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# Teacher's Guide To "A Turtle Tale"

**C**hildren will learn about turtles, wetlands and journeys in "A Turtle Tale." Ignoring the fact that turtles can't really talk, it is a tale filled with information about different species of turtles, their similarities and their differences. We hope you and your students enjoy the story and that the information presented in it will start discussions and answer questions about this fascinating group of reptiles.

So let's start with that: Turtles are reptiles, the vertebrate group of cold-blooded animals that also includes alligators (and other crocodilians), lizards and snakes. Worldwide about 250 species of turtles exist; South Carolina has 16 species (18 counting sea turtles), and the Central Savannah River Area has 13. Most of the species are aquatic (water-loving) or semi-aquatic (sort of water-loving), but two species (the box turtle and the gopher tortoise) are terrestrial (land-loving).

The story begins with a snapping turtle — an "old" snapping turtle. One of the messages of the story is that turtles, like humans, can reach very old ages. Now, exactly how old is a good (probably unanswerable) question. A few (a very few) records exist of turtles in captivity that reached ages of 100 years old or more. Certainly, individuals of many species live more than 50 years. For turtles in the wild, it is not uncommon for a few individuals in a population to outlive the researchers who are studying them. Determining how long turtles survive in the wild is a very labor-intensive effort. Many turtles (hundreds or even thousands) must be captured, given some sort of permanent mark like a notch in the shell and then recaptured

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in subsequent years. Remember that although some individuals may live a very long time, most individuals only live a short time.

Maybe that's why Jaws from "A Turtle Tale" is feeling so sentimental. The probability that she and Slo-Mo would have even hatched out of their eggs and made it out of their nest was small to begin with because numerous predators (raccoons, skunks, foxes, pigs, snakes) like to dine on turtle eggs. The probability that both of them would have survived to a ripe old age of 40 is very small indeed because still other animals (birds, fish, alligators) love to eat baby turtles.

When Jaws meets Nosy in the depths of the swamp and decides to send her message through him, the story introduces another concept — that of **habitat**. All organisms have basic requirements for survival: energy, nutrients, water and a space to live in. The place where an organism lives is called its habitat. A habitat is a location, or an address for the organism. Categorization of habitats can be very broad, such as aquatic versus terrestrial habitats, but these broad habitat categories can also be sub-divided into smaller and smaller habitat types. Some species live in a wide variety of habitats (and are called habitat generalists), while others only survive under a very narrow range of conditions (habitat specialists).

Most species of turtles probably fall somewhere in the middle. For example, although snapping turtles may be most common in swamp and marsh habitats, they are also found in lakes, ponds, creeks or rivers, and even temporary ponds. Simi-

larly, although softshell turtles may prefer flowing water such as a river with a sandy bottom, they can survive in other aquatic habitats as well.

The young turtle named Longnails is also in search of his favorite habitat. Yellow-bellied slider turtles are one of several species that are often grouped together as “pond” turtles. These turtles are both abundant and noticeable because of their habit of basking on banks, stumps and fallen logs. The turtle Longnails introduces two more basic concepts related to turtles. First, there is the sex of the turtle (a male), which can be discerned by his long toenails; female sliders have short toenails. Sexual differences in nail length is a secondary sex characteristic (like facial hair in humans) that occurs once reproductive maturity is reached. Of the turtle species mentioned in the story, only the slider turtles exhibit this particular sex difference in nail length. In box turtles, females and males differ in the shape of the bottom shell (the plastron); a female’s plastron is flat, and a male’s is “dented” inward. In mud turtles the length of the tail differs between sexes. In snapping turtles it can be nearly impossible to tell the sexes apart without probing their rear ends; needless to say it can be a bit dangerous, too.

The second concept introduced by Longnails concerns turtle movements and orientation. Aquatic and semi-aquatic turtles, like sliders, occasionally make overland journeys. Sometimes these journeys are related to the season — female turtles come out on land when it’s time to dig a nest and lay eggs. And Tiny the mud turtle is moving out of the pond to spend the winter on land (some other species spend the winter under water in the mud at the bottom of the pond). Other times these movements may depend on what’s happening to the turtle’s habitat. If a turtle is “unlucky” enough to live in a pond or wetland that dries up, then it will leave the site in search of a new one. But there are also times when a turtle leaves the water for no apparent reason and heads off through woods and across fields (and highways) to find a new site. More often than not turtles that pick up and leave like this are males, and researchers believe they are dispersing to new habitats to

enhance their chances of reproductive success. Exactly how turtles that leave their wetland are able to locate a new habitat is unknown; some biologists believe that turtles can see the polarized light reflected off the surface of water, and then head toward it. However they do it, experiments have shown that a turtle placed in an unfamiliar terrestrial habitat is likely to find the nearest body of water.

At some point students might ask some questions about the basking behavior of turtles. Animal behavior in general is a fascinating topic, and a teacher could discuss many aspects of behavior. Remember that turtles are “cold-blooded,” meaning that their body temperature is determined primarily by their environmental surroundings, not by internal mechanisms. Although many species can tolerate a wide range of temperatures from near freezing to more than 100 degrees Fahrenheit, they generally prefer to keep their body temperature in a much narrower range. Their temperatures will track the daily environmental temperature cycle to some extent, with highest body temperatures in the afternoon and lowest at night. Turtles regulate their body temperature by their behavior to maintain temperature at some “preferred” level. Exactly what this preferred temperature is depends on the season, the size of the turtle and how recently it has eaten. Turtles that have just eaten will bask more to raise their temperature and increase the rate at which their meal is digested. Unfed turtles will choose lower temperatures that keep their metabolic rates lower and cause them to use less energy. Whereas pond sliders are apt to climb out on logs to warm up and dive in the water to cool down, some species (like snapping turtles) rarely ever leave the water to bask. Instead they come to the surface to warm up, and dive to deeper water to lower their temperature.

The turtle species in this story have their “turtleness” in common, but they have many differences, also. As mentioned, their habitat preferences differ — box turtles are almost completely terrestrial, snappers and softshells are largely aquatic, and sliders and mud turtles are aquatic most (but not all) of the time. There are



obvious differences in appearance. Size of adults varies greatly; mud turtles are the size of a cassette tape and weigh less than a pound, adult snapping turtles are as large as a sweater box and weigh up to 40 pounds. Shape differs as well; softshell turtles are pancake-like, and box turtles are dome-shaped. Temperament (turtle attitude) extremes are dramatic; box turtles retreat quickly inside their shell and rarely bite, snapping turtles (the name is a clue) say, "Go ahead, make my day," and softshells are not much kinder.

And finally, another difference between species is in their diets. Again box turtles and snapping turtles may represent the two extremes. Box turtles are primarily vegetarians, eating berries, fruits and mushrooms, supplemented by occasional animal matter; young box turtles especially eat mostly animals (insect grubs and earthworms). Snapping turtles consume mostly animals, including already dead ones (carrion), and fish, frogs, snails, crayfish and snakes, but even the diet of snapping turtles may be about one-third plant material.

**NOTE:** *All turtles potentially can bite, and, when they do, it's usually more than a pinch. This is not to say kids shouldn't handle turtles, but just that care should be taken. Try to limit their touching to "mellow" species like box turtles or sliders, or to baby turtles that couldn't really hurt children. Teach kids not to poke the turtle's head or harass it. Remember turtles have extremely long necks and can reach unexpectedly long distances. And remember to have kids wash their hands after handling because turtles can transmit some bacterial infections.*

Although tying Slo-Mo and Jaws together through the nesting habits of their mothers is a bit of a stretch, it is within the realm of possibility. Female snapping turtles may leave a swamp habitat and travel three miles or more to a particu-

lar nest site they use year after year. Nesting occurs from April to July (primarily in May and June) in South Carolina. Usually nest sites are in open areas exposed to sunlight. Precisely where the nests are located can be extremely critical because the temperature of the nest is affected strongly by its location, and in many species the sex of the baby turtles (yes, that's right, the sex of the babies) is determined by the temperature of the nest. Nest location will also influence the likelihood that a predator will find the nest and eat the eggs. Egg hatching occurs after about two months if a predator does not find the nest. In many instances the newly hatched baby turtles will remain underground in their nest throughout the winter, then emerge in the spring. In the case of Slo-Mo and Jaws, we have the hatchlings emerging in the late summer/early autumn at about the same time that the mud turtles come out of water to look for hibernation sites. ■

### **General References on Turtles**

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Peterson Field Guides "Reptiles and Amphibians: Eastern/Central North America." 1991. by Roger Conant and Joseph T. Collins. Houghton Mifflin Company, Boston.

### **Advanced Reading**

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"Turtles of the United States and Canada." 1994. by Carl H. Ernst, Jeffrey E. Lovich, and Roger W. Barbour. Smithsonian Institution Press, Washington, D.C.