

Michigan Mussel Identification Test

Test Basics

Freshwater mussels are among the most imperiled animals in the world as well as notoriously challenging to identify. There are multiple ways these animals are protected under state and federal statute, leading to additional scrutiny for those wanting to work with freshwater mussels. To help ensure that people working with freshwater mussels in Michigan are able to identify these animals correctly, the Michigan Department of Natural Resources and freshwater mussel experts developed a test to certify competency to identify Michigan's freshwater mussels.

Legal Authority

Michigan, acting through its Department of Natural Resources, has an obligation to preserve and protect its resources as prescribed by Article 4, § 52 of the Michigan Constitution. Fish and other aquatic organisms in the public waters of Michigan are entrusted to the State for the use and enjoyment of the public, present and future.

Of the 45 mussel species that have been reported from Michigan, 18 (40%) are listed either endangered or threatened pursuant to Part 365, Endangered and Threatened Species, of the Michigan Natural Resources and Environmental Protection Act (1994 PA 451). Seven of these species are also federally listed and receive additional protection pursuant to the Endangered Species Act (87 Stat. 884, as amended 16 U.S.C. § 1531 et seq.). An additional 13 species are in decline and are identified as species of special concern. The Michigan Department of Natural Resources has authority to manage the method and manner of take for freshwater mussels in Michigan (1994 PA 451, as amended). The definition of take is "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct" (1994 PA 451).

Who needs to be certified?

Beginning Jan. 1, 2025, the DNR's Fisheries Division will only issue Scientific Collectors Permits to contactors who are certified in Michigan freshwater mussel identification. To be "certified" means the person has successfully passed the Michigan Freshwater Mussel Identification Test. "Contractors" are defined as an individual or company hired to conduct freshwater mussel surveys within the State of Michigan. If the contractor holds an Ohio Freshwater Mussel Certification, that can be submitted with the Scientific Collectors Permit application in lieu of the Michigan certification. Contractors (or subcontractors) will need at least one person in their field unit that is certified in freshwater mussel identification.

If the permit applicant is not a "Contractor" including students, academics, naturalists, etc. a certification is not required to obtain a Scientific Collectors Permit for mollusks, but it is recommended.

IMPORTANT! Don't wait until the last minute to pass this test! You will not be permitted to work on freshwater mussels in Michigan beginning in 2025 unless you've passed this test (or Ohio's equivalent test). If you wait to take the test until just before the 2025 field season, and

then fail the test, you won't be issued a Scientific Collector's Permit to work with freshwater mussels in Michigan that year.

What species may be included in the test?

Federally-listed species (5 species)

- *Epioblasma torulosa rangiana* (northern riffleshell)
- *Epioblasma triquetra* (snuffbox)
- *Obovaria subrotunda* (round hickorynut)
- *Paetulunio fabalis* (rayed bean)
- *Pleurobema clava* (clubshell)

State-listed species (11 species)

- *Alasmidonta viridis* (slippershell)
- *Cyclonaias tuberculata* (purple wartyback)
- *Lampsilis fasciola* (wavyrayed lampmussel)
- *Ligumia recta* (black sandshell)
- *Obliquaria reflexa* (threehorn wartyback)
- *Obovaria olivaria* (hickorynut)
- *Sagittunio nasuta* (eastern pondmussel)
- *Simpsonaias ambigua* (salamander mussel)
- *T. lividum* (purple lilliput) and *T. parvum* (lilliput); identification required only to the genus level for these species
- *Truncilla donaciformis* (fawnsfoot)

Non-listed species (25 species, species marked with an asterisk are identified as “special concern” by Michigan)

- *Actinonaias ligamentina* (mucket)
- **Alasmidonta marginata* (elktoe)
- *Amblema plicata* (three-ridge)
- *Anodontooides ferussacianus* (cylindrical papershell)
- **Cambaunio iris* (rainbow)
- *Corbicula* sp.
- *Cyclonaias pustulosa* (pimpleback)
- **Elliptio complanata* (eastern elliptio)
- *Eurynia dilatata* (spike)
- *Fusconaia flava* (Wabash pigtoe)
- *Lampsilis cardium* (plain pocketbook)
- *Lampsilis siliquoidea* (fat mucket)

- *Lasmigona complanata* (white heelsplitter)
- **Lasmigona compressa* (creek heelsplitter)
- **Lasmigona costata* (flutedshell)
- *Leptodea fragilis* (fragile papershell)
- **Pleurobema sintoxia* (round pigtoe)
- **Potamilus alatus* (pink heelsplitter)
- **Ptychobranthus fasciolaris* (kidneyshell)
- *Pyganodon* sp. (including *P. grandis* (giant floater) and **P. lacustris* (lake floater); identification required only to the genus level for these species.)
- *Quadrula quadrula* (mapleleaf)
- *Strophitus undulatus* (creeper)
- **Truncilla truncata* (deertoe)
- **Utterbackia imbecillis* (paper pondshell)
- **Venustaconcha ellipsiformis* (ellipse)

The following 4 species have been reported from Michigan, but are not included on the test, because they either are thought to be extirpated from the state, are of questionable occurrence in Michigan, or are now not thought to be valid species.

- *Epioblasma perobliqua* (white catspaw, federally listed)
- *Leptodea leptodon* (scaleshell, federally listed)
- *Leptodea ohiensis* (pink papershell)
- **Pyganodon subgibbosa* (round lake floater)

How is the test administered?

- The test includes 50 shells in total, including at least one specimen of all mussel species listed above (if any species are excluded because test specimens are unavailable, you will be told this before you begin the test).
- The test will include more than one specimen of some species.
- All specimens will be glued shut, so you won't be able to see inside the shells (as if you were identifying a live specimen in the field).
- Specimens will be typical adult examples of each species, with no "trick" shells, deformed or pathological specimens, tiny juveniles, etc.
- Shells will be grouped into 10 stations, each station containing 5 shells. You will have 12 minutes per station, for a total of 120 minutes. You will not be able to go back to re-examine shells after you've left a station.
- You may use any notes or books that you could reasonably be expected to use in the field, but no smart devices. You may answer using either scientific or common names (not both, please), and minor misspellings, errors in gender of species names, or use of outdated or commonly used alternative scientific names won't count against you.

How well do I need to do to pass the test?

An applicant will pass the test if ALL the following criteria are met:

- a) All federally listed species are correctly identified;
- b) No more than 1 specimen of state-listed species is misidentified; and
- c) No more than 3 specimens of non-listed species are misidentified.

What happens after I take the test?

We will contact you within 1 week to tell you whether you passed, and to let you know which species (if any) you misidentified. If you passed the test, we will provide an electronic certificate stating that you passed Michigan's mussel identification test that can then be attached to future Scientific Collector's Permit Applications. The certification is good for 5 years following the date of the test (certifications for tests passed before Jan. 1, 2025 will be valid until Jan. 1, 2030). Please note that the certification asserts only that you passed Michigan's mussel identification test. To conduct mussel surveys in Michigan, you will also need to be familiar with the Michigan mussel survey protocols (<https://mnfi.anr.msu.edu/resources/michigan-mussels>), and there may be additional project-specific requirements as well.

If you fail the test, you may take it again on the next date it is offered, but not later the same day.

Test schedule and registration

Schedule

The next opportunities to take the Michigan mussel identification test are as follows:

- May 20, 2024 (1-3 p.m.), University of Michigan Museum of Zoology, Ann Arbor
- Aug. 16, 2024 (TBD), Lake Superior State University, Sault Ste Marie
- Oct. 21, 2024 (1-3 p.m.), University of Michigan Museum of Zoology, Ann Arbor
- Dec. 2, 2024 (1-3 p.m.), University of Michigan Museum of Zoology, Ann Arbor
- Jan. 27, 2024 (1-3 p.m.), University of Michigan Museum of Zoology, Ann Arbor
- Feb. or March 2025 (TBD), Annual Meeting of the Michigan Chapter of the American Fisheries Society, TBD
- May 12-16, 2025 (TBD), Freshwater Mollusk Conservation Society Conference, Ypsilanti

Registration

To register for the test, [fill out the registration form](#).

Cost

There is no fee for taking the mussel identification test.

Who can I contact for additional information about the test?

Kesiree O'Brien: OBrienK7@michigan.gov

John Buszkiewicz: Buszkiewiczj@michigan.gov

Jennifer Johnson: JohnsonJ17@michigan.gov

For questions on Scientific Collectors Permits, contact Tom Goniea: Gonieat@michigan.gov.

Helpful Hints for Test-Takers

There are many books and websites for identifying freshwater mussels. You may find the following to be helpful:

- Mulcrone, R.S., and J.E. Rathbun. 2020. Pocket field guide to the freshwater mussels of Michigan. 2nd edition. Michigan Department of Natural Resources. (best guide to Michigan species; includes photos and identification tips for all MI species)
- Watters, G. T., Hoggarth, M. A., & Stansberry, D. H. 2009. The freshwater mussels of Ohio. The Ohio State University Press. (includes many useful photographs)
- Strayer, D.L., and K.J. Jirka. 1997. The pearly mussels of New York state. *Memoirs of the New York State Museum* 26: 1-113 + 27 plates. (freely available at https://nysl.ptfs.com/#!/s?a=c&q=* &type=16&criteria=field11%3D39020917&b=0; gives tips for telling species apart)
- Metcalfe-Smith, J.L. 2005. Photo field guide to the freshwater mussels of Ontario. St. Thomas Field Naturalist Club.

In addition, mussel experts sometimes teach identification classes, which usually give students the chance to handle real shells. Watch for opportunities to take such classes; we will post information about classes in Michigan that we hear about.

In past tests, people have had a lot of trouble distinguishing between the cylindrical papershell (*Anodontoidea ferussacianus*) and the creeper (*Strophitus undulatus*). Be sure that you can tell these 2 common species apart! In addition to the differences in shell shape and color described by Mulcrone and Rathbun, note the differences in beak sculpture, which often is the best way to tell these 2 similar species apart.

Other common problems for past test-takers include telling the lampmussel species (*Lampsilis* spp.) apart from one another and from the mucket (*Actinonaias ligamentina*), recognizing the eastern elliptio (*Elliptio complanata*) and telling the rainbow (*Cambaunio iris*) from the ellipse (*Venustaconcha ellipsiformis*). Be prepared.