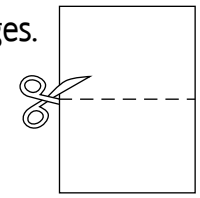
INSTRUCTIONS TO PRINT AND ASSEMBLE YOUR PASSPORT:

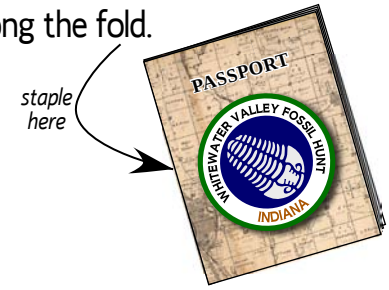
1. Print the passport using your printer's settings for 2-sided borderless printing. You should have 2 pages with print on each side.

2. Cut along the dashed line on both pages.



3. Stack the 3 sheets of paper with the passport cover on top and the page that begins with "WHERE TO BEGIN YOUR HUNT" facedown on the bottom.

4. Fold the stack in half and staple along the fold.



TO COMPLETE YOUR FOSSIL HUNT PASSPORT

1. Explore the Whitewater Valley and collect at least 5 fossils. Try to find different types of fossils.

2. Bring your fossils & passport to one of the following locations to receive your completion stamp and prize!

Old National Road Welcome Center
5701 National Road East, Richmond, IN 47374
www.visitrichmond.org 765-935-8687 800-828-8414
Hours: Mon - Fri 8:30-5, Sat 9-5, Sun 10-4 (May-Oct)
Mon - Fri 8:30 - 5, Sat 10-4:00 (Nov-Apr)

Joseph Moore Museum at Earlham College
801 National Road West, Richmond, IN 47374
www.earlham.edu/joseph-moore-museum 765-983-1303
Hours: Sun, Mon, Wed, Fri, Sat 1-5:00

Franklin County Indiana Welcome Center
813 Main St., Brookville, IN 47012
www.franklincountyin.com 765-647-6522
Hours: Mon - Fri 9-3, Sat 8-12:30

COMPLETION CERTIFICATE

*name:*_____

completed the **WHITEWATER VALLEY FOSSIL HUNT**

To learn more about the fossils in this area, visit:
sites.google.com/site/whitewatervalleyfossilhunt

Thanks for visiting Indiana's past!

FOSSIL FINDS

Try to find 5 different types of fossils. List the name of the fossils you found below each box.

fossil: _____ _____

(e.g. bivalve, crinoid, etc)

_____ _____ _____

Visit the Joseph Moore Museum or go online to sites.google.com/site/whitewatervalleyfossilhunt for help identifying your fossils!

WHITEWATER VALLEY FOSSIL HUNT PASSPORT

STATE OF INDIANA

put your photo here

Paleontologist

Name: _____

Age: _____

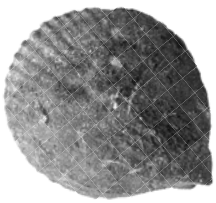
Hometown: _____

city *state*

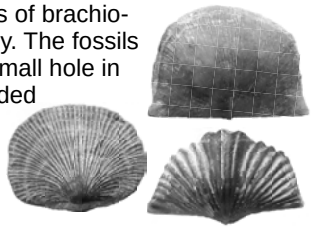
email: _____

WHITEWATER GORGE FOSSILS

BIVALVES - Bivalves like clams, scallops, and oysters had shells that dissolved soon after burial. Fossil bilvalves are typically impressions of the shells in mud or casts created when mud filled an empty shell.

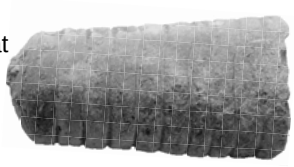


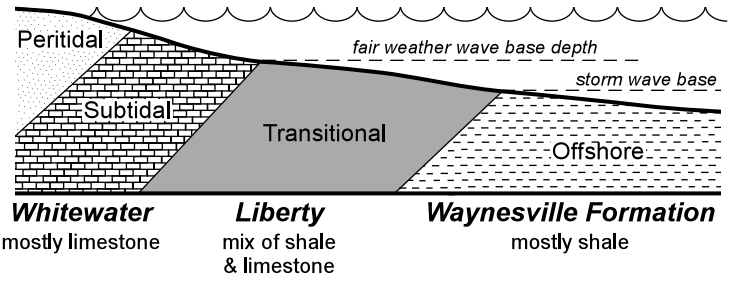
BRACHIOPODS - Many different kinds of brachiopods are found in the Whitewater Valley. The fossils have two ridged, hinged shells with a small hole in the shell near the hinge. A stalk protruded through this hole and fastened the animal to the sea floor. Brachiopods ate by filtering food from the water.



BRYOZOA - These twig- or net-like fossils were home to thousands of tiny animals. It is common to find fossils covered in a thin mesh of bryozoa. Bryozoans fed on microscopic organisms and plants by projecting tentacles with tiny moving filaments into the water through the holes in their external skeletons.

CEPHALOPODS - squid-like animals that lived in chambered cone-shaped shells. Nautiloids reach up to 15 ft in length and feed on smaller creatures they caught in their tentacles.





The 3 Richmondian rock formations found in the Whitewater Valley are at the top of an alternating sequence of shale and limestone found throughout the area around Cincinnati.

The ***Waynesville Formation*** is the oldest. It is mostly shale from a muddy, offshore environment. The fossils found there are delicate & unbroken.

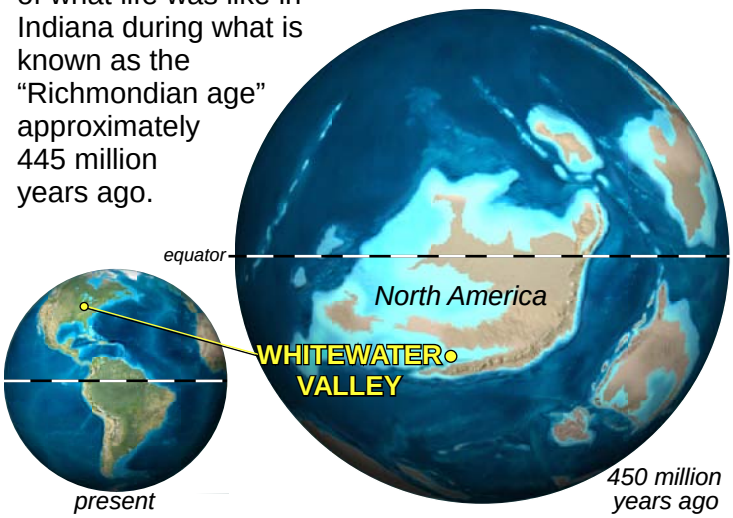
The ***Liberty Formation*** is a mix of shale and limestone. It was deposited in a transitional environment reached by storm waves, but untouched between storms.

The ***Whitewater Formation*** is mostly limestone, indicating it was deposited in relatively clear, shallow water. It contains lots of fossils that show evidence of being battered and broken by wave action.

Travel back in time 445 million years...
Welcome to *tropical* INDIANA

Long before woolly mammoths roamed the frozen plains, long before dinosaurs existed, Indiana looked a lot like the Bahamas do today.

During the late Ordovician, much of North America was covered by a shallow sea teaming with life. Indiana was located south of the equator. The fossils found in the Whitewater Valley give us some idea of what life was like in Indiana during what is known as the "Richmondian age" approximately 445 million years ago.

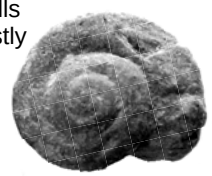


CORALS - Both horn-shaped and encrusting, colonial corals are found in the area. Colonial corals have star-shaped pores which are much larger than those of bryozoa. Like modern corals, these animals did not move, but captured food from seawater.


encrusting coral on a brachiopod

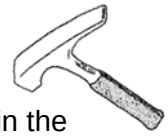
CRINOIDS - Related to modern starfish and sea urchins, crinoids are sometimes referred to as 'sea lilies' since they look like flowers that were attached to the sea floor by a flexible stalk. Crinoids fed by filtering food from the sea water with their feather like arms. They were fairly delicate and tended to break apart when the organism die, so typically only individual stem segments are found.

GASTROPODS - Like bivalves, most snails shells were not preserved, so the fossils found are mostly shell fillings or impressions. Fossil snails, like their modern cousins, crawled around the bottom scraping algae and other small food particles from rocks and plants.



TRILOBITES - Trilobites are extinct, bug-like scavengers that found food in the sea floor muds. Like modern insects and crabs, trilobites shed many jointed skins as they grew. These fragile skeletons were easily broken apart by waves, so usually only pieces are found.

WHERE TO BEGIN YOUR HUNT



Fossils can be found just about anywhere in the Whitewater Valley. Look for fossils along stream banks or the Cardinal Greenway where nature and time have eroded them from the surrounding rock. You can also find great specimens in piles of dirt & rubble near construction sites. Outcrops are constantly being created or destroyed though construction activities.

Here are a few known fossil locations to get you started on your hunt:

Richmond Fossil Park (on Bridge Avenue, just west of Sim Hodgin Parkway in Richmond, IN)
Collect fossils from the rubble pile and on the near shore of the creek. A nice outcrop of the Whitewater Formation is visible on the far side of the creek.

Whitewater River Valley Gorge Trail (between Test Road and Waterfall Road, Richmond, IN)
Collect loose fossils along the trail or in the stream bank at the base of Thistlethwaite Falls.

Fairfield Causeway Road (just west of Brookville Lake, Brookville, IN)
The Waynesville (eastern outcrop) and Liberty (western outcrop, up the hill) Formations outcrop along the south side of Fairfield Causeway Road. Park near the lake and walk up the hill. Watch out for traffic and do not climb on the outcrops.

SAFETY FIRST!

Fossil collecting can be dangerous. Please be careful and follow these few simple guidelines to ensure that you have a safe and fun collecting experience:

1. **Choose a safe collecting site**- Areas where fossils are found like creek banks or road cuts can be unstable and treacherous. Avoid areas with no road shoulder, fast moving traffic, and where non-emergency stops are not permitted. *Make sure you have permission from the land owner or the applicable permit to collect.*

2. **Beware of dangers**- Slippery slopes, falling rocks, poison ivy, traffic, and "creepy crawlies" are common hazards for fossil collectors. Always be aware of your surroundings. Collect from rubble piles ONLY: Never try to break fossils out of intact rock in the hillside.

3. **Dress for safety**- Wear clothing to protect yourself from weather and insects as well as appropriate footgear to prevent falls and twisted ankles.

4. **Be prepared**- Pack plenty of water to avoid dehydration. Bring a first aid kit for unexpected injuries. Always tell someone where you will be collecting and when you plan to be back.