NEW YORK STATE OF OPPORTUNITY. | Department of Environmental Conservation

SENTINEL RANGE WILDERNESS AREA

and

Bartlett Primitive Area

Draft Unit Management Plan

Draft River Area Management Plans

West Branch Ausable River

East Branch Ausable River

NYS DEC, REGION 5, DIVISION OF LANDS AND FORESTS

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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.

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 is 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 the 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 is 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. While none of these waters are located directly within the boundaries of the unit, one LTM water (Owen Pond) is located in relatively close (within 10 miles) proximity to the northwest of the SRWA 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*), mountain ash (*Sorbus americana*), harebell (*Campenula rotundifolia)*, and three-toothed cinquefoil (*Potentilla tridentata*). There are usually many mosses and lichens growing on rock outcrops. Examples of this forest type can be found on the summit of Pitchoff Mountain.

- 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. Examples of this forest type can be found on the slopes of Notch Mountain.

- 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

Terrestrial Invasive Plant Inventory

In 1998 the Adirondack Nature Conservancy's Invasive Plant Project initiated Early Detection/Rapid Response (ED/RR) surveys along Adirondack Park roadsides. Expert and trained volunteers reported 412 observations of 10 plant species throughout the area surveyed, namely NYS DOT Right-of-Ways (ROW). In 1999 the Invasive Plant Project was expanded to include surveying back roads and the "backcountry" (undeveloped areas away from roads) to identify the presence or absence of 15 invasive plant species. Both surveys were conducted under the auspices of the Invasive Plant Council of New York "Top Twenty List" of non-native plants likely to become invasive within New York State. A continuum of ED/RR surveys now exists under the guidance of the Adirondack Park Invasive Plant Program (APIPP).

Assessments from these initial ED/RR surveys determined that four terrestrial plant species would be targeted for control and management based upon specific criteria such as geophysical setting, abundance and distribution, multiple transport vectors and the likelihood of human-influenced disturbance. The four priority terrestrial invasive plants species are Purple loosestrife (*Lythrum salicaria*), Common reed (*Phragmites australis*), Japanese knotweed (*Polygonum cuspidatum*) and Garlic mustard (*Alliaria petiolata*).

The Adirondack Park is susceptible to further infestation by invasive plant species intentionally or accidentally introduced to this ecoregion. While many of these species are not currently designated a priority species by APIPP, they may become established within or in proximity to a unit and require resources to manage, monitor, and restore the site.

Infestations located within and in proximity to a unit may expand and spread to uninfected areas and threaten natural resources within a unit; therefore it is critical to identify infestations located both within and in proximity to a unit and then assess high risk areas and prioritize Early Detection Rapid Response (ED/RR) and management efforts.

Terrestrial invasive plant species identified within the unit include bush honeysuckle (*Lonicera spp.*) and Japanese barberry (*Berberis thunbergii*). These are both present at various locations adjacent to the East Branch Ausable River. Additional invasive plant species populations are known to exist adjacent to the unit and in nearby communities. There has been no official inventory of invasive plant species in the unit to date. However, most interior portions of the unit are believed to be free from infestation.

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*), 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 new regulation, or the threat from invasive insects, please visit the following Department web page: http://www.dec.ny.gov/animals/28722.html.

- Emerald ash borer (*Agrilus planipennis*) Asian beetle, discovered in 2002 in southeastern Michigan and nearby Windsor, Ontario, infests and kills North American ash species (*Fraxinus* sp.) including green, white, black and blue ash. Thus, all native ash trees are susceptible. Damage is caused by the larvae, which feed in tunnels (called galleries) in the phloem just below the bark. The serpentine galleries disrupt water and nutrient transport, causing branches, and eventually the entire tree, to die. Adult beetles leave distinctive D-shaped exit holes in the outer bark of the branches and the trunk. Adults are roughly 3/8 to 5/8 inch long with metallic green wing covers and a coppery red or purple abdomen. They may be present from late May through early September but are most common in June and July. Signs of infection include tree canopy dieback, yellowing, and browning of leaves. Most trees die within 1 to 4 years of becoming infested, unless treated. The infestation of emerald ash borer has spread from Michigan into nearby states killing millions of ash trees.

  Emerald ash borer infestations have been discovered within New York. In response to these discoveries Department and DAM have enacted quarantines that restrict the movement of ash trees, ash products, and firewood from all wood species to limit the potential spread of emerald ash borer to other parts of the state. For more information on this invasive species, or the quarantine, visit the following DEPARTMENT web page: http://www.dec.ny.gov/animals/7253.html.

  Ash trees represent a fairly small component of the forests of the SRWA, however, loss of these trees could limit the diversity of plant life and wildlife in the unit.

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

Common Name	Scientific Name	Breeding Bird Atlas Project	
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
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. In 2010, the moose population in New York State was estimated to be about 500-800 animals. However a standard procedure for estimating moose numbers has not been established. 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 shrubs). In late winter when browse quantity and quality are lowest, moose will use closed canopy areas that represent the best cover available within the range (e.g., closed canopy conifers in 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 rare, 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**
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**

Common Name	Scientific Name	Number of Towns
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 viewshed 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 1800's, 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 1960's and early 1970's 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 Environment al 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, 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 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. At the Pitchoff Mountain trailheads intermittent register data is available from 1989 - 2012, at the Copperas and Owen ponds trailheads intermittent register data is available from 2001 – 2012. 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 for the period that it was collected. Analysis of user data has led to the following conclusions:

Use of the SRWA is primarily day use. Less than ten percent of all users in the unit are overnight users.

- Copperas Pond Trailhead – 9% of all users are overnight users. (Based on 2007, 2008, 2009 average)
- Owen Pond Trailhead – 5% of all users are overnight users. (Based on 2007, 2008, 2009 average)
- Pitchoff Mountain (west) Trailhead – 1% of all users are overnight users. (Based on 2007, 2008, 2009 average)

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

Although there has been fluctuation in the number of users in the SRWA from year to year, the total number of yearly users at the Pitchoff Mountain Trailheads has followed three distinct trends from 1989 - 2009. From 1989 to 1993 user numbers showed a steady increase from 2,722 (1989) to 5,353 (1993). From 1994-2000 user number

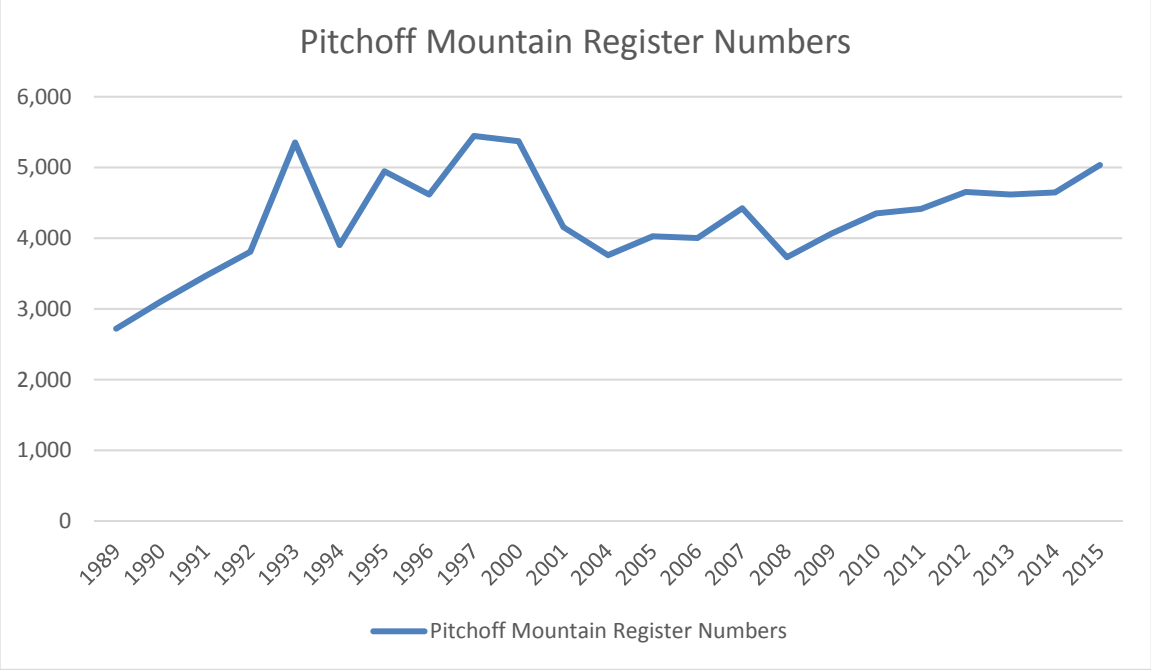
fluctuated between 3,903 (1994) and 5,371(2000). From 2001-2012 user numbers remained close to 4,000 (see Table 6, and Graphs 1 and 2).

Table 6. Number of trailhead registrants within the SRWA

Year	**Pitchoff Mountain** (East and west trailheads combined)	**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	
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

Year	**Pitchoff Mountain** (East and west trailheads combined)	**Copperas Pond**	**Owen Pond**	**Unit Total**
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	5,033	7,155	(included in Copperas total)	12,188

* some data missing



Group size data was measured for the period of 2007-2009 by breaking user groups into four size classes: 1-5, 6-10, 11-15, and 16 or more individuals. The following group size trends have been noted:

- Small groups (1-5 individuals) are by far the most common group size in the unit, representing about ninety percent of groups.
- Moderate groups of 6-10 and 11-15 individuals represent 10% of groups. Groups of 6-10 individuals representing about 8%, and groups of 11-15 individuals representing about 2% of all groups.
- Use by large groups (16 or more individuals) represents less than one percent of all groups.

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 health of the Forest Preserve so that adverse impacts can be identified and addressed early.

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. Some examples inculde:

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(dd), 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

In general, the level of human use of the SRWA does not appear to significantly impact the natural resources of the unit beyond their capacity to withstand this use. The unit exhibits few of the overuse problems experienced in the nearby Eastern Management Zone of the High Peaks Wilderness Area. This is due, in large part, to the smaller geographic area of the unit and the lesser number of primary attraction points (summits, lakes, ponds, and interior structures). Much of the visitor use appears to be either day trips or short-term overnights. High levels of soil erosion and compaction are evident on the most popular trails. Soil erosion and compaction are also evident at some rock climbing sites. Use patterns are such that throughout the year there are opportunities for solitude for individual users. Hunting pressure in the unit appears stable. Hunting is not expected to impact overall numbers of any species population.

Carrying Capacity

The term “carrying capacity” has its roots in range and wildlife sciences. As defined in the range sciences, carrying capacity means the number of animals that can sustainably graze at a location for a period of time. The concept has been modified to address recreational uses as well; however, its basic assumptions proved to be false.

After many years of study, basic research showed that there was no linear relationship between the amount of use and the resultant amount of impact (Krumpe and Stokes,

1993). For many types of impacts, most of the impact occurs from low levels of use. In some cases, such as trail erosion, once the soil starts to wash away, additional foot travel on the trail does not cause the amount of impact to increase proportionately. This research revealed that visitor behavior, site resistance/resiliency, and type of use may be more important in determining the amount of impact than the amount of use, although the total amount of use is still a factor (Hammit and Cole, 1987).

The shortcomings of the carrying capacity approach, as applied to wilderness management, soon became apparent. It became clear that searching for one single carrying capacity was probably next to impossible, since it is dependent on many variables as noted above. By focusing on determining how many visitors an area could accommodate, it was found that managers often lost sight of basic wilderness goals and objectives – the very things they were trying to achieve. This changed the question from "How many is too many?" to "How much change is acceptable?"

Viewed in this context, carrying capacity can be used to prescribe what kind of resource and social conditions are acceptable, compare them to on-the-ground conditions, and identify the management policies and actions needed to maintain or restore the desired wilderness condition.

Establishing appropriate conditions is dependent on clearly stated management objectives. They are based on value judgements derived from experience, research, inventory data, public input (dialogue with users), careful analysis, and common sense. The objectives dictate how much change will be allowed to occur, where it occurs, and what management actions are needed to control it. Once in place and functioning, limits of acceptable change (LAC) are used as measuring tools to alert the Department to unacceptable changes before it is too late to react.

Carrying capacity does not always require use limitations; rather use limitations are viewed as one of many management actions that can be taken in response to a specific problem. When past efforts have proved ineffective, a use limit may be the only option available when standards are exceeded. Monitoring provides the feedback necessary to periodically modify management actions, standards or objectives.

Defining carrying capacity in terms of limits of acceptable change, requires a decision on what kinds of wilderness conditions are acceptable, then prescribing actions to protect or achieve those desired conditions. They are applied through a planning framework that expresses management objectives based on careful considerations of resource conditions, inherent constraints, and the needs and wants of its users.

Strategy

The long-term strategy for managing the SRWA uses a combination of three generally accepted planning 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. For each management activity category included in Section IV of this plan, a written assessment of the current management situation and a set of assumptions about future trends has been described. All management proposals listed in Section IV have been determined using this information.

Limits of Acceptable Change (LAC) and Visitor Experience and Resource 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 which 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 management will 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 particular standard may be chosen so as 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. However, since the VERP model was developed to apply only to impacts from visitor use, some management issues in the SRWA call for an approach that is properly in the LAC vein.

Since differences between LAC and VERP are not significant, choices are left up to managers. These choices are as evident as they need to be wherever this plan, in Section IV, calls for sets of management actions which incorporate them.

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

The identification of acceptable resource and social 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; and,
- A monitoring program to see if objectives are being met.

These four factors can be achieved by using the following 10 steps created for the LAC process:

Step 1: Define Goals and Desired Conditions

Step 2: Identify Issues, Concerns and Threats

Step 3: Define and Describe Acceptable Conditions

Step 4: Select Indicators for Resource and Social Conditions

Step 5: Inventory Existing Resource and Social Conditions

Step 6: Specify Standards for Resource and Social Indicators for Each Opportunity Class

Step 7: Identify Alternative Opportunity Class Allocations

Step 8: Identify Management Actions for Each Alternative

Step 9: Evaluate and Select a Preferred Alternative

Step 10: Implement Actions and Monitor Conditions

Though the levels of human impact within the SRWA are relatively low, a number of management issues might develop within the unit that could be addressed by the LAC process. Such issues may be categorized as conflicts between public use and resource protection, conflicts between users, and conflicts between outside influences and the objectives for natural resource or social conditions within the unit. The capacity of the area to withstand use can be divided into three categories for which impact indicators can be chosen:

- Physical capacity - May include indicators that measure visitor impacts to physical resources (e.g., soil erosion on trails, campsites and access sites) and changes to environmental conditions (e.g., air and water quality).

- Biological capacity - May include indicators that measure visitor impacts to biological resources (e.g., vegetation loss at campsites) and changes in the ecosystem (e.g., diversity and distribution of plant and animal species).

- Social capacity - May include indicators that measure visitor impacts on other visitors (e.g., conflicts between user groups), the effectiveness of managerial conditions (e.g., noncompliant visitor behavior), and interactions with the area's physical or biological capacity (e.g., the impacts of the sight of significant erosion on trails on the recreational experience of visitors).

The following list gives examples of indicators that could be used in assessing and monitoring conditions in the SRWA:

Physical capacity

- Extent of soil erosion on trails and at campsites

- Extent of air and water quality degradation caused by fossil fuel combustion

Biological capacity

- Extent of bare soil in camping areas and riparian areas near lakes and streams

- Diversity and distribution of plant and animal species

Social capacity

- Incidence and volume of late night noise at campsites

- Extent of illegal tree cutting for firewood near campsites

- Number of encounters with large groups on trails

These indicators form the basis for 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 unit.

1. Land Resources

Recreational use in the unit tends to be concentrated on the trails and camping areas. With proper layout, drainage structures, and maintenance, these facilities should be able to sustain current use levels. Overall use levels in the unit are low to moderate compared to other popular wilderness areas in the region. Negative resource impacts appear to be due more too improper facilities layout than actual use levels. See the Public Use section above for more information on user numbers.

2. 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).

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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 and significant environmental impacts were identified. 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 use 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, at the base lodge at Whiteface Mountain Ski Area, Wilmington. Comments have also been received by mail, phone calls, meetings, and email. Several issues have received multiple comments and are of concern to the Department and the public in the development of this plan.

A complete list of public comment received to date can be found in Appendix J.

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.

An area within 1/2 mile of either bank of 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" corridor under the New York State Wild, Scenic and Recreational Rivers Act. 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 corridor. Likewise, an area within 1/2 mile of either bank of 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". About 883 acres of the SRWA falls within this corridor.

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.
- Primitive campsites that do not comply with water and trail setback requirements will be relocated to compliant sites. Lean-tos will be relocated when major repair or replacement becomes necessary. Minimum setbacks for pit privies and non-designated campsites are 150 feet.
- 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 East Branch Ausable River corridor, a trail will be built from Bartlett Road to the river.

- Within the West Branch Ausable River corridor, 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.

Invasive Plants

The negative impacts of invasive species on natural forest and aquatic communities are well documented. Unrestrained growth of invasive species cause 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 lands, lakes and ponds 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, control protocol, 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 or threaten sensitive communities. 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.

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.
- Keep the unit free of terrestrial invasive plant species.

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.
- 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.

- Eliminate populations of invasive plant species that are discovered in the unit using best management practices outlined in the Interagency Guidelines for the control of Terrestrial Invasive Plant Species on Forest Preserve Lands in the Adirondack Park. These actions may be carried out by Department personnel, by members of APIPP, or other volunteers under supervision of Department through a Volunteer Stewardship Agreement.

- Continue periodic monitoring and management of identified invasive plant populations.

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 1950's. 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 of the unit's ponds were surveyed in the 1980's 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 including: Holcomb Pond; Marsh Pond; Winch Pond; Unnamed Pond (P-235); and Unnamed Pond (P259).

- Manage two ponds as coldwater ponds including: Copperas Pond and Owen Pond.

- Unnamed Pond (P-269) will not be stocked 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 nonnatives.

- 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 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.

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.

Boundary line maintenance should be prioritized; with areas most susceptible to incursion maintained first.

Objectives

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

Management Actions

- 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. 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 on most of the unit's trails. 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 or primitive 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.

A portion of the Jackrabbit Trail (a long distance ski trail that currently runs from Keene to Paul Smiths) 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 away from 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.

Another portion of the Jackrabbit Trail, located on what has been known as “Old Mountain Road” in North Elba near the Keene/North Elba town line, has been flooded by beavers and requires about 800 feet of new trail to bypass this beaver pond. - 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.

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.

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

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

- 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 and Notch Mountain will be formalized and upgraded where necessary.
- Build about 0.5 miles of new ski trail to reroute the Jackrabbit Trail off of Mountain Lane in North Elba.
- Build about 800 feet of new trail to bypass flooded portions of Old Mountain Road (Trail)/Jackrabbit Trail.
- A trail will be developed to the Ausable River from Bartlett Road.
- For the Pitchoff Mountain Trail implement the actions outlined in Alternative 2, below. The other alternatives presented in the UMP are viable options. Based on public comment and additional field work the alternative selected in the final UMP could be one of the other alternatives. In addition to the actions listed there are

other sections of the trail that have significant erosion problems. The trail may be rerouted to avoid the problem areas.

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

- Ski trails may be built in the area of Scotts Cobble, near Lake Placid. The exact route of these trails will be developed in consultation with the APA. The trails may start from a new parking area off State Route 73. A trail connection to the adjacent Craig Wood Golf Course may also be built.

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

- To better accommodate skiers, sections of trails that have steep slopes may be cut wider; following trail guidance. At the base of steep slopes the trail width will gradually narrow.

- The central area of the SRWA will be managed as an area without trails. This will be the area that is north of South Notch, located further than 0.5 miles away from any road, and located about 0.25 mile away from the private property that borders the SRWA. This area covers almost 10,500 acres and includes the summits of Stewart, Kilburn, Slide, and Black mountains. Kilburn Slide is not included in this area. Herd paths in the area may remain, provided the use of the paths do not result in significant natural resource damage. The 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 around problem areas, removal of downed trees, ditching, clearing of brush, water bar construction and cleaning, bridge repairs and reconstruction, and installing 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

The western portion of the Pitchoff Mountain Trail leading to Balanced Rocks Overlook is in need of significant rehabilitation. Options for rehabilitating this portion of the trail are limited due to thin soils and steep bedrock outcroppings. Rehabilitation 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 and would degrade the wilderness character of the trail corridor. An alternative to rehabilitating the current trail would be rerouting the trail.

The eastern parking of the Pitchoff Mountain Trail is at a location that has poor lines of sight. An alternative to the use of this parking area will need to be identified. Three of these alternatives include relocating the eastern end of the trail to a new parking area that is proposed in the trailhead section, below.

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. In addition to trail hardening the first 0.2 miles of the trail will be relocated to move the trail off of private property.

The first 0.5 miles of the eastern end of the trail will be relocated to a new trailhead.

Advantages of Alternative 1 include:

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

Disadvantages of Alternative 1 include:

- Requires substantial resources.
- Trail will still be steep and difficult for some users.

Alternative 2 (preferred alternative): Relocate the trail to Balanced Rocks Overlook. This would start at the trail register and head due north (running east of the current trail) for about 0.2 miles then cross the current trail 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 first 0.5 miles of the eastern end of the trail will be relocated to a new trailhead.

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: 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 1.3 miles, a decrease of 0.2 miles from the existing trail. Another substantial change is that this would create a 4.0 mile long loop trail.

The first 0.5 miles of the eastern end of the trail will also be relocated to the new trailhead.

Advantages of Alternative 3 include:

- A more sustainable trail that would be easier to maintain (per mile) than much of the existing trail.
- Elimination of trail sections that are difficult for users to negotiate.
- About 0.2 miles less trail to maintain.
- Safer trailhead/parking area location.
- Alleviate some congestion at the Cascade Parking areas.
- Eliminate the need for people to walk along Route 73 to complete a loop hike.

Disadvantages of Alternative 3 include:

- Construction of about 1.3 miles of new trail.

- Construction of two new bridges.
- Terrain near the beginning of the trail will make the work difficult.

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 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.
- Alleviate some congestion at the Cascade parking areas.
- 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.

3. Trailheads/Parking Areas

Present Conditions

A trailhead is defined as the starting or termination point of one or more designated trails at a point of entrance to state land which may contain some or all of the following: vehicle parking, trail signs, and peripheral registration structures (Van Valkenburg, 1986). A trailhead classification system was adopted in 1986 to provide for consistency in their location and development. Class I trailheads are the most developed and are found at the major entrances to backcountry. Class II and Class III are encountered at lesser used trails with correspondingly less development.

There are four developed trailheads in the SRWA:

Copperas Pond - Maintain to Class II Trailhead standards

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 - Maintain to Class II Trailhead standards

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 - Maintain to Class II Trailhead standards

This trailhead is currently marked with a High Peaks Scenic Byway trailhead sign.

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 about 300 feet to the west across Route 73 in the High Peaks Wilderness Area. Because these two trailheads are in such close proximity to each other, and share the same parking areas, management decisions that affect one area will likely affect the other. Management guidelines for both of these trailheads have been established in the High Peaks Wilderness Complex Unit Management Plan. These guidelines call for the creation of one trailhead to provide access to both the Pitchoff Mountain and Cascade Mountain trails. The following area description and subsequent management proposals are from the Cascade Lakes Special Management Area plan (Page 183, High Peaks Wilderness Complex Unit Management Plan):

> This is a heavily visited area. Cascade Mountain, one of the easiest 4,000 foot peaks to access, registered over 17,000 visitors in 1998. Its trailhead has a recommended parking capacity of 10 vehicles; yet the actual number of parked vehicles quadruples on weekends and holidays as motorists park and walk up and down the narrow shoulders of the highway. This is creating serious traffic problems restricting traffic flow and endangering pedestrians (Draft Route 73 Scenic Highway Corridor Plan, 1998). There is no room to expand the parking lot due to terrain. However, there is the potential to relocate trailhead parking to a safe "off-road" location on more gentle terrain situated on the Mt. Van Hoevenberg Intensive Use Area to the west.
>
> One option is to enter into an agreement with ORDA and construct a 50 vehicle parking lot in the intensive use area to serve both the Cascade and Pitchoff trail heads. The latter trail head is located in the Sentinel Wilderness north of Route 73 and has no parking facilities. Illegal parking and heavy pedestrian use along this section of highway is a concern. The proposal includes provisions for safe off-road parking and a minor relocation of the Cascade Trail.

These recommendations from the High Peaks Wilderness Complex Unit Management Plan will be supported by this plan.

Pitchoff Mountain East - Maintain to Class III Trailhead standards

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.

About 0.7 miles west of the existing trailhead there is a DOT pull-off on the south side of Route 73. This pull-off is easy to access from the highway, is regularly plowed in the winter, and provides parking for about 10 cars. Since moving the trailhead to this parking area will remove some problems associated with the current location, such a move is being proposed. Moving the parking area will necessitate rerouting about 0.5 miles of the eastern end of the Pitchoff Trail. This is addressed in the Trails section of the Proposed Management Actions above.

A trailhead for the Jackrabbit Trail is being proposed in the draft Saranac Lakes Wild Forest UMP off of Mountain Lane near its intersection with Route 73 in North Elba. Parking for this trailhead will be developed on the south side of the road on lands within the Saranac Lake Wild Forest and on the north side of the road on lands within the SRWA. Total parking capacity at this site will be 11 vehicles, with room for six vehicles on the south side of the road (Saranac Lakes Wild Forest), and room for five vehicles on the north side of the road (SRWA).

In addition to trailheads, the public may access the SRWA anywhere along a public highway. 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, and bushwhacking. These pull-off areas are usually large enough for only one or two cars to park at a 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

- 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.

- Initiate discussions and coordinate planning efforts with NYS DOT and ORDA to determine the feasibility of relocating the Cascade/Pitchoff Trailhead and parking lot. The intent is to provide safe parking and build a parking lot at a capacity consistent with desired interior use levels for Cascade and Pitchoff mountains. Consultation with APA is required for APSLMP conformance.

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

- Build a five car parking area on the north side of State Route 73 to serve the trails to Scotts Cobble.

- Develop partnerships with local governments and outside volunteers to maintain and snowplow roadside trailhead parking facilities.

- Move the Pitchoff Mountain eastern trailhead to a pullout located about 0.7 miles to the west.

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

4. 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.

There has been no demand for additional designated campsites in the unit and none are being proposed at this time. Camping use will be monitored and new designated sites may be proposed in the future if necessary for resource protection.

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

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

- Establish new campsites if necessary for resource protection.

- Inventory designated campsites every 5 years.

- The 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.

- “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.

5. 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.

6. 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.

7. 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.

Objective

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

Management Action

- 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.

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

- 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.

- Information about group size limits will be disseminated through an information and education program, to inform visitors of limits during trip planning and/or prior to arrival.

- 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.

2. Rock Climbing

Present Conditions

Rock and ice climbing in the unit occur at several locations on Pitchoff Mountain and at Wilmington Notch. Although climbing use levels have never been measured in this area, they are believed to be low to moderate compared to other rock and ice climbing areas. One exception is the Pitchoff Right Ice Climbing Wall. This is one of the most popular ice climbing walls in the Adirondack Park due to its easy access from a major road.

Rock climbing is not a wilderness dependent activity; it is a terrain dependent activity, however significant rock climbing areas have been classified as wilderness. Some rock 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 climbing occurs along the periphery of the unit.

The use of fixed anchors as a method of protection for rock climbers has become an issue in numerous Forest Preserve units, including the SRWA. Fixed anchors have been installed on several climbing routes in the unit. This plan will support the recommendations from the Dix Mountain and Giant Mountain Wilderness Area UMPs to establish a temporary moratorium on the placement of new, or replacement of existing, bolts or fixed pitons; inventory all known climbing walls in the unit for existence of fixed anchors; and 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 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.

Objective

- Manage rock climbing sites to minimize environmental impacts.

Management Actions

- 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 and Notch Mountain will be formalized and upgraded where necessary.
- Establish a temporary moratorium on the placement of new, or replacement of existing, bolts or fixed pitons.
- 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 rock climbing community.

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 and, while it is not specified, would be about 35 feet wide based on the length and area listed in the APSLMP. 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. There are several locations along the road where a vehicle can safely pull-off to the side, these pull-offs can be used for accessing the SRWA. In addition to the pull-offs there is a snowplow turnaround that is part of Bartlett Road.

The section of the SRWA that Bartlett Road passes though and all of the SRWA that is east of Bartlett Road were acquired in 1983. Leading off of Bartlett Road are several old grown-in roads that have become herd paths. Some of these lead 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.

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

- A trail will be developed to the Ausable River from Bartlett Road.

VI. Schedule for Implementation and Estimated Budget

The following tables outline a schedule for implementation of the proposed management actions and their estimated costs. Accomplishments are contingent upon sufficient staffing levels and available funding. The estimated costs of implementing these projects is 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. Where listed, “person-days” denotes the number of Department staff (person) days that each project would require in addition to the dollar amount.

Annual Maintenance and other Activities	**Estimated**	
	Person days	**Cost**
Boundary Line Maintenance (About 6 Miles/year @ $500/mile).	10	$500
Conduct routine maintenance of facilities.	15	$3,000
Monitor and address impacts to natural resources.	10	$1,000
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	**35**	**$4,500**

Year 1	Estimated	
	Person days	**Cost**
Relocate Pitchoff East Trailhead, and reroute eastern portion of Pitchoff Trail.	20	$28,000
Promulgate regulations, as identified in UMP.	20	0
Move the Jackrabbit Trail off of Mountain Lane.	2	1,000
Reroute the Jackrabbit Trail around beaver ponds.	6	2,500
Total Cost - Year 1	**48**	**$31,500**

Year 2	Estimated	
	Person days	**Cost**
Close the current campsites at Copperas Pond and build one new campsite.	7	0
Close the campsite at Holcomb Pond.	1	0
Total Cost - Year 2	**8**	**0**

Year 3	Estimated	
	Person days	**Cost**
Build parking area at Mountain Lane.	8	$3,000
Reroute Pitchoff Trail to Balanced Rocks Overlook.	15	$12,000
Total Cost - Year 3	**15**	**$15,000**

Year 4	Estimated	
	Person days	**Cost**
Restoration work on the Pitchoff Mountain Trail.	10	$20,000
Reroute Copperas Pond Trail.	10	$10,000
Total Cost - Year 4	**20**	**$30,000**

Year 5	Estimated	
	Person days	**Cost**
Build parking area and trail to Scotts Cobble.	16	$15,000
Total Cost - Year 5	**16**	**$15,000**

Cost Summary

Total Costs: $96,000

107 person-days

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Appendices

Appendix A - Acronyms

Appendix B - Facilities

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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

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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

Pit privies:	**(total 2)**	**QUANTITY**
Copperas Pond lean-to		1
Jackrabbit tent site		1

Lean-to (total 1)

Copperas Pond	1

Parking areas **(total 3)**

Name	**Location**	**Capacity**
Owen Pond	Route 86	7
East Branch	Bartlett Road	3
Holcomb Pond	River Road	2

Trails - listed by class

Location/name	Length (miles)	Notes
Class II- Path	**1.5 total**	
Holcomb Pond	0.6	Follows the old North Notch Ski Trail for part of the way.
Monument Trail	0.9	Remnants of old road, to base of Kilburn Slide
Class III- Primitive Trails	**2.5 Total**	
Barkeater Cliffs Trail	0.4	Trail to rock climbing area
East Branch Trail	1.9	Trail to East Branch Of Ausable River From Bartlett Road in Jay
Notch Mountain Trail	0.2	Access trail to Notch Mtn. Slabs from Copperas Pond Trail
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
Old Mountain Road (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
1.5	2.5	3.6	6.3	0.5	15.4

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.

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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. Additional fishes include white suckers, pumpkinseed (native but widely introduced), creek chubs (native but widely introduced), and golden shiners (non-native). An inspection in 2002 concluded that there is not a barrier on the outlet downstream to where it meets the outlet of Winch Pond.

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. All Brook trout were relatively fit. The pond level was lower by 2' or so because a beaver dam washed out.

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	08/16/84	ALSC	147	6.95	32.1	1984	ALSC	ST(1), LT(15), GS(213), CC(1), WS(33), PKS(18)
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	07/29/09	DEC	171	6.6	40	2009	DEC	ST(9), GS(382), WS(39), FAT(16), CC (27), PD (1), NRD (1), BND (1)

1 CH = Champlain Watershed

2 Species Codes:

BND = Blacknose dace GS = Golden shiner PKS = Pumpkinseed

BT = Brown trout LT = Lake trout ST = Brook trout

CC = Creek chub NRD = Northern redbelly dace WS = White sucker

FAT = Fathead minnow PD = Pearl dace

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 initiated with the preparation of the LEAF. Upon review of the information contained in the LEAF, there will not be a significant impact on the environment and a Negative Declaration will be prepared. Any changes that are made in this plan, based upon public comments, will be considered in the LEAF and determination of significance prior to completing the final plan.

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Appendix J – Public Comment

A summary of public comment received at a public open house on September 9, 2002.

- Against/concerned with motor vehicle use on Jack Rabbit Trail.
- Need for signage ("no motor vehicles") on Old Mountain Road/Jack Rabbit 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 Jack Rabbit 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.

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Appendix K – Unit Maps

Map 1- Location

Map 2- Hydrology / Wetlands

Map 3- Existing Facilities

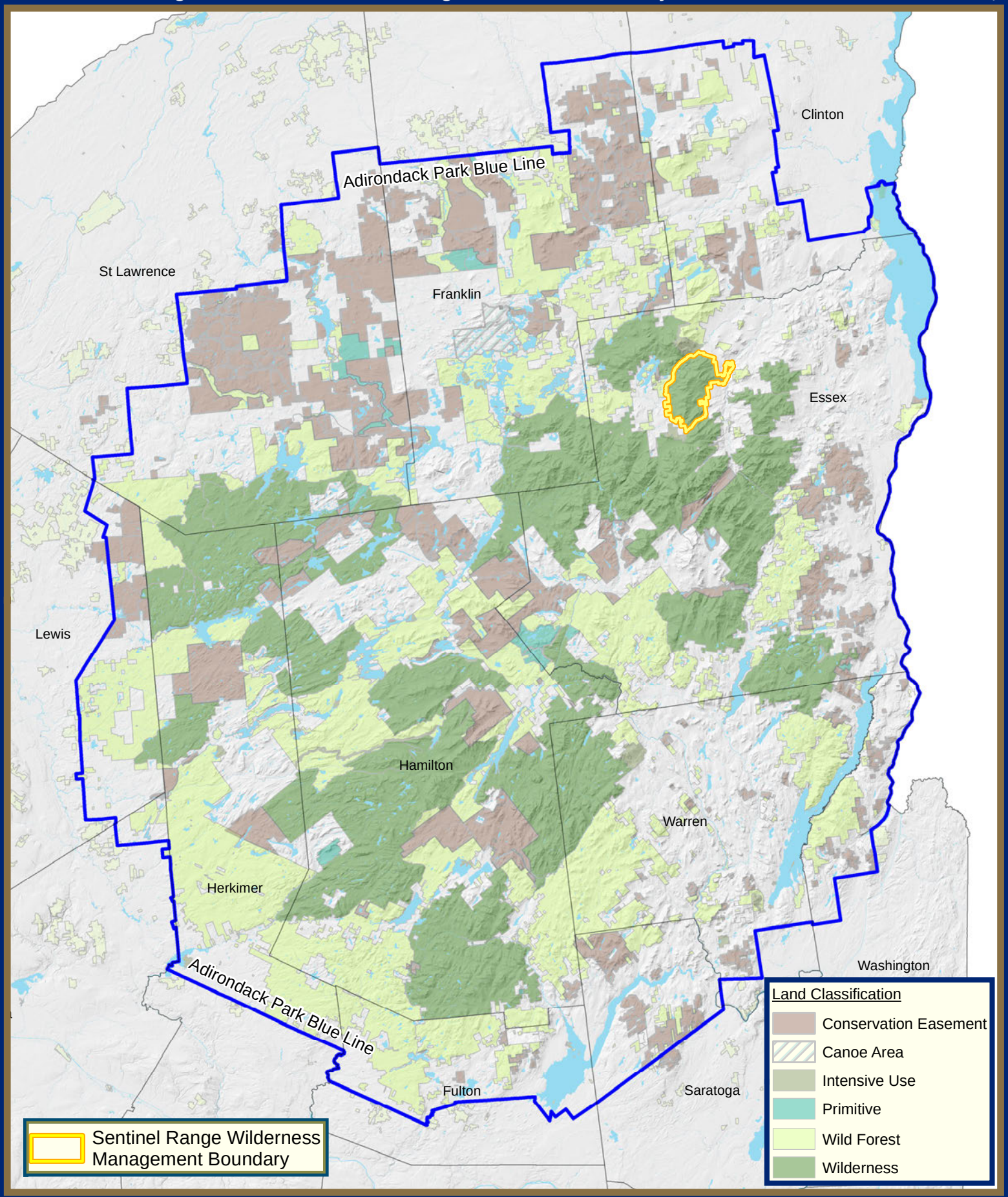
Map 4- Proposed Facilities / Actions

Map 5- Pitchoff Mountain Trail Alternatives

New York's Forest Preserve

Sentinel Range Wilderness Management Boundary

Location Map



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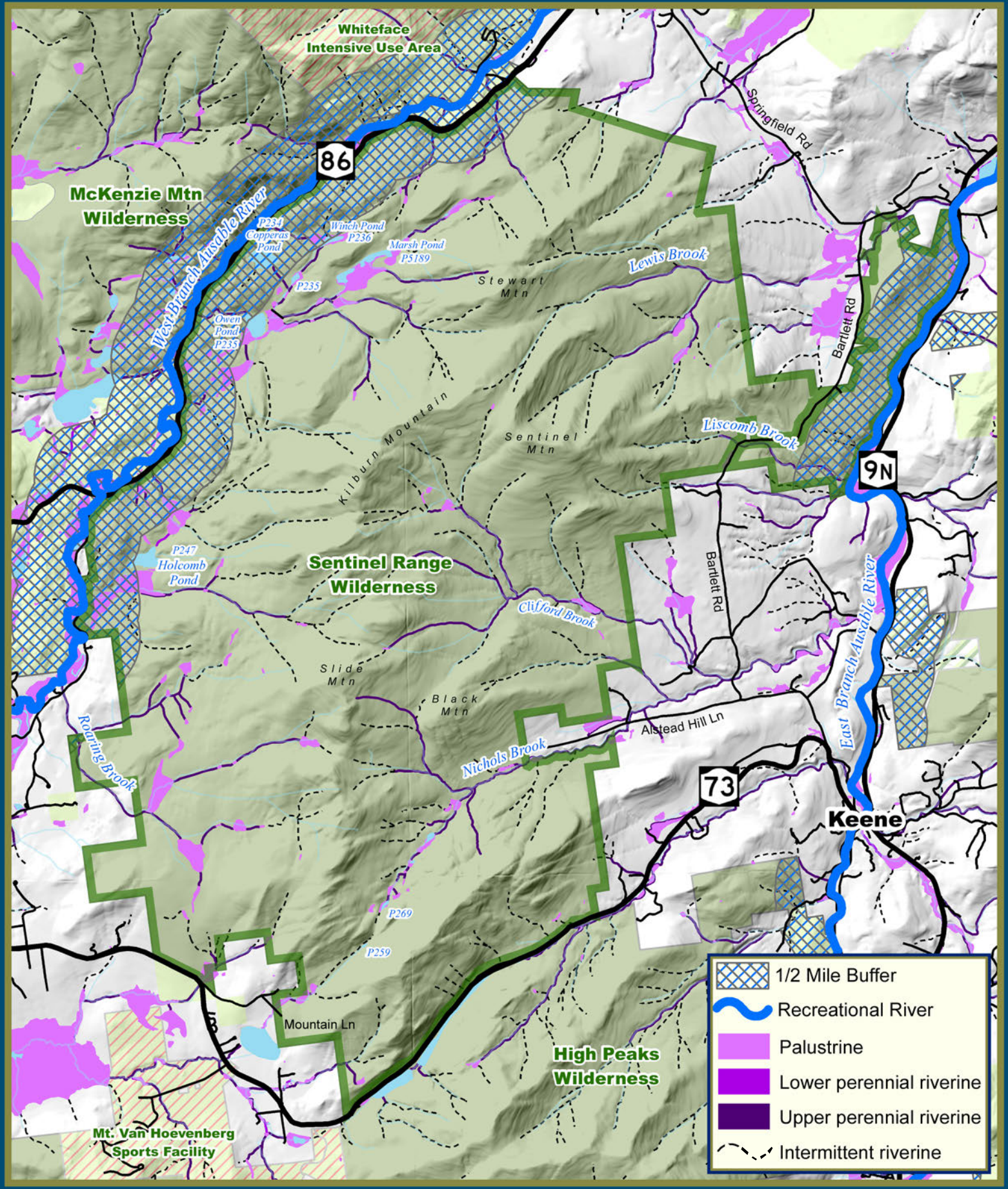
New York's Forest Preserve

Sentinel Range Wilderness Unit Management Plan

Hydrology / Wetlands



NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Draft 7-22-15

Ray Brook Office
(518)897-1200

0 1 2 4 Miles

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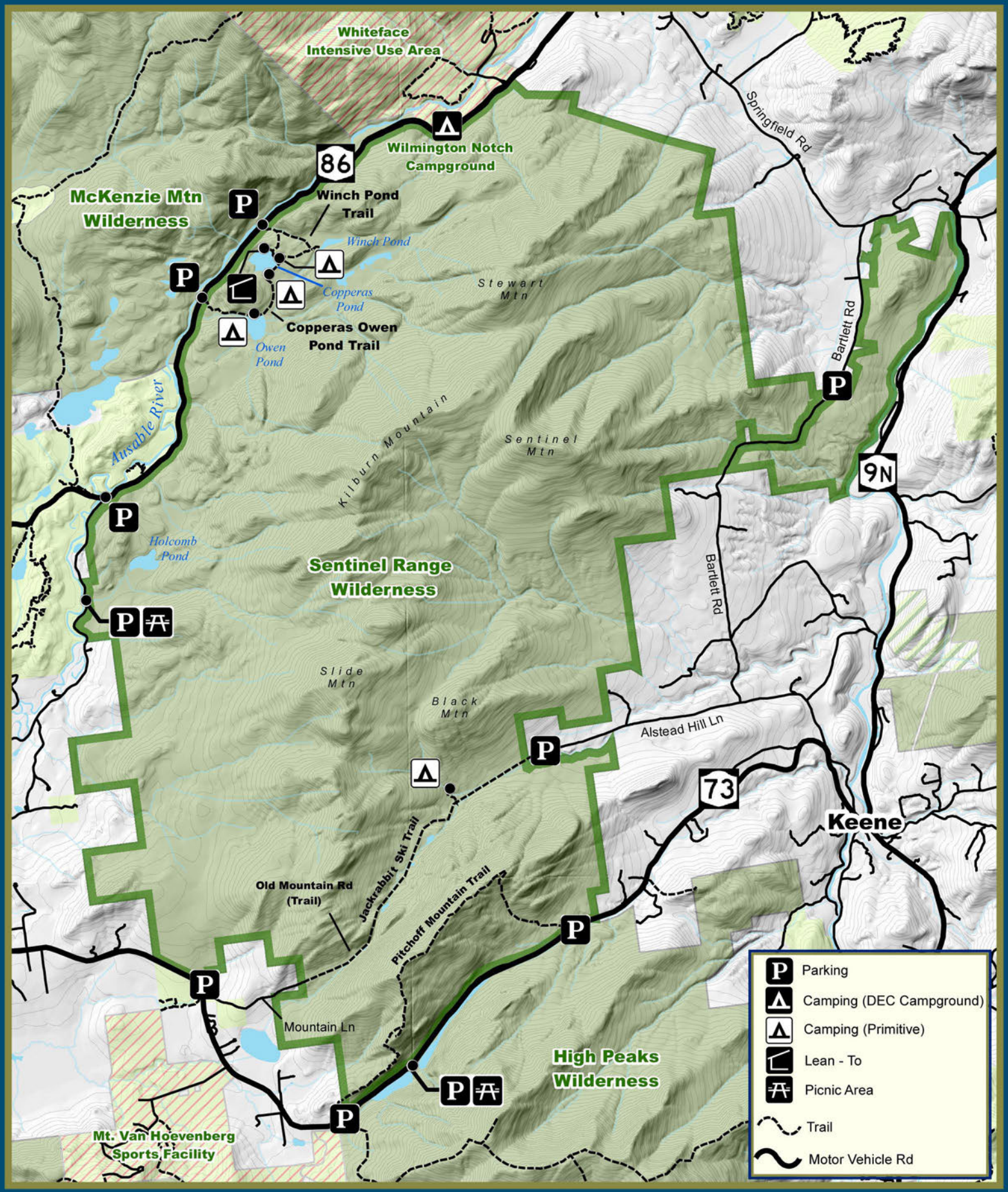
New York's Forest Preserve

Sentinel Range Wilderness Unit Management Plan

Existing Facilities



NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

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Ray Brook Office
(518)897-1200

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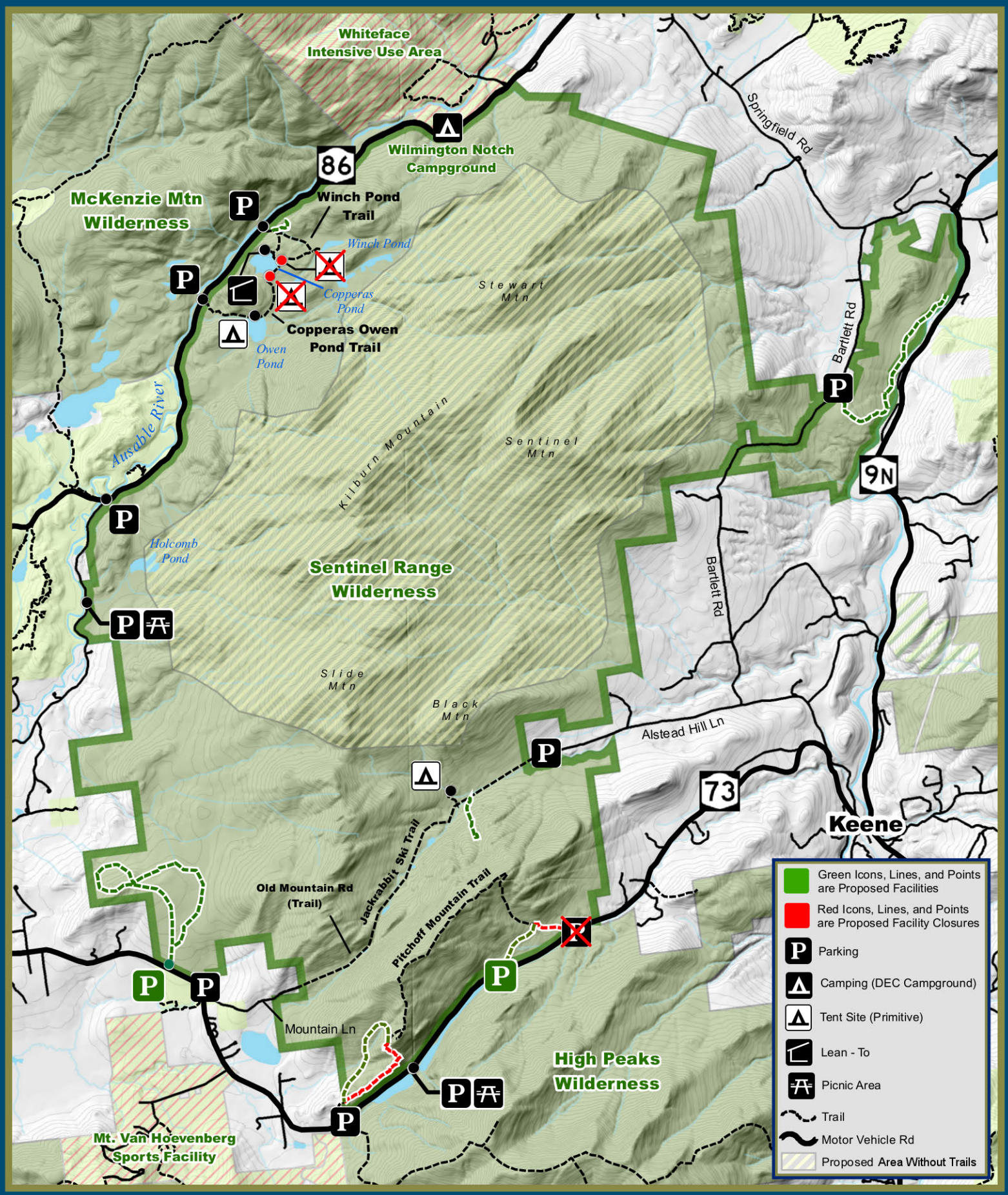
New York's Forest Preserve

Sentinel Range Wilderness Unit Management Plan

Proposed Facilities/Actions



NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Ray Brook Office
(518)897-1200

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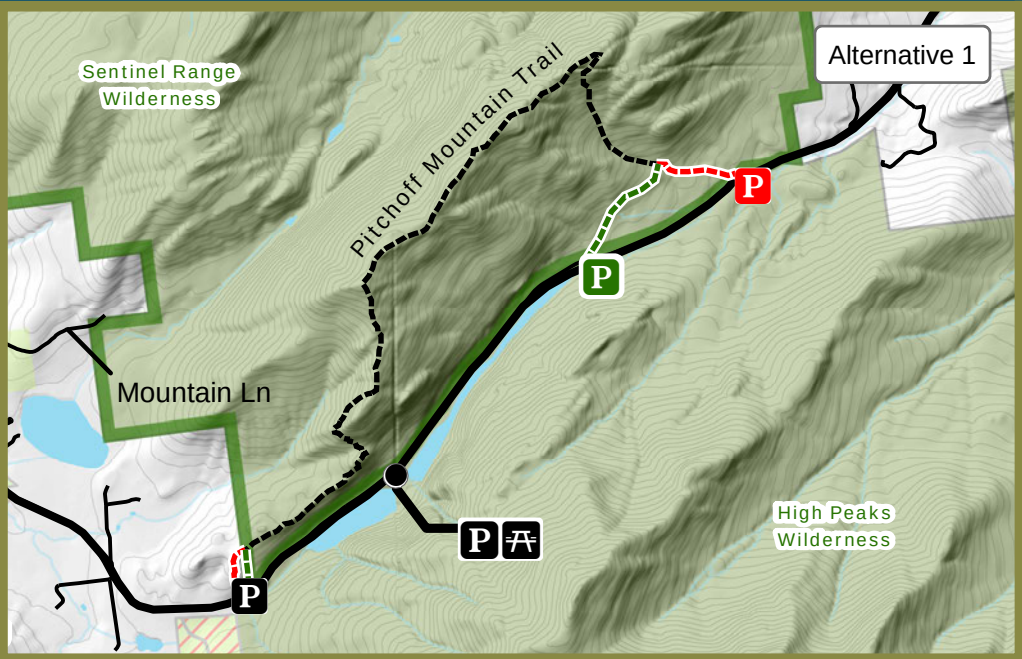
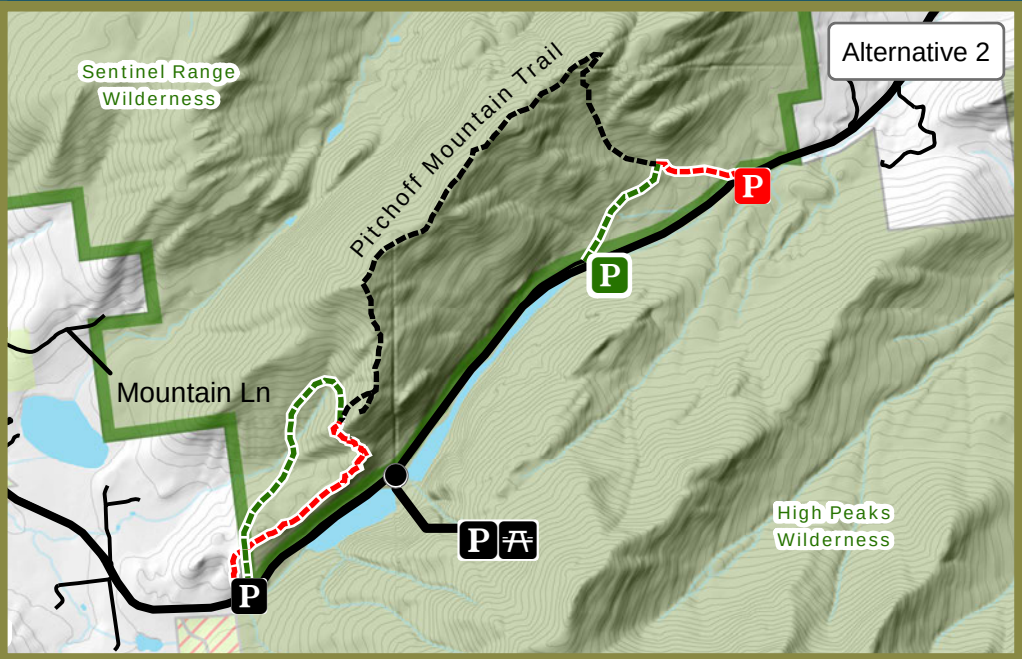
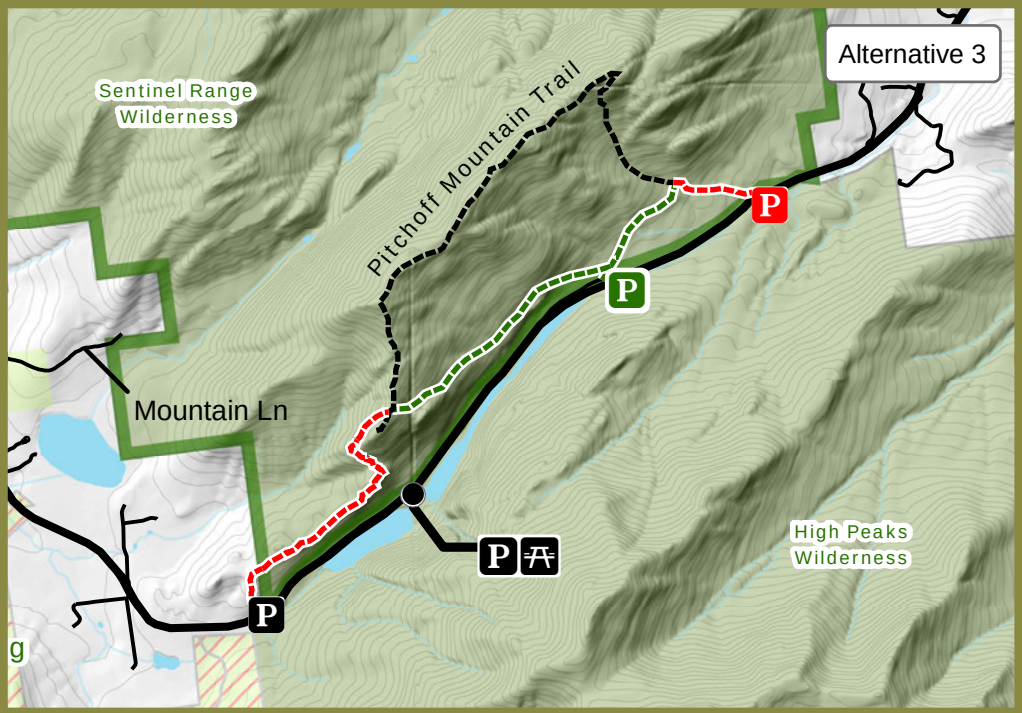
New York's Forest Preserve

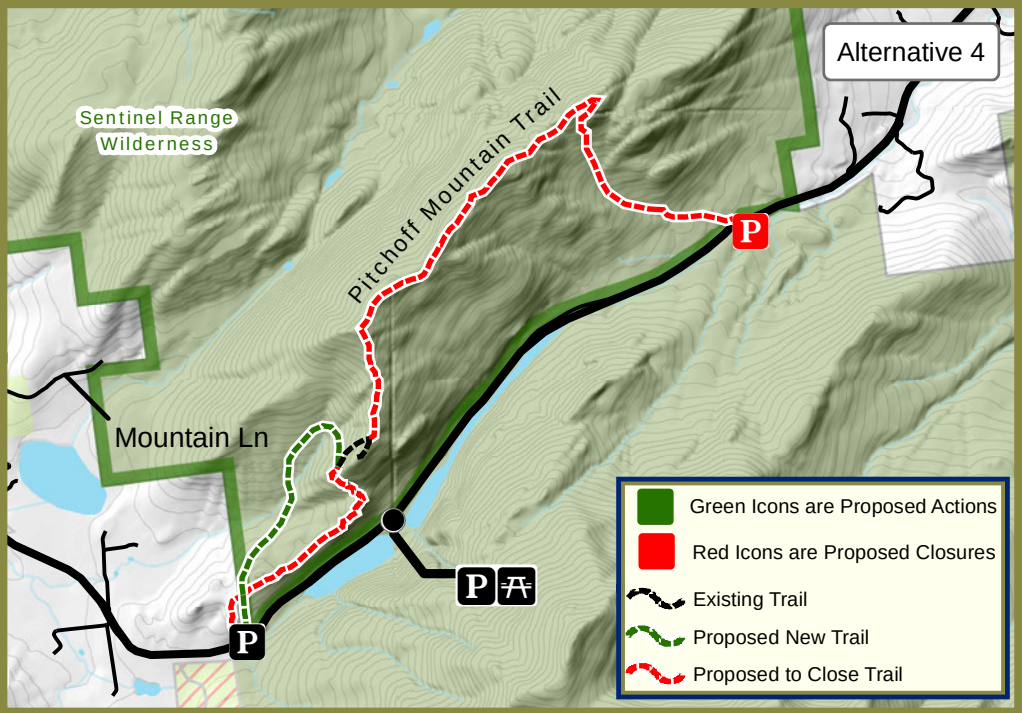
Sentinel Range Wilderness Unit Management Plan

Pitchoff Mtn. Alternatives









NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Draft 7-13-15

Ray Brook Office
(518)897-1200

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0 0.75 1.5 3 Kilometers

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