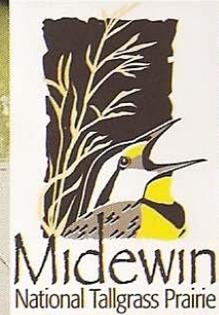
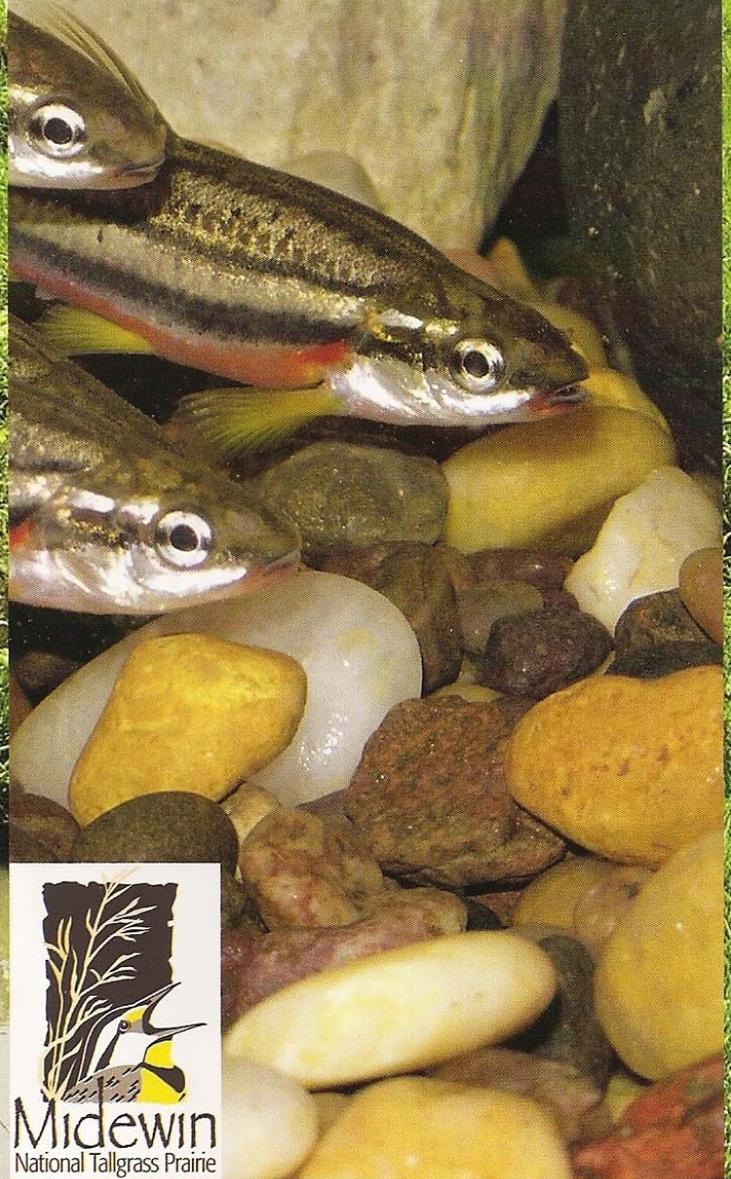


Midewin National Tallgrass Prairie

Fishes and Crayfishes of Midewin



United States Department of Agriculture
Forest Service

Funding and support for this brochure were contributed by The Field Museum and the National Fish and Wildlife Foundation.

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Midewin National Tallgrass Prairie

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by

Philip Willink
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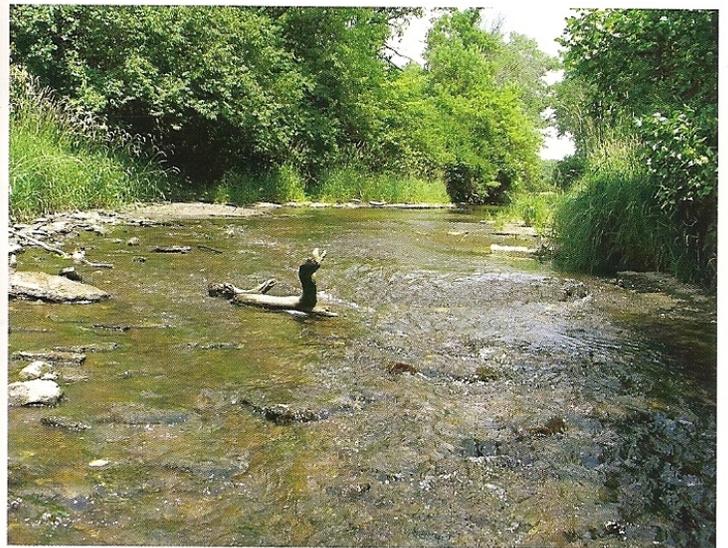
WELCOME TO MIDEWIN

Welcome to the Midewin National Tallgrass Prairie. Midewin was established in 1996 as the first national tallgrass prairie in the country. It is administered by the USDA Forest Service, in close cooperation with the Illinois Department of Natural Resources and the support of hundreds of volunteers and partner agencies, businesses, and organizations.

The Illinois Land Conservation Act mandates four guiding purposes for Midewin's management:

- To conserve and enhance native populations and habitats of fish, wildlife, and plants;
- To provide for scientific, environmental and land use education and research;
- To allow agricultural use to continue under certain conditions; and
- To provide a variety of recreation opportunities.

As the largest portion of the peacetime conversion of the former Joliet Army Ammunition Plant, Midewin represents the largest prairie restoration attempted in the United States. Located just 40 miles south of Chicago, it also represents an unprecedented opportunity for urban dwellers to experience the wide-open spaces that characterized the Prairie State 200 years ago.



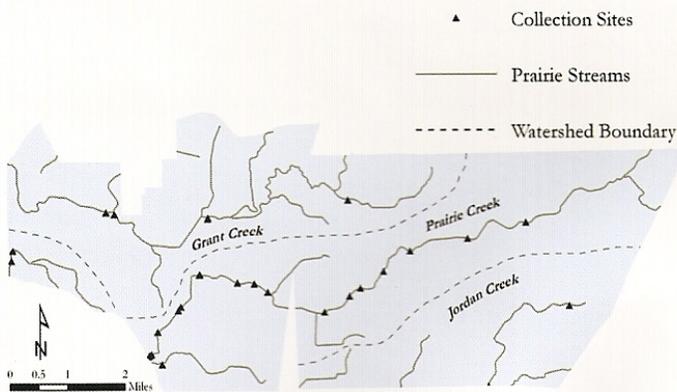
PRAIRIE STREAM OVERVIEW

Water is essential to life in prairies. Both plants and animals need water to live. The many streams that crisscross our regional prairies are an integral part of the entire ecosystem. These prairie streams are conduits of water that ultimately carry water that the prairie and land have purified. They scour the land, which helps release nutrients trapped in the earth. Prairie streams provide a variety of habitats for a myriad of aquatic organisms, such as fishes and crayfishes.

Excellent streams flow through Midewin. The most prominent is Prairie Creek. Large sections flow over clean gravel or exposed Silurian bedrock. Other parts are heavily vegetated. Mud and sand are found in the areas with a slower current. Because of the clean water and variety of habitats, fishes and crayfishes are abundant and diverse in Prairie Creek. The clear water makes it the best place to view aquatic organisms.

For most of the year, Grant Creek is relatively shallow and its fishes and crayfishes are those that would be typically found in small prairie streams. However, what makes Grant Creek special is that it has an unimpeded connection with the Des Plaines River. During times of high water, large river fishes may swim into Midewin for a short time before returning to the Des Plaines River as water levels drop. Many surprising fishes have been found in Grant Creek.

The smallest prairie stream in Midewin is Jordan Creek. It holds the lowest number of fishes and crayfishes. And yet its clear waters are home to one of the most beautiful of Midewin's fishes, the orangethroat darter.



To the north of these three streams is Jackson Creek. Its fishes are a mixture of sensitive species that have not yet been impacted by urban sprawl, species that prefer abundant native aquatic vegetation, and river species from the nearby Des Plaines River.

RESTORATION

The structure and function of the prairie streams in the environs of the Midewin National Tallgrass Prairie have undergone drastic changes in the past 150 years. Degradation of natural landscape, water quality, stream morphology, and the hindering of fluvial-geomorphic processes have resulted in drastic fluctuations in aquatic species occurrence and abundance.

Before 1859, Native American cultures were dependent on this ecosystem for natural resources such as bison and fishes for food. These cultures not only had negligible impact on the prairie stream ecosystem, but also in effect preserved its diversity and function through facilitation of natural processes such as fire, which maintained the open prairie.

After 1859, European settlers implemented agricultural practices that immediately affected streams and their respective recharge zones that had taken thousands of years to develop. Creation of drain tile systems to dry fields no longer allowed for native vegetation and the soils to filter water. Streams were channelized and deepened for swift conveyance of water, thus binding the streams to a state of homogeneity. In 1940, the US Army not only began production of wartime ordnance, but also further restricted fluvial geomorphic processes through road, bridge and dam construction. The prairie streams themselves were used as chemical waste channels, turning the creeks red with TNT. After the smoke of 145 years had finally cleared, what was left was a battered and poisoned landscape in dire need of restoration. The extreme resilience shown by fishes native to the prairie stream is a glimmer of hope that the fluvial landscape may be restored to preexisting diversity and a more natural geomorphology.

Midewin streams currently have a significantly modified hydrologic and hydraulic function. Straightened and entrenched stream channels are slowly recovering but need help. In order to restore the tallgrass prairie complex that once covered Midewin, fluvial and hydrogeomorphic processes need to be restored. Although it may seem difficult to do this, simply removing bridge crossings, culverts, weirs, roads, riprap, drain tiles and dams, planting appropriate native vegetation and letting nature take its course could do the trick in most cases.

HOW TO USE THIS GUIDE

The following pages of this brochure are filled primarily with species accounts. These accounts are divided into a fish section and a crayfish section. The fish section is further sub-divided into families, with species organized alphabetically within family.

Each species account includes common name, scientific name, picture, size, and a brief description with notes on how to identify the species and its ecological characteristics.

For more information on these species or the area, please see the Suggested Reading section at the end of the brochure.



FISHES

A total of 42 species of fishes has been recorded for Midewin. Most are species that are typically found in regional prairie streams. A few are brief visitors from nearby rivers, such as the Des Plaines. The majority are minnows (family Cyprinidae), darters (family Percidae), or sunfishes (family Centrarchidae). The largest fishes are common carp, golden redhorse, white sucker, largemouth bass, and smallmouth bass.

Fishes fill a variety of ecological niches. Some, such as basses, are predators on fishes and crayfishes. Minnows and darters feed on smaller aquatic insects. Redhorses and suckers forage on invertebrates living in the bottom sediments. Mammals, birds, turtles, and snakes will eat fishes when the opportunity arises. Most fishes spawn in the spring, usually over riffles or piles of stones. It is during this time that the males of certain species become extremely colorful. Some, such as the sunfishes, spawn over shallow depressions during the early summer months.

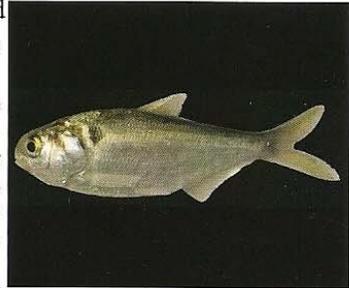
Family Clupeidae

Gizzard Shad

Dorosoma cepedianum

Gizzard shad live in rivers or lakes and are abundant at times. Juveniles swim into Midewin during floods, foraging in mud for aquatic invertebrates. Distinguishing characters include a dark spot behind the head and a compressed body.

Grant Creek



Grow to 28 inches

Family Cyprinidae

Common Stoneroller

Campostoma anomalum

Common stoneroller live in small to medium streams. They prefer rubble or gravel, where they eat algae off of rock. Distinguishing characters include a cartilaginous ridge on the lower jaw, and breeding males become humped and studded with small bumps call tubercles.

Grant, Prairie and Jordan creeks

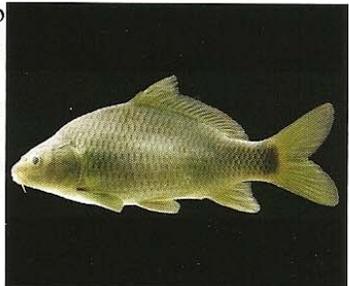


Grow to 8.5 inches

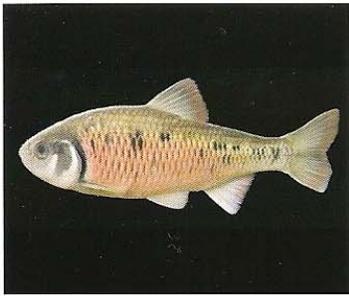
Common Carp
Cyprinus carpio

Found in all habitats. Distinguishing characters include large scales, a long dorsal fin, and barbels at the mouth corners. The only invasive fish species living within Midewin.

Prairie and Jordan creeks



Grow to 24.5 inches

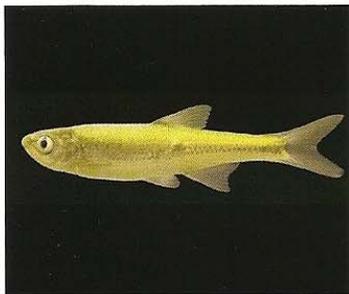


Striped Shiner
Luxilus chrysocephalus

Common in streams and small rivers. Distinguishing characters include a relatively tall body and faint "V"s that can be seen along its back. Breeding males develop pink sides and tubercles on the head. The striped shiner often hybridizes with its close relative to the north, the common shiner *Luxilus cornutus*.

Grow to 7.5 inches

Grant, Prairie, and Jordan creeks



Redfin Shiner
Lythrurus umbratilis

Fairly common in slow-moving prairie streams and small rivers. Distinguishing characteristics include a small black spot in the lower anterior corner of the dorsal fin. Some males develop bright red fins, and hence its common name.

Grow to 3.5 inches

Prairie and Jordan creeks

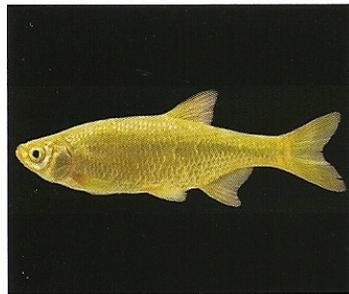


Hornyhead Chub
Nocomis biguttatus

Common in streams and small rivers that have gravel bottoms. Distinguishing characters include a small red spot behind the eye and a round spot at the base of the tail. Breeding males develop tubercles giving it its common name. This fish builds gravel nests that are 2 to 3 feet in diameter and are shared by other minnow species.

Grow to 10.5 inches

Grant, Prairie and Jordan creeks



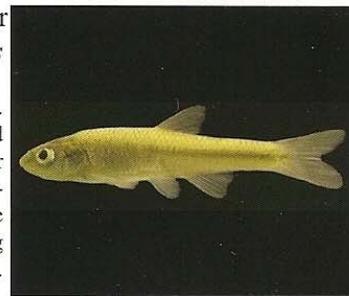
Golden Shiner
Notemigonus crysoleucas

One of our most tolerant fishes. It can survive in severely degraded habitats as well as a variety of healthy aquatic ecosystems. Distinguishing characters include a dorsal fin positioned behind the pelvic fins, and a saw tooth ridge of scales between the pelvic and anal fins.

Grow to 12 inches

Grant, Prairie and Jordan creeks

Bigmouth Shiner
Notropis dorsalis

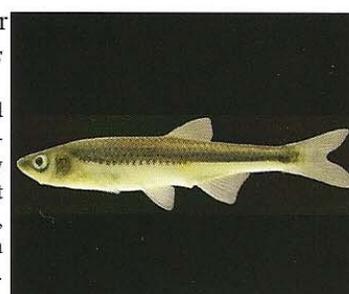


Common in streams and small rivers over sand. Distinguishing characters include eyes rotated slightly upward and a mouth that is longer than the width of the eye. Despite its plain appearance, it serves an important role in aquatic ecosystems by foraging on insects and serving as food for game fish.

Grant Creek

Grow to 3.25 inches

Roseyface Shiner
Notropis rubellus

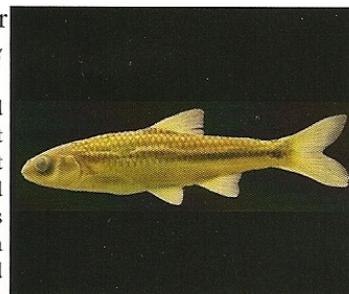


Lives in clean, moderately flowing streams and small rivers; relatively uncommon. Distinguishing characteristics include a slender silvery body and the distance from eye to tip of snout is greater than eye diameter. In springtime, males develop tubercles and red pigmentation on their head, hence the common name.

Prairie Creek

Grow to 3.5 inches

Sand Shiner
Notropis stramineus

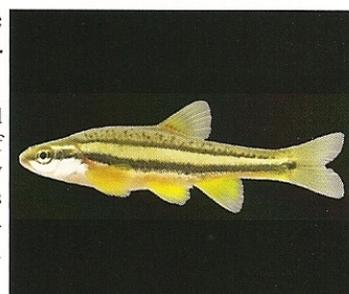


Common in streams and small rivers over sand or silt. Distinguishing characters include a faint line between top of head and dorsal fin that expands into a wedge before the dorsal fin, and faint "=" marks along its lateral line. Despite its plain appearance, it serves an important role in aquatic ecosystems by foraging on insects and serving as food for game fish.

Prairie Creek

Grow to 3.25 inches

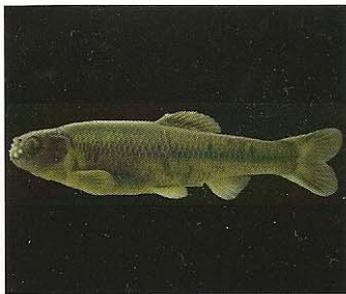
Southern redbelly dace
Phoxinus erythrogaster



Common in small streams over gravel, sand or silt. The southern redbelly dace is one of the region's most attractive fishes. It is easily recognized by its red belly. Not all individuals have bright red coloration, but do retain distinctive black lines along the side.

Grant and Prairie creeks

Grow to 3.5 inches

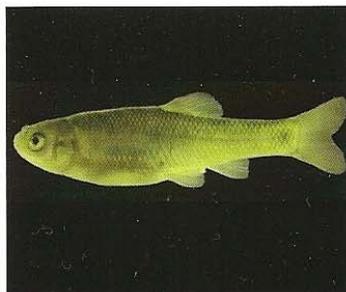


Grow to 4.5 inches

Bluntnose Minnow
Pimephales notatus

One of the most common fishes in the Chicago Region. It can be found in small streams, large rivers, and lakes. Distinguishing characters include smaller scales between head and dorsal fin, and a small black spot at the base of the tail. Males get much darker and develop tubercles on their face.

Grant, Prairie, and Jordan creeks



Grow to 4 inches

Fathead Minnow
Pimephales promelas

Tolerant to habitat and water quality degradation. Occupies headwater streams and ditches where flow is minimal and the bottom is mud. Distinguishing characters include smaller scales between head and dorsal fin, a small terminal mouth, and faint herringbone lines along the body.

Grant and Prairie creeks

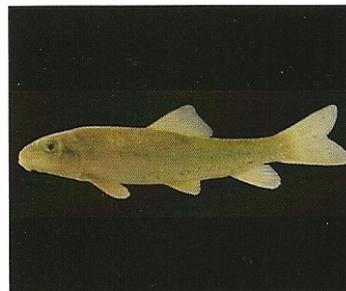


Grow to 12 inches

Creek Chub
Semotilus atromaculatus

Inhabits streams of all size and survives in isolated pools during drought. Distinguishing characters include tiny scales, small black dot in the lower anterior corner of the dorsal fin, and a large mouth that reaches the eye. It is the largest minnow in Midewin and feeds on aquatic insects and fishes.

Grant, Prairie, and Jordan creeks



Grow to 25 inches

White Sucker
Catostomus commersonii

Inhabits streams, rivers, ponds and lakes. Like other suckers, its mouth is below and has thick, fleshy lips. Taste buds on the lips are used to find aquatic insects in sand and mud. Its most distinguishing character is that its scales increase in size from the head to the tail.

Grant and Prairie creeks

Family Catostomidae

Golden Redhorse
Moxostoma erythrurum



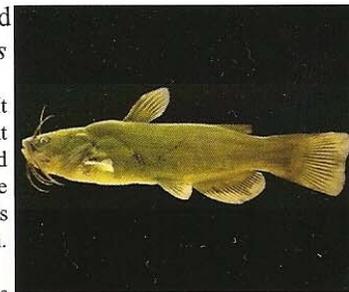
Grow to 32.5 inches

Inhabits clear, flowing streams over sand, gravel, and cobble. Its presence in Midewin indicates good water quality and habitat. Like other suckers, their mouth is below and has thick, fleshy lips. Distinguishing characters include mouth shape, uniformly sized scales, and adult bodies have a golden or bronze hue.

Prairie Creek

Family Ictaluridae

Black Bullhead
Ameiurus melas

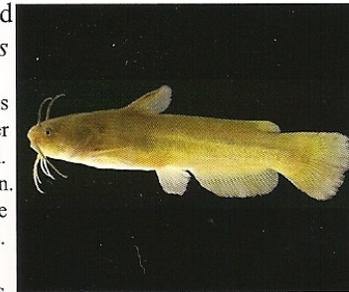


Grow to 24.5 inches

Prefers the shelter of deep pools of streams. It is not unusual to find them under bridges. At night they come out to feed. The black bullhead has eight barbels. It can be recognized by the short adipose fin and the lower four barbels that are brown.

Grant, Prairie, and Jordan creeks

Yellow Bullhead
Ameiurus natalis

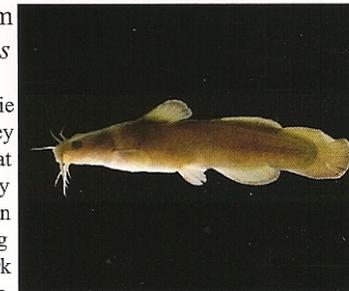


Grow to 18.25 inches

Prefer the shelter of deep pools of streams and rivers. It is not unusual to find them under bridges. At night they come out to feed. Can be recognized by the short adipose fin. Different from the black bullhead in that the lower four barbels are pale.

Prairie and Jordan creeks

Slender Madtom
Noturus exilis



Grow to 5.75 inches

The slender madtom population in Prairie Creek is one of the largest in the region. They are otherwise rare. It is a small catfish that hides in rock crevices and feeds nocturnally. Its elongate body makes it look eel-like when it swims along the bottom. Distinguishing characters include a long adipose fin and dark edges along its dorsal, anal, and tail fins.

Prairie Creek

Family Centrarchidae



Grow to 12 inches

Green Sunfish
Lepomis cyanellus

Abundant in streams, rivers, and lakes. The green sunfish is an unabashed predator, feeding on small fishes and aquatic invertebrates. Distinguishing characters are a large mouth, wavy green lines on the face, and a dark spot near the end of the dorsal fin.

Grant, Prairie and Jordan creeks



Grow to 12 inches

Warmouth
Lepomis gulosus

A widespread species, but rarely locally abundant. It lives in ponds and streams, usually in areas with little to no current and abundant vegetation. Distinguishing characters are the dark lines radiating from the eyes.

Grant Creek

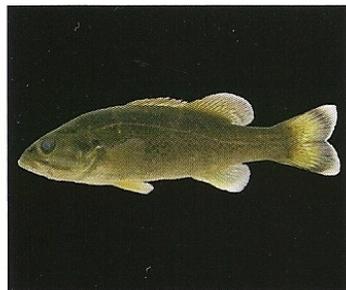


Grow to 16.5 inches

Bluegill
Lepomis macrochirus

A popular sport fish in the region and abundant in streams and lakes. Generally, only smaller fishes are found in streams. Distinguishing characters are a small mouth, chain-like pattern on its side, and a small dark spot near the end of the dorsal fin.

Grant and Prairie creeks



Grow to 27.25 inches

Smallmouth Bass
Micropterus dolomieu

A popular sport fish occupying streams and rivers with flowing clear water over cobble and gravel. This predator feeds on fishes and crayfishes. It resembles the largemouth bass, but its mouth is smaller (only reaches the eye) and its side has several thin vertical lines or is uniformly colored.

Prairie Creek

Largemouth Bass
Micropterus salmoides



Grow to 38 inches

A popular sport fish occupying lakes or backwaters of rivers. Juveniles are found in streams, rivers, and lakes. This predator feeds on fishes and crayfishes. It resembles the smallmouth bass, but its mouth is larger (passes the eye) and has a lateral diffuse black stripe from behind the head to the tail.

Prairie and Jordan creeks

Family Percidae

Fantail Darter
Etheostoma flabellare

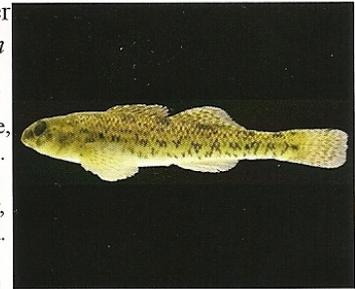


Grow to 3 inches

Occupies the cobble riffles of flowing streams and is sensitive to sedimentation. Distinguishing characters are lines of black dots along its sides and dark tail bars. Breeding males develop spheres on the tips of the first dorsal fin rays. These are believed to mimic eggs that the male guards in nests underneath rocks.

Grant and Prairie creeks

Johnny Darter
Etheostoma nigrum

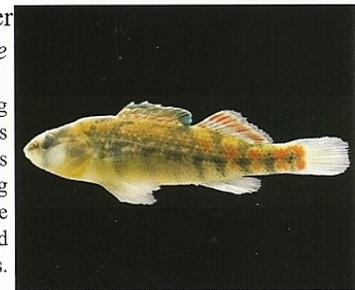


Grow to 2.75 inches

Abundant due to its tolerance to a variety of conditions, including sedimentation. Hence, it can be found in streams, rivers, and lakes. Distinguishing characteristic is a series of "X"s or "W"s on its sides. Breeding males larger, darker, and develop tubercles on the head.

Grant and Prairie creeks

Orangethroat Darter
Etheostoma spectabile



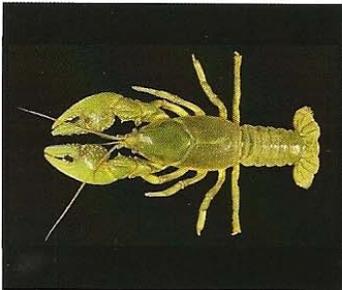
Grow to 2.75 inches

Prefers streams with a moderate to strong current flowing over cobble riffles and is moderately sensitive to sedimentation. Males are recognized by orange and blue bars along its sides. Females and juveniles have the same basic pattern, but the colors are browns and blacks instead of oranges and blues.

Prairie and Jordan creeks

CRAYFISHES

Crayfishes are decapod crustaceans, featuring a hardened exoskeleton comprised of a carapace and segmented abdomen, four pairs of walking legs and two enlarged chelae (pincers) that are used to obtain food and dig burrows. Breeding may take place in the spring, fall or year-round in some species. The rusty crayfish is invasive and not native to the region, and can displace native species. Our largest aquatic invertebrates, crayfish are critical components of aquatic ecosystems. They are omnivores, scavengers and predators. Crayfish burrows, often recognizable by their “chimneys” of mud pellets, provide shelter and hibernation sites for a variety of animals. Crayfish serve as important prey items for fishes, amphibians, turtles, snakes, birds and mammals, and are also eaten by humans. All are harmless to man, but the large pincers of an adult devil crayfish can inflict painful wounds if the animal is carelessly handled. Seven species of crayfishes are currently known to occur at the Midewin National Tallgrass Prairie. All are in the family Cambaridae.



Grow to 3 - 5 inches

Devil Crayfish

Cambarus diogenes

The devil crayfish is common, yet is often considered rare due to its burrowing habits and secretive nature. This large, distinctive crayfish has a broad, arched carapace and large, heavy pincers. They are uniformly black-green to olive, with faint rust-red edges on the tail segments and rostrum edges. Devil crayfish are found in temporary ponds and marshes along streams.

Grant and Prairie creeks



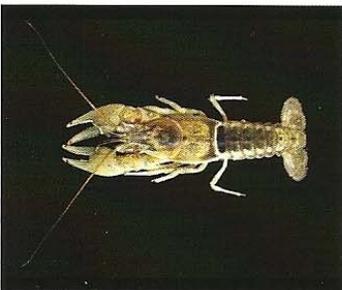
Grow to 1.5 - 3.5 inches

Calico Crayfish

Orconectes immunis

The calico crayfish is widely distributed and occupies the quiet waters of ponds, marshes, ditches, and streams. It is olive and greenish dorsally with darker markings, a stripe on the tail that is scalloped on the edges. The chelae have a gap at the base that may contain bristles, and may be purplish in adults.

Grant, Prairie, and Jordan creeks



Grow to 2 - 3 inches

Northern Clearwater Crayfish

Orconectes propinquus

This crayfish requires well-oxygenated, clear, fast flowing creeks and streams over gravel or bedrock. The northern clearwater crayfish is abundant in Midewin. It is a light green or brown crayfish with a wide areola, dark tail band and orange tips on large, smooth chelae.

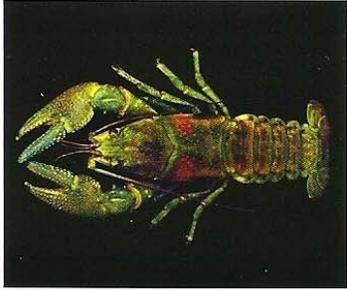
Grant, Prairie, and Jordan creeks

Rusty Crayfish

Orconectes rusticus

This invasive, aggressive crayfish is native to the Ohio River drainage. Their use as live fish bait has contributed to widespread introduction.

They may out-compete and displace native crayfish. Rusty crayfish can be distinguished by light green to olive coloration and large, rust colored spots on the sides of the carapace and the edges of the tail segments.



Grant and Prairie creeks

Grow to 2 - 5 inches

Northern Crayfish

Orconectes virilis

The northern crayfish is extremely abundant, occupying large permanent ponds, creeks and streams. It is a large greenish, olive crayfish; the top of the carapace may be brown, with a narrow areola, and a poorly defined tail band with scalloped edges. The chelae of most adults may be dark greenish-blue or slate blue with white tubercles.



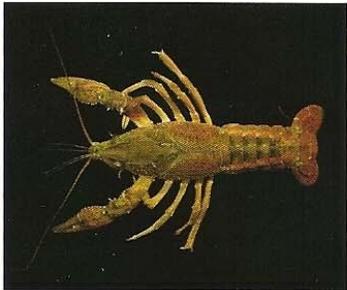
Grant Creek

Grow to 2 - 5 inches

White River Crayfish

Procambarus acutus

This crayfish inhabits temporary and permanent ponds, lakes and marshes, constructing burrows at wetland edges. Distinguishing characters include: large size; long chelae with slender fingers; and a carapace covered with pointed tubercles that give the animal a sandpaper texture. Coloration is brick red; light greenish or olive; with a dark band down the tail.



Grant, Prairie and Jordan creeks

Grow to 2.5 - 5 inches

Prairie Crayfish

Procambarus gracilis

This crayfish creates burrows with mud pellet “chimneys” in grassy areas near wetlands. They breed in temporary wetlands and can be found far from permanent water if the water table is high. Adults are olive in color, though males may be brick or rust red. The rostrum has light edges. There is a light-colored spike on the forearm just before the chelae.



Grant, Jordan, and Prairie creeks

Grow to 2 - 3 inches

OTHER SPECIES REPORTED FROM MIDWIN

Below is a list of additional species reported from Midwin. They were not included in this field guide because we were unable to verify if they currently still lived within its boundaries. Most of these fishes are probably temporary visitors, swimming into Midwin from upstream or downstream localities. This list is not intended to be comprehensive. The nearness of the Des Plaines and Kankakee rivers means that additional species could enter Midwin in the future.

Species	Grant Creek	Prairie Creek
Red shiner <i>Cyprinella lutrensis</i>	X	
Spotfin shiner <i>Cyprinella spiloptera</i>	X	
Common shiner <i>Luxilus cornutus</i>		X
Silverjaw minnow <i>Notropis buccatus</i>		X
Suckermouth minnow <i>Phenacobius mirabilis</i>		X
Quillback <i>Carpionodes cyprinus</i>	X	
Northern hogsucker <i>Hypentelium nigricans</i>		X
Black buffalo <i>Ictiobus niger</i>	X	
Stonecat <i>Noturus flavus</i>		X
Tadpole madtom <i>Noturus gyrinus</i>		X
Rock bass <i>Ambloplites rupestris</i>		X
Pumpkinseed <i>Lepomis gibbosus</i>		X
Blackside darter <i>Percina maculata</i>	X	X

SUGGESTED READING

The Fishes of Illinois by Philip W. Smith, 1979.

A Field Guide to Freshwater Fishes of North America North of Mexico: Peterson Field Guide by Lawrence M. Page and Brooks M. Burr, 1991.

Fishes of the Great Lakes Region by Carl L. Hubbs and Karl F. Lagler, edited by Gerald R. Smith, 2004.

The Crayfishes and Shrimps (Decapoda) of Illinois by Lawrence M. Page, 1985.

Crayfishes and Shrimp of Wisconsin by H.H. Hobbs III and J.P. Jass, 1988.

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Crayfish website: <http://crayfish.byu.edu/>

Guide to the Geology of the Joliet Area Including the Midwin National Tallgrass Prairie and the Des Plaines and Mazonia / Braidwood State Fish and Wildlife Areas, Will and Portions of Grundy and Kankakee Counties, Illinois by Wayne T. Frankie and Robert S. Nelson, 2003.



GLOSSARY

Adipose fin

A short fleshy fin that is only present in some fish species. It is located on the back between the dorsal fin and tail.

Anal fin

Single fin located underneath a fish, just in front of the tail.

Barbels

Long, thin, fleshy appendages near the mouth of some fish.

Breeding male

A male fish that is reproductively active. In some species, breeding males become very colorful and grow tubercles.

Dorsal fin

Single fin located on the back of a fish.

Hybridize

When two different species interbreed to produce offspring.

Pelvic fins

A pair of fins underneath a fish, just in front of the anal fin. One is on the left side, and the other is on the right side.

Lateral line

A series of small holes that form a line between the head and the tail. The lateral line senses pressure changes, and is used by fishes to find food, escape from predators, and navigate through their environments.

Snout

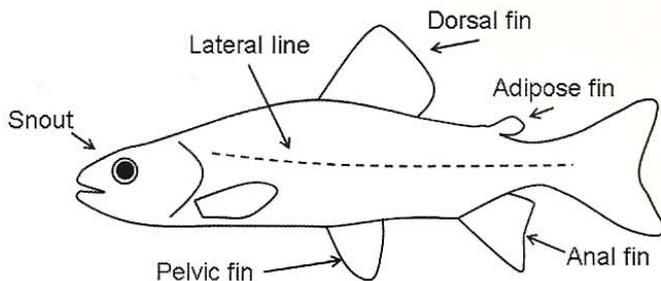
Area between the eye and the most forward point of the fish.

Subterminal mouth

Mouth is located underneath the head.

Tubercles

Small bumps that grow on the head, body, and fin of some fishes when they are reproductively active.



ACKNOWLEDGEMENTS

Our special thanks go to Cathy Starr for formatting this brochure. This publication would not have been possible without her hard work.

We would like to thank Jolynn Willink, Chris Jones, Cathy Starr, and Mary Pat Holtschlag for helping with fieldwork.

Michael Rizo was instrumental in introducing us to Midewin.

Renee Thakali facilitated our getting permission to work on Midewin property. Marta Witt provided helpful comments on this brochure.

Photos by P.W. Willink and N.J. Willink.

