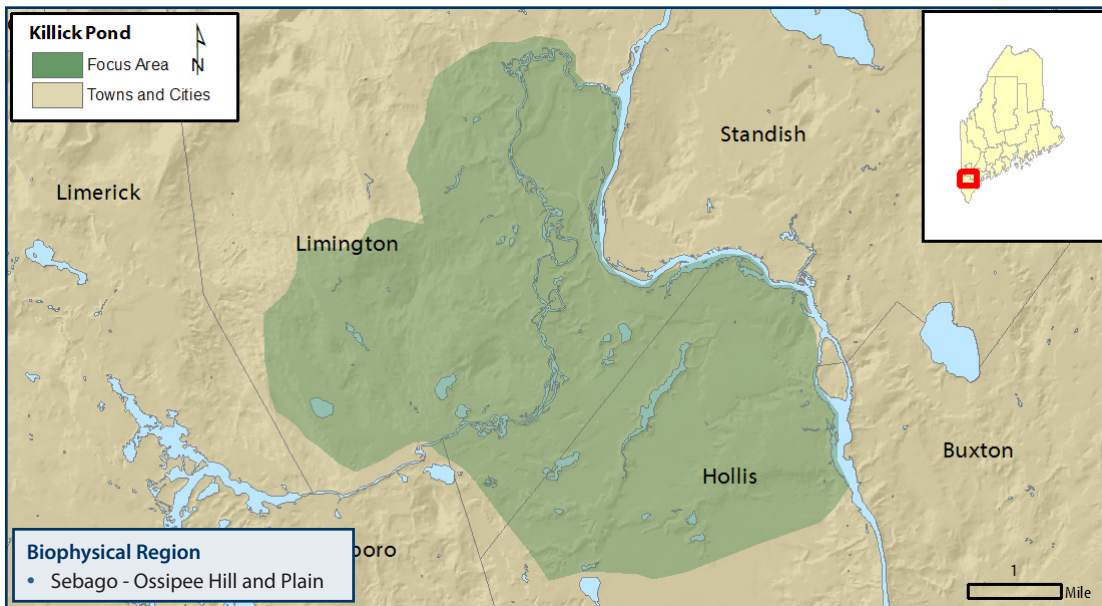


# Killick Pond



## WHY IS THIS AREA SIGNIFICANT?

The Killick Pond Focus Area includes several features of ecological significance including rare and exemplary natural communities and rare plant and animal species. Pitch pine/scrub oak barrens, a rare natural community type in Maine, cover much of the Focus Area and the presence of numerous wetlands, ponds, and riparian areas interspersed with the barrens vegetation provides for tremendous species and community diversity.

## OPPORTUNITIES FOR CONSERVATION

- » Work with willing landowners to permanently protect remaining undeveloped areas and significant features.
- » Maintain enhanced riparian buffers to protect natural communities, rare species, and wetland integrity.
- » Encourage best management practices for forestry, vegetation clearing, and soil disturbance activities to maintain ecological functions and values.
- » Limit use of pesticides, especially aerial spraying.
- » Work with willing landowners of large parcels to consider prescribed burning (managed fire) as a tool for maintaining and enhancing pine barren habitats.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox: [www.beginningwithhabitat.org/toolbox/about\\_toolbox.html](http://www.beginningwithhabitat.org/toolbox/about_toolbox.html).

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## Rare Animals

- Acadian Swordgrass Moth
- Broad Sallow
- Eastern Box Turtle
- Pine Barrens Zale
- Wood Turtle
- Ribbon Snake
- Sleepy Duskywing

## Rare Plants

- Narrow-Leaved Goldenrod
- Fall Fimbr
- Small Whorled Pogonia
- Northern Blazing Star

## Rare and Exemplary Natural Communities

- Pocket Swamp
- Kettlehole Bog – Pond Ecosystem
- Leatherleaf Bog
- Grassy Shrub Marsh
- Pitch Pine-Scrub Oak Barren
- Pitch Pine Bog
- Red Maple Swamp
- Silver Maple Floodplain Forest
- Streamshore Ecosystem
- Three-way Sedge-Goldenrod Outwash Plain
- Pondshore
- Sedge Meadow
- Unpatterned Stream Ecosystem
- White Oak – Red Oak Forest

## Significant Wildlife Habitats

- Deer Wintering Area
- Inland Wading Bird and Waterfowl Habitat
- Significant Vernal Pool



*Pitch Pine Scrub Oak Barren, Maine Natural Areas Program*

## FOCUS AREA OVERVIEW

The Killick Pond Focus Area is a large geographic area covering approximately 12,000 acres with numerous features of ecological significance including thirteen rare or exemplary natural communities and ecosystems, eight rare animal populations, and four rare plant populations. Pine barrens and related habitats cover over 1,500 acres at the site. A 420 acre (170 ha) parcel is owned by the Maine Army National Guard (MANG) and is heavily fragmented by sand roads, rifle ranges, and sand pits. It also receives heavy, unregulated recreational use, particularly from ATVs. However, the MANG property is one of only two pine barrens of this type in Maine currently managed with prescribed fire. Embedded within the barrens are two occurrences pitch pine bog. These bogs are dominated by a thin overstory of pitch pine and white pine above a mat of Sphagnum moss and leatherleaf. The site also has extensive frost pockets.

Much of the pine barrens to the west is characterized by a sparse, old age pitch pine canopy above old growth gray birch, but the pitch pine and scrub oak becomes thicker and of better quality to the east. Only a portion of Killick Pond burned in the fire of 1947.

The pitch pine/scrub oak barrens at Killick Pond grow on

droughty, nutrient poor soils in areas with coarse grained glacio-marine surficial deposits. Poor soils and cold pockets create harsh growing conditions and limit the number of plant species that survive here. However, the presence of numerous wetlands, ponds, and riparian areas interspersed with the barrens vegetation increases species and community diversity.

## NATURAL COMMUNITIES

**Pitch Pine-Scrub Oak Barrens:** This natural community includes woodlands on sandy outwash deposits with patchy vegetation in which pitch pine is the canopy dominant. In openings, a dense shrub/sapling layer of scrub oak and/or gray birch is typical. A low layer of heath shrubs is dominated by lowbush blueberry, with bracken fern and woodland sedge as characteristic herbs. Mosses are virtually absent. Soils tend to be excessively drained and accumulate very little organic matter.

**Three-way Sedge-Goldenrod Outwash Plain Pondshore:** This community is made up of concentric zones of different herbs growing around shallow, sandy-bottomed ponds in outwash plains, whose shores are inundated for part of the growing season and exposed for part of the growing season. A band of shrubs (e.g. highbush blueberry, maleberry, button-

bush, leatherleaf) is typical at the upland edge. The next lower zone is dominated by narrow-leaved goldenrod and three-way sedge; golden-pert and meadow beauty are characteristic. The lowest zone, exposed less frequently than those above, is dominated by pipewort and spikerush.

**Mixed Graminoid Shrub Marsh:** Mixed graminoid shrub marsh is a heterogeneous wetland type in which herbs and shrubs occur in various assemblages. The typical example is dominated by herbs (>50% graminoids), often with a sparse shrub layer containing meadowsweet or hardhack. Bluejoint is frequent, mixed with other herbs. Any of a variety of graminoids may be prominent at different sites. Three-way sedge and yellow loosestrife are indicators. A variant in southern Maine has buttonbush as a prominent shrub. Additional data and analysis may show this divisible into more than one community type.

**Tussock Sedge Meadow:** This community is a marsh dominated by well defined hummocks of tussock sedge mixed with bluejoint grass and other grass-like plants. Other wetland herbs vary among sites, and include royal fern, cinnamon fern, sensitive fern, St. Johnswort, flat-topped goldenrod, or woolgrass. This community is generally found on saturated soils, with standing water through much of the growing season. Soils may be entirely organic, or organic over mineral soil. This natural community typically occurs in large flat basins with drainage streams.

**Red Maple-Sensitive Fern Swamp:** Red maple dominates the somewhat open to nearly closed forest canopy of this swamp. Balsam fir, red spruce, and / or northern white cedar may be common associates, but are less common than red maple. Winterberry is typical in the patchy shrub layer, and bluejoint grass and sensitive fern are characteristic herbs. This community occurs on mineral soils, or well-decomposed organic material over mineral soil, in small basins, as narrow ribbons along drainage channels, or on floodplains of medium-sized streams to small rivers.

**Silver Maple Floodplain Forest:** This type has a tall, spreading canopy of silver maple, often with few other tree species, over an open understory. Minor amounts of American elm, red maple, or bur oak may be present. A dense herb layer of spring ephemerals and ferns carpets the ground. It occurs on plains flanking low-gradient rivers, within the reach of seasonal floods, elevation <700'. Soils are fine sand or silt, usually with good drainage capacity.

**Kettlehole Bog-Pond Ecosystem:** Kettlehole bogs are flat peatlands in "kettles" (circular or elliptical depressions, usually deeper than they are wide, formed in morainal, glaciofluvial, or coastal plain deposits by the melting of buried ice blocks). The centers of these bowl-shaped basins may be a floating peat-

#### Ecological Services of the Focus Area

- Provides high quality habitat for waterfowl, wading birds and deer as well as rare plants, animals and natural communities.
- Wetlands purify and regulate the flow of water entering the Saco and Little Ossipee Rivers.

#### Economic Contributions of the Focus Area

- Provides recreational opportunities including hunting, fishing and wildlife watching.
- Includes Poland Spring properties and provides a significant source of drinking water.

land mat or open water ringed by peatland. Where the surface of the floating mat is sufficiently elevated (by peat accumulation) to be free from contact with the mineral-enriched pond water, vegetation typical of nutrient-poor conditions develops. In the southernmost part of the state, kettlehole vegetation may include species of more southern affinity such as Atlantic white cedar, sweet pepperbush, and arrow-arum.

**Streamshore Ecosystem:** This is the group of communities bordering and directly influenced by the open-water portion of a stream (first-order through third or fourth-order). It includes vegetated aquatic communities as well as the emergent and bordering communities. Most communities are palustrine; streams are generally too small to exert many disturbance effects on adjacent terrestrial areas. Upland forests bordering streams are included under forested upland ecosystems.

**Unpatterned Fen Ecosystem:** Fens are peatlands in which groundwater or water from adjacent uplands moves through the area. As a result, plants are exposed to more nutrients, and the vegetation is typically different and more diverse than that of bogs. Peat is moderately - to well decomposed and of variable thickness. The vegetation consists predominantly of sedges, grasses, reeds, and sphagnum.

#### CHARACTERISTIC SPECIES

To date, several state-rare species of moth, including **sleepy dusky wing** (*Erynnis brizo*), **pine barrens zale** (*Zale sp. 1*), and **Acadian swordgrass moth** (*Xylena thoracica*), have been documented within the pine barrens of the Killick Pond Focus Area. Many of these species are highly dependant on the plant species specific to pitch pine-scrub oak barrens and associated

habitat types. Some of the plant-larvae relationships can be quite complex with larvae limited to only one species as a food source.

Rare species associated with wetlands are also present in the Killick Pond Focus Area, including the ribbon snake and the wood turtle, both species of Special Concern. **Ribbon snakes** (*Thamnophis sauritus*) are a semi-aquatic species found around the periphery, usually within vegetation, of both flowing and standing bodies of water including bogs, shrub swamps, forested wetlands, wet meadows, streams, and pond/lake edges. Southwestern and central Maine are the northern extent of this snake's range. **Wood turtles** (*Glyptemys insculpta*), a primarily northeastern species, are declining throughout their range. Maine likely hosts some of the largest and most viable remaining populations in the U.S. The turtles overwinter in well-oxygenated streams and rivers. Habitat degradation and loss and collection for the pet trade are major threats to this species.

Two large **Deer Wintering Areas** have been mapped in the Focus Area. The first of these follows the Little Ossipee River and includes its bordering forests from just west of East Limington southward towards the Edgcomb Bridge. The second mapped Deer Wintering Area is located south and east of Killick Pond. The Killick Pond Focus Area also includes numerous high and moderate value **Inland Wading Bird and Waterfowl Habitats** including emergent wetlands along the inlet stream to Killick Pond, and bordering wetlands associated with Boyd Pond, Doles Pond, Foss Pond, and Lily Pond. Several other unnamed wetlands have also been mapped for their value to wading birds and waterfowl. The Killick Pond inlet and outlet and Black Brook as well as other unnamed tributaries support wild **brook trout fisheries** as well.

Several species of rare plants occur within the Focus Area. **Fall fimbry** (*Fimbristylis autumnalis*), and **narrow-leaved golden-rod** (*Euthamia tenuifolia* var. *tenuifolia*), are associated with outwash plain pond shore habitat and require undisturbed shoreline areas with sandy soils where there is a natural seasonal draw down of water. A small population of **northern blazing star** (*Liatrix scariosa*) was located in 1996 after a prescribed burn was done in the Focus Area. The current status of this population should be determined. **Small whorled pogonia** (*Isotria medeoloides*), one of the rarest orchids in North America, has been documented in the focus area as well. This species occurs in mid-successional mixed woods with sparse shrub and herb layers and thick leaf litter. It often occurs near intermittent streamlets or where a hardpan impedes water percolation into the soil. Other rare plants likely occur in some of the unique habitats within the Focus Area, and more thorough inventory in the future will likely lead to their discovery.

#### CONSERVATION CONSIDERATIONS

» Without managed burns or some equivalent vegetation management program, pine barrens community types will



Top: Sleepy Dusky wing, Erik Nielson  
Middle: Ribbon Snake, Jonathan Mays  
Bottom: Wood Turtle, MDIFW

succeed to more mesic forest types dominated by red and white oak, and white pine. Only those sites that are the most xeric or frost prone will likely maintain pine barrens habitat. A loss of pine barrens community types will lead to a loss of habitat for pine barrens dependent moths and butterflies. Small pockets of barrens may persist, but the distribution of these pockets may not be adequate to maintain the viable populations of these species. In addition, habitat for rare barrens flora may be lost. It is likely that the Killick Pond Barrens will eventually burn again in a catastrophic

fire. The build up of fuel since 1947 and the volatility of the vegetation may result in a severe and intense wildfire under drought conditions. Depending on the scale of such a fire, large shifts in pine barrens community types may occur.

- » Residential development pressure is increasing within and surrounding the focus area. Increased development may cause irreversible impacts to the natural systems through fragmentation due to roads and land conversion. While non-native species are not a current stress on the system, there is an increased likelihood that exotics may play a role in the Killick Pond area as development increases. Frequently, trails and roads are avenues for the dispersal of exotic weeds. Domestic dogs and cats that roam freely can negatively impact the nesting success and movement of wildlife. Ground nesting birds are particularly vulnerable, and an increase in domestic animals may lead to a decrease in regionally rare populations of whip-poor-wills and common nighthawks. Many people who live in neighboring developments use the area for recreation, including uses that may be incompatible with the ecology of the site (e.g. dumping, off trail use by ORV's, etc.).
- » Timber management can lead to increased fragmentation and isolation of habitat patches and conversion to other forest types. However, timber management, applied properly within pitch pine habitats may actually help regenerate some barrens community types. There is evidence that past timber management in pitch pine – scrub oak barrens in Maine has been instrumental in perpetuating those systems by exposing mineral soil for pitch pine regeneration. Strip cuts completed in the late 1980s at Vernon Walker Wildlife Management Area succeeded in promoting early successional pitch pine community types.
- » Low-intensity cutting (single tree or small group selection, firewood harvest) within riparian buffers is likely compatible as long as operators avoid wetlands. Winter harvests are recommended to minimize impacts to rare animals and wetland condition. Close adherence to Best Management Practices for forestry activities near vernal pools (available from Maine Audubon Society at 207-781-6180 ext. 222) will generally ensure the protection of all major wetland habitats.
- » The integrity of wetlands and aquatic systems including all the processes and life forms they support are dependent on the maintenance of the current hydrology and water quality of these systems. Intensive timber harvesting, vegetation clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution. Improperly sized crossing structures such as culverts can impede movement of fish and aquatic invertebrates effectively fragmenting local aquatic ecosystems and ultimately leading to local extirpation of some species. Future management activities should avoid additional impacts to the site's hydrology.
- » Periodically, Gypsy moths attain outbreak population levels, defoliating a large proportion of scrub oak and other species in some areas of southern Maine. During an outbreak period several thousand acres may be sprayed with BT (*Bacillus thuringensis*) from the air to help control Gypsy moth populations. While BT is believed to pose no threat to higher organisms, it is NOT host specific within the order Lepidoptera and thus poses a potentially severe threat to the area's rare butterfly and moth species. For this reason, wide buffers (1/2 mile) should be flown around sections of pitch pine barrens hosting known occurrences of rare butterflies and moths when spraying pesticides for control of gypsy moths and other pests.
- » With expected changes in climate over the next century, plant and wildlife species will shift their ranges. Maintaining landscape connections between undeveloped habitats will provide an important safety net for biodiversity as species adjust their ranges to future climate conditions.
- » This area includes Significant Wildlife Habitat for wintering deer and inland waterfowl and wading birds. Land managers should follow best management practices with respect to construction and forestry activities in and around wetlands, shoreland areas, and Significant Wildlife Habitat. Vegetation removal, soil disturbance and construction activities may require a permit under the Natural Resources Protection Act. Contact MDIFW for more information.

#### Public Access Opportunities

- » Killick Pond Wildlife Management Area, MDIFW
- » Little Ossipee Wildlife Management Area, MDIFW
- » Little Ossipee River, MBPL

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Sleepy Dusky Wing	<i>Erynnis brizo</i>	T	S2	G5T5
	Wood Turtle	<i>Glyptemys insculpta</i>	SC	S4	G4
	Extra-striped Snaketail	<i>Ophiogomphus anomalus</i>	SC	S4	G4
	Eastern Box Turtle	<i>Terrapene carolina</i>	E	S1	G5T5
	Ribbon Snake	<i>Thamnophis sauritus</i>	SC	S3	G5
	Acadian Swordgrass Moth	<i>Xylena thoracica</i>	SC	S3	G4
	Barrens Xylotype	<i>Xylotype capax</i>	SC	S3	G4
Plants	Pine Barrens Zale	<i>Zale sp. 1</i>	SC	S1	G3G4
	Narrow-Leaved Goldenrod	<i>Euthamia tenuifolia</i>	T	S2	G5
	Fall Fimbry	<i>Fimbristylis autumnalis</i>	T	S2S3	G5
	Small Whorled Pogonia	<i>Isotria medeoloides</i>	E	S2	G2
	Northern Blazing Star	<i>Liatris scariosa</i>	T	S1	G5?T3
	Pocket Swamp	Hemlock – Hardwood Pocket Swamp		S2	G5
	Kettlehole Bog – Pond Ecosystem	Kettlehole Bog – Pond Ecosystem		–	Not ranked
Natural Communities	Leatherleaf Bog	Leatherleaf Bog		S4	Not ranked
	Grassy Shrub Marsh	Mixed Graminoid Shrub Marsh		S5	Not ranked
	Pitch Pine-Scrub Oak Barren	Pitch Pine-Scrub Oak Barren		S2	G2
	Pitch Pine Bog	Pitch Pine Bog		S2	G3G5
	Red Maple Swamp	Red Maple-Sensitive Fern Swamp		S4	G3G5
	Silver Maple Floodplain Forest	Silver Maple Floodplain Forest		S3	Not ranked
	Streamshore Ecosystem	Streamshore Ecosystem		S4	Not ranked
	Three-way Sedge-Goldenrod Outwash Plain Pondshore	Three-way Sedge-Goldenrod Outwash Plain Pondshore		S1	G2G3
	Sedge Meadow	Tussock Sedge Meadow		S4	Not ranked
	Unpatterned Stream Ecosystem	Unpatterned Stream Ecosystem		S4	Not ranked
White Oak – Red Oak Forest	White Oak – Red Oak Forest		S3	Not ranked	

State Status\*

- E** Endangered: Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
- T** Threatened: Rare and, with further decline, could become endangered; or federally listed as Threatened.
- SC** Special Concern: Rare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

*\*State status rankings are not assigned to natural communities.*

State Rarity Rank

- S1** Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
- S2** Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (on the order of 20–100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.

Global Rarity Rank

- G1** Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.
- G2** Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (on the order of 20–100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.