

Welcome everyone, thank you for coming. My name is _____. I'm with *Speaking for Wildlife*, a wildlife volunteer program run by the University of New Hampshire Cooperative Extension. *Speaking for Wildlife* is a program that brings wildlife presentations and nature walks to communities throughout the state.

This *Speaking for Wildlife* presentation will be about natural communities of New Hampshire. All of the photos you'll be seeing today were taken by ecologists Ben Kimball and Dan Sperduto, formerly with New Hampshire's Natural Heritage Bureau. Ben, Dan, and other Natural Heritage Bureau staff have covered much of our state in search of special ecological places. They've gone by foot, on boats, in waders, and even hanging from ropes, as you'll see! Along the way they've taken incredible photos, that we thought worth sharing with people through the *Speaking for Wildlife* program. We hope you'll enjoy this ecological tour through our beautiful state, and that it may inspire you to look a little more carefully at the natural areas you visit, or to visit new places you'll hear about in this presentation!

I'll be talking for about forty-five minutes, and then we'll have time for questions, but feel free to ask questions as we go.

So, let's get started!

[Note: The Natural Heritage Bureau is part of the NH Division of Forests and Lands, which is in the Department of Resources and Economic Development] [Dan Sperduto now works for Sperduto Ecological Services in Canterbury, NH]

What are Natural Communities?



recurring groups of plants found in particular physical environments



So what is a natural community exactly?

A natural community describes a specific combination of plants that regularly occur together. Since they began classifying natural communities in the 1980s, the Natural Heritage Bureau has identified nearly 200 types in New Hampshire, grouped into eight broad categories. Some types are quite widespread and other types are very rare. They may be very large – envision a 250-acre forest – or as small as a table top*.

When scientists are classifying a natural community, they look at the dominant plants and how they are layered – from trees and shrubs down to groundcover. They also take into consideration physical features such as the availability of water, the quality of soil, elevation, and geology.

These physical features define plant habitats and determine where natural communities occur on the landscape, but there's one more major factor we haven't mentioned yet.

Natural disturbance. Can anyone give me an example of natural disturbance that occurred around here in our lifetimes? [*might include flooding, tornado, ice storms, insects and diseases, drought, etc.*]

[*Note: *the only communities that are sometimes this small are seeps, of which there are several types*]

Natural Disturbance



Wind in a spruce - fir forest



Fire at the Ossipee Pine Barrens



Ice scour along the Connecticut River

The frequency and type of natural disturbances greatly influence which plants can grow in a natural community. In a place that burns regularly, you'll find plants that are adapted to fire such as pitch pine and wild lupine. A floodplain that floods every year will have different plants than one that floods every fifty years.

Plants that grow in such areas are adapted to these conditions. For example, along a river bank, you'll find trees and deep-rooted grasses that can survive scouring from blocks of ice. Openings created by wind in a spruce-fir forest provide ideal growing conditions for young conifer trees.

Other natural disturbances that affect our landscape include insect outbreaks, flooding, ice storms, and drought.

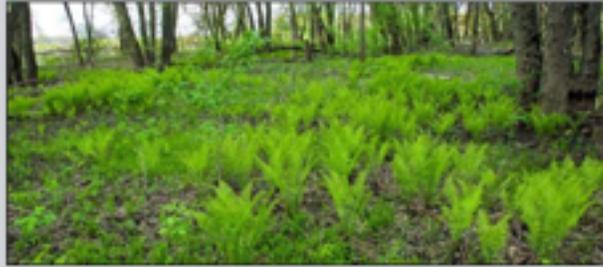
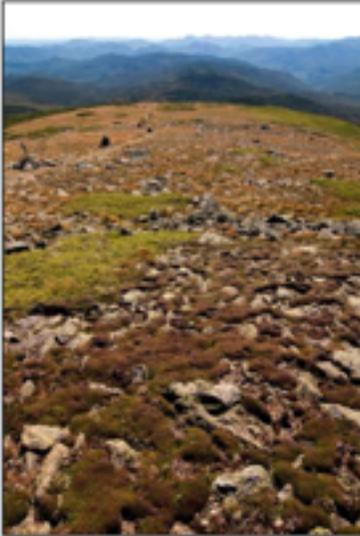
What's in a Name?



Each natural community is given a name, which usually includes some of the dominant plants and physical features that occur there. Because of this, the names can sound a little unwieldy. For example, have you been to a “**bulblet umbrella-sedge open sandy pond shore**” lately? Maybe, but you probably don’t know it!

So, you might ask, why have such detailed classifications? And why should you care?

Making Sense of Diversity



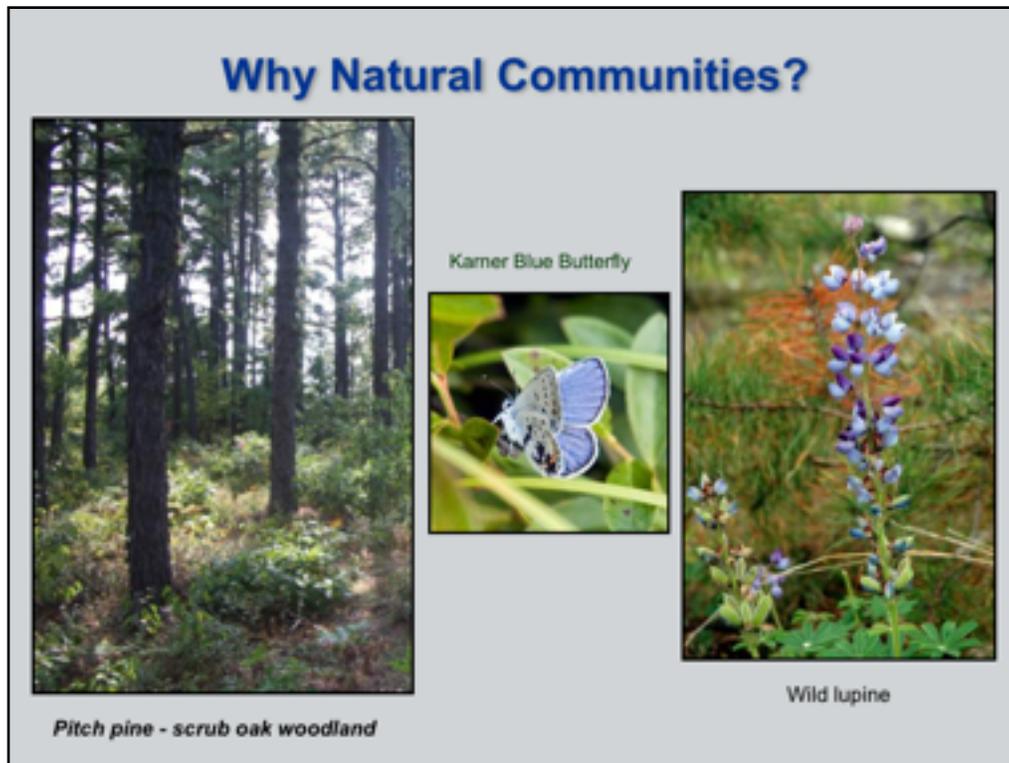
Classifying or naming things helps us make sense of the incredible complexity of our landscape. And, because of the diversity of our landscape--from the seacoast to the northern forests and mountains--we happen to live in an ecologically complex state.



Due to our climate, New Hampshire lies on the border between two large ecosystem types. We are at the *southern* edge of northern and boreal forests, which stretch north from the White Mountains all the way to the Arctic Circle [blue colors on map]. And we are also at the *northern* edge of the temperate forest types, which continue south all the way to Florida [green on map]. So we have plants from both systems. We also have the highest mountain in the northeast, and a precious 17 miles of seacoast. We have one of the largest estuaries on the Atlantic Coast at Great Bay*, as well as many lakes, rivers, and wetlands that enrich our landscape. In short, we are a very diverse state.

So again, naming and classifying our natural communities helps us make sense of this complexity.

**[Note: although Great Bay is technically the largest estuary, the majority of the state's salt marsh habitat is actually in Hampton Marsh]*



And all of this classifying helps focus conservation efforts on our rarest, most unique natural places.

A great example of why natural communities are important is the story of the Karner Blue Butterfly, a federally-endangered insect that lives in New Hampshire. [point to butterfly at center]

We know that Karner Blues rely on wild lupine, and that wild lupine is found in **pitch pine - scrub oak woodland** communities (commonly called “pine barrens”).

Although we don’t know everything about what these butterflies need to survive, we know that if we can protect the natural communities in which they are found, we have the best chance of ensuring their survival. While much of the pine barrens habitat in New Hampshire has been developed, and Karner Blue populations have dwindled, it’s not too late. Our ability to identify this natural community has led to the conservation of virtually all the state’s remaining pine barrens.

[NOTE: you may get this question!!!]

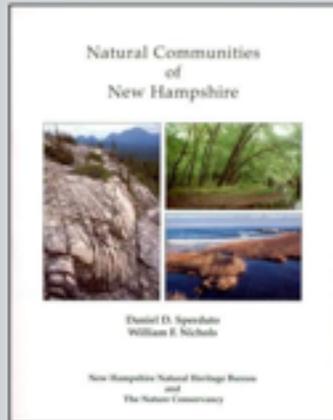
The difference between Natural Communities, Habitats, and Forest Types (i.e. different ways to classify nature):

-Habitat is based on wildlife needs, and is used by wildlife biologists

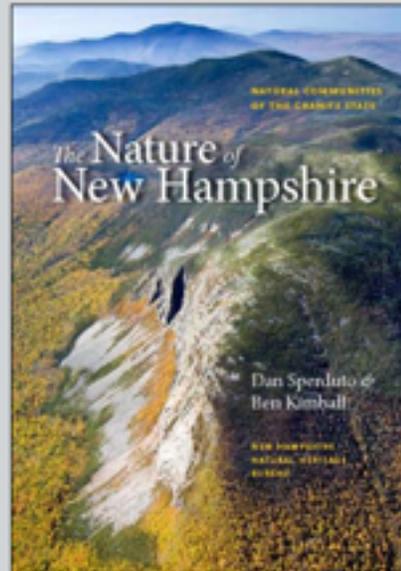
-Forest types are based on tree species, and are used by foresters

-Natural communities describe the entire plant community that occurs given a specific set of physical characteristics, and are used by ecologists. The main difference is that natural communities are a finer scale of classification than the other two (which are much more broad).

Natural Community Publications



Technical manual



Illustrated guide

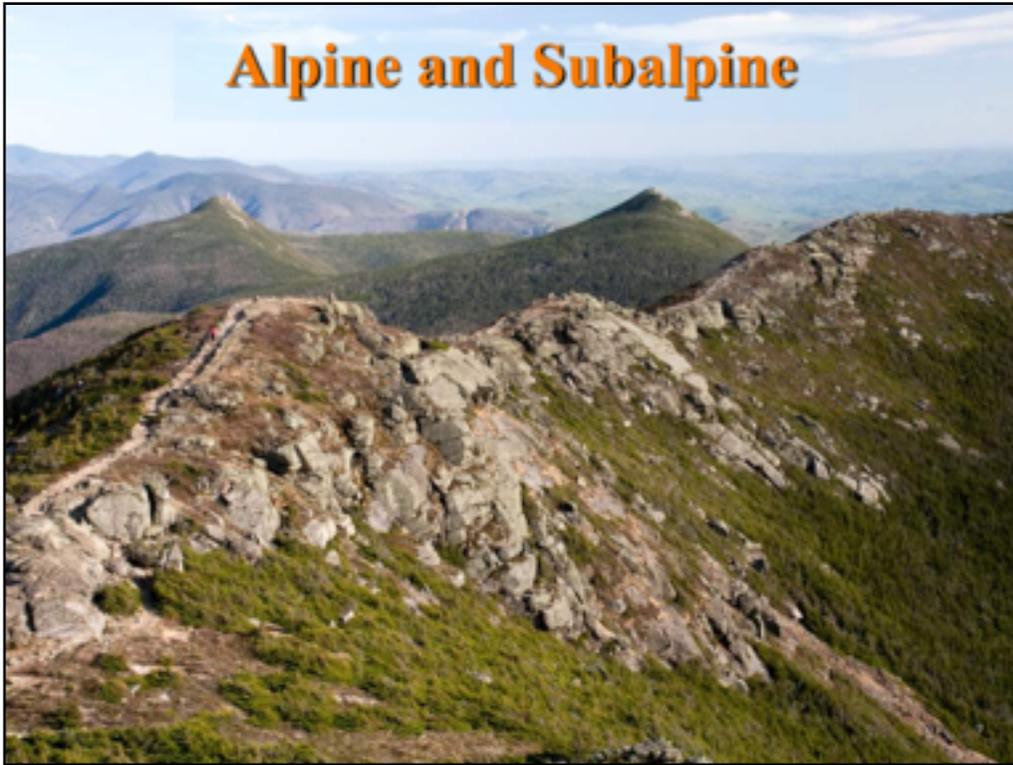
Now you know something about what natural communities are, and why they are important. You've heard that there are almost 200 different communities grouped into 8 categories. You can find out more about all of them in two publications produced by the Natural Heritage Bureau.

The guide at left, *Natural Communities of New Hampshire*, is a technical manual and is available online. This book is used by professionals such as foresters, wetlands scientists, and wildlife biologists.

You can also look for the fully-illustrated guide, shown at right, called "The Nature of New Hampshire." This book is available at bookstores throughout the state and online. Many of the pictures from this presentation are from this new guide [point to the book at right].



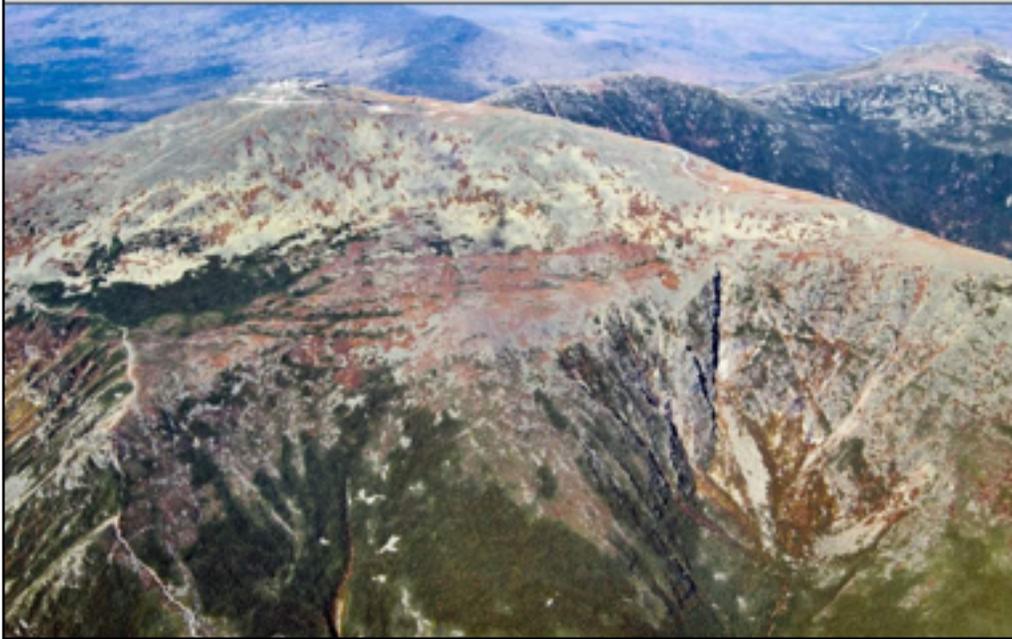
For the remainder of this talk, I'm going to take you on a visual tour through the eight categories of natural communities found in New Hampshire [point to list on screen]. I'll show examples from the peaks of the White Mountains to the shores of the Atlantic Ocean.



Let's begin in the mountains, with alpine and subalpine natural communities.

These types of plant communities occur on cold, wind-exposed summits and the upper slopes of New Hampshire's highest mountains. This photo shows the Appalachian Trail as it traverses the alpine zone on Franconia Ridge in the White Mountains. The alpine zone is actually a patchwork made up of several natural communities.

Alpine Zone



The highest point in New Hampshire is the summit of Mt. Washington. Suffice to say, the weather at the top is pretty dramatic. Hurricane force winds occur on average 110 days per year. The temperature has ranged from a low of -50 degrees and has never exceeded 72 degrees. Snow and rain are the rule, not the exception.

So this is obviously a very severe environment, and only a small number of very hardy and specialized plants can grow here. Their geographic range is mostly much further north.

[Optional]

In this photo of Mt. Washington, the "Alpine Garden" is in the center [red color]. The Lions Head Trail is at the left, just above the upper edge of Tuckerman Ravine (mostly out of the picture), and Huntington Ravine is at right.

Alpine and Subalpine Plants



Most alpine and subalpine communities consist of low, mat-forming plants. True alpine vegetation occurs above 4,900 ft. while subalpine vegetation occurs just below, down to 3,000 ft.

The left photo here shows stunted, windblown trees called “krummholz” on Mt. Guyot [*pronounced “Gee-Yot”*] The two photos on the right show plants that only grow in the Presidential Range: Lapland rosebay on the top, and Alpine azalea on the bottom. All of these plants are able to tolerate drought, cold temperatures, rocky soils, and a very short growing season. Many alpine plants have evergreen leaves and are able to spread through their roots, rather than relying exclusively on seeds to propagate. Most can photosynthesize at low temperatures and light levels, an adaptation that allows them to survive the harsh conditions.

diapensia shrubland



Diapensia shrubland is a natural community that occurs in the harshest, most windblown parts of the alpine zone, on mountainsides where snow typically doesn't accumulate in winter. Here you'll find the plant *diapensia* growing in dense cushions that resist the drying and abrasive effects of strong wind.

Although they are tough plants when it comes to wind, *diapensia* and other alpine plants are unfortunately, and somewhat ironically, very susceptible to damage when trampled by human feet. Some New Hampshire mountaintops have lost much of their vegetation due to heavy hiking traffic.

In the photo at left, note that the girl is standing on bare rock to avoid trampling the fragile vegetation.



Most of the plants* that occur in the state's alpine and subalpine areas are specific to this habitat and don't grow in any other community types. As a result, there are many rare plants that grow here. Two of the rarest—mountain avens and Boott's rattlesnake root— are restricted to New England, New York, and Nova Scotia. Dwarf cinquefoil** is even more restricted. It only grows on Mt. Washington!

**[note: when we say "most of the plants," this means that 70 out of 115 alpine and subalpine species don't grown in any other natural communities...]*

***[note: technically dwarf cinquefoil also grows on Franconia Ridge, but the populations there are transplants, and quite small in comparison]*

sheep laurel - Labrador tea heath- krummholz

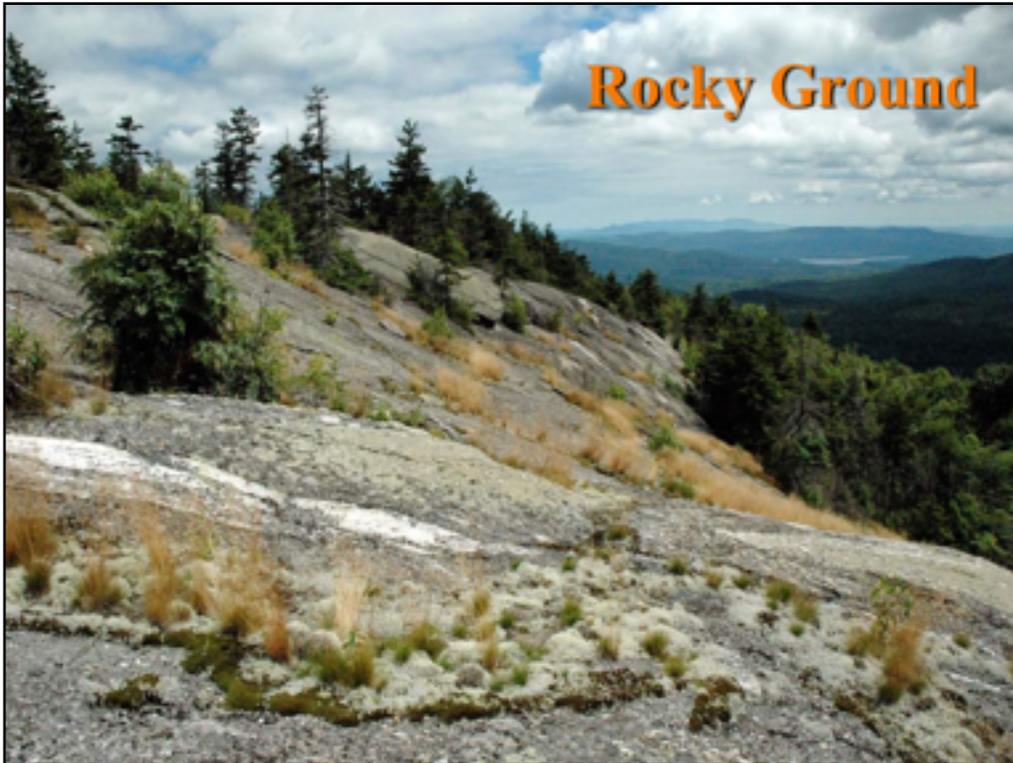


Subalpine areas are still above treeline, but the environment here is a little less severe than in the alpine zone. **Heath - krummholz** communities are common here, where you'll find Labrador tea, mountain cranberry, crowberries, blueberries, lichens, and the stunted, windblown krummholz trees I mentioned earlier. This photo shows a **sheep laurel - Labrador tea heath - krummholz** community on Shelburne-Moriah Mountain near the border with Maine.

[optional]

Krummholz is usually made up of black spruce, balsam fir, and heartleaf birch trees. The krummholz layers are low and patchy, usually no more than 2 feet in height. The shape of krummholz typically shows the direction of prevailing winds, with branches "flagged" in one direction.

[Note: The Town of Gorham is visible in the background of this photo]

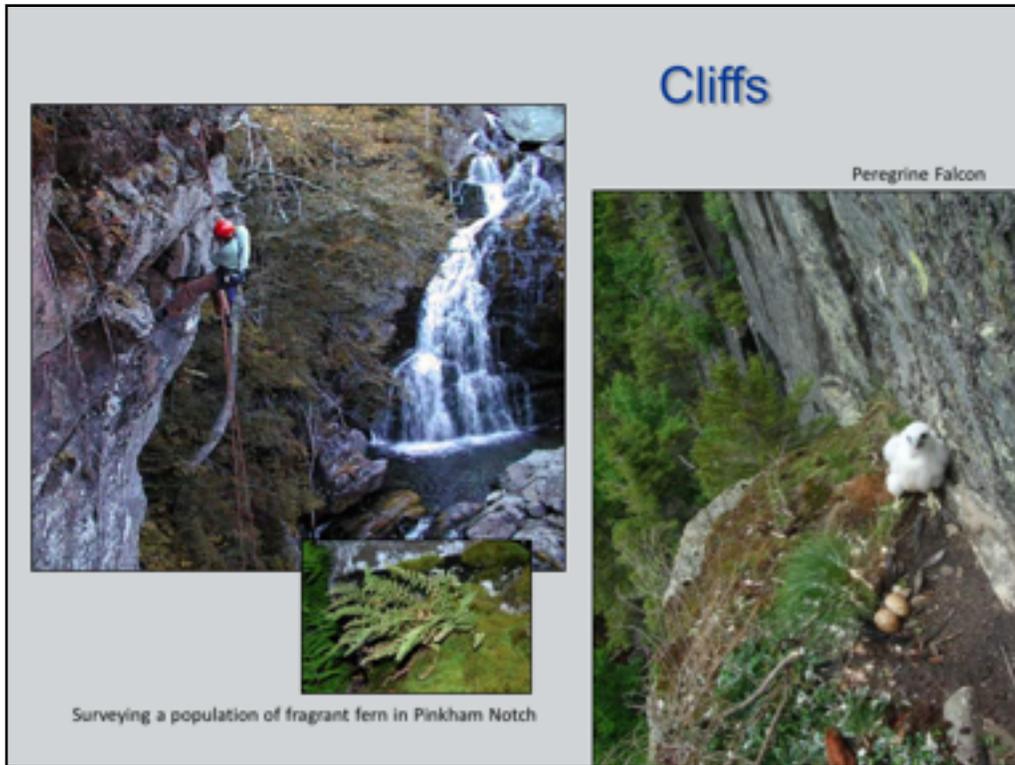


The second major group of natural communities is aptly called Rocky Ground. The communities in this group are found lower in elevation, and include rocky ridges, cliffs, and talus slopes, which I'll show you in a minute.

You still won't find many trees in these areas, since recurring fires, steep slopes, or repeated rock falls keep them from becoming established. In fact, overall plant cover is low, but look for scattered stands of spruce, pine, or oak trees, with heath shrubs, small plants, and lichens in between patches of thin soils and exposed bedrock.

This photo shows a ***red spruce - heath - cinquefoil rocky ridge*** community near Mt. Cardigan.

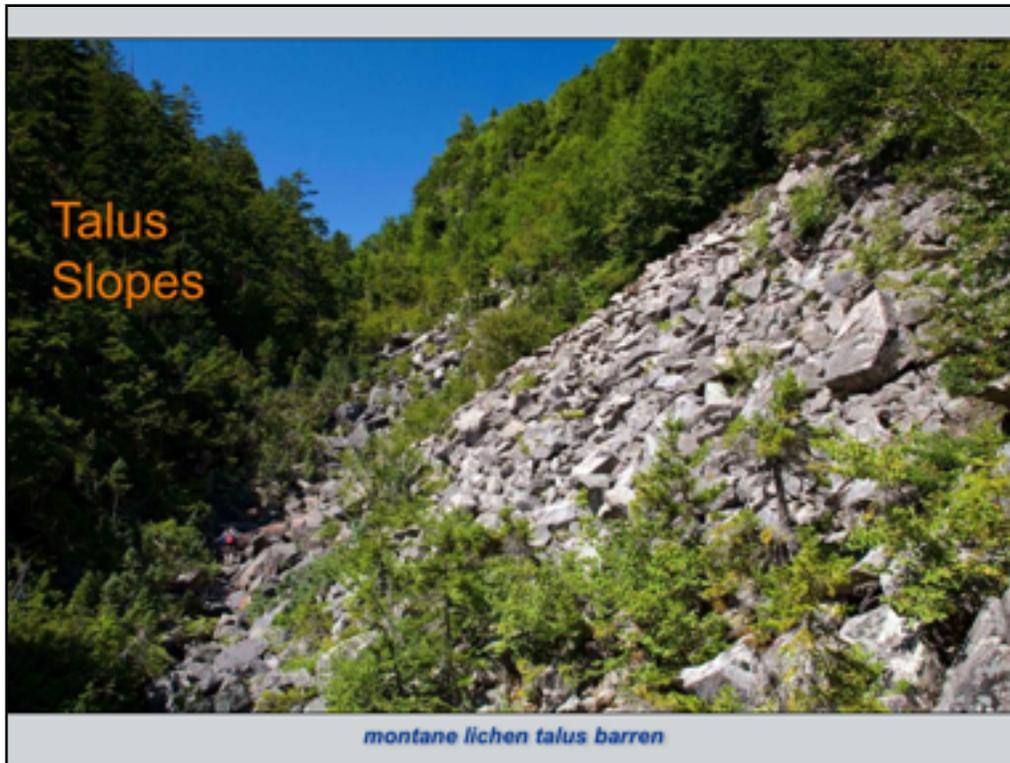
[note: All of these communities occur below the elevation of alpine communities; they do not support any of the same alpine-restricted species.]



Cliffs in New Hampshire support a surprising number of different natural communities. The hardy plants found here can grow on bare rock, anchor in cracks, or perch on narrow ledges.

Many of our state's rare plants and mosses grow here. In the photo on the left, a Natural Heritage Bureau ecologist is surveying a population of fragrant fern.

Cliffs are also critical habitat for the peregrine falcon, an endangered species in New Hampshire. The photo at right is a peregrine chick, hatched on this cliff ledge.



This photo shows a “talus slope.” You can tell the scale of the photo from the hiker at lower left – these are *large* blocks of rock! Talus forms when rocks collect at the bases of ledges, cliffs, and other steep slopes, and can be found throughout the state from sea level to the alpine zone. The crevices created by the rock piles can provide habitat for some rare species of wildlife including black racer snakes and several species of bats.

Pictured here is a ***montane lichen talus barren*** community in Ice Gulch, a ravine in Randolph where ice can persist throughout the summer under some of the larger boulders.

[A note about the natural community name: “montane” means “of the mountains” or “occurring in mountainous areas”]



The next group of communities we'll talk about are Forests. Some of you may know that forests cover the majority of New Hampshire – eighty percent (80%) of our landscape. In fact, we are the second most forested state in the country, behind Maine. In New Hampshire, like much of New England, our landscape *wants* to be trees.

Forests may have thick understories of shrubs and small plants or be relatively barren underneath, but all types share the trait of having a canopy of trees as the dominant plant cover.

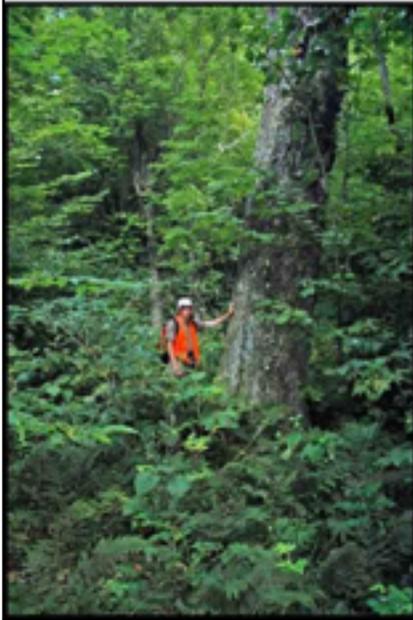
This photo shows the lower slopes of Mt. Moosilauke in Benton, NH.



New Hampshire's **spruce-fir forests** are either found above a thousand feet in elevation or in cold, lowland valleys in the North Country. Communities in this group are dominated by red spruce and balsam fir, sometimes mixed with yellow and paper birch. Look for an occasional patch of blueberry in the understory, and bunchberry on the forest floor.

The trees and plants in these forests can tolerate extreme temperatures, a short growing season and scarce nutrients.

Mixed Hardwood Forests



sugar maple - beech - yellow birch forest
Mt. Cardigan (Orange)



hemlock - beech - oak - pine forest
Hollis

Mixed hardwood forests cover most of New Hampshire's land area between the spruce-fir forests of the north and the oak and pine forests of southern and coastal areas. In the north and at higher elevations, the dominant species in mixed hardwood forests are sugar maple, beech, and yellow birch. These northern forests are the source of New Hampshire's famed fall foliage displays. In southern areas and lower-elevations, trees such as hemlock, beech, red oak, and white pine are most common. Shrubs and low-growing plants grow densely in the understory of many of these mixed forests, creating excellent habitat for many wildlife species.

The photo at left shows a large yellow birch in a typical northern mixed forest community called ***sugar maple - beech - yellow birch forest***. The photo on the right shows ***hemlock - beech - oak - pine forest***, by far the most common forest type in southern New Hampshire.

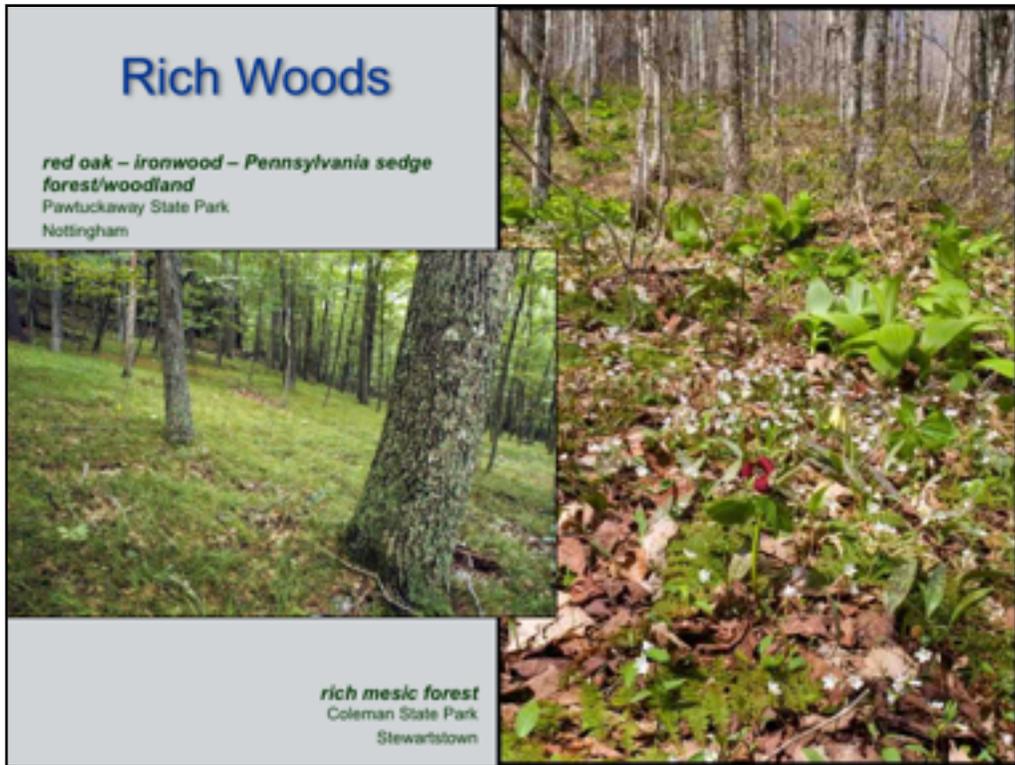
Appalachian Oak and Pine Forests



In the southernmost parts of New Hampshire, a different forest type is common: the Appalachian Oak and Pine Forest. This forest type, seen in the Seacoast and along NH's border with Massachusetts, is the northern range of those temperate forests that extend all the way to Florida. Look for red oak, mixed with species common in the Southern U.S. such as white oak, black oak, and shagbark hickory (like the one you see in this photo).

Many of the plants that grow here – including oak trees and pitch pine – tend to resist both drought and fire. These are adaptations to the warmer, drier conditions of southern New Hampshire.

This photo shows a **mesic Appalachian oak - hickory forest** at Great Bay National Wildlife Refuge in Newington. “Mesic” means “medium” or “middle” and describes how wet or dry the soils are... in this case, they're somewhat wet, somewhat dry.



Rich woods are a special group of forested natural communities. Rich woods share a diverse mix of plants that only grow in soils that are rich in organic matter and nutrients like calcium. Sugar maple and white ash are the most common trees, and there is often a lush understory of wildflowers and other plants. Many of New Hampshire's rare forest plants occur in rich woods communities.

The left photo shows a lawn-like carpet of Pennsylvania sedge in a rich woods community on Middle Mountain at Pawtuckaway State Park. The right photo shows three spring wildflower species in bloom in a ***rich mesic forest*** at Coleman State Park: red trillium, spring beauty, and trout lily.

When you're out exploring the woods, be on the lookout for these places – most of our soils in New Hampshire are acidic and lacking in nutrients – so these are special spots that contain some really interesting and beautiful plants.

Old Growth Forests



Hemlock - beech - oak - pine forest
Pisgah State Park, Winchester

Another special group of forests is Old-Growth. Forest patches that have escaped harvesting or other significant human impact over the past 350 years are very rare in New Hampshire.

Old-growth forests often have very large trees and many dead trees both standing (called “snags”) and on the ground (called “coarse woody material”). This rotting wood provides ideal habitat for many animals, and for microorganisms, lichens, and fungi. In old forests, young trees fill in the gaps where older trees have fallen, so you’ll also see a mix of tree sizes from small to very large.

Typical old-growth tree species include hemlock, yellow birch, sugar maple, beech, red spruce, and black gum.

This photo shows old-growth **hemlock - beech - oak - pine forest** at Pisgah State Park in Winchester.

**[not all old-growth has large trees; some old-growth high-elevation spruce-fir have quite narrow trunks, and very old northern white cedar can be especially small when it grows on ledges, etc.]*



The next major group of natural communities is **Peatlands**.

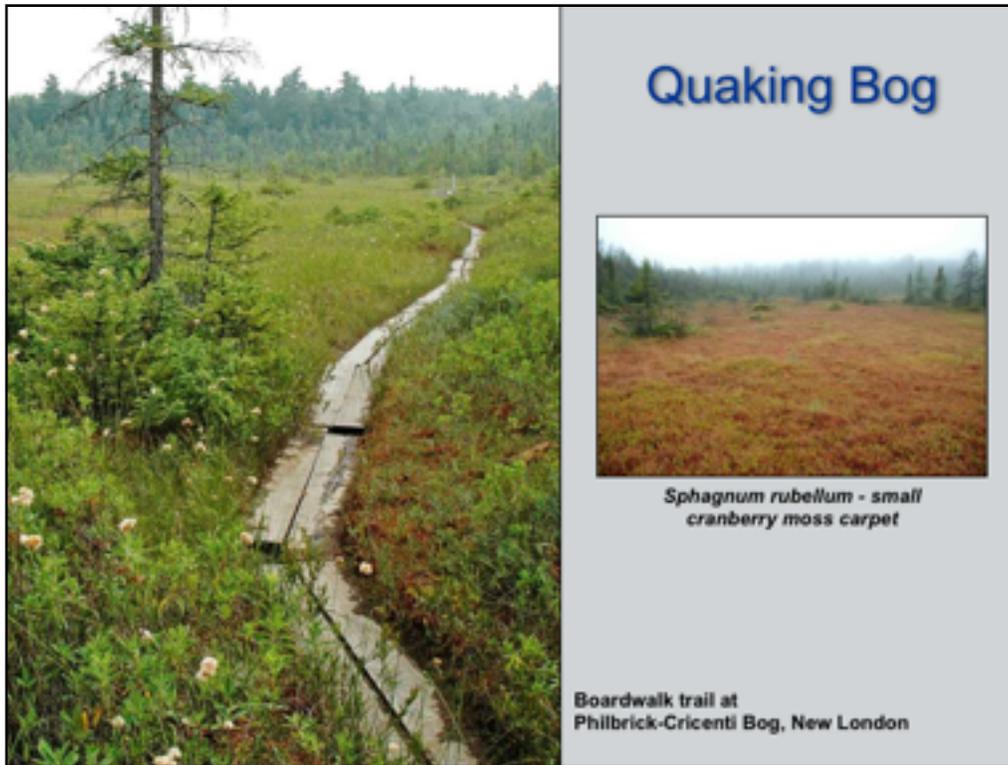
These wetlands – also called bogs, fens, mires, muskegs, and moors – contain layers of partially decayed wetland plants called peat. Peat forms when *live* plants grow faster than dead plants are able to decompose. This occurs in wetlands where the water is very acidic and lacking in nutrients, often in cold places and cold pockets of the landscape. The tough growing conditions here allow for a very distinct group of plants including mosses, sedges and flowering plants, but also sometimes shrubs and stunted trees.

This photo shows an open peatland community at Spruce Swamp in Fremont, NH.



Most peatlands start their development as open ponds. Vegetation slowly grows in from the outer edges, eventually filling in the pond until there is no open water left at all.

This photo shows the peatland fringe around the border of Little Cherry Pond at the Pondicherry Wildlife Refuge in Jefferson, NH.



The water isn't always gone, however. The ground surface of many peatlands is actually a floating mat of peat moss. The thickness of the peat mat varies from site to site, and in thinner portions you can actually feel the ground move beneath your feet as you walk across the surface. Have you heard of or seen a "quaking bog?" The boardwalk trail at Philbrick-Cricenti Bog in New London, shown here at left, is a great spot to visit and experience a quaking bog.

Carnivorous Plants



There are some really interesting plants that grow in peatlands, including some that are carnivorous – they eat insects!

Pitcher plants trap insects in the water of the pool formed inside their hairy leaves [see photos at upper left]. Then they secrete enzymes into the water that “digest” the insects, giving the plant nitrogen to grow.

Other carnivorous plants found in peatlands include round-leaved sundews (the red leaves with sticky projections in the upper photo) and horned bladderworts (the yellow flowers in the lower photo).

[Optional: bladderworts trap and digest very small aquatic animals in underwater capsules on the plants.]



The next major group of communities is **Swamps**. Swamps are another name for forested wetlands. They occur in wet depressions in the forest, and along the low lying edges of rivers, marshes and peatlands. Swamps have wet soils, but unless you recognize some of the wetland plants that grow here, you might not realize these are wetlands during dry parts of the year.

Look for muddy soils, a lot of living (and dead) plant material, a dense layer of shrubs in the understory, and mossy hummocks and hollows at the forest floor. Typical trees include red maple and white cedar, and also swamp white oak, black gum, hemlock, and ash trees.

The photo here shows the Loverens Mill Cedar Swamp, a Nature Conservancy preserve in Antrim, which is an example of an ***inland Atlantic white cedar swamp***.

Poor Swamps



Poor swamps aren't lacking in money... but they are lacking in nutrients! Here, soils are acidic and wet. Poor swamps are often found growing along the edges of open peatlands.

This photo shows rhodora in bloom in a ***pitch pine - heath swamp***, which is a relatively uncommon natural community type.



This slide shows a ***black gum - red maple basin swamp***, a very cool example of a rare type of swamp. Black gum trees are tough, long-lived trees that grow despite lots of abuse from wind, insects, fire, or other disturbances. You can see its unique bark, at lower right, which offers a thick layer of protection.

The middle photo shows just how tough a black gum tree can be. It's lost its upper trunk and all its top branches except for one. Surprisingly, this tree is still alive and will probably be around for years to come.

Since black gum has never been a valuable timber tree and grows in swamps, they've never been a priority for loggers and New Hampshire has some examples of very, very old black gum trees. The photo in the upper right shows two of the oldest known black gum trees in New Hampshire. The Natural Heritage Bureau took cores that show these trees are well over 600 years old. That makes them two of the oldest known hardwood trees east of the Mississippi!

I can't tell you where they are, though*... you'll have to keep your eyes peeled. The confidentiality of some data on rare natural communities and species is to protect both the environment as well as the privacy of private landowners, on whose properties the rare communities and plants occur.

Rich Swamps



northern white cedar - balsam fir swamp Hurlbert Swamp, Stewartstown

Can you guess what makes rich swamps “rich”? [ASK AUDIENCE]

They are rich in nutrients such as calcium. Compared to “poor swamps,” drainage is better and soils are less acidic. Typical trees include northern white cedar, balsam fir, red maple, and green and black ash. This photo shows a ***northern white cedar - balsam fir swamp*** at Hurlbert Swamp in Stewartstown.

Rich swamps, like rich woods, contain some of our state’s rarest forest plants...

Rare Plants in Rich Swamps



Showy lady's slipper



Large yellow lady's slipper

Several rare orchids are only found only in rich swamps, including both showy and large yellow lady's slippers. Both of these plants are threatened by orchid collectors who illegally harvest them from both public and private lands.

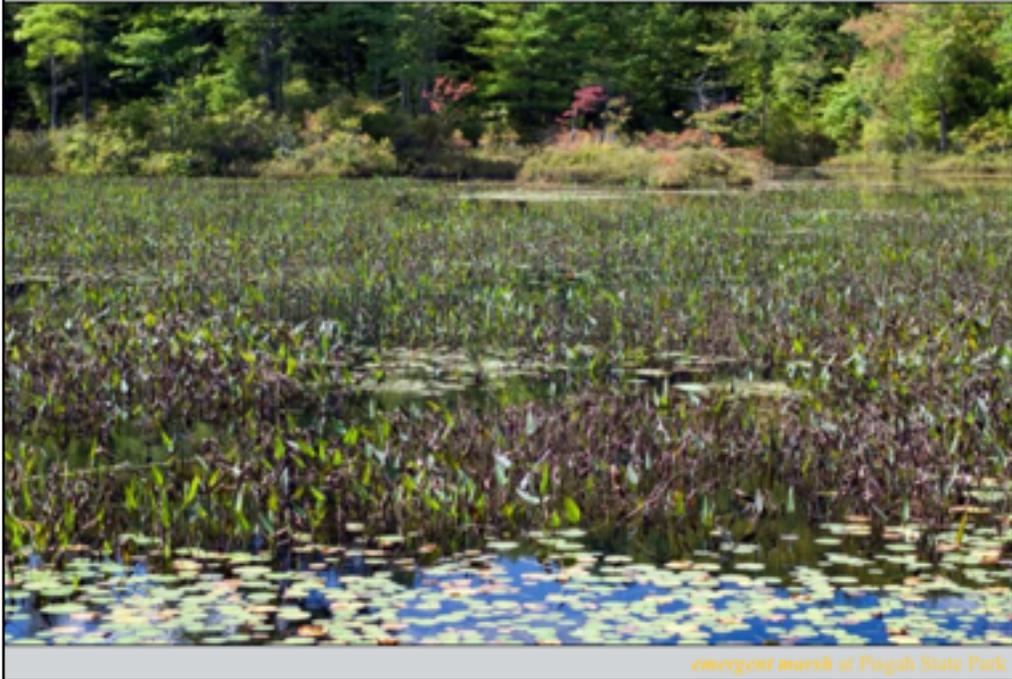


Marshes are the next group of natural communities we'll talk about. This is an aerial view of Garland Pond Wildlife Management Area in Ossipee. You can see where the trees stop and the marsh starts – that line is driven by the level of the water.

Marshes are freshwater wetlands in low spots on the land where water collects for at least part of the year. The plants that grow here must be able to tolerate flooding, and for the most part, this eliminates trees. Marshes are lush places, benefiting from rich soils and lots of nutrients.

Marshes benefit us in lots of ways – they provide excellent flood control, pollutant filtration, erosion control, and wildlife habitat. Acre for acre, marshes have more wildlife than almost any other habitat. As open areas in a mostly forested landscape, many also offer scenic and recreational enjoyment.

Emergent Marshes



There are many different types of marshes and they all look quite different. This is an example of an emergent marsh in Pisgah State Park. Emergent marshes have open water with plants that root underwater but “emerge” through the surface, hence the name.

These plants, which include pickerel weed, lily pads, sedges, and cattails, grow in slow moving or still water. They provide great hiding places for waterfowl with newly hatched ducklings, nurseries for young fish, and hunting grounds for herons, bitterns and egrets. Look for these marshes along river and pond edges, as well as beaver ponds.



Wet shrublands are another type of marsh.

Look for alder, buttonbush, highbush blueberry, and winterberry holly, all shrubs that grow well in wet soils, or even in standing water. They flood much less often than other marshes so they might not look like your typical marsh.

Wildlife find great cover in the dense thicket of these wetlands. Woodcock feed safely on earthworms in the moist soils below alder shrubs. Spotted turtles spend their summers here feeding on insects, amphibian eggs and just about anything else they can catch. Birds, bears and chipmunks all benefit from loads of berries produced each year in these shrublands.



Several rare marsh community types occur at the edges of large lakes and ponds, and support plant species found nowhere else in the state. This photo shows a mix of peatland and marsh vegetation in the Ossipee Lake Natural Area on the south shore of Ossipee Lake.

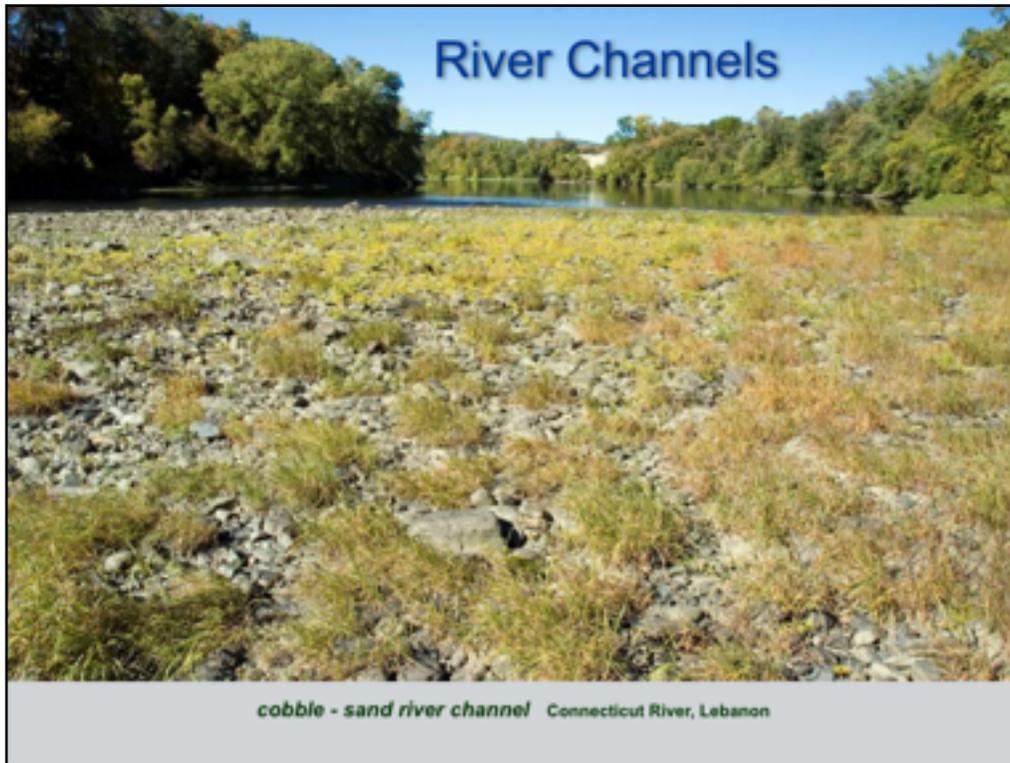


The second to last group of natural communities is called River Channels and Floodplains. Although river corridors make up only 2% of New Hampshire's land area, they are extremely rich in plants and wildlife, and contribute greatly to our state's diversity.

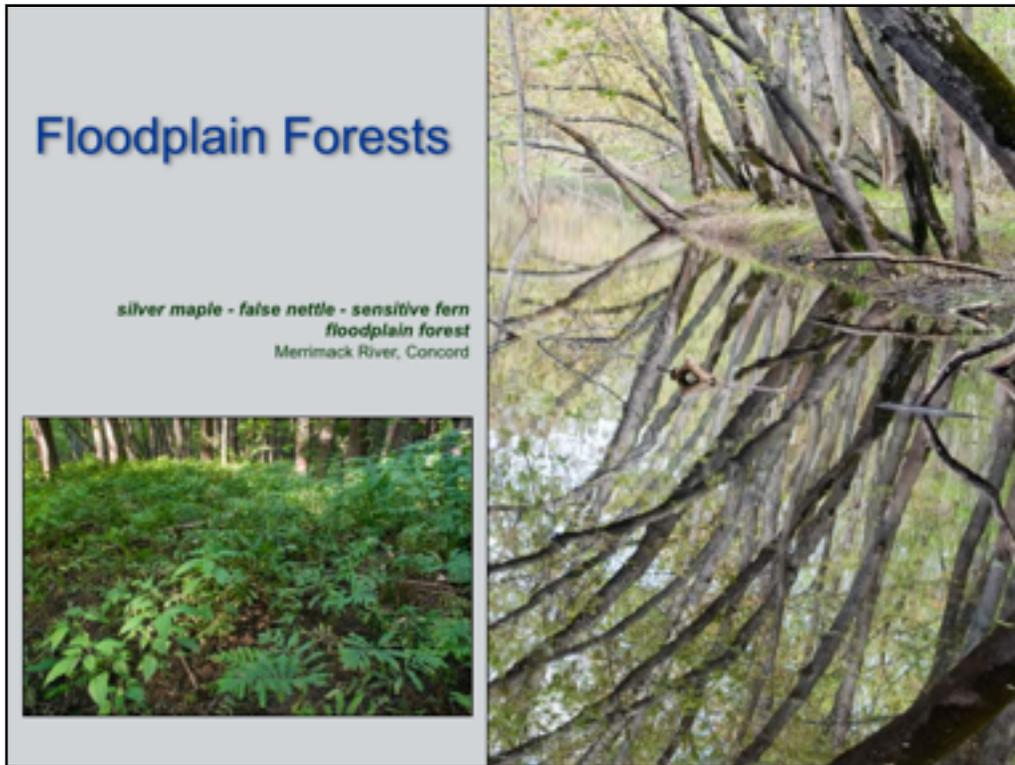
River channels flood consistently every year, usually in the spring, while floodplains are less predictable. They might flood every year, or every 10 years.

This is a photo of the Merrimack River between Boscawen and Canterbury. The sandy bluffs you see in the center are part of the newly created Muchyedo Banks Wildlife Management Area in Canterbury, recently conserved by the town and several conservation groups. A private landfill was planned for the site, but the unique character of this floodplain area convinced residents to raise the funds to conserve it.

Cliff swallows often nest in the banks of river bluffs like these.



River channel communities grow closest to the river, where flooding and disturbance are greatest. Look for grasses and a few hearty shrubs scattered across bare ground along the river's edge. This photo shows a ***cobble - sand river channel*** community along the Connecticut River in Lebanon.



Floodplain forest communities grow in low-lying areas along rivers, usually less than 20 feet above the river channel. They typically have tall trees in the canopy, and a low, lush groundcover with little in between. Arching canopies of silver maple floodplains are particularly beautiful – you can see an example here from the Merrimack River in Concord.



Our final group of natural communities occurs near the ocean. Although New Hampshire only has 17 miles of coastline, this is nevertheless one of the most biologically rich parts of the state. But, like many coastal areas, our seacoast is also home to lots of people, which means there are houses, roads, docks, and other human development. Many of our coastal plants and animals such as the endangered piping plover are at risk of extinction in the state.

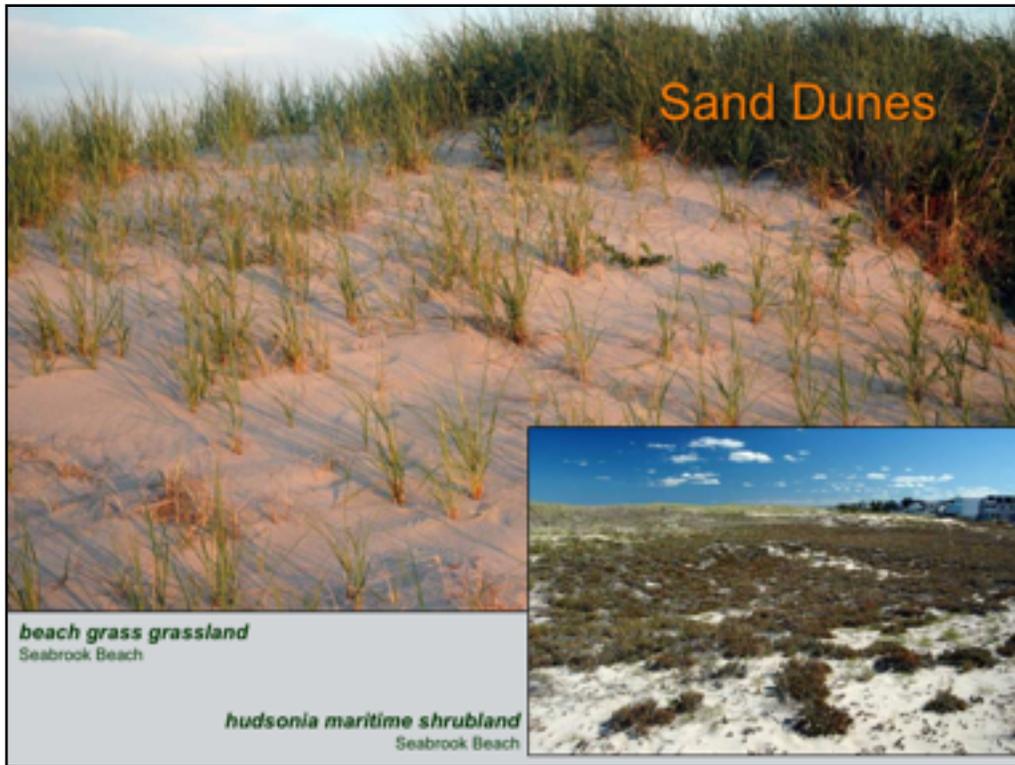
[CLICK to show sign posted for plovers]



Despite our short coastline, New Hampshire is lucky enough to have several large estuaries. Estuaries occur where rivers meet the sea, and freshwater mixes with salt water. Salt marshes such as this example at Hampton Marsh include natural communities such as **high salt marsh**, **low salt marsh**, and **salt pannes and pools**. You can see some salt pannes and pools in this aerial photo [*point to the isolated blue pools*].

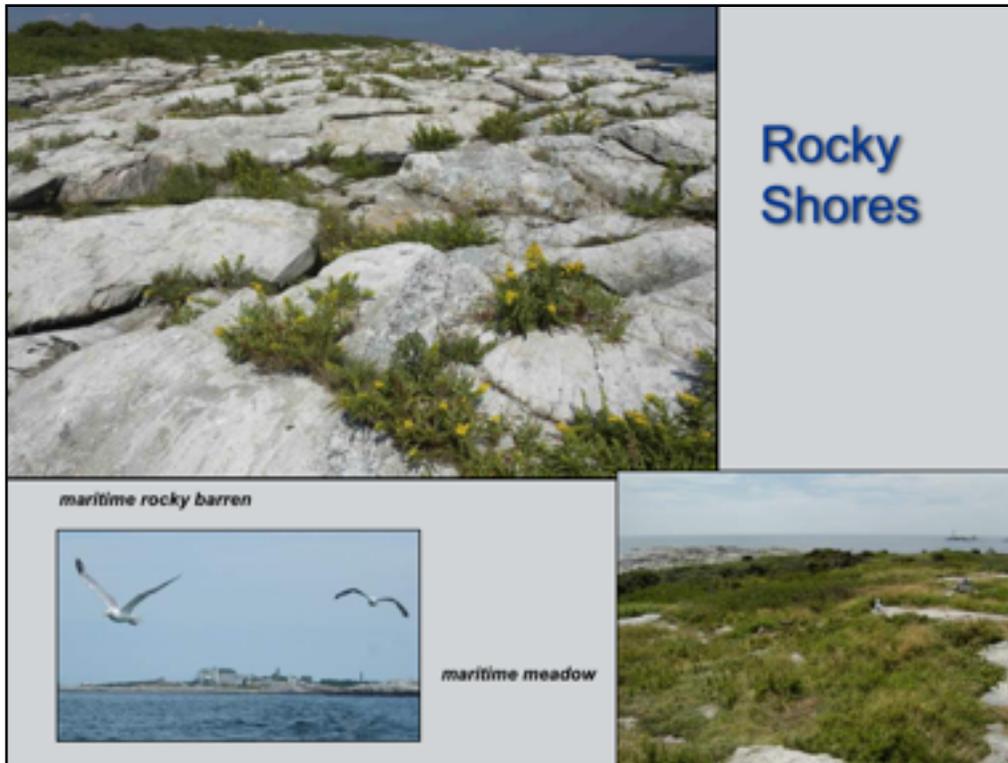
Estuaries are incredibly productive ecosystems with plants like cord-grass and eelgrass that have adapted to changing tides, shifts in salinity of the water, and seasonal flooding and freezing.

Although these plants are tough when it comes to adapting to natural conditions, they've proven less tough when it comes to pollution and excess nutrients from things like septic systems, water treatment plants, farms, and lawn fertilizers. These pollutants have led to the loss of 30% of eel grass in Great Bay since 1996, and this plant has disappeared completely from all of the tidal rivers in New Hampshire.



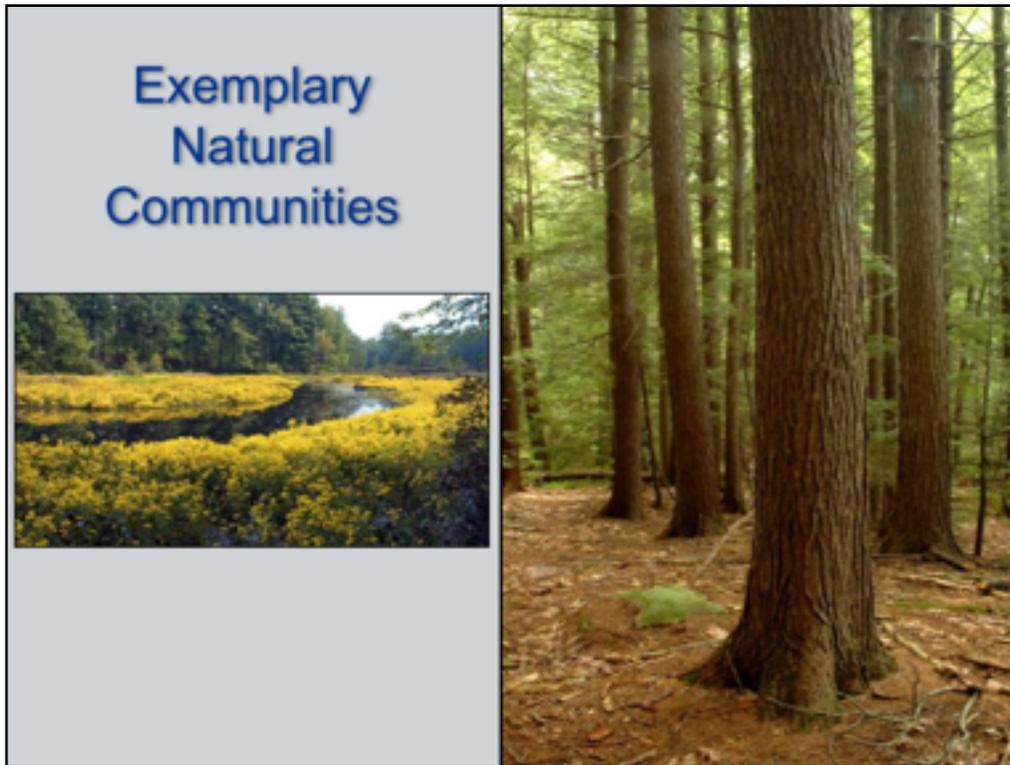
Sand dunes are a dry, sandy, salty, and windy environment, with a short list of plants and trees that can survive there. Look for clumps of beach grass, little bluestem, and **hairy hudsonia**, a rare plant species in New Hampshire [see photo at lower right].

As you can probably guess, sand dunes are a rare feature along New Hampshire's seacoast. Most of the state's once-extensive dunes have been lost to development, but the spits and barrier beaches protecting the estuary in Hampton Harbor support small remnant examples of several coastal dune communities.



The only examples of rocky shore natural communities in New Hampshire are on the Isles of Shoals and portions of the mainland like Odiorne Point State Park. Here too, plants must be able to tolerate salt spray and very rocky soils, if you can even call them “soils”!

One of these communities, the ***maritime meadow***, actually requires the presence of active seabird colonies to persist. The nesting gulls tug and pull at the vegetation. That action, combined with salt spray and many layers of bird guano [or you can say “droppings”] keep woody shrubs from outcompeting the grasses and sedges there.



So now you've seen many different examples of natural communities in New Hampshire.

But, how do we know which natural communities are the most special? The Natural Heritage Bureau evaluates each type of natural community based on how rare it is, both in the state and in the world. If a natural community is *only* found in New Hampshire, we have a special responsibility to care for and protect that type.

In addition, the Bureau rates every record of a natural community according to whether it's in good shape – undisturbed by humans with healthy growth and the ability to replace itself over time. The best examples are called "Exemplary Natural Communities." These are the best remaining examples of New Hampshire's natural diversity.

On the photo at right, you'll see an example of a **hemlock - white pine forest** in Durham that is rated as an exemplary natural community. It's an old forest, protected from development and logging over the past 100 years, and is likely to remain so in the future.



There are hundreds of ways that humans have altered and destroyed natural communities. We build houses and buildings that damage natural areas, we build roads that separate plants and animals from each other, we fill wetlands and dam rivers, and pollution spreads in the wake of most human settlement.

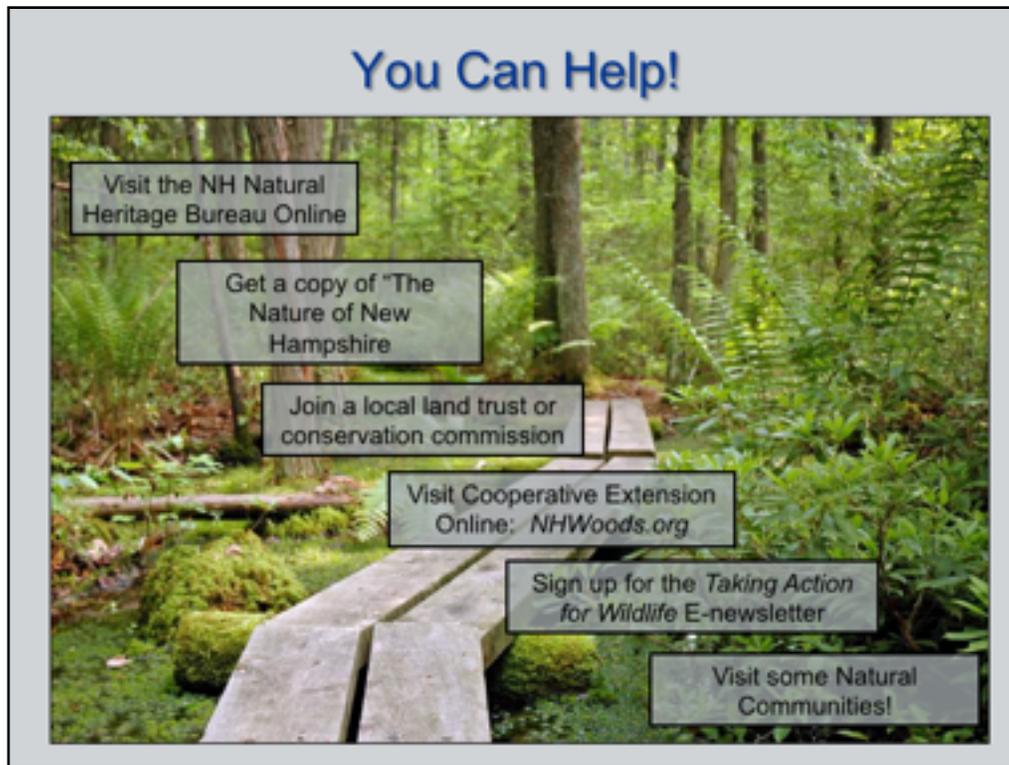
In addition, new threats, like invasive exotic plants, irresponsible recreation, and climate change are adding to the list of threats.

[Photos:

purple loosestrife in bloom

coastal development separating foredune communities from backdune communities

habitat fragmentation from road construction in Concord
and an ATV driving over rare plants along the Saco River.]



But fortunately, New Hampshire has a large number of local, state, and national conservation groups working hard to protect the state's exemplary natural communities from these threats. In recent years, local towns have funded an amazing amount of land conservation in both southern and northern New Hampshire, to the tune of well over \$140 million dollars. In addition, many private landowners are involved in conserving their own land and are interested in learning about their individual piece of our state's natural heritage.

You can participate in many of these efforts too! We're hoping that by learning more about natural communities, you'll notice some new special places around you. You can:

[CLICK]

Visit the Natural Heritage Bureau website – they have pictures and descriptions of all the natural communities, and where to go to see examples of them [CLICK]

Pick up a copy of "The Nature of New Hampshire" -- the full-color reference guide to natural communities [CLICK]

Join your local land trust, or conservation commission, or one of the many statewide groups working to conserve land [CLICK]

Look for outdoor workshops where you can learn more about natural resources – go to NHWoods.org for upcoming events near you [CLICK]

Sign up for the Taking Action for Wildlife e-newsletter, which is focused on wildlife and conservation [CLICK]

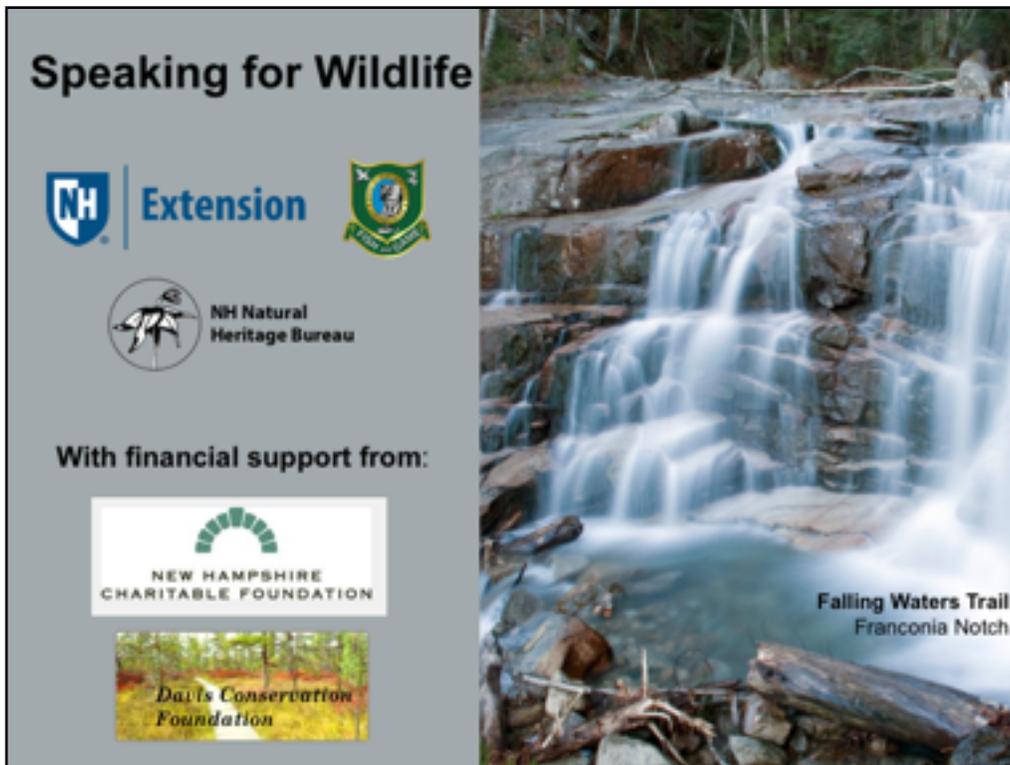
Visit some examples of special natural communities... the Natural Heritage Bureau has a bunch of guides to help you do just that...



This series of brochures called “Visiting New Hampshire’s Biodiversity” is put out by the Natural Heritage Bureau.

These guides have maps, parking information, photographs, and lots of interpretive information about amazing places where you can experience the state’s exemplary natural communities in person.

These guides are available on the bureau’s website (www.nhdf.org/natural-heritage-and-habitats), at rest areas statewide, and we have a handout with download information available here today.



I hope you'll take a closer look at natural areas near you, or visit a few new places that showcase interesting natural communities. The Nature of New Hampshire is truly special – so go outside and take advantage of it!

That's the end of my presentation. Before I take questions, I'd like to thank the organizations who sponsored this program:

- The **New Hampshire Charitable Foundation** and the **Davis Conservation Foundation** for grants that supported the creation of Speaking for Wildlife,
- UNH Cooperative Extension** for supporting our volunteer programs, and **NH Fish and Game** for their continued support of the program;
- The New Hampshire **Natural Heritage Bureau** for putting this presentation together

Thank you for listening! Questions or comments?