New York State

Freshwater Mussel Survey Guidelines

for Waterbody Disturbance Projects

June 2022

The survey methods described herein are intended to apply to routine Joint Permit Applications and natural resources general permits (e.g., stream disturbance, excavation and fill, water quality certificates) where proposed regulated activities are within areas known or suspected to contain imperiled mussels[1,2]. These guidelines will assist with survey plan development and provide a standardized approach and acceptable level of search effort to maximize detectability of mussels, provide essential details for impact assessment, and guide project design to avoid or minimize adverse impacts to mussels.

This methodology can be applied or adapted to most situations requiring assessment of potential impact to mussels within New York State; however, the regulatory process for activities having an extensive impact to aquatic systems vary, and largescale impacts to more common mussel species and mussel concentration areas require additional consideration. Therefore, separate consultation with the Department of Environmental Conservation (DEC) is required for: Federal Energy Regulatory Commission projects for hydropower relicensing, dam maintenance and construction, hazardous waste remediation dredging, State Pollutant Discharge Elimination System (SPDES) projects for wastewater treatment facility repair or maintenance, Emergency Authorizations under the Uniform Procedures Act (UPA), or large stream diversions or withdrawals.

While this document establishes standardized survey methodology, the project sponsor should **coordinate with the DEC prior to developing a mussel survey plan and application for a License to Collect or Possess (LCP)**. Early consultation with the DEC will help in the evaluation and determination of the appropriate survey extent for the proposed activity, as well as any acceptable deviations from these guidelines before survey design. Additionally, surveys conducted in areas where federally listed freshwater mussel species or species proposed for listing may occur must be coordinated with the U.S. Fish and Wildlife Service (USFWS) New York Field Office.

The LCP, which is the license required to handle and survey freshwater mussels in New York State, can be applied for and submitted with the survey plan after consultation with the DEC and the USFWS (if applicable). Details regarding minimum surveyor qualifications and application procedures for obtaining a LCP can be found on the DEC's website at: www.dec.ny.gov/permits/122781.html

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[1] Within this document "imperiled mussels" refers to freshwater mussel species that are federal or state listed as threatened or endangered, as well as those that are ranked as S1 (critically imperiled), S2 (imperiled) or any combination thereof (e.g., S1S2, S2S3) by the New York Natural Heritage Program. Appendix A provides a list of native freshwater mussels considered "imperiled" in New York State.

[2] Several resources are available for determining whether imperiled species may be of concern at a given project site. For state listed or ranked species, refer to the imperiled freshwater mussels layer in the DEC Environmental Resource Mapper at: https://gisservices.dec.ny.gov/gis/erm/ or the list of waterbodies provided in Appendix B. For federally listed species, use the USFWS Information or Planning and Consultation (IPaC) online tool at: https://ecos.fws.gov/ipac/. If the project is within an area highlighted as containing imperiled mussels, consultation with the DEC and USFWS (if applicable) should occur as soon as possible.

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1. Survey Area

The survey area should incorporate the entire area of project impact (see definitions and section 1.1), including any temporary or permanent disturbances, as well as survey area buffers (see section 1.2).

1.1. Area of Project Impact

The area of project impact includes the proposed footprint of any in-water work, new structures or existing structures that will be altered or removed, any areas of proposed excavation or fill, as well as any upstream, downstream, or adjacent areas of adverse impacts resulting from the proposed activity. Table 1 provides examples of activities and disturbances to consider when determining the area of project impact.

Table 1. Activities to Consider When Determining Area of Project Impact

Note: These are typical considerations for various project types. Additional project-specific considerations may also apply.

Adverse Impact to Mussels	Examples of Activity or Disturbance
Crushing or mechanical effects	Any in-water work, including: • Equipment access, operation, and staging • Placement of rip rap, fill, structures, cofferdams • Excavation, dredging, leveling • Fording, skidding of logs
Sedimentation/siltation	Upland and in-water work, including: • Ground clearing (especially on the stream bank or lake/pond shore) • Discharging of water or fill (resuspension) • Placing or removing cofferdams • Dredging, excavation • Fording, skidding of logs
Water quality effects	• Chemical load (fertilizer, sewage, road runoff, waste disposal, toxic sediment dispersal) • Dissolved oxygen changes • Temperature increases/decreases (e.g., riparian vegetation removal, dam releases, pump-around/sewage outflows, etc.)
Flow alteration/impoundments[a]	• Drying/dewatered areas (e.g., cofferdams, drawdowns, diversion of flow) • Scour from discharges • Changes in velocity or bedload • Redirection of thalweg • Dredging • Barrier/dam removal • Bank hardening or stream channelization • Water intakes (withdrawals affecting stream flow)
Fragmentation	• Barrier/dam placement • Impassable culvert

a) The flow alteration zone for dewatering, causeways, cofferdams, etc. minimally includes a linear distance of 4x the dewatered area or in-water projection or at least 20m downstream. Dam removal impact zones are project specific.

1.2. Buffers

Survey buffers are to serve as a safety margin for unintended effects or minor changes in project scope that may occur during the proposed activity and must be included in the survey area. For most projects, including those still in the planning stage, the default buffer distances described in Table 2 apply.

Projects with well-defined areas of impact and/or exceptional protective measures may be able to reducesurvey buffer distances or modify survey methods within buffer areas in consultation with the DEC.

Table 2: Survey Area Buffers Based on Project Type

Project Type	Upstream Buffer	Downstream Buffer	Lateral Buffer
Dredging (Maintenance)	150m	500m	150m
Bridge Projects	50m	100m	Bank to bank
Waterline/Pipeline Corridor Disturbances	50m	100m	Bank to bank
Water Intakes (at shoreline)	10m	10m	10m
Shoreline Protection - without projecting structures	10m	10m	10m
Projecting Structures (e.g., work causeways, docks/piers, boat ramps, temporary work area isolation, grade control structures, rock vanes, j-hooks, etc.)	10m	20m	10m
New Outfalls	10m	Mixing Zone + 100m	10m
Replacing an existing outfall	10m	10m	10m

2. Survey Methods

The first step in most instances is a **timed search survey** to determine whether mussels are present within the survey area and to provide insight into their distribution. The following methods should be used to develop an adequate survey plan while also taking into consideration any project- specific and site-specific circumstances. Other proposed methodologies that follow documented, statistically acceptable methods may be considered in consultation with DEC.

2.1. Acceptable Survey Methods

Survey Type

- Cell surveys are required in most cases. Survey cells should cover the entire survey area and individual cells should not exceed 100m^2 (10mx10m).
- Transect surveys are generally discouraged but may be considered on a case-by-case basis to identify areas for project planning including location of cell surveys, or where large areas or extensive linear project impacts (e.g., dredging or pipelines) are expected.[3]

Search Effort for Cell Surveys

The following search rates should be used as the planned level(s) of effort when designing a survey. Field conditions and habitat suitability may increase (e.g., searching around obstructions, poor visibility, etc.) or decrease (e.g., exceptional visibility, poor habitat that still warrants searching, etc.) search rates during the actual survey. Any field deviations from planned search effort should be documented and described in the survey report (see Table 3, Example Data Table).

- Target search effort of 0.5min/m^2 for cell searches OR,
- Target search effort of 1 min/m^2 if:
    - target mussels include any of the following small-bodied species: rayed bean (*Villosa fabalis*), dwarf wedgemussel (*Alasmidonta heterodon*), brook floater (*A. varicosa*), slippershell (*A. viridis*), salamander mussel (*Simpsonaias ambigua*), snuffbox (*Epioblasma triquetra*), liliput (*Toxolasma parvum*), green floater (*Lasmigona subviridis*)
    - within a mussel concentration area (see definitions on page 10)
- Cells with unsuitable mussel habitat can be visually assessed and excluded from the survey effort. Unsuitable habitat may include dense clay, concrete, rip rap, and bedrock with no sand/gravel deposits.

[3] Where transect surveys are approved by the DEC, transects should be 1m wide, placed parallel to stream flow, and spaced at a maximum of 10m, with a minimum search effort of 1min/m^2

2.2. Search Techniques

Surveys must use visual and tactile search techniques. Acceptable techniques to best detect mussels include the following:

- Sweeping away silt, sand, and/or small detritus by hand
- Hand-probing at least the upper 5cm (2 inches) of loose substrate. Depending on the potential species within the vicinity of the project site, probing at an additional depth (e.g., brook floater (*A. varicosa*), snuffbox (*E. triquetra*), green floater (*L. subviridis*), clubshell (*Plerobema clava*), etc.) or searching under rocks (salamander mussels (*S. ambigua*)) may be required
- Searching among the bases/roots of submerged vegetation and around the edges of emergent vegetation
- Searching banks; exposed silt, gravel or point bars; muskrat middens; and islands to recover any shells or dead mussels
- Examining any cracks or openings in areas of bedrock, concrete, rip rap, etc.
- Thoroughly examining heterogenous substrate (mixtures of sand, cobble, boulders, etc.,)
- Use of viewing buckets or aquascopes at depths ≤ 1 foot
- Snorkeling (usually at depths ≤ 3 feet)
- Using SCUBA or surface supplied air in deeper areas (usually > 3 feet)
- Working from downstream to upstream

***Unacceptable* techniques** include the following:

- Conducting visual surveys from a boat
- Using combs, rakes or any mechanical means that may cause harm to mussels and their habitat

3. Candidate Relocation Site Survey

This survey should be conducted to identify a suitable site for relocating mussels if a salvage event is deemed necessary. This would be performed at the same time as the initial survey if imperiled mussel species or a mussel concentration area was found. The site(s) should be searched using visual and tactile methods to identify a mussel population and assemblage comparable to the project site. Survey results must be submitted (see page 8 for reporting requirements) and DEC approval of the site is required prior to a relocation event. *No mussels are to be moved without prior consultation with DEC and USFWS (if applicable). A relocation plan must be approved before receiving an LCP to conduct a salvage. Additionally, if endangered or threatened species require relocation, the project sponsor must submit a mitigation plan and obtain a 6 NYCRR Part 182 Incidental Take Permit.*

3.1. Ideal Relocation Site Characteristics

The relocation site should meet as many of the following criteria as possible:

- Upstream of the project site and other potential threats or disturbances such as existing infrastructure that may require future maintenance (e.g., bridge/culvert sites, proposed dredging sites, stormwater outfalls, etc.)
- Within the same waterbody and no more than three river miles from the project site
- In a site having no barriers to reproduction or dispersal
- Habitat equal to or better than the source site (e.g., similar substrate, flow conditions, etc.)
- Size/area equal to or larger than the source site, with suitable space for settlement to avoid overcrowding and competition with resident mussels
- In a location having the presence of a similar mussel population and assemblage
    - Attention should be given where there are hybridization and/or competition considerations (e.g., within the Allegheny, Susquehanna, and Delaware basins for species such as elktoe and brook floater (*A. marginata/varicosa*))
- Native freshwater mussels should not be moved into areas where invasive species (e.g., Dreissenid mussels, didymo) could reduce mussel survival
- Introduction of invasive species should be avoided when identifying candidate relocation sites

4. Survey Timing and Condition Requirements

- Surveys may only be conducted between **May 15 and September 30.** Surveying outside of this window will require case-by-case review and approval of plans by the DEC but will generally not be approved unless there are extenuating circumstances. A time extension will also require modification of the LCP.
- **Flow:** Surveys within streams should be conducted during typical low flow or base flow conditions
- **Visibility:** Minimum of 0.5m (approx. 20 inches) at depth of substrate under adequate lighting (e.g., avoid dusk or dawn)
- **Temperature:**
    - Water temperature must be 55 degrees Fahrenheit (ºF) or above
    - Air temperature must be 50ºF or above

Conditions should be monitored prior to conducting surveys.[4] Data for flow or stage height, visibility, and temperature must be recorded on site at the time of the survey.

5. Mussel Handling

The following measures describe the required methods for handling mussels at the time of the survey. Processing/data collection measures can be found on pages 8-9.

Handling Requirements

- Mussels shall not be exposed to air longer than necessary (no more than **5** minutes) for identification, measurement, and photographic documentation.
- For shallow water areas (≤ 3 feet), mussels should be handled and processed one at a time and placed back into the substrate from the location collected.
- For deeper water areas (>3 feet), mussels shall be submerged in water and kept in the shade at all times when waiting to be processed. Use of mesh bags or perforated buckets placed in the stream or other methods to maintain flow is required. Mussels shall be returned in suitable substrate within a few meters from the location they were collected.
- Mussels shall be partially placed back into the substrate with their posterior side up.
- For individuals that appear gravid, gently encourage the mussel to withdraw their lure and foot into the shell to prevent them from releasing glochidia before removing the mussel from the substrate.

[4] To assess conditions prior to the survey, up-to-date data on flow, visibility, and temperature may be found on the USGS website https://waterdata.usgs.gov/ny/nwis/rt. Please note: USGS gauges are not provided in all streams and should only be used as a general reference.

6. Survey Plan Requirements

6.1. Submission Deadlines

Prior to submitting a survey plan and LCP application, the project sponsor should consult with the DEC's Environmental Permits Regional Office and the USFWS New York Field Office (if applicable).

After consultation and approval of the survey area for the project, the mussel survey plan and accompanying LCP application should be submitted using the required deadlines listed below.

- At least 45 days prior to the start of the planned survey
- No later than August 1 of the same calendar year for the planned survey

6.2. Survey Plan Checklist

All submissions must have appropriate documents for review in order to receive timely approval. To ensure all necessary documents and information are submitted, review the checklist below.

- ✓ Justification for survey and description/scope of work of the waterbody disturbance project
- ✓ Anticipated start dates and end dates of the project and the mussel survey
- ✓ Aerial photo showing entire area of project impact overlaid with the mussel survey area boundaries
- ✓ List of potential species within the vicinity of the project site
- ✓ Survey methodology (including level of search effort in min/m^2) and mussel handling techniques
- ✓ Description of data/metrics that will be collected (*refer to the checklist under Report Requirements (pages 8-9) for data/metrics to be collected at the time of the survey*)
- ✓ Survey methodology for determining candidate relocation sites

7. Report Requirements

Survey data must be provided to the DEC, the USFWS New York Field Office (if applicable), and the project sponsor whether or not imperiled mussels are found at the project site.

7.1. Reporting Deadlines

Survey reports should be submitted to the DEC's Environmental Permits Regional Office **at least 60 days in advance of the proposed project** and no later than **December 31** of the year the survey was conducted. Where federally listed species are found, formal consultation with the USFWS New York Field Office must be initiated **at least 135 days in advance of the project's activity.**

A copy of the survey report and a digital data form, which provides a summary of the species found and search effort per survey, must also be submitted no later than **December 31**. This form can be found on the DEC's Special Licenses webpage at: www.dec.ny.gov/permits/122781.html

7.2. Notification Requirements

If NYS endangered or threatened species are found that were not identified in the survey plan, the DEC must be informed within 24 hours.

If federally listed species are found during the survey, the USFWS New York Field Office must be informed within 24 hours of their discovery. Contact information can be found at: www.fws.gov/northeast/nyfo/info/intro.html

7.3. Required Data and Information to Report

The survey report should provide a narrative and summary of findings and all elements as outlined on the following two pages.

- ✓ **Introduction:**
  - Purpose, brief project description
  - Name of stream/waterbody surveyed
  - Location details including city/town, county, and GPS coordinates in decimal degrees
  - Setting and surrounding land use
- ✓ **Methods:**
  - Date(s) and time(s) of day the survey was conducted
  - Survey conditions, including visibility, water & air temperature, water flow/speed/stage height, and weather (e.g., rain, sun, overcast)
  - Survey techniques and methods (e.g., SCUBA, snorkel)
  - Area(s) surveyed, including extent of survey area (e.g., project area of impact, buffers, and cells)
  - Search effort including number of surveyors and total time spent surveying, including catch per unit of effort (CPUE – #/hour) and survey effort (min/m^2)
  - Explanation of any deviations from the approved survey plan (e.g., reduced survey effort)
- ✓ **Results:**
  - Species information:
    - Identification to species – scientific name and common name
    - Number of individuals per species
    - Identification of listing/ranking (see Appendix A for all species considered imperiled in NYS)
    - For imperiled species only:
      - Identification of condition (live, dead, shell)
      - Measurements of shell length (mm)
      - Sex, if determinable
      - GPS data of location (coordinates in decimal degrees)
  - Habitat/substrate assessment:
    - Sediment characterization of each cell based on percent cover of the substrate type using the Wentworth scale
    - Stream/waterbody features (e.g., channel alterations, impoundments)
    - Average stream depth and width
    - Aquatic vegetation identification and percent cover
    - Presence of invasive bivalves, species, and description of abundance
  - Aerial photo displaying the following (all items must be shown on a single aerial photo):
    - Entire survey area in relation to the proposed project
    - Cells/transects surveyed
    - Distribution of imperiled species within survey cells/transects and total search effort
    - Sediment characterization
  - Tabular data organized by search cell, including cell size, total search effort (min/m^2), average depth, substrate type, and species found (common & scientific name, total #, and condition) – *see Table 3 for an example*
- ✓ **Candidate Relocation Site** (*if applicable*):
  - Map identifying site location(s) and coordinates in decimal degrees
  - Description of habitat/substrate characteristics
  - Survey area in square meters
  - Mussel species assemblage and density found
  - Number of individuals per species counted
  - Person hours of search time
  - Presence of invasive bivalve species and description of abundance

- ✓ **Conclusion**
  - Summary of findings, potential impacts to mussels and their habitat, and a description of outcomes and recommended actions
- ✓ **Appendices**
  - Clear and representative photographs of individual species as follows:
    - Must show beak view and lateral view (see Figure 1)
    - For imperiled mussels, photographs of up to 5 individuals per species encountered
    - For all other mussels, at least one set of beak and lateral photos of each species encountered
    - For empty shells of imperiled species, internal photos showing overall shape and internal structures (e.g., hinge teeth). See "Shell Voucher Processing" on page 10 to determine where to distribute spent shells collected at the survey site.
    - Photographs of any suspect or questionable species
  - Clear and representative photographs of waterbody and study area. *Underwater photographs showing the substrate are encouraged, but not required.*
  - Copy of collection license(s) and surveyor qualifications
  - Copy of approved survey plan
  - Copy of field data sheets
  - Copy of digital data form (available at www.dec.ny.gov/permits/122781.html)

Figure 1. Beak view and lateral view photographs are required for each species encountered. Must be clear enough to definitively identify beak sculpture and shell shape.

Table 3: Example Data Table

Cell # (corresponds w/ aerial photo)	**Cell Size** (m2)	**Total Search Effort** (min)	**Average Depth** (feet)	**Substrate Type(s) %**	**Species Found**		
					Name (common & scientific)	**Total # Found** (n)	**Condition** (live, shell, dead)
1	100	105	7	• Sand (50%) • Silt (50%)	**a.** Green floater (*Lasmigona subviridis*) **b.** Eastern lampmussel (*Lampsilis radiata*)	**a.** n = 3 **b.** n = 20	**a.** Live, 2; Shell, 1 **b.** Live, 16; Shell, 2; Dead, 2
2	50	60	4	• Cobble (70%) • Fine Gravel (30%)	Green floater (*L. subviridis*)	n = 1	Live
3	50	15 *	5	• Boulder (90%) • Sand (10%)	No mussels found	n/a	n/a
4	50	55	13	• Cobble (60%) • Silt (40%)	**a.** Eastern elliptio (*Elliptio complanata*) **b.** Eastern floater (*Pyganodon cataracta)*	**a.** n = 16 **b.** n = 22	**a.** Live, 15; Dead, 1 **b.** Live, 18; Shell, 2; Dead, 2

***** Search effort reduced due to poor habitat conditions of artificially placed boulders/riprap (photos attached).

7.4. Shell Voucher Processing

Dead shell vouchers, at least one of each species found, should be retained and submitted along with a copy of the report to the DEC at: NYS Mussel ID, 6274 East Avon-Lima Rd, Avon, NY 14414.
Living mussels should not be sacrificed for voucher purposes.

Each shell voucher must be labeled with the following information:

- Species (common and scientific name)
- Collection date
- Collection location (include waterbody name, road crossing, and coordinates)
- Number of specimens
- Name of collector

7.5. Survey Results Expiration

Results are valid for up to five years from the date of the survey.

Definitions

- **Area of Project Impact:** the areal extent of any potential impacts to mussels from a proposed activity or project. This includes construction of new structures, modification, or removal of existing structures (e.g., bridge piers, temporary bridge, cofferdam, etc.) and any other potential impacts occurring from the activity. The area of project impact also includes areas downstream and upstream where changes in sediment deposition, erosion patterns, substrate composition, and local hydrology are anticipated.
- **Buffers:** components of the survey area that serves as a safety margin for unintended effects or minor changes in project scope that may occur during the proposed activity.
- **Disturbance Project**: any project causing a disturbance to a waterbody that requires a permit or permit equivalent from the DEC. Examples include the following projects: bridge repairs/construction, shoreline protection, dock installation, dredging, etc.
- **Imperiled Mussels:** freshwater mussel species that are federal or state listed as threatened or endangered, as well as those that are ranked as S1 (critically imperiled), S2 (imperiled) or any combination thereof (e.g., S1S2, S2S3) by the New York Natural Heritage Program. View the list of imperiled species in Appendix A.
- **Joint Permit:** environmental permit required in New York State for activities affecting streams, waterways, waterbodies, wetlands, coastal areas, sources of water, and endangered and threatened species. For more information visit: www.dec.ny.gov/permits/6222.html#waterways
- **License to Collect or Possess (LCP):** collection license issued by the DEC's Special Licenses Unit, which allows for the possession and collection of native species of fish and wildlife for scientific purposes. For purposes of this document, the LCP authorizes the collection or handling of freshwater mussel species for surveys and relocations associated with a proposed project. For more information visit: www.dec.ny.gov/permits/122781.html
- **Mussel Concentration Area**: an area containing a high density of mussels, which would necessitate increased search effort to determine the presence of imperiled species and trigger efforts for avoidance or potential relocation. A mussel concentration area is defined as having a Catch per Unit Effort (CPUE) of 30 live mussels per hour or more, or a density of 0.5mussels/m^2. In an event the CPUE or density is triggered, the search effort should increase to 1 min/m^2
- **Project Sponsor or Designee**: person who applies for and receives the necessary permits (e.g., stream disturbance permit, water quality certificate, etc.) from the DEC's Division of Environmental Permits (DEP) to conduct a regulated action or waterbody disturbance project.
- **Special License Applicant/Surveyor**: person who applies for and receives a License to Collect or Possess (LCP) from the DEC's Division of Fish and Wildlife (DFW) Special Licenses Unit to conduct a mussel survey associated with the proposed project.
- **Survey area**: area and extent of proposed mussel survey, including the area of project impact and required buffers.

References

The sources listed below were used during the development of this document.

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Appendices

Appendix A: Imperiled Mussel Species

Scientific Name	Common Name	Federal Listing	State Listing	S rank
Actinonaias ligamentina	Mucket			S1S2
Alasmidonta heterodon	Dwarf wedgemussel	E	E	S1
Alasmidonta varicosa	Brook floater		T	S1
Alasmidonta viridis	Slipper shell			S1S2
Amblema plicata	Threeridge			S1
Anodonta implicata	Alewife floater			S1S2
Epioblasma torulosa rangiana(Lea)	Northern rifffleshell	E	E	S1
Epioblasma triquetra	Snuffbox	E	E	SH S1
Fusconaia flava	Wabash pigtoe			S2
Fusconaia subrotunda	Longsolid	Proposed		S1
Lasmigona subviridis	Green floater	Petitioned	T	S1S2
Lampsilis cardium	Plain pocketbook			S2S3
Lampsilis cariosa	Yellow lampmussel			S2S3
Lampsilis fasciola Rafinesque	Wavy-rayed lampmussel		T	S1
Lampsilis ovata	Pocketbook			S1S2
Leptodea fragilis	Fragile papershell			S2S3
Leptodea ochracea	Tidewater mucket			S1
Ligumia nasuta	Eastern pondmussel			S2
Ligumia recta	Black sandshell			S2
Margaritifera	Eastern pearlshell			S2
Pleurobema clava	Clubshell	E	E	S1
Pleurobema sintoxia	Round pigtoe			S1
Potamilus alatus	Pink heelsplitter			S2
Ptychobranchus fasciolaris	Kidneyshell			S2
Simpsonaias ambigua	Salamander mussel	Petitioned		S1
Toxolasma parvum	Lilliput			S1
Truncilla truncate	Deertoe			S1
Utterbackia imbecillis	Paper pondshell			S1
Villosa fabalis	Rayed bean	E	E	S1
Villosa iris	Rainbow			S2S3

E = Endangered, T = Threatened, S rank = State conservation status ranking.

Appendix B: New York State Waterbodies Containing Imperiled Mussels

Last Revised 2/14/2020

NYSDEC Fisheries Index Number (FIN)	Waterbody Name	Resource Rank
C-134	Mettawee River	S1S2
C-138	Poultney River	S1S2
C-21	Salmon River	S1S2
C-21-2	Riley Brook	S1S2
C-21-4B	Unnamed Water	S1S2
C-25-3	Dry Mill Brook	S1S2
C-48	Boquet River	S1S2
C-48-6	North Branch Boquet River	S1S2
CT-15-12	Webatuck Creek	TE
D	Delaware River	TE
D-1	Neversink River	TE
D-1-38	Sheldrake Stream	TE
D-70	East Branch Delaware River	TE
D-70-20	Beaver Kill	TE
D-70-20-2	Twadell Brook	TE
E-1	Buffalo River	S1S2
E-1-6	Cayuga Creek	S1S2
E-1-6-2	Slate Bottom Creek	S1S2
E-1-6-7	Little Buffalo Creek	S1S2
E-1-6A	Unnamed Water	S1S2
E-19	Little Sister Creek	S1S2
EC	Erie Canal	S1S2
ER-3	Bronx River	S1S2
H	Hudson River	S1S2
H-129	Indian Kill	S1S2
H-139-13	Wallkill River	S1S2
H-139-13-19	Shawangunk Kill	TE
H-158	Saw Kill	S1S2
H-193	Catskill Creek	S1S2
H-221-4	Normans Kill	S1S2
H-240	Mohawk River	S1S2
H-240-82	Schoharie Creek	S1S2
H-240-82-49	Unnamed Water	S1S2
H-299-P27-13	Kayaderosseras Creek	S1S2
H-43-1	Minisceongo Creek	S1S2
NJ-11	Mahwah River	TE
NJ-1-12	Unnamed Water	S1S2
NJ-1-12-2F	Unnamed Water	S1S2
ONT-1	Kents Creek	S1S2
ONT-108-P113-3	Irondequoit Creek	S1S2

NYSDEC Fisheries Index Number (FIN)	Waterbody Name	Resource Rank
ONT-108-P113-3-8	Allen Creek	S1S2
ONT-117	Genesee River	TE
ONT-117-14	Red Creek	S1S2
ONT-117-148	Black Creek	TE
ONT-117-19	Black Creek	S1S2
ONT-117-19-28	Spring Creek	S1S2
ONT-117-19-30	Bigelow Creek	S1S2
ONT-117-19-8	Onion Creek	S1S2
ONT-117-27	Honeoye Creek	S1S2
ONT-117-27-28	Bebee Creek	S1S2
ONT-117-40	Conesus Creek	S1S2
ONT-117-66	Canaseraga Creek	S1S2
ONT-122-P153-2	Larkin Creek	S1S2
ONT-125	Salmon Creek	S1S2
ONT-125-1	West Creek	S1S2
ONT-125-2	Brockport Creek	S1S2
ONT-130	Sandy Creek	S1S2
ONT-130-1	East Branch Sandy Creek	S1S2
ONT-130-2	West Branch Sandy Creek	S1S2
ONT-138	Oak Orchard Creek	S1S2
ONT-138-15	Unnamed Water	S1S2
ONT-139	Johnson Creek	S1S2
ONT-148-3	East Branch Eighteenmile Creek	S1S2
ONT-152A	Twelvemile Creek	S1S2
ONT-156	Fourmile Creek	S1S2
ONT-158	Niagara River	S1S2
ONT-158-12	Tonawanda Creek	TE
ONT-158-12-1	Ellicott Creek	S1S2
ONT-158-12-11	Ledge Creek	TE
ONT-158-12-11-1	Murder Creek	TE
ONT-158-12-32	Little Tonawanda Creek	S1S2
ONT-158-12-6	Ransom Creek	S1S2
ONT-158-12-8	Mud Creek	S1S2
ONT-158-12-8-7	Unnamed Water	S1S2
ONT-158-12-9	Beeman Creek	S1S2
ONT-19-40-3	Black Creek	S1S2
ONT-19-45-1	Butler Creek	S1S2
ONT-19-57-1	Unnamed Water	S1S2
ONT-19-60	Otter Creek	S1S2
ONT-19-70	Fish Creek	S1S2
ONT-53	Salmon River	S1S2
ONT-66_12	Seneca River	S1S2
ONT-66-11-P26-24	West Branch Fish Creek	S1S2
ONT-66-11-P26-24-14	East Branch Fish Creek	S1S2

NYSDEC Fisheries Index Number (FIN)	Waterbody Name	Resource Rank
ONT-66-11-P26-24-14-29	Alder Creek	S1S2
ONT-66-11-P26-24-14-39	Sixmile Creek	S1S2
ONT-66-11-P26-37	Chittenango Creek	S1S2
ONT-66-11-P26-9	Scriba Creek	S1S2
ONT-66-11-P26-9-5	Spring Brook	S1S2
ONT-66-12-12-P154-6	Ninemile Creek	S1S2
ONT-66-12-12-P154-6-2	Geddes Brook	S1S2
ONT-66-12-43	Owasco Outlet	S1S2
ONT-66-12-51	Crane Brook	TE
ONT-66-12-52	Canandaigua Outlet	S1S2
ONT-66-12-52-18	Pond Brook	S1S2
ONT-66-12-52-23	Ganargua Creek	S1S2
ONT-66-12-52-23-24	Red Creek	S1S2
ONT-66-12-P296-74	Fall Creek	TE
ONT-66-12-P369-60-1	Old Barge Canal Channel	S1S2
ONT-71	Ninemile Creek	S1S2
ONT-73	Sterling Creek	S1S2
ONT-73-3	Sterling Valley Creek	S1S2
ONT-78	Red Creek	S1S2
ONT-84-P96-12	First Creek	S1S2
PA-1	Cayuta Creek	TE
PA-3	Chemung River	TE
PA-3-4	Dry Brook	S1S2
PA-3-57	Tioga River	TE
PA-3-57-5	Canisteo River	TE
PA-3-58	Cohocton River	TE
PA-3-58-15	Mud Creek	TE
PA-3-58-15-9	Birdseye Hollow Brook	S1S2
PA-3-58-28	Fivemile Creek	TE
PA-53	Allegheny River	TE
PA-53-15	Red House Brook	TE
PA-53-50	Twomile Creek	TE
PA-53-52	Pratt's Brook	S1S2
PA-53-54	Olean Creek	TE
PA-53-54-10	Ischua Creek	TE
PA-53-54-11	Oil Creek	TE
PA-53-57	Haskell Creek	TE
PA-53-63	Dodge Creek	TE
PA-53-64	Oswayo Creek	TE
PA-63	Conewango Creek	TE
PA-63-13	Cassadaga Creek	TE
PA-63-13-4	Chadakoin River	S1S2
PA-63-13-4-P122-26	Whitesides Creek	S1S2
PA-81	French Creek	TE

NYSDEC Fisheries Index Number (FIN)	Waterbody Name	Resource Rank
SL-1	Raquette River	S1S2
SL-1-2	Squeak Brook	S1S2
SL-2	Grass River	S1S2
SL-2-16G	Unnamed Water	S1S2
SL-2-22	Little River	S1S2
SL-2-22-2	Grannis Brook	S1S2
SL-2-22-2-6	Leonard Brook	S1S2
SL-2-25	Harrison Creek	S1S2
SL-2-25-2	Elm Creek	S1S2
SL-2-45	Plumb Brook	S1S2
SL-2-45-17	Orebed Creek	S1S2
SL-2-47	Black Brook	S1S2
SL-2-48	North Branch Grass River	S1S2
SL-25	Oswegatchie River	S1S2
SL-25-7-P1-3	Indian River	S1S2
SL-2-58	Middle Branch Grass River	S1S2
SL-25branch	Oswegatchie River branch	S1S2
SLC-25	Trout River	S1S2
SLC-29-1	Little Salmon River	S1S2
SLC-29-2-2	West Branch Deer Creek	S1S2
SLC-32	St. Regis River	S1S2
SLC-32-20	West Branch St Regis River	S1S2
SLC-32-6	Deer River	S1S2
SR	Susquehanna River	TE
SR-128	Unnamed Water	TE
SR-146	Unadilla River	TE
SR-146-64	West Branch Unadilla River	S1S2
SR-146-64-6	Unnamed Water	S1S2
SR-146-9	Butternut Creek	S1S2
SR-16	Owego Creek	TE
SR-16-4	Catatonk Creek	TE
SR-16-4-16	Willseyville Creek	TE
SR-16-4-7A	Unnamed Water	S1S2
SR-172	Otego Creek	S1S2
SR-204	Oaks Creek	TE
SR-44	Chenango River	TE
SR-44-14	Tioughnioga River	TE
SR-44-14-27	Otselic River	TE
SR-44-14-59	East Branch Tioughnioga River	TE
SR-44-14-60	West Branch Tioughnioga River	TE
SR-44-23	Genegantslet Creek	S1S2
SR-44-72	Sangerfield River	TE
SR-44-78	Payne Brook	S1S2