



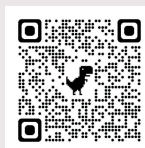
Friends of the White River

We are Friends of the White River. We advocate for the preservation of the river as Central Indiana's most precious natural resource. We represent the people who use the river for outdoor recreation, those who live near its banks, and all citizens who benefit from the river.

Programs

Outdoor Education
Environmental Justice
Watershed Restoration

Join or Donate



White River Fast Facts

The West Fork of the White River flows 312 miles and passes through Muncie, Anderson, Noblesville, Indianapolis, Martinsville, Spencer, and Bloomfield. The East Fork flows a total of 192 miles and passes through Columbus, Seymour, and Bedford.

The two rivers meet just south of Washington. The combined White River flows west another 50 miles before it empties into the Wabash River near Mount Carmel, Illinois.

The West Fork of the White River's upper watershed is over 2,500 square miles. It spans across 16 different counties and has over 900 connecting streams, creeks, and tributaries.

Land & Water Acknowledgment

We acknowledge the White River's location on the past, present, and future homelands of the Miami, Lenape, Peoria, and Kickapoo. We honor the heritage of Native peoples, what they teach us about the stewardship of the earth, and their continuing efforts to protect the planet.

River History



Glaciers carved out the White River and all its tributaries when they retreated about 17,000 years ago. These river systems have provided food, water, and transportation for people and animals for millennia.

Paleo-Indians were the first humans to live along the White River over ten thousand years ago. They were nomadic hunters and gatherers who tracked large game animals like mammoths and mastodons. These animals would have used the river as a water source as well.

Descendants of Paleo-Indians, Woodlands, and Mississippian peoples along the White River included – and still include – the Myaamia (Miami Nation), the Kaskaskia (Peoria Tribe), Kiikaapoi (Kickapoo), and later the Lenape (Delaware Tribe).

Archaeological research associates the Delaware tribes with both forks of the White River before white settlers began displacing Native groups.

Missionaries and settlers, who first arrived in the 1600s, also recognized the river's benefits. It provided clean drinking water, transportation, and, later, a power source. The 1818 Treaty of St. Mary's and other forced removals through 1846 largely displaced the Lenape and Miami peoples living along the White River.

Over the next century, agriculture and industrialization took their toll on the White River. Settlers drained wetlands for farms. Indianapolis city planners built the sewer system to drain directly into the White River. In the 1880s, the Emrichsville Dam was built near 16th Street, fragmenting the river's ecosystem and creating a lethal drowning hazard.

The Great Flood

Intense rain when the ground was still thawing in the spring of 1913 led to the most significant flood in recorded Indiana history. It devastated neighborhoods, factories, and infrastructure. Municipalities lacked resources for disaster planning, flood control, and levee and dam maintenance.

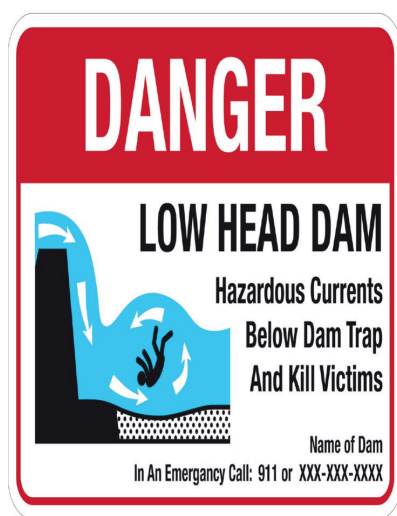
Streets flooded and water damaged buildings in Indianapolis.



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Photo courtesy of the Indiana Historical Society

Low Head Dams



Low-head dams can be deceptively dangerous. The water around them can appear calm and inviting. However, when the river isn't low, recirculating currents can push and pull victims underwater in a repeating cycle. There are multiple low-head dams along the White River in Hamilton and Marion Counties. The most dangerous of those are located in low-income areas. To enjoy any waterway safely it is very important to plan ahead and know your route and any potential dangers.

When have you planned and prepared for something fun that could also be a risk?

What steps did you take?



DNR Map of Indiana's LowHead Dams

www.friendsofwhiteriver.org

Environmental Justice

The Environmental Protection Agency defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Environmental racism occurs when legislators, businesses, and other empowered individuals do not engage minority communities in, or even exclude them from, environmental stewardship.

Racial segregation during the 20th Century restricted Black people's access to recreational spaces. Most public parks and pools in Indianapolis allowed white people only. This meant that laws prohibited Black people from using beaches along the cleaner stretches of the river. Black people could only swim in the river at Belmont Beach - near a severely polluted and industrial stretch of the White River. Even today, pollution such as combined sewer overflows and industrial outfalls harm marginalized communities along the river.

While many people have come together in support and protection of the river, several adjacent communities have been continually left out of river stewardship and decision-making. Friends is committed to cultivating inclusion in the care of Indianapolis' most prominent waterway. **Who do you think could help in your community? How do you define your community?**



Belmont Beach Project

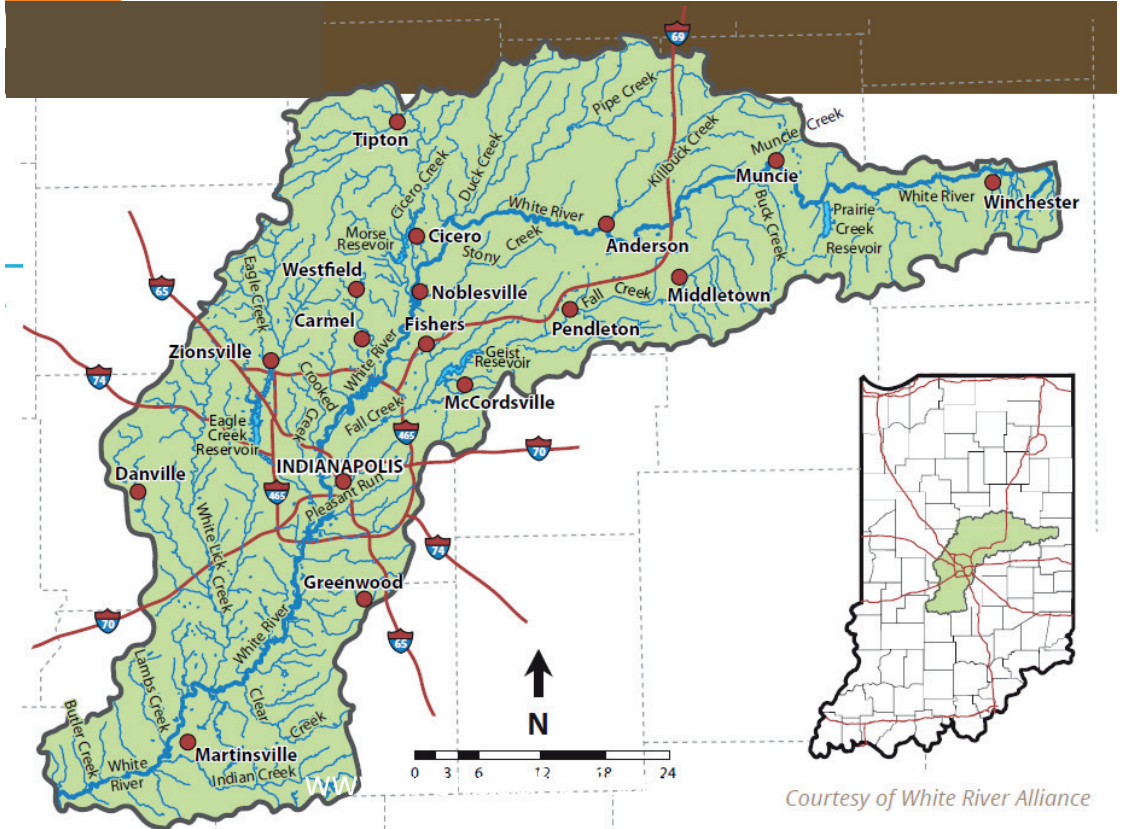
www.friendsofwhiteriver.org

Watershed Map

No matter where you are, you are in a watershed. A watershed is determined by topography rather than a geographical boundary. Watersheds include all areas of land and water that drain to a central point. The Upper White River Watershed includes the White River, all of the smaller streams which flow into the White River, and all of the land which drains into all of those smaller tributary streams.

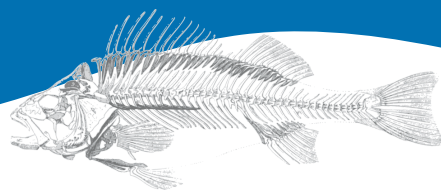
Water enters a stream through many means, including through the soil, over the land, and even through storm drains. This is why it is so important not to pollute, anywhere! Even when not in direct contact with a stream, waste finds its way into a critical habitat or municipal drinking water supply. Practice Leave No Trace wherever you are.

Who knows an example of a Leave No Trace principle or who could guess what that might be about?



Courtesy of White River Alliance

Pollution



Fish Kill

The Guide Corporation, an automotive lighting company with a plant in Anderson, Indiana caused the most devastating fish kill in the history of the White River. In December of 1999, the Guide Corporation dumped 10,000 gallons of a toxic chemical called HMP-2000 into the White River. It was only a matter of days before fish started floating up to the surface. The wastewater left the ecosystem in shambles. As a result, responders cleaned up over 113 tons (at least 4.6 million individuals) dead fish. The absence of a productive food chain following the fish kill left the river without a functioning ecosystem.

After a long legal battle, the Guide Corp. assumed responsibility and a court order forced the company to pay \$14 million to account for landowner damages and ecological restoration. The incident galvanized the environmental community and spurred redoubled action through federal and state policies and investment.

The White River river has come a long way thanks to the restoration efforts, however there is still quite a bit of work that needs to be done. **What other environmental disasters have occurred in the past and how have affected communities responded?**

Fish Consumption Advisory

Fish is a lean protein that is a good source of omega-3 fatty acids. However, some fish also contain Mercury and PCBs at levels harmful to human health. The Indiana Fish Consumption Guidelines are a set of recommendations for the consumption of recreationally caught fish from Indiana public waters created by scientists at multiple state agencies.



Fish Kill Info



Fish Consumption Advisory

Dig Indy



Dig Indy

The White River today is healthier than it has been in generations thanks to regulations like the Clean Water Act, efforts like the Citizens Energy Group Dig Indy project, and the advocacy of organizations including Friends of the White River.

The DigIndy Tunnel System - set to be completed in 2025, will catch and store waste water that would otherwise flow into the river. Gigantic tunnels will run 200-feet below ground and will store more than 250 million gallons of sewage that can be slowly released to a wastewater treatment plant. This new system will ensure that less contaminated water reaches the river - meaning better water quality of the White River.



Erosion & Wetlands

Soil is the primary pollutant into the White River due in large part to rapid-draining farm fields, roads, parking lots, and buildings. Drainage from this infrastructure causes large amounts of stormwater reach the White River in a short period of time. An inch of rainwater usually raises the depth of the White River by around one foot. All this stormwater causes the Erosion you see today.

The word erosion refers to the processes in which soil, rock, or other natural material is stripped away by natural forces. Along the banks of the White River, we see immense amounts of shoreline erosion from the natural flow of the water.

Humans speed up the erosive process by developing along the bank. One of the biggest mistakes that humans make is allowing invasive plant species with shallow roots to dominate the “Riparian Zone” (river banks). Without the root systems from native plants holding soil and rocks in place, the water erodes the riverbank quicker.

Soil erosion refers to the movement of soil by water or wind. This most often occurs when bare soil is present. Steep slopes, the presence of invasive plant species, and land use practices all contribute to soil erosion. When a stream channel is narrowed by people, slopes often become steep and plants are easily washed away.

Native plants can be used to stop erosion. Many native grasses and sedges are adapted to steep slopes and grow best near water. A combination of multiple kinds of plants is recommended to help keep the soil in place.

Up until about 200 years ago, wetlands covered nearly a quarter of Indiana. Now, there are only about 15% of those important wetlands left. Wetlands store excess stormwater, reduce flooding and erosion, filter and purify drinking water, recharge the groundwater supply, and provide critical wildlife habitats.



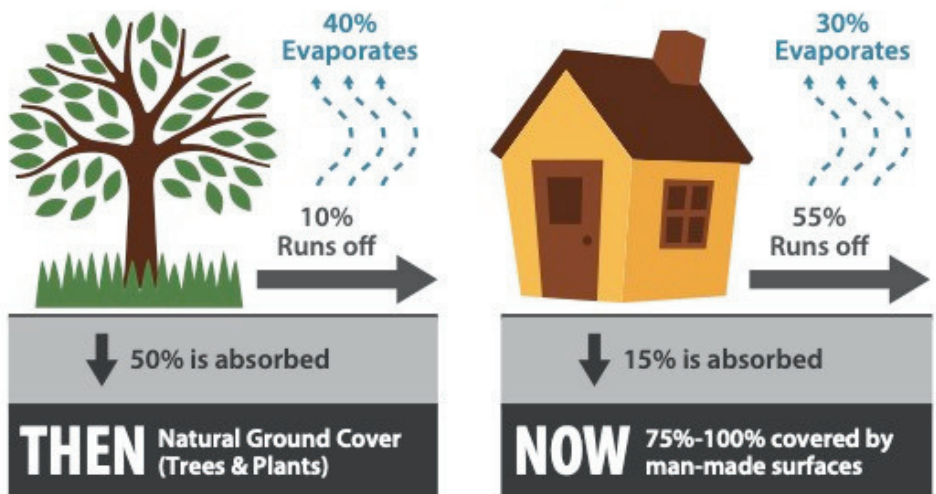
Stormwater

How does pollution enter our lakes and rivers?

When it rains, water collects on our driveways, sidewalks, and yards. Some of it is absorbed into the ground, but most of it flows into storm drains, then to pipes under the street, and finally into a river or lake. As it runs off, the water mixes with pollution that's on the ground - everything from litter to chemicals to animal poo!

THEN & NOW

As the population has increased in the State of Indiana, so has development, which results in fewer plants and more hard surfaces. More runoff means more pollution in our lakes and rivers!



Adapted from (EPA) U.S. Environmental Protection Agency, 2003, Protecting Water Quality from Urban Runoff, EPA 841-F-03-003.

Did you know?

There are more than 10,000 storm pipes discharging pollution to the River in southern Hamilton and Marion Counties alone!

One pound of phosphorus from lawn fertilizer can grow up to 500 pounds of algae in the water!

The average dog produces 0.75 lbs of poo per day, and that can contribute 7.82 billion fecal bacteria to our stormwater.

Stormwater

Where do you fit it?



How will you help prevent pollution?

Learn more about how your actions can help improve our water!
Visit Clear Choices Clean Water and take an action pledge today!



- Pick up my pet's poo!
- Plant a tree!
- Grow native plants!
- Don't litter and pick up what you can!
- Adopt a storm drain!
- Don't feed the geese!
- Use less fertilizer!
- Learn about soil health!
- Take a Clear Choices Pledge!

Streams

HEALTHY STREAM



1 SETBACKS AND NATURAL BUFFERS

The stream has a wide, healthy riparian corridor that filters pollutants and keeps the stream cool. Very few structures/buildings located close to the streambank allow the stream to connect with its floodplain and give streams room to spread out and balance sediment loads.



Citizens Energy Group Bean Creek Erosion Control Project

2 COMPLEX STREAM CHANNEL FEATURES

Healthy streams have a variety of riffles, runs and pools that create habitat for fish, insects and invertebrates that can only survive in waterways with high water quality and prevent streambank erosion.



3 MEANDERING STREAM CHANNEL SHAPE

Healthy stream channels meander as streams balance their sediment loads and gradually move across the floodplain, a feature often observed in a natural setting where streams have not been artificially straightened.



Citizens Energy Group Bean Creek Erosion Control Project

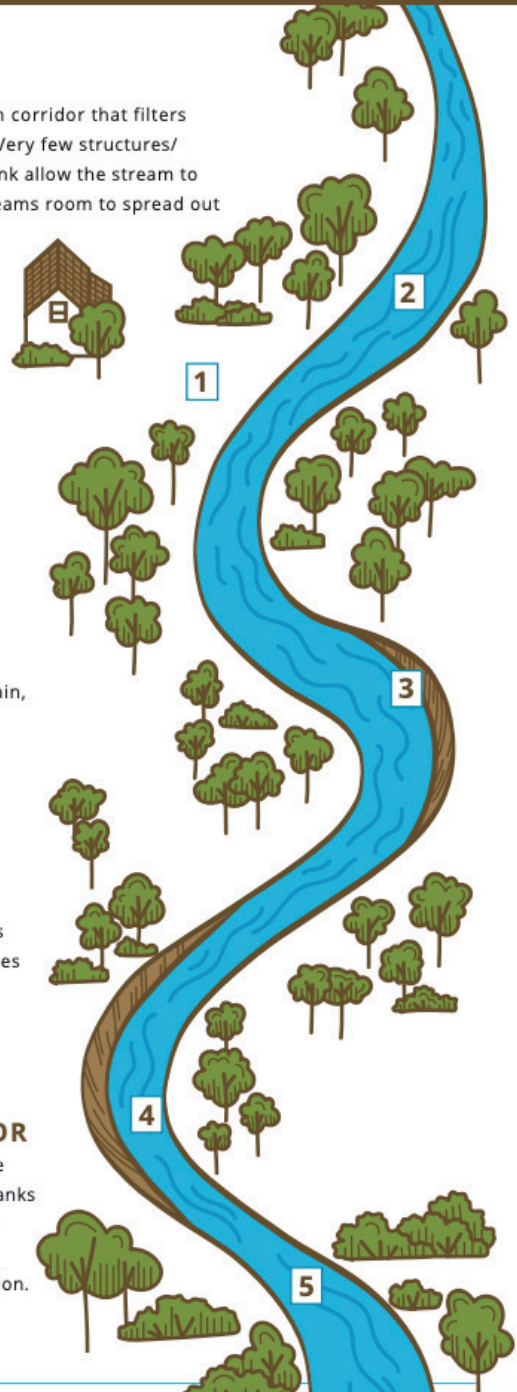
4 GENTLE, STABLE STREAMBANK SLOPES

Gentle slopes promote floodplain connection and reduce stress on banks which contribute to erosion that pollutes waterways and clogs streambeds.



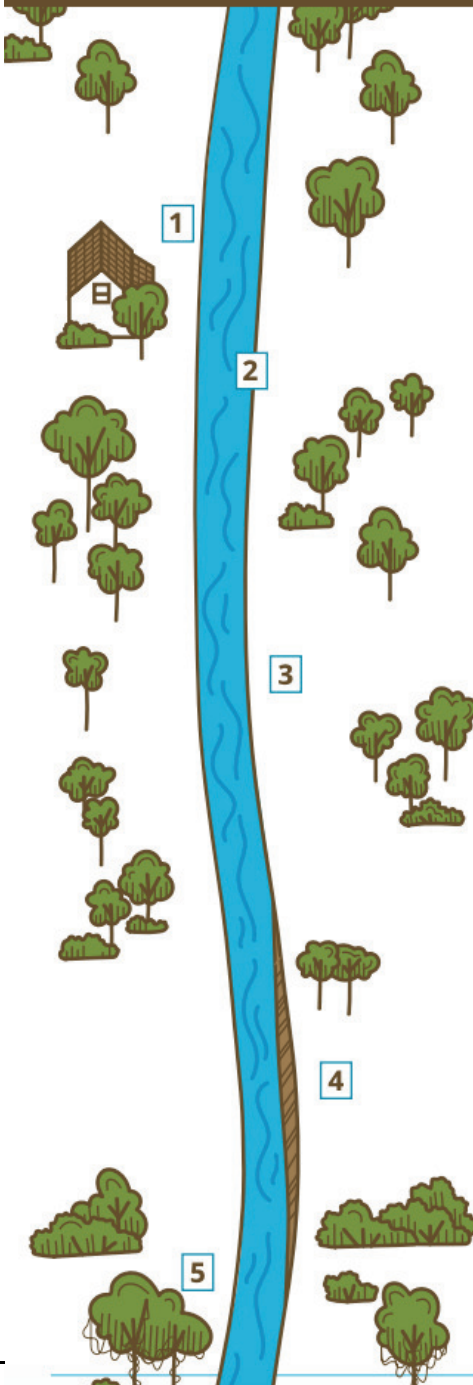
5 NATIVE VEGETATION IN RIPARIAN CORRIDOR

Healthy streams have a variety of native trees, shrubs and vegetation on their banks and in the areas adjacent to the stream corridor, helping support wildlife, filter stormwater runoff and preventing erosion.



Streams

UNHEALTHY STREAM



1 LACK OF SETBACKS AND BUFFERS

Water quality suffers when structures are allowed to be built too close to streams, occupying areas that perform critical ecosystem services related to flooding and pollutant filtering.



2 LACK OF STREAM CHANNEL COMPLEXITY

Streams without riffles, runs and pool complexes speed flow velocity and increase water temperature which reduces water quality.



3 STRAIGHTENED STREAM CHANNEL

Many streams and waterways have been straightened to accommodate urban development and agriculture needs, often resulting in downstream erosion and flooding.



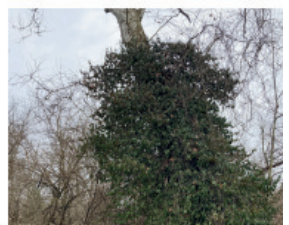
4 STEEP, UNSTABLE STREAMBANK SLOPES

Steep slopes are subject to erosion and can threaten property while contributing unhealthy pollutant loading to streams.



5 INVASIVE VEGETATION IN RIPARIAN CORRIDOR

Invasive vegetation often occupies riparian areas of streams and leads to erosion due to the shallow root systems of these plants and their ability to prevent the growth of native trees, shrubs, wildflowers and grasses by altering growing conditions and soil chemistry.



Birds



Bald Eagle

You may find our national emblem soaring above the river. If you're lucky, you may even see one dive into the river to snatch a fish. Once, Bald Eagles and many other species of birds were on the brink of extinction due to widespread use of the chemical pesticide DDT. Since then, laws have been made to protect these birds, and they have made a remarkable comeback thanks to restoration efforts led by scientists. **What else do we need to do to protect Bald Eagles? How could we do it?**



Great Blue Heron

You'll find these majestic birds flying up and down the river, resting on treetops and wading in shallow waters looking for fish. They have long skinny legs, a long beak, and a wingspan of up to 6 and a half feet long. They eat fish, frogs, turtles and snakes. **Can you spot a Great Blue Heron?**



Belted Kingfisher

These small to medium sized birds look kind of like a blue jay. They have a slate blue body, a white neck, and an always-fashionable mohawk on their large heads. Their eyes are adapted to see under the water and you may see them dive into the water to grab smaller fish. **Keep an eye out and point one out to us if you think you see one today.**

Birds

Great Egret

These beautiful birds are snow white with a long, orange, pointed beak and black legs. Like herons, you may find them wading in shallow water looking for fish to grab. They are a species of concern in Indiana, which means their populations are in trouble. You can spot them in late summer and early fall, as they begin to migrate through Central Indiana heading south to warmer temperatures.



Osprey

This large bird has a brown top, white underside, and a brown patch near the middle of each wing. They soar high over the water before diving feet-first into the water to grab fish.



Red-tailed Hawk

You're almost sure to see a red-tailed hawk - it's one of the most common raptors in Indiana. You can find them perched in trees, on fences, or on utility poles in natural areas around the state. These brown hawks have distinct cinnamon-red tail feathers and can soar very high in the air, flying miles without having to flap their wings. They eat smaller mammals like mice and rabbits. They are birds of prey and an important part of our ecosystem. **Let's see who can find one first!**



Birds

Wood Duck

Wood ducks are popular among birdwatchers and wildlife enthusiasts for their beauty and unique behaviors. Males have striking colors with patterns of green, purple, white, and chestnut. Females are mostly brown with a white eye-ring and a white throat. They are known for perching and nesting in trees, which is unusual behavior for ducks. They nest in tree cavities, often using holes created by woodpeckers. Wood ducks need forested wetlands and riverbanks to survive. **What do you think wood ducks eat?**



Green Heron

Green herons are known for their rich greenish-blue feathers on their back and wings. They have a chestnut-colored neck and head and white underparts. These birds live in habitats like marshes, swamps, streams, ponds, and mangroves. They are often seen perched at the water's edge. **What do you think they are doing there?**



Pileated woodpecker

The pileated woodpecker is known for its appearance and loud drumming sounds. These woodpeckers have mostly black feathers with bold white stripes on their faces and necks. The males have a red crest on the top of their heads that extends from the bill to the nape of the neck, while females have a black crest. Pileated woodpeckers live in forests across most of North America. **Any guesses how they make their homes?**



Birds

Cliff Swallow

The cliff swallow is a small bird that migrates. Cliff swallows make gourd-shaped mud nests in colonies on vertical cliffs, rocky ledges, and human-made structures such as bridges, buildings, and overpasses. Like many migratory birds, they face threats from habitat loss, pesticide use, and collisions with buildings and vehicles. **Does anyone know a way we can keep migrating birds safe?**



Killdeer

Killdeer have a brownish upper body and white underbody. Their head and neck have bold black and white markings, and they have two black breast bands. Their wings display a rust-colored patch during flight. They have long legs and a long, straight black bill. As a shore bird, killdeer can be found in beaches, muddy banks, wetlands, and fields during the non-breeding season. One of the most interesting killdeer behaviors is a "broken-wing" display. **Can anyone think of how a broken-wing display might be used by the Killdeer?**



Canada Goose

Canada (not Canadian!) Geese have black necks and heads, and a light brown body and white chin strap that runs beneath their beak. These geese are highly adaptable and are found in a variety of places like lakes, rivers, marshes, grasslands, agricultural fields, parks, and urban areas. Human/wildlife conflicts are very common with Canada Geese, especially during nesting season. **Why do you think we see so many Canada Geese in urban and suburban areas?**



Native Plants

Milkweed

You'll find lots of this native plant along the Urban Wilderness Trail on the river, especially in the summer and fall. Inside the leaf stem is milk-like fluid that gives Milkweed its name. Milkweed feeds and gives a home to many insects. Monarch butterflies lay their eggs and feed on the leaves. **What could you do to help important insects like the monarch?**



Riverbank Grape

This wild grapevine can grow up to 75 feet long. It is found hanging from floodplain trees where it can find sun. Mature vines have a reddish-brown, shredding bark that can be up to 8 inches thick. The fragrant flowers produce bunches of berries that are very sour until after a frost when they begin to turn more sweet-tart. Humans, birds, and small animals enjoy the edible grapes.



Native Plants

Cottonwood

These large trees shoot up quickly, growing 5 to even 15 feet each year. You won't be able to wrap your arms around a mature cottonwood as their dark gray trunks with very deep ridges can be 9 feet in diameter (that's 28 feet around). They get their name from the cotton-like seeds that blow through the air in early summer. These water-loving trees provide shade to the waters below, keeping fish cool in the summer heat.



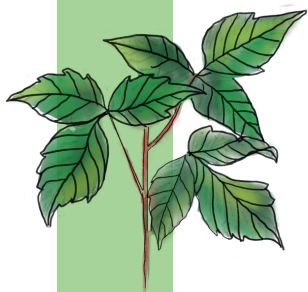
American Sycamore

You'll often find these grand trees with light-grey, white, and brown bark leaning over the river's waters. One of the largest deciduous trees in the eastern United States, Sycamores are a favorite for bird species like the Great Blue Heron to build their nesting colonies.



Poison Ivy

Friend or foe? This is a bit of a trick question; people are taught to stay away from poison ivy because it gives most of us an itchy skin rash. But for the ecosystem, this native vine and ground cover has a lot of benefits. Poison Ivy is food for grazing animals, like white-tailed deer. It can also lead birds to berries, and it can act as a ground cover to help with erosion control. **Is Poison Ivy a friend or foe?**



Native Plants

Stinging Nettle



Stinging nettle grows along streams, lakes, and in wetlands. It is easy to spot and has a painful sting. It can easily reach six feet in height and has fine hairs on the stems and leaves. Each hair is like a hollow needle filled with acid that causes pain to humans for up to 24 hours. Despite the painful effect it is known for, nettle has many uses including as a remedy for ailments. Humans have also used it as a food source and rope-making material. **Has anyone encountered stinging nettle before? What happened? What was it like?**

Jewelweed

Like stinging nettle, jewelweed grows in moist, partially shady conditions. Conveniently, this plant is a remedy for nettle stings. Applying the crushed stem of jewelweed to the affected area soothes irritated skin. The flowers of this plant may be orange or pale yellow and are loved by hummingbirds, bumblebees, and butterflies. The fruit is an elongated capsule, which, when ripe bursts open at the slightest touch. **What other plants do you know of with medicinal properties?**



Wingstem



Also called yellow ironweed or golden honeyplant, this plant has structures which run down the stem and form raised ridges or “wings” along it. This plant is found in fertile, moist, low-lying areas, near creeks and in open bottomland woods. The flower attracts long-tongued insects like bumblebees and butterflies. It is less attractive to short-tongued insects like wasps and flies. **Why do you think this is?**

Invasive Plants



Winter Creeper

Landscapers brought this evergreen vine over from China in the early 1900s. It's an invasive species that grows extremely fast. The waxy leaves can block out native plants making it hard for them to grow. This vine is dangerous for the river ecosystem because it increases erosion.

Asian Bush Honeysuckle

One of the most common invasive plants in Indiana, these shrubs grow to about 15 feet tall and have dense, egg-shaped leaves. Originally introduced to slow down erosion, the shrubs now form a near solid wall along many Indiana streams and highways. They prevent native plant species from growing nearby by releasing chemicals into the soil. Many organizations support community efforts to remove honeysuckle. **Is there any honeysuckle where you live? How could you identify it? What could you do about it?**



Invasive Plants

Eurasian Milfoil

This underwater plant grows fast. It feeds off the chemicals that run into the river from lawns and fields. It can quickly take over shallow waterways and make it hard to paddle. The plant grows long, bushy, green tails just below the water surface. They can be up to ten feet long and tangle around your paddle! **Why else is it bad for the environment?**



Garlic Mustard

Like many invasive species, garlic mustard starts growing earlier in the year than native plants. This means it is able to form dense clusters to outcompete native plants. Our native insects and wildlife depend on native plants for food and Garlic Mustard limits their food supply. Garlic mustard starts as a mound of round leaves in the first year. The following spring, it shoots up three-foot stalks of rough triangular leaves with small white flowers.

How can we find out what other plants are native to Indiana?



Tree of Heaven

Although this tree has a beautiful name, it's bad for our Indiana environment. Tree of Heaven releases toxins into the soil that make it hard for native plants to grow. It is also difficult to control because it sends its seeds far and wide to grow new trees.

What native tree looks similar to Tree of Heaven?



Plants

Duckweed

Duckweed are members of the family containing the world's smallest flowering plants. They are generally a very small floating green plant, usually smaller than your smallest fingernail. Often mistaken for algae, this plant floats on the surface of the water and reproduces very rapidly. This plant may or may not have a 'root' extending from the underside, but the plant is not rooted to the soil. **How do you think people can tell the difference between algae and Duckweed?**



Cutleaf Coneflower

Also known as green-headed coneflower or cutleaf coneflower. It grows in the part-shade of floodplain forests, swamps, and stream banks where it may form small patches. Each flower is 3-4 in across, with cone-shaped, greenish-yellow centers and back-tilted golden rays. This plant was one of the earliest American species to be exported to England. In 1640, this plant was growing in the garden of England's King Charles I.

Name some plants that were brought to North America from Europe, Asia, or Africa.

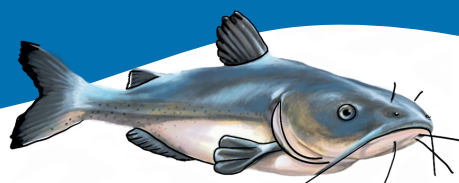
Reed Canary Grass

A cool season grass that grows up to six feet tall. Reed canary grass spreads through rhizomes (underground horizontal stems) forming dense stands in wetlands, moist meadows, and streambank areas. Once it has invaded an area, it can completely eliminate native plant species. For humans, it can aggravate allergies by producing abundant pollen.

Why do you think that outcompeting native plants is a problem?



Fish

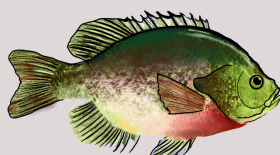


Channel Catfish

This bottom feeder has inhabited the sandy bottom of the White River for decades. As the water quality gets better, the channel catfish population grows. Anglers often target this hard fighting fish.

Bluegill/Sunfish

Named after its dark spot on its gill, the Bluegill is one of the most common fish in the White River - and there's lots of them. This fish is great for children and beginner anglers to practice fishing because it'll bite almost anything on a hook. The Bluegill is relatively small, however if you catch enough of them, they make for a tasty meal. **Who likes eating fish or seafood? Sustainable fish is a great, healthy meal!**

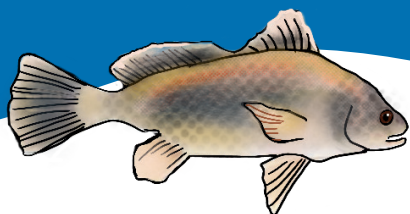


Smallmouth Bass

Very popular for those who fish, including fly fish, the native smallmouth bass is common in the White River. It's generally an olive color with brown vertical bars on its body and a light-colored underside. They like warmer water. During winter they hang out in the deeper parts of the river.



Fish



Freshwater Drum

Also known as a white perch, rock perch, or sheepshead, these fish are common in the river. They are silvery-gold in color and have a distinct humpback shape with a top (dorsal) fin that has two separate parts. They like the deeper parts of the river. They get their name because males can make a grunting sound that sounds like a drum during mating season.

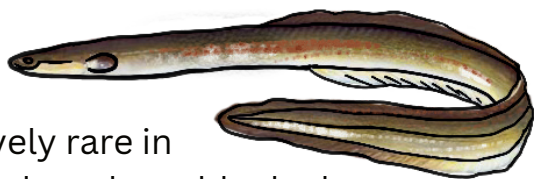


Flathead Catfish

A variety of types of catfish live in the river, including the Flathead. They have a broad, flattened head that looks like a shovel. They're a muddy-yellow color with a pale belly. They can get big: up to four feet in length and as much as 70 pounds in weight. They stick to the river bottom or hide under logs.

American Eel

These long creatures are native but they are relatively rare in the White River. Lowhead dams have blocked their migration routes. You are likely to only find females in Indiana. The males are hundreds of miles away since they like to stay near the mouths of rivers near oceans. Males can reach about 18 inches in length and females can grow up to five feet.



Turtles and Mussels



Mussels

There are 10-12 species of mussels still living in the river, but there were once many more. These creatures live on the riverbed and can help us tell how clean the water is. If they are living and breeding - then the river is healthy. **Freshwater mussels are a natural important part in filtering our water, can you identify some living ones today?**

Painted Turtles & Red Eared Sliders

These turtles are one of the most common animal sightings along the river. As of now, the turtle population is thriving throughout the White River. You can typically spot these turtles on logs or up on the bank soaking up some sun rays to stay healthy and give them energy for the day ahead.



Let's try to keep count how many turtles we see today!

Snapping Turtle

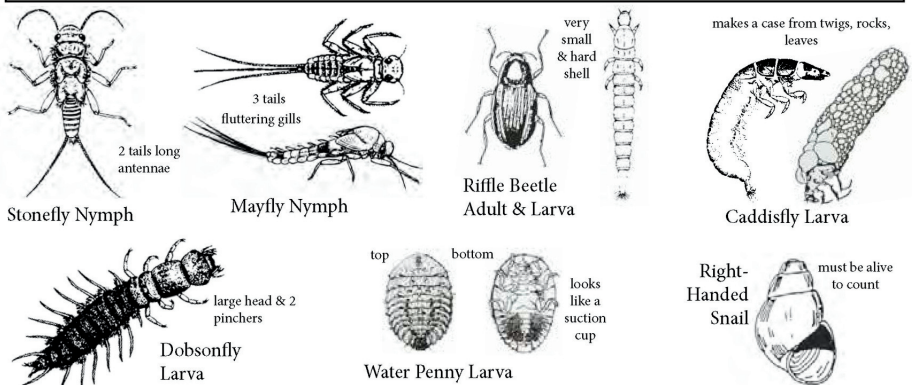
This turtle can grow to 18 inches long and weigh up to 50 pounds. Its shell is dark brown to black, helping it hide in mud. Their necks and long tails have a yellowish color while their head is dark. As their name suggests, they are not the most friendly creatures when they're bothered. They will bite to defend themselves, so leave them be, as with all wildlife.



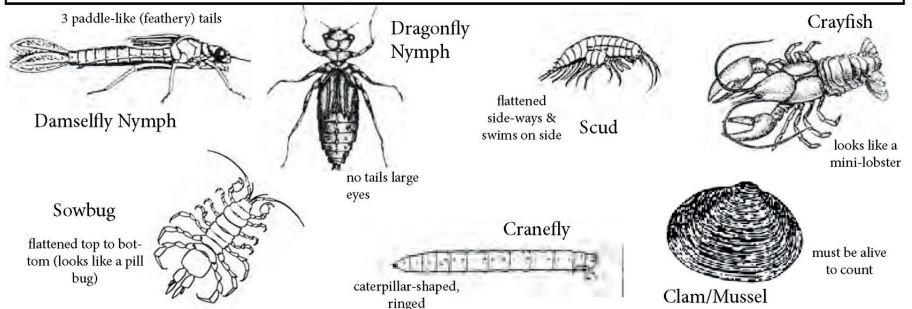
Macroinvertebrates

A *benthic macroinvertebrate* is any creature without an inside skeleton that can be seen easily and lives on the bottom of any water environment. Benthic means “bottom dwelling” and macro means “large enough to see with the naked eye” or with very little assistance. Invertebrate means an animal without a backbone. **See if you can find any of these MacroInvertebrates in the White River.**

GROUP 1 – Very Intolerant of Pollution



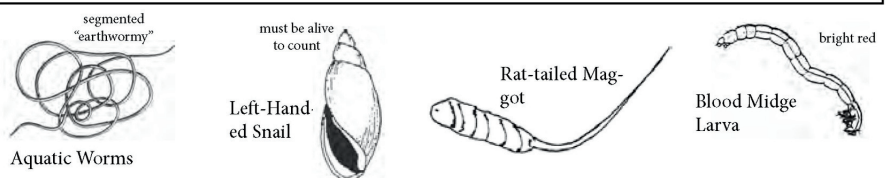
GROUP 2 – Moderately Intolerant of Pollution



GROUP 3 – Fairly Tolerant of Pollution



GROUP 4 – Very Tolerant of Pollution



Mammals

River Otter

Once endangered in Indiana, the river otter was reintroduced to the ecosystem by the Indiana Department of Natural Resources in 1995 and is now a healthy population. You could find these furry brown mammals swimming along the shore- especially in the morning and evening. **What do you think river otters might eat?**



Muskrat

These medium-sized rodents live in wetland environments. They have short brown fur and a long tail that is covered in scales rather than hair. They spend most of their time in water and live in traditional families. They build their dens into the river bank and protect it with an underwater entrance. **Have you seen a muskrat before? Do you think they are helpful or harmful to our waterways?**



White-Tailed Deer

Since there are no more wild elk or bison in the state, White-tailed Deer are Indiana's largest remaining herbivore. Deer are common throughout the state, as they have adapted to survive across a wide range of landscapes and habitats. The sale of hunting and fishing licenses, and funds from the Wildlife and Sport Fish Restoration Program paid for the successful reintroduction of white-tailed deer. **Why do you think white-tailed deer needed reintroduction in the first place?**



Mammals

North American Mink

The mink looks like a ferret but can both swim and climb trees. It has a long and slender body covered in dark brown fur. It burrows in dens in riverbanks or under logs or stumps.



Beaver

Like the muskrat, the beaver is a rodent, and spends most of its time in water. Unlike the muskrat, its scaly tail is flat rather than long and pointy. Tree stumps that have been gnawed off by their large front teeth along the river are evidence of beavers nearby. They eat trees and woody plants as well as softer aquatic plants. **How do beavers build their dams?** They use larger pieces of wood to create small dams, and then build a lodge with an underwater entrance.



Woodchuck

Also known as a groundhog, they have brown to brownish-gray fur and live in meadows, woodland clearings, and other grassy open areas. They build and live in extensive tunnel systems. Not to be confused with the beaver, woodchucks have a long and bushy tail (not leathery and flat like a beaver) **True or false? Woodchucks live on both land and in water. False: Woodchucks do not live in an aquatic habitat. Look for them roaming about on land and be kind to all living animals!**

