

# Helpful, Harmful, or Neutral?

All groups of organisms vary in their traits. Some trait variations help an individual survive and reproduce. Others are harmful or make no difference. But it doesn't always depend on the trait itself—often, it depends on the environment where the organism is living.

1. For each trait variation, decide whether it would be helpful, harmful, or neutral to the organism in each of the two environments. You may choose more than one outcome.
2. Explain your reasoning with detailed evidence from each card.
3. Where would an organism with that trait variation be more likely to reproduce and pass down its genes to the next generation? Mark that environment with a star.

Trait	Environment 1	Environment 2
Red flower	Meadow with bee pollinators HELPFUL    HARMFUL    NEUTRAL <b>Reasoning</b>	Meadow with hummingbird pollinators HELPFUL    HARMFUL    NEUTRAL <b>Reasoning</b>
Blind fish	Dark underground river HELPFUL    HARMFUL    NEUTRAL <b>Reasoning</b>	Brightly lit river HELPFUL    HARMFUL    NEUTRAL <b>Reasoning</b>
Plastic-eating bacteria	Soil with plastic contamination HELPFUL    HARMFUL    NEUTRAL <b>Reasoning</b>	Clean soil HELPFUL    HARMFUL    NEUTRAL <b>Reasoning</b>
Friendly wolf	Small, crowded forest HELPFUL    HARMFUL    NEUTRAL <b>Reasoning</b>	Near humans HELPFUL    HARMFUL    NEUTRAL <b>Reasoning</b>

## Questions

1. If any of these organisms moved to a different environment, would its traits change? Explain your thinking.
2. Did the organisms' environments make any of these traits? Explain your thinking.
3. Why would a trait have different effects on an organism depending on its environment?
4. Choose a trait and an environment from the activity.

If a population lives and reproduces in this environment for many generations, is the trait variation likely to become more or less common? Explain your answer.