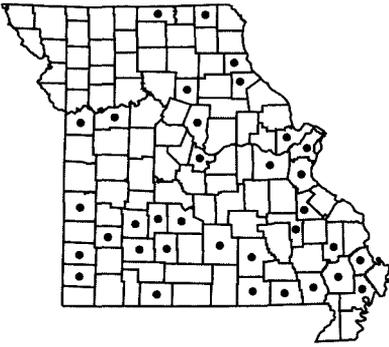
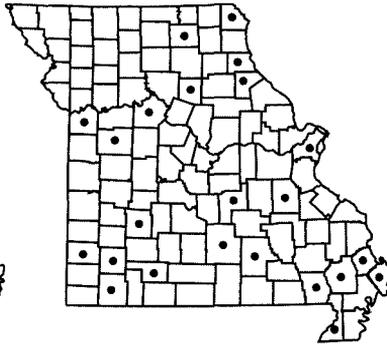
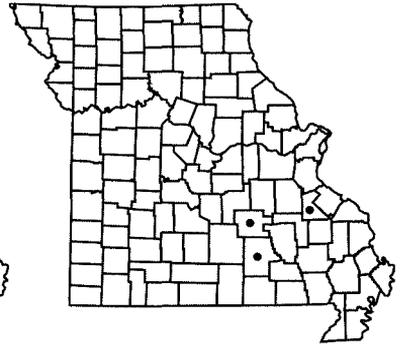
from Missouri, with the type material collected by B. F. Bush in Jackson County in 1923 (L. H. Bailey, 1925).

18. *Rubus flagellaris* Willd. (northern dewberry)

Map 2516

Canes to 250(–450) cm long and 60 cm tall, 3–6 mm in diameter. Prickles moderate to dense, (2)3–5 per cm of cane, (2–)3–4 mm long. Petioles with nonglandular hairs, armed with downward-curved prickles to 3 mm long. Stipules 14–18 mm long, linear to linear-lanceolate or narrowly elliptic. Primocane leaves mostly with 5 leaflets, rarely with 3, margins coarsely, doubly, and sharply toothed, the upper surface glabrous, the under-surface thinly hairy, often with small prickles on the veins. Primocane central leaflets 6–9 cm long and 4–7 cm wide, broadly ovate to ovate-elliptic, occasionally obovate, especially in late-season growth, cordate to rounded at the base, shouldered to an abruptly tapered, sharply pointed tip, the leaflet stalk about $\frac{1}{4}$ as long as the leaflet blade; middle leaflets elliptic-obovate, angled at the base, short-tapered to a sharply pointed tip, short-stalked; basal leaflets elliptic, angled at the base, angled to a sharply pointed tip, sessile. Inflorescences 9–22 cm long, with 1–6 flowers on long, ascending stalks, with 2–6 leafy bracts, these mostly simple or mostly with 3 leaflets; flower and inflorescence stalks nearly glabrous, with small downward-curved prickles. Sepals 6–8 mm long, 3–4 mm wide, narrowly elliptic to triangular-elliptic, abruptly tapered to a short, slender point. Petals 12–20 mm long, obovate. Fruits 10–20 mm long, 10–15 mm wide, globose to broadly oblong in outline. $2n=28, 35, 49$. May–June.

Scattered nearly throughout the state, more abundantly south of the Missouri River (northeastern U.S. west to Wisconsin and Oklahoma). Openings of mesic to dry upland forests, upland prairies

2518. *Rubus meracus*2519. *Rubus roribaccus*2520. *Rubus satis*

ries, banks of streams, tops of bluffs, and margins of sinkhole ponds; also pastures, old fields, old mines, cemeteries, railroads, roadsides, and open, disturbed areas.

Palmer and Steyermark (1958) published the name *R. flagellaris* f. *roseoplenus* E.J. Palmer & Steyermark based on a specimen collected by Palmer (59655) in 1955 along a railroad in Barton County. This form was stated to differ from the typical one in its doubled corollas with numerous pinkish-tinged petals. However, the type specimen instead appears to represent an unusual plant of sect. *Arguti* (although the specimen is incomplete and thus cannot be determined to species with confidence).

19. *Rubus leviculus* L.H. Bailey

Pl. 540 j-l; Map 2517

Canes to 200 cm long, typically prostrate, 2–4 mm in diameter, sometimes so delicate as to seem herbaceous. Primocanes sometimes with gland-tipped hairs. Prickles moderate, 1.0–3.5 per cm of cane, 0.5–2.0 mm long. Petioles with nonglandular hairs, occasional gland-tipped hairs, and downward-curved prickles to 1 mm long. Stipules 8–15 mm long, linear-lanceolate. Primocane leaves mostly with 3 leaflets, rarely with 5, margins sharply and sometimes coarsely toothed, the upper surface thinly hairy, the undersurface thinly to velvety hairy. Central primocane leaflets 5–8 cm long and 2.5–4.0 cm wide, elliptic, rounded to angled at the base, tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{5}$ – $\frac{3}{10}$ as long as the leaflet blade; basal leaflets asymmetrically ovate-elliptic to elliptic, angled at the base, angled to a sharply pointed tip, short-stalked to nearly sessile. Inflorescences 4.0–12.5 cm long, with 1–3 flowers on long, ascending stalks, with 1–4 narrow, leafy bracts, these mostly with 3 leaflets; flower and inflorescence stalks densely covered with nonglandular and glandular hairs and small down-

ward-angled, needlelike prickles or downward-curved prickles. Sepals 5.5–7.0 mm long, 3–4 mm wide, triangular to elliptic-ovate, tapered to a sharply-pointed tip. Petals 10–14 mm long, obovate. Fruits 10–14 mm long, 10–15 mm wide, short-cylindric. April–May.

Uncommon, mostly south of the Missouri River (southeastern U.S. west to Missouri and Iowa). Mesic upland forests, upland prairies, sand prairies, and banks of streams and rivers; also pastures, old fields, railroads, roadsides, and open, disturbed areas.

20. *Rubus meracus* L.H. Bailey

R. frustratus L.H. Bailey

R. kelloggii L.H. Bailey

Map 2518

Canes to 250 cm long and 60 cm tall, 2.5–4.0 mm in diameter. Prickles usually moderate, 1–4 per cm of cane, 1.5–2.5 mm long. Petioles with dense, nonglandular hairs, armed with downward-curved prickles to 2 mm long. Stipules 12–15 mm long, linear to linear-lanceolate. Primocane leaves with 3 or 5 leaflets, margins coarsely and sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets (6.5–)7.0–9.0 cm long and (4–)5–6 cm wide, elliptic, rounded at the base, tapered to a short, sharply pointed tip, the leaflet stalk about $\frac{1}{5}$ – $\frac{3}{10}$ as long as the leaflet blade; middle leaflets elliptic-obovate, angled at the base, short-tapered to a sharply pointed tip, stalked; basal leaflets, when 3 leaflets are present, ovate, often with asymmetric lobes, rounded at the base, angled to tapered to a sharply pointed tip, short-stalked, when 5 leaflets are present, elliptic to elliptic-obovate, angled at the base, angled to a sharply pointed tip, sessile. Inflorescences 5–20 cm long, with 1–6(–8) flowers on long, ascending stalks, with 2–6 leafy bracts, these about evenly divided between simple bracts and those with 3 leaflets; flower and

inflorescence stalks with dense, nonglandular hairs and downward-angled to downward-curved prickles. Sepals 7–9 mm long, 3.0–4.5 mm wide, triangular-elliptic, tapered to a sharply pointed tip or abruptly tapered to a short, slender point. Petals (9–)12–20 mm long, obovate to broadly obovate. Fruits 12–17 mm long, 10–15 mm wide, globose to short-cylindric. $2n=49$. April–May.

Uncommon, mostly south of the Missouri River (eastern U.S. west to Kansas and Oklahoma). Mesic to dry upland forests, upland prairies, sand prairies, savannas, glades, and margins of sink-hole ponds; also roadsides.

Two taxa here treated as synonyms of *R. meracus* (Widrechner, 1998), *R. frustratus* and *R. kelloggii*, were described from Missouri, with the type material of *R. frustratus* collected by B. F. Bush in Cooper County in 1935 (L. H. Bailey, 1943a) and that of *R. kelloggii* by J. H. Kellogg in Stoddard County in 1933 (L. H. Bailey, 1945).

This dewberry can closely resemble *R. roribaccus*. The primary difference is expressed in the narrower leaflets of *R. meracus*. Some Missouri collections are difficult, if not impossible, to assign to one species or the other with certainty, and the county distribution map for *R. meracus* may contain a few records that will in the future be redetermined as *R. roribaccus*. This is especially true of fragmentary collections and of late-season primocanes, which can have relatively narrow leaflets in both taxa.

21. *Rubus roribaccus* (L.H. Bailey) Rydb.

(Lucretia dewberry)

R. occidualis (L.H. Bailey) L.H. Bailey

Map 2519

Canes to 250 cm long and 50 cm tall, 2.5–5.0 mm in diameter. Prickles moderate to dense, 1.0–4.5 per cm of cane, 1.0–3.5 mm long. Petioles with dense, nonglandular hairs, armed with downward-curved prickles to 2 mm long. Stipules 12–18 mm long, linear to linear-lanceolate, sometimes notched. Primocane leaves with 3 or 5 leaflets, margins coarsely and sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets (6.5–)7.5–9.5 (–11.0) cm long and (5.5–)6.0–8.5 (–9.0) cm wide, nearly orbicular to ovate or ovate-elliptic, sometimes lobed, cordate to truncate at the base, tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{4}$ – $\frac{2}{5}$ as long as the leaflet blade; middle leaflets elliptic to elliptic-obovate, rounded to angled at the base, short-tapered to a sharply pointed tip; basal leaflets, when 3 leaflets are present, ovate, rounded at the base, short-tapered to a sharply pointed tip, sessile, when 5 leaflets

are present, elliptic to elliptic-obovate, angled at the base, angled to a sharply pointed tip, short-stalked to sessile. Inflorescences (4.0–)6.5–25.0 (–35.0) cm long, with (1–)3–5 (–8) flowers on long, ascending stalks, with 2–7 leafy bracts, these about evenly divided between simple bracts and those with 3 leaflets; flower and inflorescence stalks with dense, nonglandular hairs and downward-angled to downward-curved prickles. Sepals 7–16 mm long, 4–5 mm wide, triangular-ovate to elliptic, tapered to a sharply pointed tip or expanded into a lobed, leafy tip. Petals 12–20 mm long, obovate to broadly obovate. Fruits 13–25 mm long, 15–25 mm wide, globose to cylindric or long-conic. $2n=49$. April–June.

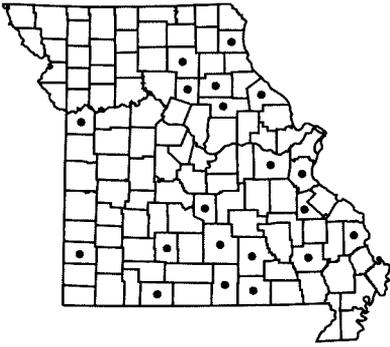
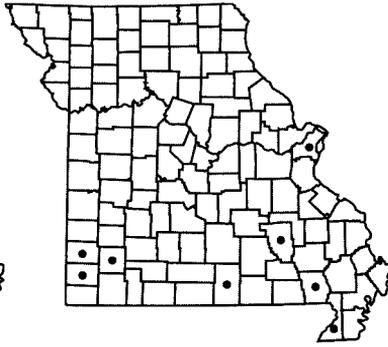
Scattered nearly throughout the state but apparently absent from most of the western portion of the Glaciated Plains Division (northeastern U.S. west to Iowa, Kansas, and Oklahoma). Openings of mesic to dry upland forests, upland prairies, banks of streams and rivers, margins of ponds and sinkhole ponds, ledges of bluffs; also pastures, old fields, old mines, cemeteries, railroads, roadsides, and open, disturbed areas.

Large-fruited selections of *R. roribaccus* have been cultivated and may escape or persist from gardens. This species has escaped from cultivation in Australia (Evans et al., 2007).

22. *Rubus satis* L.H. Bailey

Map 2520

Canes to 300 cm long and 40–120 cm tall, 4–7 mm in diameter, forming a dense, mounding tangle. Prickles usually moderate, 0.5–3.0 per cm of cane, 1.5–5.0 mm long. Petioles with nonglandular hairs, armed with downward-curved prickles to 1.5 mm long. Stipules 10–14 mm long, linear to linear-lanceolate. Primocane leaves mostly with 5 leaflets, rarely with 3 leaflets, the margins sharply toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets 8–14 cm long and 6.0–10.5 cm wide, broadly ovate to ovate, cordate at the base, tapered or long-tapered to a sharply pointed or filiform tip, the leaflet stalk about $\frac{1}{3}$ as long as the leaflet blade; middle leaflets elliptic, angled at the base, long-tapered to a sharply pointed tip, stalked; basal leaflets elliptic-obovate, angled at the base, tapered to a sharply pointed tip, sessile. Inflorescences mostly racemose, occasionally appearing flat-topped or flaring toward the apex, (4–)9–21 cm long, with 4–8 flowers and 1–6 leafy bracts, these mostly with 3 leaflets; flower and inflorescence stalks with dense, nonglandular hairs and downward-curved prickles. Sepals 6–7 mm long, 3–4 mm wide, triangular-ovate, tapered to a

2521. *Rubus steelei*2522. *Rubus armeniacus*2523. *Rubus laciniatus*

sharply pointed tip. Petals 14–18 mm long, obovate to broadly obovate. Fruits 10–18 mm long, 9–17 mm wide, globose to short-cylindric. $2n=63$. May–June.

Uncommon in the eastern portion of the Ozark Division (northeastern U.S. and adjacent Canada west to Minnesota, Iowa, and Missouri). Mesic upland forests; also roadsides and open, disturbed areas.

The Missouri populations are somewhat disjunct from the main range of the species. The habit of *R. satis* fits Steyermark's (1963) erroneous description of *R. missouricus*, as expressed in his key. *Rubus missouricus* is not known to tip-root. The growth habit of *R. satis* also resembles that of *R. hancinianus*, which is found on dry, upland prairies in central Kansas and which could occur on similar sites in western Missouri (for further discussion on this species' current exclusion from the flora, see the treatment of sect. *Flagellares*). *Rubus hancinianus* differs from *R. satis* in having smaller, elliptical to obovate central primocane leaflets with rounded bases, as well as flowers that often include more than 5 petals.

23. *Rubus steelei* L.H. Bailey

Pl. 540 o; Map 2521

Canes to 180 cm long, typically prostrate, 2–3 mm in diameter, sometimes so delicate as to seem herbaceous. Prickles moderate, 0.5–2.0(–3.0) per cm of cane, 1–2(–3) mm long. Petioles with non-glandular hairs, armed with downward-angled,

needlelike prickles to 1.5 mm long. Stipules 5–12 (–20) mm long, linear to lanceolate. Primocane leaves almost always with 3 leaflets, rarely a few with 5 leaflets, the margins bluntly to sharply toothed, the teeth varying widely in coarseness, the upper surface glabrous, the undersurface thinly hairy. Central primocane leaflets 5.0–8.5 (–9.0) cm long and 3–6(–7) cm wide, elliptic-ovate to elliptic-rhombic, subcordate to angled at the base, tapered to a pointed or sharply pointed tip, the leaflet stalk about $\frac{1}{6}$ – $\frac{1}{3}$ as long as the leaflet blade; basal leaflets asymmetrically ovate, sometimes lobed, rounded at the base, angled to a pointed tip, sessile or nearly so. Inflorescences 5.0–20.5(–28.0) cm long, with 1–6(–10) flowers on long, ascending stalks, if only a single flower is present, then generally the inflorescences are at least 8 cm long, with (2–)3–5(–7) bracts, these usually mostly simple; flower and inflorescence stalks nearly glabrous, sometimes with small downward-angled, needlelike prickles. Sepals 6–12 mm long, 3–4 mm wide, triangular-ovate to elliptic, with slender to filiform or lobed and leafy tips. Petals 8–12 mm long, obovate. Fruits 8–15 mm long, 10–15 mm wide, globose to short-cylindric. May–June.

Scattered, mostly in the Ozark and Ozark Border Divisions and the eastern portion of the Glaciated Plains (eastern U.S. and adjacent Canada west to Minnesota, Kansas, and northeastern Texas). Mesic to dry upland forests, savannas, glades, and tops of bluffs; also fallow fields, old fields, fencerows, railroads, and roadsides.

2d. Section *Rubus*

Canes stout with considerable branching, sometimes persisting more than two years. Stipules lateral. Perhaps as many as 300 species, native to the Old World, primarily in western and central Europe.

Treatments vary widely in the number of species recognized. Steyermark (1963) accepted three naturalized taxa in sect. *Rubus*: *R. bifrons* Vest, *R. laciniatus*, and *R. procerus*. *Rubus laciniatus* is a distinctive taxon that is clearly defined. *Rubus procerus* was the name that Steyermark applied to the Himalayan blackberry, an invasive species whose correct name is a matter of some controversy. The present treatment follows those of Evans and Weber (2003) and Zielinski (2004) in using the name *R. armeniacus*. No specimens confirming the presence of *R. bifrons* in the Missouri flora have been located.

1. Canes typically less than 150 cm tall, arching; leaves softly pubescent, but green, beneath; central primocane leaflets irregularly divided or lobed, deeply incised and tapered to a narrow, sharply pointed tip 25. *R. LACINIATUS*
1. Canes robust, often more than 150 cm tall, high-arching to erect; leaves white to gray-felted beneath; central primocane leaflets elliptic to broadly elliptic to oblong, sharply, but not deeply, serrate
 2. Primocane leaves with (3–)5 leaflets, white to light gray-felted beneath, central leaflet typically at least 6 cm wide; canes with sparse tufted or simple hairs, nearly glabrous at maturity; inflorescences paniculate, with 5–30+ flowers on strongly branching stalks, leafy bracts concentrated at the basal nodes, lower inflorescence stalks covered with tufted clusters of hairs (some times appearing stellate-hairy) 24. *R. ARMENIACUS*
 2. Primocane leaves with 3 or 4(5) leaflets, gray-felted beneath, central leaflet 3.5–4.5 cm wide; canes hairy, inflorescences racemose, typically with 3–8 flowers on unbranched stalks; leafy bracts found nearly the entire length of the inflorescence, lower inflorescence stalks covered with simple, spreading hairs. 26. *R. SERISSIMUS*

24. *Rubus armeniacus* Focke (Himalayan blackberry)

R. discolor Weihe & Nees

R. procerus P.J. Muell., misapplied

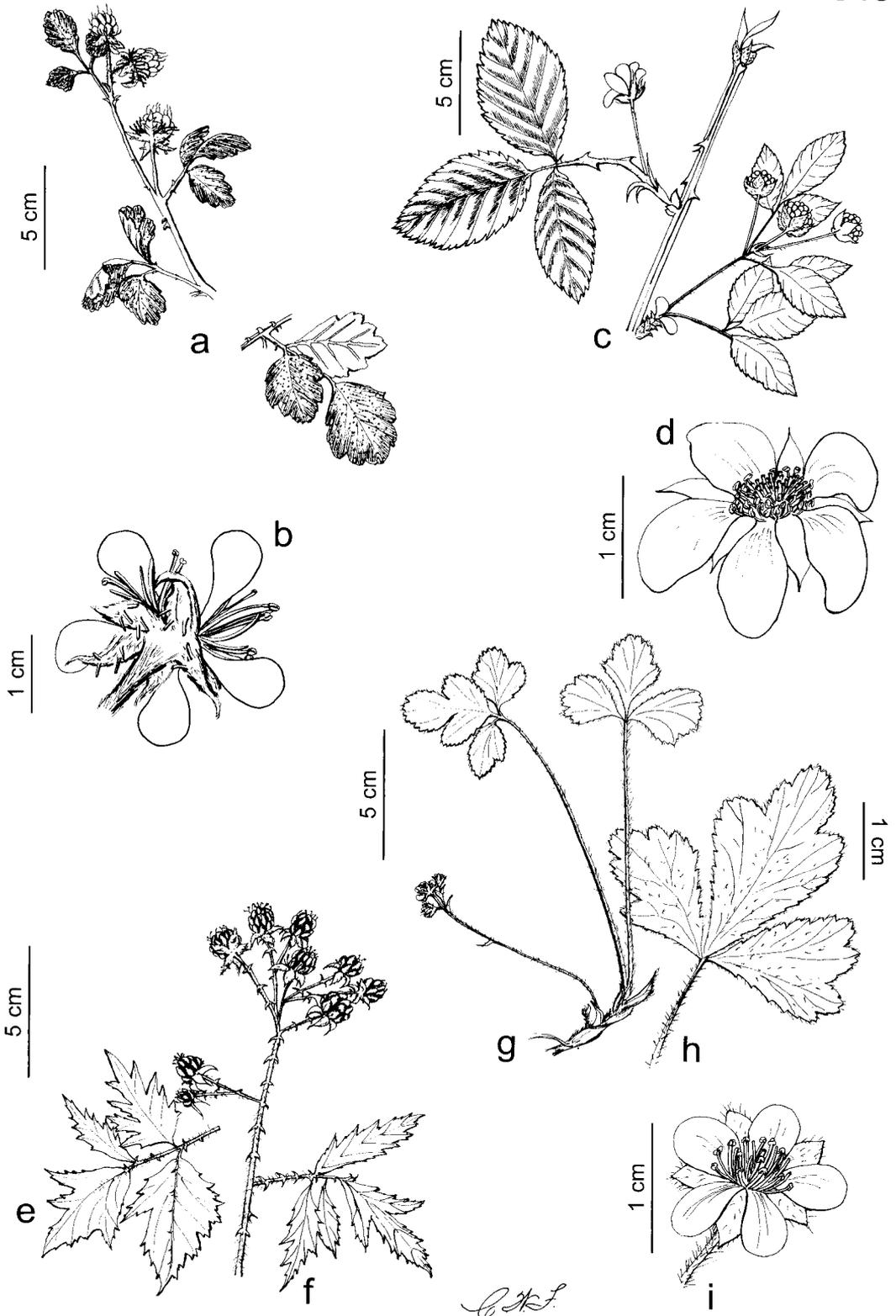
Pl. 542 a–c; Map 2522

Canes to 350 cm long and 100–300 cm tall, 5–15 mm in diameter, often branched. Canes with sparse tufted or simple hairs, becoming nearly glabrous at maturity. Prickles moderate, 0.6–1.4 per cm of cane, 8–11 mm long, often with red at or near their bases. Petioles with nonglandular hairs, armed with many broad-based, downward-curved prickles to 5 mm long. Stipules 10–12 mm long, linear to filiform, clearly lateral, diverging 3–6 mm from the base of the petiole. Primocane leaves with (3)5 leaflets, margins irregularly, coarsely, and sharply toothed, the upper surface nearly glabrous, the undersurface white- to light gray-felted, the midvein on the undersurface drying to a light yellow. Central primocane leaflets 5.0–12.5 cm long and 6.0–9.5 cm wide, suborbicular to broadly elliptic-obovate or oblong-obovate, cordate to rounded at the base, abruptly short-tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{3}$ – $\frac{2}{5}$ as long as the leaflet blade; lateral primocane leaflets resembling the central leaflet but somewhat smaller, the basal pair with stalks 3–6 mm long.

Inflorescences typically paniculate, 28–38 cm long and 8–18 cm wide, with 5–31 flowers and 3–7 leafy bracts, these concentrated at the basal nodes, a mixture of simple bracts, and those with 3 and 5 leaflets; flower and inflorescence stalks with dense nonglandular hairs, and strong straight to downward-angled prickles; the flower stalks sometimes with a few gland-tipped hairs and lanceolate, stipulelike bractlets to 15 mm long, the lower inflorescence stalks covered with tufted clusters of hairs (sometimes appearing stellate-hairy). Sepals 3.0–3.5 mm long, 6–8 mm wide, triangular, abruptly tapered to a sharp tip. Petals 13–20 mm long, broadly elliptic, pale pink. Fruits 10–20 mm long, 10–20 mm wide, oblong. $2n=28$. May–June.

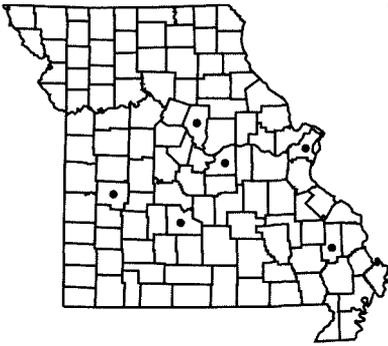
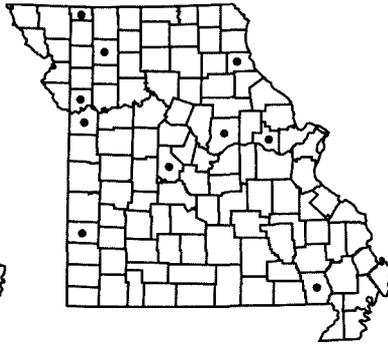
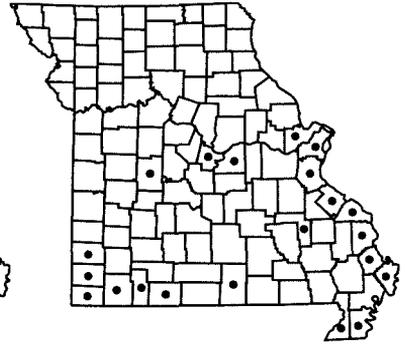
Introduced, scattered in the southern portion of the Ozark Division (likely native to the Caucasus; naturalized widely in Europe, U.S., and adjacent Canada). Banks of streams, also pastures and roadsides.

This species is likely represented in Missouri only by escaped or persisting populations of cv. 'Himalaya' or similar horticultural selections. It is a serious, invasive pest in the Pacific Northwest. It was treated by Steyermark (1963) as *R. procerus*, a synonym of the Eurasian species, *R. praecox* Bertol. (Zielinski, 2004).



C. K. F.

Plate 543. Rosaceae. *Rubus idaeus*, **a**) tip of floricane and larger floricane leaf, **b**) flower from below. *Rubus missouricus*, **c**) flower, **d**) floricane node with fruits. *Rubus laciniatus*, **e**) primocane leaf, **f**) apical portion of inflorescence with fruits. *Geum fragarioides*, **g**) habit, **h**) leaf, **i**) flower.

2524. *Rubus serissimus*2525. *Rubus missouricus*2526. *Rubus trivialis*

25. *Rubus laciniatus* Willd. (cutleaf blackberry)

Pl. 543 e, f; Map 2523

Canes to 150 cm long and 80–120 cm tall, 3–10 mm in diameter, arching and often branched. Canes at maturity with sparse, fine hairs. Prickles moderate, 1.0–2.4 per cm of cane, 5–7 mm long, broad-based and strongly downward-curved. Petioles with nonglandular hairs, armed with many broad-based, downward-curved prickles to 3 mm long. Stipules 6–13 mm long, linear to filiform, clearly lateral, diverging (2–)3–6+ mm from the base of the petiole. Primocane leaves with 5 or more leaflets, the margins irregularly and sharply toothed and deeply incised, sometimes strongly lobed, the upper surface thinly to moderately hairy, the undersurface densely and softly hairy. Central primocane leaflets 6.0–11.5 cm long and 4–11 cm wide, ovate-triangular in general outline, angled to truncate at the base, angled ultimately to a narrow, sharply pointed tip, the leaflet stalk about $\frac{2}{5}$ – $\frac{1}{2}$ as long as the leaflet blade; lateral primocane leaflets also strongly lobed or divided but typically also ovate-triangular in general outline, stalked. Inflorescences typically paniculate, 23–58 cm long and 10–27 cm wide, with 10–40 flowers, and 4–8 leafy bracts, these concentrated at the basal nodes, a mixture of simple bracts and those with 3 or 5 leaflets; flower stalks with spreading, nonglandular hairs, inflorescence stalks zigzag, with sparse to dense nonglandular hairs, both flower and inflorescence stalks with strong downward-curved prickles. Sepals 8–13(–25) mm long, 2–4 mm wide, lanceolate, armed with small, yellowish, needlelike prickles, sometimes with leafy, jagged tips. Petals 10–12 mm long, obovate, often with 2 or 3 lobes, pale pink. Fruits 15–25 mm long, 10–25 mm wide, short-cylindrical. $2n=28$. June.

Introduced, uncommon, sporadic (may be of European garden origin; widely naturalized in Europe, the U.S., and Australia). Edges of mesic

upland forests; also pastures and open, disturbed areas.

This distinctive taxon appears to be represented in Missouri only by escaped or persisting populations of European horticultural selections. Steyermark (1963) also considered it nonnative in the United States.

26. *Rubus serissimus* L.H. Bailey (everbearing blackberry)

Pl. 542 d, e; Map 2524

Canes to 300 cm long and 125–200 cm tall, 3–8 mm in diameter, with the main stem fairly erect and with strong branches that often arch down nearly to the ground, but without tip-rooting. Canes covered with fine hairs, at least on new growth. Prickles moderate, 1.2–1.8 per cm of cane, 5–9 mm long, broad-based and nearly straight, often with red at or near the base. Petioles with dense, nonglandular hairs, armed with many broad-based, downward-curved prickles to 4 mm long. Stipules 10–14 mm long, filiform, clearly lateral, diverging 3 mm from the base of the petiole. Primocane leaves typically with 3 leaflets, a few with 4 or rarely 5 (when more than 3 leaflets are present, each basal leaflet is attached in a more or less pedate fashion to the lateral leaflet stalk), the margins finely, doubly, and sharply toothed, the upper surface thinly hairy, the undersurface gray-felted. Central primocane leaflets 5–7 cm long and 3.5–4.5 cm wide, elliptic, subcordate to rounded at the base, short-tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{4}$ – $\frac{1}{3}$ as long as the leaflet blade; lateral and basal primocane leaflets asymmetrically elliptic to elliptic-obovate, sometimes lobed, rounded at the base, angled to a pointed tip, basal leaflets (when present) with stalks 1–2 mm long. Inflorescences typically racemose, well-developed examples can be compactly paniculate, 8–28 cm long and 4–10 cm wide, with 3–8 flowers concentrated near the apex and 3–7

leafy bracts, these mostly with 3 leaflets, positioned nearly the entire length of the axis; flower and inflorescence stalks dense with simple, spreading hairs, strong straight to downward-angled prickles, and rarely lanceolate, stipulelike bractlets to 5 mm long. Sepals 6–8 mm long, 2–3 mm wide, triangular, tapered to a sharply pointed tip. Petals 7–11 mm long, obovate, pale pink, fading to white. Fruits 15–20 mm long, 14–20 mm wide, globose to short-cylindric. May–July.

Introduced, scattered south of the Missouri River (likely native to Europe, perhaps of garden origin, naturalized in Arkansas, Missouri, Oklahoma, and Texas). Upland prairies and sand prairies; also gardens, railroads, roadsides, and open, disturbed areas.

This unusual blackberry was described by L.H. Bailey (1943b) from cultivated material of unknown nativity supplied to him by a nursery in Denton, Texas. At that time, it was evidently also being grown in Oklahoma. Bailey classified it in sect. *Cuneifolii* L.H. Bailey, a group native to the southeastern United States, but he was unable to locate any native populations. Its combination of light pink petals, large prickles with reddish mark-

ings, and lateral stipules all suggest that it is actually of Old World origin and not a member of sect. *Cuneifolii*. It was first collected in Missouri in 1969 by Viktor Mühlenbach during his inventories of the St. Louis railyards. Its most common habitats in the state (near railroad rights-of-ways and in gardens) also suggest escape from cultivation, rather than being an overlooked member of the native flora. However, attempts to key it out to any of the numerous described species of Sect. *Rubus* native to Europe have so far proven unsuccessful. Perhaps it is of garden origin. Alice et al. (in press) also consider it to be of New World origin and include *R. serissimus* under a broadly circumscribed taxon, *R. longii* Fernald, consisting of various members of sect. *Cuneifolii*.

Until recently, specimens of *R. serissimus* in Missouri herbaria were misdetermined either as *R. bifrons* or *R. armeniacus* (for further discussion, see the sectional treatment above). In fact, *R. serissimus* is more widespread and abundant in the state than is *R. armeniacus* and now represents an important invasive element that is forming dense thickets in various natural habitats.

2e. Section *Setosi* L.H. Bailey

About 25 species, primarily in the northeastern U.S. and adjacent Canada, particularly on acidic or nutrient-poor soils.

27. *Rubus missouricus* L.H. Bailey

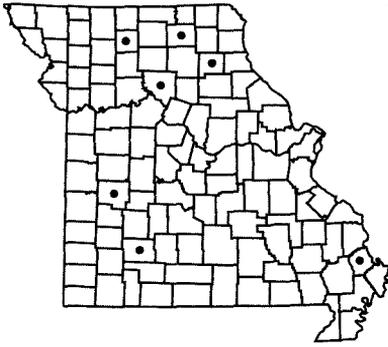
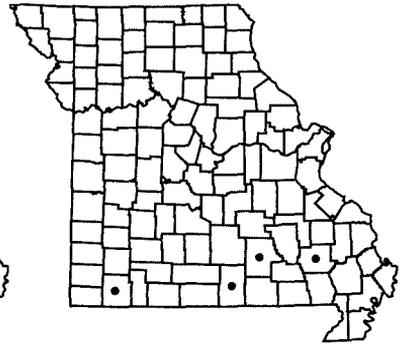
Pl. 543 c, d; Map 2525

Canes 80–170 cm long and 70–150 cm tall, 5–7 mm in diameter, erect to arching the first year, arching the second year; clonal by root-suckering but not tip-rooting. Prickles moderate to dense, 1–5(–8) per cm of cane, 2–5 mm long, needlelike, straight or somewhat downward angled. Petioles with soft, nonglandular hairs, armed with downward-angled or downward-curved, needlelike prickles to 3.5 mm long. Stipules 15–20 mm long, lanceolate, basal to somewhat lateral, diverging 0–3 mm from the base of the petiole. Primocane leaves with 3 or 5 leaflets, the margins sharply and somewhat irregularly toothed, the upper surface thinly hairy, the undersurface velvety hairy. Central primocane leaflets 7–10 cm long and 4.0–5.5 cm wide, elliptic to obovate-elliptic, rounded to angled at the base, tapered to a sharply pointed tip, the leaflet stalk about $\frac{1}{5}$ – $\frac{1}{3}$ as long as the leaflet blade; lateral primocane leaflets elliptic to obovate-elliptic, often asymmetrically lobed when only 3 leaflets are present, angled at the base, ta-

pered to a sharply pointed tip, stalked (the stalks much shorter in the basal pair). Inflorescences varying on a single cane from large, compound, flaring inflorescences, almost broomlike in appearance, to reduced, simple racemes, 8–21(–35) cm long and 6.5–15.0 cm wide, with 7–20 flowers and 2–5 bracts, mostly with 3 leaflets; flower and inflorescence stalks with dense nonglandular hairs, rarely with a few hairlike prickles. Sepals 5–7 mm long, 2.5–4.0 mm wide, ovate-elliptic to triangular, tapered abruptly to a short, slender point. Petals 10–14 mm long, obovate, typically white, but sometimes drying to a light rose pink. Fruits 10–20 mm long and 12–17(–19) mm wide, globose to short cylindric or short-conic. $2n=21, 28$. May–June.

Uncommon, mostly north of the Missouri River (north-central U.S. from Missouri north to Minnesota and east to Michigan). Upland prairies, bottomland prairies, edges of bottomland forests, and banks of streams; also pastures and fencerows.

Rubus missouricus was described by L. H. Bailey (1932) from Missouri, with the type mate-

2527. *Spiraea alba*2528. *Spiraea douglasii*2529. *Spiraea japonica*

rial collected by B. F. Bush from Jackson County. It was considered endemic to Missouri, even in Steyermark's (1963) treatment. The species has not often been collected in the state and most of

the specimens in herbaria are historical. The species typically begins to flower a week or two later than neighboring populations of other native members of subgenus *Rubus*.

2f. Section *Verotriviales* L.H. Bailey

About 10 species, primarily in the southeastern U.S. and adjacent northeastern Mexico; most taxa treated as one highly polymorphic taxon, *R. trivialis*, by Alice et al. (in press).

28. *Rubus trivialis* Michx. (southern dewberry) Pl. 540 m, n; Map 2526

Canes to 250 cm long and to 70 cm tall, arching to prostrate, typically branched, 3–4 mm in diameter, reddish, often rooting at tips and sometimes at nodes. Primocanes with prickles and dark red hairs, some or all gland-tipped. Prickles moderate, 1–3 per cm of cane, 3–5 mm long, downward angled or downward curved. Petioles with stiff, dark red hairs, some or all gland-tipped, and downward-angled prickles to 2 mm long. Stipules 5–14 mm long, linear to filiform. Primocane leaves mostly with 5 leaflets, less often 3, the margins sharply or bluntly toothed, the upper surface nearly glabrous, the undersurface hairy only on the veins. Central primocane leaflets 5.0–7.5 cm long and 2.5–5.0 cm wide, narrowly elliptic to ovate-elliptic to obovate-elliptic, truncate, rounded, or angled at the base, usually tapered to a sharply pointed tip, but occasionally rounded at tip, the leaflet stalk about $\frac{1}{6}$ – $\frac{1}{3}$ as long as the leaflet blade; basal leaflets generally of same form as the central leaflet, but smaller, short-stalked. Primocane leaflets often persist until flowering the following spring, by winter typically appearing bronzed. Inflorescences 5–18 cm long, with 1–3(4) flowers on

long, ascending stalks and 2–6 leafy bracts, these mostly with 3 leaflets; flower and inflorescence stalks thinly covered with light-colored, nonglandular hairs and sometimes with red, glandular hairs, and needlelike or downward-curved prickles. Sepals 4–6(–9) mm long, 2–5 mm wide, narrowly triangular, tapered to a pointed tip or abruptly tapered to a short, slender point. Petals 10–14(–18) mm long, obovate to broadly obovate, white or sometimes pinkish-tinged. Fruits 10–30 mm long, 9–12 mm wide, oblong. $2n=14$. April–June.

Scattered, mostly south of the Missouri River, most abundantly in the Mississippi Lowlands Division (southeastern U.S. west to Oklahoma and Texas; Mexico). Banks of streams and rivers, bases and ledges of bluffs, bottomland forests, swamps, and sloughs; also pastures, fallow fields, levees, and roadsides.

This attractive species is distinctive in its abundant, red, prickles and bristly hairs, some of which are gland-tipped. As in some other species of *Rubus*, it produces long, white roots that are fleshy and somewhat thickened, which can give rise to new canes at quite some distance from the original clump.