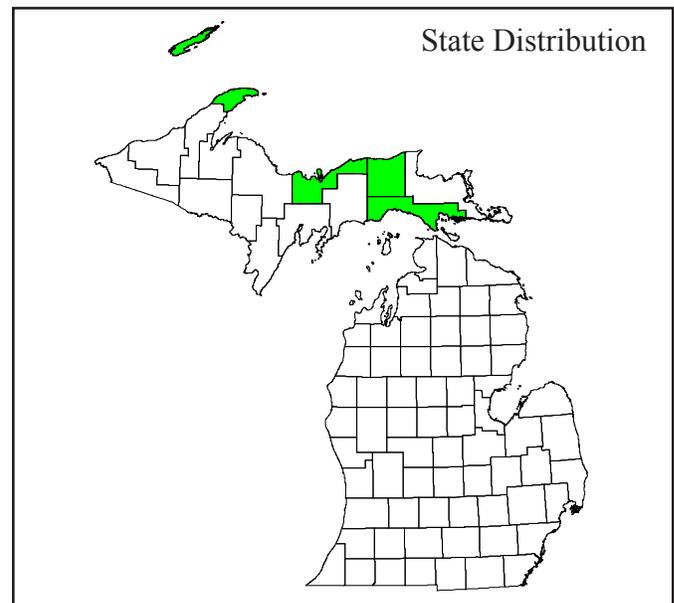
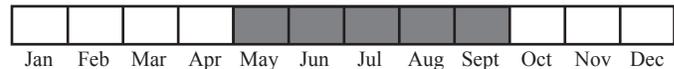




Photo by Ben Legler



Best Survey Period



Status: State threatened

Global and state rank: G5/S2

Other common names: Heathberry

Family: Ericaceae (heath family)

Synonyms: *Empetrum eamesii* Fern. & Weig.; *E. atropurpureum* (Lange) Hagerup; *E. hermaphroditicum* (Lange) Hagerup.

Taxonomy: Some authors have recognized the several geographical varieties or races as distinct species. However, those who treat the *Empetrum* complex in an inclusive sense would assign Great Lakes plants to *E. nigrum* ssp. *hermaphroditum* (Hagerup) Bocher. (Voss 1985).

Range: Black crowberry, in the broad taxonomic sense, is circumboreal, growing in the western North American arctic from Greenland to Alaska. In eastern North America, it ranges south as far as montane regions of New England and Lake Superior. It is considered rare in Minnesota, New Hampshire, and Vermont (NatureServe 2007)

State distribution: Eleven of the 21 known state

localities for black crowberry have been discovered or confirmed extant since 1980, and four others date from the 1970's. Seven stations are on or near Isle Royale (where it is common to locally frequent on several islands), five in Alger County, three in Luce, two on mainland Keweenaw, and four in Mackinac County. Most of the mainland Upper Peninsula occurrences consist of colonies that are very local but often dense in the small areas that they occupy. Inventories conducted in Mackinac County near a previously documented site, where it was long thought to be localized, discovered that *E. nigrum* was much more widespread and abundant. A Mackinac county occurrence near the shore of Lake Michigan was also subsequently documented.

Recognition: Black crowberry is a **low, creeping, mat-forming** shrub with **crowded, evergreen** leaves that are linear-oblong to elliptic and **only 4-8 mm long**. A characteristic feature of the leaf is the **strongly revolute (rolled-under) margin** which makes it appear **tubular or needle-like in shape**. Tiny **inconspicuous flowers that lack petals** and are usually unisexual are borne singly in the axils of the uppermost leaves. The fruits are **blackish, berry-like drupes** (edible but not tasty) containing six to nine seed-like nutlets. Cranberry (*Vaccinium oxycoccos*) is a low, trailing ericad that may occur with black crowberry and grow similarly on Sphagnum hummocks and mounds; however, this



low shrub is only superficially similar and can be easily distinguished by its flat, more widely-spaced leaves, large berries, and much less stout habit.

Best survey time/phenology: Black crowberry is a distinctive species easily identified in vegetative condition, and thus can be sought throughout the growing season, from May through September.

FQI Coefficient and Wetland Category: 10, FACW-

Habitat: In Michigan, black crowberry has been found on the rocky Lake Superior shores of northernmost Isle Royale National Park, where it frequently occurs on ledges, in rock crevices, by edges of rock pools, or on *Sphagnum*-covered rocks (Soper and Voss 1964). Typical associates there include *Potentilla fruticosa* (shrubby cinquefoil) and *Juniperus horizontalis* (creeping juniper). On Superior's southern shore, it grows on sandstone ledges, in the sand beach/forest ecotone, and along trails in woods near the shore under red and white pine, white spruce, and paper birch. In the Mackinac County locality, it typically occurs on *Sphagnum* hummocks in a marly northern fen dominated by white cedar. There and at other Mackinac County localities, it consistently grows on mounds dominated by *Sphagnum fuscum*, *S. capillifolium*, and *S. magellanicum*. In the arctic and subarctic, crowberry typically inhabits bogs, heaths, sandy beach ridges, and rocky shores (Given and Soper 1981, Soper and Voss 1964). It is reported to prefer a strongly acid substrate, even though it sometimes grows in areas with calcareous bedrock or mineral soil (Wherry 1920). Growth in calcareous sites is restricted to the more acidic substrates found on hummocks. On a small island near Lake Superior's north shore, black crowberry was found to be a component of various successional plant communities maintained by permafrost, wave-action, and fire (Barclay-Estrup and Nuttall 1974). *Empetrum nigrum* is able to re-sprout following fire, but is also susceptible to hot fires (Mallik and Gimingham 1985) and has been shown to strongly decrease following fire in black spruce-dominated forests in Labrador (Foster 1985).

Biology: Black crowberry is a woody perennial. It has been collected in flower during June and July and in fruit during July and August. The fruits of crowberry are undoubtedly consumed by a variety of birds and mammals that act as dispersal vectors. Its leaves are

well-adapted for water-retention, being rolled in a tubular fashion and nearly closed along the seam by dense hairs; stomates lie only within the cavity created by this configuration (Mentz 1909). Pollination is thought to be accomplished by wind (Mentz 1909).

Conservation/management: Most of Michigan's *E. nigrum* stations are located on National Park or national and state forest lands. An extensive population in Mackinac county lies within an area recommended for formal Research Natural Area designation by the U.S. Forest Service. However, many colonies--especially those on the south shore of Lake Superior--are extremely localized. Management practices to maintain or restore early successional habitat (e.g. thinning overstory vegetation or burning) may stimulate this species, but should in each case be accompanied by a carefully designed monitoring program to determine the positive and negative effects of management actions.

Research needs: Long-term monitoring and experimental management to maintain habitats are desirable. Virtually nothing is known about the life history, demography, or genetic diversity of this species in Michigan.

Related abstracts: Northern fen, limestone cobble shore, sandstone cliff, sandstone lakeshore cliff, dry northern forest, bald eagle, Blanding's turtle, cherrystone drop, eastern box turtle, eastern flat-whorl, eastern massasauga, Hine's emerald dragonfly, incurvate emerald, land snail, merlin, northern harrier, osprey, piping plover, secretive locust, short-eared owl, six-whorl vertigo, spotted turtle, tapered vertigo, yellow rail, butterwort, Caspian tern, common tern, downy oatgrass, dwarf lake iris, English sundew, Houghton's goldenrod, Lake Huron tansy, pale Indian paintbrush, prairie Indian plantain, Richardson's sedge, round-leaved orchid, sedge, tapered vertigo.

Selected references:

- Barclay-Estrup, P. & D. V. Nuttall. 1974. Some aspects of the distribution and ecology of crowberry, *Empetrum nigrum* L. on the north shore of Lake Superior. *Can. Field Nat.* 88: 171-181.
- Foster, D.R. 1985. Vegetation development following fire in *Picea mariana* (black spruce)-*Pleurozium* forests of south-eastern Labrador, Canada. J.



- Ecol. 73: 517-534.
- Given, D. R. and J. H. Soper. 1981. The arctic-alpine element of the vascular flora at Lake Superior. Publ. Bot. No. 10, National Mus. Nat. Sci., Ottawa.
- Hultén, E. 1970. The circumpolar plants II. Almqvist & Wiskell, Stockholm.
- Löve, A. and D. Löve. 1959. Biosystematics of the black crowberries of America. Can. Jour. Genet. and Cyt. 1: 34-38.
- Mallik, A.U. and C.H. Gimingham. 1985. Ecological effects of heather burning: II. Effects on seed germination and vegetative regeneration. J. Ecol. 73: 633-644.
- Mentz, A. 1909. Empetraceae in: The structure and biology of arctic flowering plants III. Empetraceae. Medd. om. Grfnland 36: 155-236.
- NatureServe. 2007. NatureServe Explorer: an online encyclopedia of life [web application]. Version 6.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: September 11, 2007).
- Soper, J. H. and E. G. Voss. 1964. Black crowberry in the Lake Superior Region. Mich. Bot. 3: 35-38.
- Weitzman, A. 1984. Summerby swamp, an unusual plant community in Mackinac County, Michigan. Mich. Bot. 23: 11-18.
- Wherry, E. 1920. Soil tests of Ericaceae and other reaction-sensitive families in northern Vermont and New Hampshire. Rhodora 22: 33-49.
- Copyright 2009 Michigan State University Board of Trustees.
Michigan State University Extension is an affirmative-action, equal-opportunity organization.
Funding for abstract provided by the Michigan Department of Transportation.

Abstract citation:

- M.R. Penskar and S.R. Crispin. 2009. Special Plant Abstract for *Empetrum nigrum* (black crowberry). Michigan Natural Features Inventory. Lansing, MI. 3 pp.

