

## Answer Guide Exploring Michigan

## Grades 6-8

1. **There's a gap in the geologic history of Michigan because not a lot of sediment accumulated.** What did end up forming was subject to erosion and glacial scouring.

**Dinosaur fossils.** The gap skips over a majority of the last 300 million years. This would be the period of time dinosaurs lived. For this reason, there are no dinosaur bones found in Michigan, so we don't know what had lived in Michigan during this time period.

2. **Michigan was once a tropical rainforest** (around 35 million years ago). Discovering past environments is one of the many things that scientists have been able to learn through finding and studying fossils
3. **Many jack pine cones are serotinous meaning they're naturally glued shut. For the cones to open and be able to release seeds, forest fires (or other intense heat) are needed.** Forest fires also help keep competition low for the jack pine trees. Without forest fires, different types of trees would cause competition for space and resources.
4. **They can be identified by the vegetation growing there.** Marshes are often next to open water and have soft-stemmed grasses. Bogs are acidic and oxygen-poor so there is decaying vegetation and sphagnum moss. Swamps are often shady and have trees and shrubs.
5. **The producers are poison ivy and the hickory sapling. The consumers are the eastern screech owl, chipmunk, white-breasted nuthatch, and white-tailed deer.** Because the consumers need to eat to get energy, they will consume the producers, so the arrows should be drawn from producers to consumers. The white-tailed deer would eat the hickory sapling and poison ivy. The eastern screech owl would eat the chipmunk. The chipmunk and the white-breasted nuthatch would eat the hickory nuts.

6. The riparian zone is the area of land next to the river or another body of water. **So in the picture it would be the land where the animals and plants are located and in the image on the wall, you can also see the riparian zone there between the water and the houses.**

It has a great supply of water and nutrients which provides an environment for plant life to thrive. For this reason, the riparian zones support a great portion of Michigan's wildlife!

7. **Monarch butterflies feed exclusively on the milkweed plant's leaves which are commonly found in coastal dunes.**

**Changes in coastal dunes and their other habitats can affect the monarch's migration route and survival.** Because monarch butterflies are also pollinators, their protection is even more vital.

8. **Non-native species are introduced by people.** This can be intentional or by accident. Not all non-native species are detrimental to the environment. **Sometimes they can have little to no effect on an environment or even have a positive effect. Some non-native species are detrimental because they can hunt native species and/or become competition for resources.**

**Answers may vary.** Examples of non-natives species that are beneficial are the Rainbow trout, King salmon, and the Atlantic salmon.

**Answers may vary.** Examples of non-native species that are harmful would be Sea lamprey, Round goby, or the Alewife. When a non-native species is harmful, they are known as invasive species.