Zizania aquatica L. var. *aquatica* wild-rice

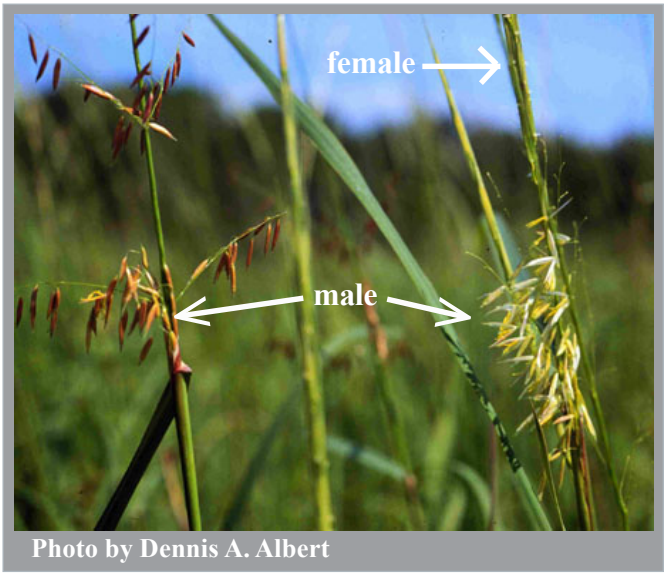
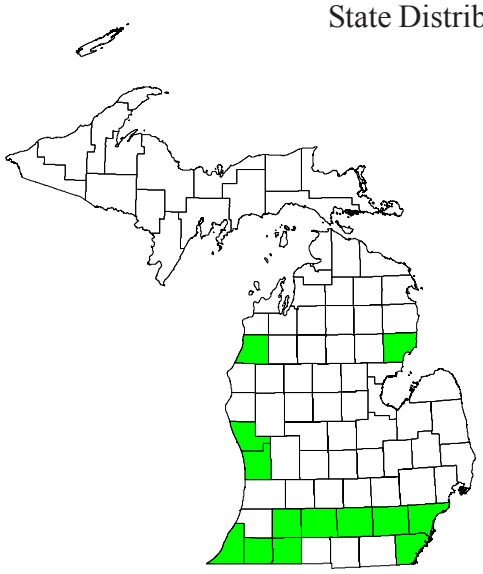
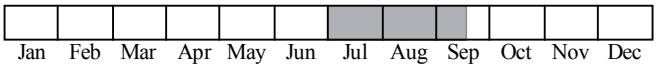


Photo by Dennis A. Albert

State Distribution



Best Survey Period



Legal status: State threatened

Global and state rank: G5T5/S2S3

Family: Poaceae (grass family; also known widely as Graminae)

Taxonomy: This variety sometimes intergrades with var. *angustifolia* Hitchcock (Voss 1972). Dore (1969) recognizes var. *angustifolia* as a distinct species, *Z. palustris* L. Warwick and Aiken (1986) have supported that separation on the basis of electrophoretic studies.

Total range: Wild-rice occurs on the Atlantic Coastal Plain from Maine to Florida and Louisiana, ranging inland from northern New York to Wisconsin and southern Illinois. The species *Zizania aquatica* (i.e. including all varieties), which ranges from Quebec to Manitoba and south to Florida, is considered endangered in Kentucky, threatened in Ohio, rare in Iowa, Rhode Island, and Pennsylvania, and is considered extirpated from West Virginia. Variety *aquatica*, the typical variety, is considered rare in Quebec and Michigan.

State distribution: *Zizania aquatica* var. *aquatica* is restricted to southern Lower Michigan. Manistee and Iosco counties are the northern limit of its Michigan distribution. Approximately 10 populations, collectively occurring in Kalamazoo, St. Joseph, Calhoun, Jackson, Monroe, Ottawa, Manistee, and Cass counties, have been discovered or confirmed extant since 1960, with the other sixteen occurrences known only from pre-1960 records.

Recognition: The robust stems of this large aquatic grass are **2-3 m tall**, varying with water depth. Wild-rice produces **submersed, floating, and aerial leaves that range from 1-4.5 cm in width**. The **terminal, open flower panicle,** which is from 30-50 cm in length**, bears male spikelets basally and female spikelets terminally**. The **pistillate lemmas are thin and flexible**, with at least a few **stiff hairs between the nerves. Aborted pistillate spikelets are less than 1 mm wide** (Aiken 1986).

Other varieties of wild-rice have firm, tough pistillate lemmas. The common var. *angustifolia*, **which occurs throughout the state**, is a distinctly shorter plant, **usually less than 2 m in height**, and also has **markedly narrower leaves (under 1 cm),** and **lemmas that are rigid and 1.5-2 mm wide even during flowering, with hairs only on the tip and along veins**. *Zizania aquatica* var. *interior*, to which a few Michigan collections can be referred, has the large stature of *Zizania aquatica* var.*aquatica* and ligules over 1 cm long, but the firm textured pistillate spikelets of *Zizania aquatica* var. *angustifolia*.

Best survey time/phenology: This species is best sought and identified when flowering or fruiting; a few records were collected in mid to late July, although August through early September is perhaps the optimal period for identification (Voss 1972).

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Habitat: Throughout its range, wild-rice grows in rivers, streams, lakes, and ponds, generally in larger water bodies. In Michigan this species is seldom found in water more than about two feet (0.6 m) deep, and favors areas with a slow current flowing over a mucky or silty bottom with little competition from other plants (Voss 1972). At a St. Joseph County locality, it grows in a small stream with a narrow sedge border, backed by a zone of poison sumac (*Toxicodendron vernix*), tamarack (*Larix laricina*), and willow (*Salix* sp.).

Biology: The long, ribbon-like submersed leaves of this annual grass first appear in mid-May. They are followed by unwettable floating leaves, and finally, by stiff, upright, relatively broad aerial leaves. Plants flower from mid-July through August, with terminal (pistillate) spikelets maturing first. Self-pollination is unlikely since male spikelets begin releasing pollen well after female spikelets on the same plant have matured. Bumblebees and syrphid flies were observed collecting pollen from male flowers at a Maryland locality, but not visiting female flowers to effect pollination (Terrell and Batra 1984). The grains ripen quickly and are shed 10-14 days after pollination. They may float in the water for a short time but soon sink. Seeds of wild-rice seldom germinate if they have dried out (Duvel 1906). Unlike nearly all other seed plants, the germinating seeds of wild rice produce a shoot before the root emerges. It is thought that this serves the seedling's greater need for reaching sunlight than for anchorage (Aiken 1986).

Conservation/management: River surveys are needed to gather more data on this species' current status in Michigan. Remaining populations may need to be protected from human over-harvesting, since annual plants can be especially vulnerable to depletion through seed collection. This plant's habitat is undoubtedly vulnerable to hydrologic disturbance, especially damming, dredging, and other activities that impair a natural water flow regime. Wild-rice has been reported from locations in State Game Areas, where it has possibly been introduced or otherwise planted to augment native rice populations for the benefit of a wide variety of wildlife. Cultivated rice grown within Michigan is usually var. *aquatica*, the seed imported from adjacent states such as Minnesota and Wisconsin.

Comments: *Zizania aquatica* was an important food for Native Americans of the southern Lower Michigan and the western Upper Peninsula. The Menominee tribe was named for wild-rice, the Native American "manonin," translating as "good berry". This species is also an important and well known wildfowl food plant. Since wild-rice is sometimes planted for improvement or wildfowl habitat, some of our records may represent human-established populations, or mixed native and non-native genotypes.

Research needs: A thorough status assessment of this species in Michigan is warranted to determine where native populations still persist. Monitoring of these populations to determine population trends would be useful as well as genetic comparisons to cultivated populations.

Related abstracts: Blandings turtle, box turtle, red-shouldered hawk, short-eared owl.

Selected references:

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Abstract citation:

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