

West Virginia Field Office
Post Office Box 1278
Elkins, West Virginia 26241

March 18, 1997

Colonel Richard W. Jemiola
District Engineer
U.S. Army Corps of Engineers
502 Eighth Street
Huntington, West Virginia 25701

Dear Colonel Jemiola:

This responds to your letters dated October 16 and November 18, 1996, requesting formal consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This constitutes the U.S. Fish and Wildlife Service's draft biological opinion on the U.S. Army Corps of Engineers, Huntington District's pending action on a Rivers and Harbors Act Section 10 permit application submitted by the Joe S. Towing Company, Incorporated. Joe S. Towing proposes to construct a barge fleeting facility along the left descending bank of the Ohio River in the vicinity of river mile 176.5 in the backchannel of Muskingum Island, Wood County, West Virginia. Please reference Public Notice No. CEORH-OR 94-62, dated October 4, 1994.

A biological assessment was prepared for the Corps by the applicant pursuant to Section 7(c) of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) to evaluate the potential for direct and indirect effects from the proposed project on the following Federally listed species: the threatened bald eagle, Haliaeetus leucocephalus; the endangered pink mucket pearly mussel, Lampsilis abrupta; and the endangered fanshell mussel, Cyprogenia stegaria. This consultation has been coordinated with the Service's Ohio River Islands National Wildlife Refuge. A complete administrative record of this consultation is on file in the West Virginia Field Office.

Background

Informal consultation between the Service and the Corps relative to the project began in our Fish and Wildlife Coordination Act report dated November 4, 1994, which included a request that the Corps prepare a biological assessment. Our November 4, 1994 correspondence indicated that H. leucocephalus was the only listed species which was known to utilize the project area, but that C. stegaria and L. abrupta also were likely to be present. On September 4, 1995, Service personnel from the Ohio River Islands National Wildlife Refuge discovered two fresh dead specimens of C. stegaria in the backchannel of Muskingum Island. Based on the

presence of suitable habitat, the Service assumes L. abrupta also occurs in the vicinity of the proposed project.

The request for preparation of a biological assessment was reiterated in our letter of September 11, 1995 to the Corps, after being advised that a notice of intent to issue a permit for the project was being drafted, and subsequent to the discovery of C. stegaria in the backchannel of Muskingum Island.

By transmittal letter dated October 16, 1996, the Corps provided the Service with a biological assessment for the proposed activity. The Corps granted the Service a 30-day extension of time to complete the review of the assessment by letter dated November 19, 1996. The Service, by letter dated December 19, 1996, did not concur with the assessment's conclusion that the project was not likely to adversely affect C. stegaria and L. abrupta. However, the assessment stated that, if the Service did not concur with the "no affect" finding, they were requesting initiation of formal consultation. Therefore, the Service initiated formal consultation on December 19, 1996. The Service did concur with the findings of the assessment that construction of the proposed project, excluding any future expansion and operating modifications, was not likely to adversely affect H. leucocephalus.

BIOLOGICAL OPINION

Proposed Project

The proposed action will consist of constructing and maintaining a barge mooring facility in the backchannel of Muskingum Island, near Ohio River mile 176.5. Four tri-tie clusters, constructed of 12-inch diameter steel pipe will be placed in the river approximately 25 feet riverward of the West Virginia shoreline, based on normal pool elevation of 582.0 feet Mean Sea Level. The tri-tie clusters will be driven 20 to 25 feet into the river bed and have a top elevation of approximately 622.0 feet MSL. The four tri-tie clusters will be spaced 195 feet apart. The floating area will extend along the riverbank for approximately 1,125 feet and riverward of the tri-ties approximately 140 feet. Two 12-foot diameter floats will be attached to chains and anchors at the upstream end of the fleet. The facility will accommodate 20 barges containing primarily sand, gravel, and limestone.

The applicant has periodically operated a loading and unloading facility at a centrally located portion of the area proposed for the mooring facility for approximately nine years without the benefit of a Corps Section 10 permit.

Review of Endangered Species Information

A small, transient population of H. leucocephalus consistently uses the bottomland forest and riverine habitats along the Ohio River in the vicinity of Muskingum Island, especially during the winter. The Service concurred with the biological assessment that construction and operation of the proposed facility, excluding any future expansion and operating modifications, was not likely to adversely affect H. leucocephalus. Therefore, only possible impacts to C. stegaria and L. abrupta will be further analyzed in this biological opinion.

The freshwater mussel fauna of the Ohio River, and the Muskingum Island area, have been in a period of sustained recovery for the last 15 years. The freshwater mussel community is repopulating/recolonizing suitable habitats after many decades of severe water quality degradation. Those mussel species which were able to survive in tributaries or other refugia are now recolonizing the mainstem. Comparisons of mussel data collected in the early 1980's (species composition, age structure) versus more recent data illustrates quite clearly that the change is continuing.

Distribution

Cyprogenia stegaria occurred in the Ohio River and many of its large tributaries in Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Kentucky, Tennessee, Alabama, and Virginia. Presently reproducing populations are known to occur in the Clinch River in Tennessee and Kentucky, and the Green and Licking Rivers in Kentucky (U.S. Fish and Wildlife Service, 1991). Since 1992, living and fresh dead specimens indicate that a reproducing population of C. stegaria occurs in the lower Muskingum River in Ohio (Dr. G. Thomas Watters, pers. comm, 1997; Ohio Department of Natural Resources, 1993) and in the upper Ohio River in West Virginia at Neal Island, Muskingum Island, and below Belleville Locks and Dam. Additionally, small, apparently non-reproducing populations may still persist in the Walhonding River in Ohio, the Kanawha River in West Virginia, the Wabash River system in Illinois and Indiana, the Barren River and Tygarts Creek in Kentucky, and the Tennessee and Cumberland Rivers in Tennessee. (U.S. Fish and Wildlife Service, 1991).

Historical records of L. abrupta indicate it was mostly an Ohio River Basin species, found mainly in the Tennessee, Cumberland, and Ohio River drainages, with occasional records from the Mississippi. Lampsilis 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 Meramac River (U.S. Fish and Wildlife Service, 1985). Lampsilis abrupta is presently known in the upper Ohio River mainstem from five locations downstream of the proposed project; three locations between river miles 283.0 and 292.4 and two additional locations at river miles 255.5 and 179.5.

Ecology and Life History

Both L. abrupta and C. stegaria inhabit clean swept sand and gravel in medium to large rivers. Many aspects of the life history of these rare mussels are not known. Like other freshwater mussels, they feed and respire by filtering macroscopic food particles and oxygen from the water column.

In the reproductive cycle, males produce sperm which is discharged into the water column and dispersed by currents. Downstream females intake the sperm during feeding and respiration.

Fertilization occurs within gills modified as brood pouches. Both L. abrupta and C. stegaria are long-term breeders (bradytictic); i.e., fertilization takes place in late summer/fall, and the

embryos (glochidia) overwinter in the female and are discharged into the water column in spring (Ortman 1919).

This complicated reproductive cycle includes a host fish, where the glochidium attaches to the gills, fins, or skin of the fish and is nourished for a short time before developing into a juvenile mussel. This relationship between the glochidium and its fish host is generally species-specific and sometimes highly specialized. For example, the genus Lampsilis has evolved a mantle flap on the incurrent syphon which resembles a small fish or aquatic invertebrate, complete with eye spot. When extended into the current, this flap attracts fish as a prey mimic, increasing the opportunity for glochidia to come in contact with the host fish. Cyprogenia stegaria glochidia are released into the water column in the form of a unique spiral conglutinate. This worm-like shape suggests that a fish visually searches for its food may be its host (U.S. Fish and Wildlife Service, 1991).

Reasons for Decline and Continued Threats

Since mussels are sedentary, they are extremely susceptible to environmental degradation. The range reductions of these mussels are attributed to physical loss of habitat and degraded water quality related primarily to water impoundments, channelization,

streambank clearing, and agriculture. Run-off from human waste, chemical outfalls, and coal mining has affected the water quality of many tributaries.

Pollution from municipal, agricultural, and industrial waste discharges has decreased or eliminated mussel populations directly and indirectly through extirpation of host fish species, resulting in mussel reproductive failures.

The exotic, prolific zebra mussel, Dreissena polymorpha, accidentally introduced to North America in the mid-1980's, poses a severe threat to all native mussel species through competition for space, food, and survival of glochidia. Presently, the zebra mussel, which was conveyed to the area through ship ballast water from interior European ports, is abundant in the lower Great Lakes and is increasing in other portions of the range of these federally listed species, including the Ohio River basin. Zebra mussels are currently not threatening the Muskingum Island area.

ENVIRONMENTAL BASELINE IN THE ACTION AREA

Status of the Species

The proposed facility is located in the Belleville Navigation Pool in the Ohio River. The biological assessment correctly characterized the freshwater mussel fauna of the Belleville Navigation Pool as particularly diverse (31 species known from recent surveys); at least 28 of these 31 occur in the Muskingum Island backchannel, including C. stegaria. The other three species, including L. abrupta, may also be present. No other site in the upper and middle Ohio River mainstem yields such a rich mussel fauna as the Muskingum Island area. The next most diverse mussel beds are known from the upper Racine Navigation Pool, (24 species) and the upper Greenup Navigation Pool, (21 species) approximately 30 and 100 miles downriver, respectively.

Brail sampling results show the Muskingum Island mussel bed forms one continuous bed which extends along both sides of the island from head to toe. Cyprogenia stegaria occurs in the backchannel of Muskingum Island at river mile 175.6 and is a component of the extensive mussel bed which occurs throughout the backchannel. Lampsilis abrupta is known from the Ohio River at river mile 179.5 and is assumed to be a component of the mussel bed in the backchannel of Muskingum Island. In addition to its close proximity to the backchannel, this assumption is based on the occurrence of suitable habitat, a diverse fish population, and the

presence of numerous other mussel species, often associated with L. abrupta, occurring in the backchannel of Muskingum Island.

The area of river potentially affected by project construction and operation (from the upper limits of barge mooring to the actual toe of the island) constitutes approximately 95 acres of freshwater mussel habitat. The site supports densities of native mussels on the order of 11 animals per square meter, with excellent recruitment, yet the habitat does not appear to have reached its full potential or carrying capacity. Quantitative surveys in 1995 around Muskingum Island showed that over eight percent of the live mussels were less than or equal to three years old, and quantitative surveys from 1996 found that over 48 percent of the live mussels were in the less than or equal to three-year old category.

Effects of the Action

Construction and operation of the proposed barge fleet facility will adversely affect this mussel resource described above, including federally listed endangered species. Anticipated impacts to C. stegaria and L. abrupta from construction and operation of the proposed facility include the direct and indirect loss and disturbance of habitat from sedimentation, prop wash and

scour, maintenance dredging, grounding, leaks, spills, and the introduction of zebra mussels from fleeted barges and tow boats.

The greatest diversity and abundance of mussels are associated with clean-swept sand and gravel substrates. Chronic increases in turbidity and suspended sediments in the vicinity of the facility can be caused by changes in current patterns from the barges and mooring structures, propeller wash and scour, and grounding.

Because of the relatively shallow nature of the backchannel in the area of the proposed project (12 to 20 feet), towboat propellers will be within three feet of the bottom. Resulting increases in turbidity and suspended sediments decrease the depth and amount of light penetration, affect primary productivity, decrease oxygen levels, increase water temperature, irritate or cause clogging of gills, and result in a blanket of silt on the substrate.

Siltation affects mussels indirectly by smothering eggs or larvae of the fish host populations, by reducing food availability, and by filling interstitial spaces, which eliminates spawning and habitat critical to the survival of young fish. Mussels may also be directly affected by siltation through smothering. Increased turbidity interferes with the ability of host fish to see glochidia packets or lures which the mussels deploy to attract them. Without successful attachment to the host fish, these rare mussels cannot reproduce at all.

Fuel leaks, product spillage, and the introduction of zebra mussels could result in direct and indirect (lethal and sublethal) adverse impacts to the freshwater mussel populations. Fuel leaks, spillage, bottom scouring, and sediment disturbance during the critical time of juvenile settlement onto the river bottom would also prevent the recruitment of young endangered mussels.

The Service believes that there has already been a significant impact to the freshwater mussels in the backchannel of Muskingum Island due to past use of the site by the applicant. In recent surveys the number of mussels captured per brail pass were significantly lower downstream of the current loading area than they were upstream, and there were no mussels collected immediately riverward of the current loading area.

Conclusion

Based on the findings described above, it is the Service's biological opinion that the proposed action is likely to adversely affect C. stegaria and L. abrupta, but is not likely to jeopardize the continued existence of these species.

INCIDENTAL TAKE

Sections 4(d) and 9 of Endangered Species Act prohibit taking (defined as actions that would harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or with Federal authorization. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of an incidental take statement.

Level of Take

The anticipated incidental take of C. stegaria and L. abrupta is difficult to quantify because these species represent such a small

portion of the mussel community. However, based on the assumption that the status of the entire mussel community within in the backchannel of Muskingum Island is indicative of the well-being of the subject two endangered mussels, the anticipated level of take is defined as:

1. A decline of up to 25% in the density of the mussel bed. This would include adults and juveniles (juvenile being defined as less than 30 percent of maximum size encountered, measured as total length, or animals #3 years old based on external annual ring counts) other than the threeridge, Amblema plicata;
2. A decline of up to 25% in the live-to-dead ratio. "Recently dead" is defined as those shells exhibiting some luster of the nacre (not chalky), which have the ligament or hinge intact or which have some soft tissue remains; or
3. A decline of up to 25% in the total number of species encountered.

If any or a combination of these criteria are exceeded in the mussel bed of the backchannel of Muskingum Island, the Corps should initiate, with the Service, an evaluation to determine the cause. If precise evidence suggests that the cause was related to

the construction and operation of the mooring facility, reinitiation of consultation will be required.

Reasonable and Prudent Measures

Reasonable and prudent measures are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. If the Corps (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

The biological assessment proposed the following operating procedures to reduce or avoid impacts to the endangered mussels:

- 1) tow boats would only enter the backchannel from downriver,
- 2) tow boats would only navigate in the deepest part of the backchannel,
- 3) tow boats would only operate within 100 meters of the West Virginia mainland shoreline and would not navigate between the small towhead and Muskingum Island,
- 4) buoys would be set to mark the deepest part of the channel,
- 5) tow boats would

maintain no wake speed, and 6) the facility would be used only when the river levels are above normal pool at 582.0 feet Mean Sea Level. Although implementation of such measures could serve to minimize impacts, the Service believes that they are not enforceable and, therefore, any benefit derived from establishing such procedures will be minimal, at best. The Service has not identified any reasonable and prudent measures that could be implemented by the Corps or the applicant that would serve to minimize or avoid incidental take from implementation of the proposed activity.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the ESA, the Corps must comply with the following terms and conditions, which outline the required reporting/monitoring requirements. These terms and conditions are non-discretionary:

1. Develop and implement a mussel monitoring plan capable of detecting community structure changes, as defined in the incidental take statement, within the mussel bed in the backchannel of Muskingum Island. The monitoring plan should be developed by a reputable malacologist in coordination with the Service, West Virginia Division of Natural Resources, and the Ohio

Division of Natural Resources. This would include establishing a "before project" baseline based on at least two sampling years before construction. After establishment of baseline, monitoring should continue throughout the life of the project or until it is determined, after consultation with the Service, that such monitoring is no longer necessary.

2. Changes discovered in the community structure of the mussel population in the backchannel of Muskingum Island as a result of the monitoring plan will be compared to the "Level of Take" criteria. Should any of these criteria be exceeded, it will trigger a reevaluation of the project impacts on L. abrupta and C. stegaria, and possibly result in reinitiation of consultation.

If the Corps determines that the monitoring period required by these Terms and Conditions exceeds the Corps permit authority, the Corps should: 1) provide the applicant with a copy of this biological opinion; and 2) notify him/her that the Terms and Conditions must be adopted by the applicant in order for the applicant to be exempt from the provisions of Section 9 should incidental take occur. In addition, the applicant should be notified that if these Terms and Conditions are not implemented, any incidental taking that results from the activities considered in the biological opinion would be prohibited by Section 9 and,

therefore, the applicant should contact this office to apply for an incidental take permit under Section 10(a)(1)(B).

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

If you have any questions, please contact me at this office (phone 304-636-6586).

Sincerely,

William A. Tolin
Acting Supervisor

cc:
WVDNR - Dowler
PAFO - Densmore
ORINWR - Wilson
OHFO - Kroonemeyer
USEPA - Forren
ODNR - Marshall
Readers file
Project file
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Literature cited

Ortmann, A. E. 1919. A monograph of the naiades of Pennsylvania. Part III. Systematic account of the genera and species. Memoirs of the Carnegie Museum 8:1-385.