Connecticut Department of ENERGY & ENVIRONMENTAL PROTECTION

Chimney Swift Grade 1 and 2 School Curriculum

Introduction

The chimney swift is a small neo-tropical migrant that breeds in Connecticut. Since 2002, chimney swifts have been declining at one of the highest rates (7%) among passerines in the Northeast, placing them on the Birdlife International Red List as near-threatened. For this reason, it is important to learn more about the chimney swift, especially because it is dependent on man-made structures (chimneys) for both its nesting and roosting needs.

Learning Objectives of the Chimney Swift Curriculum

- To educate students about chimney swifts: what they look like, where they live, how they have adapted to their environment, and the problems they face.
- To create awareness of chimney swift habitat through a field trip to observe a chimney swift roost or nest.

Below are some of the Connecticut state benchmarks that may be met in the Chimney Swift Curriculum:

State Benchmarks for K-2 Science Curriculum

A INQ.1 Make observations and ask questions about objects, organisms, and the environment.

A INQ.2 Make predictions based on observed patterns.

A INQ.3 Present information in words and drawings.

A INQ.4 Use nonstandard measures to estimate and compare the sizes of objects.

Vocabulary:
Neo-tropical migrant
Chimney swift roost
Adaptation

Lesson 1: What is a chimney swift? How is it unique from other birds?

Background Information

Chimney swifts are small birds that are most commonly seen in flight. They have often been called “flying cigars” because of their small tube-like bodies and short tails. They are about 5 inches long, and are sooty gray to black in color with a lighter silvery-gray throat. Their distinctive flight is bat-like, with quick flickering wing beats.

Chimney swifts are neo-tropical migrants that are protected by the Migratory Bird Treaty Act. They winter primarily in the Amazon Basin and summer in central and eastern North America. Swifts historically nested in large hollowed-out trees, but had to adapt to using man-made structures (chimneys) after the ancient forests were cut. The birds are now dependent upon our chimneys for nest and roost sites. Unfortunately, many homeowners cap their chimneys or build

homes that either do not have chimneys or have chimneys that are too small for the swifts' nesting needs. This lack of suitable chimneys presents a problem for Connecticut's chimney swift population.

Chimney swifts are unusual in many ways. They do not perch or stand like other birds because their legs are too short. This feature makes it more comfortable for clinging to vertical surfaces, like a chimney wall. Chimney swifts fly almost constantly. Specially designed wings enable them to fly without using a lot of energy. The birds even bathe and eat on the fly, and they eat a lot. Swifts consume almost a third of their body weight in flying insects each day. Small cup-like nests are built in chimneys, fashioned from tips of branches broken off in flight and held together with saliva. Chimney swifts usually lay from 3 to 5 eggs. The young are born completely naked and helpless. However, one day after hatching, they can cling to the wall of a chimney. Young chimney swifts fledge in about a month.

Chimney swift numbers are in decline. Reasons are not entirely known, but the decline has been attributed to extreme weather events, contaminants in the environment, and unknown conditions during migration and on the wintering grounds. In Connecticut, you can help by protecting and monitoring chimney swifts in nesting and roosting chimneys. Monitoring chimney swifts will help researchers understand why the birds are declining.

Lesson Objectives:
Students will:

- Learn how to identify a chimney swift by its unique features (size, color, beak, feet, flight pattern).
- Identify how a chimney swift is uniquely adapted to its environment.

Method:

- Students will compare chimney swifts to other birds by using bird mounts, skins, or pictures (or combination of the above).

Procedure:

1. Students should sit together at small tables. Give each group a chimney swift and two other birds to look at and compare.
2. Have the students identify which characteristics the birds have in common. How many characteristics are different? What characteristics are unique to the chimney swift?
3. Teacher-led discussion: What is adaptation? Give the class some common examples that they can relate to. Have students look at their birds again. Can they come up with any ideas about how their birds have adapted differently. Looking at the beaks, can they guess what the birds might eat? Where they might live? How they fly?

Extensions:

1. Have students draw and write about a bird that might live in their backyard or neighborhood. How is it different from other birds? What does it eat? Where does it live? How has it adapted to its environment?
2. Collect pictures of birds from all over the world. Create a collage or poster showing the diversity of birds.

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Lesson 2: Chimney Swifts: What they eat, where they live, and problems they face
(*This lesson would be taught by a visiting biologist or Master Wildlife Conservationist*)

Lesson objectives:

- Be able to discuss where a chimney swift nests and where it roosts.
- Be able to discuss what and how much a chimney swift eats.
- Be able to discuss some of the problems that chimney swift face today.

Method:

- Show students a short presentation/video of chimney swifts: flight patterns, roosting behaviors, etc.

Activity #1: This exercise demonstrates what it means for chimney swifts to eat enough food that adds up to one-third of their body weight each day. Students will use their own bodies as examples.

Procedure:

1. Students should sit at small tables. Give each group a scale for measuring grams and a food object (something small, like M & M candies, would work well), plus a handout for recording information.
2. Tell students the cool fact that chimney swifts eat one-third of their body weight each day and that they are going to figure out what that means.
3. Ask the groups to weigh their "M & M" and record its weight on the handout.
4. Next, ask if any volunteers from the class would be willing to share their weight for the exercise. Choose a student. Record his/her weight on the blackboard. Make note that the student's weight is in pounds and the M & M weight is in grams. Why is there a difference? Is there a way to convert pounds into grams? (Teacher note: 1 pound is equal to 453.6 grams. Use a calculator to do the conversion.)
5. Invite the class to predict how many "M & M's" the student would have to eat each day. Record predictions.
6. With the teacher's help, ask the students to figure out the correct amount of "M & M's" the volunteer would have to eat for his/her body weight. (If the students do not have the math skills to do this, perhaps a chart could be made that would allow them to find the answers. For example, if a student weighed 50 pounds, he/she would have to eat X # of apples.)
7. Do the exercise again with another student.
8. For a follow up with chimney swifts, give them the weight of the chimney swift and weight of a fly. Ask them to predict how many flies a chimney swift would have to eat? Calculate the answer together. Do the same for beetles.

Discussion:

What did you learn from your experiment? In what ways did it surprise you? Would it be hard to eat that many "M & M's" in a day? What kind of problems might a chimney swift have trying to forage for food every day? Do you think chimney swifts would want to eat flies or beetles or both? Why?

Activity #2: This activity illustrates some of the problems that chimney swifts face in trying to find suitable roosting or nesting habitat.

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Procedure:

1. Find an open space in the classroom that is big enough for the students to spread out.
2. Give each student a gym spot to place on the floor. This will represent each student's own nest spot. Tell the students that there will also be a home base, which is a roost spot.
3. Next, ask them to move to a new nest spot. At the same time, remove one or two of the nest spots. Say to the students, "Nesting is no longer available here as this chimney was just capped." Let the students know that if they cannot find a nest spot, they can roost on "home base" in the roosting chimney.
4. Do another round or two in the same manner. You can vary what is said. An alternative might be, "This chimney was just rebuilt and is now too small for the chimney swifts. You need to find a new home."
5. Finally, after a few rounds, have only one roost spot where all the students must fit together. Ask them to notice how they feel at the moment.
6. Ask the students to then take a seat on the floor.
7. Discussion: How did it feel to share that space? What were the advantages to being all together? What were the disadvantages? If you were a chimney swift, where would you want to be if it was cold and rainy? When you had to move to the roost spot, in what ways did you have to adapt to your new space? Was that easy or hard? What problems can you think of that could happen to a chimney swift if all chimneys were to be the wrong size. What can we do to help the chimney swifts?

Evaluation:

1. Identify five cool facts about chimney swifts.
2. Identify something that might help chimney swifts in our environment.

Extension Activity:

- Make a poster about chimney swifts that would help educate your family or neighbors about the birds and the problems they face.
- Make a chimney swift crown hat. (Make a band around the head with a brick pattern. Cut out swifts and attach them to the head "chimney" band via pipe-cleaners so that it appears that swifts are flying around your head.)
- Create a story about a chimney swift and what happens to it when it comes to your town.
- Plan an evening field trip for students and their parents to visit a chimney swift roost site.

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