Herps in Washington
Anfibios y reptiles en Washington
3-5th

Themes: Adaptations, Biodiversity

Location:

We encourage you to take students to visit a wildlife area during spring and early summer. You can also take a trip in your schoolyard or visit a local greenspace, estuary, or wetland where you might find reptiles and/or amphibians.

Modifications, Adaptations:

For COVID-19 distance learning, or other remote learning modification, look for **remote learning modifications** throughout the lesson plan.

Standards:

NGSS

3-LS3-1

Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

4-LS1-1

Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

WA OSPI

ESE Standard 3:

Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

Materials:

Herpetology PowerPoint, Herps in their Habitat PowerPoint Activity, Reptiles and Amphibians Venn diagram, tablets or phones with iNaturalist app downloaded.

Vocabulary:

English

Adaptation: A physical or behavioral trait an organism has to be well suited to its habitat.

Amphibian: An animal that is cold blooded, lays aquatic eggs or larva, starts life with gills, breathes air as an adult, and is covered in moist, slimy skin.

Bioblitz: An event that focuses on finding and identifying as many species as possible in a specific area over a short period of time.

Biodiversity: The full range of life in all its forms. This includes the habitats in which life occurs, the ways that species and habitats interact with each other, and the physical environment necessary.

Camouflage: Protective coloring or another feature that conceals an animal and enables it to blend into its surroundings.

Cold blooded: A body temperature that changes with the temperature of the surroundings. Fish, amphibians, and reptiles are cold blooded.

Ecosystem services: Benefits people obtain from ecosystems and wildlife.

Ectothermic: An animal that regulates its body temperature by exchanging heat with the surrounding environment.

Metamorphosis: A series of dramatic changes in an animal's body shape and structure as it develops after hatching or being born.

Reptile: An animal that is cold blooded, breathes air, lays eggs, and is covered in scales or bony plates**.**

Talus: A sloping mass of rocks at the base of a hill or mountain.

Thermoregulation: The ability of an organism to keep its body temperature within certain boundaries even when the surrounding temperature is different.

Spanish

Adaptación: Una habilidad especial que ayuda a un animal a sobrevivir. Las adaptaciones pueden ser cambios físicos en el cuerpo del animal o cambios de comportamiento en un animal o grupo de animales.

Anfibio: Un animal de sangre fría, que pone huevos o larvas acuáticas. Comienza su vida con branquias y de adulto respira aire. Está cubierto de una piel húmeda y viscosa.

Bioblitz: Un evento que se enfoca en encontrar e identificar tantas especies como sea posible en una zona específica durante un periodo corto de tiempo.

Biodiversidad: La gama completa de vida en todas sus formas. Esto incluye los hábitats en los que se da la vida, la manera en que las especies y los hábitats interactúan unos con otros, y el ambiente físico necesario.

Camuflaje: Color de protección u otra característica que oculta a un animal y le permite confundirse con su entorno.

Sangre fría: una temperatura del cuerpo que cambia con la temperatura del entorno. Los peces, anfibios y reptiles son de sangre fría.

Servicios del ecosistema: Beneficios que obtiene la gente de los ecosistemas y la naturaleza.
Ectotermos: animales que regulan la temperatura de su cuerpo al intercambiar calor con el entorno cercano.

Metamorfosis: Una serie de cambios drásticos en la forma y estructura del cuerpo de un animal que ocurren a medida que se desarrolla después de salir del huevo o de nacer.

Reptil: un animal de sangre fría que respira aire, pone huevos y está cubierto de escamas o placas óseas.

Talud: acumulación de fragmentos de roca al pie de una colina o una montaña.

Termorregulación: la capacidad de un organismo de conservar la temperatura corporal dentro de ciertos límites, incluso cuando la temperatura del entorno es diferente.

Objectives:

Students will..

1. Classify reptiles and amphibians by their differences and similarities using a Venn Diagram
2. Define what it means for herps to be cold blooded or ectothermic.
3. Organize herps based on their camouflage, habitat, and geographic range using a virtual field guide.
4. Explore their school yard or nearby green space to find as many herps as possible.
5. Research and evaluate a herp in Washington and present their findings to their peers.

Procedure:

Open the Herpetology PowerPoint. Make sure presenter notes are on. This PowerPoint is broken up into two parts and is recommended to be taught in two different class settings.

Part 1:

Slide two introduces herps as cold-blooded (or ectothermic) reptiles and amphibians.
Slide three introduces traits specific to reptiles and then takes you to a 1:30 video about reptiles.
Slide four introduces students to the three types of reptiles in Washington.
Slide five introduces traits specific to amphibians with a 2:30 video at the end of the slide.
Slide six shows students the types of amphibians found in Washington.
Slide seven asks students to think about why reptiles and amphibians are classified together. It then shows a short movie comparing cold- and warm-blooded animals.
Slide eight introduces the students' assignment. Distribute the Venn diagram sheet so they can follow along as you explain instructions. Students can either draw or write in the diagram. If they choose to draw, their pictures must make sense. For example, for amphibian eggs they should show eggs in the water instead of on land. To help students remember, you may choose to show the reptile and amphibian slides again or you can show this webpage from the University of Georgia. Decide whether students can work on this assignment with a partner or on their own.
Remote learning modification: Present slide deck over Zoom/Google Classroom. When it comes to the Venn Diagram, have students fill out the diagram on the computer. You may choose to have students work in breakout rooms.

Part 2:

Review Venn diagrams by clicking to fill in the traits on slide eight.
Slide nine: Washington is rich in herp diversity. Introduce the term biodiversity here.
Slides 10-12: Introduce the term camouflage in slide 10. Show students examples of camouflage and why it is important for herps.
Slide 13: Students look for a hidden coastal tailed frog. Don't click until they've found it.
Slide 14: Herps play important roles in their ecosystems.
Slide 15: Introduce the term ecosystem services. Before clicking, ask students if they can think of any services reptiles or amphibians might provide them or their families.
Slides 16-17: Introduce the important pest control that both reptiles and amphibians provide for us.
Slide 18: Show that herps are also an important prey species for larger birds and mammals (and sometimes larger herps!).
Slide 19: Ask students to recall what is special about amphibian skin.
Slide 20: Amphibians are very sensitive to water pollution because they so easily absorb chemicals through their skin.
Slide 21: Amphibians serve as water quality and ecosystem health indicators.
Slide 22: What students and their families can do to help protect herps in their area.

Herp habitat activity

At the end of the slideshow, distribute the Herp Habitat activity. This activity has three different Washington habitats. Each habitat has a set of five herps. Three of the five herps may be found in that habitat and two of them are unlikely to be found. Using information about the habitat (encourage students to think about camouflage) and the Burke Museum Reptile and Amphibian Guide students will decide which three species belong in each habitat. Encourage students to look at the map of where the species is found in the Burke Museum guide. Students will also answer corresponding questions with each habitat.

You can either print off the slides and have students cut and paste or Remote learning modification: put the slide deck into your virtual classroom space and have students virtually cut and paste and answer questions on the slides.

Key:

- Habitat one: grass and shrubland (Eastern Washington)
  Species found: gopher snake, spadefoot toad, and pygmy short horned lizard.
- Habitat two: marsh with nearby woodland (Central Washington)
  Species found: painted turtle, ensatina salamander, coastal tailed frog.
- Habitat three: River in the Olympic mountains (Western Washington)
  Species found: Pacific tree frog, garter snake, Western toad

If students have any questions or need clarification, review the species profile and where they are found on the guide.

Research Project:

Ask students to pick one herp from the reptile and amphibian guide.
Students will do a short research project and learn more about the species. If students need more sources for their project, please see the "more resources section".

Their project should address:
1) Is the species a reptile or amphibian?
2) Where does the species live in Washington? (Use maps)
3) What does its habitat look like (find or draw pictures)
4) What internal (i.e., cold-blooded) and external (i.e., long-toes) adaptations does the species have that allow it to survive in its environment?
5) What does the species eat? What eats the species?
6) Does the species share similar adaptations with other herps? If so, describe them. If not, why do you think this is?
7) Are there any threats facing the species? If so, what are the threats and how can people help the species? If there are no

threats, describe why you think the species is doing well.

BioBlitz
For the first part of this project you will need a mobile device such as a smart phone or tablet. Download and familiarize yourself with iNaturalist. In this project students will participate in the global reptile BioBlitz and the global amphibian BioBlitz. For the amphibian BioBltiz, you can have students use this guide to identify amphibians and their egg masses in Washington. This page has information on how to organize a BioBlitz for your students. We recommend using a school yard, local park, nearby greenspace, or WDFW wildlife area for this project. If students find a herp, we encourage them to call other students over to see the animal. Do not allow students to touch or hold the animals. Herps can be very delicate and sensitive to lotions or oils on our skins. Additionally, we want to make sure we are not harming the animal or putting student at risk. Encourage students to look only with their eyes and take only pictures and memories home with them. **Remote learning modification:** students can do a BioBlitz in their closest greenspace.

In the next class period, debrief with students.
• What was their most interesting find?
• What surprised them?
• What did they find the most of, the least of?
• If students did not find a lot of species, why do they think that happened?
• Ask students to describe the habitat they searched in.
• Did they think it was suitable for herps?
• Were there signs or predators or prey species for the herps?
• Did anyone find the species they did their report on?

Idea: Show off your students' work! Share student projects from this lesson with WDFW.
Facebook:@WashingtonFishWildlife
Instagram:@TheWDFW
Twitter:@WDFW
#WildWashington #WildWa

Did you teach this lesson? Give us your feedback.

Additional Resources :

We encourage you to use the following resources as either a supplement to this lesson, or to share the resources with students for their project.

Supplemental activities:

• Reptiles and Amphibians-Teacher's Guide- Albuquerque Biopark
• Amphibians and Reptile Conservation Teaching and Learning Module

Other resources:

• Washington Herp Atlas- WDFW
• Living with Wildlife: Snakes-WDFW
• Habitat at Home (how to make wildlife habitat in your home or schoolyard)-WDFW
• Species of Greatest Conservation Need fact sheets amphibians and reptiles- WDFW
• Bill Nye the Science Guy-Reptiles (video)
• What is a reptile? (video)
• Disappearing Frogs (video)- TEDed
• Amazing Amphibians (video)- Cornell University College of Veterinary Medicine
• Amphibians-Idaho Science Trek PBS
• Reptiles and Amphibians- Slater Museum of Natural History
• Tree frog metamorphosis-King County