

Plant Diversity Website

***Rubus caesius* L.**

Common Names: European dewberry (1).

Etymology: *Rubus* is the Latin word for blackberry/raspberry and *caesius* means bluish-gray, probably referring to the glaucous stems or fruits (4,8).

Botanical synonyms: *Rubus psilophyllus* Nevski; *Rubus turkestanicus* (Regel) Pavlov (2).

FAMILY: Rosaceae (the rose family)

Quick Notable Features (9,11):

- Glaucous stems armed with hooked prickles
- Trifoliate leaves with armed and glandular petioles and petiolules
- Perfect, white flowers bearing glandular pubescent sepals, armed with very small prickles on the outer surface
- The blackish fruit is glaucous and does not separate from the receptacle

Plant Height: The stems can grow to 1.5m tall (11).

Subspecies/varieties recognized (2):

R. caesius var. *aquaticus* Weihe & Nees
R. caesius var. *arvalis* Rchb.
R. caesius var. *brutus* Trin. ex Steud.
R. caesius var. *caesius*
R. caesius var. *dunensis* Noeld.
R. caesius var. *pseudocaesius* (Lej.) Boenn.
R. caesius var. *turkestanicus* Regel
R. caesius var. *umbrosus* Rchb.
R. caesius subsp. *caesius*
R. caesius subsp. *leucosepalus* Focke
R. caesius subsp. *transaltaicus* Focke
R. caesius subsp. *turkestanicus* (Regel) Focke



Most Likely Confused with: *R. caesius* may be confused with *Rubus bifrons*, *R. occidentalis*, *R. strigosus*, *R. laciniatus*, *R. hispidus*, *R. flagellaris*, *Rhus aromatica*, and *Toxicodendron radicans*.

Habitat Preference: The species is found in open areas such as roadsides, wood margins, mid-successional dunes, riverbanks, valleys, and ravines. It prefers full sun to partial shade, slightly acidic to basic, moist soils (1,11,14).

Geographic Distribution in Michigan: Although introduced, *R. caesius* is rare, only found in Lenawee and Washtenaw counties (1).

Known Elevational Distribution: *R. caesius* can grow at altitudes up to 2000m above sea level, where it was collected in Iran (7).

Complete Geographic Distribution: Native to Europe and Asia, the European dewberry is not common in North America. In the United States, a few collections in Michigan, Ohio, Kentucky, New York, and Iowa are reported; it is also found in Ontario, Canada. The species also occurs in Afghanistan, Andorra, Argentina, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, China, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Islamic Republic of Iran, Iraq, Ireland, Italy, Japan, Kazakhstan, Latvia, Luxembourg, Netherlands, New Zealand, Norway, Pakistan, Poland, Portugal, Russian Federation, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Tajikistan, Turkey, Turkmenistan, Ukraine, United Kingdom, and Uzbekistan (1,3,7,11).

Vegetative Plant Description: The round stems of *R. caesius* are glaucous, especially the primocanes, producing a frosted appearance. The stems are ascending or decumbent, rooting at the tips; the plant is biennial. Each cane is ≤ 1.5 m tall and 0.5-2m long, armed with irregular sized prickles, greenish-yellow to brown, and glabrous to glabrescent. The petioles are 4-6cm long, armed, and often glandular. The lanceolate stipules are 0.6-1cm long and 0.2-0.3cm broad, bearing hairs and marginal glands. The leaves are alternately arranged and trifoliolate (rarely five). Each leaflet is thin, broadly ovate to almost round, 4-7cm long and 3-7cm broad, basally round, apically acute, with doubly serrate margins. The blade is somewhat pubescent, lighter green abaxially. The lateral leaflets are nearly sessile, while the terminal leaflets have a 1-2.5cm long petiolule and are armed and glandular (1,8,9,11,14).



Climbing Mechanism: *R. caesius* climbs using its hooked prickles (16).

Flower Description: The corymbose inflorescence can be axillary or terminal and bears at least 10 flowers; the terminal inflorescences (up to 14cm long) are longer and bear more flowers than the axillary inflorescences. The inflorescences are almost perpendicular to the floricanes. The pedicel (1-1.5cm long) and rachis are pubescent, often glandular, and armed with very small prickles. The broadly lanceolate bracts are pubescent or glandular pubescent, 0.5-0.8cm long and 0.1-0.2cm broad. The perfect, white flowers are up to 6cm across and have a 5-parted calyx and corolla. The outer surface of the calyx is pubescent, and occasionally armed with minute prickles; the sepals are long acuminate, 0.6-0.8cm long and 0.3-0.5cm wide. The white corolla is glabrous, and the obovate petals are basally clawed, 0.8-2cm



long. Stamens are numerous, borne on a hypanthium, relatively shorter than the petals, but often longer than the glabrous pistils. The numerous ovaries are unilocular and bear 2 ovules, of which only one will become a seed, the styles are filiform and stigmas capitate (1,8,9,11).

Flowering Time: June-September (10).

Pollinator: Like many other species of *Rubus*, the European dewberry is pollinated by bees, flies, and beetles. It is also capable of self-pollination and apomixis (9,10).

Fruit Type and Description: The fruit is a glaucous, bluish-black aggregate of few drupelets; the receptacle does not detach from the fruit. The aggregate is approximately 1cm in diameter, and nearly round. The drupelets are irregular sized, and each contains one seed (1,8,9,11).

Seed Description: The reticulate seeds of *R. caesius* are reniform, 2.2-3.2mm long and 1.3-2mm wide (15).

Dispersal Syndrome: The fruits are consumed and dispersed by birds and other animals. It reproduces vegetatively by rooting at the tips. The plant can also be propagated by root and softwood cuttings (9,10).

Distinguished by: *Rubus bifrons* canes are glabrous, armed with straight prickles, and each plant can have both 3- and 5-foliolate leaves, unlike the pubescent *R. caesius*, which is armed with hooked prickles, and usually tri-foliolate. The corolla of *R. bifrons* is light pink, not white. *R. occidentalis* is vegetatively very similar to *R. caesius*, but differs in the lack of stem pubescence and the purple canes. The fruit in *R. occidentalis* separates from the receptacle (black raspberry), unlike the fruits in *R. caesius*. *R. strigosus* has glandular-bristled stems, rarely straight prickles, and fruits similar to *R. occidentalis*, although red. *R. laciniatus* leaflets and petals are lobed, and the sepals have long appendages, unlike in *R. caesius*. *R. hispidus* has coriaceous, evergreen leaves instead of thin and deciduous. Additionally, *R. hispidus* is densely bristly, and occasionally bears slender prickles. The flowers are smaller, with petals usually no longer than 0.6cm. *R. flagellaris* stems are not glaucous, the leaves are glabrous, the inflorescence only occasionally bears more than 9 flowers, and the fruits have many drupelets (few in *R. caesius*). *Rhus aromatica* is a fragrant, unarmed shrub with tri-foliolate leaves, the leaflets dentate only at the upper half. The inflorescence in *R. aromatica* is clustered and expands with or before the leaves (early spring), the flowers are small, yellow and 5-merous (including stamens), and the fruits are hairy red drupes. *Toxicodendron radicans* climbs with the assistance of aerial roots, and the woody stems are unarmed. The leaflets are tri-foliolate, toothed, with the 2 lateral asymmetrical, the lower half sometimes slightly lobed. The inflorescence is an axillary panicle that bears yellow-greenish flowers, that later become whitish drupes (1,8).

Other members of the family in Michigan: *Agrimonia* (5), *Amelanchier* (6), *Aronia* (1), *Aruncus* (1), *Chaenomeles* (1), *Chamaerhodos* (1), *Comarum* (1), *Cotoneaster* (2), *Crataegus* (29), *Dalibarda* (1), *Dasiphora* (1), *Drymocallis* (1), *Filipendula* (3), *Fragaria* (2), *Geum* (10), *Kerria* (1), *Malus* (6), *Physocarpus* (1), *Potentilla* (15), *Poterium* (1), *Prunus* (17), *Pyrus* (3), *Rhodotypos* (1), *Rosa* (16), *Rubus* (15), *Sanguisorba* (1), *Sibbaldiopsis* (1), *Sorbaria* (1), *Sorbus* (3), *Spiraea* (5) (source 1).

Ethnobotanical Uses: The species is cultivated for its edible berries, as an ornamental plant, and for honey production. The fruit can be consumed raw, or made into jam or jelly; it can also be used to make a purple or dull blue dye. The leaves can be used to make tea. The fruits are used to increase the appetite, and for digestive and respiratory tract health. The leaves and roots can be made into tea, extracts, or an infusion to treat stomach problems such as ulcers and gastritis, and kidney stones. The decoction obtained from the leaves, stems, and fruits, in addition to the ailments already mentioned, can promote women's reproductive health during menopause and to treat cystitis, diabetes, bacterial infections such as pyelitis, skin fungal infections, and hair loss (9,10,17).

Phylogenetic Information: The genus *Rubus* is a member of the subfamily Rosoideae in the family Rosaceae, which is in the order Rosales, a Eudicot clade of the angiosperms. Members of the Rosaceae family can be found worldwide, and the genus *Rubus* is found in both north and south temperate climatic zones (5,6).



Interesting Quotation or Other Interesting Factoid not inserted above: In Central Europe, carnivorous mammals are very important fruit dispersers. A study in Germany showed that martens (*Martes martes* and *M. foina*) are dispersers of *R. caesius* fruits in German mesic forests, with seed germination rate after digestion of 6.5% (12). A large industry surrounding this plant is present in the Baltic (18).

R. caesius was identified as an “extraneous plant” along with *Satureja montana* L., *Origanum majorana* L., *Cistus incanus* L., and *Rhus coriaria* L. in many samples of commercial grade Mediterranean oregano. *S. montana* and *O. majorana* were added for their similar flavor, while the others, including *R. caesius*, were added to increase the volume of the product (13).

Literature and websites used:

1. *Michigan Flora Online*. A.A. Reznicek, E.G. Voss, & B.S. Walters. February 2011. University of Michigan. Web. January 6, 2013. <http://michiganflora.net/species.aspx?id=2554>.
2. Tropicos.org. Missouri Botanical Garden. 06 Jan 2013
<<http://www.tropicos.org/Name/27800345>>
3. The PLANTS Database: USDA, NRCS, 1991-2007.
<http://plants.usda.gov/java/profile?symbol=RUCA>
4. Brown, R.W. 1956. *Composition of Scientific Words*. Washington, D.C.: Smithsonian Institution Press.
5. Judd, W.S., C.S. Campbell, E.A. Kellogg & P.F. Stevens. 1999. *Plant Systematics: A Phylogenetic Approach*. Sunderland, Massachusetts: Sinauer Associates, Inc.
6. Stevens, P.F. Angiosperm Phylogeny Website. Version 12 July 2012.
<http://www.mobot.org/mobot/research/apweb>.
7. Gbif.org. Global Biodiversity Information Facility.
[http://data.gbif.org/occurrences/searchCountries.htm?c\[0\].s=20&c\[0\].p=0&c\[0\].o=2995209](http://data.gbif.org/occurrences/searchCountries.htm?c[0].s=20&c[0].p=0&c[0].o=2995209)
8. Fernald, M.L. 1950. *Gray's Manual of Botany*, 8th ed. New York: American Book Co.
9. AgroAtlas: Interactive Agricultural Ecological Atlas of Russia and Neighboring Countries 2003-2009. *Rubus caesius* L. - European dewberry.
http://www.agroatlas.ru/en/content/related/Rubus_caesius/
10. Plants For A Future, 1996-2012. *Rubus caesius*.
<http://www.pfaf.org/user/Plant.aspx?LatinName=Rubus+caesius>

11. Lingdi, L. & D.E. Boufford 2003. *Flora of China, Vol. 9: Rubus*.
http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200011369
12. Schaumman, F. & T. Heiken 2002. Endozoochorous seed dispersal by martens (*Martes foina*, *M. martes*) in two woodland habitats. *Flora - Morphology, Distribution, Functional Ecology of Plants* 197(5): 370-378.
13. Marieschi, M., A. Torelli, F. Poli, G. Sacchetti, & R. Bruni 2009. RAPD-Based Method for the Quality control of Mediterranean Oregano and its contribution to pharmacognostic techniques. *Journal of Agriculture and Food Chemistry* 57(5): 1835-1840.
14. Online Atlas of the British and Irish Flora. *Rubus caesius* L. Botanical Society of the British Isles and the Biological Records Centre.
<http://www.brc.ac.uk/plantatlas/index.php?q=plant/rubus-caesius>
15. Bojnanský, V. & A. Fargašová 2007. *Atlas of Seeds and Fruits of Central and East-European Flora: The Carpathian Mountains Region*. Springer: The Netherlands.
16. Moll, J.W. 1934. *Phytography as a Fine Art: Comprising Linnean Description, Micrography and Pen-portraits*. Brill Archive: Holland.
17. Eisenman, S.W., D.E. Zaurov, & L. Struwe 2013. *Medicinal Plants of Central Asia: Uzbekistan and Kyrgyzstan*. Springer: New York, Heidelberg, Dordrecht, London.
18. Ecolink Baltic. Edible mushroom and berry production manufacturer, and exporter.
<http://www.ecolinkbaltic.com/mushrooms-berries/berry/blackberry-fruit-rubus-caesius-blackberries>

Image Credits (all used with permission):

1. Image of habit courtesy of Jouko Lehmuskallio
<http://www.luontoportti.com/suomi/en/puut/dewberry>
2. Image of leaves and fruits courtesy of Jouko Lehmuskallio,
<http://www.luontoportti.com/suomi/en/puut/dewberry>
3. Image of leaves courtesy of Grai Oleksy
4. Image of flower and fruits courtesy of Dragiša Savić, <http://www.naturefg.com/pages/a-plants/rubus%20caesius.htm>
5. Image of seeds courtesy of Tracey Slotta @ USDA-NRCS PLANTS Database,
http://plants.usda.gov/java/usageGuidelines?imageID=ruca_001_ahp.tif

PRIMARY AUTHOR: Cristine V. Santanna, with editing by Robyn J. Burnham.

© Robyn J. Burnham

For additional information on Michigan Plant Diversity species accounts, please contact Robyn J. Burnham via email: rburnham@umich.edu