

**APPENDIX D**  
**FINAL**  
**USFWS**  
**COORDINATION ACT REPORT**

*Feasibility Report with Integrated Environmental Assessment  
Rip Rap Landing HREP*

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# United States Department of the Interior



## U.S. FISH AND WILDLIFE SERVICE

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September 12, 2014

Colonel Anthony P. Mitchell  
U.S. Army Corps of Engineers  
St. Louis District  
1222 Spruce Street  
St. Louis, Missouri 63103-2833

Attn: Dr. Kathryn McCain, CEMVP-PD-P

Dear Colonel Mitchell:

This letter constitutes our Final Fish and Wildlife Coordination Act Report (Report) for the Rip Rap Landing State Fish & Migratory Wildlife Management Area Habitat Rehabilitation and Enhancement Project (HREP) located in Calhoun County, Illinois. This report is intended to provide compliance with Subsection 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*); the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*); and, the National Environmental Policy Act (83 Stat. 852, as amended P.L. 91-190, 42 U.S.C. 4321 *et seq.*). This Report has been reviewed by the Illinois Department of Natural Resources and their concurrence is noted.

## **INTRODUCTION**

The Rip Rap Landing HREP is a component of the Upper Mississippi River System-Environmental Management Program (UMRR-EMP) authorized by Section 1103 of the Water Resources Development Act (WRDA) of 1986. The goal of EMP is to implement “numerous enhancement efforts...to preserve, protect, and restore habitat that is deteriorating due to natural and man-induced activities.” The Rip Rap Landing project addresses habitat rehabilitation and enhancement at the Rip Rap Landing State Fish & Migratory Wildlife Management Area. Rip Rap Landing Fish and Wildlife Area is located in Pool 25 between Upper Mississippi River Miles 260.5 and 267 and contains approximately 2,338 acres of river bottomlands. Rip Rap Landing Fish and Wildlife Area includes both U.S. Army Corps of Engineers (Corps) General Plan lands (283 acres) and Illinois Department of Natural Resources (IDNR) owned lands (2,055 acres). The Corps property is managed by the IDNR through a cooperative agreement between the IDNR, Corps, and U.S. Fish and Wildlife Service (Service). A portion of the IDNR land known as the Rust Land Company tract has a Natural Resources Conservation Service (NRCS) Wetland Reserve Program (WRP) easement in place. Another portion of the IDNR land was previously designated a State Natural Area due to the significant historic forest composition of bottomland hardwood forest.

## **THREATENED AND ENDANGERED SPECIES**

We have reviewed the May 2014 Definite Project Report (DPR) with integrated Environmental Assessment (EA) for this project. In responding to the EA, we concurred that with implementation of the conservation measures discussed in the report, the proposed project is not likely to adversely affect any known federally listed threatened or endangered species.

## **RESOURCE PROBLEMS AND OPPORTUNITIES**

Historically the Rip Rap Landing Fish and Wildlife Area provided high quality habitat for a variety of fish and wildlife resources. Over the years a large portion of the area was cleared for farming and the 1993 and 1995 floods severely degraded the remaining bottomland hardwood forest, wetland, and aquatic habitats within the project area. Other factors contributing to the degradation include an increased water table from the construction of Lock and Dam 25 and the inability to properly drain the area following flooding. The inability to properly drain the area is primarily due to hillside born sediment deposition within the Sny Creek channel. This sediment deposition within Sny Creek has also resulted in the loss of connectivity between the Mississippi River, Sny Creek and adjacent backwater lakes.

Sedimentation is considered by many as the most severe problem affecting fish and wildlife resources in the Mississippi River. Sediment deposition occurs due to overbank flooding and inputs from surrounding uplands. Aquatic vegetation production is inhibited by soft substrates and high turbidity. This aquatic vegetation forms the basis of the substrate needed for aquatic macroinvertebrate production and along with macroinvertebrates provides an important food base for many species of migratory birds and riverine fish. The aquatic vegetation also provides important spawning and brood rearing habitat for fish.

The degraded state of the project area provides a significant opportunity to rehabilitate, enhance and increase wetland and aquatic habitats for the benefit of migratory birds, fish and other wildlife resources. The primary problems to be addressed by this project include the loss of forested wetland habitat, loss of native non-forested wetland habitat, sedimentation in backwater areas and in non-forested wetland habitat, lack of floodplain connectivity, lack of water regulation and supply, invasive plant species colonization, and river scouring in non-forested wetland habitat.

## **GOALS AND OBJECTIVES**

The goal of the Rip Rap Landing HREP project is to increase the quality and quantity of aquatic, non-forested wetland, and forested wetland habitats. To achieve this goal a planning team of biologists from the Corps, IDNR, Natural Resources Conservation Service (NRCS), and Service developed the objectives for the project. The objectives include the following:

- Objective 1: Improve habitat to fish over the period of analysis

- Objective 2: Increase native plant species diversity and reduce number of acres impacted by invasive plant species by improving water level management over the period of analysis
- Objective 3: Reduce impacts of headwater flooding and river-borne sedimentation over the period of analysis
- Objective 4: Increase quantity and quality of bottomland hardwood forest over the period of analysis

## **PROPOSED PROJECT FEATURES**

To achieve the project objectives, a number of project plans/features were evaluated. The recommended plan (alternative 8) consists of the following:

- Improved water level management (drainage and delivery) on 713 acres of wetlands in Zones 1, 3, and 4;
- Conversion of approximately 100 acres of cropland and former cropland to bottomland forest within Zones 1 and 3;
- Riverside ridge scour embankment in Zone 4;
- Excavation of Sny Creek to restore year-round access for fish from the Mississippi River to Roadside Lake in Zones 4 and 5

## **METHODOLOGY TO EVALUATE ALTERNATIVES**

The Rip Rap Landing HREP was analyzed using the Wildlife Habitat Appraisal Guide (WHAG) and the Aquatic Habitat Appraisal Guide (AHAG). The target species for the WHAG included the mallard and northern parula. The target species for the AHAG included the smallmouth buffalo and bluegill. Existing conditions, future without project conditions and future with project conditions were examined. This analysis was conducted with team members representing the Corps, IDNR, Service and HDR, Inc., the contractor assisting with preparation of the Definite Project Report with Integrated Environmental Assessment.

The utilized evaluation models produced a rating of habitat quality for each respective habitat type. This rating is referred to as a Habitat Suitability Index (HSI). The HSI, a value ranging from 0.1 to 1.0, measures the existing and future habitat conditions compared to optimum habitat which is 1.0. This value, when multiplied by the available habitat within the project area, will provide a measure of available habitat quality and quantity known as habitat units (HUs). Average annual habitat units (AAHUs) for each species are typically calculated to reflect expected habitat conditions over a 50-year project life.

The WHAG model includes limiting factors in each matrix. Absence of critical life requisites for a particular species makes the habitat unsuitable and results in an HSI value of zero regardless of other habitat characteristic scores. The AHAG model did not include limiting factors.

## **EXISTING, FUTURE WITHOUT, AND FUTURE WITH PROJECT CONDITIONS**

A number of general and site specific assumptions were made as to what the project area and vicinity would be like 50 years in the future with and without the project and can be found in Appendix D of the May 2014 DPR.

### *Terrestrial Species*

#### Zone 1

The overall habitat suitability score for the target terrestrial species, the mallard, improved with the project over the existing condition and was greater than the future without project within each of the different habitat types in Zone 1 (Table 1). The overall habitat suitability for the mallard improved with the project due to the conversion of cropland to forested habitat, improved ability to manage water conditions in the fall-winter, increased availability of water 4-18 inches in depth, increased coverage of important food plants, and improved access to nonforested wetlands with predictable water levels. Without the project the inability to manage fall-winter water conditions resulted in a limiting factor value and an HSI score of zero for the mallard within each of the different habitat types.

The overall habitat suitability scores for the other species analyzed varied across the different habitat types. In the bottomland hardwood areas the habitat suitability for the green-backed heron, wood duck, and beaver improved with the project due to improved access to nonforest wetlands with predictable water levels. Habitat suitability for the northern parula and prothonotary warbler also improved due to changes within the forest stand that benefited each of the species. In the nonforested wetland areas the habitat suitability for the Canada goose improved with the project similar to the mallard and habitat quality for the muskrat, green-backed heron, and coot improved due to the ability to manage the water regime and manage for water in the 4-18 inch range by August. Habitat suitability for the lesser yellowlegs remained the same with or without the project while habitat quality for the least bittern and king rail declined slightly with the project because of the water regime management. In the cropland areas the habitat suitability for the green-backed heron and beaver improved with the project due to the conversion of cropland to forested wetland habitat and improved access to nonforest wetlands with predictable water levels. Habitat suitability for the northern parula and prothonotary warbler also improved with the conversion of cropland to forested habitat.

#### Zone 2

The overall habitat suitability score for the target terrestrial species, the northern parula, varied across the different habitat types in Zone 2 (Table 1). In the bottomland hardwood areas the habitat suitability for the northern parula remained the same with the project because the forested habitat would be left in its current condition. In the cropland areas the habitat suitability with the

project improved due to the conversion of cropland to forested habitat and the increased availability of forested habitat adjacent to permanent water. Without the project the lack of forested habitat in the cropland areas resulted in a limiting factor value and the HSI score of zero for the northern parula.

The overall habitat suitability scores for the other species analyzed remained the same or improved with the project. In the bottomland hardwood areas the habitat suitability for the green-backed heron, wood duck, beaver, northern parula, and prothonotary warbler remained the same because the forested habitat would be left in its current condition. In the cropland areas habitat suitability for the green-backed heron, wood duck, beaver, and prothonotary warbler improved with the project due to the conversion of cropland to forested wetland habitat and the increased availability of forested habitat adjacent to permanent water.

### Zone 3

The overall habitat suitability scores for the two target terrestrial species, the mallard and northern parula, improved with the project over the existing condition and were greater than the future without project within each of the habitat types in Zone 3 (Table 1). In the bottomland hardwood areas the habitat suitability for the mallard improved due to increased coverage of important food plants including acorn producing trees. In the nonforested wetland areas of Waverly Lake the habitat suitability for the mallard improved due to increased coverage of important food plants. In the nonforested wetland areas of Roadside Lake the habitat suitability for the mallard improved due to the improved ability to manage water conditions in the fall-winter, increased coverage of important food plants, and increased plant diversity. Without the project the inability to manage fall-winter water conditions in Roadside Lake resulted in a limiting factor value and the HSI score of zero for the mallard. In the cropland areas the habitat suitability for the northern parula improved due to the conversion of cropland to forested habitat. Without the project the lack of forested habitat in the cropland areas resulted in a limiting factor value and the HSI score of zero for the northern parula.

The overall habitat suitability scores for the other species analyzed varied across the different habitat types. In the bottomland hardwood areas the habitat suitability for the wood duck, northern parula, and prothonotary warbler improved with the project while the habitat suitability for the green-backed heron and beaver declined slightly. Habitat suitability for the wood duck, northern parula, and prothonotary warbler improved due to beneficial changes within the forest stand as it matures over the life of the project. In the nonforested areas of Waverly Lake habitat suitability for the Canada goose, least bittern, lesser yellowlegs, king rail and American coot improved with the project while habitat suitability for the muskrat and green-backed heron declined slightly. Habitat suitability for the Canada goose improved similar to the mallard, habitat suitability for the lesser yellowlegs and king rail improved with the project due to improved ability to manage the water regime, and habitat suitability for the least bittern and American coot improved with the project due to the increased abundance of emergent vegetation and improved ability to manage the water regime. In the nonforested areas of Roadside Lake habitat suitability for the Canada goose, least bittern, and American coot improved with the project while habitat suitability for the lesser yellowlegs and green-backed heron remained unchanged and habitat suitability for the muskrat declined. Habitat suitability for the Canada

goose improved similar to the mallard and habitat suitability for the least bittern and American coot improved with the project primarily due to the increased abundance of emergent vegetation. In the cropland areas habitat suitability for the green-backed heron, beaver, and prothonotary warbler improved due to the conversion of cropland to forested habitat.

#### Zone 4

The overall habitat suitability scores for the two target terrestrial species, the mallard and northern parula, improved with the project over the existing condition and were greater than the future without project within each of the habitat types in Zone 4 (Table 1). In the nonforested wetland areas the habitat suitability for the mallard improved due to improved ability to manage water conditions in the fall-winter, increased availability of water 4-18 inches in depth, and increased coverage of important food plants. Without the project the inability to manage fall-winter water conditions resulted in a limiting factor value and the HSI score of zero for the mallard. In the cropland areas the habitat suitability for the northern parula improved due to the conversion of cropland to forested habitat and the increased availability of forested habitat adjacent to permanent water. Without the project the lack of forested habitat in the cropland areas resulted in a limiting factor value and the HSI score of zero for the northern parula.

The overall habitat suitability scores for the other species analyzed varied across the different habitat types. In the nonforested wetland areas the habitat suitability for the Canada goose, least bittern, king rail, and American coot improved with the project while habitat suitability for the lesser yellowlegs and green-backed heron remained unchanged and habitat suitability for the muskrat declined. Habitat suitability for the Canada goose improved similar to the mallard, habitat suitability for the king rail improved with the project due to increased coverage of sedge canopy and improved ability to manage the water regime, and habitat suitability for the least bittern and American coot improved primarily due to the increased abundance of emergent vegetation. In the cropland areas habitat suitability for the green-backed heron, beaver, and prothonotary warbler improved due to the conversion of cropland to forested wetland habitat and the increased availability of forested habitat adjacent to permanent water.

#### Zone 5

Habitat suitability was not calculated for this zone since no terrestrial habitat features were proposed for this zone.

#### Aquatic Species

Habitat suitability for both aquatic species in Roadside Lake and Sny Creek improved with the project over existing conditions, while without the project the habitat suitability declined (Table 3). The major change associated with the project is that the dredging of Sny Creek and the added connection between Sny Creek and Roadside Lake would allow improved access for spawning and rearing to areas that for the most part are inaccessible under the current conditions. Without the project the impact of sediment deposition within Roadside Lake and Sny Creek would lead to reduced depth, poor water temperatures, and reduced dissolved oxygen levels. Habitat suitability

was not calculated for Dog Island given that the features for that area were removed from consideration.

### Summary

The WHAG and AHAG analysis indicates that the preferred alternative results in a net increase of 503.69 AAHUs for the target terrestrial species and 51.40 AAHUs for the target aquatic species over the future without project. The combination of aquatic and terrestrial features in the preferred alternative will yield a net increase of 555.09 AAHUs for all evaluation species over the future without project condition.

## **CONCLUSIONS AND RECOMMENDATIONS**

According to the Incremental Cost Analysis, the preferred alternative ranks 8 out of 10 in cost per AAHU output compared to the other best buy plans (Appendix E of the DPR). In addition, the alternative rated high for acceptability, completeness, effectiveness, and efficiency in achieving the project objectives. In the Draft Coordination Act Report (DCAR) for this project the Service recommended that alternatives including the dredging of Dog Island Sloughs and water control structures within Dog Island Sloughs be carried forward for further investigation. According to information in the DPR, these features were removed from consideration given the potential impact to forested habitat utilized by the Indiana bat and projected minimal aquatic habitat gain from the proposed features. Given this information, the Service concurs with removing these features at this time; however, the Service recommends continued coordination regarding the potential to improve habitat conditions for the Indiana bat and fisheries resources on Dog Island.

In the DCAR, the Service recommended that hillside sediment control measures be incorporated into the project plans. According to information in the DPR, sedimentation from the hillsides was initially assumed to have a large effect on the wetlands within the project area; however, further investigations determined that NRCS has initiated steps to curb hillside sedimentation in the area and has greatly reduced the problem. The Service recommends ongoing coordination with NRCS to address any remaining hillside and instream sediment issues.

Overall, the proposed project (Alternative 8) will be beneficial to the Mississippi River and biota dependent upon the river and its floodplain by improving habitat quality in this portion of river. The project will rehabilitate and enhance the quality and diversity of wetland habitat, enhance forest quality, reconnect channels to the floodplain, and improve aquatic diversity in backwater habitats. Migratory birds and other terrestrial organisms will have access to improved habitat for resting, feeding, nesting, and escape cover. Large river fish and other aquatic organisms will gain improved access to important habitats for several life stages, such as spawning, rearing and over wintering. These areas will also provide an important feeding area for aquatic organisms and serve as a production area for small fish and invertebrates that other terrestrial organisms feed upon. The proposed Rip Rap Landing HREP will be beneficial to a variety of fish and wildlife resources. The Service supports the proposed Rip Rap Landing HREP.

Thank you for the opportunity to provide this Final Fish and Wildlife Coordination Act Report. If you have questions, please contact me at (618) 997-3344, ext. 345.

Sincerely,

*/s/ Matthew T. Mangan*

Matthew T. Mangan  
Fish and Wildlife Biologist

cc: IDNR (Atwood, Postlewait)  
MDC (Sternburg)  
USFWS (Clevenstine, Mabery)

Attachments: Table 1  
Table 2

Table 1: Habitat Suitability Index (HSI) scores for Existing, Future Without (Year 50) and Future With (Year 50) for terrestrial species, Rip Rap Landing HREP. Only the species highlighted in gray were used to calculate project benefits. Net change is the difference between Future With Project and Future Without Project.

Habitat Type	Species	Existing	Future With	Future Without	Net
Zone 1 - Bottomland Hardwoods	<b>Mallard</b>	<b>0.00</b>	<b>0.81</b>	<b>0.00</b>	<b>0.81</b>
	Green-backed Heron	0.53	0.60	0.53	0.07
	Wood Duck	0.48	0.58	0.48	0.10
	Beaver	0.45	0.51	0.45	0.06
	Northern Parula	0.42	0.50	0.42	0.08
	Prothonotary Warbler	0.44	0.53	0.44	0.09
Zone 1 - Nonforested Wetlands	<b>Mallard</b>	<b>0.00</b>	<b>0.85</b>	<b>0.00</b>	<b>0.85</b>
	Canada Goose	0.00	0.61	0.00	0.61
	Least Bittern	0.71	0.61	0.69	-0.08
	Lesser Yellowlegs	0.68	0.68	0.68	0.00
	Muskrat	0.15	0.62	0.15	0.47
	King Rail	0.56	0.49	0.56	-0.07
	Green-backed Heron	0.71	0.85	0.76	0.09
	American Coot	0.63	0.78	0.68	0.10
Zone 1 – Cropland Conversion	<b>Mallard</b>	<b>0.00</b>	<b>0.86</b>	<b>0.00</b>	<b>0.86</b>
	Green-backed Heron	0.00	0.34	0.00	0.34
	Beaver	0.15	0.33	0.00	0.33
	Northern Parula	0.00	0.35	0.00	0.35
	Prothonotary Warbler	0.00	0.09	0.00	0.09
Zone 2 - Bottomland Hardwoods	Green-backed Heron	0.44	0.44	0.44	0.00
	Wood Duck	0.48	0.49	0.49	0.00
	Beaver	0.40	0.40	0.40	0.00
	<b>Northern Parula</b>	<b>0.50</b>	<b>0.50</b>	<b>0.50</b>	<b>0.00</b>
	Prothonotary Warbler	0.68	0.71	0.71	0.00
Zone 2 – Cropland Conversion	Green-backed Heron	0.00	0.54	0.00	0.54
	Wood Duck	0.00	0.10	0.00	0.10
	Beaver	0.14	0.48	0.00	0.48
	<b>Northern Parula</b>	<b>0.00</b>	<b>0.45</b>	<b>0.00</b>	<b>0.45</b>
	Prothonotary Warbler	0.00	0.11	0.00	0.11
Zone 3 - Bottomland Hardwoods (Roadside Lake)	<b>Mallard</b>	<b>0.13</b>	<b>0.29</b>	<b>0.27</b>	<b>0.02</b>
	Green-backed Heron	0.64	0.63	0.63	0.00
	Wood Duck	0.50	0.64	0.55	0.09
	Beaver	0.68	0.63	0.59	0.04
	Northern Parula	0.42	0.45	0.45	0.00
	Prothonotary Warbler	0.47	0.64	0.64	0.00
Zone 3 - Bottomland Hardwoods (Waverly Lake)	<b>Mallard</b>	<b>0.13</b>	<b>0.29</b>	<b>0.27</b>	<b>0.02</b>
	Green-backed Heron	0.64	0.63	0.63	0.00
	Wood Duck	0.50	0.64	0.55	0.09
	Beaver	0.68	0.63	0.59	0.04
	Northern Parula	0.42	0.45	0.45	0.00
	Prothonotary Warbler	0.47	0.64	0.64	0.00

Table 1: Continued

Habitat Type	Species	Existing	Future With	Future Without	Net
Zone 3 - Nonforested Wetlands (Roadside Lake)	<b>Mallard</b>	<b>0.00</b>	<b>0.31</b>	<b>0.00</b>	<b>0.31</b>
	Canada Goose	0.00	0.32	0.00	0.32
	Least Bittern	0.00	0.71	0.00	0.71
	Lesser Yellowlegs	0.65	0.65	0.62	0.03
	Muskrat	0.64	0.28	0.64	-0.36
	Green-backed Heron	0.77	0.77	0.79	-0.02
	American Coot	0.60	0.69	0.58	0.11
Zone 3 - Nonforested Wetlands (Waverly Lake)	<b>Mallard</b>	<b>0.15</b>	<b>0.31</b>	<b>0.13</b>	<b>0.18</b>
	Canada Goose	0.14	0.29	0.13	0.16
	Least Bittern	0.63	0.81	0.61	0.20
	Lesser Yellowlegs	0.64	0.68	0.61	0.07
	Muskrat	0.55	0.53	0.41	0.12
	King Rail	0.64	0.76	0.57	0.19
	Green-backed Heron	0.87	0.73	0.86	-0.13
	American Coot	0.61	0.65	0.60	0.05
Zone 3 – Cropland Conversion	Green-backed Heron	0.00	0.34	0.00	0.34
	Beaver	0.15	0.33	0.00	0.33
	<b>Northern Parula</b>	<b>0.00</b>	<b>0.35</b>	<b>0.00</b>	<b>0.35</b>
	Prothonotary Warbler	0.00	0.37	0.00	0.37
Zone 4 - Nonforested Wetlands	<b>Mallard</b>	<b>0.00</b>	<b>0.35</b>	<b>0.00</b>	<b>0.35</b>
	Canada Goose	0.00	0.35	0.00	0.35
	Least Bittern	0.00	0.80	0.00	0.80
	Lesser Yellowlegs	0.65	0.65	0.62	0.03
	Muskrat	0.40	0.26	0.40	-0.14
	King Rail	0.00	0.73	0.00	0.73
	Green-backed Heron	0.73	0.73	0.75	-0.02
	American Coot	0.54	0.65	0.51	0.14
Zone 4 – Cropland Conversion	Green-backed Heron	0.00	0.54	0.00	0.54
	Beaver	0.14	0.48	0.00	0.48
	<b>Northern Parula</b>	<b>0.00</b>	<b>0.45</b>	<b>0.00</b>	<b>0.45</b>
	Prothonotary Warbler	0.00	0.44	0.00	0.44

Table 3: Habitat Suitability Index (HSI) scores for Existing, Future Without Project (Year 50) and Future With Project (Year 50) for aquatic species, Rip Rap Landing HREP.

<b>Location</b>	<b>Species</b>	<b>Existing</b>	<b>Future With</b>	<b>Future Without</b>	<b>Net</b>
Roadside Lake	Smallmouth Buffalo	0.30	0.59	0.22	0.37
	Bluegill	0.34	0.48	0.22	0.26
Sny Creek	Smallmouth Buffalo	0.30	0.59	0.22	0.37
	Bluegill	0.34	0.48	0.22	0.26