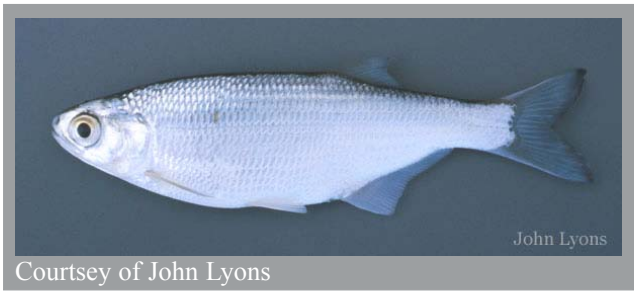
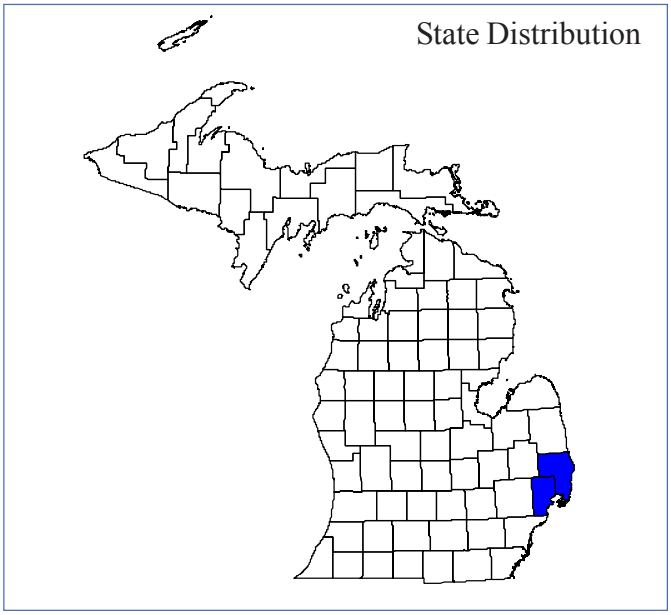
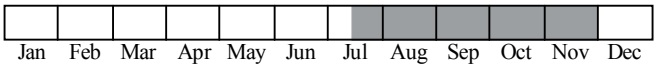
Hiodon tergisus Lesueur — Mooneye



Courtsey of John Lyons



Best Survey Period



Status: State Threatened

Global and state rank: G5/S2

Family: Hiodontidae (mooneyes)

Total range: The mooneye is restricted to North America and its range is generally discontinuous. It is found in the St. Lawrence-Great Lakes (except Superior), Mississippi, and Hudson Bay basins from the Gulf Coast and Mobile Bay drainage to the eastern parts of North Dakota, southeastern Saskatchewan and Southern Manitoba (Page and Burr 1991, Smith 1985, Scott and Crossman 1973).

State distribution: Northern-lower Michigan is at the edge of the mooneye's range. The historic distribution of mooneye in Michigan is not well known, because other species such as gizzard shad, alewife, and some ciscoes have been misidentified as mooneye causing some uncertainty. Mooneyes have been confirmed from lakes Michigan, Huron, St. Clair, and Erie, although they seem to be historically scarce in Lakes Michigan and Huron (Van Oosten 1961, Evers 1994). Within the last 20 years however, the mooneye has been found in low numbers only in Lake St. Clair and the St. Clair River (MI DNR).

Recognition: The mooneye is a silvery, deep bodied, laterally compressed fish. It has a small, oblique mouth and a large eye. The lateral line is complete and almost straight and has 52-57 scales. The caudal peduncle is long. The Mooneye has a keeled ventral edge from pelvic fins to anus but it is not serrate. In addition, the mooneye has a strong toothed plate on the tongue and prominent teeth on the roof of the mouth.

The mooneye has historically been confused with gizzard shad, alewife, and some cisco's. The easiest way to distinguish gizzard shad and alewife from mooneye is their lack of a lateral line. Cisco's have an adipose fin whereas the mooneye does not.

Best survey time/phenology: The mooneye has been collected in the fall in Michigan, but other times may also be effective survey times.

Habitat: The Mooneye occurs in clear large rivers and lakes. They are often found in deeper holes of rivers with swift currents and firm substrates (Smith 1979). They appear to be intolerant of silt and turbid waters (Trautman 1981, Smith 1985).

Biology: In Michigan waters, the mooneye spawns in April and May and possibly into June (Scott and Crossman 1973) when water temperatures are around

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10-13°C (Glenn and Williams 1976). The mooneye appears to become sexually mature in their 4th, 5th, or 6th year and spawn every year after, with males generally maturing 1 year earlier than females (Glenn and Williams 1976).

During their first year, mooneye feed mainly on insects, specifically larval mayflies (Ephemeroptera), caddisflies (Trichoptera), and midges (chironomids) (Glenn 1978). By mid-July of their first summer, young mooneyes are able to ingest adult corixids (water boatman) (Glenn 1978). Adult mooneye feed mainly on corixids, adult beetles (Coleoptera), adult and larval mayflies (in season), and a variety of midges (Glenn 1975). In addition, crustaceans, filamentous algae, and tree bark have been found in the stomachs of mooneye (Glenn 1975), yet there is no evidence that mooneye eat fish or mollusks (1975, 1978). Mooneye stomachs were found to be most full during April, May, October, and November (Glenn 1975), whereas during June and August they seem to grow the fastest (Glenn 1976).

The mooneye averages 293 mm in total length and 226 g in weight (Wallus and Buchanan 1989). Male mooneye can live up to 7 years and females up to 9 years (Glenn and Williams 1976).

Movements: No movement studies have been published on the mooneye, but it is suggested that they travel to rivers to spawn. Hence movements may be extensive.

Interesting note: The mooneye is one of only two Osteoglossomorpha (toothed tongue) species in North American, the goldeye being the other species. Most of this group is found in the southern hemisphere and includes the largest wholly freshwater fish, the giant arapaima of the Amazon, which can grow up to 3 m. Preserving this species is important for the biodiversity of not only Michigan but North America.

Conservation and management: Mooneye populations are naturally discontinuous throughout the U.S. and today many are considered vulnerable to decline (NatureServe 2004). This isolation makes local populations highly susceptible to extinction because losses due to natural- or human-induced perturbations cannot be replaced by neighboring populations. The mooneye is intolerant of silt and turbidity, and as such agricultural, urbanization, and industrialization practices can be detrimental to this species.

Research needs: To date, no specific surveys have targeted the mooneye in Michigan; they have only been caught incidentally. Hence, little is known about mooneye populations in Michigan. Only a few individuals have been collected in Lake St. Clair. An understanding of habitat locations used throughout the year and population estimates are critical for the continued existence and management of this species.

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Abstract citation:

Derosier, A.L. 2004. Special Animal Abstract for *Hidon tergisus* (mooneye). Michigan Natural Features Inventory. Lansing, MI. 3 pp.

Funding provided by the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center via the Great Lakes Commission.

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