

SCIENCE·3D

THE REAL BLACK PANTHER

In this packet, sample student answers are provided in **red** and notes to teacher are in **blue**.

This **Explore Your Backyard** activity will have students reinforce their understanding of traits and adaptation by exploring local organisms and predicting outcomes of environmental change.

This activity can be conducted in the field (ideal) or online. Have students observe the different organisms in the ecosystem. Encourage them to take notes about the organisms they see and the traits that help them survive in their environment. Then have them choose one organism as their focus. If the exploration is done online, have students choose an ecosystem and then conduct online searches to find resources. Consider having students select one of the ecosystems the World Wildlife Federation is working on, available at <https://www.worldwildlife.org/places/>.

The Environmental Protection Agency (EPA) also has a useful set of maps that shows how it defines ecosystems, available at <https://www.epa.gov/eco-research/ecoregions>. Students may need to conduct further online research for information on these, as EPA maps do not include detailed information about the ecosystems. Regardless of the resources students use to start the investigation, they are likely going to have to search multiple sites in order to gather the background data listed below. This helps reinforce the importance of background research and the need to use multiple sources.





COMPARING ADAPTATIONS OF LOCAL ORGANISMS

The traits of an organism may help it survive, or make it more vulnerable, in a changing world. For the black panther, the current conditions make it tough for an individual with this color to survive and reproduce in the forests of India. However, things could change, and this coloration could become beneficial! Let's investigate some traits that might affect survival and reproduction of organisms in your local ecosystems! Your teacher will help you decide what ecosystem to study.

THE ECOSYSTEM I STUDIED WAS: Deciduous forest

1. **Describe** the important environmental conditions in the ecosystem. If you selected an ecosystem on land (terrestrial) be sure to include things like 1) the quality of soil, 2) the amount of rain/snow, 3) the required temperatures for survival in different seasons, and 4) the availability of water for drinking. If you selected a freshwater or ocean ecosystem include information like 1) availability of water throughout the year, 2) the speed water flows, 3) water depth, and 4) the temperatures organisms must face throughout the year.

Answers will vary. Complete answers will address all of the points listed and may include others. Here is an example of a complete answer: I studied a deciduous forest. These forests have deep soils with lots of nutrients. There is lots of rain in the spring, some rain in the summer, and not much rain in the fall. In the winter it snows. Temperatures are cold in the winter. They are moderate in the spring and fall. The temperature is hot in the summer. There is plenty of water for drinking from streams, rivers, and ponds.

2. **List** the organisms you observed in the ecosystem:

Squirrel, Pine tree, Woodpecker, Raccoon, Holly bush

Mushroom, Field mouse, Beetle, Mosquito, Bear!

Extend the lesson: Have students describe the roles of organisms in the ecosystems or the interactions among the organisms they observed.

3. **Choose** one organism to study. My organism is a _____

4. **List** the traits that help your organism survive:

Depending on the organism selected, answers may include traits like:

For animals: fur, claws, blubber, tough scales, echolocation

For plants: bark, leaves, spines, shallow (or deep) root systems, waxy leaves, chemicals

5. **Describe** how the traits you listed above would either help or harm your organism survive and reproduce if the *temperatures increased*.

For example: If the temperatures increased, having a warm fur coat would probably hurt

my organism because it might overheat.

6. **Describe** how the traits you listed in question 4 would either help or harm your organism survive and reproduce if the *temperatures decreased*.

For example: If the temperatures decreased, having a warm fur coat would help my
organism because it would be able to stay warm enough to survive.

7. **Compare** and **contrast** the traits and adaptations of the black panther and your organism.

Answers will vary based on the organisms, but similarities may include traits that help
them stay warm or stay safe from predators; contrasts may include traits that help with
eating meat versus traits that help with eating plants.