Learning about Forests (LEAF) Monthly Planning Guide for LINKS Chapters

December 2023

Overview

Monthly Theme	Environmental Awareness Days	Cultural and Identity Awareness Days
For the Birds: Forest Habitats and Biodiversity	International Volunteer Day (5) World Soil Day (5) Christmas Bird Count	Universal Human Rights Month Rosa Parks Day (1) International Day for the Abolition of Slavery (2) PEARLS Founder's Day (7) Kwanzaa (26-Jan 1)

Elementary	1. Activity 1: Observing Forest Biodiversity 2. Activity 2: Butterflies and Moths in Winter 3. Activity 3: Christmas Bird Count
Middle and High School	1. Activity 1: Observing Forest Biodiversity 2. Activity 2: Christmas Bird Count

Mentoring Moment Suggestion

Seek out passionate volunteers, activists, elders, and Indigenous members of the community, consider accessing the expertise of wildlife biologists, conservation scientists, ornithologists, birders, naturalists, hikers, foragers, or land managers.

For the Birds: Forest Habitats and Biodiversity

ELEMENTARY ACTIVITIES

SUMMARY

While taking walks in woodlands, parks, or near trees, youth will examine how plants and animals depend on forest ecosystems—including both living and dead trees. They will also prepare for the annual Audubon Christmas Bird Count. Students will also study the life cycles of a few butterfly and moth species and learn how they adapt to the winter season.

MATERIALS

- *Reading*: Tree Death Brings New Life (attached)
- *Reading:* This Log is Alive (attached)
- *Journal Activity:* Study a Snag (attached)
- *Video*: Pileated Woodpecker Building a Nest Cavity
- Video: Acorn Woodpecker Family Guards their Stash
- Video: Cavities in Snag Trees
- Christmas Bird Count info sheet
- *Guide:* NWF Bird Identifier (attached)
- Binoculars
- Field Guides—birds, mammals, insects, trees in winter
- Journals, sketch pads
- Pencils
- Cameras (if available)

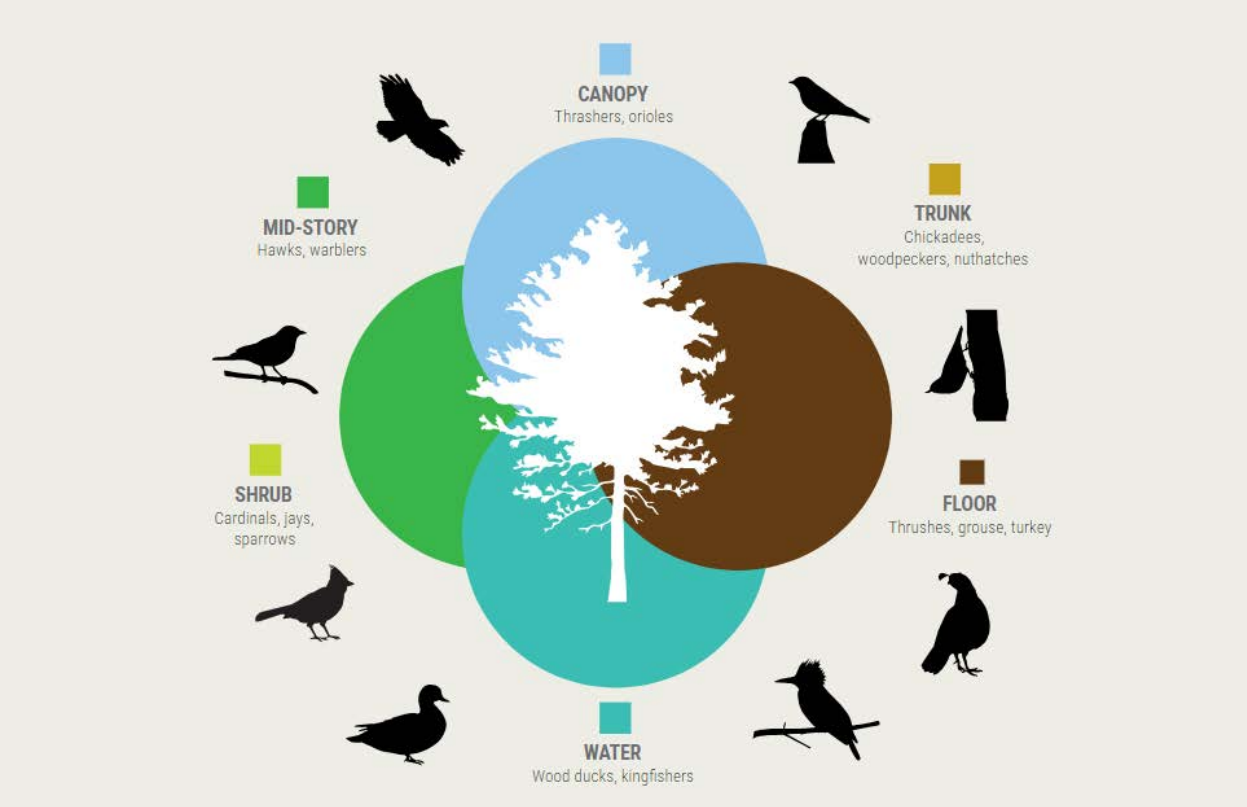
BACKGROUND[1]

Forests provide habitat for a wide variety of birds, mammals, reptiles, amphibians, and even fish. Every organism plays an important role in the ecological web that is the forest. Different types of forests support different numbers and types of animals. Each animal species is uniquely adapted to its environment through its morphology, physiology, and behavior.

Birds are essential components of forest ecosystems. Small fruit-eating and insectivorous birds disseminate seeds and help regulate insect populations. Large predatory birds control small-mammal populations, and birds serve as food for other species, including humans. Some birds, such as woodpeckers, construct nest cavities that later serve as shelter for other animals. Scavenging birds help decompose animal and plant material on the forest floor. And, the beauty of bird song and flight provides incomparable aesthetic value.

[1] https://apps.fs.usda.gov/forest-atlas/lives-introduction.html

All types of forests are important for birds, and each bird species is adapted to the forest in which it resides. Suitable bird habitat provides food, water, shelter, nest sites, song posts, and perching sites. Some species, such as mockingbirds and crows, are habitat generalists: they occupy a wide range of habitats and are not dependent on any one type. Others, such as the red-cockaded woodpecker and Kirtland's warbler, are habitat specialists and require a specific habitat type or feature for all or a critical part of their life cycle. The red-cockaded woodpecker, for example, makes its nest only in living pine trees.



FOREST BIRD HABITAT: Each bird species may be characterized by a general habitat type. But many species use different features of a forest during different life stages, requiring a diverse set of characteristics even for an individual species. Species may be generalists during part of the year, such as in winter, but specialists during other life stages, such as during breeding season. Thus, depending on the life stage, a given species may occupy differing locations in the forest. This graphic provides examples of types of birds most likely to be encountered in a given forest vegetation layer for at least some portions of the bird's life cycle.

Activity 1: Observing Forest Biodiversity

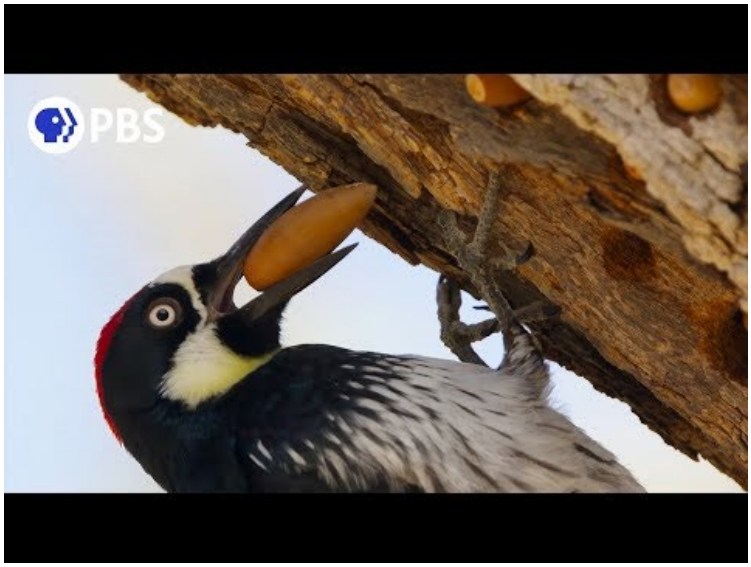
WHAT TO DO

Explain to students that they will be exploring forest biodiversity and examining how trees can provide habitat for wildlife and other plants—birds, mammals, insects, and more—during

this activity. While taking walks in woodlands, parks, or near trees, they will observe how plants and animals depend on trees in many ways.

1. Engage students in a discussion about how the plants and animals in a forest ecosystem depend on trees.
    a. What are some plants and animals that depend on trees?
    b. What do trees provide for these plants and animals (food, cover, and places to nest and raise young)?
2. Allow time for students to explore some of the following resources that detail how wildlife and other organisms depend on trees (both living and dead trees) for their habitat.
    a. *Reading*: Tree Death Brings New Life (attached)
    b. *Reading:* This Log is Alive (attached)
    c. *Video:* Cavities in Snag Trees
    d. *Video:* Pileated Woodpecker Building a Nest Cavity

    e. Video: Acorn Woodpecker Family Guards their Stash



3. ***Take a walk.*** Visit a local park, forest, or garden with the group.
4. Pass out journals, sketch books, or attached worksheets so students can use them while out in the field.
5. Guide the group through different prompts or spend time in front of specific trees to inspect them closely. Encourage students to sketch or take notes in their journals or on the activity pages.
6. ***Look up in the tree canopies.*** Can you spot any bird nests, wasp nests, squirrel nests, cavities, or holes in the tree?
7. ***Examine the forest floor.*** Turn over logs, rocks, or gently look under the leaf layer.
8. Reflect on what students observed. Ask a few students to share their observations or sketches. Use these questions to guide a discussion:
    a. Did you see signs of life on the trunk, branches, roots, and leaves?
    b. How is a tree affected by the plants and animals that live on it? (they may benefit, harm, or be neutral to the tree)
    c. What signs of decomposition did you notice?

Activity 2: Butterflies and Moths in Winter

Youth will compare and contrast the winter adaptations of eight butterfly and moth species.

WHAT TO DO

1. Discuss the life cycles of butterflies and moths. Explain to them that in today's activity they will explore how butterflies, moths, and bees survive winter and get ready for spring.

- Ask students if they see as many animals outside during winter as in the other seasons. Why not? Where are they? Some animals hibernate while others migrate. Why? Think of some animals that hibernate (bears, skunks, frogs, chipmunks, etc.) and others that migrate (birds, monarchs, whales, etc.). Which animals have you seen in the winter? What about insects? Where are they?
- Many insects like bees, butterflies, and moths hibernate in the winter or even go through a stage where they stop growing.

2. Print and cut out the Butterfly in Winter cards (attached).
3. Give students time to read the backs of the cards and look at the pictures.
4. Once students have read all the cards, they can complete the Butterfly Adaptation worksheet (attached).
5. Use the following questions to reflect on what students have learned and guide a discussion.

Discussion Questions:

1. What are some ways butterflies survive winter?
2. Which of these butterflies have similar winter adaptations?
3. What are some of the benefits and risks to each winter adaptation?

4. Which of these butterflies may have a head start and appear earlier in spring? Why?
5. Which butterflies may not appear until later in the spring or summer? Why?
6. What are some ways we can help these butterflies in the winter?

Activity 3: Audubon Christmas Bird Count

-Info sheet/flyer attached

Audubon's 124th Christmas Bird Count will be held from Dec 14, 2023 to January 5, 2024!

• https://www.audubon.org/conservation/join-christmas-bird-count

WHAT TO DO

Gather your friends, families, binoculars, and bird guides! Here's what you need to know to participate in your town.

Follow these steps to participate in Audubon's Christmas Bird Count:
Step 1: Read **these details** to become familiar with Audubon's Christmas Bird Count.

Step 2: Check out the map to find a count near you. Green and yellow circles are open to new participants, and red circles are full.

Step 3: To arrange participation contact compilers by email in advance of count day by using the information from the circle pop-ups on the map.

Step 4: **Sign up for American Birds** so you can hear about the results of the Christmas Bird Count and other Audubon community science programs!

Step 5
Already signed up for a count? Then head over to our **CBC Live tracker** to see photos posted from others who are scouting for or participating in the Christmas Bird Count, and upload your own photos!

For the Birds: Forest Habitats and Biodiversity

MIDDLE AND HIGH SCHOOL ACTIVITIES

SUMMARY

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- *Reading:* This Log is Alive (attached)
- *Reading:* Snag Trees and Healthy Ecosystems (attached)
- *Video*: Pileated Woodpecker Building a Nest Cavity
- Video: Acorn Woodpecker Family Guards their Stash
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BACKGROUND[2]

Forests provide habitat for a wide variety of birds, mammals, reptiles, amphibians, and even fish. Every organism plays an important role in the ecological web that is the forest. Different types of forests support different numbers and types of animals. Each animal species is uniquely adapted to its environment through its morphology, physiology, and behavior.

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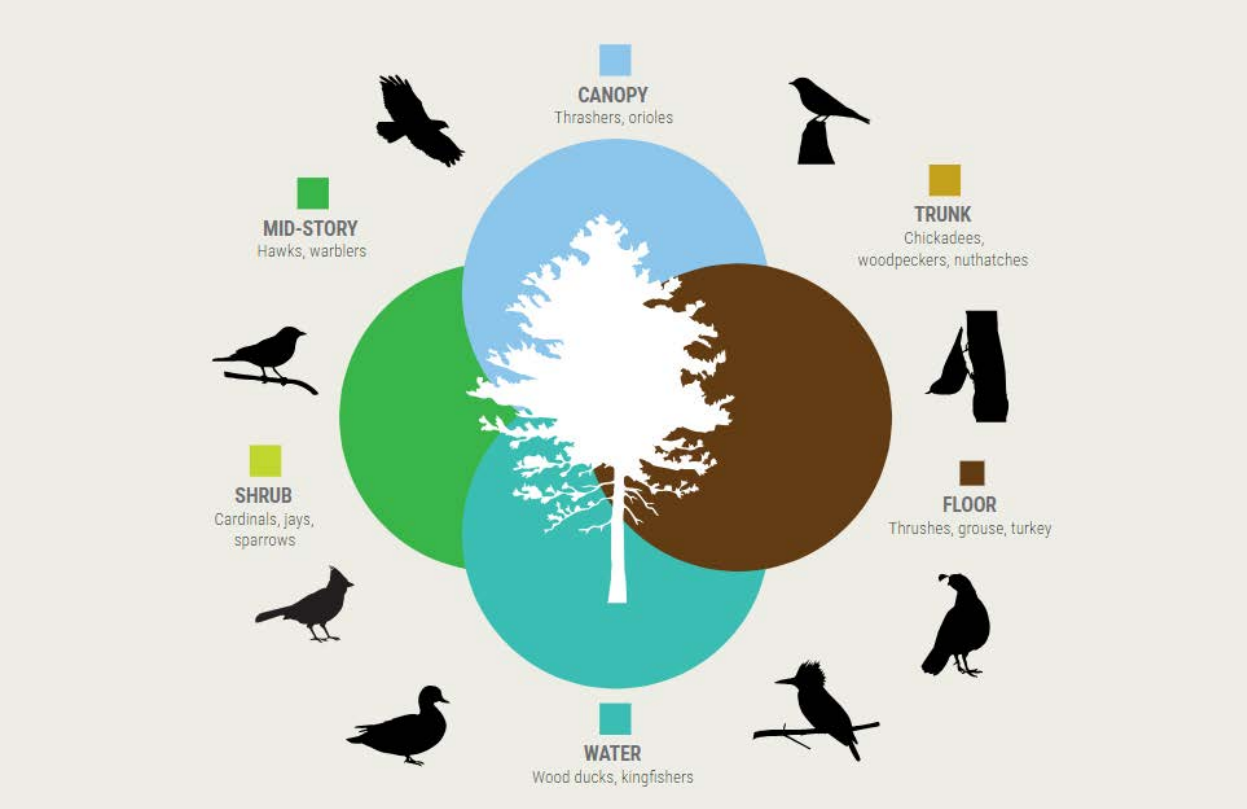

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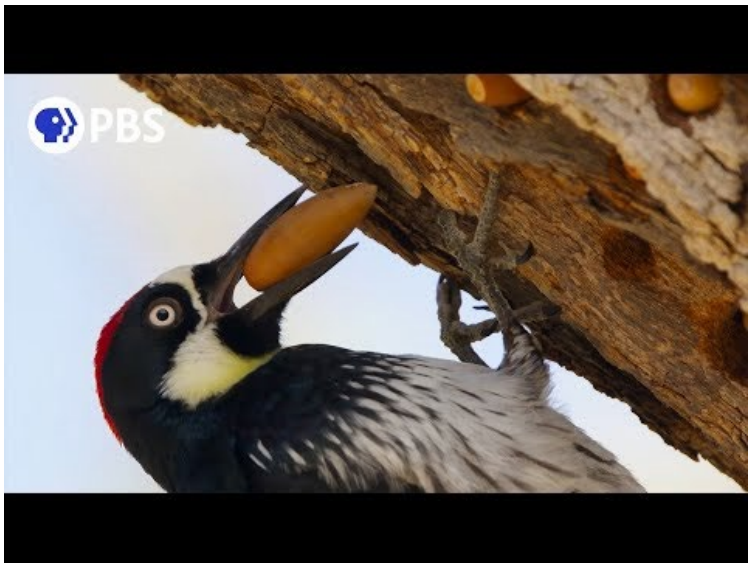

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6. ***Look up in the tree canopies.*** Can you spot any bird nests, wasp nests, squirrel nests, cavities, or holes in the tree?
7. ***Examine the forest floor.*** Turn over logs, rocks, or gently look under the leaf layer. What organisms do they find?
8. Reflect on what students observed. Ask a few students to share their observations or sketches. Use these questions to guide a discussion:
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Tree Death Brings New Life

A wealth of wildlife relies on tree snags, known as "habitat trees."

Doreen Cubie // Garden for Wildlife // Oct 09, 2021

Woodpeckers (such as the northern flicker, above) are the first birds to carve cavities in snags. Raccoons (below) also shelter and rear young in hollow trees.

LOOKING FOR A SIMPLE, low-cost way to boost wildlife habitat? Leaving a dead tree or downed log in your yard will do the trick. Nationwide, about 1,000 species of birds, mammals, amphibians and reptiles depend on these "snags" at some point in their life cycle.

Until a few decades ago, snags—today better known as "habitat trees"—were routinely removed both from backyards and forests. Now we know better, says Ken Bevis, stewardship wildlife biologist for the Washington State Department of Natural Resources. "A tree provides excellent habitat for many, many years after it dies," he says.

Woodpeckers are the first birds to take advantage of snags, Bevis says, usually beginning to excavate cavities five to seven years after the tree dies. Swallows, bluebirds, wrens, small owls, kestrels and wood ducks are among the birds that nest in the same cavities after the woodpeckers depart. Porcupines, squirrels, martens and other mammals also shelter in hollow trees. In winter, brown creepers, small nuthatchlike birds, and some bat species roost behind the loose bark to keep warm. Hawks and owls perch on the tops of snags when searching for prey.

If you have space, experts recommend three habitat trees per acre, but even one will provide benefits. "The smallest of snags is going to be valuable," says Ashley Hoppers, a University of Georgia extension agent. "But the larger it is, the better."

From hazard to habitat

As for the risks of keeping snags, avoid having dead wood resting against your home. Any large branch or tree that may fall on your house or your neighbor's should be cut down or trimmed. Bevis suggests removing the crown, or as much as one-half or even two-thirds of a dead tree, which he

calls transforming it from hazard to habitat. “Broken tops are great,” he says. “An arborist can make it look like the snag broke off naturally.”

Downed logs also provide valuable habitat. As the logs decay, Hoppers says, they replenish soil nutrients, attract insect food for animals and act as “nurse logs” for new tree seedlings to sprout. A wide variety of wildlife—from chipmunks to scarlet king snakes to several salamander species—will set up housekeeping in the logs, bringing an even greater abundance of wildlife to your at-home habitat.

Doreen Cubie is a frequent contributor who last wrote about how to help wildlife stay wild in your yard.

More from *National Wildlife* magazine and the National Wildlife Federation:

Garden for Wildlife »
What to do With Fallen Leaves »
Dead Trees Are Anything But Dead »

Get Involved

DONATE TODAY | SIGN A PETITION | DONATE MONTHLY | NEARBY EVENTS

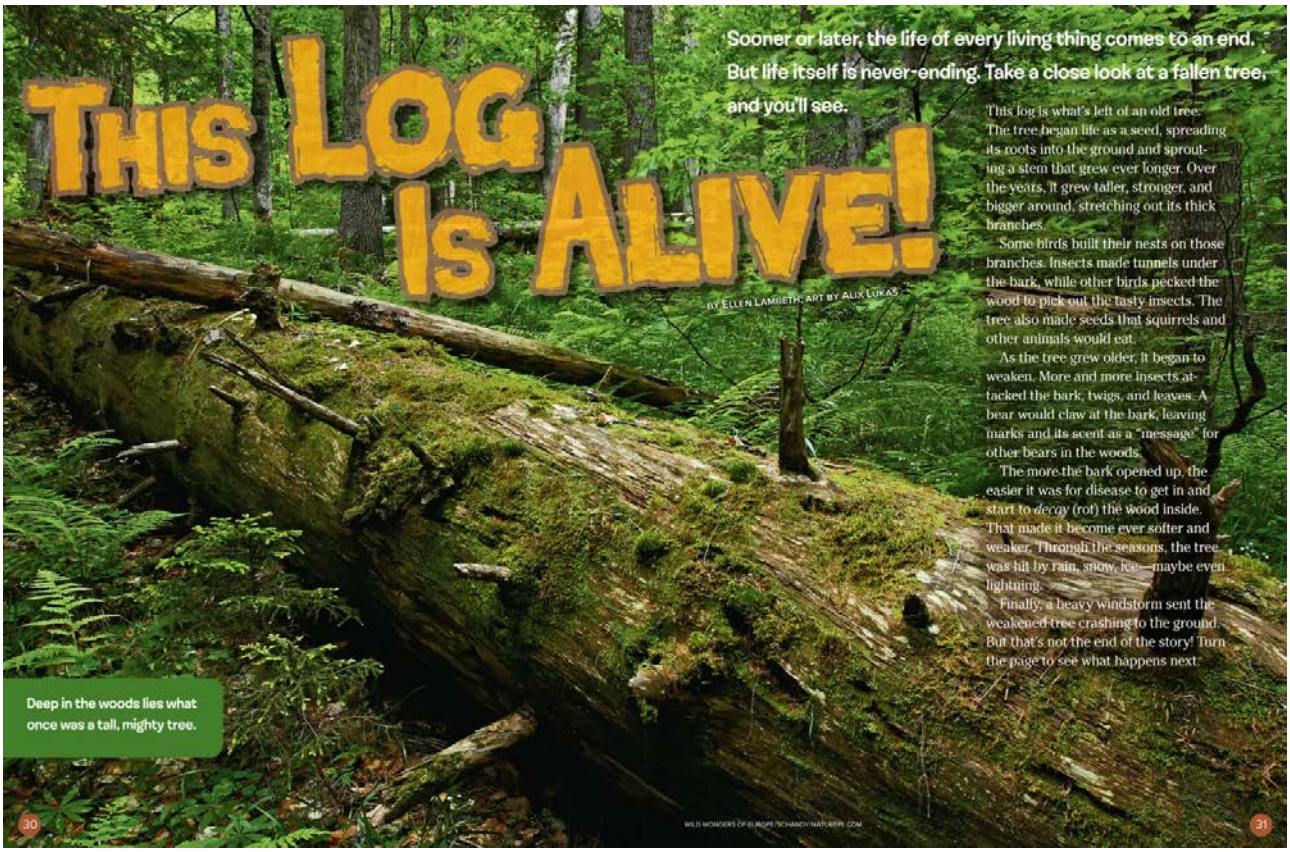
rangerrick.org /ranger_rick/this-log-is-alive/

This Log Is Alive!

Michele Reyzer ⁝ 3-3 minutes

By Ellen Lambeth; Art by Alix Lukas

Sooner or later, the life of every living thing comes to an end. But life itself is never-ending. Take a close look at a fallen tree, and you'll see.



Tap image for a closer look.

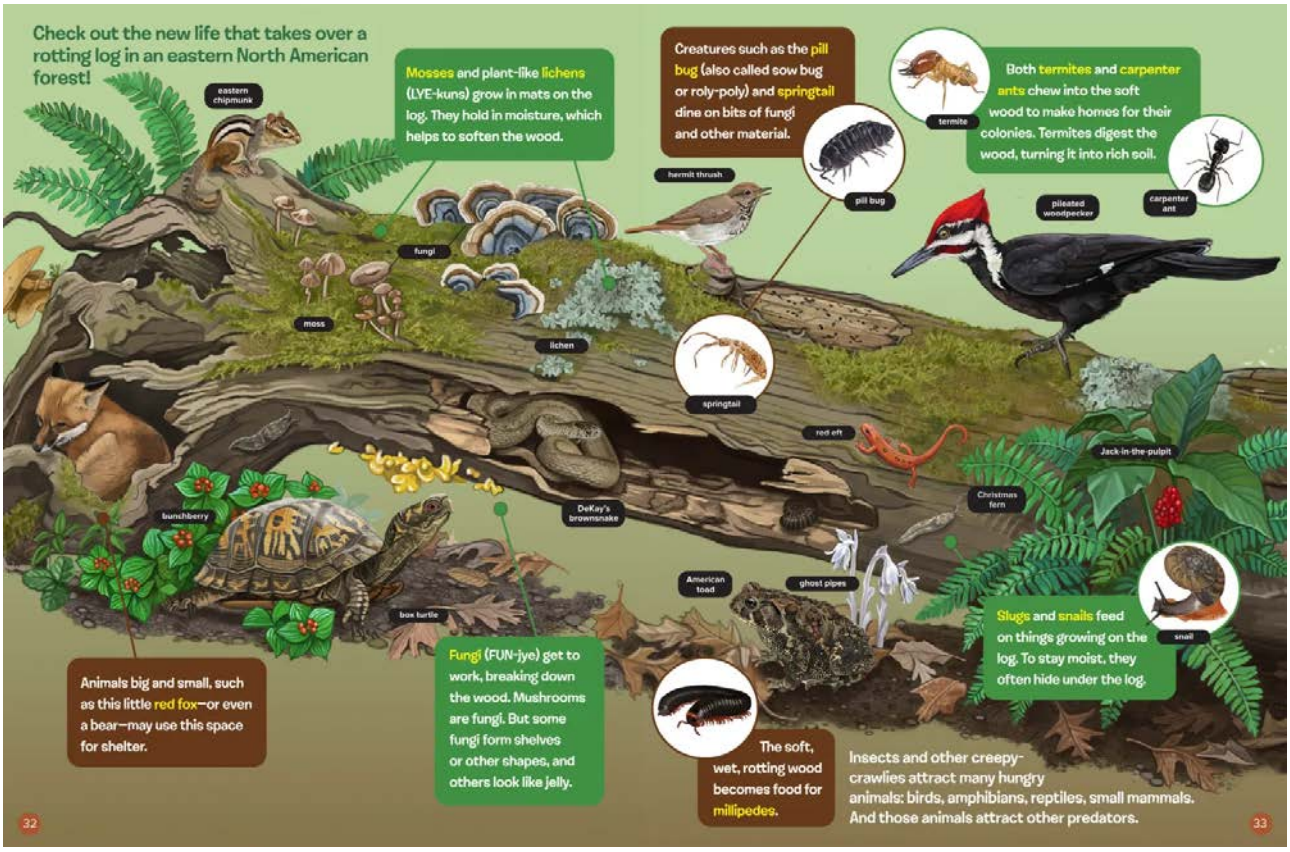
This log is what's left of an old tree. The tree began life as a seed, spreading its roots into the ground and sprouting a stem that grew ever longer. Over the years, it grew taller, stronger, and bigger around, stretching out its thick branches.

Some birds built their nests on those branches. Insects made tunnels under the bark, while other birds pecked the wood to pick out the tasty insects. The tree also made seeds that squirrels and other animals would eat.

As the tree grew older, it began to weaken. More and more insects attacked the bark, twigs, and leaves. A bear would claw at the bark, leaving marks and its scent as a “message” for other bears in the woods.

The more the bark opened up, the easier it was for disease to get in and start to decay (rot) the wood inside. That made it become ever softer and weaker. Through the seasons, the tree was hit by rain, snow, ice—maybe even lightning.

Finally, a heavy windstorm sent the weakened tree crashing to the ground. But that’s not the end of the story! Turn the page to see what happens next.



Tap image for a closer look.

Tap image for a closer look.

HOW TO BE A LOG DETECTIVE

- Pack a kit that includes a journal or sketch pad, pencil, field guide, magnifying glass, and maybe a camera.
- Take a walk in the woods with family or friends. (Let an adult know where you are going.)
- When you find a log, imagine what might have caused the tree to fall, and when.
- Touch the log. Is it moist or dry, soft or hard? Knock on it. Does it sound solid or hollow?
- What do you see on, around, and under the log? Look for plants, lichens, and fungi. Also look for animals or their signs, such as empty seed shells or nut husks, fur or feathers, tracks or scat (animal poop).
- Peel back some bark to see what’s underneath. Check for holes or tunnels in the wood. If you can roll the log to check underneath, be sure to carefully move it back in place.
- Record what you find by sketching it or taking photos.
- Visit again in different seasons and in following years to look for changes.

STUDY A SNAG

Snags are dead trees that are still standing. They are important places for wildlife. Can you spot a snag? Then can you find signs of animals giving it new life?

Keep a record!

Date _____ Time _____

Location _____

Weather _____

Helpful Things to Take Along:

- ☐ Magnifying glass
- ☐ Binoculars

Sketch your snag in the box below.

Then look for signs of wildlife.

- From far away, binoculars may help you see birds perched atop the snag or peeking out of holes.
- Close up, use a magnifying glass to search for insects under the bark.

Describe what you find:

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Audubon Christmas Bird Count

Contribute valuable community science data!

Find more info and register here:
www.audubon.org/conservation/join-christmas-bird-count

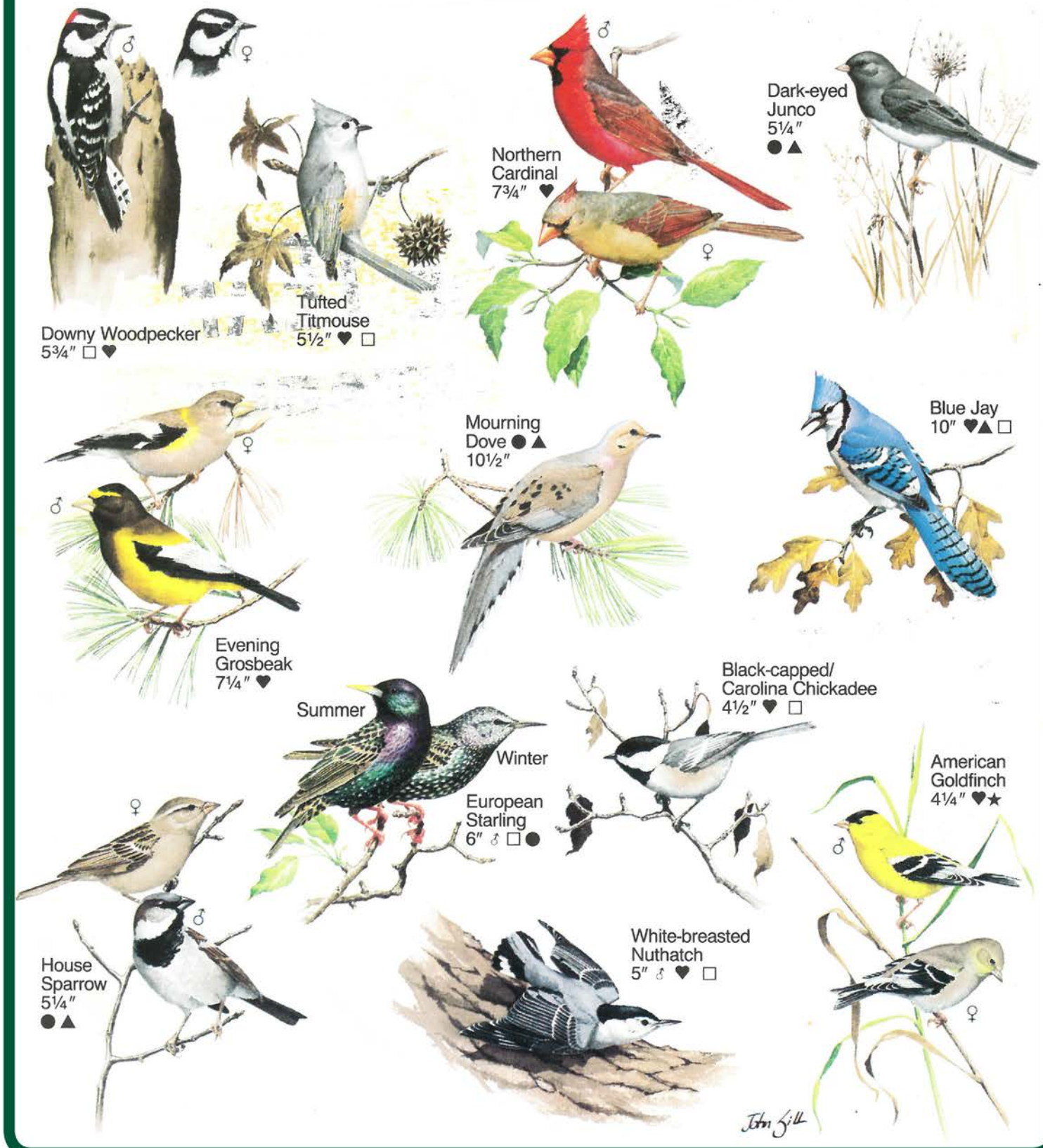
December 14, 2023-
January 5, 2024

Audubon Christmas Bird Count

Gather your friends, families, binoculars, and bird guides! The Audubon Christmas Bird Count takes place December 14, 2023-January 4, 2024.

Here are some tips to make your Christmas Bird Count event a successful and fun day.

- Read these details to become familiar with Audubon's Christmas Bird Count and register.
- Make memories! Take photos of your bird sightings, the landscapes, and your group.
- Use a journal to record additional observations or sketch scenes and sightings from the day.
- Build in breaks throughout the day so people in your group can refuel or rest.
- Compare your bird lists/data to other groups in your town or with data from past years.
- If you use social media, share your sightings with your friends. Use or follow hash tags to see how others are participating in the Christmas Bird Count.
- Follow local birding groups or individual birders to see their photos and sightings.
- Be inspired! Read about the birds that first inspired birders.
- Once you're back home, make a pinecone bird feeder for all the birds that reside in your neighborhood through winter.
- Here are some more tips for attracting birds to your yard.

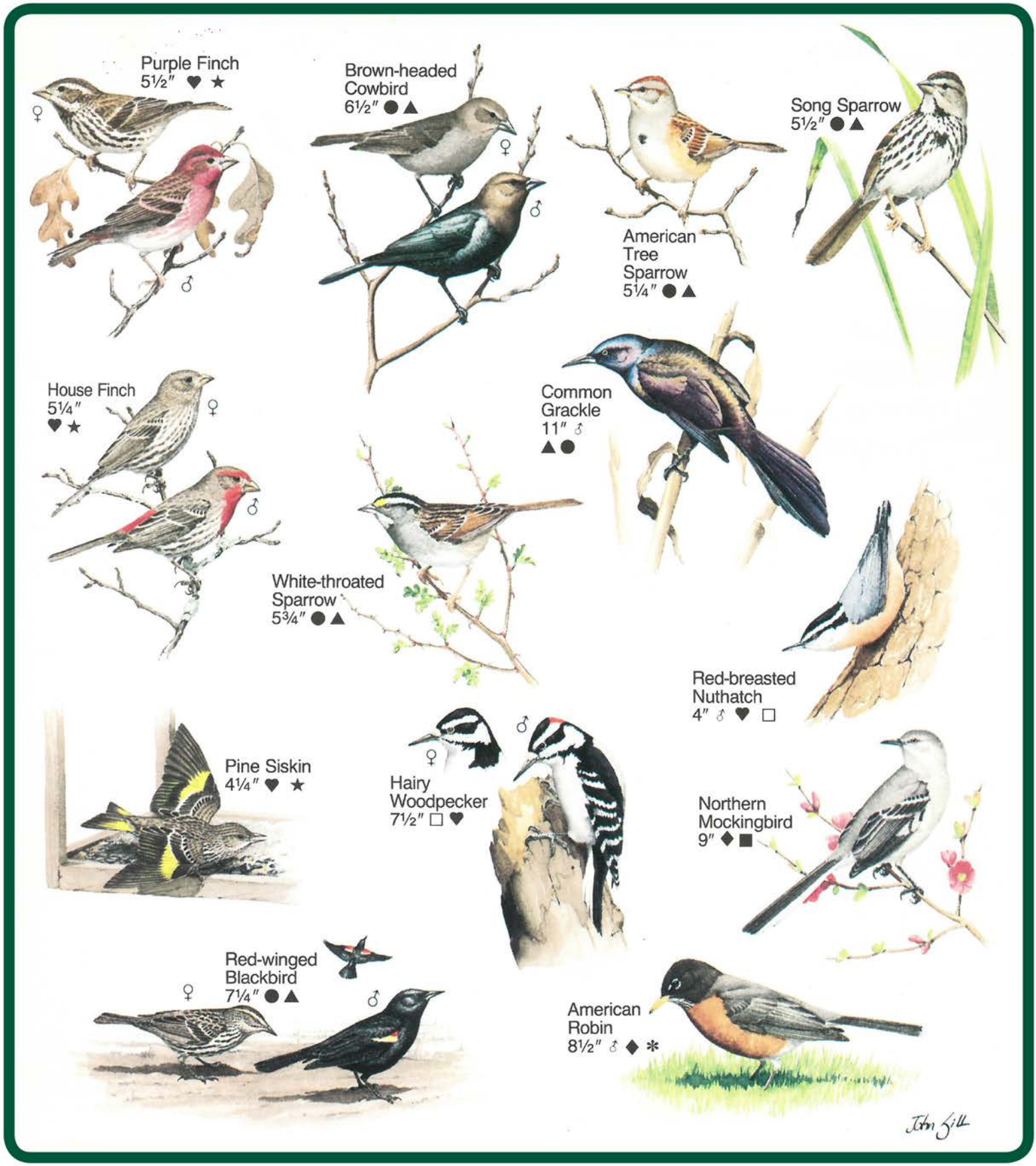


Bird Identifier

nwf.org/Eco-Schools-USA

Food Preference Key
- ♥ = Sunflower Seed
- ★ = Thistle (Niger)
- ● = Millet
- □ = Suet
- ▲ = Cracked Corn
- ◆ = Berries
- ✻ = Earthworms
- ■ = Insects

NATIONAL WILDLIFE FEDERATION · SINCE 1936 ·



The Bird Identifier is a handy reference designed to help you identify 25 kinds of birds often seen around your home. To identify a bird, simply compare the bird you see with John Sill's beautiful and technically accurate illustrations. If you can't find it on the chart, it could be a young bird which sometimes has a distinctive plumage of its own, but, close inspection usually reveals its similarity to one or both of its parents. Depending on the time of year and your location in North America, there are a great many other species that you could see. To identify these will require the services of one of the several popular field guides.

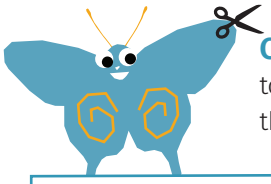
For further information on how to make your home and neighborhood more attractive to birds, visit us online at **nwf.org/Eco-Schools-USA**

nwf.org

11100 Wildlife Center Dr.
Reston, VA 20190-5362

BUTTERFLIES AND MOTHS IN WINTER

Name:_____ Date:_____

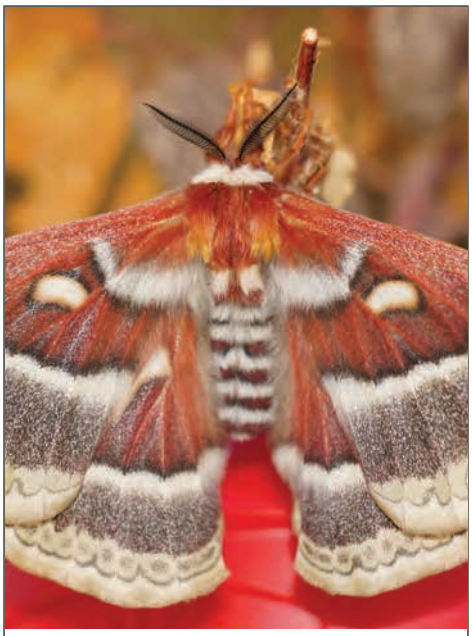


Cut out each of the butterfly cards. Read the back of the card to find out how each species spends winter. Use the cards to complete the Butterfly Adaptations Worksheet.

Front of Cards

Monarch Butterfly

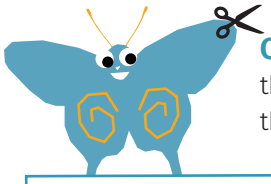
Isabella Tiger Moth



Cecropia Moth

Mourning Cloak Butterfly

Name:_____ Date:_____



Cut out each of the butterfly cards. Flip the cards to see what the butterfly or moth looks like as an adult. Use the cards to complete the Butterfly Adaptations Worksheet.

Back of Cards

Isabella Tiger Moth

The Isabella Tiger Moth spends the winter as the **Woolly Bear Caterpillar.**

Why do you think it is fuzzy?

As the weather gets cooler, it finds itself a thick leaf or bark on the ground and curls up inside. Although it freezes solid, it produces a special chemical which prevents the tissues from damage. Once spring arrives will it thaw and make its cocoon.

Monarch Butterfly

The Monarch butterfly **migrates** thousands of miles to reach its winter destination, riding warm air currents to conserve energy. The largest winter colony is in the temperate mountain forests of Mexico, which provides the right climate for Monarchs. There, tens of millions of monarchs congregate each year, covering the fir trees. How does a new generation of monarchs find the same winter home each year? Scientists are still researching that question.

Mourning Cloak Butterfly

The Mourning Cloak Butterfly spends the winter as an **adult**, though some also migrate south. To withstand cold temperatures, it stores extra fat in the fall and also replaces some of the water in its body with a special chemical that acts as an anti-freeze! On milder winter days it opens its wings to absorb the light of the sun through its dark scales.

Cecropia Moth

At the end of the summer, the five-inch-long Cecropia caterpillar seals itself into a **cocoon** along the length of a twig, usually in a dark protected area to escape predators. Once spring arrives it emerges after a long winter hibernation as a moth.

BUTTERFLIES AND MOTHS IN WINTER

BUTTERFLIES AND MOTHS IN WINTER

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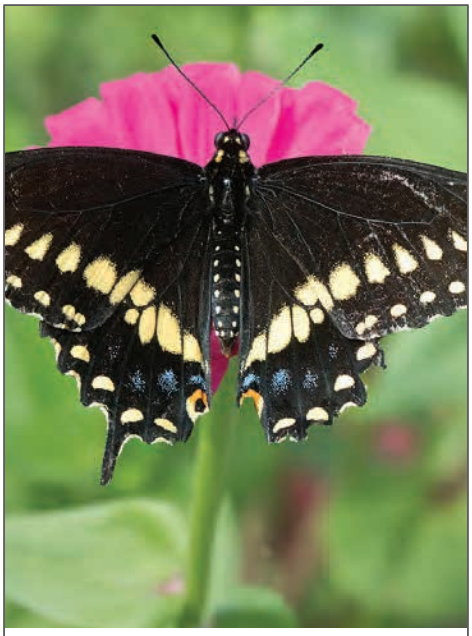
Front of Cards



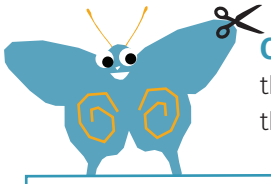
Eastern Black Swallowtail

Banded Hairstreak Butterfly

Painted Lady Butterfly

Red-spotted Purple Butterfly

Name:_____ Date:_____



Cut out each of the butterfly cards. Flip the cards to see what the butterfly or moth looks like as an adult. Use the cards to complete the Butterfly Adaptations Worksheet.

Back of Cards

Banded Hairstreak Butterfly

Banded Hairstreaks live around woodlands because their host plants are trees such as oaks, hickory, and walnut. Adults lay eggs on woody twigs or bark of the host plant where they remain the entire winter! The caterpillars emerge in spring. We finally see the adult butterflies in flight by June.

Eastern Black Swallowtail

The Eastern Black Swallowtail spends the summer eating the leaves of its host plants: parsley, dill, carrots, fennel, and celery. Then it finds a sheltered and secure place to build its **chrysalis**, which is either brown or green to blend in with its environment. It spends the entire winter there and emerges as a butterfly in the spring!

Red-spotted Purple Butterfly

In autumn, the Red-spotted Purple caterpillar creates a tiny **shelter** out of the leaves of its host plant. It uses a silk thread to coat a leaf and attaches itself to a twig. As the thread dries, it shrinks, curling the leaf like a sleeping bag with the caterpillar curled up inside. When spring arrives, the caterpillar crawls out and continues to eat from its host plant.

Painted Lady Butterfly

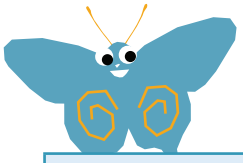
The Painted Lady has the largest habitat range of all the butterflies. It is found on every continent except Australia and Antarctica! One reason for this is because its host plants are members of the thistle family, which grow just about everywhere. The other reason is, like the monarch, it is migratory. It will spend spring and summer in the north and will **migrate** to the south in the fall and winter.

WORKSHEET 9.2

SIDE 1

BUTTERFLY ADAPTATIONS

Name:_____ Date:_____



Read the Butterfly in Winter Cards at your table. Check off how each insect spends the winter. Note any special adaptations it has to survive winter.

	Egg	Larva	Pupa	Adult	Adaptations
Monarch				✓	Example: The monarch migrates for the winter.
Cecropia Moth					
Mourning Cloak Butterfly					
Eastern Black Swallowtail Butterfly					
Banded Hairstreak Butterfly					
Isabella Tiger Moth					
Painted Lady Butterfly					
Red-spotted Purple Butterfly					

Conservation Northwest
Keeping the Northwest Wild

Snag Trees and Ecosystems

“Dead” trees are actually full of life

Standing dead trees, called snags, provide birds and mammals with shelter to raise young and raptors with unobstructed vantage points. Large downed trees also provide important habitat for wildlife.

Hundreds of species of birds, mammals, amphibians, reptiles and fish benefit from snags for food, nesting or shelter!

Woodcutters: check snag trees for cavities

Produced in partnership with the Washington Department of Fish & Wildlife, Yakama Nation Fisheries, U.S. Forest Service – Okanogan-Wenatchee National Forest, and Yakima Valley Audubon Society, this video is designed to help educate woodcutters on how to identify cavities in snags so that these animal homes remain on the landscape.

People cutting firewood in many national forest areas, including the USFS Naches Ranger District, are not allowed to cut snags containing cavities or other obvious signs of bird or animal habitation. This video will be shown to woodcutters when obtaining permits at the Naches Ranger District, helping them to look for cavities and leave those snags standing on the landscape.

We understand firewood gathering is often an important activity for campers and others in rural areas, but it's important to leave big snags and any dead trees with cavities or other visible animal homes standing. And when possible, to gather smaller-diameter dead wood from the forest floor!

Snags are homes

Only 30 bird species are capable of making their own nest cavities in trees. The pileated woodpecker is a famous example. Another 80 animal species, like fishers, depend upon previously-excavated or natural tree holes for their nests. Some, like wolverines, count on deep drifts piled around natural obstructions like dead tree trunks to dig their dens in winter.

The insulation of a tree-trunk home allows wildlife to survive high summer and low winter temperature extremes. Tree cavities and loose bark are used by many animals to store their food supplies, while

Snag trees can be beautiful. They also provide vital habitat for birds and wildlife. Photo: Kelly Smith / United by Blue

insects living inside the dead wood eat thousands of forest pests, which can harm living trees. Woodpeckers and creepers feast on the wood-eating insects and provide “sawdust” for ants to process. Deer and mountain caribou eat the lichen growing on the trunks.

When they eventually fall into or near water and wetlands, fish and amphibians hide under and around dead wood. This aquatic “structure” provides important shelter for juvenile salmon, steelhead, char and trout. Without woody debris in our rivers and streams, these watersheds can’t provide adequate habitat for many native fish species.

Whether created through natural processes or active forest restoration, standing or down, dead wood plays an important role on the landscape.

Learn more about the debate around snag trees in this article from Yale Environment 360!

Respecting human needs while preserving habitat

We are working with partners to increase awareness of the importance of snags, and ensure forest management policies on our public lands protect the values they offer. Three national forests in Washington—the Okanogan-Wenatchee, Umatilla and Colville National Forests —currently allow the felling of snags on portions of their lands for firewood unless there are active cavity nests in the tree.

Firewood cutting and snag felling is already restricted in wilderness and some sensitive areas. A firewood gathering guide from Okanogan-Wenatchee National Forest can be found here. The Okanogan-Wenatchee and other national forests also provide special firewood-collection zones. Often, these are small trees left

A snag tree preserved for wildlife habitat in the Central Cascades. Photo: Chase Gunnell

behind or piled up after forest thinning and stand-reduction projects.

However, from the ground it can be extremely difficult for woodcutters to determine if a snag or dead tree is being used for nesting or denning. Sensible firewood-gathering regulations are needed to protect nesting and denning sites.

Due to the policies mentioned above and a lack of enforcement capacity, researchers have documented not only the continued loss of snags on the landscape, but the removal of trees providing home to wildlife such as the black-backed woodpecker, white-headed woodpecker, Pileated woodpecker, Lewis' woodpecker and American three-toed woodpecker.

While there is important social and economic value to firewood gathering and recreation on national forests (and often some ecological benefit from the removal of small and downed dead fuels), the removal of standing, dead wood needs sensible and scientifically-sound management guidelines to help protect nesting sites, wildlife habitat and healthy ecosystems.

Learn more about snags

- Do Burned Forests Need Human Help or Do They Do Better on Their Own? from Adventure Journal
- Firewood gathering permit info from Okanogan-Wenatchee National Forest
- "A Time for Change: A Review of US Forest Service Policies on Snag Cutting and Its Impacts on Cavity-nesting Species in Eastern Washington": A poster presentation by Jeff Kozma (Yakama Nation) and Teresa Lorenz (WDFW).

Related Projects

Sustainable Forest Roads