NEW YORK STATE OF OPPORTUNITY. | Department of Environmental Conservation

SENTINEL RANGE WILDERNESS AREA

and

Bartlett Primitive Area

Proposed Final Unit Management Plan

River Area Management Plans

West Branch Ausable River

East Branch Ausable River

NYS DEC, REGION 5, DIVISION OF LANDS AND FORESTS

P.O. Box 296, 1115 State Route 86, Ray Brook, NY 12997-0296
r5.ump@dec.ny.gov

www.dec.ny.gov **September 2019**

This page intentionally left blank

Acknowledgments

Planning Team:

Robert Daley	Forester 2	Division of Lands & Forests
Dan Fox	Forest Ranger 1	Forest Protection and Fire Mgt.
Robert Praczkajlo	Forest Ranger 1	Forest Protection and Fire Mgt.
John Fieroh	Biologist 1 (Fisheries)	Bureau of Fisheries
Paul Jensen	Biologist 2 (Wildlife)	Bureau of Wildlife
Doug McCabe	Conservation Operations Supv. 2	Division of Operations
Walt Link	Environmental Program Specialist (Planning)	Adirondack Park Agency
Steven Guglielmi	Forester 1	Division of Lands & Forests

Staff Contributors:

Thomas Martin	Natural Resources Supervisor	Regional Administration
Kristofer Alberga	Forester 3	Lands and Forests
Tierney Rosenstock	Natural Resources Planner	Lands and Forests
Josh Clague	Environmental Program Specialist 2	Lands and Forests

This page intentionally left blank

Contents

I. Introduction

A. Planning Area Overview

The Sentinel Range Wilderness Area (SRWA) is located in the northeast portion of the Adirondack Park in the towns of Jay, Keene, North Elba, and Wilmington in Essex County. The namesake of the unit, the Sentinel Range, is a prominent mountain range in the region. The SRWA covers 23,874 acres. The Bartlett Primitive Area passes through the western edge of the SRWA.

Much of the unit boundary is along public roads, rivers, or private property lines. The SRWA is bounded on the northwest by Whiteface Mountain Ski Area, Wilmington Notch Campground, and McKenzie Mountain Wilderness Area; on the northeast and east by private lands; on the south by the High Peaks Wilderness Area, and on the west by the Saranac Lakes Wild Forest and private lands. Other nearby Forest Preserve units includes the Hurricane Mountain Wilderness Area, Jay Mountain Wilderness Area, and the Wilmington Wild Forest**.**

Most of the unit is undeveloped and provides outstanding opportunities for solitude and unconfined recreation. The majority of recreational use occurs on the periphery of the unit near Pitchoff Mountain and in the vicinity of Copperas and Owen ponds. Most of these users are day users but camping is popular in the Copperas Pond area. Overall use levels are low to moderate compared to other wilderness areas in the region.

The SRWA contains prominent watercourses classified under the Wild, Scenic, and Recreational Rivers System Act (WSRRS Act) including the East Branch Ausable River and West Branch Ausable River. In accordance with the WSRRS Act, and its implementing regulations found in Part 666 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR), this UMP also serves as a River Area Management Plan for both rivers where they intersect the SRWA. Section IV.A.2 of this UMP contains information on the river areas within the SRWA.

B. Unit Geographic Information

The SRWA is a forested, mountainous area with relatively few ponds and wetlands. The area is characterized by steep slopes and numerous small streams that drain to larger rivers outside the unit. Named mountains in the SRWA include: Kilburn, Pitchoff, Sentinel, Slide, and Stewart.

The SRWA is made up of the following parcels:

Essex Tract, Henry’s Survey

Lots 232 and 233. Portions of Lots 236, and 237

Jay Tract

Lots 6, 24, 25, 26, and 27. Portions of Lots 28, 32 and 65

Mallory Grant

Portions of Lots 11, 12, and 14

Old Military Tract, Townships 1 & 2, Richard's Survey

Lots 10, 21, 23, 24, 25, 26, 27, 28, 42, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, and 58. Portions of Lots 35, 36, 37, 38, 59, 60, 64 and 94

Old Military Tract, Township 11, Richard's Survey

Portions of Lots 359 and 360

Old Military Tract, Township 12, Thorn's Survey

Lots 121, 123, 127, 128, 129, 130, 131, 134, 135, 136, 137, 138, 141, 142,143, 144, 145, 147, 148, 149, 150, 151, 152, 153, and 154. Portions of Lots 1, 132, 139, and 146

Whiteface Mountain Tract

Portions of Lots 1, 2, 3, 5, and 6

The unit is covered by the Keene Valley and Lake Placid 7½ x 15 minute USGS quadrangle maps.

C. General Access

Access to the SRWA is gained along the following roads where they form the boundary of the unit.

- State Route 73 in Keene and North Elba.
- State Route 86 in North Elba and Wilmington.
- River Road (County Route 21) in North Elba.
- Bartlett Road in Jay, Keene, and Wilmington.
- Mountain Lane in North Elba.
- Alstead Hill Lane in Keene.

Hamlets near the SRWA include Keene, Lake Placid, Upper Jay, and Wilmington. Nearby population centers include Albany, New York (130 miles); New York City (280 miles); and Montreal, Quebec (100 miles). State Highways provide easy access to the SRWA from Interstate 87 (Northway).

D. General History

The lands comprising the SRWA were originally part of the “Old Military Tract” (Townships One, Two, Eleven and Twelve). The Old Military Tract was land that was set aside by the state in 1786 as a “memorial of public gratitude” to compensate Revolutionary War veterans for their service. Unfortunately, this land was too remote to be of immediate value to the veterans, and none are known to have settled there (Plunz, 1999). Not long after this, however, settlement began to occur around the Sentinel Range area. By the beginning of the 19th century, villages had been established at Keene, Jay, and Wilmington; and settlers were beginning to move into North Elba.

Settlers first entered Keene, and North Elba via a primitive wagon track that ran from Westport, on Lake Champlain, to Hopkinton in Saint Lawrence County. This track, which was established in the 1790s, was improved over the years and became known as Old Military Road. The section of Old Military Road that ran from Keene to North Elba, was originally located in the pass to the north of Pitchoff Mountain. In the mid-1800s a road was built to the south of Pitchoff Mountain, through Cascade Pass. Today State Route 73 approximately follows the Cascade Pass route.

The earliest industries in the area included lumber and iron. Timber was cut for local sawmills and for charcoal and potash production. According to the Sargent Commission map of 1884, lower elevation lands in the north of the unit, and those lands adjacent to the West Branch of the Ausable River were logged for softwoods by this time. Likewise, hardwood timber was removed from some areas to make charcoal and potash. Charcoal was used at the numerous iron forges in the region and many charcoal kilns were located in the area.

Much of the logging that took place in the SRWA was done by the J. And J. Rogers Company of Ausable Forks. Started in the 1830s, the Rogers Company quickly grew to be one of the largest producers of iron in the country. By the 1860s, they were producing over 6,000 tons of iron and iron products a year. In order to sustain this level of output, the company had to consume large amounts of local resources. They had vast land holdings throughout the Ausable Valley Region, including much of the land now contained in the SRWA, and timber was cut from 1,000 acres of this land per year to supply the 1,600,000 bushels of charcoal needed to fire their forges.

In the 1890s the J. and J. Rogers Company reorganized its industry from iron to wood pulp products and began cutting softwoods in the Ausable Valley and High Peaks Region. Several large logging operations were conducted in the Sentinel Range in the early 1900s. Logs from these operations were transported to the Ausable River on large, horse-drawn sledges in the winter and then floated to the company mill in Ausable Forks in the spring. Logs were also brought to Owens Pond where they would be driven to the Ausable River in the spring.

During the mid to late 1800s the towns of Keene, North Elba and Wilmington became popular tourist destinations, due in part to earlier visitors who extolled the natural beauty

of the area. Many hotels and guest houses were built in the area at this time, and visitors would enjoy, hiking, hunting, fishing, boating, or more leisurely pursuits.

During the early part of the 20th century, devastating fires swept through much of the Adirondacks. Severe forest fires swept through lands in the southern portion of the SRWA in 1903. At this time, most of Pitchoff Mountain was burned over. The numerous rock outcrops and stands of white birch found on the mountain are a result of these fires.

Early in the 20th Century, Lake Placid became one of the first winter sports centers in America due in large part to Melvil Dewey, the proprietor of the Lake Placid Club. In the winter of 1904-05, Dewey kept the club open and provided skiing, skating, tobogganing, and snowshoeing for members. The popularity of these winter activities increased in the following years and numerous facilities were developed in the Lake Placid area. Several ski trails were developed in what is now the SRWA beginning in the early 1920s when H. Smith “Jackrabbit” Johannsen was instrumental in getting the Lake Placid Club to build a ski trail to North Notch from River Road in Lake Placid. In the following years this trail was expanded to Clifford Falls in Keene where skiers could return to Lake Placid via Old Military Road. Additional ski trails were developed in the SRWA including South Notch Trail, which formed a loop with North Notch Trail via Clifford Falls, and Monument Trail, which started at the Conservation Monument on Route 86 in Wilmington Notch and led to several other trails.

In 1932 Lake Placid hosted the third Winter Olympics. Many new facilities were constructed, and existing ones upgraded for the events. Cross country ski trails were cut around Whiteface, Street, and Nye mountains and Mount Van Hoevenberg; and the existing North and South Notch ski trails in the Sentinel Range were upgraded. Lean-tos were also built in North and South notches at this time by the Conservation Commission (forerunner of the Department of Environmental Conservation).

When the Olympics were held in February 1932, a thaw melted much of the snow in the area before all of the events were completed. The North and South Notch Trail loop was chosen for the 50-kilometer ski race because it had the best snow conditions of all available trails.

As more people began to prefer skiing at resorts in the 1940s and 1950s, the cross-country ski trails in the Sentinel Range were slowly abandoned. Interest in cross-country skiing revived in the 1970s and 1980s. In 1986 work was done to reopen some historic ski trails, including what is now the Jackrabbit Trail. As the backcountry winter recreation has become more popular it has also become an important economic activity for local communities.

II. Inventory, Use, and Capacity to Withstand Use

A. Natural Resources

1. Physical

Geology

Although the SRWA does not contain any of the so called “High Peaks” of the Adirondacks, it is part of the High Peaks region by virtue of its bedrock geology and topography.

The High Peaks region appears as part of a mountainous dome covering an area about 60 miles in diameter. The region, referred to as the “Central Highlands”, is part of the Grenville Province, a large area of bedrock extending into Canada. The High Peaks are a remnant of a mountain region existing 1 – 1.3 billion years ago. Once flat, the Adirondacks were covered by sedimentary rock, the same sedimentary rock that surrounds the region today. During more recent geologic time, the region was uplifted, creating a central dome with its sedimentary covering removed by erosion. The dome is characterized by three prominent geologic features: (1) long straight valleys running north-northeast, (2) gently curved ridges and valleys, and (3) radial drainage patterns flowing outward from the dome. Elevations rapidly fall off to the north and east in the central highlands and decline more gradually south and west.

Much of the bedrock is metanorthosite, a metamorphic rock that has been subject to extremely high temperatures and pressures. Metanorthosite is very hard, extremely dense, and resists weathering and erosion. It was left towering over the countryside as sedimentary rock wore away. Rock color ranges from white to bluish gray. Plagioclase feldspar is its major component. The largest area of such rock is the Marcy massif which underlies most of the High Peaks. The massif contains numerous “dikes” or intrusions of igneous rock that penetrate the anorthosite. Chemically less stable and less resistant to erosion than the base rock, many of these dikes eroded to form stream channels. Where the dike rock in stream beds is fractured and broken, waterfalls and stream rapids occur.

The northern portion of the unit which contains the highest mountains is underlain by metanorthosite. Representative exposures of this rock can be seen on Kilburn Mountain. In the southern section of the unit, the metanorthosite is overlain by Gneissic rocks. Representative exposures of these rocks can be seen on Pitchoff Mountain.

Rocks in the High Peaks Region have also been altered by folding and faulting of the crust, which serves to relieve internal pressures. Valleys form along and within the fault zones. These valleys tend to be long and straight, and generally follow a north-northeast direction; they divide the High Peaks into its characteristic mountain ranges. Cascade Pass and Wilmington Notch are examples of such fault zones.

Even resistant rocks eventually succumb to the pull of gravity and slabs are torn from craggy peaks, leaving cliffs with piles of broken rock at their bases. (Kendall, 1987). Referred to as “mass wasting,” this down slope movement of weathered, disintegrated rock, is evident along all cliffs and steep slopes. Significant rock falls and slides are encountered at the base of Pitchoff and Notch mountains.

Despite the cumulative effects of running water, weathering, mass wasting, and other agents of change, glacial erosion and deposition have had dramatic effects on High Peaks landscapes. During the Pleistocene Epoch, 1.6 million years ago, huge ice sheets advanced and retreated several times across the Adirondacks. The last major ice sheet, the Wisconsian, reached its maximum advance across the area over 21,000 years ago. The ice was thick enough to cover the entire unit, and the surrounding high peaks of the Adirondacks. Ten thousand years later in retreat, this glacier accomplished spectacular erosion; plucked rock fragments in its path, scoured mountaintops, scraped away soil and loose sediments, wore away bedrock, and gouged river valleys into deep troughs. Melting ice sheets released huge volumes of melt water.

Soils

Soils are formed by the chemical and physical breakdown of parent material. The soils in the SRWA are mostly derived from glacial deposits called till. Glacial tills are a mixture of clay, silt, sand, and stone and are deposited in several different ways. Basal till is deposited beneath an active glacier as the ice melts from contact with the earth, or as material in the ice gets lodged on the underlying rock. Ablation till is the material deposited (left behind) as retreating glaciers melt away.

Although soil characteristics are quite variable and fluctuate widely from location to location, the soils characteristics found in the SRWA can be described as follows: soil depth and richness (productivity) is generally greater at the base of the mountains and on terraces and decreases with elevation. Mid-slope soils are still somewhat deep and rich and are generally well drained. The upper slopes and mountain tops of the unit are characterized by thin soils with rock outcrops. Areas of the unit that were burned by wildfires have a higher incidence of rock outcrops. These were caused by intense fires burning the organic soil layer along with the vegetation (and its associated root mat). With the loss of the organic layer and vegetation, there was nothing to protect the mineral soils from the erosive power of the wind and rain.

Detailed soil survey maps for the SRWA are not available. Broad soil types, accurate to an area about 40 acres in size, were delineated using aerial photographs. Soil type interpretations are general and have not been completed.

The following soil series, and associations of series, are located in the SRWA as per APA GIS information. Soil series descriptions are taken from: National Resources Conservation Service (NRCS) official Soil Series Descriptions. Found at: http://soils.usda.gov/technical/classification/osd/index.html

- Adams
  The Adams series consists of very deep, excessively and somewhat excessively drained soils formed in glacio-fluvial, or glacio-lacustrine sands. They are found on outwash plains, deltas, lake planes, moraines, terraces and eskers.

- Becket
  The Becket series consists of very deep, well drained soils that formed in a loamy mantle overlying dense, sandy till on drumlins and glaciated uplands. They are moderately deep to a densic contact.

- Hermon
  The Hermon series consists of very deep, somewhat excessively drained soils on upland till plains, hills and ridges. These soils formed in glacial till.

- Lyman
  The Lyman series consists of shallow, somewhat excessively drained soils formed in glacial till. They are found on rocky hills, mountains and high plateaus.

- Lyme
  The Lyme series consists of very deep, poorly drained soils that formed in loamy glacial till in slightly concave areas and shallow drainageways on glaciated uplands.

Soil associations found within the unit:

- Becket-Lyman:
  The Becket series consists of very deep, well drained soils that formed in a loamy mantle overlying dense, sandy till on drumlins and glaciated uplands. They are moderately deep to a densic contact.

  The Lyman series consists of shallow, somewhat excessively drained soils formed in glacial till. They are found on rocky hills, mountains and high plateaus.

- Becket-skerry:
  The Becket series consists of very deep, well drained soils that formed in a loamy mantle overlying dense, sandy till on drumlins and glaciated uplands. They are moderately deep to a densic contact.

  The Skerry series consists of very deep, moderately well drained soils that formed in a loamy mantle overlying dense, sandy glacial till on drumlins and glaciated uplands. They are shallow or moderately deep to a densic contact.

- Pillsbury-Tug Hill:
  The Pillsbury series consists of very deep, poorly and somewhat poorly drained soils that formed in compact, loamy glacial till on glaciated uplands. They are shallow or moderately deep to a densic contact and very deep to bedrock.

Terrain/Topography

The topography of the SRWA ranges from the relatively low-lying areas along the east and west branches of the Ausable River, to the mountain summits of the Sentinel Range. Although there is variation in the terrain, the unit is predominately mountainous upland. A notable exception is the area of ponds and wetlands located in the northwestern portion of the unit. Maximum relief (change in elevation) across the unit is 3,211 feet from the top of Kilburn Mountain (3,881 feet) down to the East Branch of the Ausable River near the Village of Upper Jay (670 feet).

Kilburn, Sentinel (3,858 feet), and Stewart (3,616 feet) mountains dominate the northern portion of the unit, while Slide (3,576) and Pitchoff (3,497 feet) mountains are prominent in the southern portion of the unit. Many smaller peaks are located around the periphery of the unit. These include Scott's Cobble, Black Mountain, The Cobble Mountain, Pine Mountain, Notch Mountain, and Hiccock Mountain.

Areas of the SRWA have very steep slopes. There are several sheer cliffs in the unit. The steepness of the terrain combined with thin soils and heavy rain events has resulted in one significant slide in the SRWA, on the western side of Kilburn Mountain.

Water

The SRWA lies within the Lake Champlain watershed. The unit is drained by small, high gradient, headwater streams. Those streams generally flow north and west to the West Branch Ausable River, or east, into the East Branch Ausable River.

The SRWA includes about eight ponds and several headwater streams that are tributary to the Ausable River. The ponds cover about 82 acres. Based on Adirondack Lakes Survey Corporation (ALSC) surveys conducted in the mid-1980s, the ponds have pH's (acidity levels) desirable for fish life. Brook trout and a variety of other fishes were present in seven of the ponds; one pond was apparently fishless. Appendix F lists the major ponded waters with a brief narrative pertaining to their important features, water chemistry, management and fish species composition

Wetlands

Wetlands possess great ecological, aesthetic, recreational, and educational value. In their capacity to receive, store, and slowly release rainwater and meltwater, wetlands protect water resources by stabilizing water flow and minimizing erosion and sedimentation. Many pollutants are removed from water that passes through a wetland. Also, because they constitute one of the most productive habitats for fish and wildlife, wetlands afford abundant opportunities for fishing, hunting, trapping, and wildlife observation. For visitors, the expanses of open space that wetlands provide offer a visual contrast to the heavily forested character prevalent in most of the SRWA.

Computer mapping data from the APA identifies about 489 acres of wetlands in the SRWA, about 2% of the unit (see Map 2). The more significant wetland complexes in the unit are located around Holcomb, Marsh, and Owens ponds and near Roaring Brook.

The most common wetland cover type in the SRWA is evergreen forest (290 acres). Other wetland cover types in the SRWA include: persistent emergent (54 acres), broad-leaved deciduous forest (53 acres), and broad-leaved deciduous shrub (48 acres). The APA data indicates that more than 132 acres of the wetlands in the SRWA have been influenced by beaver activity.

Air Resources and Atmospheric Deposition

The effects of various activities on SRWA air quality have not been sufficiently measured nor determined. Air quality and visibility in the unit appears to be good to excellent, rated Class II (moderately well controlled) by federal and state standards. However, the summits are often obscured by haze caused by air pollutants when a large number of small diameter particles exist in the air. Mountain visibility is reduced considerably on high sulphate days (O'Neil, 1990). Air quality may be more affected by particulate matter blown in from outside sources rather than from activities within the unit.

The adverse effects of atmospheric deposition on the Adirondack environment have been documented by many researchers over the last two decades. While permanent monitoring sites have not been established in the SRWA general observations of the effects of acidic deposition on the regional ecosystem are numerous and well documented.

Effects of Acidic Deposition on Forest Systems

At present, the mortality and decline of red spruce at high elevations in the Northeast and observed reductions in red spruce growth rates in the southern Appalachians are the only cases of significant forest damage in the United States for which there is strong scientific evidence that acid deposition is a primary cause (National Science and Technology Council Committee on Environment and Natural Resources, 1998). The following findings of the National Acid Precipitation Assessment Program (1998) provide a broad overview of the effects of acidic deposition on the forests of the Adirondacks. The interaction of acid deposition with natural stress factors has adverse effects on certain forest ecosystems. These effects include:

- Increased mortality of red spruce in the mountains of the Northeast. This mortality is due in part to exposure to acid cloud water, which has reduced the cold tolerance of these red spruce, resulting in frequent winter injury and loss of foliage.

- Reduced growth and/or vitality of red spruce across the high-elevation portion of its range.

- Decrease supplies of certain nutrients in soils to levels at or below those required for healthy growth.

Nitrogen deposition is now recognized with sulfur as an important contributor to effects on forests in some ecosystems, which occurs through direct impacts via increased foliar susceptibility to winter damage, foliar leaching, leaching of soil nutrients, elevation of soil

aluminum levels, and/or creation of nutrient imbalances. Excessive amounts of nitrogen cause negative impacts on soil chemistry similar to those caused by sulfur deposition in certain sensitive high-elevation ecosystems. It is also a potential contributor to adverse impacts in some low-elevation forests.

Sensitive receptors

High-elevation spruce-fir ecosystems in the eastern United States epitomize sensitive soil systems. Base cation stores are generally very low, and soils are near or past their capacity to retain more sulfur or nitrogen. Deposited sulfur and nitrogen, therefore, pass directly into soil water, which leaches soil aluminum and minimal amounts of calcium, magnesium, and other base cations out of the root zone. The low availability of these base cation nutrients, coupled with the high levels of aluminum that interfere with roots taking up these nutrients, can result in plants not having sufficient nutrients to maintain good growth and health.

Sugar maple decline has been studied in the eastern United States since the 1950s. Recently, studies suggest that the loss of crown vigor and incidence of tree death is related to the low supply of calcium and magnesium to soil and foliage (Driscoll, 2002).

Exposure to acidic clouds and acid deposition has reduced the cold tolerance of red spruce in the Northeast, resulting in frequent winter injury of current-year foliage during the period 1960-1985. Repeated loss of foliage due to winter injury has caused crown deterioration and contributed to high levels of red spruce mortality in the Adirondack Mountains of New York, the Green Mountains of Vermont, and the White Mountains of New Hampshire.

Acid deposition has contributed to a regional decline in the availability of soil calcium and other base cations in high-elevation and mid-elevation spruce-fir forests of New York and New England and the southern Appalachians. The high-elevation spruce-fir forest of the Adirondacks and Northern New England are identified as one four areas nationwide with a sensitive ecosystem and subject to high deposition rates.

Effects of Acidic Deposition on Hydrologic Systems

New York's Adirondack Park is one of the most sensitive areas in the United States affected by acidic deposition. The Park consists of over 6 million acres of forest, lakes, streams and mountains interspersed with dozens of small communities, and a large seasonal population fluctuation. However, due to its geography and geology, it is one of the most sensitive regions in the United States to acidic deposition and has been impacted to such an extent that significant native fish populations have been lost and signature high elevation forests have been damaged.

There are two types of acidification which affect lakes and streams. One is a year-round condition when a lake is acidic all year long, referred to as chronically or critically acidic. The other is seasonal or episodic acidification associated with spring melt and/or rain storm events. A lake is considered insensitive when it is not acidified during any time of

the year. Lakes with acid-neutralizing capability (ANC) values below 0 µeq/L are considered to be chronically acidic. Lakes with ANC values between 0 and 50 µeq/L are considered susceptible to episodic acidification; ANC may decrease below 0 µeq/L during high-flow conditions in these lakes. Lakes with ANC values greater than 50 µeq/L are considered relatively insensitive to inputs of acidic deposition (Driscoll, 2002). Watersheds which experience episodic acidification are very common in the Adirondack region. A 1995 EPA Report to Congress estimated that 70% of the target population lakes are at risk of episodic acidification at least once during the year. Additionally, EPA reported that 19% of these lakes were acidic in 1984, based on their surveys of waters larger than 10 acres. A 1990 report by the ALSC (which included lakes of less than 10 acres) in an extensive survey of 1,469 lakes in the Adirondacks, found that 24% of Adirondack lakes had summer pH values below 5.0 a level of critical concern to biota. Moreover, about half of the waters in the Adirondacks surveyed had ANC values below 50, making them susceptible to episodes of acidification. Confirming that, EPA's Environmental Monitoring and Assessment Program (EMAP) sampling in 1991-1994 revealed that 41% of the Adirondack lakes were chronically acidic or susceptible to episodic acidification, demonstrating that a high percentage of watersheds in the Adirondacks are unable to neutralize current levels of acid rain.

In addition to sensitive lakes, the Adirondack region includes thousands of miles of streams and rivers which are also sensitive to acidic deposition. While it is difficult to quantify the impact, it is certain that there are large numbers of Adirondack brooks that will not support native Adirondack brook trout. Over half of these Adirondack streams and rivers may be acidic during spring snowmelt, when high aluminum concentrations and toxic water conditions adversely impact aquatic life. This adverse effect will continue unless further limits are placed on emissions of acid rain precursors.

Monitoring

In the 1980s, the ALSC surveyed waters in, and near the SRWA. Summaries of those data can be found at http://www.adirondacklakessurvey.org see: ALS Pond Data. Since that time the Adirondack Long-Term Monitoring (LTM) program managed by the ALSC has been sampling chemistry in 52 lakes across the Park on a monthly basis. One of these waters, Owen Pond, is located within the unit. Annual summaries of 22 chemical parameters are downloadable from the ALSC website.

Climate

The region's climate, in general terms, is best described as cool and moist. Climatic conditions can vary considerably throughout the unit and are influenced by such factors as slope aspect, elevation, seasonal temperatures, precipitation, prevailing winds, and the location of natural barriers.

Summers tend to be warm with cool nights. Maximum day-time temperatures seldom exceed 90 degrees Fahrenheit. Frost can occur any month of the year and occasionally freezing temperatures are recorded in July and August. Winters are long and extremely cold. Temperatures below 0 degrees Fahrenheit are common during winter. Arctic-like

conditions may be encountered at high elevations. Daily temperature variations of 20-30 degrees Fahrenheit are common between peripheral entry points and interior locations. Annual precipitation, in rainfall, is between 35 and 45 inches per year; snowfall ranges from 100 to 150 inches per year.

Due to the availability of direct sunlight, southern slopes are drier than northern slopes. The latter tend to retain more moisture. Prevailing winds are generally westerly but may be modified by topography. Eastern slopes, leeward of prevailing winds, tend to be drier than western slopes. Extensive damaging winds (hurricane force) are rare but do occur when coastal storms move inland. The resulting influence of climate on local flora and fauna, in particular, is profound.

2. Biological

Vegetation

The SRWA occupies a transition zone between the boreal forests to the north and the mixed forests of the south. Its forests represent a mosaic of plant communities that correspond to local variations in soil, temperature, moisture and elevation. Past events such as fire, wind, land clearing, and logging have exerted a strong influence on present day conditions. These disturbances have contributed to a great diversity of forest cover types which support a vast variety of animal and plant species.

Severe forest fires swept through lands in the southern portion of the SRWA in 1903. At this time, most of Pitchoff Mountain was burned over. The numerous rock outcrops on the mountain are a result of the soils being washed away after the vegetation and organic matter that held them in place was burned off. The stands of paper birch that blanket the lower slopes of the mountain are also a result of these fires. Fires have also affected the forests in the vicinity of Bartlett Road.

Much of the unit was logged from the mid-1800s, to the early 1900s. Early logging in the unit was for sawtimber and focused mainly on mature spruce, pine and hemlock. This logging was confined to areas close to rivers and roads on the periphery of the Unit. The hardwood timber in these areas was left standing, and in some cases is still standing today (see description of *virgin hardwood* forest type below). As the iron industry in the area grew in the mid-1800s, the need for charcoal increased with it. Lower and mid-slope lands in the northeastern portion of the unit were cut for hardwoods presumably to supply charcoal for the J. and J. Rogers Company's iron works. Later as the Rogers Company changed from iron to pulp production large softwood logging operations were conducted at various locations throughout the unit. Softwoods were cut from all but the highest summits in the unit except on lands that were not available for logging.

The Seventeenth annual Report of the Conservation Department (1927) includes a description of Forest Preserve lands acquired from 1917 to 1927. Much of the land within the SRWA was acquired during this time period and the following descriptions from the 1927 report provide a good picture of the condition of the forests at that time:

Virgin Softwood – This group includes the areas of practically pure spruce and balsam protection forests found at elevations greater than 3,000 feet, principally in the high mountain region of Essex County. Lands in this classification have never been lumbered and support very heavy stands of merchantable softwood timber, largely pulpwood, ranging from 20 cords to as high as 60 cords per acre.

Virgin Hardwood - Lands included in this type are located at a lower altitude than the virgin softwood areas and have little or no softwood in mixture. Some included in this classification, however, had been lumbered many years ago for large size scattering hemlock, pine, and other softwoods, but the quantity of the softwoods removed was so small that the character of the forest was changed but little. Upon these lands still remains the original hardwood growth.

Old Lumbering – This classification includes lands which were lumbered from 20 to 60 years ago for the better softwood sawtimber and which now bear, in addition to the original virgin hardwood, a considerable stand of merchantable softwood timber. From the standpoint of recreation and watershed protection, they are fully as desirable as the virgin areas, because of the fact that owing to the lapse of time, practically all traces of former lumbering have disappeared, and in many cases, the growth is superior to some of that found on virgin lands.

Lumbered – This classification includes lands which have been recently lumbered so closely for large hardwood or softwood, or both, that little if any merchantable material remained at the time of acquisition. No lands were placed in this classification which had been burned subsequent to the lumbering operation. Generally speaking, these areas are reproducing themselves with young stands of hardwood and softwood species which, however, are not yet large enough to be included in the next classification following (second growth). They were acquired at extremely low prices and from the standpoint of a future timber supply, will undoubtedly prove to be some of the most desirable lands acquired…

Second Growth – Into this classification are placed all lands lumbered closely 10 years ago or more and upon which at the present time the natural reproduction has attained a size of from two to ten inches in diameter. The growing timber on much of this type will reach merchantable size within a comparatively short time. Some lands lightly burned a great many years ago now having good forest growth upon them were included in this group.

Although much of the unit was logged prior to state acquisition, some large tracts were never logged. Other areas were logged selectively, and now show little if any signs of

past logging. Many of these areas are now considered old growth forests. The term “old growth” can have different meanings for different people. For some this term implies a first growth forest (often called “virgin forest”) that has never been logged or cleared by humans and looks essentially the same today as it would have before European settlement. Several areas within the unit are considered first growth forests, including about 1,700 acres on Kilburn and Sentinel Mountains. The Department defines old growth forests with the following description:

> “Old Growth Forest” involves a convergence of many different, yet interrelated criteria. Each of these criteria can occur individually in an area that is not old growth, however, it is the presence of all of these factors that combine to differentiate old growth forest from other forested ecosystems. These factors include: an abundance of late successional tree species, at least 180-200 years of age, in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self-perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring **(1)** canopy gaps formed by natural disturbances creating an uneven canopy, and **(2)** a conspicuous absence of multiple stemmed trees and coppices. Old growth forest sites typically are **(1)** characterized by an irregular forest floor containing an abundance of coarse woody materials which are often covered by mosses and lichens; **(2)** show limited signs of human disturbance since European settlement; and **(3)** have distinct soil horizons that include definite organic, mineral, illuvial accumulation, and unconsolidated layers. The understory displays well developed and diverse surface herbaceous layers

The tract of land located between the Bartlett Road and the East Branch of the Ausable River was cleared for farming in the 1800s. These farms were abandoned in the early 1900s and began reverting back to forest.

The Ice Storm of 1998 also had an effect on plant communities in the unit. Damage from the storm ranged from mild to heavy, and many stands in the unit were affected. Examples of this damage can be seen throughout the affected areas, where many of the trees have numerous broken branches, missing tops, or are permanently bent over as is the case with many paper birches.

All plants on state land are protected by general State Land use regulations (6 NYCRR §190.8) which state that:

> *“No person shall deface, remove, destroy or otherwise injure in any manner whatsoever any tree, flower, shrub, fern, fungi or other plant organisms, moss or other plant, rock, soil, fossil or mineral or object of archaeological or paleontological interest found or growing on State land, except for personal consumption or under permit from the Commissioner of*

Environmental Conservation and the Commissioner of Education, pursuant to section 233 of the Education Law."

Forest communities of the SRWA can be categorized using *Ecological Communities of New York State* (Edinger *et al*., 2002). Although numerous ecological communities are present at varying scales and degrees within the unit, the most prominent are:

- Successional northern hardwoods

  A hardwood or mixed forest that occurs on sites that have been cleared or otherwise disturbed. In the SRWA, the dominant trees are usually white birch (*Betula papyrifera*), often in pure stands, with scattered quaking aspen (*Populus tremuloides*) and red maple (*Acer rubrum*). A characteristic of successional forests is the lack of reproduction of the canopy species. Most of the tree seedlings and saplings in these forests are species such as balsam fir (*Abies balsamea*) and red spruce (*Picea rubens*) that are more shade-tolerant than the canopy species. This is a common forest type in the SRWA, largely the result of wildfires in the early twentieth century. Examples of this forest type can be found on Pitchoff Mountain.

- Hemlock-northern hardwood forest

  A mixed forest that typically occurs on middle to lower slopes of ravines, on cool, mid-elevation slopes, and on moist, well-drained sites at the margins of swamps. In any one stand, hemlock (*Tsuga canadensis*) is codominant with any one to three of the following: American beech (*Fagus grandifolia),* sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), black cherry (*Prunus serotina*), white pine (*Pinus strobus*), yellow birch (*Betula alleghaniensis*), and basswood (*Tilia americana*). The relative cover of hemlock is quite variable, ranging from nearly pure stands in some steep ravines to as little as 20 percent canopy cover. Striped maple (*Acer pensylvanicum*) is often prominent as a mid-story tree. Examples of this forest type can be found in the unit, in the vicinity of Copperas, Owen, and Winch Ponds.

- Pine-northern hardwood forest

  A mixed forest that usually occurs on gravelly outwash plains, delta sands, eskers, and dry lake sands in the Adirondacks. In the SRWA, pine-northern hardwood forests occur on excessively drained soils and are composed of red pine (*Pinus resinosa*) with white pine (*Pinus strobus*), red oak (*Quercus rubra*), and northern hardwoods codominant. Examples of this forest type can be found in the portion of the unit that lies between the Bartlett Road, and the East Branch Ausable River in the town of Jay.

- Spruce-northern hardwood forest

  A mixed forest that occurs on lower mountain slopes and upper margins of flats on glacial tills. Codominant trees are red spruce (*Picea rubens*), sugar maple (*Acer saccharum*), beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*), with scattered balsam fir (*Abies balsamea*) . Striped maple (*Acer pensylvanicum*) and mountain maple (*Acer spicatum*) are common subcanopy trees. Characteristic shrubs include hobblebush (*Viburnum lantanoides*). Examples of this forest type can be found in various locations on the lower and mid-slopes of the Sentinel Range. Much of the spruce in these forests was harvested in the late 1800s and early 1900s. Areas that were not logged show the best examples of this forest type.

- Mountain spruce-fir forest

  A conifer forest that usually occurs at elevations ranging from 3,000 to 4,000 feet. This forest occurs on upper slopes that are somewhat protected from the prevailing westerly winds, usually at elevations above spruce-northern hardwood forests, and below mountain fir forests. The dominant trees are red spruce (*Picea rubens*), and balsam fir (*Abies balsamea*). Common associates are mountain paper birch (*Betula cordifolia*) and yellow birch (*Betula alleghaniensis*). Subcanopy trees that are usually present at a low density include mountain ash (*Sorbus americana*), mountain maple (*Acer spicatum*), pin cherry (*Prunus pennsylanica*), and striped maple (*Acer pensylvanicum*). Examples of this forest type can be found on the higher mountains of the Sentinel Range including Kilburn, Sentinel, Slide, and Stewart.

- Mountain fir forest

  A conifer forest that usually occurs at elevations ranging from 3,500 to 4,500 feet. This forest typically occurs on cool upper slopes that are exposed to wind, at elevations above spruce-northern hardwood forests, usually above mountain spruce-fir forest, and below mountain alpine krummholz. Soils are typically thin (less than 20 inches), and they tend to be highly organic and strongly acidic. The vegetation typically has a low species diversity; the tree layer is almost entirely balsam fir (*Abies balsamea*), with a small amount of mountain paper birch (*Betula cordifolia*), and occasional individuals of red spruce (*Picea rubens*), and mountain ash (*Sorbus americana*). Examples of this forest type can be found on the tops of the highest mountains in the unit including Kilburn, Stewart and Sentinel Mountains.

Unique Plant communities

- Spruce-fir rocky summit

  A community that occurs on cool, dry, rocky ridgetops and summits where the bedrock is non-calcareous (such as anorthosite, quartzite, or sandstone), and the soils are more or less acidic. The vegetation may be sparse or patchy, with numerous rock outcrops. The species have predominantly boreal distributions. Characteristic species include red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), and mountain ash (*Sorbus americana*). There are usually many mosses and lichens growing on rock outcrops. Examples of this forest type can be found over about 363 acres along the summit of Pitchoff Mountain. Threats to this community are the spread of invasive species and excessive erosion from use of the hiking trail. An invasive species, Canadian bluegrass, was noted has occurring in the community. Management will be to monitor the threats to the community, take action to address the threats, and protect the landscape integrity.

- Ice cave talus community

  A community that occurs on rocks and soil at the base of talus slopes that emit cold air. The emission of cold air results from air circulating among rocks of the talus slope where winter ice remains through the summer. The air is cooled by the ice deep in the talus and settles: gravity eventually forces the air out along the face of the rocks at the base of the slope. The vegetation in these communities is distinctive because it includes species that are characteristic of climates much cooler than the climate where the ice caves occur. This community covers about 18 acres on slopes near Notch Mountain. Threats to this community include: global warming causing a shift of community composition as ice melt occurs earlier in the year, invasive species being introduced, and potential for disturbance from rock climbers accessing adjacent cliffs. Management of the community will be to maintain the natural processes and landscape integrity.

- Red pine rocky summit

  A community that occurs on cool, dry, rocky ridgetops and summits where the bedrock is non-calcareous (such as anorthosite, quartzite, or sandstone), and the soils are more or less acidic. Red pine (*Pinus resinosa*) is typically dominant but may also be codominant with red oak (*Quercus rubra*) and/or white pine (*Pinus Strobus*). Characteristic shrubs include blueberry (*Vaccinium angustifolium*) and bearberry (*Arctostaphylos uvaursi*). Characteristic herbs include trailing arbutus (*Epigaea repens*), wintergreen (*Gaultheria procumbens*), tufted hairgrass (*Deschampsia flexuosa*), poverty-grass (*Danthonia spicata*), and Pennsylvania sedge (*Carex pensylvanica*). There are usually many mosses and lichens growing on rock outcrops. Pure natural red pine is considered a unique forest type due to the fact that red pine is almost always associated with seedling establishment

following a fire. Examples of this forest type can be found on the summits of The Cobble, Hiccock, and Pine mountains.

Rare and Endangered Plants

A review of the Natural Heritage Program database for threatened and endangered plant species indicates that following species may occur within the unit.

Rock-cress - Rock-cress *(Draba arabisans)* is classified as threatened in New York State. It is a native perennial herb.

Smooth cliff brake - Smooth cliff brake, *(Pellaea glabella ssp. Glabella*) is classified as threatened in New York State. It is a native fern.

Smooth cliff fern - Smooth cliff fern, *(Woodsia glabella*) is classified as endangered in New York State. It is a native fern.

Canadian single-spike sedge - Canadian single-spike sedge, *(Carex scirpoidea ssp. Scirpoidea*) is classified as endangered in New York State. It is a native sedge.

All plant species that are classified as endangered, threatened, or exploitable are protected by the New York Protected Native Plants Regulations (6 NYCRR §193.3) and the Environmental Conservation Law (Section 9-1503). Facilities or improvements that are likely to directly impact a protected plant species will be closed or relocated.

Invasive Plants

Invasive Plants

Non-native, invasive species directly threaten biological diversity and the high-quality natural areas in the Adirondack Park. Invasive plant species can alter native plant assemblages, often forming mono-specific stands of very low-quality forage for native wildlife, and drastically impacting the ecological functions and services of natural systems. Not yet predominant across the Park, invasive plants have the potential to spread - undermining the ecological, recreational, and economic value of the Park's natural resources.

Because of the Adirondack Park's continuous forested nature and isolation from the normal "commerce" found in other parts of the State, its systems are largely functionally intact. In fact, there is no better opportunity in the global temperate forested ecosystem to forestall and possibly prevent the alteration of natural habitats by invasive plant species.

Prevention of non-native plant invasions, Early Detection/Rapid Response (ED/RR) of existing infestations, and monitoring are primary objectives in a national strategy for invasive plant management and necessitates a well-coordinated, area-wide approach. A unique opportunity exists in the Adirondacks to work proactively and collaboratively to detect, contain, or eradicate infestations of invasive plants before they become well

established, and to prevent further importation and distribution of invasive species, thus maintaining a high-quality natural landscape. The Department shares an inherent obligation to minimize or abate existing threats in order to prevent widespread and costly infestations.

The Department has entered into a partnership agreement with the Adirondack Park Invasive Plant Program (APIPP). The mission of APIPP is to document invasive plant distributions and to advance measures to protect and restore native ecosystems in the Park through partnerships with Adirondack residents and institutions. Partner organizations operating under a Memorandum of Understanding are the Adirondack Nature Conservancy, Department of Environmental Conservation, Adirondack Park Agency, Department of Transportation, and Invasive Plant Council of NYS. The APIPP summarizes known distributions of invasive plants in the Adirondack Park and provides this information to residents and professionals alike. Specific products include a geographic database for invasive plant species distribution; a central internet website for invasive plant species information and distribution maps; a list-serve discussion group to promote community organization and communication regarding invasive species issues; and a compendium of educational materials and best management practices for management.

Management of invasive species on Adirondack Park Forest Preserve lands is covered by *Inter-Agency Guidelines for Implementing Best Management Practices to Control Invasive Species on DEC Administered Lands of the Adirondack Park*.

Information about the location of invasive species in the SRWA is maintained on New York iMapInvasives. *http://www.nyimapinvasives.org/* The webpage states:

*i*MapInvasives is New York State's on-line, all-taxa invasive species database and mapping tool. The comprehensive database can be used for:

- Documenting and sharing invasive species observation, survey, assessment and treatment data
- The coordination of early detection and rapid response efforts through email alerts
- Data analysis and summaries in the web interface and GIS

*i*MapInvasives partners with many organizations to leverage collaboration in the fight against invasive species.

Forest Health

A combination of many factors can influence the health of a plant community. Physical factors tend to be weather related with notable examples being lightning, fires, ice damage, severe winds, flooding and drought.

Biological factors are variable and include the effects of disease, insects, and wildlife on the forest environment. Three major forest insects and one major disease described

below have had an effect on this area (DEC-Forest Health Reports, NYS Forest Health: Summary Report of Conditions for 2003). The effects of acidic deposition have been discussed previously in the Air Resources section of this plan.

- Beech bark disease - Beech bark disease is an important insect-fungus complex that has caused extensive mortality of American beech throughout portions of the Adirondacks, including the SRWA. The primary vector, a scale insect, *Cryptococcus fagi*, attacks the tree creating entry sites for the fungus, *Nectria coccinea var. faginata*. Changes in the percent of beech in the cover type can stimulate shifts in animal populations that utilize beech mast extensively as a food source. On the other hand, dead and/or dying beech trees may benefit other wildlife species by providing abundant nesting, feeding, and potential den locations.

- Eastern spruce budworm - The Eastern spruce budworm (*Choristoneura fumiferana*) is considered to be one of the most destructive conifer defoliators in North America. Host species include balsam fir in addition to red, white, and black spruce. The last significant incidence of this pest within the Adirondack Park occurred in the mid-1970s. Populations of this insect, while currently not a problem, are being monitored throughout the northeast.

- Forest tent caterpillar - The forest tent caterpillar (*Malacosoma disstria*) a native insect, may be found wherever hardwoods grow. Outbreaks have occurred at 10 to 15-year intervals with the last widespread outbreak in the late 1970s. While portions of St. Lawrence County were moderately to severely defoliated in 2002, 2003, 2004, 2005 and 2006, no widespread outbreaks were reported for Essex County. Favored hosts of forest tent caterpillars are sugar maple and aspen with birch, cherry, and ash also being utilized.

- Balsam woolly adelgid - The balsam woolly adelgid (*Adelgaes piceae*), a pest of true firs, was introduced into the United States from Europe or Asia around the turn of the 20th century. Since that time, it has spread throughout the United States and Canada.

In addition, several insect pests have been introduced to this country and have the potential to negatively impact the forests in the Adirondack Park, including the SRWA. These include the emerald ash borer (*Agrilus planipennis*), sirex wood wasp (*Sirex noctilio*), hemlock woolly adelgid, spotted lantern fly, and Asian longhorned beetle. As a result of these recent infestations, state and federal agencies have enacted quarantines, and taken other measures to limit the spread of these damaging insect species. New York has adopted a regulation that prohibits the import of firewood into the state unless it has been heat treated to kill pests. The regulation also limits the transportation of untreated firewood to less than 50 miles from its source. To learn more about this regulation, or the threat from invasive insects, please visit the following Department web page: http://www.dec.ny.gov/animals/28722.html.

In addition to the major insect and disease problems listed above, various forest declines, have impacted the vegetation within the unit and the surrounding areas.

To provide a factual basis for public policy and private ownership decisions, permanent forest inventory and analysis plots have been established by the United States Forest Service (USFS) statewide, including forest preserve and private lands within the Adirondacks. These plots, and the evaluation of the data collected at them, document and provide information on forest changes that might be caused by atmospheric deposition, soil nutrient loss, global warming, and/or various insect and disease factors. From 1985 to the present, significant research efforts have been underway to study the effects of atmospheric deposition on forest species, with support from federal and state agencies, forest industry, and other institutions. Data are still being evaluated to determine the link between air pollution and forest health.

Wildlife

Wildlife communities in the unit reflect those species commonly associated with northern hardwood and mixed forest stands that are transitional to the boreal forests of higher latitudes. The unit is part of a large wilderness complex with the Mckenzie Mountain Wilderness Area located to the north (separated by Route 86) and the High Peaks Wilderness area located to the south (separated by route 73). The unit is located entirely within the Adirondack High Peaks ecological zone. Based on USGS Land Use/Land Cover data, forest composition in the unit is 44% coniferous, 31% deciduous, and 24% mixed. Significant boreal forest within the unit includes high elevation spruce-fir habitats that are important for a number of wildlife species with statewide distributions mostly or entirely within the Adirondacks (e.g., Bicknell's Thrush, American marten). Terrestrial fauna are represented by a variety of bird, mammal, and invertebrate species. Amphibians and reptiles also occur on the unit, although species diversity is relatively low as compared with other vertebrates. The distribution and abundance of wildlife species on the unit is determined by physical (e.g., elevation, topography, climate), biological (e.g., forest composition, structure, and disturbance regimes, available habitat, population dynamics, species' habitat requirements), and social factors (e.g., land use). It is important to note that wildlife populations occurring on the unit do not exist in isolation from other forest preserve units or private lands. The physical, biological, and social factors that exist on these other lands can and do influence the abundance and distribution of wildlife species on SRWA.

With the exception of NYNHP surveys, comprehensive field inventories of wildlife species have not focused specifically on SRWA, or Forest Preserve units in general. Statewide wildlife survey efforts conducted by the Department have included two Breeding Bird Atlas projects (1980-1985 and 2000-2005) and the New York State Amphibian and Reptile Atlas Project (1990-1999). Additionally, the Bureau of Wildlife collects harvest data on a number of game species (i.e., those that are hunted or trapped). Harvest data is not collected specific to Forest Preserve units, but rather on a town, county, and wildlife management unit (WMU) basis. Harvest data can provide

some indication of wildlife distribution and abundance and is sometimes the only source of data on mammals.

The unit is largely covered by mature forests with limited areas of early successional habitat. The character of the unit's vegetation has a significant effect in determining the occurrence and abundance of wildlife species. While some species prefer mature forests, many others occur in lower densities on Forest Preserve lands than they do on private lands characterized by a greater variety of habitat types. Natural forest disturbances including wind storms, ice storms, tree disease and insect outbreaks, fire, and beaver activity influence forest structure and wildlife habitats by creating patches of earlier successional stages within a larger matrix of mature forest. These natural disturbances create important habitat for a variety of species that depend on early succession vegetation communities and the edges created between these communities and the surrounding forest. However, these areas are usually limited in size. Private lands adjacent to public lands may provide some habitat for species that prefer early successional habitats, depending on land use and the type and spatial extent of timber harvesting.

Amphibians and Reptiles

The New York State Amphibian and Reptile Atlas Project (1990-1999) confirmed the presence of 16 species of reptiles and amphibians in USGS Quadrangles within, or partially within SRWA, (Table 1). It is important to note that quadrangles (the survey sample unit) overlap and extend beyond the boundaries of these units. Therefore, recorded species do not necessarily reflect what was found on the units, but on the quadrangles. Some species may have been found on private lands adjacent to SRWA. However, these data should provide a good indication of the species found throughout this unit. Documented amphibians and reptiles included 1 species of snakes, 9 species of frogs and toads, and 6 species of salamanders (Table 1). These species are classified as protected wildlife, and some may be harvested during open hunting seasons. Of the 16 confirmed species none were classified as endangered, threatened, or special concern.

Table 1. Amphibian and reptile species recorded in USGS Quadrangles within, or partially within, the Sentinel Range Wilderness Area during the New York State Amphibian and Reptile Atlas Project, 1990-1999.

Common Name	**Scientific Name**
spotted salamander	*Ambystoma maculatum*
red-spotted newt	*Notophthalmus v. viridescens*
northern dusky salamander	*Desmognathus fuscus*
Allegheny dusky salamander	*Desmognathus ochrophaeus*
northern redback salamander	*Plethodon cinereus*
northern two-lined salamander	*Eurycea bislineata*
eastern American toad	*Bufo a. americanus*
northern spring peeper	*Pseudacris c. crucifer*
gray treefrog	*Hyla versicolor*
bullfrog	*Rana catesbeiana*
green frog	*Rana clamitans melanota*
mink frog	*Rana septentrionalis*
wood frog	*Rana sylvatica*
northern leopard frog	*Rana pipiens*
pickerel frog	*Rana palustris*
common garter snake	*Thamnophis sirtalis*

Habitat Associations

- Spotted salamander (*Ambystoma maculatum*) – The spotted salamander prefers vernal pools for breeding, but its jelly-like globular egg masses are found in a variety of wetland habitats. Because of its fossorial habits, the spotted salamander is rarely encountered except during the breeding season. At that time they can be found under rocks, logs, and debris near the edges of the breeding pools.

- Red-spotted newt (*Notophthalmus viridescens)* – One of the most fascinating life histories of any salamander is that of the red-spotted newt, with four stages in its

life cycle (egg, aquatic larva, terrestrial immature red eft, and aquatic adult). Interestingly, the red eft remains on land from two (Bishop, 1941) to seven years (Healy, 1974) before they transform into their final life stage, the aquatic adult.

- Northern dusky salamander (*Desmognathus fuscus*) – The northern dusky salamander inhabits rocky stream ecotones, hillside seeps and springs, and other seepage areas in forested or partially forested habitat. They are typically found under rocks and other cover objects such as logs adjacent to, or in the water (Harding, 1997).

- Allegheny dusky salamander (*Desmognathus ochrophaeus*) – The Allegheny dusky salamander is more terrestrial than its congener, the Northern Dusky Salamander, being found under rocks and woodland debris in moist forests usually near a seep or stream.

- Northern redback salamander (*Plethodon cinereus*) – The Northern redback salamander is found in deciduous, coniferous or mixed forest where it nests in moist, rotten logs. It favors pine logs in advanced stages of decay rather than deciduous tree logs that appear to be more susceptible to molds, thus attributing to possible fungal infections in the eggs (Pfingsten and Downs, 1989).

- Northern two-lined salamander (*Eurycea bislineata*) – Northern two-lined Salamanders inhabit springs and seeps in forested wetlands, edges of brooks and streams, and terrestrial areas many meters from water. They are usually found under rocks, logs, and debris (Pfingsten and Downs, 1989).

- Eastern American toad (*Bufo americanus*) – Although eastern American toads can be found in almost every habitat from cultivated gardens to woodlands, they are typically found in moist upland forest. Special habitat requirements include shallow water for breeding (DeGraaf and Rudis, 1983).

- Northern spring peeper (*Pseudacris crucifer*) – Northern Spring Peepers inhabit coniferous, deciduous and mixed forested habitat where they typically breed in ponds, emergent marshes or shrub swamps. However, their spring chorus is commonly heard from just about any body of water, especially in areas where trees or shrubs stand in and near water (Hunter, et al., 1999).

- Gray treefrog (*Hyla versicolor*) – Gray treefrogs are found in forested areas where they hibernate near the soil surface, tolerating temperatures as cold as -6 degrees Celsius for as long as five consecutive days. Due to the production of glycerol which serves as an antifreeze, gray treefrogs can freeze up to 41.5% of their total body fluids. The frogs breed in both permanent and temporary ponds and wetlands (Hunter, et al., 1999).

- Bullfrog (*Rana catesbeiana*) – Bullfrogs require permanent bodies of water with adequate emergent and edge cover. Their aquatic habitats include shallow lake coves, slow-moving rivers and streams, and ponds (Hunter, et al., 1999).

- Green frog (*Rana clamitans*) – Green frogs are rarely found more than several meters from some form of water, including lakes and ponds, streams, quarry pools, springs, and vernal pools (DeGraaf and Rudis, 1983).

- Mink frog (*Rana septentrionalis*) – Mink frogs prefer cool, permanent water with adequate emergent and floating-leaved vegetation where they feed on aquatic insects and other invertebrates. Here they also hibernate on the bottom in the mud (Harding, 1997).

- Wood frog (*Rana sylvatica*) – Wood frogs prefer cool, moist, woodlands where they select temporary pools for breeding. However, where vernal pools are absent, wood frogs will breed in a variety of habitats including everything from cattail swamps to roadside ditches (Hunter, et al., 1999).

- Northern leopard frog (*Rana pipiens*) – Although sometimes found in wet woodlands, northern leopard frogs are the frog of wet meadows and open fields, breeding in ponds, marshes, and slow, shallow, vegetated streams (DeGraaf and Rudis, 1983).

- Pickerel frog (*Rana palustris*) – Whether the habitat selected is a bog, fen, pond, stream, spring, slough, or cove, pickerel frogs prefer cool, clear waters, avoiding polluted or stagnant habitats. Grassy streambanks and inlets to springs, bogs, marshes, or weedy ponds are preferred habitats (Harding, 1997).

- Common garter snake (*Thamnophis sirtalis*) – Garter Snakes are found in a wide variety of habitats including, but not limited to, woodlands, meadows, wetlands, streams, drainage ditches, and even city parks and cemeteries (Conant and Collins, 1998). But large populations of common garter snakes are usually found in moist, grassy areas near the edges of water (Harding, 1997).

Birds

The avian community varies seasonally. Some species remain within the area year-round, but the majority of species utilize the area during the breeding season and for migration. The Breeding Bird Atlas 2000 Project (2000-2005) documented 106 species in atlas blocks within, or partially within the SRWA (Appendix D). It is important to note that atlas blocks overlap and extend beyond the land boundary of the SRWA (Map 3); therefore, the data does not necessarily reflect what is found in the unit. It is probable that some species determined to be present by BBA surveys were found only on private lands adjacent to the state lands.

Birds Associated with Boreal Forest

The SRWA contains high elevation montane forest and a limited amount of lowland boreal forest that is significant for a variety of birds. In total, boreal forest comprises about 6,383 acres or 28% of the unit. This includes about 587 acres of lowland boreal forest, which occurs primarily along the northwestern boundary of the unit. The state endangered spruce grouse prefers lowland boreal forests, where it selects immature or uneven-aged spruce-fir habitats. However, there are no extant or historical records of spruce grouse in the unit.

Additionally, there are about 5,796 acres of high elevation boreal forest (equal to or greater than 2,800 feet elevation) in the unit. High elevation spruce-fir forest is especially important as breeding habitat for Bicknell's thrush, a special concern species in New York. Throughout the range of this species, primary breeding habitat exists in montane forest (between 2,900 feet and 4,700 feet) dominated by stunted balsam fir and red spruce (Atwood et al., 1996). This species utilizes fir waves and natural disturbances as well as the dense regenerated ecotones along the edges of ski slopes. The species is most common on the highest ridges of the Adirondacks, preferring young or stunted dense stands of balsam fir up to 9 feet in height. Here they lay their eggs above the ground in the dense conifer thickets. Within SRWA, Bicknell's thrush have been documented during the 1980-1985 Breeding Bird Atlas Project and NYNHP surveys in 2002 and 2003 (Table 2).

In an effort designed to protect birds associated with high elevation boreal forest and their habitats, New York State designated the Adirondack mountain summits above 2,800 feet in Essex, Franklin, and Hamilton counties as the Adirondack Subalpine Forest Bird Conservation Area (BCA) in November 2001. The New York State Bird Conservation Area Program was established in September 1997, under section §§11-2001 of the Environmental Conservation Law. The program is designed to safeguard and enhance bird populations and their habitats on selected state lands and waters.

Of 27 bird species associated with boreal forest that occur in New York (Tim Post, NYSDEC, personal communication), 20 (74%) have been documented in BBA survey blocks within, or partially within, SRWA. During the two BBA projects, 11 species of lowland boreal forest birds, 4 species of high elevation boreal forest birds, and 5 species commonly associated with boreal forest, have been documented on the unit (Table 2). Only slight differences in detections of boreal birds were recorded between the two atlas periods; olive-sided flycatcher, Bicknell's thrush (but see footnote; Table 2), blackpoll warbler, and Blackburnian warbler were documented in the first atlas project but not the second, and the Tennessee warbler was documented in the second atlas project but not the first.

Table 2. Bird species associated with boreal forest as recorded by the New York State Breeding Bird Atlas projects (1980-1985 and 2000-2005) occurring in atlas blocks within, or partially within the SRWA.

Common Name	**Scientific Name**	**Breeding Bird Atlas Project**	
		1980-1985	2000-2005
Lowland Boreal Forest Species			
olive-sided flycatcher	*Contopus cooperi*	X	
boreal chickadee	*Poecile hudsonicus*	X	X
ruby-crowned kinglet	*Regulus calendul*	X	X
Cape May warbler	*Dendroica tigrina*	X	X
bay-breasted warbler	*Dendroica castanea*	X	X
white-throated sparrow	*Zonotrichia albicollis*	X	X
yellow-bellied flycatcher	*Empidonax flaviventris*	X	X
Lincoln's sparrow	*Melospiza Lincolnii*	X	X
pine sisken	*Carduelis pinus*	X	X
white-winged crossbill	*Loxia leucoptera*	X	X
red crossbill	*Loxia curvirostra*	X	X
High Elevation Boreal Forest Species			
Bicknell's thrush[1]	*Catharus bicknelli*	X	X[1X]
blackpoll warbler	*Dendroica striata*	X	
winter wren	*Troglodytes troglodytes*	X	X
Swainson's thrush	*Catharus ustulatus*	X	X
Species Commonly Associated with Boreal Forest			
evening grosbeak	*Coccothraustes vespertinus*	X	X

Common Name	Scientific Name	Breeding Bird Atlas Project	
Blackburnian warbler	*Dendroica fusca*	X	
magnolia warbler	*Dendroica magnolia*	X	X
northern parula	*Parula americana*	X	X
Tennessee warbler	*Vermivora peregrina*		X

[1]Bicknell's Thrush was not confirmed during the 2000-2005 Breeding Bird Atlas Project, but was confirmed during New York Natural Heritage Program surveys in 2002 and 2003.

Habitat Associations

In additional to boreal and mixed-boreal forests, other habitats types of importance include deciduous forests, lakes, ponds, streams, bogs, beaver meadows, and shrub swamps.

Birds associated with marshes, ponds, lakes, and streams include: common loon, pied-billed grebe, great blue heron, green-backed heron, American bittern, and a variety of waterfowl. The most common ducks include the mallard, American black duck, wood duck, hooded merganser, and common merganser. Other species of waterfowl migrate through the region following the Atlantic Flyway.

Bogs, beaver meadows, shrub swamps, and any areas of natural disturbance provide important habitat for species that require or prefer openings and early successional habitats. Species such as alder and olive-sided flycatchers, American woodcock, Lincoln sparrow, Nashville warbler, chestnut-sided warbler, brown thrasher, blue-winged warbler, yellow warbler, common yellowthroat, indigo bunting, eastern towhee, and field sparrow rely on these habitats and are rarely found in mature forests. These species, as a suite, are declining more rapidly throughout the Northeast than species that utilize more mature forest habitat. Habitat for these species are, and will be, very limited within SRWA.

Birds that prefer forest habitat are numerous, including many neotropical migrants. Some species prefer large blocks of contiguous forest (e.g., northern goshawk), others prefer blocks of forest with adjacent openings, and many prefer forest with a relatively thick shrub layer. The forest currently is maturing and will eventually become old growth forest dominated by large trees.

Songbirds are a diverse group filling different niches in the Adirondacks. The most common species found throughout the deciduous or mixed forest include the ovenbird, red-eyed vireo, yellow-bellied sapsucker, black-capped chickadee, blue jay, downy woodpecker, brown creeper, wood thrush, black-throated blue warbler, pileated

woodpecker, and black and white warbler. The golden-crowned kinglet, purple finch, pine sisken, red and white-winged crossbill and black-throated green warbler are additional species found in the coniferous forest and exhibit preference for this habitat. Birds of prey common to the area include the barred owl, great horned owl, eastern screech-owl, northern goshawk, red-tailed hawk, sharp-shinned hawk, and broad-winged hawk.

Game birds include upland species such as turkey, ruffed grouse and woodcock, as well as a variety of waterfowl. Ruffed grouse and woodcock prefer early successional habitats and their habitat within the area is limited due to the lack of timber harvesting. Turkey are present in low numbers and provide some hunting opportunities. Waterfowl are fairly common along the waterways and marshes and provide hunting opportunities.

Mammals

Large and Medium-sized Mammals

Large and medium-sized mammals known to occur in the central Adirondacks are also believed to be common inhabitants of the SRWA and include the white-tailed deer, moose, black bear, coyote, raccoon, red fox, gray fox, bobcat, fisher, American marten, river otter, mink, striped skunk, long-tailed weasel, short-tailed weasel, beaver, muskrat, porcupine, and snowshoe hare (Saunders, 1988). Of these species, white-tailed deer, black bear, coyote, raccoon, red fox, gray fox, long-tailed weasel, short-tailed weasel, bobcat, and snowshoe hare can be hunted. Additionally, these species (with the exception of white-tailed deer, black bear, and snowshoe hare) along with fisher, American marten, mink, muskrat, beaver, and river otter can be trapped. Hunting and trapping activities are highly regulated, and the Department's Bureau of Wildlife collects annual harvest data on many of these species.

Important big game species within the area include the white-tailed deer and black bear. Generally, white-tailed deer can be found throughout SRWA. From early spring (April) to late fall (November), deer are distributed generally on their "summer range." When snow accumulates to depths of 20 inches or more, deer travel to their traditional wintering areas. This winter range is characteristically composed of lowland spruce-fir, cedar or hemlock forests, and to a lesser degree, a combination of mixed deciduous and coniferous cover types. Often found at lower elevations along water courses, this habitat provides deer with protective cover from adverse weather and easier mobility in deep snows (see Critical Habitat section).

Black bears are essentially solitary animals and tend to be dispersed throughout the unit. The Adirondack region supports the largest black bear population in New York State (4,000 to 5,000 bears). Hikers and campers in this region are likely to encounter a bear, and negative interactions between black bears and humans, mainly related to bears stealing food from humans, have been a fairly common occurrence in the Adirondack High Peaks for at least twenty years. In 2005 a new regulation was enacted, requiring all overnight campers in the Eastern High Peaks Wilderness Area to use bear-resistant canisters for food, toiletries, and garbage. In other areas of the Adirondacks, the Department recommends the use of bear resistant canisters as well.

Moose entered the state on a continuous basis in 1980, after having been absent since the 1860s. Based on recent aerial surveys, the department in collaboration with SUNY College of Environmental Science and Forestry, estimates that there are approximately 400 moose in Adirondack Park. Additionally, these surveys have indicated that moose population density is greater in the northern and northwestern Adirondacks where these animals are utilizing younger, regenerating forest stands resulting from timber harvests within conservation easements. In the northeastern United States, moose use seasonal habitats within boreal and mixed coniferous/deciduous forests. The southern distribution of moose is limited by summer temperatures that make the regulation of body temperature difficult. Moose select habitat primarily for the most abundant and highest quality forage (Peek 1997). Disturbances such as wind, fire, logging, tree diseases, and insects create openings in the forest that result in regeneration of important hardwood browse species such as white birch, aspen, red maple, and red oak. Typical patterns in moose habitat selection during the summer include the use of open upland and aquatic areas in early summer followed by the use of more closed canopy areas (such as upland stands of mature aspen and white birch) that provide higher quality forage in late summer and early autumn. After the fall rut and into winter, moose intensively use open areas again where the highest biomass of woody browse exists (i.e., dormant trees and shrubs). In late winter when browse quantity and quality are lowest, moose will use closed canopy areas that represent the best cover available within their range (e.g., closed canopy conifers in transitional and boreal forest). From late spring through fall, moose commonly are associated with aquatic habitats such as lakes, ponds, and streams. However, use of aquatic habitats can vary geographically over their range. It is believed that moose use aquatic habitats primarily to forage on highly palatable plants, however, moose may also use these areas for relief from insects and high temperatures.

Chronic Wasting Disease (CWD) in White-tailed Deer

Chronic Wasting Disease (CWD) is a fatal, neurological disease found in members of the deer family (cervids). It is a transmissible disease that slowly attacks the brain of infected deer and elk, causing the animals to progressively become emaciated, display abnormal behavior, and invariably results in the death of the infected animal. Chronic Wasting Disease has been known to occur in wild deer and elk in the western U.S. for decades and its discovery in wild deer in Wisconsin in 2002 generated unprecedented attention from wildlife managers, hunters, and others interested in deer. Chronic Wasting Disease poses a significant threat to the deer and elk of North America and, if unchecked, could dramatically alter the future management of wild deer and elk. However, there is no evidence that CWD is linked to disease in humans or domestic livestock other than deer and elk.

In 2005, the Department received confirmation of CWD from two captive white-tailed deer herds in Oneida County and subsequently detected the disease in 2 wild deer from this area. Until recently, New York was the only state in the northeast with a confirmed CWD case in wild deer. However, CWD has been detected in deer in West Virginia, Virginia, and Pennsylvania.

The Department established a containment area around the CWD-positive samples and will continue to monitor the wild deer herd in New York State. More information on CWD, New York's response to this disease, the latest results from ongoing sampling efforts, and current CWD regulations are available on the Department website: *http://www.dec.ny.gov/animals/7191.html*

Small Mammals

The variety of habitats that occur within the Adirondack region are home to an impressive diversity of small mammals. These mammals inhabit the lowest elevations to those as high as 4,400 feet (Southern bog lemming). Most species are found in forested habitat (coniferous, deciduous, mixed forest) with damp soils, organic muck, or soils with damp leaf mold. However, some species (e.g., hairy-tailed mole) like dry to moist sandy loam soils and others (e.g., white-footed mouse) prefer the drier soils of oak-hickory, coniferous, or mixed forests. Small mammals of the Adirondack region are found in alpine meadows (e.g., long-tailed shrew), talus slides and rocky outcrops (e.g., rock vole), grassy meadows (e.g., meadow vole, meadow jumping mouse), and riparian habitats (e.g., water shrew). It is likely that many, if not most, of the small mammal species listed below inhabit the SRWA (Table 3). An exception may be the northern bog lemming, a species whose southernmost range extends just into the northern portion of Adirondack Park; only one recently-verified specimen exists (Saunders, 1988). All listed species are known to occur within Adirondack Park.

Table 3. Small mammal species recorded within Adirondack Park (data based on museum specimens; Saunders, 1988). Number of towns represents the number of towns in which each species was recorded.

Common Name	**Scientific Name**	**Number of Towns**
star-nosed mole	*Condylura crestata*	6
hairy-tailed mole	*Parascalops breweri*	11
short-tailed shrew	*Blarina brevicauda*	31
pygmy shrew	*Sorex hoyi*	1
long-tailed shrew	*Sorex dispar*	7
smoky shrew	*Sorex fumeus*	18
water shrew	*Sorex palustris*	10
masked shrew	*Sorex cinereus*	25

Common Name	Scientific Name	Number of Towns
deer mouse	*Peromyscus maniculatus*	26
white-footed mouse	*Peromyscus leucopus*	14
southern red-backed vole	*Clethrionomys gapperi*	32
meadow vole	*Microtus pennsylvanicus*	31
yellownose vole	*Microtus* chrotorrhinus	6
woodland vole	*Microtus pinetorum*	1
southern bog lemming	*Synaptomys cooperi*	12
northern bog lemming	*Synaptomys borealis*	1
meadow jumping mouse	*Zapus hudsonicus*	22
woodland jumping mouse	*Napaeozapus insignis*	25

Endangered, Threatened, and Special Concern Species

New York has classified species at risk into three categories, endangered, threatened, and species of special concern (*6 NYCRR* §*182*). The following section indicates the protective status of some vertebrates that may be in the unit:

- Endangered: Any species that is either native and in imminent danger of extirpation or extinction in New York; or is listed as endangered by the US Department of Interior.

- Threatened: Any species that is either native and likely to become endangered within the foreseeable future in New York; or is listed as threatened by the US Department of the Interior.

- Special Concern: Native species not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, they receive no additional legal protection under the Environmental Conservation Law; but, they could become endangered or threatened in the future and should be closely monitored.

The following section describes those species that are classified as endangered, threatened, or special concern within SRWA (Table 4) and briefly summarizes the habitat requirements of these species.

Table 4. Endangered, threatened, and special concern species documented in survey blocks within, or partially within, Sentinel Range Wilderness Area (SRWA). Bird data were collected during the 1980-1985 and 2000-2005 Breeding Bird Atlas projects and New York Natural Heritage Program (NYNHP) surveys.

Common Name	**Scientific Name**	**Breeding Bird Atlas Project**	
		1980-1985	2000-2005
	Endangered		
peregrine falcon	*Falco peregrinus*	X	X
	Special Concern		
American bittern	*Botaurus lentiginosus*		X
Bicknell's thrush[1]	*Catharus bicknelli*	X	X[1]
common loon	*Gavia immer*	X	X
common nighthawk	*Chordeiles minor*	X	
coopers hawk	*Accipiter cooperii*	X	
northern goshawk	*Accipiter gentilis*	X	
osprey	*Pandion haliaetus*	X	X
red-shouldered hawk	*Buteo lineatus*	X	X
sharp-shinned hawk	*Accipiter striatus*	X	X
whip-poor-will	*Caprimulgus vociferus*	X	

[1]Bicknell's thrush was not confirmed during the 2000-2005 Breeding Bird Atlas Project but was confirmed during New York Natural Heritage Program surveys in 2002 and 2003.

Habitat Associations

Endangered Species

Birds

Peregrine falcon (*Falco peregrinus*) – Three basic habitat requirements are necessary for nesting Peregrine Falcons, including open country in which to hunt, sufficient food resources (i.e., other avian species), and steep, rocky cliff faces for nesting (Ratcliffe, 1993). The falcons typically nest 50 to 200 feet off the ground and often near a river, stream, or other water body. Nesting sites for Peregrines usually include a partially-vegetated ledge (with both herbaceous and woody species) that is large enough for at least several young to move about during the pre-fledging period. The nest is a well-rounded scrape that is sometimes lined with grass. Ideally, the eyrie ledge also is sheltered by an overhang that protects the chicks from inclement weather. Occasionally, peregrines may nest in old common raven nests. Suitable nest sites (e.g., snags, live trees, ledges) are located on the cliff face near the eyrie, on more distant sections of the cliff, and on the cliff rim.

Special Concern Species

Birds

- American bittern (*Botaurus lentiginosus*)– In the Adirondacks, the American bittern is a bird of freshwater emergent wetlands where it typically nests on a grass tussock or among the cattails. Here it lays its eggs from 4 to 18 inches above the water (Bull, 1974) in scanty nests made from sticks, grass, and sedges.

- Bicknell's thrush (*Catharus bicknelli*) – Throughout the range of Bicknell's thrush, montane forest dominated by stunted balsam fir and red spruce is the primary habitat. Bicknell's thrush utilizes fir waves and natural disturbances as well as the dense regenerated ecotones along the edges of ski slopes. The breeding habitat of Bicknell's thrush is located in the Adirondacks at elevations greater than 2,800 feet. The species is most common on the highest ridges of the Adirondacks, preferring young or stunted dense stands of balsam fir up to 9 feet in height. Here they lay their eggs above the ground in the dense conifer thickets

- Common loon (*Gavia immer*)– Common loons use small and large freshwater lakes in open and densely forested areas for breeding and nest on lakes as small as two acres. Special habitat requirements include bodies of water with stable water levels with little or no human disturbance. Loons use islets for nesting and shallow coves for rearing their young. Nests are constructed on the ground at the water's edge on sand, rock, or other firm substrates. Loons prefer small islands for nesting (to avoid predators) but will also nest along protected bays and small

peninsulas of the shoreline. In an extensive project undertaken to determine the status of the common loon in New York, Department staff surveyed 557 lakes in the northern part of the state during 1984 and 1985.

- Common nighthawk (*Chordeiles minor*)– Two distinct habitats are used by nesting common nighthawks: bare flat rocks or bare ground in open fields and pastures, and, more recently (since the mid-late 1800s), on flat, gravel rooftops (Bent, 1940). In upstate New York nighthawks also nest in mountainous areas, provided woods are interspersed with clearings or openings (Bull, 1974).

- Cooper's hawk (*Accipiter cooperii*)– Cooper's Hawks use a variety of habitat types, from extensive deciduous or mixed forests to scattered woodlots interspersed with open fields. Floodplain forests and wooded wetlands are also used by Cooper's hawks. Cooper's hawk construct nests typically at a height of 35 to 45 feet in both conifer (often white pine) and deciduous trees (often American beech). Nests are commonly constructed on a horizontal branch or in a crotch near the trunk. Cooper's hawks have been known to use old crow nests as well. Foraging areas are usually located away from the nest in forested areas or open areas adjacent to forest.

- Northern goshawk (*Accipiter gentilis*) – Important habitat characteristics for Northern goshawk include a combination of tall trees with a partial canopy closure for nesting and woodlands with small, open areas for foraging (Johnsgard, 1990). In New York State, goshawks prefer dense, mature, continuous coniferous or mixed woods where they typically place their nest 30 to 40 feet off the ground in the crotch of a tree (Andrle and Carroll, 1988).

- Osprey (*Pandion haliates*) – Osprey breed near large bodies of water, including rivers and lakes, that support abundant fish populations. Osprey typically construct their nest in tall dead trees, but also use rocky ledges, sand dunes, artificial platforms, and utility pole cross arms. Nests are placed in locations that are taller than adjacent areas, which provide vantage points.

- Red-shouldered hawk (*Buteo lineatus*) – Red -shouldered hawks breed in moist hardwood, forested wetlands, bottomlands and the wooded margins of wetlands, often close to cultivated fields, Red-shouldered hawks are reported as rare in mountainous areas. Special habitat requirements include cool, moist, lowland forests with tall trees for nesting. Red-shouldered hawks forage in areas used as nesting habitat as well as drier woodland clearings and fields.

- Sharp-shinned hawk (*Accipiter striatus*) – Sharp-shinned hawks prefer breeding habitats that consist of open or young woodlands that support a large diversity of avian species, the hawk's primary prey (Johnsgard, 1990). Although Sharp-shinned hawks use mixed conifer-deciduous forest for nesting, most nests recorded in New York State have been located in conifers, with 80% of the nests found in hemlocks (Bull, 1974).

- Whip-poor-will (*Caprimulgus vociferus*) – Whip-poor-will select open woodlands in lowland deciduous forest, montane forest, or pine-oak woods (Erlich et. al., 1988) that is interspersed with open fields, with a preference for dry oak-hickory woods in some areas of upstate New York (Bull, 1974). Whip-poor-will nest on the ground in dry, sparse areas. Eggs are typically laid in the open or under a small shrub on the leaf litter where they are well concealed (Bent, 1940).

Extirpated and Formerly Extirpated Species

The moose, elk, wolf, eastern cougar, Canada lynx, bald eagle, golden eagle, and peregrine falcon all inhabited the Adirondacks prior to European settlement. All of these species were extirpated from the Adirondacks, mostly as a result of habitat destruction during the nineteenth century. Unregulated harvest also leads to the decline of some species, such as moose, wolf, elk, beaver, American marten, and fisher. More recently, some birds fell victim to the widespread use of DDT.

Projects to re-establish the Canada lynx, peregrine falcon, and bald eagle have been implemented. A total of 83 Canada lynx were released into the Adirondack Park from 1989 to 1991 by the SUNY College of Environmental Science and Forestry as part of their Adirondack Wildlife Program. Lynx dispersed widely from the release area and mortality was high, especially mortality caused by vehicle-animal collisions. It is generally accepted that the lynx restoration effort was not successful and that there are no lynx from the initial releases or through natural reproduction of released animals remaining in the Adirondacks. Lynx are legally protected as a game species with no open season as well as being listed as threatened on both the Federal and State level.

Efforts to reintroduce the peregrine falcon and the bald eagle through "hacking" programs began in 1981 and 1983, respectively. These projects have been remarkably successful within New York. Bald Eagles are becoming much more common, and Peregrines are recovering. Both species are now found in portions of the Adirondacks and are believed to be common residents within SRWA. Golden Eagles are generally considered to have always been rare breeders within the state.

The wolf and eastern cougar are still generally considered to be extirpated form NYS. Periodic sightings of cougars are reported from the Adirondacks, but the source of these individuals is believed to be from released captive individuals. Reports of timber wolves are generally considered to be misidentified coyotes, although there is some evidence to suggest that the Eastern coyote found in the Adirondacks may be a hybrid between the red wolf and coyote.

Invasive/Exotic Wildlife

As with plant species, these organisms do not occur naturally in New York State. While some species go relatively unnoticed (e.g., spiny water flea), other introductions such as the zebra mussel have caused great concern. There are no confirmed reports of zebra

mussels in unit waters. Domestic canines and felines can also have an impact on native deer, rodents, and birds.

Other Fauna

Other, less known, members of the animal kingdom occur within the unit. Insects are the most notable and abundant form of animal life. Some species can cause human health concerns (e.g., Giardia, swimmer's itch) or are generally considered a nuisance (e.g., black flies, mosquitoes) to individuals that recreate in the area.

Fisheries

The Sentinel Range Wilderness lies within the Ausable River portion of the Lake Champlain watershed. The western portion of the unit flows into the West Branch Ausable River, while eastern portions flow into the East Branch Ausable River. The unit is drained by small, high gradient, headwater streams.

Ponded waters in the SRWA range in size from small beaver flows to 23-acre Holcomb Pond. The NYS Biological Survey lists eight ponded waters within the unit with an estimated combined area of about 82 acres.

Appendix F lists the major ponded water in the unit with a brief narrative pertaining to their important features, including past and current management, accessibility, size, water chemistry, and fish species composition. Appendix G gives additional information about the ponded waters including physical, chemical and biological data.

Fish communities in the Adirondacks are a result of geological and human influences. Prior to human influences relatively simple fish communities were common. Human-caused changes in habitat and introduction of fishes have altered those natural communities.

Geological History

The Fishes of the Adirondack Park, a Department publication (August 1980) by Dr. Carl George of Union College, provides a summary of geological events which influenced the colonization of the Adirondack ecological zone by fishes. A limited number of cold tolerant, vagile, lacustrine species closely followed the retreat of the glacier. Such species presumably had access to most Adirondack waters. Additional species gained access about 13,000 B.P. (before present) when glacial Lake Albany, with a surface elevation of 350' a.s.l. (average sea level), provided a colonizing route for Atlantean and eastern boreal species to southern and eastern portions of the Adirondacks. Barriers above that elevation would have excluded those species from interior portions of the Adirondacks.

By about 12,300 BP, the Ontario lobe of the glacier had retreated sufficiently to allow species associated with the Mississippi drainage access to fringes of the Adirondacks via the Mohawk Valley and the St. Lawrence drainage including Lake Champlain. Lake

Albany had apparently drained prior to that, as barriers had formed on the Lake George outlet.

The sequence of colonization routes to surrounding areas, combined with Adirondack topography, resulted in highly variable fish communities within the Adirondacks. In general, waters low in the watersheds would have the most diverse communities. The number of species present would have decreased progressing towards headwater, higher elevation sections. Chance and variability in habitat would have complicated the trends. Consequently, a diversity of fish communities, from numerous species to monocultures to no fish, occurred in various Adirondack waters.

Brook trout were particularly successful at colonizing the Adirondack region and thrived in the relative absence of competing and predacious fishes. George (1980) states: "Under primeval conditions, the brook trout was nearly ubiquitous in the Adirondacks. Its agility, great range in size and facility in rapidly flowing water allowed it to spread widely, perhaps even concurrently with the demise of the glaciers, thus explaining its presence in unstocked waters above currently impassable waterfalls." Brook trout were reported to be native to nearly all Adirondack waters according to Calvins's Report to the Commissioners of Fisheries, Game and Forests, 1902-1903. The 1932 Biological Survey of the Upper Hudson Watershed Report reiterated that "Above the 1000-foot contour line most Adirondack waters are naturally suited and were originally inhabited by brook trout."

Many Adirondack waters were originally inhabited by brook trout or brook trout in combination with only one or two other species as indicated by the following passage, also from the 1932 Biological Survey: "In the survey of the Upper Hudson drainage, 51 trout ponds were studied where the trout is found in company with only a few other species" (page 36). Natural fish barriers prevented the establishment of many fish species found downstream in the watershed. Today, natural fish barriers are considered to be an indicator that a pond historically contained a very simple fish community. In these circumstances brook trout would have been capable of maintaining themselves by natural spawning.

Watershed morphometry probably severely limited the diversity of fishes in the SRWA. The unit includes extreme headwater portions of the Lake Champlain Watershed and fish diversity is normally low in such headwater portions of watersheds (Hynes 1972). Topography would have made that lack of diversity particularly prominent. Consequently, the unit historically supported particularly low diversities on a region-wide basis. Brook trout are very adept at colonizing such head water areas and would probably have been abundant in the unit historically. Also historic brook trout monocultures were most likely to have occurred in such headwater areas. The ponds in the unit are at elevations of 1,600 feet or higher, and natural barriers to upstream fish migration (e.g. waterfalls) exist between the unit's ponds and waters within or peripheral to the park. Rainbow and Alice Falls on the Ausable River are barriers, as are The Flume and High Falls on the West Branch Ausable River.

About 300 years ago the influence of human cultures from the Old World initiated a period of rapid manipulation of the natural environment. Slightly more than 150 years ago, canal construction opened new migration routes for fishes into peripheral Adirondack areas. Commercial lumbering caused substantial impacts to natural ecosystems. Railroads and eventually roads were developed to support the tanning, lumbering and mining industries (George 1980). Exploitation of pristine fisheries combined with environmental degradation resulted in the decline of fish populations and stimulated early management efforts consisting primarily of stocking.

Fish Community Changes

A variety of nonnative species were distributed into the Adirondack uplands via stocking efforts described by George (1980) as "nearly maniacal". He notes that many species were " ... almost endlessly dumped upon the Adirondack upland." Nonnative species were introduced and the ranges of native species, which previously had limited distributions, were extended. The result has been a homogenization of fish communities. Certain native species, notably brook trout and round whitefish, have declined due to the introduction of other fishes. Other natives, brown bullhead and creek chubs, for example, are presently much more abundant than historically, having been spread to many waters where previously absent. Native-but-widely-introduced (NBWI) species often were introduced concurrently with the nonnatives. NBWI species are just as unnatural as nonnative introductions, and due to the lack of early surveys, it is often unknown which NBWI fishes were actually native to a pond or if they have been introduced.

Consequently, fish populations in the majority of waters in today's Adirondack wilderness areas have been substantially altered by the activities of mankind. Indeed, of the 1,123 Adirondack ecological zone waters surveyed by the Adirondack Lakes Survey Corporation (ALSC), 65% contained known nonnative species.

Detailed documentation of the historic fish communities is not available. Extensive fishery survey data was first collected in the 1930's, decades after the massive stockings and introductions of the late 1800's. Reviewing work by Mathers from the 1880's and others, George (1980) has summarized what is known. Table 3 presents information on species known to be native, native-but-widely-introduced (NBWI), and nonnative. It should be noted that the native classification does not mean those species were found in every water nor even in a majority of waters. For example, of 1,123 waters surveyed by the Adirondack Lakes Survey Corporation in the 1980's which contained fish, white suckers and northern redbelly dace were found respectively in 51 and 19 percent of the lakes. Such distributions, after a century of introductions, demonstrates that "native" does not necessarily imply a historically ubiquitous distribution. Barriers, high stream gradients, low stream fertilities, and rigorous climatic conditions following retreat of the glacier resulted in low species diversity for fishes in most Adirondack waters. Low diversity allowed the brook trout to occur in large areas of the Adirondack upland.

Habitat Changes

Natural reproduction by brook trout is also very sensitive to impacts from sedimentation caused, for example, by extensive logging, fires and other human activities. Due to their reproductive behavior, brook trout are among the most susceptible of all Adirondack fish fauna to the impacts of sedimentation. Brook trout spawn in the fall, burying their eggs in gravel. Flow must be maintained through the gravel, around the eggs, until hatching the following spring. Sand or fine sediments restrict flow around the eggs resulting in an inadequate supply of oxygen.

The long incubation period, the lack of care subsequent to egg deposition, and burying of the eggs contribute to the brook trout's susceptibility to sedimentation. Most other fishes are spring spawners, yielding short incubation periods, and do not bury their eggs. Various strategies further minimize vulnerability to sediments, such as eggs suspended from vegetation (e.g.: yellow perch, northern pike, and certain minnow species) and fanning the nest during incubation (e.g.: bullhead, pumpkinseed, smallmouth bass and largemouth bass). In general, the species less susceptible to sedimentation have thrived during the recent history of the Adirondacks.

Acid Precipitation

Recently acidic deposition has impacted the aquatic resources of the Adirondacks. The ALSC surveyed 1,469 Adirondack waters, 24 percent of which had pH levels less than 5.0 (Kretser el al. 1989). Historic data and water chemistry analysis demonstrates that many of those waters were historically circumneutral and able to support fishes. Acid deposition has had little impact on the aquatic resources in the SRWA. The pH ranges from 6.8 to 7.5 on area ponds; all favorable for sustaining fish and other aquatic life.

Streams

Small, high gradient, headwater streams dominate the flowing waters of the SRWA. Those streams flow into the Ausable River watershed and ultimately to Lake Champlain. These streams support coldwater communities of fishes which are likely to include: brown trout, brook trout, cutlips minnows, common shiners, blacknose dace, longnose dace, northern redbelly dace, creek chub, white sucker and slimy sculpin. The streams in the unit are not stocked.

Conclusion

Habitat changes, widespread introductions of nonnative fishes and broad dispersal of native fishes which historically had limited distributions have drastically altered the fish fauna of Adirondack waters.

Throughout the Adirondack Park, native species sensitive to competition and habitat changes have declined. The distribution of other natives and nonnatives have increased due to stocking. Simple fish communities containing only brook trout, or brook trout in association with one or a few other fishes, are depressed within the unit. Self-sustaining populations of brook trout were historically much more abundant in the Adirondacks then

presently. Within the SRWA, brook trout continue to be present in several ponds, but generally their populations are extremely low. As such the brook trout are neither prominent components of the biological systems nor do they provide a notable recreational resource.

3. Visual/Scenic Resources/Land Protection

The SRWA is comprised primarily of mountainous uplands that are visible from the nearby hamlets of Keene, Lake Placid, and Wilmington. Sentinel Mountain looms over the village of Keene, while the jagged ridgeline of the Sentinel Range provides a picturesque backdrop for the Village of Lake Placid. Travelers who enter Lake Placid from the north or the east must pass through the Wilmington Notch or Cascade Pass (respectively). Both of these mountain passes provide outstanding scenery and are made up in part by lands contained in Unit.

Cascade Pass is formed by the steep slopes, cliffs, and rock outcrops of Pitchoff Mountain (located within the SRWA) on its north side, and the steep slopes and cliffs of Cascade Mountain (located within the High Peaks Wilderness Area) on its south side. Added to the impressive mountain scenery of the pass are the picturesque Upper and Lower Cascade lakes (within the High Peaks Wilderness Area) that run for about 1.5 miles through the pass.

Cascade Pass is one of the prominent features along the High Peaks (Route 73) Scenic Byway Corridor. According to the Route 73 Scenic Corridor Management Plan:

> "This Corridor is based on a 30-mile stretch of highway from Exit 30 of the Adirondack Northway I-87 to the intersection of Old Military Road near Lake Placid. Route 73 is the main gateway to the High Peaks region, Lake Placid, and Saranac Lake; a highly traveled road with a rich combination of wilderness trail access points, spectacular mountain scenery, river views, historic landscapes, buildings and settlements, potential archeological sites along a mix of vistas, curves and straight-aways. For much of its length, it winds through spectacular mountain passes and along river valleys, often bounded on both sides by Forever Wild state Forest Preserve classified as wilderness."

Lands of the SRWA directly border the High Peaks Scenic Byway for about 3.5 miles. In addition, Pitchoff Mountain and the Sentinel Range can be viewed from various other locations along the scenic byway.

Wilmington Notch is formed by the steep slopes and cliffs of Notch Mountain, located within the SRWA, and the sheer cliffs of Sunrise Mountain located within the McKenzie Mountain Wilderness Area. In addition to the impressive mountain scenery of the pass is the West Branch of the Ausable River (within the McKenzie Mountain Wilderness Area) which runs through the pass in a series of rapids and gorges.

Wilmington Notch is a prominent feature along the Olympic Trail Scenic Byway. Lands of the SRWA directly border this byway for about six miles. In addition, the mountains of the Sentinel Range can be viewed from various other locations along the scenic byway.

Many of the summits in the SRWA provide vantage points ranging from small openings and rock outcrops (Kilburn Mountain) to 360-degree panoramas (Pitchoff Mountain). The view shed from the SRWA includes the High Peaks Wilderness Area to the south; the McKenzie Mountain Wilderness Area to the west; Whiteface Mountain, and the Stephenson and Wilmington Ranges to the north; and the Jay Mountain Wilderness, and Hurricane Mountain Wilderness Area to the east.

Critical Habitat

Deer Wintering Areas

The maintenance and protection of deer wintering areas (or deer yards) are important in maintaining northern deer populations. These areas provide deer with relief from the energetic demands of deep snow and cold temperatures at a time when limited fat reserves are being used to offset reduced energy intake (i.e., nutritionally, winter browse is poor). Previous researchers have demonstrated that deer consistently choose wintering areas which provide relief from environmental extremes over areas that may provide more abundant forage (Severinghaus, 1953; Verme, 1965). These observations are consistent with the fact that the nutritional value of winter browse is poor due to low digestibility and that deer can expend more energy obtaining browse than the energy gained by its consumption (Mautz, 1978).

Severinghaus (1953) outlined several habitat components of deer yards, including topography and forest cover type (i.e., presence of conifers). The most important characteristic of an Adirondack deer yard is the habitat configuration making up a “core” and travel corridors to and from the core. The core is typically an area, or areas, of dense conifer cover used by deer during severe winter weather conditions. Travel corridors are dense but narrow components which allow access to food resources (hardwood browse) in milder conditions. Use of wintering areas by deer can vary over time depending on winter severity and deer population density. Although Severinghaus (1953) reported that some Adirondack deer yards have been used since the early 1800s, recent research suggests that the location of some current deer yards may overlap very little (or not at all) with their historical counterparts mapped in the late 1960s and early 1970s by the Department (Hurst, 2004). Therefore, planning for the protection of deer wintering areas relative to recreational activities in the unit should consider the dynamic nature of these areas (not the static representation of historical boundaries) and seek to update our understanding of wintering areas currently used by deer.

Historical deer wintering areas have been identified within 3 general areas of SRWA: south of the village of Upper Jay (east of Bartlett Road), the southern flank of Sentinel Mountain along Clifford Brook, and within the broad area defined by Owen Pond, Copperas Pond, Winch Pond, and Marsh Pond (Ed Reed, NYSDEC, unpublished data). Additionally, a GIS model of potential deer wintering habitat was developed for the

Adirondacks by SUNY-ESF Adirondack Ecological Center staff. Initial results of this model suggest that potential deer wintering habitat within the unit is located primarily along the northwestern boundary and between Phelps Brook and the village of Upper Jay.

Guidelines for Protection of Deer Wintering Areas

Research on wildlife responses to winter recreation (e.g., cross-country skiing, foot travel, snowmobiling) is limited. Studies conducted on mule deer (Freddy et al., 1986) and elk (Cassirer et al., 1992) suggest that these species can be disturbed by these activities. However, when planning the location of recreational trails, general guidelines for protecting deer wintering areas can be followed which should reduce the potential for disturbance.

Activities which substantially diminish the quality or characteristics of the site should be avoided, but this does not mean human use is always detrimental. Pass through trails, and other recreational uses can be compatible with deer wintering areas if they are carefully considered. Recreational planning which affords protection of core sections and avoids fragmenting travel corridors are acceptable in many situations. Certain types of recreation, such as cross-country skiing, are not presently considered to significantly impact deer yards in an overall negative way, particularly if the traffic along trails is not prone to stopping or off-trail excursions. These types of trails in or adjacent to deer wintering areas can provide a firm, packed surface readily used by deer for travel during periods of deep snow. They can also create access for free-roaming dogs if the location is close to human habitation; thus, trails should avoid deer yards in these situations. High levels of cross-country ski use can increase the energy demands of deer within the yard due to increased movement.

In summary, general guidelines for protecting deer wintering areas include:

- Within travel corridors between core wintering areas, avoid placement of trails within a 100-foot buffer on either side of streams,

- Avoid placement of trails through core segments of deer yards to reduce disturbance associated with users stopping to observe deer,

- In areas with nearby human habitation, avoid land uses which result in remnant trails, roadways or other access lanes which facilitate accessibility to free-roaming dogs.

Peregrine Falcon Nesting Areas

Peregrine falcons, an endangered species in New York State, nest on cliffs in the Adirondack region. The population of Peregrine Falcons has steadily grown in the state due to a successful hacking program initiated by the Department in this region in the late 1970s. Peregrines first mate when they are 1 to 3 years old, building nests on high cliff ledges 20 to 200 feet off the ground. The same nesting ledge, called an eyrie, may be used year after year. The female lays 3 to 5 eggs in a nest, called a scrape, which

consists of a shallow depression in the gravel found on the ledge. These eyries are aggressively protected against predators, and humans, by both the male and female peregrine. The young hatch after a 28 to 33-day incubation period. Each chick will stay in and about the nest until it fledges at 35 to 45 days of age. Young will stay with the parents for a few more weeks to perfect their flying and hunting skills. As cooler weather approaches, peregrines begin to migrate south. In the spring, peregrines have a tendency to return to the same region from which they fledged.

Peregrine Falcons and Rock Climbers

Human disturbances, such as rock climbing on cliffs containing eyries, can be a potential problem to nesting peregrines. Human disturbance within the territory of a breeding pair may result in nest abandonment and/or death of any young. Rock climbing routes with known peregrine falcon nesting sites are monitored by the Department annually throughout the Adirondacks. Rock climbing routes with active nest sites are temporarily closed to prevent any disturbances that might interfere with the successful raising of the young peregrine falcons. The closure of climbing routes is based on a number of factors, including the route's proximity to a nesting site, observations of alarm behavior by the nesting falcons, and professional judgement by Department staff. The specific areas of the cliff that are closed to rock climbing represent a balance between the recreational interests of climbers and the need to protect the breeding and nesting activities of this endangered species. The Department’s priority is protecting an endangered species; however, attempts are made to maximize the opportunities for climbing at the same time. This is the reason why individual rock-climbing routes are closed rather than entire cliffs. While there are currently no conflicts with rock climbers and peregrine falcons in SRWA, the Department can implement appropriate management actions in the future if necessary.

In summary, the Department stresses the following points to Adirondack rock climbers:

- Peregrine falcons are an endangered species and are protected under state and federal law,
- Human disturbance within the territory of a breeding pair may result in nest abandonment and/or death of any young,
- Certain rock-climbing routes are closed and illegal to climb during the breeding season, and
- Falcons are very territorial and will utilize their razor-sharp talons in defense of their domain, including attacks on humans.

Rare communities and plant species that have been identified by the Natural Heritage Program are identified in Appendix C.

B. Facilities

The SRWA has relatively few developed facilities compared with other nearby wilderness areas such as the High Peaks Wilderness Area. In the SRWA there are about 10.4 miles of maintained trails, 1 lean-to, and 4 designated campsites.

An inventory of facilities in the SRWA is in Appendix B.

C. Past Influences

1. Cultural

The Adirondack region has been an important part of the cultural heritage of New York State. The area has a pristine beauty due to its deep forests, abundant lakes, streams and waterfalls, majestic mountains and the assortment of fish, wildlife and plant communities that abound within its borders. Although use in some portions of the Adirondacks has been a problem, the area in general continues to reflect a wilderness quality. This quality provides the unique opportunity for visitors to better appreciate the delicate ecological balance of life. Preservation of this wilderness was a major contribution to the conservation movement of our country. The Adirondacks have also provided a spiritual uplift for many generations of New Yorkers and countless others by allowing its visitors to experience tranquility and solitude in such a magnificent natural setting.

Many writers, painters, and philosophers have also been inspired by the Adirondack region. Early writers such as Reverend William H. H. Murray, wrote of their travels through the Adirondacks and the unspoiled nature, and recreational opportunities that abounded in this area. Early Adirondack painters also focused on the wild and awesome scenery of the region. Famous members of the Hudson River School of painting such as Thomas Cole and Asher B. Durand painted in the area in the mid to late 1800s.

2. Archeological and Historic Resources

The term ‘cultural resources’ encompasses a number of categories of human created resources including structures, archaeological sites and related artifacts. The Department is required by the New York State Historic Preservation Act (SHPA) (Parks, Recreation and Historic Preservation Law [PRHPL], Article 14) and the State Environmental Quality Review Act (SEQRA) (ECL Article 8) to include such resources in the range of environmental values that are managed on public lands. The Adirondack Forest Preserve was listed as a National Historic Landmark by the National Park Service in 1963. This designation also results in automatic listing in the State and National Registers of Historic Places.

Archaeological sites are, simply put, any location where materials (artifacts, ecofacts) or modifications to the landscape reveal evidence of past human activity. This includes a wide range of resources ranging from pre-contact Native American camps and villages to Euro-American homesteads and industrial sites. Such sites can be entirely subsurface or can contain above ground remains such as foundation walls or earthwork features.

As a part of the inventory effort associated with the development of this plan the Department arranged for the archaeological site inventories maintained by the New York State Museum and the Office of Parks, Recreation and Historic Preservation to be searched in order to identify known archaeological resources that might be located within or near the unit. The two inventories overlap to an extent but do not entirely duplicate one another. The purpose of this effort was to identify any known sites that might be affected by actions proposed within the unit and to assist in understanding and characterizing past human use and occupation of the unit.

The quality of the site inventory information varies a great deal in all respects. Very little systematic archaeological survey has been undertaken in New York State and especially in the Adirondack region. Therefore, all current inventories must be considered incomplete. Even fewer sites have been investigated to any degree that would permit their significance to be evaluated. Many reported site locations result from 19th century antiquarian information, artifact collector reports that have not been field verified. Often very little is known about the age, function or size of these sites. This means that reported site locations can be unreliable or be polygons that encompass a large area. Should systematic archaeological inventory be undertaken at some point in the future it is very likely that additional resources will be identified. The results of these site file checks are presented in Table 5.

Table 5. Known archaeological sites in the vicinity of the Sentinel Range Wilderness Area

Site Type	Description
school	Site of Alstead Hill School House. Built Pre-1858.
industrial: forge	Wilmington Forge
industrial: forge	Newells Forge
industrial: forge	Tobys Forge.
Prehistoric/(?)	Traces of early occupation.
village	Site of recent village.
Prehistoric/(?)	Traces of early occupation.
Prehistoric/(?)	Traces of early occupation.
Prehistoric/(?)	Traces of early occupation.
Prehistoric/transitional	Rock shelter
Prehistoric/Early Archaic(?), Late Archaic, Early Woodland	No further information.
Prehistoric/Middle Archaic	No further information.

D. Public Use

1. Land Resources

Public access to the SRWA is free and relatively unregulated. Public use is permitted to the extent that it does not degrade the physical, biological, and social characteristics of the area. The “minimum tool” concept is used to manage public use and achieve management objectives, using indirect methods when possible (i.e., limiting parking), and direct methods when necessary (e.g., promulgating regulations).

Known uses of the unit include hiking, hunting, trapping, rock climbing, ice climbing, camping, and cross-country skiing.

Recreational use is difficult to measure. There are only four developed trail heads in the SRWA, however the public can enter the unit at various other locations. Hikers, rock and ice climbers, and hunters are known to enter the unit from Route 73 at the southern boundary of the unit, along Route 86 and River Road on the western boundary of the unit, and off of Bartlett Road in the eastern portion of the unit. In addition, Mountain Lane and Alstead Hill Road provides access to the southern portion of the unit in North Elba and Keene respectively.

User data has been collected from trail registers at all four trailheads in the unit. It is recognized that this data is not a complete record of recreational use in the unit, but it is still believed to be indicative of overall user numbers and trends.

A study of all trail register sheets in the Adirondack Park from 2012 (Beier, 2014) allows for an analysis of that data. This information shows that camping makes up a very small percent of those visiting the SRWA. At the Owen and Copperas trails ten percent of visitors indicated that they were spending at least one night in the unit. At the Pitchoff Mountain Trails less than 2 percent of visitors where spending a night in the SRWA. These results are very similar to an analysis of register sheet data from 2007, 2008, and 2009. That analysis showed the following percent of visitors camping in the unit: at Copperas Pond nine percent, at Owen Pond five percent, and at Pitchoff Mountain one percent.

This data from the 2012 register sheets can also be used to consider the size of groups that are entering the SRWA. This information shows that most of the groups entering the SRWA are in small groups. Two people is the most common group size and represents the largest share of total visitors to the area.

Owen and Copperas use by group size.

Number of people in group	percent of individual groups	percent of total visitors
1 to 3	71	46
4 to 6	22	33
7 to 10	4	11
11+	3	10

Pitchoff Mountain use by group size.

Number of people in group	percent of individual groups	percent of total visitors
1 to 3	69	40
4 to 6	22	31
7 to 10	5	12
11+	4	17

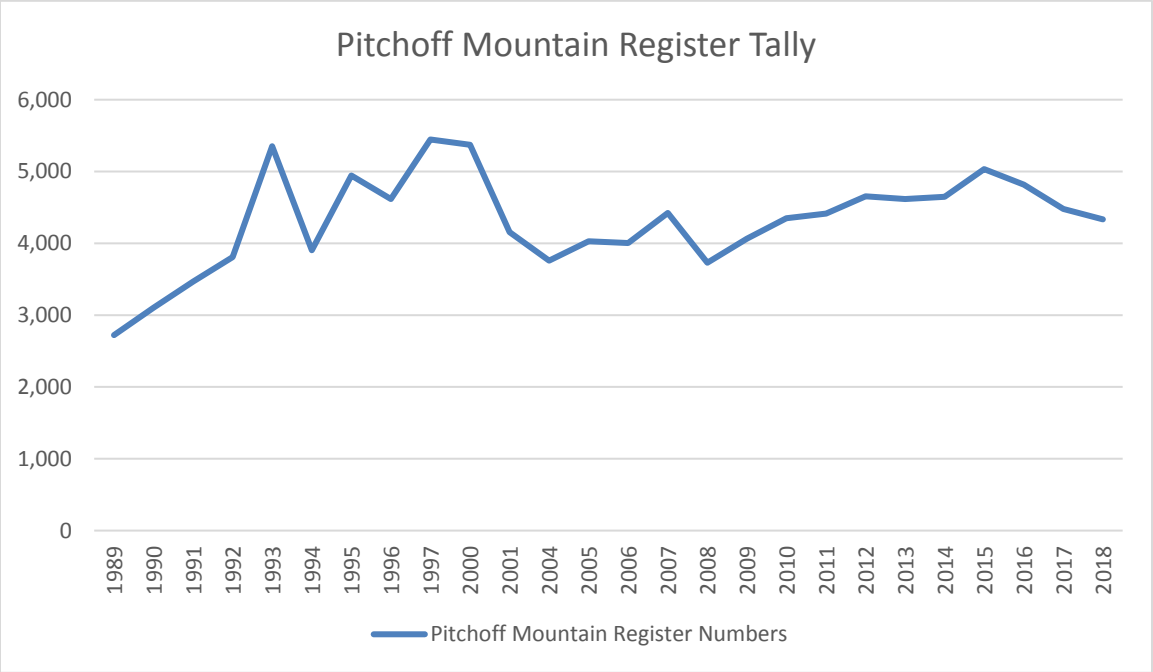
Use of the SRWA is greatest in summer and fall, coinciding with school vacations, and popular holidays. The months of July, August, and September see the highest use levels.

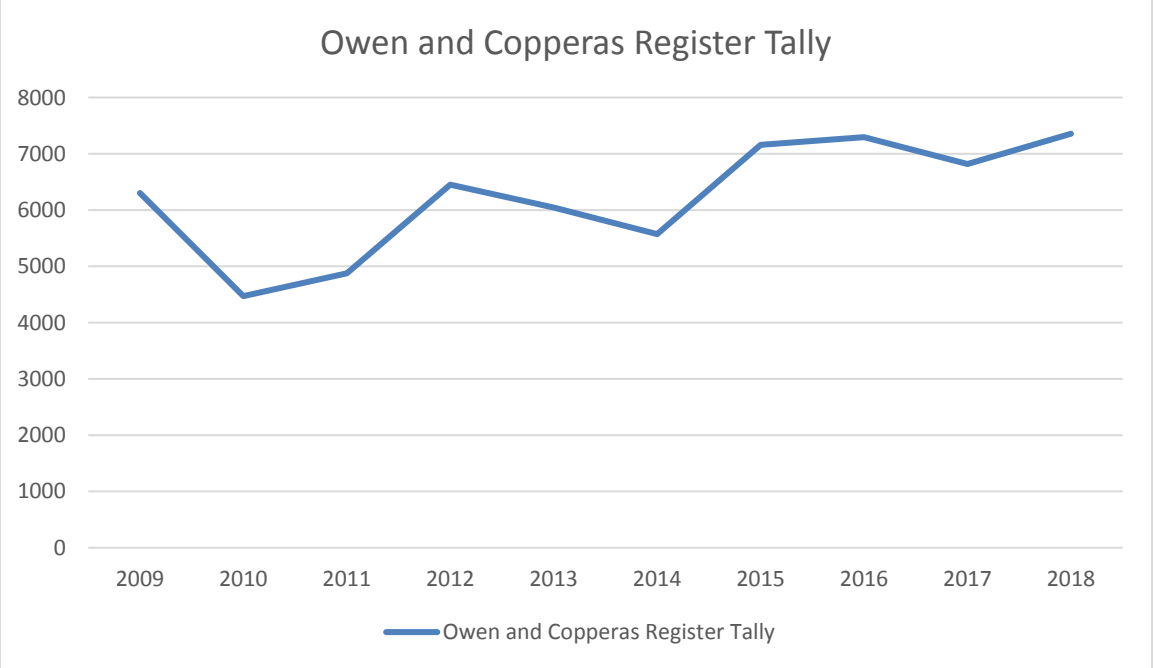
Table 6. Number of trailhead registrants within the SRWA

Year	**Pitchoff Mountain** (east and west trailheads)	**Copperas Pond**	**Owen Pond**	**Unit Total**
1989	2,722			
1990	3,104			
1991	3,467			
1992	3,808			
1993	5,353			
1994	3,903			
1995	4,945			
1996	4,617			
1997	5,446			
2000	5,371			
2001	4,156	3,111	3,536	10,803
2002		2,956	3,561	

Year	**Pitchoff Mountain** (east and west trailheads)	**Copperas Pond**	**Owen Pond**	**Unit Total**
2004	3,760	3,445	3,925	11,130
2005	4,028	2,968	3,288	10,284
2006	4,003			
2007	4,423			
2008	3,731*	2,799*		6,530
2009	4,065	2,885*	3,419	10,339
2010	4,350*	3,068	1,403*	8,821
2011	4,415	2,255*	2,622	9,292
2012	4,654	2,819*	3,633	11,106
2013	4,617	6,045	(included in Copperas total)	10,662
2014	4,648	1,887	3,696	10,231
2015	5,090	7,159	(included in Copperas total)	12,188
2016	4,818	7,295	(included in Copperas total)	12,113
2017	4,478	6,818	(included in Copperas total)	11,296
2018	4,334	7,356	(included in Copperas total)	11,690

* some data missing


Pitchoff Mountain Register Tally
6,000
5,000
4,000
3,000
2,000
1,000
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
2000
2001
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Pitchoff Mountain Register Numbers


Owen and Copperas Register Tally
8000
7000
6000
5000
4000
3000
2000
1000
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Owen and Copperas Register Tally

Projecting future use of the SRWA is difficult. There are many variables that will influence amount and types of use in the SRWA. This underscores the importance of monitoring the use and impacts so that action may be taken.

2. Wildlife

Data regarding the amount of public use of the wildlife resource within SRWA are not available. A variety of wildlife recreation uses occur on the unit, including: hunting, trapping, bird watching, and wildlife photography. Past studies by the Department indicate that few sportsmen sign-in at trailhead registers. This combined with the fact that many hunters and trappers traditionally bush whack and use unmarked trails and watercourses to enter State lands, prevents an accurate estimate of total visitor use. Information regarding non-consumptive use of wildlife is also lacking. For the most part, observations of wildlife enhance the recreational experience of the general public. Recreational use tends to be heaviest near towns, roads, and access points. With the exception of the more readily accessible areas adjacent to roads and highways, the majority of the unit probably is not heavily used by sportsmen during the hunting and trapping seasons.

A number of mammals and birds may be hunted or trapped during seasons set annually by the Department. These species are identified in the ECL, Section 11-0903 and 11-0908. The Department has the authority to set hunting and trapping season dates and bag limits by regulation for all game species. White-tailed deer and bear may be taken during archery, muzzleloading, and regular seasons. Antlerless deer harvest is prohibited during the regular firearm season but may be permitted during the archery and muzzleloading seasons. In addition, there is an early season for black bear.

Small game hunters may take certain waterfowl, woodcock, snipe, rail, crow, ruffed grouse, wild turkey, coyote, bobcat, raccoon, red fox, gray fox, weasel, skunk, varying hare, cottontail rabbit and gray squirrel. Muskrat, beaver, weasel, river otter, mink, fisher, American marten, skunk, raccoon, coyote, red fox, gray fox, and bobcat may also be trapped.

Harvest statistics are generated and compiled by the Department using an automated licensing and reporting system (DECALS) for deer, bear, coyote, and turkey and a pelt sealing system for beaver, river otter, fisher, American marten, and bobcat. Harvest information is reported by township, county, and Wildlife Management Unit (WMU). Since harvest information is not collected on a Forest Preserve unit basis and harvest distribution is not evenly distributed across the landscape, harvest data by town are generally not representative of the actual harvest within units. Types and levels of non-consumptive uses of wildlife within SRWA have not been determined.

Potential Impacts

The impact of public recreation use on most wildlife species is not well understood, but studies show that there are impacts. Some wildlife species can be vulnerable to disturbance associated with public recreational activity.

Non-game Species:

Common loon: Common loons nest along shorelines of lakes and ponds. Their nests are often very near the water line and are susceptible to disturbance from the land or from the water. Nests along shore are more susceptible to human disturbance where trails follow the shore of a lake. Nests along the shore or on islands are more susceptible to human disturbance if boats or canoes can be carried readily into lakes occupied by loons. Water bodies with greater boating access will have higher levels of disturbance. If adults are forced to leave the nest, nest abandonment could occur. Additionally, fledgling mortality can occur if chicks are chased by boats.

Peregrine falcon: See Critical Habitat section.

Game Species:

Impacts appear to be minimal for those game species that are monitored. The Department's Bureau of Wildlife monitors the populations of game species partly by compiling and analyzing harvest statistics, thereby determining levels of consumptive wildlife use. Several legislative changes have occurred that likely have had impacts on use of the area by hunters. Both hunting of bears by using bait and by using dogs have been prohibited, probably lowering use by bear hunters. Use by deer hunters probably has increased because of two legislative changes, one allowing successful archers to purchase a second tag for use during the regular firearms season and similar legislation allowing successful muzzleloader hunters the same privilege. Harvest statistics are compiled by town, county and wildlife management unit. Regular season deer regulations (bucks only) for this area result in limited impacts to the reproductive capacity of the deer population. Overall, deer populations within the unit are capable of withstanding current and anticipated levels of consumptive use.

An analysis of black bear harvest figures, along with a study of the age composition of harvested bears, indicates that hunting has little impact on the reproductive capacity of the bear population. Under existing regulations, the unit's bear population is capable of withstanding current and anticipated levels of consumptive use.

The coyote, varying hare, and ruffed grouse are widely distributed and fairly abundant throughout the Adirondack environment. Hunting and/or trapping pressure on these species is relatively light. Under current regulations, these species undoubtedly are capable of withstanding current and anticipated levels of consumptive use.

While detrimental impacts to game populations over a large area are unlikely, wildlife biologists continually monitor furbearer harvests, with special attention to beaver, river otter, bobcat, fisher, and American marten. These species can be susceptible to overharvest to a degree directly related to market demand for their pelts as well as a variety of other economic and environmental factors. The Department's Bureau of Wildlife closely monitors furbearer harvest by requiring trappers to have the pelts of bobcat, fisher, American marten, and river otter sealed by Department staff. Additionally, biological samples are required for all trapped martens, which biologists use to closely

monitor the harvest. Specific regulations are changed when necessary to protect furbearer populations.

Other Impacts

Water fluctuations can have a significant impact on nesting activity of loons, marsh birds, and waterfowl and can also have a negative impact on furbearers such as muskrats and beaver. The maintenance and protection of winter deer yards remains a concern of wildlife managers, particularly in the Adirondacks, as they fulfill a critical component of the seasonal habitat requirements of white-tailed deer. Few data are available on the impacts of cross-country ski trails and foot travel during winter on deer use of wintering areas.

3. Fisheries

Quantitative angler use estimates and their economic impact for the SRWA are not available. Fishing pressure on the unit's streams is probably light. Owen and Copperas Ponds are probably the most frequently fished ponds, with brown trout and lake trout respectively being the primary target species. Trout fishing on lakes and ponds typically peaks in April, May, and June when trout can still be found in the cool water near the surface. Surface fishing activity declines in the summer due to formation of a thermocline which causes fish to move to deeper water.

Department angling regulations are designed to conserve fish populations in individual waters by preventing over-exploitation. When necessary, populations of coldwater gamefish are maintained or augmented by Department's annual stocking program. Most warmwater species (smallmouth bass, largemouth bass, northern pike and panfishes) are maintained by natural reproduction; however, stocking is sometimes used to introduce those fishes to waters where they do not exist.

Under existing angling regulations, the coldwater and warmwater fish populations are capable of withstanding current and anticipated levels of angler use.

Department monitors the effectiveness of angling regulations, stocking policies, and other management activities by conducting periodic biological and chemical surveys. Based on analysis of biological survey results, angling regulations may be changed as necessary to protect the fish populations. Statewide angling and special angling regulations provide the protection necessary to sustain or enhance natural reproduction where it occurs.

4. Water Resources

The predominant recreational uses of the water resources in the SRWA are fishing and sightseeing. Swimming is a popular activity in the summer. Camping occurs adjacent to a couple of the waterbodies. It is rare for watercraft to be used in the unit.

E. Education, Interpretation and Research

Education, interpretation or research projects on state owned lands require a temporary revocable permit (TRP) pursuant to ECL §9-0105(15) and 6NYCRR §190.8(ad), unless the project is carried out by the Department. Each request or application for such a permit is considered separately giving consideration to the limitations of the area and consistency with the management goals and objectives for the lands involved. Permits will not be issued for any project or purpose that is inconsistent with Article XIV, Section 1 of the New York State Constitution; any statute, rules or regulation, or the APSLMP guidelines which are applicable for wilderness or primitive areas. Such permits may be denied, revoked, or suspended by the Department at any time.

Research activities that are occurring in or adjacent to the SRWA include:

- Adirondack Park Invasive Plant Program (APIPP) - The mission of this program is to document invasive plant distributions and to advance measures to protect and restore native ecosystems in the Park through partnerships with Adirondack residents and institutions. Partner organizations operating under a Memorandum of Understanding (MOU) are the Adirondack Nature Conservancy, Department of Environmental Conservation, Adirondack Park Agency, Department of Transportation, and Invasive Plant Council of NYS. The APIPP summarizes known distributions of invasive plants in the Adirondack Park and provides this information to residents and professionals alike.

- USDA Forest Service, Forest Inventory and Analysis Program - This program is the nation's forest census. It reports on status and trends in forest area and location; in the species, size, and health of trees; in total tree growth, mortality, and removals by harvest (on private land); in wood production and utilization rates by various products; and in forest land ownership. The program includes information relating to tree crown condition, lichen community composition, soils, ozone indicator plants, complete vegetative diversity, and coarse woody debris. Additional information on the program can be found at http://www.fia.fs.fed.us.

- Adirondack Lakes Survey Corporation (ALSC) - The ALSC is a not-for-profit corporation established through a cooperative agreement between the Empire State Electric Energy Research Corporation and the Department. The ALSCs mission is to determine the extent and magnitude of acidification of lakes and

ponds in the Adirondack region.
http://www.adirondacklakessurvey.org/index.html

F. Relationship between Public and Private Land

The SRWA borders private lands and other Forest Preserve units. The private lands are a mixture of undeveloped forest parcels and residential lots. The unit is part of a large wilderness complex with the McKenzie Mountain Wilderness Area located to the north (separated by Route 86) and the High Peaks Wilderness Area located to the south (separated by Route 73). The lack of intense development on most of the adjoining lands helps to maintain the wilderness character of the unit. This also provides important connectivity for wildlife species.

SRWA enhances the wild character of surrounding lands and represent a significant portion of the viewshed of surrounding towns. Having views of the mountains and forests of the SRWA can increase property values, as can having property adjacent to State land, or near trailheads.

The developed private lands adjacent to the SRWA have various impacts on the unit. The more developed this private land is, the greater impact on the SRWA. There can be impacts to the wilderness character, wildlife and plant communities, and recreation of the area. Adjacent developed private property also impacts the administration of the area; one example is increasing the importance of boundary line maintenance to discourage encroachments

Table 7 provides an estimate of the real property taxes that were paid by New York State based on the 2012 Assessment Roll for the towns of Jay, Keene, North Elba, and Wilmington. These values were calculated by the Office of Real Property Services using approved assessments and tax rates. Note that these values are for all Forest Preserve lands in the towns listed; this includes Forest Preserve units other than the SRWA.

Table 7. Tax payments for all Forest Preserve Lands in the Towns of Jay, Keene, North Elba, and Wilmington. Essex County, 2012.

Town	Forest Preserve Acreage	County Taxes Paid	Town/Village Taxes Paid	School taxes Paid	Special District taxes	Total Taxes Paid
Jay	7,658	$9,737	$21,893	$61,503	$7,135	$100,268
Keene	70,291	$297,279	$352,022	$954,321	$76,104	$1,679,706
North Elba	72,560	$389,250	$121,765	$1,122,115	$216,368	$1,849,498
Wilmington	25,460	$112,391	$191,601	$328,472	$27,026	$659,490
Totals	175,969	$808,657	$687,281	$2,466,411	$326,633	$4,464,951

G. Capacity to Withstand Use

Best Management Practices

This Unit Management Plan proposes the development of wildland recreational facilities in the Sentinel Range Wilderness Area. Each section below builds on the planning process as well as the recreational experience of the user. In addition to official documents, which inform the UMP process, the planning team applied principles and strategies that are currently considered norms in the field of wildland recreation management.

The following six best management practices (BMPs) are essential in wildland management:

1. Planning- includes the UMP process (with public participation), work planning, development of guidelines and other supportive materials and process and building partnerships with stakeholders.
2. Education and outreach- includes providing effective education and outreach for visitors, local government and communities and partners. Utilizing all mediums available and covering topics from preparedness to stewardship.

3. Front country infrastructure- includes roadside access points, human waste facilities, visitor information and other support facilities.
4. Backcountry infrastructure- includes trails, campsites and support facilities appropriate to educate and protect the natural resource
5. Limits on use when all else fails- when education and outreach along with appropriate infrastructure improvements cannot support the carrying capacity, different methods of permits, limits on use or fees should be utilized
6. Resources both personnel and funding- includes staff to facilitate management, maintenance and safety concerns and appropriate funds to maintain and educate and expand opportunities for partnerships.

The Department will adhere to these six BMPs and apply them in the SRWA to successfully build and manage recreation facilities that do not significantly negatively impact the natural resources or users' experience.

Phased Approach to Planning

Many management actions proposed in this UMP are conditional and will follow a phased approach. Decisions to implement successive phases will be informed by monitoring and comparisons between defined desired conditions and existing conditions. If thresholds for natural resources conditions or visitor experience conditions are exceeded, implementation of subsequent actions may not occur. Utilizing a phased approach for developing recreational infrastructure tied to monitoring visitor use-related impacts will help ensure that the wild character of the area and user experience is kept intact.

The intent of this approach is to provide a variety of access to the SRWA, to create new purpose-built recreational facilities, and ensure newly constructed resources can withstand existing use before constructing additional facilities. Sustainable purpose-built facilities are a key factor in this process, not only to have a strong foundation for recreational use, but also so we can evaluate the known indicators. Once the condition of facilities is measured and evaluated, the next steps can be determined in accordance with the phases set forth below.

The schedule of implementation at the end of this UMP was developed to further illustrate the succession of the phased approach. Once constructed, each facility will be photo documented to show its original condition, then periodically photo documented to illustrate changes over time. These photos coupled with use data collected from register sheets will be evaluated to illustrate the recreational carrying capacity of specific facilities. From there, the data collected on these individual facilities will be looked at on a larger scale that considers the entire network of facilities and access points regardless of land classification.

The phased approach and schedule of implementation integrates and considers the complex nature of the area, which will allow for a more balanced and systematic approach to address the carrying capacity of the area. The evaluation of facilities will guide the phases of this plan, and only after the condition of these facilities is evaluated, can a determination be made to proceed with, maintain current, or retract the phases of the schedule. There are various environmental criteria that can activate the phases of the plan. These may be site specific or at larger scales and can include things such as campsite sprawl, vegetation damage, and trail erosion. Social criteria will also be considered in the progression of the phases. Regardless of the criteria, the main objective is to appropriately provide sustainable and desirable facilities without exceeding the carrying capacity of the land on which they are located.

Carrying Capacity

The SRWA cannot withstand ever-increasing and unlimited visitor use without suffering the eventual loss of its essential natural and wild character. However, the underlying question of how much use and of what type the whole area - or any site or area within it - can withstand before the impacts of such use cause degradation of the very resource or experience, remains. Such understanding and determinations are a wildland manager’s most important and challenging responsibility. Our primary goal throughout this UMP is to strike and maintain a proper balance of making sure a natural area’s "carrying capacity" is not exceeded while concurrently providing for visitor use and enjoyment.

Defining the amount and type of use that an area can withstand before negative impacts to the resource or user experience occur is a significant challenge. Relative differences in ecosystem sensitivities to disturbances need to be considered in recreational planning. Avoiding sensitive sites or taking precautions in the layout and design of any facility can drastically reduce negative impacts associated with use. Individual locations that can withstand more usage should be considered to help balance the overall carrying capacity of the unit.

Recreational use of the SRWA provides many benefits to visitors; however, impacts from this use may occur to water bodies. Information on the cumulative impacts to water bodies in the SRWA is lacking. An assessment of waterbodies that integrates recreation and ecology is proposed in this UMP.

The term "carrying capacity" in public lands management, where public recreation is the leading use, means the amount of use that any single facility or the entire complex can handle without degrading the resource or the perceived experience of the user. Given the many variables associated with measuring carrying capacity, it can be a challenging concept to both understand and measure. While it can be helpful to establish upper-level thresholds for use, there is not an exact science on how to consistently set these thresholds across all variables. Taking steps to address the micro-level of carrying capacity, such as addressing erosion and compaction of trails and campsites, may not

always address the greater concept of carrying capacity that occurs at the whole-unit level

Essentially, this is because the relationship between the amount of use and the resultant amount of impact is not linear (Krumpe and Stokes, 1993). For many types of activities, for instance, most of the impact occurs with only low levels of use. In the case of trail erosion, once soil starts to wash away, additional foot travel does not cause the impact upon the trail to increase proportionately. It has been discovered that visitor behavior, site resistance/resiliency, type of use, etc. may actually be more important in determining the amount of impact than the amount of use, although the total amount of use is certainly (and obviously) still a factor (Hammit and Cole, 1987).

This makes the manager's job much more involved than simply counting, redirecting, and (perhaps) restricting the number of visitors in an area. Influencing visitor behavior can require a well-planned, multi-faceted educational program. Determining site resistance/resiliency always requires research (often including much time, legwork and experimentation). Shaping the types of use impacting an area can call not only for education and research and development of facilities, but also the formulation and enforcement of a set of regulations which some users are likely to regard as objectionable.

Nevertheless, the shortcomings of a simple carrying capacity approach have become so apparent that the basic question has changed from the old one, "How many is too many?" to the new, more realistic one; "How much change is acceptable?" The Department embraces this change in approach while recognizing the tasks it calls for in developing the best foundation for management actions. Professionally-informed judgments must be made such that carrying capacity is given definition in terms of resource and social conditions that are deemed acceptable; these conditions must be compared with the real, on-the-ground conditions; certain projections must be made; management policies and actions must be drafted and enacted with an aim toward maintaining or restoring the conditions desired.

More recent carrying capacity studies have relied on the social aspect of recreation, in that users often have a pre-conceived idea of what type and level of use they want to experience on a given trip. This could be in the form of number of paddlers on a water body, hikers passed on the way to a destination, or how much solitude they want to experience at a primitive tent site, etc.

This shift in managers' central focus - away from trying to determine how many visitors an area can accommodate, to trying to determine what changes are occurring in the area and whether they are acceptable.

Management and Planning Concepts

Management of the SRWA uses a combination of three generally accepted planning and monitoring methods: (1) the goal-achievement process; (2) the Limits of

Acceptable Change (LAC) model employed by the U.S. Forest Service; and (3) the Visitor Experience and Resource Protection (VERP) model employed by the National Park Service. Given the distinctly different, yet important purposes of these methods (particularly between the first method and the second two), there are clear benefits offered by employing a blend of these approaches here.

Goal-Achievement Process

The goal-achievement process provides a framework for proposed management by means of the careful, stepwise development of key objectives and actions that serve to prescribe the wilderness conditions (goals) outlined by APSLMP guidelines. The Department is mandated by law to devise and employ practices that will attain these goals.

Limits of Acceptable Change (LAC) and Visitor Experience and Resources Protection (VERP) Models

These methods both employ carrying capacity concepts, not as prescriptions of the total number of people who can visit an area, but as prescriptions of the desired resource and social conditions that should be maintained to minimum standards regardless of use.

Establishing and maintaining acceptable conditions depends on well-crafted management objectives which are explicit and draw on managerial experience, research, inventory data, assessments and projections, public input, and common sense. When devised in this manner, objectives founded in the LAC and VERP models essentially dictate how much change will be allowed (or encouraged) to occur and where, as well as how to respond to changes. Indicators (measurable variables that reflect conditions) are chosen, and standards (representing the bounds of acceptable conditions) are set, all so that management efforts can be effective in addressing unacceptable changes. A standard may be chosen to act as a simple trigger for management action (as in VERP), or it may be chosen to act as a kind of boundary which - given certain assessments - allows for management action before conditions deteriorate to the point of no longer meeting the standard (as in LAC).

Even well-conceived and executed efforts can prove ineffective, but when this is the case, management responses must be adjusted. **Monitoring of resource and social conditions is absolutely critical.** Both the LAC and VERP models rely on monitoring to provide systematic and periodic feedback to managers concerning specific conditions.

The Department and the APA are working together to develop a guidance framework for monitoring wildlands in the Adirondack Park which will assess the effects of management actions and public use with respect to physical, biological and social conditions. The guidance for wildlands monitoring will be developed to implement LAC and/or VERP and to integrate these into the decision-making process. Given the numerous variables impacting the management of a large wildland complex, the

Department acknowledges this process will evolve over time and utilize appropriate resources that are emerging across public land management agencies.

This UMP identifies desired conditions for the SLWF and proposes methods and indicators for monitoring and measuring how visitor use is impacting those conditions. In certain instances, implementation of the UMP will be conditional and/or phased according to the results of visitor use monitoring. Additional visitor use management strategies and actions to achieve desired conditions outlined in the final guidance for wildlands monitoring will inform future management of SLWF. Any final guidance would become an appendix to the APA/DEC memorandum of Understanding and applied to future UMPs

In outline, The Department's approach applies four factors in identifying potential management actions for an area:

- The identification of acceptable conditions as defined by measurable indicators;
- An analysis of the relationship between existing conditions and those desired;
- Determinations of the necessary management actions needed to achieve desired conditions;
- A monitoring program to see if objectives are being met.

A proposed list of management and planning concepts, for which measurable indicators and monitoring tools can be developed, may be used by the Department for measuring and evaluating acceptable change on the SRWA as follows:

- Condition of vegetation in camping areas and riparian areas near lakes and streams;
- Extent of soil erosion on trails and at campsites;
- Noncompliant visitor behavior;
- Noise on trails and in adjacent campsites;
- Conflicts between different user groups;
- Diversity and distribution of plant and animal species;
- Water quality.

Management of the SRWA will use a phased approach for the development of facilities following guidance for wildlands monitoring. The guidance for wildlands monitoring will be developed to implement LAC and/or VERP and to integrate these into the decision-making process. Given the numerous variables impacting the management of a large

wildland complex, the Department acknowledges this process will evolve over time and utilize appropriate resources that are emerging across public land management agencies. The U.S. Forest Service White Mountain National Forest Wilderness Appendix is an impressive model that helped form the Department's planning process. As the guidance for wildlands monitoring is developed the Department will utilize aspects of the recently developed Visitor Use Management Framework (developed by the Interagency Visitor Use Management Council, which is made up of the federal public land agencies).

Recreation Research Findings and Management Implications

Any recreational use in the SRWA will have some adverse environmental impact. Impacts from hiking and camping typically follow a natural progression. Initial and very light use may only damage particularly fragile soils and vegetation. However, even at low levels of use, the groundcover and surface organic litter are damaged. With moderate use, all but the most resistant plant species are lost and mineral soils may be exposed. High use exposes mineral soils to compaction and erosion, which in turn expose the roots of trees.

Recreation impacts are related to visitor use levels in a curvilinear fashion. For example, a study of wilderness campsites in Minnesota found that only 12 nights of campsite use per year caused substantial impact. However, further increases in use caused little additional change for most forms of impact (Marion, 2016). Considering the popularity of camping in the SRWA since at least 1860, most, if not all, campsites show evidence of substantial impact. However, it is also likely that continued use will have little additional adverse impact on existing campsites.

One important implication of the curvilinear use/impact relationship is that nearly all use must be eliminated to achieve significant reductions in recreational impact. In other words, the only way to eliminate adverse impacts of hiking and camping in the SRWA would be to close the area to all public use. However, a more realistic approach is to minimize impact by managing other factors to help mitigate adverse environmental impacts.

The adoption of indicators and standards for measuring impacts helps create a consistent and reliable methodology in monitoring impacts. Indicators are tools used to assess the resource or social conditions of a given area and are not always a direct measure of the actual conditions of a facility. Standards are thresholds to determine if and what management action will be taken. It is accepted and assumed that sustainable and purpose-built facilities will experience minimal further impacts. These assumptions need to be re-assessed over time. If the facilities are maintaining their intended condition then they can either be maintained as is, or the land manager can proceed to the next phase of the plan. If the condition of the facility is failing and our assumptions are not being met then corrective adjustments need to be made, which could involve

anything from hardening and re-routes, to taking a step back to a previous phase of the plan.

Regular and consistent monitoring is critical for this framework to be successful. Without the regular measurements of the indicators and comparison to the established standards it is not possible to understand the degree to which we are able to achieve wild character integrity.

The Department chose four categories of indicators as significant identifiers of resource concerns. Those indicators fall into the categories of biophysical, social, aesthetic, and ecosystem process. Each is described below.

Use-Related Factors. Many impacts are the result of uninformed or careless behavior. Managers can educate and regulate visitors to reduce high impact behavior (e.g., building fires, chopping on trees, cutting switchbacks) and encourage low impact behavior such as the “leave no trace” program. Large groups have a greater potential to damage resources than the same number of individuals in smaller groups. Limits on group sizes can be encouraged or required to minimize resource impacts. A defined camping season which only allows camping for a few months, rather than throughout the year, may also have some benefit.

Environmental Factors. Managers can encourage recreational use in impact resistant locations. For example, trails can be relocated to avoid wet areas or steep slopes. Campsites can be located on flat, well drained areas. Knowledge of the relative resiliency (ability to recover) of different vegetation and soil types can be used to select areas which will quickly recover following recreational trampling. Sites with high resiliency are also desirable because they usually support dense vegetation which helps confine use to campsites and trails.

Managerial Factors. Managers of some protected areas have sought to minimize impacts by encouraging visitor dispersal. However, due to the use/impact relationship and several behavioral factors, this impact-minimization strategy has only been successful in areas which receive low use. Therefore, this strategy would not likely to be effective in the SRWA because of the high levels of use.

Other Considerations. Most visitors prefer hiking on established trails and camping on existing campsites. Many visitors enjoy camping close to trails and other groups for social reasons, while others fear getting lost when away from trails. Areas with rugged terrain and/or dense vegetation may limit the ability of visitors to hike off-trail or the number of suitable camping locations necessary to support a dispersed camping policy. Pre-existing trails and campsites are also more convenient, comfortable, and require less work to use and maintain. Finally, water and other scenic attractions in the backcountry will always attract larger numbers of visitors than less interesting areas. In general, management efforts to alter these natural tendencies will be unsuccessful without substantial and expensive educational and law enforcement programs (Marion, 2016). Therefore, a strategy of closing and relocating campsites in the SRWA to reduce

impact is generally not a realistic way to limit adverse impact. Relocated campsites would have to be constructed in areas that have not been impacted, and it would be difficult to keep the public from continuing to use the old sites.

Recreation research shows that visitor containment, or concentration, in the SRWA offers a promising strategy for minimizing recreation impacts. Trails, which concentrate use on their treads, represent one form of containment. Similarly, mandating use of designated campsites also contains visitors to sites that have already been impacted. A campsite rotation program has also been considered in the past. However, recovery rates on campsites and trails are considerably lower than initial impact rates, which mean that a rest-rotation strategy will generally be ineffective (Marion, 2016).

These management concepts form the basis of the proposed management actions presented in Section IV. This approach will require flexibility, determination and patience. It may not be possible to complete all inventories and assessments called for by this strategy - and by the APSLMP - in this plan's five-year time frame. It will be important to show progress in achieving APSLMP goals and in gaining initial managerial experience and knowledge in applying this strategy to some carrying capacity questions and issues. Knowledge gained as a result of the implementation of this first SRWA UMP will be useful to: 1) revising and refining management actions if evaluation shows that desired conditions are not being attained or sustained; and 2) creating a foundation upon which this strategy can eventually be built into a fully-developed, science-based approach to protecting and managing the unique resources of the SRWA.

1. Land Resources

Generally, the most heavily-used areas will usually show the most effects from use. However, there are several factors which can mitigate heavy use or amplify the effects of lighter use. One factor is the conditions at the time that the use occurs. For example, a few people walking a trail when the trail is wet and soft will cause more damage than a large number of people using the same trail when it is dry. Another factor to consider is the skill level and behavior of the users. A large group may not leave any evidence that they used an area, while a small group or even an individual can, through willful neglect or ignorance, leave an area permanently altered. A third factor to consider is the design and location of the improvement that is being used. A properly designed and located facility will allow for heavy use without having a negative impact on the resource. Poor facility design or location can lead to quick deterioration of the resource.

The heavily used areas of the SRWA are clearly being negatively affected by the levels of use they receive. Examples are the trails to Pitchoff Mountain, popular rock-climbing areas, and the shore of Copperas Pond. The main problems resulting from use of the SRWA are erosion, mud, soil compaction, decreased vegetation, litter, improper human waste disposal, and removal of dead wood. It is fairly obvious why most of these impacts are considered to be problems; however, some people may not understand why removal of dead wood is considered to be a problem. It is seen as a problem by

land managers because dead wood provides important habitat for a variety of wildlife, slows erosion, and allows nutrients to be recycled back into the soil. In heavily-used areas, dead wood is collected and burned at a faster rate than it is created, this results in an ever-widening area of damage from people gathering wood. Secondary effects of wood gathering include damage to living vegetation and removal of standing dead trees, which is illegal.

Many land resource problems tend to expand with time, if they are not addressed. An example is that muddy sections of trails will widen as people, trying to stay dry, walk around the wet areas. Another example is that on poorly designed, excessively steep trails people will go around or stay on the edge of the eroded area. This will result in vegetation loss, thereby exposing more soil to erosion. For this reason, it is important to take action when a problem becomes known.

Illegal motor vehicle use in the SRWA is not a large problem, but this has caused some impacts. Old roads are particularly vulnerable to illegal motor vehicles. The main problem has been from ATVs entering the SRWA from private property or a town road. Enforcement action and improvement to barriers are usually effective at curtailing the problems for a time, but ATVs are difficult to stop because they can go almost anywhere. Impacts in the SRWA caused by ATV's include mud holes, ruts, and increased erosion.

The most noticeable recreation impacts (such as trail erosion, trash, and tree injuries) receive most of the management focus. Recreation also results in impacts to biological communities that are not as noticeable (Larson, et al, 2016), yet these impacts should still be considered. These impacts are not limited to the physical spot where the use occurs but extend for a distance. While major portions of the SRWA receive significant recreation use, there are other areas that see little to no use. Areas that receive significant use are generally near the ponds and trails. Little used areas may have herd paths that pass through them, but generally lack developed facilities. The greater the distance from heavy recreation use, roads, and developed private property, the more wilderness character the area will have and impacts to wildlife will be lesser. In the SRWA about 13,000 acres lack recreation facilities and are a significant distance (.5 mile) from private property or a road.

2. Water Resources

The APSLMP recognizes the importance of waterbodies to the Adirondack Park and that these waters have a carry capacity just as land resources do. An action recommended in the APSLMP is for the Department to conduct a comprehensive study "to determine each water body's capacity to withstand various uses, particularly motorized uses, to maintain and enhance its biological, natural, and aesthetic qualities." An effort to conduct this was the study "Adirondack Park Forest Preserve Carrying Capacity of Water Bodies Study: Phase 1 – Selecting Indicators for Monitoring Recreational Impacts", released in 2011. The focus of this study was "on identifying the

indicators of resource and social change to measure and how to take those measurements."

Waterbodies in the SRWA are impacted by recreational use. These impacts mostly come from the use that occurs on the adjacent land, such as camping and hiking. Swimming and fishing are the primary recreational uses of the ponds in the SRWA.

3. Wildlife Resources

Current levels of consumptive (i.e., hunting and trapping) and non-consumptive wildlife uses are not expected to significantly impact wildlife populations in SRWA. The inaccessibility of much of the unit substantially reduces the potential for overharvest of game species, including many furbearer species (e.g., river otter, fisher, and American marten) and provides a "reservoir" that ensures that harvests are sustainable over time.

Defining the amount and type of use that the area could withstand before negative impacts to the wildlife resource occurred would be a significant challenge. However, consideration of relative differences in wildlife or community sensitivities to disturbances could be useful for recreational planning. Endangered, threatened, and special concern wildlife species, critical habitats, and significant ecological communities should receive primary attention during planning efforts, because their capacity to withstand use is likely less than that for more abundant wildlife species and common habitats and communities.

Several areas within SRWA should receive careful consideration during planning efforts, including: 1) high-elevation and lowland boreal forests that are important to a number of wildlife species, 2) critical wildlife habitats including Peregrine Falcon nesting areas and deer wintering areas, and 3) the spruce-fir rocky summit community on Pitchoff Mountain identified by NYNHP (Edinger 2002).

This page intentionally left blank

III. Management and Policy

A. Management Guidelines

1. Guiding Documents

This unit management plan has been developed within the guidelines set forth by Article XIV of the State Constitution, Article 9 of the Environmental Conservation Law, Parts 190-199 of Title 6 NYCRR, the APSLMP, and established Department policy.

Article XIV of the State Constitution provides in part that, “The lands of the State, now owned or hereafter acquired, constituting the Forest Preserve as now fixed by law, shall be forever kept as wild forest lands. They shall not be leased, sold or exchanged, or be taken by any corporation, public or private, nor shall the timber thereon be sold, removed or destroyed.”

The APSLMP provides guidance for the use and management of lands which it classifies as “Wilderness” by establishing basic guidelines.

It is important to understand that the State Land Master Plan has structured the responsibilities of the Department and the Agency in the management of State lands within the Adirondack Park. Specifically, the APSLMP states that:

> "..... the legislature has established a two-tiered structure regarding state lands in the Adirondack Park. The Agency is responsible for long range planning and the establishment of basic policy for state lands in the Park, in consultation with the Department of Environmental Conservation. Via the master plan, the Agency has the authority to establish general guidelines and criteria for the management of state lands, subject, of course, to the approval of the Governor. On the other hand, the Department of Environmental Conservation and other state agencies with respect to the more modest acreage of land under their jurisdictions, have responsibility for the administration and management of these lands in compliance with the guidelines and criteria laid down by the master plan."

In order to put the implementation of the guidelines and criteria set forth in the APSLMP into actual practice, the Department and APA have jointly signed a Memorandum of Understanding (MOU) concerning the implementation of the APSLMP. The document defines the roles and responsibilities of the two agencies, outlines procedures for coordination and communication, defines a process for the revision of the APSLMP, as well as outlines procedures for State land classification, the review of UMPs, state land project management, and state land activity compliance. The MOU also outlines a process for the interpretation of the APSLMP.

Department policy has been developed for the public use and administration of Forest Preserve lands. Select policies relevant to the management of this unit include;

- Administrative Use of Motor Vehicles and Aircraft in the Forest Preserve (CP-17).
- Standards and Procedures for Boundary Line Maintenance (NR-91-2; NR-95-1).
- Tree Cutting on Forest Preserve Land (O&D #84-06).
- Cutting and Removal of Trees in the Forest Preserve (LF-91-2).
- Division Regulatory Policy (LF-90-2).
- Volunteer Stewardship Agreement (CP-58).
- Policies and Procedures Manual Title 8400 - Public Land Management.

The Department also maintains policy to provide guidelines for the design, location, siting, size, classification, construction, maintenance, reconstruction and/or rehabilitation of dams, fireplaces, fire rings, foot bridges, foot trails, primitive camping sites, road barriers, sanitary facilities and trailheads. Other guidelines used in the administration of Forest Preserve lands are provided through Attorney General Opinions, Department policy memos, and Regional operating procedures.

The recommendations presented in this unit management plan are subject to the requirements of the State Environmental Quality and Review Act of 1975. All proposed management activities have been reviewed. Based on this review, the management activities were found to have no significant impact on the natural resources of the unit and a Negative Declaration was issued (see Appendix I).

2. Application of Guidelines and Standards

All trail construction and relocation projects will be developed in accordance with the APSLMP, and will incorporate the use of Best Management Practices, including but not limited to such considerations as:

- Locating trails to minimize necessary cut and fill;
- Where appropriate, lay out trails on existing old roads or clear or partially cleared areas;
- Locating trails away from streams, wetlands, and unstable slopes wherever possible;
- Use of proper drainage devices such as water bars and broad-based dips;

- Locating trails to minimize grade;
- Using stream crossings with low, stable banks, firm stream bottom and gentle approach slopes;
- Constructing stream crossings at right angles to the stream;
- Limiting stream crossing construction to periods of low or normal flow;
- Using stream bank stabilizing structures made of natural materials such as rock or wooden timbers;
- Avoiding areas where habitats of threatened and endangered species are known to exist;
- Using natural materials to blend the structure into the natural surroundings.

All lean-to relocation projects will incorporate the use of Best Management Practices, including but not limited to such considerations as:

- Locating lean-tos to minimize necessary cut and fill;
- Locating lean-tos to minimize tree cutting;
- Locating lean-tos away from streams, wetlands, and unstable slopes;
- Use of drainage structures on trails leading to lean-to sites;
- Locating lean-tos on flat, stable, well-drained sites;
- Limiting construction to periods of low or normal rainfall.

All parking lot construction and relocation projects will incorporate the use of Best Management Practices, including but not limited to such considerations as:

- Locating parking lots to minimize necessary cut and fill;
- Locating parking lots away from streams, wetlands, and unstable slopes wherever possible;
- Locating parking lots on flat, stable, well-drained sites using gravel for surfacing or other appropriate material to avoid stormwater runoff and erosion;
- Locating parking lots in areas that require a minimum amount of tree cutting;

- Limiting construction to periods of low or normal rainfall;
- Wherever possible, using wooded buffers to screen parking lots from roads;
- Limiting the size of the parking lot to the minimum necessary to address the intended use.

All fish stocking projects will be in compliance with the *Programmatic Environmental Impact Statement on Fish Species Management Activities of the Department of Environmental Conservation,* dated December 1979.

All pond reclamation projects will be undertaken in compliance with the *Programmatic Environmental Impact Statement on Fish Species Management Activities of the Department of Environmental Conservation, Division of Fish and Wildlife*, dated June 1980 and the *Programmatic Environmental Impact Statement on Undesirable Fish Removal by the Use of Pesticides Under Permit Issued by the Department of Environmental Conservation, Division of Lands and Forests, Bureau of Pesticides Management*, dated March 1981.

All liming projects will be in compliance with the *Final Generic Environmental Impact Statement on the New York State Department of Environmental Conservation Program of Liming Selected Acidified Waters*, dated October 1990, as well as the Division of Fish, Wildlife and Marine Resources liming policy.

Application of the Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA), along with the Architectural Barriers Act of 1968 (ABA) and the Rehabilitation Act of 1973; Title V, Section 504, have had a profound effect on the manner by which people with disabilities are afforded equality in their recreational pursuits. The ADA is a comprehensive law prohibiting discrimination against people with disabilities in employment practices, use of public transportation, use of telecommunication facilities and use of public accommodations. Title II of the ADA requires, in part, that reasonable modifications must be made to the services and programs of public entities, so that when those services and programs are viewed in their entirety, they are readily accessible to and usable by people with disabilities. This must be done, unless such modification would result in a fundamental alteration in the nature of the service, program, or activity or an undue financial or administrative burden.

Title II also requires that new facilities, and parts of facilities that are newly constructed for public use, are to be accessible to people with disabilities. In rare circumstances where accessibility is determined to be structurally impracticable due to terrain, the facility, or part of facility is to be accessible to the greatest extent possible and to people with various types of disabilities.

Consistent with ADA requirements, the Department incorporates accessibility for people with disabilities into the planning, construction and alteration of recreational facilities and

assets supporting them. This UMP incorporates an inventory of all the recreational facilities or assets supporting the programs and services available on the unit, and an assessment of the programs, services and facilities on the unit to determine the level of accessibility provided. In conducting this assessment, the Department employs guidelines which ensure that programs are accessible, including buildings, facilities, and vehicles, in terms of architecture and design, transportation and communication to individuals with disabilities.

Any new facilities, assets and accessibility improvements to existing facilities or assets proposed in this UMP are identified in the section containing proposed management actions.

The Department is not required to make each of its **existing** facilities and assets accessible as long as the Department's programs, taken as a whole, are accessible.

For copies of any of the above mentioned laws or guidelines relating to accessibility, contact the Department's Universal Access Program Coordinator at 518-402-9428 or UniversalAccessProgram@dec.ny.gov.

Historic and Archeological Site Protection

Historic and archaeological sites are protected by the provisions of the New York State Historic Preservation Act (SHPA - Article 14 PRHPL), 6 NYCRR § 190.8 (g) and Section 233 of the Education Law. No actions that would impact these resources are proposed in this UMP. Should any such actions be proposed in the future they will be reviewed in accordance with the requirements of SHPA. Unauthorized excavation and removal of materials from any of these sites is prohibited by Article 9 of the ECL and Section 233 of the Education Law. In some cases additional protection may be afforded these resources by the federal Archaeological Resources Protection Act (ARPA).

Archaeological sites may be made available for appropriate research. Any archaeological research to be conducted on the property will be under the auspices of appropriate permits. Research permits will be issued only after approval by the New York State Museum and consultation with OPRHP and APA. Extensive excavations are not contemplated as part of any research program in order to assure that the sites are available to future researchers who are likely to have more advanced tools and techniques as well as more fully developed research questions.

B. Administration and Management Principles

1. Administration

The administration of the SRWA is shared by several Department programs. The following programs perform the indicated functions:

- The Division of Lands and Forests acquires and maintains land for public use, manages the Forest Preserve lands, promotes responsible use of public lands and provides educational information regarding the use of the Forest Preserve.

- The Division of Fish, Wildlife and Marine Resources protects and manages fish and wildlife species, provides for public use and enjoyment of natural resources, stocks freshwater fish, licenses fishing, hunting and trapping, protects and restores habitat, and provides public fishing, hunting and trapping access.

- The Natural Heritage Program enables and enhances conservation of New York's rare animals, rare plants, and significant ecosystems. Field inventories, scientific analyses, expert interpretation, result in the most comprehensive database on New York's distinctive biodiversity which provides quality information for natural resources planning, protection, and management.

- The Division of Water protects water quality in lakes and rivers by monitoring water bodies and controlling surface runoff.

- The Division of Air Resources regulates, permits and monitors sources of air pollution, forecasts ozone and stagnation events, educates the public about reducing air pollution and researches atmospheric dynamics, pollution and emission sources.

- The Division of Operations designs, builds and maintains Department facilities and infrastructure, operates Department campgrounds and day-use facilities and maintains trails and lean-tos.

- The Division of Public Affairs and Education is the public communication wing of the Department. The Division communicates with the public, promotes citizen participation in the UMP process, produces, edits and designs Department publications.

- The Division of Law Enforcement is responsible for enforcing all of New York's Environmental Conservation Laws relating to hunting, fishing, trapping, license requirements, endangered species, possession, transportation and sale of fish and wildlife, trespass, and damage to property by hunters and fishermen.

- The Division of Forest Protection and Fire Management is responsible for the preservation, protection, and enhancement of the State's forest resources, and the safety and well-being of the public using those resources. Forest Rangers are the stewards of the Forest Preserve and are the primary public contact for the SRWA and responsible for fire control and search and rescue functions. In 1980, state law designated Forest Rangers as Peace Officers with all powers to enforce all state laws and regulations with emphasis on the Article 9 of the Environmental Conservation Law and Part 190 of the Department's regulations.

2. Management Principles

General Forest Preserve Principles

The primary goal of Forest Preserve management is the perpetuation of Forest Preserve lands as “forever wild forest lands” consistent with New York State Constitution, Article XIV, Section 1. In conformance with the constitutional and legal constraints that embody this goal, Department manages the Forest Preserve to protect and preserve the natural resources of the unit and to provide opportunities for a variety of recreational activities for people of all abilities where those activities are permissible under the APSLMP, Department regulations and policies, and will not compromise the natural resource. Through partnerships with local governments, organizations, and individuals, Department provides for the use and enjoyment of the Forest Preserve in a manner that is supportive of the economy of the region while protecting the wild forest character of the area.

The Department allows and promotes recreational use of the Forest Preserve to the extent that it does not degrade the character of the area. To achieve this, the Department uses the “minimum tool” necessary to obtain specific objectives, employing indirect methods (limiting parking, etc.) whenever possible, and developing regulations only where necessary and as a final resort. Existing programs that promote backcountry use and etiquette will be utilized where appropriate and feasible. Examples of successful programs and messages used in other management units include, Leave No Trace™.

Public use controls are not limited to assessing and matching types and levels of use to physical and biological resource impacts. Social issues, such as user preferences, are also considered. This presents a unique challenge in managing the Forest Preserve, as access is free and use is relatively unregulated.

Management Principles specific to Wilderness Areas

The following principles, first adopted in the High Peaks Wilderness Area (HPWA) UMP, attempt to introduce professional wilderness management guidelines in writing long-term policy and day-to-day problem solving for wilderness managers. As with the HPWA UMP, these principles will also guide managers in addressing management problems of the SRWA.

- Manage Wilderness as a Composite Resource, Not as Separate Parts
  Wilderness is a distinct resource producing many societal values and benefits. One of wilderness's distinctive features is the natural relationship between all its component parts: geology, soil, vegetation, air, water, fish and wildlife – everything that makes up a wilderness. In most cases, separate management plans will not be developed for vegetation, fish, wildlife, recreation, etc. Rather, one plan must deal simultaneously with the interrelationships between these and all other components.

- Manage the Use of Other Resources and Activities Within Wilderness in a Manner Compatible with the Wilderness Resource Itself
  All proposed management actions must consider their effect on the wilderness resource so no harm comes to it. For example, recreation should be managed and kept within acceptable levels that maintain the unit's wilderness character, including opportunities for solitude or a primitive and unconfined type of recreation emphasizing a quality visitor experience (APSLMP, 2001; Hendee et.al, 1990).

- Allow Natural Processes to Operate Freely in Wilderness
  This principle is derived in part from the APSLMP definition of wilderness in dealing with the term "natural conditions." According to the APSLMP, the primary wilderness management guideline will be to achieve and perpetuate a natural plant and animal community where man's influence is not apparent (APSLMP, 2001, Page 20). It means not introducing exotic plants and animals not historically associated with the Adirondacks nor manipulating vegetation to enhance one resource over another.

- Attain a High Level of Wilderness Character Within Legal Constraints
  An important APSLMP wilderness goal is to retain, and make where necessary, Adirondack wilderness areas as wild and natural as possible. Examples of this principle include efforts to rehabilitate alpine summits and restoring severely eroded trails.

- Preserve and Enhance Wilderness Air and Water Quality
  Wilderness air and water quality bear testimony to the general health of our environment. Federal and state laws are designed specifically to protect air and water quality. In wilderness, internal pollution sources such as human and domestic animal wastes must be controlled.

- Safeguard Human Values and Benefits While Preserving Wilderness Character
  Wilderness areas are not just designated to protect natural communities and ecosystems; they are also for people. The APSLMP directs that "human use and enjoyment of those lands (meaning state lands within the Adirondack Park) should be permitted and encouraged, so long as the resources in their physical and biological context and their social and psychological aspects are not degraded" (APSLMP, 2001, Page 1). This is especially true for wilderness.

- Preserve Opportunities for Solitude or Primitive and Unconfined Types of Recreation
  This principle comes directly from the APSLMP definition of wilderness (APSLMP, 2001, Page 21). Levels of solitude within any given wilderness will vary; sometimes substantially. Management strategies to protect the wilderness resource should strive to minimize the amount of contact or control over visitors once they are in the unit (Hendee et.al, 1990).

- Control and Reduce the Adverse Physical and Social Impacts of Human Use in Wilderness Through Education and Minimum Regulation
  When human use must be controlled to prevent misuse and overuse, it is best to do so by education followed by the minimum degree of regulation necessary to meet management objectives. The latter option is sometimes called the minimum tool rule – application of the minimum tools, equipment, regulations, or practices that will bring the desired result (Hendee et.al, 1990).

- Favor Wilderness Dependent Activities When Managing Wilderness Use
  Wilderness is a distinct resource, and many recreational or other activities taking place there can be enjoyed elsewhere. Not all outdoor activities require a wilderness setting. Examples are large group use, orienteering schools, competitive events, and other organized events. A Department management goal is to refer these activities to Wild Forest Areas.

- Remove Existing Structures and Terminate Uses and Activities Not Essential to Wilderness Management Except for Those Provided by the APSLMP
  "A wilderness area is further defined to mean an area of state land or water having a primeval character without significant improvements or permanent human habitation...." (APSLMP, 2001, page 20). Except for those conforming structures, uses, and administrative actions specifically identified by the APSLMP, the Department is mandated to remove all non-conforming structures and uses not compatible with a wilderness environment as soon as possible (APSLMP 2001, page 20).

- Accomplish Necessary Wilderness Management Work with the "Minimum Tool"
  This principle requires every management action to be scrutinized to see first if it is necessary, then plan to do it with the "minimum tool" to accomplish the task. The Department has established guidelines and policies for many administrative activities in classified Wilderness Areas, including, but not limited to, trail construction, boundary line marking, use of motorized equipment and vehicles, cutting and removal of trees, and fisheries management in Wilderness Areas. Its goal is to have the least possible impact on the environment and the visitor experience (Hendee and others, 1990).

- Establish Specific Management Objectives, with Public Involvement, in a Management Plan for Each Wilderness
  Working together within the constraints of the APSLMP, managers and the public need to define acceptable levels of use and specific management practices for each Adirondack wilderness. These need to be clearly stated in management plans available for public review and comment. It is essential visitors and other users understand wilderness values, and managers clearly know their management responsibilities (APSLMP, 2001; Department policy 1972-present; Hendee et.al, 1990).

- Harmonize Wilderness With Adjacent Land Uses
  Wilderness management should be coordinated with the management of adjacent state and private lands in a manner that recognizes differing land management goals.

- Manage Wilderness With Interdisciplinary Scientific Skills
  Because wilderness consists of complex relationships, it needs the skills of natural resource professionals and social scientists that work as an interdisciplinary team focusing on preserving wilderness as a distinct resource. Environmental and social sciences are used in decision-making.

- Manage Special Exceptions Provided by The APSLMP With The Minimum Impact on The Wilderness Resource
  The APSLMP (2001) authorizes certain uses and structures in wilderness areas. These exceptions include such structures as interior outposts, existing dams on established impoundments, existing or new fish barrier dams, trails, bridges, signs, trail shelters (lean-tos), etc. (See generally APSLMP 2001, Pages 21-26). Construction of additional conforming structures and improvements will be restrained to comply with wilderness standards, and all management and administrative actions will be designed to emphasize the self-sufficiency of users in an environmentally sound and safe way.

C. Management Issues, Needs and Desires

Public comment has been obtained by way of a public outreach effort that included an Open House, held on September 9, 2002 and a public meeting on the draft version of the UMP, held on December 7, 2017.

A complete list of public comment received can be found in Appendix J and K.

Significant issues in the SRWA are:

- Pitchoff Mountain Trailhead (east)- This trailhead is located on a curve that limits visibility for approaching traffic. This traffic is also traveling down a steep hill. The parking area is on the opposite side of State Route 73 from the trail.

- Recreational use impacts- Some trails in the unit are steep and heavily used, which has resulted in sections of trail that are severely eroded. There are also other impacts on natural and wilderness resources that are occurring from recreational use. Addressing these impacts in this UMP is one of the primary directives from the APSLMP. Major impacts include those that result from large groups, camping, and rock climbing.

IV. Proposed Management Actions

This section identifies specific management proposals as they relate to natural resources, uses, or facilities. These proposed actions are consistent with the management guidelines and principles and are based on information gathered during the inventory process, through public input, and in consultation with the planning team. This section also identifies management philosophies for the protection of the area while providing for use consistent with its carrying capacity.

A. Bio-Physical Resources

1. Soils

Present Conditions

The main recreation impacts on soil are compaction and erosion. There are sites in the SRWA where soil disturbance requires rehabilitative actions. Trail widening, trail use during wet weather, camping too close to riparian areas, and poor trail design are all contributing factors to soil disturbance.

Objectives

- Keep soil erosion caused by recreational use within acceptable limits that closely resemble the natural processes.
- Minimize the amount of human caused soil compaction at undeveloped areas.

Management Actions

- Monitor soil conditions affected by recreation use.
- Target trail maintenance to heavily eroded areas and develop a priority list based on resource need rather than user convenience.
- Design, locate, and construct structures and improvements in ways that will minimize the potential for soil erosion.

2. Water

Present Conditions

There are eight ponds, and many streams within the SRWA. Water quality and biological surveys of the ponds have been conducted. No studies have been conducted to

determine the effects of recreation use on water quality. As focal points for visitation, streams, ponds, and wetlands are often on the receiving end of more human disturbance than upland forest areas. With increasing levels of use, the potential for deterioration of water quality is more likely.

No instances of aquatic invasive plant species have been identified within the unit. However, invasive plant species inventory work within the unit is incomplete.

The East Branch Ausable River, from Saint Hubert's downstream to its confluence with the West Branch at Ausable Forks, is designated as a "Recreational River" under the New York State Wild, Scenic and Recreational Rivers Act (Act). Within the SRWA and other state lands, the Act identifies the 0.5-mile zone from each bank of the designated river as the "river area". On private lands, the river area is 0.25-mile from each bank of the designated river. ECL §15-2713 (2)(d); 6 NYCRR 666 (Department regulations) and 9 NYCRR 577 (APA regulations) provide for the management of Wild, Scenic, and Recreational Rivers. About 423 acres of the SRWA falls within this river area. Likewise, the West Branch Ausable River, from its headwaters near Heart Lake downstream to its confluence with the East Branch at Ausable Forks, is designated as a "Recreational River", and about 883 acres of the SRWA falls within this river area.

Objectives

- Stabilize and improve water quality.
- Reduce the potential for pathogenic contamination (especially giardiasis) of water resources.
- Keep the waters within the unit free of aquatic invasive plant species.

Management Actions

- Monitor riparian areas to identify potential impacts on water resources. Correct undesirable conditions by rehabilitating the area or relocating use to more durable sites.
- Incorporate water quality and biological survey information into planning activities.
- Advise the public through the Department information and education programs about the effects and impacts of recreation use on water quality and their role in preserving water quality.
- Encourage the public to treat all water prior to consumption.
- Within the West Branch Ausable River area, two primitive tent sites will be closed and restored, and one new site will be developed.

3. Wetlands

Present Conditions

The APA regulates wetlands within the Adirondack Park under the NYS Freshwater Wetlands Act (1975) and the Adirondack Park Agency Act (1971). The nearly 500 acres of wetlands in the SRWA are an extremely important natural resource. These wetlands are susceptible to damage from public use.

Objectives

- Minimize the amount of wetland disturbances and impacts caused by the construction and maintenance of structures and improvements and human recreation use.

- Preserve and protect wetland community vegetation and associated plant species.

Management Actions

- Assist in making wetland information more readily available to resource managers and the general public.

- Take appropriate action to reduce the impacts on wetlands or associated vegetation caused by use of trails or other facilities.

- Coordinate future maintenance and construction activities that may affect wetlands with the APA to determine wetland boundaries and the need for wetland permits.

4. Vegetation

Present Conditions

Much of the SRWA's vegetated landscape has been altered by wind, fire, insects, disease, logging, and recreational use. Despite these influences, the unit has several unique ecosystems requiring special attention. These areas include spruce-fir rocky summit on Pitchoff Mountain, ice cave talus community on Notch Mountain, red pine rocky summit on Cobble Mountain, old growth forest on Kilburn Mountain, and wetland communities.

Objectives

- Allow natural processes to continue their role in the succession of plant communities.

- Preserve and protect any threatened or endangered plant species or communities.

Management Actions

- Maintain existing plant databases and support efforts to inventory plant communities, with an emphasis on sensitive, rare, threatened, or endangered plant species or communities.
- Use native trees, shrubs, or grasses to restore areas to natural conditions.
- Monitor vegetation in high-use areas, such as campsites and lean-tos, to detect any changes before unacceptable conditions arise.
- Emphasize and enforce the regulations regarding tree cutting on State land.
- Educate the public on their role in protecting and sustaining natural plant communities and the vegetative impacts associated with various recreational activities.
- Encourage and support research to determine the long-term effects of acid deposition on native plant species and communities.

5. Wildlife

Present Conditions

While all of the objectives and management actions outlined below are important, a management priority should be placed on increasing our understanding of the occurrence and distribution of many wildlife species and their habitats within SRWA. This priority is reflected under the list of potential management action projects (denoted by letters) outlined below.

Guidelines for Protection of the Adirondack Subalpine Forest Bird Conservation Area

Adirondack mountain summits above 2800' are part of the Adirondack Subalpine Forest Bird Conservation Area (ASFBCA). This BCA was established to provide protection for a distinctive bird community, which includes Bicknell’s thrush (species of special concern), blackpoll warbler, and Swainson’s thrush. According to the Department report Adirondack Subalpine Forest Bird Conservation Area: Management Guidance Summary (see Appendix E for full report) trail construction and maintenance activities, especially those involving motorized equipment, have the potential to disturb the nesting activities of upper-elevation birds such as Bicknell's thrush. Whenever possible, routine maintenance should be planned so that it can be completed outside of the normal

nesting season for Bicknell's thrush. Should maintenance be needed during this period, the use of non-motorized equipment would help to minimize impacts.

The use of motorized equipment, in accordance with Department policy, is allowed from April 1, through May 24 in wilderness areas. However, pertinent studies by the Vermont Institute of Natural Science (Rimmer et. al. 2004, 2005) recommend that construction activities within Bicknell's Thrush breeding habitat (e.g. ASFBC) occur before May 15 or after August 1. Therefore, blowdown removal using chainsaws will be prohibited from May 15 through August 1 within the ASFBCA; construction activities will occur during off-peak seasons and outside the breeding season for Bicknell's thrush, with the written approval of the Commissioner, as required by the APSLMP; and the use of helicopters will occur after September 15 and before May 15, except in emergencies, in keeping with current Department policy.

Objectives

- To perpetuate, support, and expand a variety of wildlife recreational opportunities, including sustainable hunting and trapping and wildlife observation and photography as desirable uses of wildlife resources.

- To assure that wildlife populations are of appropriate size to meet the demands placed on them, including consumptive and non-consumptive uses.

- To increase our understanding of the occurrence, distribution, and ecology of game and non-game wildlife species and their habitats

- To minimize wildlife damage and nuisance problems

- To meet the public's desire for information about wildlife and its conservation, use, and enjoyment.

Management Actions

- Manage and protect wildlife through enforcement of the Environmental Conservation Law and applicable rules and regulations.

- Support traditional use of the unit's wildlife resources, particularly activities designed to perpetuate hunting and trapping programs and education efforts.

- Continue to monitor and inventory wildlife populations and their habitats, particularly game species, species classified as rare, threatened, endangered or special concern, and those species associated with boreal habitats.

    a. Conduct targeted surveys for endangered and special concern bird species that were documented in the first Breeding Bird Atlas Project, but not the second.

b. Where harvest information is lacking, conduct surveys for American marten to better understand distribution and habitat use.

c. Conduct surveys for bird species associated with boreal forest. Priority should be placed on those species that were detected during the first Breeding Bird Atlas Project, but not the second and on those species that were not detected during either survey project.

d. Monitor existing radio-collared moose and continue to collar new individuals on an opportunistic basis.

e. Monitor use of deer wintering areas in the unit.

f. Continue to support statewide survey efforts that increase our understanding of the occurrence and distribution of flora, fauna, and significant ecological communities (e.g., Breeding Bird Atlas, New York Natural Heritage Program surveys).

g. Continue to support ongoing wildlife research and survey projects in the Adirondacks. Examples include research on American marten and black bear ecology and surveys for moose, Peregrine Falcon, Bald Eagle, and Osprey.

- Within the Subalpine Forest Bird Conservation Area, blowdown removal using chainsaws and construction activities will occur after August 1 and before May 15.

- Active management of wildlife populations will be accomplished primarily through hunting and trapping regulations developed by the Department's Bureau of Wildlife for individual or aggregate Wildlife Management Units. Continued input from Citizen Advisory Committees will be considered in determining desirable levels of wildlife.

- Re-establish, to the extent possible, self-sustaining wildlife populations of species that are extirpated, endangered, threatened or of special concern in habitats where their existence will be compatible with other elements of the ecosystem and human use of the area.

- Provide information, advice and assistance to individuals, groups, organizations and agencies interested in wildlife whose activities and actions may affect, or are affected by, the wildlife resources or the users of wildlife.

- Provide information, advice and/or direct assistance to requests for relief from, or solutions to reduce or alleviate, problems with nuisance wildlife.

    - Provide information to user groups on avoiding problems associated with black bears. Encourage the use of bear-resistant food canisters.

- Work cooperatively with the Division of Lands and Forests to assess problems associated with beaver-flooded trails. Work with area trappers and encourage trapping at nuisance sites during the open beaver trapping season.

6. Fisheries

Present Conditions

Ponds in the SRWA did not escape the massive fish introductions by humans in Adirondacks. Known non-native fishes are present in five out of the seven ponds for which fish data are available (Table G2). In addition to known non-natives, native-but-widely-introduced fishes (NBWI) are present in six of the seven of the ponds for which fish data is available. Five ponds in the unit are listed in this plan as "Adirondack Brook Trout" ponds. However, brook trout abundances are very low in most of those waters. As such, the brook trout are neither prominent components of the biological systems nor do they provide a notable recreational resource.

Early fisheries surveys are not available to document the progression of fish introductions in the SRWA. None of the ponds in the unit were survey netted prior to the 1950s. At the time of the earliest surveys in the unit, known nonnatives were present in three out of four ponds: northern pike and yellow perch were present in Owen Pond in 1952; golden shiners were present in Copperas Pond in 1959; and golden shiners were present in Winch Pond in 1960. In the "early" surveys, only Holcomb Pond was free of known nonnatives (surveyed in 1957). The other four ponds in the unit were not surveyed prior to the 1980s.

All the unit's ponds were surveyed in the 1980s by the Adirondack Lakes Survey Corporation. At that time known nonnatives were present in five of the eight ponds, totaling 85 percent of the surface area of the unit's ponded water (70.1 out of 82.2 acres): Winch contained golden shiners and fathead minnows; Copperas contained golden shiners; Holcomb contained pearl dace; Unnamed (P-235) contained golden shiners, pearl dace and fathead minnows; and Owen contained pearl dace. Owen Pond is located downstream of Winch and Unnamed (P-235), so it almost certainly contains golden shiners and fathead minnows by now. Of the three potentially "natives only" ponds, Marsh Pond (11 percent of the ponded waters or 9.4 acres) supports a NBWI species, creek chubs, which may or may not be native to that waterbody. That leaves 2 acre, Unnamed Pond (P-269), which was fishless, and 0.7 acre Unnamed Pond (P259) which apparently contained only brook trout.

None of the ponds in the SRWA that contain nonnatives will be returned to natural conditions (natives only) during this 5-year plan. Wetlands, extensive tributary systems and/or the absence of natural fish barriers (or sites to construct a fish barrier) make effective treatment with rotenone very difficult.

All area waters are subject to statewide angling regulations.

The 1993 Organizational and Delegation Memorandum regarding "Fishery Management Policy in Wilderness, Primitive, and Canoe Areas" forms the basis for fishery management goals in the unit. That memorandum includes policy guidelines that resulted from negotiations between the Department, APA and several citizen organizations.

Objectives

- Restore native fish communities with emphasis on native species that have declined due to man's influences.
- Protect native fish communities from the addition of undesirable non-native fishes.
- Provide recreational angling as part of a larger wilderness experience emphasizing quality over quantity.
- Protect the fishless state of naturally barren waters that have not been stocked.

Management Actions

- Manage five ponds as Adirondack brook trout ponds: Holcomb Pond; Marsh Pond; Winch Pond; Unnamed Pond (P-235); and Unnamed Pond (P259).
- Manage two ponds as coldwater ponds: Copperas Pond and Owen Pond.
- Unnamed Pond (P-269) will not be stocked in order to maintain its fishless status.
- Maintain and enforce regulations that prohibit the use of fish as bait in the unit. The use of fish as bait is a potentially significant vector for introductions of disruptive nonnative species.
- Reducing the distribution of nonnative and native-but-widely-introduced fish species is desirable and appropriate. However, due to difficulties associated with the individual ponds in this unit, no reclamations are presently proposed.
- In many instances, fish barriers (either enhancing partially effective natural fish barriers, or constructing fish barrier dams) are essential tools to prevent the spread of nonnative and NBWI fishes. The SLMP specifies that fish barrier dams are conforming structures in wilderness areas. When non-natives have been established upstream of an existing barrier, enhanced/constructed fish barriers may be the only option to prevent the spread of fishes further upstream in that portion of the watershed. Specific sites for newly enhanced or constructed barriers

are not proposed in this plan. If, or when, the need for a new barrier site is identified, the UMP will be amended to include the proposed work.

- Promote angler use of the waters in the unit, but generally only in the context of numerous additional waters throughout the Adirondacks. For example, leaflets distributed to anglers will list waters in the SRWA along with other waters that provide similar fish resources; they will not highlight the SRWA waters over other waters.

- Conduct biological surveys of waters within the unit as required.

- Fish stocking will emphasize native species, but historically associated fishes are also stocked as per the "Fishery Management Policy in Wilderness, Primitive, and Canoe Areas."

B. Land and Water Protection

1. Open Space/Land Acquisition

Present Conditions

The overall framework for land protection in New York State is identified in the State Open Space Conservation Plan. The plan is built from the bottom up from the work of nine regional committees, representing the spectrum of open space advocates, natural resource and recreation professionals, local government, and concerned citizens. This plan ensures that the State of New York conserves its cherished open space resources as a critical part of efforts to improve the economy, and the quality of life in New York communities.

Objectives

- Protect the SRWA through land acquisitions.

Management Actions

- Follow the Open Space Plan to purchase appropriate land adjacent to the SRWA from willing sellers.

2. Control of Exotic and Invasive Species

Present Conditions:

The negative impacts of invasive species on natural forest and aquatic communities are well documented. Unrestrained growth of invasive species causes the loss of

biodiversity; interruption of normal hydrology; suppression of native vegetation; and significant aesthetic, human safety, and economic impacts. Terrestrial and aquatic invasive species have been identified at increasing rates of colonization along roadsides, in campgrounds, and in water bodies of the Forest Preserve. Some of these species have the potential to colonize backcountry areas and degrade natural resources of the Forest Preserve.

Although in the context of a global society, the transfer of species from one location to another may be viewed as part of a "natural process," there may be occasions when this relocation of non-native species becomes unacceptable and an active response is warranted.

The Department has created an Office of Invasive Species to work with various universities, state agencies, and non-profit groups in coordinating a response to invasive species. The Department is a member and will continue to collaborate with other partners of the Adirondack Park Invasive Plant Program (APIPP) (Adirondack PRISM) to support education, inventory, research, and control of invasive species. An inventory and analysis of the current distribution of invasive species on Forest Preserve lands will provide the necessary information on the present extent of invasive exotics and provide the basis for long term decision making.

In 2010 Department and APA developed Inter-Agency Guidelines for Implementing Best Management Practices for the Control of Terrestrial and Aquatic Invasive Species on Forest Preserve Lands in the Adirondack Park (http://www.apa.ny.gov/State_Land/Appendix_F.pdf). These guidelines provide a template for the process through which comprehensive active terrestrial and aquatic invasive species management will take place on Forest Preserve lands in the Adirondack Park. Department shall be responsible for management of terrestrial and aquatic invasive species on Forest Preserve lands while APA will be responsible for providing review of, and advice on, APSLMP compliance and permit jurisdiction.

The control methods and Best Management Plans (BMPs) contained in the guidelines restrict the use of herbicides so that adverse impacts to non-target species are avoided and native plant communities are restored. Aquatic invasive species will be managed using non-mechanical harvesting techniques (hand-pulling) and temporary benthic matting as described in the guidelines. Use of pesticides for aquatics is not a part of this guidance. The guidelines are meant to be a dynamic document that is periodically revised to reflect new invasive species threats, continuing inventory of the Forest Preserve, and evolving invasive species management techniques.

Efforts should be made to restore and protect native ecological communities through early detection and rapid response efforts to eradicate or control existing or newly identified invasive species populations. Adoption of the guidelines and implementation through the UMP and site specific work planning process, gives Department the basic tools needed to preserve, protect and restore the natural native ecosystems of the Forest Preserve.

Prior to implementing containment and/or eradication controls, terrestrial invasive plant infestations occurring within the unit need to be assessed on a site-by-site basis. The geophysical setting and the presence, or absence, of sensitive native flora within or adjacent to the targeted infestation often predicts the BMP's and limitations of the control methodology. Infestations occurring within specific jurisdictional settings may trigger a permitting process, as do most terrestrial infestations occurring within an aquatic setting. The species itself often dictates whether manual management controls, e.g. hand-pulling or cutting, or the judicious, surgical application of herbicides is warranted in order to best control that specific species in that specific setting. No single BMP guarantees invasive plant containment or eradication. Many infestations require multiple, seasonal control efforts to reduce the density and biomass at that setting. Adaptive management protocols suggest that implementation of integrated control methodologies may provide the best over-all efficacy at specific infestations.

All management recommendations are based on knowledge of non-native invasive species present and their location, species, abundance and density. A complete inventory is necessary to identify aquatic and terrestrial invasive plant threats. Inventory should be based on existing inventories, formal or informal inventories during routine operations, and by soliciting help from volunteers to actively study and report on invasive species presence, location, and condition.

Many, if not all, invasive plant infestations will have multiple transport and distribution vectors. All "easy to contain – low abundance" terrestrial and aquatic invasive plant infestations are immediate targets for containment and/or eradication controls. Minimizing the spread of newly documented and immature infestations before they have the chance to become established is a priority management action.

Facilities and activities may influence invasive plant species introduction, establishment, and distribution. These facilities and activities are likely to serve as "hosts" for invasive plant establishment. Perpetual early detection and rapid response protocols will be implemented at probable locations of invasive plant introductions, such as parking/trailhead areas.

Protocols to minimize the introduction and transfer of invasive plant species will be incorporated during routine operations and emergency maintenance activities.

Restoration of sites where invasive plant management occurs is critical to maintain or enhance historical ecological function and structure. Restoration will incorporate best available science to determine effective techniques and the use of appropriate native or non-invasive plant species for site restoration.

Educating natural resource managers, elected officials, and the public is essential to increase awareness about the threat of invasive species and ways to prevent their introduction and transport into or out of the unit. Invasive species education will be incorporated in staff training and citizen licensing programs for hunting, fishing, and

boating; through signage, brochures, and identification materials; and included in information centers, campgrounds, community workshops, and press releases.

Information about the location of invasive species in the SRWA is maintained on New York iMapInvasives. *http://www.nyimapinvasives.org/* The webpage states:

*i*MapInvasives is New York State's on-line, all-taxa invasive species database and mapping tool. The comprehensive database can be used for:

- Documenting and sharing invasive species observation, survey, assessment and treatment data
- The coordination of early detection and rapid response efforts through email alerts
- Data analysis and summaries in the web interface and GIS

*i*MapInvasives partners with many organizations to leverage collaboration in the fight against invasive species.

Objectives:

- Prevent the introduction of new invasive species into the SRWA
- Eliminate occurrences of invasive species in the SRWA.

Management Actions:

- Management of invasive species will follow the *Inter-Agency Guidelines for Implementing Best Management Practices for the Control of Terrestrial and Aquatic Invasive Species on Forest Preserve Lands in the Adirondack Park*.
- Continue periodic monitoring and management of identified invasive plant populations.
- Partner with organizations addressing invasive species in the SRWA.
- Train Department staff working within the unit to identify and document the location of invasive plant species.
- Work towards a complete comprehensive inventory of the presence and extent of invasive plants in the unit.
- Periodically review staffing, training, and licensure needs to establish capacity to provide invasive species monitoring and response.

3. Carrying Capacity

The Department and the APA are working together to develop a guidance framework for monitoring wildlands in the Adirondack Park which will assess the effects of management actions and public use with respect to physical, biological and social conditions. This UMP identifies desired conditions for the SRWA and proposes methods and indicators for monitoring and measuring how visitor use is impacting those conditions. In certain instances, implementation of the UMP will be conditional and/or

phased according to the results of visitor use monitoring. Additional visitor use management strategies and actions to achieve desired conditions outlined in the final guidance for wildlands monitoring will inform future management of SRWA. Any final guidance would become an appendix to the APA/DEC memorandum of Understanding and applied to future UMPs.

.

Objectives

- Utilize a phased approach to facility implementation.
    - Proposals in this document that are intended as subsequent phases are referred to as conditional actions.
- Collect baseline data related to recreational use and the physical condition of facilities.
- Establish and implement a regular and reoccurring monitoring program to help track changes to the unit over time.
- Use the latest best management practices (BMPs) available in the siting and construction of all facilities
- Provide consistent messaging with partners to help educate users.
- Commit to implementing a carrying capacity based phased approach through this UMP. Quality data derived through this process will lead the Department in making the best decisions available to protect the resource and user experience.

Action Steps

- Develop an annual report including the status of the Wildland Monitoring, implementation progress, usage trends and identify issues impacting the unit.
- Collect and tally trail register information on an annual basis
- Monitor facilities like parking areas, tent sites, high-use trails, and climbing areas on a periodic basis for comparison over time. These monitoring efforts will involve data collection through photo documentation, visual observations, use number data, etc. Preference will be given to variables that will help guide management decisions.
    - Data that may be sampled (specifics in guidance for wildlands monitoring)
        - Erosion and compaction;
        - Occurrences of litter and human waste;
        - Expansion of use beyond the designed area;
        - Visual and audio sampling during peak and off-peak times;
        - Need for enforcement actions, etc.
- Use a phased approach when constructing new facilities. This allows the Department to evaluate and ensure the social and environmental carrying

capacities are not being exceeded and ensure there is a public desire for additional facilities before they are constructed. If monitoring efforts show the limits of acceptable change are being exceeded then management adjustments will be made, and the next phases of the plan will not be considered until corrective measures are successfully completed. This could hold or bring the management back to a previous phase.

- Site facilities in locations that provide long-term sustainability, keep overall maintenance to a minimum, and enhance the user experience
- Develop a visitor survey to monitor user experience. Using various methodologies develop a survey that discusses user satisfaction, acceptance of crowding, perceived management conditions and other factors to gauge user experience. This survey should be completed on a 3-5-year cycle across the unit.
- Design, locate, and construct all new structures and improvements in ways that will minimize the potential for soil erosion.
- Monitor the site conditions at all facilities. If unacceptable change occurs, provide restoration to secure the disturbed areas in a manner that prevents erosion.
- Close, relocate, or restrict use of unit facilities, as appropriate, to reduce negative impacts to resources caused by recreational use.
- Provide educational materials the public can find through signage on site and on the Department's website before their visit.
- Emphasize information and education as the primary means to reduce impacts and slow unacceptable levels of change.
- Provide outreach through on the ground interactions with Department representatives like Assistant Forest Rangers, SCA Back Country Stewards, and volunteers.

3. Water Body Carrying Capacity

The SRWA contains eight ponds, totaling 82 acres, which are entirely within the unit. There are also several streams and rivers which flow through or adjacent to the SRWA. The waters provide direct recreational opportunities, scenic value, and wildlife habitat.

There are several ways that water quality is impacted. Introduction of nutrients, sediment, and invasive species; damage to riparian vegetation; and disturbances to wildlife are impacts on water bodies from recreational use. In addition to the environmental impacts, there are also impacts to the recreational experience caused by use on and adjacent to the water bodies. Copperas and Owen ponds have the greatest potential for impacts from inputs such as shoreline development and levels of use.

The APSLMP recommends that a comprehensive study of Adirondack lakes and ponds should be conducted by the Department to determine each waterbody's capacity to

withstand various uses. The Department and APA are working together to develop a guidance framework for monitoring wildlands in the Adirondack Park which will assess the effects of management actions and public use with respect to the physical, biological and social conditions. This wildland monitoring guidance framework will likely be based on and selecting indicators that will comprehensively monitor the ecological and social impacts of use on the water bodies and surrounding riparian lands to assess the carrying capacity.

The monitoring in the SRWA will examine water-related use and development. The monitoring will select indicators, monitor the indicators, and evaluate against standards to determine the capacity of waterbodies. Indicators may look at ecological impacts, social impacts, recreation use, and adjacent development.

Information within this UMP that will be useful in the assessment of cumulative impacts includes: trail register information, ponds physical feature data (e.g. max depth), results of ponds' chemical and biological surveys, individual pond descriptions, inventory and description of facilities, and inventory of aquatic invasive species.

Several organizations are involved with studying Adirondack waterbodies. The following is a list of some of the organizations collecting data and a brief description of the information gathered:

Adirondack Watershed Institute (AWI) – Oversees several programs related to water quality. The Stewardship program has the mission of preventing the introduction of new aquatic invasive species. The Adirondack Lake Assessment Program is a collaboration between Paul Smith's College, Protect the Adirondacks, and AWI to develop a long-term water quality database. AWI also works with other organizations to conduct detailed water quality studies.

Adirondack Lake Survey Corporation – Gathers biological and chemical information as part of monitoring water quality

Adirondack Park Invasive Plant Program – Monitors for invasive aquatic plant species

Objectives

- The Department develops and coordinates a comprehensive study of SRWA lakes and ponds.

Management Actions:

- Establish desired conditions to determine if carrying capacity has been exceeded.
    - Desired conditions for water bodies may be ones that demonstrate the integrity of the freshwater ecosystem and appropriate recreational quality.
- Develop and implement a comprehensive monitoring program. Monitoring use of water bodies will help measure and determine impacts to better inform carrying

capacity development and long-term planning. Final specifics will be detailed in the guidance for carrying capacity of Adirondack lakes and ponds.
    - Monitoring could include photo point locations, water analysis, and visitor surveys.
- Due to the known impacts and high use levels sustained, the shoreline and waters of Copperas Pond will be prioritized in future wildland monitoring of this unit.

C. Facilities

1. Boundary Line Management

Present Conditions

Aside from roads and rivers, the SRWA has about 26 miles of boundary lines that must be maintained on a regular basis. The proper maintenance of these lines is important to help reduce trespass, eliminate the need for resurvey work, familiarize field staff with an area, reduce the cost of regular inspections, and facilitate public use of the area. Boundary line maintenance needs to be given a high priority when annual work plans are developed and funding requests are made, with areas most susceptible to incursion maintained first. Proper boundary line maintenance and patrol should decrease occurrences of illegal encroachment onto the SRWA.

During the public comment period for this UMP, a comment was received reporting a possible encroachment in the SRWA. This is a waterline that runs from the Town of North Elba's Craig Wood Golf Course onto State Forest Preserve land for a distance of about one mile. The waterline ends at a small impoundment on State land at a tributary of Roaring Brook. The waterline is a mixture of metal and plastic pipe laying on top of the ground. Motorized vehicles have been used on State land to service this line. It is believed that the water line is primarily used for irrigation purposes. It is not certain what year the water line was established, but it is believed that it dates to at least the early 1930s. The waterline and impoundment are on a parcel of lands that has been in State ownership since 1881. At this point no documentation has been found to show the Town of North Elba has a legal right for a waterline to be located on State land.

Objectives

- Protect the SRWA from encroachments and illegal use.
- The lands of the SRWA will be identifiable on the ground.

Management Actions

- The issue of the Craig Wood Golf Course waterline in the SRWA will be resolved within three years of the adoption of this UMP. During the interim period the use of motor vehicles or motorized equipment associated with the waterline will not be allowed in the Sentinel Range Wilderness Area. Unless a legal right for the waterline can be established, the waterline and impoundment will be removed from the SRWA. If it is determined that there is a legal right for the waterline, then reclassification of the land on which the waterline facility exists may be required to ensure its continued existence and use complies with the APSLMP.

- Inspect boundary lines to determine maintenance needs and assign a priority to each identified need. Undertake maintenance activity to ensure all boundaries are identified and marked within the five-year implementation of this plan. Brush, paint, and sign all boundary lines at least once every seven years as per Department Boundary Line Maintenance Policy NR-95-1. Mark boundaries where they cross any trail, road, or stream.

- Identify and address all access, land title, and trespass issues.

- Physically identify APSLMP unit designations on the ground for administrative and public use.

- Monitor boundaries and pursue enforcement for unauthorized activities, such as illegal motor vehicle and mountain bike entry and timber trespass.

- Correct land classification boundaries on computer mapping information used by the Department and APA.

2. Hiking Trails

Present Conditions

Once developed, trails must be maintained; otherwise they will deteriorate and cause resource problems. The Department faces a backlog of trail maintenance and reconstruction projects. Much of the maintenance that takes place within the unit is carried out on a voluntary basis by individuals and organizations that have stewardship agreements with the Department.

An inventory of SRWA trails was completed in 2008 and has been incorporated into a trails classification system, patterned after the U.S. Forest Service's Nationwide Trails Program (Appendix B). Trails in the SRWA have been assigned a classification based on condition and level of use. Five trail classifications are used ranging from unmarked footpaths (Class I) on through to intensively maintained trunk trails (Class V). Trail standards and maintenance prescriptions, reflecting different types and levels of use.

The classification system acknowledges the fact that all trails do not require the same degree or frequency of maintenance.

There are few marked trails in the SRWA, and these are relatively close to the major roads that border the SRWA. This results in an area of more than 15,000 acres in the core of the SRWA that is free of marked trails. While there are herd paths and the remnants of old trails in this area, overall this undeveloped area provides outstanding opportunities for solitude and unconfined recreation as called for in the APSLMP. These opportunities can be preserved by limiting new trail construction to the edges of the SRWA.

Parts of the SRWA trail network are poorly located, with long stretches of grade three to four times steeper than present acceptable design standards. As grades approach 20 percent, it becomes difficult to control erosion. Trails with long steep grades tend to channel water and create gullies accelerating erosion (Trapp et.al., 1994). Portions of the Pitchoff Mountain and Copperas Pond trails are examples of this. Several sections of these trails have grades in excess of 40 percent. Gullies have formed at these locations creating new drainage channels. Due to the steep grades and gullying, the cost of constructing and maintaining drainage structures would be prohibitive, and of questionable success. Another problem associated with these sections of trail is the formation of ice in the winter; water running down the trail/gulley freezes into ice flows that are difficult to negotiate. In such areas, hikers tend to walk around the icy section which has led to substantial trail widening.

The Pitchoff Mountain Trail is about 4.3 miles long and has two trailheads. The majority of use occurs on the western portion of the trail from the Pitchoff West Trailhead to the Balanced Rocks Overlook. The trail layout allows people to hike the trail as a through trail, meaning there is no need to retrace their steps. To do this they need two vehicles with one parked at the opposite trailhead of where they start. Some people hike this trail as a loop by walking along State Route 73 to return to their vehicle. The Pitchoff Mountain Trail has several problems including areas of extensive erosion, and inadequate, or unsafe parking (see the Trailheads section below for a further discussion of parking). Alternatives for addressing these issues are listed after the management actions for this section.

There are several climbing areas in the unit that are accessed via informal trails. Trails to Barkeater Cliffs, Notch Mountain Slabs, and Pitchoff Chimney Cliff will be officially adopted by the Department to allow for maintenance and improvements. The trail to Barkeater Cliffs is currently in good condition and requires only minor upgrading at this time. The trails to Notch Mountain Slabs and Pitchoff Chimney Cliff will require more extensive upgrades.

Desired Conditions for Hiking Trail Monitoring

Properly designed and constructed hiking trails will maintain their firm and stable surface for their intended use, and with minimal maintenance. A sustainable trail ensures

environmental protection, user safety, function and enjoyment. Building a well-designed, sustainable trail that blends well with its natural surroundings enhances the user's experience and decreases user conflict. Like other facilities, the variables for hiking trails will include monitoring efforts to collect data on the presence of eroded areas, the expansion of the tread through vegetation loss, and the occurrence of trash and human waste. Photo points will be a useful tool to help illustrate potential changes over time.

Objectives

- Provide visitors with a trail system that offers a range of wilderness recreational opportunities in a manner that keeps impacts to a minimum and preserves a significant area without marked trails.

- Maintain and reconstruct trails to appropriate wilderness standards.

- Identify the need for trail relocations and/or need for new trails based on resource protection.

Management Actions

- Monitoring for the desired conditions of hiking trails will help measure and determine impacts to better inform carrying capacity development and long-term planning. Final specifics will be detailed in the guidance for wildlands monitoring but generally:
    - Desired conditions for hiking trails will be ones that have minimal erosion and expansion from the designed footprint of the built facility, doesn't negatively impact trailside vegetation, is free of occurrences of human waste or litter, and provides an enjoyable user experience.
    - Monitoring could include photo point locations; control measuring points for erosion, tread expansion, or trash; and user surveys.

- Due to the known impacts and high use levels, the Pitchoff Mountain Trail will be prioritized in future wildland monitoring of this unit.

- Maintain trails to standard contained in Appendix B. Under this system, developed trails will be maintained, relocated, or reconstructed to specific standards.

- The trails to Barkeater Cliffs, Notch Mountain, and Pitchoff Chimney Cliff will become official trails and may be upgraded where necessary.

- For the Pitchoff Mountain Trail implement the actions outlined in Alternative 3, below. In addition to the major reroutes listed, other segments of the trail may be rerouted to avoid problem areas.

- The trail to Copperas Pond will be rerouted. Most of the current trail is heavily eroded and is too steep.

- The central area of the SRWA will be managed as an area without developed trails. The purpose for this is to facilitate recreation opportunities of an undeveloped nature and to preserve an area that has comparatively lower levels of human impacts. The area that will be kept free of developed trails covers almost 10,500 acres. This area is located north of South Notch, further than 0.5 miles from any road, and 0.25 mile away from the private property that borders the SRWA. Kilburn Slide (located on a smaller peak north of Kilburn Mountain) will be excluded from the trailless area. The trailless area will include the summits of Stewart, Kilburn, Slide, and Black mountains. Herd paths in the area may remain, provided the use of the paths do not result in significant damage to the natural resources. The herd paths will not be improved or maintained.

- Monitor closed trails for use and natural resource impacts.

- Trail construction, relocation, or reconstruction activities shall require an approved project work plan.

- Contractual and volunteer trail maintenance agreements, approved by the Department, will be reviewed annually and additional volunteer agreements will be sought.

- Trail maintenance will include minor relocations, removal of downed trees, ditching, clearing of brush, water bar construction and cleaning, bridge repairs and reconstruction, and installing other trail structures.

- Trail structures may be built where needed for resource protection or visitor safety. These would include bridges, ladders, turnpike, rock cribbing, and bog bridges.

- Herd paths or social trails which are in poor locations or are causing damage to the natural resources will be closed.

Alternatives for the Pitchoff Mountain Trail

Portions of the Pitchoff Mountain Trail are in need of significant rehabilitation, particularly the trail to Balanced Rocks. Options for rehabilitating the trail in place are limited due to thin soils and steep slopes. Rehabilitation work would require extensive sections of rock staircase and possibly several sections of log ladder to traverse the steepest areas. Installing these structures would be a significant undertaking. An alternative to rehabilitating the current trail would be rerouting the trail.

The eastern parking of the Pitchoff Mountain Trail is at a location of State Route 73 that has poor lines of sight. This parking area needs to cease being used as a trailhead.

Alternative 1: Harden and rehabilitate the trail to Balanced Rocks Overlook. There are steep sections of trail with severe erosion that will need major work to rehabilitate. Stone and fill will need to be brought to the trail. Several ladders or other trail structures will need to be built to make the trail sustainable. The trail to the eastern summit will be rerouted to a new parking area.

Advantages of Alternative 1 include:

- Uses current trail corridor.
- No additional trail to maintain

Disadvantages of Alternative 1 include:

- Requires substantial resources to do the work and for ongoing maintenance.
- Trail will still be steep and difficult for some users.

Alternative 2: Relocate the trail to Balanced Rocks Overlook, but retain the current trailhead. The reroute would leave the current trail at about 0.2 miles and travel west of the current trail avoiding all of the steep, rocky sections along the lower ridge and below the large rock outcrop on which Balanced Rocks Overlook is found. This reroute would rejoin the existing Pitchoff Trail about 0.1 miles below the junction of the main trail with the spur trail that leads to the overlook. The total distance to the overlook from the trail head would be about 1.5 miles, the same as the current trail.

The trail to the eastern summit will be rerouted to a new parking area.

Advantages of Alternative 2 include:

- A more sustainable trail that would be easier to maintain (per mile) than much of the existing trail.
- Elimination of several trail sections that are difficult for users to negotiate.
- No additional trail to maintain.

Disadvantages of Alternative 2 include:

- Construction of about 1.3 miles of new trail.

- Retention of a 0.1 mile section of very steep, very eroded trail that would require a rock staircase, or some similar improvement, to mitigate natural resource damages.

Alternative 3 (preferred alternative): Relocate the entire western portion of the trail, and its trailhead, to the same location as the proposed Pitchoff East Trailhead. The distance from the new trailhead to Balanced Rocks Overlook would be about 1.8 miles, an increase of 0.4 miles from the existing trail. This alternative would result in a 5.1 mile long loop trail.

The trail to the eastern summit will be rerouted to the new parking area..

Advantages of Alternative 3 include:

- A more sustainable trail that would be easier to maintain than much of the existing trail.
- Elimination of trail sections that are difficult for users to negotiate.
- Safer trailhead/parking area location.
- Eliminate the need for people to walk along Route 73 to complete a loop hike.

Disadvantages of Alternative 3 include:

- Construction of about 1.6 miles of new trail.
- Challenging terrain along some sections of the new trail.

Alternative 4: Relocate the trail to Balanced Rocks Overlook and close the rest of the Pitchoff Mountain Trail. The public will not be prohibited from using the trail that continues to the summits, but this will not be maintained. The trail up Pitchoff Mountain from the eastern trailhead will be closed and brushed-in. This will be a substantial change to the existing trail because it will no longer be usable as a through trail. The new trail route to Balanced Rocks would follow the route proposed in Alterative 2.

Advantages of Alternative 4 include:

- About 2.4 miles less trail to maintain.
- Eliminate the need to build 0.5 miles of new trail to that would be associated with the relocation of the eastern trailhead.

Disadvantages of Alternative 4 include:

- The elimination of the through trail could result in more use of the remaining portion of trail. This would result in increased social impacts.

- The elimination of the through hike option may make the trail less desirable for some people.

Alternative 5: Close the entire Pitchoff Mountain Trail. All trails to Balanced Rocks and Pitchoff Mountain will be closed. The trails will be brushed in to discourage use. To prevent continued erosion portions of the trail will be restored to a natural condition.

Advantages of Alternative 5 include:

- Eliminate the need for new trail construction or trail structures to address the problems with the current trail.

- About 4.5 miles less trail to maintain.

- Reduces the number of pedestrians crossing Route 73.

- Increase opportunities for solitude.

- Reduce damage to the natural resources.

Disadvantages of Alternative 5 include:

- This would eliminate an opportunity for people to connect to nature.

- The people who hike this trail would be displaced to other trails in the area, some of which are already heavily used.

- This would be very unpopular with a portion of the public; particularly for those who hike this trail as a tradition and the volunteers who have contributed to the maintenance of the trail.

Alternative 6: Relocate the Pitchoff Mountain Trail to a new trailhead on Mountain Lane and / or Alstead Hill Lane. The relocation of the Pitchoff Mountain Trail to the north would remove some of the need for parking along State Route 73, however this would increase traffic on a narrow dirt road. This could be a significant impact for the residents who live along these roads. The steep slopes and cliffs on the north side of Pitchoff Mountain would present challenges with finding a suitable route for a trail from this side.

3. Cross-Country Ski Trails

Present Conditions

Skiing is allowed throughout the SRWA, both on trail and off; however, the best skiing would be on purpose-built ski trails. The hiking trails in the SRWA are not well suited to use for skiing. The primary ski trail that passes through the SRWA is the Jackrabbit Trail. This is a long-distance ski trail that runs from Keene to Paul Smiths.

A portion of the Jackrabbit Trail is located on Mountain Lane. At one time the one-mile section of road from the intersection with NY Route 73 to the turnaround just before the SRWA boundary was not plowed in the winter. Skiers utilized this stretch of road to connect with the western portion of the Jackrabbit Trail. This stretch of road is being plowed, leaving a one-mile gap in the trail. A reroute of the trail off the road has been proposed. This reroute will cross portions of the SRWA, private property, and lands within the Saranac Lakes Wild Forest. The proposed portion of the trail in the SRWA is about 0.5 miles long.

Between North Elba and Keene, the Jackrabbit Trail is located along Old Mountain Road. The use of the old road allowed for the easier and quicker establishment of this trail to occur than if it had been built from scratch. Unfortunately, maintaining proper drainage is often a problem when old roads are used as trails. This is particularly true in wilderness areas where all work is done by hand. There are several areas along Old Mountain Road where lack of proper water diversion is negatively impacting trail usage. Several of these areas are where beaver impoundments are either crossing the old road bed or are causing water to flood the road. The reestablishment of a trail in the original road bed would be a tremendous undertaking, cause significant natural resource impacts, and require continuous maintenance. A new properly built trail that is out sloped to shed water would be the best long-term solution to address the problem areas. This will be a challenge because the new trails will be built along steep cross slopes and rocky terrain.

The former North Notch and South Notch trails were originally developed as ski trails and were some of the earliest dedicated ski trails in the region. They were also used for the 50-kilometer ski race during the 1932 Olympics. These trails were part of a larger ski trail network started in the 1920s by members of the Lake Placid Club. With the establishment of developed ski areas such as Whiteface Mountain in the 1940s and 1950s, the demand for backcountry ski trails decreased substantially and many traditional ski trails (including North and South Notch trails) were abandoned. In recent years the number of backcountry skiers has increased and there has been public comment requesting that all, or portions, of the former North and South Notch Ski Loop be reopened.

Reopening these trails could provide additional backcountry ski opportunities. It could also offer a unique, and regionally significant, experience by allowing people to ski on the same trails used by Olympic athletes in 1932. It would require a substantial amount of construction and yearly maintenance to reopen these trails. Portions of the original

route may not be usable for a trail built to current standards, for example the beginning of the North Notch Trail crosses a large wetland. Another management consideration is that these trails pass through an area that is free of marked trails; keeping significant acreages without trails is an important management consideration. A further complicating factor is that the trail would need to cross private property (at the west end of the South Notch Trail and the east end of the North Notch Trail). Another consideration is that these trails would in many ways be duplicative of what the Jackrabbit Trail currently provides. At this time these trails will not be reopened.

A user group conflict related to cross-country ski trails is the problem of "postholing". This occurs when someone walks through snow without wearing skis or snowshoes and leaves deep footprints in the trail. In certain weather conditions the footprints can become frozen in place and are difficult to address. The holes make the trail much less enjoyable to ski and are a safety concern.

Desired Conditions for Cross-Country Ski Trail Monitoring

Desirable conditions are typically easily achievable for cross country ski trails, if the weather cooperates. With adequate snow pack, conditions rarely become deteriorated, which shifts the typical tread concerns like erosion to other concerns like corridor expanding through a loss of vegetation. Desirable cross-country ski trails maintain safe lines of sight and corridors that are free from vegetative obstructions. Cross-country skiing is often a secondary use on hiking or mountain bike trails, so when this is the case, the monitoring variables for the trails in which they use will be the primary guide for monitoring variables. When the trails are for skiing only, the monitoring program will assess, in the non-winter months, corridor expansion through vegetation loss, and erosion. Photo points will be developed along routes to continually monitor impacts and to ensure corridor expansion through vegetation loss is not occurring.

Objectives

- Design and locate all trails in accordance with DEC guidance and trail best management practices that minimize environmental impacts.
- Add and enhance skiing opportunities as appropriate throughout the area.

Management Actions

- Monitoring for the desired conditions of cross-country ski trails will help measure and determine impacts to better inform carrying capacity development and long-term planning. Final specifics will be detailed in the guidance for wildlands monitoring but generally:
    - Desired conditions for ski trails will be ones that have minimal expansion from the designed footprint of the built facility, doesn't negatively impact trailside vegetation, and provides an enjoyable user experience.
    - Monitoring could include photo point locations, control measuring points, occurrences corridor expansion, and visible erosion in non-winter months.

- Build about 0.5 miles of new ski trail to reroute the Jackrabbit Trail off Mountain Lane in North Elba.

- Build trail reroutes to bypass flooded portions of the Jackrabbit Trail along Old Mountain Road. These bypasses will be designed for ski use. They will be the minimum length need to route a sustainable trail around the flooded areas.

- Allow a possible reroute of the Jackrabbit Trail off Alstead Hill Lane, near the western end of that road. This option for a trail may be needed to address concerns of public use impacting private property. The new trail may enter the SRWA from private property at Nichols Brook, parallel Nichols Brook in the SRWA for about 0.3 miles, then cross Nichols Brook again on to the private property, and back to the Jackrabbit Trail.

- A ski trail may be built to connect the Jackrabbit Trail at the Craig Wood Golf Course and at Mountain Lane. This new trail would allow people skiing the Jackrabbit Trail to avoid two crossings of State Route 73. The trail will be about 2 miles long. This trail will pass along the base of Scotts Cobble.

- Conditionally propose two loop trails at Scotts Cobble. These trails would connect at the base of Scotts Cobble with the proposed trail listed above. The combined length of these loop trails will be about 1.5 miles. The trails would provide options for people to ski up and down Scotts Cobble. The Department will work with the Agency in developing guidelines for backcountry ski trails that define the nature of backcountry skiing opportunities. Once SLMP compliant Ski Trail Guidance has been developed the DEC will develop this trail.

- Conditionally propose a loop trail at the northeast slope of Pitchoff Mountain. This trail would be situated between an elevation of 1,600 and 2,500 feet. This trail would be connected to the Jackrabbit trail. This loop trail could be about 2 miles long. The development of this trail would be dependent upon the satisfactory resolution of the problems with parking at Alstead Hill Lane, the adoption of guidelines for backcountry ski trails, and monitoring information on use of the Jackrabbit Trail.

- Where practical new trails, reroutes, and trail structures will be designed and constructed to accommodate and enhance ski use.

- Signage and education will be the preferred method to address the problem of “postholing” on designated ski trails. If that does not adequately address the problem, then a regulation maybe developed that would require the use of skis or snowshoes on trails designated for ski use. The designated ski trails in the SRWA are the Jackrabbit Trail and the proposed trails at Scotts Cobble and the northeast slope of Pitchoff Mountain.

4. Trailheads/Parking Areas

Present Conditions

Trailheads are points of entry to State land which may contain some or all of the following: parking, educational information, register boxes, and kiosks. The SRWA is served by 4 trailheads, which are:

Copperas Pond - Located on Route 86 in the town of North Elba between Lake Placid and Wilmington, this trailhead serves the northern end of the Copperas Pond Trail which provides access to Copperas, Owen, and Winch ponds; and rock climbing routes on Notch Mountain. This trailhead provides the shortest access to Copperas Pond and its associated lean-to and campsites, and Winch Pond. A DOT pull-off on the western side of Route 86 (directly across from trailhead) provides adequate parking for this trailhead.

Owen Pond - Located on Route 86 in the town of North Elba between Lake Placid and Wilmington, this trailhead serves the southern end of the Copperas Pond Trail. This provides the shortest access to Owens Pond. A DOT pull-off at this trailhead provides parking for about seven cars. This trailhead was moved to its current location in 2011. Prior to that it was located about 0.2 miles to the south, where the Owen Pond Outlet crosses Route 86.

Pitchoff Mountain West - Parking for the Pitchoff Mountain West Trailhead is available at several roadside pull-offs along Route 73. These pull-offs also serve the Cascade Mountain Trailhead which is located across Route 73 in the High Peaks Wilderness Area.

Pitchoff Mountain East - This trailhead is located at the eastern terminus of the Pitchoff Mountain Trail on Route 73 in Keene, and is served by a roadside pull-off which can accommodate up to three cars. This pull-off is located on the south side of the highway in a location with limited sight distance in either direction.

In addition to official trailheads, there are also locations where access to the SRWA is available by small roadside pull-offs or parking areas. Many of these do not access official facilities. The nature of the roads in the area are such that there are limited locations to safely park outside the travel lanes. The areas where people can safely pull-off of the road tend to be used repeatedly. The public use from the pull-offs are those activities that do not need developed facilities and that favor dispersed use such as hunting, fishing, trapping, rock/ice climbing, and bushwhacking. These pull-off areas are usually large enough for only one or two cars to park at a time.

Parking at trailheads is a concern, because sometimes demand for parking exceeds the available supply. If an official parking area is full, some visitors park along road shoulders. Parking is a problem at several of the trailheads in the SRWA and in adjacent areas. The worst of the problems occur at several of the trailheads located along New

York Route 73, between Interstate 87 and Lake Placid. This has resulted in problems with many cars parking along the shoulders of the busy road.

One of the locations which has been noted as being very congested is at the Cascade and Pitchoff mountains trailheads. The trails for these two mountains start on opposite sides of State Route 73. There are five small, separate parking areas at this location. On many weekend and summer days the parking areas fill up and cars are parked along the shoulders of the road. The vast majority of the cars parked here belong to people who are hiking Cascade Mountain.

The Department has tested different options for dealing with parking problems at the Cascade/Pitchoff trailheads. For the 2017 Columbus Day / Canadian Thanksgiving Weekend parking was prohibited at the Cascade/Pitchoff West trailheads. A temporary trail to Cascade Mountain and parking was provided from the Mount Van Hoevenburg Intensive Use Area. This greatly increased the distance to reach Cascade and Pitchoff mountains. For the 2018 Columbus Day / Canadian Thanksgiving Weekend parking was prohibited at the Cascade/Pitchoff West trailheads, but a shuttle service was provided from parking at Mount Van Hoevenburg to the trailheads. The experiences from these two approaches to dealing with the parking problems provided valuable lessons to the Department.

The 2018 High Peaks Wilderness Area UMP Amendment proposes several actions to address parking at the trailheads along State Route 73, including the Cascade Mountain Trailhead. The High Peaks UMP calls for the rerouting of the Cascade Mountain Trail to a parking area at Mount Van Hoevenburg and the closing of the parking areas on the south side of New York Route 73 where the current trail starts. This action would result in the one parking area on the north side of the road being retained, this parking area is known as “Stagecoach Rock Parking”.

Desired Conditions for Trailhead Facility Monitoring

There are numerous parking areas that serve as entry points to the front and backcountry. Properly designed and managed parking areas will maintain their firm and stable surface with minimal maintenance and allow unencumbered parking for the designed number of vehicles. This not only maximizes environmental protection, but also user safety, function and enjoyment. Appurtenances to the parking areas like privies and gates should also be maintained in a clean and functional working condition. Like roads and other facilities described, parking areas can add to a user’s positive experience if it blends well with the natural area and is kept free of trash and human waste. The variables to be monitored in parking areas will be the presence of a firm and stable surface that is smooth and easily accessible by the public, along with clean sanitary conditions including properly maintained privies and an absence of trash. Photo points will be a useful tool to help illustrate potential changes over time.

Objectives

- Provide and manage adequate trailhead facilities to protect resource values and to accommodate visitor needs.

- Provide adequate parking and mitigate any parking related problems in cooperation with affected parties.

- Indirectly manage interior use by balancing parking lot capacities to interior visitor capacities.

Management Actions

- Monitoring for the desired conditions of parking areas will help measure and determine impacts to better inform carrying capacity development and long-term planning. Final specifics will be detailed in the guidance for wildlands monitoring but generally:
    - Desired conditions for parking areas will be a firm and stable surface that has minimal expansion from the designed footprint, well maintained privies and gates, is free of occurrences of litter and human waste, and adds to the overall user experience.
    - Monitoring could include photo point locations, control measuring points, survey of invasive species, surveys of visual occurrences of trash, and user surveys

- Use signs at trailheads to inform users of Department rules and regulations, the location of facilities, proper safety and sanitary measures, and recommended backcountry etiquette.

- Build a five car parking area on the north side of Mountain Lane in North Elba. This will be part of an 11 car parking area/trailhead for the Jackrabbit Trail which is also located on the south side of Mountain Lane, in the Saranac Lakes Wild Forest.

- Develop partnerships to plow snow from parking areas.

- Build a new parking area for the Pitchoff Mountain Trail; this will be the one official parking area for those hiking Pitchoff Mountain. The parking area will initially be built for 15 cars. This parking may be expanded to accommodate up to 30 vehicles following the monitoring of impacts from use of the new trails. This will be located in the SRWA to the east of Lower Cascade Lake, off of New York Route 73. The Pitchoff East parking will be closed. Parking at what is known as “Stagecoach Rock” may continue, as long as there are not problems with excessive numbers of cars parking. Combined with the actions in the High Peaks

UMP Amendment this should eliminate the most significant parking problem along State Route 73 between Lake Placid and Keene Valley.

- Existing pull-off parking areas may be maintained and they may be improved to allow for safer parking.

5. Campsites

Present Conditions

A primitive tent site, commonly referred to as a designated campsite, is one identified by a Department permissive sign or disk, providing space for not more than three tents, and designed to accommodate a maximum of eight people on a temporary or transient basis. These sites are designed to accommodate the need for shelter while having the least possible impact on the environment (APSLMP, 2001).

There are currently five designated campsites in the SRWA. Two of these sites are located on Copperas Pond, one site is located on Owens Pond, one site is at Holcomb Pond and one site is located off of the Jackrabbit Trail below Black Mountain in Keene. Camping is common near Copperas and Owen ponds, but overall overnight use is a small percentage of total recreational use within the SRWA.

The campsite located on the south shore of Copperas Pond is within sight of, and less than one quarter mile away from the lean-to, and therefore does not comply with the APSLMP guideline stating that primitive tent sites must be “out of sight and sound and generally one quarter mile from any other primitive tent site or lean-to.” The campsite on the east side of Copperas Pond is directly on the hiking trail, which is not ideal. Current camping levels can be reasonably accommodated by the lean-to and one campsite.

Desired Conditions for Tent Site Monitoring

Emphasis is given throughout the plan on well designed and constructed facilities that promote resource protection and will maximize long term sustainability. Tent Sites are a great example of the importance of constructing a well-built, sustainable facility up front. Choosing a suitable location and constructing a tent site with a hardened tent pad ensures initial and long-term environmental protection. These facilities will exhibit a comfortable, well drained tent pad, usable fire pit, and a sanitary privy. Beyond the obvious environmental benefits, these facilities add to the user’s experience as much as a desirable location does. The monitoring variables for tent sites will include efforts to collect data on the expansion of the designated area through vegetation loss, soil compaction, and the occurrence of trash and human waste. Photo points will be a useful tool to help illustrate potential changes over time.

Objectives

- Provide campsites in areas that are attractive or convenient for users while adhering to APSLMP guidelines, following best management practices and prioritizing natural resource protection.

- Develop a good understanding of camping locations and use levels in the unit.

Management Actions

- Monitoring for the desired conditions of tent sites will help measure and determine impacts to better inform carrying capacity development and long-term planning. Final specifics will be detailed in the guidance for wildlands monitoring but generally:
    - Desired conditions for tent sites will be ones that have minimal expansion from the designed footprint of the built facility, doesn't negatively impact adjacent vegetation, shows minimal signs of compaction, is free of occurrences of human waste or litter, and provides an enjoyable user experience.
    - Monitoring could include photo point locations, control measuring points, occurrences of trash, vegetation loss, and visitor surveys.

- Monitor camping in the unit to determine if existing facilities are adequate for current use levels.

- Inventory designated campsites every 5 years.

- Two campsites on Copperas Pond will be closed and restored to a natural condition. One new campsite will be built at an APSLMP compliant location.

- Close the campsite at Holcomb Pond. This campsite is at a poor location. This area does not receive enough use to warrant the construction of a new campsite.

- Build two campsites off Bartlett Road. Neither of these campsites will allow vehicle access on to the campsite. One campsite will be near the northern end of the primitive area and the other will be about 0.6 miles south of the first site.

- "At-large" camping will be prohibited above 3,500 feet in elevation.

- Post "no camping" signs or disks at fragile environments that show sign of impacts from camping.

6. Lean-tos

Present Conditions

Historically, there were several lean-tos in the SRWA: two on the shores of Copperas Pond, one in North Notch, and one in South Notch. The lean-tos in North and South notches were constructed in 1931 by the Conservation Department in preparation for the 1932 Olympics. There is currently one lean-to in the unit, located on the northern shore of Copperas Pond. This lean-to does not meet APSLMP guidelines that require a set-back distance of 100 feet from the pond. Therefore, no further structural maintenance of the lean-to will be carried out. When the lean-to is in need of significant repair, it will be relocated to a site that is compliant with the APSLMP.

Objective

- Assure that lean-to locations comply with APSLMP guidelines

Management Actions

- The maximum capacity of a lean-to site shall be 8 persons.
- Structural maintenance of the Copperas Pond lean-to will cease and it will be relocated to a site that is compliant with APSLMP guidelines when in need of significant repair.

7. Signs

Present Conditions

Signs are used to welcome users, mark trails, and provide regulatory, interpretive, and safety information. Proper signing can educate users and help minimize user impacts on the resource. In wilderness areas, signs may be erected at trail junctures that show directions with arrows and use the minimal necessary wording. Signs may be used at interior areas within the unit; however, signage is kept to a minimum to avoid interfering with wilderness values and guidelines. Interior signing is limited to trail junctions, special information and regulatory signs.

Much of the wilderness boundaries are not well identified. Several entrances have register boxes which provide minimal information.

Objectives

- Provide for the minimal use of signs necessary to manage and protect the Wilderness resource and user safety.

- Adequately identify the unit, major access points, regulations, and resources.

Management Actions

- Develop a comprehensive sign inventory that is maintained and updated annually.
- Coordinate and review all signs through a single area manager, and post signage that is consistent, and relevant to resource and user needs.
- Place appropriate signage at trailheads to inform users of Department rules and regulations, the location of facilities, proper safety and sanitary measures, and recommended backcountry etiquette.

8. Picnic Areas

Present Conditions

The APSLMP allows picnic areas in wilderness areas within 500 feet of a public highway. On River Road (Essex County Route 21) there is an existing picnic area. Some, or all, of this site may be within the public highway right-of-way. The facility consists of a small parking area, two benches, and a monument to the 10th Mountain Division. The parking area is mostly used by those fishing the adjacent West Branch Ausable River.

Desired Conditions for Picnic Area Monitoring

Picnic area should be properly designed and constructed to accommodate their intended use with minimal maintenance and limited undesirable impacts. The monitoring variables for the picnic area will include efforts to collect data on the expansion of vegetation loss, the occurrence of trash or human waste, and visitors' enjoyment. Photo points will be a useful tool to help illustrate potential changes over time.

Objective

- Provide adequate picnic facilities in compliance with provisions in the APSLMP.

Management Action

- Monitoring for the desired conditions will help measure and determine impacts to better inform carrying capacity development and long-term planning. Final specifics will be detailed in the guidance for wildlands monitoring but generally:
    - Desired conditions will be ones that have minimal expansion from the current use footprint, doesn't negatively impact adjacent vegetation, is free of occurrences of human waste or litter, and provides an enjoyable user experience.

  - Monitoring could include photo point locations; control measuring points for occurrences of trash, fires, human waste, and vegetation loss; and visitor surveys.

- The picnic area on River Road may be maintained. Interpretive signage, a picnic table, or a bench may be added.

D. Public Use and Access

1. Public Use

Present Conditions

Public access to the SRWA is free and relatively unregulated. The “minimum tool” concept is used to manage public use and achieve management objectives, using indirect methods when possible (i.e. limiting parking), and direct methods when necessary (promulgating regulations).

Many visitors consider large groups inappropriate and undesirable in wilderness. Most wilderness users prefer not to feel crowded, and highly value privacy, solitude, and peace and quiet (Dawson, et al, 2005). Aside from behavioral factors, the potential to cause impact varies with party size and the type of user. Parties larger than 8 persons in a group have been documented to cause greater impacts to certain environmental and sociological resources than smaller groups (Cole, 1987, 1989, Hendee, 1990, and USDA Forest Service, 1994). Although large groups represent a small proportion of total users, they contribute a disproportionate amount of impact when compared to smaller parties.

Large groups commonly create congestion problems at trailhead facilities, on trails, rock climbing sites, and mountain summits. It is very difficult to control and confine large groups at vulnerable locations, such as mountain summits or riparian areas. Over a short period of time the rate of unacceptable change on a particular resource can be accelerated by large group occupancy of a site. Higher noise levels are associated with large groups. It can be a major source of visitor dissatisfaction when large groups, just by their sheer size, displace other users. There is also a problem when groups from one organization split into several smaller groups and then rejoin at interior locations, often fragile summit areas, or the shores of waterbodies. Large group use is inconsistent with the concept of solitude, which is called for in wilderness areas as per the APSLMP.

Large groups require greater campsite space and sometimes expand campsites. Large groups cooking with wood fires generally consume greater amounts of fuel wood and extend firewood gathering areas. Impacts tend to be more spread out and extend well beyond campsite boundaries.

There are currently some restrictions limiting large groups in the SRWA. Department regional practice limits overnight groups in wilderness areas to a maximum of 9 individuals. Organized groups of more than 20 people are required to get a Temporary

Revocable Permit (TRP). There can be conditions attached to the TRP, including size limits.

Selecting a specific group size requires judgment; no magic formula exists to calculate an ideal number. The situation is parallel to setting speed limits to control use on highways. Research indicates that the size of a group should be low, ideally 4-6 people per group, but generally less than 10 persons per party to be effective in reducing environmental and sociological impacts (Cole, and others, 1987).

Day use group size restrictions of a maximum of 15 people are recommended in order to protect the natural resources and the wilderness character of the unit. This number is consistent with group size limitations recently established in nearby wilderness areas, and will help to set a standard for recreational use of wilderness within the Adirondack Park.

Most of the recreational use in the SRWA is concentrated in a few destinations close to the periphery of the unit (Owen and Copperas ponds, and Balanced Rocks Overlook on Pitchoff Mountain). For those users wishing a higher degree of solitude, most of the unit is undeveloped and sees little if any use in a typical year. These undeveloped areas contain a number of different ecological communities and landscape features, and offer truly outstanding opportunities for solitude.

Many of the resource impacts that result from recreational use can be mitigated through an active visitor education and information program. Most visitors lack a basic understanding of Department rules and regulations and are unaware of the effects their activities have on the resource. Visitors need to be informed of the proper use of state land and all special rules and regulations that apply before they enter the unit. A well-developed education and information program can help reduce any user related impacts while improving the visitor experience. Department will develop a web page with a map of the SRWA in conjunction with other nearby Forest Preserve units that focuses on the area's history, natural resource values, recreational opportunities, use guidelines, and linkages with local communities. The development of a comprehensive user education strategy outside the UMP initiative is also being undertaken by the Department.

There are locations in the SRWA where public use, even at locations without a developed facility, is impairing the wilderness character and direct action is required to address the negative impacts. Public recreation activities which result in accumulation of garbage and recurring injury to vegetation are examples of some of the problems. At these areas DEC will need to remove the trash and encourage growth of vegetation.

Desired Conditions for Public Use Monitoring

Public use, even at locations without a designed and built facility, should result in limited undesirable impacts. The monitoring variables for these areas will include efforts to collect data on expansion of vegetation loss, success of vegetation reestablishment, occurrences of trash or human waste, and visitors' enjoyment. Photo points will be a useful tool to help illustrate potential changes over time.

Objectives

- Manage visitor use to keep impacts on the resource and experiences of all visitors at an acceptable level consistent with the concept of wilderness as described by the APSLMP.

- Understand changes in use and level of use over time.

- Encourage overnight and day users to travel in small rather than large groups.

- Increase visitor self-sufficiency and knowledge of personal protection through educational efforts.

Management Actions

- Monitoring for the desired conditions will help measure and determine impacts to better inform carrying capacity development and long-term planning. Final specifics will be detailed in the guidance for wildlands monitoring but generally:
    - Desired conditions will be ones that have decrease in the current use footprint, doesn't negatively impact adjacent vegetation, and is free of occurrences of human waste or litter.
    - Monitoring could include photo point locations; control measuring points for occurrences of trash, fires, human waste, and vegetation loss; and visitor surveys.
- Address areas impacted by public use by taking appropriate action such, as removing garbage and encouraging establishment of vegetation.

- Develop a set of visitor-use management strategies and actions aimed at achieving and/or maintaining desired conditions. Implement these strategies and actions, and adjust them based on monitoring and evaluation.

- Adopt regulations to limit the maximum number of persons per campsite to eight. This will be implemented over a two-year period.

    YEAR ONE – Inform the public of the impending change through an information and education effort.

    YEAR TWO –Adopt a specific regulation to conform with the APSLMP to reduce the maximum number of persons per campsite to eight.

- Adopt regulations to limit the size of day use groups to a maximum of 15 persons per party. This will be implemented over a two-year period.

    YEAR ONE – Inform the public of the impending change through an information and education effort.

YEAR TWO –Adopt a specific regulation to conform with the APSLMP to reduce the size of day use groups to a maximum of 15 persons per party.

- When larger groups split up to meet size limits, each subgroup must be equipped as a self-sustaining group. Each division of a larger group must camp and travel at least one mile apart from other divisions of the group so as not to violate group size limits. Day use groups must adhere to this same requirement and not congregate into larger groups on trails or at destination points.

- Those groups desiring a larger group size for day and overnight activities will be referred to appropriate wild forest areas where a higher degree of recreational use can be sustained and is permitted by the APSLMP.

- Continue to collect public use data from trail registers to determine average number of yearly users and groups sizes.

- Develop a web page and map of the SRWA in conjunction with other nearby units that focuses on the area's history, natural resource values, recreational opportunities, use guidelines, and linkages with local communities.

- Promote Leave-No-Trace™ ethics and techniques with all users.

- The former water source for the Wilmington Notch Campground is located in the SRWA. This drilled well is just outside of the New York Route 86 right-of-way. Actions which may be taken to address the well include cutting off the top of the well casing, removing an electric box, and filling the well with sand.

2. Rock and Ice Climbing

Present Conditions

The SRWA is a popular destination for rock and ice climbing. Particular climbing areas that receive high use are Barkeater Cliff, Pitchoff Chimney Cliff, Pitchoff left/right, and Pitchoff North.

Rock and ice climbing are not a wilderness dependent activity; they are a terrain dependent activity, however significant climbing areas have been classified as wilderness. Some climbers may seek a wilderness climbing experience, but for the majority the closeness of a climbing route to a parking area may be a more important consideration. Therefore, most rock and ice climbing occurs along the periphery of the unit.

The following table is a summary of climbing opportunities in the SRWA. This information was provided by the Adirondack Climbers Coalition.

Area	# Summer Routes	# Winter Routes	Summer Use	Winter Use
Notch Mountain Slab	15	0	High	None
Sportsman Crag	2	2	Low	Low
Cloudspin Cliff	6	0	Low	None
High Falls Crag	4	10	Low	High
Pitchoff North Face	1	20+	None	High
Swamp Rock	1	1	Low	Low
Barkeater	42	3+	High	Low
Pitchoff Ridge Trail Domes	4	0	Low	None
Grand View Cliff	4	0	Low	None
Pitchoff Chimney Cliff	45	5+	High	High
Pitchoff Quarry	0	10+	None	High
Sisters Wall	0	8+	None	High
Unbalanced Rock	2	0	Low	None
Ice Age Wall	3	1	Low	Low

The use of fixed anchors as a method of protection for rock climbers has become an issue in the Forest Preserve. Fixed anchors have been installed on several climbing routes in the unit. This plan will support the recommendations from the previous UMPs to convene a focus group (including Department and APA staff, members of the climbing community, environmental organizations and other interested parties) to develop a park-wide policy on the management of fixed anchors on Forest Preserve lands.

The placement of fixed anchors which involve drilling or defacement of the rock is a violation of Department regulations (6 NYCRR 190.8(g) -- “No person shall deface, remove, destroy, or otherwise injure in any manner whatsoever any . . . rock, fossil or mineral…”). The APSLMP does not discuss the appropriateness of fixed anchors.

Several of climbing areas in the SRWA are part of unique communities or harbor rare, threatened, and endangered species. One well known example is that peregrine falcons nest along some climbing routes. There have been many years of successful cooperative efforts with the climbing community at protecting these nesting sites. Other species at risk to impacts from climbing are not as noticeable. For example, the New York Natural Heritage Program has identified several plant species, which are listed as New York threatened or endangered, at High Falls Crag. The species that were identified are listed in Appendix C. Cooperation between the Department and the climbing community could help protect these species. In addition to the individual species, an ice cave talus community has been identified in the Wilmington Notch Area. It is not likely that this community would be significantly impacted by climbing use, but this should be monitored.

Desired Conditions for Climbing Monitoring

Climbing offers a slightly different set of variables for desirable conditions. The access routes are like hiking trails in that they will maintain their firm and stable surface for their intended use, and with minimal maintenance. A sustainable trail ensures environmental protection, user safety, function and enjoyment. The top and bottom of climbing routes are often located on steep slopes of various types that can be prone to erosion. Desirable conditions for routes are a firm and stable area to prepare for an ascent, a face that accepts removable anchors, and a top that is either firm and stable or that cannot easily be topped out or access for the use of slings. Somewhat like other facilities, the variables for climbing will include monitoring efforts to collect data on access trails for the presence of eroded areas, the expansion of the tread through vegetation loss, and the occurrence of trash and human waste. Variables to consider for the routes are firm and stable soils at the bottom and top of climbing routes, vegetation loss through both erosion and the use of slings to trees and the occurrence of fixed anchors. Photo points will be a useful tool to help illustrate potential changes over time.

Objective

- Manage rock climbing sites to minimize environmental impacts.

Management Actions

- Monitoring for the desired conditions of climbing routes will help measure and determine impacts to better inform carrying capacity development and long-term planning. Final specifics will be detailed in the guidance for wildlands monitoring but generally:
    - Desired conditions for climbing routes will be ones that have minimal impacts to the top and bottom of cliffs and access routes to popular locations, is free of occurrences of human waste or litter, doesn’t have any expansion of fixed anchors, and provides an enjoyable user experience.

  - Monitoring could include photo point locations; control measuring points for occurrences of trash, fires, human waste, and vegetation loss; and visitor surveys.

- Stabilize soil at the top and base of climbing routes (using native materials) where erosion is identified as a problem.

- Access trails to the Barkeater Cliffs, Notch Mountain, and Pitchoff Chimney Cliff will be formalized and upgraded where necessary.

- Maintain adequate parking for climbers. This may be in official parking areas or at roadside pull-offs.

- Address potential harm that rock climbing could cause to protected species. Potential actions that could be taken could include providing interpretive information or closing problem routes (seasonally or permanently). Any action taken should be done in collaboration with the climbing community.

- The Department will convene a focus group, including Department and Agency staff, members of the climbing community, environmental organizations and other interested parties, to develop a Park-wide policy on the management of fixed anchors on Forest Preserve lands.

3. Access for Persons with Disabilities

Present Conditions

Past management of the SRWA has not focused on provision of access for people with disabilities. Slopes and other terrain constraints make most of the unit difficult to access. Exposed roots, rocks and other natural barriers also limit access. The primitive nature of wilderness coupled with APSLMP guidelines that wilderness be “without significant improvement,” and “generally appears to be affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable” severely limits what forms of interior modification can be undertaken. The APSLMP provides for limited development along the periphery of the unit. These areas remain the most likely candidates for development of accessible facilities.

The Universal Trail Assessment Process (UTAP) is an objective method of measuring such site conditions as average and maximum grade, minimum trail width, cross slope, trail length, and surface type. These variables can then be presented to the user at the trailhead to allow them to make an informed decision on whether they would like to use the facility or not.

Objective

- Increase access opportunities for people with disabilities where such development does not alter the fundamental nature of existing programs, is compliant with Department regulation and policy, and conforming under the guidelines of the APSLMP.

Management Actions

- Inform users of the location and condition of facilities in the unit, focusing on such variables as length of trails, average grade, steepest grade, minimum width, etc., to allow them to make informed decisions regarding whether they choose to use a facility or not.

- Identify potential opportunities for accessible facilities in the unit.

E. Proposed Regulations

Present Conditions

Several of the management proposals outlined in this section require the promulgation of new rules and regulations in accordance with the State Administrative Procedure Act, Department policies and procedures, and the APSLMP. Statutory authority for regulations is found in the ECL §9-0105(3), ECL §9-0105(3) and in of the Adirondack Park Agency Act (Executive Law §§816.1 – 816.3). Existing regulations relating to public use of State lands under the jurisdiction of the Department are found in 6 NYCRR, Part 190. These proposed regulations constitute the minimum level of direct regulation necessary to assure APSLMP compliance and directly influence visitor behavior to protect resources and the experiences of visitors.

Amend 6 NYCRR §190.13 (Wilderness Areas in the Adirondack Park) to apply the following regulations to the SRWA:

- 190.13(c) Group size restrictions: which prohibit day use groups of sixteen or more people, prohibit camping groups of nine or more people, and prohibit larger groups unless separated into smaller groups which do not exceed such limitations and such smaller groups maintain a separation distance from each other of at least one mile at all times
- 190.13(d) Camping restrictions which prohibit tent platforms or camp structures other than tents, tarps, lean-tos, or those composed of snow; prohibit camping above 3,500 feet in elevation.
- 190.13(f) Miscellaneous Restrictions
    - requiring registration at trail registers.

- prohibiting the use of any audio device which is audible outside the immediate area of a campsite.
- prohibiting the use of soap or detergent in any pond, stream or other water body.
- prohibiting the marking of trails with plastic ribbons, paint, blazes or other devices.
- Prohibiting cutting or clearing trails except by written permission of the department.
- prohibiting unattended pets or pets not under the complete control of their owners.

F. Bartlett Primitive Area

Present Conditions

This primitive area is the section of Bartlett Road that bisects the SRWA. The Bartlett Primitive Area covers about 6 acres, is about 35 feet wide, and passes through the SRWA for about 1.4 miles. Bartlett Road is a dirt town road that connects Jay with Keene. One private property parcel, border on three sides by SRWA, is accessed via this road. Along the road there are several vehicle pull-offs which can be used for accessing the SRWA. In addition to the pull-offs there is one snowplow turnaround. Intersecting Bartlett Road are several old, partially grown-in roads. Some of these are now herd paths that go to the East Branch Ausable River.

Objective

- Protect the wilderness character of the SRWA while respecting the motorized use of Bartlett Road.

Proposed Actions

- Monitor the State lands adjacent to Bartlett Road for illegal motor vehicle encroachment. If an encroachment is discovered, respond with appropriate actions to address any unacceptable natural resource impacts and to discourage further encroachments.

- Build two campsites off Bartlett Road. Neither of these campsites will allow vehicle access on to the campsite. One campsite will be near the northern end of the primitive area and the other will be about 0.6 miles south of the first site.

- The existing pull-offs along Bartlett Road may be improved to allow for safer parking.

G. Old Mountain Road

Present Conditions

Old Mountain Road (historically known as Old Military Road, and Northwest Bay Hopkinton Road) is in the towns of Keene and North Elba. This section of road runs between Alstead Hill Road, in Keene, and Mountain Lane, in North Elba. The road originated as a rough track to connect Hopkinton, in Saint Lawrence County, with Westport, on Lake Champlain. The road was improved and became a legal public highway by an act of the State Legislature in 1810. This road provided a vital link to the newly forming communities in the area. In 1858 a road was built along Cascade Lakes, currently the location of State Route 73. Over time the condition of Old Mountain Road has become such that automobiles cannot travel it; however, public use of the road has continued. Starting in 1986 the road has been cleared and maintained as a cross-country ski trail, this is part of the Jackrabbit Ski Trail. Pedestrian use, cross-country ski and hiking, is the predominate mode of travel on the road. It is rare for a motor vehicle to use the section of road in the SRWA.

The status of Old Mountain Road has been the subject of multiple legal proceedings. These proceedings have resulted in the determination that Old Mountain Road remains a town road, that it is a public right-of-way, the land under the road is owned by the State, and this land is part of the Forest Preserve.

Old Mountain Road passes through the SRWA for about three miles. There are points where it is farther than one mile from any other road. Motor vehicle use on this road would have a significant negative impact to the wilderness character of the area, and this would be a major alteration to the current visitor experience. The impacts from motor vehicle use of the road would be far greater than the current impacts caused by the non-motorized uses of the road. The potential for traditional road maintenance to occur along this route would present even greater threats to the wilderness character. Natural features that would be disturbed by road maintenance include beaver ponds, wetlands, and vegetation.

Objectives

- Protect the wilderness character of the SRWA.

Proposed Actions

- Facilitate pedestrian use of Old Mountain Road by allowing trails to be built in the SRWA to bypass blocked portions of the road. These reroutes are detailed in Section IV.C.3.

- Except in the case of an actual and ongoing emergency, Department staff will not use motor vehicles on Old Mountain Road.

- In recognition of the fact that motor vehicle use on Old Mountain Road will have significant negative impacts of the wilderness character of the SRWA, the Department will work with the towns to prohibit motor vehicle use on Old Mountain Road. The Department may take other appropriate actions to protect the wilderness character of the SRWA.

VI. Phases for Implementation

The overall guidance throughout this UMP is based on implementing the prescribed management actions in phases that allows land managers to continuously monitor and evaluate the carrying capacity of the lands affected. The phases are outlined to provide initial access to facilities, which will then be monitored for use and impacts to the environment. Once ground use data is collected through monitoring it will be evaluated to determine if the specific thresholds of each facility have been met in order to activate the following phase of the plan. With this phased approach it is understood that the actions in phase 1 will be constructed, and once the carrying capacity of the area in relation to the phase 1 facilities is evaluated successive phases may be implemented. Successive phases are conditional and will need to be activated in order to be constructed. This process will be repeated for each facility outlined below. Monitoring results will determine if successive phases will be started, if the facility will be maintained at its current level of development, or if we need to step back a phase and re-evaluate our management strategy. Through this process we can methodically develop opportunities, monitor them and make decisions to realize the management goals for the area.

Completing items in the schedule are contingent upon sufficient staffing levels and available funding. Approval for construction of individual projects is also contingent upon the results of monitoring of use levels from prior projects, assessment of impacts, and a consideration of demand. The estimated costs of implementing these projects are based on historical costs incurred by the Department for similar projects. Values for some projects are based on projected costs for service contracting. These cost estimates do not include capital expenditures for items such as equipment, nor do they include the value of program staff salaries.

Phase 1

Annual Maintenance and other Activities	Estimated	
	Person days	**Cost**
Develop wildland monitoring plan, including indicators and standards for natural resource and social conditions. Develop and implement (throughout all phases) action steps that may be triggered by exceedance of standards, as identified through the monitoring process.	30	

Annual Maintenance and other Activities	Estimated	
	Person days	**Cost**
Monitor conditions at new and selected existing facilities throughout the unit. Implement action steps where necessary to protect natural resource integrity and desired social conditions, which may include relocation or closure. Management actions that are dependent or conditional upon one another will be monitored, and if conditions are not optimized, then dependent/conditional facilities may not be constructed.	10	$1,000
Boundary Line Maintenance (About 6 Miles/year @ $500/mile).	10	$500
Conduct routine maintenance of facilities.	15	$3,000
Conduct biological and chemical surveys of selected waters to assess fisheries management needs, and to determine progress towards management objectives.		
Stock fish in unit waters.		
Total Cost - Annual Maintenance and other Activities	**65**	**$4,500**

Year 1	Estimated	
	Person days	**Cost**
Relocate Pitchoff Trailheads and reroute the Pitchoff Mountain Trail.	60	$375,000
Promulgate regulations, as identified in UMP.	20	0
Move the Jackrabbit Trail off of Mountain Lane.	10	10,000
Reroute the Jackrabbit Trail around beaver ponds.	12	8,000
Total Cost - Year 1	**102**	**$393,000**

Year 2	Estimated	
	Person days	**Cost**
Close the current campsites at Copperas Pond and build four new campsites in the unit.	7	6,000
Close the campsite at Holcomb Pond.	1	0
Total Cost - Year 2	**8**	**$6,000**

Year 3	Estimated	
	Person days	**Cost**
Build parking area at Mountain Lane.	8	$15,000
Total Cost - Year 3	**8**	**$15,000**

Year 4	Estimated	
	Person days	**Cost**
Restoration work on the Pitchoff Mountain Trail.	10	$20,000
Reroute Copperas Pond Trail.	10	$40,000
Total Cost - Year 4	**20**	**$60,000**

Year 5	Estimated	
	Person days	**Cost**
Build new Jackrabbit Ski Trail connection near Scotts Cobble.	10	$40,000
Total Cost - Year 5	**10**	**$40,000**

Cost Summary

Total Costs: $514,000

178 person-days

Phase 2

- Expand the Pitchoff Mountain Trailhead to handle 30 vehicles.
- Develop a loop trail on the northeast slope of Pitchoff Mountain.

Bibliography and References

ADIRONDACK PARK AGENCY AND DEPARTMENT OF ENVIRONMENTAL CONSERVATION 1998. *MEMORANDUM OF UNDERSTANDING*. 1985 AND SUBSEQUENT 1995 AND 1998 AMENDMENTS, RAY BROOK, NY.

ADIRONDACK PARK AGENCY. 2001. *ADIRONDACK PARK STATE LAND MASTER PLAN.* ADIRONDACK PARK AGENCY: RAY BROOK, NY. (HTTP://WWW.NORTHNET.ORG/ADIRONDACKPARKAGENCY/APA_PDF/SLMP/SLMPPDF2001.PDF)

ANDRLE, R.F., AND J.R. CARROLL. 1988. *THE ATLAS OF BREEDING BIRDS IN NEW YORK STATE*. CORNELL UNIVERSITY PRESS, ITHACA.

ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD. 1999. *REGULATORY NEGOTIATION COMMITTEE ON ACCESSIBILITY GUIDELINES FOR OUTDOOR DEVELOPED AREAS – FINAL REPORT.* THE ACCESS BOARD : WASHINGTON, DC. (HTTP://WWW.ACCESS-BOARD.GOV/OUTDOOR/OUTDOOR-REC-RPT.HTM)

ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER. 1999. *WILDERNESS PLANNING TRAINING MODULE*, MISSOULA, MT. (HTTP://CARHART.WILDERNESS.NET/MANUAL/AWARE/AWARE.PDF)

ATWOOD, J.L., C.C. RIMMER, K.P. MCFARLAND, S.H. TSAI, AND L.R. NAGY. 1996. *DISTRIBUTION OF BICKNELL'S THRUSH IN NEW ENGLAND AND NEW YORK.* WILSON BULLETIN 108:650-662.

BAILEY, J. 1980. *HISTORY OF THE TOWN OF KEENE, NEW YORK.* KEENE VALLEY LIBRARY ARCHIVES.

BALL, J. 1974. *BIRDS OF NEW YORK STATE.* DOUBLEDAY/NATURAL HISTORY PRESS: GARDEN CITY, NY.

BEEHLER, B. 1978. *BIRD LIFE OF THE ADIRONDACK PARK.* ADIRONDACK MOUNTAIN CLUB: GLENS FALLS, NY.

BEIER, COLIN; ABIGAIL LARKIN. 2014. DEVELOPING AN ADIRONDACK PARK TRAIL REGISTER DATABASE TO SUPPORT RECREATION MANAGEMENT AND COMMUNITY PLANNING. SUNY COLLEGE OF ENVIRONEMNTAL SCIENCE AND FORESTRY. SYRACUSE, NY

BENT, A.C. 1940. *LIFE HISTORIES OF NORTH AMERICAN CUCKOOS, GOATSUCKERS, HUMMINGBIRDS, AND THEIR ALLIES.* DOVER PUBLICATIONS, INC. NEW YORK.

BISHOP, SHERMAN C. 1941. *THE SALAMANDERS OF NEW YORK.* NEW YORK STATE MUSEUM BULLETIN 324:1-365.

Bradbury, A. 1986. Rotenone and trout stocking. Washington Department of Game, Fisheries Management Report 86-2

BROWN, E. 1985. *THE FOREST PRESERVE OF NEW YORK STATE.* ADIRONDACK MOUNTAIN CLUB: GLENS FALLS, NY.

BULL, J. 1974. *BIRDS OF NEW YORK STATE.* COMSTOCK PUBLISHING ASSOCIATES, ITHACA.

BURNS, K. 2005. NYS-DEC FOREST RANGER. PERSONAL INTERVIEW. JAY, NY

BURT, W. AND GROSSENBEIDER R. A FIELD GUIDE TO THE MAMMALS. HOUGHTON MIFFLIN CO.: BOSTON, MA. 1964.

CALVIN. 1903. REPORT TO THE COMMISSIONERS OF FISHERIES, GAME AND FORESTS, 1902-1903 IN: *ANNUAL REPORT OF THE FOREST, FISH AND GAME COMMISSIONERS FOR 1902-1903.* J.B. LYON COMPANY: ALBANY NY. PP 292

CARLETON, G. 1980. *BIRDS OF ESSEX COUNTY, NEW YORK.* HIGH PEAKS AUDUBON SOCIETY: ELIZABETHTOWN, NY.

CASSIRER, E.F. , D.J. FREEDY, AND E.D. ABLES. 1992. *ELK RESPONSES TO DISTURBANCE BY CROSS-COUNTRY SKIERS IN YELLOWSTONE NATIONAL PARK.* WILDLIFE SOCIETY BULLETIN 20:375-381.

COLE, D.N. 1989. *WILDERNESS CAMPSITE MONITORING METHODS: A SOURCE BOOK.* GEN. TECH. REPORT INT-259, USDA FOREST SERVICE, INTERMOUNTAIN RESEARCH STATION: OGDEN, UT. (HTTP://WWW.WILDERNESS.NET/PUBS/179.PDF)

COLE, D.N. 1989. *LOW-IMPACT RECREATIONAL PRACTICES FOR WILDERNESS AND BACKCOUNTRY.* GEN. TECH. REPORT INT-265, USDA FOREST SERVICE, INTERMOUNTAIN RESEARCH STATION: OGDEN, UT. (HTTP://WWW.WILDERNESS.NET/PUBS/183.PDF)

COLE, D.N., PETERSEN, M. AND LUCAS, R. 1987 *MANAGING WILDERNESS RECREATION USE: COMMON PROBLEMS AND POTENTIAL SOLUTIONS.* GEN. TECH. REPORT INT-230, USDA FOREST SERVICE, INTERMOUNTAIN RESEARCH STATION: OGDEN, UT. (HTTP://WWW.WILDERNESS.NET/PUBS/169.PDF)

COLE, D.N. 1994. *THE WILDERNESS THREATS MATRIX, A FRAMEWORK FOR ASSESSING IMPACTS.* RESEARCH PAPER INT-475, USDA FOREST SERVICE, INTERMOUNTAIN RESEARCH STATION: OGDEN, UT. (HTTP://WWW.WILDERNESS.NET/PUBS/247.PDF)

COLVIN, V. 1874. *REPORT ON THE TOPOGRAPHICAL SURVEY OF THE ADIRONDACK WILDERNESS OF NEW YORK FOR THE YEAR 1873.* WEED, PARSONS AND COMPANY: ALBANY, NY.

COLVIN, V. 1880. *SEVENTH ANNUAL REPORT ON THE PROGRESS OF THE TOPOGRAPHICAL SURVEY OF THE ADIRONDACK REGION OF NEW YORK FOR THE YEAR 1873.* WEED, PARSONS AND COMPANY: ALBANY, NY.

CONANT, R. AND J.T. COLLINS. 1998. *A FIELD GUIDE TO REPTILES AND AMPHIBIANS, EASTERN AND CENTRAL NORTH AMERICA.* HOUGHTON MIFFLIN COMPANY, BOSTON.

DAWSON, C.P., PETERS, N., CONNELLY, N.A. AND BROWN, T.L. 2005. *ADIRONDACK VISITOR STUDIES CONDUCTED IN SUPPORT OF NYSDEC UNIT MANAGEMENT PLANNING: BOG RIVER UNIT, MCKENZIE MOUNTAIN WILDERNESS, WEST CANADA LAKE*. HUMAN DIMENSIONS RESEARCH UNIT REPORT HDRU SERIES NO. 05-6, CORNELL UNIVERSITY. ITHACA, NY.

DAWSON, C.P., CONNELLY, N.A. AND BROWN, T.L. 2005. *ADIRONDACK VISITOR STUDIES CONDUCTED IN SUPPORT OF NYSDEC UNIT MANAGEMENT PLANNING: LAKE GEORGE WILD FOREST (NORTH) AND WILLIAM C. WHITNEY WILDERNESS*. HUMAN DIMENSIONS RESEARCH UNIT REPORT HDRU SERIES NO. 05-7, CORNELL UNIVERSITY. ITHACA, NY.

DAWSON, CHAD P. 2011. *NORTHEASTERN ADIRONDACK FOREST PRESERVE VISITOR STUDY*. SUNY COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY. SYRACUSE, NY.

DEGRAAF, R.M. AND D.D. RUDIS. 1983. *AMPHIBIANS AND REPTILES OF NEW ENGLAND.* THE UNIVERSITY OF MASSACHUSETTS PRESS, AMHERST.

DEGRAAF, R.M. AND D.D. RUDIS. 1986. *NEW ENGLAND WILDLIFE: HABITAT, NATURAL HISTORY, AND DISTRIBUTION.* U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE. GENERAL TECHNICAL REPORT NE-108.

Demong, L. 2001. The Use of Rotenone to Restore Brook Trout in the Adirondack Mountains of New York-An Overview in R. L. Cailteux, L. Demong, B. J. Finlayson, W. Horton, W. McClay, R. A. Schnick and C. Thompson, editors. Rotenone in fisheries: are the rewards worth the risks? American Fisheries Society, Trends in Fisheries Science and Management 1, Bethesda, Maryland

DOIG, H.E. 1976. *WILDERNESS AREA MANAGEMENT*. NYS-DEC , DIVISION OF FISH AND WILDLIFE GENERAL POLICY DOCUMENT. ALBANY, NY.

DRISCOLL, C.T. ET.AL. 2001. *ACIDIC DEPOSITION IN THE NORTHEASTERN UNITED STATES: SOURCES AND INPUTS, ECOSYSTEM EFFECTS, AND MANAGEMENT STRATEGIES*. *BIOSCIENCE* 51:3, P. 180-198.

DRISCOLL, C.T., K.M. DRISCOLL, MJ MITCHELL AND DJ RAYNAL. 2002. *EFFECTS OF ACIDIC DEPOSITION ON FOREST AND AQUATIC ECOSYSTEMS IN NEW YORK STATE*. *ENVIRONMENTAL POLLUTION*. (IN PRESS).

Eilers, J.M. 2008. Benthic macroinvertebrates of Diamond Lake, 2007. Report to the Oregon Department of Fish & Wildlife, Roseburg, OR. 18 pp.

EDINGER, G.J., D.J. EVANS, S. GEBAUER, T.G. HOWARD, D.M. HUNT, AND A.M. OLIVERO (EDITORS). 2002. *ECOLOGICAL COMMUNITIES OF NEW YORK STATE*. SECOND EDITION. A REVISED AND EXPANDED EDITION OF CAROL RESCHKE'S ECOLOGICAL COMMUNITIES OF NEW YORK STATE. (DRAFT FOR REVIEW). NEW YORK NATURAL HERITAGE PROGRAM, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, ALBANY, NY.

FREDDY, D.J., W.M. BRONAUGH, AND M.C. FOWLER. 1986. *RESPONSES OF MULE DEER TO DISTURBANCE BY PERSONS AFOOT AND SNOWMOBILES.* WILDLIFE SOCIETY BULLETIN 14:63-68.

GEORGE, C.J. 1980. *THE FISHES OF THE ADIRONDACK PARK.* PUBLICATIONS BULLETIN FW-P171. NYS-DEC: ALBANY, NY.

GIRAUD, W. 2005. NYS-DEC FOREST RANGER. PERSONAL INTERVIEW. ELIZABETHTOWN, NY

GOODWIN, J. 2006. PERSONAL INTERVIEW. KEENE VALLEY, NY.

GOODWIN, T. 1992. *GUIDE TO ADIRONDACK TRAILS: HIGH PEAKS REGION, 12TH. EDITION.* ADIRONDACK MOUNTAIN CLUB: LAKE GEORGE, NY.

GRAEFE, DAVID; CHAD DAWSON; AND LISA GERSTENBERGER. 2010*. ADIRONDACK PARK FOREST PRESERVE ROADSIDE CAMPING STUDY.* SUNY COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY. SYRACUSE, NY.

GREELEY, J.R. AND BISHOP, S.C. 1932 *FISHES OF THE UPPER HUDSON WATERSHED. IN: A BIOLOGICAL SURVEY OF THE UPPER HUDSON WATERSHED.* STATE OF NEW YORK, CONSERVATION DEPARTMENT. J. B. LYON COMPANY: ALBANY, NY.

HAMMITT, W.E. AND COLE, D.N. 1987. *WILDLAND RECREATION: ECOLOGY AND MANAGEMENT*. JOHN WILEY AND SONS: NY, NY.

HARDIN, G. 1968. THE TRAGEDY OF THE COMMONS. *SCIENCE* 162:3859 PP. 1243-1248.

HARDING, J.H. 1997. *AMPHIBIANS AND REPTILES OF THE GREAT LAKES REGION.* THE UNIVERSITY OF MICHIGAN PRESS, ANN ARBOR.

Harig, A.L. and M.B. Bain. 1998. Defining and restoring biological integrity in wilderness lakes. Ecological Applications 8 (1): 71-87.

HEALY, W.R. 1974. *POPULATION CONSEQUENCES OF ALTERNATIVE LIFE HISTORIES IN NOTOPHTHALMUS V. VIRIDESCENS.* COPEIA 1:221-229.

HENDEE, J.C.; STANKEY, G.H. AND LUCAS, R.C. 1990. *WILDERNESS MANAGEMENT.* INTERNATIONAL WILDERNESS LEADERSHIP FOUNDATION: GOLDEN, CO.

HUNTER, M.L., A.J.K. CALHOUN, AND M. MCCOLLOUGH. 1999. *MAINE AMPHIBIANS AND REPTILES.* THE UNIVERSITY OF MAINE PRESS, ORONO.

HURST, J.E. 2004. *AN EVALUATION OF HISTORICAL CHANGE IN WHITE-TAILED DEER WINTER YARDS IN THE ADIRONDACK REGION OF NEW YORK.* M.S. THESIS, STATE UNIVERSITY OF NEW YORK, COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY. SYRACUSE, NY.

HYNES, H.B. 1972. THE ECOLOGY OF RUNNING WATERS. UNIVERSITY OF TORONTO PRESS. TORONTO, ONT, CANADA.

JAFFE, H.W. AND JAFFE, E.B. 1986. *GEOLOGY OF THE ADIRONDACK HIGH PEAKS REGION: A HIKER'S GUIDE*. ADIRONDACK MOUNTAIN CLUB: GLENS FALLS, NY.

JOHNSGARD, P.A. 1990. *HAWKS, EAGLES, AND FALCONS OF NORTH AMERICA, BIOLOGY AND NATURAL HISTORY.* SMITHSONIAN INSTITUTION PRESS, WASHINGTON DC.

JOHNSON, A.K. 2001. *COPING, CROWDING AND SATISFACTION: A STUDY OF ADIRONDACK WILDERNESS HIKERS.* M.S. THESIS. SUNY COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY: SYRACUSE, NY.

KENDALL, D.L. 1987. *GLACIERS AND GRANITE.* DOWN EAST BOOKS: CAMDEN, ME.

KETCHLEDGE, E.H. AND LEONARD, R. 1982. *ADIRONDACK INSIGHTS: SUMMIT STABILITY. ADIRONDAC*. DECEMBER, 1982 ADIRONDACK MOUNTAIN CLUB: GLENS FALLS, NY.

KETCHLEDGE, E.H., ET.AL. 1985. *REHABILITATION OF ALPINE VEGETATION IN THE ADIRONDACK MOUNTAINS OF NEW YORK STATE.* RESEARCH PAPER NE-552. USDA FOREST SERVICE, BROOMALL, PA.

KIRKLAND, G., ET.AL. 1975. *MAMMAL SURVEY OF ESSEX COUNTY, NEW YORK.* SHIPPENBURG STATE COLLEGE, PA.

KRETSER, W., GALLAGHER, J. AND NICOLETTE, J. 1989. *ADIRONDACK LAKES STUDY 1984-1987, AN EVALUATION OF FISH COMMUNITIES AND WATER CHEMISTRY.* ADIRONDACK LAKE SURVEY CORPORATION: RAY BROOK, NY.

KRUMPE, E. E. & G. L. STOKES. 1993. *EVOLUTION OF THE LIMITS OF ACCEPTABLE CHANGE PLANNING PROCESS IN UNITED STATES FOREST SERVICE WILDERNESS MANAGEMENT*. IN PROCEEDINGS, 5TH WORLD WILDERNESS CONGRESS SYMPOSIUM ON INTERNATIONAL WILDERNESS ALLOCATION, MANAGEMENT AND RESEARCH. SEPTEMBER 1993. TROMS, NORWAY. INTERNATIONAL WILDERNESS LEADERSHIP FOUNDATION, FORT COLLINS, COLORADO

LAMBERT JD, SD FACCIO, AND B HANSCOM, 2002. *MOUNTAIN BIRDWATCH: 2001 FINAL REPORT TO THE UNITED STATES FISH AND WILDLIFE SERVICE*. VERMONT INSTITUTE OF

LARSON CL, REED SE, MERENLENDER AM, CROOKS KR (2016) EFFECTS OF RECREATION ON ANIMALS REVEALED AS WIDESPREAD THROUGH A GLOBAL SYSTEMATIC REVIEW. PLOS ONE 11(12): E0167259. HTTPS://DOI.ORG/10.1371/JOURNAL.PONE.0167259

LAWYER, J AND HAAS, J. 2014. ADIRONDACK ROCK: A ROCK CLIMBERS GUIDE, SECOND EDITION. ADIRONDACK ROCK PRESS: POMPEY, NY.NATURAL SCIENCE: WOODSTOCK, VT.LINDSEY, J. 1958. THE FISH CAR – ADIRONDACK – AN ERA PASSES. *THE NEW YORK STATE CONSERVATIONIST.* DECEMBER - JANUARY, 1958-59. VOLUME 13(3):31. NEW YORK STATE CONSERVATION DEPARTMENT: ALBANY, NY.

Ling, N. 2002. Rotenone - a review of its toxicity and use for fisheries management. Science for Conservation 211. 40 p.

MARCHLAND, P.J. 1987. *NORTH WOODS.* APPALACHIAN MOUNTAIN CLUB: BOSTON, MA.

MATHER, F. 1884. *MEMORANDA RELATING TO ADIRONDACK FISHES WITH DESCRIPTIONS OF NEW SPECIES, FROM RESEARCHES MADE IN 1882*. *NEW YORK STATE LAND SURVEY, APPENDIX E*. P. 113- 182.

MAUTZ, W.W. 1978. *SLEDDING ON A BUSHY HILLSIDE: THE FAT CYCLE IN DEER.* WILDLIFE SOCIETY BULLETIN 6:88-90.

MCEWEN, APRIL; CHAD DAWSON; AND LISA GERSTENBERGER. 2011. *ADIRONDACK PARK FOREST PRESERVE CARRYING CAPACITY OF WATER BODIES STUDY: PHASE 1 – SELECTING INDICATORS FOR MONITORING RECREATIONAL IMPACTS*, SUNY COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY. SYRACUSE, NY.

MCMARTIN, B. 1993. *DISCOVER THE NORTHEASTERN ADIRONDACKS*. NORTH COUNTRY PUBLICATIONS: UTICA, NY.

MCMARTIN, B. 1994. *THE GREAT FOREST OF THE ADIRONDACKS*. NORTH COUNTRY PUBLICATIONS: UTICA, NY.

MELLOR, D. 2016. BLUE LINES 2. THE MOUNTAINEER: KEENE VALLEY, NY.MITCHELL, R.S. AND TUCKER, G.C. 1997. *REVISED CHECKLIST OF NEW YORK STATE PLANTS.* NEW YORK STATE MUSEUM: ALBANY, NY.

NATIONAL SCIENCE AND TECHNOLOGY COUNCIL COMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES. 1998. *NATIONAL ACID PRECIPITATION ASSESSMENT PROGRAM BIENNIAL REPORT TO CONGRESS: AN INTEGRATED ASSESSMENT.* U.S. NATIONAL ACID PRECIPITATION ASSESSMENT PROGRAM, SILVER SPRING, MD. (HTTP://WWW.NNIC.NOAA.GOV/CENR/NAPAP/NAPAP_96.HTM)

NYS-DEC. 1980. *PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT ON FISH SPECIES MANAGEMENT ACTIVITIES OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION DIVISION OF FISH AND WILDLIFE*. ALBANY, NY.

NYS-DEC. 1981. *PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT ON UNDESIREABLE FISH REMOVAL BY THE USE OF PESTICIDES UNDER PERMIT ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION DIVISION OF LANDS AND FORESTS BUREAU OF PESTICIDES MANAGEMENT.* ALBANY, NY.

NYS-DEC. 1999. *HIGH PEAKS WILDERNESS COMPLEX UNIT MANAGEMENT PLAN.* NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION: ALBANY, NY.

NEW YORK STATE FOREST COMMISSION, 1884. *MAP OF THE ADIRONDACK PLATEAU SHOWING POSITION AND CONDITION OF EXISTING FORESTS*. NEW YORK STATE FOREST COMMISSION: ALBANY, NY.

O'NEIL, W. 1990. AIR RESOURCES IN THE ADIRONDACK PARK. *THE ADIRONDACK PARK IN THE TWENTY-FIRST CENTURY, TECHNICAL REPORTS, VOLUME ONE.* COMMISSION ON THE ADIRONDACKS IN THE TWENTY-FIRST CENTURY: ALBANY, NY

PEEK, J.M. 1997. *HABITAT RELATIONSHIPS. PAGES 351-376 IN FRANZMANN, A.W. AND C.C. SCHWARTZ (EDS.) ECOLOGY AND MANAGEMENT OF THE NORTH AMERICAN MOOSE.* SMITHSONIAN INSTITUTION PRESS, WASHINGTON, D.C.

PFEIFFER, M. 1979. *A COMPREHENSIVE PLAN FOR FISH RESOURCE MANAGEMENT WITHIN THE ADIRONDACK ZONE*. NYSDEC: RAY BROOK, NY.

PFINGSTON, R.A. AND F.L. DOWNS. 1989. *SALAMANDERS OF OHIO.* COLLEGE OF BIOLOGICAL SCIENCES, THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO.

PLATT C. 2005. NYS-DEC FOREST RANGER. PERSONAL INTERVIEW. KEENE, NY.

PLUNZ, R., ED. 1999. *TWO ADIRONDACK HAMLETS IN HISTORY: KEENE AND KEENE VALLEY*. PURPLE MOUNTAIN PRESS: FLEICHMANNS, NY.

RESCHKE, C. 1990. *ECOLOGICAL COMMUNITIES OF NEW YORK STATE.* NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK NATURAL HERITAGE PROGRAM. LATHAM, NY.

REED SE, MERENLENDER AM. 2008. QUIET, NONCONSUMPTIVE RECREATION REDUCES PROTECTED AREA EFFECTIVENESS. CONSERVATION LETTERS. 1: 146–154

SAUNDERS, D.A. 1988. *ADIRONDACK MAMMALS.* ADIRONDACK WILDLIFE PROGRAM, STATE UNIVERSITY OF NEW YORK COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY, SYRACUSE, NY.

SCHMITT, K. 1916. *FIRE PROTECTION MAP OF THE ADIRONDACK FOREST*. NEW YORK CONSERVATION COMMISSION IN ALBANY, NY.

SCOTT, W.B., AND CROSSMAN, E.J. 1973. *FRESHWATER FISHES OF CANADA*. FISHERIES RESEARCH BOARD OF CANADA: OTTAWA, ONT, CANADA.

SEVERINGHAUS, C.W. 1953. *SPRINGTIME IN NEW YORK - ANOTHER ANGLE: WHAT GOES ON IN OUR ADIRONDACK DEERYARDS.* NEW YORK STATE CONSERVATIONIST 7:2-4.

SMITH, H.P. 1885. *HISTORY OF ESSEX COUNTY.* D. MASON AND CO. SYRACUSE, NY.

TRAPP, S., GROSS M. AND ZIMMERMAN, R. 1994. *SIGNS, TRAILS AND WAYSIDE EXHIBITS.* UNIV. OF WISCONSIN: STEVENS POINT, WI.

TUTTLE, S.E. AND D.M. CARROLL. 1997. *ECOLOGY AND NATURAL HISTORY OF THE WOOD TURTLE (CLEMMYS INSCULPTA) IN SOUTHERN NEW HAMPSHIRE.* CHELONIAN CONSERVATION AND BIOLOGY 2:447-449.

United States Environmental Protection Agency. 2007. Reregistration Eligibility Decision (RED) for rotenone. 44 p.

U.S. FOREST SERVICE. 1994. *LEAVE NO TRACE: A PROGRAM TO TEACH SKILLS FOR PROTECTING THE WILDERNESS ENVIRONMENT.* WASHINGTON, D.C.

U.S. GENERAL ACCOUNTING OFFICE. 1989. *WILDERNESS PRESERVATION: PROBLEMS IN SOME NATIONAL FORESTS SHOULD BE ADDRESSED.* GAO/RCED-89-202. WASHINGTON, D.C. (HTTP://ARCHIVE.GAO.GOV/D26T7/139617.PDF)

VAN VALKENBURG, N.J. 1987. *UNIT PLANNING FOR WILDERNESS MANAGEMENT.* THE ASSOCIATION FOR THE PROTECTION OF THE ADIRONDACKS: SCHENECTADY, NY.

VERME, L.J. 1965. SWAMP CONIFER DEERYARDS IN NORTHERN MICHIGAN. JOURNAL OF FORESTRY 523-529.

WALLACE, E.F. 1875. *DESCRIPTIVE GUIDE TO THE ADIRONDACKS.* WATSON GILL CO.: SYRACUSE, NY.

WATERMAN, G. AND WATERMAN, L. 1993. *WILDERNESS ETHICS*. COUNTRYMAN PRESS: WOODSTOCK, VT.

Appendices

Appendix A - Acronyms

Appendix B - Facilities

Appendix C - Rare Communities and Species

Appendix D - Birds

Appendix E - Adirondack Sub-alpine Fir Forest Bird Conservation Area

Appendix F - Individual Pond Descriptions

Appendix G - Ponded Water Survey Data

Appendix H - Classification of Common Adirondack Upland Fish Fauna

Appendix I - State Environmental Quality Review Act Requirements (SEQRA)

Appendix J - Public Comment

Appendix K - Unit Maps

This page left intentionally blank

Appendix A - Acronyms

ADA	American with Disabilities Act
ADAAG	American with Disabilities Act Accessibility Guidelines
ADK	Adirondack Mountain Club
ALSC	Adirondack Lakes Survey Corporation
ANC	Acid neutralizing capacity
APA	Adirondack Park Agency
APLUDP	Adirondack Park Land Use Development Plan
APIPP	Adirondack Park Invasive Plant Program
APSLMP	Adirondack Park State Land Master Plan
ATV	All-Terrain Vehicle
BP	Years Before Present
BMP	Best Management Practices
DAM	New York State Department of Agriculture and Markets
DEC	New York State Department of Environmental Conservation
DMU	Deer Management Unit
DOT	New York State Department of Transportation
ECL	Environmental Conservation Law
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EQBA	Environmental Quality Bond Act
HPWA	High Peaks Wilderness Area
LAC	Limits of Acceptable Change
NBWI	Native-But-Widely-Introduced
NHPC	Natural Heritage Plant Community

NPS	National Park Service
NYCRR	New York Code of Rules and Regulations
NYS	New York State
OSP	Open Space Plan
SEQRA	State Environmental Quality Review Act
SRWA	Sentinel Range Wilderness Area
SUNY-ESF	State University of New York, College of Environmental Science and Forestry
TNC	The Nature Conservancy
UFAS	Uniform Accessibility Standards
USGS	United States Geologic Survey
UMP	Unit Management Plan
USDA	United States Department of Agriculture
USFS	United States Forest Service
UTAP	Universal Trail Assessment Process
WMU	Wildlife Management Unit

Appendix B – Facilities

Primitive tent sites:	**(total 5)**	**QUANTITY**
Copperas Pond		2
Owen Pond		1
Vicinity of Jackrabbit Trail (Keene)		1
Holcomb Pond		1

Lean-to (total 1)

Copperas Pond	1

Picnic Area:	**(total 1)**	**QUANTITY**
River Road		1

Parking areas **(total 4)**

Name	**Location**	**Capacity**
East Branch	Bartlett Road	3
Holcomb Pond	River Road	2
Owen Pond	Route 86	7
Stage Coach Rock (Pitchoff Mountain)	NY Route 73	12

Trails - listed by class

Location/name	Length (miles)	Notes
Class II- Path	**6.4 total**	
East Branch Trail	1.9	Trail to East Branch Of Ausable River From Bartlett Road in Jay
Holcomb Pond	0.6	Follows the old North Notch Ski Trail for part of the way.
Monument Trail	3.9	Remnants of old road, to base of Kilburn Slide
Class III- Primitive Trails	**0.7 Total**	
Barkeater Cliffs Trail	0.4	Access to climbing area
Notch Mountain Trail	0.2	Access trail to Notch Mtn. Slabs from Copperas Pond Trail
Pitchoff Chimney Cliff	0.1	Access to climbing area
Class IV- Secondary Trails	**3.6 Total**	
Pitchoff Trail	2.9	From Pitchoff East Trailhead to Balanced Rocks Overlook intersection
Winch Pond Trail (northern)	0.4	From Copperas Pond Trail
Winch Pond Trail (southern)	0.3	From Copperas Pond Trail
Class V- Primary Trails	**6.3 Total**	
Copperas Pond Trail	1.8	From Copperas Pond Trailhead to Owen Pond Trailhead
Jackrabbit Ski Trail	3.2	From end of Mountain Lane to Alstead Hill Road
Pitchoff Trail	1.3	From Pitchoff West Trailhead to Balanced Rocks Overlook
Class VIII- Ski Trails	**0.5 Total**	
Jackrabbit Trail (proposed extension)	0.5	Proposed section to bypass plowed portion of Mountain Lane

Summary, miles in each class

Class II	Class III	Class IV	Class V	Class VIII	Total
6.4	0.7	3.6	6.3	0.5	17.5

TITLE	EXAMPLE	MARKING	TREAD	BARRIERS	USE LEVEL	ACCEPTABLE MAINTENANCE
I Unmarked Route		None	Intermittently apparent, relatively undisturbed organic soil horizon	Natural obstructions present, Logs and water courses	Occasional	None
II Path		Intermittent	Intermittently apparent, compaction of duff, mineral soils occasionally exposed	Same as unmarked route	Low, varies by location	Intermittent marking with consideration given to appropriate layout based on drainage, occasional barrier removal only to define appropriate route.
III Primitive	Barkeater Cliffs Trail	Trail markers, sign at junction with secondary or other upper level trail	Apparent, soil compaction evident	Limited natural obstructions (logs and river fords)	Low	Drainage (native materials) where necessary to minimize erosion, blowdown removed 2-3 years, brushing as necessary to define trail (every 5-10 years). Bridges only to protect resource (max - 2 log width). Ladders only to protect exceptionally steep sections, Tread 14"-18", clear: 3' wide, 3' high.
IV Secondary	Winch Pond Trail	Markers, signs with basic information	Likely worn and possibly quite eroded. Rocks exposed, little or no duff remaining	Up to one years accumulated blowdown, Small streams.	Moderate	Drainage where needed to halt erosion and limit potential erosion (using native materials), tread hardening with native materials where drainage proves to be insufficient to control erosion. Remove blowdown annually. Brush to maintain trail corridor. Higher use may warrant greater use of bridges (2-3 logs wide) for resource protection. Ladders on exceptionally steep rock faces. Tread 18"-24". Clear 4' wide, 3' High.
V Trunk or Primary Trail	Copperas Pond Trail	Markers, signed with more information and warnings.	Wider tread, worn and very evident. Rock exposed, possibly very eroded.	Obstructions only rarely, Small streams	High	Same as above; Plus: regular blowdown removal on designated ski trails, non-native materials as last resort, Extensive tread hardening when needed, bridge streams (2-4 logs wide) difficult to cross during high water, priority given to stream crossings below concentrations of designated camping. Tread 18"-26", clear 6' wide, 8' high, actual turnpiking limited to 2% of trail length.
VI Front Country		Heavily marked, detailed interpretive signing	Groomed	None	Very High	Extensive grooming, some paving, bark chips, handicapped accessible. This is to be implemented within 500' of wilderness boundary.
VIII Ski Trail	Jackrabbit Trail	Marked High. Special markers, sign at all junctions with hiking trails.	Duff remains. Discourage summer use	Practically none due to hazards.	High	Focus on removal of obstructions, maintenance should be low profile, tread determined by clearing 6' (Should be slightly wider at turns and steep sections. Provide drainage using native materials to protect resource.

This page intentionally left blank

Appendix C – Rare Communities and Species

New York Natural Heritage Program Database documentation of rare communities and species.

Element group	Common name	Scientific name	Global rank	State Rank
Community	Ice cave talus community		G3	S1S2
	Spruce-fir rocky summit		G4	S3
Vascular plant	Canadian single-spike sedge	Care scirpoidea ssp. Scirpoidea	G5T5	S1
	Rhodora	Rhododendron canadense	G5	S2
	Rock-cress	Draba arabisans	G4	S2
	Smooth cliff brake	Pellaea glabella ssp. Glabella	G5T5	S2
	Smooth cliff fern	Woodsia glabella	G5	S1
Vertebrate animal	Bicknell's thrush	Catharus bicknelli	G4	S2S3
	Peregrine falcon	Falco peregrinus	G4	S3

NY NATURAL HERITAGE GLOBAL AND STATE RANKS:

Each element has a global and state rank as determined by the NY Natural Heritage Program. These ranks carry no legal weight. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Infraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world**.**

GLOBAL RANK:

G3 = Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5= Demonstrably secure globally, though it may be quite rare.

STATE RANK:

S1= Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2= Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.

S3= Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.

TAXON (T) RANK:

The T-ranks (T1 - T5) are defined the same way the Global ranks (G1 - G5) are, but the T-rank only refers to the rarity of the subspecific taxon.

Double Ranks (i.e. S1s2):

The first rank indicates rarity based upon current documentation. The second rank indicates the probable rarity after all historical records and likely habitat have been checked.

Appendix D – Birds

Table D1. Bird species documented in atlas blocks within, or partially within, SRWA during the New York State Breeding Bird Atlas 2000 Project, 2000-2005.

Common name	*Scientific name*	NY legal status
Alder flycatcher	*Empidonax alnorum*	Protected
American bittern	*Botaurus lentiginosus*	Protected-Special Concern
American crow	*Corvus brachyrhynchos*	Game Species
American goldfinch	*Spinus tristis*	Protected
American redstart	*Setophaga ruticilla*	Protected
American Robin	*Turdus migratorius*	Protected
American woodcock	*Scolopax minor*	Game Species
Baltimore oriole	*Icterus galbula*	Protected
Bank swallow	*Riparia riparia*	Protected
Barred owl	*Strix varia*	Protected
Belted kingfisher	*Megaceryle alcyon*	Protected
Bicknell's thrush	*Catharus bicknelli*	Protected-Special Concern
Black-and-white warbler	*Mniotilta varia*	Protected
Black-backed woodpecker	*Picoides arcticus*	Protected
Blackburnian warbler	*Dendroica fusca*	Protected
Black-capped chickadee	*Poecile atricapillus*	Protected
Blackpoll warbler	*Dendroica striata*	Protected

Black-throated blue warbler	*Dendroica caerulescens*	Protected
Black-throated green warbler	*Dendroica virens*	Protected
Blue jay	*Cyanocitta cristata*	Protected
Blue-headed vireo	*Vireo solitarius*	Protected
Boreal chickadee	*Poecile hudsonicus*	Protected
Broad-winged hawk	*Buteo platypterus*	Protected
Brown creeper	*Certhia americana*	Protected
Brown-headed cowbird	*Molothrus ater*	Protected
Canada goose	*Branta canadensis*	Game Species
Canada warbler	*Wilsonia canadensis*	Protected
Cedar waxwing	*Bombycilla cedrorum*	Protected
Chestnut-sided warbler	*Dendroica pensylvanica*	Protected
Chimney swift	*Chaetura pelagica*	Protected
Chipping sparrow	*Spizella passerina*	Protected
Cliff swallow	*Petrochelidon pyrrhonota*	Protected
Common grackle	*Quiscalus quiscula*	Protected
Common loon	*Gavia immer*	Protected-Special Concern
Common merganser	*Mergus merganser*	Game Species
Common raven	*Corvus corax*	Protected
Common yellowthroat	*Geothlypis trichas*	Protected
Dark-eyed junco	*Junco hyemalis*	Protected

Downy woodpecker	*Picoides pubescens*	Protected
Eastern bluebird	*Sialia sialis*	Protected
Eastern kingbird	*Tyrannus tyrannus*	Protected
Eastern phoebe	*Sayornis phoebe*	Protected
Eastern wood-pewee	*Contopus virens*	Protected
European starling	*Sturnus vulgaris*	Unprotected
Evening grosbeak	*Coccothraustes vespertinus*	Protected
Field sparrow	*Spizella pusilla*	Protected
Golden-crowned kinglet	*Regulus satrapa*	Protected
Gray catbird	*Dumetella carolinensis*	Protected
Gray jay	*Perisoreus canadensis*	Protected
Great blue heron	*Ardea herodias*	Protected
Great crested flycatcher	*Myiarchus crinitus*	Protected
Hairy woodpecker	*Picoides villosus*	Protected
Hermit thrush	*Catharus guttatus*	Protected
House wren	*Troglodytes aedon*	Protected
Indigo bunting	*Passerina cyanea*	Protected
Least flycatcher	*Empidonax minimus*	Protected
Magnolia warbler	*Dendroica magnolia*	Protected
Mallard	*Anas platyrhynchos*	Game Species
Merlin	*Falco columbarius*	Protected
Mourning dove	*Zenaida macroura*	Protected
Mourning warbler	*Oporornis philadelphia*	Protected

Nashville warbler	*Vermivora ruficapilla*	Protected
Northern cardinal	*Cardinalis cardinalis*	Protected
Northern flicker	*Colaptes auratus*	Protected
Northern parula	*Parula americana*	Protected
Northern saw-whet owl	*Aegolius acadicus*	Protected
Northern waterthrush	*Seiurus noveboracensis*	Protected
Olive-sided flycatcher	*Contopus cooperi*	Protected
Osprey	*Pandion haliaetus*	Protected-Special Concern
Ovenbird	*Seiurus aurocapilla*	Protected
Peregrine falcon	*Falco peregrinus*	Endangered
Pileated woodpecker	*Dryocopus pileatus*	Protected
Pine siskin	*Spinus pinus*	Protected
Pine warbler	*Dendroica pinus*	Protected
Purple finch	*Carpodacus purpureus*	Protected
Red crossbill	*Loxia curvirostra*	Protected
Red-breasted Nuthatch	*Sitta canadensis*	Protected
Red-eyed vireo	*Vireo olivaceus*	Protected
Red-shouldered hawk	*Buteo lineatus*	Protected-Special Concern
Red-tailed hawk	*Buteo jamaicensis*	Protected
Red-winged blackbird	*Agelaius phoeniceus*	Protected
Rock pigeon	*Columba livia*	Unprotected
Rose-breasted grosbeak	*Pheucticus ludovicianus*	Protected

Ruby-crowned kinglet	*Regulus calendula*	Protected
Ruby-throated hummingbird	*Archilochus colubris*	Protected
Ruffed grouse	*Bonasa umbellus*	Game Species
Savannah sparrow	*Passerculus sandwichensis*	Protected
Scarlet tanager	*Piranga olivacea*	Protected
Sharp-shinned hawk	*Accipiter striatus*	Protected-Special Concern
Song sparrow	*Melospiza melodia*	Protected
Spotted sandpiper	*Actitis macularius*	Protected
Swainson's thrush	*Catharus ustulatus*	Protected
Swamp sparrow	*Melospiza georgiana*	Protected
Tree swallow	*Tachycineta bicolor*	Protected
Turkey vulture	*Cathartes aura*	Protected
Veery	*Catharus fuscescens*	Protected
White-breasted nuthatch	*Sitta carolinensis*	Protected
White-throated sparrow	*Zonotrichia albicollis*	Protected
White-winged crossbill	*Loxia leucoptera*	Protected
Wild turkey	*Meleagris gallopavo*	Game Species
Winter wren	*Troglodytes troglodytes*	Protected
Wood thrush	*Hylocichla mustelina*	Protected
Yellow warbler	*Dendroica petechia*	Protected
Yellow-bellied flycatcher	*Empidonax flaviventris*	Protected

Yellow-bellied sapsucker	*Sphyrapicus varius*	Protected
Yellow-rumped warbler	*Dendroica coronata*	Protected

Appendix E – Adirondack Sub-Alpine Fir Forest Bird Conservation Area

Management Guidance Summary

Site Name: Adirondack Sub-alpine Forest Bird Conservation Area

State Ownership and Managing Agency: Department of Environmental Conservation

Location: Adirondack Mountain summits above 2,800 feet in Clinton, Essex, Franklin, Hamilton and Warren counties. Surveyed and confirmed nesting locations for Bicknell's Thrush (Atwood and Rimmer, et al. 1996) include: Mount Marcy, Algonquin Peak, Blue Mountain, Cascade Mountain, Giant Mountain, Kilburn Mountain, Hurricane Mountain, Lower Wolfjaw Mountain, Lyon Mountain, Mount Haystack, Phelps Mountain, Porter Mountain, Rocky Ridge Peak, Santanoni Peak, Snowy Mountain, Vanderwhacker Mountain, Wakely Mountain, Whiteface Mountain, Wright Peak.

Size of Area: About 69,000 acres

DEC Region: 5

General Site Information: Adirondack Mountain summits over 2,800 feet in elevation, more specifically, those with dense subalpine coniferous forests favored by Bicknell's Thrush. Bicknell's Thrush prefer dense thickets of stunted or young growth of balsam fir and red spruce. Found less frequently in other young or stunted conifers, and heavy second growth of fir, cherry, birch.

Vision Statement: Continue to maintain the wilderness quality of the area, while facilitating recreational opportunities in a manner consistent with conservation of the unique bird species present.

Key BCA Criteria: Diverse species concentration site; individual species concentration site; species at risk site (ECL 11-2001, 3.f, g, and h). Peaks over 2,800 feet with dense subalpine thickets provide habitat for a distinctive bird community, which includes Bicknell's Thrush (special concern), Blackpoll Warbler, Swainson's Thrush.

Critical Habitat Types: Dense subalpine coniferous thickets. To a lesser degree, young or stunted and heavy second growth of cherry or birch.

Operation and Management Considerations: *Identify habitat management activities needed to maintain site as a BCA*.

None identified for certain, although human access and acid rain could be impacting.

Identify seasonal sensitivities; adjust routine operations accordingly.

The BCA is comprised of lands that are within the Adirondack High Peaks Wilderness Area, and other lands within the broader Adirondack Forest Preserve. The Adirondack High Peaks Wilderness Area portion is subject to relatively stringent regulations and use limitations. Portions of the BCA that are not within the High Peaks Wilderness Area may have less stringent use limitations. Access to wilderness areas is completely limited to foot trails and non-motorized access, including horse trails. Access in wild forest and intensive use areas may include motorized forms of access. Examples include a road up Blue Mountain to transmitters, and a road up Whiteface. The road up Blue Mountain is used largely for administrative access to the transmitter towers. Whenever possible, routine maintenance on these towers or the access road should be scheduled outside the nesting season for Bicknell's Thrush (May through July). The road up Whiteface sees considerable use by the public. Trail and road maintenance activities have the potential to disturb nesting activities of high altitude birds (in particular, Bicknell's Thrush). Whenever possible, routine maintenance should be planned so that it can be completed outside of the normal nesting season. Should maintenance be needed during the nesting season, the use of non-motorized equipment would help to minimize the impacts.

Identify state activities or operations which may pose a threat to the critical habitat types identified above; recommend alternatives to existing and future operations which may pose threats to those habitats.

Ensure that bird conservation concerns are addressed in the Adirondack Park State Land Master Plan, individual unit management plans, and other planning efforts. For those areas where plans have already been completed, incorporate concerns for subalpine bird communities at the earliest opportunity. On May 18, 2000, emergency regulations were adopted for the High Peaks Wilderness Area, which comprises part of the BCA. These regulations prohibit camping above 4,000 feet; limit camping between 3,500 and 4,000 feet to designated areas; prohibit campfires above 4,000 feet, and require the leashing of pets above 4,000 feet.

Identify any existing or potential use impacts; recommend new management strategies to address those impacts.

There has been little research on what effect normal use of hiking trails has on nesting birds. Recreational use in some areas of the BCA is relatively high. More research is needed on whether there is a significant impact to bird populations from the current level of human visitation. The Adirondack High Peaks Wilderness portions of the BCA are remote locations and access is largely limited to foot trails. Motorized vehicles are not normally allowed. Those areas of the BCA outside of the High Peaks Wilderness Area allow the use of motorized vehicles and have fewer restrictions on other uses. The Unit Management Planning process for these areas should assess the effects of current levels of recreational use, and the need for new trails (including placement, timing, and construction method) on subalpine bird species (in particular, Bicknell's Thrush).

Consideration should be given to prohibiting motorized vehicle access to subalpine forests above 2,800 feet.

Education, Outreach, and Research Considerations: *Assess current access; recommend enhanced access, if feasible.*

Recreational use in some areas of the BCA is relatively high. Further study or research would help to assess impacts of recreational activities on nesting high altitude species. The need for protective measures will be discussed and incorporated as part of the planning process for the Adirondack Forest Preserve and Wilderness Areas that form the BCA, or at the earliest opportunity.

Determine education and outreach needs; recommend strategies and materials.

There is a need to identify to the public the distinctive bird community present in subalpine forests over 2,800 feet. The potential impacts of human intrusion need to be portrayed to the public, and a "please stay on the trails" approach may be beneficial. Continue partnerships with the National Audubon Society, High Peaks Audubon Society, Adirondack Mountain Club and other groups involved in education and conservation of birds of the Adirondack High Peaks.

Identify research needs; prioritize and recommend specific projects or studies.

Acid rain deposition may be having an impact on nesting success of songbirds at high elevations by causing die-offs of high altitude conifer forests, and killing snails and other sources of calcium needed for egg production. More research is needed on this. The curtailment of sulphur dioxide emissions and the reduction of acid rain is currently a significant New York State initiative. A detailed inventory and standardized monitoring of special concern species is needed for the area. In particular, all peaks above 2,800 feet should be surveyed for Bicknell's Thrush. The impact of the current levels of human use on nesting success needs to be assessed.

Contacts: DEC Region 5 Wildlife Manager, 518-897-1291

DEC Region 5 Regional Forester, 518-897-1276

Sources: Atwood, J. L., C. C. Rimmer, K. P. McFarland, S. H. Tsai, and L. R. Nagy. 1996. Distribution of Bicknell's thrush in New England and New York. Wilson Bulletin 108(4):650-661.

Bull, John L. 1998. Bull's Birds of New York State. Comstock Publishing Associates, Ithaca, NY.

NYSDEC Division of Lands and Forests. 1999. High Peaks Wilderness Complex Unit Management Plan. NYSDEC, Albany, NY.

Rimmer, C. C., Atwood, J., and L. R. Nagy. 1993. Bicknell's Thrush - a Northeastern Songbird in Trouble? Vermont Institute of Natural Science, Woodstock, VT.

State of New York Endangered Species Working Group. 1996. Species Dossier for Bicknell's Thrush. New York State Department of Environmental Conservation.

Wells, J. V. 1998. Important Bird Areas in New York State. National Audubon Society, Albany, NY.

Date BCA Designated: 11/16/01

Date MGS Prepared: 12/6/0

Appendix F – Individual Pond Descriptions

Pond Management Classifications

Adirondack Brook Trout Ponds - Adirondack Zone ponds which support and are managed for populations of brook trout, sometimes in company with other salmonid fish species. These waters generally lack warmwater fishes but frequently support bullheads. Management may include stocking.

Coldwater Ponds and Lakes - Lakes and ponds which support and are managed for populations of several salmonids. These waters generally lack warmwater fishes but frequently support bullheads. Management may include stocking.

Other Ponds and Lakes - Fishless waters and waters containing fish communities consisting of native and nonnative fishes which will be managed for their intrinsic ecological value.

Two-Story Ponds and Lakes - Waters which simultaneously support and are managed for populations of coldwater and warmwater game fishes. The vast majority of the lake trout and rainbow trout resource fall within this class of waters. Management may include stocking.

Unknown Ponds and Lakes - Waters which could not be assigned to the subprogram categories specifically addressed in this document due to a lack of or paucity of survey information.

Warmwater Ponds and Lakes - Waters which support and are managed for populations of warmwater game fishes and lack significant populations of salmonid fishes. Management may include stocking.

This list of ponded waters in the Sentinel Range Wilderness was obtained from the NYS Biological Survey.

1. **Copperas Pond** (CH-P234)

Copperas Pond has a surface area of 21 acres and a maximum depth of 78 feet. Copperas has a self-sustaining population of lake trout, which is unusual for such a small pond. Brook trout are also sustained by natural reproduction, but at an apparently very low abundance. An inspection in 2002 concluded that there is not a barrier on the outlet downstream to where it meets the outlet of Winch Pond. A 2017 netting confirmed

that the lake trout population continues to do well with a similar catch rate and slightly larger fish compared to the previous survey conducted in 1984. Other fish species captured were northern redbelly dace, bluntnose minnow, white sucker and pumpkinseed.

Copperas Pond will continue to be managed as a coldwater pond to preserve its native fishes in the presence of nonnative species.

Management Class: Coldwater

2. **Holcomb Pond** (CH-P247)

Holcomb Pond is about 23 acres in size and has a maximum depth of 2 feet. The 1984 ALSC survey collected brook trout (sustained by natural reproduction), northern redbelly dace, creek chubs (native but widely introduced), white suckers, and pearl dace (non-native). The species and numbers of fish collected is surprising given the very shallow depth of Holcomb Pond. Winter kill for all fishes, and summer heat stress for brook trout, are likely to affect this pond's fish community in certain years. Following such events, fish would readily be able to re-colonize Holcomb Pond. The pond is closely connected to the West Branch Ausable River by a moderately sized stream, with relatively little gradient between the pond and the river.

Holcomb Pond will be managed as an Adirondack brook trout pond to preserve its native fishes in the presence of nonnative species.

Management class: Adirondack Brook Trout

3. **Marsh Pond** (CH-P5189)

Marsh Pond is a 9 acre pond with a maximum depth of 5 feet. Brook trout, blacknose dace, creek chubs and white suckers were collected in the 1984 ALSC survey. Brook trout, apparently sustained by natural reproduction, were very low in abundance (only one was collected), while white suckers were very abundant. Geological Survey maps show more than 1.0 miles of perennial stream tributary to Marsh Pond.

Marsh Pond will be managed as an Adirondack brook trout pond

Management Class: Adirondack Brook Trout

4. **Owen Pond** (CH-P233)

Owen Pond has a surface area of 21 acres and a maximum depth of 31 feet. The most recent fishery survey (1984) collected brook trout, brown trout, pumpkinseed, creek

chubs (native but widely introduced), pearl dace (non-native), and white suckers. Brook trout were stocked annually prior to the 1984 survey, and the brown trout may have immigrated from the West Branch Ausable River via the Owen Pond outlet. A relatively large tributary system, which includes Copperas Pond, Winch Pond, Marsh Pond and unnamed pond (P-5189), flows into Owen Pond.

Owen Pond will be managed as a coldwater pond.

Management Class: Coldwater

5. **Unnamed pond** (CH-P235)

Unnamed pond (CH-P235) has a surface area of about 0.5 acres and a maximum depth of 6 feet. The 1986 ALSC survey collected brook trout, the non-native golden shiner, creek chub (native-but-widely introduced), blacknose dace, northern redbelly dace, pearl dace (non-native), fathead minnows (non-native), and white suckers. The brook trout collected in 1986 were apparently sustained by natural reproduction, but their abundance was very low. This pond is located between two other ponds discussed in this UMP: Winch Pond is upstream and Owen Pond is downstream.

Unnamed pond will be managed as an Adirondack brook trout pond to preserve its native fishes in the presence of nonnative species.

Management Class: Adirondack Brook Trout

6. **Unnamed pond** (CH-P259)

Unnamed pond (Ch-P259) is small, 0.7 acres, with a maximum depth of 6 feet. A 1986 survey collected only brook trout, which are apparently sustained by natural reproduction.

Unnamed pond will be managed as an Adirondack brook trout pond

Management class: Adirondack Brook Trout

7. **Unnamed pond**(CH-P269)

Unnamed pond (CH-P269) has a surface area of 2 acres and a maximum depth of 4 feet. A 1984 fisheries survey collected no fish.

Unnamed pond will be managed to preserve its aquatic habitat. It will not be stocked as per Wilderness fish management guidelines.

Management Class: Other

8. **Winch Pond** (CH-P236)

Winch Pond has a surface area of about 5 acres and a maximum depth of 16 feet. A 1984 fisheries survey collected brook trout sustained by stocking, white suckers, and the non-natives, golden shiner and fathead minnow. A 2009 Department biological survey conducted to look at the fish community of Winch Pond revealed that brook trout seem to be struggling in this pond due to competition from undesirable species. Four new species were found, that were not in the ALSC survey; creek chub, pearl dace, northern redbelly dace and eastern blacknose dace. The golden shiners were very numerous compared to the 1984 ALSC survey. To mitigate these competitive pressures, the stocking policy was amended in 2010 to include brown trout. It was hoped that the addition of the piscivorous brown trout would suppress the minnow species to a level that would benefit the brook trout. The strategy appears to be working based on the most recent survey completed in 2017. Brook trout were larger and more numerous relative to 2009.

Winch Pond will be managed as an Adirondack brook trout pond to preserve its native fishes in the presence of nonnative species.

Management Class: Adirondack Brook Trout

Appendix G – Ponded Water Survey Data

Table G.1 - Ponded Water Inventory Data for Sentinel Range Wilderness

Total Ponded Water Area = 82.2 Acres

Name	Pond #	Wshed	File #	County	Management Class	Area (acres)	Max Depth (feet)	Mean Depth (feet)
Copperas	P234	CH	273	Essex	Coldwater	21	78	32.5
Holcomb	P247	CH	284	Essex	Adirondack Brook	22.7	2	2
Marsh Pond	P5189	CH	273A	Essex	Adirondack Brook	9.4	5	3
Owen Pond	P233	CH	272	Essex	Coldwater	21	31	12.1
Unnamed	P235	CH	274A	Essex	Adirondack Brook	0.5	6	3
Unnamed	P259	CH	292	Essex	Adirondack Brook	0.7	6	2.6
Unnamed	P269	CH		Essex	Other	2	4	1.3
Winch Pond	P236	CH	274	Essex	Adirondack Brook	4.9	20	4.9

Table G.2: Sentinel Range Wilderness - Ponded Water Survey Data

Name	Pond #	Wshed[1]	Most Recent Chemical Survey					Most Recent Biological Survey		
			Date	Source	ANC (ueq/l)	pH	Conductivity	Year	Source	Fish Species[2] and Number Caught
Copperas Pond	P234	CH	05/30/17	DEC	154	7.45	25.4	2017	DEC	LT(17), NRD(4),
Holcomb Pond	P247	CH	07/23/84	ALSC	216.5	7.49	41.6	1984	ALSC	ST(13), NRD(3), CC(3), WS(59), PD(109)
Marsh Pond	P5189	CH	07/23/84	ALSC	74.4	6.84	20.7	1984	ALSC	ST(1), BND(5), CC(3), WS(29)
Owen Pond	P233	CH	07/24/84	ALSC	108.5	6.96	35.1	1984	ALSC	BT(5), ST(3), CC(31), WS(16), PKS(2), PD(2)
Unnamed Water	P235	CH	07/17/86	ALSC	147.1	7.13	38.6	1986	ALSC	ST(3), GS(27), NRD(168), FAT(27), BND(1), CC(12), WS(28), PD(8)
Unnamed Water	P259	CH	07/18/86	ALSC	85.6	6.93	28.4	1986	ALSC	ST(7)
Unnamed Water	P269	CH	07/18/84	ALSC	158.8	6.89	34.1	1984	ALSC	No fish caught.
Winch Pond	P236	CH	05/30/17	DEC	121	7.24	24.8	2017	DEC	ST(13), GS(8),

1 CH = Champlain Watershed

2 Species Codes:

BND = Blacknose dace FAT = Fathead minnow PD = Pearl dace

BNM = Bluntnose minnow
GS = Golden shiner
PKS = Pumpkinseed
BT = Brown trout
LT = Lake trout
ST = Brook trout
CC = Creek chub
NRD = Northern redbelly dace
WS = White sucker

This page intentionally left blank

Appendix H – Classification of Common Adirondack Upland Fish Fauna

Table H.1. Classification of Common Adirondack Upland Fish Fauna into Native, Nonnative, and Native but Widely Introduced Adapted from George, 1980

Native To Adirondack Upland

blacknose dace
white sucker
longnose sucker
northern redbelly dace
redbreast sunfish
finescale dace
creek chubsucker
longnose dace
slimy sculpin
lake chub
common shiner
round whitefish

Native Species Widely Introduced within the Adirondack Upland [1]

brook trout
brown bullhead
pumpkinseed
cisco
lake trout
creek chub

Nonnative to Adirondack Upland

golden shiner
smallmouth bass
chain pickerel
yellow perch
largemouth bass
fathead minnow [2]
brown trout
rainbow trout
splake
Atlantic salmon
lake whitefish
walleye
rainbow smelt
central mudminnow
bluegill
redhorse suckers (spp.)
northern pike
black crappie
rock bass
fallfish [4]
bluntnose minnow [5]
banded killifish[3]
pearl dace

[1] These native fishes are known to have been widely distributed throughout Adirondack uplands by DEC, bait bucket introduction, and unauthorized stocking. This means that their presence does not necessarily indicate endemicity. Other species listed above as native have been moved from water to water in the Adirondack Upland, but the historical record is less distinct.

[2] Not mentioned by Mather (1884) from Adirondack collections, minor element southern Adirondack Uplands (Greeley 1930-1935).

[3] Early collections strongly suggest dispersal as a bait form.

[4] Adventive through stocking.

[5] Not mentioned by Mather (1884) from Adirondack collections, widely used as bait.

Appendix I – State Environmental Quality Review (SEQR)

The State Environmental Quality Review Act (SEQRA) requires the consideration of environmental factors early in the planning stages of any proposed action(s) that are undertaken, funded or approved by a local, regional or state agency. A Long Environmental Assessment Form (LEAF) is used to identify and analyze relevant areas of environmental concern based upon the management actions in the draft unit management plan. For this plan, SEQRA review has been conducted with the preparation of the LEAF. Review of the information contained in the LEAF has determined that there will not be a significant adverse impact on the environment and a negative declaration has been issued.

This page intentionally left blank

Appendix J – Public Comment

The following is a summary of public comment received during the initial development of the UMP. These were gathered at public open house held on September 9, 2002.

- Against/concerned with motor vehicle use on Jackrabbit Trail.
- Need for signage ("no motor vehicles") on Old Mountain Road/Jackrabbit Trail.
- Allow fixed climbing anchors for safety.
- Desire for snowmobile connection from Lake Placid to Wilmington.
- Interested in re-opening South Notch Trail.
- Interested in trail connecting North & South Notch Trail.
- Concerned that a leash law will be implemented in SRWA.
- Concerned with increased traffic on Shackett Road *(now known as Alstead Hill Lane)* if a new trail is developed.
- Opposed to any new facilities/improvement.
- Need to coordinate parking at Pitchoff Mt. with Cascade parking.
- For keeping/improving Copperas Pond lean-to, replacing other lean-to on Copperas Pond.
- Trail improvements/hardening needed on trail into Copperas.
- Supports Jackrabbit Trail. Need for trail re-route at North Elba side of Old Mountain Road due to plowing.
- Original Wilmington Notch Road (a.k.a. Ore Haul Road) could/should be reopened for hiking and skiing.
- Interest in reopening 1932 Olympic Ski Trail (North & South Notch Trail).
- For use of Mountain Road and other old roads by motor vehicles for hunting access and other recreational purposes.

This page intentionally left blank

Appendix K – Response to Public Comment

The following section contains responses to public comments received on the Draft SRWA UMP. The public comments came from 18 emails or letters, and the 8 people who gave verbal comments at a public meeting, held in December, 2017. Comments are organized by general topic.

Rock and Ice Climbing

1. Parking on Mountain Lane should be plowed and maintained for ice climbers.
    - Response: Efforts will be made to develop partnerships for plowing of parking areas.
2. Climbers do not need designated trails; however, herd paths have developed at several locations where erosion control is needed.
    - Response: The designation of trails allows for greater maintenance actions than would be allowed on a non-designated trail.
3. Supports the designation of trails to Barkeater's Cliff and Notch Mountain. Designate and maintain the trail to Pitchoff Chimney Cliff.
    - Response: The trail to Pitchoff Chimney Cliff has been added to the list of trails that will be designated as official trails.
4. Either do not mark climber trails or use a different marker from hiker trails, this would eliminate confusion. This is being developed for the Dix and Giant areas.
    - Response: It is likely that the Department will follow this suggestion.
5. Main concern is that access for rock and ice climbing is provided.
    - Response: Access for climbers will be considered as the proposals are implemented.
6. Concern that if Pitchoff Trail is rerouted then parking may spill over into the parking areas used by rock and ice climbers.
    - Response: Access for climbers will be considered as the proposals are implemented.
7. Access for climbers is important. This includes parking, access trails, and the routes on the cliffs.
    - Response: Access for climbers will be considered as the proposals are implemented.

8. Equal consideration should be given to rock climbers as any other user group. Recognize it as a legitimate recreational activity equal to hiking. Concessions in wilderness guidelines have been made to accommodate hiking community. Ladders and hitch-ups have been bolted into rock, trees cut to make trails, and sign posts and markers installed.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
9. Develop objectives for the management of rock climbing that are sensible, realistic, and time sensitive.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
10. Climbing use has increased in recent years. Need to address erosion on approach trails, cliff bases, and cliff tops.
    - Response: Addressing impacts from recreational use will be a priority for the Department.
11. Fixed anchors should be allowed in wilderness, but rock climbing routes should be viewed holistically. Experts should make these decisions just like trails are decided.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment, and the Department will fully look into the issues of rock climbing with the input from a focus group.
12. Use the climbing community as a resource throughout the process.
    - Response: The authors of the SRWA UMP acknowledge the importance of working with user groups to develop effective solutions.
13. On the question of whether fixed anchors are appropriate in wilderness areas. In practical effect, a climbing route is essentially a trail, used by humans for recreational access along an established, linear route. Whereas a foot trail is horizontal and marked by discs, a climbing route is vertical and often marked by fixed anchors. Therefore, we see no reason why a vertical trail network should be regarded any differently than a traditional hiking trail network. In places where climbing is appropriate and sustainable, routes marked by fixed anchors may be as acceptable as a foot trail delineated by colored plastic markers. But at remote locations, it may be more desirable to keep certain cliffs free of such route markers, much like the trailless zone proposed in this UMP; this would allow experienced climbers the freedom to pioneer their own personal routes up the rock face. And because there are flora and fauna that may thrive on rock faces precisely because of their inaccessibility to terrestrial animals and humans, seasonal or permanent closures of certain areas should always be considered. DEC and its predecessors, the Conservation Commission and the Conservation Department, have now been maintaining a marked trail network throughout the Adirondacks for hiking, paddling, skiing, horseback riding, snowmobiling, and other pursuits for a century. In the early

days new trails were created based on perceived need, but since 1972 a greater level of planning has been involved in trail management. However, the park's extensive network of climbing routes is entirely user-created, with no planning and little oversight involved in its development. Routes have "spontaneously" appeared at rock walls in all corners of the Adirondacks, often accessed by well-manicured footpaths that did not exist previously. While we are not opposed to the expansion of climbing routes in the Forest Preserve, we do point out that no other user group would be allowed to modify state lands to such an extent for its own benefit. As in the current UMP, climbing routes are not inventoried as "facilities" by DEC, and therefore their true extent and impact cannot be known. In our view, the UMPs often treat rock climbing as a tangential use of state land, vaguely documented and poorly understood. We offer no opinion on whether rock climbing routes and fixed anchors conform to the SLMP or other state land use regulations and policies. We do, however, recognize rock climbing as an established and widespread recreational use that seems in keeping with the wild and rugged nature of the Forest Preserve. Therefore, we urge DEC and APA to regard the status of climbing "trails" and assert its management authority over them, since this is a topic of park-wide importance. Perhaps the first step toward this goal is to provide an inventory in the current UMP of all the rock climbing routes in the SRW and identify their location on a map of the unit's facilities.

- Response: The authors of the SRWA UMP acknowledge and appreciate this comment, and the Department will fully look into the issues of rock climbing with the input from a focus group.

14. Regarding climbing anchors - these are not in any way a problem for anyone at Pitchoff (except for some anchors that are old and may need to be replaced). No hikers or tourists can see any of the existing anchors, or would see any new anchors, from any hiking trail or from the road. And the anchors exist to provide safe travel for a legitimate wilderness use, and to protect vegetation at the top of the cliff. Further perspective is that the proposed hiking trail alternatives would involve the cutting of hundreds of trees and the installation of many signs and markers, which would represent a far greater visual impact, and a far greater "permanent installation in the wilderness" than any of the tiny, essentially invisible climbing anchors. So the discussion of climbing anchors in the draft is misguided. Safe replacement of any anchors that the climbing users, in their expertise, deem to need replacement should be encouraged in the plan, to continue to provide safe recreation for these legitimate users. Further, the climbing community should be celebrated for being able to pursue its chosen recreation with very little visual impact, as opposed to the cutting of hundreds of trees and the installation of many very visible signs and markers as is proposed for the hiking trails in the draft.

    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment, and the Department will fully look into the issues of rock climbing with the input from a focus group.

15. The high-use areas for summer are Pitchoff Chimney Cliff, Barkeater, and Notch Mountain Slab, and for winter are Pitchoff Left/Right, Pitchoff North, and High Falls Crag. I see that the UMP is proposing to adopt the climber paths to two high-traffic areas: Barkeater and Notch Mountain. I don't understand why this is necessary, as climbers don't really have a problem accessing these cliffs, but if state wishes to improve these heavy-use herd paths, I suggest you also consider adopting the short trail to Pitchoff Chimney Cliff, as it is one of the highest traffic cliffs in the park.
    - Response: The Pitchoff Chimney Cliff access trail has been added to the UMP as a trail that will be designated.
16. In regards to the climbing areas in the Sentinel Range, the plan identifies several, but I want to provide a more complete inventory of climbing areas.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment; this information has been added to the UMP.
17. Access Fund does not support the current Department regulation regarding bolts/fixed anchors: 'The placement of bolts, or other fixed anchors which involve drilling or defacement of the rock is a violation of Department regulations (6 NYCRR 190.8(g) -- "No person shall deface, remove, destroy, or otherwise injure in any manner whatsoever any . . . rock, fossil or mineral…"). The APSLMP does not discuss the appropriateness of fixed anchors. However, Access Fund supports the Plan's objective to, 'Manage rock climbing sites to minimize environmental impacts. Often the use of fixed anchors minimizes environmental impacts by protecting cliff top ecology. It is clear that climbing is considered an appropriate use within the Adirondack Park. Due to the need for climbers to descend and occasionally place fixed protection on sections of cliff faces that will not accept any other form of gear, fixed anchors are an important piece of the overall climbing system that rock and ice climbers use while recreating. Rock climbing and the use of judiciously placed fixed anchors are in line with maintaining the unit's wilderness character; climbing provides opportunities for solitude and a primitive and unconfined form of recreation. Fixed anchors, defined by the Access Fund and other national organizations and agencies as climbing equipment (e.g. bolts, pitons or slings) left in place to facilitate ascent or descent of technical terrain, are a critical component of a climber's safety system. Fixed anchors are typically placed by the first ascensionist on technical ascents where removable anchor placements are not possible or for descents (rappels) that would be otherwise impossible without a fixed anchor. The vast majority of climbers have never placed a fixed anchor, opting instead to climb established climbing routes thereby avoiding the burden of the careful deliberation and labor associated with placing a fixed anchor in wilderness. The Access Fund does not support a temporary moratorium on the replacement and maintenance of existing fixed hardware. Access Fund supports a process through which fixed anchors are considered and managed on a site specific basis. Fixed anchors, specifically bolts, necessitate long-term maintenance. Current findings indicate that most modern, stainless steel bolts need to be replaced after approximately 50 years, but that antiquated bolts are untrustworthy and need replacement much more

frequently. It is essential that climbers be permitted to replace and maintain existing bolts in Adirondack Park through this planning process. Longstanding and developed climbing resources (such as many of the climbing areas that are located in the Sentinel Range Wilderness Unit) depend on long-term stewardship in order to maintain the established climbing routes and descents. Access Fund recommends the Department's current regulation regarding fixed anchors be amended to allow for managed placement and use of fixed hardware where appropriate. The judicious placement of fixed hardware is essential part of the overall climbing system that rock and ice climbers use while recreating. Rock climbing and the use of fixed anchors are in line with maintaining the unit's wilderness character; climbing provides opportunities for solitude and a primitive and unconfined form of recreation. Access Fund requests the ongoing maintenance and repair of existing fixed hardware be permitted throughout this planning process and temporary moratorium on new fixed anchors. Access Fund encourages the DEC to partner with the climbing community to inventory existing fixed hardware and develop a collaborative fixed hardware management plan.

- Response: The authors of the SRWA UMP acknowledge and appreciate this comment, and the Department will fully look into the issues of rock climbing with the input from a focus group.

18. Mountaineering and technical climbing have a long tradition in the Adirondacks dating back to 1850. Some of the first roped climbing in the U.S. (with running belays) was in the Adirondack Park in the 1920s. These pursuits have always used fixed anchors—pitons, slings around trees, and since the early 1970s, bolts. Much like climbing is inseparable from the Adirondacks, fixed anchors are inseparable from climbing. Fixed anchors have almost no visual impact, make climbing safe, make it possible to descend, and protect sensitive cliff-tops from erosion. You may be interested to learn that it has been many years since a new climbing anchor was placed in the Sentinel Range, so the urgency of this issue as stated in the UMP seems out of touch. While I support the theory laid out in the UMPs (temporary moratorium, inventory, focus group, and policy development), this hasn't happened. And while new anchors have not been placed in many years, there is a pressing need to replace existing anchors, as they are showing wear and present a safety issue. I would like to see the DEC expedite a replacement policy, one involving the local climbing coalition, where permits can be issued to replace specific aging hardware. Much like a trail crew replaces water bars, a climbing crew would replace anchors using safe, modern, high-quality, long-life, low-visibility materials.

    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment, and the Department will fully look into the issues of rock climbing with the input from a focus group.

19. Strongly opposed to a moratorium on new fixed anchors/replacing old fixed anchors. I imagine these comments would be better served at the focus group, but I will state them anyways. I realize hardware falls into a legal grey area, if the DEC wanted to interpret forever wild to allow fixed hardware I would imagine they could get a lawyer

to back that interpretation up. Is the no fixed hardware solely from a legal standpoint? Are there other reasons? Have the writers of this UMP been to the top of Owls Head? Or Barkeater? When there are no fixed anchors climbers use trees and the impact of this practice on the top of cliffs is apparent, the two aforementioned areas are examples of this. I imagine there would be a few more pine trees on the top of Owls head if there were fixed anchors, just like the trees are slowly disappearing at the top of Barkeater, albeit at a slower rate. Isn't preventing soil erosion part of this UMP?

- Response: The authors of the SRWA UMP acknowledge and appreciate this comment, and the Department will fully look into the issues of rock climbing with the input from a focus group.

20. Rock climbing is listed, but not ice climbing. Ice climbing, while under the umbrella of "technical climbing", occurs in the winter and often uses different cliffs, parking, and approaches. Hence, it should be specifically mentioned and addressed in the UMP.
    - Response: References to ice climbing have been added to the UMP.
21. There is an outdated, out-of-print, 22-year-old reference listed, when newer references are available which are more relevant. The DEC now references these sources for peregrine closures. These sources are also up-to-date with respect to cliff descriptions and rock/ice climbing routes at the various locations in the Sentinel region.
    - Response: The references have been updated.
22. Climbers definitely use non-standard access points, and it should be noted.
    - Response: Access for climbers will be considered as the proposals are implemented.
23. Fixed piton use has all but disappeared in the Adirondacks, and those that are placed (for mostly winter use) are generally removed by the climbing party. We don't see a need to even mention fixed pitons. In climbing usage terms, we disagree that these are "low to moderate" usage. Four of the areas should be considered high usage: Pitchoff Chimney Cliff, Pitchoff Left/Right, Barkeater, and Pitchoff North. The language specifically mentions rock climbers, but ice climbers are equally affected and should be included. Rock and ice climbing have been a legitimate recreational uses on Adirondack park lands since the 1930s, and are recognized in the APSLMP as such under the definition of "Mountaineering". Fixed anchors are an inseparable part of that experience. While we support the temporary moratorium on new fixed anchors, be aware that there has been no new fixed hardware added to the cliffs in the Sentinel region for many years now. The historic hardware that does exist, however, is heavily used and in dire need of replacement for safety. For this reason, we recommend that the DEC work rapidly with local climbers coalition to establish a permitting process for replacing aging, dangerous fixed anchors.

- Response: The use of the term “piton” has been removed from the UMP. The characterization of climbing use as “low to moderate” has been removed. Ice climbing has been added to the discussion in the UMP.

24. We would like clarification on what is meant by “protected species”. We are fully aware—and cooperate fully—with the state’s efforts to protect peregrine falcons. We are unaware of other protected species.
    - Response: Additional information has been added about unique communities that are located adjacent to some rock climbing areas. Also added has been information about some of the unique species that these areas may harbor.
25. The issue of fixed anchors is a complex one. Support for the temporary moratorium until a working group can be convened.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment, and the Department will fully look into the issues of rock climbing with the input from a focus group.
26. The DEC should consider ways to educate climbers about snowshoeing etiquette while using popular cross-country ski trails.
    - Response: The authors of the SRWA UMP acknowledge and appreciate the importance of this issue. The UMP will address this issue. The use of signage will be the preferred method. If that does not resolve the problem other actions may be taken. Including the development of regulations.

Trailheads

1. Parking along NY Route 73 is a big concern, glad that it will be included into any planning.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
2. Need to consider a relocation of the parking on Alstead Hill Road. There are safety concerns with emergency vehicle access and a concern for the private land owner.
    - Response: A new trail proposal has been added to the UMP to address these concerns.
3. Complexity of the transportation and parking should be made taking the entire situation into account, not piecemeal. It would be a mistake to decouple the eastern Pitchoff Trailhead from the Route 73 process.
    - Response: Additional discussion about the parking along State Route 73 has been added to the UMP.
4. Generally, we are pleased with the array of options presented for reconfiguring the trail network on Pitchoff Mountain, with the goals of reducing erosion and improving public safety on NY 73. The options seem to be reasonable and viable courses of

action, and not a series of undesirable alternatives intended to force a preferred result. Based on information provided at the recent public hearing, however, it is our understanding that Alternative 3 has since been determined to be unfeasible. Given the need to relocate certain trail sections, provide safe parking at the trailheads, and avoid user conflicts, we suggest that relocating the trails to the north side of the mountain might also be worth investigating. With a trailhead established at Alstead Hill Road, hikers could make a loop over the mountain that also includes a portion of Old Mountain Road and its scenic valley. This would require two new trails from Old Mountain Road to the summit of Pitchoff, but it would alleviate the congestion concerns on NY 73, and not require hikers and climbers to share a confined parking area near the Cascade Lakes. This would be far preferable to Alternative 4, in which much of the scenic ridgeline traverse is abandoned.

- Response: Further field work has resulted in the determination that Alternative 3 is feasible, and this is now the preferred option. This proposal is to build a parking area in the SRWA off State Route 73 and to reroute the Pitchoff Mountain Trail to form a loop trail starting at this parking area. Relocating the trailhead for Pitchoff Mountain to the Alstead Hill Road or Mountain Lane area would present significant challenges. This would also impact residents who live along these roads.

5. The most popular hiking destination on Pitchoff is the Balanced Rocks, as the plan points out. The ONLY material problem with the Balanced Rocks resource is the lack of adequate parking at the west trailhead. The other problems with erosion and minor trail route changes can be simply addressed with adequate trail maintenance (which has been absent for decades, and is overdue). Given that the parking is the ONLY real issue, I am at a loss to understand the proposed alternatives. Alternatives 1, 2 and 4 fail to address the parking issue at the west trailhead. Why even propose these alternatives? They do nothing to address the only real problem. Alternative 3 does eliminate the parking at the west trailhead, but it does so by destroying access to the Balanced Rocks for families and children (who are much of the user population) by greatly lengthening the trail. So all these alternatives will basically do nothing to fix the only real problem; or they will destroy access for the users. What needs be done, and is notably absent from the alternatives, is to build a decent sized parking lot (perhaps for 30-50 cars) on the Pitchoff side of the road, near where the west trailhead is located today. Equip the trailhead with properly designed bathroom facilities, and staff it with a full time NYS paid trailhead steward. That's the alternative I would support. I don't see it in the draft plan.

   - Response: Further field work has resulted in the determination that Alternative 3 is feasible, and this is now the preferred option. This proposal is to build a parking area in the SRWA off State Route 73 and to reroute the Pitchoff Mountain Trail to form a loop trail starting at this parking area. The new route to Balanced Rocks will be longer than the current trail, but this is not expected to be a significant inconvenience for hikers. The current trail to Balanced Rocks is significantly eroded.

6. Alternatives 1-5 show closing the east Pitchoff Mountain parking and relocating the parking and trailhead nearer to the lakes, to an existing lot. Climbers use this lot to access climbing on the north side of the road (in the Sentinel Wilderness region), and the south side of the road (not in the Sentinel Wilderness region). We are concerned that, in summer, the lot will fill to capacity and force overflow into the pullouts along the lake, which are now used by climbers for access to Pitchoff Chimney Cliff, a high-use climbing destination. Alternative 3 and 5 close the west trail to Balanced Rock. This is a climbing destination, and closing this access makes this cliff very difficult to access
    - Response: Access for climbers will be considered as the proposals are implemented.
7. Add a discussion of management actions conducted during the fall of 2017 which temporarily relocated the trailhead/trail for Cascade and Pitchoff.
    - Response: A description of actions taken in 2017 and 2018 to address the parking at the Cascade and Pitchoff trailheads has been added to the UMP.
8. The Pitchoff Mountain trailhead alternatives for the west parking are insufficient. The actions are dependent on the reroute of the Cascade Mountain trail.
    - Response: Further field work has resulted in the determination that Alternative 3 is feasible, and this is now the preferred option. This proposal is to build a parking area in the SRWA off State Route 73 and to reroute the Pitchoff Mountain Trail to form a loop trail starting at this parking area.
9. West Pitchoff Trailhead- this series of pullouts is used by climbers lightly in the summer and heavily in the winter for access to the Cascade Waterfall and the Top of the Lake Gullies. Both summer and winter hiking use is very heavy, with hikers. The ACC strongly opposes options that remove this parking area since that would cut off climbing access. The ACC understands that there are limited resources to work within this area as far as expanding parking. One possibility is for winter maintenance to be performed on the day use picnic area between Upper and Lower Cascade Lakes for winter climber access.
    - Response: Access for climbers will be considered as the proposals are implemented.
10. The proposed Pitchoff East Trailhead proposed relocated trailhead's parking is heavily used by ice climbers in the winter for access to the Pitchoff Quarry cliff and overflow parking for Pitchoff Right cliff. During the summer months this parking area is not used by climbers. If the proposed parking area becomes full from hikers, the next closest parking area are heavily used in the summer and winter by climbers. We would like to avoid the overflow hiker parking taking over climbing parking. There is room at the proposed relocated trailhead to expand parking.

- Response: The UMP has been revised to state that a new parking area for the Pitchoff Mountain Trail will be built off of State Route 73, in the SRWA. Access for climbers will be considered as the proposals are implemented.

11. My first concern is parking. While the UMP presents several options and doesn't commit to any parking plan at this time, I have concerns about these parking areas: The end of Mountain Lane: there is very limited parking here, and it is used by ice climbers to access the north side of Pitchoff. While ice climbers can park further out by Route 73, like in the old days, this was very inconvenient. Cascade Trailhead: this parking area is used by ice climbers to access the popular Cascade Falls, and rock climbers to access Balanced Rock. It fills up, especially in the winter where there is limited overflow. East end of Cascade Lakes: this parking is used to access cliffs in the Cascade Range. If the trail for Pitchoff is rerouted here (as detailed in some alternatives), I worry that we won't be able to park here in the summer. Further, if the lot fills up, overflow will spill into the pullouts along the lake, taking up the limited parking available to climbers at Pitchoff Chimney Cliff. This cliff is arguably one of the most popular in the park.
    - Response: The UMP has been revised to state that a new parking area for the Pitchoff Mountain Trail will be built off of State Route 73, in the SRWA. Access for climbers will be considered as the proposals are implemented.
12. Be aware that the parking at the end of Mountain Lane is very important to ice climbers, as it provides parking and access the north side of Pitchoff, one of the most popular ice climbing venues in the park. A parking area for the jackrabbit trail is proposed near the intersection of Mountain Lane and Route 73. We support the maintenance of the existing parking area (at the end of Mountain Lane), as this would help climbers and not affect skiers.
    - Response: The authors of the SRWA UMP acknowledge the importance of this location; however, the parking area at the east end of Mountain Lane is not on State land, so it is outside the scope of this UMP.
13. There are pull-offs that could be used as the trailhead parking on either end of the former Ore Haul Road. There is a parking area at Monument Falls at the southern terminus. Perhaps DOT could install a crosswalk with flashing caution lights to make it safer to cross the State highway. There is parking near the Wilmington Notch Campground at the northern terminus.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
14. Parking at Alstead Hill Road is sometimes a problem for the business, especially on popular weekends. This issue wasn't addressed at all in the UMP, as the lot is private and access to this very popular trail should not be at the whim of a landholder...I'm hoping a solution can be figured out and now is the time obviously. Perhaps the state can purchase an easement for parking and then build a bridge across Nichols Brook, build a short section of trail on state land, and another bridge

back to the ski trail. Last year the town graciously plowed a field for the skiers for President's Weekend.

- Response: A new trail proposal has been added to the UMP in order to address these concerns.

Trails

1. The proposals for Scotts Cobble should be clearer, need to mark on the maps.
    - Response: Additional information has been added about the proposed trails for the Scotts Cobble area.
2. The proposals for reroutes of the Jack Rabbit Trail should be clearer, need more specific information.
    - Response: A better description of these reroutes have been added to the UMP.
3. Supports the trailless area.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
4. We are happy that DEC is proposing to designate a significant portion of the wilderness interior as a trailless area, a feature that has been included in several other UMPs. The proposals to reroute eroded trail segments, close degraded campsites, and relocate the lean-to at Copperas Pond all seem to be reasonable measures that conform to established policies.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
5. We question the need for a series of looping ski trails near Scotts Cobble. This particular proposal is not well developed in the UMP, and no justification is provided. As it appears on the Proposed Facilities map, the new trail would provide access to no features unique to the SRW, and would therefore provide a generic experience that does not require a wilderness setting. Furthermore, such a ski trail system would be redundant in a neighborhood that already includes developed facilities at Mount Van Hoevenberg and the privately owned Cascade Cross-Country Ski Center. It would also create another trailhead parking area along a state highway that is already overloaded with recreational options. For all of these reasons, we suggest these proposed ski trails should be reconsidered.
    - Response: More information has been added about the proposed trails for the Scotts Cobble area. In addition, a new trail proposal has been added for this are that would connect with the Jack Rabbit Trail.
6. The trail that follows the former Ore Haul Road from Monument Falls to the Wilmington State Campground should be re-established. This trail essentially

parallels NY 86 through the Wilmington Notch and provides access to Kilburn Slide. The trail section from Monument Falls to Kilburn Slide is used by hikers, skiers, and sportsmen. It has received some sporadic maintenance by users, but should be marked and maintained by DEC. There are some areas of poor drainage that would benefit from rerouting the trail to a more sustainable location and some brook crossings where a bridge would be appropriate. The section from the Slide to the Campground is not maintained, but would be popular with hikers, cross-country skiers, hunters and trappers if the blowdown and encroaching vegetation was cleared. It is a scenic area and would be outside the designated trailless area. As stated on page 88, "Where practical new trails, reroutes, and trail structures will be designed and constructed to accommodate and enhance ski use". This trail is an opportunity to enhance the user experience and would be appropriate for skiing since the grades are gentle to moderate.

- Response: This suggestion will not be included in this UMP, but the suggestion will be retained for future consideration.

7. The UMP proposes a trail to be constructed on the East side of the Bartlett Road along an old road that provides access to the East Branch of the Ausable River (page 87). It is shown on the map of proposed facilities, but there is no mention of such a trail in the 5-year schedule for implementation. This is likely an oversight that should be corrected to reflect the new trail construction.
    - Response: The proposed trail from Bartlett Road to the East Branch Ausable river has been removed from the UMP.
8. Directly across from the Wilmington Notch State Campground is a cliff, it gets a bit of rock climbing attention. The ridge across from the entrance is a nice route to the top of the cliffs and I think it would make a nice destination for those staying at the campground without the need to drive someplace. Route 86 to the top of the cliffs is roughly 0.5-miles. The top of the cliffs is quite flat so it can be approached without any problem and a safe destination. The top of what is being referred to as Stewart Cobble is a rock knob with OK views, but the cliff view is quite impressive. Parking could be available at Whiteface Ski Center for alternate trail spur.
    - Response: This suggestion will not be included in this UMP, but the suggestion will be retained for future consideration.
9. Hiccock Mountain is also an amazing destination peak, just food for thought on that one.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
10. Old road/trail across from Monument Falls access the slide on Kilburn is still in decent condition and fairly heavily used. Not sure this would be a trail destination but food for thought as well.

- Response: This suggestion will not be included in this UMP, but the suggestion will be retained for future consideration.

11. The old 1932 Olympic ski trail through North and South Notches would be cool to see again.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
12. At Scott Cobble, there is an old trail off Route 73 that is faint but there, it accesses the base of the mountain, not sure the final destination, looks to follow State Property Line.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
13. The Cobble Mountain east of Sentinel Mountain is a stellar little peak. It has a very noticeable herd path to the summit in the vicinity of Liscomb Brook.
    - Response: This suggestion will not be included in this UMP, but the suggestion will be retained for future consideration.
14. Strongly support creating a trail so that skiers don't have to walk down mountain road.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
15. On North Notch and South Notch "Another consideration is that these trails would in many ways be duplicative of what the Jackrabbit Trail currently provides." Any opportunities to duplicate the experience of the Jackrabbit Trail should be considered.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
16. Supports the Department's goal of managing a significant portion of the SRWA as an area without trails or other facilities. Such areas provide opportunities for truly remote wilderness experiences and solitude. In general, backcountry skiers are strong supporters of Wilderness. Most backcountry skiers treat Wilderness areas and their fragile forest and alpine environments with respect and great admiration. For many a Adirondack skier, the wilderness lands of the High Peaks region are a sanctuary. We obviously love trails and the many benefits they provide, but we also appreciate the intrinsic value of Wilderness areas - "wilderness for wilderness's sake" - and believe certain areas of Adirondack Wilderness units should be forever kept free of man-made facilities.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
17. Supports the proposal to build about 1 mile of new ski trail to reroute the Jackrabbit Trail off of Mountain Lane. A reroute of the trail away from the road as proposed in

the UMP will require crossing portions of the SRWA, private property, and lands within the Saranac Lakes Wild Forest. The proposed portion of the trail in the SRWA is about 0.3 miles long and the portion in the SRWA is about 0.6 mile long. The length of the portion on private lands is less than 0.2 mi.

- Response: The authors of the SRWA UMP acknowledge and appreciate this comment.

18. Suggests a direct trail connection originating at the Wilderness boundary with the town lands on the lower slopes of Scott's Cobble, following the proposed Scott's Cobble ski trail to Rt. 73, then a side trail paralleling Rt. 73 to join with the proposed new parking lot on the north side of Mountain Lane at its intersection with Rt. 73. Such a trail connection would allow thru skiers on the Jackrabbit Trail to bypass 2 state highway crossings on their way to Old Mountain Rd. It also eliminates the need for an extra parking lot on Rt. 73. The 2 parking lots proposed for Mountain Lane are more than sufficient with 10-12 parking spots.
    - Response: This suggested trail has been added to the UMP.
19. A portion of the "Old Mountain Road" section of the Jackrabbit Ski Trail has been flooded by beavers and requires about 800 feet of new trail to bypass this beaver pond. Strongly supports this action and suggests that the Department leave open the possibility of constructing additional sections of new trail to bypass additional beaver ponds that have formed in recent years, or that may form in the future as the result of the unrelenting beaver activity. The UMP should clearly state that this new trail will be designed for skier use. Typically, the ponds are frozen enough for safe travel on the ice by the time the trail is in condition for ski touring. However, there are times in the shoulder season when skiers are unable to traverse the trail due to thin ice, even though the rest of the trail might still hold good snow cover.
    - Response: These suggestions have been added to the UMP.
20. The area can benefit from additional, dedicated backcountry ski touring trails where the terrain and snow patterns make such trails feasible for long-term winter use. Such trails should only be considered at the periphery of the unit so as not to conflict with the goal of preserving a large core trailless area.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
21. Agrees that the North and South Notch trails should not be reopened at this time, for the reasons stated in the UMP.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
22. Supports the establishment of a ski trail loop on SRWA lands on the northern and eastern slopes of Scott's Cobble, originating at Rt. 73, as proposed in the UMP. The terrain and tree cover in this area is conducive for a ski trail. Such a trail would also

complement trails on adjacent town lands, especially if a trail connection to the golf course and Jackrabbit Ski Trail was established.

- Response: Additional information has been added about the proposed trails for the Scotts Cobble area.

23. We now advocate that the stakeholder committee be reconvened so that the Draft Guidelines for Ski Trails can be updated with input from the committee and the public, and then sent to the APA Board to determine State Land Master Plan compliance.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
24. The designation of a trailless area over 10,000 acres is highly laudable. Steps should be taken to inventory and ensure baseline conditions and use levels are understood to inform and define carrying capacity limits.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
25. Maintain low trail density to the high points in this UMP.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
26. Make trail improvements to Copperas Pond.
    - Response: The UMP includes proposals to improve the trails to Copperas Pond.
27. Encourages the Department to install a DEC signage kiosk at both trail heads, with educational messages aimed at both winter and summer users of the trail, and signage specifically aimed at discouraging “postholing” on the Jackrabbit Ski Trail.
    - Response: The authors of the SRWA UMP acknowledge and appreciate the importance of this issue. The UMP will address this issue. The use of signage will be the preferred method. If that does not resolve the problem other actions may be taken. Including the development of regulations.
28. DEC should do more to prevent hikers and climbers from walking on the Jackrabbit Trail (one of the few designated ski trails in the region) during the ski season. Post-holing is particularly prevalent on the western end of the Old Mountain Road where climbers are traveling to Pitchoff Right. Requiring snow shoes when the trail is snow covered would enhance the skier experience.
    - Response: The authors of the SRWA UMP acknowledge and appreciate the importance of this issue. The UMP will address this issue. The use of signage will be the preferred method. If that does not resolve the problem other actions may be taken. Including the development of regulations.

29. When human use must be controlled to prevent misuse and overuse, it is best to do so by education followed by the minimum degree of regulation necessary to meet management objectives. Lack of or improper use of equipment is a management issue across the Forest Preserve. DEC strives to prevent costly and needless rescues by encouraging visitors to be properly prepared for sudden changes in weather, emergencies, and backcountry travel in any season. For years we have tried desperately to educate trail users about the negative impact of "postholing" on winter trails and the experiences of other users (ie. hiking on snow-covered trails without snowshoes). Despite consistently posted signage and educational efforts, "postholing" remains an issue on the Old Mountain Road section of the Jackrabbit Ski Trail, much to the chagrin of backcountry skiers seeking a quality, Wilderness-based recreation experience. We strongly urge the Department to consider a new regulation that would require all users to possess and use ski or snowshoes on the Old Mountain Rd. and any new ski trails approved in the SRWA. This could be accomplished through a revision to 6 CRR-NY 190.13 Wilderness areas in the Adirondack Park, which currently states (in part) : *In the High Peaks Wilderness Area, no person shall fail to possess and use skis or snowshoes when the terrain is snow-covered with eight or more inches of snow*.
    - Response: The authors of the SRWA UMP acknowledge and appreciate the importance of this issue. The UMP will address this issue. The use of signage will be the preferred method. If that does not resolve the problem other actions may be taken. Including the development of regulations.
30. Object to the proposed trail from Bartlett Road. It will impact a deer yard. Hikers will impact solitude and pleasure of hunters. Increased road traffic. Increased potential for pathogenic contamination of the Ausable River due to human waste. It could lead to future expansion of the trail to include the old road system through legal steps or illegal cutting.
    - Response: The proposal to improve the trail from Bartlett Road to the East Branch Ausable River has been removed from the UMP. This trail will remain as an unmarked path.

Other

1. The public opportunity to speak should be held and a different time to encourage more people to attend. There should be more public meetings at different times.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
2. There should be more information on the maps.
    - Response: Maps in the UMP have been updated.
3. Level of detail and analysis is good, should be the basis for UMPs going forward.

- Response: The authors of the SRWA UMP acknowledge and appreciate this comment.

4. The UMP is silent on the status of Old Mountain Road. It is our understanding that courts have ruled this route to still be a public highway under the jurisdiction of Keene and North Elba. It is also our understanding that litigation related to the road is still active. We assert that any outcome that results in a non-wilderness corridor traversing the SRW would be detrimental to the wilderness character of the area. The valley through which the trail passes contains sensitive wetlands and soft soils, making it unsuitable for multi-modal transportation despite its origins as a highway. Mechanical and motorized access leaves ruts in the wetlands, and is out of keeping with the primitive character of the surrounding landscape. The distances on this trail are so short that such access is not required to benefit most of the people interested in exploring this rugged valley; rather, motorized access is at best an expediency, and at worst a deliberate attempt to subvert the goals of the SLMP. Regardless of the outcome, DEC has the clear statutory authority to extinguish the right of way and thus bring the trail into full compliance with wilderness guidelines. This authority can be exercised at any time.
    - Response: Updated information and actions related to this issue have been added to the UMP.
5. State on page 86, “For clarity the name “Old Mountain Road” is used in this UMP; however, this is an abandoned road and it is to be treated as any other wilderness foot trail.” It is a bit puzzling that the UMP makes no mention of the controversial status of the Old Mountain Road. The State’s right to include this road in the wilderness classification has been challenged legally. The abandonment of this road by the Towns of Keene and North Elba is in question. The resolution of this litigation could impact the management of this trail and may allow for mountain biking if the road is excluded from wilderness. This issue should be addressed in the UMP, if only briefly until the status is determined by the courts.
    - Response: Updated information and actions related to this issue have been added to the UMP.
6. Prohibit snowmobiling on the Jackrabbit Trail / Mountain Road.
    - Response: Updated information and actions related to this issue have been added to the UMP.
7. I feel the state is doing well to preserve and restore the native fisheries, I also believe they are managing fisheries impacted by non-natives as well as can be expected. Having said that, I believe the fisheries in the Sentinel Wilderness are at somewhat greater risk than usual, simply due to their proximity to the highway, and the high amount of traffic they receive from local campgrounds. Copperas Pond is a unique fishery, in that, ice fishing is allowed after April 1. This is a great experience for the adventurous, and provides a terrific angling opportunity found in very few places. I have observed dozens of fishermen over the past 5 years using baitfish,

tip-ups, and keeping over the limit. This pond is very resilient, but I feel that better signage of baitfish regulations, combined with better oversight during the first two weeks of April by ECO's could help. If not by impression of control, then at least by educating those who may honestly not understand the regulations. Secondly, in regards to Winch pond. Being an avid ADK pond fly-fisherman, I am very much in-tune to almost every pond in the northern tier. In the UMP, it states low populations of healthy Brook Trout. I have been into this pond several times recently and have seen very high numbers of healthy fish. While they tend to be smaller average size, I have caught two in excess of 16", several more in the 12"-14" range. This shows excellent year class distribution of healthy fish. I have also witnessed on 2 occasions, individuals using baitfish in this water as well. These anglers, I believe, most likely knew the regulations but chose to ignore them. Again, conspicuously posting the baitfish regulations, and regular ECO patrols might help mitigate the problem.

- Response: The authors of the SRWA UMP acknowledge and appreciate this comment; this information has been shared with enforcement staff.

8. Campsites There are three existing primitive campsites that are being closed – 2 at Copperas Pond and 1 at Holcomb Pond. DEC should relocate sites that are being closed. If the herd path to Holcomb Pond was in better condition, there would likely be more use of that site. The UMP proposed a new primitive site to replace the 2 sites being closed at Copperas Pond. However, in year 2 of the schedule for implementation there is no cost estimate for constructing a new site. The location of the new site is missing from the proposed facilities map. This is probably an oversight and should be corrected. The UMP states, “There has been no demand for additional designated campsites in the unit and none are being proposed at this time.” With the increasing number of visitors coming to the Lake Placid/Wilmington/Keene region, it seems likely that there is a demand for designated campsites. The land east of the Bartlett Road would be a suitable place to establish a couple of primitive campsites, including an accessible campsite for persons with disabilities. According to the APSLMP, there used to be a couple of tent platform camps on this parcel before the State acquired it. Stated on page 96, “Provide campsites in areas that are attractive or convenient for users while adhering to APSLMP guidelines…”. This location is attractive and would provide camping in the Keene/Upper Jay area where there are limited opportunities for camping that are convenient and easy to access. When DEC acquired this 1120-acre tract, Region 5 staff recommended developing a State Campground on the East side of Bartlett Road. APA staff did not agree with that proposal and therefore recommended the Wilderness classification, knowing it did not meet the APSLMP minimum size guideline of 10,000 acres and that Bartlett Road (an existing town road used by motor vehicles) separated this portion from the rest of the Sentinel Range Wilderness. Normally such a parcel would have been classified as Wild Forest, which would eliminate the need for creating a Primitive Corridor along Bartlett Road. However, this would leave open the possibility of locating a State

Campground east of the Bartlett Road. Instead, we have a road open to motor vehicles bisecting a Wilderness Area – a unique case where this occurs in the Adirondack Park. Apparently, the APA is willing to bend the rules when it serves the purpose of achieving the agency's wishes.

- Response: A proposal to designate two campsites along Bartlett Road has been added to the UMP. The statement "There has been no demand for additional designated campsites in the unit and none are being proposed at this time" has been removed from the UMP.

9. Bartlett Primitive Area: as stated on page 104, "Bartlett Road is a dirt road that passes through the SRWA for about 1.4 miles. It is a town road that connects Jay with Keene." If Bartlett Road is a town road, how does it meet the criteria for a Primitive classification? Does the Town intend to abandon this section of road in the future? As stated above, the classification of the 1,120-acre tract that created this primitive corridor to allow for the Wilderness classification of the lands east of the Bartlett Road is suspect. DEC should push for the APA to follow its own guidelines and reclassify this parcel as Wild Forest.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment; however, answers to these questions are outside the scope of a UMP.
10. Are you aware of the water pipe infrastructure that runs across state lands and appears to be maintained for the benefit of the golf course? It is iron pipe approximately 4-inch diameter and can be found running on top of the ground, along a path on state lands and the north side of a dirt road that parallels the 6th fairway. Is this permitted, or should its removal be addressed in this UMP?
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment; this issue has been added to the UMP.
11. The UMP identifies the presence of ice cave talus and spruce-fir rocky summit communities, but does not describe actions to protect these communities. DEC must propose management actions to protect these two communities.
    - Response: Additional information about potential threats to these communities has been added to their description. Proposals in the UMP do consider the potential threats to these communities.
12. DEC should review the latest invasive species distribution information. DEC must develop and or revise prevention/ management plans in collaboration with APIPP as part of the UMP.
    - Response: The UMP has been updated with information about the mapping of invasive species.
13. Under forest health the UMP should add hemlock woolly adelgid to the invasive species discussed. This pest was discovered near Lake George and has already caused significant decline in the Catskill Park.

- Response: Hemlock woolly adelgid is now listed in the UMP.

14. On page 55 6NYCRR 190.8(dd) should be (ad). This paragraph should include a brief description of all critical spread prevention and early detection and rapid response work coordinated by APIPP.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment, this change was made to the UMP.
15. Capacity to withstand use: the Interagency Visitor Use Management Council has posted a framework which could provide insight to DEC's long-term planning process.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
16. DEC should add an action to develop a leave no trace skill and ethics integration and outreach plan. This plan should cover messaging on the DEC web page, at trailheads, on literature, and programming.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
17. DEC should commit to integrated training of Leave No Trace skills and ethics on the trainer or Master Educator level for DEC staff.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
18. The practice of using rotenone to kill fish in waterbodies is damaging to native species, specifically to amphibians and invertebrates. The almost 30-year-old Programmatic EIS cited in the UMP must be revised and a new EIS must be prepared that incorporates current research. "Pond reclamation" as it is currently configured and practiced by DEC must end.
    - Response: No reclamations are specifically planned for the Sentinel Range Wilderness area. However, it must be noted that anthropogenic influences have degraded fish communities and aquatic habitats in Adirondack Wilderness areas. Invasive, nonnative fishes are widely distributed, and have caused certain native fishes, notably brook trout and round whitefish, to decline dramatically. The Adirondack Park State Land Master Plan specifically directs us to manage for native species and natural communities in Wilderness: "The primary wilderness management guideline will be to achieve and perpetuate a natural plant and animal community where man's influence is not apparent." Reestablishing the presence of native species, and related Wilderness recreational opportunities in Wilderness areas requires actions to be taken in Wilderness. Thus, the Department will use the basic tools needed to preserve, protect and restore the natural native ecosystems of the Forest Preserve.

The use of rotenone is the only method, other than complete draining, that can consistently eliminate entire populations of nonnative fishes to allow us to restore native fish species, including rare or Endangered species. The Department of Environmental Conservation remains committed to the safe and effective use of rotenone. To that end, we recently sent two staff to attend the American Fisheries Society's intensive week-long training course on use of rotenone. Furthermore, the American Fisheries Society has developed a manual on safe and effective rotenone use for fisheries managers, and use of this manual is required via its reference into the EPA and New York State registered product labels.

While the use of any substance, even the organic compound rotenone, has non-target impacts, research and monitoring have revealed these impacts are generally minor and transitory (Bradbury 1986; Demong 2001; Ling 2003). Furthermore, a study by researchers from Cornell University found a suite of biological indicators in Adirondack waters were consistent with natural conditions in the reclaimed ponds included in their comparative study (Harig and Bain 1989). Adirondack wilderness lakes with high biological integrity were characterized by native fish communities, by zooplankton communities with relatively greater species richness, biomass, and larger species, particularly Daphnia and other cladocerans, and by phytoplankton communities with few dinoflagellates. A shift to native fish fauna (via reclamation) in ponds impacted by nonnative fish had a top-down, cascading effect on the zooplankton and phytoplankton, shifting their communities from being similar to ponds with poor biological integrity to characteristics more consistent with high-integrity ponds. Other researchers have noted similar results with macroinvertebrates (e.g. Eilers 2008). While amphibians are occasionally affected by rotenone, only minor mortality has been observed in Adirondack reclamations which are conducted at relatively low concentrations (1 ppm) and typically in the fall after metamorphosis to less sensitive life-stages has occurred. The practical implication of abandoning use of rotenone means that, contrary to the master plan, our response to invasive fish will be to accept them as Adirondack fauna at the expense of native fish communities.

It is also important to keep the extent of the pond reclamation program in perspective. Because of the restrictive criteria required for us to even consider a reclamation using rotenone, only a small percentage of Adirondack waters are potential candidates – less than 5% of Adirondack waters. But even with its small scale, pond reclamations have resulted in significant successes, including the restoration of a self-sustaining native brook trout population in Lower Sargent Pond and the documented natural reproduction of native Endangered round whitefish in Bug Lake and Rock Pond.

While the Programmatic EIS's cited in the UMP are almost 40 years old, the use of rotenone is still largely consistent as described in these documents,

except that we have become more restrictive in its use, not less so. While updated documents would, perhaps, be ideal, staffing limitations currently require us to spend our limited resources in higher priority areas. For newer reviews regarding the use of rotenone, we refer the reader to the EPA's recent Reregistration Eligibility Decision for rotenone or a review such as that of Ling (2002). We also remind the reader that use of rotenone is just one small aspect of an integrated suite of strategies to protect native Adirondack fish communities (i.e. baitfish prohibitions and associated education, construction and maintenance of strategically placed fish barriers, etc.).

19. Any archaeological research must be done in consultation with the appropriate Tribal Historic Preservation Office.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
20. Trailhead should include Leave No trace messaging.
    - Response: Management of the area will include providing educational information to visitors of the area.
21. Work with the new ArcGIS Information Gateway to disseminate rules, regulations and educational information.
    - Response: Management of the area will include providing educational information to visitors of the area.
22. Supports the reduction in group size.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
23. The proximity of the SRWA to the High Peaks and McKenzie Wilderness areas as well as Mount Van Hoevenberg, necessitates a stronger consideration of complex planning in the UMP. This UMP should be developed in coordination with updates or amendment to the adjoining unit.
    - Response: Development of this UMP has taken into consideration the management of nearby areas.
24. The UMP does not take the opportunity to think out of the box when it comes to addressing chronic management issues.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.
25. The wilderness management principles should be individually reviewed and revised, where appropriate, to incorporate modern practices and philosophies.
    - Response: The authors of the SRWA UMP acknowledge and appreciate this comment.

Appendix L – Unit Maps

Map 1- Location

Map 2- Hydrology / Wetlands

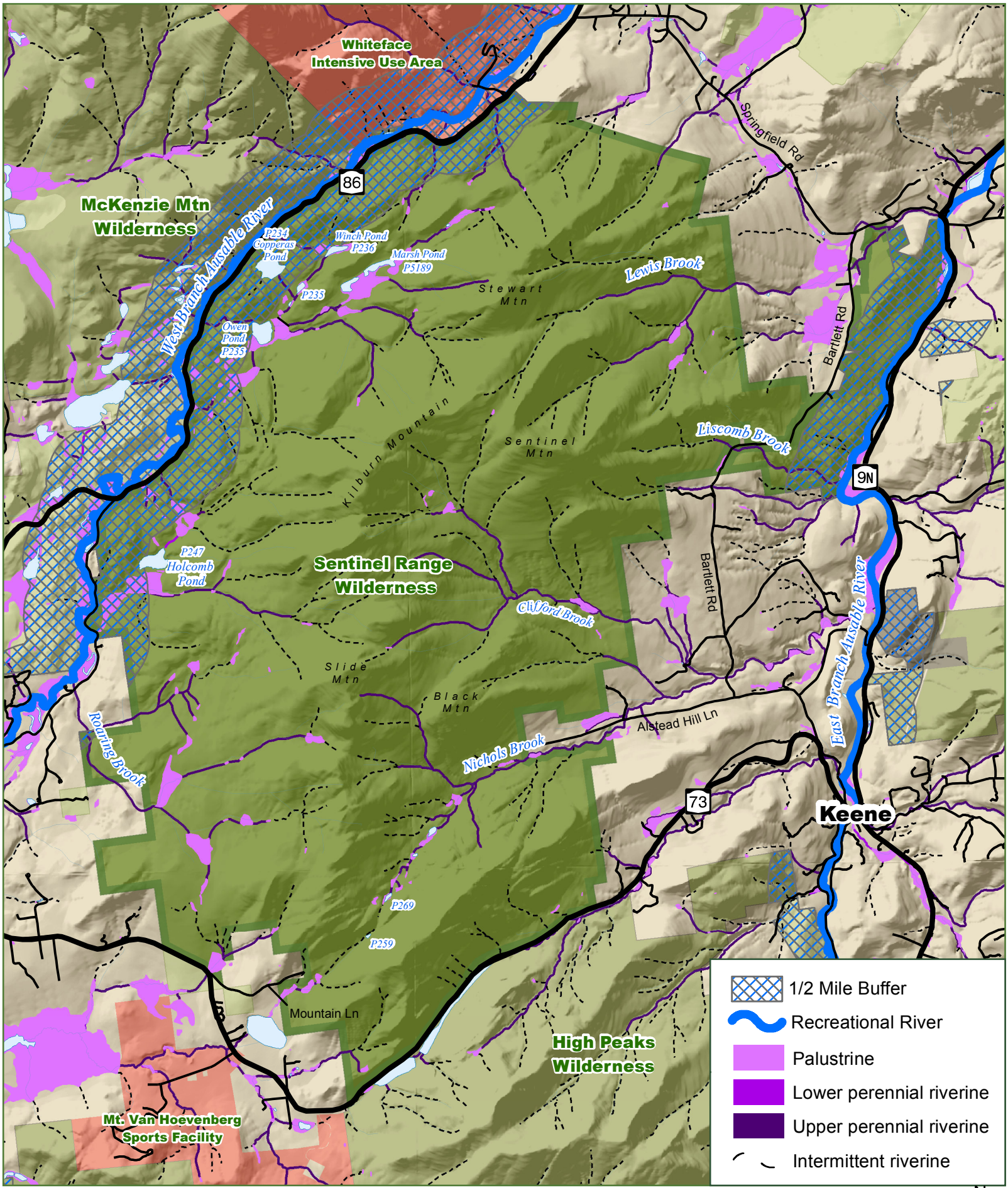
Map 3- Existing Facilities

Map 4- Proposed Facilities / Actions

Map 5- Pitchoff Mountain Trail Alternatives

New York's Forest Preserve
Sentinel Range Wilderness Unit Management Plan

Map 2 - Hydrology / Wetlands



NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Ray Brook Office
(518)897-1200

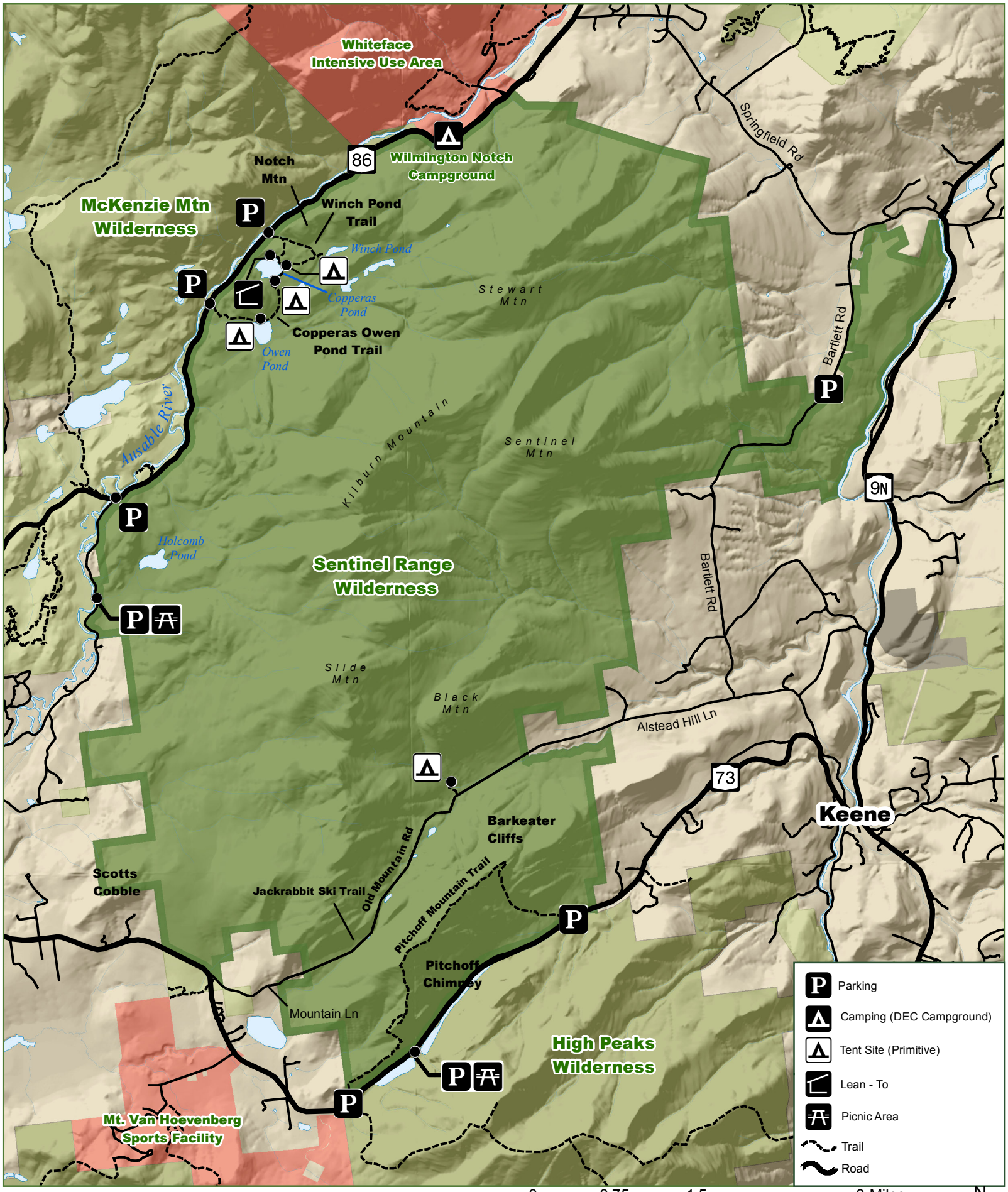
0 0.75 1.5 3 Miles

0 0.75 1.5 3 Kilometers

N

New York's Forest Preserve
Sentinel Range Wilderness Unit Management Plan

Map 3 - Existing Facilities



NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

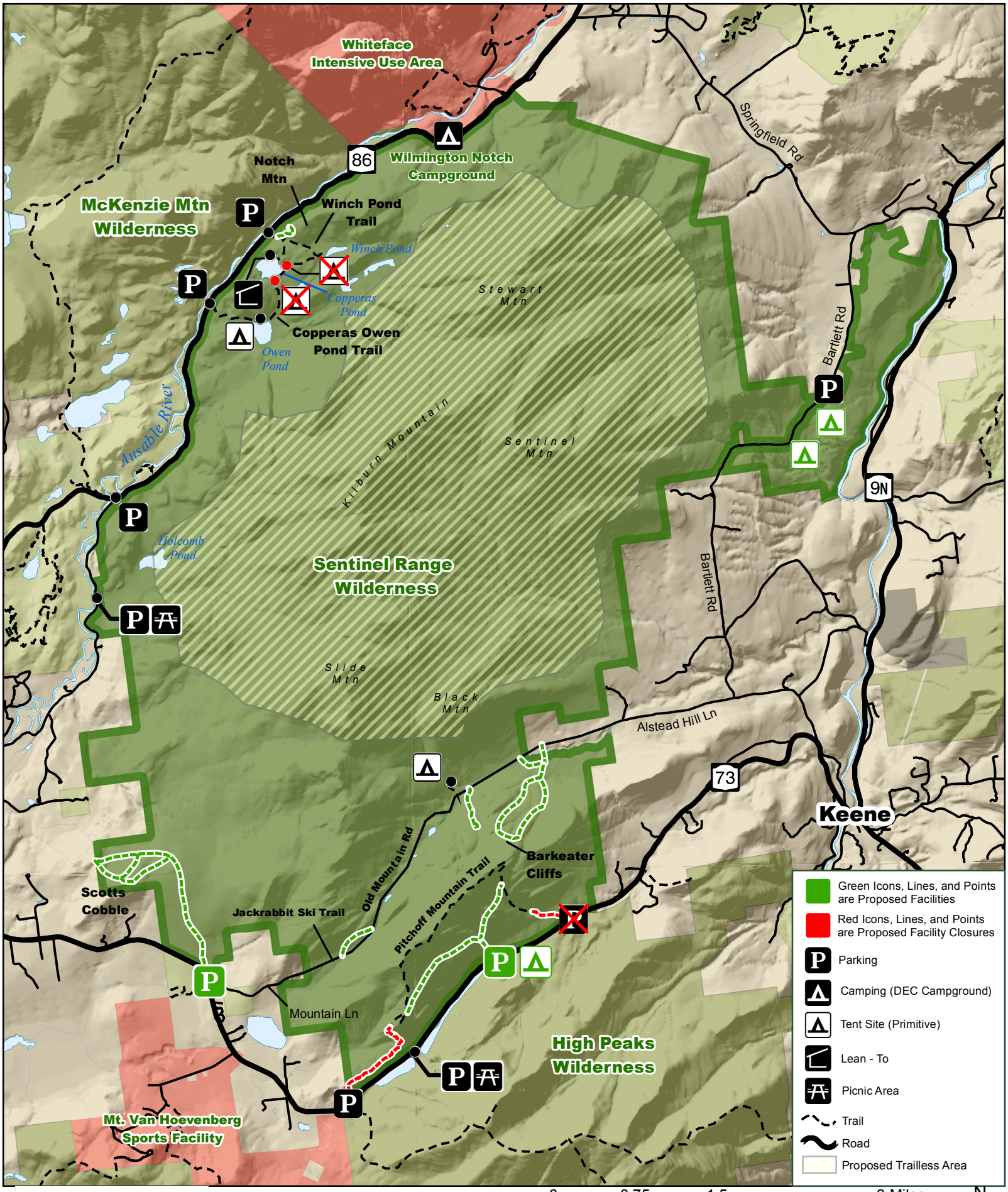
Ray Brook Office
(518)897-1200

0 0.75 1.5 3 Miles
0 0.75 1.5 3 Kilometers

N

New York's Forest Preserve
Sentinel Range Wilderness Unit Management Plan

Map 4 - Proposed Facilities/Actions



NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Ray Brook Office
(518)897-1200

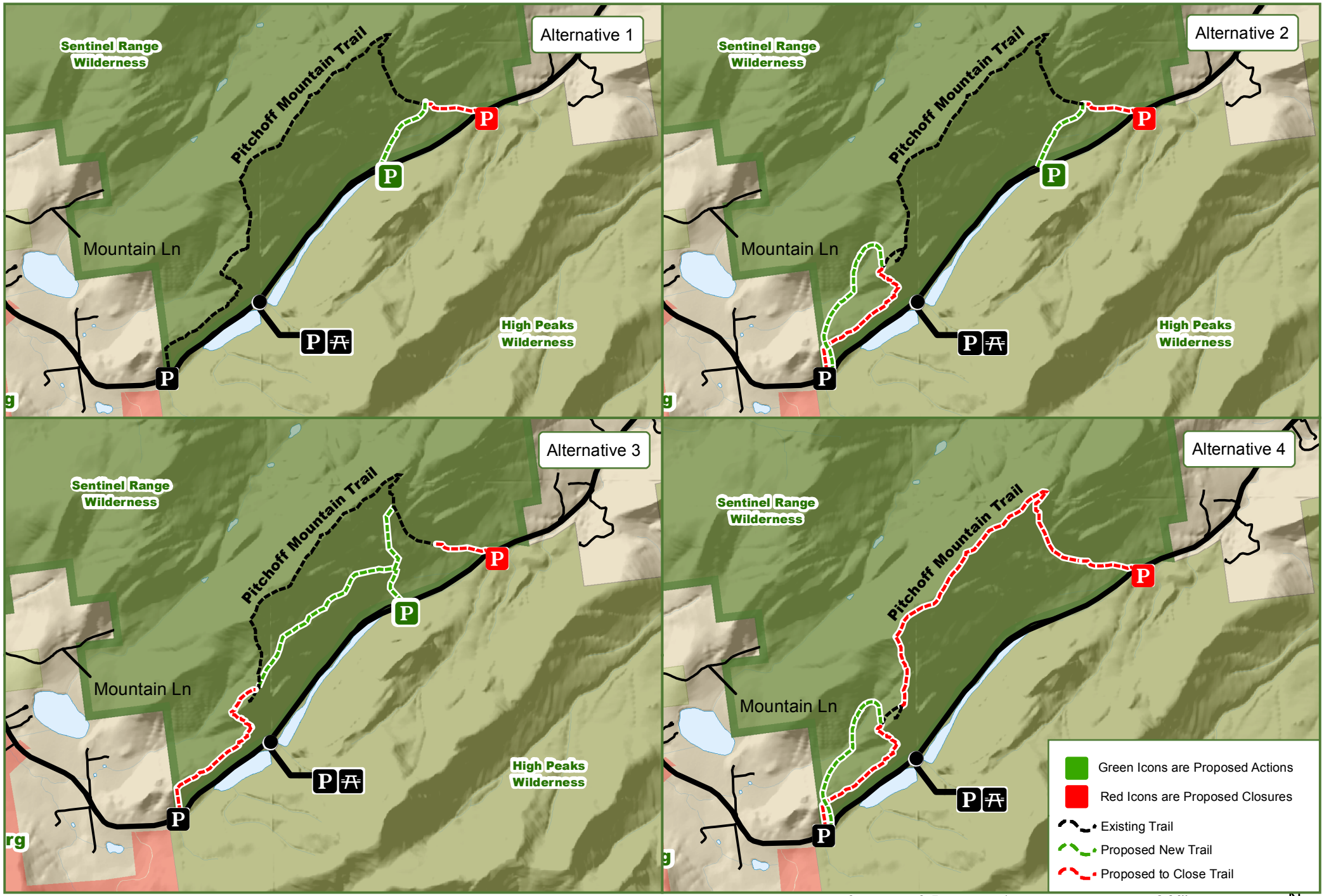
0 0.75 1.5 3 Miles

0 0.75 1.5 3 Kilometers

N

New York's Forest Preserve
Sentinel Range Wilderness Unit Management Plan

Map 5 - Pitchoff Mtn. Alternatives



NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Ray Brook Office
(518)897-1200