

Plant Diversity Website

Vitis vulpina L.

Common Names: Frost grape, winter grape, chicken grape

Two grape species are known as Frost Grape. To avoid confusion, the name Frost Grape will only be applied here to *V. vulpina*. *V. riparia* will be referred to as River-bank Grape. More info: click [here](#).

Etymology: *Vitis* is Latin for grapevine. *Vulpina* means “of a fox” (15).

Botanical synonyms

V. cordifolia Michx. (7) *V. illex* Bailey (1)
V. muscardina Raf. *V. pullaria* Leconte (2)

FAMILY: Vitaceae (the grape family)

Quick Notable Features (5):

- Reddish-brown bark splitting into narrow strips
- Alternate, simple, toothed leaves
- Cordate leaf shape and unlobed or merely shouldered leaves
- Stems and leaves not markedly glaucous

Plant Height: Climbs up to 25m (1).

Subspecies/varieties recognized:

V. vulpina var. *amurensis* (Rupr.) Regel
V. vulpina var. *parvifolia* Regel
V. vulpina var. *yzabalana* S. Watson (12)

Three other subspecies/varieties: *V. vulpina* var. *praecox* (Engelm. ex Bailey) Bailey, *V. vulpina* subsp. *riparia* (Michx.) Clausen, and *V. vulpina* var. *syrticola* Fern. & Wieg. (12). All are now classified as *V. riparia* (1).

Most Likely Confused with: Often misidentified as *V. riparia*. Can also be confused with other *Vitis* species, as well as *Ampelopsis brevipedunculata*.

Habitat Preference: Dry to rich mesic forests, bottomlands, and thickets. Associated with disturbed habitats (riverbanks, fencerows, shores, dunes 5, 7).

Geographic Distribution in Michigan: Very rare (threatened species) in Michigan; found in the southernmost part of Michigan (1, 5).



Known Elevational Distribution: None found

Complete Geographic Distribution: Native to North America. Ranges from Nebraska to Massachusetts and south, and from Texas and Kansas to the eastern seaboard. May be found in Michigan and New York; unreported in Connecticut and Rhode Island (1, 7).

Vegetative Plant Description: High-climbing liana with reddish-brown bark splitting into narrow strips. Leaves are simple, alternate, coarsely to sharply toothed, cordate, 10-15cm long and wide. Leaves are generally unlobed but may occasionally appear slightly 3-lobed, although lobes are always shallow and more accurately described as mere shoulders. Leaves are glabrous when mature but retain some pubescence along principal veins abaxially. The stem is glabrous and contains pith interrupted by diaphragms 2-6mm thick (3, 6, 7). Vessel diameters in *Vitis* spp. are large with *Vitis vulpina* reported as 208 μ m in diameter and only 558 μ m in length (17).

Climbing Mechanism: Plants climb using forked axillary tendrils opposite the leaves. Tendrils are absent every 3rd node (6, 7).

Flower Description: Flowers are borne in axillary panicles 10-15cm long. They are green, perigynous, 5-merous, 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 (3, 6, 7).



Flowering Time: Mid-May to mid-June in Northeastern United States (7).

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

Fruit Type and Description: Fruits develop in September and October. The fruit is a black non-glaucous berry 3-10mm in diameter (3, 6, 7).

Seed Description: Seeds are round, somewhat acuminate, approximately 5 mm long (6, 7).

Dispersal Syndrome: The fruit is bird-dispersed, specifically observed in Illinois being consumed by robins, thrushes, flickers, and grackles (11, 18).

Distinguished by: *V. vulpina* may be distinguished from other grape species by its *consistently* unlobed or very shallowly lobed leaf shape. The non-glaucous fruit is also distinct from those of *V. aestivalis*, which have a thin bloom, and those of *V. riparia*, which are heavily glaucous. Although *V. labrusca* berries are also non-glaucous, its leaves are densely pubescent abaxially, distinguishing it from all other grape species.

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* (3), *Parthenocissus* (3).

Ethnobotanical Uses: *V. vulpina* is used for a variety of medicinal purposes including treatment of the kidneys, liver, eyes, mouth, skin, gastrointestinal tract, urinary tract, and rheumatism. Wilted leaves are used for gynecological aid. Decoctions of twigs are used as antidotes for Indian turnip poisoning or as tonics to combat insanity (4).

Phylogenetic Information: Family Vitaceae is a core eudicot recently added to the Rosids. They are unplaced in any order. However, Vitaceae may instead be a sister group to all the rosids. Vitaceae is most closely related to the Crossosomatales, Geraniales, and Myrtales (8).

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 (12). These names have since been dropped and *V. cordifolia* Michx. exists only as a synonym to *V. vulpina* L. However, they are still sometimes reported as subspecies of one another (1). *V. riparia* has been misapplied as a synonym to *V. vulpina* (Fern. ed. 7, not L.) but should not be confused with *V. vulpina* L., the species treated here, now recognized as a separate species. Unfortunately, the term Frost Grape is still applied to both species, a legacy of a confusing naming history. [Back to Top](#).

V. vulpina literally means “foxy grape” (7) (referring to the animal, and not any physical attractiveness or wily behavior), or more precisely vixen grape since *vulpina* is feminine (14). It should not be confused with the fox grape, *V. labrusca*. “Foxy” can also mean having a distinct flavor, especially that of North American grapes; however, this is generally only applied to the fox grape *V. labrusca*, and does not explain the basis for using the word “fox” to describe grapes. The origin of the association between foxes and grapes is quite interesting. Foxes have long been thought to have a penchant for grapes, as exemplified by some ancient literature. References can be seen in Aesop’s the *Fox and the Grapes* fable and chapter 2 of the *Song of Solomon*; these stories may have given rise to the gardening myth that foxes are attracted to grapes, enter gardens, and dig up lawns and vegetation (14). The common name for the species is much more straightforward: Frost grape refers to the fact that the berries of this species and River-bank grape are very acidic and become sweet after the first frosts.

Although some names can be confusing, taxonomists are not evil (13).

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 (16).

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IMAGE CREDITS:

1-5. Habit, Leaf, Leaf Close-up, Stem Pith, and Flower Images © Bioimages from Steven J. Baskauf: <http://www.cas.vanderbilt.edu/bioimages/frame.htm>

6. Seed image courtesy of Steve Hurst, from ARS Systematic Botany and Mycology Laboratory. http://plants.usda.gov/java/largeImage?imageID=vivu_003_ahp.tif Steve Hurst @ USDA-NRCS PLANTS Database

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