

Table of Contents

and guide to what, where, and how to find things in this book.



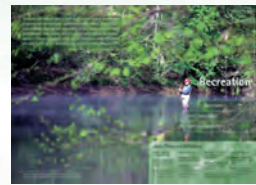
- 1.0 Streams**
- 1.1 Natural and Human Changes**
- 1.2 Principal Streams and Watersheds**
- 1.3 Uses, Benefits, and Values**
- 1.4 Stream Trivia**



- 6.0 Wildlife Diversity**
- 6.1 Aquatic Insects
- 6.2 Mollusks
- 6.3 Stream Fishes
- 6.4 Reptiles and Amphibians



- 2.0 Geology and Geography**
- 2.1 Bedrock, Ground Water, and Glacial Deposits
- 2.2 Climate and Water Cycle
- 2.3 Precipitation
- 2.4 Relief and Land Use



- 7.0 Recreation**
- 7.1 Gone Fishin'
- 7.2 More Sport Fishes
- 7.3 Recreational Opportunities



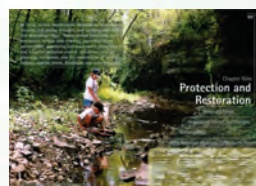
- 3.0 Habitat Quality and Threats**
- 3.1 Quality and Size
- 3.2 Anatomy of a Stream
- 3.3 Streamside Forests and Floodplains
- 3.4 Habitat Threats



- 8.0 Stream Laws**
- 8.1 U.S. Environmental Laws
- 8.2 U.S. Wildlife and Conservation Laws
- 8.3 Ohio Environmental Laws
- 8.4 Ohio Wildlife and Conservation Laws



- 4.0 Water Quality and Pollution Control**
- 4.1 Water Chemistry
- 4.2 Standards and Monitoring
- 4.3 Point Source Pollution
- 4.4 Nonpoint Source Pollution



- 9.0 Protection and Restoration**
- 9.1 Status and Trends
- 9.2 Partnerships, Science, and Programs
- 9.3 A Stream Ethic
- 9.4 Water Resources: Americans' Top Resource Priority



- 5.0 Ecology**
- 5.1 Stream Quality
- 5.2 Seasonal Changes
- 5.3 Plants and Predators
- 5.4 Preferred Habitat



- 10.0 Major Ohio Watersheds**
- 10.1 Maumee River
- 10.2 Sandusky River
- 10.3 Cuyahoga River
- 10.4 Grand River
- 10.5 Great Miami River
- 10.6 Little Miami River
- 10.7 Scioto River
- 10.8 Hocking River
- 10.9 Muskingum River
- 10.10 Mahoning River

Chapter and Section Number

This book is divided into 10 chapters and chapter sections. This number identifies the chapter and section you are in. It also serves as a double page number.

Chapter Section

All information pertaining to a chapter section will be contained in the white area of the page.

Section Heading

Section Introduction

Timeline

This timeline maps Ohio's stream related history independent of chapter sections. It begins during the prehistoric Paleozoic Era (page 1.1) and ends in the year 2000 (page 9.4). Here you will find important - and fascinating - information that helps explain the types of streams we have today and how they have changed through time.

Natural and Human Changes

During the past two million years, Ohio streams have undergone several periods of major change: first by glaciers and more recently by Europeans with the settlement of the Ohio country. Human activities during the past 200 years have resulted in dramatic physical, chemical, and biological changes in many streams. Since the 1970s, however, there have been increasing efforts to understand, protect, and restore these valuable natural resources.

Settlement of the Ohio Country

As Ohio became increasingly accessible to Europeans, the Indian and other water users were soon put in a position of being overruled by a majority of European settlers. Ohio passed the first State Stream Laws Act in 1802. Federal laws such as the Clean Water Act were passed in 1970 and 1972 and were required to establish minimum quality standards and essential limits to maintain and restore the physical, chemical, and biological integrity of the surface waters of the United States. As the result, the quality of many streams in Ohio today is better because of reduced amounts of pollutants. Many community-based watershed groups and government agencies are working to protect and restore streams and watersheds throughout Ohio.

Restoring the Ohio Country

Ohio's streams have been degraded by human activities. Many communities have been degraded by pollution, and many streams are now in poor health. The Ohio country has been degraded by human activities. Many communities have been degraded by pollution, and many streams are now in poor health.

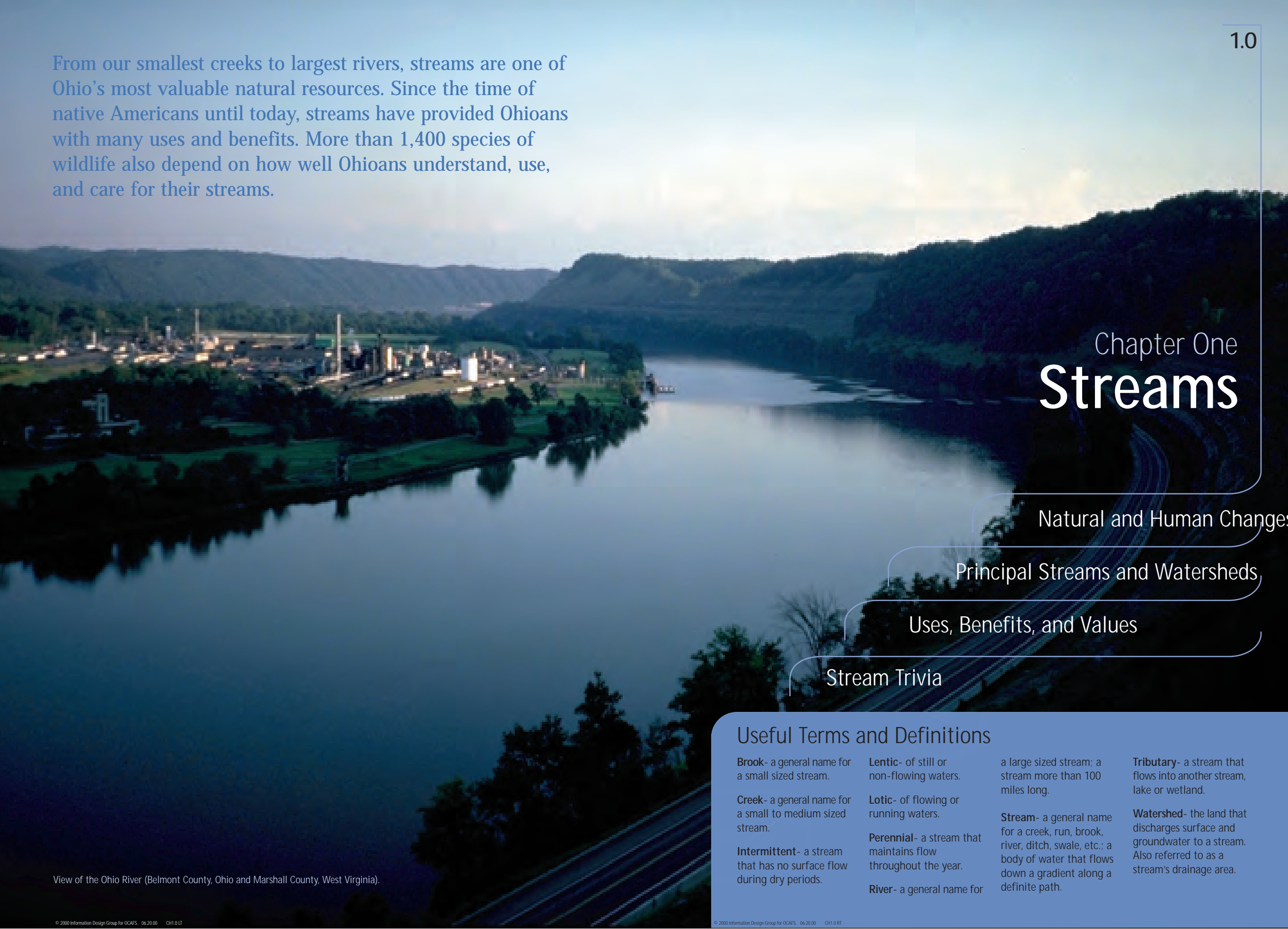
Timeline

This timeline maps Ohio's stream related history independent of chapter sections. It begins during the prehistoric Paleozoic Era (page 1.1) and ends in the year 2000 (page 9.4). Here you will find important - and fascinating - information that helps explain the types of streams we have today and how they have changed through time.

"In Ohio Streams"

In this column you will find an illustration and facts about more than 100 kinds of fish, insects, mollusks, and other aquatic wildlife that live - or lived - in Ohio streams.

From our smallest creeks to largest rivers, streams are one of Ohio's most valuable natural resources. Since the time of native Americans until today, streams have provided Ohioans with many uses and benefits. More than 1,400 species of wildlife also depend on how well Ohioans understand, use, and care for their streams.



Chapter One Streams

Natural and Human Changes

Principal Streams and Watersheds

Uses, Benefits, and Values

Stream Trivia

Useful Terms and Definitions

Brook- a general name for a small sized stream.

Lentic- of still or non-flowing waters.

a large sized stream; a stream more than 100 miles long.

Tributary- a stream that flows into another stream, lake or wetland.

Creek- a general name for a small to medium sized stream.

Lotic- of flowing or running waters.

Stream- a general name for a creek, run, brook, river, ditch, swale, etc.; a body of water that flows down a gradient along a definite path.

Watershed- the land that discharges surface and groundwater to a stream. Also referred to as a stream's drainage area.

Intermittent- a stream that has no surface flow during dry periods.

Perennial- a stream that maintains flow throughout the year.

River- a general name for

View of the Ohio River (Belmont County, Ohio and Marshall County, West Virginia).

Natural and Human Changes

During the past two million years, Ohio streams have undergone several periods of major change - first by glaciers and more recently by Europeans with the settlement of the Ohio country. Human activities during the past 200 years have resulted in dramatic physical, chemical, and biological changes in many streams. Since the 1970s, however, there have been increasing efforts to understand, protect, and restore these valuable natural resources.

the Ohio country by pioneers and naturalists, native Americans had little impact on the quality of streams. In the early 1700s, Ohio's pristine environment was described as a predominantly forested landscape with scattered openings, clean streams, numerous wetlands, and an abundance of wildlife.

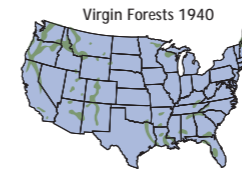
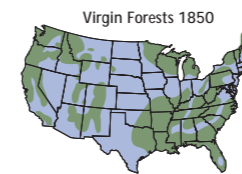
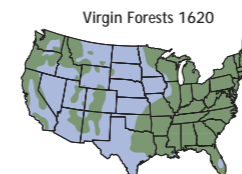


Today, the presence of prehistoric artifacts along many Ohio streams is evidence of how important streams were to native Americans.



Settlement of the Ohio Country

As Ohio became increasingly populated by Europeans, cities were built, forests were cleared, wetlands were drained and the quality of streams continued to worsen. By 1825, stream transportation had become difficult due to the construction of numerous mill dams. Many urban streams had also become seriously polluted by 1885. In 1893, Ohio's first water pollution law was passed and the city of



Restoring the Ohio Country

Realizing how impaired streams had become, new federal and state water laws were soon passed in hopes of reversing more than a century of stream degradation. Ohio passed the first "State Scenic Rivers Act" in 1968. Federal laws such as the Clean Water Act were also passed in 1970s and states were required to establish water quality standards and chemical limits to maintain and restore "the chemical, physical, and biological integrity of the surface waters of the United States." As a result, the quality of many streams in Ohio today is better because of reduced amounts of pollution. Many community-based watershed groups and partnerships comprised of citizens, landowners, businesses, and government representatives have also formed to protect and restore streams and watersheds throughout Ohio.



The ancient Teays River watershed once drained the southern two-thirds of the land now called Ohio.

tributaries, and numerous wetlands were left behind.

Ice Over the Teays

Approximately 2,000,000 years ago, Ohio was drained by an ancient stream system known as the Teays drainage. Glaciers from the north, however, blocked many of the stream valleys. As water flowed out

of the newly created lakes, the Ohio River drainage was created to the south. As the last glacier retreated to the north, approximately 10,000 years ago, Lake Erie, its



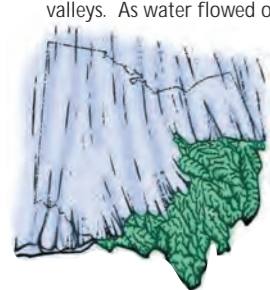
Dams and other human influences have eliminated lake sturgeon (Acipenser fulvescens) from Ohio streams. As the numbers of this Ohio endangered fish increase in Lake Erie today, there is hope the fish will someday return to its former spawning grounds in Ohio streams.

The First Ohioans

As Ohio became warmer, native Americans began living along many Ohio streams. As they are for humans today, streams were also very important to the first Ohioans. Based on early descriptions of

species. Stream impacts continued to increase through the mid-1970s when some streams had become so polluted they contained no fish for over 50 miles. By then, more than 22,500 miles of county ditches had also been constructed. The Ohio country had been settled with little regard for stream quality.

Canton completed Ohio's first sewage plant due to outbreaks of diphtheria. Stream impacts must have been localized, however, because biological surveys in many rural Ohio streams found an abundance of pollution sensitive fish and mussel



PALEOZOIC ERA BEGINS
Ohio's upper bedrock layers are formed by extensive sedimentation throughout seven geologic periods. Fossils indicate both shallow marine and freshwater habitats were present in Ohio.

570,000,000 BC Cambrian Period
Ohio changes from a broad coastal plain to a shallow sea. Trilobites and other life appear. Jawless fishes (agnathans), Ohio's oldest fossil vertebrates, have been found in Upper Cambrian rocks. Deposits of sand and mud form.

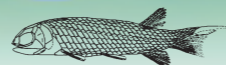
500,000,000 BC Ordovician Period
Fishes become more abundant and aquatic assemblages include trilobites, sponges, jellyfish, crinoids, corals, cephalopods, brachiopods, pelecypods, algae, jellyfish, gastropods, and bryozoa. Ohio's location is south of the equator. Abundant fossils from this period can be found in the limestone streams of southwestern Ohio.



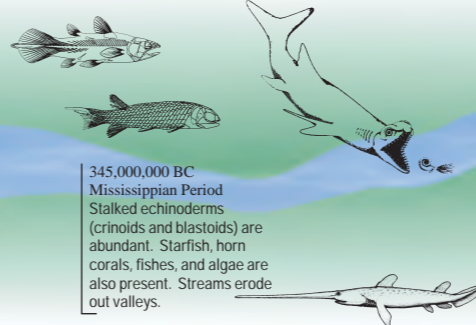
440,000,000 BC Silurian Period
Ohio's shallow, marine, subtropical environment supports coral reefs, an abundance of nautiloids, snails, crustaceans, algae, and jellyfish. Land plants appear with receding sea levels. Evaporation of shallow seas leave behind thick salt beds which are today mined near Cleveland.



400,000,000 BC Devonian Period
Trilobites decline. Corals, bryozoans, cephalopods, sponges, and crinoids are present. Huge and ferocious predatory fish such as *Dunkleosteus terrelli*, *Onychodus sigmoides*, and sharks inhabit Ohio seas.



345,000,000 BC Mississippian Period
Stalked echinoderms (crinoids and blastoids) are abundant. Starfish, horn corals, fishes, and algae are also present. Streams erode out valleys.



320,000,000 BC Pennsylvanian Period
Consisting of both marine and terrestrial environments, this period contains a broad diversity of plants and animals. Tree ferns, early conifers, reeds, and rushes provide lush vegetation that overwhelms the landscape. Numerous swamps with peat bogs form as vegetation dies. Extensive coal beds form in eastern Ohio. Large saltwater and small freshwater sharks (*Symmorium reniforme* and *Bandingray*), coelacanth (*Rhabdoderma elegans*), and other fishes (*Haplolepis corrugata*) are present in Ohio. Amphibians and dragonflies are also present.



Extinct



Common Name: harelip sucker
Scientific Name: *Lagochila lacerata*
Phylum: Chordata
Class: bony fishes (Osteichthyes)
Order: Cypriniformes
Family: suckers (Catostomidae)
Number of Streams: 0
Distribution: Ohio River & Lake Erie Basins
Habitat: medium to large streams
Size: < 1.5 feet
Pollution Tolerance: highly intolerant

Locally Common



Common Name: Dobsonfly larva; hellgrammite
Scientific Name: *Corydalus cornutus*
Phylum: Arthropoda
Class: Insecta
Order: Megaloptera
Family: fishflies & dobsonflies (Corydalidae)
Distribution: Ohio River & Lake Erie drainages
Habitat: riffles of medium to large streams
Size: < 3 inches
Pollution Tolerance: intermediate to sensitive

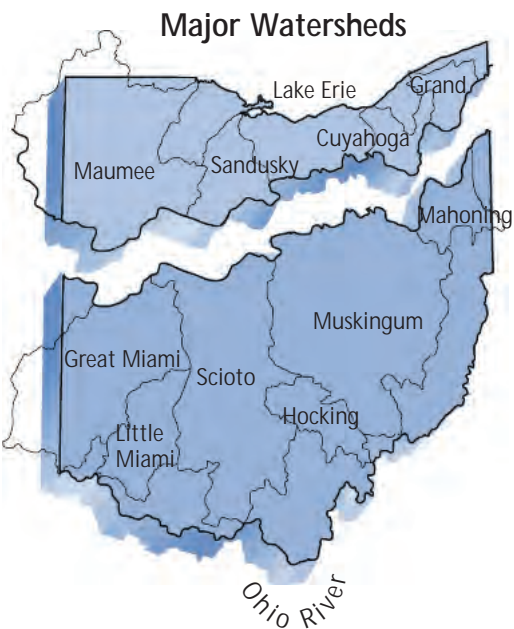
Endangered



Common Name: white catpaw
Scientific Name: *Epioblasma obliquata*
Class: Bivalvia
Order: Unionoida
Family: freshwater mussels (Unionidae)
Distribution: Lake Erie drainage
Habitat: riffles of small to medium streams
Size: < 2 inches
Abundance: one stream, very rare
Pollution Tolerance: intolerant

Principal Streams and Watersheds

With more than 60,000 miles of streams, Ohio is a water-rich state. But, if you look at the size of our streams, it is obvious that we have a lot of small creeks and a few large rivers. In fact, it takes many small streams to make a large one. Only 15 of the 3,300 named streams in Ohio have watersheds larger than 1,000 square miles! With streams in the northern third of the state flowing into Lake Erie and streams in the southern two-thirds flowing into the Ohio River, Ohio has two principal watersheds or drainage basins.



Lake Erie Basin
Streams in the northern third of the state flow into Lake Erie and eventually into the Atlantic Ocean through Lake Ontario and the St. Lawrence River.

Ohio River Basin
Streams in the southern two-thirds of the state flow into the Ohio River and eventually into the Gulf of Mexico through the Mississippi River.

Ohio's Largest Watersheds

	Drainage in Ohio (sq mi)	Number of Streams	Number of Miles
Lake Erie Basin	11,714	9,556	
Maumee River	6,608	2,809	327
Sandusky River	1,420	902	105
Cuyahoga River	809	1,220	58
Grand River	712	872	53
Ohio River Basin	34,361	34,361	
Muskingum River	8,051	10,739	675
Scioto River	6,517	4,206	567
Great Miami River	5,371	2,519	285
Little Miami River	1,757	1,213	141
Hocking River	1,197	2,272	122
Mahoning River	1,140	932	66

* Includes named and unnamed streams, but excludes intermittent streams.

Streams and Watersheds

Streams and their watersheds are formed as water flows from higher to lower elevations within specific areas of land. And just like a funnel, streams drain everything that is poured into their watersheds. All streams have watersheds and all streams are tributaries. As small streams merge, larger streams are formed.

MESOZOIC ERA BEGINS
A long gap in Ohio's development. No rocks formed during this period occur in Ohio.

PALEOZOIC ERA ENDS
245,000,000 BC
Ohio becomes an exposed continental area as the consecutive periods of extensive sedimentation end.



225,000,000 BC Triassic Period
Conifers appear and reptiles are abundant, but cannot be found in Ohio.

190,000,000 BC Jurassic Period
Dinosaurs and other reptiles are common, but cannot be found in Ohio.



135,000,000 BC Cretaceous Period
Dinosaurs present and mollusks are abundant.

CENOZOIC ERA BEGINS
A series of spectacular events end the long break in Ohio's geologic record. The weather turns colder in the northern hemisphere. Enormous Arctic ice caps grow and spread southward. Canada and most northern states are covered in a frozen mass of ice 1,000 to 8,000 feet thick. Seventy of Ohio's 88 counties are affected by glaciers.

Watershed Size
(square miles)

20,000 to 90,000
Ohio River

3,000 to 10,000
Muskingum River
Maumee River
Scioto River
Great Miami River

1,000 to 3,000
Tuscarawas River
Auglaize River
Walhonding River
Little Miami River
Whitewater River
Sandusky River
Hocking River
Paint Creek
Mahoning River
Mohican River

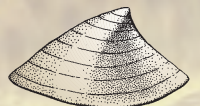
400 to 1,000
Wills Creek
Cuyahoga River
Licking River
Tiffin River
Blanchard River
Grand River
Raccoon Creek
Mad River
Stillwater River
Killbuck Creek
Portage River
Big Walnut Creek
Salt Creek
Big Darby Creek
Olentangy River
Sandy Creek
E. Fork Little Miami
Kokosing River
Stillwater Creek
Black Fork Mohican
St. Marys River
Ohio Brush Creek
Deer Creek
Huron River
Little Auglaize River
Little Beaver Creek
St. Joseph River

Threatened



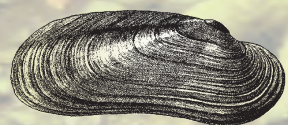
Common Name: river darter
Scientific Name: *Percina shumardi*
Phylum: Chordata
Class: bony fishes (Osteichthyes)
Order: Perciformes
Family: darters & perches (Percidae)
Number of Streams: 5
Distribution: Ohio River & Lake Erie Basins
Habitat: large streams
Size: < 3.2 inches
Pollution Tolerance: intolerant

Common



Common Name: limpet
Scientific Name: *Ferrissia* sp.
Phylum: Mollusca
Class: snails & limpets (Gastropoda)
Order: Pulmonata
Family: limpets (Ancylidae)
Size: < 1 inch
Pollution Tolerance: tolerant

Extirpated



Common Name: spectacle case
Scientific Name: *Cumberlandia monodonta*
Phylum: Mollusca
Class: Bivalvia
Order: Unionoida
Family: freshwater mussels (Margaritiferidae)
Distribution: Ohio River drainage
Habitat: swift current, buried in large streams
Size: < 6 inches
Abundance: none
Pollution Tolerance: intolerant

Streams

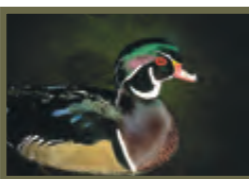
Uses, Benefits, and Values

Used a stream lately? Probably so, and in more than one way. Besides drinking water, they even provide cooling water for the generation of electricity. Streams also provide many recreational opportunities and beautiful scenery. More than 1,400 species of aquatic wildlife also depend on streams and how wisely we use our land and water.

Uses

Streams, lakes, and aquifers are important sources of water for all Ohioans. In 1997, we used approximately 10.8 billion gallons per day for public, industrial, and agricultural purposes. Streams also provide many recreational opportunities such as fishing, boating, and wildlife viewing. Stream corridors are also popular areas for parks, trails, and other greenways.

Agriculture Total surface water withdrawals in 1997 equaled approximately 16 million gallons per day from 535 intakes. The water was used for crop and livestock production, landscaping, fish and waterfowl propagation, and golf course irrigation.



Wildlife Diversity Ohio streams provide habitat for more than 1,400 species of aquatic wildlife. That is a lot considering worldwide there is only one species of humans, one species of domestic cat, and one species of domestic dog!

Electricity The majority of water withdrawn from streams and lakes in Ohio is used as cooling water to produce electricity. In 1997, forty-two power generating facilities in Ohio used 8,569 million gallons of water per day. Coal mining, quarrying, manufacturing, and other industries also withdrew a total daily average of 449 million gallons per day.

Recreation Streams provide many recreational opportunities such as canoeing and fishing.

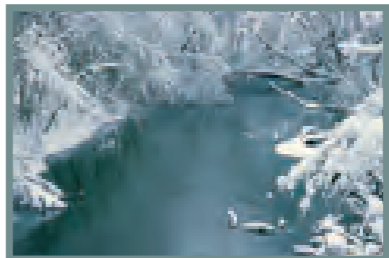


Public Water Supply In 1997, Ohio had 178 intakes that withdrew on average 899 million gallons per day for more than 6,000,000 people. Most water treatment plants are located upstream from cities.

Lakes and Reservoirs Streams and watersheds provide water to more than 60,000 of Ohio's inland lakes, reservoirs and ponds that cover approximately 200,000 acres. Most are manmade and have multiple purposes including water supply, flood control, and recreation.

Benefits

The economic and social well-being of all Ohioans is closely linked to the quality and quantity of streams and the goods and services they provide.



Wastewater Treatment Plants After water is used for public and industrial water supply, it is treated and returned to streams. Ohio has more than 3,000 point source discharges - most of which are located downstream from cities.



Values

Why is it so hard to pass over a bridge and not take a look at the stream if there isn't something special about them? Because you might miss a glimpse of wildlife or scenic view? Or is it just a natural instinct that tells us we need them to survive?

A guide to Ohio Streams

65,000,000 BC Tertiary Period
Although evidence of this period has not been found in Ohio, mammals become important and modern plants and animals appear in abundance.

25,400 BC
The last glacial invasion, the Wisconsin stage, reaches Ohio.

13,000 BC
Paleo Indians, the first people to discover the Americas, begin living in Ohio during the last ice age. They hunt now extinct species such as the mammoth and mastodon. They also fish, gather nuts and fruits, and hunt deer and small game.

10,000 BC
New drainage patterns are established over much of Ohio as glaciers retreat. Glacial outwash deposits fill many stream valleys and leave important groundwater aquifers.

8,000 BC
Archaic Indians continue to hunt and gather as Ohio's climate warms and thick forests begin to grow throughout Ohio. Jericho is built in Israel.

In Ohio Streams... 1.3

Locally Common



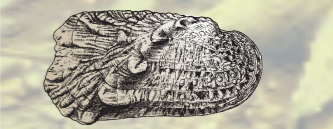
Common Name: longnose gar
Scientific Name: *Lepisosteus osseus*
Phylum: Chordata
Class: bony fishes (Osteichthyes)
Order: Lepisosteiformes
Family: gars (Lepisosteidae)
Number of Streams: 46
Distribution: Ohio River & Lake Erie Basins
Habitat: medium to large streams
Size: < 4.5 feet

Common



Common Name: river snail
Scientific Name: *Elimia livescens*
Phylum: Mollusca
Class: snails & limpets (Gastropoda)
Order: Mesogastropoda
Family: river snails (Pleuroceridae)
Size: < 2 inches
Pollution Tolerance: intermediate

Endangered



Common Name: rabbitsfoot
Scientific Name: *Quadrula cylindrica*
Phylum: Mollusca
Class: Bivalvia
Order: Unionoida
Family: freshwater mussels (Unionidae)
Distribution: Ohio River & Lake Erie drainages
Habitat: along shore unburied in small to medium size streams
Size: < 6 inches
Abundance: rare
Pollution Tolerance: intolerant

timeline

Stream Trivia

Do you know which state passed the first Scenic Rivers Law? What percent of the earth's water is in freshwater streams? Or do you know about how many miles of streams are in Ohio? What is the largest fish species in Ohio streams? Can you name three streams that were named after birds?

State Facts

- Ohio is about 44,846 square miles in surface area (land 40,469 sq. mi. and water and wetlands 4,377 sq. mi.).

Gradient Facts

- Average stream gradients (or rate of fall) in Ohio ranges from a high of 627.7 ft./mi. (Boland Run, Scioto Co.) to a low of 0.1 ft./mi. (Toussaint River, Ottawa Co.).

Fish Facts

- Ohio's most common stream fish - the creek chub - lives in more than 90% of Ohio's streams.
- Ohio's largest common stream fish - the flathead catfish - can exceed four feet in length and weigh more than 80 pounds.
- Ohio's smallest stream fish - the least darter - is less than two inches long.
- American eels are champion long distance swimmers! One eel swam more than 2,000 miles to reach Salt Lick Creek (Ross Co.) after hatching in the Atlantic Ocean.
- About 153 species of fish live in Ohio streams.

Drainage Facts

- With an average annual precipitation of 38 inches, streams drain away nearly 9.5 trillion gallons of water annually from Ohio.
- 22,500 miles of county ditches have been built in Ohio.
- 4,000 miles of drainage ditches are being maintained in Ohio.
- The drain tiles in northwest Ohio could reach to the moon if stacked on top of each other.

Stream Facts

- There are more than 3,300 named streams in Ohio.
- Ohio has an estimated 61,532 total miles of streams.
- Every stream is a tributary with a watershed.
- Each location in a stream has a drainage area or watershed.
- Ohio passed the first scenic rivers law in 1968.

Water Facts

- About two-thirds of the earth's surface is covered with water.
- About 97.2% of the earth's water is in the oceans.
- Only 2.8% of the earth's water is freshwater of which about three-fourths is frozen.
- Streams and lakes hold less than 0.02% of the earth's water.
- In 1990, each person in Ohio used an estimated 143 gallons of water per day. Annually this amounts to 52,195 gallons!

Inorganic Sediment Facts

Group Name	Particle Name	Diameter	Size (mm)
Rocks	Boulder	>255	
	Cobble	65	255
	Pebble	4	64
Gravel	Granule	2.0	3.9
	Very Coarse Sand	1.0	1.9
Sand	Coarse Sand	0.5	0.9
	Medium Sand	0.25	0.49
	Fine Sand	0.125	0.249
	Very Fine Sand	0.062	0.124
	Silt	Silt	0.004
Clay	Clay	0.000	0.0039

Stream Names

With more than 4,000 different streams in Ohio, names are important! Names can describe a stream's location, size or local history. Most contain two words - a descriptor such as the name of an animal and a second word that usually describes its size. Small-sized streams often end with *run*, *fork* or *brook*, medium-sized streams usually end with *creek*, and large-sized streams usually end with *river*. Most rivers are more than 100 miles in length.

Since some streams have the same name, it is also wise to name what stream it flows into and the name of its major watershed.

Name	#
Run	1,589
Creek	1,207
Unnamed	334
Fork	303
Ditch	232
Branch	171
River	52
Brook	20

Descriptors	#	Mammals	#	Birds	#
Dry	53	Wolf	34	Turkey	31
Big	36	Bear	25	Goose	14
Long	26	Beaver	23	Duck	7
Clear	20	Bull	12	Owl	7
Muddy	14	Hog	12		
		Dog	8	Minerals	
Food		Fish		Mud	30
Sugar	37	Pike	4	Rock	13
Plum	22	Sunfish	2	Sand	10
Salt	18			Coal	9
Honey	16	Trees		Slate	8
		Pine	16	Patriotic	
Colors		Cedar	14	Flag	5
Black	24	Sycamore	12	Congress	4
Yellow	12	Walnut	8	Yankee	2
Silver	11				

Ohio's Longest Streams



Indian Names

Chickamauga Creek
Chickasaw Creek
Cuyahoga River
Kinnikinnick Creek
Macochee Creek
Mississinewa River
Olentangy River
Scioto River
Talawanda Creek
Wakatomika Creek
Ottawa River
Ohio River

Largest Watersheds (sq. mi.)

Muskingum River 8,038
Scioto River 6,510
Great Miami River 5,385
Maumee River (in OH) 4,862
Little Miami River 1,755
Sandusky River 1,421
Hocking River 1,200
Mahoning River (in OH) 1,075
Cuyahoga River 813
Grand River 712

Common



Common Name: creek chub
Scientific Name: *Semotilus atromaculatus*
Phylum: Chordata
Class: bony fishes (Osteichthyes)
Order: Cypriniformes
Family: minnows & carps (Cyprinidae)
Number of Streams: 882
Distribution: Ohio River & Lake Erie Basins
Habitat: small to medium streams
Size: < 12 inches
Pollution Tolerance: highly tolerant

Common



Common Name: sow bug
Scientific Name: *Caecidotea* sp.
Phylum: Arthropoda
Class: Crustacea
Order: Isopoda
Family: sow bugs (Asellidae)
Size: < 1 inch
Pollution Tolerance: tolerant

Endangered



Common Name: monkeyface
Scientific Name: *Quadrula metanevra*
Phylum: Mollusca
Class: Bivalvia
Order: Unionoida
Family: freshwater mussels (Unionidae)
Distribution: Ohio River drainage
Habitat: moving water in large streams
Size: < 4 inches
Abundance: rare
Pollution Tolerance: intolerant

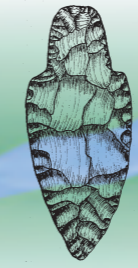
timeline

3100 BC
The age of Egypt's pharaohs begins.

2200 BC
Stonehenge, a prehistoric structure in present day England, is completed.

1000 BC
In Greece, Homer writes the *Iliad* and the *Odyssey*.

800 BC
Woodland Indians in Ohio begin a new way of life with pottery, cultivated plants, settled villages and mound building. The Adena culture become Ohio's first farmers growing sunflowers, squash and some weedy plants. Burial mounds became the ritual focus for their communities. The Hopewell culture make works of art out of copper, mica, shell and animal claws and teeth. Hunting and gathering continues.



4 BC
Birth of Jesus.

1000 AD
The Colosseum, an amphitheater, opens in Rome