

Plant Diversity Website

Vitis riparia Michaux

Common Names: River-bank grape, frost grape

There are currently two grape species known as Frost Grape. To avoid confusion, *V. riparia* will be referred to as River-bank Grape, and Frost Grape will be treated as *V. vulpina*. For more information, click [here](#).

Etymology: *Vitis* is Latin for grapevine. *Riparia* means “of river-banks” (2).

Botanical synonyms:

V. vulpina L. spp. *riparia* (Michx.) R.T. Clausen
V. rupestris Scheele (1, 5)



FAMILY: Vitaceae (the grape family)

Quick Notable Features (5):

- Reddish-brown bark splitting into narrow strips
- Alternate, simple, cordate, toothed and lobed leaves
- Sharp ciliolate teeth; forward-pointing lobes

Plant Height: Climbs up to 17m (1).

Subspecies/varieties recognized (11):

V. riparia var. *praecox* Engelm. ex Bailey and

V. riparia var. *syrticola* (Fern. & Wieg.)

Fern.



Most Likely Confused with: Can be misidentified as other *Vitis* species, especially summer grape *V. aestivalis* and the real frost grape, *V. vulpina*. Other impostors include *Parthenocissus tricuspidata*, *Ampelopsis brevipedunculata*, and species in the cucurbit genera *Echinocystis* and *Sicyos*.

Habitat Preference: Lowland to upland forests, especially disturbed areas. It is prevalent on shores and dunes (5).

Geographic Distribution in Michigan: Common throughout the state, currently reported from 65 of 83 counties (5).

Known Elevational Distribution: Reported in the mountain states of Montana and Wyoming, ~ 1,500m (1).

Complete Geographic Distribution: Native to North America. Ranges north to Quebec and Manitoba, south to West Virginia and Tennessee, and west to Texas. Also found in some mountain and western states including Wyoming, Montana, and Washington (1, 6, 7).

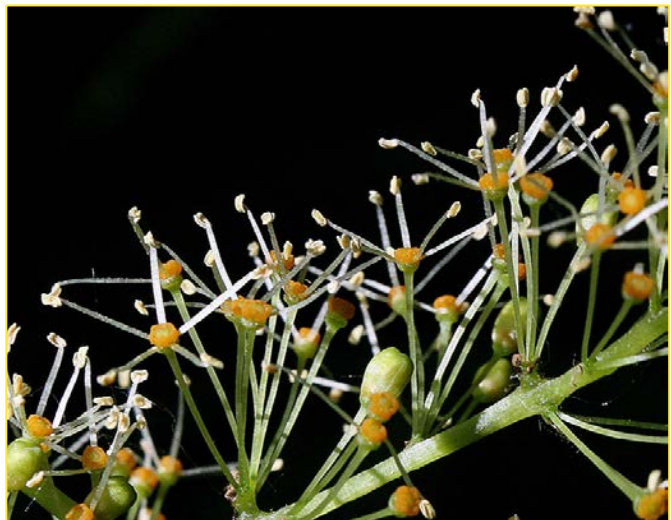


Vegetative Plant Description: High-climbing perennial liana with reddish-brown bark splitting into narrow strips. Leaves are simple, alternate, cordate, toothed, and lobed. Leaf lobes are pronounced, pointed forward, and longer than broad. Venation is palmate. Leaves are 7-15cm long and broad. Young leaves are pubescent

beneath; older leaves retain some pubescence along veins and vein-axils. To achieve continued apical growth, lateral summer branches are generally abscised at the end of each season of growth (17). The brown pith is diaphragmed (3, 5, 7) and the bark is noticeably deep red-brown and shreddy-peeling (pers. obs., RJB).

Climbing Mechanism: Plant climbs using bifid axillary tendrils opposite the leaves (6). Tendrils are widely believed to be modified shoots and usually are found at two out of every three nodes (17).

Flower Description: Flowers are borne in axillary panicles 5-15cm long. Flowers are perigynous, 5-merous, green, and incomplete: the calyx is essentially missing. Stamens are 5, opposite the petals, and can be elongate or short and erect or reflexed, depending on whether the flower is sterile or fertile, respectively. Pistils are rudimentary to well-developed depending on fertility. The superior ovary is 2-celled with 2 ovules per cell. Styles are short; stigmas are 2-lobed (6, 7, 10). The sexual system has been characterized as functionally dioecious because although pollen is produced by both sexes, it is inaperturate in the functionally female plants and yet bears apertures in the functionally male plants (18).



Flowering Time: Mid-May through early July in the northeastern United States (7).

Pollinator: Flowers are bee-, wind, or self-pollinated (9, 18).

Fruit Type and Description: Fruits appear in August and September. The fruit is a dark purple to black, heavily glaucous, acidic berry, 6-12mm in diameter. Fruits are borne in axillary panicles. Berries contain up to four seeds (6, 7).

Seed Description: Seeds are rounded with a very short beak, approximately 5 mm long (6, 10).



Comparison of *A. brevipedunculata* (top) and *V. riparia* (bottom)

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Dispersal Syndrome: Grapes are bird dispersed (12).

Distinguished by: *V. riparia* leaves usually have pronounced lobes that are longer than broad and pointing forward; leaves of *V. aestivalis* typically have shallower lobing and much smaller serrations. *V. riparia* also has less pubescence on the leaf undersides than *V. aestivalis*. *V. riparia* can be distinguished from *V. vulpina* by its distinct lobing; *V. vulpina* leaves are unlobed or with shoulders. However, Voss acknowledges that “[grape] species are often difficult to distinguish. Flower and fruit characters are even less useful than vegetative ones” (5).

Vitis species are distinguished from similar-looking cucurbits (*Echinocystis*, *Sicyos*) by the tendrils, which arise opposite (180°) from the leaves. Cucurbit tendrils arise at 90° from leaves.

Vitis may be distinguished from *Parthenocissus tricuspidata* by its shredding and peeling bark; *Parthenocissus* bark is tight. *Parthenocissus* tendrils also terminate in adhesive disks, whereas *Vitis* tendrils are twining.

Vitis can be distinguished from *Ampelopsis brevipedunculata* by twig and fruit characteristics: *Ampelopsis* stems contain white pith and are covered by tight bark with lenticels (7); the berries are dry or have

only a thin layer of pulp, and in the case of *A. brevipedunculata*, often grow in multiple colors on the same branch, giving the plant its name ‘Porcelainberry’ (6). *Vitis* bark is shredding and contains brown pith, and the berries are pulpy and black. Leaf morphology is typically unreliable in distinguishing the two genera.

Other members of the family in Michigan (number species): *Vitis* (3), *Ampelopsis* (2), *Parthenocissus* (3).

Ethnobotanical Uses: *V. riparia* is used exclusively for food. Berries are eaten fresh or dried for winter use (4). Ethnobotanical uses for *V. riparia* may overlap with those of *V. vulpina*, as the two species have had a confusing history and have long existed as one species. For additional ethnobotanical information, see *Vitis vulpina* (see our *V. vulpina* webpage).



Phylogenetic Information: Vitaceae is a core eudicot recently added to the Rosid group. in the order Vitales (APGIII). Vitales may be a sister group to all the Rosids. Vitaceae is most closely related to the Crossosomatales, Geraniales, and Myrtales (8, 15).

Interesting Quotation or Other Interesting Factoid not inserted above: *V. riparia* Michx. and *V. vulpina* L. have been known as *V. cordifolia* var. *riparia* (Michx) A. Gray and *V. cordifolia* var. *vulpina* (L.) Eaton, respectively (13). These names have since been dropped and *V. cordifolia* Michx. only exists as a synonym to *V. vulpina* L.. However, they are still sometimes reported as subspecies of each other (1). *V. riparia* has been treated as a synonym to *V. vulpina* (Fern. ed. 7, not L.) but should not be confused with *V. vulpina* L., now known as a separate species (7). Unfortunately, *V. riparia* still retains its common name Frost Grape, a legacy of its confusing naming history. [Back to Top](#).

Grapes are delicious (personal observation, Susu Yuan). The grapes are sour until the first frost, but they make good jelly (5).

Vitis tendrils and inflorescences grow at the same location (at nodes, opposite leaves) and their presences are mutually exclusive (either one or the other, not both). The two different structures develop from the same undifferentiated axillary primordia, which default into inflorescences. Interestingly, gibberellins, which normally stimulate flowering in plants, are responsible for the conversion of developing inflorescences into tendrils and the elongation of stem internodal zones in *Vitis*. This is crucial to the climbing habit of grapes (14). Furthermore, the plant transitions from spirally arranged leaves as a juvenile to distichously arranged leaves which bear tendrils at 2 of 3 nodes (16).

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