Alignment with STEM Framework

Altruist ♥   **Investigator** 🔍   **Conservationist** 🟢

Overview

This activity will explore the different species of aquatic turtles in your local water systems using mark and recapture methods of trapping. The traps will be baited with different types of foods, so that youth will be able to see if the different types of food have any influence on the turtles collected - whether that be by age, sex, species, etc... Youth will learn how to properly set and bait the traps, as well as how to handle the turtle and any other creatures that may find their way into the traps. Once the turtles are collected, youth will collect measurements for the turtles, mark them, and then release them. They will also learn about turtle anatomy and physiology.

Practice Goals

☐ Asking questions and defining problems
☐ Planning and Carrying out investigations
☐ Analyzing and Interpreting Data
☐ Obtaining, Evaluating, and Communicating Information

Content Goals

☐ How do you budget best management practices to efficiently address stormwater runoff?
☐ How do you learn through trial and error?
☐ How do you manage stormwater runoff in a large area?
☐ What management practices are best used in managing stormwater runoff?

Purpose

This activity is intended to give youth the opportunity to collect data that can be used not only for their own observations and experiments, but also to contribute to the larger scientific community as a whole. Being able to get safe hands-on experience with the wildlife in our local water systems is a valuable way of learning more about ecosystems close to home, which is integral to the goals of the Summer Institute. This investigation provides youth the opportunity to learn about the species who live around us as well as the details of data collection in the field.

Teacher Background Information

Facilitators should familiarize themselves with turtle anatomy and physiology before the activity, as well as local species of aquatic turtles, their characteristics, and be able to use the identification key. They should also be comfortable with the water system they will be exploring as well as apps (HerpMapper) and other technology (Hoop traps, calipers, scales) that will be used in the data collection process. It may also be necessary to contact your local wildlife agencies to acquire a permit to work with the aquatic turtles. Safety and handling protocols for wildlife should also be familiar to the facilitator, and expressed to youth.

Affinity Goals

♥ I can act like an **Altruist** by using data collection methods to measure the health of turtle populations, and other species in our ecosystems.

🔍 I can act like an **Investigator** by collecting information about local aquatic turtle species and using that information to draw conclusions about them, as well as contribute data sources for other scientists.

💧 I can act like a **Conservationist** by evaluating the factors that influence the presence of species we are trapping, and how we can safely collect data from wildlife.

Materials

- [ ] Aquatic Turtle Traps
- [ ] Bait (sardines in oil, in water)
- [ ] Triangular Files for marking turtles
- [ ] Tools for weighing and measuring turtles (calipers & scales)
- [ ] Apps – HerpMapper to add data collected to an international database, a GPS app of some kind
- [ ] Datasheets
- [ ] Clipboards
- [ ] Waders
- [ ] Thick leather/rubber gloves
- [ ] Thermometers
- [ ] GPS (if not using a GPS app)

Time Needed

**Adaptable (2-3 hours)**

Instructional Sequence

What do we know about turtles

- [ ] Using the provided handouts, have discussions with youth about information we know about aquatic and semi-aquatic turtles. This can include discussions about turtle anatomy (having youth label turtle diagrams) and characteristics of turtles that they should look out for during the trapping process, as well as species they can expect to find.
- [ ] This may be a good time to discuss safety in the field, as well as handling of the turtles and other wildlife, should they encounter it..

Setting up traps for day one

- [ ] Facilitators or participants can set up the traps beforehand, using the protocols outlined in the 'Amazing Aquatic Turtles' curricula from the HERP Project at https://theherpproject.uncg.edu/curriculum/the-semi-aquatic-turtles-project/.
- [ ] Otherwise, traps can be set by youth during day one, and checked the following day.
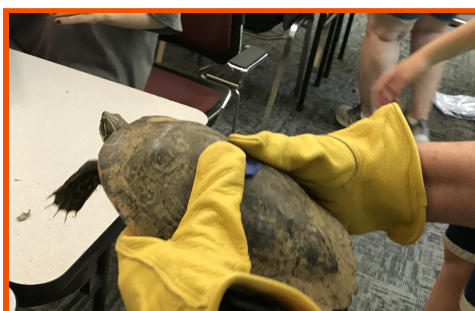
Checking the Traps

☐ Working in pairs or groups of three and following the HERP Project protocols, youth should check the traps the following day. Smaller turtles can be removed by reaching into the trap (avoiding teeth or claws) and larger or more aggressive turtles (such as snapping turtles) can be removed by undoing the back of the trap.

☐ It may also be beneficial to place turtles in a separate container after they have been removed from the traps. Be sure that youth check the traps for fish or other wildlife and return them to the water.

Identifying the turtles

☐ Using the included turtle ID keys, youth should record the species of all the turtles that were collected. Facilitators can also develop their own IDs of other aquatic turtle species that are present in the water system, if that is more applicable.

Collecting data from the turtles

☐ Before collecting any other data, youth should determine the sex of the turtle, or if the turtle is still too young to determine whether it is male or female.

☐ After sex has been determined, youth should measure the turtles - they should measure the turtle's width at its widest point, the shell height at its tallest point, the straight carapace length, and the straight plastron length. If the app you are using to report your data requests any other measurements, those should also be taken.

☐ Once the turtle's measurements have been taken, youth should then weigh the turtles by placing a container on the scale, zeroing the scale, and placing the turtle inside the container.

☐ Using a GPS or GPS app, record the location of the trapping.

Marking and releasing

☐ When youth are ready to release the turtles, they should mark the turtle by filing the carapace so that it will be identifiable if captured again.

Non-Trapping Methods

☐ If the facilitator would prefer a less hands-on method of data collection, youth may also observe and identify turtles as they bask during the midday sun using binoculars. Record the location the turtles were observed, as well.

Reporting Data to the HERP Project/HerpMapper

☐ Using the HERP Project app (accessible from their website, at https://theherpproject.uncg.edu/apps-collecting-data/) or another citizen science app such as HerpMapper or iNaturalist, provide as much information as possible about the turtles you observed and the location they were observed at.