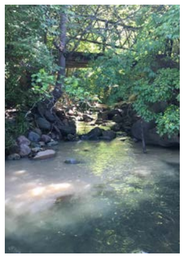
Pollution Impacts

A clean stream has very few impacts from pollution. This does not mean the water is always clean, only that pollution may occur but the impacts are not long lasting. Pollution interferes with the needs of stream fish: food, protection, and reproduction.

Sediment



Soil erosion is a big problem in Indiana's rivers and streams. Sediment covers the stream bottom and the gravel areas fish need to find food and lay eggs. Neither the insects eaten by fish nor the fish eggs can survive when covered by sediment due to lack of oxygen.

Toxins

Toxins are poisonous substances present in many types of chemicals used in everyday life. Toxins that enter the stream are potentially harmful. Some toxins will kill fish and their food sources outright, while others cause problems with growth and reproduction.

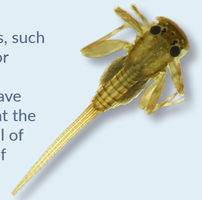
Stormwater

When precipitation falls on our cities and towns it runs across hard surfaces - like rooftops, sidewalks and roads - and carries pollutants, including nitrogen and phosphorus, into local waterways. Excess organic matter in the stream, often brought in by stormwater, causes a cycle of plant growth and decay that leads to low levels of dissolved oxygen. Stream fish need plenty of dissolved oxygen to survive. Organic matter includes leaves, grass clippings, and sewage. Other stormwater pollutants can include litter, pet waste, detergents, and fertilizers.

Home is where the habitat is

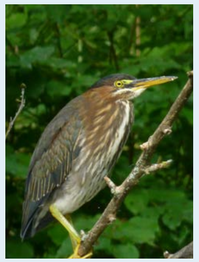
Like other animals, fish are constantly searching for food, protection from predators, and a place to raise their young. Clean streams offer high-quality habitat for all these needs.

FOOD



Many small fish eat aquatic insects, such as the nymph form of the mayfly or caddisfly. A good supply of these insects means the small fish will have plenty to eat. In turn, larger fish eat the smaller fish. White River is also full of crayfish, which is a favorite food of sunfish and bass.

HIDING PLACES



Fish need to hide when predators are around. Predators include larger fish, mammals, and birds. The Green Heron and Kingfisher are two birds that primarily eat fish. The shadow of a heron searching for a meal signals to a fish that it's time to take cover next to a rock, under a downed tree, or in a deep pool beyond the reach of the bird's sharp beak.

REPRODUCTION

Clean streams have places for fish to raise their young. A stream bottom with clean gravel or rocks is necessary for many fish to reproduce successfully.

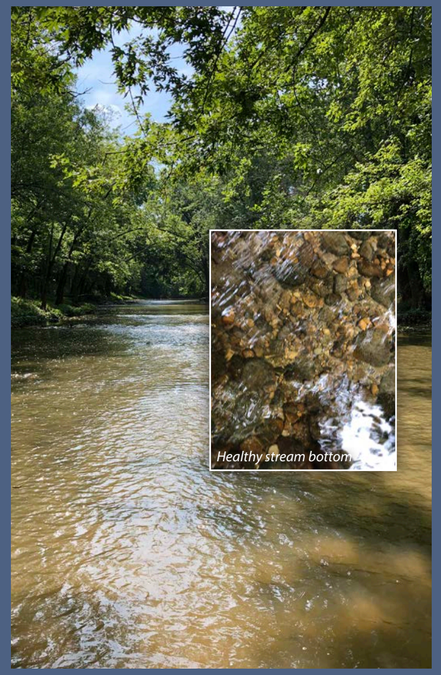
LIFE CYCLE

The breeding season for fish begins when water temperatures warm up in the spring. For some types of fish, the female will simply drop her eggs over gravel and the male will fertilize the eggs as they fall down to the stream bottom. The fertilized eggs rest alone in spaces between the stones until hatching about 10 to 14 days later. Other fish use their tails to sweep a shallow nest in the gravel, or select a hollow place under or between rocks. The female deposits eggs into the nest and the male fertilizes them. Sometimes the male fish stays near the nest to guard the eggs against predators like crayfish or other fish until they hatch.

Introduction

Indiana has over 35,600 miles of rivers and streams, as well as thousands of acres of lakes, ponds, and wetlands. Altogether, these waterways are home to 227 different species of fish ranging in size from huge catfish to tiny minnows. Indiana's landscape offers many different habitats for fish, including cold waters in the Great Lakes drainages to the north and warm waters in the Wabash and White River drainages in central and southern Indiana. This varied landscape has a lot to offer for different fish.

The West Fork of the White River begins in Lynn, IN, near Winchester. This warm water stream meanders throughout Randolph County before entering Delaware County, passing through Muncie for approximately nine miles. A majority of this stretch is sampled annually by the Bureau of Water Quality to assess the health of White River's fish community. Let's take a look at some of the clean water species they encounter during their biological monitoring.



West Fork White River

Resources

Simon, T., & Tomelleri, J. (2011). *Fishes of Indiana: A Field Guide.* Bloomington, Indiana: Indiana University Press.

Text & Photos: Sarah Brichford, Howard County Stormwater District, Kokomo, Indiana and Drew Holloway, Aquatic Biologist at the Muncie Sanitary District's Bureau of Water Quality

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Check out our other brochures to learn more about the many creatures that call White River home.

Muncie
SANITARY DISTRICT
BUREAU OF WATER QUALITY
STORMWATER MANAGEMENT

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Phone: 765-747-4896 | MuncieSanitary.org

Stream Fish

WEST FORK WHITE RIVER DELAWARE COUNTY, INDIANA

Stream Fish of West Fork White River, Delaware County, Indiana

*Fish not shown to scale
(adult fish length in millimeters)