

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

7. Please also rank these threats to the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

	Critical threat	Serious threat	Somewhat of a threat	Slight threat	No threat	Unknown	Response Total
Habitat loss (breeding range)	0% (0)	100% (3)	0% (0)	0% (0)	0% (0)	0% (0)	3
Habitat loss (feeding/foraging areas)	33% (1)	67% (2)	0% (0)	0% (0)	0% (0)	0% (0)	3
Small native range (high endemism)	0% (0)	0% (0)	0% (0)	0% (0)	67% (2)	33% (1)	3
Near limits of natural geographic range	0% (0)	0% (0)	0% (0)	33% (1)	67% (2)	0% (0)	3
Large home range requirements	0% (0)	0% (0)	0% (0)	0% (0)	67% (2)	33% (1)	3
Viable reproductive population size or availability	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	0% (0)	3
Specialized reproductive behavior or low reproductive rates	33% (1)	0% (0)	33% (1)	0% (0)	33% (1)	0% (0)	3
Degradation of movement/migration routes (overwintering habitats, nesting and staging sites)	33% (1)	0% (0)	33% (1)	0% (0)	0% (0)	33% (1)	3
Genetic pollution (hybridization)	0% (0)	0% (0)	0% (0)	33% (1)	67% (2)	0% (0)	3
Unknown	0% (0)	0% (0)	0% (0)	0% (0)	50% (1)	50% (1)	2
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	1
Total Respondents							30

8. Other threats to the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

My area of expertise is effects of contamination on biological organisms, especially aquatic. This makes filling out the survey difficult. My knowledge is applicable to aquatic habitats rather than specific wildlife species in this survey.

Total Respondents 1

9. Please briefly describe the top two threats to the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana identified above.

1. The acute effects of toxicants are recognized as a threat to organisms, but there is little knowledge on ecosystems or regional effects on chronic insults. Toxicants are more destructive to the embryonic stages, but these are poorly documented. Pollution controls do not have definite focus on chronic effects

2. Habitat loss and pollution

Siltation- hornyhead chub are sight-feeders and mound builders for spawning; thus, muddy water will hamper their chances of survival and if the silt covers gravel and their nest, chances for successful reproduction will be limited. Competition from other wildlife species better adapted to muddy and silty stream conditions

1. Runoff, mostly agricultural
2. Instream modifications

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

Total Respondents 4

10. Please rank the following threats to the HABITAT of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

	Critical threat	Serious threat	Somewhat of a threat	Slight threat	No threat	Unknown	Response Total
Commercial or residential development (sprawl)	33% (1)	33% (1)	33% (1)	0% (0)	0% (0)	0% (0)	3
Counterproductive financial incentives or regulations	0% (0)	0% (0)	0% (0)	0% (0)	33% (1)	67% (2)	3
Invasive/non-native species	33% (1)	0% (0)	33% (1)	33% (1)	0% (0)	0% (0)	3
Nonpoint source pollution (sedimentation and nutrients)	25% (1)	75% (3)	0% (0)	0% (0)	0% (0)	0% (0)	4
Habitat fragmentation	0% (0)	67% (2)	33% (1)	0% (0)	0% (0)	0% (0)	3
Successional change	0% (0)	0% (0)	33% (1)	0% (0)	67% (2)	0% (0)	3
Diseases (of plants that create habitat)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (3)	3
Habitat degradation	25% (1)	75% (3)	0% (0)	0% (0)	0% (0)	0% (0)	4
Climate change	0% (0)	0% (0)	33% (1)	0% (0)	67% (2)	0% (0)	3
Stream channelization	33% (1)	67% (2)	0% (0)	0% (0)	0% (0)	0% (0)	3
Impoundment of water/flow regulation	0% (0)	33% (1)	33% (1)	33% (1)	0% (0)	0% (0)	3
Agricultural/forestry practices	25% (1)	75% (3)	0% (0)	0% (0)	0% (0)	0% (0)	4
Residual contamination (persistent toxins)	0% (0)	50% (2)	0% (0)	25% (1)	0% (0)	25% (1)	4
Point source pollution (continuing)	0% (0)	75% (3)	0% (0)	25% (1)	0% (0)	0% (0)	4
Mining/acidification	0% (0)	50% (2)	0% (0)	0% (0)	50% (2)	0% (0)	4
Drainage practices (stormwater runoff)	0% (0)	75% (3)	25% (1)	0% (0)	0% (0)	0% (0)	4
Unknown	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (2)	2
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	1
Total Respondents							58

11. Other HABITAT threats to the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

Riparian corridor destruction. Loss of shading and sedimentation

Total Respondents 1

12. Please briefly describe the top two HABITAT threats to the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana identified above.

Habitat Degradation and Nonpoint source pollution

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

Nonpoint source pollution- sedimentation
 Agricultural practices- again sedimentation

1. Loss of riparian corridor
2. Runoff

Total Respondents 3

13. What current monitoring efforts by state agencies are you aware of for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Yes, these efforts occur	Not aware of these efforts occurring	Response Total
Statewide year-round monitoring conducted by state agencies	0% (0)	100% (3)	3
Statewide once a year monitoring conducted by state agencies	0% (0)	100% (3)	3
Periodic statewide (less than once a year but still regularly scheduled) monitoring conducted by state agencies	0% (0)	100% (3)	3
Occasional statewide (less than once a year and not regularly scheduled) monitoring conducted by state agencies	0% (0)	100% (3)	3
Regional or local year-round monitoring conducted by state agencies	0% (0)	100% (3)	3
Regional or local once a year monitoring conducted by state agencies	33% (1)	67% (2)	3
Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by state agencies	67% (2)	33% (1)	3
Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by state agencies	67% (2)	33% (1)	3
	Total Respondents		24

14. What current monitoring efforts by other organizations are you aware of for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Yes, these efforts occur	Not aware of these efforts occurring	Response Total
Statewide year-round monitoring conducted by other organizations	0% (0)	100% (3)	3
Statewide once a year monitoring conducted by other organizations	0% (0)	100% (3)	3
Periodic statewide (less than once a year but still regularly scheduled) monitoring conducted by other organizations	0% (0)	100% (3)	3
Occasional statewide (less than once a year and not regularly scheduled) monitoring conducted by other organizations	0% (0)	100% (3)	3
Regional or local year-round monitoring conducted by other organizations	0% (0)	100% (3)	3

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

Regional or local once a year monitoring conducted by other organizations	33% (1)	67% (2)	3
Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by other organizations	0% (0)	100% (3)	3
Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by other organizations	67% (2)	33% (1)	3
	Total Respondents		24

15. How crucial are these monitoring efforts by state agencies for the conservation of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Very crucial	Somewhat crucial	Slightly crucial	Not crucial	Unknown	Response Total
Statewide year-round monitoring conducted by state agencies	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Statewide once a year monitoring conducted by state agencies	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Periodic statewide (less than once a year but still regularly scheduled) monitoring conducted by state agencies	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Occasional statewide (less than once a year and not regularly scheduled) monitoring conducted by state agencies	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Regional or local year-round monitoring conducted by state agencies	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Regional or local once a year monitoring conducted by state agencies	0% (0)	33% (1)	33% (1)	0% (0)	33% (1)	3
Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by state agencies	0% (0)	67% (2)	33% (1)	0% (0)	0% (0)	3
Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by state agencies	0% (0)	67% (2)	0% (0)	0% (0)	33% (1)	3
	Total Respondents					24

16. How crucial are these monitoring efforts by other organizations for the conservation of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Very crucial	Somewhat crucial	Slightly crucial	Not crucial	Unknown	Response Total
Statewide year-round monitoring conducted by other organizations	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Statewide once a year monitoring conducted by other organizations	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Periodic statewide (less than once a year but still regularly scheduled) monitoring conducted by other organizations	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

Occasional statewide (less than once a year and not regularly scheduled) monitoring conducted by other organizations	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Regional or local year-round monitoring conducted by other organizations	0% (0)	0% (0)	33% (1)	33% (1)	33% (1)	3
Regional or local once a year monitoring conducted by other organizations	0% (0)	67% (2)	33% (1)	0% (0)	0% (0)	3
Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by other organizations	0% (0)	33% (1)	33% (1)	0% (0)	33% (1)	3
Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by other organizations	0% (0)	67% (2)	0% (0)	0% (0)	33% (1)	3
Total Respondents						24

17. Regional or local state agency monitoring for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

IDNR periodically conducts fish stream surveys. IDEM conducts stream health surveys using fish and invertebrates.

IDEM monitors the Great Lakes Drainage once every five years; thus, they may have data available for hornyhead chub captured in the basin as part of the fish community assessments. IDNR may also sample fish communities in this area and have data on the hornyhead chub.

Maumee system

Total Respondents 3

18. Regional or local monitoring by other organizations for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

In some cities stream health is also assessed by fish and invertebrate surveys.

Elkhart Public Works and Utilities has a fisheries biologist on staff that actively collects fish community samples from the Great Lakes Basin (1-2 times in the summer). He may have data on the hornyhead chub as well.

Maumee system

Total Respondents 3

19. Please list organizations that are monitoring the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

IDNR, IDEM, City of Elkhart and South Bend.

TNC

Total Respondents 2

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

20. What are the current monitoring techniques for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Frequently used	Occasionally used	Not used but possible with existing technology and data	Not used and not possible with existing technology and data	Not economically feasible	Unknown	Response Total
Radio telemetry and tracking	0% (0)	0% (0)	67% (2)	0% (0)	33% (1)	0% (0)	3
Modeling	0% (0)	33% (1)	33% (1)	0% (0)	0% (0)	33% (1)	3
Coverboard routes	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (2)	2
Spot mapping	0% (0)	67% (2)	0% (0)	0% (0)	0% (0)	33% (1)	3
Driving a survey route	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (2)	2
Reporting from harvest, depredation, or unintentional take (road kill, bycatch)	33% (1)	0% (0)	33% (1)	33% (1)	0% (0)	0% (0)	3
Mark and recapture	0% (0)	67% (2)	33% (1)	0% (0)	0% (0)	0% (0)	3
Professional survey/census	0% (0)	100% (3)	0% (0)	0% (0)	0% (0)	0% (0)	3
Volunteer survey/census	0% (0)	67% (2)	0% (0)	0% (0)	0% (0)	33% (1)	3
Trapping (by any technique)	0% (0)	50% (1)	0% (0)	0% (0)	0% (0)	50% (1)	2
Representative sites	0% (0)	67% (2)	0% (0)	0% (0)	0% (0)	33% (1)	3
Probabilistic sites	0% (0)	33% (1)	33% (1)	0% (0)	0% (0)	33% (1)	3
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	1
Total Respondents							34

21. Other monitoring techniques for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

No responses were entered for this question.

Total Respondents 0

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

22. What one or two monitoring techniques would you recommend for effective conservation of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

Professional Fish Surveys and Creel Surveys

IDEM, IDNR, and Elkhart use electrofishing equipment to sample fish communities; however, a seine could probably be used as well as tagging and radio telemetry to track the species movement.

1. Intensive quantitative sampling of known populations. Need to understand demography of wildlife species. See Strayer & Smith, 2003. AFS Monogr. 8.
2. Less intensive qualitative sampling of new or not recently surveyed areas. Need to determine distribution and status of wildlife species. See same for protocols.

Total Respondents 3

23. What current HABITAT inventory and assessment efforts or activities by state agencies are you aware of for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Yes, these efforts occur	No effort that I'm aware of	Response Total
Statewide annual inventory and assessment conducted by state agencies	0% (0)	100% (3)	3
Statewide once a year inventory and assessment conducted by state agencies	0% (0)	100% (3)	3
Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment conducted by state agencies	0% (0)	100% (3)	3
Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment conducted by state agencies	0% (0)	100% (3)	3
Regional or local year-round inventory and assessment conducted by state agencies	0% (0)	100% (3)	3
Regional or local once a year inventory and assessment conducted by state agencies	33% (1)	67% (2)	3
Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment conducted by state agencies	33% (1)	67% (2)	3
Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment conducted by state agencies	67% (2)	33% (1)	3
	Total Respondents		24

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

24. What current HABITAT inventory and assessment efforts or activities by other organizations are you aware of for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Yes, these efforts occur	No effort that I'm aware of	Response Total
Statewide year-round inventory and assessment conducted by other organizations	0% (0)	100% (3)	3
Statewide once a year inventory and assessment conducted by other organizations	0% (0)	100% (3)	3
Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment conducted by other organizations	0% (0)	100% (3)	3
Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment conducted by other organizations	0% (0)	100% (3)	3
Regional or local year-round inventory and assessment conducted by other organizations	0% (0)	100% (3)	3
Regional or local once a year inventory and assessment conducted by other organizations	33% (1)	67% (2)	3
Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment conducted by other organizations	33% (1)	67% (2)	3
Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment conducted by other organizations	67% (2)	33% (1)	3
	Total Respondents		24

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

28. Regional or local HABITAT inventory and assessment by other organizations for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

St. Joseph River

Maumee system

Total Respondents 2

29. Please list organizations that are monitoring this HABITAT for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

IDNR, IDEM, City of Elkhart and South Bend

TNC

Total Respondents 2

30. What are the current HABITAT inventory and/or assessment techniques for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

If a technique is not applicable to the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat do not select a response in that row.

	Frequently used	Occasionally used	Not used but possible with existing technology and data	Not used and not possible with existing technology and data	Not economically feasible	Unknown	Response Total
GIS mapping	0% (0)	33% (1)	0% (0)	0% (0)	0% (0)	67% (2)	3
Aerial photography and analysis	0% (0)	0% (0)	33% (1)	33% (1)	0% (0)	33% (1)	3
Systematic sampling	0% (0)	67% (2)	0% (0)	0% (0)	0% (0)	33% (1)	3
Property tax estimates	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (3)	3
State revenue data	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (3)	3
Regulatory information	0% (0)	33% (1)	0% (0)	0% (0)	0% (0)	67% (2)	3
Participation in landuse programs	0% (0)	33% (1)	0% (0)	0% (0)	0% (0)	67% (2)	3
Modeling	0% (0)	67% (2)	0% (0)	0% (0)	0% (0)	33% (1)	3
Voluntary landowner reporting	0% (0)	33% (1)	0% (0)	0% (0)	0% (0)	67% (2)	3
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (2)	2

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

Total Respondents 29



31. Other HABITAT inventory and assessment techniques for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

No responses were entered for this question.

Total Respondents 0

32. What one or two HABITAT inventory and assessment techniques would you recommend for effective conservation of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

Assessment using the Qualitative Habitat Evaluation Index.

1. Assess riparian corridor
2. Water quality

Total Respondents 2

33. What is the current body of science for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Response Total	Response Percent
Complete, up to date and extensive	0	0%
Adequate	0	0%
Inadequate	3	100%
Nonexistent	0	0%
Other (please explain below)	0	0%
Total Respondents	3	

34. Please provide a citation (title, author, date, publisher) that would give the best overview of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana, if available. This resource may be used if further detail is needed.

Title = Naiades of Pennsylvania
 Author = Ortman
 Date = 1919
 Publisher = Carnegie Museum

Response Total Response Percent

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

35. If possible, please provide a second citation (title, author, date, publisher) that would give another good overview of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana. This resource may also be used if further detail is needed.

Title = Freshwater mussels of the Midwest
 Author = Cummings & Mayer
 Date = 1992
 Publisher = INHS

Response Total Response Percent

36. What is the current HABITAT body of science for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

Complete, up to date and extensive

Adequate

Inadequate

Nonexistent

Other (please explain below)

Response Total Response Percent

0 0%

0 0%

3 100%

0 0%

0 0%

Total Respondents 3

37. Please provide a citation (title, author, date, publisher) that would give the best HABITAT overview of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana, if available. This resource may be used if further detail is needed.

Title = Naiades of Pennsylvania
 Author = Ortmann
 Date = 1919
 Publisher = Carnegie Museum

Response Total Response Percent

38. If possible, please provide a second citation (title, author, date, publisher) that would give another good HABITAT overview of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana. This resource may also be used if further detail is needed.

Title = Freshwater Mollusca of WI
 Author = Baker
 Date = 1928
 Publisher = WI Geol. Nat. Hist. Survey

Response Total Response Percent

39. What are the research needs for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Urgently needed	Greatly needed	Needed	Slightly needed	Not needed	Unknown	Response Total
Life cycle	33% (1)	0% (0)	0% (0)	33% (1)	33% (1)	0% (0)	3
Distribution and abundance	0% (0)	0% (0)	100% (3)	0% (0)	0% (0)	0% (0)	3
Limiting factors (food, shelter, water, breeding sites)	0% (0)	0% (0)	100% (3)	0% (0)	0% (0)	0% (0)	3
Threats (predators/competition,	0% (0)	67% (2)	33% (1)	0% (0)	0% (0)	0% (0)	3

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

contamination)								
Relationship/dependence on specific habitats	0% (0)	67% (2)	33% (1)	0% (0)	0% (0)	0% (0)	3	
Population health (genetic and physical)	0% (0)	0% (0)	33% (1)	67% (2)	0% (0)	0% (0)	3	
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	1	
							Total Respondents	25

40.	Other research needs for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.
	No responses were entered for this question.
	Total Respondents 0

41.	What are the HABITAT research needs for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?								
		Urgently needed	Greatly needed	Needed	Slightly needed	Not needed	Unknown	Response Total	
	Successional changes	0% (0)	0% (0)	33% (1)	0% (0)	33% (1)	33% (1)	3	
	Distribution and abundance (fragmentation)	0% (0)	33% (1)	33% (1)	33% (1)	0% (0)	0% (0)	3	
	Threats (land use change/competition, contamination/global warming)	33% (1)	33% (1)	33% (1)	0% (0)	0% (0)	0% (0)	3	
	Relationship/dependence on specific site conditions	33% (1)	0% (0)	67% (2)	0% (0)	0% (0)	0% (0)	3	
	Growth and development of individual components of the habitat	33% (1)	0% (0)	33% (1)	33% (1)	0% (0)	0% (0)	3	
	Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	1	
								Total Respondents	16

42.	Other HABITAT research needs for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.
	No responses were entered for this question.
	Total Respondents 0

43.	How well do the following conservation efforts address the threats to the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?							
		Very well	Somewhat	Not at all	Not used	Unknown	Response Total	
	Habitat protection (use below for details)	0% (0)	100% (2)	0% (0)	0% (0)	0% (0)	2	

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

Population management (hunting, trapping)	0% (0)	50% (1)	0% (0)	50% (1)	0% (0)	2
Population enhancement (captive breeding and release)	0% (0)	0% (0)	0% (0)	100% (2)	0% (0)	2
Reintroduction (restoration)	0% (0)	0% (0)	0% (0)	100% (2)	0% (0)	2
Food plots	0% (0)	0% (0)	0% (0)	50% (1)	50% (1)	2
Threats reduction	0% (0)	50% (1)	0% (0)	50% (1)	0% (0)	2
Native predator control	0% (0)	0% (0)	0% (0)	100% (2)	0% (0)	2
Exotic/invasive species control	0% (0)	0% (0)	50% (1)	50% (1)	0% (0)	2
Regulation of collecting	0% (0)	50% (1)	50% (1)	0% (0)	0% (0)	2
Disease/parasite management	0% (0)	0% (0)	0% (0)	100% (2)	0% (0)	2
Translocation to new geographic range	0% (0)	0% (0)	0% (0)	100% (2)	0% (0)	2
Protection of migration routes	0% (0)	0% (0)	0% (0)	50% (1)	50% (1)	2
Limiting contact with pollutants/contaminants	0% (0)	100% (3)	0% (0)	0% (0)	0% (0)	3
Public education to reduce human disturbance	0% (0)	100% (2)	0% (0)	0% (0)	0% (0)	2
Culling/selective removal	0% (0)	0% (0)	0% (0)	50% (1)	50% (1)	2
Stocking	0% (0)	0% (0)	0% (0)	100% (2)	0% (0)	2
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	1
Total Respondents						34

44. Other current conservation practices for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

Habitat protection if it greatly reduced the turbidity in streams for hornyhead chub feeding and breeding behaviors. Also, exotic/invasive species control would help the hornyhead population. The hornyhead chub is sensitive to pollution so limiting contact with pollutants/contaminants would benefit the species. The hornyhead chub is also a popular bait fish, so regulation of collecting would be beneficial to the species.

Total Respondents 1

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

45. What one or two specific practices would you recommend for more effective conservation of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

Habitat protection and Public Education

Habitat protection - erosion controls

Exotic species - possession of exotic species illegal (must dispose of fish properly and not release back to stream)

1. Intensive quantitative sampling of known populations. Need to understand demography of wildlife species. See Strayer & Smith, 2003. AFS Monogr. 8.

2. Less intensive qualitative sampling of new or not recently surveyed areas. Need to determine distribution and status of wildlife species. See same for protocols.

Total Respondents 3

46. How well do the following conservation efforts address the HABITAT threats to the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

	Very well	Somewhat	Not at all	Not used	Unknown	Response Total
Habitat protection through regulation	0% (0)	100% (2)	0% (0)	0% (0)	0% (0)	2
Habitat protection on public lands	0% (0)	100% (2)	0% (0)	0% (0)	0% (0)	2
Habitat protection incentives (financial)	0% (0)	100% (2)	0% (0)	0% (0)	0% (0)	2
Habitat restoration through regulation	0% (0)	50% (1)	0% (0)	0% (0)	50% (1)	2
Habitat restoration on public lands	0% (0)	100% (2)	0% (0)	0% (0)	0% (0)	2
Habitat restoration incentives (financial)	0% (0)	100% (2)	0% (0)	0% (0)	0% (0)	2
Artificial habitat creation (artificial reefs, nesting platforms)	0% (0)	50% (1)	0% (0)	50% (1)	0% (0)	2
Selective use of functionally equivalent exotic species in place of extirpated natives	0% (0)	0% (0)	0% (0)	100% (2)	0% (0)	2
Succession control (fire, mowing)	0% (0)	0% (0)	0% (0)	50% (1)	50% (1)	2
Corridor development/protection	0% (0)	50% (1)	0% (0)	0% (0)	50% (1)	2
Managing water regimes	50% (1)	50% (1)	0% (0)	0% (0)	0% (0)	2
Pollution reduction	33% (1)	67% (2)	0% (0)	0% (0)	0% (0)	3
Protection of adjacent buffer zone	33% (1)	67% (2)	0% (0)	0% (0)	0% (0)	3
Restrict public access and disturbance	0% (0)	0% (0)	0% (0)	50% (1)	50% (1)	2
Land use planning	0% (0)	50% (1)	0% (0)	0% (0)	50% (1)	2
Technical assistance	0% (0)	50% (1)	0% (0)	0% (0)	50% (1)	2
Cooperative land management agreements (conservation easements)	0% (0)	100% (1)	0% (0)	0% (0)	0% (0)	1
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	1
						Total Respondents 36

Appendix E-13: Rivers and Streams Great Lakes Drainage Wadeable/Large River

47. Other current HABITAT conservation practices for the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana.

Habitat protection and restoration on all lands by any means necessary would benefit all wildlife species (except those that are exotic and more tolerant than others) not just the hornyhead chub. Pollution reduction, protection of adjacent buffer zone, land use planning, and conservation easements would all be beneficial practices to the Hornyhead chub.

Total Respondents 1

48. What one or two specific HABITAT practices would you recommend for more effective conservation of the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat in Indiana?

Protection and restoration of Buffer Zones

Protection of adjacent buffer zone
Nonpoint Source Pollution reduction

1. Assess riparian corridor
 2. Water quality monitoring
- See Watters, 2000. Proc. 1st FMCS Symposium

Total Respondents 3

49. Do you have any additional comments or information on the Wildlife in Wadeable/ Large Rivers of the Great Lakes Drainage Habitat that you feel would be useful in the development of the Indiana Comprehensive Wildlife Strategy?

The overall smallmouth bass population in this area is somewhat poor aside from the St. Joseph River. I believe this is mostly due to the lack of habitat and loss of buffer zones. Buffer zones are vital to the health of smallmouth bass populations. They supply and protect habitat that is vital to the survival of the smallmouth bass.

IDEM has collected hornyhead chubs from the Elkhart River (Elkhart & Noble counties), St. Joseph River (DeKalb County), Cedar Creek (Allen Co.), Yellow Creek (Elkhart Co.), and Pigeon River (Lagrange Co.). If you would like the data, we can provide water chemistry, biological, and habitat data assessments.

N/A

Total Respondents 3