

Station 1 – Limestone Walls

You're looking at 350 million years of history in the quarry walls. These limestone walls were formed 350 million years ago when Indiana was covered with a warm shallow ocean. The ocean waters contained lots of calcium. This calcium was gradually deposited on the ocean floor and eventually formed into solid limestone.

You may be able to see fossils of brachiopods, crinoids, and bryozoans in the quarry walls. These marine animals used calcium dissolved in the ocean waters to form their skeletons or shells.

The walls of the quarry were exposed by blasting. Most of the rock is unstable, as you can see by the fallen rocks at the bottom of the cliffs. In fact, the limestone from this quarry was too hard and brittle to use for buildings or monuments; instead the limestone was used to make gravel.

Questions

1. How old are the limestone rocks?
2. How does limestone form? Draw a sketch to illustrate the process.
3. Look closely at the wall. Do you see any living plants or animals?
4. What special characteristics do these plants or animals need to live on the wall?

Station 2 – Eastern Juniper

The eastern juniper is an evergreen tree. It has small scaly leaves, reddish wood, and scaly bark. There are separate male and female trees. The female trees produce small blue berries. The male trees produce small brown cones.

Eastern junipers of all sizes can be seen along the quarry trail. These trees can survive and reproduce in stressful areas like the quarry bottom where the soil is dry and infertile. Perhaps we should admire junipers for their ability to survive in such stressful conditions.

Uses of junipers:

- Provides shelter for animals
- Aromatic leaves are used for making perfumes
- Wood is used to make fence posts, cedar chests, and carvings

Questions

5. Draw a sketch of a juniper tree. Show if it is a male or a female tree.
6. How old do you think your tree is?
7. Do you see any animals living in the tree? (look closely)
8. Why are the berries blue?

Station 3 – Wetlands

There are wetlands on the right side of the trail. These wetlands formed because the soil is poorly drained and doesn't allow water to soak into the ground. Shallow ponds and bogs form in areas like this.

Questions

9. What kinds of plants do you see in the wetland?
10. What special characteristics do these plants need to survive in the wetland?
11. Why are wetlands important?

Station 4 – Turkey Vultures

There are often Turkey Vultures soaring above the quarry cliffs. Sometimes you can see 20 or 30 Turkey Vultures soaring at once. Turkey Vultures usually eat dead and decaying flesh. They are often called “nature’s janitors”. Their bald head helps them keep clean while they eat dead stuff.

Questions

12. Stop, look, and listen for two minutes. How many Turkey Vultures do you see?
13. What other animals do you see or hear?
14. What are the weather conditions? What time of year is it? How could this affect what you see and hear?

Station 5 – Secondary Succession

What would happen if you stopped mowing your lawn? Gradually your lawn would be converted into a thick meadow and then eventually into a forest. This is what is happening here. This field was abandoned maybe 5 or 10 years ago. A mix of grasses, seedlings, and herbs are growing vigorously. As time passes, the young trees will grow into larger trees and outcompete other plants.

One of the common plants here is goldenrod. They have large clusters of bright golden flowers at their tips. They usually bloom during late summer.

Other common plants are the eastern cottonwood and sycamore. Both have large leaves that are roughly triangular in shape. The cottonwood leaves seem to be always moving, even when there's just the slightest breeze. It's easy to tell the cottonwoods apart from other trees because you can see their leaves waving in the breeze.

Questions

15. Why do trees eventually replace grasses in the long run? What advantage do trees have over grasses?
16. Do you see any insects visiting the goldenrods?
17. Do you see any unusual shapes of the goldenrod stems? Draw a sketch of one.
18. Draw a sketch of a sycamore leaf and a cottonwood leaf. Show the differences and similarities between the two.

Station 6 – New road

This part of the road was built across the quarry pond shortly after DePauw acquired the park. The road makes it easier for us to get across to the quarry bottom.

Cattails are growing along the edge of the quarry pond. The brownish spikes are the cattail's flowers. Each spike has two parts: the upper part is the male and the lower part is the female. The plant relies on wind to transfer the pollen from the male to the female flowers.

15. Some people have talked about flooding this area and turning it into a larger lake. Do you think this is a good idea? Why or why not?
16. Who should decide whether or not to flood this area?
17. How would flooding change the plants and animals that live here?

Station 7 – Quarry pond

The quarry pond is fairly shallow, no deeper than 5 or 6 feet in most areas. Why isn't it deeper? Because there is an underground stream that runs from the pond to Big Walnut Creek. The excess water drains down to the creek. The mining company created this channel to keep the entire quarry bottom from filling with water.

The level of the quarry pond changes with rainfall and evaporation. The small orange marker shown in this photo helps us keep track of the changes.

Canada Geese are often found in the quarry pond. They mostly eat fish and insects.

Sometimes there's a pair of Snow Geese in the pond. These birds are blue phase; they have bluish-gray feathers on most of their body and white feathers on their head, neck and rump.

Bluegills are the most common fish in the pond. They are small with a roundish body, like a sunfish. They are a pale green color with a small patch of blue or black that is part of the covering over their gills. They may seem quite tame because they seem to follow you as you walk along the road across the pond. This is because they're hungry. Please don't feed the fish in the pond – we don't want to interrupt the natural food chain.

17. How many Canada Geese do you see in the pond today?
18. Canada Geese usually mate for life. Does this seem unique? Do most animals do this?
19. How many Bluegills do you see? How large are they?
20. Why do you think the fish in the pond are hungry?
21. Why would it be harmful if we feed the fish in the pond?
22. Do you hear any frogs or toads? What do they sound like?
23. Do you hear any birds? What do they sound like?

Station 8 – Quarry Bottom

What would happen if you abandoned a parking lot? Would it stay as a parking lot forever? Or would plants and animals eventually move in and colonize the site so that it goes back to nature? This is what is happening here in the quarry bottom. The quarry was abandoned about 30 years ago. There was nothing here except for bare rock – no soil, no plants, no animals. Plants, animals, and other organisms have been gradually moving in, but it is a very slow process.

Killdeers are a type of shorebird that live in the quarry bottom. They nest on the bare ground or gravel. Killdeers give a loud call, “kill-deer, kill-deer”. Killdeers are also known for their distraction displays – also known as “dis-dis” for short. If you’re near their nest, the adult bird will drag her wing as though it’s broken. She pretends that she’s injured, thus distracting you away from her nest and towards her.

24. How do plants change the conditions in the quarry bottom?
25. Why is it important to study what is happening here in the quarry bottom?
25. How many killdeers do you see or hear?
26. What special characteristics do killdeers have to survive and reproduce in the quarry bottom?

Station 9 – Plants with red stems

There are many plants with red stems growing in the quarry bottom. The stems appear red because they contain a special pigment inside their cells. The plants produce this pigment when they're exposed to bright sunlight, like when we get sunburned from staying out in the sun for too long.

27. Imagine that you are asked to do an experiment to figure out how the sun changes the stem color. What you do for your experiment? Sketch a drawing to show how you would set up your experiment.

Station 10 – Phragmites

There are large patches of Phragmites growing here. They look like cattails but they're much taller, often growing as tall as 13 feet. Phragmites is an invasive plant, originally from Asia. Invasive plants are non-native to the area. They wouldn't occur here if humans hadn't moved them – either intentionally or accidentally! Invasive plants can cause problems because they can keep native plants from having enough space and nutrients to grow.

28. Can you think of any invasive plants or animals that live in Indiana?
29. Are there any invasive plants or animals that live in your backyard?

Station 11 – Phragmites

Look over to the left and down into the quarry and you will see several small ponds. These ponds fill with rainwater and dry out during the summer. Many insects and amphibians spend part of their lives in the ponds. They must complete the aquatic portion of their life cycle before the ponds dry out in the summer.

30. Why are these temporary ponds important?
31. What do you see from this view that you couldn't see before?
32. What was your favorite part of the quarry trail?