Mussel Surveys in Streams with Potential Populations of the Federally Listed Round Hickorynut and Federally Proposed Salamander Mussel

PID 121779

Summary

Soliciting proposals from consultant/researcher mussel biologists with an active federal permit and with capacity to survey 100+ distinct sites throughout multiple watersheds. While two (2) species are targeted within this research, other federally listed species (FLS) may be encountered, therefore the investigators should have all applicable FLS covered under their permit(s).

Results of the surveys will include a species list, numbers, specimen condition, and a discussion of potential presence/absence of target species per sample site. If present, the potential population size of target species will be estimated. The survey information will be added to the ODOT/ODNR database. This information may be used by state and federal agencies to confirm or change stream group number in the Ohio Mussel Survey Protocol and will be incorporated into ODOT's database for planning purposes for future federal aid highway projects.

Rationale

Unionids or freshwater mussels are bivalves that live in streams and other waterbodies. The eastern US has the highest diversity of freshwater mussels in the world, and historically, Ohio had 80 species of mussel (nearly 30% of all known species). Although Ohio has approximately 60 remaining species, over 70% of those species are endangered, threatened, or are species of concern. All of Ohio's freshwater mussels are protected by state law (ORC Section 1533.324). Ohio also has 13 species of mussels that are listed by the Endangered Species Act as endangered or threatened (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). The Ohio Mussel Survey Protocol requires some amount of mussel survey work for all streams over five (5) square miles. The highest level of survey work is required for streams that are known to contain federally listed species (FLS). The streams and small rivers are referred to as Group 2 streams and the large rivers are referred to as Group 4 streams. The survey work for Group 2 and 4 streams requires a survey to determine if the species is present in the area at the time that ecological coordination is completed, and another survey right before construction to relocate mussels that may be impacted by the activities. Surveys for other types of streams only require relocation of mussels before construction.

The inclusion of *Obovaria subrotunda* (round hickorynut) and the proposed listing of *Simpsonaias ambigua* (salamander mussel) increased the number of Group 2 streams and thereby increased the number of higher-level surveys that are performed for roadway projects. For many of these streams, the records for these species are from a single location or a single individual, are older and potentially no longer relevant, or the quality of the shell (whether fresh dead or weathered dead) is unknown. The surveys carried out under this grant will help determine if these species are still present in the listed streams and if they are, will help define their actual range. This will allow ODOT to focus the additional cost and effort associated with higher-level surveys on areas with known or likely populations of these species, reducing the need to perform these surveys in areas that are unlikely to contain these species.

Table 1: Streams and Rivers included in Grant Scope

Obovaria subrotunda	
Stream Name	**County(ies)**
Alum Creek	Delaware (Franklin County if additional sites needed)
Auglaize River	Putnam
Black River	Lorain
Federal Creek	Athens
Hocking River	Athens
Middle Fork Salt Creek	Vinton, Ross
Rocky Fork Little Scioto River	Scioto
Symmes Creek	Lawrence
Wakatomika Creek	Coshocton, Knox, Licking, Muskingum
Walnut Creek	Franklin, Pickaway (Fairfield County if additional sites needed)
Simsponaias ambigua	
Stream Name	**County(ies)**
Deer Creek	Fayette, Madison, Pickaway, Ross
Eagle Creek	Brown
Hocking River	Athens
Little E. Fk. Ohio Brush Creek	Adams (also sites in Ohio Brush Creek near this stream)
Little Scioto River	Scioto
Salt Creek	Ross
Symmes Creek	Gallia

Site Selection and Study Plan

The streams and counties listed in Table 1 are the target streams for this survey effort. Previous survey information will be given to the selected consultant, as well as the number of roadway crossings and minimum number of surveys requested on each stream segment. Stream crossings and areas where the road is very close to the stream are preferred survey locations; however, the consultant can survey on public and private properties as long as permission from the appropriate landowner is obtained.

A study plan detailing proposed sites and survey methods must be prepared and coordinated with ODOT-OES, ODNR-DOW, and USFWS-COFO, and approval must be obtained from these agencies prior to beginning survey work.

Survey Methods

<u>Tier 1: Timed Search for General Community Assessment</u>

Purpose:

The purpose of this tier is to identify sites that contain suitable habitat for the target species and a relatively diverse assemblage of common and listed species for further examination.

Methods:

The malacologist(s) should perform a directed meander timed search for at least 60-work person minutes to assess the general mussel community and habitat availability. If, based on the professional judgement of the malacologist in the field, better habitat is identified upstream/downstream, then the search may be conducted within that area.

Surveyors may use appropriate visual methods to search the selected area for live and dead shell while attempting to cover as much of the suitable habitat as possible. Live mussels may be hand collected for identification then promptly returned to the location of collection in life position. Representative photographs of all species and the surveyed area should be taken. If state or federally listed species are observed as live or fresh dead, they should be documented according to Ohio Mussel Survey Protocol and USFWS reporting standards.

Representative shells should be collected (if present) and deposited at the Ohio State University Museum of Biological Diversity. No live mussels shall be taken as vouchers. If this area meets the standards for elevating it to the Tier 2 effort, the responsible party should keep the shells separated by date until survey activities have been completed.

Collected Data:

- Habitat Assessment Form and Site Information
- Mussel Community Data (numbers, species, observations)
- Site and Representative Specimen Photographs
- Shell specimen vouchers

<u>Tier 2: Additional Timed Search Effort if High Quality Community is Suspected</u>

Purpose:

The purpose of this tier is to expend additional qualitative search effort in areas previously identified as containing a relatively diverse assemblage of common and listed species to get a complete species list.

Methods:

If the results of the previous Tier 1 survey work show that a diverse mussel assemblage may exist at the site, the malacologist should expend a minimum of two (2) work person hours within the area identified during the Tier 1 survey as having suitable mussel habitat. The area should be searched visually and tactilely with the goal of collecting as many distinct species as possible. Site sampling should be conducted using a directed meander approach.

If the surveyor believes that the survey area or a portion of the survey area has the potential to contain one or both target species, the malacologist shall expend an additional six (6) work person hours in the areas identified as the highest likelihood of supporting the target species. The survey lead may expend additional time based on best professional judgment. Mussel collection shall continue until no new species are observed. For sites where this additional survey time is warranted, a species richness curve shall be included in the final report for that site. The surveyor should GPS the boundary of the area surveyed in this Tier showing the extent of the survey and any notable occurrences.

Live mussels should be collected, identified, and photographed per the voucher requirements in the OMSP. State or Federal Threatened and Endangered species should be documented according to Ohio Mussel Survey Protocol and USFWS reporting standards. If genetic samples are performed, the malacologist should record that data and provide it to the appropriate contacts according to their permit stipulations.

Collected Data:

- Mussel Data (numbers, species, sex (if applicable), and size (T&E or unique circumstances).
- Site and Representative Specimen Photographs
- GPS boundaries of surveyed area(s) and mussel community.
- Genetic Swab Data for Salamander Mussel (optional)*

* Minnesota DNR has requested assistance with collecting genetic swabs of salamander mussels. Swab kits containing the necessary sampling equipment will be provided by MN DNR and will be available prior to the start of these surveys. Alcohol for preservation is not included in the kits and the selected party should procure preservative appropriate for the MDNR sampling protocol.

Deliverables:

Comprehensive Report:

- Ohio Mussel Habitat Assessment Form (OMSP, Appendix B) for each site surveyed
- Table for each site with species/numbers collected
- Mapping for each site
- Photographs of each site and photo vouchers of all species with standardized measurement device collected at each site
- Analysis for each stream/watershed discussing the species potential status within that stream/watershed.

Shapefiles and Digital Records:

As many commercially available data collection, management, and processing tools are available, the applicant should work in concert with the ODOT grant facilitator in selecting the most appropriate methodology for digital file transfer.

Spatial data should be formatted into a comprehensive layer or file with each site being a discrete query-able location with accompanying biological data. This includes polygons of the survey extent, locations of notable collections, and other features identified by the malacologist as being significant to understanding the habitat.

Mussel community data should be consolidated into a single spreadsheet with each river system and individual sites reported individually. These data will be used by various agencies and therefore should be formatted in a consistent and succinct way.

Timing of the proposed work

Following the authorization of an approved study plan, ODOT anticipates that survey work would begin within the 2025 mussel survey season (per the Ohio Mussel Survey Protocol) and will

continue during the 2026 mussel survey season. A draft report of the findings will be due 11/30/2026 and a final report must be submitted by 12/30/2026.

Criteria Evaluating Proposals

This project has been authorized for a total amount of $500,000 that cannot be exceeded. Proposals will be evaluated based on the qualifications of the proposer (the qualifications of the proposer's project manager and the permitted malacologist(s) and others completing the work), the capacity of the proposer to complete the work, and the number of survey sites the proposer can commit to completing within the allotted budget.