

SUGGESTED REFERENCES

- Sy Montgomery
The Tarantula Scientist
(Scientists in the Field Series)
Houghton Mifflin, March 2004
- *American Tarantula Society Headquarters*
<http://atshq.org/>
- *From Wikipedia, the free encyclopedia, a comprehensive summary of tarantula information.*
<http://en.wikipedia.org/wiki/Tarantula>

NATIONAL SCIENCE EDUCATION STANDARDS

Grades K-4
Life Science
The Characteristics of Organisms
Life Cycles of Organisms
Organisms and Environments

Grades 5 - 8
Life Science
Structure and Function in Living Organisms
Diversity and Adaptations of Organisms
Population and Ecosystems

*Source: *National Science Education Standards, 1996, National Academy Press*

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TARANTULA - UP CLOSE & PERSONAL



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SYNOPSIS

Tarantulas are the oldest spiders on the planet and some have venomous fangs which rival many snakes. A combination of five characteristics makes them unique - they are quite hairy, have dense hair-pads and retractable claws, and have fingerlike spinnerets. They also have cuspules, which are like black studs, all around their mouth, which are used to crush food. And lastly, they have eight eyes, but are almost blind. Other spiders might have one or two of these traits, but only tarantulas have all five.

This issue sheds light on different tarantula species from all over the world. A close-up and personal look at their physiology shows how their silk works, and extracting their venom shows promise in helping to develop new medicines. A rare glimpse at their mating rituals and hunting techniques shows how tarantulas have lived up to their reputations.

CURRICULUM UNITS

- BIOLOGY
- ECOLOGY
- ENVIRONMENTAL SCIENCE

RUNNING TIME

15:07

BACKGROUND

Tarantulas are big, hairy and very scary, with venomous fangs to rival many snakes. The fiercest of these Arachnids live hidden in Australia. With a reputation to match – their name alone provokes fear and loathing.

This is the hair-raising journey to discover the secret lives of these ancient crawlers. Arachnids have been roaming our planet for more than 350 million years and tarantulas have survived to become the giants of the spider kingdom.

Very little is known about this living fossil. Scientists describe them as the Primitive Spiders of the family Theraphosidae. Across the globe more than 880 tarantula species have been identified, but as many as 2000 more are thought to exist.

While American Tarantulas are renowned for an easy-going attitude, their rarely featured Australian cousins are notorious for their short temper. Far more aggressive and prone to striking, they produce unique sounds, rearing-up angrily to hiss at intruders. These noisy temper tantrums have earned them the names "Barking" or "Whistling Spider". Six different whistlers have been identified, but many more are thought to be lurking in remote burrows.

Dr. Robert Raven is the acknowledged world authority on tarantulas. For more than 20 years his focus has been these feisty fighters. His ongoing mission is to discover new and unidentified tarantulas in the wild. He painstakingly searches Australia's vast Outback and remote rainforests, hoping to find, capture and identify new species. With spider images magnified up to 50,000 times he opens a window on their amazing microcosm.

From myth and phobia to the naked truth, from extreme close-up to the big picture, this program sheds new light on the hairy tales of these extraordinary creatures.

ADVANCED ORGANIZERS

Prior to viewing this program, students should have some understanding of the following Benchmarks for Science Literacy, Oxford University Press which are excerpted and, in some cases, abbreviated below. Refer to the Benchmarks for more information.

Benchmark 5: The Living Environment

Section A - Diversity of Life

Know by Grade 8

- Animals and plants have a great variety of body plans and internal structures that contribute to their ability to make or find food and reproduce.

Section F - Evolution of Life

Know by Grade 8

- Small differences between parents and offspring can accumulate (through selective breeding) in successive generations so that descendants are very different from their ancestors.
- Individual organisms with certain traits are more likely than others to survive and have offspring. Changes in environmental conditions can affect the survival of individual organisms and entire species.

**Benchmarks can be found at www.project2061.org/tools/benchol/bolintro.htm*

CRITICAL THINKING EXERCISES

- Have students research the different body parts of a tarantula, draw a detailed picture, and label the parts of the anatomy.
- Even spiders that don't build webs use silk. Discuss with students how they think tarantulas use silk.
- Spiders are not insects. They are arachnids. Have students list several characteristics of arachnids that set them apart from insects.

VOCABULARY

- Cuspules** Studs around the mouthparts used in crushing food.
- Antibiotic** Any of a large group of chemical substances having the capacity in dilute solutions to inhibit the growth of or to destroy bacteria and other microorganisms, used chiefly in the treatment of infectious diseases.
- Pedipalp** One of the second pair of appendages near the mouth of a spider or other arachnid that are modified for various reproductive, predatory, or sensory functions.
- Paralyze:** to bring to a condition of helpless stoppage, inactivity, or inability to act
- Instincts** An inborn pattern of behavior that is characteristic of a species and is often a response to specific environmental stimuli
- Spinnerets** Any of various tubular structures from which spiders and certain insect larvae, such as silkworms, secrete the silk threads from which they form webs or cocoons.
- Toxins** A poisonous substance, especially a protein, that is produced by living cells or organisms and is capable of causing disease when introduced into the body tissues but is often also capable of inducing neutralizing antibodies or antitoxins.

CAREER POSSIBILITIES

- BIOLOGIST
- ENTOMOLOGIST
- ENVIRONMENTALIST
- MEDICAL RESEARCHER