



## DESERT INDOORS®

### Environmental Education Activities for Students and Families at Home

(This activity was created in accordance with shelter-in-place. Remember to practice social distancing and stay local.)

#### Module: *The Desert Tortoise, the Environment, and You!*

**Topic:** Desert conservation and protection advocacy

**Objective/Learning Goal:** Children will learn more about the desert tortoise and understand how they can make a difference in assisting tortoise populations by becoming land stewards and future community leaders and desert conservationists.

#### Glossary:

- **Adaptation** - A change or the process of change by which an organism or species becomes better suited to its environment.
- **Carrying Capacity** - The number or quantity of living things that an environment can support without degradation of the habitat.
- **Citizen Science** - The collection and analysis of data relating to the natural world by members of the public, typically as part of a collaborative project with professional scientists.
- **Habitat** - The natural home or environment of an animal, plant, or other organism.
- **Predation** - The preying of one animal on others.
- **Reabsorb** - To take-up something previously secreted or emitted.

**Materials:** *iNaturalist* application, paper or notebook, pencil, access to internet or Wi-Fi, videos <https://www.youtube.com/watch?v=alOh7GUXe3U> and <https://www.youtube.com/watch?v=klZ3153RT7w> .

#### Indoor and/or Outdoor Activity:

Build Background Knowledge - Ask your kids what they already know about Citizen Science: Who can become a *Citizen Scientist*? How do you go about participating in a project? What kind of projects can children participate?

Because of the relative lack of moisture in the Mojave Desert many plant and animal species grow slowly. Lack of access to water resources lowers the number of animals

and plants that can be sustained within the *habitat*, this is called *carrying capacity*. Animals have *adapted* by being very water conscience. Species like the desert tortoise, the road runner, and many snakes can *reabsorb* water from their feces. Tortoises use their bladders to store most of their water, which is why you never want to pick one up! The desert tortoise (*Gopherus agassizii*) is an herbivorous forager or plant eater and gets the water they need by consuming plants. Thanks to their powerful front legs, the desert tortoise can excavate burrows that they spend around 95% of their life inside. These burrows also become a shared home to other animal species like, rodents, frogs, lizards, and insects.

Did you know that a tortoise:

- spends most of its time in burrows to regulate its body temperature and protect it from water loss.
- they are a federally protected species and are considered a threatened species.
- can live about 50 to 80 years and can't reproduce until they are between 12-20 years old!
- their diet primarily consists of grasses, but they eat herbs, annual wildflowers, and cacti fruit.
- uses their bladder to store water to survive in the desert heat (that's why we don't want to move them, they'll get scared, pee and then can die from dehydration).
- tortoise's gender is determined by their nest temperature; this means warmer temperatures will result in more males being born and cooler temperatures more females.
- young desert tortoises will occasionally come out to feed or drink water in the dead of winter, they can do this because their small bodies take less time to heat up than adults.
- Agassiz's Desert Tortoise (*Gopherus agassizii*) is classified as a threatened species, but many experts agree that they are in fact critically endangered and in need of reclassification.
- tortoises can have different eye colors! There is a dominant eye color much like how brown is the dominant color in people as well as less common eye colors.
- tortoises dig their own drinking bowls in the soil and remember exactly where they are so that when it rains, they rush to it for a drink.
- tortoises have multiple summer and winter burrows that they use.
- female tortoises can lay fertile eggs for several years after mating with a single male. This ensures that she can produce young each year without depending on male contact.

- if there is no water available, Desert tortoises will sometimes eat wet mud and extract the water that way.
- male desert tortoises have the highest testosterone levels of any living vertebrate, making them the most aggressive and territorial animals on the planet.

Hatchlings, baby tortoises, have shells that won't harden for about 5 years! That means when they are very young, they are susceptible to *predation* from other animals. This includes coyotes, the kit fox, snakes, and the raven.

The raven is an especially dangerous predator at this time, because their populations have grown so fast in the last couple of decades. Though they are native to the Mojave Desert, they are very smart birds and learn to adapt quickly to environmental changes. They have adapted to living with humans. When we don't throw away trash properly or leave our trash cans open, ravens can get into them and eat it (eww!). Unfortunately, ravens also love to eat baby tortoises. Because of their soft shells and slow-moving nature, tortoises have become prime targets for all those hungry birds.

Now that we know more about the Desert Tortoise and the raven, let's talk about each species. Why are tortoises important and why should you care about them? What can you do as a student to help protect the tortoise? What can we do about raven populations? Well, those are good questions. Let's answer them together.

Why is the desert tortoise important? With your learning partner, discuss why the desert tortoise is an important part of the ecosystem. Discuss what part they play in their habitat and what tortoises provide to other plant and animal species.

What can you do as a student to help protect the tortoise? It might seem like a daunting question, after all you're student and not an adult right?! But you must remember that you are the next generation of scientists, land stewards, and conservation advocates. You can start learning now and, come up with ideas that you can share and inspire other students and adults. Brainstorm some ideas together, tell your learning partner your ideas, maybe they came up with different solutions. You can write and/or draw them as well.

If your ideas included helping to reduce the raven population, what solution did you come up with? Maybe you thought about making sure your trashcan lid was closed or to pick-up garbage you find outside. Maybe even share what you know with others and suggest they use the same practices?

You can learn more about the tortoise by watching MDLT's Land Steward Luke B., talk about the Desert Tortoise <https://www.youtube.com/watch?v=kIZ3153RT7w> or by watching this video from biologist Kelly H., <https://www.youtube.com/watch?v=aI0h7GUXe3U>

Follow-up/ Discussion - *What did you learn? How do you feel about being able to participate in projects or work that helps this threatened species? How do you feel about being a student that can help protect the desert?*

Students can then take time to draw or illustrate their ideas, tortoise habitat, or they can depict themselves as the scientists and advocates they now are.

Additionally, children and adults can participate in a variety of Citizen Science projects that they are interested in by visiting <https://www.citizenscience.gov/#>

***We would love to hear how your citizen science and tortoise saving projects went, share your work with [Mary\\_mary@mdlt.org](mailto:Mary_mary@mdlt.org)?***



## Further Reading and Resources-

Bureau of Land Management- *The Threatened Desert Tortoise*

[https://www.blm.gov/sites/blm.gov/files/documents/Nevada\\_SNDO\\_Desert\\_Tortoise\\_Fact\\_Sheet\\_0.pdf](https://www.blm.gov/sites/blm.gov/files/documents/Nevada_SNDO_Desert_Tortoise_Fact_Sheet_0.pdf)

Desert Tortoise Council- <https://deserttortoise.org/>

Joshua Tree National Park- *Desert Tortoise*

<https://www.nps.gov/jotr/learn/nature/tortoise.htm>

The Living Desert Zoo- *Time to Talk Trash* <https://www.livingdesert.org/learn/in-the-community/healthy-desert-education-project/>

Mojave National Preserve- Desert Tortoise

<https://www.nps.gov/moja/learn/nature/desert-tortoise.htm>

San Diego Zoo- *Animals and Plants: Desert Tortoise-*

<https://animals.sandiegozoo.org/animals/desert-tortoise>

U.S. Fish & Wildlife Service- *Mojave Desert Tortoise*

[https://www.fws.gov/nevada/desert\\_tortoise/dt/dt\\_life.html](https://www.fws.gov/nevada/desert_tortoise/dt/dt_life.html)