

**Weiser, Conrad E LRP**

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**From:** Pamela\_Shellenberger@fws.gov  
**Sent:** Tuesday, August 18, 2009 10:46 AM  
**To:** Weiser, Conrad E LRP  
**Subject:** Re: Upper Ohio Navigation Study & ESA  
**Attachments:** Mussel\_qualified\_AR\_012907.pdf; Scan001.PDF

Conrad,

The comments in our letter of October 24, 2006, remain valid. Please have a qualified mussel surveyor conduct surveys for mussels in project impact areas.

(See attached file: Mussel\_qualified\_AR\_012907.pdf)

This email serves as our official response to Brian Greene's letter dated July 24, 2009.

Thank you,

Pamela Shellenberger  
Fish and Wildlife Biologist  
Endangered Species Program  
U.S. Fish and Wildlife Service  
315 South Allen Street, Suite 322  
State College, PA 16801  
P: 814-234-4090 x241



**DEPARTMENT OF THE ARMY**  
**PITTSBURGH DISTRICT, CORPS OF ENGINEERS**  
**WILLIAM S. MOORHEAD FEDERAL BUILDING**  
**1000 LIBERTY AVENUE**  
**PITTSBURGH, PA 15222-4186**

REPLY TO  
ATTENTION OF

July 24, 2009

Environmental and Cultural Resources Section

Mr. Dave Densmore  
U.S. Fish and Wildlife Service  
315 South Allen Street, Suite 322  
State College, PA 16801-4850

Dear Mr. Densmore:

This office is currently performing the Upper Ohio Navigation Study, Pennsylvania. Under Section 7 of the Endangered Species Act, we request your comments on the presence of endangered or threatened species or their critical habitat within the study area as defined below. Enclosed is a map of the study area.

The purpose of the Upper Ohio River Navigation Study is to develop the best plan for maintaining safe, reliable, efficient, and environmentally sustainable navigation on the upper 40 miles of the Ohio River. The study area extends from the confluence of the Monongahela and Allegheny Rivers at the "Point" in Pittsburgh (Ohio River mile 0.0) to the Pennsylvania/Ohio state line (river mile 40.0). This river reach includes the three uppermost navigation structures on the Ohio River: Emsworth, Dashields and Montgomery Locks and Dams, located 6.2, 13.3 and 31.7 river miles, respectively, below the "Point" in Pittsburgh.

For study purposes related to this request, the potential area of effect includes the narrow river corridor to the top of the riverbanks and the limited federal landholdings at each of the three locks and dams. Due to the narrow and linear nature of the study area, we did not perform a PNDI search prior to this request. Our study will also consider potential future work areas, but these will be the subject of a separate request by a contractor assisting with the study. At this stage of the study, any potential disposal requirements will be designated for existing commercial sites rather than proposing development of a new site.

Potential impacts being considered in the study area at present will be limited to improvements to the existing facilities at their present locations, and any sites within the pools that may be proposed for ecosystem restoration projects. No alternatives involving pool elevation changes are being considered in any detailed alternative formulation.

We would appreciate receiving your comments within 30 days of the date of this letter. If you have any questions on this matter, please contact Mr. Conrad Weiser of my staff at 412-395-7220 or by e-mail at [conrad.e.weiser@usace.army.mil](mailto:conrad.e.weiser@usace.army.mil).

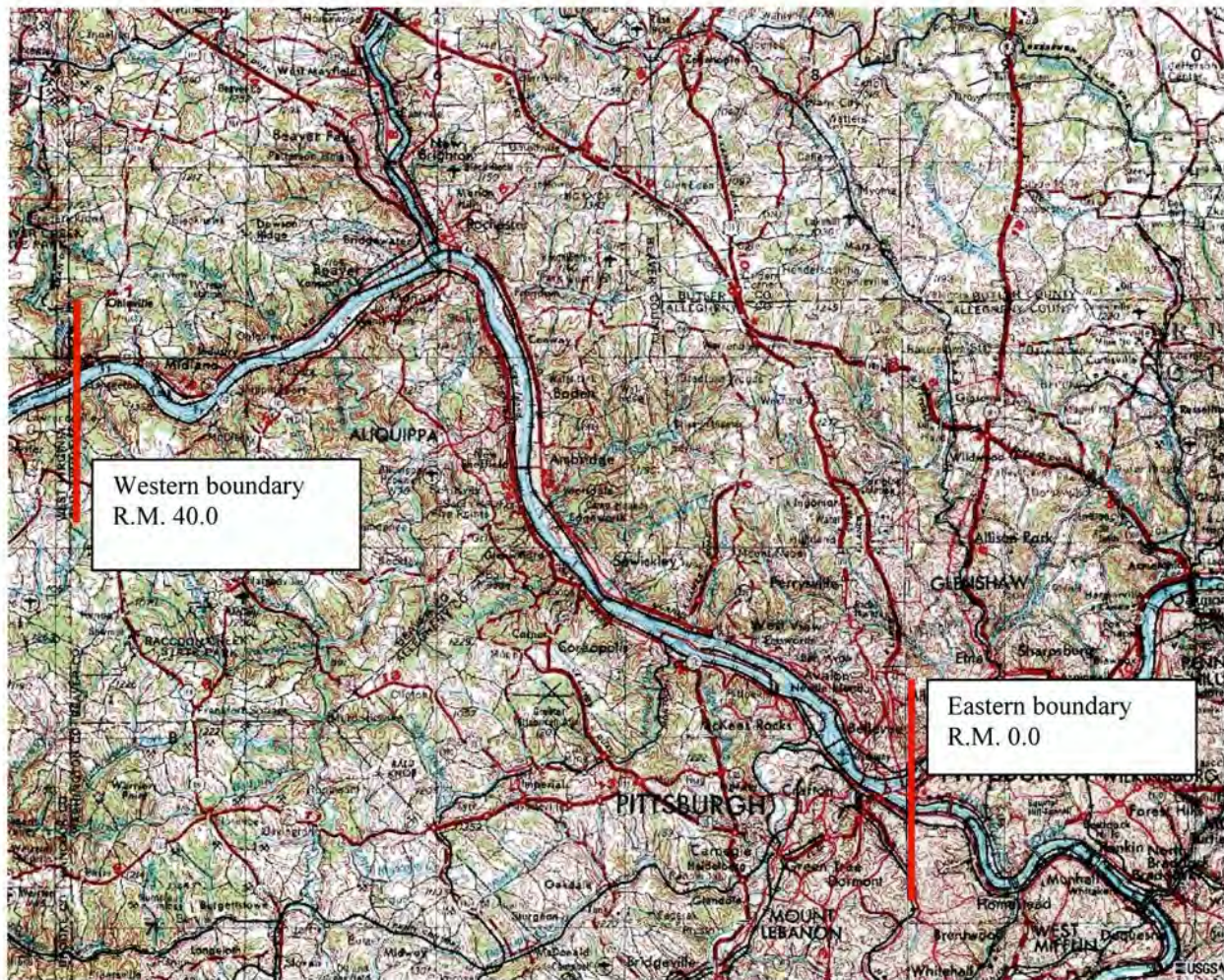
Sincerely,

— signed —

Brian H. Greene, Ph.D.  
Chief, Environmental and Cultural Resources  
Section

Enclosure





Upper Ohio Navigation Study, Pennsylvania, study area: bank to bank between r.m. 0.0 – 40.0.

List of involved USGS 7.5 min quadrangles:

PITTSBURGH WEST  
EMSWORTH  
AMBRIDGE  
BADEN  
HOOKSTOWN  
BEAVER  
MIDLAND

Enclosure





# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Pennsylvania Field Office  
315 South Allen Street, Suite 322  
State College, Pennsylvania 16801-4850

October 24, 2006

Colonel Stephen L. Hill  
(ATTN: Conrad Weiser)  
U.S. Army Corps of Engineers  
2200 William S. Moorehead Federal Building  
1000 Liberty Ave.  
Pittsburgh, PA 15222-4186

Dear Colonel Hill:

This responds to the Notice of Intent to Prepare an Environmental Impact Statement (EIS) for the Upper Ohio Navigation Study, as published in the *Federal Register* (Vol. 71, No. 189, September 29, 2006). The study will evaluate alternatives for maintaining commercial navigation on the upper 40 miles of the Ohio River in Allegheny and Beaver Counties, Pennsylvania. Navigation is currently provided by the Emsworth, Dashields, and Montgomery locks and dams.

The following comments are provided pursuant to the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of federally endangered and threatened species, and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) to ensure the protection of fish and wildlife resources.

## Federally Listed Candidate, Threatened, and Endangered Species

The proposed project area is within the range of seven freshwater mussel species that are federally listed as endangered: clubshell (*Pleurobema clava*), fanshell (*Cyprogenia stegaria*), northern riffleshell (*Epioblasma torulosa rangiana*), orange-foot pimpleback (*Plethobasis cooperianus*), pink mucket (*Lampsilis abrupta*), ring-pink (*Obovaria retusa*), and rough pigtoe (*Pleurobema plenum*). The pink mucket, fanshell, and orange-foot pimpleback are found in Ohio River navigation pools downstream of the proposed project area, and the rough pigtoe, ring-pink, northern riffleshell, and clubshell are known to occur in free-flowing and impounded navigation portions of tributaries within the Ohio River basin navigation system.

Two additional mussel species, the rayed bean (*Villosa fabalis*) and sheepnose (*Plethobasus cyphus*), are candidates for federal listing as endangered or threatened. Candidate species are species for which the Service currently has substantial information on file to support the



appropriateness of proposing to list as threatened or endangered. Candidate species are known to be facing various threats, and have usually suffered substantial population declines and/or habitat loss. Although these species receive no regulatory protection under the ESA, the Fish and Wildlife Service strongly encourages federal agencies and other planners to consider these species when planning and implementing their projects.

Although several of the above species have not been documented in the proposed project area in recent years, no comprehensive surveys have been conducted that are likely to locate them. Spot surveys, conducted in response to permitting needs in specific river reaches, are likely to overlook uncommon species, or species that are abundant only in localized areas. Although some mussel species have been assumed to be extirpated, this conclusion is unsupported because it is based on a lack of survey information, rather than negative survey results. For example, between 1999 and 2005, six or more mussel species have been documented in sections of the upper Ohio River basin where these species had been assumed to have been extirpated. These species include mussels that are listed as endangered or are of special concern.

Because there is limited information about listed species in the Ohio River, we recommend that mussel surveys be completed by a biologist experienced in finding and identifying mussels in large river habitats. The survey should follow the Ohio River Protocol, and the results should be included as part of the EIS description of the affected environment of the project area. This information should then be used in the EIS analysis of the environmental consequences of the alternatives, and in the preparation of the Biological Assessment (BA) necessary to complete ESA section 7 consultation with the Service.

The proposed project is also within the range of the federally listed, threatened bald eagle (*Haliaeetus leucocephalus*) and endangered Indiana bat (*Myotis sodalis*). The EIS and BA should address potential impacts to these species that might be caused by the alternatives under consideration.

#### Other Fish and Wildlife Resources

The Ohio River has recovered substantially from previous water quality degradation due to mining and industrial development, and now supports diverse aquatic life. We recommend that the Corps assess aquatic life data gaps, and conduct biological surveys or studies as appropriate, to develop a current and complete inventory of aquatic species and habitats in the project area. This baseline information is necessary to conduct an adequate evaluation of the environmental consequences of each proposed alternative.

Two islands belonging to the Service's Ohio River Island National Wildlife Refuge (Georgetown and Phillis Islands) in the New Cumberland pool have been affected by erosion from dredging, high flows, and vessel wakes. The EIS should address the consequences of the various proposed alternatives on this situation (*e.g.*, whether increased traffic on the river as a result of the improved navigation system could further damage these islands). In addition, if demolition of the old locks and dams is proposed, we further recommend that the EIS address the possible use of suitable demolition material to stabilize and/or increase the size of these islands as part of mitigation and ecosystem restoration measures.

Other ecosystem restoration measures the Corps may want to evaluate include restoring and protecting shallow-water habitat and riverbed substrates, reducing non-point source discharges, creating habitat refugia to serve as anchors for biodiversity, managing for native species assemblages, and improving the connectivity of habitats (river to tributaries, river to floodplain, pool to pool, etc.).

Thank you for the opportunity to comment. If you have any questions, please contact Richard McCoy of my staff at 814-234-4090, ext. 232.

Sincerely,

A handwritten signature in black ink, appearing to read "David Densmore", followed by a long horizontal line extending to the right.

David Densmore  
Supervisor



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Pennsylvania Field Office  
315 South Allen Street, Suite 322  
State College, Pennsylvania 16801-4850

February 14, 2012

Colonel William H. Graham  
U.S. Army Corps of Engineers  
William S. Moorhead Federal Building  
1000 Liberty Avenue  
Pittsburgh, PA 15222

Dear Colonel Graham,

On February 14, 2012, the U.S. Fish and Wildlife Service published a rule in the Federal Register listing two freshwater mussels, the rayed bean (*Villosa fabalis*) and snuffbox (*Epioblasma triquetra*), as endangered under the U.S. Endangered Species Act (ESA) of 1973.

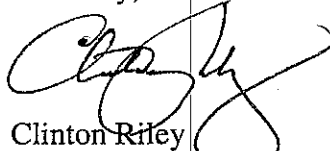
The rayed bean has declined significantly range-wide and is now known from only 31 streams and Lake Erie (down from 115), a 73 percent decline. The rayed bean is currently found in rivers in Indiana, Michigan, New York, Ohio, Pennsylvania, Tennessee, and West Virginia, as well as Ontario, Canada. In Pennsylvania the rayed bean is found in the following rivers: Allegheny River (Armstrong, Clarion, Forest, Venango, and Warren Counties); Cussewago Creek (Crawford County); French Creek (Crawford, Erie, Mercer, and Venango Counties); LeBoeuf Creek (Erie County); Muddy Creek (Crawford County).

The snuffbox is currently known from only 79 streams (down from 210 historically), representing a 62 percent decline in occupied streams. Currently, the snuffbox occurs in Alabama, Arkansas, Illinois, Indiana, Kentucky, Michigan, Minnesota, Missouri, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, Wisconsin, and Ontario, Canada. These populations, with few exceptions, are highly fragmented and restricted to short reaches. In Pennsylvania the snuffbox is found in the following rivers: Allegheny River (Armstrong, Clarion, and Venango Counties), Conneaut Outlet (Crawford County); Cussewago Creek (Crawford County); Dunkard Creek (Greene County); French Creek (Crawford, Erie, Mercer, Venango County); LeBoeuf Creek (Erie County); Little Mahoning Creek (Indiana County); Muddy Creek (Crawford County); Shenango and Little Shenango River (Mercer County); West Branch French Creek (Erie County).



For additional information about the rayed bean and snuffbox mussels, contact Robert Anderson,  
U.S. Fish and Wildlife Service, 315 South Allen Street, State College, PA 16801 (814) 234-4090  
ext. 223, Robert\_M\_Anderson@fws.gov.

Sincerely,



Clinton Riley  
Field Office Supervisor

Enclosure

**Federally Listed, Proposed, and Candidate Species in Pennsylvania**  
(revised February 14, 2012)

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status<sup>1</sup></u>	<u>Distribution (Counties and/or Watersheds)</u>
<b>MAMMALS</b>			
Indiana bat	<i>Myotis sodalis</i>	E	<u>Hibernacula</u> : Armstrong, Beaver, Blair, Centre, Fayette, Huntingdon, Lawrence, Luzerne, Mifflin and Somerset Co. <u>Maternity Colonies &amp; Male Sites</u> : Adams, Armstrong, Bedford, Berks, Blair, Greene, Pike, Washington, and York Counties. Potential winter habitat state-wide in caves or abandoned mines. Potential summer habitat state-wide in forests or wooded areas.
<b>BIRDS</b>			
Piping plover	<i>Charadrius melodus</i>	E	Designated critical habitat on Presque Isle (Erie Co.). Migratory. No nesting in PA since 1950s, but recent colonization attempts at Presque Isle
<b>REPTILES</b>			
Bog turtle	<i>Clemmys (Glyptemys) muhlenbergii</i>	T	Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York Co.  <i>Historically found in Crawford, Mercer and Philadelphia Co.</i>
Eastern massasauga rattlesnake	<i>Sistrurus catenatus catenatus</i>	C	Butler, Crawford, Mercer and Venango Co.  <i>Historically found in Allegheny and Lawrence Co.</i>
<b>MUSSELS</b>			
Clubshell	<i>Pleurobema clava</i>	E	Allegheny River (Armstrong, Clarion, Forest, Venango, Warren); Conneaut Outlet (Crawford); Conneauttee Creek (Crawford); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Muddy Creek (Crawford); Shenango River (Mercer)  <i>Has not been found recently in 13 streams of historical occurrence in Butler, Beaver, Fayette, Greene, Indiana, Lawrence, and Westmoreland Co.</i>
Dwarf wedgemussel	<i>Alasmodonta heterodon</i>	E	Delaware River (Monroe, Northampton, Pike, Wayne Co.).  <i>Has not been found recently in streams of historical occurrence in the Delaware River watershed (Bucks, Carbon, Chester, Philadelphia) or Susquehanna River watershed (Lancaster)</i>
Northern riffleshell	<i>Epioblasma torulosa rangiana</i>	E	Allegheny River (Armstrong, Clarion, Forest, Venango, Warren); Conewango Creek (Warren); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Muddy Creek (Crawford)  <i>Has not been found recently in streams of historical occurrence, including Shenango River (Lawrence)</i>



<u>Common Name</u>	<u>Scientific Name</u>	<u>Status<sup>1</sup></u>	<u>Distribution (Counties and/or Watersheds)</u>
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	C	Allegheny River (Armstrong, Clarion, Forest, Venango, Warren); Conneauttee Creek (Venango); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Muddy Creek (Crawford); Shenango River (Crawford, Mercer)
Rayed bean	<i>Villosa fabalis</i>	E	Allegheny River (Armstrong, Clarion, Forest, Venango, Warren); Cussewago Creek (Crawford); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Muddy Creek (Crawford)  <i>Potentially extant in Shenango River (Crawford, Mercer) and Woodcock Creek (Venango)</i>  <i>Has not been found recently in 5 streams of historical occurrence in Armstrong, Lawrence, Mercer and Warren Co.</i>
Sheepnose	<i>Plethobasus cyphus</i>	PE	Allegheny River (Forest and Venango Co.).  <i>Has not been found recently in streams of historical occurrence, including: Allegheny River (Armstrong); Beaver River (Lawrence); Monongahela River (Washington); Ohio River (Allegheny and Beaver)</i>
Snuffbox	<i>Epioblasma triquetra</i>	E	Allegheny River (Armstrong, Clarion, Venango), Conneaut Outlet (Crawford); Cussewago Creek (Crawford); Dunkard Creek (Greene); French Creek (Crawford, Erie, Mercer, Venango); LeBoeuf Creek (Erie); Little Mahoning Creek (Indiana); Muddy Creek (Crawford); Shenango and Little Shenango River (Mercer); West Branch French Creek (Erie)
<b>FISH</b>			
Atlantic sturgeon <sup>2</sup>	<i>Acipenser oxyrinchus oxyrinchus</i>	E	Delaware River (New York Bight Distinct Population Segment)
Shortnose sturgeon <sup>2</sup>	<i>Acipenser brevirostrum</i>	E	Delaware River and other Atlantic coastal waters
<b>PLANTS</b>			
Northeastern bulrush	<i>Scirpus ancistrochaetus</i>	E	Adams, Bedford, Blair, Cambria, Carbon, Centre, Clinton, Columbia, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Lackawanna, Lehigh, Lycoming, Mifflin, Monroe, Perry, Snyder, Tioga, and Union Co.  <i>Historically found in Northampton Co.</i>
Small-whorled pogonia	<i>Isotria medeoloides</i>	T	Centre, Chester and Venango Co.  <i>Historically found in Berks, Greene, Monroe, Montgomery and Philadelphia Co.</i>

<sup>1</sup> E = Endangered; T = Threatened; PE = Proposed for listing as Endangered; C = Candidate

<sup>2</sup> Atlantic sturgeon and shortnose sturgeon are under the jurisdiction of the National Marine Fisheries Service



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Pennsylvania Field Office  
110 Radnor Road, Suite 101  
State College, Pennsylvania 16801-4850



March 18, 2015

Deborah Campbell  
U.S. Army Corps of Engineers  
Pittsburgh District  
William S. Moorhead Federal Building  
ATTN: Conrad Wiser  
1000 Liberty Avenue  
Pittsburgh, PA 15222-4186

RE: USFWS Project #2009-1403

Dear Ms. Campbell:

Thank you for your letter dated June 30, 2014, which requests information about federally listed and proposed endangered and threatened species within the area affected by the proposed Upper Ohio Navigation Study located on the Ohio River, and extending from the Monongahela River confluence to the Pennsylvania/Ohio State line (40 river miles). The Army Corps of Engineers (Corps) proposes to develop a plan for "maintaining safe, reliable, efficient, and environmentally sustainable navigation on the upper 40 miles of the Ohio River". The following comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) to ensure the protection of endangered and threatened species. We have previously commented on this project by letters dated October 24, 2006, February 14, 2012, and May 30, 2014, and by email dated August 18, 2009.

### Federally Listed and Proposed Species

The Ohio River is inhabited by multiple federally-listed, endangered mussel species, including the clubshell (*Pleurobema clava*), northern riffleshell (*Epioblasma torulosa rangiana*), rayed bean (*Villosa fabalis*), fanshell (*Cyprogenia stegaria*), orange-foot pimpleback (*Plethobasis cooperianus*), pink mucket (*Lampsilis abrupta*), ring-pink (*Obovaria retusa*), rough pigtoe (*Pleurobema plenum*), snuffbox (*Epioblasma triquetra*), sheepnose (*Plethobasus cyphus*) or rabbitsfoot (*Quadrula cylindrica cylindrica*) (a mussel species that is federally listed as threatened). The pink mucket, fanshell, rough pigtoe, and orange-foot pimpleback are found in Ohio River navigation pools, as well as in free-flowing and impounded navigation portions of tributaries within the navigation system.

Although several of the above species have not been recently documented in the proposed project area, no comprehensive surveys have been conducted that are likely to locate them. Spot



surveys, conducted in response to permitting needs in specific river reaches, are likely to overlook uncommon species and species that are abundant only in localized areas. Although some mussel species have been assumed to be extirpated, this conclusion is unsupported because it is based on a lack of survey information, rather than negative survey results. For example, between 1999 and 2005, six or more mussel species were documented in sections of the upper Ohio River basin where these species had previously been assumed extirpated. These species include mussels that are listed as endangered, or are of special concern.

Because there is limited information about listed species in the Ohio River, and the potential for adverse direct and indirect effects on listed mussels, we recommend that mussel surveys for federally-listed mussels be completed downstream of the existing lock and dams, within any proposed areas of disturbance. Surveys should be completed by a qualified surveyor (see enclosed list) experienced in finding and identifying mussels in large river habitats, following the submission of a site-specific mussel survey proposal to the Fish and Wildlife Service. The survey should follow the Ohio River Protocol, and survey results should be submitted to the Service for review and concurrence. If endangered mussels are found during the survey, further consultation with the Service will be necessary, including consideration of alternatives to avoid and minimize adverse effects.

Survey results should be included as part of the Final Feasibility Report and Integrated Environmental Impact Statement (FFR/EIS) description of the affected environment of the project area. This information should then be used in the FFR/EIS analysis of the environmental consequences of the alternatives, and in the preparation of the Biological Assessment (BA) necessary to complete ESA section 7 consultation with the Service.

#### Bald and Golden Eagle Protection Act

The bald eagle has been removed from the federal *List of Endangered and Threatened Wildlife*, and is, therefore, no longer protected under the Endangered Species Act. However, it continues to be protected under the Bald and Golden Eagle Protection Act (Eagle Act). The Eagle Act protects bald eagles by prohibiting killing, selling, disturbing, or otherwise harming eagles, their nests or eggs. "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle; 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

During the breeding season, bald eagles are sensitive to a variety of human activities. In general, the *National Bald Eagle Management Guidelines (Guidelines)* recommend that activities should be kept as far away from nest trees as possible; loud and disruptive activities should be conducted when eagles are not nesting; and activity between the nest and the nearest foraging area should be minimized.

Bald eagles are known to nest in the vicinity of the project area, with at least two nests being located within the project River reach. Consequently, we recommend that you evaluate the project type, size, location and layout in light of the *Guidelines* to determine whether or not bald

eagles might be disturbed as a direct or indirect result of this project. For instance, the *Guidelines* recommend avoiding blasting and other activities that produce extremely loud noises within 1/2 mile of active nests, unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area. If it appears that disturbance may occur, we recommend that you consider modifying your project consistent with the *Guidelines* or pursue a disturbance permit. These guidelines, as well as general eagle information, are available at <http://www.fws.gov/northeast/ecologicalservices/eagle.html>. For more information regarding eagle permits, please contact Scott Frickey, Regional Bald and Golden Eagle Coordinator at [Scott\\_Frickey@fws.gov](mailto:Scott_Frickey@fws.gov) or 413 253-8577.

### Other Fish and Wildlife Resources

Our October 24, 2006, letter raised a number of concerns with this project. Except where noted below, our concerns are unresolved. A brief listing of concerns (past and present) are as follows:

1. *Dam removal vs. "two-for-three" dam reconstruction proposal.* The Service generally supports the removal of the Ohio River lock and dam systems if they are removed in manner that minimizes erosion and sedimentation and is followed by appropriate habitat restoration activities (streambank stabilization, revegetation, and instream habitat enhancements) and monitoring. However, The Service cannot support the proposed two-for-three dam "consolidation" proposal (similar to what was done on the Monongahela River), as the proposed activity would deepen Ohio River pools, reduce existing prime mussel habitat and shallow-water riverine habitat, substantially alter channel morphology, and favor habitat generalists rather than habitat specialists associated with river benthos (*i.e.*, federally listed mussels, mussel host fish, macroinvertebrates, and resident fish).
2. *Aquatic life data gaps.* The Ohio River is recovering from previous water quality degradation and now supports a diverse assemblage of aquatic life. We recommend that the Corps assess aquatic life data gaps and conduct biological surveys or studies, as appropriate, to develop a current and complete inventory of aquatic species and habitats in the project area and develop baseline information for this River reach.
3. *Ohio River Islands National Wildlife Refuge.* The Service's Ohio River Island National Wildlife Refuge (Georgetown and Phyllis Islands) in the New Cumberland pool have been affected by erosion from dredging, high flows, and vessel wakes. The FRR/EIS should address the consequences of the various proposed alternatives on these islands (*e.g.*, whether increased traffic on the river as a result of the improved navigation system could further damage these islands). In addition, if demolition of the old locks and dams is proposed, we further recommend that the FRR/EIS address the possible use of suitable, non-contaminated demolition material to stabilize and/or increase the size of these islands as part of mitigation and ecosystem restoration measures.
4. *Riverine habitat.* Corps should evaluate the feasibility of restoring and protecting shallow-water habitat and riverbed substrates, reducing non-point source discharges, creating habitat refugia to serve as anchors for biodiversity, managing for native species assemblages, and improving the connectivity of habitats (river to tributaries, river to floodplain, pool to pool, etc.).



5. *Up- and downstream fish migration.* The existing dams already serve as barriers to upstream and downstream fish migration. However, many of the fish found in the Ohio River (resident fish and potential migratory fish) are subject to seasonal, temporal, and diurnal movements, mostly through the existing lock systems. The Corps should explore alternatives to effectively pass fish downstream around the dams. This issue would become even more critical, should the Corps resolve to withdraw operation and maintenance support of the lock system in the future. Fish passage studies should include a literature search of available passage designs for the species of concern, as well as information on the relative effectiveness of each design. The Corps should investigate existing facilities at other dams, paying careful attention to attraction flows, guidance mechanisms, and velocities. Whether providing a new fish passage facility, restoring the lock and dam system to operational, or eliminating said locks and dams the Corps should design their project in a manner that will not create a bottleneck and delay up- or downstream fish movements or expose fish to excessive predation.

The Corps should collect information on the passage requirements of the fish species found in the Ohio River. This information should include swimming speeds (including burst speeds), where in the water column these fish are likely to be moving, different forms of attractants or repellents (*e.g.*, sound, light, etc.) that may help guide each species, and an evaluation of fish species likely to use a passage facility.

The Corps should also investigate alternatives to the current lock system for moving fish species upstream, above the dams, if the Corps withdraws operation and maintenance support for the lock systems (*i.e.*, different types of fish ladders, lifts, natural channels, etc.,). Investigations should include a literature search of available passage designs for the species of concern, as well as information on the relative effectiveness of each design.

6. *Sediments and dam removal/reconstruction.* Given the long period of time that the lock and dams have been in place, we have concerns about any sediments that may have accumulated both up- and downstream of the lock and dam systems, as well as contamination they might contain (*i.e.*, arsenic, cobalt, , cadmium, manganese, magnesium, antimony, etc.). These materials may be mobilized during dam removal or reconstruction activities. Consequently, project proponents should analyze sediments for contaminants and, if found, the sediments should be removed to an off-site, approved disposal area, disposed of properly, and not reused in the project area.

Dam removal or dam reconstruction (the two-for-three dam proposal) has the potential to produce sediment releases, which could smother downstream mussel beds and fish habitat. To help inform the design and implementation of a future dam removal project that could affect mussel populations, we recommend that the Corps develop a monitoring plan and implement it before, during, and after the dam removal/ reconstruction project. The monitoring plan should include: (1) turbidity monitoring; (2) channel morphology characterization, including post-construction erosion and sedimentation rates, bank stability, instream habitat, scour and deposition zones, and substrate composition; and (3) post-construction mussel population study (to be developed in conjunction with the Service). A monitoring plan and its results should be submitted to the Service for evaluation.

7. *Water and sediment quality.* The Corps should evaluate baseline water and sediment quality to allow a proper determination of project affects (both beneficial and adverse). These studies should include recording of water and sediment parameters necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages of aquatic life (including temperature, dissolved oxygen, pH, hardness, ammonia, heavy metals, alkalinity, chloride, nitrates, turbidity, and conductivity). Studies should compare water quality to State water quality standards. This information should be used to document baseline water quality conditions and to determine potential impacts from construction and operation of the project.

#### Secondary, Indirect, and Cumulative Impacts

There are likely secondary, indirect or cumulative adverse environmental effects beyond those associated with direct project impacts, such as, but not limited to, interruption of the flow regime in the Ohio River; stormwater runoff into streams (leading to water quality degradation); introduction of petroleum products, heavy metals, or fines into the environment (via construction, staging areas, impervious surfaces where previously there were none); access road maintenance, facility maintenance and facility operation; operations from any subsequent development; limited regrowth of vegetation near the dams and access roads; post construction erosion and sedimentation; and erosion of George and Phyllis Islands (due to altered river hydraulics, flow, or pattern). All effects should be identified, quantified, and included in the Corps' FFR/EIS.

#### Single and Complete Project

All components of this project, including waste and borrow sites, as well as access roads, infrastructure routes, laydown areas, and stockpile areas should be evaluated under the same FFR/EIS, as there may be additional, associated, environmental impacts (including adverse effects on threatened and endangered species upstream of the project (increased backwater effect), resident fish movements, mussel host species, wetlands, streams, riverine habitat, riparian buffers, migratory birds, and other fish and wildlife). It is difficult for reviewers to assess the all adverse effects of a project (direct, secondary, or cumulative impacts) without a complete disclosure of all interrelated projects proposed for the same area; consequently, a full evaluation of potential effects requires that all such projects be considered especially with reference to cumulative, secondary, and indirect impacts.

*To avoid potential delays in reviewing your project, please use the above-referenced USFWS project tracking number in any future correspondence regarding this project.*

If you have any questions regarding this matter, please contact Jennifer Kagel of my staff at 814-234-4090.

Sincerely,



Lora L. Zimmerman  
Field Office Supervisor





**U.S. FISH AND WILDLIFE SERVICE  
& PENNSYLVANIA FISH AND BOAT COMMISSION**  
*(Revised June 24, 2010)*

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**QUALIFIED MUSSEL SURVEYORS**

The following list includes persons known by the U.S. Fish and Wildlife Service (USFWS) and Pennsylvania Fish and Boat Commission (PFBC) to have the skills and experience to search for and successfully find freshwater mussels and their habitat. Any individuals handling or conducting surveys for endangered mussels must first obtain from the Pennsylvania Fish and Boat Commission a Scientific Collector's Permit, and a Special Permit to survey for endangered and threatened species pursuant to 58 PA Code 75.4. All permitted collector's encounters with endangered mussels must be reported in writing to the PFBC and USFWS within 48 hours.

Contracted mussel surveys and research will be overseen by a qualified surveyor, who will be present in the field at all times during the investigation. Qualified surveyors are the individuals who act in the capacity of Principal Investigator (PI), having in-field oversight responsibility for surveys, mussel identification, and safe handling procedures. The qualified mussel surveyor is the one responsible for correctly identifying mussels to species. The qualified mussel surveyor is also the one responsible for carrying out the actual in-stream searches (surveys) for mussels and the one responsible for conducting in-stream quality-assurance checks on at least 10% of the survey area searched by assistants who are not qualified mussel surveyors. In addition, qualified mussel surveyors will ensure 1) they and their assistants have the appropriate permits to conduct mussel survey work, including work with endangered mussels; 2) surveys are carried out in accordance with USFWS-approved survey protocols; and 3) reports are accurate and complete and submitted to the appropriate agencies. A failure to carry out the above responsibilities may result in one's removal from the list of qualified surveyors due to the inherent risks to endangered mussels.

This information is not to be construed as an endorsement of individuals or firms by the USFWS, PFBC, or any of their employees. Persons not on this list, but who have documented experience in conducting scientific studies of, or successful searches for, freshwater mussels and their habitat may submit their qualifications to the USFWS and PFBC for review. The submission must include documentation that the requestor has experience successfully locating and identifying freshwater mussel habitats, and successfully locating and identifying species in their river and stream habitat. The submission must also include documentation of the requestor field experience with endangered mussel species in the river drainage in which he/she intends to conduct survey work. Additions to and deletions from this list are at the sole discretion of the USFWS and PFBC. This list is subject to revision at any time without prior notice.

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**Allegheny and Ohio River Drainage\***

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- Individual has indicated that they are certified SCUBA diver, and willing to conduct surveys that require SCUBA.