SF-00006-03

870059

STATE OF MINNESOTA

DEPARTMENT Natural Resources - Wildlife

Office Memorandum

Librarian

TO: Recipients of the Management Plan for Bicentennial Prairie

DATE: 1-8-87

FROM: Vicki Dunevitz VD
SNA Management Planner

PHONE: 297-3288

SUBJECT: Errors in the Public Review Draft of the Bicentennial Prairie Management Plan

Please correct two errors in your copy of the public review draft of the management plan. On page iii, third paragraph, "Detroit Lakes" should be changed to "Fergus Falls". On page 5, third paragraph, the fourth sentence should read "The Area Wildlife Manager is located in Fergus Falls, about 60 miles southeast of Bicentennial Prairie". I apologize for the inconvenience.

VD:pmt

A MANAGEMENT PLAN

FOR

THE BICENTENNIAL PRAIRIE TRACT

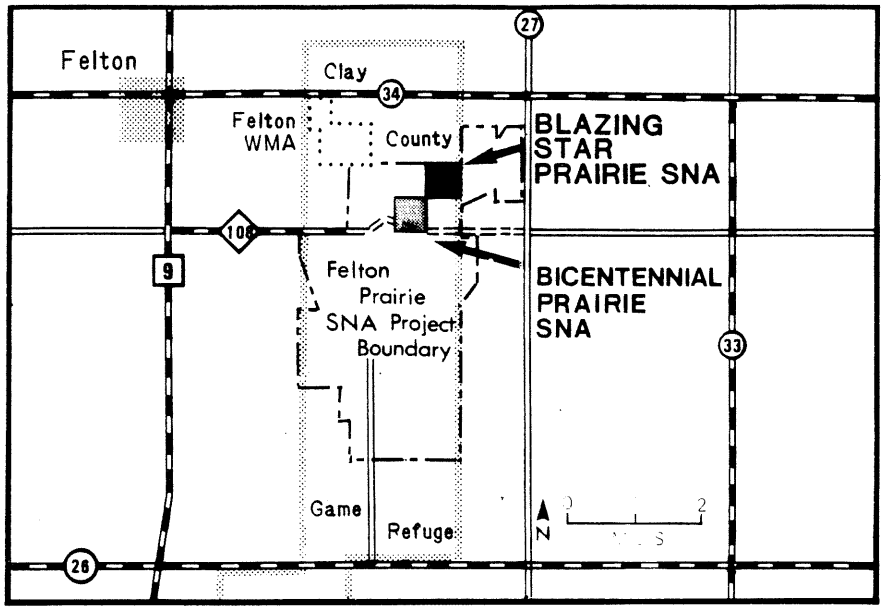
OF THE FELTON PRAIRIE

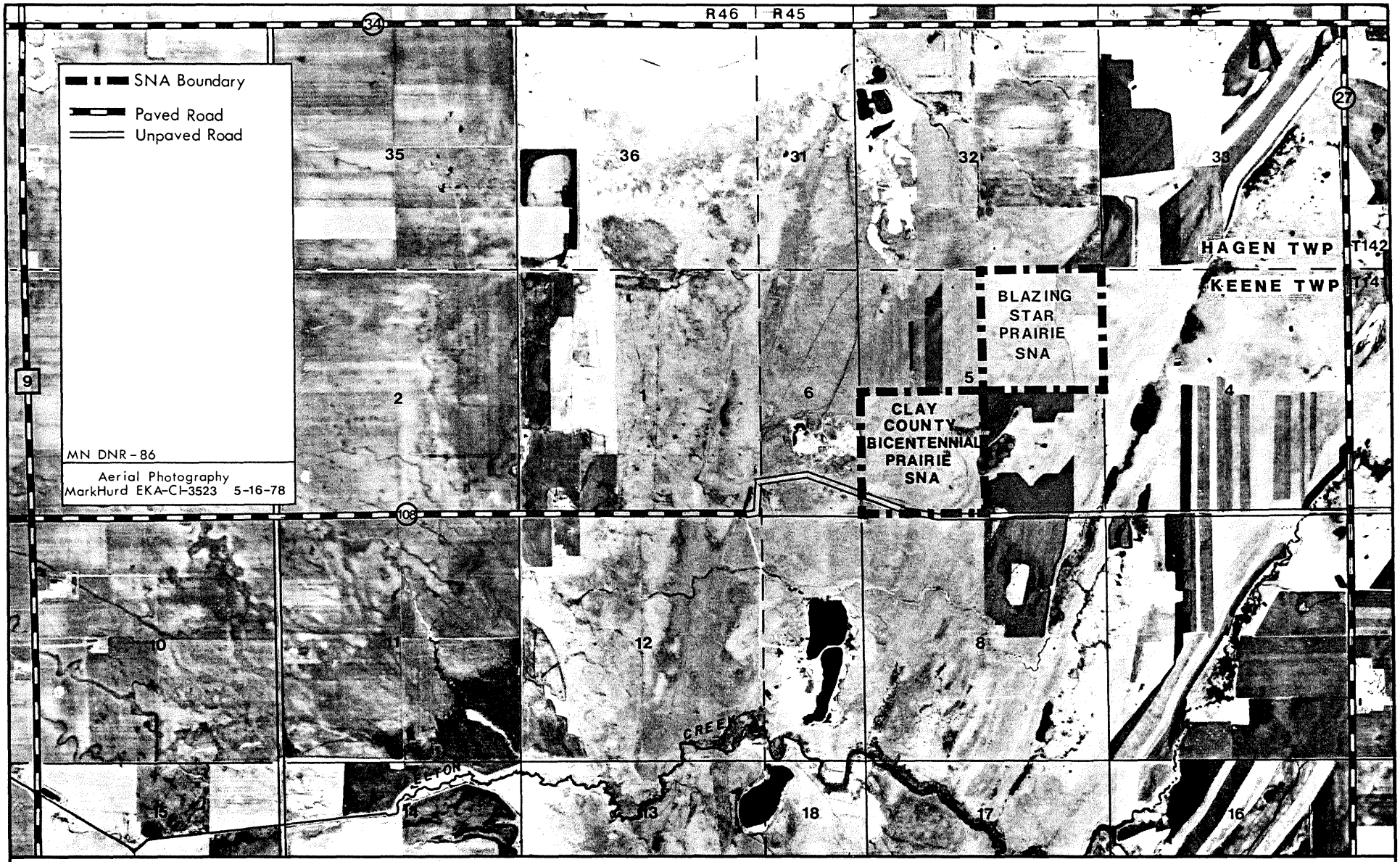
SCIENTIFIC AND NATURAL AREA

Section 5, Southwest Quarter
Township 141 North, Range 45 West
Ulen SW Quadrangle - J4C

Clay County
Minnesota

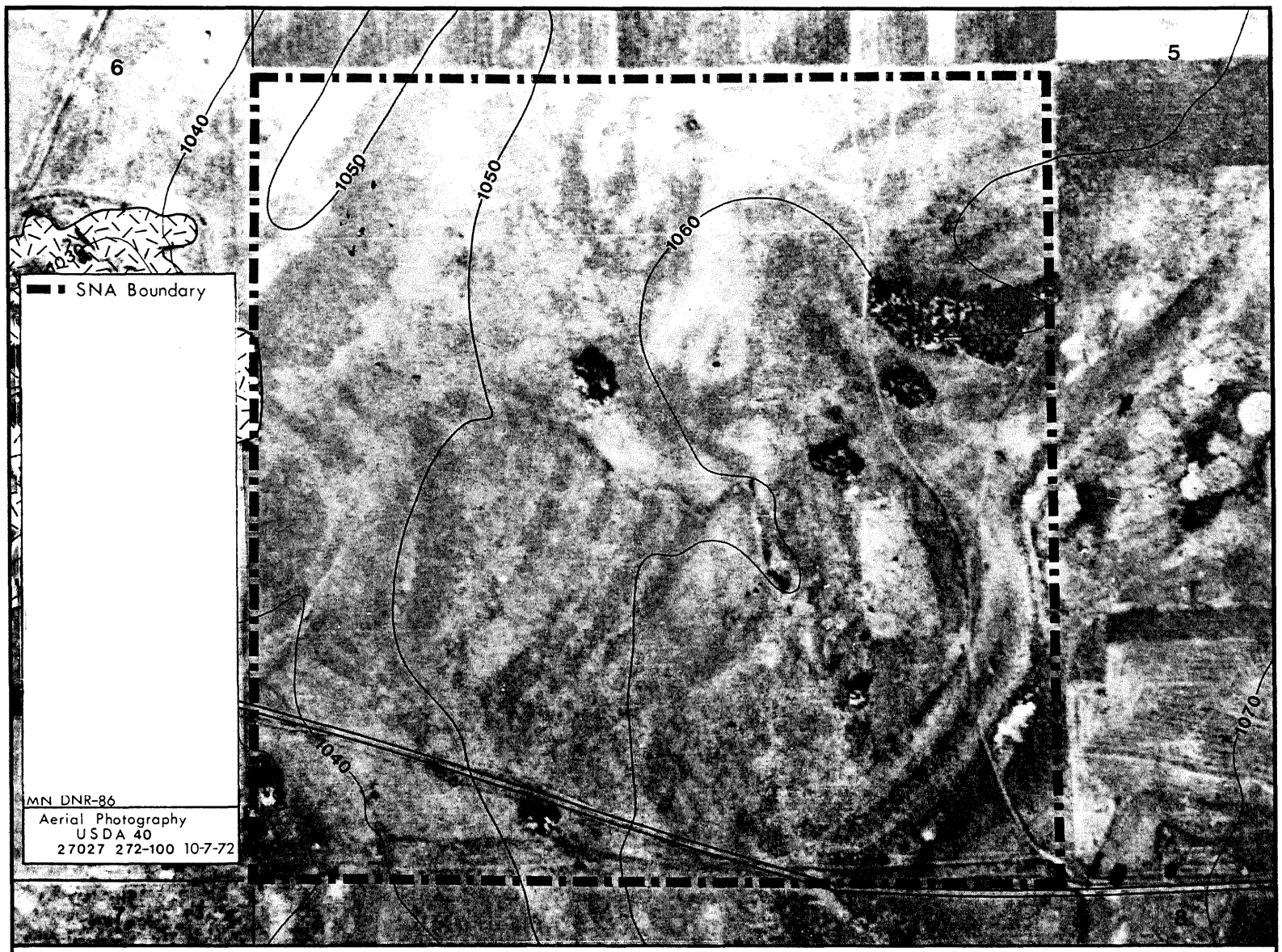
Prepared by
The Scientific and Natural Areas Program
Division of Fish and Wildlife
Minnesota Department of Natural Resources
November 1986


Felton
Clay
Felton
WMA
County
BLAZING
STAR
PRAIRIE SNA
10
9
Felton
Prairie
SNA Project
Boundary
BICENTENNIAL
PRAIRIE
SNA
Game
Refuge
N
27
34
33
26



BICENTENNIAL PRAIRIE SNA

VICINITY



BICENTENNIAL PRAIRIE SNA

0 1/8 1/4 MILES

0 1/8 1/4 KILOMETERS

SITE

The Bicentennial Prairie tract of the Felton Prairie SNA was established to protect and perpetuate Minnesota's rare and unique natural resources for nature observation, education, and research.

Principal activities which are UNLAWFUL in the use of this area are listed below. Further information is available at Department of Natural Resources Offices.

. Collecting plants, animals, rocks, or fossils.

. Camping, picnicking, and swimming.

. Horses, dogs, and other pets.

. Snowmobiles

. Other motorized vehicles (except on east-west road in southern portion of the preserve).

• Trapping, fishing, and boating.

• Hunting any animals other than deer

PREFACE

Scientific and Natural Areas are established to protect and perpetuate natural features which possess exceptional scientific or educational value. Nominated areas must satisfy a set of rigorously drawn criteria to qualify for designation. Scientific and Natural Areas serve many purposes. They are places for the quiet appreciation and study of nature and serve as outdoor classrooms for teaching and research in the natural sciences. They are areas against which the effectiveness of resources management techniques employed elsewhere can be evaluated. Scientific and Natural Areas often protect the last remaining occurrences of a rare species or plant community.

However, land control alone does not assure long term preservation of natural areas and their endangered species. Many natural areas will decline in quality when not properly managed. Management of vegetation, control of foreign species, and management of visitors are important concerns.

Comprehensive planning is a prerequisite to effective and successful management. In 1975, the Minnesota legislature passed the Outdoor Recreation Act (86A), establishing the Outdoor Recreation System. This act directed managing agencies to prepare master plans for units of the system. This document is part of a planning effort to satisfy the mandates of that act. It establishes a strategy for stewardship that addresses biological management, obligations of ownership, and visitor management.

This plan was prepared by the Department of Natural Resources, Scientific and Natural Areas Program with the assistance of the Commissioner's Advisory Committee on Scientific and Natural Areas. It was based on a resource inventory prepared by the Scientific and Natural Areas Program and the Natural Heritage Program, included as an appendix to this report. Funding was provided by the Legislative Commission on Minnesota Resources.

SUMMARY OF MANAGEMENT PROGRAMS

General Management Considerations

Bicentennial Prairie is owned by Clay County and protected through a 10-year renewable conservation easement with the DNR Scientific and Natural Areas (SNA) Program. The county retains gravel rights, but is restricted from testing or mining for gravel without first holding a public hearing and notifying the DNR and The Nature Conservancy at least 60 days prior to the hearing date. The agreement also recognizes the rights of local farmers to use roads across the preserve to transport farm equipment.

The Bicentennial Prairie tract is a portion of a complex of native prairies and wetlands variously owned by the State, Clay County, and private individuals. This complex, measuring 6000 acres in size, is the project boundary of the Felton Prairie Scientific and Natural Area. The 160-acre Blazing Star Prairie, immediately northeast of Bicentennial Prairie, is also protected by the SNA Program.

DNR management and enforcement personnel are located in Moorhead, Detroit Lakes, Bemidji, and St. Paul. Management and protection, therefore, will require coordination of all personnel visiting the site, and will be aided by the appointment of a volunteer steward.

Education of visitors and local residents will be accomplished through updating and distributing the Bicentennial Prairie brochure and continuing public relations work in the area.

The SNA will be open to deer hunting to maintain consistency with other public lands in the Clay County Game Refuge and prevent deer overpopulation. All other hunting is prohibited.

Structures and Facilities

Drive-in access to Bicentennial Prairie can be gained by entering the site from the east or west near the southern boundary of the preserve. An unimproved road connects these two entrances and leads to a parking area which will be delineated by wooden posts. Signing needs include 2 unit signs, an interpretive sign, 3 rules and regulations signs, boundary signs, signs restricting use of farm field roads, and a sign directing visitors to the parking area. The interpretive sign will include information about the historic sites on the preserve, the special natural features of the area, and a map.

The condition of the fencing on the south boundary of the SNA will be monitored once a year. Haystack remains will be removed.

Management of Natural Features

The primary management activity on Bicentennial Prairie is the conduction of a prescribed burn program. Suggested timing and frequency of burns are discussed in light of the following objectives: to produce unit to unit variation in vegetation, to return/maintain the prairie to native

species-dominated vegetation, to control exotic pest plant species, and to control woody encroachment. The latter goal will also be accomplished through girdling or cutting aspen trees to eliminate aspen from the Bicentennial Prairie.

Inventory and Monitoring of Natural Features

Permanent reference plots in addition to two already on the site will be established and monitoring of vegetation in all plots will be done. Inventory and monitoring of significant plant and animal species and plant communities on the site will be continued.

Adjacent Lands

The Bicentennial Prairie is part of a 6000 acre complex of lands owned variously by the state, county, Nature Conservancy, and private individuals known as Felton Prairie. Protection priorities for these lands are delineated.

TABLE OF CONTENTS

OVERVIEW

A. Description

The Bicentennial Prairie tract of the Felton Prairie Scientific and Natural Area (SNA) is a 160 acre tract of unplowed prairie in northeastern Clay County, approximately 23 miles northeast of Moorhead, Minnesota. The 6000 acre Felton Prairie complex is a mosaic of prairie lands owned variously by the county, the state, The Nature Conservancy, and private individuals. Bicentennial Prairie is owned by Clay County, which in 1976, entered into an agreement with the state to preserve the site as a Scientific and Natural Area. Since that time the preserve has been managed by the SNA Program in conjunction with The Nature Conservancy. On May 6, 1986, a new 10-year conservation easement was signed and the preserve was designated a Scientific and Natural Area.

Felton Prairie is one of the largest remaining tracts of native prairie in the Red River Valley area. The Bicentennial Prairie is an exemplary part of the complex, supporting diverse prairie vegetation and known for its many bird and butterfly species, several of them endangered or threatened in the state. The wave deposited beach ridge of Glacial Lake Agassiz which crosses the site provides topographic relief and is considered a significant geologic feature. Community types in the Bicentennial Prairie include mesic blacksoil prairie, wet blacksoil prairie, and gravel prairie.

The prairie vegetation on the SNA was historically maintained as grassland by frequent wildfires. It was used as a pasture for cattle and sheep prior to 1940, was mowed for hay from 1943-1971, and portions were prescribe burned in 1984 and 1985. Details of the land use history are provided in an appendix to this report.

B. Preservation Value

Bicentennial Prairie is located in the Red River Valley Landscape Region. Several significant natural features have been identified on the SNA by the DNR's Natural Heritage Program. The Program maintains the most comprehensive data base available on Minnesota's rare plant and animal species, plant communities, and other natural features. These features are known as "elements" and are ranked according to their endangerment in the state. Bicentennial Prairie contains at least 11 elements, including 1 geologic feature, 2 natural communities, 1 plant species, 3 bird species, 1 mammal species, and 3 butterfly species. Two additional rare bird species have been documented to occur on the SNA in past years, and may return to the site as the prairie site quality improves with proper management.

Geologic Features

Lake and Wetland Deposition - Quaternary

A Glacial Lake Agassiz beach ridge (formally called "Lake and Wetland Deposition") crosses the Bicentennial Prairie tract in the northwest and southeast portions of the preserve (see map in the Appendix). Although beach ridges are common topographic features in the Red River Valley, many have been cultivated or destroyed by gravelling operations.

Natural Communities

1. Mesic Blacksoil Prairie Northwest - *state threatened/special concern

This prairie type occurs in northwest Minnesota on the deep loam soils of the lake plain and beaches of Glacial Lake Agassiz and surrounding uplands. In comparison with dry and wet prairie types, mesic blacksoil prairies contain the richest soils and highest species diversity, and have therefore been highly susceptible to conversion to agriculture. On the SNA, this community type is dominated by midgrasses, with little bluestem (Schizachyrium scoparium) most abundant, and blue grama (Bouteloua gracilis) and porcupine grass (Stipa spartea) of secondary importance. Bluegrasses (Poa compressa and Poa pratensis) have become an important component of much of the prairie in recent years.

2. Gravel Prairie - *state threatened

Gravel prairie occurs on Bicentennial Prairie on beach ridges in the northwest and southeast portions of the preserve. This community occurs on well drained to excessively drained gravelly soils in several different regions of the state, including on crests of beach ridges associated with Glacial Lake Agassiz (as in the SNA), on outwash areas along major rivers, and on the gravelly crests of morainic hills and ridges in southwestern Minnesota. The dominant plants are little bluestem (Schizachyrium scoparium) and sideoats grama (Bouteloua curtipendula). The more well-drained soils in gravel prairie support a number of mid-height to low bunch grasses and sedges, including some western grasses that are uncommon to rare in the state. The gravel resource of this community type makes it vulnerable to exploitation.

Plant Species

Prairie white-fringed orchid (Platanthera praeclara) - state endangered, federally threatened

This species was found in "wet prairie" of the SNA in 1979, but has not been verified in subsequent visits to the site. The orchid once occurred throughout the prairie region of Minnesota, but now survives as a few isolated colonies in remnant habitats. Platanthera requires low, wet calcareous prairies such as those found on portions of the southeast part of Bicentennial Prairie.

Animal Species

1. Baird's sparrow (Ammodramus bairdii) - state endangered

Baird's sparrow was last documented in the SNA in 1980, when 2 birds were observed in the site. There have been no documented occurrences there or

*Ranks for natural community types are program-defined and do not represent an official federal or state status.

anywhere else in the state for the past 5 summers. The species is regionally endemic to the northern Great Plains and has been reduced in extent as its habitat was destroyed until, by 1960, it was confined in Minnesota to Felton Prairie. No nesting evidence has been reported in the area.

2. Sprague's pipit (Anthus spragueii) - state endangered

A few sprague's pipits have been observed in the SNA consistently in recent years, though nesting has not been documented at Felton Prairie since 1962. Observers have regularly noted the birds along the south boundary of Bicentennial Prairie. Sprague's pipit is also a regional endemic to the northern Great Plains, and is presently found in Minnesota only at Felton Prairie. The preferred habit of this species is tall grass in mixed grass prairies and uplands.

3. Chestnut collared longspur (Calcarius ornatus) - state endangered

This species was last confirmed nesting in Bicentennial Prairie and adjacent Blazing Star Prairie in 1974. In recent years, they have been observed consistently on adjacent grazed prairies, and were seen on Bicentennial Prairie at least once. The tall, dense grass cover on the Bicentennial and Blazing Star tracts have provided less suitable habitat for this shortgrass - requiring species in recent years. Prescribed burns may provide the necessary habitat for a return of chestnut collared longspurs to the SNA. The Felton Prairie population of this species is the only known viable population in the state. It is a regional Great Plains endemic, with an original distribution similar to that of the Baird's sparrow and Sprague's pipit.

4. Upland sandpiper (Bartramia longicauda) - state special concern

Upland sandpipers were observed nesting in Bicentennial Prairie in 1985. A formerly widespread prairie species, these birds have declined throughout much of their northern United States range as their habitat has become modified or lost. They prefer grasslands with fairly short vegetation that is not too dense.

5. Greater prairie chicken (Tympanuchus cupido) - state special concern

This prairie species has been confined in recent years to a narrow strip of grasslands in northwestern Minnesota, centered in the beach ridge complex of Glacial Lake Agassiz. Booming grounds are present on several of the prairie tracts around Bicentennial Prairie, and nests were documented in the site in 1985. Habitat requirements include undisturbed dense herbaceous cover for nesting, winter cover, and food, and open expanses of short cover for courtship.

6. Prairie vole (Microtus ochrogaster) - state special concern

The prairie vole occurs in Minnesota primarily in prairies of the western and southeastern parts of the state. It requires grasslands that are

relatively dry and relatively undisturbed. Much of its habitat in the state has disappeared with the conversion of prairies. It was recorded in Bicentennial Prairie in 1979 and 1980.

7. Uhler's arctic butterfly (Oeneis uhleri varuna) - state endangered

Generally considered a western species, the Felton Prairie population of the Uhler's arctic butterfly is the only Minnesota locality where there is evidence of a persistent, breeding population. Collections were made yearly from 1965 through 1971 and again in 1982. The species has been observed most consistently in Bicentennial Prairie and in one other relatively undisturbed site in the area.

8. Assiniboia skipper (Hesperia assiniboia) - state endangered

Felton Prairie contains the only known breeding colony of this butterfly species in the state. It has been found sparsely in Bicentennial Prairie as well as on several other portions of the Felton Prairie complex. Its habitat in Minnesota is ungrazed shortgrass prairie.

9. Dakota skipper (Hesperia dacotae) - state threatened

Felton Prairie supports one of only 2 large healthy colonies of this butterfly species in the state. Bicentennial Prairie is one of the strongholds for the Dakota skipper, possibly because of its relatively undisturbed nature and its large population of purple cone flower, a preferred nectar source.

C. ORA Classification

The Clay County Bicentennial Prairie fully meets the designation criteria for a Scientific and Natural Area as outlined in the Outdoor Recreation Act (M.S. 86A.05, Subd. 5). The preserve includes (1) a relatively undisturbed plant community maintaining itself under prevailing natural conditions typical of Minnesota, (2) a natural formation significantly illustrating geological processes, (3) habitat supporting at least 8 vanishing, rare, or endangered plant and animal species, and (4) an area large enough to preserve its inherent natural values and permit effective research and educational functions.

D. Management Philosophy

The three most important attributes of Bicentennial Prairie are (1) the high quality of the plant community, (2) the presence of (or in some cases the potential for) several threatened and endangered animal and plant species, and (3) its inclusion in one of the largest undeveloped tracts of prairie remaining in the Red River Valley area. The major management problems are controlling woody encroachment and exotic herbaceous plants, stagnation of native species due to cessation of fire, and destruction by an adjacent gravelling operation. The increasing magnitude of these problems and the inherent dynamic nature of the prairie community necessitates an active management policy for Bicentennial Prairie. The protection of adjacent tracts is considered vital to the perpetuation of rare species in the Felton Prairie SNA.

SECTION 1. GENERAL MANAGEMENT CONSIDERATIONS

A. Clay County

The Clay County Board of Commissioners participated in an agreement to protect Bicentennial Prairie in 1976. In the 10-year protective agreement, the DNR committed to providing management of the preserve. The county retained gravel rights to the site, but is restricted from testing or mining for gravel without first holding a public hearing to consider the action and notifying the DNR and The Nature Conservancy at least 60 days prior to the hearing date. The agreement also recognized the rights of local farmers to use roads across the preserve to transport farm equipment, insofar as they "do not damage the real estate." A new 10-year conservation easement was signed by the Clay County Board of Commissioners on May 6, 1986. The same rights and restrictions contained in the original agreement were retained.

B. Management Resources

The type of management that takes place in an SNA depends on both the need for and availability of management resources. The SNA program is responsible for developing a management plan, securing development funds, and overseeing implementation. Based on this plan, the SNA program will prepare work plans to schedule and coordinate management actions. SNA relies heavily on the cooperation of, and coordination with other DNR programs, divisions, and other agencies and organizations. Some of these resources are described below.

1. DNR Offices and Facilities

Region 1 DNR personnel are located in Bemidji, 80 miles northeast of the SNA. The Regional Nongame Specialist is an official local liaison for the Scientific and Natural Areas Program. The Area Wildlife Manager is located in Detroit Lakes, approximately 34 miles southeast of Bicentennial Prairie. The Conservation Officer is located 20 miles southwest of the preserve in Moorhead. St. Paul based SNA staff are about 225 miles from the preserve.

2. Proximity to University and College Campuses

Six university and college campuses are located within 80 miles of the SNA, providing excellent opportunities for research and education activities in the preserve. Moorhead State University and Concordia College (Moorhead), North Dakota State University (Fargo), University of Minnesota (Crookston), Bemidji State University, and University of North Dakota (Grand Forks) should be invited to participate in research and educational use. Scientists from Moorhead State University, The Nature Conservancy, and the DNR Natural Heritage Program have conducted research and natural features inventory work on the Felton Prairie complex to date. More research use should be encouraged.

C. Surveillance and Enforcement

Inappropriate uses or overuse can damage natural conditions and preservation efforts in natural areas. Because of the fragility of nature preserves, continued protection and maintenance requires systematic surveillance and enforcement.

Enforcement will continue to be the responsibility of the area conservation officer in Moorhead. Visitors to the SNA are encouraged to report any signs of problems or violations. Few recent enforcement problems relating to the SNA have been reported, though there was an early instance of vandalism shortly after the preserve was dedicated. Occasional instances of trespassing on the farm roads by hunters and others have been reported. SNA rules and regulations will be posted at all entrances to the preserve (Action 2.3).

Designation of a volunteer steward who lives near the preserve will assist in monitoring the area for problems. The steward will be instructed to report any violations to the conservation officer or SNA staff.

Action 1.1 Designate a volunteer steward

D. Public Use

1. Visitors

Bicentennial Prairie and the nearby Blazing Star Prairie are visited by scout and church groups, school classes, and individuals. The historic sites are of special interest to many of these visitors. An effort should be made to educate visitors about Scientific and Natural Areas, prairies, and the significance of the Bicentennial and Blazing Star tracts. A brochure describing the Clay County Bicentennial Prairie was developed by the DNR in conjunction with TNC and the Moorhead State University Biology Department. The brochure should be updated and generalized (i.e. should not refer to the "present year") and be made available to visitors upon request.

Action 1.2 Update Clay County Bicentennial Prairie brochure

Other actions will also assist in visitor education. The text of the interpretive sign (Action 2.1) at the entrance will include a brief explanation of the preserve's significance. The identification of a volunteer steward who will lead occasional tours of the site will provide a mechanism for visitor contact and distribution of brochures. Lastly, TNC staff and interns have given talks in towns in the area, led tours of the site, and done public relations work in the area with very positive results. These activities, in conjunction with SNA-sponsored public relations, should be continued.

Action 1.3 Continue public relations work in the area

---

2. Hunting

The SNA is located within the Clay County Game Refuge, in which all hunting except deer hunting is prohibited. Deer hunting is allowed in the

Refuge because populations have reached large enough numbers to cause crop depredation problems. Bicentennial Prairie and adjacent county lands have been utilized by a few hunters in past years with no damage caused to the natural resources of the area. Deer in Bicentennial Prairie are found primarily in the few aspen clones on the site. As management of the vegetation leads to the reduction of aspen on Bicentennial Prairie (Action 3.2), it is predicted that the deer population, and therefore hunting, will be reduced.

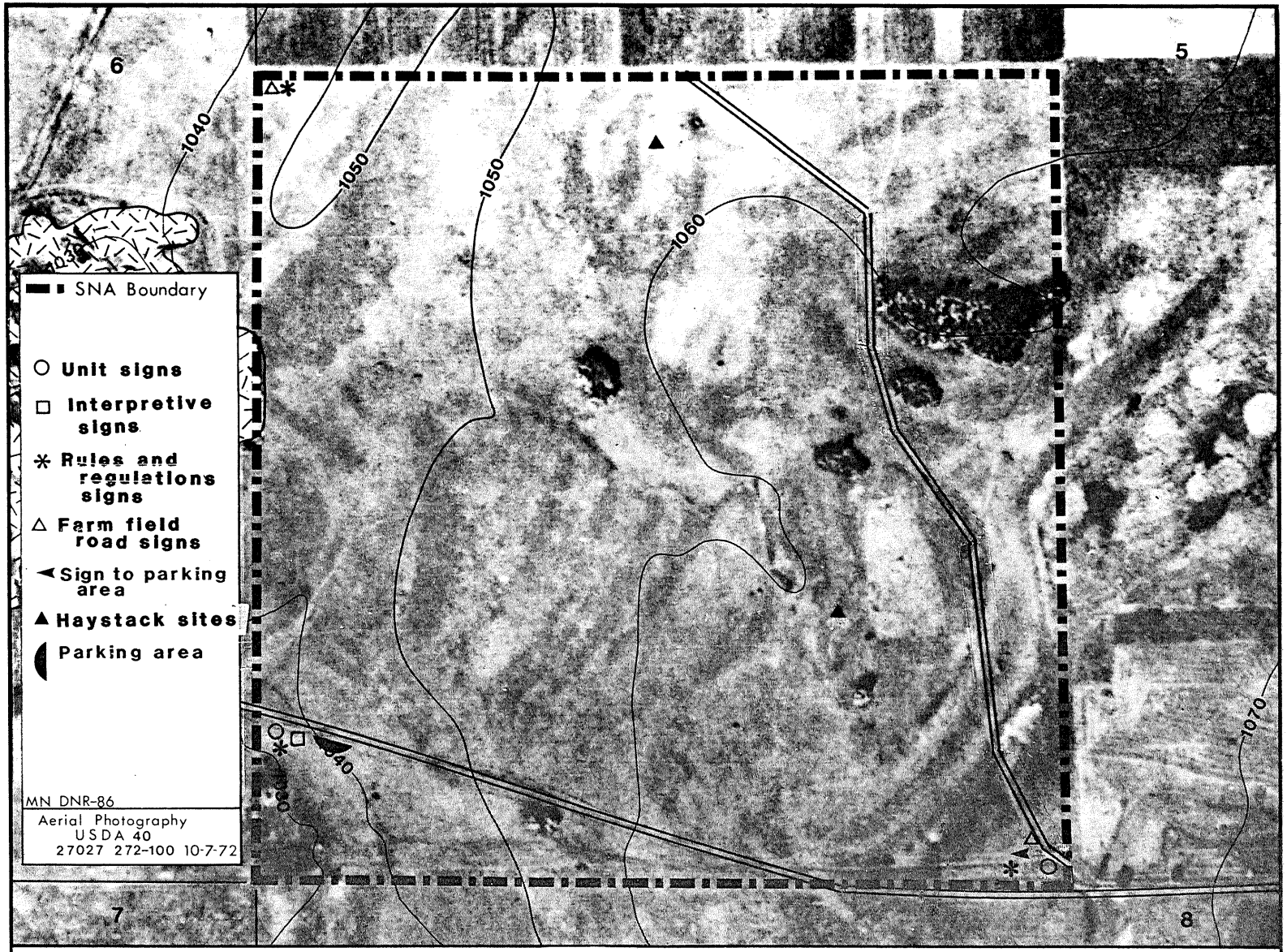
Therefore, keeping Bicentennial Prairie open to deer hunting should cause no damage to resources on the preserve as well as being consistent with policy on adjacent public lands.

Action 1.4 Post the SNA as open to deer hunting

Considerations:

Signing - The Rules and Regulations signs will be amended to state the SNA is open to deer hunting.

Hunter Education - Contact with local sportsmen's groups should be made to inform them which sites are open to hunting on Felton Prairie and which sites are closed.



BICENTENNIAL PRAIRIE SNA

Figure 1

MANAGEMENT

SECTION 2. STRUCTURES AND FACILITIES

A. Access and Parking

Drive-in access to the SNA can be gained by entering the site from the east or west near the southern edge of the preserve. An unimproved road runs east-west near the southern edge of the Bicentennial Prairie, and this road connects to County Road 108 to the west, and County Road 112 to the east. Visitors should be encouraged to enter the site from the west, as the southeastern corner of the preserve is low and wet and at times is not passable by all vehicles.

A portion of disturbed prairie in the southern portion of the site is designated as a parking area (Figure 1). The area will be delineated by surrounding it with wooden posts. There will be room for one bus or 4 to 5 cars in the parking area.

Action 2.1 Post parking area

B. Signing

The purpose of signing is to identify and describe the SNA unit, and to provide basic visitor information. Signing needs include unit signs, an interpretive sign, rules and regulations signs, boundary signs, signs restricting use of farm field roads and a sign directing visitors to the parking area.

Action 2.2 Develop and post unit signs

Considerations:

Type of sign - Unit signs are large wood-routed signs identifying the Bicentennial Prairie tract of the Felton Prairie SNA.

Locations - One sign has already been made; this should be placed in the southeast corner of the tract, facing the southeast entrance (Figure 1). Another unit sign should be placed near the southwest entrance, facing southwest (Figure 1).

Action 2.3 Develop and post an interpretive sign

Considerations:

Location and Text - One interpretive sign should be placed just west of the parking area, and should include a map of the Bicentennial and Blazing Star Prairie tracts, the buffalo rubbing rock ~~and teepee ring~~ location~~s~~, the visitor road, and the parking area. The text of the sign should include a short explanation of the site's significant natural and historic features.

Action 2.4 Post rules and regulations signs

Considerations:

Locations - One sign should be placed at each of the 2 entrances to the site (near the unit signs), and one at the north end of the farm field road (Figure 1).

Action 2.5 Survey boundaries

Considerations:

Accuracy - The boundaries as they are presently signed may be slightly inaccurate, as field edges and roads were used to estimate edges.

Action 2.6 Post boundary signs

Considerations:

Locations - The north, east, and south boundaries should be posted with SNA signs placed approximately 1000 feet apart. The portion of the west boundary containing gravelling intrusion should be posted with boundary signs about 100 feet apart to prevent further intrusion, and the remainder of the west boundary should contain signs 1000 feet apart.

Action 2.7 Develop and post signs restricting use of farm field roads

---

Considerations:

Locations - Three signs reading "Restricted Road - Farm Machinery Only" should be constructed, and placed at north and south ends of the field roads (Figure 1).

Action 2.8 Develop and post sign directing visitors to parking area

---

Considerations:

Location and Text - A sign should be placed near the southeast corner of the site to direct visitors entering from the east to the parking area. The sign should have an arrow pointing to the left, with the text reading "Parking Area", and should be placed just north of the east-west road (Figure 1).

C. Historic Sites

Two possible historic sites have been identified in the north-central portion of Bicentennial Prairie. A glacial erratic which forms a prominent feature on the landscape is thought to have served as a "buffalo rubbing stone". In the same vicinity, several small stones embedded in circular patterns are thought to be remnant "teepee rings", marking spots where teepees formerly existed. The locations of these sites are of interest to educators leading student groups and to other visitors. Mention of these features and their location will be included on interpretive signs (Action 2.3), and should be included in tours of the preserve.

D. Gravel Pits

The gravelling operation adjacent to Bicentennial Prairie's west boundary has produced a gravel pit which crosses the section line into the preserve by about 200 feet. To prevent further encroachment, boundary signs will be placed along the edge of the pit, 100 feet apart, high enough so that workers in the area can clearly see the signs (Action 2.6).

E. Roads

A number of compacted mowed roads, probably established by hunters, branch off the visitor road and farm field road in the preserve. These branch roads should not be used and should be allowed to restore to native prairie vegetation. Only the visitor road and farm field road will remain open (Figure 1). The farm field road is to be used only by neighboring farmers. The closed branch roads should be monitored to determine whether restoration is proceeding, and if not, further restorative measures should be considered.

Action 2.9 Close and monitor branch roads

F. Fencing

The south boundary of the preserve is adjacent to the B Bar B Ranch, where cattle are pastured. It is important that fencing along that boundary be maintained to prevent grazing intrusion into Bicentennial Prairie. If the fencing falls into disrepair, the owner should be contacted and SNA staff will cooperate with assisting in repair of the fence.

Action 2.10 Monitor condition of fencing on south boundary

Considerations:

Frequency - Check fencing once a year.

G. Haystacks

At least two old haystacks were left in the Bicentennial Prairie following the cessation of haying (Figure 1). The baling wire and any associated trash should be removed from these areas, and any hay remaining should be scattered over the tract. Exotic weeds should be hand pulled from these areas.

Action 2.11 Remove remains of haystacks

SECTION 3. MANAGEMENT OF NATURAL FEATURES

A. Prairie Communities

Prescribed burning has been, and will continue to be a major management activity on Bicentennial Prairie. The primary goals of burning are to enhance native grassland vegetation, suppress encroachment of trees and shrubs, and reduce competition from undesirable exotic problem plant species. The consensus among experts in Minnesota is that prairies naturally burned at intervals of approximately one to 4 or 5 years and, except in severe drought, fires occurred in the dormant season. Specific fire effects on the biota will depend on fire intensity, fire frequency, timing of burn, and pre- and post-burn environmental conditions. Burning frequency and prescription on Bicentennial Prairie should be coordinated with burn plans for the other units of the Felton Prairie complex, to assure that habitat for prairie plants and animals is maintained in the preserve as a whole.

In the period between 1971 and 1984, no grazing, mowing, or burning was done in Bicentennial Prairie, allowing a high build-up of fine fuels and an increase in size of the aspen clones on the preserve. Exotic species were noted to occur frequently on the site during recent visits. Canada bluegrass (Poa compressa) and Kentucky bluegrass (Poa pratensis) were dominant or co-dominant in some portions of the preserve in 1985. It is possible that the exceptionally hot fires of 1984 and 1985 led to an immediate increase in bluegrass following the killing of many little bluestem and other native grasses. An alternative explanation is that bluegrass has increased gradually since mowing was halted in 1971. During a 1986 site visit, it was observed that bluegrass had apparently decreased in extent and native grasses had increased, indicating that the bluegrass expansion may have been short-lived. The other exotic species occurring in portions of the preserve is white sweet clover (Melilotus alba). Numerous seedlings scattered sparsely throughout much of the preserve were observed during a spring 1986 visit.

The restoration of native species composition and structure of the prairie will require a prescribed burn plan that takes into account the above factors, the life histories of significant species in the preserve, and the management of adjacent lands. The graph in Figure 2 depicts the timing of important life history characteristics of significant species which could be impacted by burning. These time frames are taken into account in the considerations below.

Action 3.1 Conduct a prescribed burn program

Considerations:

Coordination - Timing and burn specifics will be coordinated with Nature Conservancy (TNC) management staff. Persons in charge of burning the unit should consult with SNA staff prior to conducting any burn in the Bicentennial Prairie.

Fire Units - Bicentennial Prairie has been divided into 3 fire units by TNC staff (Figure 3). These units should be retained, and no more than one unit burned in a given year.

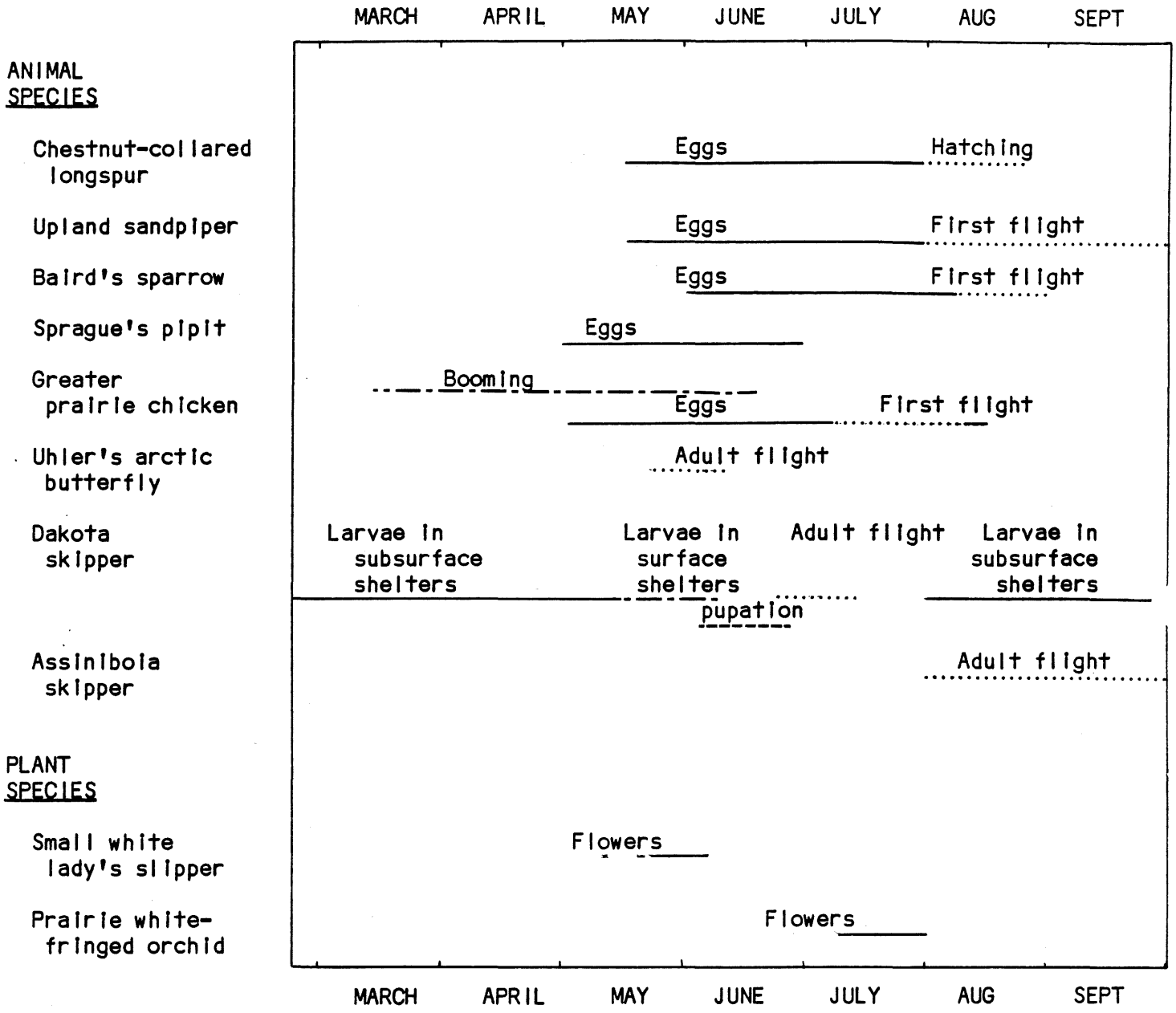
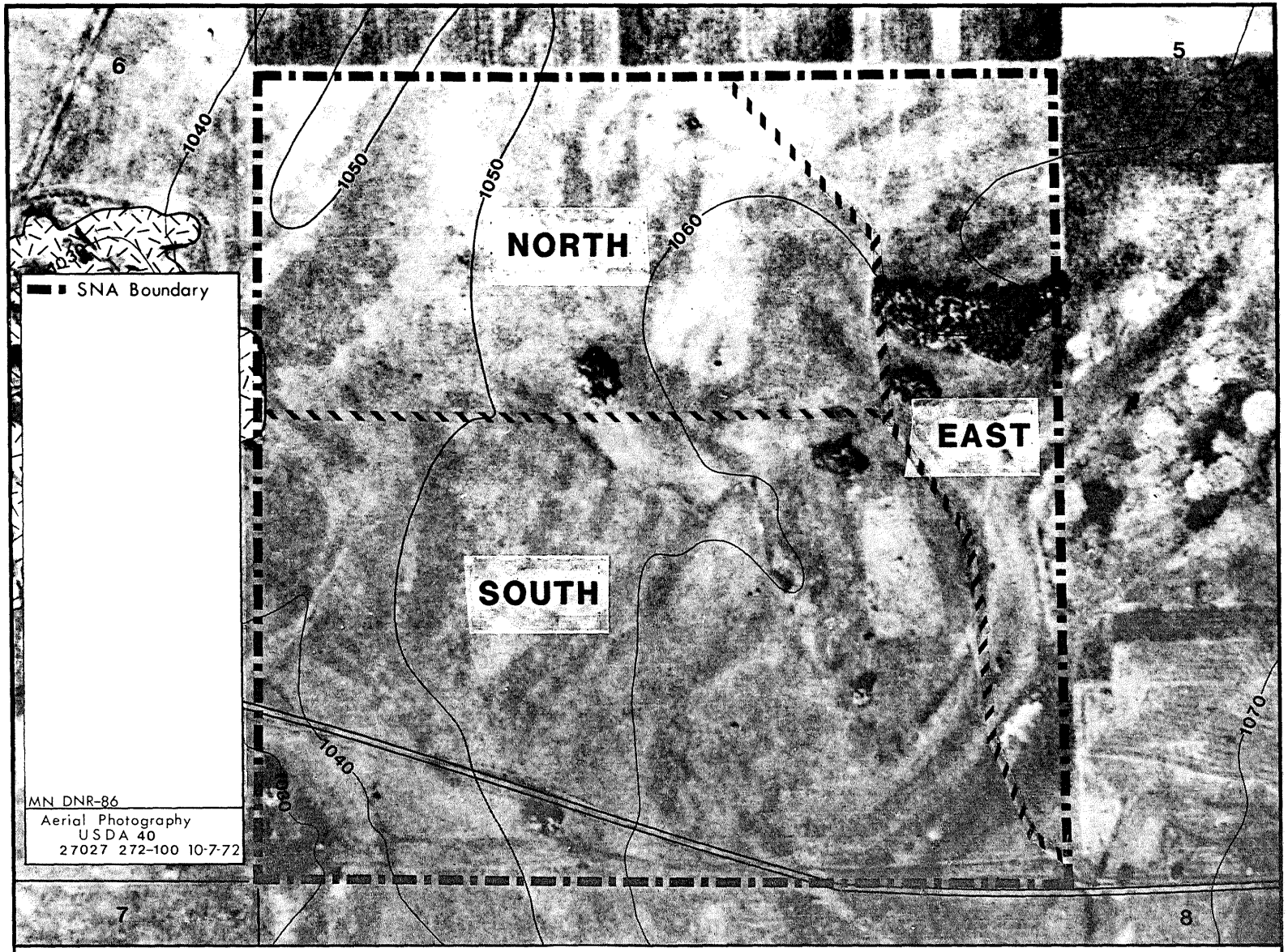


Figure 2. Life History Information for state-significant species in Bicentennial Prairie. Dates are generalized for Minnesota. Missing information indicates dates not available.



BICENTENNIAL PRAIRIE SNA

Figure 3

FIRE UNITS

Objectives -

1. to produce unit to unit variation in vegetation structure (density, height, litter depth, etc.)
2. to return/maintain each unit in native species-dominated vegetation
3. to control exotic plant species, including Canada bluegrass, white sweet clover, and others if they become evident on the site
4. to control aspen sprouts, seedlings, and saplings
5. to use dormant season fire to remove 70% or more of the 1 hour time lag fuels (fine fuels) per burn

Guidelines for Prescription -

1. The timing of burning must take into account control of aspen, reduction of exotic species, and protection of rare species. No one burning time will be optimal for all of these objectives. Summer or late spring burning provides the best control of woody encroachment, but dormant season burns are more effective in cool-season exotic species control and are less harmful to plants and animals. Figure 2 demonstrates that burning before the first of May or after the end of August should avoid damaging rare species. Burning in late spring or fall has resulted in the most effective control of Canada bluegrass. Summer or fall burning followed by spring burning has proved most effective in controlling white sweet clover in some cases. It is recommended that burning be done from mid-April to mid-May or in the fall, with fall burns being followed immediately by spring burns if monitoring indicates that white sweet clover is becoming a problem.

2. Burn frequencies of every 3 years should accomplish burning objectives, with only one unit burned per year.

3. On units which have not been burned for several years, burning should be done at the cool end of prescription to avoid extremely hot fires and long residence times. Ideal conditions would include steady winds, high humidity, and low temperatures.

Monitoring - Burn conditions should be carefully documented during each prescribed burn. Fuel type and amount, weather conditions, and fire behavior should be recorded.

Action 3.2 Eliminate aspen clones

Considerations:

Extent - Aspen clones have expanded considerably since grazing and burning were removed from Bicentennial Prairie, reducing the amount of native prairie vegetation. Trees should be girdled or cut to eliminate as much aspen as possible.

B. Fauna and Flora

The maintenance of species diversity and of optimal habitat conditions for rare animal and plant species on the SNA constitutes an important management priority for Bicentennial Prairie. In general, management of native prairie vegetation also serves to maintain native prairie species. Habitat requirements for individual species were addressed in Prescribed Burning Considerations (Action 3.1), and are discussed in Section 6 (Effects of Management on Significant Resources).

SECTION 4. INVENTORY AND MONITORING OF NATURAL FEATURES

A. Prairie Communities

Scientific and Natural Areas present excellent opportunities for long-term ecological research and monitoring of protected natural communities. Monitoring yields information essential to management by tracking changes in the vegetation and documenting the effects of management practices. The mesic blacksoil prairie and gravel prairie communities should be inventoried and monitored for structural characteristics (such as density, height, etc.) and species composition.

Action 4.1 Establish and monitor permanent reference plots

Considerations:

Photo stations - Several photo stations should be established to document aspen clone size, and additional woody encroachment. Photos should be taken every one to two years.

Existing plots - Three 10 m x 10 m releve plots marked by conduit poles were established in 1979, and 2 still persist on the site. Additional plots should be added in the mesic and gravel prairie portions of the site and more in-depth analyses of all plots should be done.

Objectives - Information collected should include frequency, density, and percent cover of species in plots. When possible, soil samples should be collected and analyzed for nutrient and organic matter content. The primary objectives are to determine the effects of prescribed burning on prairie vegetation, to document long-term changes in prairie communities, and to compare structure and species composition to that of adjacent prairie lands and other SNAs. Some specific research questions which should be addressed include:

1. How do structure and species composition of burned prairie differ from unburned prairie, grazed prairie, and formerly plowed prairie?

2. How do soil compaction and species composition and structure of vegetation differ in abandoned mowed roads and adjacent non-road areas? How fast is restoration taking place in the old roads?

3. What is the most effective burn prescription for control of bluegrass and white sweet clover?

4. What direct damage to flora and fauna occurs as a result of burning? What benefits occur?

5. To what extent are warm season native grasses increasing with time and management? Are cool season exotic species (bluegrass and white sweet cover) decreasing?

Standardization - Sampling design and data collection should, whenever possible, be compatible with methods utilized in other SNAs. Information should also be compatible with Natural Heritage Program methodologies, including the use of releves.

B. Rare Plants

Bicentennial Prairie should be surveyed to determine the extent of known state-significant plant species on the site and determine whether additional rare species occur there. One state special concern species, red three-awn grass (Aristida longiseta), has been noted to occur in the site, but was not verified. It was collected on gravel prairie west of Bicentennial Prairie in 1985. In addition, the small white lady's slipper (Cypripedium candidum) (ranked state special concern) occurs in an adjacent tract of land to the east, and should be searched for in Bicentennial Prairie.

Action 4.2 Inventory rare plant species

A special effort should be made to determine whether the prairie white-fringed orchid (last seen in 1979) still exists in the site. If it is found, a monitoring program should be established to document population size and vigor, phenology, and reproduction.

Action 4.3 Monitor prairie white-fringed orchid population, if found

---

C. Rare Animals

The six threatened or endangered animal species occurring in the past and/or present on Bicentennial Prairie are high priorities for inventory and monitoring needs. Searches for these species on the tract should be made, and, when found, populations should be monitored.

Action 4.4 Inventory threatened and endangered animal species

---

Considerations:

Species - Bird species include baird's sparrow, sprague's pipit, and chestnut-collared longspur. Butterfly species include uhler's arctic, assiniboia skipper, and Dakota skipper.

Action 4.5 Monitor threatened and endangered animal species

Considerations:

Bird Species - Annual surveys should be made to determine population size, and breeding population size and fledgling success shoud be recorded for species breeding on the site.

Butterfly species - Surveys should be made approximately every 3 years during the flight times of these species to assess population sizes. Flight times are: uhler's arctic - late May - early June
dakota skipper - late June - early July
assiniboia skipper - early August - late September

Management Questions - Monitoring activities should take into account the land use history and recent prescribed-burn history of compartments of the site to determine effects of management on populations of significant species.

SECTION 5. ADJACENT LANDS

The Felton Prairie complex consists of a mosaic of lands owned variously by the state, Clay County, and private individuals. Some of these lands are completely or partially protected, while others are unprotected. The rarity of many of the elements on the complex together with its large size make the preservation of as much land as possible a high protection priority. The entire complex measures approximately 6000 acres in size; the conservation of all these lands would constitute the largest prairie preserve in the Red River Valley landscape region. Protection would allow for the coordination of proper management on individual tracts to ensure the existence of a large expanse of contiguous habitat for prairie species.

Areas supporting medium to high quality prairie or known to support threatened or endangered species have been designated as higher protection priorities, while tracts with poor quality or highly disturbed prairie have been designated as lower protection priorities (Figure 4). It should be emphasized, however, that protection of the Felton Prairie as a whole is important, and conservation action on all component lands should be pursued. Highest protection is afforded by SNA designation, accomplished through gift, fee acquisition, partial ownership (i.e. conservation easement) or long-term lease of a parcel. Alternatively, registry of privately-owned lands and state-owned non-SNA lands may be pursued as a short-term conservation measure.

The Felton Prairie Project Boundary map (Figure 4) depicts ownership boundaries of lands near Bicentennial Prairie and delineates protection priorities. Owners of individual parcels are shown in the Appendix to this report (Figure 10) and in the report entitled "Felton Prairie" by Nancy Braker et al., submitted to TNC and the DNR in November 1985.

Action 5.1 Pursue conservation action on remaining Felton Prairie tracts

---

Considerations:

Detailed Information - The 1985 inventory of Felton Prairie yielded considerable information about site quality, resources, and recommended conservation actions for component tracts. Reports are filed with the DNR SNA and Natural Heritage Programs.

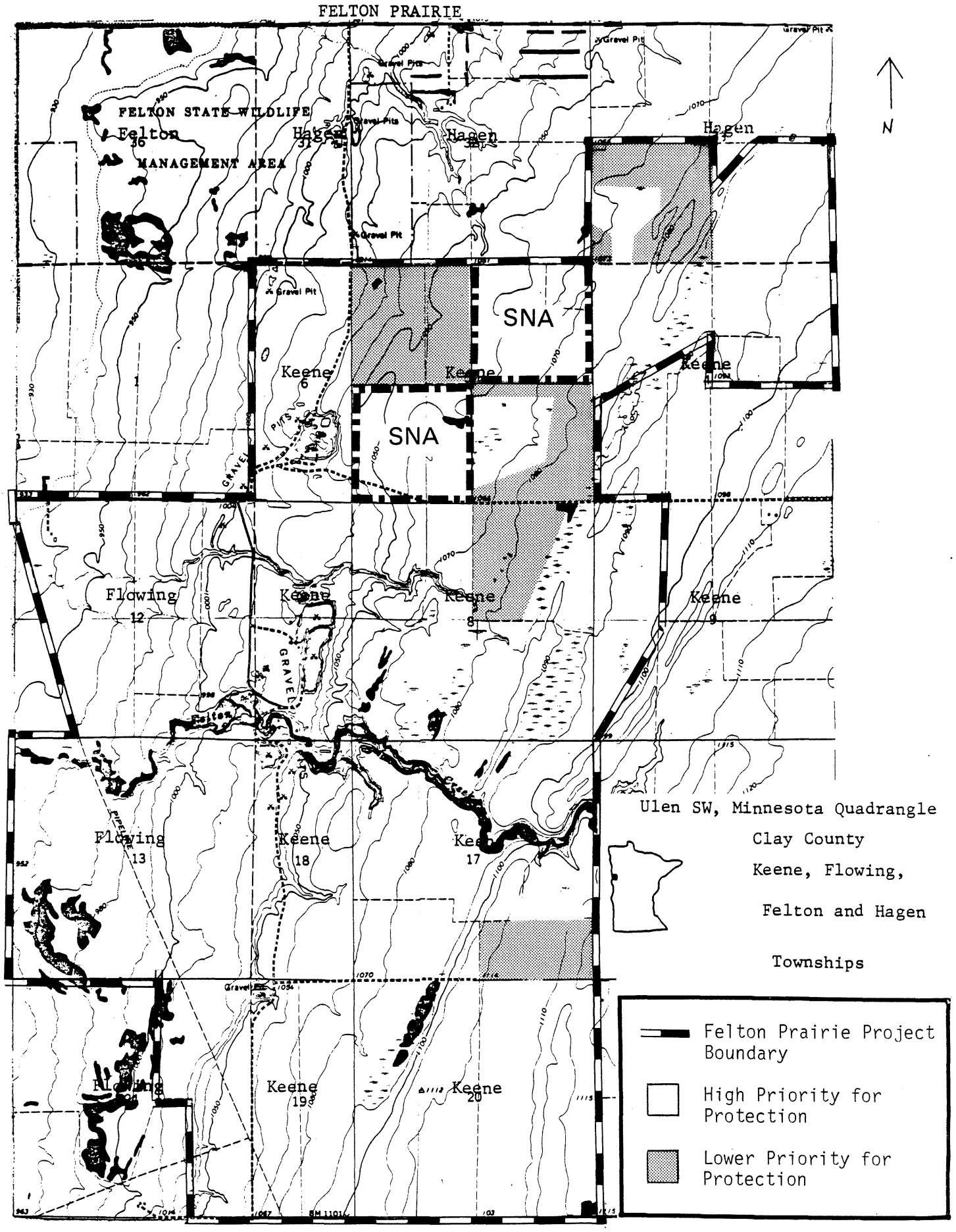


Figure 4 **Felton Prairie Scientific and Natural Area Project Boundary**

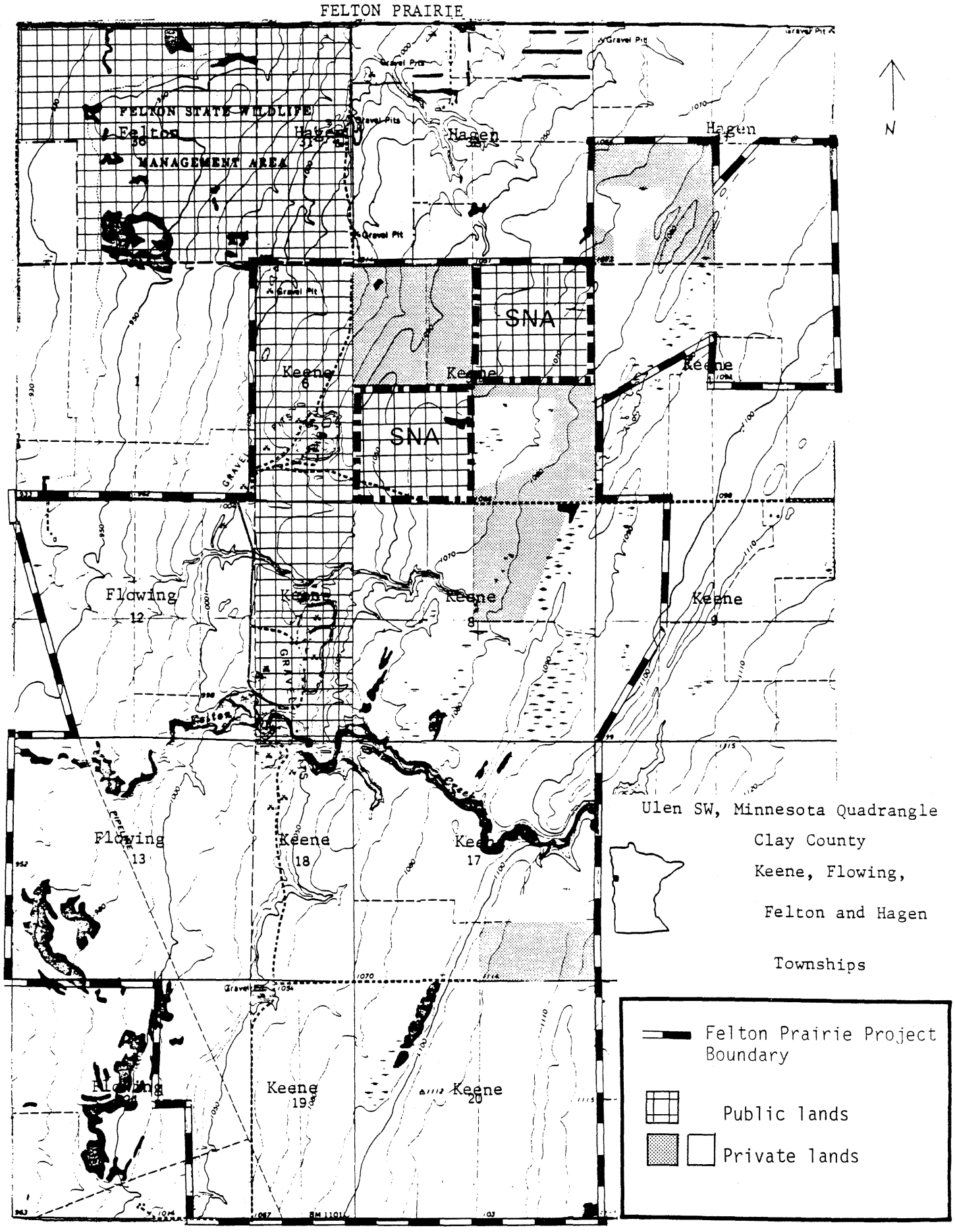


Figure 5 Land Ownership Within the Felton Prairie Scientific and Natural Area Project Boundary

SECTION 6. EFFECTS OF MANGEMENT ON SIGNIFICANT RESOURCES

A. Prairie Communities

The primary management action affecting prairie communities is prescribed burning (Action 3.1), which is designed to improve site quality and return the communities to presettlement structure and species composition to presettlement structure and species composition. The control of aspen clones (Action 3.2) will aid prairie communities by providing additional habitat for native herbaceous species. Monitoring activities (Action 4.1) will provide resource information useful in making future management activities. The identification of a volunteer steward (Action 1.1) will aid in protecting the prairie from disturbance and degradation due to harmful human activities. Conservation action on the remainder of Felton Prairie lands (Action 5.1) will help ensure the protection of the prairie communities in the area.

B. Rare Plants

All of the above actions designed to protect the prairie community should also positively affect rare plant species. Prescribed burning has been demonstrated to have positive effects on prairie white-fringed orchids and small white lady's slippers in at lest some cases[1], although more research is needed on the topic. Inventory activities (Action 4.2) will provide specific information regarding presence of rare species. In addition, monitoring of prairie white-fringed orchids (Action 4.3) will provide information useful in assessing management needs of the species.

C. Rare Animals

Prairie community protection will also help ensure the perpetuation of rare animal species. Inventory and monitoring activities (Actions 4.4, 4.5) will provide information useful in assessing management needs of the species.

[1]See Bowles, M.L. 1983. The tallgrass prairie orchids Platanthera leucophaea (Nutt.) Lindl. and Cypripedium candidum Muhl. ex willd.: Some aspects of their status, biology, and ecology, and implications toward management. Natural Areas Journal 3(4):14-37.

SECTION 7. MANAGEMENT COSTS AND IMPLEMENTATION

Actions recommended in this plan have been separated into two categories: (1) administrative and (2) operational. The costs of administrative actions are difficult to itemize because they are included in an SNA staff member's salary. Operational actions are on-site activites. They often have both capital and labor costs. Capital costs have been listed.

Administrative and operational actions are often funded out of different budget sources. This makes it difficult to present an implementation schedule that equates both types of actions. To accommodate budget planning, separate implementation schedules are outlined for each category.

It is important, however, to have a mechanism that does allow comparison between all actions in this plan and between actions in different plans. The system outlined below distinguishes between (a) actions needed to improve or maintain the integrity of a site's most important features, called elements, (b) legal or moral obligations of ownership or land management by the Department, and (c) all other actions important for reasons other than above.

Group I Actions: Actions that prevent or reduce the vulnerability of the element to destruction or serious degradation. That is, in the absence of these actions the preservation of the element is threatened on this site. Research, ecological survey and monitoring may be included here if, without such informtion, it is not known what actions are necessary to maintain the element.

Group II Actions: Actions necessary because they constitute an obligation of land management/ownership by the Department. These may be legal obligations, departmental, or SNA program standard requirements.

Group III Actions: Actions taken for all other reasons. For example, actions taken to provide for public use, acquire supplementary resource information, administrative coordination, etc.

The following chart illustrates the scheduling of actions described in the text, and the immediate and on-going capital costs of implementation. The scope of this plan covers a ten year period. The plan should be reviewed every five years to evaluate progress, reassess priorities, and refine management techniques. Actions listed under the category "Begin Immediately" need immediate attention or are a continuation of an existing program. "Phase I" is the first five year period. "Phase II" is the second five year period. Implementation of many actions depends on availability of materials, equipment and labor. An action may be initiated sooner than scheduled if circumstances so dictate and earlier scheduled actions will not suffer as a result.

ADMINISTRATIVE ACTIONS	GROUP	BEGIN IMMEDIATELY	PHASE I	PHASE II	*RESPONSIBILITIES AND COSTS
Action 5.1 Pursue conservation action on remaining Felton Prairie tracts	I	X			SNA, TNC
Action 1.1 Identify volunteer steward	III		X		SNA
Action 1.2 Update Bicentennial Prairie brochure	III		X		SNA, TNC, MSU
Action 1.3 Continue public relations work	III	X			SNA, TNC
OPERATIONAL ACTIONS					
Action 2.9 Close and monitor branch roads	I		X		SNA
Action 2.10 Monitor condition of fencing on south boundary	I	X			SNA
Action 3.1 Conduct prescribed burn program	I	X			SNA, TNC
Action 3.2 Eliminate aspen clones	I		X		SNA
Action 4.1 Establish and monitor permanent prairie community plots	I		X		SNA
Action 4.2 Inventory rare plant species	I	X			NHP
Action 4.3 Monitor prairie white-fringed orchid populations	I		X		NHP
Action 4.4 Inventory threatened and endangered animal species	I	X			NG
Action 4.5 Monitor threatened and endangered animal species	I		X		SNA, NG
Action 2.1 Post parking area	II		X		W
Action 2.2 Develop and post unit signs	II		X		SNA - develop W - post, $150
Action 2.4 Post rules and regulations signs	II	X			W, 3 signs at $5.50 ea
Action 2.5 Survey boundaries	II		X		ENG
Action 2.6 Post boundary signs	II	X			W, 16 signs at $5.50 ea
Action 2.7 Develop and post farm field road signs	II	X			SNA - develop, W - post
Action 2.11 Remove remains of haystacks	II		X		SNA
Action 1.4 Post SNA as open to deer hunting	III	X			W
Action 2.3 Develop and post 2 interpretive signs	III		X		SNA - develop, W - post $600
Action 2.8 Develop and sign directing visitors to parking area	III		X		SNA - develop, W - post

*SNA = Scientific and Natural Areas Program
TNC = The Nature Conservancy
MSU = Moorhead State University
NHP = Natural Heritage Program
W = Area Wildlife Manager
NG = Nongame Wildlife
ENG = Engineering