

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 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, esp. disturbed areas. It is prevalent on shores and dunes (5).

Geographic Distribution in Michigan: Common throughout the state, reported from 64 of 83 counties (5).

Known Elevational Distribution: Reported in mountain states 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 to short and erect to reflexed, if 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).



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

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

Pollinator: Flowers are bee- and self-pollinated (9).

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).

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 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* (link to *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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- 8) APG II 2003. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG II. *Botanical J. of the Linnean Society* 141(4): 399-436.
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- 3) Seed image copyright Steve Hurst @ USDA-NRCS PLANTS Database”
http://plants.usda.gov/java/largeImage?imageID=viri_003_ahp.tif
- 4) *Ampelopsis* image copyright Karlheinz Knoch, 2005. Photo: www.knoch1.de
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Vitis riparia - Michx.

Common Name	Riverbank Grape
Family	Vitaceae
Synonyms	<i>V. odoratissima</i> . <i>V. vulpina</i> . pro parte.
Known Hazards	None known
Habitats	Riverbanks, bottomlands, rich thickets and woodland margins[43, 62].
Range	Eastern and Central N. America. Locally naturalized in Europe[50].
Edibility Rating	 
Medicinal Rating	
Care	     

Summary

UPDATE: 07/09/11: This name is a synonym of *Vitis vulpina* L.. The record derives from WCSP (in review) which reports it as a synonym with original publication details: Fl. Bor.-Amer. 2: 231 1803.

Physical Characteristics



commons.wikimedia.org/wiki/User:BotBln



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Vitis riparia is a deciduous Climber growing to 15 m (49ft 3in) at a fast rate.

It is hardy to zone 2 and is not frost tender. It is in flower from May to July, and the seeds ripen from Aug to September.

The flowers are hermaphrodite (have both male and female organs) and are pollinated by Insects.

Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils. It can grow in semi-shade (light woodland) or no shade. It prefers dry or moist soil.

Habitats

Woodland Garden Sunny Edge; Dappled Shade; South Wall. By. West Wall. By.

Edible Uses

Edible Parts: [Fruit](#); [Leaves](#); [Sap](#).

Edible Uses:

Fruit - raw or dried for later use[22, 46, 62, 161, 183]. Juicy and somewhat acid[183]. The taste is best after a frost[101]. The fruit is about 6 - 12mm in diameter[200] and is carried in fairly large bunches[K]. Leaves - cooked[55, 159]. Young leaves are wrapped around other foods and then baked, they impart a pleasant flavour. Young tendrils - raw or cooked[55, 85, 159]. Sap - raw[101, 161]. A sweet flavour, it is used as a drink[183]. The sap can be harvested in the spring and early summer, though it should not be taken in quantity or it will weaken the plant[K].

Medicinal Uses

Plants For A Future can not take any responsibility for any adverse effects from the use of plants. Always seek advice from a professional before using a plant medicinally.

None known

Other Uses

[Dye](#); [Rootstock](#).

A yellow dye is obtained from the fresh or dried leaves[168]. The plant is used as a rootstock for the common grape, *V. vinifera*, especially in areas where phylloxera disease is prevalent[183].

Cultivation details

Prefers a deep rich moist well-drained moderately fertile loam[1, 200]. Grows best in a calcareous soil[200]. Succeeds in sun or partial shade though a warm sunny position is required for the fruit to ripen[200]. The young growth in spring can be damaged by late frosts. Plants climb by means of tendrils[182]. They grow particularly well into elm trees[18]. Any pruning should be carried out in winter when the plants are dormant otherwise they bleed profusely[182, 200]. Occasionally cultivated for its edible fruit in N. America[46], there are some named varieties[183]. 'Brandt' is of uncertain parentage, probably involving this species, it usually ripens its fruit in S.E. England[11]. Resistant to Phylloxera disease, a disease that almost destroyed the European grape crops. This species can be used as a

rootstock in areas where the disease is prevalent and can also be used in breeding programmes with *V. vinifera* in order to impart resistance to that species[183]. The flowers are powerfully scented of mignonette[245]. Plants in this genus are notably susceptible to honey fungus[200].

Propagation

Seed - best sown in a cold frame as soon as it is ripe[K]. Six weeks cold stratification improves the germination rate, and so stored seed is best sown in a cold frame as soon as it is obtained. Germination should take place in the first spring, but sometimes takes another 12 months. Prick out the seedlings into individual pots when they are large enough to handle and grow them on in a cold frame for their first winter. Plant out in early summer. Cuttings of mature wood of the current seasons growth, December/January in a frame. These cuttings can be of wood 15 - 30cm long or they can be of short sections of the stem about 5cm long with just one bud at the top of the section. In this case a thin, narrow strip of the bark about 3cm long is removed from the bottom half of the side of the stem. This will encourage callusing and the formation of roots. Due to the size of these cuttings they need to be kept in a more protected environment than the longer cuttings. Layering.

Author

Michx.

Botanical References

1143200

Links / References

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Comprehensive listing of species and how to grow them. Somewhat outdated, it has been replaced in 1992 by a new dictionary (see [200]).

[11]**Bean. W.** Trees and Shrubs Hardy in Great Britain. Vol 1 - 4 and Supplement. A classic with a wealth of information on the plants, but poor on pictures.

[18]**Philbrick H. and Gregg R. B.** Companion Plants.

Details of beneficial and antagonistic relationships between neighbouring plants.

[22]**Sholto-Douglas. J.** Alternative Foods.

Not very comprehensive, it seems more or less like a copy of earlier writings with little added.

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A bit dated but good and concise flora of the eastern part of N. America.

[46]**Uphof. J. C. Th.** Dictionary of Economic Plants.

An excellent and very comprehensive guide but it only gives very short descriptions of the uses without any details of how to utilize the plants. Not for the casual reader.

[55]**Harris. B. C.** Eat the Weeds.

Interesting reading.

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Very readable.

[85]**Harrington. H. D.** Edible Native Plants of the Rocky Mountains.
A superb book. Very readable, it gives the results of the authors experiments with native edible plants.

[101]**Turner. N. J. and Szczawinski. A.** Edible Wild Fruits and Nuts of Canada.
A very readable guide to some wild foods of Canada.

[159]**McPherson. A. and S.** Wild Food Plants of Indiana.
A nice pocket guide to this region of America.

[161]**Yanovsky. E.** Food Plants of the N. American Indians. Publication no. 237.
A comprehensive but very terse guide. Not for the casual reader.

[168]**Grae. I.** Nature's Colors - Dyes from Plants.
A very good and readable book on dyeing.

[182]**Thomas. G. S.** Ornamental Shrubs; Climbers and Bamboos.
Contains a wide range of plants with a brief description, mainly of their ornamental value but also usually of cultivation details and varieties.

[183]**Facciola. S.** Cornucopia - A Source Book of Edible Plants.
Excellent. Contains a very wide range of conventional and unconventional food plants (including tropical) and where they can be obtained (mainly N. American nurseries but also research institutes and a lot of other nurseries from around the world.

[200]**Huxley. A.** The New RHS Dictionary of Gardening. 1992.
Excellent and very comprehensive, though it contains a number of silly mistakes. Readable yet also very detailed.

[245]**Genders. R.** Scented Flora of the World.
An excellent, comprehensive book on scented plants giving a few other plant uses and brief cultivation details. There are no illustrations.