Chapter 2
Natural and Human Environment

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Introduction

This chapter will provide background information on the natural and human environment for the Nancy Lake State Recreation Area and Nancy Lake State Recreation Site. The natural and human environment will be considered when making facility, trail, and management recommendations.

Natural Environment

Climate

The climate for NLSRA and NLSRS is transitional maritime-continental, characterized by long cool winters and short warm summers. The area lies within the transitional zone, bounded by the continental zone to the north, west and east, and the maritime zone to the south. Temperatures for the community of Willow just a few miles north of NLSRA range from a lowest recorded temperature of -50°F in January 1989 to the highest recorded temperature of 89°F in July 1999. The average high temperature in June is 68°F while the average low temperature in December is 1°F. Daily minimum temperatures in summer are generally between 44 and 47°F.

Yearly precipitation for the area around NLSRA is just over 21 inches per year. Precipitation is usually light in spring and summer and increases in late summer and fall with most of the precipitation occurring as rain in August. Snow accumulation is more typical of the continental zone with most of the snowfall occurring between November and March. December and January are the months most likely to get the heaviest snowfall.

Long days in summer and short days in winter have a strong influence on recreation in Southcentral Alaska. While a recreationist in mid-summer can expect approximately 19 hours of daylight, mid-winter recreational activities which depend on natural daylight, are restricted to about 5 hours.

Geology

Surface Features
Vast sheets of ice once covered the area of the Nancy Lake State Recreation Area and Recreation Site. This sheet moved down the Susitna Valley from the north, coalesced with

glaciers from the Matanuska Valley and Turnagain Arm, and moved down Cook Inlet. Around 10,000 years ago this ice sheet began receding and the landforms we see today were revealed. Surface features consist of glacial till and ground moraine deposits (uplands and ridges) adjacent to scoured depressions or flat areas (lakes, ponds, and wetlands).

Elongate ridges and uplands that we see today – in terms of glacial morphology, drumlins and eskers – are derived from glacially pulverized rock, known as till, that was eroded from parent material and transported to this site by the glaciers. Within and under glaciers, the till was formed by both ice and water into the elongate ridges seen today. The direction of ice flow over this area is evidenced in the northeast/southwest trend of these ridges. Glacial deposits in this area have been recorded at more than 140 feet in depth.

The same glaciers that formed the ridges also formed the lakes and lowland areas. Significant scouring occurred in the Susitna basin as a result of the tremendous weight and generally north to south movement of glaciers in the Valley. This glacial scour is evidenced by the numerous lakes that formed in lower depression areas. Other deperessional or lowland features were formed in ground moraine deposits under the ice.

Soils

The Soil Survey of the Matanuska-Susitna Valley Area, Alaska was finalized in 1998. The updated soil survey reclassified many of the soils identified by earlier surveys for this area. The planning area is located within two general soil map units: Estelle-Disappoint Association and Histosols (peatlands). Generally speaking, the majority of upland soils in the planning area are Estelle soils while the majority of wetland soils are Histosols. However, there are several classified units of both upland and wetland soils in addition to those previously mentioned. Upland soils comprise approximately 50% of the total planning area; wetland soils comprise approximately 29%; and the remaining 21% is surface waters. See Map 3 on page 27 for a general depiction of wetland and upland soils.

The Estelle-Disappoint Association contains two soils units that are found within the same unit. Estelle soils are found in areas of deep glacial till that is overlain with wind-blown silt and volcanic ash. These soils are well drained and can be found throughout the planning area. These soils have slight to severe restrictive soil features for recreational development because of slope, percolation, or erodability. Disappoint soils are similarly found in areas of deep glacial till overlain with silt and volcanic ash. Unlike Estelle soils, Disappoint soils are found in depressions or at toeslopes and are very poorly drained (wetlands). These soils have severe restrictive soil features for recreation development because of wetness and large stones.

Histosols are deep organic soils found on low landscape positions and depressions and includes bogs and fens on glacial till within the planning area. These soils are very poorly drained (wetlands) and may have water present at the soil surface.

Subsurface
Below the glacially influenced surface formations lie Tertiary aged sedimentary bedrock of the middle Kenai formation. Below that formation is igneous bedrock of the Jurassic period. Coal is present at varying quantities and depths.

Water

Surface Water
There are 131 lakes within the NLSRA. Sixty-seven are over five surface acres in size and 20 are over 40 acres in size. The four largest lakes are Red Shirt Lake (1,183 acres), Nancy Lake (761 acres), Lynx Lake (315 acres), and Butterfly Lake (310 acres). The Little Susitna River flows through the southern portion of the recreation area. In addition to being in NLSRA the Little Su is also legislatively designated as one of the Recreation Rivers. Lakes and streams within NLSRA make up approximately 4,632 acres (or 21%) of the planning area.

Surface waters generally drain southwesterly into the Susitna River. Only Nancy Lake and the lakes in the extreme southeastern corner of the recreation area drain into the Little Susitna River. The lakes north of Nancy Lake Parkway drain westerly into Rolly Creek and then into the Susitna, while those south of the parkway drain southwesterly into Red Shirt Lake, then into Fish Creek and the Susitna. Although flooding of the lakes and streams within NLSRA along natural rivers may pose some hazard problems, flooding from heavy rains or snows are not considered to be a significant hazard.

There are five water rights issued for withdrawal of surface waters in NLSRA. All five authorizations occur on Nancy Lake.

Subsurface Water
Ground water from three wells within the NLSRA supply water for state maintained facilities. These wells are located at the State Recreation Site campground, South Rolly Lake Campground, and at the agency staff/maintenance facility. Numerous private wells exist on the adjacent private parcels, and range from 25 feet to over 140 feet deep. Hand dug/driven wells range from 15 feet to over 40 feet.

Vegetation

Most of NLSRA and NLSRS are covered by boreal forest. There are four general forest cover types in the planning area. The most predominate cover type is a pure White Birch (Betula papyrifera) type; these stands dominate the higher elevation areas particularly on the well drained eskers and ridges. These stands give way to the second cover type as elevation is lost and the land forms more closely adjoin the lakes and muskeg areas. This second type is a White Birch/White Spruce (Picea glauca) type. White Birch is the predominate species in this type with White Spruce being scattered throughout the stand. The third cover type is recognized as elevation decreases at toe-slopes where ridges give way to rolling to flat terrain. This type is a transition between and mostly Black Spruce (Picea mariana) to a

mixture of White Spruce and Black Spruce (Picea mariana). Drainage at these sites is better than the adjoining pure Black Spruce type on the muskegs, but not as well drained as the White Birch or the White Birch/White Spruce stands upslope. The fourth cover type is the Black Spruce type; this type occurs on poorly drained soils and is located next to the numerous lakes and muskegs in the Recreation Area. Cottonwood (Populus balsamifera) and Quaking Aspen (Populus tremuloides) along with alder (spp) and willow (spp) are present but scattered in riparian areas, seep locations, and at the edge of muskegs. See Map 4 on page 29 for a depiction of the vegetative cover for the planning area.

Since this area is a designated State Recreation Area, timber management and stand manipulation is generally not appropriate in most circumstances. However, there may be circumstances where timber management is consistent with management, facility, or visitor use objectives. Under some extenuating circumstances (i.e. a large wildfire, insect epidemic, or hazard trees) stand manipulation may be appropriate in order to enhance visitor safety.

Fish and Wildlife

The rolling hills interspersed with lakes and wetlands provide rich habitat for fish and wildlife. Few detailed studies specific to this area exist; however some general information on fish and wildlife does exist. The following information contained in this plan was taken from general data developed by ADF&G, peer reviewed literature, and is augmented with personal communication with staff from ADF&G, USFWS, and DPOR.

Large Mammals
Several species of large mammals utilize this area's diverse habitat. Species include bears (black and brown), moose, and wolves. ADF&G data indicates that all of these species are present within the NLSRA.

Both brown and black bears have been sighted in the planning area; however, exact numbers are not known. Black bears are distributed across much of Alaska, particularly in "open" forests with mixed habitat types. Similarly, brown bear are distributed across much of Alaska. However, the preferred type of habitat for brown bear includes large areas of grasslands that provide high quality foods when other food sources are unavailable. The planning area contains habitat types suitable to both types of bears.

Moose have a circumpolar distribution and inhabit a wide range of habitats in the northern hemisphere. In Alaska, moose occupy a range of habitats from the North Slope to the Alaska Peninsula and Southeast Alaska. Moose are commonly sighted throughout the planning area and utilize all available habitats (uplands, wetlands, and waterbodies). Habitat information produced by ADF&G indicates concentration areas to be present. Based on this information, numbers of moose in the planning area can increase during the spring, summer, and winter.

Wolves exist in a wide variety of habitats, climates, and terrains across Alaska and have been sighted in the planning area. Moose is an important food source for wolves but they will prey upon other small mammals, birds, and fish. All of these prey species are found within NLSRA.

Small Mammals
Small mammals are commonly found in habitats similar to those located in the planning area. These animals can include: wolverines, coyotes, lynx, martin, weasels (ermine), red foxes, beavers, hares, squirrels, muskrats, and voles to name a few. Of these animals, hares, squirrels, beavers, and muskrats are commonly sighted in the area.

Birds
Common throughout the planning area, birds utilize all available habitat types. The upland areas and transitional habitats provide habitat for migratory and resident songbird populations. The numerous wetlands, ponds, and lakes provide habitat for several species of water birds including multiple species of ducks, Canada geese, common and Pacific loons, red-necked grebes, and trumpeter swans. Open meadows are frequented by sand hill cranes in the summer. ADF&G habitat information indicates that waterfowl and swan nesting, molting, and brood rearing occurs in portions of the recreation area. Common loons have been observed on many of the lakes and nesting is known to occur on several waterbodies. Similarly, red necked grebes have been observed nesting and brood rearing on several waterbodies.

Fish
Many of the waterbodies have both resident and anadromous fish populations. Resident fish species include burbot, Dolly Varden, rainbow trout, whitefish species, and Northern pike. With one exception – Northern pike – the listed species are native to these waters. Northern pike have recently become established in the Susitna River watershed where they are considered an invasive species. Since their introduction they have spread to many waterbodies, including those in the recreation area. A voracious predator, Northern pike negatively impact native fish populations in waters where they are introduced. Several waterbodies have seen a reduction or elimination of native salmon and trout species where pike have become established.

Twenty five waterbodies are identified as anadromous in the *Atlas to the Catalogue of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes*[11]. These waterbodies support various habitat needs for fish species including spawning and rearing habitats. Anadromous fish species include chinook, coho, pink, and sockeye salmon. Once abundant in many of the lakes, salmon populations have been deceased or eliminated where pike are present. See Map 5 on page 31 for a depiction of anadromous waterbodies in the planning area.

[11] Alaska Department of Fish and Game (ADF&G) publication available online or in hard copy at certain locations across the state.

Ten waterbodies have been stocked by ADF&G. Four of these lakes – North & South Rolly, Rhein, and Tanaina – were stocked with rainbow trout in 2011. See Table 3 on page 33 for information on stocked lakes.

Natural Hazards

Wildland fires

Many tree stands within NLSRA are over-mature or have been affected by forest pests. Because of the prior spruce beetle mortality in the white spruce and the age and condition of the white birch some active management of the high risk trees may be required to protect the recreating public. Dead and dying white and black spruce in areas of high public use may necessitate active forest management to reduce the threat of wildfire. The type and composition of understory species also affects the rate spread of wildland fires. Modification of the understory may be necessary to provide vegetative breaks or control areas to help reduce rate of fire spread in this area. High use areas such as campgrounds and public use cabins are particularly vulnerable to wildfire due to concentrated and reoccurring public use where fires are authorized. Most wildfires in the Mat-Su Valley are caused by humans.

Hazard Trees

For the same reasons stated above, some trees in close proximity to trails and facilities have become hazardous to the recreating public. Over-mature, diseased, or declining trees are susceptible to failure of the bole or limbs. Injuries may occur if a person is present when the failure occurs. This is particularly true where use is concentrated at campgrounds, remote campsites, or public use cabins.

Water

Much of the recreation in this area is centered on water based recreation activities in both summer and winter. Unexpected water immersions are possible through a number of scenarios including boat capsizing, falls overboard, or unsafe ice conditions. These events may result in hypothermia or drowning. The majority of boating fatalities in Alaska involve adult males that have capsized a boat or have fallen overboard while recreating. By statute, persons under 13 must wear their personal flotation device when in an open boat or on the deck of a boat, and when waterskiing.

Cold Temperatures

When recreating in the winter time, people can expect cold temperatures that persist for extended periods. Average low temperatures for January, February, and March are 1, 3, and 8ºF respectively. The lowest recorded temperatures for these same months are -47, -41, and -43ºF respectively. Exposure at these temperatures can result in frostnip or frostbite, or if prolonged, death.

Other Hazards

Other hazards include slip, trip, and fall accidents; encounters with traps; encounters with wildlife; and, accidents related to discharge of bow and arrow.

Map 3: Soils

Map 4: Vegetation

Map 5: Anadromous Fish Distribution

Table 3: Stocked Lakes

Waterbody Name	Stocked by ADF&G	Most recent year stocked	Species Stocked (past and present)
Big Noluck	Yes	1999	rainbow trout
Delyndia Lake	Yes	1990	coho salmon
Little Noluck	Yes	1992	rainbow trout
Milo Lake	Yes	1972	rainbow trout
Nancy Lake	Yes	1994	sockeye and coho salmon
North Rolly Lake	Yes	2012	rainbow trout
Rhein Lake	Yes	2012	rainbow trout
South Rolly Lake	Yes	2012	rainbow trout
Tanaina Lake	Yes	2012	rainbow trout
Little Susitna River	Yes	1995	Arctic grayling and coho salmon

Human Environment

Population

Just over 50% of the State's population is within a couple hours drive of NLSRA and NLSRS. See Map 1 on page 13 for a depiction of the locations of NLSRA and NLSRS within Southcentral Alaska. Most of these people live within the Municipality of Anchorage (291,826); however, a substantial number of people (88,995) reside in the Matanuska Susitna Borough. The population within Alaska increased by 83,299 people between 2000 and 2010. Over 60,000 of these new residents reside in Anchorage and Matanuska Susitna Borough in roughly equal numbers (31,543 Anchorage; 29,673 Matanuska Susitna Borough). This translates into just over 70% of the statewide population growth occurring in Anchorage and the Matanuska Susitna Borough.

Cultural History

Not long after the glaciers retreated, this rich and diverse area was inhabited by Alaska Natives. While exhaustive archaeological surveys have not been completed for the entire area, some specific areas have been studied and have yielded evidence of past settlement and use. Dating of sites within the Susitna Valley indicates that the first Alaskans may have come into this area approximately 10,000 years before the present day. The oldest sites of these are associated with the American Paleoarctic Tradition, dating from 10,500 to 5,200

years ago. Sites in the Cook Inlet region dating from 3,000 to 1,000 years ago suggest a Pacific Eskimo cultural affiliation with coastal Southcentral and Southwestern Alaska. Linguistic data suggests there were several migrations of Dena'ina into the region starting 1,000 to 1,500 years ago. By between 600 and 500 years ago, they had replaced earlier populations.

People were drawn to this area because of plentiful salmon, resident fish populations and the availability of moose and other animals. Artifacts related to these early inhabitants have been located within the recreation area and site. In addition to archaeological studies, detailed information about local village sites and use of the area by the Dena'ina people has been provided by Shem Pete and his son Billy Pete. This father and son were both residents of the area. Remnants of Billy Pete's cabin and the village where Shem Pete once lived are still visible today.

The area around Nancy Lake was an important home and cross-roads for Alaska Natives and early Alaskans. NLSRA and NLSRS are positioned at the transition between the Talkeetna Mountains to the east and the vast wetlands and flats of the Susitna River to the west. Initially, this area was inhabited by people that relied on the fish and game resources for sustenance. These people often traveled with the seasons and natural patterns of the fish and game they depended upon and established village sites and seasonal camps where harvests would occur. The recreation area, site, and surrounding lands contain several such sites. American gold prospectors made their way to the Susitna River by 1896. As prospecting and gold mining expanded in the Talkeetna Mountains many people traveled the mining trails including the Nancy Lake-Susitna Trail – a trail that is also recognized as a segment of the Iditarod Trail. After European contact and settlement, people continued to live, hunt, fish, and trap in this area. Others were only visitors on their way to destinations elsewhere in the Susitna Valley or surrounding mountains.

Surface Estate

The surface estate is the land that you can see in addition to common variety materials. The NLSRA encompasses just over 22,500 acres of land and water. Of that, approximately 323 acres are private ownership inholdings[12]. At approximately 30 acres, the NLSRS encompasses a significantly smaller area of land and water. There are no private inholdings within the recreation site. There are approximately 500 parcels of private land contiguous[13] with the boundary of NLSRA and NLSRS. Over 400 more private parcels are adjacent[14] (within ½ mile) to the recreation area and site. See Map 2 on page 15 for a generalized depiction of land ownership.

[12] Inholdings are defined for the purpose of this document as private properties within the boundary of NLSRA.

[13] Contiguous parcels are located outside of the external boundary of NLSRA or NLSRS but share a common boundary with NLSRA or NLSRS.

[14] Adjacent parcels lie near the external boundary of NLSRA or NLSRS but do not share a common boundary with NLSRA or NLSRS.

Subsurface Estate

The subsurface estate includes the lands below the surface and the leasable minerals[15] and locatable minerals[16] such as gold, coal, oil and gas. The state owns the entire subsurface estate at NLSRS and NLSRA with the exception of 15 acres on Skeetna Lake where 15 acres of the hydrocarbon estate is owned by the Alaska Mental Health Trust Authority. Because the lands and waters were withdrawn from the public domain as a special purpose site they cannot be leased for private or commercial development of the subsurface resources.

Recreational Uses

The recreation area is well known in Southcentral Alaska for its canoe trail (Lynx Lake Loop) and 13 public use cabins. In addition to these well known opportunities, many different recreational uses occur within NLSRA and NLSRS. These uses vary by location and season. During ice free periods recreational uses include motorized and non-motorized boating, hiking, camping, fishing, bike riding, waterskiing, wildlife and nature viewing, photography, and swimming. When snow and ice conditions allow, winter recreationists enjoy skiing, dog sledding, skijoring, snowshoeing, skating, snowmobiling, and ice fishing among other pursuits. A lesser known canoe trail – the Pioneer Loop – provides access to several lakes north of the Nancy Lake Parkway. Local and regional recreation preferences are discussed below.

Use Trends

Visitor count data for fiscal year 2001 to fiscal 2010[17] was reviewed to see if any trends in overall use and use of public use cabins were evident. Generally speaking, overall use of NLSRA reached a ten year high of just over 70,000 people in fiscal year 2002 but has been declining in recent years to a ten year low of approximately 40,000 people in fiscal year 2010. In contrast, use of NLSRS has increased in recent years to a ten year high of just over 12,000 people in fiscal year 2008 from a low of just under 5,000 people in fiscal year 2004. See Graph 1 on page 39 for a depiction of overall visitor use count data.

Overall use of the 13 public use cabins at NLSRA has ranged from a low of 4,368 people to a high of 6,496 people. Generally, use of the cabins has increased recently to over 6,000 people per year for the last two years. Cabins on Nancy Lake are the most readily accessible and receive the highest levels of use (consistently over 2,000 people per year) while the more remote cabins at James and Lynx lakes receive the least amount of use (between 274 and 675 people per year). See Graph 2 on page 39 for a depiction of public use cabin visitor count data.

Taken together, just over 600,000 people have visited NLSRA and NLSRS including over 55,000 people at the public use cabins over a ten year period.

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[15] Leasable minerals include deposits of coal, sulfur phosphates, oil shale, sodium potassium, oil, and gas. Leasable minerals do not include the locatable minerals.

[16] Locatable minerals include both metallic (gold, silver, lead, etc.) and non-metallic (feldspar, asbestos, mica, etc.) minerals. Locatable minerals do not include the leasable minerals.

[17] The most recent visitor count data available at the time of plan development was fiscal year 2010.

Public Access
Access to NLSRA and NLSRS is provided to residents and visitors via the George Parks Highway. Three primary access routes lead west from the highway into the recreation area and site – Nancy Lake Parkway, Lynx Lake Road and Butterfly Lake Trail, and Buckingham Palace Road. A number of lesser routes also access private land or subdivisions on borough roads or from roads and trails originating on private, borough, or state land.

The Nancy Lake Parkway is a 6.5 mile long paved road that provides access to the majority of developed recreation facilities at NLSRA. The facilities include trailheads, parking areas, picnic area, and the South Rolly Lake Campground. Among the trailheads are those used to access the canoe trails. The road is also used for access to private property near Red Shirt Lake.

Lynx Lake Road is a minimally developed and maintained dirt road that is approximately 6 miles long. This road primarily serves as an access route for private property owners on Nancy, Lynx, Butterfly, Skeetna, and Delyndia lakes. This road leaves the George Parks Highway at mile 63.9 and generally travels west and south to the boundary of NLSRA. A small parking area with a traffic control gate has been developed just inside the NLSRA boundary. From this parking area, the road continues south and east to private property on the eastern shore of Lynx Lake. From this property, the route continues as a moderately developed trail to the northeast shore of Butterfly Lake. This trail is commonly known as the Butterfly Lake Trail. In the past, property owners had been authorized to use both highway vehicles and ATV's on Lynx Lake Road and Butterfly Lake Trail for access to their private property. Use of a highway vehicle or ATV is now restricted beyond the traffic control gate by anyone who applies for a special permit. Only three facilities are accessible from this road and trail – Lynx Lake boat launch, Lynx Lake Public Use Cabins 2 & 3 and the Butterfly Lake boat launch. The Lynx Lake launch is small and only minimally developed whereas the Butterfly Lake launch was recently developed as a hand launch for small boats.

Buckingham Palace Road together with multiple connected local roads provides access to the NLSRS and to numerous private properties on Nancy Lake. Public access to the surface of Nancy Lake is provided where local roads terminate at the shoreline. These road access sites can accommodate a small amount of use but lack sanitation, waste, or parking facilities common to other water access sites.

Recreational Preferences

Statewide
The Statewide Comprehensive Outdoor Recreation Plan (SCORP) is a document that is produced to guide recreation-related decisions and policies on a large scale over a 5-year period from 2009 to 2014. It is necessary to develop the SCORP every 5 years to maintain the State's eligibility to participate in the federal Land and Water Conservation Fund program. Among other plan requirements, it assesses the supply and demand for outdoor recreation on a statewide basis. The public process used to develop information for the SCORP was extensive and included: 600 telephone surveys conducted in three

representative regions of the state; a survey distributed to park professionals across the state; and, a survey that was mailed out to 2,357 households across the state. An additional survey was provided to school districts to get input from the youth of Alaska. The following text highlights some information contained in the SCORP.

The majority of people surveyed indicated that they are generally satisfied with the outdoor recreation opportunities in their community or within 1 hour of their community. Ninety-six percent of all respondents indicated that parks and outdoor recreation were important or very important to their life style. The importance of outdoor recreation is reflected in the number of people that own equipment that facilitates recreation. The type of equipment owned ranges from relatively small and inexpensive items such as backpacks, tents, bicycles, and fishing equipment to larger more expensive items such as canoes, rafts, ATV's, snowmobiles, and recreational vehicles among other types. Hiking is the activity favored by most people in addition to being the activity most people reported participating in. Other favorite activities include fishing, hunting, snowmobiling, cross country skiing, camping, biking, ATV riding/4 wheeling, skiing/snowboarding, and running.

Many of the activities listed above rely upon a developed facility or trail that allows the person to engage in the recreational pursuit. A series of questions were asked to better understand what types of developments and experiences people would support. People supported development of new facilities to provide recreational opportunities and experiences to varying degrees while registering opposition to a few. The developments that drew the most support were: establishment of new parks and recreation areas; and, expansion of the public use cabin system. Other developments and experiences that were supported to a lesser degree included: providing toilets at regular intervals along road systems; development of new trailheads on roads and highways; and, development of more non-motorized trails. Development of visitor centers drew the least support while several other types of developments and experiences similarly garnered little support, these included: development of tourist facilities; more RV campgrounds; more organized recreation programs; providing more facilities for disabled people; providing more RV dump stations; and, more boat launches and ramps. Respondents overwhelmingly supported improving the maintenance of existing facilities before developing new facilities when funding is limited.

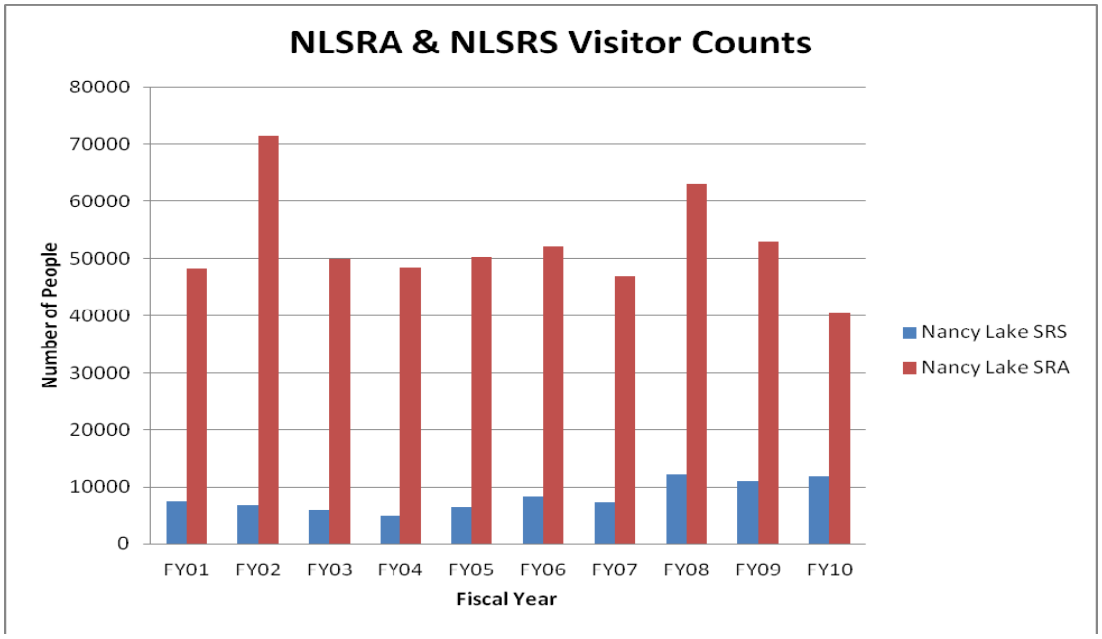
Local

A questionnaire was developed to help DPOR better understand people's preferences for types of recreation and facilities, and to gain a better understanding of access within and through NLSRA to private property. The questionnaire was made available to be completed electronically at the NLSRA planning website or people could request a hard copy be mailed to them. Notice of the availability of the questionnaire was sent to the distribution list of over 900 people and included property owners in the area, non-governmental organizations, and other people interested in management of these state resources. The questionnaire was available for people to complete for over 30 days in the fall of 2010. One hundred and fifty-one people completed the questionnaire by the September 13th deadline. While not taken directly from the 1981 survey, several questions are variants of those asked in the earlier survey. This was done to determine if there had been any shifts in preferences since 1981.

The first part of the questionnaire focused on recreation, experiences, and facilities while the second part was focused on private property, access to that property, and how NLSRA facilities are used to facilitate private access. Information from the questionnaire is summarized in the following text while a more detailed review of results is provided in Appendix D.

- Of the 151 respondents to the questionnaire, 99% indicated that they recreate, or had recreated, in NLSRA in the past. Opportunity to escape urban environments was the primary reason people chose to recreate at NLSRA. Slightly more people recreate during the summer (88%) than in winter (87%); however, respondents indicate that recreation occurs in all seasons.
- Recreation occurs in all areas of the NLSRA with snowmobiling (68%), canoeing (66%), boating (61%), fishing (54%), and hiking (51%) indicated as the five activities most engaged in.
- Respondents indicated that many of the commonly occurring recreational facilities and uses *were appropriate* at NLSRA with hiking (72%), cross country skiing (69%), camping (69%), public use cabins (65%), and snowmobile riding (64%) being the five uses and facilities that drew the most support.
- Horse riding (33%), dog training (31%), float plane use (29%), education & interpretation center (16%), and snowmobile riding (15%) drew the most responses as the five uses and facilities that are *not appropriate* at NLSRA.
- The "quiet natural setting of the area" is what people like most about NLSRA while people indicated that the least liked "motorized use in the recreation area" (62% and 33% respectively).
- Seventy-two percent of respondents indicated that development should remain at current levels or be increased slightly.
- Fourteen questions were specific on the types of uses and facilities. Respondents indicated support for many trail and facility proposals with the exception of equestrian trails. The question of where to develop new trails and facilities that are supported by respondents remains problematic with over ½ of respondents indicating opposition to higher levels of development in Nancy Lake Parkway corridor or in the Lynx Lake Road and Butterfly Lake Trail area.
- Fifty-two percent of respondents indicated they were property owners within, contiguous to, or adjacent to NLSRA. On average, these people have owned their property for 17 years. The five methods of access most commonly used by these property owners are Snowmobile (79%), highway vehicle both summer and winter (46% and 43% respectively), canoe (44%), and hiking (42%). Sixty-two percent of landowners that responded use trails, launches and boat storage areas to access their private property.

Graph 1: Overall visitor counts for NLSRA and NLSRS



Graph 2: Public use cabin visitor counts.