

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Suite 322
315 South Allen Street
State College, Pennsylvania 16801

January 27, 1992

Colonel James R. VanEpps
District Engineer
U.S. Army Corps of Engineers
502 Eighth Street
Huntington, West Virginia 25701

Dear Colonel VanEpps:

This responds to your letter dated July 24, 1991, requesting formal consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended (Act). This constitutes the Fish and Wildlife Service's Biological Opinion on the Corps of Engineer's Gallipolis Locks and Dam Replacement Project on the Ohio River at rivermile 279.2. The project consists of construction of double locks in a canal that would bypass the existing lock chambers on the West Virginia side of the river.

The Corps has determined that impacts to the endangered pink mucket pearly mussel, Lampsilis abrupta from the new locks are inconsequential and immeasurable. The Corps recognizes the potential threats to L. abrupta from spill related pollution incidents and vessel movement associated with barge floating areas and terminals. The Service believes that the potential adverse impacts will increase with accelerated levels of barge movement and, therefore, "may affect" L. abrupta.

Background

Informal consultation on the project began on April 13, 1981, with the District's request for information concerning endangered and threatened species which could be affected by proposed projects in the Huntington District. The Service responded by letter dated May 14, 1981. Except for possible transient species, no federally listed or proposed species were identified for the project vicinity, (Mason and Cabell Counties). No information request or response from the Service was specific to the Gallipolis project. In 1987 and 1990 the Service discovered L. abrupta occurred at two locations in the Ohio River between rivermiles 283 and 292 below the Gallipolis project. The Service requested, by letter dated September 28, 1987, that informal consultation pursuant to Section 7 of the Act be reinitiated. A Biological Assessment (BA), dated September 27, 1990, was submitted to the Service. Based on the "may affect" results of the BA the Service requested that the Corps initiate formal consultation on the project. On July 24, 1991, the Corps concurred and requested formal consultation.

The authorized plan consists of construction of double locks, measuring 1,200 by 110 feet and 600 by 110 feet, in a canal that would bypass the existing project. The canal will be about 1.7 miles in length along its centerline, with a maximum bottom width of 500 feet in the upper entrance. The BA predicted that the number of tows would approximately double over the next 50 years with the new lock system, to 13-17 thousand tows annually under the new locks.

Pink Mucket Pearly Mussel. *Lampsilis abrupta*

Distribution

Historical records of *L. abrupta* indicate that it was mostly an Ohio River Basin species, found mainly in the Tennessee, Cumberland, and Ohio River drainages, with occasional records from the Mississippi. *L. abrupta* originally occurred in 25 river systems but was never collected in large numbers from any site.

Presently, *L. abrupta* is known from 16 river systems, representing three major geographic locations. The largest populations are found in the Tennessee River, Cumberland River, Osage River, and the Meramec River. *L. abrupta* is presently known from two sites downstream of the project between Ohio River rivermiles 283 and 292. Another site at rivermile 179.5 was located in 1991. These three sites are represented by four individuals: three females and one male.

Ecology and Life History

L. abrupta inhabits medium to large rivers in substrates ranging from silt to boulders. The preferred habitat is a mixture of sand, gravel, and cobble substrates swept by moderate to fast currents in depths up to 24 feet. *L. abrupta* requires well-aerated water having high dissolved oxygen and low carbon dioxide concentrations. Habitat at the occupied sites in the Ohio River are typical for the species.

The life history of *L. abrupta*, is thought to be similar to other native mussels. Males produce sperm which is discharged into the water column and dispersed by currents. Females downstream intake the sperm during feeding and respiration. Fertilization occurs within the posterior section of the outer which we modified as brood pouches. *L. abrupta* is a long-term brooder, i.e., eggs are fertilized in late summer to early fall and the embryos (glochidium) develop over winter and are discharged in late spring to early summer. The glochidium then attach (encyst) to the gill filaments or fins of a fish where they develop into a juvenile mussel. The sauger, *Stizostedion canadense* is thought to be a prime possibility as the host fish species.

Reason for Decline

Possibly the most important factor contributing to the decline of *L. abrupta* and freshwater mussels in the Ohio River Basin is the alteration and destruction of habitat for flood control, navigation, and hydropower and water quality degradation by domestic and industrial pollution.

Siltation has severely affected freshwater mussels. The greatest diversity and abundance of mussels are usually associated with clean-swept sand and gravel substrates. Increased silt-transport from surface mining, coal washing, dredging, farming, logging, and road construction are some of the major sources of sedimentation. Chronic increases in turbidity and suspended sediments decrease the depth and amount of light penetration, affects primary productivity, increases water temperature, irritates or causes clogging of gills, and results in a blanket of silt on the substrate. Siltation affects mussels indirectly by affecting the fish host populations, by smothering fish eggs or larvae, reducing food availability or filling interstitial spaces in gravel and rubble substrate, thus eliminating spawning and habitat critical to the survival of young fish. Mussels may be directly affected by siltation through smothering.

Project Impacts

The Service is not concerned with the direct construction impacts of the project on L. abrupta, but rather the indirect physical and chemical impacts associated with increased barge traffic (reference our letter of July 24, 1989).

The major mussel beds below Gallipolis Locks and Dam are not associated with the navigation channel or the shallow nearshore areas or bars. The mussel beds are associated with the clean-swept sand and gravel substrate between the navigation channel and the shallow zone. This zone can vary in depths from 12 to 24 feet and is usually aligned with the thalweg. However, vessels frequently deviate from the sailing line and pass over or near these mussel beds. Propeller scour, resulting in increased turbidity and resuspended sediments, can adversely affect the mussel bed and the endangered species. Feeding and respiration time can be shortened; reproduction success reduced by affecting sperm transfer and glochidia emission and attachment; and, suitability of the habitat reduced to attract the host fish. This may have severe impacts during low water, especially in the growing or spawning season. These impacts could be exacerbated as the frequency of occurrence increases due to increased tow traffic.

Additional tow traffic will increase the chance of toxic spill events which threaten all aquatic life including freshwater mussels.

Biological opinion

The Service concurs with the Corps that the impacts of incremental increases in tow traffic attributable to the new locks at Gallipolis are difficult to measure. However, we disagree that they are inconsequential. Based on available information, it is our biological opinion that L. abrupta will be adversely impacted by the project, but the action will not likely jeopardize the continued existence of the species. An incidental take statement, along with measures which must be taken to minimize the incidental take, are specified in Appendix A.

Conservation Recommendations

Conservation measures are discretionary actions that the Corps could take to promote the recovery of the species. They are consistent with the scope, magnitude, and duration of the federal actions and are not intended to broaden the agency's authority.

The Service recommends the following measures be implemented to assist in conservation of L. abrupta:

Avoidance or reduction of impacts of tow passage over the major mussel beds below Gallipolis Locks and Dam could be accomplished between rivermiles 283 and 293. This could be accomplished by (1) marking the beds with navigation buoys; and (2) educating towboat operators as to the locations to these sensitive areas and soliciting their cooperation to avoid the mussel beds. The latter could be accomplished by direct contact with the towing companies or through the "ride share" program extended to Service biologists. The "ride share" program was proposed by some of the major towing companies at the annual Ohio River Ice Committee meeting. A similar program, "Biologist Onboard," is conducted on the Mississippi River with the Service's Rock Island, Illinois, field office. A summary report of their program is enclosed.

In addition to impacts of tow passage on L. abrupta, there are increased chances of toxic spills which could adversely affect the aquatic community and the endangered mussel. The Service requests that each vessel carrying toxic chemicals have an effective accident preventive spill program and an adequate spill response plan when an accident occurs.

The Service looks forward to discussing these conservation measures which we believe will help conserve, maintain, and enhance endangered species habitat below Gallipolis Locks and Dam.

This precludes the need for further action on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. Should this project be modified or new information becomes available, consultation should be reinitiated.

Should any of the "Level of Take" criteria be reached in any of the mussel beds in the Ohio River, especially those below Gallipolis Locks and Dam between rivermiles 283 and 293, the Service will determine whether or not additional action is necessary. Such action may include implementation of additional measures to minimize harm to the species and/or reinitiation of consultation.

Please direct any specific questions regarding this correspondence to Endangered Species Staff Specialist, Bill Tolin, in our Elkins Office (304-636-6586).

Sincerely,

Charles J. Kulp
Supervisor

Enclosures

References

- U.S. Army Corps of Engineers. 1990. Biological assessment for the Pink mucket pearly mussel, Lampsilis abrupta. Huntington, West Virginia. 11 pp.
- U.S. Fish and Wildlife Service. 1989. Biological opinion regarding impacts to the pink mucket pearly mussel, Lampsilis abrupta, from the development of hydropower on existing locks and dams in the upper Ohio River Basin in Ohio, Pennsylvania, and West Virginia. West Virginia Field Office, Elkins, West Virginia. 12pp.

Appendix A

Incidental Take

This is an incidental take statement for Lampsilis abrupta pursuant to 50 CFR 420.14(g)(7). The Biological Assessment has concluded that the project, indirectly, may adversely affect L. abrupta. The biological opinion concurs with this finding and concludes no jeopardy of the species. "Take" is defined in the Endangered Species Act, Section 3(19), as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct." This statement includes the level of take that is anticipated to occur due to the action. If the level of incidental take is exceeded, formal consultation under Section 7 of the Act, may be reinitiated.

Level of Take

If the project is completed as planned it will result in increased tow traffic and an increased chance of a toxic spill on the Ohio River. This will cause habitat degradation of mussel beds containing L. abrupta between rivermiles 283 and 293 and in the vicinity of rivermile 179.

Since L. abrupta represents such a small portion of the mussel community it would not be practical to only monitor that species. It is reasonable to assume that the status of the entire mussel community reflects the well being of L. abrupta. Therefore, we are proposing that the monitoring studies take place on several known mussel beds after establishing a "before project" baseline. However, baseline sampling should continue every year until project completion. Since the project is nearing completion within the next few years, this may only give us two or three sampling seasons to establish the baseline.

The level of incidental take is defined as:

1. A continual decline in the density of the five most abundant mussel species. This should include adults and juveniles (juvenile being defined as less than 30 percent of maximum size encountered, measured as total length) other than Amblema plicata the threeridge, which is a pollution tolerant species;
2. Failure to collect L. abrupta from a bed in which it is known to occur;
3. A continual decrease in the live-to-dead ratio. "Recently dead" is defined as those shells exhibiting some shininess of the nacre or dead less than one year;
4. A decline of 25 percent or more in the total number of species encountered per mussel bed;
5. No evidence of recent recruitment of the five dominant species other than A. plicata; or
6. A decline in the growth rate of two dominant species other than A. plicata.

If any or combination of these criteria are found at a mussel bed an evaluation by the Fish and Wildlife Service and the Corps of Engineers to determine the cause would ensue. If precise evidence suggested that the cause was related to navigation, reinitiation of consultation will be required.

Reasonable and Prudent Measures To Minimize Impacts of the Taking

1. Monitor mussel communities to detect any changes in the various criteria described in the previous section "Level of Take." The goal of this task is to establish a baseline and monitor the mussel community over the period of time that tow traffic is expected to increase due to the Gallipolis project. Changes in community structure will be noted and compared to the "Level of Take" criteria previously discussed. Should any of the "Take" criteria be met, it will trigger a reevaluation of project impacts on L. abrupta and possible reinitiation of consultation. The details of the monitoring plan will be worked out between the Corps and the Service.