

ENVIRONMENTAL DOCUMENTATION

CHAPTER 3-- FEDERAL THREATENED AND ENDANGERED SPECIES ASSESSMENT (PROGRAMMATIC)

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1. INTRODUCTION

The Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq) provides for the conservation of threatened and endangered species and the ecosystems on which those species rely. A federal agency must coordinate its proposed actions with the U.S. Fish and Wildlife Service (USFWS) and assess for potential impacts. Where necessary, a federal agency would develop measures to minimize those impacts if a proposed action could affect threatened or endangered species or their habitat. This would likely be performed through a formal, detailed consultation process.

Given the reconnaissance nature of this study, and the fact that specific project construction is not being recommended at this time, full coordination of potential ESA issues was not performed with the USFWS. Consultations with the USFWS, as well as a more detailed evaluation of potential impacts of systemic FDR on threatened and endangered species, would need to be undertaken as part of future site-specific feasibility studies. This would be needed to ensure compliance with Section 7 of the Endangered Species Act and any applicable State statutes concerning the protection of listed species.

Although consultation has not been pursued with the USFWS, potential impacts to federally threatened and endangered species were considered briefly and are discussed here. This assessment discusses the general systemic effects of various alternative concept plans for flood damage reduction (FDR) upon federally-listed threatened and endangered (T&E) species within the Upper Mississippi River System (UMRS).

The assessment relies heavily upon information derived from prior studies and reports covering the UMRS. In particular, discussion of listed species within the project area is largely based upon the efforts pursued for the Upper Mississippi River - Illinois Waterway System Navigation Study Integrated Feasibility Report and PEIS ("Navigation Study;" USACE 2004). This recent effort considered review of federal listed species within the UMRS and its corresponding floodplain. Much of the project area considered by the navigation study is similar to that considered within the UMRCP. Therefore, the discussion of federally listed species within from the navigation study is relevant and can be referenced here.

2. METHODOLOGY

The sequence of steps used in this discussion of potential impacts to federally-listed T&E species were as follows: (1) identification of protected species potentially present within the UMRS floodplain, (2) identification of the potential impact vectors of relevance to the study area's protected species, and (3) assessment of the potential impacts to the identified species.

Discussion here is meant to provide a programmatic overview of what potential impacts might be to threatened and endangered species. However, presence of threatened or endangered specie resources is heavily site-specific. Thus, a thorough evaluation would need to be considered on a case-by-case basis. However, that is beyond the scope of this effort. Impact discussion here is generalized based on knowledge of the key species and the proposed alternatives. Any future project planning would need to consider threatened and endangered specie issues on the site-specific level.

3. RESULTS

Step 1. Compilation of Federally Protected Species Potentially Present within the UMRS Floodplain.

The species discussed here are based on those identified for the aforementioned coordination during the Navigation Study. This list is likely representative of the federally listed species within the study area. The exception may be at the extreme southern extent of the UMRCF project area, which is downstream of the area considered by the Navigation Study. Future coordination with the USFWS would confirm if any additional species would need to be included for this area.

In a letter dated January 12, 2004 for the Navigation Study, the Corps of Engineers requested a listing of federally threatened and endangered species that could occur in the UMRS. In a letter dated January 16, 2004, the U.S. Fish and Wildlife Service (USFWS) provided a list of ten Federally threatened or endangered species that may be found in the project area (**Table 1**). Three species, the pink mucket pearly mussel, fat pocketbook mussel and scaleshell mussel, were considered to be extirpated from the UMRS. A brief description of the federally threatened and endangered species is provided in subsequent paragraphs.

Table 1. Species listed as threatened or endangered under the federal Endangered Species Act (ESA) within the UMRS floodplain.

| Common Name | Scientific Name | Federal Status |
|----------------------------|---------------------------------|-------------------------|
| Decurrent false aster | <i>Boltonia decurrens</i> | Threatened |
| Higgins' eye pearly mussel | <i>Lampsilis higginsii</i> | Endangered |
| Pink mucket pearly mussel | <i>Lampsilis abrupta</i> | Endangered (Extirpated) |
| Winged mapleleaf | <i>Quadrula fragosa</i> | Endangered |
| pocketbook mussel | <i>Potamilus capax</i> | Endangered (Extirpated) |
| Scaleshell mussel | <i>Leptodea leptodon</i> | Endangered (Extirpated) |
| Pallid sturgeon | <i>Scaphirhynchus albus</i> | Endangered |
| Bald eagle | <i>Haliaeetus leucocephalus</i> | Threatened |
| Interior least tern | <i>Sterna antillarum</i> | Endangered |
| Indiana bat | <i>Myotis sodalis</i> | Endangered |

Decurrent false aster (*Boltonia decurrens*)

The decurrent false aster is a federally listed, threatened floodplain species that occurs along a 400 km section of the lower Illinois River and nearby parts of the Mississippi River. *B. decurrens* is an early successional species that requires either natural or human disturbance to create and maintain suitable habitat. Its natural habitat was wet prairies, shallow marshes, and shores of open rivers, creeks, and lakes. In the past, the annual flood/drought cycle of the Illinois River provided the natural disturbance required by this species. The USFWS indicates that the species can be considered to occur anywhere in the Illinois River floodplain downstream of La Salle County, Illinois, and the Mississippi River in Jersey, Madison and St. Clair Counties, Illinois, and St. Charles County, Missouri. It occupies disturbed alluvial soils in the floodplains of these rivers. No critical habitat is listed for this species. Annual spring flooding created open, high-light habitat and reduced competition by killing other less flood-tolerant, early successional species. Field observations indicate that in “weedy” areas without disturbance, the species is eliminated by competition within 3 to 5 years.

Higgins' eye pearly mussel (*Lampsilis higginsii*)

The Higgins eye pearly mussel was listed as an endangered species by the USFWS on June 14, 1976 (Federal Register, 41 FR 24064). The major reasons for the listing of *L. higginsii* were the decrease in both the abundance and range of the species. As stated in the original and the 2003 draft revision to the recovery plan, *L. higginsii* was never abundant and Coker (1919, as cited in USACE 2004) indicated it was becoming increasingly rare around the turn of the century. The fact that there were few records of live specimens from the early 1900s until the enactment of the Endangered Species Act in 1973 was a major factor in its listing in 1976. A variety of factors have been listed as affecting *L. higginsii* over time including commercial harvest, impoundment from the project, channel maintenance dredging and disposal activities, changes in water quality from municipal, industrial and agricultural sources, unavailability of appropriate glochidial hosts, exotic species and disease. There are ten Essential Habitat Areas identified for Higgins eye pearly mussel. These include; (1) the St. Croix River near Interstate; (2) the St. Croix River at Hudson, Wisconsin (River Mile 16.2 - 17.6); (3) the St. Croix River at Prescott, Wisconsin (River Mile 0 - 0.2); (4) the Wisconsin River near Muscoda, Wisconsin (Orion); (5) the UMR at Whiskey Rock, at Ferryville, Wisconsin, Pool 9 (River Mile 655.8 - 658.4); (6) the UMR at Harpers Slough, Pool 10 (River Mile 639.0 - 641.4); (7) the UMR Main and East Channel at Prairie du Chien, Wisconsin, and Marquette, Iowa, Pool 10 (River Mile 633.4 - 637); (8) the UMR at McMillan Island, Pool 10 (River Mile 616.4 - 619.1); (9) the UMR at Cordova, Illinois, Pool 14 (River Mile 503.0 - 505.5); and (10) the UMR at Sylvan Slough, Quad Cities, Illinois, Pool 15 (River Mile 485.5 - 486.0).

Winged mapleleaf (*Quadrula fragosa*)

The winged mapleleaf is an endangered mussel species of the central United States, federally listed in 1991. The USFWS acknowledges uncertainty with the taxonomic designation of the winged mapleleaf within its 1997 Recovery Plan, however they believed the winged mapleleaf met the ESA definition of species and thus was appropriate for its protection. Studies conducted since then have stated that *Q. fragosa* should be considered a separate species and is genetically distinct from the similar species *Q. quadrula*. In the UMRS, the winged mapleleaf is found only in the St. Croix River.

Pallid sturgeon (*Scaphirhynchus albus*)

Pallid sturgeon, like shovelnose sturgeon, inhabits comparatively large flowing rivers, but pallid sturgeon occur over a narrower range of conditions. In general they prefer greater turbidity, finer substrates, and deeper, wider channels; and they are more likely than shovelnose sturgeon to occur in sinuous reaches and near long-established islands and alluvial bars. The endangered pallid sturgeon (*Scaphirhynchus albus*) occurs in the Missouri River and the Mississippi River downstream from the mouth of the Missouri. The species formerly occurred in the Mississippi River at least as far upstream as Grafton, Illinois. A pallid sturgeon captured in the tailwater of Melvin Price Locks and Dam In 2000. The USFWS listed four reasons for the

decline of the pallid sturgeon: (1) habitat loss, (2) commercial harvest, (3) pollution/contaminants, and (4) hybridization with the shovelnose sturgeon.

Bald eagle (*Haliaeetus leucocephalus*)

Now occurring again throughout most of the United States, the bald eagle was first listed as a federally endangered species in 1967. In 1995 the eagle was reclassified as threatened in all 48 conterminous states and in 1999 the USFWS proposed to delist the bald eagle in the 48 conterminous states; that proposal remains pending. Meanwhile, the bald eagle also occurs in Alaska and Canada, where it is not at risk, and is not protected under the Endangered Species Act, and in small numbers in northern Mexico.

Interior least tern (*Sterna antillarum*)

The interior least tern is a federally listed, endangered breeding migratory bird species that occurs in the Missouri River, Arkansas River, Mississippi and Ohio rivers, Red River, and Rio Grande River systems. The Mississippi Valley Division prepared a Biological Assessment to evaluate the effects of the Regulating Works Feature of the Mississippi River between the Ohio and Missouri Rivers and the Channel Improvement Feature of the Mississippi River and Tributary Project (USACE 1999b, as cited in USACE 2004). That Biological Assessment and the USFWS's Biological Opinion for O&M of the 9-foot Navigation Project contain extensive reviews of the life history of the least tern that are hereby incorporated by reference. On the Mississippi River the least tern is most abundant on the Lower Mississippi River, below Cairo, Illinois. In the Middle Mississippi River, the species is known to occur between St. Louis and the mouth of the Ohio River. Within this segment of river they are known to nest on Marquette Island (R.M. 50.5), Bumgard Island (R.M. 30), and Brown's Bar (R.M. 23) (Jones 2003, as cited in USACE 2004). In addition, the St. Louis District recently constructed a least tern nesting island in Pool 26, just above Melvin Price Locks and Dam, that is showing promise as a nesting site. The wintering area of the interior least tern is unknown, however it is believed to be in Central and/or South America (USFWS 1990, as cited in USACE 2004). No critical habitat is listed for this species. The only Mississippi River essential habitat occurs down stream of the proposed project (from Hwy 146 bridge, Missouri and Illinois, to Vicksburg, Mississippi).

Indiana bat (*Myotis sodalis*)

The Indiana is an endangered mammal species that has been found in 27 states throughout much of the eastern United States. The USFWS issued a "will likely adversely affect" Biological Opinion for Indiana bats to the Corps for continued Operation and Maintenance of the 9-foot Navigation Channel Project on the Upper Mississippi River in 2000. However, while the project may affect individuals, the impacts will be offset by management actions proposed by the Corps or will be negligible, and will not rise to the level of incidental take (i.e., harm and harassment). Indiana bats are associated with the major cavernous limestone (karst) regions of the midwestern

and eastern United States. Indiana bats winter in caves or mines that satisfy their highly specific needs for cold (but not freezing) temperatures during hibernation. The fact that Indiana bats congregate and form large aggregations in only a small percentage of known caves suggests that very few caves meet their requirements. Exclusion of Indiana bats from hibernacula by blockage of entrances, gates that do not allow for bat flight or proper air flow, and human disturbance of hibernating bats have been major documented causes of Indiana bat declines.

Step 2. Identification of Potential Impact Vectors.

Various ecological disturbances and habitat forming processes affect physical habitat and resulting biota on the UMRS. Much of this is identified and discussed within the HNA Technical Report (Theiling et al 2000). Disturbance factors can be both natural and man-made. Disturbance mechanisms resulting from implementation of systemic FDR measures that have the potential to adversely affect floodplain biota vary by alternative, but could include (and certainly not limited to) dredging for construction materials and it’s associated impacts, disturbance from footprint impacts, altered hydraulic conditions, reduced connectivity with the floodplain, and habitat fragmentation, as well as potential secondary impacts. Conversely, some select alternatives could provide positive effects as they encourage floodplain restoration. Please see the main report for full discussion of project alternatives considered for this study.

Step 3. Programmatic Assessment of Potential Impacts to Threatened or Endangered Species.

Appendix A provides a general assessment of the project-related effects of FDR activities and concept plans on the river’s biological resources, including Threatened and Endangered Species. **Table 2** provides a very brief summary of the analysis, as it pertains to federally protected species. Please see Appendix A for further discussion of the rationale of the ratings provided.

Table 2. Summary of general impact rating for project alternatives on Threatened and Endangered Species, as presented in Section **XXX**.

| Alternative | Impact Rating | Rating Definition |
|-------------|---------------|--|
| NA | 0 | +3 Major beneficial environmental impacts might be expected; +2 Moderate beneficial environmental impacts might be expected; +1 Minor beneficial environmental impacts might be expected; 0 No appreciable environmental impacts might be expected; -1 Minor adverse environmental impacts might be expected; -2 Moderate adverse environmental impacts might be expected; -3 Major adverse environmental impacts might be expected. |
| A | -1 | |
| B | -1 | |
| C | 0 | |
| D | 0 | |
| E | 0 | |
| F | 0 | |
| G | -1 | |
| H | 1 | |
| I | 0 | |
| J | +2 | |
| K | 0 | |
| L | 0 | |

Mussels

Since Pink mucket pearly mussel, pocketbook mussel, and Scaleshell mussel are extirpated impacts would not be expected. Also, the only population of winged mapleleaf exists well above the UMRS on the St. Croix River. Thus, impacts to mussels would likely be limited to Higgins' eye pearly mussel. Potential impacts include direct dredging, burial, sediment resuspension during construction; with long-term impacts potentially occurring through alteration of current and flow patterns. Potential impacts from dredging would need to be considered for future construction. However, most Higgins' eye populations are located upstream of where most FDR projects might be considered. Also, since most construction would not occur within aquatic areas, the likelihood of substantial footprint impacts to Higgins eye would be low. It's also possible that some alternatives (e.g., Alternative J) that promote ecosystem restoration could benefit Higgins Eye. However, these benefits are highly uncertain and may be geared more toward floodplain habitat (areas not utilized by Higgins Eye).

Pallid sturgeon

Potential construction impacts include dredging entrainment and sediment resuspension; with long-term impacts potentially occurring through reduction of lateral connectivity and alteration of current and flow patterns. However, most levee creation/expansion would not occur immediately within aquatic areas. Moreover, most construction would occur with existing levees. Few "new" levees would be proposed that would remove existing floodplain, especially those floodplain areas with high quality terrestrial, wetland or aquatic habitat. Thus, likelihood of substantial impacts to Pallid Sturgeon through construction activities, alternations in flow patterns or reduced connectivity would probably be low.

It's also possible that some alternatives that promote ecosystem restoration could benefit Pallid Sturgeon. Alternatives that promote floodplain connectivity and floodplain habitat restoration could provide seasonal benefits to this species. However, these benefits are highly uncertain.

Indiana Bat

Potential construction impacts include displacement or disruption of normal feeding, resting or reproductive activities. Long-term impacts could include permanent changes in land cover, separation, fragmentation or reduction of habitats. Most construction would include expansion of existing levees, many of which would include landward expansion of agricultural levees. Such areas may be devoid of floodplain forest habitat valuable to this species. However, some forest clearing may be necessary should many of these alternatives be considered further. Thus impacts to Indiana Bat may be possible. Thus, any future project would need careful coordination with the USFWS to ensure compliance with ESA.

It's also possible that some alternatives that promote ecosystem restoration could benefit Indiana Bat. Alternatives that promote floodplain habitat restoration, particularly floodplain forest habitat, could provide important benefits to this species. These benefits would need further investigation and quantification with any future project.

Bald Eagle

Potential construction impacts include displacement or disruption of normal feeding, resting or reproductive activities. Long-term impacts could include permanent changes in land cover, separation, fragmentation or reduction of habitats. Most construction would include expansion of existing levees, many of which would include landward expansion of agricultural levees. Such areas may be devoid of floodplain forest habitat valuable to this species. However, some forest clearing may be necessary should many of these alternatives be considered further. Thus impacts to Bald Eagle may be possible. Thus, any future project would need careful coordination with the USFWS to ensure compliance with ESA.

It's also possible that some alternatives that promote ecosystem restoration could benefit Bald Eagle. Alternatives that promote floodplain habitat restoration, particularly floodplain forest habitat, could provide important benefits to this species. These benefits would need further investigation and quantification with any future project.

Interior Least Tern

Potential construction impacts include displacement or disruption of normal feeding, resting or reproductive activities. Long-term impacts could include permanent changes to habitat as a result of altered hydraulic conditions, though these may be limited. Most construction would include expansion of existing levees, many of which would include landward expansion of agricultural levees. Impacts would probably be limited to more floodplain areas, with less influence on river islands that are important tern habitat. However, any future project considerations in the area of least tern would need to consider further the potential for impacts.

Decurrent false aster

Potential construction impacts include covering of existing decurrent false aster communities. Implementation of FDR measures also could influence the microhabitat conditions such as soil, elevation and moisture conditions important to the species. It also could effect disturbance mechanisms, such as flooding, that are important for this species. Several FDR measures can, themselves, create disturbance. It is uncertain how this anthropogenic disturbance may have short- or long-term effects (either adversely or beneficially) on decurrent false aster.

It's possible that some alternatives that promote ecosystem restoration could benefit decurrent false aster. Alternatives that promote floodplain habitat restoration, particularly floodplain connectivity, could provide important benefits. Restoring flood pulse and flood disturbance could benefit this species within its range. Given these issues with both beneficial and adverse

effects, any future project would need careful review to identify potential effects. This would include thorough coordination with the USFWS to ensure compliance with ESA.

4. REFERENCES

USACE, 2004. FINAL - UMR-IWW System Navigation Feasibility Study, Integrated Feasibility Report and PEIS. Rock Island District, Corps of Engineers. September 2004.

Theiling, C.H., C. Korschgen, H. De Haan, T. Fox, J. Rohweder, and L. Robinson. 2000. Habitat Needs Assessment for the Upper Mississippi River System: Technical Report. U.S. Geological Survey, Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin. Contract report prepared for U.S. Army Corps of Engineers, St. Louis District, St. Louis, Missouri. 248 pp. + Appendices A to AA.