

Who Wants a Spiny Snack?

This article is provided courtesy of the American Museum of Natural History.

Not many animals! How the spiny puffer stays safe in the ocean



A shark glides through the warm water, searching for its next meal. It spots an ordinary brown fish swimming slowly in the clear waters ahead.

But as the shark approaches, PUFF-PUFF-PUFF! The fish puffs out into a round, spiny ball. The startled shark swims away. The pufferfish is safe for now - at least until the next shark or big fish swims by.



The ocean can be a dangerous place for small fish like the puffer. Its waters are full of predators like sharks, squid, and bigger fish that eat small fish. But pufferfish have adaptations that protect them from predators.



All animals have adaptations to stay alive. An adaptation is a body part or behavior that helps an animal live in its environment. Predators have adaptations that help them hunt. A shark's powerful, torpedo-shaped tailfin and sharp teeth are two adaptations.

Other animals have adaptations that provide protection from predators. These animals may be fast enough to escape predators. Or they might use camouflage, special patterns or colors that help them hide in their environment.



Can you find the flounder?

But some animals don't run or hide. They have bodies that are hard to eat. Just picture the sharp spines of a porcupine, hedgehog, or sea urchin. Few predators are large or tough enough to make a meal of those animals!



Porcupines have long sharp spines that protect them.

Some toads and snakes have their own way to discourage predators. They puff themselves up to look larger. The bigger an animal, the harder it is to catch and eat. Pufferfish combine both of these adaptations. They puff up AND they have long, sharp spines.

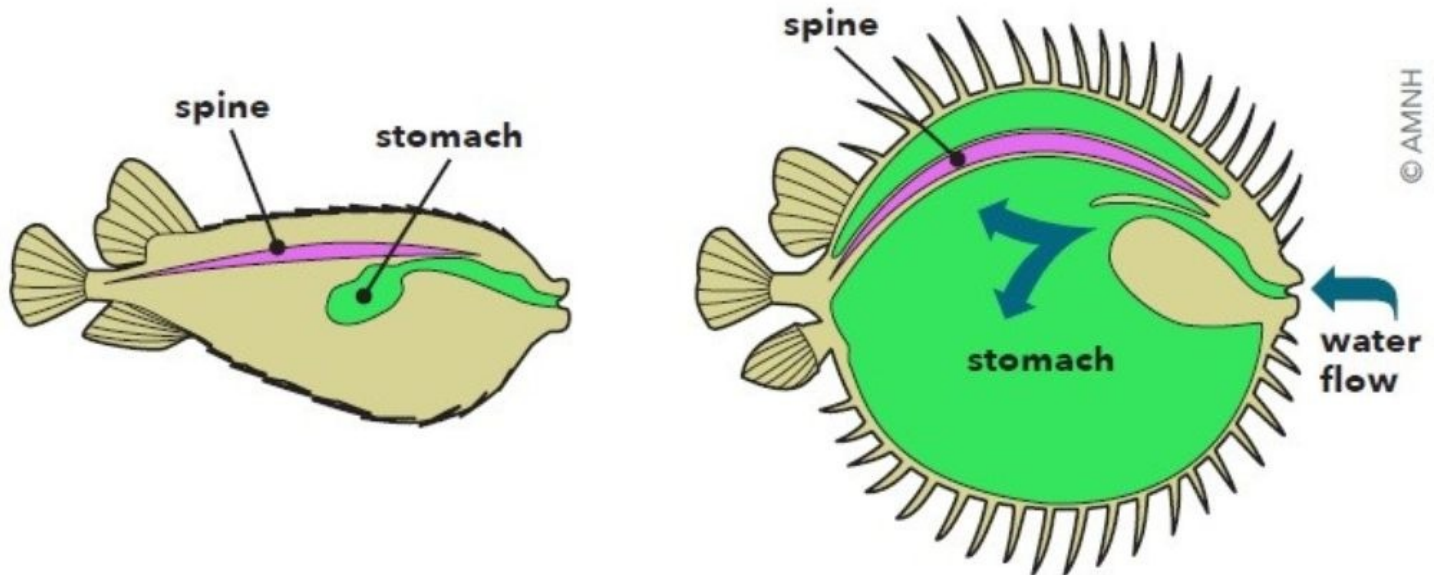


A pufferfish's skin is hard and covered with sharp spines.

Swimming along, a pufferfish looks like any other fish. But when it is threatened, it swells up suddenly like a big balloon. When this happens, it's easy to see why some people call it balloonfish. But this fish is no soft, squishy balloon. Its skin becomes rigid, with sharp spines sticking out in all directions. Usually these spines lie flat against the side of the fish. When the fish puffs up, the outer skin stretches out and pulls the spines up.

How does the pufferfish make this amazing transformation?

Despite its nickname, it doesn't blow itself up with air like a balloon. Instead, it fills up with water. The fish pumps a huge amount of water through its mouth into its stomach. Filled with water, its stomach becomes almost one hundred times larger. The stomach can expand like this because it's usually crumpled into many tiny folds. As water rushes in, the stomach unfolds. To make room for the swelling stomach, other organs like the liver and intestines are pushed to the side.



A spiny puffer can change from an ordinary-looking fish into a menacing spiny ball in a few seconds. Then only the biggest animals dare to eat it. The ocean may be full of dangers, but adaptations like sharp spines and puffing up help keep the puffer safe.

Name: _____ Date: _____

1. At the beginning of the text, what does the fish do when the shark approaches?

- A. It puffs out into a round, spiny ball.
- B. It swims away, startled.
- C. It swims slowly, searching for a meal.
- D. It attacks the shark with its spines.

2. What does the author describe in this text?

- A. why different kinds of sharks have different adaptations
- B. the different predators that are likely to hunt porcupines
- C. what happens when a predator eats a spiny pufferfish
- D. how a pufferfish puffs up into a round spiny ball

3. Read these sentences from the text.

"Some toads and snakes have their own way to discourage predators. They puff themselves up to look larger. The bigger an animal, the harder it is to catch and eat. Pufferfish combine both of these adaptations. They puff up AND they have long, sharp spines."

Based on this evidence, why might a pufferfish puff itself up?

- A. to try and convince a predator that the pufferfish is a toad or a snake
- B. to be able to hunt, catch, and eat other fish more easily
- C. to prepare itself to fight off a predator's attack
- D. to make the pufferfish appear difficult to catch and eat

4. Why might the author have included the images of the flounder and the porcupine?

- A. to force the reader to decide which animal looks more like the pufferfish
- B. to show the reader examples of different animals with adaptations that protect them from predators
- C. to suggest that the flounder and the porcupine would probably be better than a pufferfish at fighting off predators
- D. to prove that animals that live on land and animals that live in the ocean are very different from each other

5. What is the main idea of this text?

- A. The ocean can be a dangerous place for small fish like the pufferfish because its waters are full of predators.
- B. Predators like sharks have adaptations that help them hunt other animals.
- C. Many animals have sharp spines, including porcupines, hedgehogs, sea urchins, and pufferfish.
- D. Adaptations like sharp spines and puffing up help keep pufferfish safe from predators.

6. Read these sentences from the text.

"Swimming along, a pufferfish looks like any other fish. But when it is threatened, it swells up suddenly like a big balloon."

Why might the author have compared the pufferfish to a balloon with this simile?

- A. to hint to the reader that balloons also swell up when they are threatened
- B. to imply that balloons also look like normal fish when they are not blown up
- C. to help the reader understand what a pufferfish looks like as it swells up
- D. to suggest that pufferfish and balloons are similar in lots of ways

7. Choose the answer that best completes the sentence.

Predators have adaptations that help them hunt. _____, a shark's powerful, torpedo-shaped tailfin and sharp teeth are two adaptations.

- A. However
- B. For example
- C. As a result
- D. At first

8. What is an adaptation?

9. What is the purpose of a pufferfish's spines? Support your answer with evidence from the text.

10. Why might a large predator and a small animal that it eats have different adaptations?

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An adaptation is a body part or action that helps an animal live.

9. What is the purpose of a pufferfish's spines? Support your answer with evidence from the text.

Suggested answer: The purpose of a pufferfish's spines is to protect the fish from predators. Students may further note that the spines make the pufferfish hard to eat, which keeps the fish safe from many predators.

10. Why might a large predator and a small animal that it eats have different adaptations?

Suggested answer: Answers may vary in detail or depth but should resemble the following. A large predator and an animal that it eats might have different adaptations because they have different needs, so they must have different behaviors and body parts in order to survive in their environment. Predators have adaptations that help them hunt, while smaller animals have adaptations that help them hide, escape, or discourage predators from eating them. Since these adaptations serve different purposes, the adaptations are different from each other.

Name: _____ Date: _____

1. What is a meaning of the word **predator**?

- A. an administrative division of a county
- B. someone who attacks in search of booty
- C. the process by which something hardens

2. What is another meaning of the word **predator**?

- A. an act of delaying or interrupting the continuity
- B. something transposed from a thought to a document
- C. any animal that lives by preying on other animals

Please use each answer choice only once. Choose the one word that best completes the sentence.

3. It is all that the _____ can do to avoid being eaten.

- A. predator
- B. prey

4. The _____ spends his nights hunting for his meal.

- A. predator
- B. prey

5. Please write your own sentence using the word **predator**.

6. What would you like to remember about the meaning of the word **predator** so that you can use it when you write or speak?

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- A. be shown or be found to be
- B. to menace, or be dangerous
- C. put in the mind of someone

2. What is another meaning of the word **threaten**?

- A. deliver a sermon
- B. pose a threat to
- C. to take by force

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3. Humans are a _____ to the cheetah's habitat.

- A. threat
- B. threatens
- C. threats
- D. threaten
- E. threatened
- F. threatening

4. They _____ to burn all government buildings, including the White House.

- A. threat
- B. threatens
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5. Even the sky looks stormy and _____.

- A. threat
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6. There are _____ against his life.

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7. The California Invasive Plant Inventory categorizes non native invasive plants that _____ the state's wildlands.

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