



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New Jersey Field Office
4 East Jimmie Leeds Road, Suite 4
Galloway, New Jersey 08205
(609) 646-9310

Freshwater Mussel Surveys in New Jersey Guidance (for project review)

Prepared by U.S. Fish and Wildlife Service, New Jersey Field Office

The U.S. Fish and Wildlife Service's (Service) New Jersey Field Office (NJFO) consults on actions that may affect federally listed and proposed freshwater mussels in New Jersey. This document serves as guidance to project proponents and freshwater mussel surveyors for what the NJFO requires while reviewing and requesting surveys for those species. If you believe a freshwater mussel survey for federally listed or proposed species may be requested or are unsure, please contact the NJFO for further assistance. Please refer to the [NJFO project review guide](#) for contact information and steps for submitting project review requests.

If a freshwater mussel survey is requested for a watercourse that is within the range of a federally listed or proposed freshwater mussel (determined by using the [Service's Information for Planning and Consultation website](#)), the NJFO should review and approve the survey plan before the survey is conducted. After reviewing, the NJFO will explain if any additional information or effort will be needed. The NJFO refers project proponents/mussel surveyors to use the [2022 West Virginia \(WV\) Mussel Survey](#) protocol, but additional information may be requested depending on the project. Only the WV Group 2 and Group 4 watercourses protocols should be used for surveying New Jersey watercourses for federally listed or proposed species. The WV protocol does not explain details about what size of watercourse would be classified as Group 2 or Group 4, other than Group 2 are small to medium sized streams and Group 4 are large rivers. For clarification, in New Jersey, most watercourses within the range of federally listed or proposed mussels would be Group 2. Large rivers, such as the Delaware River, are Group 4. If there is difficulty deciding, please contact the NJFO for assistance with determining the watercourse group. The NJFO must review and approve final survey reports.

The WV protocol discusses "triggers" for conducting Phase 2 surveys for Group 2 and Group 4 watercourses. In New Jersey, Phase 2 triggers for Group 2 watercourses include: 1) Mussel density of 0.5 mussels/meter² (all species included) found within a cell or 2) two mussels of any species found within a 5 meter transect segment. Phase 2 triggers for Group 4 watercourses include: 1) Mussel density of 0.5 mussels/meter² (all species included) found within any area of the survey. For example, 2 mussels within a 5 meter transect segment for a Group 4 watercourse is 0.4 mussels/meter² and would not require a Phase 2 survey.

Please be aware that:

- Table 3 in the WV protocol includes the upstream buffer, downstream buffer, and lateral buffer spacing requirements for Group 2 and 4 watercourses (based on project type). It also includes the maximum transect spacing or if cells would be requested for that type of project.
- The Area of Direct Impact should also include areas that are physically and hydraulically impacted. Section 4 of the WV protocol provides helpful information about special considerations for specific project types to be aware of.
- Cells (preferred) or transects must be used for surveys and can be coupled with timed searches.
- For Group 4 watercourses: If using transects, timed searches between transects may be requested. Additionally, transect spacing of 10 meters apart (almost always recommended) or appropriate use of cells does not require a Phase 2 survey (regardless of triggers).
- Transects should be 1 meter wide and data collected for every 5-meter segment.
- Section 9 of the WV protocol goes over specific search times, triggers (described above), and requirements for Group 2 and 4 watercourses when conducting Phase 1 and 2 surveys. Phase 2 surveys will require additional search effort and surveyors may wish to conduct surveys to meet Phase 2 survey requirements during the first survey (instead of going back to add the additional survey effort).
- All streams less than or equal to 20 meters wide should use cells for surveying federally listed or proposed species. Cells may be requested for streams larger than that width as well.
- If transects are used for a Group 2 watercourse and triggers (as described above) are met, then the mussel concentration area must be broken into cells not to exceed 25 meter² for Phase 2 surveys.
- If using transects, timed search surveys may be requested in mussel concentration areas. Species richness curves must be included in survey reports (as described in section 6.6 of the WV guidelines) for those timed searches.

Information applicable to New Jersey and not explained in the WV protocol includes:

- Follow the New Jersey Water Monitoring Council's [Decontamination Protocols](#) to minimize the risk of introducing or spreading aquatic invasive species.
- Survey extent boundaries for project types not included in the WV protocol (*e.g.*, dam removals) will need to be determined during the consultation process.
- Freshwater mussel surveys are generally conducted from May 1 to September 30 when water temperatures are above 55°F. Actions within watercourses that are intermittent, ephemeral, very narrow/shallow or are severely degraded may not require a survey. The stream conditions are important to describe when the NJFO is determining if a survey is necessary. Depending on the watercourse conditions, a habitat assessment may determine that a freshwater mussel survey is not necessary.
- Surveyors in NJ must have a non-expired scientific collection permit from the New Jersey Department of Environmental Protection (NJDEP) to conduct freshwater mussel surveys. Additionally, surveys for federally listed or proposed freshwater mussels in New

Jersey should be conducted by a [New Jersey recognized qualified dwarf wedgemussel surveyor](#).

- Surveys are (generally) valid for 5 years, after which a new survey may be requested. However, if changes have occurred that would make the habitat more suitable for the species (*e.g.*, substrate, flow changes), that could warrant another survey sooner.
- Since the Service's range of federally listed or proposed freshwater mussels in New Jersey (determined by using the [Service's Information for Planning and Consultation website](#)) extends beyond the NJDEP's landscape mapping, there may be instances where the NJFO may request surveys when the NJDEP does not.
- Ensure coordination with the NJDEP when requesting a freshwater mussel survey.

At any time, if federally listed or proposed species are found, the NJFO should be notified as soon as possible for further review and consultation. If federally listed or proposed species are found during the survey, additional quantitative freshwater mussel surveys (not described in the WV protocol) of the defined survey areas will be requested. The NJFO recommends using the quantitative survey protocols explained in [Smith et al \(2001\)](#). This is necessary to determine densities and project impacts (*e.g.*, how many federally listed or proposed species are expected to be in the impacted area) to the species. If a relocation/salvage is needed, further consultation with the NJFO will be required to determine protocols and an appropriate plan.

Relocation/salvage plans may differ from the details explained in the WV protocol and there may be additional (or a change of) requirements. No federally listed or proposed freshwater mussels are to be moved without prior authorization from the NJFO and NJDEP. Additionally, if a relocation/recipient site is identified, a quantitative survey should be conducted at that location as well so that the NJFO can determine if it is suitable.

As possible, surveyors should ensure they collect the following (in addition to the other information described in the WV protocol) for each federally listed or proposed species found:

1. Exact location found (latitude/longitude). If many federally listed or proposed species are found in one area, that general location should be recorded.
2. Shell length (mm) of longest distance from anterior to posterior.
3. Status or shell condition: found alive, fresh shell, weathered shell, fossilized shell.
4. Watercourse depth at location found.
5. Substrate at location found (*e.g.*, bedrock boulder, cobble, gravel, sand, silt, clay).
6. Age: count external annuli. If unsure, indicate if it is less than or equal to 5 years old or greater than or equal to five years old. Or if you truly cannot determine, then explain why.
7. Include representative photographs of the species. If there are many found, photographs of each individual is not necessary.
8. Any additional notes that may be helpful. For example, if there are signs of stress such as gaping, foot protruding, excessive mucus, and crawling away. If it was found within an area that has aquatic vegetation.