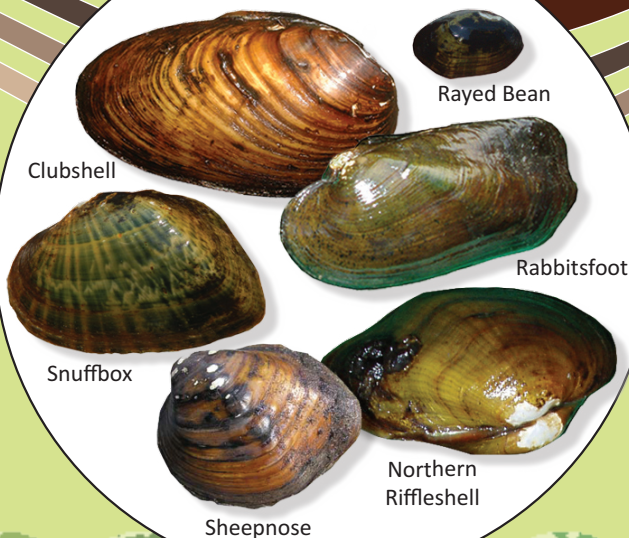


ENDANGERED

Ohio Basin Mussels

It's unlawful to harm, harass, collect, or possess these mussels. These species are protected in Pennsylvania.

U.S. Federally Listed Species



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PUB 546D (10-19)

Freshwater Mussels

Freshwater mussels are the most imperiled group of animals in North America with 7% already extinct and 70% of the remaining threatened, endangered or rare. In Pennsylvania, the Ohio River Basin contains the greatest number of species. Freshwater mussels are valuable filter feeders, each cleaning as much as 18 gallons of water daily. This greatly contributes to improving the water quality of our rivers.

Maintenance and construction activities in the waterways listed must avoid adverse impacts to threatened or endangered freshwater mussels.

The penalties for violations of these laws include criminal prosecution and civil litigation. Permits issued are dependent upon the protection of this species and implementation of special permit conditions. If you are working in the waterways listed or on a tributary within one mile of any of these waterways be aware that you may find these animals.



Northern Riffleshells - Photo by: EnviroScience, Inc.

Cover Photo Credits: **Rabbitsfoot** - Georgia Parham/USFWS, **Sheepnose** - Kristen Lundh/USFWS, **Clubshell/Snuffbox/Northern Riffleshell/Rayed-Bean** - EnviroScience, Inc.,

District	County	Waterways*
1	Crawford	French Creek, Shenango River, Conneaut Outlet, Oil Creek, Conneautee Creek, Muddy Creek, Cussewago Creek
	Erie	French Creek, LeBoeuf Creek, South Branch French Creek, West Branch French Creek, Brokenstraw Creek, Little Brokenstraw Creek Forest Allegheny River, Tionesta Creek
	Mercer	French Creek, Shenango River, Sandy Creek, Neshannock Creek, Little Shenango River, Venango Allegheny River, French Creek, Sandy Creek, Oil Creek
	Warren	Allegheny River, Conewango Creek, Brokenstraw Creek, LittleBrokenstraw Creek
2	McKean	Allegheny River & Oswayo Creek
	Potter	Allegheny River
10	Armstrong	Allegheny River, Cowanshannock Creek
	Butler	Allegheny River
	Clarion	Allegheny River
	Indiana	Little Mahoning Creek
11	Allegheny	Allegheny River, Ohio River
	Beaver	Ohio River
	Lawrence	Shenango River, Neshannock Creek
12	Westmoreland	Allegheny River

* Waterways refers to the waterway listed and one stream mile on tributaries to the waterway going upstream from the confluence with the listed waterway.



Standard Avoidance & Minimization Measures

The following must be implemented for all bridge activities and projects that may effect T&E mussels in the Ohio Basin. Some activities and projects will require implementation of additional avoidance measures that may include salvage and relocation or other mitigation. Refer to the PA DEP permit and contact the district environmental manager to determine if additional measures are required.

1 When designing and constructing new bridges, wherever possible, limit in-stream work to one construction season. Pier placement will be in a manner that minimizes changes in river flow patterns, reduces scour potential, minimizes the number of piers used and in-stream work areas. Necessary work platforms, causeways and new piers will be placed in least suitable mussel habitats. Materials will be used that do not require maintenance, such as sand-blasting and painting. Direct bridge runoff to stone mats or grassed swales at abutments or similar areas to reduce the likelihood of roadway contaminants or spilled hazardous materials from reaching rivers and streams. Avoid access and impacts to the stream when conducting geotechnical borings and inspections. Conduct drilling through existing piers, off-site, or if in-stream avoidance is not feasible minimize the number of borings and utilize barges when possible. Document any in-stream disturbance that results from geotechnical or inspection activities and coordinate with the district environmental manager. Notify all public utilities potentially associated with the action of the potential presence of the species and their need to consult with the USFWS/ PFBC on their respective relocation activities.

2 Complete a Final PNDI ER* during annual planning for any maintenance activities. If there is a mussel conflict with identified conservation measures, confirm that these measures can be implemented and sign the PNDI receipt acknowledgement. Confirm that the schedule complies with any restrictions during intermediate and weekly planning. Ensure that all persons working in the streams and tributaries identified are familiar with PennDOT briefing materials about these species prior to starting the action.

* Pennsylvania Natural Diversity Inventory Environmental Review.

3 Store and dispense vehicular fuels and fluids at least 300 feet from the action's limit of disturbance and any aquatic habitats present. Develop and implement a spill prevention control and countermeasure plan (SPCC Plan). Monitor the project site daily to ensure leakage of toxic materials/spill avoidance/ remediation practices are implemented. The project foreman, on-site inspector, or environmental monitor may complete the daily inspections. Locate project storage, debris and construction waste and staging areas only in upland areas located as far away as possible from wetland/ watercourse habitat areas. Unpermitted discharges to waterways shall be reported to the PennDOT District Environmental Unit immediately upon discovery.

4 Conduct all work associated with the action in accordance with the approved erosion and sediment pollution control plan. Implement E&S best management practices before, during, and after all land disturbance to prevent sediment runoff to streams. Monitor the project site daily to ensure the erosion and sedimentation control practices are implemented and properly maintained.

5 All construction vehicles and equipment that enters the waterway will be washed and inspected for juvenile zebra mussels and other invasive or exotic species before entering another body of water. Brush off mud, wash, disinfect with a bleach-water solution and thoroughly rinse all equipment, tires, vehicles, boots, hand tools, etc. that were in contact with streams or wetlands before bringing equipment to or moving from sites to limit the spread of pathogens, invasive species and zebra mussels.

6 Clearly delineate the direct and indirect impact areas in the field to ensure that only planned activities occur in each area. Use high visibility orange construction fencing to delineate avoidance areas during the action. The fencing will act as a visual warning to prevent construction equipment and personnel from entering and disturbing sensitive areas outside of the project limit of disturbance.

7 Avoid access and impacts to the stream to the extent practicable. Use of rock fills, rock stabilization, and causeway areas will be minimized. Use temporary bridges to reduce causeway impacts. Use only clean rock fill materials and remove all causeway gabions and rock fill materials. Construction material, rock fill, and debris will be removed from the streambed and the streambed will be restored to pre-construction grade.

8 Use alternatives to dropping bridge components into the water whenever possible. Minimize stream impacts during bridge removals by using successive deconstruction methods. Use only non-shattering methods to avoid scattering debris.

9 Remove existing piers to below streambed level and allow to refill with natural streambed material. Fill scour holes, and holes remaining following pier removal with natural cobble and gravel materials.

10 Report spills, unpermitted discharges or excessive sedimentation into streams to the District Environmental Manager immediately.

Activities with Potential to Impact Endangered Mussels

- Drainage Cleaning
- Drainage Repair
- Drainage Replacement
- Drainage Installation
- Bridge/Culvert/Pipe Replacements
- Pipe/Culvert Extensions
- Bridge Maintenance:
 - Repair/Replace Structure
 - Repair/Replace Substructure
 - Repointing
 - Repair/Replace Culverts
 - Paving Pipes/Arches/Culverts
 - Stream Deflectors
 - Channel Cleaning
 - Repair/Replace Backwalls
 - Underpinning
 - Repair/Replace Slopewalls
 - Streambed Paving
 - Rock Protection
 - Scour Hole Backfill
- Sink Hole/Slide Repairs
- Using scaffolding/bents/ temporary supports onstreambeds

Pennsylvania State Listed Species

Round Hickorynut -

Photo by: Robert Warren,
courtesy of the Illinois State Museum



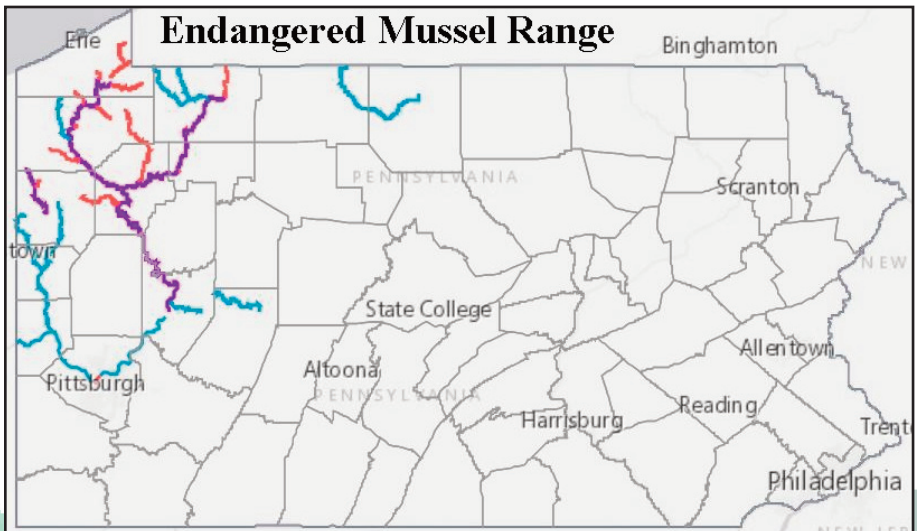
Pistol Grip -

Photo by: Nevin Welte,
Pennsylvania Fish and Boat Commission



Salamander Mussel -

Photo by: Mathew Patterson,
USFWS





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To report issues or if you have questions related to endangered mussels in the Ohio basin contact the office in your area and request the environmental manager.

- **District 1:** Erie | Warren | Crawford | Forrest | Venango | Mercer | 814-678-7085
- **District 2:** Cameron | Centre | Clearfield | Clinton | Elk | Juniata | McKean | Mifflin | Potter | 814-765-0614
- **District 10:** Armstrong | Butler | Clarion | Indiana | Jefferson | 724-357-2800
- **District 11:** Allegheny | Beaver | Lawrence | 412-429-5000
- **District 12:** Fayette | Greene | Washington | Westmoreland | 724-439-7155