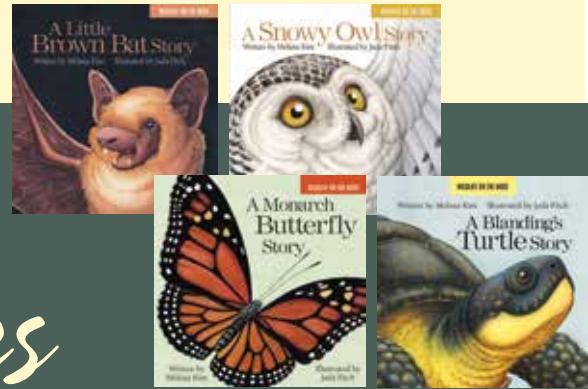


WILDLIFE ON THE MOVE

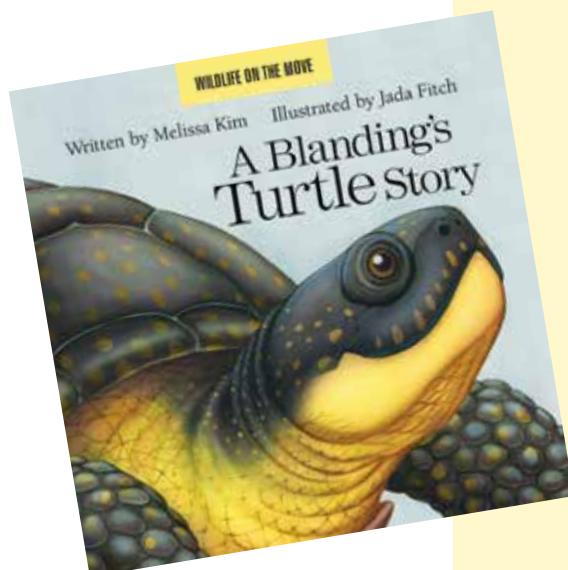
Teaching Guides

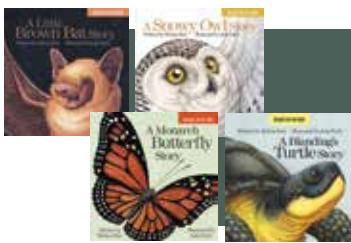


A Maine Audubon/Islandport Press Partnership

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Introduction

ABOUT MAINE AUDUBON

Maine Audubon is building a community of people who understand that when Maine's wildlife thrives, Maine thrives. Since 1843, we have been connecting people to nature through a science-based approach to conservation, education, and advocacy. The largest Maine-based wildlife conservation organization, Maine Audubon has eight wildlife sanctuaries, 10,000 members, and serves 50,000 people annually.

We work with children, adults, families, and educators to foster environmental literacy and stewardship through science-based and experiential education programs.

ABOUT WILDLIFE ON THE MOVE

Wildlife On the Move started with a great story. In January 2014, a Snowy Owl got stuck in an abandoned building in downtown Portland, Maine, and Maine Audubon staff were called on to assist. Both on scene that day and in the days following, we saw a fantastic opportunity in this front page story to explain basic wildlife ecology, why animals venture far from home, and what positive human intervention looks like. Our friends at Islandport Press agreed, and together we set to work developing a series of books that would help introduce and expand upon these important themes for families and classrooms in Maine and beyond. Not only did the trapped Snowy Owl get a happy ending, but we hope that her and other stories will live on to benefit and inspire generations of young naturalists and conservationists to come.

Why these species? The species chosen for the Wildlife on the Move project are iconic, charismatic, and most importantly, representative of the challenges facing Maine's wildlife. Even students who have never seen a Snowy Owl, for example, are able to relate to the experience of living in Maine. Though the story of each species is unique, they explore similar themes of animal movement, human interactions with wildlife, animal adaptations, seasonal changes, and habitat requirements.

Why this format? The Wildlife on the Move books are written for preschool-aged children through second graders, with simple prose supported by a strong foundation of scientifically accurate content and illustrations. This allows educators, aided by these curriculum guides, to dig deeper into the underlying scientific concepts and to challenge older students to take on a greater load of the cognitive work. The

smaller board books allow students of all ages to explore the books at their own pace and practice reading skills, while the large teacher editions allow for large group reading and discussion while inviting further interaction with the detailed illustrations.

HOW TO USE THIS GUIDE

Like the books in the Wildlife on the Move series, these companion teaching guides can be used in multiple ways. It is certainly possible to choose a standalone unit or lesson from one teaching guide, or to use them to provide context and background information to inform your own usage of the Wildlife on the Move books.

However, we hope that your interactions with this book series will go deeper than that. Taken as a whole, the Wildlife on the Move series provides an opportunity to explore multiple themes related to ecology, geography, and stewardship throughout each season and from multiple angles. This seasonal focus also provides an excellent starting point for incorporating outdoor exploration and field work into your teaching. You'll find tips for that in this guide, too.

Finally, we are proud to have put together a set of books that truly speak to a wide range of ages—from preschool to second grade. If you have the opportunity to work with multiple age groups, we hope you'll take advantage of this by spiraling back to the Wildlife on the Move books as your students grow. Not only will they be glad to revisit these familiar stories, but you'll be prepared to help them delve deeper into the ecological themes contained within the books.

Acknowledgments Maine Audubon and the Wildlife On The Move project have benefitted from many partners and collaborators. These guides include contributions from teachers at Portland Public Schools and Opportunity Alliance, and were funded by the Jane B. Cook 1992 Charitable Trust and Edward H. Daveis Benevolent Fund. We especially thank Melissa Kim at Islandport Press for her tireless support.

In each guide, you'll find these sections:

Background information This section will give you the context and background knowledge necessary to teach these books confidently! It's certainly not necessary to have all of the answers, but knowing where to look for more information is important. If this section doesn't answer all of your (or your students') questions, the resources listed at the end of the guide should point you in the right direction.

Discussion Questions Part of what makes these books work for a wide range of ages is their careful balance between scientific accuracy and conciseness. This gives educators the opportunity to highlight certain ideas and themes in the books by asking well-chosen open-ended questions before, during, and after a read aloud. This section contains examples and ideas for all three.

Lessons and Activities We've provided a range of lessons and activities in each guide organized around several themes and guiding questions. Though each works as a standalone, we think that they work best when bundled. This allows you to explore a topic in different ways, address multiple learning styles, and incorporate other subjects.

Standards Addressed For the purpose of these teaching guides, we've chosen to focus on the Next Generation Science Standards (NGSS). The reason for this is twofold; first, while many of the lessons and activities in this guide integrate multiple subject areas, we believe that it is their accurate and accessible science content that sets the Wildlife on the Move books apart.

Secondly, the NGSS align with Common Core State Standards for Math and English Language Arts. These Common Core connections are listed for each NGSS performance expectation and accessible on the NGSS website.

We have also taken the Maine Early Learning Developmental Standards into account for those educators working with preschoolers. You'll find a list of the science standards most relevant to this guide in the Appendix.

Objectives The importance of firsthand observation and hands-on, sensory experiences in nature cannot be overstated, especially for young children. Throughout

this guide, you will notice that many of the lesson objectives reflect that by going beyond knowledge and skills to include experiences and actions.

Extensions Each lesson includes extension options and ideas for incorporating other subjects, specialties, and areas of your classroom. These are just a starting point—consider working with other teachers at your school or parents to fully integrate Wildlife on the Move themes into other areas.

Take Learning Outside Research has shown that students are happier, healthier, and more engaged when they are given opportunities to play, learn, and explore outside. Authentic experiences in nature support students' learning, but also their social, emotional, and physical growth and development.

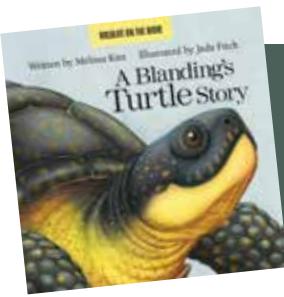
Focusing on the seasonal themes of each Wildlife on the Move book can be a great springboard for taking your students outside, and many of these lessons include outdoor exploration and observation components. Consider allowing extra time outdoors for students to explore and play on their own, too. Unstructured time in nature often leads to unexpected teachable moments and gives your students a chance to relate to you—and each other—in new and positive ways.

Take Action The final part of this section describes ways that you and your students can take meaningful action to help wildlife. We know that time and resources vary from school to school and we have included projects that vary accordingly. Maine Audubon is committed to helping schools take action, so let us know if we can be of help.

Appendix In this section are the following resources:

- Maine Early Learning and Development Standards
- Book lists, including children's books, teacher resources, and classroom-friendly field guides
- Songs and fingerplays
- Reproducibles, including graphic organizers and graphics used in lessons

Access online resources at maineaudubon.org/WOTM.



Background Information

WHAT MAKES TURTLES SPECIAL?

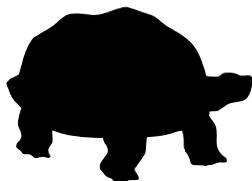
Turtles are reptiles with shells. This distinguishing feature provides excellent protection from predators and is made up of two halves that are fused together. The upper half is called the carapace, and the lower half of the shell is the plastron. Although a turtle can withdraw into its shell if threatened, it cannot leave it as its ribs and spine are fused to the inside of the carapace. The shell itself is made of bone and covered with plates, called scutes, that are made of keratin.

Turtles, like other reptiles, are cold-blooded. This means that unlike mammals and birds, which can generate their own body heat, their body temperature is dependent on ambient temperatures. It is common to see turtles basking on logs, rocks, or in shallow water on days when the air temperature is warmer than the water.

TURTLE OR TORTOISE?*



TURTLES



TORTOISES

Appearance

Streamlined with a low shell profile.
Webbed feet or flippers.

Sturdy legs and high domed shells.
Feet are not webbed.

Habitat

Aquatic or semi-aquatic

Terrestrial

Diet

Omnivorous

Herbivorous

*Technically, all shelled reptiles are considered turtles! Tortoises are a separate category within that larger group.

BLANDING'S TURTLE LIFE HISTORY

Appearance A Blanding's Turtle can be distinguished by its bright yellow throat, spotted head and shell, and helmet-shaped carapace, which grows up to 10 inches long.

Diet Blanding's Turtles are mostly carnivorous, although they have been observed eating some aquatic plants as well. They mainly feed in the water and eat invertebrates including snails, aquatic insects, and small crustaceans. Blanding's Turtles will also eat tadpoles and fish, although they tend to scavenge on dead fish rather than catch live ones.

Range and Habitat Blanding's Turtles are found throughout the northern U.S. from Minnesota to Maine, but their populations tend to be fragmented, especially in the Northeast. Most of the Blanding's Turtles in New England are found in Massachusetts, and their range in Maine extends only into southern Maine.

Blanding's Turtles inhabit vernal pools and a variety of wetland habitats and frequently move between these areas throughout the active season. Suitable aquatic habitats must also be near potential nesting sites, which often include residential and agricultural areas, under power lines, or road edges.

Reproduction

Blanding's Turtles are slow to mature, often not breeding until they are between 14 and 20 years old. They mate in late spring and early summer and females typically lay eggs in June or July. They can travel more than a mile in search of a suitable nest site and often lay eggs in residential areas where ambient heat helps the eggs develop.

Like other reptiles, the sex of a Blanding's Turtle embryo is not genetically determined. Instead, it is the nest temperature that determines sex, with cooler nests resulting in mostly male hatchlings and warmer nests resulting in female

hatchlings. The eggs will not hatch at all if temperatures are below 22 degrees Celsius, which is probably what restricts their range to southern Maine.

Average clutch size is between 10 and 12 eggs, and both nests and hatchlings are extremely vulnerable to predation by raccoons, skunks, crows, foxes, and other opportunistic predators. When the turtles hatch in August or September, they are less than 1.5 inches long and their soft shell offers little protection. Those that survive usually overwinter in wetlands.

Brumation Just as some mammals conserve energy during the winter by reducing their body temperatures and metabolic rates in a state called hibernation, many cold-blooded animals enter brumation. Blanding's Turtles brumate under the water (and often ice) of deeper pools. Their metabolism is so slow during this time that they do not even need to breathe and can meet their reduced oxygen needs by absorbing dissolved oxygen in the water through specialized blood vessels in their cloaca (the opening through which they eliminate waste and lay eggs).

CONSERVATION STATUS

The Blanding's Turtle is listed as endangered under the Maine Endangered Species Act. Its federal status is under review and a decision is expected in 2023.

Blanding's Turtles can live to be more than 70, and in theory this long lifespan should balance out their relatively late sexual maturity and low breeding success. However, human development has put undue pressure on them in several ways. First, the wetland habitat they rely upon is becoming increasingly degraded and fragmented. Adult turtles are frequently killed while crossing roads as they move between wetlands or to potential nest sites. Lastly, many of the predators that prey on turtle nests and hatchlings thrive in more developed areas.

GLOSSARY

Carapace: the upper half of a turtle's shell

Plastron: the bottom half of a turtle's shell

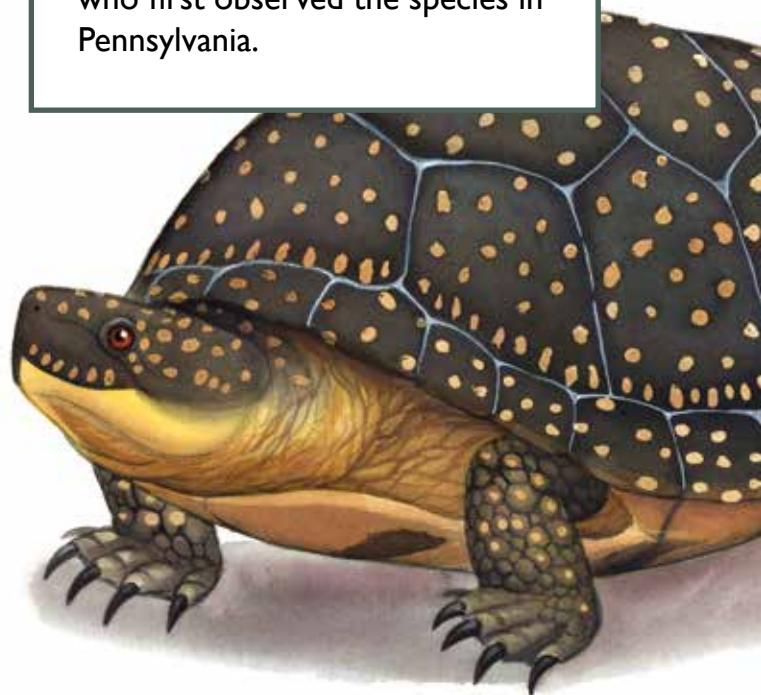
Cold-blooded: having a body temperature that changes with that of the environment (ectothermic)

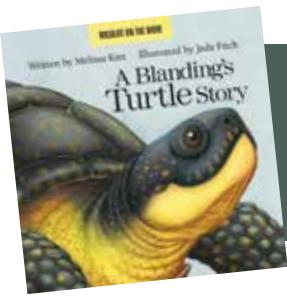
Brumation: the hibernation-like state that cold-blooded animals enter to conserve energy in cold weather

Who was **BLANDING?**



The Blanding's Turtle gets its name from Dr. William Blanding (1773-1857), the doctor and amateur naturalist who first observed the species in Pennsylvania.





Discussion Questions

Before Reading

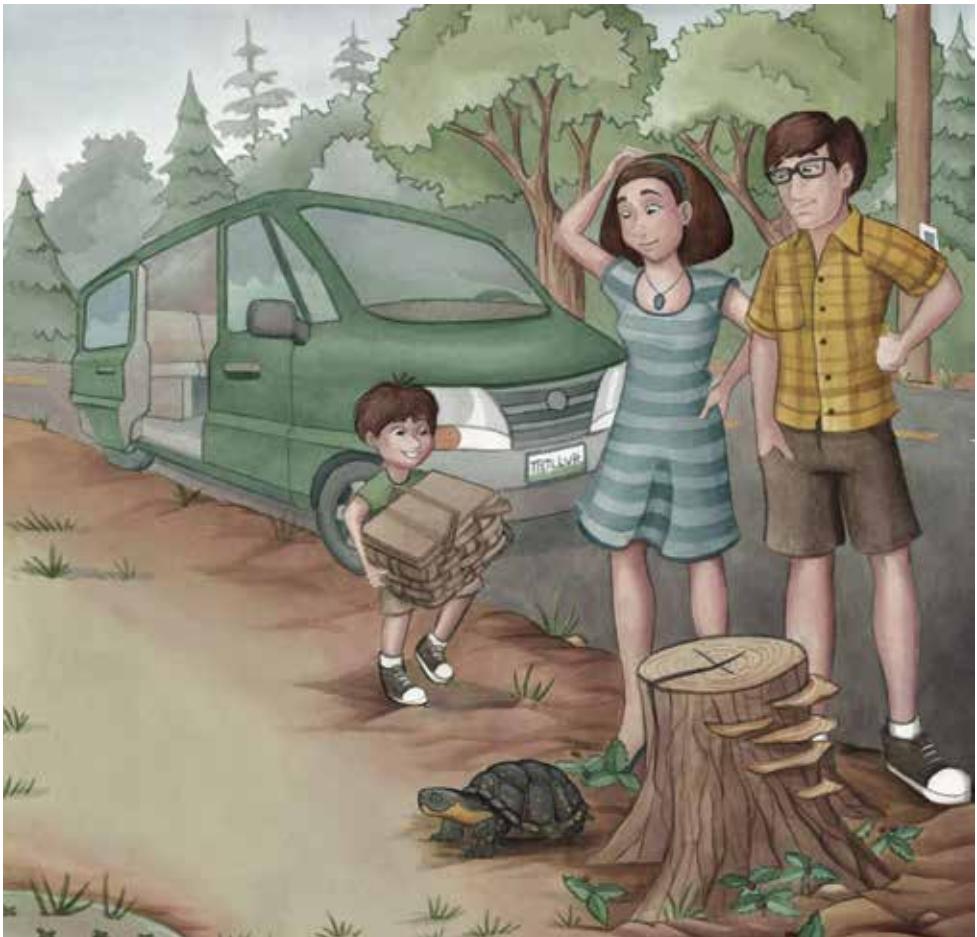
- What do you already know about turtles?
- Why might a turtle be “on the move?”

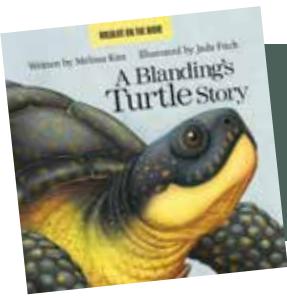
During

- What different habitats does the turtle visit? What does she do in each?
- There is a lot to notice on the last page. What does the sign the boy created say? What predators do you see that might want to eat the baby turtles?

After Reading

- What should the family have done when they first saw the turtle? What if she had been in the middle of the road?





Lessons & Activities

Unit I: Turtle Adaptations and Life Cycle

GUIDING QUESTIONS

How do turtles grow?

What do turtles need to survive?

NGSS Performance Expectations

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Turtles, sea turtles, and tortoises, oh my!

Objectives: Students will be able to describe the physical characteristics that distinguish turtles, sea turtles, and tortoises and how those characteristics relate to the animal's behavior.

Materials: pictures of turtles, sea turtles, and tortoises (see appendix), "design a turtle" worksheet (see appendix)

Procedure:

1. Show students at least one picture each of a freshwater turtle, sea turtle, and tortoise. What do they have in common? How are they different? Use a 3-part Venn diagram or other graphic organizer to capture students' ideas.
2. Connect these observations to each animal's life history. Where do sea turtles live? Why would they need flippers? Which animals have a streamlined shell for swimming quickly? Which have a domed shell that offers extra protection from predators?

3. Give each student a copy of the "design a turtle" worksheet and ask them to create their own creatures. Once they have answered the questions about where their animal lives, how it moves, and what it eats, they should use those answers to draw the animal. Encourage creativity and attention to detail! What will they call their new species?

Extension: There are many weird and wonderful turtle species around the world that have unique adaptations for staying camouflaged, catching prey, or breathing while remaining mostly underwater. Have students choose a species to research and share their findings with the class.

Turtle Shells

Objectives: Students will compare the shape and patterns of different turtles' shells, sort them according to different attributes, and create artwork that depicts a shell of their own design.

Materials: turtle and tortoise photographs (see appendix), turtle shell templates (see appendix), crayons, watercolors, paint brushes

Procedure:

1. Begin by introducing some of the vocabulary used to describe a turtle's shell:
 - a. Carapace: the top half of the shell
 - b. Plastron: the bottom half of the shell
 - c. Scutes: the plates that cover both halves of the shell
2. Although all turtles have shells, the appearance of those shells can vary greatly. Divide the class into small groups or pairs and give each group a set of photographs. Give them some time to look closely at the photos, then ask them to sort them into two or more groups. They may sort according to color, texture, shape, or something completely different!
3. When a group has finished sorting, have them show you and describe their categories. Record their thoughts and have them work together to create new categories.
4. Allow enough time for each group to repeat the sorting process several times, then debrief as a large group. Read back the list of categories/attributes that you recorded earlier, asking students to show examples of each. Was there anything they noticed that was surprising? Why might the shells differ so greatly?

5. Give students a chance to create a shell of their own design using watercolor resist. Have them use crayons to draw a design in the shell portion of the turtle template. When that's completed, they can paint over the design using watercolors. The wax from the crayon will resist the watercolor, so the design will still show through.

Extension: Turtle tag is a fun way to reinforce the idea that a turtle's shell protects it from predators. Find an area with plenty of room to run around and designate one or two students as potential predators. What might like to eat a turtle? (Raccoons, foxes, herons). Everyone else is a turtle, and they need to avoid being eaten. They can do so by avoiding the predators, or by hiding in their shells (crouching down and covering their heads). Play for a while, switching up roles as predators get tired. Do they succeed in eating any turtles?

The Race to Raise Young

Objectives: Students will understand that animals differ in how long they live and how old they are when they begin to reproduce.

Materials: animal "passports" and four season station signs (see appendix), at least 3 dice, writing implements

Setup: Create four stations around the perimeter of the room. Each should have a table or flat surface and one of the station signs. Place one or more dice at each of the fall, winter, and spring stations, and some writing implements at the summer station.

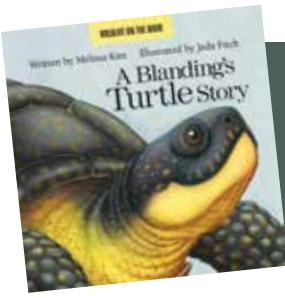
Procedure:

1. Begin by asking the students how old they think the turtle in *A Blanding's Turtle Story* is. How long do they think Blanding's Turtles can live? Blanding's Turtles do not begin breeding until around age twenty, and can live to be over seventy. This is not the case for many of the animals we encounter in our day-to-day lives.
2. Shuffle the animal passports and give one to each student. Explain that the number of boxes on the passport represents the number of years that that species lives, and that the boxes with Xs in them are years that the animal is alive but not reproducing.

3. The goal of each animal in this game is to survive long enough to have babies, which they can attain by doing laps around the room. Each lap represents one year, but there are some times when they will be in danger. What dangers might their animals face? (predation, cars, hunters, etc.) To represent these dangers, as they pass each of the first three stations, they should roll one of the dice at the table. If they roll 1 through 4, they survive and can move onto the next station. If they roll 5 or 6, they don't survive and should take a seat (there will be a chance to rejoin the game momentarily).

4. When they reach the "summer" station, they have made it through the year and should color in one of the boxes on their passport. If it's a box that does not have an X in it, they have also successfully reproduced! If there are any students sitting out at this point, they can invite one of them to rejoin the game as their "baby" and that student should be given a passport for the corresponding animal.
5. As you continue to play, some of the robins and deer may fill their passports and reach the end of their lifespans. They should take a seat and can rejoin the game in the same way as described in the previous step. Allow enough time for this to happen, and for any surviving turtles to have young.
6. Debrief the game by asking students about their experiences. What made it easy or hard to be a particular animal?

Extension: Something not addressed in the game above is the fact that not all animals have the same number of young each year, and not all of those young survive. Some animals have just a few young and care for them intensely, while others have many young (or lay many eggs) and leave them to fend for themselves. Have students think of an example of each and research that species. How many young does it usually have? What dangers do they face?



Lessons & Activities

Unit II: Turtle Habitat

GUIDING QUESTIONS

**What makes good turtle habitat?
Where do turtles lay their eggs?**

NGSS Performance Expectations

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to fit their needs.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

Aquatic Explorations

Objectives: Students will explore an aquatic habitat in their community by scooping or searching for creatures, making and recording observations, and analyzing their findings.

Materials: clear containers, thermometers, measuring tools, nets, binoculars, field guides, paper, clipboards, writing utensils

Procedure:

This lesson includes three different approaches to exploring and observing an aquatic habitat. Depending on the needs and abilities of your students, as well as your schedule and situation, you may choose to focus on only one exploration, combine elements from each, or continue to visit the same habitat and add a new layer of exploration each time.

Focus on: Water

1. You can tell a lot about what kinds of plants and animals will live in an aquatic habitat just by looking at the characteristics of the water. For example, would a sea turtle live in a freshwater pond? What would happen to an insect that's a weak swimmer in a fast-flowing river?
2. Begin by collecting and observing some of the water in a clear container. Is it cloudy or clear? What is its temperature?
3. Move on to observing the body of water as a whole. Is the water moving or still? Try tossing in leaves or other small natural objects that float to observe water currents. If the water is moving, are there some places where the current is stronger than others? If you can, measure the depth.
4. Based on your findings, what animals would you expect to find living here? Continue onto the next exploration to see if your predictions are correct!

Focus on: Biodiversity

1. Biodiversity refers to the variety of plant and animal species in a given area. In this exploration, you'll be challenging students to measure biodiversity by finding and identifying as many different plants and animals as they can.
2. If you will be using nets to scoop, make sure to go over a few guidelines beforehand:
3. Students should kneel when scooping so that they don't lean too far over the water
4. If they catch something, have them gently move it to a container of water for observation. Be prepared to assist students with the transfer.
5. Avoid handling frogs and tadpoles—the oils on our hands can be harmful to them.
6. Remind students to look both in the water and around it, and that they may need to look closely and carefully to see some of the smaller aquatic insects.
7. Provide field guides and help students try to identify what they've found. Keep a list of plants and animals observed. Was there anything surprising? Anything you expected to find that you didn't?

Focus on: Turtle Habitat

What do animals need in their habitat? (food, water, shelter). What would those elements look like for a turtle? Come up with a list of things to look for that might indicate that a body of water could be a good habitat for a turtle.

Assess your chosen aquatic habitat by looking for the things on your list. Is there anything missing? Did you observe any turtles? What about potential predators?

Extension: Continue to explore your chosen aquatic habitat throughout the year. How does it change with each season? Explore the life cycles of some of the creatures you see there. How do they change and grow?

Turtle Maps

Objectives: Students will demonstrate knowledge of the two habitat types that Blanding's Turtles need (aquatic and suitable nesting sites) and will imagine the journey a turtle might need to make between the two habitats.

Materials: long strips of paper, turtle and turtle crossing cut-outs (see appendix), drawing implements, glue sticks

Procedure:

1. Show students the inside cover pages of *A Blanding's Turtle Story*. What do they see? What does the dotted line represent? The turtle in the story is on a quest to find a place to lay her eggs, which means she needs a place with soft or sandy soil where she can dig. What does she encounter along the way?
2. Have students create their own "turtle map" on a long strip of paper. They can glue a cutout of a turtle at the beginning of the strip, and should then imagine and draw the places and things the turtle will encounter along her journey. Remind them to include a nest at the end, and if their turtle crosses any roads, they can add a "Turtle Crossing" sign, too.
3. Give students a chance to share their maps and the accompanying story with partners or in small groups.

Extension: Continue to imagine turtle journeys by adding plastic turtles and other related props to sand/water or block play for younger students, or by asking older students to write a story from the perspective of the turtle in their map.

Habitat Hop

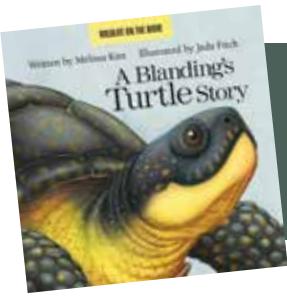
Objectives: Students will experience the need for habitat connectivity and discuss the effects of fragmentation.

Materials: Carpet squares, hula hoops, or some other material that can be used to create designated areas for students to stand in/on, music player

Procedure:

1. Begin by reviewing the components a habitat must include to meet an animal's basic needs (food, water, shelter). What happens if an animal cannot meet those needs?
2. Create a large circular path using the hula hoops or carpet squares, which represent wetland habitat for Blanding's Turtles. Explain to the students that they are Blanding's Turtles and that although they can travel fairly long distances over land, they need to be able to return to wetlands to feed or brumate. When the music is playing, they should follow the circular path. When it stops, they should freeze.
3. Practice starting and stopping the music a few times, then begin to take away some of the habitat. You can explain that the wetlands in these areas were replaced with new buildings. Continue to play for several rounds, taking away more habitat each time. If students find themselves out of the designated areas when the music stops, they are out.
4. When the remaining habitat gets crowded to the point of becoming uncomfortable, or many of the turtles are "out," pause the game to debrief. What happens when the turtles have to travel very long distances between habitats? How might this happen in real life?
5. Finish by brainstorming some ways to restore or protect the habitat that was lost. Maybe a town can create a wildlife sanctuary or a conservation group can work to restore habitat. Return the squares and allow the turtles to play another round or two with more available habitat.

Extension: Blanding's Turtles can walk more than a mile to find a place to lay their eggs. Visit a track, or better yet, a nature trail, and see how long it takes to walk one mile. How long do you think it would take a turtle?



Lessons & Activities

Unit III: People and Turtles

GUIDING QUESTIONS

How can people help turtles?

NGSS Performance Expectations

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to fit their needs.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

SS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

K-2-ETS1-1. Ask questions, make observations, and gather information about a new situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Wildlife Crossings

Objectives: Students will compare the steps people take to be safe when crossing roads with the challenges faced by animals that need to cross roads, and will design road crossings for an animal of their choice.

Materials: photos of wildlife road crossings (see online resources), paper, drawing implements

Procedure:

1. Begin by reviewing how to safely cross the street (look both ways, cross at a crosswalk, etc.). What else helps keep people safe when crossing? (signs, bright clothing, flags, etc.). Can animals do or use those things?
2. Look at the two pictures in *A Blanding's Turtle Story* that show the turtle crossing the road. What do you notice? Make sure to point out the "Turtle X-ing" sign on pages 3-4. Pages 7-8 show a special crossing tunnel for reptiles and amphibians. Turtles won't go into dark tunnels, so they need a tunnel that lets in sunlight. A fence on either side funnels them towards the safe crossing.
3. Show students pictures of other wildlife road crossings and discuss the features that make them unique and suited for the animals that use them. Have students choose an animal that might need to cross the road and design a crossing for that animal. Encourage them to think about how that animal moves, when it would need to cross the road, and what might motivate or deter it.
4. Give students time to share their designs with others in pairs or small groups.

Extension: Use the crossings that students designed in step 3 as blueprints and try to build them! Provide blocks, Legos, clay, play dough, or other building materials, along with plastic animals and even some cars or train tracks.

Turtles in our Town

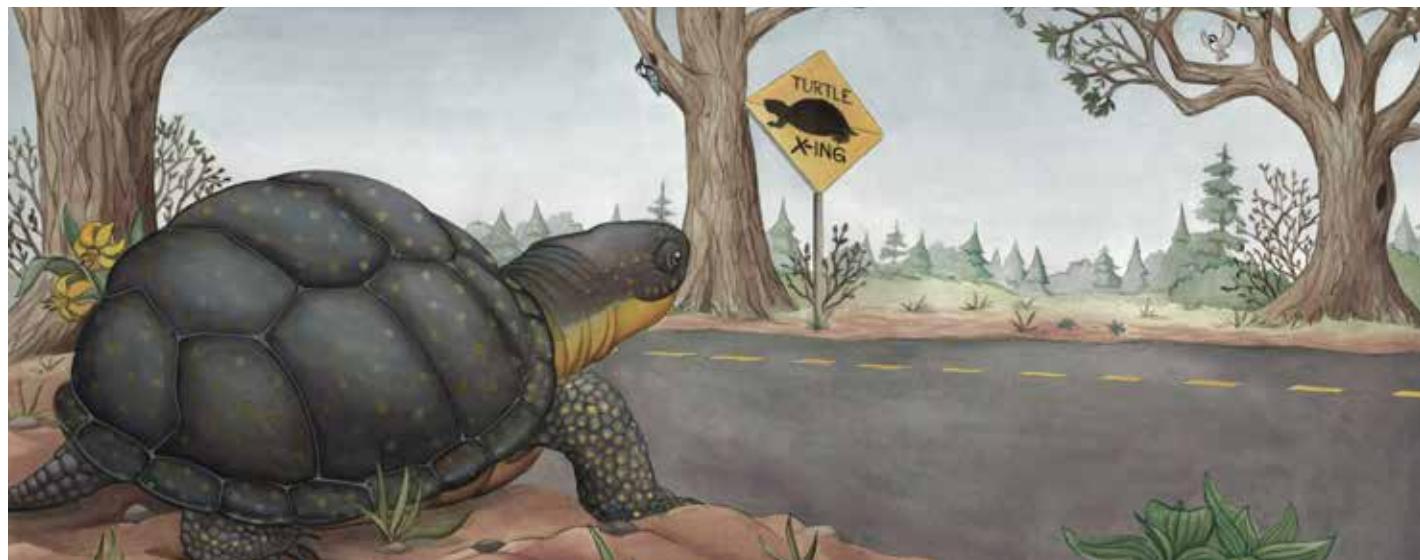
Objectives: Students will work together to draw a map of an imaginary town that meets the needs of a family, a store owner, and a Blanding's Turtle

Materials: "Turtles in our Town" role cards (see appendix), large paper for each group of three, drawing implements

Procedure:

1. Divide the class into groups of three. Explain that each group of three will include a family, a store owner, and a Blanding's Turtle, and that they all need to work together to create a town. Each person will get a card that explains their role and the three things that they need in the town. For example, the family needs a place to live (house, apartment, etc.), a school, and a playground. They will need to work together to create a town that works for the whole group.
2. Give the students time to discuss and draw their town plans. Make sure they remember to connect the buildings with roads, and encourage them to name their towns and add detail.
3. Have each group give the rest of the class a "tour" of their town. How did different groups approach meeting the needs of each group member?

Extension: Can turtles usually speak for themselves? What other animals might wish to have a say in the town's plans? Work together to create a list of their needs and try to incorporate them into the towns.



Spread the Word about Turtle Crossings

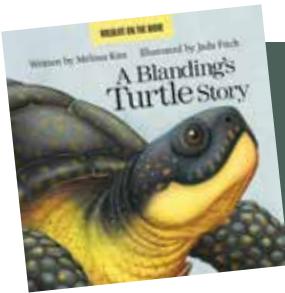
Objectives: Students will research the turtle species found in their community and will create posters or other displays to increase community awareness of these animals along roadways

Materials: poster board, writing and drawing implements, field guides or other resources

Procedure:

1. Use the field guides to figure out which species of turtles are found in your area. Although Blanding's Turtles only live the southernmost parts of Maine, most turtles found in the state face similar challenges with respect to fragmented habitat and road crossings.
2. Have students choose one or more of the species they learned about in the previous step and create posters that share important information about the turtles, and what to do if you see a turtle in the road (see the Take Action section for more information).
3. Display the posters in a public space, such as your school's corridors or the public library.

Extension: How else could you spread the word?
See the Take Action section for more ideas.



Take Action

Watch for wildlife! Maine Audubon's Wildlife Road Watch is a citizen science project that compiles map-based data on attempted road crossings by wildlife. Visit maineaudubon.org/projects/road-watch/ to view a map of observations or to input your own.

Spread the word about slowing down. Work with your town, school, or community to encourage safe driving for the sake of wildlife and pedestrians! In addition to posters, students could write letters to the editor of a local newspaper, plan and host a road safety education event, or create PSAs that cover what to do if you find a turtle in the road.

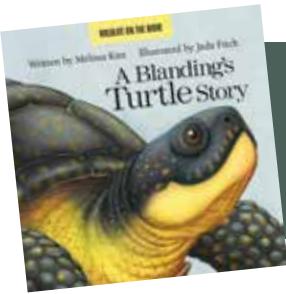
Protect and restore habitat. Contact Maine Audubon or check with other conservation organizations in your area to see if there are opportunities to help with invasive species removal, litter cleanup, or restoration projects.

Help on the Big Night! Vernal pools are temporary pools of water that form in the spring. Many amphibians lay their eggs in vernal pools because there are no fish to prey on the eggs, although there may be hungry Blanding's Turtles! The first warm and rainy spring night is often called the Big Night because droves of these amphibians move from their overwintering places to vernal pools. If there is a vernal pool in your community, consider joining or organizing a volunteer effort to help escort amphibians across the road during this important migration event.

What to do if you see a **TURTLE IN THE ROAD**

If you spot a turtle in the road or along the side of the road and can safely stop to check on it, you'll want to keep in mind the following:

1. That turtle knows where it wants to go! If it's in the road or about to cross, help it cross safely in the direction it was already going.
2. If you need to move the turtle, hold it by encircling the shell with both hands. Never pick a turtle up by its tail!
3. However, if the turtle is a snapping turtle, do not try to pick it up. Instead, you can "herd" it out of harm's way by walking behind it or gently nudging it with a stick.
4. Lastly, please report your encounter to Maine Audubon's Wildlife Road Watch project at maineaudubon.org/projects/road-watch/



Take Learning Outside

To extend your study of turtles and their habitat to the outdoors, try some of these ideas:

Fall

- Animals that hibernate or brumate are busy eating as much as they can before winter! Watch for woodchucks feasting on fallen apples or turtles and frogs snapping up insects. How are other animals getting ready for winter?

Winter

- Watch for ice to form on ponds and lakes. What's happening underneath the ice?
- Turtles are cold-blooded, so their body temperatures decrease along with air and water temperatures in the winter. However, warm-blooded animals that remain active need to eat high-energy food to maintain their body temperatures. Try putting out a suet feeder for the birds and watch to see who visits it.

Spring

- Lengthening days and warmer air and water temperatures mean it's time for turtles to emerge from brumation. What other signs of spring can you observe?
- Birds, reptiles, and amphibians are busy laying their eggs. Watch for birds engaging in courtship and nesting behavior like singing, defending territories, or carrying nesting material. Visit a pond or wetland to look for amphibian eggs, and keep an eye out for turtles on the move!

Summer

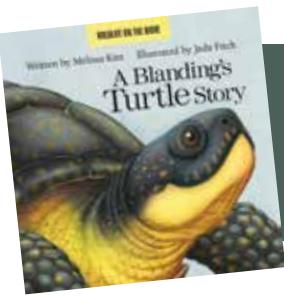
- Warm summer sunshine brings many turtles out of the water to bask in the sunshine. Look for turtles on logs or swimming near the surface of a pond near you.
- Blanding's Turtles eat a variety of aquatic creatures, including insects, snails, and tadpoles. Summer is a great time to scoop for these creatures.

The BENEFITS

The benefits of taking your students outside are multi-fold. Getting students moving and exploring in different settings offers physical benefits and gives them a chance to recharge. Connecting what you do outside with what happens in the classroom provides opportunities for students to excel and engage in different ways. Perhaps most importantly, it also provides a framework of shared experiences from which you can all work. Young children learn best from firsthand experience, but may not have ever looked under a fallen log or followed a bee from flower to flower.

These benefits are magnified if you make outdoor learning a regular habit. Going outside and, if possible, visiting the same location throughout the year will highlight seasonal changes and spark lines of questioning that link to bigger ecological concepts. For example, hibernation and migration make much more sense if you've noticed insects and flowering plants getting scarcer and felt temperatures getting colder throughout the fall. Furthermore, as you and your students become more comfortable with the routines and expectations associated with outdoor learning, it will get easier and you'll be better able to take advantage of teachable moments as they arise.

The ideas here are only a starting point. At Maine Audubon, we want all educators to feel confident and supported in creating these types of experiences for their students. We provide this support through classroom visits that can serve to introduce content, field trips and field studies at our sanctuaries or local parks, curricular coaching, teacher workshops, and rentable materials through our Educator Resource Center. Visit maineaudubon.org for more information.



Appendix

Maine Early Learning and Development Standards

Earth Science:

Demonstrates, through observation and investigation, an understanding that human action impacts the earth (i.e., use of resources and recycling, the process from cutting trees to recycling paper)

Life Science:

- Uses senses to observe and describe properties of familiar plants and animals
- Uses vocabulary for naming plants and animals moving beyond generic labels (e.g. “bug”) to names of specific creatures (e.g. “ant,” “beetle”) and uses symbols or icons to identify where they see such creatures
- Develops plans, based on observations and guided inquiry, to care for plants and animals in the classroom and surrounding area
- Observes and describes animals in his/her immediate environment to learn what they need to live
- Uses nature journals, tally sheets and resource materials, with support, to summarize observations (e.g., make connections between the types and numbers of birds coming to a feeder in summer or winter by counting and categorizing)
- Listens to accounts and discusses pictures found in fictional or non-fictional books or media to enhance vocabulary and concept knowledge of living things and their environments
- Identifies problems affecting the lives of plants and animals (including themselves) and generates possible solutions
- With teacher support, creates drawings or models for possible solutions
- Compares tools or solutions and reflects on what works well
- Designs and creates materials to change the behavior or incidence of creatures (e.g. bird feeders, butterfly gardens in places

Book Lists: Children’s Books

- *A Turtle’s Life* by Nancy Dickmann: very simple text paired with photos that describe a Box Turtle’s life cycle.
- *All Eyes on the Pond* by Michael J. Rosen: each two-page spread includes a rhyming couplet that describes a different pond animal’s unique perspective
- *Big Night for Salamanders*: not about turtles, but a good introduction to “big night” and vernal pools
- *Box Turtle at Long Pond* by William T. George: a Box Turtle searches for food and interacts with many other animals interested in eating the same things along the way
- *Follow the Moon Home: A Tale of One Idea, Twenty Kids, and a Hundred Sea Turtles* by Philippe Cousteau: an inspiring story of a class in South Carolina that mobilizes a town to take action to help Loggerhead Sea Turtles; includes a “letter to young activists” at the end
- *Melvin and the Boy* by Lauren Castillo: a boy who wants a pet has high hopes when he takes a Box Turtle home from the park, but instead decides to return the turtle and visit it in its own habitat; the charming illustrations help make the point without being too didactic
- *My Little Book of Painted Turtles* by Hope Irvin Marston: a year in the life of a group of Painted Turtles, accompanied by plenty of action and sound words that make for a fun read aloud
- *Scoot!, Turtle Splash, and Pond Babies* by Cathryn Falwell: an engaging trio of books that look at a pond and the creatures that live there; each book features lovely collage-style illustrations and extra information, activities, and projects
- *Turtles and Snails: A Scholastic First Discovery Book*: detailed illustrations and text that highlight the diversity and life cycles of these two groups of animals that use shells for protection
- *A Place for Turtles* by Melissa Stewart: Lovely illustrations and includes many different species, including Blanding’s; this book touches on a huge array of threats that humans pose to turtles and while it does include solutions, could be discouraging unless framed carefully and paired with direct action

Book Lists: Field Guides and Reference

- *National Audubon Society Field Guide to North American Reptiles and Amphibians*: includes a section of color photographs that are easy to flip through, along with species profiles that include range maps, descriptions, and other information about habitat and habits
- *Maine Amphibians and Reptiles*, edited by Malcolm L. Hunter, R., Aram J.K. Calhoun, & Mark McCollough: a comprehensive account of each species found in Maine; includes a CD of frog and toad sounds

Adult Resources

- *Balanced and Barefoot: How Unrestricted Outdoor Play Makes for Strong, Confident, and Capable Children* by Angela Hanscom: written by a pediatric occupational therapist (and founder of TimberNook), an easily accessible description of the developmental benefits of outdoor play. A good one to recommend to parents
- *Nature Preschools and Forest Kindergartens: The Handbook for Outdoor Learning* by David Sobel: engaging accounts from existing programs along with guidance on everything from curriculum development to risk assessment
- *Hug a Tree and Other Things to Do Outdoors with Young Children* by Robert Rockwell, Elizabeth Sherwood, and Robert Williams: a classic compilation of outdoor activities for young children
- *Project Seasons: Hands-on Activities for Discovering the Wonders of the Natural World* by Deborah Parrella: a compendium of seasonal activities

Songs and Fingerplays

I'm a Little Turtle (to the tune of "I'm a Little Teapot")

I'm a little turtle with a shell

I have four legs, a head, and a tail When I get so scared that I want to hide I pull my head and my legs inside

I'm a little turtle, look and see When the sun's out on a rock I'll be Soakin' up the sunshine and warming my toes But if something scares me, SPLASH, I'll go

Rock-a-bye Turtle (to the tune of "Rock-a-bye Baby")

Rock-a-bye turtle, in a white egg

When the time comes, your white egg will crack
When the egg cracks, you must be real quick
Run to the water (ocean) quicker than this!

Here is My Turtle (fingerplay)

Here is my turtle (*form fist and extend thumb*)

He lives in a shell (*put thumb inside fist*)

He likes his home very well (*nod*)

He pokes his head out (*pop out thumb*)

When he wants to eat (*move thumb around*)

And pulls it back in (*put thumb back in*)

When he wants to sleep

TURTLES



Common Snapping Turtle



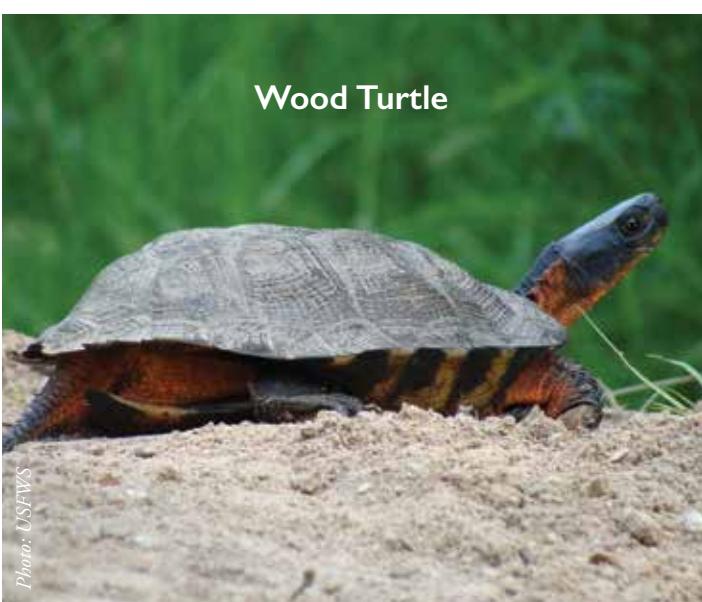
Common Musk Turtle



Painted Turtle



Spotted Turtle



Wood Turtle



Blanding's Turtle

TURTLES



DESIGN A TURTLE

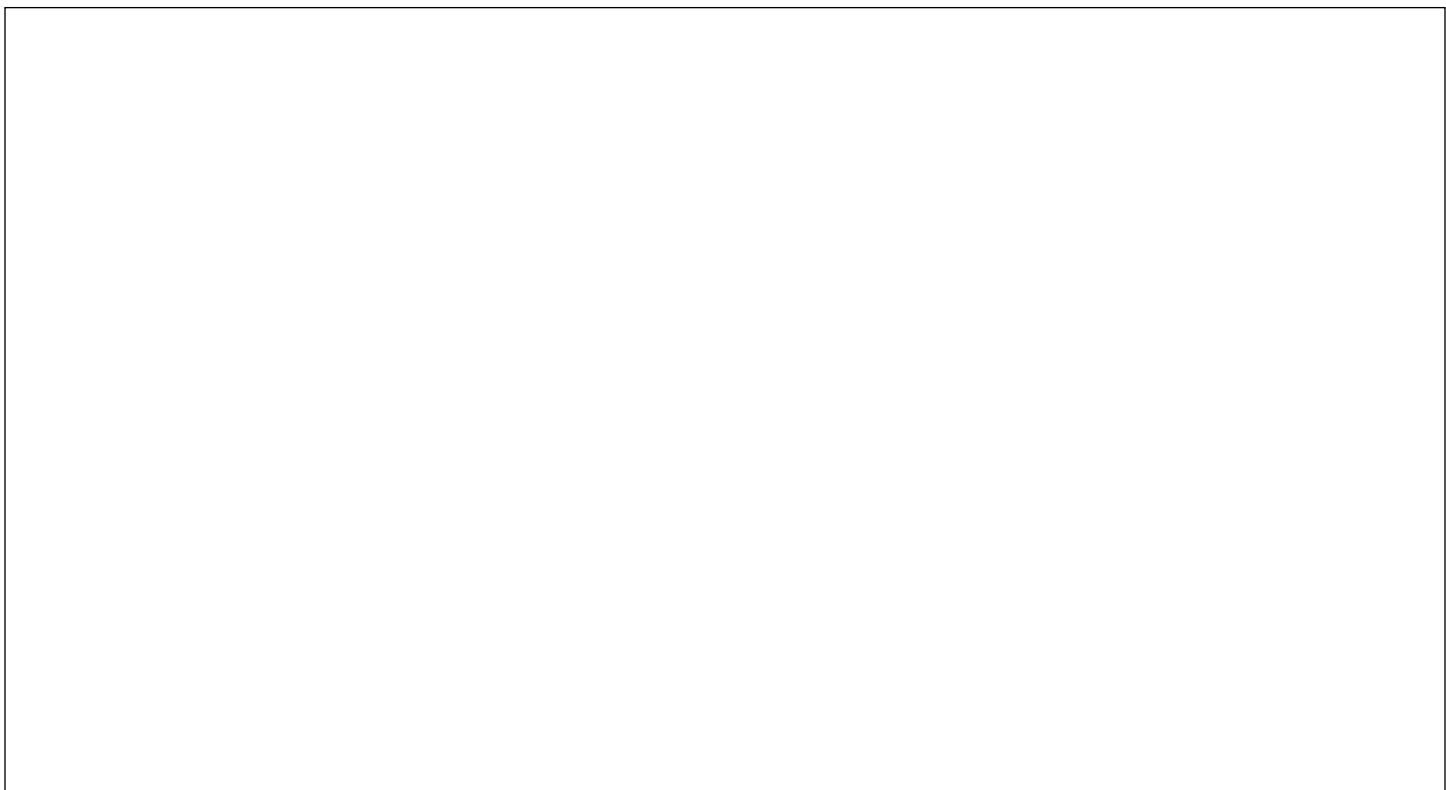
Species name: _____

Where does your turtle live? _____

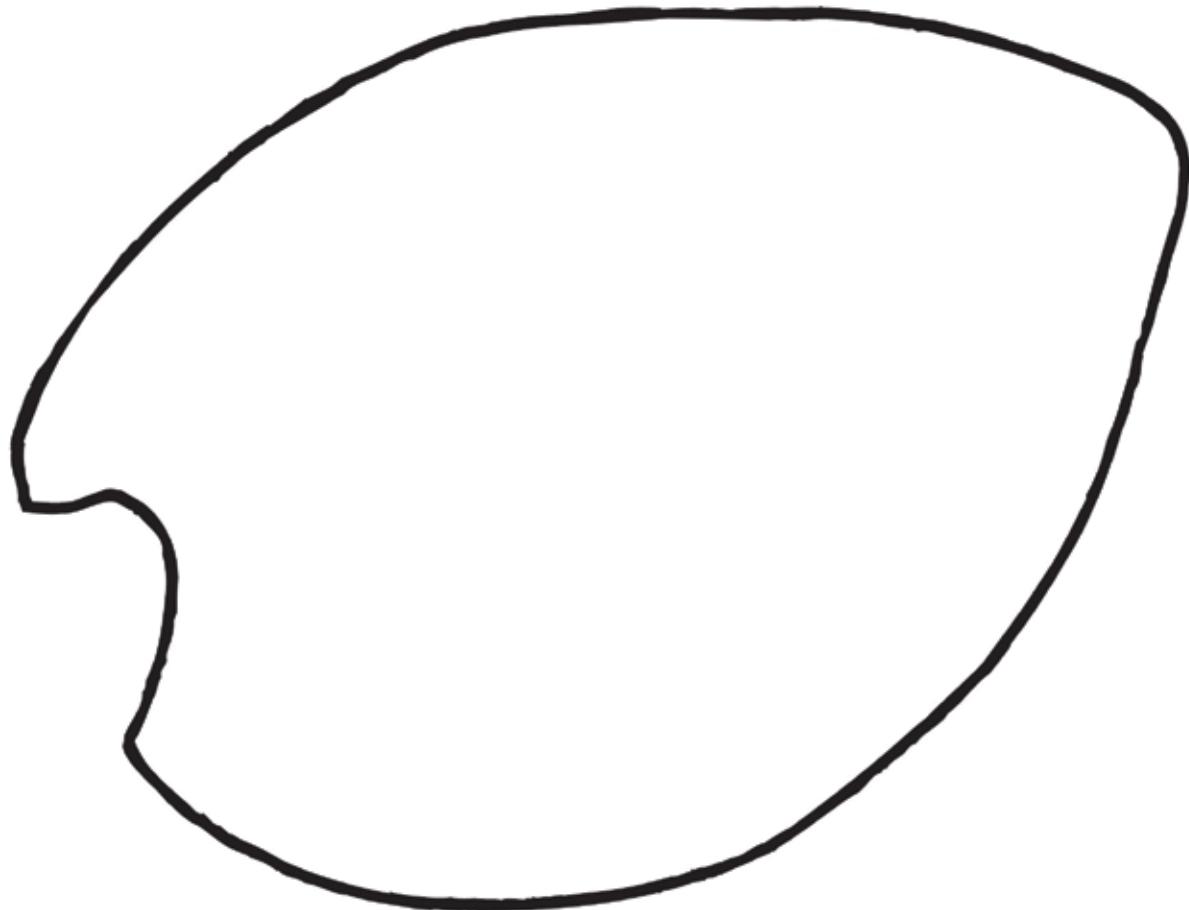
How does it move? _____

What does it eat? _____

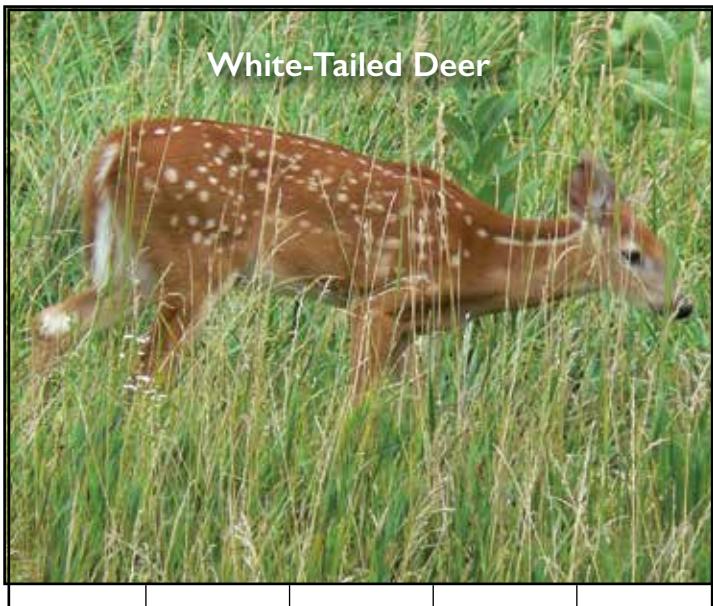
Draw your turtle:



TURTLE SHELL TEMPLATE



RACE TO RAISE YOUNG



x				
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x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	x
x	x	x	

FALL

WINTER

SPRING

SUMMER

CUTOUTS FOR TURTLE MAPS



TURTLES IN OUR TOWN: ROLE CARDS



We need a:

- place to live
- school
- playground



I need a:

- store
- parking lot
- farm



I need a:

- vernal pool or pond
- marsh
- place to lay eggs

