

Delaware River Basin Commission
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Executive Director

REQUEST FOR PROPOSALS

INFORMATION AND INSTRUCTIONS

Amended November 19, 2025*

1. GENERAL INFORMATION / BACKGROUND

The Delaware River Basin Commission (“DRBC,” or “Commission”) is seeking a qualified consultant to perform a creel survey in the Delaware River Basin. This Request for Proposals (“RFP”) is being issued pursuant to agreements among the DRBC, the Atlantic States Marine Fisheries Commission (“ASMFC”), the Pennsylvania Fish and Boat Commission (“PFBC”), the Delaware Department of Natural Resources and Environmental Control (“DNREC”), and the New York State Department of Environmental Conservation (“NYSDEC”).

Any changes to this RFP will be in the form of an addendum, which will be posted on the Commission’s website, www.drbc.gov.

The work to be performed pursuant to this RFP will consist of a “Base Phase,” funded by ASMFC and a “Supplemental Phase” drawing on state sources of funding. The consultant will be selected based on a review of proposals submitted to DRBC in response to this RFP. The DRBC reserves the right to reject any or all submittals and to be the sole judge of the merits of each submittal.

The Commission in its sole discretion may waive minor irregularities, defects, or informalities in the submitted proposals when such irregularities, defects, or informalities have no bearing on the amount of the bid or on the competitive advantage of the proposal.

Questions regarding any aspect of this RFP, including requests for clarification or to explain apparent discrepancies or omissions, must be submitted in writing and should be directed to the project coordinator, Jake Bransky, at jacob.bransky@drbc.gov. Questions will be accepted until 4:00 p.m. Eastern Time, on Monday, December 1, 2025. Q&A will be posted on www.drbc.gov on Monday, December 8, 2025.

* The number of anticipated sampling days per stratum (2 weekdays and 2 weekend days each week plus 5 holidays) from March 1 to and including October 31, 2026, has been corrected in both the Study Plan (Attachment B) and this RFP. The correct number of anticipated sampling days is 145 (*not* 175, as originally stated).

2. QUALIFICATIONS

Each bidder must be an environmental consulting firm employing scientists with a minimum of two (2) years of experience in the fisheries field. The selected consultant will have demonstrated experience and expertise executing creel surveys.

The proposal should include a description of the bidder's qualifications. The qualifications should demonstrate the firm's ability to perform the work and should include at a minimum, the following:

- The bidder's experience and demonstrated abilities, including successfully completed project(s) of similar scope, if any;
- At least two (2) references who can attest to the bidder's prior work;
- Résumés for the bidder's proposed project manager and key team members; and
- The bidder's capabilities to meet the needs of the project within the time frame required.

3. PROJECT SCOPE

The Delaware River Basin Creel Survey will assess recreational fishing in the Delaware River Basin, focusing in particular on American Shad, and Striped Bass fisheries. The work will consist of an initial "Base Phase" and a subsequent "Supplemental Phase." The "Base Phase," for which the ASMFC has secured funding, will cover a survey period beginning March 1, 2026 and ending June 15, 2026. The "Supplemental Phase" will cover a survey period beginning June 16, 2026 and ending no later than October 31, 2026. The duration of the "Supplemental Phase" will be determined by the DRBC on the basis of available funding.

The survey is a required element of Amendment 3 of ASMFC's Interstate Fishery Management Plan for Shad and River Herring and Amendment 7 of ASMFC's Interstate Fishery Management Plan for Striped Bass. The survey will characterize the spatial-temporal trends of angler use and harvest, including angler effort, catch rates, harvest rates, size structure and composition of the creel, angler demographics and angler opinions regarding their fishing experiences. The work will be accomplished by evaluating total angler effort, catch rates, and harvest rates per defined stratum and zone of the Delaware River and tributaries to be sampled. It will summarize composition of the catch and angler demographics and opinions.

On-the-ground and aerial surveys. Anglers will be interviewed by a creel clerk using a prepared questionnaire and examination of the catch. A questionnaire approved for use in the survey will be provided to the contractor prior to the commencement of fieldwork. Aerial surveys will also be performed to estimate the number of anglers fishing in a defined spatial area. For full details of the project scope, please see the Delaware River Creel Survey Study Plan developed by the Delaware River Fish and Wildlife Management Cooperative (the "Co-op"), provided as Attachment B ("Study Plan").

Monthly progress reports. The consultant will provide monthly progress reports to DRBC, including estimates of catch (numbers kept + numbers released), harvest (numbers kept), catch rate, harvest rate, angler effort (hours), and angler trips, along with other notes and comments on survey progress as needed.

“Base Phase” progress report and final report. Additional reports will include a “Base Phase” progress report summarizing the efforts completed through June 15, 2026, but providing no data or analysis, and a final report summarizing all survey results (including both “Base Phase” and “Supplemental Phase” results), through conclusion of the survey, as described in the Study Plan. The “Base Phase” report is needed to fulfill conditions of the National Oceanic and Atmospheric Administration (“NOAA”) grant through which ASMFC is funding the bulk of the survey work, and will be due to DRBC no later than July 10, 2026. The comprehensive final report, inclusive of all necessary data quality control and analyses to fully quantify angler effort, catch, behavior, demographics and opinions, will be due to DRBC no later than December 31, 2026. Findings should be concisely summarized in a written narrative with supporting tables and figures, and all raw data should be tabulated in appropriate appendices. Electronic submission of all raw data gathered, appropriately organized in MS Excel spreadsheets, and associated data analysis scripts (e.g., R, SPSS, SAS, etc.), will also be required as part of the final report submission.

The successful bidder will conduct the creel survey on behalf of DRBC, the Co-op, ASMFC, PFBC, DNREC, and NYSDEC.

4. COST/PAYMENT TERMS

Based on the project scope described in Section 3 above and the full study plan comprising Attachment B, and in accordance with the submittal requirements set forth in Section 6 below, bidders are directed to provide a separate cost proposal (“Cost Proposal”) in the form set forth below, including estimated costs and a “not to exceed” total dollar amount, along with a schedule of hourly rates.

Invoices shall be submitted no more frequently than monthly and will be based on actual hours completed and work performed. Assuming evidence of satisfactory progress, in accordance with paragraph 10.a. (“Time of Payment”) of the [DRBC Standard Contract](#), DRBC will remit payment within 30 days, consistent with the agreed upon rates and services. Invoices will be in such form as may be required by DRBC’s Director of Finance and Administration. Five percent of each payment will be withheld pending completion and acceptance by the Commission of all final work products.

5. AGREEMENT TERMS

The agreement between the consultant and the DRBC will require the consultant to provide insurance for its operations as set forth in Attachment A of this RFP.

No subcontractors will be permitted to work in connection with this project without the DRBC's express written approval. The selected consultant must comply with all applicable provisions of state and federal laws.

6. SUBMITTAL REQUIREMENTS/ PROPOSAL CONTENTS

Each bidder must submit a technical proposal ("Technical Proposal") and a separate cost proposal ("Cost Proposal").

Technical Proposal

The Technical Proposal is not to exceed 20 pages, double sided, 12-point font. The Technical Proposal must include the following:

- Documentation and summary of relevant firm experience with creel surveys, as outlined in Section 3, including at least one (1) recent example of similar work performed.
- A staffing plan documenting and summarizing education and relevant experience of proposed key team members.
- Identification and contact information for the bidder's proposed project manager.
- A detailed description of the proposed scope of services and approach to completing the tasks outlined in Attachment B.
- Proposed schedule of completion, including an expected period of performance. The Creel Survey Study Plan provided as Attachment B anticipates that the data collection phase of the survey will run from a date on or about March 1, 2026, through October 31, 2026; however, the actual survey dates will be as set forth in the agreement between the consultant and the Commission. The period of performance, including the development of a final report, shall conclude no later than December 31, 2026.
- Any exceptions to the project scope as described in Section 3 of this RFP or the above requirements must be clearly described in the Technical Proposal.

Cost Proposal

The Study Plan assumes sampling on 145 of the 245 possible sample collection days between March 1 and October 31, 2026.

The Cost Proposal should include estimated and not-to-exceed costs for elements I through III below, at the level of detail shown or described, along with a standard schedule of hourly rates (element IV).

- I. *On-the-ground and aerial fieldwork **by month***. Provide the hours, rates, and costs per month for fieldwork, adding rows for items other than on-the-ground survey, aerial survey, and supervision/ coordination, as needed. For expenses like fuel and meals (if

not included in the listed categories), please explain assumptions narratively or in a separate table.

Monthly Fieldwork Costs

	Hours	Hourly Rate (\$)	Total Amt. (\$)
On-the-ground Survey			
Aerial Survey (16 flights per month)			
Supervision/ Coordination; monthly progress reports			
Other (Include as many other items as necessary. Define units if other than hours.)			
Estimated Total Monthly Fieldwork Cost (sum of estimated On-the-ground, Aerial and Other costs)			
Total Not-to-Exceed Monthly Fieldwork Cost (sum of Estimated Total Monthly Fieldwork Cost plus a margin of error)			

- II. *Total “Base Phase” (March 1, 2026 through June 15, 2026) cost, including prep and fieldwork for March 1 through June 15, 2026 and progress report due by July 10, 2026.*

Total “Base Phase” Project Cost

Estimated Total Fieldwork Cost, March 1 – June 15, 2026 (based on above table or tables)	
Progress Report for March 1 – June 15, 2026	

Estimated Total “Base Phase” Cost	
Total Not-to-Exceed “Base Phase” Cost (Estimated Total “Base Phase” cost plus a margin of error)	

- III. *Data analysis and final report.* This element consists of a budget for data analysis and preparation of the final report covering both the “Base Phase” and “Supplemental Phase” surveys. At a minimum, the budget should include: (1) total hours required to complete the data analysis and final report; (2) hourly rate; and (3) total cost for completion of these tasks. If cost will vary based on duration of the “Supplemental Phase,” please provide cost range and assumptions.
- IV. Standard schedule of hourly rates.

Submittals should be concise. Any requested terms, conditions, or qualifications should be noted.

7. PERIOD OF PERFORMANCE

The selected consultant will commence work within ten (10) business days of execution of an agreement between the Commission and the consultant.

Prior to inception of data collection, the successful bidder will be required to meet with DRBC/Co-op members to finalize the Creel Study Plan and logistical details (e.g., clerk schedules, software to be utilized).

Data collection (fieldwork) is expected to begin on or around March 1, 2026 and to conclude no more than eight months later, on or around October 31, 2026. However, if a different data collection period is agreed upon, the period shall be as stated in the agreement between the Commission and the consultant.

Progress reports summarizing field efforts will be due monthly. The “Base Phase” report summarizing efforts through June 15, 2026 must be submitted to the DRBC and ASMFC by July 10, 2026. The final report, including methods, data, and results for the entire survey period, will be due no later than December 31, 2026.

8. SUBMITTAL INSTRUCTIONS

Technical Proposal

Interested bidders should send an electronic (PDF) file of their Technical Proposal (excluding Cost Proposal) as outlined in Section 6, above, *via* email to: DRBC.Proposals@drbc.gov by the date set forth below.

Cost Proposal

The Cost Proposal, including the requirements outlined in Section 6, above, also must be submitted by the deadline set forth below, **in hard copy only**, and in a sealed envelope clearly marked “Cost Proposal” addressed to:

Elba Deck, Director of Finance and Administration
Delaware River Basin Commission
25 Cosey Road
West Trenton, NJ 08628

Please ensure the hard copy Cost Proposal is delivered by the deadline.

Deadline

Both the emailed Technical Proposal (PDF format) and sealed Cost Proposal (hard copy only) must be received no later than **4:00 p.m. Eastern Time, on Friday, December 19, 2025**. Proposals received after this time will not be considered. The Commission reserves the right to reject any submittal for any reason.

9. PROPOSAL SELECTION AND AWARD PROCESS

Proposals will be evaluated by a committee comprised of staff of the DRBC and the Co-op. Evaluation committee members may not speak with bidder representatives regarding proposals submitted in response to this RFP between the time of submission and the Commission’s selection of a consultant. During that period, any questions may be addressed to Elba Deck, DRBC’s Director of Finance and Administration, at elba.deck@drbc.gov or 609-477-7221.

Technical Proposals received before the deadline will be reviewed by the evaluation committee and evaluated based on: (1) relevant firm experience; (2) staffing plan; and (3) references. Each of these factors will be weighted equally. The committee may request interviews, presentations (on-site or virtual), or additional details. Scoring will be tabulated, and Technical Proposals ranked based on the scores received.

Technical Proposals that demonstrate the consultant’s ability to perform the survey as determined by the evaluation committee will be accepted for further consideration. Only Cost Proposals associated with accepted Technical Proposals will be opened for consideration.

All bidders will be notified promptly when a selection has been made. If for any reason the Commission and the top-ranked bidder are unable to reach an agreement on contract terms, the Commission will pursue an agreement with the next ranked bidder, and so on until a contract is executed.

Attachment A

Insurance Requirements

The agreement between the consultant and the Commission ("Agreement") will require the former to provide insurance applicable to its operations as follows:

- (a) Worker's Compensation with statutory limits, and Employer Liability Insurance with a limit of \$1,000,000 per accident to provide for payment of Worker's Compensation benefits to the consultant's employees and/or their dependents in connection with the services covered by the Agreement. Such benefits shall include, when required, Occupational Disease benefits in accordance with applicable law. Applicable law shall include but shall not be limited to the U.S. Longshoremen's and Harbor Workers' Compensation Act and the Jones Act.
- (b) Comprehensive General Liability Insurance on standard bureau form excluding professional liability but including Premises-Operations, Contractual Liability, Owner's and Contractor's Protective Liability, and Completed Operations Insurance, with a combined single limit of \$1,000,000 per occurrence and \$2,000,000 annual aggregate, for bodily injury and/or personal injury, including death and property damage.
- (c) Comprehensive Automobile Public Liability Insurance (including owned, non-owned, and hired automobiles) with a combined single limit for bodily injury, death and property damage of \$1,000,000 per accident. This policy shall also provide coverage for Automobile Comprehensive, Fire and Theft insurance subject to a \$500 deductible and Collision insurance subject to a \$500 deductible on owned commercial vehicles.
- (d) Excess Liability Insurance in the amount of \$5,000,000.
- (e) Products Completed Liability Insurance in the amount of \$1,000,000 with no time period exclusionary language.
- (f) Upon execution of the Agreement, the consultant will provide the Commission with the appropriate certificates of insurance, as outlined above, including the Commission as an additional insured for the term of the Agreement on the Comprehensive General Liability and Automobile Public Liability policies.

Attachment B

Delaware River Creel Survey Study Plan

Delaware River Creel Survey Study Plan

*Amended November 19, 2025**

Prepared by the
Delaware River Basin Fish & Wildlife Management Cooperative

* The number of anticipated sampling days per stratum (2 weekdays and 2 weekend days each week plus 5 holidays) from March 1 to and including October 31, 2026, has been corrected in Section 3.7 of this Study Plan. The correct number of anticipated sampling days is 145 (*not* 175, as originally stated).

Table of Contents

1.0 Introduction	1
2.0 Goals/Objectives	2
3.0 Sampling Design for Delaware River and Tributary Creel Surveys	2
3.1 Study Area Stratification	2
3.2 Sampling Methods and Results for Delaware River and Tributary Creel Surveys	3
3.3 Angler Use (i.e., angler count estimation)	4
3.4 Angler Effort (i.e., creel clerk interview)	5
3.5 Angler Catch (i.e., angler interview)	5
3.6 Survey Design	5
3.7 Study Period	6
3.8 Work Schedule	6
3.9 Progress and Final Reports	7
4.0 Literature	8
Appendix 1. Proposed access site locations are listed with geographic and categorical information for each. Additional sites to be added are included in site zones G through J.	9

1.0 Introduction

Amendments 2 and 3 to the Interstate Fishery Management Plan for Shad and River Herring and Amendment 7 of the Interstate Fishery Management Plan for Striped Bass charge the basin states of the Delaware River Basin Fish and Wildlife Management Cooperative (Co-op) with monitoring and reporting catch, landings, and effort of the recreational catch and release of American Shad and Striped Bass within the Delaware River Basin. The Co-op member agencies include the Pennsylvania Fish and Boat Commission, the New Jersey Department of Environmental Protection Division of Fish and Wildlife, the Delaware Department of Natural Resources and Environmental Control Division of Fish and Wildlife, the New York Department of Environmental Conservation Division of Fish & Wildlife, the United States Fish and Wildlife Service, and the National Marine Fisheries Service. The [last creel survey of the Delaware River](#) was conducted by Versar, Inc. in 2002 and published the following year (Vølstad 2003). Specifically, this survey was conducted from mid-March through October 2002, under Contract No. FP22010046 (Delaware River Creel Survey) issued by the Pennsylvania Fish and Boat Commission, on behalf of the Co-op. Due to the significant amount of time since the last creel survey and the exclusion of other potential areas of recreational fishing effort, a creel survey is being funded to be conducted in 2026 to assess the current recreational harvest and effort of American Shad and Striped Bass as well as other recreationally targeted species of interest within the Delaware River Basin.

Overall, the 2002 creel survey described the Delaware River as mostly catch and release fisheries (Vølstad et al. 2003), which mirrored a nationwide trend of anglers across many of the inland recreational fisheries showing an increase in practicing catch and release (Sass and Shaw 2020). The practice of catch and release is often envisioned as a method to fish sustainably by allowing caught fish to survive. Yet, catch and release mortality in some species is estimated to be high in some studies. Specifically, within American Shad, a study in the Hudson River estimated catch and release instantaneous mortality to be as high as 33% (Millard et al. 2000).

Over the last three decadal studies, the harvest and catch rate of American Shad has been estimated to be decreasing (Miller and Lupine 1987; 1996; Vølstad et al. 2003). In the 2002 creel survey, catch rate of American Shad was assumed to be decreasing due to

decreasing fishing effort targeting shad. However, declines in biological metrics suggest that catch rates might also be influenced by population declines. In 2023, further declines in biological metrics triggered management action resulting in a basin wide recreational creel reduction from three fish per day to two fish per day. Given the current declining trends in American Shad abundance in the Delaware River and the unknown status of the recreational fishery, it is critical to conduct a creel survey to identify any sources of additional mortality and provide managers the best available information to mitigate these observed population declines.

2.0 Goals/Objectives

The goal of this study is to quantify present-day fisheries of the Delaware River and selected tributaries. Specific objectives include characterizing spatial-temporal trends of angler use and harvest for a suite of popular gamefishes with the principal focus on the American Shad and Striped Bass fisheries. Popular game fish will include invasive species that anglers may also target and catch. Parameters of interest will include describing angler effort, catch rates, harvest rates, size structure and composition of creel and angler demographics through collection of the following information:

- Total angler effort per strata and zone for the Delaware River and tributaries sampled;
- Catch rates per strata and zone for the Delaware River and tributaries sampled;
- Harvest rates per strata and zone for the Delaware River and tributaries sampled;
- Size structure and species composition of creel; and
- Angler demographics/opinion.

3.0 Sampling Design for Delaware River and Tributary Creel Surveys

3.1 Study Area Stratification

Historically, stratification was applied both geographically and temporally to collect the best estimate of angler effort for American Shad (Vølstad et al. 2003). Similar geographic stratification, with the addition of several zones to better capture tributary effort, will be used

again in this survey to support comparison of post-stratification calculations and understanding changes in the fisheries. Defined strata and zones are defined as:

Stratum	Stratum Range	Stratum & Zone River Miles	Zone	Zone Range
Estuary	Delaware Memorial Bridge to Trenton	69-133	-	Estuary
1	Trenton to Delaware Water Gap Bridge (Rt. 80)	133-168	A	Yardley to Upper Black Eddy Access
		168-212	B	Holland Church to Kittatinny Beach Access
2	From Delaware Water Gap Bridge to Narrowsburg	212-256	C	Worthington STP to Matamoras Access
		256-290	D	Sparrowsburg Access to Narrowsburg Access
3	From Narrowsburg to Downsville, NY, East Branch and West Branch	290-330	E	Skinner's Falls Access to Hancock
		330-348	F	East Branch – Peas Eddy to Shad Hole
4*	Tributaries	Brandywine R.	J	Mouth to RM 3
		Schuylkill R.	I	Mouth to RM 23
		Lehigh R.	H	Mouth to RM 17
		West Branch	G	Mouth to RM 18

*Zones within Stratum 4 will be flown the same time as the adjacent Delaware River Stratum, though stratum and zones for the tributaries will be analyzed separately from those for the main stem Delaware River.

3.2 Sampling Methods and Results for Delaware River and Tributary Creel Surveys

Required parameters will include weighted estimates of angler hours, trips, catch, harvest, catch rate by major river strata/zone, month, and fishing mode (boat or shore) with estimated variance to be targeted. Weighted estimates will compensate for the difference in

weekend and weekday effort and count in estimates. Estimate creel statistics with error bounds need to be specifically quantified for diadromous species (i.e., American Shad and Striped Bass), resident species (e.g., Smallmouth Bass, muskellunge spp., Brown Trout, Rainbow Trout, Channel Catfish, Walleye), and aquatic invasive species (e.g., Blue Catfish, Freshwater Drum, Northern Snakehead, and Flathead Catfish) and other frequently caught species (i.e., potentially White Perch, Largemouth Bass, etc.) where appropriate. The statistical design will require sufficient sampling effort to yield a relative standard error (PSE) of 20% for the American Shad and Striped Bass catch estimates. When conducting the interview, creel clerks will interview one angler at a time. A questionnaire, to be developed by PFBC and provided to the contractor prior to the commencement of sampling, will include location (i.e., point of contact, and reach(es) fished), fishing mode, time spent fishing, target species, catch, release and harvest, sex, length, weight, and angler's demographics/opinions. If anglers have released fish the angler will be asked to estimate the size of the released fish and number caught. Additionally, during the interview process, a few questions (i.e., no more than eight) will be dedicated to characterizing pertinent angler demographics (e.g., angler origin, gender, age type (adult/youth), terminal tackle type, etc.) and opinion (e.g., trip motivator(s), trip satisfaction, etc.). Summarization of this data type can be aggregated to reflect the study period/area in its entirety.

3.3 Angler Use (i.e., angler count estimation)

Angler effort and counts will be collected from creel clerk interviews, and angler counts will be collected from aerial flights as an instantaneous count estimate. Shore/wade anglers and boat anglers can be most efficiently counted over the broad spatial area that includes the Delaware Basin by low altitude airplane. A sampling month (March through October) should consist of 2 weekdays and 2 weekend days per stratum for a total 128 stratum flights. With an aerial count this would be considered an instantaneous count due to the high unlikelyhood of anglers being recounted within a fly by. On each flight, aerial observers should count the number of shore and boat anglers successively within portions of the area swept, yielding a progressive overall survey count (Pollock et al. 1994). Angler counts will be verified by creel clerks sampling the anglers from the ground, counting anglers present at the time of aerial

flights within their line of sight. All aerial flights will be coordinated with a subset of days surveyed by creel clerks seeking angler effort via access point interviews.

3.4 Angler Effort (i.e., creel clerk interview)

Angler effort will be calculated for total hours spent fishing and number of fishing trips, for all types of trips (i.e., complete/incomplete). Estimates will be calculated for the different strata/zones separately by month and for the entirety of the survey period. Angler effort will be based on the aerial angler counts, in conjunction with the daily effort distribution estimated from the access survey. These calculations will identify generalized focal points of the fishery, for example, where anglers are concentrating effort in one particular stratum or zone, and/or will identify peak(s) of timing of angler use of the fishery. Anglers who respond that they have not finished fishing for the day will be requested to fill out and return a postcard summarizing their catch and harvest information once done for the day. PFBC will develop the postcard and provide it to the contractor prior to the commencement of sampling. Issuance of postcards will be employed to increase completed trip occurrences. Anglers will be encouraged to return postcards through USPS. Received postcards that are filled in with no missing data, will be treated as a completed trip. Otherwise, the creel clerk will attempt to update the original interview, as best as possible, to a more robust incomplete trip if incomplete trips are needed.

3.5 Angler Catch (i.e., angler interview)

Total angler catch and harvest will be estimated for both types of fishing—boat and shore—and per sportfish species listed above. Estimations will be calculated for separate strata and zone by month and for the entirety of the survey period. Size distributions will be expressed as total length frequency per sportfish species and through frequency of proportional size distribution preferred (PSDP), memorable (PSDM), and trophy (PSDT) sizes for each sportfish species.

3.6 Survey Design

For the 2026 creel survey, the modified roving creel method will be implemented, similar to the modified roving creel survey done in 2008 in the Susquehanna River (Smucker 2010). A modified roving creel survey consists of a route where a clerk has a prescribed schedule to monitor access points but has the flexibility to prioritize interviews along this route

(see identified Access Points in Appendix 1). This differs from a roving creel survey, where a clerk is required to stick to a schedule and does not have the flexibility to collect fishing trips from anglers at other than designated access points. This modified roving creel allows a clerk to use scheduled times at access points as flexible guidelines and would allow clerks to collect additional trip counts. Calculation of metrics will be based on formulas from the 2008 Susquehanna River Creel Survey (Smucker 2010). For this survey, a proposed sampling event should cover approximate 15 river miles along a specified route. Including tributaries, an estimated 25 sampling routes would be required, four of which would include tributaries.

Angler effort will incorporate complete and incomplete data. This will be required to calculate effort for the modified roving creel survey which will be based on angler counts extrapolated out using the number of hours in a fishing day. To calculate angler catch, total catch and harvest will be calculated from the product of effort and catch rate (angler-hours x fish/hour). Mortality will be reported by accounting for direct mortality (harvest) and indirect mortality by applying a mortality rate to released fish (for example, see Millard et al. 2000).

3.7 Study Period

Sampling is proposed to occur from March 1st through October 31st. Temporal strata will be created to evaluate greater angler effort anticipated to occur on weekend days and holidays relative to weekdays. Thus, angler interviews must occur on both weekend days throughout the survey period. A sampling week should consist of 2 weekdays and 2 weekend days per stratum. Sampling should also occur on the holidays of Memorial Day, Juneteenth, July 4th, Labor Day, and Columbus Day. A total of 145 days is anticipated to be sampled out of a total possible sampling time span of 245 days.

3.8 Work Schedule

Sampling is proposed to be randomly selected by determining the primary sampling units (PSUs) known as the combination of all the times (days, part days) available for fishing during a defined period and all points of access to the fishery (Pollock et al. 1994). Historically, PSUs encompassed a morning, evening, and nighttime frame. This survey will consist of morning and evening shifts only with an AM shift from 7 AM to 1 PM, and a PM shift from 1 PM to 7 PM. The probability between the AM and PM shifts should remain constant at 50/50.

These times are to be used as references and are based on an 8-hour workday with the first and last hour anticipated for travel to/from the sample sights. Starting times will be dynamic as days get longer to summer solstice and then wane to winter solstice. Creel clerks will need to be at survey locations no later than one hour after sunrise for a morning shift, but the afternoon shift starting time will be adjusted to delay leaving the river until one hour past sunset. Due to the safety and cost associated with accurate night sampling, nighttime surveys will not be conducted in this study.

3.9 Progress and Final Reports

This creel survey should focus on estimates of catch (numbers kept + numbers released), harvest (numbers kept), catch rate, harvest rate, angler effort (hours), and angler trips. Monthly estimates should be provided for each of the strata and zones and then aggregated to produce monthly estimates. These monthly estimates should be included in routine monthly progress reports filed no later than 2 months after the last day of sampling for the corresponding month. Other notes and comments on survey progress should be included in the monthly reports as needed.

The final report will be analogous to the [Versar report](#), including methods and results of the survey. Results should include fishing effort, catch and harvest stats for specific species, angler characteristics, and comparisons to historical surveys. Yet, a finer spatial scale summarization of angler catch and effort may become prudent within the estuary/non-tidal stratum-zones should a clear trend(s) become evident, particularly regarding Striped Bass (i.e., Stratum 01A, Calhoun St. Bridge downstream to head of tide, approximately US 1 Bridge). Fishing effort should calculate the total angler effort (hr) and number of trips, with a breakdown temporally and spatially of patterns in fishing effort. Catch and harvest statistics for each species should include catch and harvest rates along with totals and relative standard errors. Species targeted and catch should also be broken-down temporally and spatially. Angler characteristics should include distribution origin, angler satisfaction, use of tackle, and angler's motivations.

4.0 Literature

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Appendix 1. Proposed access site locations are listed with geographic and categorical information for each. Additional sites to be added are included in site zones G through J.

State	Site Name	Site ID	River mile	Site Zone	Site Stratum
NY	Hancock (at Sewer Treatment Plant)	1	330	E	Three
PA	River Road access approx 1 mile north of Stockport Creek	2	328.6	E	Three
PA	Buckingham (approx. 2.2 miles north of	3	325	E	Three
PA	Equinunk	4	322.5	E	Three
NY	Lordsville	5	321.6	E	Three
NY	Long Eddy	6	315.2	E	Three
NY	Basket Creek, under RT 97 viaduct	7	314	E	Three
NY	Kellams Bridge	8	312.6	E	Three
NY	Hankins, Red Barn Camp Ground	9	311	E	Three
NY	Callicoon	10	303	E	Three
PA	Callicoon (Approx. 0.5 miles south of Callicoon	11	303	E	Three
NY	NYDEC Cocheton access area	12	298	E	Three
PA	Damascus (just downstream from the PA	13	298	E	Three
NY	Skinnners Falls	14	295	E	Three
NY	Narrowsburg (off Main Street)	15	290	D	Two
PA	Narrowsburg	16	290	D	Two
NY	Tusten/Ten Mile R NY, NPS Access	17	284	D	Two
PA	PFBC Zane Grey access area	18	278	D	Two
NY	Highland, NY DEC	19	274	D	Two
NY	NY DEC Mongaup Access	20	261.2	D	Two
NY	Sparrowbush, NY DEC (Off RT 97 north of RT 42 junction)	21	258.1	D	Two
PA	PFBC Matamoras (approx. 1.5 miles north of	22	256	C	Two
PA	DWGNRA - Milford Beach	23	246	C	Two
PA	DWGNRA - Dingmans Ferry	24	239	C	Two
PA	DWGNRA - Eshback	25	232	C	Two
PA	DWGNRA - Bushkill	26	228	C	Two
NJ	DWGNRA - Depew (off Old Mine Road,	27	220	C	Two
NJ	DWGNRA - Poxono (off Old Mine Road,	28	219	C	Two
PA	Smithfield Beach (off River Road	29	218	C	Two
NJ	Worthington STP (upper) (off Old Mine Road	30	217	C	Two
NJ	DWGNRA - Kittatinny Beach	31	211	B	One
PA	Up River end of Arrow Island	32	210.75	B	One
PA	Portland Generating Station - Reliant Energy	33	206	B	One
PA	Northampton County Parks - Doe Hollow	34	198	B	One
NJ	NJDFW - Belvidere Access	35	197	B	One
PA	Martins Creek - PP&L	36	194	B	One
PA	PFBC - Sandts Eddy Access	37	189	B	One

State	Site Name	Site ID	River mile	Site Zone	Site Stratum
PA	Northampton County Parks - Frost Hollow	38	186	B	One
NJ	Phillipsburg Boat Ramp	39	184	B	One
PA	Scott Park Boat Ramp Easton	40	184	B	One
PA	Hugh Moore Park	41	184	B	One
PA	Wi-Hit-Tuk County Park	42	181	B	One
PA	Theodore Roosevelt Rec. Area	43	178	B	One
PA	Fry's Run Park	44	177	B	One
PA	PFBC - Riegelsville Access	45	175	B	One
NJ	NJDFW - Holland Church Access	46	174	B	One
PA	PFBC - Upper Black Eddy Access	47	168	A	One
NJ	NJDFW - Kingwood Access	48	163	A	One
PA	Tinicum Park	49	163	A	One
NJ	D&R Canal St. Pk. - Byram	50	156	A	One
PA	Lumberville Wing Dam - PA/NJ sides	51	156	A	One
NJ	D&R Canal St. Pk. - Bull's Island Rec. Area	52	155	A	One
PA	Virginia Forrest Rec. Area	53	154	A	One
NJ	D&R Canal St. Pk. - Lambertville	54	149	A	One
NJ	D&R Canal St. Pk. - Firemen's Eddy Access -	55	147	A	One
PA	PFBC - Yardley Access	56	139	A	One
NJ	Old Wharf (off Rt. 29 south of Lalor Street in	57	133	Estuary	Estuary
NJ	Lalor St. Park, Trenton, NJ	58	132	Estuary	Estuary
NJ	Marine Terminal Park (off Lamberton Rd)				
NJ	City of Trenton Waterfront Park (municipal launch)	59	129	Estuary	Estuary
NJ	Bordentown Beach	60	128	Estuary	Estuary
PA	Quaker Penn Boat Launch			Estuary	Estuary
NJ	Curtin Marina	61	118.5	Estuary	Estuary
NJ	Burlington City Boat Ramp (near mouth of	62	118	Estuary	Estuary
PA	Bristol Wharf				
PA	Neshaminy State Park (Street Rd., exit off	63	116	Estuary	Estuary
PA	Delaware River access, county park, Bensalem	64	114	Estuary	Estuary
NJ	Lightning Jacks Marina	65	111	Estuary	Estuary
NJ	Hawk Island Marine (Ran-Del Marina)	66	111	Estuary	Estuary
PA	Linden Ave. Boat Ramp (City of Philadelphia)	67	111	Estuary	Estuary
PA	Pennypack Avenue terminus at the Delaware River	68	109	Estuary	Estuary
PA	Pennypack Park on the Delaware River	69	109	Estuary	Estuary
PA	PFBC - Tacony Access (potentially closed to public)	70	107	Estuary	Estuary
PA	PFBC - Frankford Arsenal Access	71	106	Estuary	Estuary
NJ	NJDEF - Delair Boat Ramp	72	105	Estuary	Estuary
NJ	Pyne Point Marina Services	73	101	Estuary	Estuary
NJ	Gloucester City Marina			Estuary	Estuary
PA	Navy Yard			Estuary	Estuary

State	Site Name	Site ID	River mile	Site Zone	Site Stratum
NJ	Red Bank Battlefield Park			Estuary	Estuary
NJ	River Gate Park	74	92	Estuary	Estuary
PA	Hog Island Road (a.k.a. Ft. Mifflin Rd, behind the Philadelphia airport)	75	90	Estuary	Estuary
PA	Ridley Township Municipal Marina, located on Darby Creek	76	85	Estuary	Estuary
PA	City of Chester Boat Ramp	77	81	Estuary	Estuary
NJ	Bridgeport Boat Yard (on Raccoon Creek)	78	80.5	Estuary	Estuary
DE	Christina River	79	80	Estuary	Estuary
NJ	Penns Grover	80	76	Estuary	Estuary
PA	Shehawken Access	81	0.5	G	Three
PA	Balls Eddy Access	82	4.5	G	Three
NY	Hale Eddy Bridge	83	9.5	G	Three
NY	South Airport access	84	12.5	G	Three
NY	North Airport access	85	13.5	G	Three
NY	Laurel Bank access	86	15.5	G	Three
NY	RT 8 Bridge	87	16.5	G	Three
NY	Peas Eddy	88	6.5	F	Three
NY	RT 17 Rest Area	89	13.5	F	Three
PA	Riverview Park	90	2.5	H	One*
PA	RT 33 Access	91	5	H	One*
PA	Sand Island Access	92	12	H	One*
PA	Canal Park	93	16	H	One*
PA	Fishing Pier at 57th Street	94	4.5	I	Estuary*
PA	Grays Ferry Crescent Fishing Plaza	95	5.5	I	Estuary*
PA	Temple University Boat House	96	10.5	I	Estuary*
PA	Conshohocken Boat Launch	97	20	I	Estuary*
PA	Upper Merion Boathouse Park	98	23	I	Estuary*
DE	7th Street Boat Ramp	99	0	J	Estuary*
DE	Brandywine Park	100	3	J	Estuary*

*Stratum with asterisks will be flown the same time as the adjacent Delaware River Stratum, though both stratum and zones for the tributaries will be analyzed separately from the main stem Delaware River.