

Fishes of the Mackinaw and Vermilion River Systems in Illinois

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by

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## Location and Origin

The Mackinaw and Vermilion river systems are two of the finest streams found in the central and east central areas of Illinois. Both originate in and primarily flow through the Grand Prairie Natural Division. The Mackinaw River and the Middle Fork of the Vermilion River (the longest tributary of the Vermilion River) originate in the same region in Ford County (Fig. 1). The Mackinaw River flows westward for about 130 miles into the Illinois River downstream of the city of Peoria. The basin of this river is elongate in shape and covers about 1,136 square miles. The Vermilion River is larger in area (1,648 square miles) but shorter in length (106 miles long), and the basin is more oval in shape (Page et al. 1992). This river flows eastward with the lower reach in Indiana and empties into the Wabash River. The Vermilion River has three primary tributaries: the Salt Fork (71 miles long), North Fork (62 miles), and Middle Fork (83 miles).

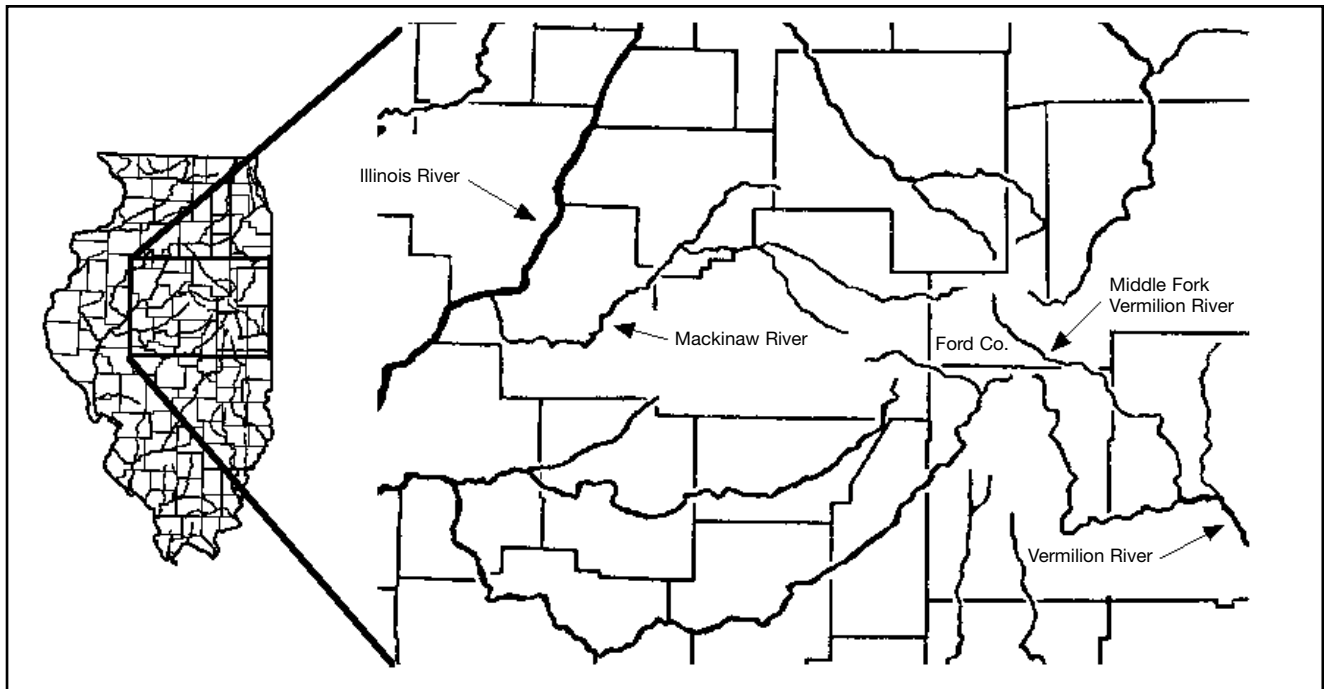
Both rivers have highly diverse fish and mussel communities (the Vermilion River has one federally endangered mussel species) especially in light of the fact that both flow through a heavily farmed landscape and have some impact from urban areas. Although the diversity has benefited in the last few years from better water treatment and farming practices, it remains closely related to the soils, substrates, and ground water. In turn, the soils, substrates, and ground water are direct products of the area's geology and climate history.

The Grand Prairie was formed some 10,000 years

ago at the end of the Wisconsin glaciation. Extensive moraines of glacial debris containing cobble, gravel, and sand remain and are covered by heavy, dark, fertile soils. Although soil erosion is a problem, the soil is relatively resistant to erosion, unlike the erodible loess soils in western Illinois. Originally, the flat upland areas contained many marshes and wet prairies until they were drained in the late 1880s and early 1900s. Now the upland areas are drained by small streams moving slowly through ditches. The water quality is often quite high in areas well supplied by ground water. As the streams move down through the moraines, they flow through a series of pools, riffles, and runs. The combination of good water quality, substrate and riparian zone is the reason for the highly diverse fish and mussel communities. Both rivers rate highly on the state's Biological Stream Characterization (Hite and Bertrand 1989) and when evaluated on biodiversity (Page et al. 1992).

## General Fish Notes

Although the fish faunas of these rivers are rich, they are also typical of the upper Midwest. The diversity is composed primarily of minnows (Cyprinidae), but many species of darters (Percidae), catfishes (Ictaluridae), suckers (Catostomidae), and sunfishes (Centrarchidae) can be found. Because the area was covered recently by glaciers, no endemic species are to be found. Presently, 76 native species have been recorded from the Mackinaw River and 92 native species from the Vermilion River (Table 1).



**Fig. 1.** Locations of the Mackinaw and Vermilion rivers in Illinois, USA.

Two exotic and one exotic species have been found in the Mackinaw and Vermilion rivers respectively.

### Fishes of the Mackinaw River

The Mackinaw River has an interesting mix of small and large stream fishes. The two mooneye species, gold-eye (*Hiodon alosoides*) and mooneye (*Hiodon tergisus*), are known to ascend from the Illinois River; so do the white and yellow basses (*Morone chrysops* and *Morone mississippiensis*).

Other typical large stream fishes include the carpsuckers (*Carpionodes*), buffaloes (*Ictiobus*), and freshwater drum (*Aplodinotus grunniens*).

The ancient fishes are well represented by the chestnut and American brook lampreys (*Ichthyomyzon castaneus* and *Lampetra appendix*) and longnose and shortnose gars (*Lepisosteus osseus* and *Lepisosteus platostomus*). The chestnut lamprey is most common in the medium and large rivers and is parasitic on other large river fishes. Adults ascend medium rivers like the Mackinaw River to construct nests and spawn. The ammocoetes (larvae) live in soft sediments until they transform into adults after 4-7

years (Scott and Crossman 1973). The American brook lamprey lives its life in small streams and is not parasitic (Fig. 2). Apparently, their nests are grouped in close proximity and individuals move freely among nests. They die after spawning (Becker 1983).

A total of 24 native species of minnows have been recorded, although a few have disappeared or become uncommon due to declining water and habitat quality. These species include the speckled shiner (*Macrhybopsis aestivalis*), spotfin shiner (*Cyprinella spiloptera*), and largescale stoneroller (*Campostoma oligolepis*).

These species have been most impacted by the decline in water quality (increased turbidity) and habitat degradation. The spotfin shiner has been replaced in the Mackinaw drainage and in other areas of the state by the red shiner (*Cyprinella lutrensis*), a species better adapted to turbid conditions (Page and Smith 1970). Some of the common species are the sand shiner (*Notropis ludibundis*), bluntnose minnow (*Pimephales notatus*), and striped shiners (*Luxilus chrysocephalus*). There are a number of attractive species such as the redbelly shiner (*Lythrurus umbratilis*), rosyface shiner (*Notropis rubellus*), and southern redbelly dace



**Fig. 2.** The American brook lamprey, *Lampetra appendix*. Drawing adapted from S. A. Forbes and R. E. Richardson's *Fishes of Illinois*, 2nd edition.

**Table 1.** Fishes of the Mackinaw River and Vermilion River drainages. Based on records from the Illinois Natural History Survey and Illinois EPA. I = introduced, SE = state endangered, ST = state threatened, X = present.

| Family          | Species                                                   | Mackinaw River | Vermilion River |
|-----------------|-----------------------------------------------------------|----------------|-----------------|
| Petromyzontidae | <i>Ichthyomyzon castaneus</i> (chestnut lamprey)          | X              |                 |
|                 | <i>Ichthyomyzon unicuspis</i> (silver lamprey)            |                | X               |
|                 | <i>Lampetra appendix</i> (American brook lamprey)         | X              |                 |
| Acipenseridae   | <i>Scaphirhynchus platyrhynchus</i> (shovelnose sturgeon) |                | X               |
| Lepisosteidae   | <i>Lepisosteus osseus</i> (longnose gar)                  | X              | X               |
|                 | <i>Lepisosteus platostomus</i> (shortnose gar)            | X              | X               |
| Hiodontidae     | <i>Hiodon alosoides</i> (goldeye)                         | X              |                 |
|                 | <i>Hiodon tergisus</i> (mooneye)                          | X              |                 |
| Clupeidae       | <i>Alosa chrysochloris</i> (skipjack herring)             |                | X               |
|                 | <i>Dorosoma cepedianum</i> (gizzard shad)                 | X              | X               |
| Cyprinidae      | <i>Campsotoma anomalum</i> (central stoneroller)          | X              | X               |
|                 | <i>Campostoma oligolepis</i> (largescale stoneroller)     | X              | X               |
|                 | <i>Ctenopharyngodon idella</i> (grass carp) I             | X              |                 |
|                 | <i>Cyprinella lutrensis</i> (red shiner)                  | X              | X               |
|                 | <i>Cyprinella spiloptera</i> (spotfin shiner)             | X              | X               |
|                 | <i>Cyprinella whipplei</i> (steelcolor shiner)            | X              | X               |
|                 | <i>Cyprinus carpio</i> (common carp) I                    | X              | X               |
|                 | <i>Ericymba buccata</i> (silverjaw minnow)                |                | X               |
|                 | <i>Erimystax x-punctatus</i> (gravel chub)                |                | X               |
|                 | <i>Hybognathus nuchalis</i> (Mississippi silvery minnow)  | X              | X               |
|                 | <i>Hybopsis amblops</i> (bigeye chub) SE                  |                | X               |
|                 | <i>Luxilus chrysocephalis</i> (striped shiner)            | X              | X               |
|                 | <i>Lythrurus umbratilis</i> (redfin shiner)               | X              | X               |
|                 | <i>Macrhybopsis aestivalis</i> (speckled shiner)          | X              | X               |
|                 | <i>Macrhybopsis storeriana</i> (silver chub)              | X              | X               |
|                 | <i>Nocomis biguttatus</i> (hornyhead chub)                | X              | X               |
|                 | <i>Nocomis micropogon</i> (river chub) SE                 |                | X               |
|                 | <i>Notemigonus crysoleucas</i> (golden shiner)            | X              | X               |
|                 | <i>Notropis atherinoides</i> (emerald shiner)             | X              | X               |
|                 | <i>Notropis blennioides</i> (river shiner)                |                | X               |
|                 | <i>Notropis boops</i> (bigeye shiner) SE                  |                | X               |
|                 | <i>Notropis dorsalis</i> (bigmouth shiner)                | X              | X               |
|                 | <i>Notropis ludibundis</i> (sand shiner)                  | X              | X               |
|                 | <i>Notropis rubellus</i> (rosyface shiner)                | X              | X               |
|                 | <i>Notropis volucellus</i> (mimic shiner)                 |                | X               |
|                 | <i>Opsopoeodus emiliae</i> (pugnose minnow)               | X              |                 |
|                 | <i>Phenacobius mirabilis</i> (suckermouth minnow)         | X              | X               |
|                 | <i>Phoxinus erythrogaster</i> (southern redbelly dace)    | X              |                 |
|                 | <i>Pimephales notatus</i> (bluntnose minnow)              | X              | X               |
|                 | <i>Pimephales promelas</i> (fathead minnow)               | X              | X               |
|                 | <i>Pimephales vigilax</i> (bullhead minnow)               | X              | X               |
|                 | <i>Rhinichthys atratulus</i> (blacknose dace)             | X              | X               |
|                 | <i>Semotilus atromaculatus</i> (creek chub)               | X              | X               |
| Catostomidae    | <i>Carpionodes carpio</i> (river carpsucker)              | X              | X               |
|                 | <i>Carpionodes cyprinus</i> (quillback)                   | X              | X               |
|                 | <i>Carpionodes velifer</i> (highfin carpsucker)           | X              | X               |
|                 | <i>Catostomus commersoni</i> (white sucker)               | X              | X               |
|                 | <i>Erimyzon oblongus</i> (creek chubsucker)               | X              | X               |
|                 | <i>Erimyzon sucetta</i> (lake chubsucker)                 |                | X               |
|                 | <i>Hypentelium nigricans</i> (northern hog sucker)        | X              | X               |
|                 | <i>Ictiobus bubalus</i> (smallmouth buffalo)              | X              | X               |
|                 | <i>Ictiobus cyprinellus</i> (bigmouth buffalo)            | X              | X               |

**Table 1.** (cont.)

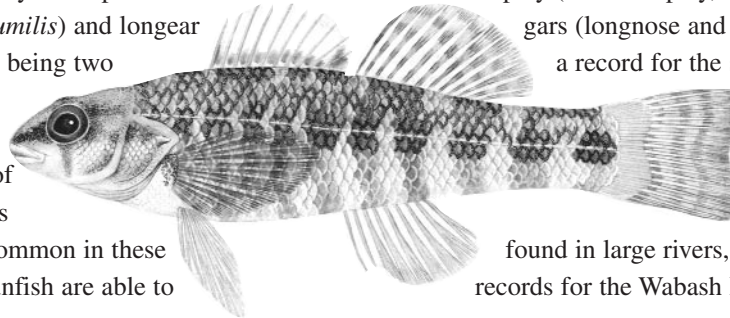
| Family        | Species                                              | Mackinaw River | Vermilion River |
|---------------|------------------------------------------------------|----------------|-----------------|
|               | <i>Ictiobus niger</i> (black buffalo)                | X              | X               |
|               | <i>Minytrema melanops</i> (spotted sucker)           |                | X               |
|               | <i>Moxostoma anisurum</i> (silver redhorse)          | X              | X               |
|               | <i>Moxostoma carinatum</i> (river redhorse) ST       |                | X               |
|               | <i>Moxostoma duquesnei</i> (black redhorse)          | X              | X               |
|               | <i>Moxostoma erythrum</i> (golden redhorse)          | X              | X               |
|               | <i>Moxostoma macrolepidotum</i> (shorthead redhorse) | X              | X               |
| Ictaluridae   | <i>Ameiurus melas</i> (black bullhead)               | X              | X               |
|               | <i>Ameiurus natalis</i> (yellow bullhead)            | X              | X               |
|               | <i>Ictalurus punctatus</i> (channel catfish)         | X              | X               |
|               | <i>Noturus exilis</i> (slender madtom)               | X              |                 |
|               | <i>Noturus flavus</i> (stonecat)                     | X              | X               |
|               | <i>Noturus gyrinus</i> (tadpole madtom)              | X              | X               |
|               | <i>Noturus miurus</i> (brindled madtom)              |                | X               |
|               | <i>Noturus stigmosus</i> (northern madtom) SE        |                | X               |
|               | <i>Noturus nocturnus</i> (freckled madtom)           | X              |                 |
|               | <i>Pylodictis olivaris</i> (flathead catfish)        | X              | X               |
| Esocidae      | <i>Esox americanus</i> (grass pickerel)              |                | X               |
|               | <i>Esox lucius</i> (northern pike)                   | X              | X               |
| Atherinidae   | <i>Labidesthes sicculus</i> (brook silverside)       | X              | X               |
| Fundulidae    | <i>Fundulus notatus</i> (blackstripe topminnow)      | X              | X               |
| Moronidae     | <i>Morone chrysops</i> (white bass)                  | X              |                 |
|               | <i>Morone mississippiensis</i> (yellow bass)         | X              | X               |
| Centrarchidae | <i>Ambloplites rupestris</i> (rock bass)             | X              | X               |
|               | <i>Lepomis cyanellus</i> (green sunfish)             | X              | X               |
|               | <i>Lepomis gulosus</i> (warmouth)                    |                | X               |
|               | <i>Lepomis humilis</i> (orangespotted sunfish)       | X              | X               |
|               | <i>Lepomis macrochirus</i> (bluegill)                | X              | X               |
|               | <i>Lepomis megalotis</i> (longear sunfish)           | X              | X               |
|               | <i>Micropterus dolomieu</i> (smallmouth bass)        | X              | X               |
|               | <i>Micropterus punctulatus</i> (spotted bass)        | X              | X               |
|               | <i>Micropterus salmoides</i> (largemouth bass)       | X              | X               |
|               | <i>Pomoxis annularis</i> (white crappie)             | X              | X               |
|               | <i>Pomoxis nigromaculatus</i> (black crappie)        |                | X               |
| Percidae      | <i>Ammocrypta pellucida</i> (eastern sand darter) SE |                | X               |
|               | <i>Etheostoma blennioides</i> (greenside darter)     |                | X               |
|               | <i>Etheostoma caeruleum</i> (rainbow darter)         |                | X               |
|               | <i>Etheostoma camurum</i> (bluebreast darter) SE     |                | X               |
|               | <i>Etheostoma flabellare</i> (fantail darter)        | X              | X               |
|               | <i>Etheostoma nigrum</i> (johnny darter)             | X              | X               |
|               | <i>Etheostoma spectabile</i> (orangethroat darter)   | X              | X               |
|               | <i>Etheostoma zonale</i> (banded darter)             | X              | X               |
|               | <i>Percina caprodes</i> (logperch)                   | X              | X               |
|               | <i>Percina maculata</i> (blackside darter)           | X              | X               |
|               | <i>Percina phoxocephala</i> (slenderhead darter)     | X              | X               |
|               | <i>Stizostedion canadense</i> (sauger)               | X              | X               |
|               | <i>Stizostedion vitreum</i> (walleye)                | X              | X               |
| Sciaenidae    | <i>Aplodinotus grunniens</i> (freshwater drum)       | X              | X               |

(*Phoxinus erythrogaster*). These species are more common in the smaller tributaries in the upper Mackinaw River.

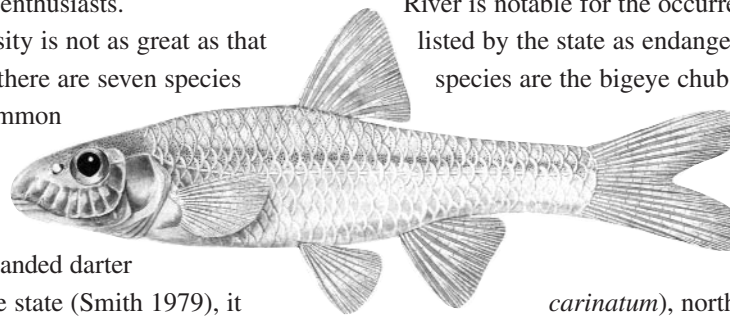
Several species of suckers can be found including the uncommon black buffalo (*Ictiobus niger*) and black rehorse (*Moxostoma duquesnei*). The northern hog sucker (*Hypentelium nigricans*) can be very common in large fast riffles.

Sunfishes are represented by nine species with the orangespotted (*Lepomis humilis*) and longear sunfishes (*Lepomis megalotis*) being two of our most beautiful fishes. Both of these fishes seem to have benefited from creation of the extensive system of ditches because they are often quite common in these habitats. The orangespotted sunfish are able to withstand low levels of oxygen (Becker 1983); low oxygen conditions are likely to be found in ditches in summer. Males of both species are known to produce sounds to court females. Both species also build nests in colonies. In clear water, these colonies are very active with courtship and spawning activities and can provide many hours of entertainment to fish enthusiasts.

Although the darter diversity is not as great as that found in the Vermilion River, there are seven species (Table 1). Two of the most common species are the banded darter (*Etheostoma zonale*) (Fig. 3) and slenderhead darter (*Percina phoxocephala*). Although the banded darter has been decimated around the state (Smith 1979), it appears to be increasing in numbers in the Mackinaw River. The slenderhead darter also is secure in the river and can be very common in the large rocky riffles throughout the drainage. The banded darter is noted for the bright green bands found on breeding males and the attachment of eggs on green algae in riffles (Becker 1983). The slenderhead darter was studied in depth by Page and Smith (1971). Perhaps their most intriguing finding is the mass migration of males to breeding areas in riffles in May and June. After spawning, adults move to raceways but then leave the raceways in late fall. Presumably, they move into deeper pools, but sampling in these areas did not detect their presence. Where these fishes go to in winter is a mystery, but



**Fig. 3.** The banded darter, *Etheostoma zonale*. From Smith (1979).



**Fig. 4.** The silverjaw minnow, *Erycymba buccata*. From Smith (1979).

many stream fishes also disappear during winter and reappear in the spring.

### Fishes of the Vermilion River

The Vermilion River has perhaps the richest fish fauna of all Illinois' rivers. Like the Mackinaw, it has a lamprey (silver lamprey, *Ichthyomyzon unicuspis*), gars (longnose and shortnose), and there is a record for the shovelnose sturgeon (*Scaphirhynchus platorynchus*) (Smith 1979). This sturgeon is more commonly found in large rivers, and there are several records for the Wabash River. A small sturgeon, the shovelnose reaches three feet in length and ascends small tributaries to spawn from April to June. It is a benthic feeder and uses its barbs (anterior to the mouth) to probe the sediment for aquatic insects (Becker 1983).

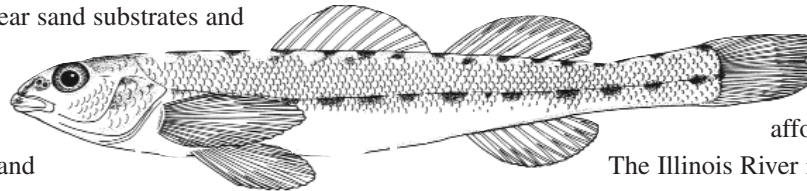
Aside from the large number of species, the Vermilion River is notable for the occurrence of many species listed by the state as endangered or threatened. These species are the bigeye chub (*Hybopsis amblops*), river chub (*Nocomis micropogon*), bigeye shiner (*Notropis boops*), river redhorse (*Moxostoma carinatum*), northern madtom (*Noturus stigmosus*), eastern sand darter (*Ammocrypta pellucida*), and bluebreast darter (*Etheostoma camurum*) (Table 1). These are species that require very high quality habitat to survive. In addition, the river chub, northern madtom, and bluebreast darter are on the western edge of their distribution. The bluebreast darter is particularly handsome and seems to be increasing in number in the Vermilion River.

As in other Illinois streams, the diversity of species is dominated by the minnows (29 native species), suckers (16 species), and darters (13 species). Species of interest include the silverjaw minnow (*Erycymba buccata*), spotted sucker (*Minytrema melanops*), and eastern sand darter. The silverjaw minnow is an attractive tan and silver fish

that has “pearl organs” in the jaw (Smith 1979) (Fig. 4). These “organs” are a part of the lateral line system but are greatly enlarged and partly encased by head bones (Reno 1971). Within the “pearl organs” are sensory structures called the neuromasts. The neuromasts in the “pearl organs” are nine times larger than those found in other parts of the lateral line system. Perhaps used to find food items, they can usually be seen by eye when large specimens are captured in the field.

The spotted sucker has a spotted distribution, although records indicate it occurs more commonly in southeastern Illinois. Like other suckers, they spawn in riffles. Typically, two males will clasp the female with their tails, all three vibrate vigorously, and eggs and sperm are released.

The eastern sand darter appears unusual because it is a long narrow fish, devoid of pigment except for rows of discrete spots along the side of the body and along the back (Fig. 5). It prefers clear sand substrates and has become less common because of the mixing of silt with sand. Like other sand darters, the eastern sand darter often burrows into the sand with only its head sticking out. This habit makes it difficult to see and hard to capture with a seine.



**Fig. 5.** The eastern sand darter, *Ammocrypta pellucida*. From Smith (1979).

### Conservation Efforts and the Future of the Mackinaw and Vermilion Rivers

Although part of the reason for the richness of the fish (and mussel) diversity of these rivers is due to their diverse substrate and habitats, conservation efforts are critical to the maintenance and enhancement of species diversity. Both rivers are benefiting from efforts to protect the aquatic communities. The Clean Water Acts of the 1970s have been critical to the improvement of water quality by reducing point pollution from urban areas.

However, it was the 1970s that probably saw the worst of the conversion of unsuitable lands to intensive agriculture. The loss of buffer strips and other anti-erosion structures and practices greatly increased erosion rates and had major impacts on water quality. Fortunately, the agricultural community has recognized the unsustainability of such practices and impressive gains have been made to reduce soil erosion. Adoption of conservation tillage practices and putting land into a CRP (Conservation

Reserve Program) have reduced erosion to the point of no net loss of soil.

Although no net loss of soil is applaudable, tremendous amounts of soil are still lost and much work remains to be done to reduce the impacts of other non-point and point sources of pollution. However, I am cautiously optimistic about the protection of these two rivers. Large areas of the Vermilion River (primarily the Middle Fork) have been conserved in the Kickapoo State Park, Middle Fork State Fish and Wildlife Area, and Middle Fork River County Preserve. In fact, the value of the Middle Fork has been recognized by its designation as a National Scenic River; the only national scenic river in Illinois, this designation draws attention and protection to the river.

The Mackinaw River has less extensive public protection although the Mackinaw River State Fish and Wildlife Area near the town of Mackinaw

affords some protection.

The Illinois River is currently receiving special attention from the state,

and the Mackinaw River, as a major tributary, is benefiting from state-funded programs. Funding from the state is supporting efforts to reduce soil erosion and improve water quality. Recently, the Mackinaw River has also received special attention from The Nature Conservancy, which has purchased high quality areas along the river to protect and restore. The Nature Conservancy has also assisted local landowners with conservation efforts such as bank stabilization and wetland restoration. Even before the involvement of The Nature Conservancy and state government, a local group of private citizens, the Parklands Foundation, became active in acquiring small tracts of high-quality natural areas. Many of these areas are along the river but also contain high-quality tallgrass prairies.

Interest has never been higher among Illinois citizens to protect their rivers. With this interest comes the support of state agencies and other private groups. Hence, I have high hopes for the future of the rivers and fishes of Illinois. Constant challenges to the ecological integrity of the rivers remain and must be overcome. The urban economy of central Illinois is vigorous but this growth puts pressure on the environment. The farm economy is suf-

fering from very low commodity prices and could force farmers to neglect good farming practices. It may also prompt them to take marginal, high cost lands out of production.

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## Review of Proposed Changes in the Illinois Endangered and Threatened Fishes List

by Claus Sutor

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The Illinois Endangered Species Protection Board has completed a 5-year review leading to revisions to its list of plants and animals. The revisions, in draft form, were adopted by the Board on Aug. 21, 1998. Upon final approval they will become part of the next edition of *Checklist of Endangered Animals & Plants of Illinois*. The revised listing for fishes is as follows:

### Endangered Fishes of Illinois

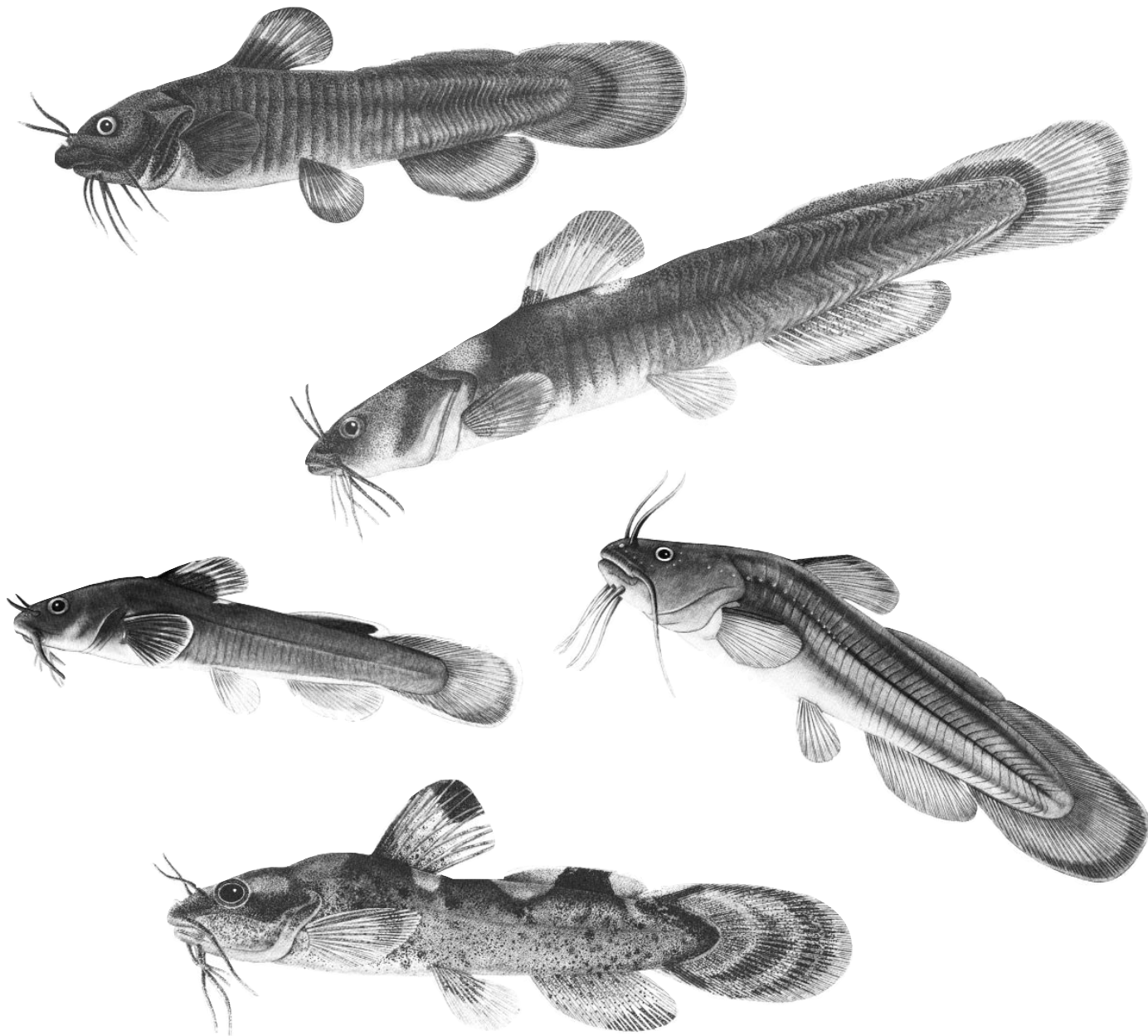
|                                |                        |
|--------------------------------|------------------------|
| <i>Acipenser fulvescens</i>    | lake sturgeon          |
| <i>Ammocrypta clara</i>        | western sand darter    |
| <i>Etheostoma camurum</i>      | bluebreast darter      |
| <i>Etheostoma exile</i>        | Iowa darter            |
| <i>Etheostoma histrio</i>      | harlequin darter       |
| <i>Hybognathus hayi</i>        | cypress minnow         |
| <i>Hybopsis amblops</i>        | bigeye chub            |
| <i>Hybopsis amnis</i>          | pallid shiner          |
| <i>Ichthyomyzon fossor</i>     | northern brook lamprey |
| <i>Macrhybopsis gelida</i>     | sturgeon chub          |
| <i>Moxostoma valenciennesi</i> | greater redhorse       |
| <i>Nocomis micropogon</i>      | river chub             |
| <i>Notropis anogenus</i>       | pugnose shiner         |
| <i>Notropis boops</i>          | bigeye shiner          |
| <i>Notropis heterolepis</i>    | blacknose shiner       |
| <i>Notropis maculatus</i>      | taillight shiner       |

|                             |                 |
|-----------------------------|-----------------|
| <i>Notropis texanus</i>     | weed shiner     |
| <i>Noturus stigmosus</i>    | northern madtom |
| <i>Platygobio gracilis</i>  | flathead chub   |
| <i>Pteronotropis hubbsi</i> | bluehead shiner |
| <i>Scaphirhynchus albus</i> | pallid sturgeon |

### Threatened Fishes of Illinois

|                              |                     |
|------------------------------|---------------------|
| <i>Ammocrypta pellucida</i>  | eastern sand darter |
| <i>Catostomus catostomus</i> | longnose sucker     |
| <i>Coregonus artedi</i>      | cisco               |
| <i>Fundulus diaphanus</i>    | banded killifish    |
| <i>Lampetra aepyptera</i>    | least brook lamprey |
| <i>Lepomis miniatus</i>      | redspotted sunfish  |
| <i>Lepomis symmetricus</i>   | bantam sunfish      |
| <i>Moxostoma carinatum</i>   | river redhorse      |
| <i>Notropis chalybaeus</i>   | ironcolor shiner    |
| <i>Notropis heterodon</i>    | blackchin shiner    |

The 1994 edition listed 21 endangered and nine threatened fishes. The current version, as indicated above, lists 21 endangered and 10 threatened species. There is some good news in that the eastern sand darter has been downlisted to threatened status. Noteworthy, however, is that the fathead chub has been placed directly into the endangered classification.



A gallery of madtoms native to the Mackinaw and Vermilion river systems of Illinois (collecting sites for the 1999 NANFA Convention). Clockwise from top: freckled madtom, *Noturus nocturnus*; slender madtom, *N. exilis*; tadpole madtom, *N. gyrinus*; brindled madtom, *N. miurus*; and stonecat, *N. flavus*. Illustrations from *Fishes of Illinois* by Philip. W. Smith (1979), reprinted with the kind permission of the University of Illinois Press.