

FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

Full Project Proposal

PROJECT NAME:

NFPP Phase I - Ferson-Otter Creek Dam Removal/Modification Project, Fox River Watershed, Illinois

FIELD OFFICE:

Carterville NFWCO

PROJECT COORDINATOR:

Nate Caswell

FONS NUMBER:

31340-2009-062

FUNDING REQUESTED:

On-the-ground funding request is for \$10,000.00 from the National Fish Passage Program.

We will have a contribution of \$10,000.00 from the Kane County Forest Preserve District, and in-kind contributions of \$5,000 from the Kane County Department of Environmental & Building Management and \$4,125 from the Illinois Department of Natural Resources for a project total of \$29,125.00.

STATEMENT OF PROBLEM:

Ferson-Otter Creek is a tributary to the Fox River, located in the east central part of Kane County, Illinois. The watershed area is approximately 50 square miles including 45 linear miles of stream habitat. Data from Illinois Department of Natural Resources (IDNR) surveys indicate that the lower the segments of Ferson-Otter Creek have a diverse fish community with Index of Biotic Integrity scores in the 48-50 range (on a scale of 0-60), representing the highest quality tributary habitat available within the St. Charles Pool of the Fox River. Unfortunately, the upper segments of Ferson-Otter Creek have lower fish diversity and overall, show lower IBI scores. We have identified two impassable dams and a number of low water barriers within the watershed which appear to be limiting upstream fish communities. Other factors contributing to the degraded communities in the watershed include effects from urban and agricultural land use practices. The City of St. Charles has been very active in stream restoration within the Ferson-Otter watershed, re-creating a large streamside wetland to mitigate urban development, and restoring the adjoining stream channel in the upper watershed – a project which has served as a region-wide model for urbanizing watersheds. Kane County is also a very active partner in stream protection through use of ordinances and its renowned program to preserve farmland.

Existing migration barriers on Ferson-Otter Creek are limiting restoration efforts already underway on the upper segments of the stream and will continue to be an impediment to full restoration for fish communities. A total of 12 fish species were only found downstream of the two impassable dams on Ferson-Otter Creek, based on IDNR surveys. Although mussel data is not currently available, it is likely that they are also affected, as shown in other watersheds in Illinois and throughout the country. Furthermore, Ferson-Otter Creek is important to Fox River fish communities as one of the largest and highest quality tributaries within the St. Charles Pool, between the St. Charles and South Elgin Dams. Tributaries serve an important function as spawning, nursery, and foraging areas for riverine species, such as the smallmouth bass, channel catfish, and golden redhorse; all species which occur only in the lower segments of Ferson-Otter Creek. Smallmouth bass and channel catfish are well-known sport species, especially important for local urban anglers. Moreover, redhorse species have been shown to be rare and vulnerable to extirpation in this segment of the Fox River due to fragmentation by

FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

mainstem Fox River Dams (Santucci et al., No. Amer. Journal of Fisheries Management 25(3):975-992).

PROJECT OBJECTIVES:

This project represents Phase I of multi-phased program to create uninterrupted fish passage throughout 44 miles of stream habitat in the Ferson-Otter Creek watershed. Our primary objective for Phase I is to remove the impassable dam at Creek Bend Forest Preserve and to modify the Davoust Dam located downstream of Creek Bend, in order to open an additional 3.25 miles of lower Ferson-Otter Creek to the Fox River. Completion of Phase I will allow us to use these projects as models for low cost stream restoration, and to give examples to present to other private landowners in order to foster cooperation for the watershed wide approach. Phase one will also include evaluation of the fish community response.

DESCRIPTION OF PROPOSED PROJECT:

Location

These sites are located in the State of Illinois within Kane County and Congressional District 14. The Ferson/Otter Creek watershed is a tributary of the lower Fox River (8-digit HUC #07120007).

Coordinates:

Davoust Dam – 41.9340° N; -88.3388° W

Creek Bend Forest Preserve Dam – 41.9298° N; -88.3516° W

Description of On-The-Ground Work

Working with our partners, we have identified six potential fish passage barriers in the first 3.9 miles of Ferson Creek. After evaluation, we determined that two of them represent substantial barriers to fish passage. We believe that the other four potential barriers identified in this section of Ferson Creek are already passable except under extremely low flows. Two of these barriers are low concrete and rock dams. One of these dams has the stream flow concentrated to one side, where we believe fish can pass. The stream itself has eroded a bypass channel around the other dam. No modifications are proposed at these sites. The last two barriers are man made rock riffles. Although they currently allow fish passage, they are poorly constructed, and may be hand modified to prevent erosion problems.

Much of the effort and expense for Phase I of this project will focus on removal of the impassable dam at Otter Bend Forest Preserve. This structure is approximately 3.5 feet in height, and is constructed of large boulders grouted in concrete. Step one of this part of the project will entail a thorough field survey at the site to obtain exact elevations of stream channel in the area of the dam. Step 2 will be to develop a detailed construction and post removal restoration plan. Based on preliminary survey and evaluation, the dam will be deconstructed using a track backhoe and the boulders from the dam will be used in conjunction with additional stone material to construct a riffle in place of the existing dam. We plan to match the invert of the newly constructed riffle to the upstream sediment elevation. There is very little fine sediment in the upstream area and only modest accumulation of bed load, which will be largely held in place by the newly constructed riffle structure. After completing the detailed plan, we will obtain Section 404 Permits from the U.S. Army Corps of Engineers (USACE) and the Illinois Department of Natural Resources (IDNR). Actual construction is anticipated to take 3.5 days.

Another feature of Phase I is to modify the Davoust Dam downstream of Creek Bend Forest Preserve. This structure is made of loose boulders without concrete grouting. This barrier is less than 18 inches in height and already has deteriorated from age and high flow events. No permits will be required for this work, and in fact all work will be done by hand since there is no access for equipment. Boulders within the structure will be rearranged to enhance fish passage and to direct flow to the center of the creek to prevent erosion of downstream banks. Work will be done at low flow, under supervision of IDNR Fisheries Personnel to insure adequate low-water fish passage. Manual labor will provided by largely Kane County, representing a significant portion of their in-kind match. This portion of the project should require approximately 1.5 days.

FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

Finally, IDNR Fisheries personnel, together with Kane County assistance, will spend 4 days sampling fish at 4 locations, requiring 2 days pre-project and 2 days post project sampling.

Probability of Completion

We anticipate 100% probability of completion within one year of receiving adequate funding.

Partner Contribution and Total Project Costs

Contributing Partners	Cash or In-Kind?	Amount \$ Contributed
Kane County Forest Preserve District	Cash	\$10,000.00
Kane County Department of Environmental & Building Management	In-Kind	\$5,000.00
Illinois Department of Natural Resources		\$4,125.00
Total FWS Fish Passage Contribution (include only on-the-ground costs)	Cash	\$10,000.00
Total Project Cost =		\$29,125.00

Itemized List of What Service Funds Will Be Spent On

Expense Item	\$
Backhoe Operation (30hrs @ \$200/hour)	\$6,000.00
Manual Labor (45hrs @ \$90.00/hour)	\$4,000.00
Total FWS Fish Passage Contribution =	\$10,000.00

HOW DOES THIS PROJECT ADDRESS FWS PRIORITIES?:

Northern Illinois has many miles of quality streams and rivers, but many lower-order streams are not publicly accessible beyond public right-of-ways. Improving habitat quality in tributary streams by removing barriers can improve the fishery throughout the river system, benefiting both the public and private landowners. Removal of barriers can also improve the fishery in the river it feeds by allowing access to spawning and rearing habitat. In this case, fish passage improvements on Ferson/Otter Creeks will serve to raise the long-term health of the fish community in the Fox River, which includes popular sport species such as smallmouth bass and channel catfish.

HOW DOES THIS PROJECT ADDRESS PARTNER PRIORITIES?:

This dam removal and modification project will address one of our primary priorities related to the Fox River Watershed Management Plan in which our goal is the uninhibited connection of all tributaries to

FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

the main stem of the Fox River. Dam removal is also a high priority for the Illinois Department of Natural Resources as indicated in their Strategic Plan, as well as the Illinois River Restoration Project (USACE, IDNR) which identified Northeastern Illinois as a high priority area for reconnection of stream habitat. Dam removal and fish passage has been a high priority for IDNR Region II Streams Program, who have been involved in three USFWS National Fish Passage Program Grants; so far, the only ones awarded in Illinois.

ANTICIPATED BENEFITS:

Watershed-Level Ecological Benefits

The City of St. Charles has been very active in stream restoration within the Ferson-Otter watershed, re-creating a large streamside wetland to mitigate urban development, and restoring the adjoining stream channel in the upper watershed – a project which has served as a region-wide model for urbanizing watersheds. Kane County is also a very active partner in stream protection through use of ordinances and its renowned program to preserve farmland. Existing migration barriers on Ferson-Otter Creek are limiting restoration efforts already underway on the upper segments of the stream and will continue to be an impediment to full restoration for fish communities. A total of 12 fish species were only found downstream of the two impassable dams on Ferson-Otter Creek, based on IDNR surveys. Although mussel data is not currently available, it is likely that they are also affected, as shown in other watersheds in Illinois and throughout the country. Removal of the Ferson Creek Dams will help restoration in these upstream areas by reconnecting them to recruitment sources so fish can take advantage these projects already in place, as well as future projects and all other adequate habitats upstream of the removed barriers

Furthermore, Ferson-Otter Creek is important to Fox River fish communities as one of the largest and highest quality tributaries within the St. Charles Pool, between the St. Charles and South Elgin Dams. Tributaries serve an important function as spawning, nursery, and foraging areas for riverine species, such as the smallmouth bass, channel catfish, and golden redhorse; all species which occur only in the lower segments of Ferson-Otter Creek. Smallmouth bass and channel catfish are well-known sport species, especially important for local urban anglers. Moreover, redhorse species have been shown to be rare and vulnerable to extirpation in this segment of the Fox River due to fragmentation by mainstem Fox River Dams (Santucci et al., No. Amer. Journal of Fisheries Management 25(3):975-992. Therefore, we anticipated removal of the Ferson Creek barriers will also benefit the Fox River mainstem.

Primary Native Species to Benefit

Smallmouth bass, a popular sport fish species is currently being impacted by the Ferson-Otter Creek dams. This species has been identified by IDNR as a species in greatest need of conservation in the State Wildlife Plan. The plan also identifies Channel catfish, the most sought after species in the Fox River. Other non-game species in Ferson Creek identified as critical by the statewide plan include, largescale stoneroller, rosyface shiner, blacknose dace, and mottled sculpin.

Stream Miles or Wetland Acres Reconnected

This project will open an additional 3.25 miles of streams in the Ferson/Otter Creek watershed to the Fox River (based on FPDSS mapping utility). Although this is not a large number of miles, much of the cost for this project will be spent on the largest barrier in this system (F5). We anticipate that future phases of this project will have a much higher ratio of miles opened per unit cost.

Other Social Benefits

The removal of the dam located on the Creek Bend Forest Preserve removes a potentially dangerous situation. In addition, it will provide an unrestricted stream system during high flows and an improved recreational environment for forest preserve users.

FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

Possible Negative Impacts

There are no anticipated negative ecological impacts to this project.

EXISTING BIOLOGICAL AND PHYSICAL MONITORING DATA:

IDNR has conducted several fish surveys downstream of the Creek Bend Forest Preserve Site. This information has been attached as Appendix D. Also, St. Charles North High School is proposing a class project to collect some base information for the Creek Bend Forest Preserve site which will include some benthic and water quality data.

BRIEF SUMMARY OF WHY THIS PROJECT SHOULD BE FUNDED:

Ferson Creek is one of the Middle Fox River's highest quality tributaries. However, this area of Illinois has been subject to intense urban development, as well as agricultural activity. These streams are under intense pressure, and need to be protected and restored whenever possible. The barriers present in this watershed may affect long-term biodiversity, and currently impact movements and habitat availability for fish and mussels from the Fox River and within the Ferson/Otter Creek watershed. Fish passage improvements on Ferson/Otter Creeks will serve to raise the long-term health of the fish community in the Fox River, which includes popular sport species such as smallmouth bass and channel catfish. This dam removal and modification project will address one of the primary priorities of the Fox River Watershed Management Plan in which the goal is the uninhibited connection of all tributaries to the main stem of the Fox River.

FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

APPENDIX A- Pictures of the Project Site



Figure 1. Photograph of the Davoust Dam (Barrier F3).

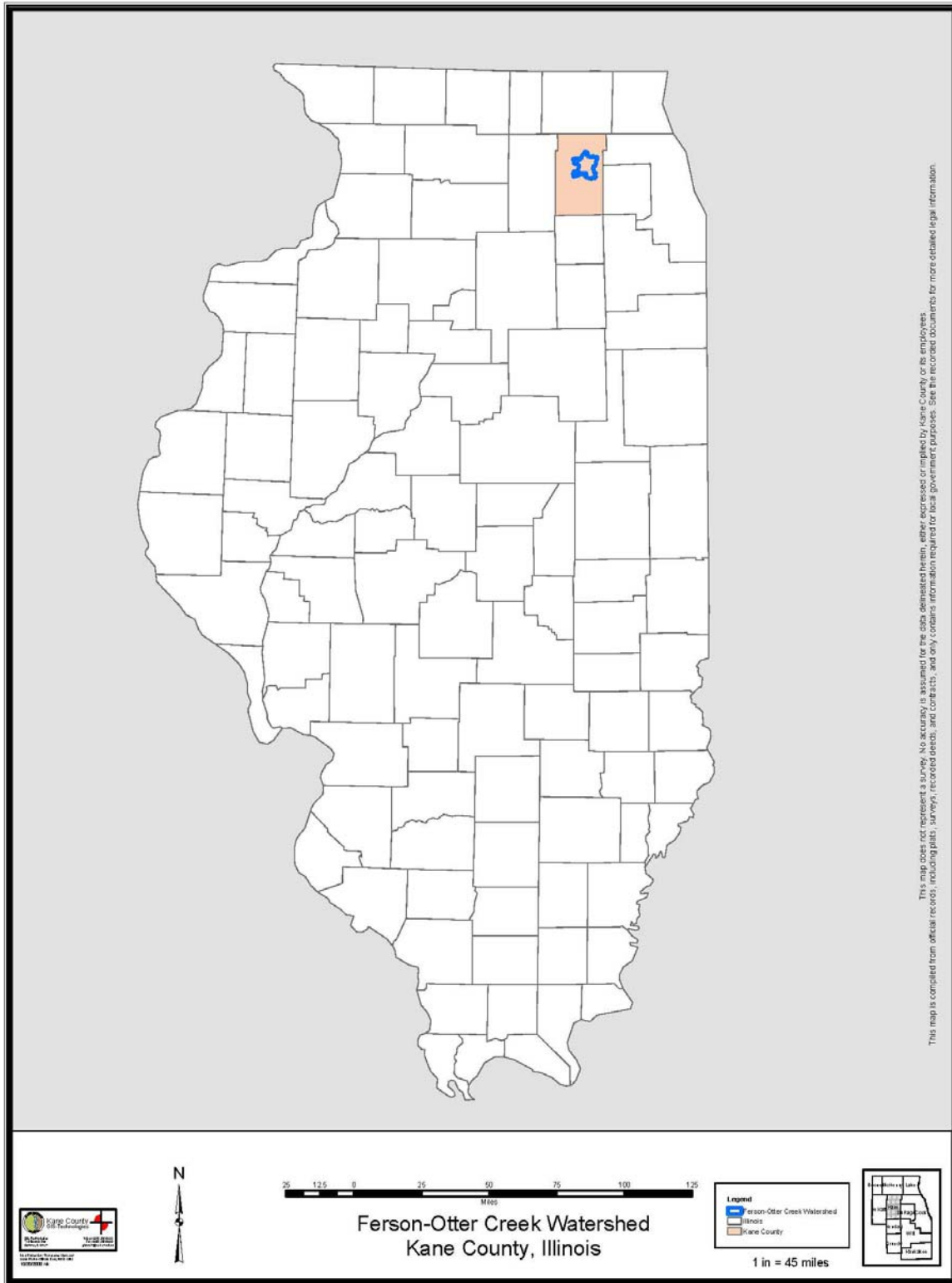
FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals



Figure 2. Photographs of the Creek Bend Forest Preserve Dam (Barrier F5) showing a view looking (clockwise from top left) across the dam, upstream at the dam, upstream above the dam, and downstream from above the dam.

FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

APPENDIX C- Map of the State, Highlighting Location of the Watershed



FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

APPENDIX D- IDNR Fish Survey Data

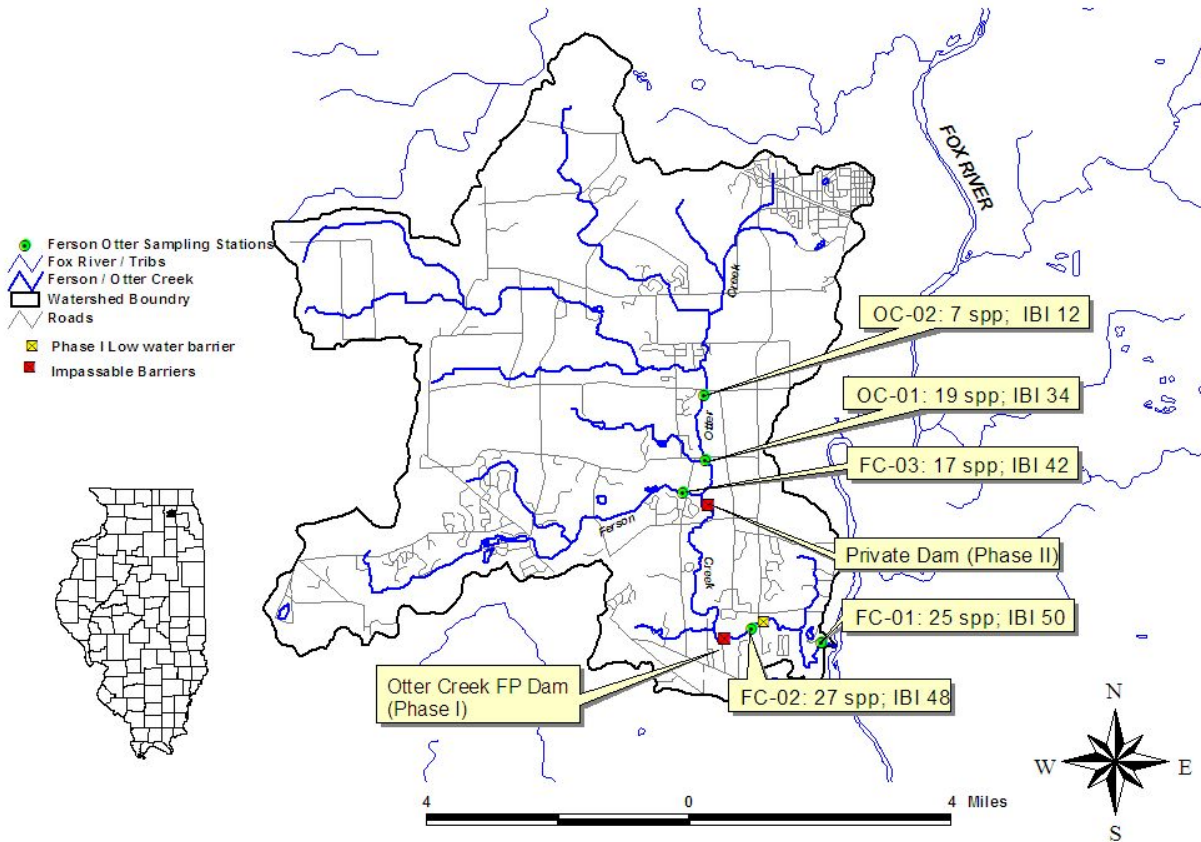


Figure 1. Ferson / Otter Creek Watershed with locations of low water barrier and Otter Creek Forest Preserve Dam to be removed in Phase I, Private Dam silted for removal in Phase II, and location of Illinois DNR fish sampling station. (Inset shows Ferson /Otter Creek location in Kane Co., Illinois)

FWS Region 3 - FY 09 Fish Passage Program- Request for Project Proposals

Table 1. Results of Illinois DNR fish community sampling in the Ferson / Otter Creek Watershed 1996 - 2007. Species limited to the lower watershed downstream of impassable dams are highlighted in yellow.
(Multiple samples combined or average for FC-02 and OC-01)

Common name	Scientific name	Ferson Creek			Otter Creek	
		FC-01	FC-02	FC-03	OC-01	OC-2
Carp	Cyprinus carpio		X	X	X	X
Golden shiner	Notemigonus crysoleucas				X	
Creek chub	Semotilus atromaculatus		X	X	X	X
Hornyhead chub	Nocomis biguttatus	X	X	X	X	
Central stoneroller	Campostoma anomalum	X	X	X	X	
Largescale stoneroller	Campostoma oligolepis		X			
Blacknose dace	Rhinichthys atratulus		X			
Striped shiner	Luxilus chrysocephalus		X	X	X	
Common shiner	Luxilus cornutus		X	X	X	X
Spotfin shiner	Cyprinella spiloptera	X			X	
Fathead minnow	Pimephales promelas				X	
Bluntnose minnow	Pimephales notatus	X	X	X	X	
Emerald shiner	Notropis atherinoides	X				
Rosyface shiner	Notropis rubellus	X				
Sand shiner	Notropis ludibundus	X	X		X	
White sucker	Catostomus commersoni	X	X	X	X	X
Northern hog sucker	Hypentelium nigricans	X	X	X	X	
Golden redbreast	Moxostoma erythrum	X	X			
Channel catfish	Ictalurus punctatus	X	X			
Yellow bullhead	Ameiurus natalis		X		X	
Stonecat	Noturus flavus	X	X	X	X	
Tadpole madtom	Noturus gyrinus	X				
Mosquitofish	Gambusia affinis		X			
Mottled sculpin	Cottus bairdi	X	X			
Black crappie	Pomoxis nigromaculatus		X			
Largemouth bass	Micropterus salmoides	X	X	X		X
Smallmouth bass	Micropterus dolomieu	X	X			
Green sunfish	Lepomis cyanellus	X	X	X	X	X
Bluegill x Green sunfish hybrid	Lepomis macrochirus x L. cyanellus		X			
Bluegill	Lepomis macrochirus	X	X	X	X	X
Walleye	Stizostedion vitreum	X				
Blackside darter	Percina maculata	X	X			
Slenderhead darter	Percina phoxocephala	X				
Logperch	Percina caprodes	X				
Johnny darter	Etheostoma nigrum	X	X	X	X	
Banded darter	Etheostoma zonale	X	X	X	X	
Rainbow darter	Etheostoma caeruleum			X		
Fantail darter	Etheostoma flabellare	X		X		
	Total No. Species	25	27	17	19	7
	Index of Biotic Integrity (*mean)	50	48*	42	34*	12