

Broadmoor Wildlife Sanctuary



A Sensory Trail for the Fall Season

FOR ALL SENSES, ALL PEOPLE

An audio tour is available through your cell phone by calling **508-530-0002**. The recording is also available online at **www.massaudubon.org**, where you can download it on your personal audio player. Individual copies of the trail map are available in printed or tactile formats, and Braille guide is available in the Nature Center.

Welcome to Broadmoor Wildlife Sanctuary. This Sensory Trail is here for your enjoyment. Please take only pictures and leave only footprints. Enjoy your walk today and return to experience the trail in different seasons.

I Trail Information

Welcome to Broadmoor's multi-sensory interpretive guide to our marsh boardwalk trail. September and October are months of autumn bounty, leaf-fall, migration. Days are cooler and crisper. Change is everywhere as the natural world prepares for winter. There is much to hear, smell, feel, and see. We hope our guide encourages you to make an in-depth, sensory exploration of the nature of Broadmoor and heighten your sense of wonder. Before you begin, we'd like to orient you to our sanctuary, give you a few quick instructions, and point you in the right direction.

Broadmoor contains more than 600 protected acres of field, forest, and wetland habitat. We have nine miles of walking trails. The trail that you are about to explore is a quarter-mile loop that is accessible to everyone. The wide path through the woods and the boardwalk through Indian Brook marsh accommodate wheelchairs, walkers, and baby strollers. There are benches along the boardwalk where you can sit. The marsh boardwalk is a favorite with young and old alike, new visitors or experienced outdoors people. The narration portion of the multi-sensory guide takes about 60-70 minutes. There is no time limit for walking the trail, but many people take an hour and a half or more to fully enjoy the experience.

Because we are a wildlife sanctuary, all of the plants and animals here are protected. Please do not collect, pick, or eat anything. For your safety as well as for that of the wildlife, remain on the trail to avoid poison ivy, thorny vegetation, rocks, roots, and ticks.

Except for the intermittent rumbling of airplanes overhead, most of the noise of human technology is coming from Route 16 in back of you: cars, trucks, lawn mowers, leaf blowers. Now is the time to leave the road behind you. Hear the singers of nature's tunes. The dominant voices in early fall belong to the insects in the field to your right. The grasses are tall and heavy with seed. Grasshoppers, leafhoppers and crickets, the herbivores of the field, jump ahead of human footfall. On warm days and in Indian summer, the quick, dry chirping of the crickets in the field blends with the high-pitched whine of the cicadas in the trees. On cooler days, the crickets call more slowly. Late in the day, katydids might join in from nearby trees with their scolding: *katy-did/katy-did/katy-didn't*. Plumes of bright yellow goldenrod, purple and white asters, and other late-blooming wildflowers attract insect pollinators. Bees, wasps, and flies add their buzzy drone to the field chorus.

Before you move on, there is one more activity that we will ask you to repeat at various places along the trail. Let yourself become a sensory barometer to measure wind and weather. Also, you can be a human compass and figure out the direction you are traveling by noting where you feel the sun on your face and what time of day it is. Ready? First, turn and be sure that you are standing with the field and split rail fence on your right. Next, lift your face slightly to the sky. In the morning, the sun is in the east; it will shine warmest on your left side. By midday and early afternoon, the sun will appear in the south so that you will feel it on your entire face. From the west later in the afternoon, the sun will feel warmest on your right. Okay, feel that sun. In which direction are you heading? You are going south.

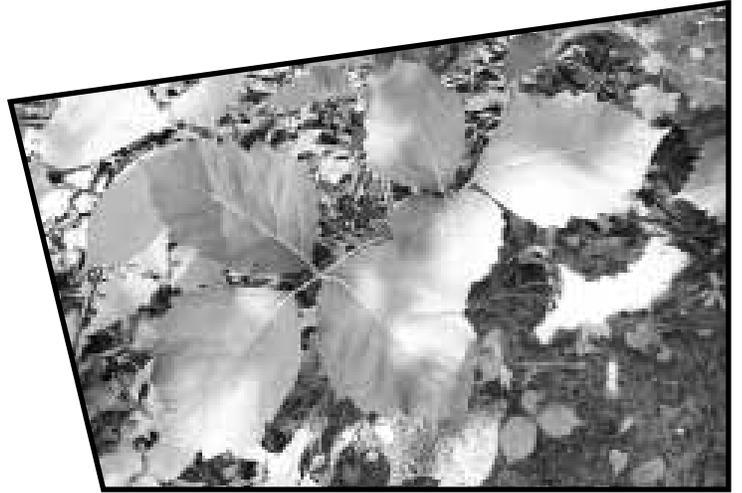
Now, feel the wind on your face. From what direction is the breeze blowing? Another way to test wind direction is to lick your finger, then hold it up to feel the breeze. Finally, what is the general "feel" of the habitat you are in? Cold or hot? Shady or sunny? Exposed to the wind or sheltered from it? Noisy and bustling or calm and quiet?

Now that you have an impression of the open field, it's time to explore the forest habitat. Please remember to walk along the right side of the trail, but don't step in the vegetation at the edge of the path. It may contain poison ivy.



You have just entered one of Broadmoor's other major habitats. This is a mixed white pine and oak forest, one of the most common forest communities in southern New England.

A word of caution before you walk through the forest: poison ivy is quite common at the edge. Poison ivy has three shiny green leaves that turn a gorgeous crimson or yellow in autumn. Sometimes the leaves have a thumb-like lobe. The stems are always smooth, with no thorns or prickles, and the berries are greenish-white. Poison ivy grows as a low plant, a small shrub, or a climbing vine. The vines are hairy with aerial roots and can give you a rash even if they have no leaves.



Stop and compare your sensory perception of this place with that of the field. Turn your face upward to gauge sunlight, temperature and wind. Does the earth smell moist, dry, earthy or fragrant with flowers? How have the sounds around you changed? The forest canopy of leaves overhead creates a cooler, moister habitat than the field.

A large oak tree is a couple of arm lengths away on your right..You may have to turn and take a step or two so that you can reach out and touch its trunk. You will be able to feel the textures of several organisms. The bark of the tree is thick and coarse with vertical furrows. Lichens and mosses grow on the trunk. The rubbery, thin patches of lichens contrast with the soft, cushiony patches of moss. The oaks are producing acorns now. You can hear them falling to the ground or feel them like small marbles under your feet, especially in a "mast" year when the crop of acorns is much more abundant than normal.

Throughout September and until the third week of October, the forest canopy will remain leafy and shady. First to lose their leaves, the maples blaze red and yellow by mid-October. Next, the beech leaves turn a coppery orange. The oaks retain their dull reddish-brown leaves long after others are gone. By the first of November, the deciduous trees are bare. The white pines are evergreen but do lose some of their needles each fall. As you walk down the trail, you may be able to hear the soft crunch of leaves and pine needles underfoot. When tread upon, they smell like dry summer sun.

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The woods are filled with chipmunk chatter, particularly in the fall when they are gathering acorns and other nuts and seeds for winter, filling their cheek pouches until they bulge. Chipmunks hoard a large food supply in underground burrows where they remain dormant for much of the winter. Listen for a single sharp chip or for a series of rapid, monotonous chips.



With their cinnamon brown fur, and white and black side stripes, chipmunks are masters of camouflage. They blend into the forest floor and woody vegetation when they aren't moving, so they are often heard before they are seen. You can recognize their chips or hear them skittering through the brush when they move.

Gray squirrels are also plentiful at Broadmoor. Like their chipmunk cousins, they gather nuts for winter, but bury them in shallow, individual holes. Squirrels are active all winter and will dig up the nuts when they're hungry. Excluding their long bushy tails, squirrels are roughly twice as long as chipmunks but weigh 5-6 times more. It's fairly easy to distinguish between the gentle rustling of chipmunks and the loud crashing of squirrels as they travel through the underbrush or in the trees. As you walk, try to distinguish chipmunk calls from birdcalls.

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When you stop now, there should be a large tree on your left. It is a white pine. Run your hands up and down the trunk. How does it compare to the oak that you examined earlier? Both trees have thick, furrowed bark, but this pine is more deeply grooved so that it feels rougher. Also, it has no lichen or mosses. Unlike the oak, the pine will keep its needles all year. The slender, waxy needles attach to the twigs in bundles of five. The branches have a different growth pattern as well. On pines, a new set of branches grows out from the trunk each year. As the tree grows, the lower branches die and break off, so that only the top quarter of a typical mature white pine has branches and needles.

The oaks and pines provide food and shelter to a wide variety of birds here at Broadmoor. Vocal as well as visible, birds can often be recognized by their songs. We are going to play the calls of some of our most common woodland birds so that you can listen for them. Two migratory birds that are still here in September and into early October are the robin and the catbird. The catbird mimics other species, but can be recognized by the scratchy "meow" interspersed in its song:

Why do some birds fly south while others winter in New England? It depends on what the birds eat. Insects disappear over the winter, so the insect eating birds migrate to warmer climates in the fall. Fruit and seed eaters remain up north because they have a winter food source. Some birds, winter robins for example, become “switch-hitters,” changing their food source from insects to berries. Now, listen to some of our year-rounders. One of the easiest songs to recognize is the “chickadeedeede” of the black-capped chickadee, our state bird. In winter, chickadees often travel in mixed flocks with other small birds, including tufted titmice and white-breasted nuthatches. Some of the larger birds you will hear include the bright red cardinal and the blue jay. The mourning dove’s haunting call is often mistaken for an owl. But the crow’s caw is unmistakable. Listen for these songs as you walk on.



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Stop six, the semi-circle of benches, is a good place to sit while we introduce you to our third habitat at Broadmoor, the marsh.

While you are sitting, we’d like to give you some information so that you can familiarize yourself with the boardwalk part of the trail. The boardwalk itself is 430 feet long and 8 feet wide. The left edge of the boardwalk has a short curb approximately six inches high, but has no rail. The right edge has a three-foot high railing that you can hold to get your bearings, so please keep toward the right side of the boardwalk. There are two benches along the boardwalk for rest and contemplation, and you will be prompted to stop at each one. There is another stop midway between the benches. Please take the time to walk at a pace that is comfortable for you. Stop and explore anywhere and everywhere you are curious.

Before the boardwalk heads into the open marsh, it passes through a small wetland buffer zone where the forest and the marsh grade into each other. This upland/wetland interface is composed of a shrub thicket, wetland plants such as jewelweed, and vines of fox grape. The fruity smell of grapes fermenting in autumn is unmistakable.

At this small jog along the railing, you are overlooking an area of very shallow water on the right. Protected from wind, the shallows heat up quickly on a sunny day, attracting many turtles and frogs. A water snake or two may bask all coiled up on a sunny spot in the vegetation. On a cooler fall day, this may be the first – and sometimes the only -- place to find reptiles and amphibians before they hibernate for the winter, beginning mid to late October. Listen for the occasional frog. Green frogs croak with a banjo-like twang. Bullfrogs give a loud “jug-o-rum”.

Dragonflies and damselflies, too, are drawn to this warm microclimate. Adults are dying off now, but they have left aquatic juveniles, called nymphs, to over-winter in ponds and streams. Next spring and summer, the mature nymphs will climb out of the water onto plant stems and metamorphose into shimmery, transparent-winged adults. Dragonflies and damselflies are fierce predators of smaller insects. Adults and juveniles alike are among nature’s best mosquito control.



What impressions can you gather from the shallows near the marsh shore? Is the area hopping with activity or does it feel like a drowsy, lazy place? Do you detect an aquatic odor of humidity and moisture? How about the scent of organic matter decaying, which smells like sulphur or rotten eggs?

Take a few moments to recognize the marsh birds. From late February through October, the red-winged blackbird’s hoarse “conk-a-reee” is the most common and easily recognized call in the marsh. Another summer resident is the common grackle. The grackle is iridescent black with a long tail and a beady yellow eye. The male red-winged blackbird is glossy black. His yellow margined red “shoulders” flash a brilliant scarlet when he flies. Female red-wings have drab, mottled brown plumage, providing them with good camouflage when they are nesting in the cattails.

There are also sweet songsters in the marsh and its edges. Listen for the melody of the song sparrow behind you or farther out in the marsh. The bright yellow male goldfinches of summer will soon molt and don a winter coat as drab an olive as the females. Listen for their “potato chip potato chip” chirping. You can hear goldfinches all year long and in the forest and field as well as the marsh.

Feel the full power of the sun's energy on your body. Imagine how you would feel if your body temperature fluctuated with the weather. Cold-blooded creatures like frogs and turtles rely on an outside source of energy, the sun, to warm them up and jumpstart their metabolism. They hibernate to protect themselves from freezing during the winter. Standing here, you can understand why, on warm sunny days, a couple of hundred eastern painted turtles may congregate in this marsh. Sometimes they paddle lazily just below the surface, and may swim under the boardwalk. Some float among the water lilies, poking their heads above water. Others bask on muddy tussocks and emergent logs. When people walk by and cast shadows on the turtles, they'll dive into the water with a gentle "plop."

One of the mammals that may be found swimming here during the day is the muskrat, especially when it is occupying a bank den on the shore to your right. Muskrats also make lodges out of mud and cattails in the open water. Muskrats are much smaller and less elusive than beavers. A swimming muskrat makes a narrow, ribbon-like wake with its long, thin tail. They are active all year and feed on cattails and many other water plants.

The shallow water to the right of the railing is covered with duckweed, the smallest of flowering plants. Smaller than confetti, a single duckweed plant is a minute floating circle with a tiny root hanging down from the center. By midsummer, the duckweed has multiplied in such profusion that the surface of the water appears lime green. Duckweed is, indeed, eaten by ducks, geese, muskrats and other herbivores of the marsh. Many larger aquatic plants thrive in the marsh habitat, rooted in the mud, but with stems and leaves emerging from the water.



Plants are important organisms in the food web of the marsh. They manufacture their own food through the process of photosynthesis. Their roots, shoots, leaves, flowers, fruits and seeds feed a wide variety of animals. Wetland plants act as filters to purify water and as sponges to control flooding. Two of the most abundant wetland plants along Indian Brook and its marsh are cattails and purple loosestrife. Cattails are taller than most people, about six feet high, with long, sword-like leaves. In autumn, the ripe seed head looks more like a big brown sausage than a cat's tail. Native American and colonial people utilized almost all parts of this native plant for food. Purple loosestrife, on the other hand, is an invasive alien plant from Eurasia and spreads widely because almost nothing here in North America eats it. Its flowers create a beautiful magenta vista, but it crowds out many of our native plants for space in the marsh.

What would a marsh be without water lilies? Indian Brook marsh is packed with lily pads that float on the water and ruffle in the breeze. We have two different species. Fragrant water lily has round pads—or leaves—and large sweet-smelling flowers with numerous white petals surrounding a yellow center. Spatterdock has leaves that are oval or heart-shaped. Its flower is a tight yellow globe on a stalk that juts out of the water.

While you are sitting, take the opportunity to look and listen for ducks and geese. Most of us are familiar with the loud honking of Canada Geese and the quacking of mallards. The wood duck call is softer. Even when the ducks and geese are silent, it's fairly easy to detect their presence if you sit quietly. Listen for wing-whir as the birds take off and land, and for the sound of a splash landing. You can also hear the click-clack of their beaks as they nibble on duckweed and dabble for submerged vegetation.

On the final segment of the boardwalk, you will make the transition from open marsh to forest through a wetland buffer zone. On the right, a stand of silky dogwood displays its autumn colors of crimson leaves and midnight blue berries. From midday on, the trees and shrubs cast shadows that keep the temperature cooler on this part of the trail. When you're ready to walk on, compare your sensory perceptions of this buffer zone with your impressions of other areas of the marsh.

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Use your senses to tell the tale of the tree. Run your fingers over the bark. Is it rough or smooth? Can you feel moss or lichen on the trunk? Knock sharply on the trunk and listen. Does this tree sound hollow or hard?

By now, you've probably deduced that this tree is dead. Fungi, bacteria, insects, and rain are all working to decompose the wood. Nature is the original recycler. In approximately twenty years, this dead maple will be soil from which new plants will sprout. For now, it still plays an important part in the ecology of the forest. Birds, squirrels and raccoons take shelter in cavities that are easily excavated in the soft, dead wood. Bark beetles, termites, and carpenter ants colonize the rotting wood. You can feel vertical tunnels and sawdust where they have come and gone. Woodpeckers make large, uneven holes in the wood to get at the insects. Eventually, a dead tree becomes so hollow and riddled with rot that it falls to the ground where it continues to decompose. One of the giant limbs of this maple came crashing down in a storm, and now lies in the shallow water parallel to the boardwalk.



When you are finished investigating the dead maple tree, step off the boardwalk into the forest and turn right onto the gravel path. Please stay to the left and follow the hillside on the left side of the trail. Using the slope as your guide, walk along the trail for 45 feet and stop at two small pine tree saplings at the bottom of the hillside on your left. Stop eleven is a stand of ferns on the slope just before the saplings, so don't walk beyond the trees. Enter "11" when you get there.

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Now that you are back in the woods, stop and take a sensory impression of this part of the forest. What is the general "feel" of the habitat? Cold or hot? Shady or sunny? Exposed to the wind or sheltered from it? Noisy and bustling or calm and quiet? There's probably too much shade for you to ascertain your direction by the sun's rays on your face, but you can try if you'd like. You are facing west. The wetlands are on your right; an oak and white pine forested hillside on your left. On windy days, listen for the breeze rustling the leaves and for the creaking of the pines as they sway in wind.

Does the air smell moist, dry, earthy or fragrant with flowers? Can you smell a sweet, grassy scent? You may be surprised at the scent of fresh-mown grass so far away from a field. If you can't smell it yet, breathe deeply to catch the scent. It belongs to hay-scented fern, one of the woodland ferns that blanket the slope to your left. Bend down and gently feel its feathery, lace-cut fronds.

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Use the 36-foot long railing on the left as a guide along the bridge. Find a comfortable spot anywhere along the railing and stop to hear a brief history of this land.

People have lived near Indian Brook probably for as long as humans have inhabited the area. Native Americans lived here because fresh water was plentiful, and the brook and marsh provided a bountiful source of food. They paddled along Indian Brook to the Charles River, their "highway system" to Boston harbor. The first gristmill in Natick was built on the Charles River, commissioned by native people and constructed in 1697 by a settler, Thomas Sawin. Over the years, another gristmill and a sawmill were powered by the waters of Indian Brook. The land on the other side of the brook and marsh used to be a dairy farm. The land on this side was once a truck farm. The farmers grew vegetables that they trucked into Boston to sell. On the right, between the bridge and the marsh, lie the rusted remnants of the pump and some of the piping used to irrigate the crops. Broadmoor is rich in both human history and natural history.



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Broadmoor Wildlife Sanctuary

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Nature Center:

**Tuesday through Friday, 9 am to 5 pm, Saturday, Sunday,
and Monday holidays, 10 am to 5 pm**

Trails

**Open Tuesday through Sunday, and
Monday holidays, dawn to dusk.**

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