

UPPER OHIO NAVIGATION STUDY, PENNSYLVANIA ENVIRONMENTAL APPENDIX

Invasive Species Issues

Note to Reader:

The potential for non-native aquatic invasive species to take advantage of fish passage strategies designed for native species at navigation projects was an issue of concern raised during the Upper Ohio Navigation Study fish passage study. In particular, the severe impacts of the Asian carp complex that has spread through the Mississippi drainage are a significant concern should the carp enter Pennsylvania through the Ohio River. The District requested that the Pennsylvania Invasive Species Council provide their position on improving passage for native fish through navigation projects, in view of the concern over Asian carp. The request and the Council's response are provided for reference. This issue was not resolved in this feasibility study, but will be addressed further through consultation as described in feasibility study Main Report.

June 23, 2010

From: Pittsburgh District, U. S. Army Corps of Engineers
Planning and Environmental Branch
1000 Liberty Avenue, Rm 2200
Pittsburgh, PA 15222-4186

To: Pennsylvania Invasive Species Council

Subject: A request for a consolidated Commonwealth position regarding aquatic invasive species issues associated with Corps of Engineers studies for improving fish passage opportunities at three Ohio River navigation facilities in Pennsylvania.

1. The Request.

The U. S. Army Corps of Engineers' Pittsburgh District (Corps) is conducting a study that may recommend adding fish passage structures to Emsworth, Dashields and Montgomery Locks and Dams on the upper Ohio River in Pennsylvania. In view of invasive species, such as Asian carp, expanding their range from the lower Ohio River into Pennsylvania, the Corps requests the Council provide a consolidated Commonwealth position on whether a Corps' recommendation for fish passage facilities is supportable. The basis for this request is derived from the Pennsylvania Invasive Species Council's Aquatic Invasive Species Management Plan (2007) objective to "...minimize the introduction and spread of aquatic invasive species into and throughout Pennsylvania." A response would be appreciated within 30 days following the Council's consideration of this request at their July 14, 2010 meeting.

2. Rationale for the Request.

The Corps wishes to address potential issues that should be factored into a recommendation for the significant investment of federal funds associated with fish passage structures. One issue is the seemingly conflicting goals of minimizing the spread of aquatic invasives while restoring historic riverine connectivity.

Staff members of both the Pennsylvania Fish and Boat Commission and Department of Environmental Protection have participated in planning efforts for fish passage through our Upper Ohio Navigation Study Interagency Working Group. Their participation has been greatly appreciated. We recognize, however, that their input does not necessarily represent their Agency position, nor has the Pennsylvania Invasive Species Council been involved in these discussions. Before we proceed further in our planning process, we wish to understand the Commonwealth's views on aquatic invasive species issues in relation to improving fish passage opportunities in the upper Ohio River.

We request that the Council consider the following questions in their reply:

- Does the Commonwealth consider restoring longitudinal connectivity on the upper Ohio River to be consistent with the Commonwealth’s aquatic invasives management plan?
- Does the Commonwealth support restoring connectivity on the upper Ohio River despite the possibility that aquatic invasives may benefit as well as native species?
- Does the Commonwealth have any plans to address the possible arrival of Asian carp or other aquatic invasives that should be recognized in connection with our study of these upper Ohio River navigation facilities?
- Are there any other issues the Council wishes to bring to our attention?

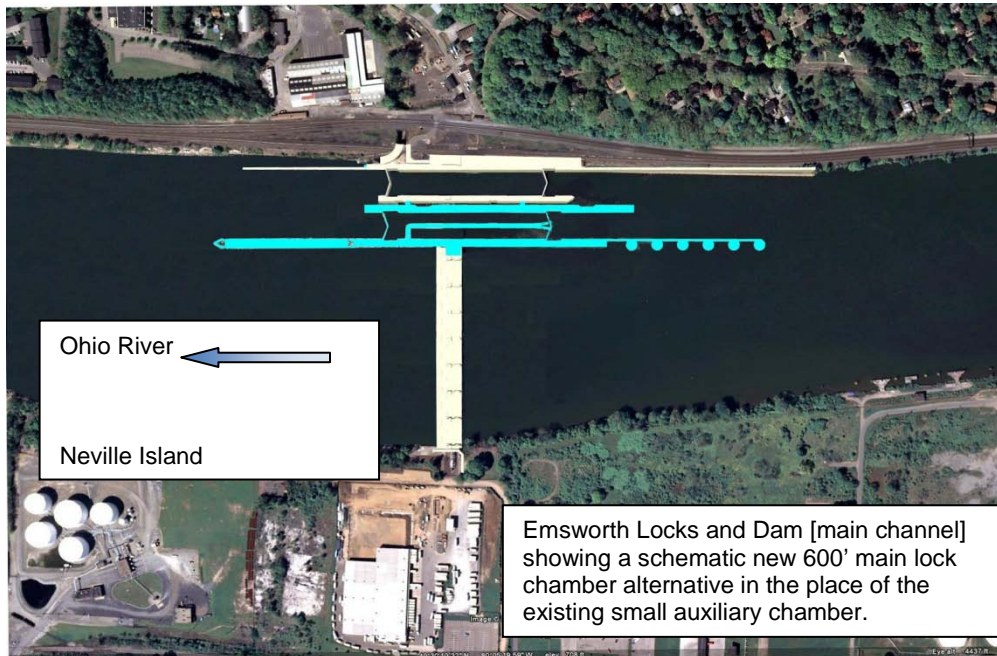
3. Background.

The Corps is conducting a multi-year feasibility study for improvements to Emsworth, Dashields, and Montgomery Locks and Dams, the three navigation facilities on the first 40 miles of the Ohio River in Pennsylvania. The scope of this “Upper Ohio Navigation Study, Pennsylvania” includes an ecosystem restoration component and the consideration of fish passage opportunities at each of the facilities.



The three navigation facilities were constructed during the 1920s and 1930s. Diminishing structural integrity of the lock chambers due to age and deterioration is the primary impetus driving the study. The final array of alternatives being evaluated consists of new main lock chambers at the current locations. The lock sizes considered range between 110’ x 600’ (the

existing main chamber dimensions) and 110' x 1200'. No significant modifications to the historic dams are anticipated, other than those required to accommodate new lock chambers.



A recent Corps' study of the Ohio River Navigation System, the "Ohio River Mainstem System Study" (ORMSS), concluded that the 981-mile river system's 19 locks and dams act as barriers to fish passage. Unless river flow is high enough to create open river conditions, i.e., all of the dam gates are fully opened, the dams are considered to be an impediment to upstream movements. The timing and duration of open river conditions are less frequent at the upper river facilities, and do not necessarily coincide with peak fish movement periods. Fish are also thought to travel upstream through the locks, however few data exist regarding the usage or efficiency of this potential means of upstream movements.

The ORMSS study committed the Corps to studying the feasibility of fish passage opportunities at the Upper Ohio facilities. The Corps asked the U. S. Fish and Wildlife Service's (USFWS) Region 3 Carterville Fish and Wildlife Conservation Office (Marion, Illinois) to take the lead in evaluating fish passage opportunities through coordination with an Interagency Working Group. This Group is comprised of representatives from the Ohio River Islands National Wildlife Refuge, the Pennsylvania Fish and Boat Commission, the Pennsylvania Department of Environmental Protection, and the Western Pennsylvania Conservancy, among others. The USFWS draft report to the Corps evaluated a number of structural and non-structural fish passage alternatives.

The stated goal of investigating fish passage opportunities was to "Improve historic connectivity for populations of riverine fishes and mussels in the Upper Ohio River Basin." During planning discussions with the Interagency Working Group, the topic of invasive species (e.g., Asian carp) usage of fish passage structures was mentioned a number of times. The general conclusion was that they are strong swimmers and will expand their range upstream with or without fish passage

structures. Consequently, planning continued with the objective of improving opportunities for native species, but invasive species issues were not addressed in any further detail.

The goal of improving historic connectivity with fish passage facilities appears to be compatible with the restoration component of various invasive species management plans. The National Invasive Species Management Plan (National Invasive Species Council, 2008) includes a strategic goal of restoring native species and habitat conditions. The Pennsylvania Invasive Species Management Plan (May 2009) has a similar goal of “Restoration.” However, the Commonwealth’s “Aquatic Invasive Species Management Plan” objectives do not include a restoration feature. The reasoning for this apparent omission is not clear from reading the documents.

The Corps’ Upper Ohio Navigation Study includes an environmental impact statement (EIS) for compliance with the National Environmental Policy Act. The draft EIS will address impacts of the lock alternatives and ecosystem restoration project alternatives. Fish passage will be included as potential mitigation for future impacts of the dams on riverine connectivity. Whether fish passage is justifiable and supportable will depend in part on the issue of future impacts from invasive species, and the Commonwealth’s position on managing these aquatic resources.

The Commonwealth’s position will be included and addressed in our draft feasibility report and EIS, which is currently scheduled for public release in November 2010.

Upper Ohio Navigation Study, PA

EDM



Emsworth Locks and Dams
• River Mile 6.2
• Constructed 1919 -1922
• New Gated Dam: 1935-1938



Dashields Locks and Dam
• River Mile 13.3
• Constructed 1927 -1929



Montgomery Locks and Dam
• River Mile 31.7
• Constructed 1932 -1936





COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
RUSSELL C. REDDING

August 31, 2010

Mr. Conrad Weiser
Pittsburgh District, United States Army Corps of Engineers
Planning and Environmental Branch
1000 Liberty Avenue, Room 2200
Pittsburgh, PA 15222-4186

Dear Mr. Weiser:

Thank you for your request to the Pennsylvania Invasive Species Council for a consolidated Commonwealth position regarding aquatic invasive species issues. The Council appreciates the opportunity to comment on the United States Army Corps of Engineers studies for improving fish passage at the Emsworth, Dashields, and Montgomery Locks and Dams on the upper Ohio River.

The issues raised in your letter are quite complex. In light of the extremely short turn around requested, after discussion at its July 14th, 2010 meeting, the Council feels that more information is required to enable proper evaluation of whether the potential benefits to native fish species of the proposed fish passage structures outweigh the possibility of facilitating the spread of aquatic invasive species. While the restoration of natural areas and native fish populations are goals laid out in the Pennsylvania Invasive Species Management Plan and the Pennsylvania Wildlife Action Plan, the Council has significant concerns regarding the movement of species such as Asian carp into Pennsylvania via the Ohio River.

The impacts aquatic invasive species invasions would have on our native fish populations would be severe, as demonstrated in the rest of the Mississippi River Basin. As a consequence, the Council is currently developing an action plan to lessen the probability of Asian carp or other threats spreading into our river systems and beyond in the Northeast. The construction of fish passage structures at Ohio River dams may significantly impact the development and implementation of that action plan.

Council members identified the following concerns that they would like to see addressed before crafting a position statement in regard to the proposed actions of the USACE:

- The risk of facilitating invasion of aquatic invasive species by the construction of fish passage structures on the upper Ohio River in Pennsylvania should specifically be evaluated by USACE during the study phase. The risk of facilitated passage by bighead, black, and silver carp should receive particular focus.
- The June 23, 2010 letter from USACE to the Council cites an Ohio River Mainstem System Study that concludes that existing locks and dams on the Ohio River impede fish movement. However, the extent of this impediment seems unclear (page 3), especially in light of previous, long term studies by the Ohio River Valley Water Sanitation Commission (ORSANCO)¹ that may indicate the opposite. To better understand whether or not proposed structural or non-structural fish passage alternatives would significantly enhance movement of native species or possibly increase the risk of new aquatic invasive species invasions, the Council would like additional information on current fish movement between the locks and dams. The Council would like to examine the scope of work for the feasibility study and any relevant sections of any previous studies that address a) impediments to fish movement through existing locks and dams or b) risks of invasion of other species.
- The USACE request to the Council seems to force a dichotomous choice between supporting the restoration of riverine connectivity or preventing the spread of aquatic invasive species. The Council would like USACE to specifically evaluate if enhanced passage is possible for those native and/or recreationally important migratory species currently affected by habitat fragmentation while concurrently minimizing the upstream spread of highest-risk aquatic invasive species (e.g. the Asian carp species). In conjunction with this request, the Council would like USACE to evaluate if the proposed fish passage structures could be designed in a way so as to selectively promote passage of native fish species while inhibiting passage of aquatic invasive species. Perhaps this could be achieved by the use of improved “bubble curtain” technology, structural design that capitalizes on certain species behaviors, or by other means.

¹ Thomas J.A, Emery E.B, McCormick F.H., 2005, Detection of Temporal Trends in Ohio River Fish Assemblages Based on Lockchamber Surveys (1957-2001), American Fisheries Society Symposium 45:431-449

- The Council would like USACE to evaluate whether proposed structural or non-structural fish passage alternatives could be implemented in such a way that they could be quickly taken "off-line" in the event of an impending invasion. For example, the Asian carp invasion front may be far enough downstream that new fish passage structures could be operated for years before invasion risk is high. Periodic environmental DNA monitoring could be conducted at pre-determined downstream locks with positive results triggering automatic closure or modified operation of passage structures or other rapid response actions. Such contingency planning should be specifically evaluated by USACE during the study phase.
- The Council would like USACE to evaluate the effects that other abiotic factors (e.g. habitat loss, pollutants, current lock design, river structure, etc.) found in the Pennsylvania segment of the Ohio River may or may not have on the movement of and success of transient native fish and, conversely, aquatic invasive species such as Asian carp.

The Council feels that it will be in a better position to make the complex decisions associated with the USACE request and to issue a consolidated Commonwealth position regarding aquatic invasive species issues associated with USACE studies for improving fish passage opportunities at Ohio River navigation facilities in Pennsylvania, once I have received your timely response of the above addressed items.

Thank you for your assistance and cooperation.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell C. Redding". The signature is written in a cursive style with a large, sweeping initial "R".

Russell C. Redding
Chair, Pennsylvania Invasive Species Council



REPLY TO
ATTENTION OF

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

Environmental and Cultural Resources Section

October 5, 2010

Mr. Russell C. Redding
Chair, Pennsylvania Invasive Species Council
Pennsylvania Department of Agriculture
2301 Cameron Street
Harrisburg, Pennsylvania 17110-9408

Dear Mr. Redding:

I wish to thank the Council for their response letter dated August 31, 2010, to our request dated June 23, 2010, for a position on our potential recommendation of fish passage facilities at Emsworth, Dashields, and Montgomery Locks and Dams on the Ohio River. In view of the short time available to consider our request at your July 14th meeting, the thoughtful and detailed comments in your response were greatly appreciated.

The Council requested additional information, considering the complexity of this issue, before preparing a consolidated Commonwealth position. I wish to provide an interim response to your comments. The Council stated five concerns, which may be summarized as follows:

1. What is the specific risk of fish passage structures facilitating passage by invasive species, particularly Asian carp?
2. What documentation is available on the impediment of Ohio River navigation dams to fish movement and on current fish movement between dams, by both native and invasive species?
3. How might fish passage facilities be designed to selectively pass native species?
4. How might fish passage facilities be designed to be modified or closed pending future invasion by Asian carp or other species?
5. Apart from the impediment of dams, are there other environmental factors that may influence the successful movement of native or invasive fishes?

We agree that these are valid concerns. Whether we will be able to satisfactorily address all of these in our present feasibility-level study, however, is less certain. The extent of navigation dam impediments (your Issue No. 2) was addressed in a U.S. Geological Survey report (Brent C. Knights, et al, 2003) for our Ohio River Mainstem System Study. We have communicated with Mr. Thomas, the primary author of the ORSANCO lockchamber surveys report, and he feels that their work confirms that the dams still cause issues with native fish populations acting as barriers and altering flow regime, even though water quality conditions

have improved in the river. Further documentation of these studies in our feasibility report may resolve this Council concern.

Issue No. 5 delves into the question of the relative significance of Corps navigation dams as a limiting factor in the life histories of various fishes and mussels in the Upper Ohio. We cannot answer this question with the information we have at present. However, we will do further research into available literature and inquire after professional opinion to address this to the extent possible in our feasibility report.

Issue Nos. 1, 3, and 4 might be better addressed in the detailed design phase following authorization of fish passage facilities. We have been aware of the risk identified in Issue No. 1 from the outset of our fish passage planning process. We observed that Asian carp have demonstrated the ability to expand their range across Upper Mississippi River navigation dams without fish passage facilities. Our decision to pursue fish passage planning in our Upper Ohio study was based on consultation with a cross section of aquatic experts from Federal and state resource agencies, non-profit organizations, private consultants, academia, and the utility companies who know the Ohio River best. The consensus among that group was that improving passage opportunities for native species was more important than potentially facilitating the expansion of invasive species. At this point, we propose conditioning any recommendation for authorizing fish passage facilities with the need for further research to address your questions prior to implementation. We will continue to solicit input from the Pennsylvania Fish and Boat Commission as we formalize our recommendation.

Your response indicated that the Council is developing an action plan to lessen the probability of Asian carp or other threats spreading into our river systems. We would like to be able to address this action plan in our feasibility report, and would appreciate being informed of its progress. We further offer to participate with the Council in an advisory capacity in the development of the action plan to the end that our planned projects might not conflict with the Commonwealth's invasive species management goals. You may contact me at 412-395-7220 at your convenience to discuss these concerns.

Sincerely,



Conrad Weiser
Acting Chief, Environmental and
Cultural Resources Section