

## Answer Guide Exploring Michigan

- 1. Answers will vary.** There are multiple fossils to choose from. Depending on what fossil students choose, the fossils will reveal different things about the past. The mastodon and the other animal skulls reveal what lived in Michigan during the Ice Age. The other fossils are species that lived in the water. These fossils reveal that Michigan was once covered by a warm shallow sea.
- 2. There's a gap in the geologic history of Michigan. The dinosaur remains that were deposited were removed by the glaciers.** It skips over a majority of the last 300 million years. This would be the period of time dinosaurs lived.
- 3. Forest fires help with the competition.** Without forest fires, different types of trees would cause competition of space and resources for the jack pine. **Forest fires are also needed for the jack pine trees to grow.** 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. Because of how important forest fires are to the jack pine, it is also important for many of the animals. **There are many species living in the jack pine ecosystem that rely on the jack pine.** There are some species that only exist because of the jack pine.

**The Kirtland's warbler.** It only breeds in the jack pine forests and needs a specific habitat for nesting. It is dependent on forest fires providing the small trees and areas it uses for nesting. Because of its dependence on the jack pine paired with the reduction of naturally occurring forest fires, the warblers are becoming endangered. To protect them, it is important to protect the ecosystem in which it lives.

## Grades 3-5

- 4. Pollution and urbanization have affected the wetlands. The increase in urbanization has led to a greater risk of flooding and water contamination of the wetlands. Answers may vary for what we can do to help.**
- 5. Living:** White-tailed deer, Eastern screech owl, Honey mushroom, Hickory saplings  
**Nonliving:** Fallen tree trunk, Snack wrappers  

While the tree trunk may be dead now, it is still beneficial to the environment as it decomposes. However, the wrapper littered can become a hazard to the living things in the forest.
- 6. Answers may vary. Examples of a simple leaf** would be the bur oak, white oak, black oak, and the northern red oak. **Examples of a compound leaf** would be the bitternut hickory, pignut hickory, shagbark hickory, and poison ivy.
- 7. 36,000; 55; 4.** Even from these numbers, we can see how widespread the rivers are and the importance of the Great Lakes.
- 8. Perched dunes are a type of sand dunes.** An example of perched dunes is the sleeping bear dunes. Perched dunes sit atop glacial moraines. Glacial moraines are ridges of sediment left by retreating glacial ice.
- 9. Answers may vary.** Each of the dioramas has its own layer of soil. Some may have all 5 layers, and some may have only one depending on the ecosystem.