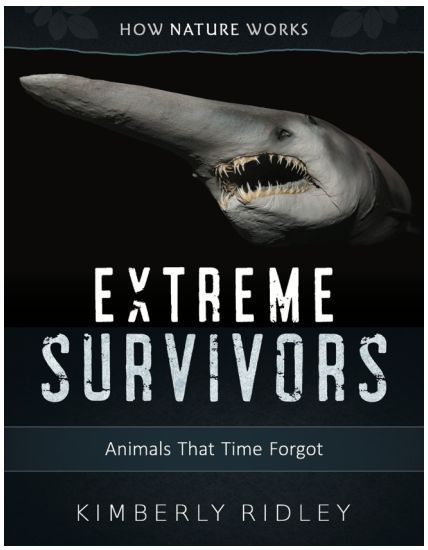
Reader Guide

EXTREME SURVIVORS



KIMBERLY RIDLEY
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8 x 10, 48 pages, Photos Throughout
Grades 3-7
HOW NATURE WORKS SERIES

Summary

What do the goblin shark, horseshoe crab, the "indestructible" water bear, and a handful of other bizarre animals have in common? They are all "extreme survivors," animals that still look much like their prehistoric ancestors from millions of years ago.

Meet ten amazing animals that appear to have changed little in more than 100 million years. They are the rare exceptions to the rule.

More than 99 percent of all life forms have gone extinct during the 3.8-billion-year history of life on Earth. Other organisms have changed dramatically, but not our extreme survivors. Evolution may have altered their physiology and behavior, but their body plans have stood the test of time.

How have these living links with Earth's prehistoric past survived? The search for answers is leading scientists to new discoveries about the past—and future—of life on Earth. The survival secrets of some of these ancient creatures could lead to new medicines and treatments for disease.

Written in a lively, entertaining voice, Extreme Survivors *provides detailed life histories and strange "survival secrets" of ten ancient animals and explains evolution and natural selection. Extensive back matter includes glossary, additional facts and geographic range for each organism and a geologic timeline of Earth.*

Before You Read

What is a fossil? What can scientists learn from them?

After You Read

Discussion Questions

1. What is unusual about the goblin shark's jaws? What advantage does this offer? If you had this kind of jaw, how would it come in handy?
2. How do we now know that some of the dinosaurs had feathers?
3. How many eyes does a horseshoe crab have? Why do you think humans only have two?
4. What is the importance of the horseshoe crab's blue blood? What problem do you foresee for the horseshoe crab as a result of this discovery?
5. How big is a large tardigrade? Name something else that is that size.
6. How can tardigrades survive being boiled, frozen, or sent into space?
7. What can a sponge do that no other animal can do?
8. How do sponges protect themselves from predators?
9. How long can a sponge live?
10. How is a velvet worm like an insect? How is it like a mammal?
11. Do any extreme survivors live near you? Which ones?
12. What is the extreme survivor with the largest geographic range? The smallest?
13. How do tadpole shrimp spread from pool to pool if they can't survive out of water?

For Further Discussion

1. What are the newest animal species?
2. How does bioluminescence work and what animals other than the comb jelly use it? What do they gain by using bioluminescence? Doesn't it attract predators?

Activities

1. Hunt for tardigrades using the instructions on page 27.
2. Make a timeline mural in the hall outside your classroom showing the formation of the Earth and appearance of first life, extreme survivors, and humans. Add other significant events and life forms such as beginning and end of dinosaurs, first insects, amphibians, reptiles, birds, fish, plants and mammals.
3. Write a story about your favorite "extreme survivor" as a super hero. How does it use its "survival secrets" to save the day?

For Further Reading

Other titles by Kimberly Ridley

The Secret Pool
The Secret Bay

Other titles in the Tilbury House Science/Nature/Environment Series:

- The Secret Bay
- The Secret Pool
- Catching Air
- City Fish, Country Fish 2/e
- The Secret Galaxy
- The Pier at the End of the World
- Swimming Home
- Soda Bottle School
- Shelia Says We're Weird
- Before We Eat
- Under the Night Sky
- Sea Soup, Zooplankton
- Saving Birds
- Riparia's River
- Puffin Project
- Life Under Ice
- Bear-ly There
- Eye of the Whale

Coming soon:

- Ana and the Sea Star
- Bees in the City
- Don't Mess With Me: The Strange Lives of Venomous Sea Creatures