

Chapter 4: Refuge Management

Introduction

Goals and Objectives

The goals that follow are general statements of what the Refuge wants to accomplish. The objectives under each goal are specific statements of what will be accomplished to help achieve the goal. Strategies listed under each objective specify the activities that will be pursued to realize an objective. The strategies may be refined or amended as specific tasks are completed or new research and information come to light.

Rice Lake National Wildlife Refuge

Goal 1:

The Refuge will contain a diversity of habitats typical of historical north-central Minnesota. (See Figure 14 on page 42)

(The Sandstone Unit habitat community objectives are listed separately, see Objective 1.10.)

Forest Community

Objective 1.1: Forest Size

Restore and maintain between 8,000 and 10,500 acres of diverse forest types.

Rationale: The Refuge has about 7,100 acres of forest habitat. Studies have shown that forest fragmentation reduces nesting success of migratory birds because of increased nest predation and parasitism. By managing the Refuge's forest in coordination with neighbors and partners, large blocks can be created. The Refuge forest



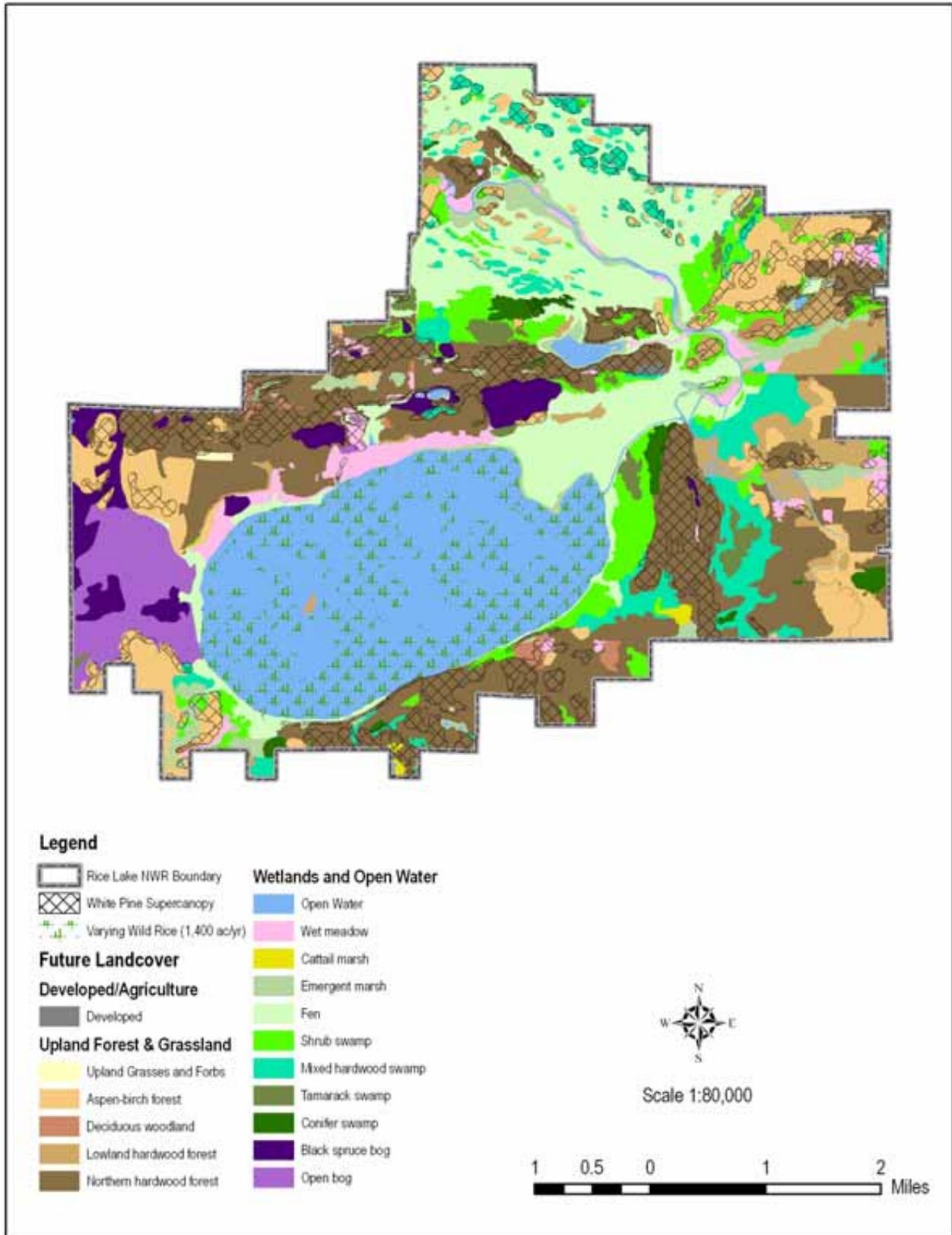
Rice Lake on Rice Lake NWR

will be a mosaic of hardwoods with scattered pines and patches of aspen. The forest structure will not be constant throughout. Variability will be introduced by natural disturbance and management activities. The mixed forest with diverse plant forms, vertical structures, and ages will provide habitat for a wide variety of wildlife. The priority bird species that are expected to benefit from mixed-age stands are neotropical species like Golden-winged Warblers and game species like American Woodcock. The bird species that are expected to benefit from reduced fragmentation are forest-interior birds such as Wood Thrush, Red-eyed Vireo, Scarlet Tanager, Ovenbird, Pileated Woodpecker, and Broad-winged Hawk.

Strategies:

1. Convert 50 percent of small forest openings within the forested communities by 2020 through planting or succession.
2. Maintain forest continuity with Aitkin County lands that are adjacent to the south Refuge boundary.

Figure 14: Future Desired Landcover, Rice Lake NWR



3. Develop a forest plan as part of more detailed habitat management planning by 2008.

Objective 1.2: Conifer Component

By the year 2106, have a 10 white pine/acre component on all suitable sites of a super-canopy size. To achieve this long-term objective, while allowing for attrition, increase the amount of white pine on suitable sites of any age class to ~14 white pine/acre, through natural regeneration and planting by 2020.

Rationale: White pine and, to a lesser degree, red pine were very abundant in the pre-settlement mixed forests of the region. Logging in the late 1800s eliminated all except the smallest of pine trees, making way for the mixed hardwood forests seen today. In the subsections that include the Refuge, white pine has declined 5-10 fold since the late 1800s. To mimic historic conditions it is desirable to reestablish white pine as a component of Refuge mixed forests and to reestablish the forest super-canopy layer on sites with the right environmental conditions. A super-canopy consists of white pines that are taller than 75 feet, which tend to be trees with a DBH (Diameter at Breast Height) of 16 inches or more. A variety of strategies will need to be used to establish white pines because the nature of the suitable sites varies. The priority bird species that are expected to benefit from the conifers as part of the mixed forest are large raptors such as Bald Eagles and mammals such as black bears.

Strategies:

1. Determine and map sites suitable for conifer restoration.
2. Establish conifers on suitable sites through natural regeneration or planting with site



White-tail deer fawn, Rice Lake NWR

preparation and management that may include mixed conifer planting, prescribed fire, selective harvesting, and brush control.

3. By 2010, plant 20 percent of suitable areas without a white pine component at a rate of 25 white pine seedlings/acre. An expected mortality rate of 25 percent over 40 years reduces the amount to ~14 white pine/acre by 2050.
4. By 2020, plant all remaining suitable areas without a white pine component at a rate of 25 white pine seedlings/acre. An expected mortality rate of 25 percent over 40 years reduces the amount to ~14 white pine/acre by 2060.
5. Manage both planted and natural regeneration sites to protect seedlings from whitetail deer browsing and disease through bud capping, repellants, and pruning.

Objective 1.3: Northern Hardwoods

Manage northern hardwood habitat as an uneven age system for a diversity of structure, tending toward early successional stages in some areas currently dominated by aspen, and tending toward later successional ecosystems in areas dominated by maple/basswood.

Rationale: Management should strive to retain critical ecosystem/cover/habitat types (Holling and Meffe 1996) as well as focus on maintaining overall biodiversity and maintain or restore ecosystem/habitat diversity and function (Lambeck 1997). At the landscape scale, management should maintain the diversity of cover types and seral stages, and increase mean patch size (Crozier and Niemi 2003). Aspen was part of the historic forest and emerged in patches where trees had been lost through fire or windthrow. Species expected to benefit from the early successional stages of aspen (DeGraaf and Yamaski, 2003) include:

- # Golden-winged Warbler
- # Northern Flicker
- # Olive-sided Flycatcher
- # Winter Wren
- # Eastern bluebird
- # Chestnut-sided Warbler
- # Black-and-white Warbler
- # Mourning Warbler
- # Canada Warbler
- # White-throated Sparrow
- # Rose-breasted Grosbeak



Rice Lake, U.S. Fish & Wildlife Service

- # Ruffed Grouse
- # American Woodcock

Older seral stages were also a part of the historic forest. Species that benefit from older seral stages include:

- # Northern Goshawk
- # Bald Eagle
- # Black-billed Cuckoo
- # Northern Flicker
- # Red-headed Woodpecker
- # Wood Duck
- # Wood Thrush

Strategies:

1. Determine best management tools to develop uneven-aged systems. The tools will likely include timber harvesting, maintaining aspen stands with even-age management while selectively harvesting or performing shelter-wood harvest in other northern hardwood stands to create a more diverse composition of species, ages and structure.
2. Specify details of northern hardwood management in the forest portion of the habitat management plan by 2008.
3. Continue working with the Aitkin County Land Department to develop cooperative forest management objectives that provide for sustained and diverse wildlife benefits.

Objective 1.4: Coniferous Bog

Maintain 1,000 acres of coniferous bog where it currently occurs.

Rationale: Pristine lowland forest is a declining habitat in northern Minnesota. The Refuge contains black spruce, white cedar and tamarack in their natural condition associated with true bogs containing important plant species like orchids, sedges, and those that are carnivorous. These bog areas are important habitat to migrating and breeding neo-tropical migrants like the Connecticut Warbler and Yellow-bellied Flycatcher.

Strategies:

1. Protect stands from fire as feasible and exclude from prescribed burn units where practical.
2. Harvest trees only to control disease.

Bog Community

Objective 1.5: Open Bogs

Restore 5,000 acres of open bog (wet meadow) with a brush stem density of 6 or less stems per square meter within 15 years.

Rationale: The large expanses of open bogs on Rice Lake are typified by sedge species, a habitat type important to Sharp-tailed Grouse as well as many waterbird species, including Yellow Rail and American Bittern, and many of the neo-tropical migrants, including LeConte's Sparrow, for both migration and nesting habitat. These open "sedge bogs" would have been clear of brush and contained only islands of tamarack, spruce and cedar trees. Since settlement times, fire, the main tool in maintaining an open bog, has been suppressed, allowing for the invasion of undesirable brush species. The target of 5,000 acres is derived from the vegetation map developed for this CCP (Figure 14 on page 42).

Strategies:

1. Map sedge fen, open bog, and forested islands.
2. The frequent use of prescribed fire will be required to control brush species that have been allowed to encroach into the open bogs. The resulting frequency of fire intervals will be unnatural and potentially devastating to the forested islands. Caution will be taken to avoid the frequent burning of the forested islands when possible.

3. Continue working with the Minnesota DNR to cooperatively use prescribed fire to increase bog restoration effects on adjoining land management units with approximately 8,000 total acres.
4. Monitor effects of fire using the protocol as written in the National Park Service's Fire Monitoring Handbook.

Aquatic Community

Objective 1.6: Pickerelweed

Reduce pickerelweed occurrence by approximately 50 percent on Rice Lake to no more than 400 acres by 2015.

Rationale: Pickerelweed has significantly increased in Rice Lake over the last 40 years. This perennial, although native, is out-competing wild rice, which is a major food resource for the fall flight of migrating ducks in Minnesota. Wild rice is an annual grass that depends on disturbances like flooding to remove competing vegetation early in the spring before the rice seeds germinate. If major flooding occurs after germination of the rice seeds, plants are often uprooted and killed. Stable water levels over the last several decades at the Refuge have maintained good rice production. However, the stable water levels have also benefited pickerelweed, which is encroaching on wild rice beds. Because wild rice is important to migrating ducks and the traditional harvest by Ojibwe people, we will reduce the beds of pickerelweed in an effort to increase the size of wild rice beds.

Strategies:

1. Evaluate methods of controlling pickerelweed, including mowing as suggested by the University of Minnesota.
2. During the 10-year period immediately following approval of this plan, manipulate water levels as an experimental control method of pickerelweed. Experiments will examine the effects of both high water and low water manipulation and mimicking otherwise naturally occurring environmental conditions. Sound monitoring techniques will help develop a long-term water management plan to effectively reduce pickerelweed and maintain healthy wild rice beds. This strategy will require sacrificing wild rice production for an estimated 3 or 4 years out of 10. If no positive results are derived at the end of the

10-year period, the experiment will be terminated immediately. This strategy is linked to Objective 1.8; Strategy 3 and Objective 4.1; Strategy 3.

3. Measure size and distribution of pickerelweed beds at a minimum of 5-year intervals with scientifically credible methods.

Objective 1.7: Wild Rice

Maintain the long-term viability of wild rice on Rice Lake through 2020 with a 10-year average of 1,400 acres, 80 seeds per head, and a stem density within rice beds of at least 20 stems per square meter.

Rationale: Wild rice is a key resource to the wildlife mission and cultural heritage of the Refuge and it is central to the Refuge vision. There isn't a clear understanding of cause and effect of rice management in the lake. During the 3-year span from 2002-2004, only 2 years were considered good rice years. For the 21 years between 1983 and 2004 the acreage of the wild rice bed ranged from a low of 1,142 to a high of 1,698 with an average of 1,433. Over the 3-year period there was an average of 85 seeds per head and an average of 25 stems per square meter. The Refuge will adapt management of the rice beds as information is gathered by way of monitoring activities.

Strategies:

1. Measure the stem density and number of seeds per head at a minimum of 3-year intervals with scientifically credible methods.
2. Determine extent of rice beds with aerial photography annually.
3. Over the next 10 years, experiment with water level manipulations that mimic natural variations. Monitor results to guide future water level manipulation as a tool to increase long-term wild rice production on Rice Lake. This strategy is linked to Objective 4.1; Strategy 3.

Invasive Species

Objective 1.8: Invasive Species

Exotic invasive species will impact no more than 10 percent of the Refuge by the year 2020.

Rationale: Invasive species are considered one of the greatest threats to the National Wildlife Refuge System, and to Rice Lake NWR. The list of presently known invasive plant species

includes common reed, reed canary grass, leafy spurge, and European buckthorn. European earthworms are also in Rice Lake NWR. It is probably only a matter of time before such species as purple loosestrife, spotted knapweed, Gypsy moth (100 miles distant), emerald ash borer (700 miles distant), zebra mussel (40 miles distant), common carp, Asian carp, and the New Zealand mud snail (50 miles distant) also appear. It is imperative that new invasive species populations be detected and treated quickly to reduce their impact on habitat and native wildlife populations.

Strategies:

1. Survey and map exotic invasive plant species on the Refuge that could likely cause negative impacts to the habitat. Early detection will provide for an effective and rapid response.
2. Monitor known invasive plant populations to assist in prioritization of treatment.
3. Reduce acreage of impacting invasive plant species through treatment as quickly as possible. Effective treatments may include spraying of herbicides, introduction of biological control agents, mowing, flooding, prescribed burning, cutting, hand pulling, or a combination of these treatments.
4. Find reported European buckthorn population through aerial detection by 2008.
5. Eradicate European buckthorn population through cutting, hand pulling, and herbicide application by 2010.
6. Add European earthworm detection to forest inventory protocol by 2008.
7. Map areas of earthworm populations and forested areas already showing negative impacts by 2020.
8. Monitor/assess carp issues (common carp and Asian carp) and work with Minnesota DNR Fisheries and Tribal Fisheries in developing a strategy to protect Rice Lake from the potentially devastating effects non-native carp would have on wild rice production while protecting native fisheries, using the best available science.
9. Determine effective treatment for common reed and reduce acreage by 50 percent by the year 2015.



Mushrooms, Rice Lake NWR

10. Maintain or improve the health of Refuge forests through active forest management (may include selective harvest, planting, and prescribed fire) to minimize long-term impacts caused by gypsy moth.
11. Continue annual gypsy moth detection trap monitoring and coordination with Minnesota Department of Agriculture.
12. Educate the public about invasive species and how they can help reduce the spread of invasives.
13. Hire a biological technician.

Special Management Area

Objective 1.9: Special Management Area

Withdraw consideration for Wilderness designation on 1,406 acres.

Rationale: Recommendation for consideration as Wilderness occurred in 1973. The recommendation has not been acted upon during the interceding 34 years. Refuge staff have concluded that the recommendation is no longer appropriate because the area fails to meet numerous criteria that were established to determine Wilderness suitability: it is less than 5,000 acres in size; human alterations to the habitat is readily apparent on portions of the area; it offers little opportunity for primitive recreational activities other than hunting; and it does not contain significant ecological, geological, scientific, educational, scenic, or historical features. Removing the Wilderness recommendation will allow for a complete range of management options to restore altered and/or degraded wildlife habitat.

Strategies:

1. Use this CCP as the decision document to withdraw the previous Wilderness recommendation.
2. Upon the CCP becoming final, explore available management options to the area previously managed as de facto wilderness.

Objective 1.10: Sandstone Unit

Maintain the 2005 landcover while allowing for forest succession.

Rationale: Because the Unit is 52 miles from the headquarters and maintenance shop, frequent and active management activities are not efficient. Vehicular access to the Unit is limited. Given the limited Refuge budget and higher priority needs on the main Refuge, management activities on the Sandstone Unit will continue to be limited. It is likely that prescribed burns will be the only management activity for the foreseeable future. Prescribed burning will suppress brush encroachment and maintain the open lands. The forest of the Unit is considered healthy and diverse and therefore will be allowed to succeed under natural conditions (Figure 15).

The Service will explore an exchange of the Sandstone Unit for State lands with the State of Minnesota. The purpose of the exchange will be to increase management efficiency for both entities and more closely align lands with the agencies' missions. Land exchanges are complex and require a number of years to complete. If and when the details of a possible exchange are specified, an environmental review of the proposed exchange will be completed. The environmental review process will include public notification and an opportunity for public comment.



Viewing scope, Rice Lake NWR

Strategies:

1. Incorporate prescribed burn units of the Sandstone Unit into the Refuge's burn program by 2008.

Goal 2:

Fish and migrating and resident wildlife populations on the Refuge will be naturally diverse, healthy, and self sustaining.

Objective 2.1: Regional Conservation Priority (RCP) Species

Seventy percent of all the Region 3 RCP (Appendix C) species associated with historically occurring habitats on the Refuge will occur on the Refuge by 2020. This includes 84 percent of the RCP bird species during migration or nesting.

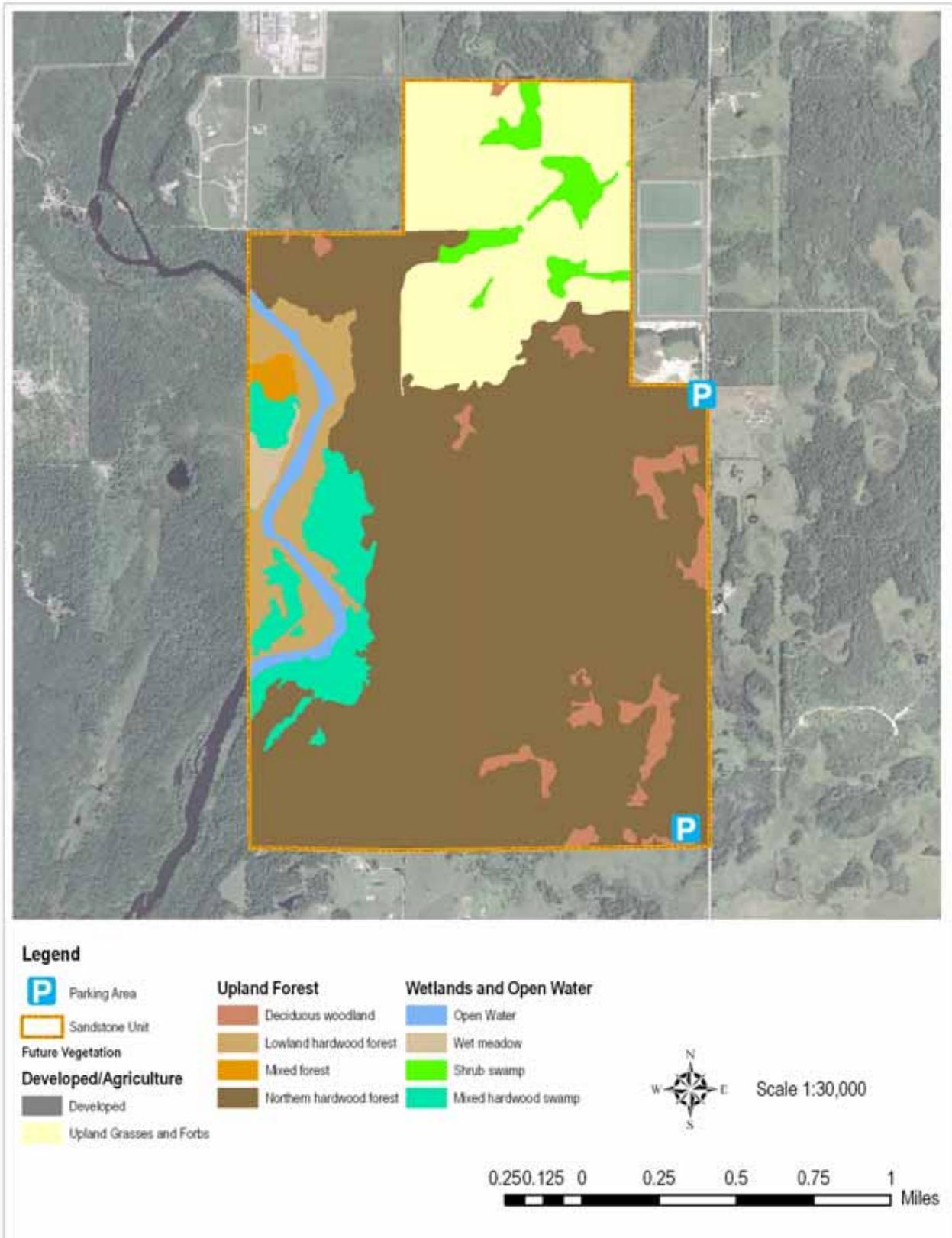
Rationale: Region 3's RCP list includes rare and declining species, federally listed, and recreationally important species that are of high concern in the Upper Midwest. The RCP list was developed to help prioritize management within the Region. Knowing that the species are using the habitats on the Refuge will be an indicator of success in providing for these species, with the exception of nuisance species. As of 2006, the Refuge hosted 47 of 56 bird species, 1 of 1 mammal species, 0 of 2 fish species, 0 of 10 mollusk or crustacean species, and 0 of 1 insect species on the Region 3 RCP list. Numbers may change as new species are documented and as habitats are restored.

Monitoring is a key element in determining if Refuge management is achieving its goals of providing habitat for key wildlife species. Monitoring can be costly if high precision is sought. For this plan we think an initial attempt to monitor birds should have the moderate goals specified in the strategy.

Strategies:

1. Every 5 years estimate species composition and abundance of RCP waterfowl, forest and marsh birds on the Refuge with scientifically credible data of known quality. The estimation will document at least 90 percent of the species and be able to detect at least a 10 percent change in abundance over 15 years
2. Support research activities that are directed toward Region 3 RCP bird species.
3. Continue to document observed fish and wildlife species and add to existing Refuge species lists.

Figure 15: Future Desired Landcover, Sandstone Unit of Rice Lake NWR



Objective 2.2: Monitoring

Verify wildlife response to habitat changes and monitor populations over time with scientifically credible data.

Rationale: Following the rationale of Schroeder, King, and Cornely (1998), the Refuge's core management direction is based on habitat objectives. Schroeder et al. reason that many factors affect wildlife populations and many of these factors are outside the control of a refuge manager. However, a refuge manager can work to provide a high quality habitat, which is necessary for an abundant wildlife population. Still, at some point it is necessary to determine if wildlife is responding as envisioned.

Strategies:

1. Monitor Region 3 RCP species every 5 years through nationally recognized protocols and link results to regional and national databases.
2. Record habitat treatments in a Refuge and regional GIS database.
3. Link the wildlife and habitat data to determine differences between habitat treatment types and changes in wildlife abundance over time.
4. Increasing habitat restoration and monitoring will require the addition of a Biological Technician.
5. Hire a Biological Technician.

Goal 3:

Visitors will enjoy wildlife-dependent recreation and they, along with residents of the local community, will appreciate the value and need for fish and wildlife conservation.

Objective 3.1: Wildlife Observation and Photography

Within 5 years of approval of the plan, increase opportunities for wildlife observation and photography to correspond with a 20 percent increase (from 2005 level) in Refuge visitation.

Rationale: Little information exists about Refuge visitors. Estimates of Refuge visitation are based on two traffic counters on the Wildlife Drive. The needs and satisfaction of visitors are known only from chance conversations with visitors. In addition, local tourism and Refuge visitation is expected to increase by up to 20 percent. Scientifically sound visitor surveys would provide better



Environmental education, Rice Lake NWR

information for improving visitor opportunities. The procedures used to conduct proper visitor surveys are time consuming and costly. Therefore, basic data will be obtained within the constraints of limited Refuge resources. Additional traffic counters will be strategically placed within the Refuge to determine the types of activities visitors are enjoying. The number of people contacted at both on- and off-Refuge events will continue to be recorded.

People will be able to spend more time engaged in wildlife observation and photography if more pull-offs are available on the wildlife drive. Visitors may stay longer and enjoy their visit more if improvements are made to the public areas and wildlife drive. Longer visits may lead to a greater appreciation of the value and need for fish and wildlife conservation and the Refuge. Increased visitation will be used as an indicator that more people are learning about and appreciating the opportunities available on the Refuge. All facilities will be made accessible according to ADA standards.

Strategies:

1. Develop and implement a visitor survey if funding is available.
2. Install, monitor and maintain accurate traffic counters.
3. Add three additional pull-offs to the Wildlife Drive.



Indian pipe, Rice Lake NWR

Objective 3.2: Interpretation

Within 10 years of approval of the plan, increase opportunities for interpretation of Refuge wildlife and habitats to correspond to a 20 percent increase (from 2005 level) in Refuge visitation.

Rationale: With increased visitation comes an opportunity to interpret Refuge resources and educate a diverse group of visitors about conservation. Many people use the hiking trails, but may not be aware of the wildlife and resources they are viewing on their hikes. An interpretive trail at Twin Lakes and a kiosk at the South Trail dam will help to orient visitors and interpret the Refuge resources they will see. Visitors will spend more time learning about the Refuge and its purpose from interpretive panels if more are provided. If people stay longer on the Refuge, it may lead to a greater appreciation of the value and need for fish and wildlife conservation. Having the visitor center open on Saturdays will allow more interaction with visitors and opportunities for impromptu interpretation of Refuge resources. All facilities will be accessible according to ADA standards. (Figure 16)

1. Convert Twin Lakes trail to an interpretive trail.
2. Install a kiosk at the South Trail dam to interpret forest ecology and wildlife of the Rice River.
3. Develop and increase interpretive programs/themes through partners and a Refuge park ranger.
4. Staff the visitor center on Saturdays.
5. Hire a seasonal (7 months) park ranger/visitor services specialist.

Objective 3.3: Environmental Education

Within 2 years of hiring a park ranger/visitor services specialist, provide environmental education programming to no fewer than 600 students per year. Eighty percent of students will report an increased desire to protect fish and wildlife habitats as a result of the programs.

Rationale: Incorporating environmental education into the school curricula is an important way to influence the future well-being of the Refuge. Only through understanding and appreciation will people be moved to personal and collective action to ensure a healthy Refuge for the future. Environmental education is important in forming general conservation attitudes and responsible conduct on the Refuge.

In the past the Refuge has not offered environmental education opportunities, but responded to special requests. This objective aims to move the Refuge's environmental education program toward more action. The more active approach will depend on additional staff and resources devoted to visitor services. Because the Refuge has no history of offering environmental education and little participation data, the beginning objective has been set at 600 K-12 students in Aitkin County and the western portion of Carlton County.

Strategies:

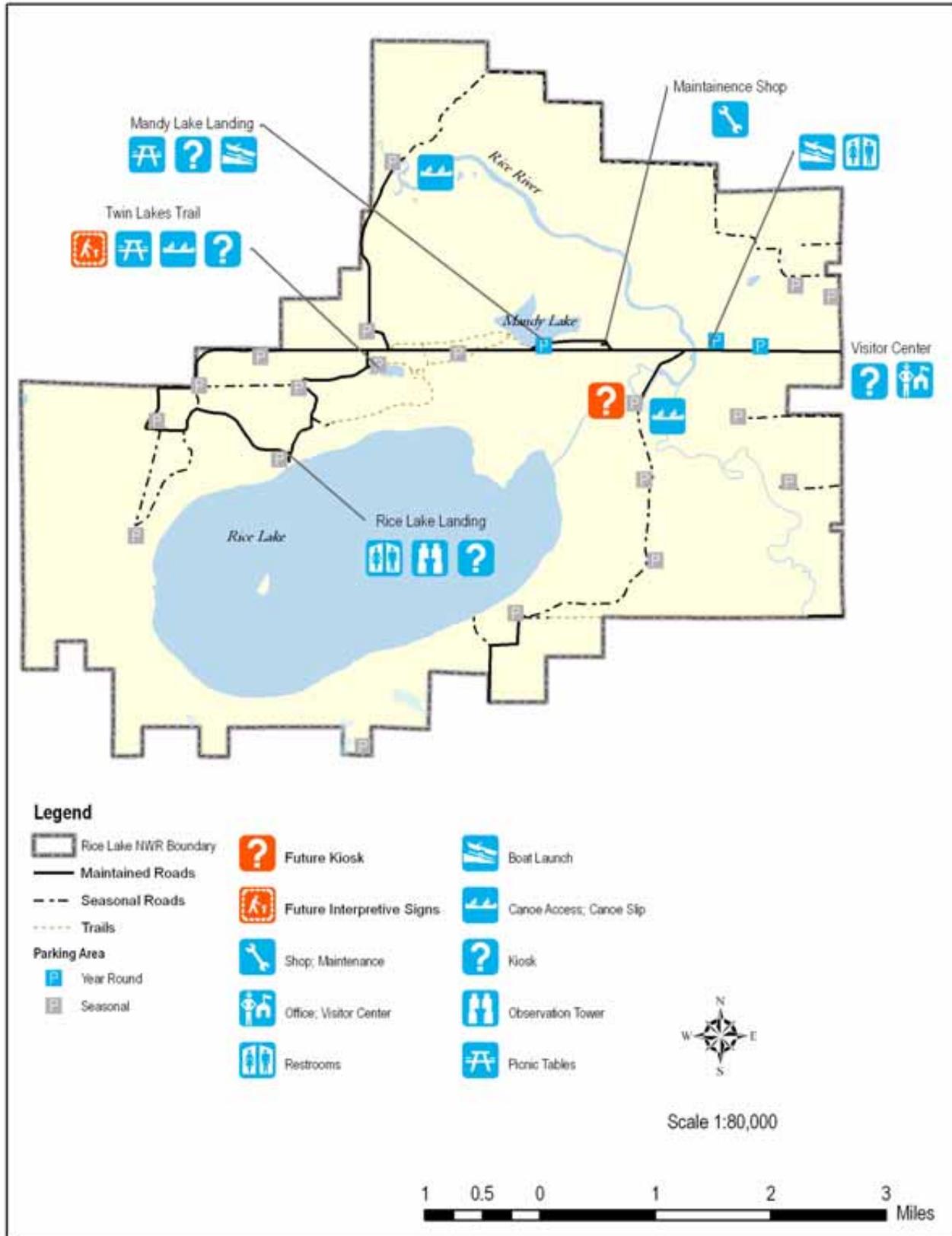
1. Adapt existing Refuge curriculums (e.g. Rhythms of the Refuge) to Rice Lake NWR.
2. Hire a park ranger/visitor services specialist.
3. Offer a teacher workshop annually.
4. Promote the environmental education opportunities to local teachers.
5. Partner with one local school to focus efforts there.

Objective 3.4: Fishing

Within 7 years of approval of the plan, reliably determine the number of fishing visits to the Refuge and that at least 85 percent of the anglers judge that they are being provided a quality opportunity.

Rationale: Approximately 10,000 fishing visits occur on the Refuge each year. The accuracy of this number needs to be determined as well as how anglers rate their visit. The intent of this objective is to gain a reliable estimate of the number of visitors who fish and their rating of the quality of opportunities provided. This information will help determine

Figure 16: Current and Future Visitor Services Facilities, Rice Lake NWR



if wildlife-dependent recreational goals of the Refuge and the National Wildlife Refuge System are being met.

Strategies:

1. Develop and implement a visitor survey.
2. Maintain and improve facilities that support fishing opportunities and meet ADA standards.
3. Conduct fish census surveys at Mandy Lake and Twin Lakes to determine the viability of fish stocking efforts as a means to improve/increase fishing opportunities.
4. Conduct Fishing Week activities.
5. Provide adequate law enforcement for visitor safety and resource protection through continued cooperation with Minnesota DNR and partnerships with other refuges.

Objective 3.5: Hunting

Within 7 years of approval of the plan, reliably determine the number of hunting visits to the Refuge and that at least 85 percent of hunters judge that they are being provided a quality opportunity.

Rationale: It is estimated that the Refuge hosts fewer than 1,000 hunting visits each year. There is an opportunity to improve the hunting program by redefining the hunting areas, offering additional hunting opportunities, clarifying boundaries, and redesigning hunt brochures. By doing this, the number of hunters on the Refuge is expected to increase while maintaining quality opportunities and sufficient wildlife populations. Wildlife surveys indicate that certain populations (e.g. white-tailed deer and Ruffed Grouse) can support additional hunting pressure. This increased participation will lead to increased appreciation of national wildlife refuges.

Strategies:

1. Develop and implement a visitor survey.
2. Review hunt program opportunities and/or impacts on other programs.
3. Offer a muzzle-loader deer hunt.
4. Modify and clarify hunt boundaries for consistency, minimizing conflicts between user groups. Two hunting units will be open on the Refuge, designated as Unit A and Unit B (Figure 17). Unit A is approximately 10,503 acres and is open for small game and big

game hunting. Unit B is approximately 3,669 acres and is open to specialized hunts only (i.e. disabled access hunts, youth hunts, or special management hunts), for both big game and small game. Approximately 98 acres of land is designated as administrative areas and is closed to hunting. The hunting unit for the Sandstone Unit is depicted in Figure 18.

5. Redesign and rewrite the hunt brochure to incorporate changes to the hunt boundaries and to meet graphics standards.
6. Initiate additional special hunts for hunters with physical disabilities and a youth hunt.
7. Provide adequate law enforcement for visitor safety and resource protection through continued cooperation with the Minnesota DNR and partnerships with other Refuges.

Objective 3.6: Outreach

Within 3 years of approval of the plan increase local community support and appreciation for fish and wildlife conservation and endorse the Refuge's role in conservation.

Rationale: The Refuge considers its neighbors and visitors to be very important. The Refuge is an asset to the community and the continued support of the community is essential. It is important that the Refuge continues efforts to build and maintain open communications with neighbors to let them know the successes, challenges, and opportunities in conservation and wildlife-dependent recreation. In an ideal setting, the objective would be to achieve an appreciation of the value and need for fish and wildlife conservation among a larger percentage of the population living around the Refuge.

The success in achieving the objective would be determined through a survey of the general population. However, for an objective to be useful it must be measurable in both a conceptual and practical sense. It is not practical to propose that the Refuge will conduct a survey of the general population anytime in the next few years, because the approvals and costs are beyond the likely resources of the Refuge. As an alternative, the objective reflects the assumption that community leaders reflect and help form the attitude within the community. By evaluating the opinions of community leaders, there will be a surrogate measure of our desired outcome within the guidelines of the Office of Management and Budget.

Figure 17: Rice Lake NWR Hunt Units

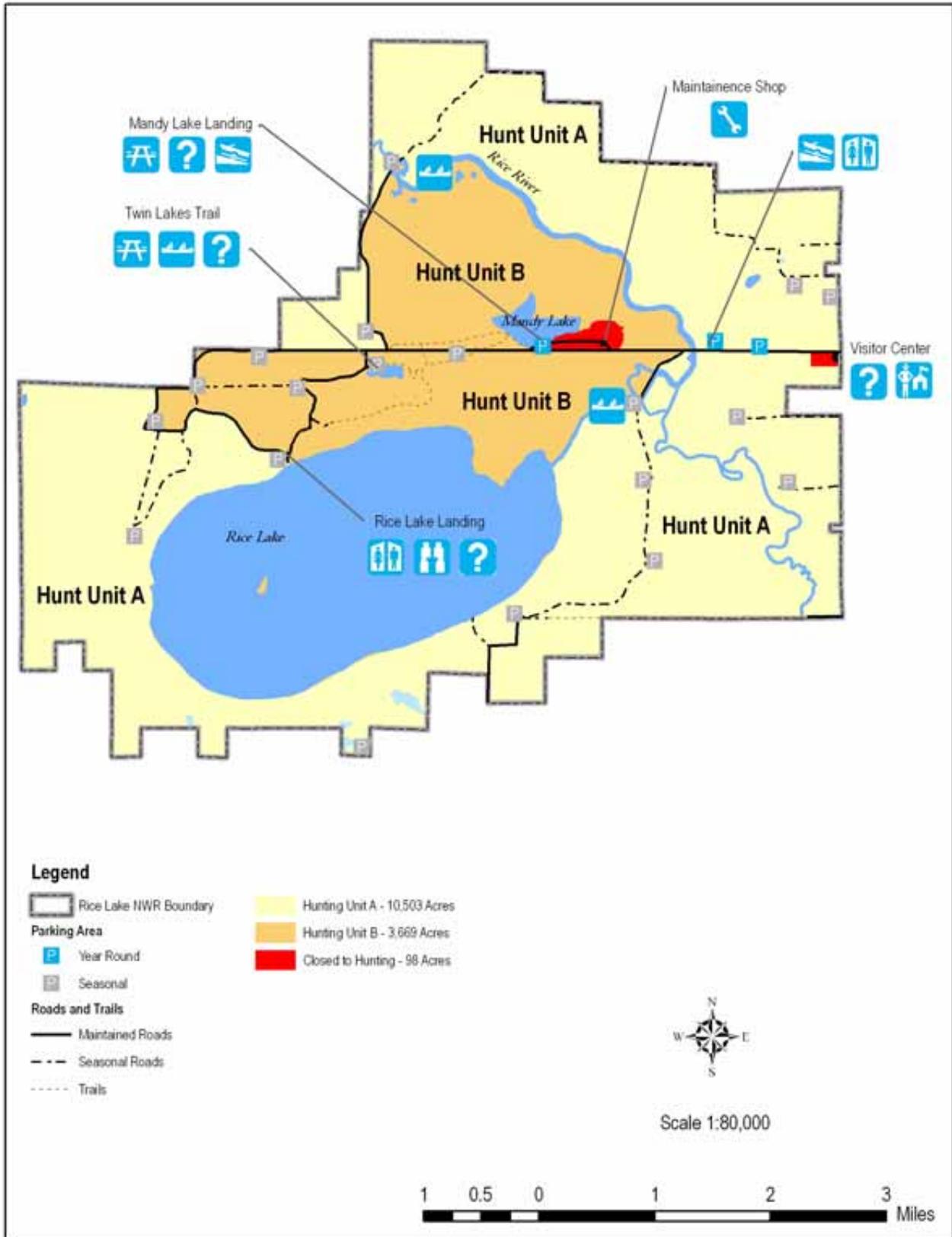
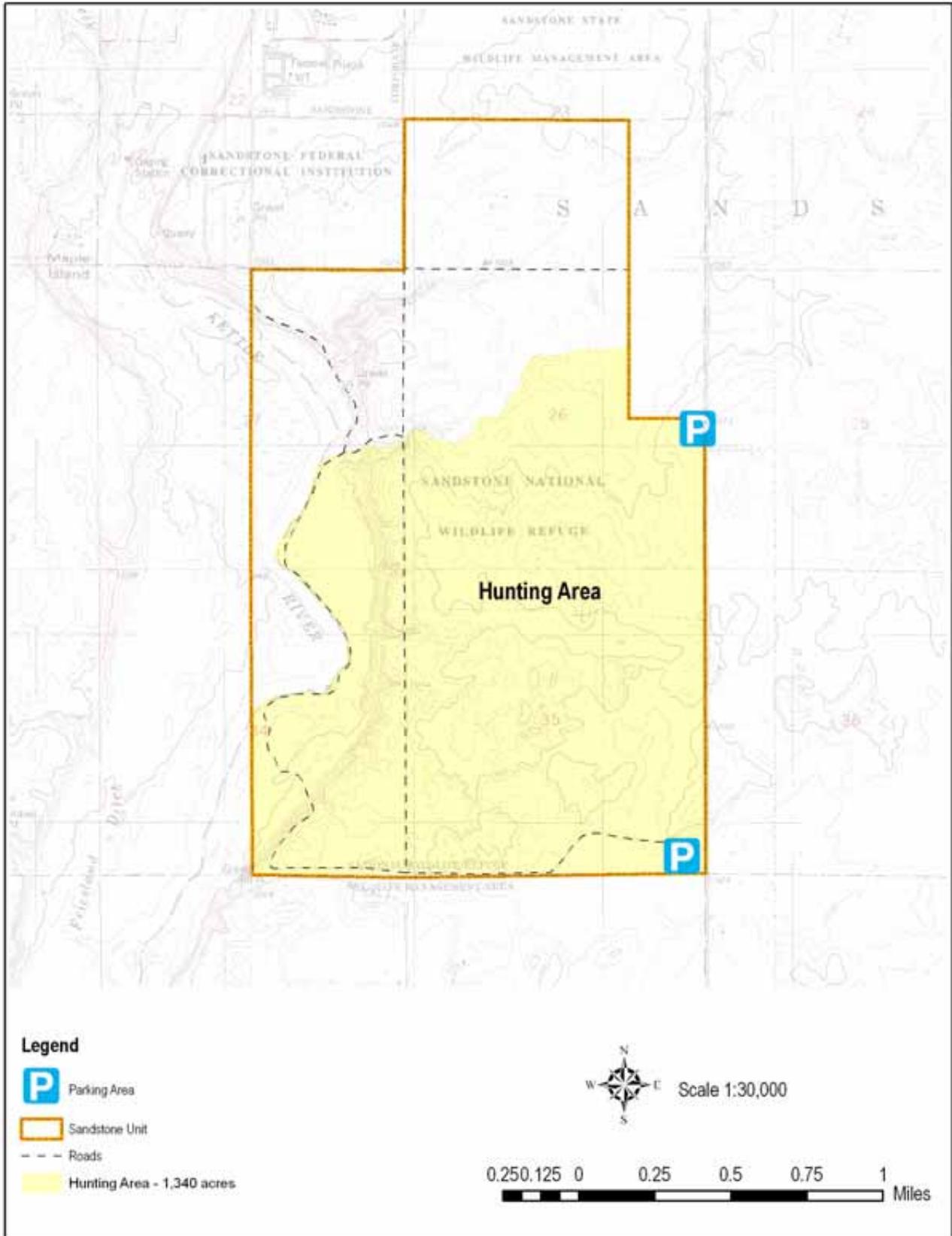


Figure 18: Sandstone Unit of Rice Lake NWR Hunt Units



Strategies:

1. Upgrade and maintain the Refuge's website.
2. Regularly submit news articles to local newspapers.
3. Maintain regular contact with community leaders through presentations and conversations.
4. Continue participation in community events and celebrations.
5. Increase outreach efforts with local communities around the Sandstone Unit.
6. Hold annual special events on the Refuge (e.g. National Wildlife Refuge Week, International Migratory Bird Day, and Take a Kid Fishing).
7. Hire a park ranger/visitor services specialist.

Goal 4:

The American Indian community and the Refuge will preserve American Indian cultural values through communication, consultation, and cooperation.

Objective 4.1: American Indian Cultural Practices

Opportunities to engage in American Indian cultural practices will be available at the level offered in 2005.

Rationale: The Refuge is rich in both historic and pre-historic American Indian cultural traditions. Both the Dakota (Sioux) and Ojibwe (Chippewa) Indians used the resources of the lake and surrounding lands during historic times. Today, members of the Ojibwe Bands throughout northern Minnesota travel to the Refuge to practice rice harvesting using traditional methods. Members of the local East Lake Band also practice drumming ceremonies and maintain a cemetery on the Refuge.

Strategies:

1. Continue to coordinate with the local Ojibwe Bands for drumming ceremonies and burials.
2. Continue cooperating with the Ojibwe people for the harvest of wild rice on Rice Lake.
3. During the next 10 years follow biological objectives to ensure long-term wild rice production is sufficient to allow for a successful harvest an estimated 6 out of every 10 years. This strategy is linked to Objective 1.7; Strategy 2 and Objective 1.8; Strategy 3.

4. Consult with Ojibwe and Dakota peoples for interpretation and environmental education of American Indian history.

Objective 4.2: Archeological, Cultural, and Historic Protection

Over the life of the plan, avoid and protect or mitigate against disturbance of all known cultural, historic, or archeological sites.

Rationale: Cultural resources are an important facet of the country's heritage. Rice Lake NWR, like all national wildlife refuges, remains committed to preserving archeological and historic sites against degradation, looting, and other adverse impacts. The guiding principle for management derives from the *National Historic Preservation Act of 1966 as amended, 16 U.S.C. 470 et seq.* and the *Archeological Resources Protection Act of 1979 as amended, 16 U.S.C. 47011-mm*, which establish legal mandates and protection against identifying sites for the public, etc. The Refuge must ensure archeological and cultural values are described, identified, and taken into consideration prior to implementing undertakings. It is also essential that new site discoveries are documented. In order to meet these responsibilities, the Refuge intends to maintain an open dialogue with the Regional Historic Preservation Officer (RHPO) and to provide the RHPO with information about new archeological site discoveries. The Refuge will also cooperate with Federal, state, and local agencies, American Indian tribes, and the public in managing cultural resources on the Refuge.

Strategies:

1. Remove all buildings and facilities from Indian Point to avoid further degradation of this culturally important site (relocation site to be determined).
2. Conduct site-specific surveys prior to ground disturbing projects and protect known archeological, cultural and historic sites.
3. Within 10 years of CCP approval and with the assistance of the RHPO, develop a step-down plan for surveying lands to identify archeological resources and for developing a preservation program to meet the requirements of Section 14 of the Archeological Resources Protection Act and Section 110(a)(2) of the National Historic Preservation Act.

4. Identify and nominate to the National Register of Historic Places all historic properties including those of religious and cultural significance to Indian tribes.
5. Inform the Regional Historic Preservation Officer early in project planning to ensure compliance with Section 106 of National Historic Preservation Act.
6. Contract with cultural resources firms specializing in Minnesota to conduct Phase I surveys prior to undertakings that could adversely affect historic resources.
7. In the event of inadvertent discoveries of ancient human remains, follow instructions and procedures indicated by the RHPO.
8. Ensure archeological and cultural values are described, identified, and taken into consideration prior to implementing undertakings.
9. Inspect the condition of known cultural resources on the Refuge and report to the RHPO changes in the conditions.
10. Integrate historic preservation with planning and management of other resources and activities.
11. Complete accessioning, cataloging, inventorying, and preserving the museum collection at the Refuge.

Goal 5:

Funding, staffing, facilities and public support will be sufficient to accomplish the purposes, vision, goals, and objectives of the Refuge.

Objective 5.1: Volunteer and Friends' Participation and Outside Assistance

Maintain volunteer participation, Friends' activities, and outside assistance at or above the 2005 level.

Rationale: With steady or declining budgets it is important for the Refuge to work closely with partners to secure alternative funding options and procure in-kind support for projects both on and off the Refuge. To have a functioning visitor services program it will be necessary to add a park ranger (visitor services specialist) to the Refuge. Visitor facilities on the Refuge need to be maintained at the current levels to ensure visitor security and provide adequate wildlife-dependent recreational opportunities. All facilities are and will be accessible according to ADA standards.

Additional facilities like pull-offs along the auto tour will need to be incorporated as Refuge visitation increases. All Refuge activities will benefit from volunteer participation, and certain activities will require volunteer participation to be successful. The Friends group needs to continue being an advocate of the Refuge and work with the Refuge to increase community awareness, secure funding through alternative sources, and assist with projects.

Strategies:

1. Strengthen the existing volunteer program and recruit new volunteers to assist with resource management and visitor services.
2. Ensure that Refuge office and maintenance needs are reflected in budget needs databases.
3. Support and encourage the Refuge Friends group to increase outreach and secure funding through grants and partnerships.
4. Continue to maintain Service-owned facilities using annual maintenance budget allocations.
5. Hire a park ranger (visitor services specialist) to increase outreach and develop a well-rounded visitor services program.

Mille Lacs National Wildlife Refuge

Goal 1: Goal

An optimum nesting population of Common Terns will exist on Hennepin Island and Refuge staff will know the productivity and chronology of species using Spirit Island.

Objective 1.1: Hennepin Island

Within 5 years of approval of the CCP, annually host a minimum of 150 nesting pairs and produce 100 fledglings annually upon completion of island enhancement.

Rationale: The Refuge contains one of four Common Tern breeding colonies in Minnesota. The Common Tern is currently listed by the State as a threatened species and has been named a resource conservation priority species for Region 3 by the U.S. Fish and Wildlife Service. It is also listed as high priority in all Bird Conservation Regions (BCRs) of Waterbird Plans. Since 1993,

Refuge staff annually construct a string grid over the southern one third of the island as a gull nesting deterrent but which still allows the Common Tern to pass through for nesting purposes. Assistance in maintaining the grid is provided by the Mille Lacs Band of Ojibwe's Department of Natural Resources. During the winter of 1996, 100 yards of pea-sized gravel were hauled to Hennepin Island as part of a habitat enhancement project. From 1998-2000, 100 fledglings or more were produced on the island annually, with the peak number of 200 fledging in 2000. Productivity has gone down since that time due to decreasing suitable nesting habitat, increasing water levels, erosion due to wave action and major storms decimating the colony in 2005. For the years 2003-2005, 51, 46, and 3 fledglings were produced respectively. An objective of producing 100 fledglings annually is challenging, but achievable with increased resources devoted to improving the conditions on the island.

Strategies:

1. Work with the Army Corps of Engineers to enlarge the island with gravel and construct rock jetties offshore to lessen erosion from wave action.
2. Maintain protective string grid above island.
3. Continue gull and Double-crested Cormorant control.
4. Continue to monitor Common Tern productivity.

Objective 1.2: Spirit Island

Annually estimate the productivity of birds on Spirit Island with scientifically credible data of known quality. The estimation will be able to detect at least a 20 percent change in productivity over 15 years.

Rationale: In order to understand and manage from a scientific foundation, basic data about wildlife use of the island is needed. Gathering sound data is a challenge because the island is remote from Refuge headquarters and wildlife use may be highly variable. Monitoring can be costly if high precision is sought. For this plan to succeed, an initial attempt to monitor birds should have the moderate goals specified in the objective, which will be achievable with available resources.

Strategies:

1. Develop and implement a monitoring plan for birds on Spirit Island.

Objective 1.3: Human Disturbance

Protect nesting birds and their habitat from human disturbance.

Rationale: The effects of human disturbance on nesting birds are well documented and are often profound. Depending on the timing and the degree of disturbance, birds may feel compelled to leave the nest temporarily or in some cases to abandon the nest permanently. Even a short-term departure during incubation or with young hatchlings can prove to be detrimental if it occurs during inclement weather or if avian predators are nearby. The issue of human disturbance is of greatest concern to the state-listed threatened Common Tern. In order to minimize impacts from human disturbance, Mille Lacs NWR will be closed to the public. Outreach and education at local marinas and public boat launches will be essential in reaching the fishing community and recreational boaters who use Mille Lacs Lake.

Strategies:

1. No public uses will be allowed.
2. Limit surveys and time of surveys.
3. Maintain boundary posting.
4. Provide periodic local updates on the status of the islands to satisfy local curiosity. Work with local resorts and the Minnesota DNR to disseminate information on restrictions.