LOOK UP LOOK OUT LOOK DOWN WINTER WALK BINGO

Fill each square with a sketch or short answer - turn in your finished sheet the week after vacation for a chance to win a prize!! You can also email your sheet to: melinda.charles@sau19.org (Don't forget to add your name)

Night Sky Pick a clear night and spend 30-60 minutes outside looking up. What constellations can you see?	**Clouds** Make a small sketch of the sky for seven days. How do the clouds change during the week?	**Birds** Identify one species of bird you see on a walk. What clues did you use?
Trees Take a walk in the woods. Using sight, smell and touch, how many different kinds of tree bark can you find?	**Inspired by Nature** Take a walk and use all your senses. Use your observations to create a poem, picture or some other creative work.	**Winter Plants** Visit a meadow or an unmown roadside with dried-up plants sticking up through the snow. Find one that looks interesting and sketch what you see.
Animal Signs Who's in your neighborhood? Find an animal trail and see if you can follow it for at least 15 tracks.	**Lichen** Go for a lichen hunt. Are the kinds growing on trees the same as the lichen on rocks? How are they different?	**Subnivean Zone** What is the subnivean zone? Who lives there?

Have fun and enjoy your vacation! Remember to use your school resources on the Quicklinks to find out more about each of the squares!

This activity comes from our librarian & children's activity friends at the Peterborough Town Library - Thank you for sharing!!

WINTER WALK BINGO STEPS FOR SUCCESS

Be Prepared!

- We recommend keeping a notebook while working on your Bingo. Bring it with you on your winter walks and record your observations and questions, as well as your sketches and maps. Don't forget your pencil!
- If you're visiting your sit spot, bring something to sit on to insulate yourself from the cold ground.
- Let someone know where you are going and when you plan to be back.
- Dress for the weather and the terrain. Popular trails often get icy with use, so consider bringing microspikes or some other traction device when you head out for a walk. If we get enough snow, snowshoes or cross country skis can enable a grand adventure.
- Poison ivy can still cause a reaction in winter. Use this site to learn how to recognize it: https://www.poison-ivy.org/poison-ivy-winter

Where to Walk - some suggestions

- You can visit the same site for multiple squares. Explore your backyard, a nearby park, or a garden.
- Check out the many walking trails in New Boston and the surrounding area. Here are a couple of links to some ideas.
    - https://myhikes.org/us/new-hampshire/new-boston
    - https://www.alltrails.com/us/new-hampshire/new-boston/
    - https://plcnh.org/conservation-properties-4/

A Nature Notebook

- A notebook is a great tool when you are observing nature - Record where you go and what you see.
    - Each time you head out on a winter walk, start a new page in your notebook. Write down the title of the square you're working on, the date, time, location and weather.
    - As you tackle each square, write down your observations and any questions that come to mind. Use sketches, maps, diagrams or symbols to preserve interesting information. If you take photos of objects, print them out when you get home and tape the photos in your notebook. Try to find answers to the questions you wrote down. If no one knows the answers yet, your question could be the start of a fun investigation!

All the information you collect will be especially useful when you work on the "Inspired by Nature" square.

Finding a Sit Spot

Some questions can be answered by staying in one place when you are outside. A sit spot lets you see what happens when animals forget you are there. Pick a spot you can reach easily, where you feel safe being alone. It can be a patio, your yard, a sturdy tree branch or a thicket in the woods. The more resources nearby for animals (food, water, shelter), the more activity you are likely to see. Settle in, get comfortable, and be as still and quiet as you can. The longer you sit, the more you will see and hear as the animals get used to your presence and go back to what they were doing before you arrived.

Look Up, Look Out, Look Down! Winter Walk Bingo!

Discover More Nature in Winter!

This packet of information was put together by PTL's Patron Service Assistant, ***Jocelyn Duffy****!*

Jocelyn *has over a decade of experience developing and presenting programs about nature, science, and history for federal, state, and regional organizations. She has degrees in information technology, library science, and natural resource management and enjoys exploring the places where people and the environment come together. Jos works on the help desk and also works as a program coordinator. She runs the Short Reads book group and our popular survival series programming.*

Subnivean Zone

Has there been enough snow this winter for a subnivean zone to form? If yes, what evidence can you find of any critters using the zone?
How does a subnivean zone help or hinder predators like foxes and owls?

Helpful resources:

- Over and Under the Snow by Kate Messner
- Life in the Cold by Peter Marchand
- The Subnivean Zone – The Field Guides podcast: http://www.thefieldguidespodcast.com/new-blog/2017/1/16/the-field-guides-ep-15-the-subnivean-zone-a-winter-underland-1
- The Outside Story (Northern Woodlands magazine)
- Shelter in the Snow: https://northernwoodlands.org/outside_story/article/subnivean-shelter-snow

Night Sky

The night sky is ever changing and always amazing. The Quadrantids Meteor Shower peaks between January 3 and 4. If it's a clear night, find a good viewing spot and plan on being outside for at least 30 minutes. Set up some lawn chairs or a few layers of blankets so you can lie down and view comfortably. Be sure to dress warmly!

• What did you see?

• During meteor showers, more meteors are visible after midnight than before. Why does this happen?

• Where do the meteors in the Quadrantids Shower come from?

Look for the moon each night this month and make a quick sketch of its shape and location in the sky. Include the time of your observation, the compass direction you are looking and the height of the moon in the sky. You can use your hand to approximate the altitude of an object in the sky (degrees of arc): https://www.timeanddate.com/astronomy/measuring-the-sky-by-hand.html.

Visit the International Dark Sky Association to find out if your neighborhood has Dark Sky Friendly outdoor lighting. Why is this kind of lighting important?
https://www.darksky.org/our-work/lighting/lighting-for-citizens/residentialbusiness-lighting/

Helpful resources:

• Find the Constellations by HA Rey
• The Stars: A New Way to See Them by HA Rey
• The Great Courses: Our Night Sky (DVD)

• Download a stargazing app or make your own planisphere to help you identify the constellations: https://in-the-sky.org/planisphere/

• EarthSky's top 10 tips for super stargazers: https://earthsky.org/astronomy-essentials/getting-started-2

• Heavens Above (enter location in upper right box and then click Live Sky View to see what's overhead right now): https://www.heavens-above.com/

Trees

On your next walk in the woods, find the tree with the biggest trunk and measure its diameter (https://www.portlandoregon.gov/trees/article/424017). How old do you think the tree is? How could you find out for sure? Can a short skinny tree be older than a tall wide tree? Why would this happen?

Imagine the life story of this tree – what was happening the day it sprouted? Write a short story or comic strip about what the tree has experienced.

Check out a tree ID book and try to figure out what species of trees you see on your walk. What parts of the trees did you use to identify them?

Helpful resources:

- A guide to nature in winter: northeast and north central North America by Donald Stokes
- E-books on Hoopla (through the Whipple Free Library)
  - Trees by Pamela Hickman, Carolyn Gavin (Nature All Around) ◦ Telling Trees by Julius King
  - Identifying Trees of the East by Michael D. Williams

Plants in Winter

Have you ever had a tough time connecting a plant or animal to its name? You can use your “Mind's Eye” to help build a connection that sticks. Find the winter remains of a plant you recognize or can identify with one of the ID guides listed below.

- Study the plant for 30 seconds, then close your eyes and imagine it with as much detail as possible. Open your eyes and look again for 30 more seconds and notice what you didn't see before. Then close your eyes and add the new details to your imaginary version. Repeat this one more time.

- Now, sketch for 1 minute using your imaginary version. Then look at the real plant for 30 seconds and notice the details you left out. Return to your sketch for another minute. Repeat this process one more time.

Look for signs of insect life on plant stalks and leaves (e.g., galls). How many different insect signs can you find?

Do these plant remains support wildlife in other ways?

Helpful resources:

• A Seed is Sleepy by Dianna Aston
• https://peterboroughtownlibrary.org/wp-content/uploads/2020/12/winter-plants-sm.pdf

• https://www.audubon.org/news/to-help-birds-winter-go-easy-fall-yard-work

• Winter Weed Finder by Dorcas Miller
• Weeds and Wildflowers in Winter by Lauren Brown (2012)

• A Guide to Wildflowers in Winter by Carol Levine

Animal Signs

Animals leave signs of their presence as they rest, look for food, and raise their young. You can use your knowledge of how an animal lives to find signs left behind in your neighborhood ***or*** use the signs you find to figure out who has been using a stone wall or visiting your garden.

Find some animal tracks, at least four, but the more the better. Measure the length and width of a few of the tracks. Are they all the same size? Front feet often leave different tracks than hind feet. The length of an animal's stride can tell you a lot. In tracking, a stride is the distance from one footprint to where that same foot lands again – be sure to measure from the same spot on each print (e.g., from heel to heel). Sketch the shapes of the tracks and record your measurements. Can you identify the animal? A good field guide will help you narrow your choices by discussing the range and habitat of the animals that live in your area.

Examine a stone wall for animal signs. Look for things like scat, fur, teeth marks, feathers and food caches – as well as tracks. Can you describe what happened here?

Use these questions (adapted from Jon Young) as a guide:

- Who was it? Can you identify the animal, determine its size or weight, see toes or claw marks?
- What was it doing? Can you interpret the animal's behavior, its direction of travel, or its gait?
- When was it here? Are the tracks fresh? Was the animal active, sleeping, hunting, etc?
- Where did it go? Follow the trail to explore the animal's habitat and the resources it uses.
- Why was the animal here? Why did it travel through this space?

- How requires empathy and imagination. Can you picture how the animal moved? How does it perceive the world?

Look up the gait of your favorite mammal. Can you imitate how it moves? How would it fare in deep snow? What would its track look like? Would you be able to tell if the animal had a tail or not?

Helpful resources:

- A guide to nature in winter: northeast and north central North America by Donald Stokes

- NH Fish & Game Pocket Guide to Animal Tracks: https://www.wildlife.state.nh.us/pubs/wildlife.html
- Association of Fish & Wildlife Agencies: https://www.fishwildlife.org/application/files/7815/2952/5274/Animal_Locomotion_and_Track_Patterns.pdf
- Distant Hill Gardens: https://www.distanthill.org/workshop-resources/wildlife-tracking/

Birds

Take a winter walk and listen for the sound of birds communicating. Stop somewhere safe and be quiet and still for 5 minutes. What do you see? How many different sounds do you hear? If you have time, create a soundscape map. Draw a north arrow in one corner of a blank page in your notebook and draw yourself at the center of the map. Sit comfortably, facing north. Close your eyes and listen for 1 minute. Open your eyes and start making your map. Get creative when deciding what symbols, words, colors, etc., you use to show sounds. Start by noting the most distant sounds along the edges of your paper and work your way in.

Take a walk and record in your journal any bird signs you find. Some signs you might see are bird tracks, feathers, and abandoned nests. Write down at least one question about each of your discoveries. Can you figure out who the signs belong to?

There are many ongoing community science projects about birds. Two winter projects that are easy to participate in are (1) the Great Backyard Bird Count (Feb 12-15, 2021) – https://www.birdcount.org/participate/ ; and (2) Project Feeder Watch (runs through April 9, 2021) - https://feederwatch.org/

Helpful resources:

• Birding for Beginners by David Sibley

• The Sibley Guide to Birds by David Sibley

• The Sibley Guide to Bird Life & Behavior by David Sibley

• Great Courses: Birding in North America (DVD)

- E-books on Hoopla
  - Northeastern Birds Backyard Guide by Bill Thompson
  - Birdsong by the Seasons – Donald Kroodsma (embedded audio)

- Cornell Lab of Ornithology: https://www.birds.cornell.edu/home/

Clouds

Can you use clouds to predict the weather?

Become a nephologist for a day and spend some time watching the clouds move across the sky. Do you feel any wind where you are? Does the speed and direction of the clouds in the sky match the wind you feel on the ground?

Clouds can both cool and warm the Earth. How do these collections of water vapor and condensation nuclei affect our climate?

Helpful resources:

• The Invention of Clouds by Richard Hamblyn
• Reading Weather by Jim Woodmencey
• Weather (Nerdy Babies) by Emmy Kastner
• Cloud Chart (National Weather Service): https://www.weather.gov/jetstream/cloudchart

• Climate Kids: https://climatekids.nasa.gov/cloud-climate/

• Cloud Classifications and Characteristics (NWS Science Corner): https://climatekids.nasa.gov/cloud-climate/

Lichen Hunt

Lichens are tough to identify at species level, but they can be divided into three main types: crustose, foliose and fruticose. Crustose lichens grow flat on a surface, sometimes they look like they have been spray painted on. Foliose lichens are leafy, their top and bottom surfaces are easy to tell apart. Fruticose lichens are more 3-D with freestanding, branchlike growth that can be shrubby, hang like hair, or stand upright.

Find two different types of lichen on your next winter walk. Make a comparison sketch of each one. What are some differences and similarities between the two you found? If you can, take a closer look with a magnifying glass or hand lens.

How do lichens propagate? Lichens grow very slowly in New England (on average 0.5 - 8 mm per year) and can live for centuries. Measure the diameter of the biggest crustose lichen you can find. How long has it been there (based on the range of growth rates given above)?

How are scientists using lichens to study our environment?

Helpful resources:

- North American Mycological Association: https://namyco.org/lichen_basics.php
- US Forest Service: https://www.fs.fed.us/wildflowers/beauty/lichens/biology.shtml

Inspired by Nature

Visit your sit spot or take a walk and use as many of your senses as you can to observe the world around you. When you get home, look over all your winter nature observations and then get creative! Write a poem, draw or paint a picture, make a collage, or use pieces of bark and other natural material (from the ground – don't break or scrape off living plants) to build a winter scene.

Here are a few classic poem forms to spark your imagination.

- Haiku – three lines; 5 syllables -- 7 syllables -- 5 syllables

- Concrete – written to form a particular image or shape on the page

    - https://www.poetryfoundation.org/learn/glossary-terms/concrete-poetry

- https://examples.yourdictionary.com/examples-of-concrete-poems.html

- Acrostic – first letter of each line spells out a word or phrase
  - https://examples.yourdictionary.com/acrostic-poem-examples.html

Helpful resources:

• Pizza, pigs, and poetry: how to write a poem by Jack Prelutsky

• Poetry writing : the expert guide by Fiona Sampson

• Poetry Foundation: https://www.poetryfoundation.org/

• Poets.org: https://poets.org/