

## **IV. Properties and Resources within the Plan Area**

### **Duck Lake Unit**

#### *Character of the Landbase*

The 30,624-acre Duck Lake Unit is located in northern Hancock County within easy driving distance of Bangor. It is west of the community of Grand Lake Stream. The topography of the Duck Lake Unit is gently rolling with low hills, the tallest point being Duck Mountain at 1,169 feet above sea level, about 650 feet higher than Duck Lake. The low point on the Unit is along the shore of Fourth Machias Lake at about 314 feet. The Unit is considered semi-remote, containing a variety of important resources including six small lakes with excellent cold and warm water fisheries and numerous sand beaches. An ecological reserve comprising 6,650 acres has been established on the eastern portion of the Unit. The Unit is surrounded by a mixture of large industrial forest and conservation ownerships within this sparsely inhabited area of Maine.

The Duck Lake Ecological Reserve provides opportunities for both scientific study and low impact recreation, and contains many of the exemplary ecological features found on the Unit. The Duck Lake Ecological Reserve originally included 3,870 acres and has recently been expanded through deed reservations, to include a total of 6,650.

Other areas within the Unit provide opportunities for drive-to camping and motorized trail use. The Unit also contains large tracts of forest management areas, providing an important revenue source for the statewide management of the Bureau's Public Reserved system.

Most of the 200 species of wildlife indigenous to Maine can be found on the Duck Lake Unit. Wildlife habitat of particular note includes three zoned deer wintering areas and numerous small wetlands. However, there is a lack of age class diversity as a result of the Unit's burn history, which has resulted in a lack of habitat variety.

The lakes on the Unit provide the principal destinations for visitors and recreationists. The primitive camping facilities at Duck Lake, Gassabias Lake, and Middle and Lower Unknown Lakes are popular with families and fisherman alike. The cold waters of Duck Lake provide quality landlocked salmon and brook trout fishing in an area of the state more noted for its warm water fisheries. The Unknown Lakes (Upper, Middle and Lower), along with Gassabias Lake and Fourth Machias Lake, are known for their warm water fisheries including bass, pickerel, and perch.

#### *Acquisition History*

Public ownership in Duck Lake area spans a period dating back to the late 1700s and early 1800s when blocks of land (now known as townships) were delineated and sold by the Commonwealth of Massachusetts. Certain parcels were retained from these blocks for future settlements, known as the Minister, Ministry, and School lots, several of which comprise the current landbase. Additional lands were added when the former Maine Military Commission transferred its lands in 1961 to the State Forest Commission who held the state's public lands at that time. Land

trades and acquisitions with private industrial landowners conducted in 1978, 1985, 1999, and the Conservation Fund in 2005 provided additional lands to the current holdings within the Duck Lake Unit.

**Transactions that created the Duck Lake Unit**

<b>Township</b>	<b>Transaction</b>	<b>Deed Date</b>	<b>Acres</b>	<b>Description</b>
T4 ND	Original Public Lot	1800?	320	Northeast Corner of Duck Lake
T4 ND	Transfer from Maine Military Defense Commission	1961	6,250	Southwest Corner of T4 MD
T4 ND	Trade from Diamond International	1978	2,606	East side of Duck Lake
T4 ND	Trade from Dead River Co.	1978	1,520 (2,000 ft. Strip)	Upper, Middle Unknown Lakes (in trade for 640-acre public lot north of Duck Lake)
T4 ND	Trade from St. Regis Paper Co.	1978	2,896	Lower Unknown Lake, Unknown Stream
T40 MD	Purchase from TPL/Robbins Lumber	1999	264	Duck Lake/Nicatous Lake “Fee Connector”
T41 MD	Original Public Lots (2)	1800?	960	1) Southern half of Gassabias Lake, 2) South of Gassabias Lake
T41 MD	Trade from St. Regis Paper Co.	1978	7,086	South of Gassabias Lake and Fourth Machias Lake
T41 MD	Trade from Barbara Cassidy et.al. (Prentiss & Carlisle)	1985	2,097	West side of Gassabias Lake towards Nicatous Lake
T41 MD	Purchase from Conservation Fund	2005	2,360	Nicatous Lake, Gassabias Stream
T42 MD BPP	Trade from St. Regis Paper Co.	1978	1,485	Fourth Machias Lake, southwest side
T42 MD BPP	Purchase from Conservation Fund	2005	400	Southeast side of Fourth Machias Lake (Ecological Reserve-deed reservation)
T35 MD T36 MD T41 MD T42 MD	Purchase from Conservation Fund	2005	2,380	Fifth Lake Stream and Fifth Lake Shorelines (Ecological Reserve-deed reservation)
Total			30,624	

## *Natural Resources*

### Geology and Soils

The northernmost and southernmost portions of the Duck Lake Unit are underlain by acidic granite. Between these two bands of bedrock is a broad belt of moderately calcareous sedimentary/metasedimentary bedrock. Most of the surface deposits on the Unit consists of till. Other deposits include two north-south oriented eskers with one bordering the west side of Gassabias Lake, and the other running along the west side of the Unknown Ponds to the west side of Fourth Machias Lake, where it continues southward along Fifth Lake Stream. The area along the southern portion of this second esker also includes ice-contact glaciofluvial deposits.

The Unit is characterized by coarse textured boulder strewn soils. Many of these soils are inherently low in fertility with extensive fire history further lowering fertility. The Dixfield-Brayton-Hermon Association, a moderately well drained (very stony-fine sandy loam) dominates the central portion of the Unit. The Colonel-Dixfield-Lyman Association is found north of Duck Lake and surrounds Fifth Machias Lake. These loamy soils are somewhat excessively drained. South of Gassabias Lake and west and east of Duck Lake is the Skerry-Becket-Brayton Association, which is poorly to somewhat poorly drained (extremely stony-fine sandy loam). The esker south of Fourth Machias Lake is characterized as the Colton-Adams-Vassalboro Association. Not surprisingly, this soil is excessively drained with a gravelly sandy loam texture.

### Hydrology and Water Quality

The eastern half of the Unit drains into Fourth Machias Lake and to the Machias River. The western half drains towards Nicatous Lake, the Passadumkeag River, and eventually the Penobscot River. Gassabias Lake likewise drains toward Nicatous Lake via Gassabias Stream. There are no active dams on any of the water bodies within the Unit, although the remains of old driving dams still exist on Unknown Stream, Fifth Lake Stream and Gassabias Stream. Key features of the water bodies in or bordering the Unit are summarized in the chart below (PEARL, 2008).

#### **Water bodies in/or bordering the Duck Lake Unit**

<b>Water body</b>	<b>Acres</b>	<b>Maximum Depth (ft)</b>	<b>Direct drainage area (sq.mi.)</b>	<b>Trophic status</b>	<b>pH</b>
<b>Duck Lake</b>	1,154	88	4.28	Oligotrophic	6.4
<b>Fifth Machias Lake</b>	1,058	27	11.49	Mesotrophic	
<b>Fourth Machias Lake</b>	1,913	26	45.26	Mesotrophic	6.78
<b>Gassabias Lake</b>	939	9	7.97	Eutrophic	
<b>Lower Unknown Lake</b>	184	25	1.17	Eutrophic	
<b>Middle Unknown Lake</b>	84	25	0.60	Mesotrophic	
<b>Spencer Pond</b>	35	5	1.91		
<b>Upper Unknown Lake</b>	51	14	2.10	Eutrophic	
<b>Nicatous Lake</b>	5,212	56	26.3	Mesotrophic	6.5

Several lakes on the Duck Lake Unit have been selected by TNC as portfolio lakes, meaning they are high value waters that best represent the ecosystems, natural communities, and species characteristic of the region. Criteria used in evaluating lakes and ponds include water quality,

dam impacts, presence of rare or noteworthy species, rarity, and remoteness. Portfolio lakes on the Unit include: Duck Lake, Fourth Machias Lake, and Fifth Machias Lake.

Wetlands

There are 1,990 acres of open wetlands and 2,042 acres of forested wetlands on the Unit, concentrated mostly on the southern half of the Unit, especially along Fifth Lake Stream and other tributaries to Fourth Lake, and east and west of Gassabias Lake.

Ecological Processes

The area has an extensive history of fires, with fires recorded in 1885, 1920, 1935, 1944, and 1960. The 1934 and 1943 fires were larger and heavier burns concentrated in the southeast portion of the Unit. The 1960 fire was relatively small and actively controlled. The coarse, sandy, glacial soils of the region contribute to the conditions that encourage the spread of fire. The red pine communities that thrive on these sandy soils are adapted to periodic fires, which clear out any underbrush and expose mineral soil providing conditions for seeds to germinate.

Spruce budworm has also played a major role on the Unit, with the most recent outbreak during the period from the late 1970s to the early 1980s. While the scale of budworm damage covers millions of acres, the intensity varies considerably according to the balsam fir component of each stand (balsam fir being the preferred food of the budworm). Budworm damage is often most severe in transitional areas next to large openings of burned stands and along wetland transitional zones, both of which occur in abundance on the Unit. Thus, periodic fires and insect outbreaks can intensify the effects of each other’s disturbance.

Duck Lake Ecological Reserve and Exemplary Natural Communities

In general, exemplary natural communities in the Unit are concentrated around Gassabias Lake and Fourth Machias Lake, with almost all of the communities contained within the ecological reserve. Important communities include wetlands, red pine forests, hemlock forests, pine woodlands, mature and old growth softwood sites, and a large peatland. The ecological reserve is a total of 6,650 acres, with the original reserve of 3,870 acres added to with new holdings containing deeded reservations.

**Ecological Reserve Acreage**

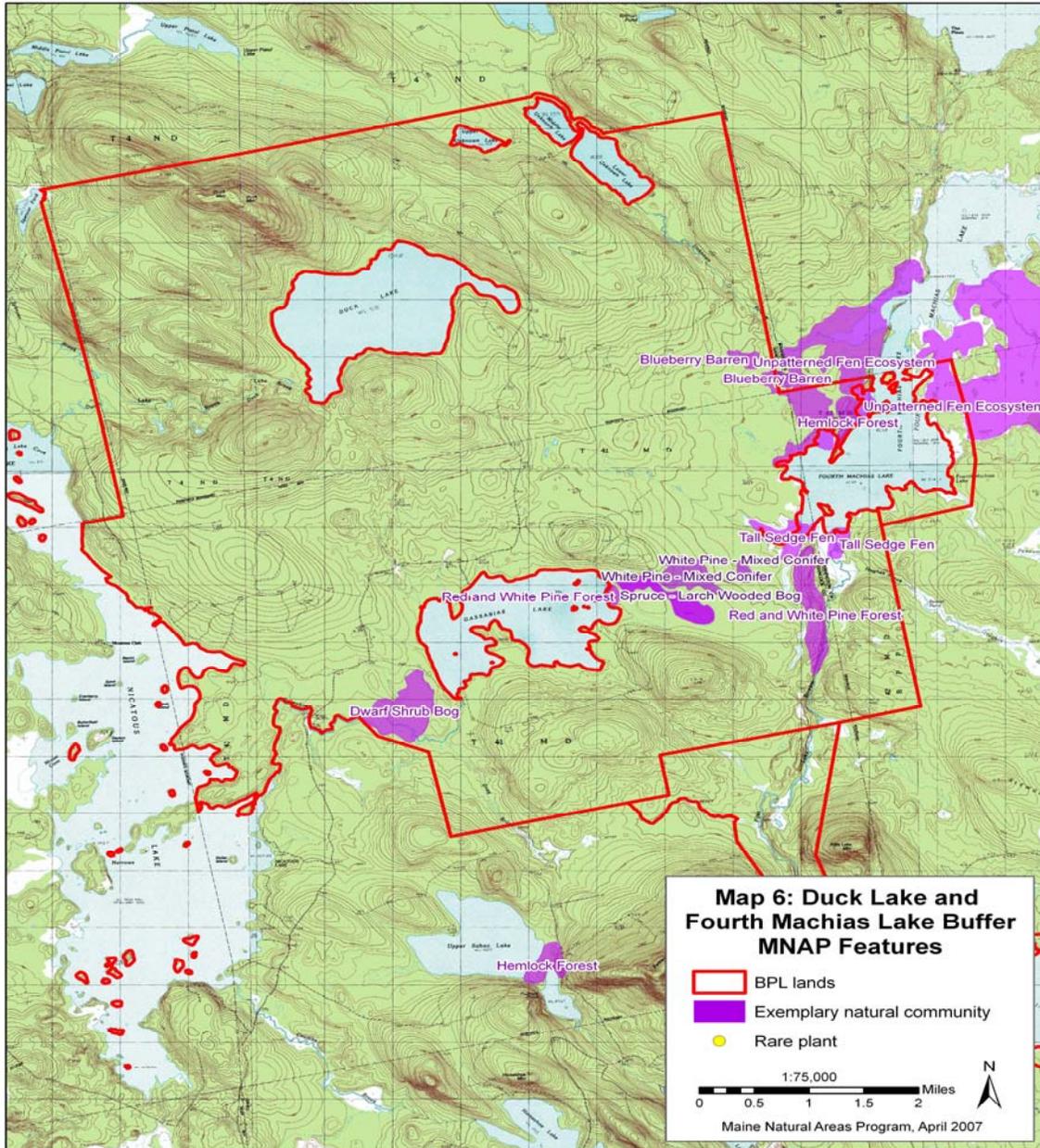
<b>Unit</b>	<b>Ecological Reserve Location</b>	<b>Reserve Acres</b>
Duck Lake (designated acres)	Gassabias-Fourth Machias Lake	3,870
Duck Lake (deeded acres)	Fourth Machias Lake	400
Duck Lake (deeded acres)	Fifth Lake Stream/Fifth Machias Lake	2,380
<b>Total</b>		<b>6,650</b>

The two ecological reserve acquisitions with deeded reservations (Fourth Machias Lake and Fifth Lake Stream/Fifth Machias Lake parcels) contain the goals of loon habitat conservation and restoration, protection of Atlantic salmon habitat, protection of ecological integrity and maintenance of traditional (non-motorized) public recreational uses. The deed specifies the property is to remain un-roaded (with the exception of the existing 42 00 0 road and a few access

roads for existing leases-holders). Motorized vehicles are allowed on these few exiting roads, but are restricted to these areas (Conservation Fund and State of Maine, 2006).

The original designated 3,870 acre Duck Lake Ecological Reserve contains many exemplary natural communities. (MNAP, 2007)

### Exemplary Communities of the Duck Lake Unit



An exemplary *Hemlock Forest* is on a sandy esker complex on the east side of Fourth Machias Lake, including most of the narrow, boot-shaped peninsula that juts into the lake. In general, hemlock dominates the slopes while white pine dominates the ridges. This area is included in a

zoned deer wintering area that cannot be managed. The area appears to have an extensive fire history with a single layer canopy. One nearly 26-inch white pine was determined to be at least 110 years old.

An exemplary *Unpatterned Fen Ecosystem* includes areas on state and adjacent land east and west of Fourth Machias Lake. This approximately 1,900-acre peatland ecosystem includes a mosaic of intergrading community types including a Mixed Tall Sedge Fen, dominant near the lakeshore and inlet stream. The southeastern corner of the ecosystem supports a Sheep Laurel – Dwarf Shrub Bog. This unpatterned fen shows signs of past beaver activity. The canopy cover is very sparse, with only scattered, small tamarack trees. *Sphagnum* covers nearly 100% of the Mixed Tall Sedge Fen.



The exemplary Unpatterned Fen Ecosystem at Fourth Machias Lake.

A small *Blueberry – Lichen Barren* is located west of the Unpatterned Fen Ecosystem. This patchy, burn origin barren has a thick, dry organic layer over sandy loam soil. Charred stumps indicate the burn origin of the stand. Canopy closure is 20% and is dominated by white pine. The community is characterized by a thick layer of low species such as bracken fern, wintergreen, sheep laurel, and low bush blueberry.

The area around the southern edge of Fourth Machias Lake ranges from a *Mixed Tall Sedge Fen* close to the lake to a *Sweet Gale Mixed Shrub Fen* further away from the lake. There are no trees or large shrubs present in the area, although there are a few scattered small white pine saplings. The herbaceous layer covers over 90% of the total area and is dominated by sweet gale, with large components of cotton-grass and white beak-rush. Minor components of 10 other species were also found. The herbaceous layer was growing on a bed of *Sphagnum*.

An exemplary *Red Pine - White Pine Forest* grows on a narrow esker south of Fourth Machias Lake surrounded by a mixed hardwood forest with varying levels of maturity. Tiny pieces of charcoal and burned stumps were indicative of the fire history. The forest forms an extensive, single storied canopy layer, which contains predominantly red pine with only minor occurrences of white pine, paper birch, and quaking aspen. One red pine was found to be seventy years old with a diameter of fourteen inches, with the community originating after the 1934 fire.

The area northeast of Gassabias Lake includes an exemplary late-successional /old growth *White Pine – Mixed Conifer Forest*. The area shows little sign of harvest, though it may have been harvested at some point in the past. The forest canopy covers roughly 80% of the total area and is estimated to be 90 to 100 feet tall. Species include white pine, red pine, hemlock, red spruce, paper birch, and red maple. One red pine was measured nearly 21 inches and found to be 195 years old with another measuring seventeen inches in diameter and approximately 250 years old. One hemlock measured nearly nineteen inches and was found to be approximately 275 years old. The forest understory is very sparse, found only beneath canopy gaps. In general, the forest regeneration only occurs in areas where there has been a blowdown event. The northern portion of this mapped community tends to be younger (130 years) and not exhibiting as much old growth structure as the southern portion.

Another late-successional /old growth *Red Pine – White Pine Forest* on the east shore of Gassabias Lake is dominated by red pines between 170 and 220 years old. Both regeneration and herb layer are sparse.

South of the forest is an exemplary *Spruce – Larch Wooded Bog*. This mature, dry bog has 30% cover black spruce. In the western portion of the peatland, the dwarf shrub layer is dominated by black spruce, sheep laurel, and leatherleaf, while in the eastern portion of the peatland, rhodora dominates the dwarf shrub layer. Both sites have thick peat with low pH. The peat mat is saturated, and there are several pools of open water. In the narrow portion of the peatland is a slight gain in elevation, and the community transitions to a *Spruce – Fir – Broom-moss Forest*. This upland area is surrounded on three sides by the peatland. Mature black spruce up to fourteen inches in diameter dominates, and the understory consists of 30% cover dominated by black spruce regeneration. One of the larger black spruces measured thirteen inches in diameter and was found to be 120 years old.

The area along the shores of Gassabias Stream is a large *Sheep Laurel Dwarf Shrub Bog* that transitions to a *Mixed Tall Sedge Fen* adjacent to the stream. The area is relatively dry and hummocky with large amounts of leatherleaf and sheep laurel. There are also components of 10 other species including rhodora, Labrador tea, black spruce, cotton-grass, cranberry, sweet gale, and pitcher plant.

No rare plants have been found within the Unit.

Duck Mountain is a relatively small mountain with moderate slopes. The soils on the upper slopes are shallow and sandy, while the lower slopes contain deeper, richer soils and abundant glacial erratics. The lower slopes contain dense thickets of American beech, red maple, and hobblebush. A *Spruce – Fir – Broom Moss Forest* exists in a small pocket along the southeastern slopes. The forest canopy covers roughly 70% of this area and is dominated by red spruce. One tree measured 12 inches in diameter and was found to be 104 years old. The forest understory and herbaceous layers are very sparse, dominated by regenerating red spruce and balsam fir.

The top of Duck Mountain is a *Spruce – Northern Hardwood Forest* dominated by red spruce, with yellow birch, American beech, and eastern hop-hornbeam. These species combined to cover

roughly 70% of the total area. One red spruce was found to be 17 inches in diameter and found to be 141 years old. The extensive understory was dominated by regenerating red spruce and yellow birch. Red oak, some with diameters up to 25 to 30 inches, is also found in patches on the southwest side of the mountain.

Unknown Stream south of Lower Unknown Lake is bordered by a Mixed Tall Sedge Fen with pockets of Sweetgale Mixed Shrub Fen. Dead standing northern white cedar are the only trees. Common species to the area include sweet gale, leatherleaf, tussock sedge, bog aster, cinnamon fern, three-way sedge, pitcher plant, and inflated sedge. The soil is muck and the water table ranges from a few inches below the surface to six inches above the surface.

The newly acquired parcels bordering the southeast portion of Fourth Machias Lake and surrounding Fifth Machias Lake will likely be inventoried by MNAP in the summer of 2009.

### ***Natural Resource Management Issues***

- The Ecological Reserve area between Fourth and Fifth Machias Lakes has received some occasional recreational use by snowmobilers on traditional trails.
- There is interest from the environmental community in expanding the current Ecological Reserve to include the connective area all the way to the east shore of Duck Lake as identified in the 1998 McMahon Report.

### ***Fisheries and Wildlife Resources***

Wildlife resources on the Duck Lake Unit are comprised of several distinct elements, including a variety of wetland, shoreland, and upland habitat areas. The fisheries, particularly the cold water species of Duck Lake, provide an outstanding if not unique resource for the eastern Maine area.

Overall, the Unit is dominated by two forest conditions which affect habitat quality: areas where major fires took place in 1885, 1920, 1935, 1944, and 1960 now dominated by immature hardwood and balsam fir; and sawtimber-size spruce and hemlock stands. The area burned, with the exception of the 1960 fire, was measured in the thousands of acres. Lacking are mature stands of northern hardwoods with manageable size, age, and quality, resulting in an overall lack of habitat diversity and relatively low population levels for some species such as sugar maple, white ash, and yellow birch.

#### **Fisheries**

The cold waters of Duck Lake provide quality landlocked salmon and brook trout fishing in an area of the state more noted for its warm water fisheries. The Unknown Lakes (Upper, Middle, and Lower), along with Gassabias, Fourth, and Fifth Machias Lakes, are known for their warm water fisheries including bass, pickerel and perch. Nicaous Lake forms the southwestern boundary of the Unit, and supports both warm water and cold water fisheries.

The area around Upper Unknown Lake has been managed for its semi-remote quality and as a walk-to fishing destination since adoption of the 1989 management plan. In 1980 discussions took place regarding the possibility of reclaiming and stocking the lake with brook trout - a

species once thought to naturally occur in these waters – as a means to enhance the recreational experience of this area. IF&W then surveyed the lake and found significant populations of yellow perch and pickerel. While not providing ideal habitat, it was determined the trout population could survive in sufficient numbers if the competing warm water species were removed and a barrier dam constructed to prevent the migration of warm water fish from Middle Unknown Lake. Although the project was considered infeasible at the time, the Bureau and IF&W agreed to reevaluate its potential at some point, which led to a resurvey of the lake in July of 2008 (see Appendix F). This survey confirmed low pH and poor water quality for brook trout, with an abundance of yellow perch, pickerel, and suckers (but no bass). The reclamation cost was also estimated at \$30,000. The updated fisheries survey report proposed several alternative management strategies for managing the fish in the lake, including the stocking of fall yearling trout that could provide a cold season sport fishery.

### **Fish Species of the Duck Lake Unit**

<b>Water body</b>	<b>Lake Fish Species Inventory</b>	<b>Stocked Fish (since 1989)</b>
Duck Lake	American eel, blacknose dace, brook trout, common shiner, creek chub, fallfish, lake chub, lake trout, landlocked salmon, pumpkinseed, rainbow smelt, round whitefish, white sucker, yellow perch	Brook trout, landlocked salmon
Fifth Machias Lake	American eel, white sucker, chain pickerel, banded killifish, pumpkinseed, white perch, brook trout, fallfish, yellow perch	
Fourth Machias Lake	American eel, alewife, brook trout, brown bullhead, chain pickerel, fall fish, lake chub, pumpkinseed, smallmouth bass, white perch, white sucker, yellow perch	
Gassabias Lake	Chain pickerel, fallfish, pumpkinseed, white perch, white sucker, yellow perch, brook trout	
Lower Unknown Lake	Banded killifish, brown bullhead, chain pickerel, fallfish, smallmouth bass, white perch, yellow perch, brook trout	
Middle Unknown Lake	Banded killifish, brown bullhead, chain pickerel, fallfish, smallmouth bass, white perch, yellow perch	
Spencer Pond	Brook trout, brown bullhead, creek chub, golden shiner, northern redbelly dace, white sucker	
Upper Unknown Lake	Brown bullhead, yellow perch, chain pickerel, white sucker	
Nicitous Lake	Brown bullhead, American eel, white sucker, chain pickerel, banded killifish, sunfish, smallmouth bass, white perch, golden shiner, rainbow smelt, yellow perch, blacknose dace, landlocked salmon, brown trout, brook trout, creek chub, fallfish	Brown trout, landlocked salmon

### Wildlife

*“Unroaded” habitat:* There is a relatively un-roaded area in the Duck Lake Unit from Upper Unknown Lake along the eastern portion of the Unit to Fifth Machias Lake. The majority of the relatively un-roaded area is in ecological reserve status. The area to the north provides a significant wildlife travel corridor between Fourth Machias Lake and the ownership boundary north of Upper Unknown Lake. Operational necessity requires the Bureau to rebuild part of an existing road and realign an approximately 2,600 foot existing road segment to avoid erosion and sedimentation north and east of Lower Unknown Lake. There may be additional needs for road improvements or expansions, however, these are likely to be relatively minor and will not constitute a significant alteration to this relatively un-roaded area.

### *Deer Habitat Management*

There are three small designated deer wintering areas on the Unit, however, the Unit contains great potential to manage for deer in coordination with other surrounding landowners. The northeast portion of the Unit in particular is conducive to managing for deer and enhancing habitat in all seasons.

### *Raptors and other birds*

A bald eagle nesting site located on an island on Gassabias Lake has been mapped and protected under Maine’s Essential Habitat law. This site has recently hosted a non-breeding pair. Broadwing hawks, cooper’s hawks, sharpshin hawks, and goshawks are common, with nests routinely located and protected during harvesting operations. Black terns, as state-listed endangered species, have been documented on the wetlands along Dead Stream just southeast of Fourth Machias Lake.

### *Loons*

Loons are commonly found on all of the bodies of water within the Unit, and nesting sites have been buffered from harvesting and recreation activities. The Machias Phase II acquisition project, which included frontage on Fourth and Fifth Machias Lakes, included a deed requirement making loon management a priority.

### *Beech Management*

The maintenance and management of American beech trees across the Unit, and their importance in the production of high quality mast as a food source, has been a focus of the Unit wildlife program since the original management plan was adopted in 1989. Beech as a species has been and continues to be in decline across the state due primarily to the presence of the imported beech bark disease complex. The disease has been particularly devastating in eastern Maine. Although bear are the focus species relative to maintaining a healthy beech component, thirty five other wildlife species also utilize its mast as a food source. In 1999 the Bureau incorporated *Beech Management Guidelines for Mast Production* into its *Wildlife Guidelines*, which provides guidance in identifying and retaining genetically-resistant beech trees. The Bureau has thinned around oak seedlings and planted acorns on the Unit to provide hard mast, although the mast is not as nutritious as beech.

### *Ruffed Grouse*

Enhancement of the ruffed grouse population has been routinely implemented as part of the timber management program, using small clear-cut blocks to encourage the dense young growth component of their preferred habitat. Although this approach has had considerable success in other areas of the state, a combination approach had better short term results on the Duck Lake Unit, which included a mix of variable strips along with the blocks.

#### *Vernal Pools*

Twenty vernal pools have been located and mapped throughout the Unit. These small, seasonal wetlands provide important habitat for certain species of frogs, salamanders, and invertebrates including the fairy shrimp. Management guidelines for the protection of these pools have been in place since the late 1990s and include portions of the adjacent upland. Although the guidelines are focused on the protection of the natural pools, a small number of man-made vernal pools (the result of past timber harvesting activities) are also being managed under these guidelines.

#### *Lynx*

Although the Duck Lake area is outside of the proposed critical habitat range for the Canada lynx, sightings have been reported from time to time. The primary food source for the lynx is the snowshoe hare, which thrives best in young softwood forests. Although there are significant amounts of this forest type on nearby private lands (the direct result of timber harvesting practices) the Bureau has managed for at least some component of young softwood habitat within the Unit, which has provided direct benefits to the lynx and other wildlife species as well.

#### *Wetlands*

There are 1,990 acres of open wetlands and 2,042 acres of forested wetlands within the Unit, concentrated mostly on the southern half of the Unit along Fifth Lake Stream, and east and west of Gassabias Lake. These wetlands provide important habitat for a variety of aquatic furbearers, large game, wading birds, and waterfowl. Past management of wetlands has been primarily protective in nature, but has included careful multi-age management of adjacent timber to encourage species diversity. Wood duck boxes have also been placed in appropriate areas and have been moderately successful.

#### *Invasive Aquatic Plants*

Invasive aquatics continue to be of statewide concern and importance to the Bureau's habitat management program, although the introduction has not occurred within the Unit. The Bureau works closely with IF&W, Department of Environmental Protection, and local groups to help monitor this important issue, and follows prevention guidelines and strategies, including signage at boat launch sites, as provided by IF&W.

#### ***Fisheries and Wildlife Management Issues***

- Although there is interest from area sportsmen in reclaiming Upper Unknown Lake and restoring the trout population that once occurred there, recent lake survey data from the IF&W indicates that habitat conditions may not be favorable, and alternatives for experimental stocking have been proposed by IF&W.
- There is a significant interest throughout the Plan area in enhancing deer habitat where possible, due to the importance of this resource to the regional economy. There is also

interest among other landowners in the region to coordinate more with the Bureau in provision of deer habitat regionally.

- Loon management and updated knowledge on nesting sites will need to be prioritized in the Machias Phase II lands.
- American Beech stands continue to decline due to the beech bark disease complex, raising concerns about the future production of important wildlife mast. Past ruffed grouse habitat management has shown mixed results on the Unit.
- Invasive aquatics will continue to be an area of concern, although their introduction has not occurred within the Unit.

### *Historic and Cultural Resources*

There is a long history of wood harvesting on the Unit lands. Traditionally, logs harvested on the eastern side of the Unit were floated down the Machias River, while logs on the western side were taken out via Niatous Lake. Hemlock was harvested in the late 1800s on the westerly side of the Unit to supply bark to the tannery on the Passadumkeag River in Lowell. The easterly side of the river supplied bark for the Grand Lake Stream Tannery. In the 1910s, logging camps were established, some of which had telephone lines installed. Trees targeted during these times were pine and spruce. Between 1956 and 1963, Eastern Pulp and Paper Company established a road that ran north-south on what was earlier known as the CCC Road (later the 32-00-0 Road), allowing access to areas previously inaccessible. These harvests frequently targeted hemlock and spruce to supply Eastern Fine Paper in Brewer. At times, sodium arsenate was used to chemically de-bark hemlock. This had a devastating effect on wildlife attracted to the salty chemical solution.

Fannie Pearson Hardy explored the area with her father and a guide in 1891, canoeing from Niatous Lake to Gassabias Lake and portaging to Fourth Machias Lake. She praises Gassabias Lake, calling it “a lovely lake” and “a paradise for small game” (Hardy, 1891). Having completed the portage between Gassabias and Fourth Machias Lakes, she offers a less charitable view of the latter: “The [Fourth] Machias end of the carry is even less cheering than the Gassabees [sic] terminus. The journal calls it ‘an unwholesome-looking place,’ and in my own mind it is associated with the Ancient Mariner and ‘a million million slimy things.’ When you get here you will wish you hadn’t come. Marshes half a mile wide extend back to the ‘dry kyle’ which fences the woods with dead trees, standing or fallen grim, gaunt and gray. The place is given over to pickerel, mud turtles, and ‘slimy things that crawl with legs.’” She continues, “A premium might safely be put on Fourth [Machias] Lake as the most unattractive piece of scenery in the State....but...our first and chiefest care was to get something to put in the kettle, and that can always be provided here.” Hardy describes Fourth Machias’s reputation as an excellent pickerel fishery, as well as a good location for eels and ducks. In fact, according to Dave Tobey, a local guide and camp owner with deep family roots in the area, in the 1930s, Fourth Machias Lake was commercially fished for pickerel. Pickerel would be salted, packed into barrels, and shipped by railroad to Boston.

The first road into Fourth Machias Lake was built in 1958. Both Fourth and Third Machias Lakes had dams that could be used to force water into the Getchel Lakes and, thus, into the St.

Croix River watershed, which included several hydropower dams. Most of the Fourth Machias dam was removed in 1978, while the Third Machias dam was removed in 1980.

Numerous historic Native American artifacts have been found along the banks of ponds in the Unit, including scrapers, arrowheads, and spearheads. In one sandy area of Fourth Machias Lake, there is a low rock wall which many think to be part of a weir that may have been constructed by Native Americans. (MNAP, 2007)

***Historic Resource Management Issues***

- Any manipulation of the lake and river shorefronts will have to be with regard to the potential presence of Native American artifacts.
- The Gassabias Lake-Fourth Machias Lake portage trail has historic importance as a travel corridor for Native Americans and early settlers.

***Recreation Resources***

The eight lakes within the Unit provide important fishing and camping destinations for visitors to this region, with snowmobile and ATV trails also available throughout the Unit. Duck Lake is noted for its unique cold-water fishery (landlocked salmon and brook trout) and for its numerous sand beaches. Gassabias Lake, the Unknown Lakes, and Fourth Machias Lake all support excellent warm-water fishing opportunities (see the Wildlife Resources section for a summary of the fisheries within the Unit).

***Camping***

The campground area at Longfellow Cove on Duck Lake was redesigned and expanded in response to public demand while providing for a use level appropriate in maintaining the fishery. The redesign involved dispersing and better delineating the campsites, however, much of the area continues to be subject to overuse with many of the newer sites receiving little use. Water access sites on the west end of the lake have been available to those seeking a more primitive and private camping experience. The campground style area at Middle and Lower Unknown Lakes also underwent a similar redesign, however this area also continues to experience periods of extensive use and overcrowding. The recent elimination of free camping on nearby private lands will undoubtedly create additional demand on these sites. In addition, the many of current camping facilities do not meet American with Disabilities Act (ADA) standards, and future upgrades will have to consider these improvements. An ADA approved vault toilet has been installed at the Unknowns camping area.

**Camping Facilities on the Duck Lake Unit**

<b>Location</b>	<b>Type of Facility</b>	<b>Access</b>	<b>No. of Sites</b>	<b>Permit Required</b>	<b>Capacity</b>
Duck Lake	Campground	Vehicle	10	No	40
Duck Lake	Campsite	Boat	3	No	13
Middle & Lower Unknown Lake	Campground	Vehicle	8	No	35
Upper Unknown Lake	Campsite	Foot	1	No	4

Gassibias Lake	Campsite	Vehicle	4	No	16
Fourth Machias Lake	Campsite	Boat	4	No	16
Nicatous Lake	Campsite	Boat	1	No	4
Outlet of Fifth Machis	Campsite	Boat	1	No	4



*Duck Lake campsite*

*Boating Access*

Boating access is important to the recreation management program on the Unit, with the facilities remaining rustic and somewhat limited in keeping with the area’s remote character. The previous management plan noted the trailerable boat site on Longfellow Cove on Duck Lake provided parking for 14 vehicles with trailers, however, the available space will only accommodate half that number. The ramp consists of a gravel surface and is considered “primitive,” meaning it has not been constructed to industry standards and may not be suitable for larger boats. Four other hand carry sites are located on Middle Unknown, Lower Unknown, and Gassabias Lakes, and on Fifth Lake Stream near Fifth Lake. The trailered launching of boats from the Unknowns and Gassabias Lake is not restricted, but is difficult to use due to their rustic nature. The boat launch on Fourth Machias Lake is on private land. These facilities are in need of improvements to correct safety and usability issues. These sites also do not meet ADA standards, although an ADA compliant privy was installed at the Unknowns. Future improvements will need to consider these access upgrades.

**Boating Facilities on the Duck Lake Unit**

<b>Type of Facility</b>	<b>Location</b>	<b>Parking</b>
Trailer (primitive)	Duck Lake	6-7 with trailers
Hand Carry	Middle Unknown Lake	1

Hand Carry	Lower Unknown Lake	0
Hand Carry	Gassabias Lake	1
Hand Carry	Fifth Lake Stream	2

In 2003 the Bureau acquired the so-called Duck Lake Fee Connector between Nicasious Lake and the original Unit boundary. Within the parcel is an area that may be suitable for the launching of boats on Nicasious Lake, but no effort has been made to develop the site. Further work is needed to determine the impact developing the site would have on the available access and use of the lake on abutting private lands.

Canoe Trails

*Gassabias Stream* from Gassabias Lake to Nicasious Lake offers a three-mile flat-water canoe trip through a variety of wildlife habitats, with the north side of the stream in public land ownership, and most of the south side in private ownership except where it abuts Gassabias Lake. The east side of Gassabias Lake also marks the start of the famous two and a half mile “Gassabias Portage to Fourth Lake,” traveled extensively by Native Americans and early American settlers en route to the Machias River.

*Fifth Machias Lake and Stream to Fourth Machias Lake* marks the beginning of the 76-mile trek to the Atlantic Ocean. This 11-mile section offers a remote and challenging experience. The stream meanders along a series of eskers known as “horsebacks” and provides a mixture of flatwater and Class I, II, and III rapids before it empties into Fourth Machias Lake. The water level drops quickly from Fifth to Fourth Machias lakes and is canoeable only in the spring.

Hiking Trail and Non-motorized Uses

Certain portions of the Unit, particularly the area around Upper Unknown Lake and the corridor from Unknown Stream to Fifth Machias Lake are largely un-roaded and receive only light recreational use. Hiking trail use in general has been limited to two areas: the short trail from Middle Unknown Lake to the Upper Unknown Lake campsite and the occasional use of the historic portage trail between Gassabias Lake and Fourth Machias Lake, and along Fifth Lake Stream.

Approximately 600 acres around Upper Unknown Lake had been allocated as a non-motorized backcountry area in the 1989 management plan. It has since been determined that little other recreational use has occurred in this area, with the exception of hunting.

With the recent acquisition of lands south of this portage trail, an overnight hiking trail opportunity now exists along the seven-mile stream corridor known as the “horseback” between Fourth and Fifth Machias Lakes. Further work is needed to determine the interest and feasibility of developing this trail, much of which would be located on lands recently-acquired as part of Phase II of the Machias River project. Although there are deed restrictions with respect to the designation of this area as an ecological reserve, a trail opportunity could be developed, provided there is sufficient interest and support, and that no construction occurs prior to the Natural Resources Inventory by the Maine Natural Areas Program (due to be conducted in the summer of 2009).

### Motorized Trails

The Duck Lake Unit in general provides important destinations and connecting trails to regional ATV and snowmobile systems throughout the eastern region of the state. Hard surfaced roads on the Unit are classified as shared use roads, which permit ATV use. These roads and the multi-use trail to Grand Lake provide an important connection for ATV users in the area.

*The ITS System:* ITS 84, a major snowmobile trail providing the only east to west connection between Grand Lake Stream and the Milford area, passes through the Unit. ITS 81 travels north-south through the Unit connecting to ITS 84. The Department's Off-road Vehicle Division (ORV) has grooming equipment and an operator in Beddington responsible for the maintenance of a portion of ITS 81. The groomer travels north along the 32-00-0 Road as far as the Gassabias Bridge at the boundary of the Duck Lake Unit, closed by the abutting landowner and reconstructed by the Bureau ORV division with permission of the abutting landowner for use by ATVs and snowmobiles. This redesign was intentional to prevent passenger vehicle travel across it, consequently rendering the bridge too narrow for passage by snow groomers. A private club grooms the ITS on the north side of the bridge. The Bureau has since acquired the lands north of and abutting this bridge.

*Backcountry/primitive snowmobile trails:* On the east side of the Unit, a local primitive snowmobile trail known as the "Horseback Trail" follows an esker formation that abuts Fifth Lake Stream. This trail was designated, for one year, as a bypass route for a portion of ITS 81 located on the 32-00-0 road, when that road was plowed. This trail followed the horseback esker and connected the Stud Mill Road to the south with the Duck Lake Road to the north. Much of this trail was unsuitable for grooming due its narrow steep-sided nature. This trail has not been in official use since 2001. In 2001 the Bureau designated the portion of the Duck Lake Unit including the trail as an ecological reserve; informal use was allowed to continue pending development of this Plan. In 2005 the Bureau officially discontinued the portion of that trail within the Fifth Lake Stream parcel acquired by the Bureau as part of the Machias River acquisition project, as that parcel was subject to deeded restrictions prohibiting motorized use.

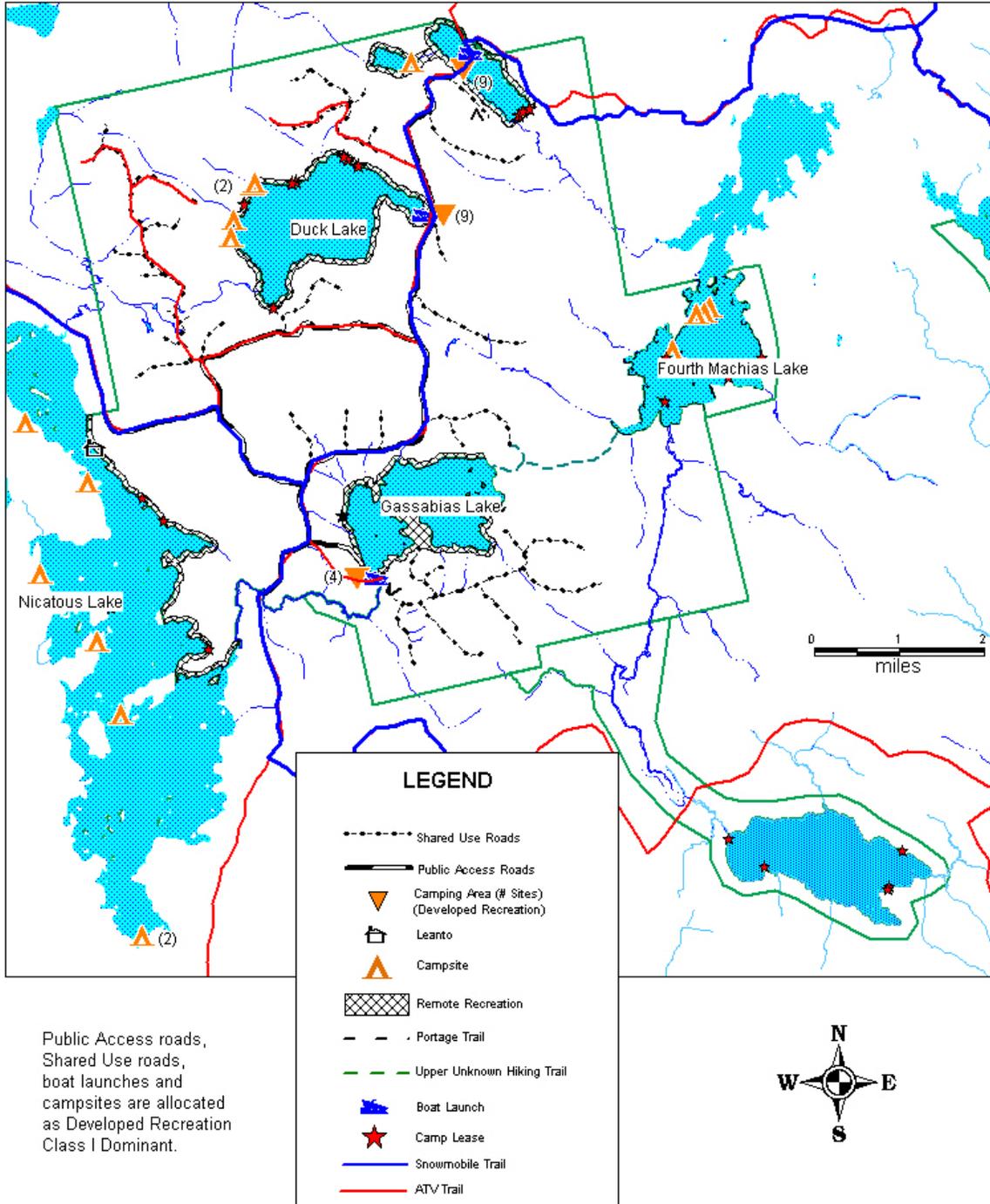
The temporary relocation of ITS 81 was the result of logging operations requiring the road to be plowed. Subsequently, removal of the truck bridge and installation of the ATV/snowmobile bridge on Gassabias Stream have prevented vehicular travel across the bridge. However, winter harvest operations within the Duck Lake Unit could still require plowing of these roads and temporary relocation of portions of ITS or local primitive trails using Bureau roads.



*Gassabias Stream ATV/snowmobile bridge installed by the Bureau*

In addition to the “Horseback Trail”, snowmobilers looking for a backcountry primitive trail experience use the Gassabias Portage Trail which provides access to Gassabias Lake from Fourth Machias Lake. This use was noted and specifically allowed in the 1989 Duck Lake Unit Management Plan. This trail, like the Horseback trail, is now within the Bureau-designated Duck Lake Ecological Reserve.

## Duck Lake Unit- Recreation Allocations, Facilities and Infrastructure



### ***Recreation Management Issues***

- The campground areas at Duck Lake and the Unknowns are frequently over capacity from Memorial Day to Labor Day. There are environmental, social, and facility management concerns from this use, with limited staff time and Bureau resources available.
- The limited parking at popular use areas (Duck Lake, Gassabias Lake, and the Unknown Lakes) creates occasional conflicts between day users, boaters, and campers.
- Recent elimination of free camping on nearby private lands will most likely result in increased demand on existing campsites on the Unit.
- The vehicle access bridge (Gassabias Stream) on the 32-00-0 road was removed by the landowner and replaced by an ATV/snowmobile bridge in 2003 by the Bureau ORV division. There have been numerous negative comments about the loss of vehicle access resulting from this bridge.
- Recreational facilities and pathways throughout the Unit are not ADA-compliant.
- Although there is the potential for a boat access site on Nicatous Lake through the “fee connector” parcel, more needs to be done to determine the feasibility and impact from its development.
- Although an alternative snowmobile route to bypass the 32-00-0 is currently not needed, if the Bureau or another landowner should plow a portion of the road for logging operations, an alternative to re-route ITS 81 will be needed. This alternative cannot be in the Ecological Reserve.
- There is shoreline erosion at unimproved boat access sites on Gassabias Lake, Middle and Lower Unknown Lake, and Fifth Lake Stream. Safety and usability improvements are needed, along with upgrades to meet ADA standards at all boat site locations.
- There may be interest in developing/extending the existing non-motorized trail along the “horseback” along Fifth Lake Stream. The southerly portion of the corridor from Fifth to Fourth Machias Lakes along Fifth Lake Stream was deeded to the state as an ecological reserve, and may provide an opportunity for a hiking trail connecting Fifth Machias Lake to Gassabias Lake and the Unknowns. Provisions for campsites within this parcel are deed specific. Any campsite or trail construction can only be performed after the Maine Natural Areas Program conducts a Natural Resources Inventory in the summer of 2009.
- Primitive, un-groomed snowmobiling has continued along the Gassabias Portage Trail within the designated ecological reserve. A management recommendation consistent with the Ecological Reserves statute and Integrated Resource Policy is needed on the future use of this trail.
- The esker or “horseback” along Fifth Lake Stream (accessed from Fourth Machias Lake) has been a snowmobile destination for local residents and guided visitors. The area surrounding the “horseback” is now designated an ecological reserve, and the southern portion is within the area with deeded restrictions against motorized use. A management recommendation consistent with the Ecological Reserves statute and Integrated Resource Policy is needed on the future use of this trail.

## *Recreation Issues: Discussion*

*Primitive Snowmobile Trails in the Duck Lake Ecological Reserve*: The statute which authorizes Bureau ecological reserves, 12 MRSA 1801, sub 4-A, addresses allowed uses and trails and roads for motorized vehicle use as follows (this same language is incorporated in the Bureau's Integrated Resource Policy).

- 1. Allowed Uses.** Allowed uses within an ecological reserve must be compatible with the purpose of the ecological reserve and may not cause significant impact on natural community composition or ecosystem processes. Allowed uses include non-manipulative scientific research, public education, and non-motorized recreation activities such as hiking, cross-country skiing, primitive camping, hunting, fishing and trapping . . . The removal of trees and construction of facilities associated with these allowed uses are allowed. The director may allow other uses when their impact remains low and does not compromise the purpose of the ecological reserve.
- 2. Trails and roads for motorized vehicle use.** The director shall allow the continuing use of an existing snowmobile trail, all-terrain vehicle trail or a road if the director determines the trail or road is well designed and built and situated in a safe location and its use has minimal adverse impact on the ecological value of an ecological reserve and it cannot be reasonably relocated outside the ecological reserve.

The existing primitive snowmobile trails both receive low use, are un-groomed and well designed for their intended uses and are situated in safe locations. Further, travel on snow protects the vegetation and soil causing minimal adverse impact on the ecological value of the reserve. The remaining issue is whether one or both of these trails could be reasonably relocated outside of the ecological reserve.

To address this issue, it is important to understand the purposes of these trails. Prior to the creation of the Fifth Machias Lake Ecological Reserve, both of these trails provided a backcountry primitive snowmobiling experience on trails connecting to relatively remote undeveloped lakes (Fourth and Fifth Machias Lakes and Gassabias Lake). The remote and undeveloped nature of these lakes, and the exemplary natural communities associated with them, are at once what attracted backcountry snowmobilers to them, and why ecological reserves now surround both Fourth and Fifth Machias Lakes and abut the east shore of Gassabias Lake.

The key concept that would allow these trails to remain in use is not that they are especially scenic, and provide a backcountry experience – the Bureau could choose to designate other scenic areas as mechanized backcountry recreation areas for this purpose – but that they also serve as destination trails to remote lakes.

The IRP does not address the difficulties of relocating trails that are “destination” trails – that serve to connect to a specific destination that provides an experience that cannot be relocated. In this case, the Director must decide, in his discretion, whether the trails can be reasonably relocated.

The Gassabias Portage Trail provides access from Gassabias Lake to Fourth Machias Lake, and from Fourth Machias Lake to Gassabias Lake. The problem is that the primitive trail system in this case requires travel across lakes – across Gassabias Lake to reach the Fourth Machias Lake, or across Fourth Machias Lake to reach Gassabias Lake. The IRP discourages the use of lakes as significant sections of snowmobile trails, due to potential safety issues.

The disallowance of motorized trails on the Fifth Machias Lake parcel has eliminated Fifth Machias Lake as a destination associated with the Horseback Trail. It now essentially results in a dead-end trail; stopping at the boundary of the Fifth Machias Lake Ecological Reserve. Because of this, concerns have been expressed that if use of the Horseback Trail continues to be allowed, snowmobilers may continue to travel south onto the Fifth Machias Lake Ecological Reserve in express violation of the terms of that acquisition.

### ***Visual Resources***

The scenic quality of the Unit, including its natural beauty, diversity, and contrast contribute significantly to the uniqueness and remote character of the Unit.

### ***Visual Resource Management Issues***

- Management of the resources should take into consideration visual quality; in particular, the background views as seen from the lakes, including the slopes of Duck Mountain north of Duck Lake.
- In visually sensitive areas harvesting should generally be limited to selection removals and designed to maintain the appearance of an intact forest canopy.
- Foreground views along trails and public access roads are also important to the visual management program and should be taken into consideration when timber harvesting or recreational facilities are planned.
- It may be desirable to include small patch cuts to create vistas or to break up the "wall" effect of the continuous forest edge along trails and public access roads.
- Natural processes should take precedent over any visual management activities where recreational use occurs in the Ecological Reserve.

### ***Timber and Renewable Resources***

The Duck Lake Unit provides significant forest management opportunities. Except for about 300 acres on or near Duck Mountain, only small areas are inoperable due to terrain. Some areas have insufficient fertility to be classed as commercial timberland, able to produce less than one-quarter of a cord per acre per year. This is often due to poor drainage, but includes some ledgey, rocky areas and areas where repeated hot burns from 60 years ago have made the sites somewhat marginal for supporting commercial tree growth. Most of this latter acreage is within the Unknown Stream portion of the 3,870 acre Ecological Reserve designated by the Bureau in 2000. Approximately 2,433 acres at that time were considered operable, but were removed from the Bureau's regulated acres. "Regulated acres" is defined as the portion of the commercial

forest landbase on which the sustainable harvest will be calculated at or near maximum sustainable levels (DOC, 2000).

The Bureau's harvesting activities at the Duck Lake Unit began in 1983 during the latter stages of the state's spruce budworm epidemic, aimed primarily at heavy salvage and pre-salvage of badly damaged softwoods. Most balsam fir larger than sapling size had died off by then, with heavy damage to both spruce and hemlock. The initial entry of 1983-85 included the largest "clearcut" ever conducted under Bureau management (375 acres) along with several other smaller clearcuts (20-40 acres). Since those entries, two natural developments have shown that these harvests were heavier than was necessary. First (and most important), the budworm epidemic unexpectedly collapsed after 1985. Second, hemlock, a species normally sensitive to disturbance and with little known history of its behavior following budworm epidemics recovered better than was expected once the feeding had ended.

Harvesting from 1986 onward has been of two general types. The first is selection or irregular shelterwood in well-stocked softwood and mixedwood stands, designed to favor spruce, pine, quality hemlock and hardwoods, while establishing desirable regeneration. The second has occurred in the burn origin stands (comprising 25% of the forestland). Most of these fires occurred in the late 1930s and 1940s, with some acres seeing recurring fires. Smaller burns have occurred as recently as the 1960s. Harvesting in these areas has attempted to improve the quality of the residual stand while making the harvesting operation commercially viable. This has been difficult due to the often low value of young hardwoods. Much of the harvest acres in the fire origin stands still have modest quality, but a significant proportion has been moved toward high quality mixed-wood and softwood (often pine) stands. Harvest volumes from 1983 through 1994 were approximately 80% softwood, due both to budworm and markets. Since that time the harvests have been almost 60% hardwoods, as more diverse markets have made them more profitable as pulpwood and biomass. This has enabled the Bureau to manage and improve a greater area of the lower quality stands.

*Stand Type Characteristics (regulated acres only):*

*Softwood*

Softwood types cover about 9,700 acres which is 45% of the Unit's regulated forest acres. These occur on all drainage classes, though they are least prevalent on well drained sites. Most are reasonably well stocked and average nearly 30 cords per acre, with spruce (nearly all red spruce) making up about 45% of the volume of softwood stands. Another 22% is hemlock with the Duck Lake Unit holding more hemlock volume than any other BPL land unit. Eleven percent is pine, (about three-quarters are white pine and one-quarter red pine). Cedar is next in volume at 7%, while yellow birch and red maple are the leading hardwoods, each with 4% of softwood type volume. Most softwoods except cedar are of good quality, though dwarf mistletoe is a problem on red and black spruce in some areas. Spruce is the most desirable management species except on droughty sites where pine should be favored. Hemlock is also very important on these acres and usually grows well. Areas currently in softwoods should be managed to stay in the type. Some mixed-wood areas, especially those of burn origin where the burns created more hardwoods, are on sites better suited to growing spruce, hemlock, and pine.

*Mixed-wood*

Mixed-wood types are found on about 6,800 acres which is 32% of the Unit's regulated area. There are three very different types of mixed-wood stands on this Unit. First, and probably least prevalent, are stands with no recent fire history and made up mainly of long lived species. These occur on sites with sufficient fertility to support quality growth on hardwoods such as yellow birch and red maple, and produce excellent softwoods. Current stocking is heavy to spruce and hemlock, with red maple, yellow birch, beech, and white pine significant. Management of this type of mixed-wood stand should favor good quality stems of current species.

The second type are the burn origin stands where seed source and/or low fertility has enabled softwoods to become a significant component. Many of these stands have low quality and remain under-stocked 60-70 years post-fire, and most are better suited for softwoods than hardwoods. Though the species mix varies greatly from site to site, generally spruce, red maple, paper birch, white and red pine, and occasionally beech, aspen, and fir are important. Management of this type of mixedwood stand should focus on improvement harvests favoring softwoods, especially pines, which are better adapted to limited fertility.

The third mixed-wood stand type is a burn origin matrix of hardwood/mixed-wood. This was caused because when fire moved through the area, portions were burned and portions were skipped. This may be the most abundant of the mixed-wood varieties and fertility and quality varies across the stands. Management should usually favor good quality stems of current species in the areas not burned, and encourage the spread of softwoods from these higher quality areas into the surrounding lower quality areas affected by fire.

On the best of the burn sites, aspen is often dominant and managing for this species and for ruffed grouse can be good for both timber and wildlife. Red maple, often an undesirable but fierce competitor on other lands, is often the best quality hardwood present on some of these burn-origin mixed-wood acres.

### *Hardwood*

Hardwood types cover about 4,900 acres, or 23% of the Unit's regulated acres. Probably two-thirds of these types originated in mid-20<sup>th</sup> century fires. These range from reasonably fertile sites holding mainly mature aspen and birch, to "hot burn" areas where low fertility has caused hardwoods to become scrubby and decadent, and a better softwood understory is growing. In between are lands with moderate fertility, holding fair quality aspen, birches and red maple, with enough pine, spruce and fir in the mix to encourage management for future softwoods. The remaining hardwood acres have a less significant fire history and are dominated by beech. Sugar maple, yellow birch, and red maple are also present. A minority originated from the same 1930s-40s fires, but retained fertility and seed source led to the northern hardwood mix, often with a high yellow birch component. Older hardwood stands have mostly had several past harvests that sifted out the best sawlogs, lowering stand quality. In addition, even the best sites here are not especially fertile, also limiting quality, and the beech bark complex has nearly destroyed any quality in that species. Overall species mix in hardwood type is 20% aspen, 18% beech, 11% each of paper birch and sugar maple, and 9% each of red maple, spruce, and pines. Management should favor northern hardwoods where fertility is highest, regenerate aspen where it occurs now on sites fertile enough for it to grow well, and move toward greater softwood presence (often already occurring in the regeneration) on the less fertile lands.

### ***Timber Management Issues***

- Burn origin mixed-wood stands have low quality and remain under-stocked 60-70 years post-fire, and are often better suited for softwoods.
- The mistletoe-infected spruce should be targeted to the extent feasible.
- Blowdown of trees has been a problem on certain boulder strewn sites.
- Hardwood stands affected by “hot burns” suffer from poor fertility limiting their growth, and some older hardwood stands have had past harvests that lowered stand quality.

### ***Transportation and Administrative Considerations***

#### **Public Access Roads**

The Unit is surrounded by large, privately owned tracts of land, served by private roads. Public vehicle access to the Unit has changed significantly since adoption of the original management plan in 1989. The Gassabias Stream Bridge on the 32-00-0 road was removed by the adjacent landowner in 2000, effectively cutting off traditional vehicle access from the south. The primary access to the Unit currently is from the west via Nicaous Lake. The Bureau has been responsible for maintenance of the 11 miles of private road used to access the Unit. The Bureau has acquired a legal right of way over half of the six miles of private road from Nicaous. Since the 1989 plan, the Bureau has improved general road conditions and conducts annual grading on all public access roads. Access from the north from Springfield and Grand Lake Stream has recently been greatly improved on abutting lands, with corresponding increase in access traffic.

Lands recently acquired in the Nicaous portion of the Phase II Machias River acquisition project had numerous large landings at the time of purchase.

#### **Life Flight Evacuation Locations**

There are two evacuation sites on the Unit suitable for helicopters to land. **Duck1 T4ND** is located just off the 32-00-0 road between the Duck Lake and Unknown Lakes campsites. **GASS1 T41ND** is located on the 32-00-0 Road between the Gassabias Lake Road and the Crossover Road. Both of these sites are along the snowmobile and ATV trails and are signed.

#### **Campplot Leases**

There are 22 private residential campplot leases within the Unit, all of which were established by previous landowners. Six leases are located on Duck Lake, four on Fourth Machias Lake, three on Lower Unknown Lake, one on Gassabias Lake, three on Nicaous Lake and five on Fifth Machias Lake. The Nicaous and Fifth Machias Lake leases, as well as the two leases on the southeast shore of Fourth Machias Lake are on lands acquired as part of the Phase II Machias River project. One lease on Gassabias Stream was terminated in 2000 at the request of the campowner, the structures of which are now owned by the Bureau and are being considered as a replacement for the Bureau crew camp on the Duck Lake Road.

Administratively, these leases will continue on a five-year renewable basis as directed by statute, provided the terms and conditions of the lease agreements are met. In addition, no new camp leases will be developed.

### *Duck Lake Road Crew Camp*

The Bureau has maintained a camp along the Duck Lake Road for management staff working in the area, however, its condition has deteriorated significantly and it has received little use since adoption of the original management plan in 1989. In 2000, a camplot lease on Gassabias Stream was terminated at the request of the campowner and the associated structures are now owned by the Bureau. The Bureau is considering either using them as a replacement for the Bureau crew camp on the Duck Lake Road, or converting the area to a campsite. Further study is needed to determine if the level of need will justify the cost of restoring the Gassabias Stream camp.

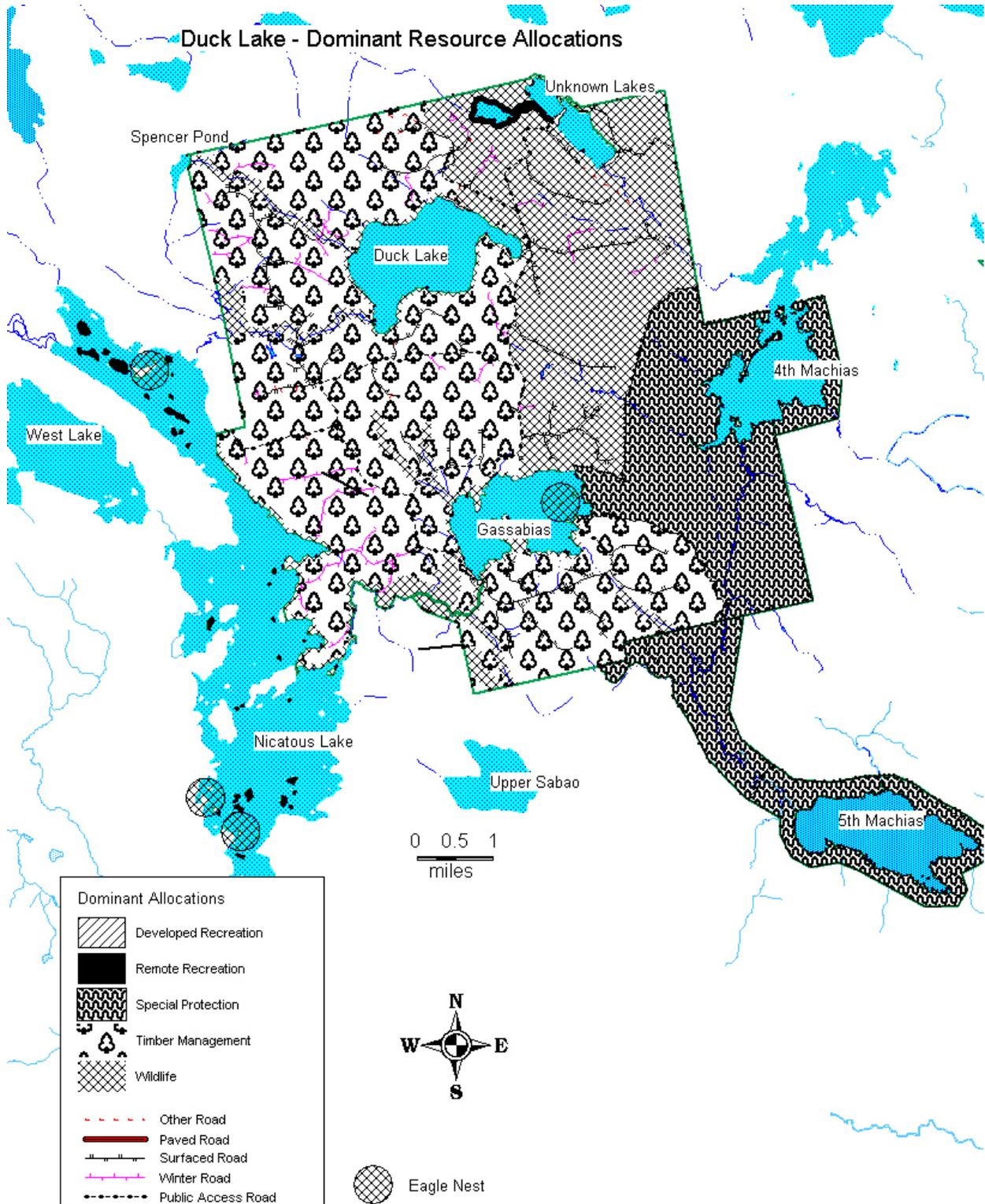
### *Inland Fisheries and Wildlife Camp*

The Department of Inland Fisheries and Wildlife owns and maintains a camp on the southwest shore of Duck Lake. As recommended in the 1989 management plan, the camp was moved across the lake from its former site, with the site converted to a water access campsite.

### ***Transportation and Administrative Management Issues***

- The Duck Lake Road crew camp is in disrepair; the former camplot lease on Gassabias Stream is now owned by the Bureau and could be converted to serve as a replacement.
- Maps of shared use roads should be posted on the Bureau's website and on Unit sign boards.
- The bridge on Gassabias Stream now prevents vehicle through-travel, which continues to be a concern for some members of the public who used to access the Unit from the south.
- Some illegal motorized use has been reported by Sweetwater Trust in the deeded Ecological Reserve. They have requested the Bureau to place a barrier on the 42-08-0 Road where it crosses the ecological reserve boundary on the east side of Fifth Lake Stream.

# Duck Lake - Dominant Resource Allocations



## **Duck Lake Unit Resource Allocations and Management Recommendations**

The following resource allocation categories are listed in the order they appear in the allocation summary on page 10 of the Integrated Resource Policy.

***Special Protection as a Dominant Use*** The special protection allocation as a dominant use will apply to the following areas:

- The Ecological Reserve on the easterly side of the Unit from Fourth Lake to Fifth Lake.
- The historic travel corridor from Gassabias Lake to Fourth Machias Lake (included within the Ecological Reserve).

### ***Special Protection Management Recommendations***

- Field staff will continue to identify and protect areas of ecological significance outside the Ecological Reserve. One such area is the seven acre mature sugar maple stand designated for protection by the Bureau in 1993.
- Primitive, non-groomed snowmobiling will be allowed on the existing Gassabias Portage Trail.
- Snowmobiling on the “Horseback Trail” in the Ecological Reserve will be discontinued. Signage explaining the non-motorized policy will be placed in appropriate places as determined by Bureau staff.

### ***Wildlife Management as a Dominant Use***

Wildlife management as a dominant use will apply to the following areas:

- The 5,985-acre area between Gassabias Lake and Upper Unknown Lake.
- Existing zoned deer wintering areas.
- Major wildlife riparian zones of 330 feet will be applied to all major streams, great ponds, and inland wading bird and waterfowl habitat. Minor riparian zones of 75 feet will be applied to all minor streams.
- Vernal pools, raptor nesting sites, and other specialized wildlife habitat. Areas surrounding bald eagle nests are considered “Essential Habitat” and will be managed for according to IF&W guidelines.

### ***Basis for Wildlife Allocations:***

***Deer Wintering Areas:*** The Bureau’s goal is to increase the amount of softwood on the Unit, particularly where fire history has resulted in stocking of hardwoods. This is a long-term endeavor that dovetails both the silvicultural and wildlife goals for the property. The proposed wildlife allocation combines areas of historical winter deer use and primary softwood sites. To achieve the wildlife goals timber harvesting will need to be a strong secondary allocation. The proposed wildlife allocation contains approximately 6,000 acres. A little more than half of these acres (3,300) currently are dominated by softwood species other than pine with relatively dense crown closure (from 34% to 100% crown closure). Areas adjacent to the wildlife allocation also contain areas dominated by softwood types which contributes to the connectivity of suitable winter shelter. These softwood dominated stands meet IF&W’s “conforming cover” definition of

a deer wintering area but all the available acres may not be selected by deer during the winter. This is part of the rationale for the large proposed wildlife allocation. There are zoned deer wintering areas on nearby lands along the Dead Stream southeast of Fourth Machias Lake and on the west side of Fourth Machias south of Unknown Stream. Opportunity exists to coordinate deer habitat management with surrounding landowners across the region. In addition, management in deer wintering areas is coordinated with IF&W.

*Riparian Zones:* The Bureau designates a 330-foot riparian management area or zone along all of the lakes and ponds, major streams, and open wetlands within the Unit. A 75-foot riparian management area is established along secondary streams. These management zones protect important feeding and nesting areas and are used as wildlife travel corridors. Timber harvesting has played an integral role in the management of these riparian zones, with a goal of retaining key structural elements such as snag and den trees to encouraging a variety of tree species and age classes, while maintaining sufficient shoreline cover necessary for wildlife habitat and water quality protection.

*Eagles Nest:* A buffer has been maintained around the nest to protect it from harvesting and recreation activities, utilizing the *Bald Eagle Habitat Management Guidelines* developed by the Ontario Ministry of Natural Resources adapted for Maine habitat conditions. Although the eagle's endangered status is expected to be dropped, the Bureau has made no change to its habitat management policy due the eagles' importance as a wildlife resource.

#### ***Wildlife Management Recommendations***

- Loon counts on Third and Fourth Machias Lakes will be prioritized, per deeded requirements that were made part of the Machias Phase II acquisition.
- Maintain a component of early-successional softwood forest within the Unit to enhance habitat for Canada lynx and other species.
- Look for/expand opportunities to enhance mature softwood habitats for softwood dependent species, especially deer. When feasible, coordinate with surrounding landowners in the provision of deer habitat on a regional basis. Continue the Bureau semi permanent seeding program to compliment adjacent landowner's wildlife food plots.
- The management goal for the 5,985-acre area between Gassabias Lake and Upper Unknown Lake portion allocated for wildlife is to increase the softwood stocking to maintain and expand use as deer wintering habitat, and to maintain a significant wildlife travel corridor between Fourth Machias Lake and the ownership boundary north of Upper Unknown Lake. Existing roads will be used in accomplishing wildlife management goals whenever possible.
- Continue implementation of the grouse habitat where sites conditions are favorable.
- Cooperate with IF&W in implementing an experimental brook trout fishery in Upper Unknown Pond for a three-year trial period. Stocking of yearling brook trout will occur in the fall.
- Continue to manage wetlands primarily through protective measures, but also include careful multi-age management of adjacent timber to encourage species diversity. Wood duck boxes will continue to be placed and maintained in appropriate areas.

***Recreation and Visual Allocations*** Recreation management and visual allocations will apply to the following areas:

- The 100-acre area around Upper Unknown and the trail from Middle Unknown will be allocated as a remote recreation area, within the larger wildlife allocation.
- Public use and camping areas at Duck Lake, the Unknowns, and Gassabias Lake will be allocated as developed class I.
- The public use/shared use road system will be allocated as developed class I.
- Remote recreation as a secondary use will apply to shoreline areas on each of the waterbodies.
- Visual class I as a secondary use will apply to shorelines of the lakes, and public use roads.

### ***Recreation and Visual Management Recommendations***

- Primitive (non-groomed) snowmobiling from Fourth Machias Lake onto the “Horseback Trail” will be prohibited. Bureau staff will place signage explaining the non-motorized policy in appropriate locations and reserves the right to place barriers as necessary.
- Primitive, non-groomed snowmobiling across the historic portage trail between Gassabias and Fourth Machias Lakes (Gassabias Portage Trail) will be allowed to continue. Sledders are encouraged to connect to the Gassabias Portage Trail via the management roads to the north of Gassabias Lake rather than crossing the lake (though crossing Gassabias Lake is not prohibited).
- If an alternative to ITS 81 due to road plowing is needed in the future, the Bureau will seek to find an alternate route that avoids the ecological reserve and that utilizes trails or roads more suited to groomers. Staff will assess a new alternative to ITS 81 to be located in the Drag Brook Area, connecting into the existing Gassabias Road system. Any alternate trail will avoid the deer wintering area.
- The trail to Upper Unknown Pond will be managed for foot or snowmobile use.
- Safety, environmental, and ADA improvements will be made to the various primitive boat launching areas around the Unit as time and resources allow. The rustic nature of the facilities in the area will be considered when making improvements.
- Work with area residents and other interests in determining the suitability of providing a trailered boat access site on Nicatous Lake, to be located on the “fee connector” portion of the Unit. As an alternative, also evaluate improving the existing launch.
- Continue to monitor and develop strategies for managing popular public use areas on Duck Lake and the Unknowns.
- Because of the importance of motorized trail use in this area, continue to work with local ATV and snowmobile clubs and the Off-road Vehicle Division on an ongoing basis to address future connectivity or safety concerns.
- Develop a more formal trailhead off the Duck Lake Road near the Ecological Reserve on the northeast corner of Gassabias Lake for visitors to the Gassabias-Fourth Machias Lake Portage Trail old growth area.
- Explore the feasibility of managing the Ecological Reserve as a non-mechanized backcountry area and developing a hiking trail along the “Horseback Trail” at Fifth Lake Stream in conjunction with the trailhead to the Gassabias Portage Trail mentioned above.

***Timber Management Allocations*** The timber dominant allocation will apply to the following areas:

- Most of the Unit, except for the ecological reserves, and wildlife dominant areas, will be managed as timber dominant.

- Areas allocated as wildlife dominant will allow timber management as an important secondary use, especially to maintain and enhance deer wintering areas.

***Timber Management Recommendations***

- Manage most of the well-stocked softwood acres to retain high spruce, hemlock, and pine components and a late-successional character, while producing high quality timber products and respecting viewsheds.
- Work to improve quality in the abundant acres of burn origin stands where quality is currently modest but the site allows for good growth.
- Encourage growth of pines, especially white pine, in both pine type stands and as significant components of softwood and mixedwood stands.
- Target mistletoe-infected spruce to the extent feasible given the above items.

***Transportation and Administrative Management Recommendations***

- The location of the evacuation sites will be put on Bureau maps and brochures.
- Continued communication between the Bureau and local snowmobile and ATV clubs is necessary to minimize conflicts on road use and for safety purposes.
- The Bureau will continue to communicate with its neighbor south of Gassabias Stream regarding the possible reinstallation of vehicular access from the south.
- The Bureau will decide which, if either, of the two Bureau camps on the Unit will be saved, and if so, how they will be maintained in an acceptable condition.
- Minimize road improvements and additions in the relatively un-roaded portion of the Unit to those deemed necessary to accomplish wildlife management goals. Use existing roads to accomplish management whenever possible.
- Place a barrier on the 42-08-0 Road where it crosses the ecological reserve boundary on the east side of Fifth Lake Stream to restrict motorized use.
- To enhance appearance and improve safety, no new log landings will be constructed on public access roads on the Nicatous portion of the Phase II Machias project.

**Duck Lake Unit Dominant Allocations Acreages**

<b>Dominant Allocation</b>	<b>Acres</b>
Special Protection	6,650
Wildlife	9,170
Remote Recreation	222
Developed Recreation Class I	36
Timber Management	13,709