

Mapping Where Animals Live

Students will study the New York State Amphibian and Reptile Atlas to learn how maps can display information on the distribution of animals.

Objectives: Students will understand:

- how maps serve as representations of a geographic region;
- how maps can show where animals live in a certain region;
- how the distribution of animals varies geographically based on habitat requirements.

Grade level: Elementary (Grades 4-6)

Subject Area: Science, Social Studies

Standards: Social Studies Standard 3
Mathematics, Science, & Technology Standard 4

Skills:

- Interpret data presented geographically on a map.
- Observe, identify, and communicate patterns in data.
- Analyze document-based information presented in scientific figures.

Duration: Preparation time: 10 minutes
Activity time: 40 minutes

Materials: Each student should have:

- Worksheet: Mapping Where Animals Live
- Relief Map of New York State with county boundaries
- Pencil or pen

Background:

Maps usually show terrain, political regions, roads, towns, and similar features of the natural and built landscape, but can also show other information linked to geography. This lesson explores maps from the New York State Amphibian and Reptile Atlas, often called the Herp Atlas. Herp derives from herpetofauna, the scientific term for animals classified as reptiles (snakes, lizards, turtles, and crocodiles) and amphibians (salamanders, frogs, and toads). Data collected by over 1,500 volunteers indicate whether or not a species was found in each of 979 U.S. Geological Survey map quadrangles that together form a mosaic covering all of New York.

Students will view actual Atlas maps and answer document-based questions about information in these scientific figures. The maps are unaltered except for being reduced in size and—most likely—converted to black and white in photocopying.

Students will learn how amphibian and reptile distribution is linked to habitat. Given the variety of habitats in the Hudson Valley, there is a great diversity of these animals here. In fact, there are more turtle species here than in almost any river valley elsewhere on Earth.

Activity:

1. Review the distinguishing characteristics of reptiles and amphibians.
2. Review vocabulary words and the content of the Amphibian and Reptile Atlas.
3. Compare an Atlas map to the state relief map showing counties. Point out the location of major topographic features such as the Adirondacks, Catskills, Atlantic Ocean, Great Lakes, and Hudson River. On the Atlas map, find the county in which your school is located.
4. Complete the "Mapping Where Animals Live" worksheet in class.
5. Explore **Resources** for links to more information about species included in this lesson.

Assessment:

- Have students share answers to worksheet questions, or collect and grade sheets.
- Visit the Atlas website (see **Resources** below) to select other maps for students to analyze. Suggestions: bullfrog, five-lined skink, Fowler's toad, and bog turtle.

Vocabulary:

amphibians: cold-blooded vertebrates that start life in water, breathing with gills, and later (usually) become air-breathing adults

atlas: a book of maps

habitat: the particular sort of place where a given plant or animal lives

relief map: a map that shows the topography of an area

reptile: cold-blooded, air-breathing vertebrates that usually lay eggs and have skin covered with scales or bony plates

scientist: a person skilled in science

Resources:

Classrooms with internet access can view all the actual Atlas maps at the Department of Environmental Conservation website <http://www.dec.ny.gov/animals/7140.html>. Click on the group of animals desired (salamanders, turtles, etc.) from the column on the left and then scroll down through the table of species to choose one that interests you. In the table are links to fact sheets about some of the species included this lesson.

Mapping Where Animals Live: ANSWER KEY

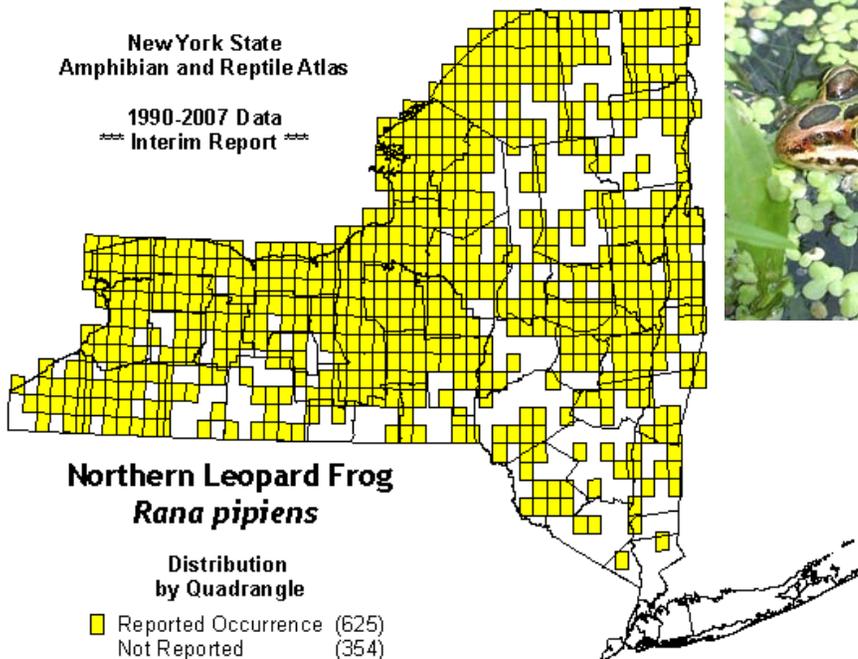
Mapping Where Animals Live

New York State is home to many kinds of **amphibians** (salamanders, frogs, and toads) and **reptiles** (snakes, turtles, and lizards). This is because New York has many types of **habitats**. Each has different kinds of amphibians and reptiles.

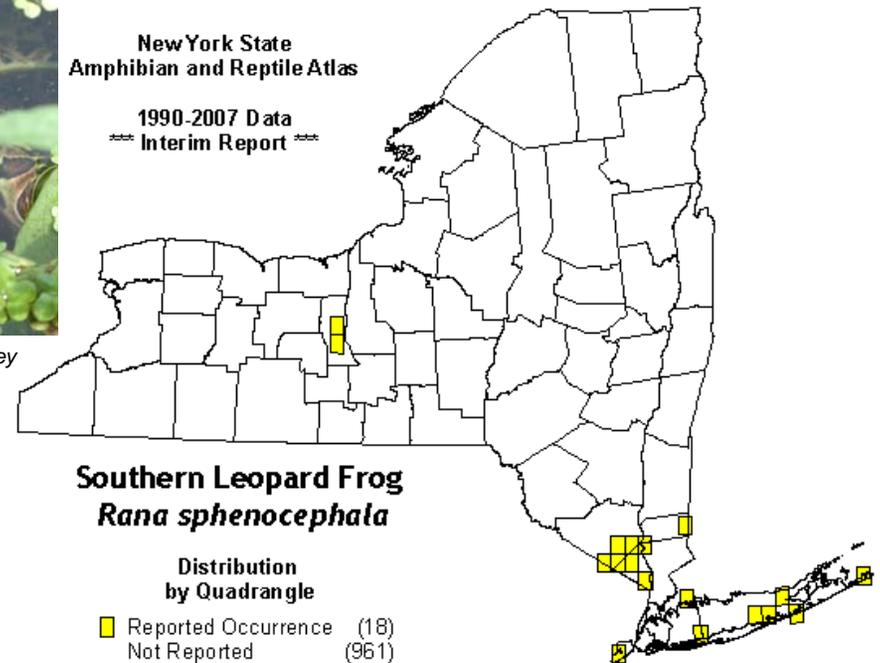
Scientists and volunteers go on field trips to search for reptiles and amphibians. They use maps to show where they find each kind. A book that collects many maps together is called an **atlas**. So the collection of maps showing where these animals live is called the Amphibian and Reptile Atlas.

Maps in the Atlas show New York's counties. The tiny squares are sections of the maps in which reptiles or amphibians were found. The maps below show where northern leopard frogs and southern leopard frogs were found.

The southern leopard frog map shows that this frog lives - surprise! - mostly in the southeastern part of New York. The northern leopard frog map shows that this frog is not common in southeastern New York. However, it is found over much of the rest of the state.



U.S. Geological Survey



Some of New York's reptiles and amphibians are not very choosy about where they live. Others require warmer or colder temperatures, or certain kinds of streams and ponds. On this page are maps showing where three kinds of frogs live in New York. Use these maps to answer questions 1 to 3 below.

1. Which of these frogs lives only in southern New York?

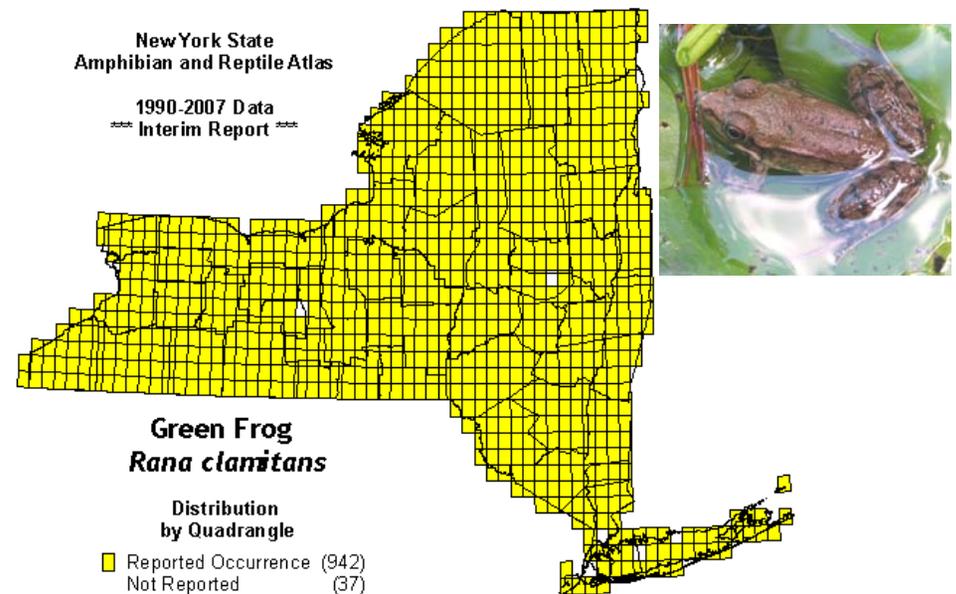
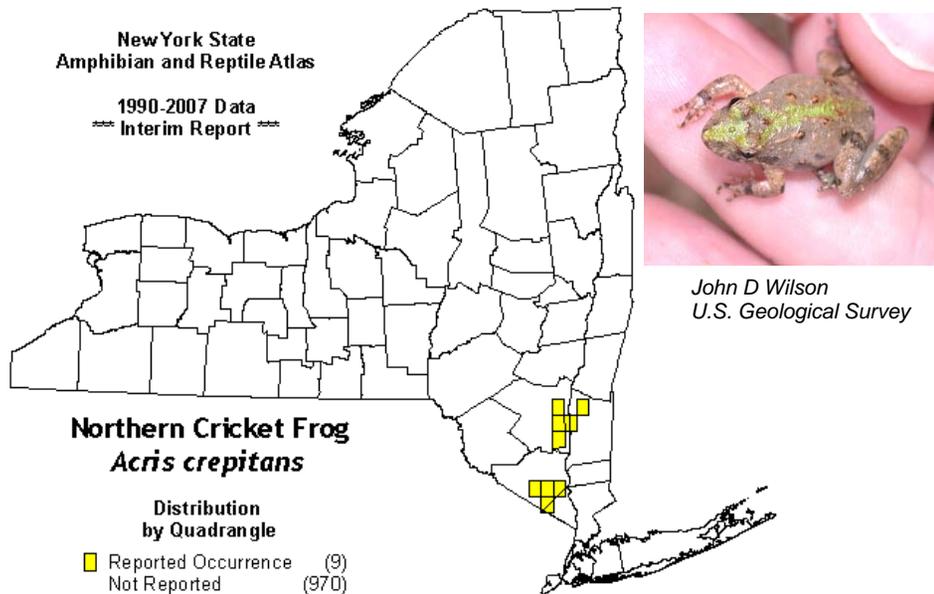
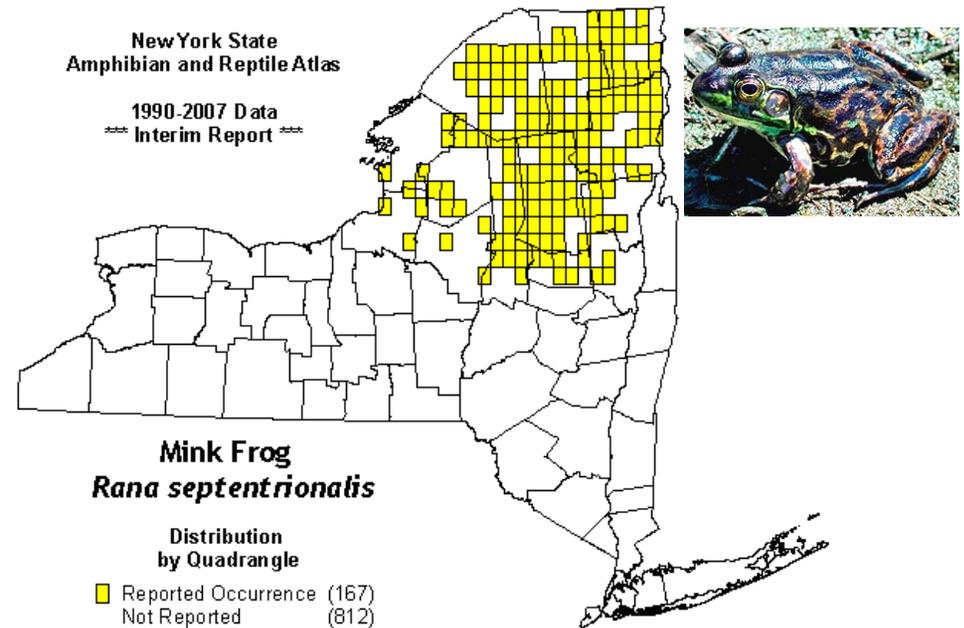
Northern Cricket Frog

2. Which frog is found mostly in the Adirondack Mountains?
(Use your **relief map** to locate the Adirondacks.)

Mink Frog

3. Which frog is found almost everywhere in New York State?

Green Frog



Each reptile and amphibian prefers a certain habitat. That habitat might occur in just one small part of each square. But by looking at where the squares are located, one can guess what habitat each animal likes. These three turtles live in water, but each needs a different kind of water habitat. Use the Atlas maps and the relief map to answer questions 4-6.

4. Which turtle lives in the ocean?

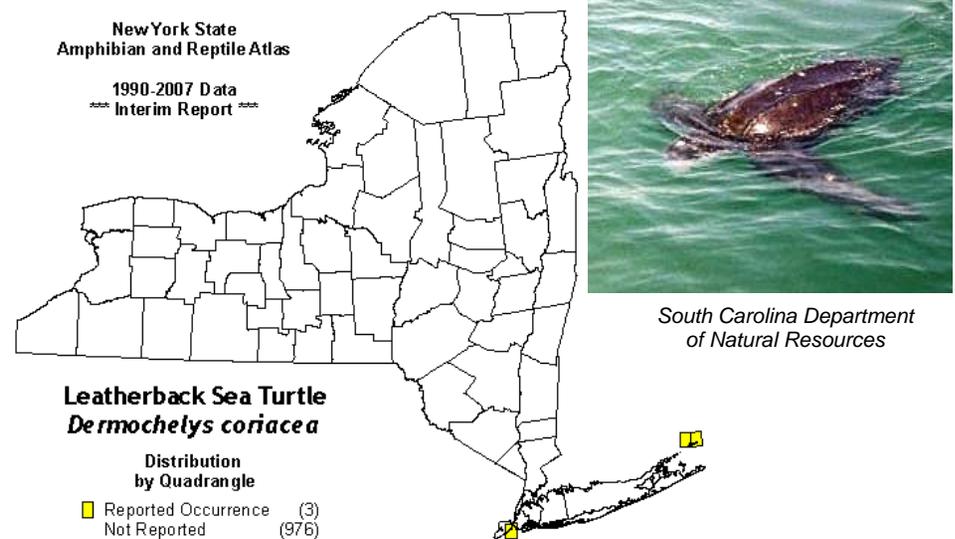
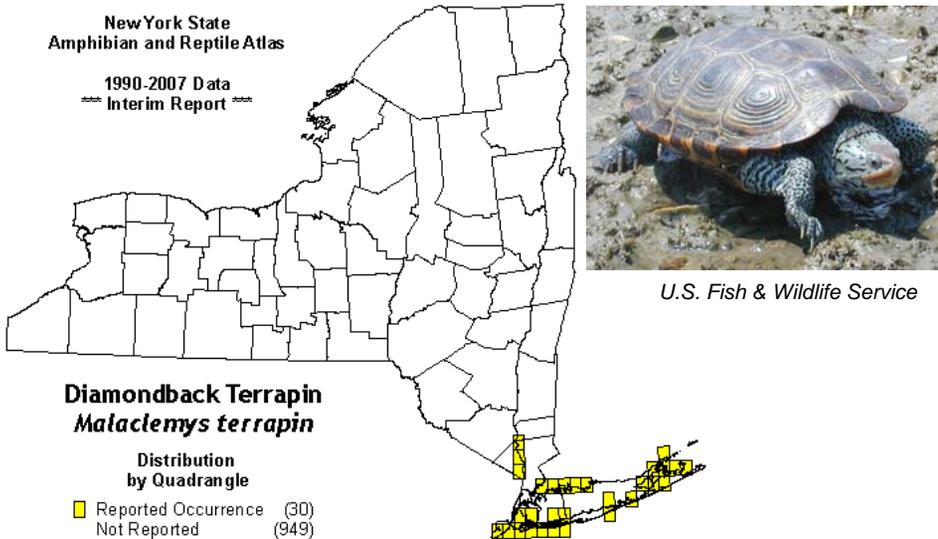
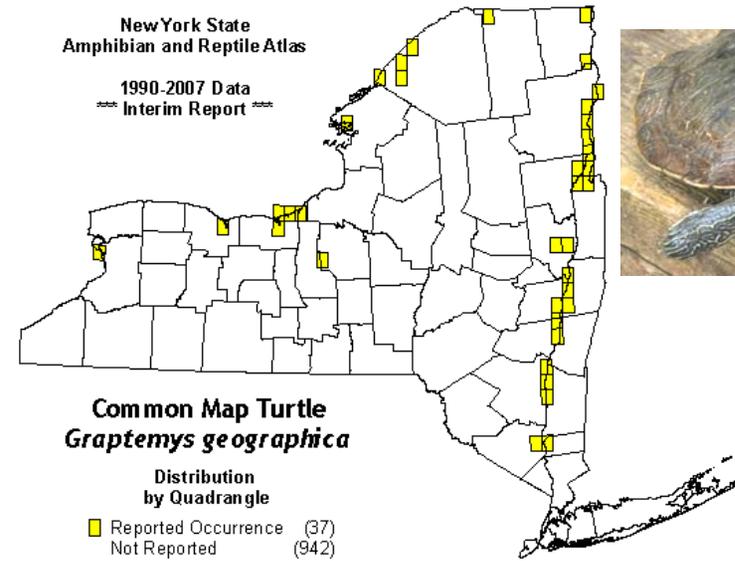
Leatherback Sea Turtle

5. Which turtle lives in large lakes and rivers where the water is fresh, not salty?

Common Map Turtle

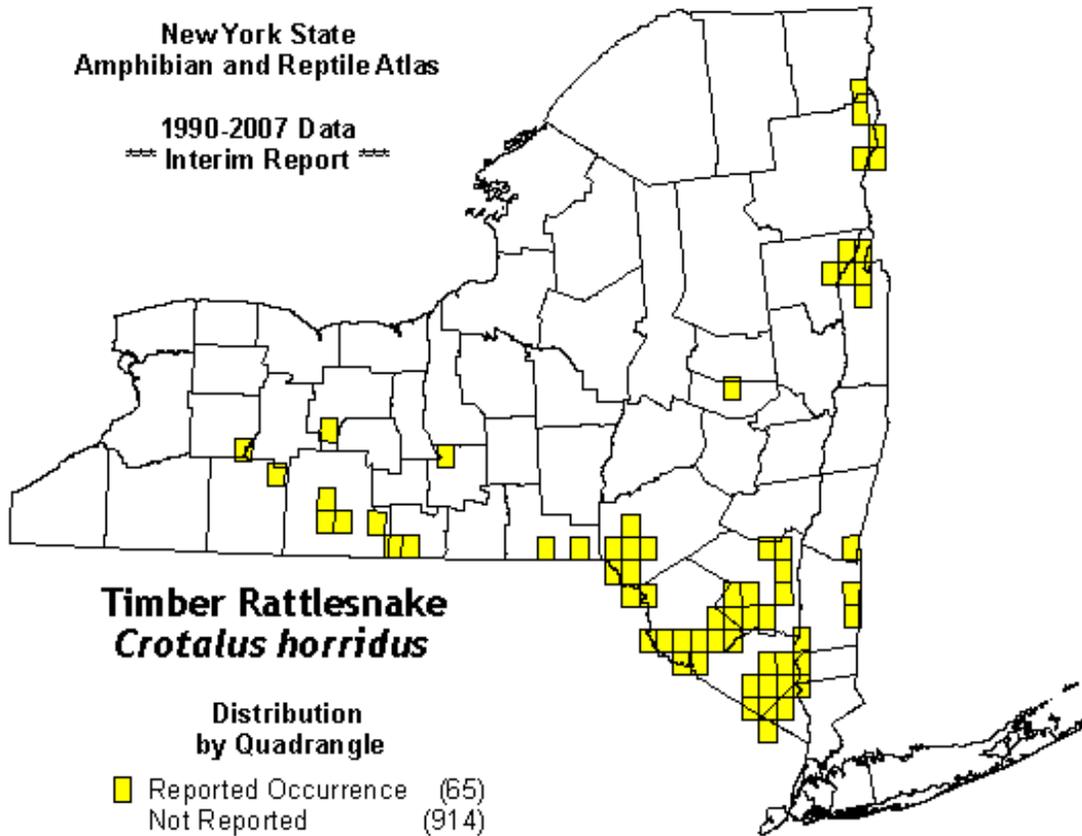
6. Which turtle lives in estuaries - places like the Hudson River where fresh water and salty ocean water mix?

Diamondback Terrapin



Imagine that you are going for a hike in each of the following counties. Use this Atlas map and the relief map with county names to say if there is a chance that you might see a timber rattlesnake. Circle yes or no next to the name of each county.

(Note: Even in counties that have timber rattlesnakes, it would be a special event to see one. These snakes are uncommon and live only in a few places with the right habitat.)



Trisha M. Shears

- 7. Albany yes no
- 8. Dutchess yes no
- 9. Orange yes no
- 10. Rensselaer yes no
- 11. Saratoga yes no
- 12. Ulster yes no
- 13. Bronx yes no