

American Bullfrog

The materials provided here are intended to help educators expand upon the Bullfrog Resource Guide and use the guide in the classroom. Assign assessment questions as a homework assignment, or use the questions for a classroom discussion or final evaluation.

CASE STUDY

Professor Tiffany Garcia's Da Vinci Days' talk, "Invasive Bullfrogs and Other Threats to Aquatic Systems"

<https://www.youtube.com/watch?v=KnHsVTbu4oY>

Find out how the bullfrogs got here, where they came from, and what we can do to control them. This video discusses specific impacts of bullfrogs to our aquatic ecosystems, our native frog and salamander species, and what makes them such effective predators and competitors in the Pacific Northwest invasion range.

LESSON PLAN

Plop! The Invasion Begins

LEARNING ACTIVITY

Community Stewardship Project: Go on a bullfrog egg hunt!

Removing American Bullfrog egg masses from local ponds is a fun stewardship project that gets your students outside. You can guide your students to understand pond ecosystems and watersheds while taking action to prevent the invasive bullfrog. For more guidance on planning a stewardship project, see our "Invasives Species 101" stewardship planning guide on MenaceToTheWest.org, under the tab "Take Action." The general guidelines below are tips to get started and are not intended to be exhaustive. If you do this activity and have suggestions on how to make it work better, please let us know by going to MenaceToTheWest.org and clicking on the feedback button. Thank you!

Pre-field trip research:

Learn about bullfrogs before heading out to the field. Have your students read the bullfrog species guide and play the game "Plop! The Invasion Begins," available on MenaceToTheWest.org.

Identify a site:

Check with your local department of fish and wildlife to confirm whether or not you have bullfrogs in your area. Identify a pond or lake near your school that has safe access. Ideally, the pond should be on a public site. Visit the pond beforehand or check with an official to ensure there are bullfrogs in that pond or lake. Consult with a local ecologist or the manager of the natural area to find out the natural history and ecological concerns at the site. And of course, be sure to gain permission from the pond manager or landowner before visiting the site.

What equipment will you need?

You will need a net that has a long handle so you can reach far into the water. You may want to wear rubber boots or waders so your feet don't get wet. Take extra care to not fall into the water. You may want to wear a lifejacket for extra safety if you don't know how to swim.

When to find them:

During bullfrog breeding season, which runs from late May through summer, females are capable of laying one to two clutches. There are 1,000 to 40,000 eggs per clutch. It takes only three to four days for the eggs to hatch, so you will need to monitor a site regularly so you can be there when the egg masses are present.

Where to find them:

The eggs can be found along the water's edge, floating in large clumps that can be anywhere from 6 inches to 12 inches across. Be sure to contact the owners of the pond before you begin removing egg masses.

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Bullfrog eggs being handled by a volunteer at a local pond. If you look closely at the picture, you can see the large mass of bullfrog eggs.

What do the egg masses look like?

Masses measure 60 cm x 30 to 60 cm and are laid as a large surface film several layers thick. This huge egg mass appears to be a kind of “floating white sheet” on top of the water.

How to remove them:

Gently remove these large clumps of egg masses from the water with a net or other scoop, place them on the ground two feet away from the water’s edge, and allow them to dry out.

Don’t accidentally remove native amphibian egg masses. If you think there might be native amphibians in the pond, then you should make sure you are not removing native frogs’ eggs. Bullfrog egg masses can be distinguished from native frog masses by the way they occur in large, pigmented sheets that float on the water’s surface. In addition, our native frogs’ egg masses are much smaller and are in discrete balls, not sheets. Red-legged frog egg masses are the biggest and are usually 6–12 inches across.

Here are some resources to help you identify bullfrog egg masses.

Amphibian egg identification page, from Idaho Museum of Natural History

<http://imnh.isu.edu/digitalatlas/bio/amph/main/ameggid.htm>

A teacher’s guide to frog identification and metamorphic timing:

<http://dnr.wi.gov/org/caer/ce/eeek/teacher/frogeggs.htm>

Be careful not to spread invasives: Any time you visit a natural area, either in the water or on dry land, you could be spreading invasive species. Before you leave for the field trip, it is important to inspect your boots, nets, or any other gear to make sure they do not have seeds or other plant material attached. You should also check and clean your boots and gear before you leave the field site.

Share your story with the WISE program: If you tried this activity, please let us know by going to MenaceToTheWest.org and clicking on “Take Action.”

ASSESSMENT QUESTIONS AND ANSWERS

- 1. In order to understand and describe organisms, scientists have organized them into a classification system. Within this classification system, what “family” do American Bullfrogs belong to? *Ranidae* (and their genus is *Lithobates*)**
- 2. Describe the type of habitat that American Bullfrogs prefer.** *Bullfrogs can be found in permanent freshwater ponds and lakes. Still waters are generally preferred, but bullfrogs can also be found in slow-moving streams.*
- 3. What are some identifying characteristics of the American Bullfrog?** *They are an olive-green color, either plain or with mottling and banding of grayish brown. They have an off-white belly blotched with yellow or gray, large brownish-yellow eyes, and large tympani (eardrums) behind the eyes.*
- 4. Where is the American Bullfrog native?** *The natural range of the bullfrog extends from the Atlantic coast to as far west as Oklahoma and Kansas.*
- 5. How do they grow?** *Four days after fertilization, spotted tadpoles will emerge from their egg masses. These tadpoles have internal gills and a tail, which will eventually disappear as the tadpole transforms into a froglet. The tadpole stage usually takes one to three years. Adults reach sexual maturity after an additional two years.*

6. **How many times can a bullfrog breed in a season?** *Bullfrogs are able to have up to two clutches if the conditions are perfect.*
7. **How many eggs can a bullfrog have in each clutch?** *They can have from 1,000 to 40,000 eggs per clutch.*
8. **How long do American Bullfrogs live?** *They live an average of seven to nine years.*
9. **What do adult American Bullfrogs eat?** *Bullfrogs are able to eat any animal that can fit in their mouths. This includes snakes, mice, worms, insects, crustaceans, and other animals' eggs. They can also be cannibalistic and will eat their own kind. There are also reports of bullfrogs eating birds.*
10. **How were American Bullfrogs introduced to the Western U.S.?** *American bullfrogs were first introduced to the Western U.S. in the early 1900s for human consumption and were set loose or escaped from bullfrog farms into the wild.*
11. **What diseases do bullfrogs spread?** *Bullfrogs spread infectious diseases like chytrid fungus and rana virus, which greatly impact our native amphibians.*



Large clumps or sheets of bullfrog egg masses floating on the surface of a pond.

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WHAT DO YOU KNOW?

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- 2** Describe the type of habitat that American Bullfrogs prefer.
- 3** What are some identifying characteristics of the American Bullfrog?
- 4** Where is the American Bullfrog native?
- 5** How do they grow?
- 6** How many times can a bullfrog breed in a season?
- 7** How many eggs can a bullfrog have in each clutch?
- 8** How long do American Bullfrogs live?
- 9** What do adult American Bullfrogs eat?
- 10** How were American Bullfrogs introduced to the Western U.S.?
- 11** What diseases do bullfrogs spread?