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Lespedeza leptostachya IN MINNESOTA
A 1991 UPDATE ON STATUS, INVENTORY AND MONITORING

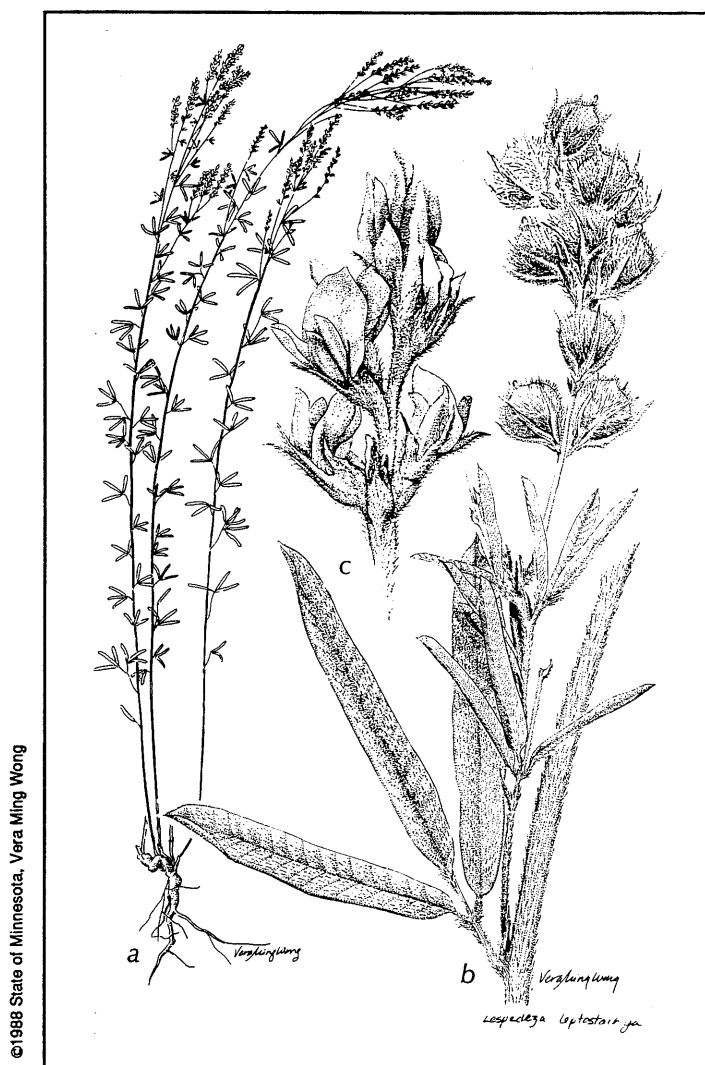
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for
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by
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Minnesota Department of Natural Resources
Section of Wildlife – Natural Heritage Program

March, 1991



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Inventory
Inventory, monitoring, data entry
Inventory
Inventory
Inventory, landowner contact, census,
checked Jackson County bridge repair sites
Inventory
Inventory
Guide to potential habitat
Inventory, family site
Monitoring, guide to family site
Inventory, census, monitoring
Inventory, census, checked Renville County
bridge repair site
Inventory, census, monitoring, guide to
family site, public relations, checked
Jackson County bridge repair sites.
Inventory
Inventory, monitoring
Inventory
Guide to family site
Inventory
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MAR 26 1991

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INTRODUCTION

Prairie Bush Clover (Lespedeza leptostachya) is a federally threatened midwestern legume known from around 50 sites in Minnesota, Iowa, Wisconsin, and Illinois. Inventory efforts in southern Iowa and southwestern Minnesota in recent years have indicated that the species is able to withstand periods of grazing and may be found in active pastures and roadsides as well as in undisturbed prairie remnants. These discoveries have caused the Minnesota DNR to shift its emphasis for this species from a concentration on long-term monitoring to increased inventory efforts in hopes of determining the actual status of the species in Minnesota.

As a strategy for extending inventory efforts beyond those accomplishable by staff botanists, the Natural Heritage Program has for the last three years recruited and trained lay volunteers to conduct long-term monitoring and assist with inventory for this species. Special emphasis has been placed on involving landowners, along with other citizens of areas where the plant is known to occur.

INVENTORY AND STATUS

Inventory efforts in Minnesota in 1990 were concentrated in two areas: in southwestern Minnesota in a band extending from Morton at the Minnesota River southward through eastern Redwood and western Brown Counties into the Des Moines River Valley of Cottonwood and Jackson Counties. Table 1 lists areas searched during the 1990 season. Areas that harbored newly discovered populations of Lespedeza leptostachya are annotated in this table with an asterisk. Altogether, 10 new element occurrences of Prairie Bush Clover were discovered during the 1990 season, representing 7 new populations.

In addition to the DNR's inventory for new sites, the status of all previously known sites was checked by Minnesota Department of Agriculture specialist Lisa Mueller as part of that department's Endangered Species Pesticide Protection program. Of 24 previously known sites, no plants were found at 2 sites and two populations were reduced to only one or two plants. All four of these diminished populations are in areas that have seen an increase in both shrub cover and litter buildup since their small populations were first discovered between five and eighteen years ago. In one case an historical population could not be relocated but another population was found on property under the same ownership. Table 2 summarizes the size of Minnesota's 35 element occurrences, their ownership, community rank and habitat size at the end of the 1990 season. Appendix 1 is a complete printout of Minnesota Natural Heritage Program element occurrence records for Lespedeza leptostachya as of February, 1990.

In addition to inventory efforts conducted in areas of high potential, Natural Heritage Program volunteers cooperated with county highway departments in 1990 to proactively check bridge repair sites in eastern Jackson County and southern Renville County. None of these project sites was found to harbor Prairie Bush Clover.

CENSUS, MAPPING, PRESERVE DESIGN AND MANAGEMENT PLANS

Census and mapping efforts were conducted at 4 of the new populations discovered in 1990. Population sizes in Table 2 reflect the results of these census efforts. Mapping was done only at two populations with over 1000 plants. The first of these sites, Great Bend 9, harbors three separate patches of Prairie Bush Clover, which were mapped and censused in 1990 by the landowner. Although the site has not been recommended for acquisition or conservation easement at the present time, a burn plan will be prepared in 1991 so the Scientific and Natural Areas Program can conduct a pilot landowner training burn at this site.

The second site, Great Bend 16, was mapped by DNR staff and volunteers and recommended in 1990 for protection through the state's Prairie Bank Easement Program. The Project Evaluation for this site is attached as Appendix 2. The site is a small prairie remnant in a ravine contiguous in part with a more extensive pasture known to harbor a small number of plants. Because the pasture is in active use and the ravine is presently not being pastured the Heritage Program is recommending enrollment of the remnant in the Prairie Bank conservation easement program at the present time. Depending on the importance of future sites in areas of potential habitat south of Windom and north of Jackson, Great Bend 16 may be recommended in its entirety for Scientific and Natural Area acquisition in the future. No conservation action is expected on this tract until the next biennium because conservation easement funds for the present biennium have been exhausted.

In cooperation with the Minnesota Historical Society the Minnesota DNR's Scientific and Natural Areas Program has prepared a burn management plan for the Jeffers Petroglyph Historical Site and plans are underway to assist the Historical Society with management of that area. Plans call for moving an existent interior fence (established to separate the virgin prairie from restored prairie) to the exterior boundaries of the property in order to facilitate movement of burn equipment and for establishment of two management units that divide the Prairie Bush Clover population so Scientific and natural Areas personnel can burn only a portion of the population in any given year.

Plans to burn Prairie Bush Clover SNA (Kilen Woods) in 1990 were not accomplished because funding was not available to field a separate Scientific and Natural Areas burn crew and area wildlife managers were unable to complete the burn within the prescribed burning season.

POPULATION MONITORING

The 1990 season was the eighth sampling season of a long term demographic monitoring program at Prairie Bush Clover Scientific and Natural Area in Kilen Woods State Park. The program was established in 1983 by Natural Heritage Program botanist Welby Smith to track a cohort of plants through their entire life cycle and to document fluctuations in the size, age structure and spatial distribution of the population at this site.

Annual monitoring of the Kilen Woods population includes a complete meter-by-meter census of a 780 square meter grid and more intensive demographic monitoring of a 26 meter transect. The census counts the number of individual plants within each square meter, but does not track individual plants or record their life state. Demographic monitoring involves relocation of individual plants within permanent square meter plots using a portable frame (Smith, 1986). The frame is calibrated along two facing sides at centimeter intervals. A similarly calibrated crossbar is used to locate plants to the nearest centimeter on x and y coordinates. These coordinates are used to track and relocate individual plants from year to year, thus avoiding tagging of each plant. In particularly dense areas, colored toothpicks are used within each sampling season to assure that investigators distinguish and account for each plant. This procedure is especially helpful in areas with a large number of seedling or very young plants, where it is sometimes difficult otherwise to distinguish the point at which the stem emerges from the ground. Unlike monitoring programs that follow a given set of tagged individuals from year to year, the coordinate system allows investigators to account for all new plants within each square meter in each year.

Table 3 summarizes demographic data each of three life states in each plot in 1990. Figures 1-3 summarize demographic data for the 26 meter transect over the past 8 years. As these figures illustrate, overall declines during the 1988 and 1989 season were attributable in large part to a reduction in seedling germination and survival, a trend that appears to be reversing in the 1990 data. Figure 4 illustrates the density and present areal distribution of Prairie Bush Clover within the 780 square meter census grid.

The 1990 season was the fourth year of monitoring at 20 randomly located sample plots on The Nature Conservancy's Red Rock Preserve, Savage Tract. Sampling at this preserve takes place in 2x2 meter plots, each of which is permanently marked at its four exterior corners with 5/8 inch conduit. The permanent conduits allow for the repositioning of a larger 2x2 version of the portable sampling frame used at Kilen Woods. The number of plants and their life stage are recorded within each square meter of each sample plot, along with a list of all species present within that plot. Life stages are distinguished by a combination of size and stem characteristics. Mature plants bear buds, flowers, fruits, or aborted flowers or fruits or are plants from which the terminal stem has been broken but which exceed 30 cm in height. Subadult plants are nonflowering individuals 15 cm or more in height with stem diameter approximately .5 mm. Juvenile plants are nonflowering individuals 15 cm. or less in height with stem diameters less than .5 mm. True seedlings are lumped with juvenile plants at Savage Tract, because their identification requires an experienced investigator and the monitoring program is anticipated to be carried out by interns who change from year to year.

Table 4 summarizes the numbers of plants in each of the three size classes in the 18 plots that could be relocated in 1990, showing a trend of decreased juvenile plants during the drought years of 1988 and 1989, followed by a modest increase of recruitment in 1990 similar to the trend at Kilen Woods State Park.

The Prairie Bush Clover population at Jeffers Petroglyph Historical site is monitored annually by the technique of a simple census of all adult and subadult plants within the same search area. No sample plots or grids have been established. In recent years volunteers have been locating plants outside the previously known population boundaries. It now appears that the population as a whole is more important than was once believed, but no effort is being made to census all the newly discovered areas in years subsequent to their discovery. Fluctuations in the Jeffers Petroglyph population over the past several years are included in Table 5.

Population monitoring at privately owned sites was continued at the Delton 10 and Carson 5 sites. Landowner-based monitoring was discontinued at the North Star 33 site, because this site was acquired as a Scientific and Natural Area and the intensity and scale of monitoring established to involve the landowners are inappropriate in a Scientific and Natural Area.

At the Delton 10 site the Minnesota Natural Heritage Program has conducted an annual census of plants in an area excluded from mowing since 1987. No permanent markers are in place. DNR personnel annually relocate the outer boundaries of this discrete patch of plants and count all plants within these boundaries. Data included in Table 5 show the expansion of this subpopulation since it was first protected from mowing in 1987. The decline in plants in 1990 is probably directly accounted for by a single swath of misplaced mowing approximately 10 meters in length into the heart of the population.

Table 6 reflects changes in the population at Carson 5, where three 1 meter square plots are censused annually on behalf of the landowner to determine whether the population is remaining strong, increasing or declining. The major concern for this population is its proximity to maintenance activities along the township road, which is immediately adjacent to the population. On site investigation in 1990 revealed that vehicles have been driving from the township road through portions of the population in the ditch. Contact from the Department of Agriculture's Endangered Species Pesticide Protection program should alert the township officers of the population will hopefully reduce the potential for such disturbance in the future.

A new monitoring program was established at Great Bend 9 , with the assistance of the landowner. Within each of three subpopulations at this site three 1 square meter sample plots were established and plants were tallied by lifestate. Data from the first years' sampling are presented in Table 7.

CONSULTATION WITH MINNESOTA DEPARTMENT OF AGRICULTURE

In 1988 the Minnesota Department of Agriculture and the U. S. Fish and Wildlife Service initiated a pilot Landowner Agreement program for the administration of federal pesticide control regulations (FIFRA, 7 U.S.C.) Under this program, private individuals, institutions and agencies who own lands harboring federally endangered species are invited to enter into voluntary pesticide management agreements to reduce pesticide jeopardy. All of Minnesota's Prairie Bush Clover populations occur within the agricultural area of the state, creating a politically-sensitive situation when restrictions are made on pesticide use.

Although the Department of Agriculture's program is highly personalized, involving on-site visits by MDA personnel with each individual landowner, the co-occurrence of known and potential Lespedeza habitat with agricultural activity necessarily requires the imposition of some real pesticide use restrictions on Prairie Bush Clover landowners and their neighbors. Concurrent with the implementation of the Agriculture Department's program, Minnesota Natural Heritage Program botanists and volunteers have accelerated inventory efforts on non-crop agricultural lands, including pastures, peripheral areas and haylands. Inventory in the Southwestern part of the state is by no means complete. For this reason the Natural Heritage Program, Scientific and Natural Areas Program, Minnesota Chapter of The Nature Conservancy and Department of Agriculture have attempted to work closely to coordinate efforts to avoid the possibility of backlash against inventory efforts and the species itself. Included in these coordinated efforts are the following activities:

1. Public education was increased in an effort to enhance a feeling of "ownership" of the resource. During the 1990 season, Minnesota Natural Heritage Program botanists conducted three field trips at Prairie Bush Clover sites (Jeffers Petroglyph and Red Rock Preserve) for the Minnesota Historical Society and The Nature Conservancy, presented endangered species training programs at the annual workshop of Minnesota county agricultural inspectors and the Jackson County township agricultural inspectors, accompanied the Martin County Agricultural Inspector on a tour of Martin County prairies in search of Prairie Bush Clover, provided endangered species informational materials at the Cottonwood County Fair, and presented an endangered species interpretative program to the Jeffers Garden Club.

2. An effort was made to coordinate landowner visits by representatives of the various agencies and institutions to reduce the sense of pressure on individual landowners and make use of the most positive established landowner-agency relationship or personal relationship for each site. During the 1990 field season, DNR botanists made 19 visits to 12 Prairie Bush Clover landowners, either individually or with the Department of Agriculture. In addition to these visits by Heritage staff, local volunteers have paid bi-monthly or quarterly visits to three key landowners.

3. Assistance was provided to landowners in helping sample established landowner-based monitoring plots at Carson 5 and Delton 10 and helping establish the new landowner-based monitoring program at Great Bend 9.

4. Whenever possible landowners were hired on a temporary basis to assist with demographic monitoring programs. Three members of two landowner families were involved in 1990 monitoring at Kilen Woods State Park and Red Rock Preserve.

5. Population locations and data were provided to the Minnesota Department of Agriculture, along with recommendations for the timing of landowner visits so as not to impede uncompleted inventory work or acquisition efforts. As a result of these recommendations pesticide management contacts were deferred on several important sites until nearby inventory was completed or acquisition attempts were either concluded or aborted.

6. In order to provide the Minnesota Department of Agriculture some guidance in determining which populations are most important to protect from pesticide jeopardy, Heritage Botanists analyzed Minnesota's Prairie Bush Clover sites on the basis of population size, tract size, habitat quality, and whether they are part of a designed preserve. The results of this analysis are presented in Table 2, which ranks Minnesota's Prairie Bush Clover populations and lists their site size and community quality.

7. The results of this analysis can be used in conjunction with the protection matrix presented in Figure 5 to determine which populations are most important for protection from pesticide jeopardy and which are undefensibly small. It is hoped that this matrix will be used by the Department of Agriculture to determine when it is appropriate to ask farmers to avoid use of pesticides in a buffer strip of cropland adjacent to bush clover habitat and when the populations or prairie remnants are so insignificant that it is not worth the potential controversy to demand such protection.

Table 1
AREAS SEARCHED FOR LESPEDeza LEPTOSTACHYA
1990

Cottonwood County:			
Township	Range	Section	Person(s) searching
T106N	R34W	WNW Section 15	D. Hageman
T106N	R36W	East ditch, 100 yards S of bridge, Section 12	D. Hageman
T106N	R36W	NW Section 13	D. Hageman
T107N	R36W	Road ditches along gravel roads, Sections 11,12,13,25,36	D. Hageman
T107N	R35W	SE Section 11 (Search of areas not formerly thought appropriate habitat)	D. Hageman
*T108N	R36W	N1/2 Section 1	D. Hageman
*T107N	R36W	SE Section 24	D. Hageman & N. Sather
T106N	R35W	Along railroad right of way through Section 17	D. Hageman
T105N	R35W	Along railroad right of way through Section 12	D. Hageman
T105N	R36W	Sections 8,9,16,17 w.of Des Moines River	D. Hageman, N. Sather, and R. Purrington
Brown County:			
*T108N	R35W	E1/2 SW Section 29	D. Hageman
T108N	R35W	NE Section 14	D. Hageman
*T109N	R35W	SWNE Section 32	D. Hageman and N. Sather
T106N	R35W	SWSW Section 9	N. Sather
*T108N	R35W	North facing slopes facing Cottonwood River, NW Section 6	D. Hageman and N. Sather
T108N	R35W	NE Section 10	D. Hageman
T108N	R35W	NE Section 9	D. Hageman

Table 1
AREAS SEARCHED FOR LESPEDeza LEPTOSTACHYA
1990
(Continued)

Redwood County:			
*T113N	R36W	SE Section 19	R. Partsch
Jackson County:			
*T104N	R35W	NESW Section 19	D. Hageman
T104N	R35W	SW Section 19	D. Hageman
Martin County:			
T103N	R30W	NESE Section 34	L. Meschke and N. Sather
T103N	R30W	Rail right of way NE Section 36 and SE Section 25	L. Meschke and N. Sather
T103N	R29W	Rail right of way SWSW Section 30	L. Meschke and N. Sather
Goodhue County:			
T112N	R14W	NENW Section 19	H. Dunevitz and P. Jensen
*T112N	R14W	NE Section 19	H. Dunevitz and P. Jensen
T112N	R14W	NWNW Section 20 and rail right of way center of NW Section 20	H. Dunevitz and P. Jensen
T112N	R14W	E1/2 SESE Section 16 and N 1/2 Section 22	R.Dahle, G.Radloff, D Doering J. Kenney, C. Sansome, and B. Moorehouse
T112N	R14W	SWSW Section 27 and NWNW Section 34	R. Dahle, D. Doering, J.Krupey C.Bezanson, J.Kenney,G.Radloff
T112N	R14W	N1/2 SWNW Section 35	R. Dahle, D. Doering, J.Krupey C.Bezanson, J.Kenney,G.Radloff
T111N	R14W	SWNWNW and NWNWSWNW Section 2 and N 1/2 SENE Section 3	R.Dahle, J.Kenney, D.Doering, G. Radloff, C.Bezanson
T111N	R14W	E 1/2NESE Section 7	H. Dunevitz,C.Converse, M.Stanley,N.Field, S.Cross, and C.Drake
*T111N	R14W	W1/2 NW Section 19 and W 1/2 SWSW Section 18	H.Dunevitz,R.Dahle,M.Richards, M. O'Neill, and M. Forsberg

Table 1
 AREAS SEARCHED FOR LEPPEDEZA LEPTOSTACHYA
 1990
 (Continued)

Rice County:			
T111N	R19W	E 1/2 NESE Section 13	R.Dahle and M.Richards
*T111N	R19W	E 1/2 NE Section 13	R. Dahle and M. Richards
T111N	R19W	SESESE Section 10	H.Dunevitz, R.Dahle, M.Richards, M. Forsberg, and M. O'Neill

Table 2. Minnesota's Prairie Bush Clover Sites, October, 1990.

OWNER	POPULATION RANK	# OF PLANTS	COMM. ACRES	COMM. RANK	COMM. EO #	IN PRES. DSN	COUNTY	LEGAL
Kilen Woods (SNA) (1990 count) (1986 count)	7 A	4974 (7246)	25	ab	HP18	Yes	J	T103N R35W SENW17
Kilen Woods (SNA) (1990 count)	6 A	401	25	ab	HP18	Yes	J	T103N R35W SWNE17
Red Rock (TNC) (1987 estimate from subsample)	10 A	5000	30	cd	MPSWSI 2	Yes	C	T107N R35W SWNE11
Fredin (1990 estimate from subsample)	25 A	2800	133	b	GTHP183 (10)	No	C	T105N R36W SNWSW16
Simonson (1989 and 1990 count)	23 A	2300	68	ab	GTHP169	Yes	B	T109N R31W SENE31
Thompson (1990 estimate)	13 A	2000	400	bc1 (160)	GTHP180	No	J	T103N R35W SENE07
Peterson (Easement pending) (1989 count)	22 A	1515	27	bc	GTHP171	Yes	B	T109N R35W SENW32
Purrington (1990 count)	32 A	1500	50	bc	GTHP182	No	C	T105N R36W SWSE09
Meine (SNA, acquisition pending) (1988 count)	15 A	1117	85	bc	GTHP75	Yes	B	T109N R35W NWSW33
Hildebrandt (TNC acquisition pending) (1988 count, minimum #)	18 A	726	78	bc	MPSWSI 5	Yes	C	T107N R35W NW11
Brown (proposed SNA) (1988, 1989 count)	16 B	500	60	bc	GTHP162	Yes	B	T108N R35W SWSE29

OWNER	POPULATION RANK	# OF PLANTS	COMM. ACRES	COMM. RANK	COMM. EO #	IN PRES. DSN	COUNTY	LEGAL
Jeffers Petroglyph (MN Hist. Society, NHP Registry) (1990 count)	1 B	391	25	b	MPSWSI 1	Yes	C	T107N R35W NENW09
Burger (1988 count, minimum #)	14 B	324	51	ab	MPSWSI 12	Yes	C	T107N R35W NESENE10
Kramer (1989, 1990 counts)	24 BC	277	68	bc	GTHP168	Yes	B	T109N R35W SWNW31
Umbanhower (1989 estimate)	19 BC	200	50	cd	BP54	No	G	T111N R18W SENE07
Winters (1988 count)	17 C	190	20	c	GTHP161	No	C	T106N R35W SWSWNW05
11 Groebner (1990 count)	28 C	146	15	cd	GTHP175	Yes	B	T109N R35W SWNE32
Cold Spring Granite (1987 count)	4 C	136	7	bc	MPSWSI 12	No	REN	T113N R34W NWNW31
McKnight (Carleton College) (1990 estimate)	8 BC	100+	35	bc	BP55	No	G	T112N R18W SWSE18
Elsness (1990 estimate)	34 C	100-200	40	bc	GTHP179	No	J	T104N R35W NESW19
Pankonen (1990 count)	31 CD	90	15	bc	GTHP176	No	B	T108N R35W NENWNW06
Pankonen (1990 count)	29 D	30	5	cd	GTHP176	No	B	T108N R36W SESENW01
Pankonen (1990 count)	30 D	20	10	cd	GTHP176	No	C	T108N R36W NENE01
Yungerberg (1990 count)	27 D	68	15	cd	GTHP177	Yes	B	T108N R35W SESW29

OWNER	POPULATION RANK	# OF PLANTS	COMM. ACRES	COMM. RANK	COMM. EO #	IN PRES. DSN	COUNTY	LEGAL
Polzin (Easement pending) (1988 count)	11 C	65	75	b	MPSWSI 4	Yes	C	T107N R35W SESE05
Therkilson (1990 count)	26 D	32	5	cd	GTHP125	No	C	T107N R36W NESENE24
Kremmin (1989 count)	20 D	24	38	c	GTHP160	No	C	T106N R35W NESW05
Howie (1990 count)	35 C	24	11	c	BP53	No	RI	T111N R19W ENE13
Chicago, NW RR (1989 count)	21 D	19	5	d	GTHP189	Yes	B	T109N R35W SESWNW32
Mann (1990 count)	33 D	14	5	bc	MPSWSI 14	No	RED	T113N R35W SWSWNW9
Wolseth (1990 count)	36 D	10	46	cd	BP52	No	G	T111N R18W NWNW19
PQT Company (1990 count)	37 D	7	80	cd	BP51	No	G	T112N R18W NENE19
PQT Company ("Fox") (1990 search, 1972 count)	2 D	0 (35)	80	cd	BP51	No	G	T112N R18W NENW19
Walinga (1990 count, 1988 count)	9	2 (21)	150	cdl	GTHP184 (30)	No	C	T105N R36W SENW08
Yonker (1990 count, 1984 count)	12 D	1 (20)	20	bc	GTHP185	No	J	T101N R34W NWSE27
Cihak (1990 search, 1977 count)	3 D	0 (40)	10	bc	GTHP183	No	J	T102N R35W SWNE10

TABLE 3. NUMBERS OF PLANTS IN EACH LIFESTATE IN DEMOGRAPHIC PLOTS
PRAIRIE BUSH CLOVER SNA, KILEN WOODS STATE PARK, 1990

Plot	Flowering	Subadult	Juvenile
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	1	0
6	1	2	0
7	14	22	6
8	19	36	11
9	5	20	2
10	10	38	1
11	22	68	4
12	14	26	7
13	14	29	11
14	16	27	3
15	0	0	0
16	0	2	0
17	1	1	0
18	1	2	0
19	18	8	0
20	23	25	0
21	23	6	0
22	12	4	1
23	4	4	0
24	0	5	0
25	3	0	0
26	0	0	0

Total	200	326	46
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TABLE 4. RED ROCK PRESERVE PERMANENT MONITORING PLOTS
1990 DATA SUMMARY FOR SAMPLED PLOTS

Plot	Numbers of plants			Plot	Numbers of plants		
	Flowering	Subadult	Juvenile		Flowering	Subadult	Juvenile
100W SW	2	0	1	102E SW	1	0	1
SE	0	0	0	SE	2	0	16
NE	0	0	0	NE	6	2	20
NW	0	0	0	NW	2	1	0
101WSW	22	8	19	103E SW	16	3	33
SE	3	3	6	SE	4	3	11
NE	1	1	1	NE	7	1	13
NW	18	7	10	NW	5	2	15
120WSW	1	0	0	104E SW	5	4	3
SE	1	0	0	SE	4	4	20
NE	0	0	0	NE	10	5	51
NW	0	0	0	NW	6	7	9
123WSW	5	2	13	105E SW	7	5	9
SE	3	0	1	SE	1	3	3
NE	2	1	2	NE	2	1	6
NW	4	3	21	NW	2	4	10
98WSW	5	0	1	106E SW	11	1	51
SE	4	2	4	SE	20	2	108
NE	2	0	0	NE	3	0	32
NW	0	0	1	NW	4	0	15
114WSW	11	1	4	107E SW	4	0	2
SE	28	10	4	SE	3	3	19
NE	3	0	0	NE	16	8	12
NW	6	0	5	NW	33	10	4
115WSW	6	3	6	*108E SW			
SE	18	26	16	SE			
NE	15	14	12	NE			
NW	0	0	0	NW			
*116WSW				109E SW	5	0	7
SE				SE	4	2	2
NE				NE	10	2	1
NW				NW	3	1	8
117WSW	13	1	5	110E SW	2	0	2
SE	9	1	2	SE	1	0	2
NE	9	5	1	NE	0	0	3
NW	34	4	2	NW	4	0	4
119WSW	11	2	2	111E SW	3	0	5
SE	11	5	3	SE	7	1	8
NE	13	6	0	NE	25	9	13
NW	13	2	1	NW	7	1	1

Plots annotated with an asterisk could not be relocated in 1990.

Total # plants 518 192 662

Avg plants/sq.m. 7.19 2.67 9.19

Max.# plants/sq. 34 26 108

Grand total all ages 1372

TABLE 5. RESULTS OF PRAIRIE BUSH CLOVER MONITORING
JEFFERS PETROGLYPH AND DELTON 10 POPULATION

Jeffers Petroglyph	1987	1988	1989	1990
(In parking circle)		98	91	174
(East of parking circle)		44	36	189
Delton 10	10	183	269	226

TABLE 6
 LANDOWNER-BASED MONITORING AT CARSON 5 NW
 POPULATION DATA FOR 1989 AND 1990

	1989 Flowering plants	1989 Nonflowering plants	1990 Flowering plants	1990 Nonflowering plants
Plot 1 NW	8	2	5	4
Plot 1 SW	1	0	1	2
Plot 1 SE	3	2	2	0
Plot 1 NE	8	4	4	7
Plot 2 NW	1	0	2	3
Plot 2 SW	3	1	7	3
Plot 2 SE	4	0	2	1
Plot 2 NE	0	0	1	5
Plot 3 NW	2	0	2	2
Plot 3 SW	1	0	1	1
Plot 3 SE	0	0	1	4
Plot 3 NE	1	0	0	2
TOTAL	32	9	28	33

TABLE 7 LANDOWNER-BASED MONITORING AT GREAT BEND 9
1990 DATA
YEAR

1990

	adults	subadults	seedlings	total
Juniper Hill				
Plot 1 (by juniper)	7	1	6	14
Plot 2 (NW of small ash)	10	2	2	14
Plot 3 (SW of small ash)	14	3	17	34
Beehive Hill				
Plot 1 (SW of fencepost)	4	1	2	7
Plot 2 (NW of fencepost)	6	0	1	7
Plot 3 (most northerly)	4	2	1	7
Look-out hill				
Plot 1 (2 m west of cedar)	45	20	72	137
Plot 2 (NW of plot 1)	30	11	37	78
Plot 3 (uphill of rock)	17	6	38	61

FIGURE 1. PRAIRIE BUSH CLOVER

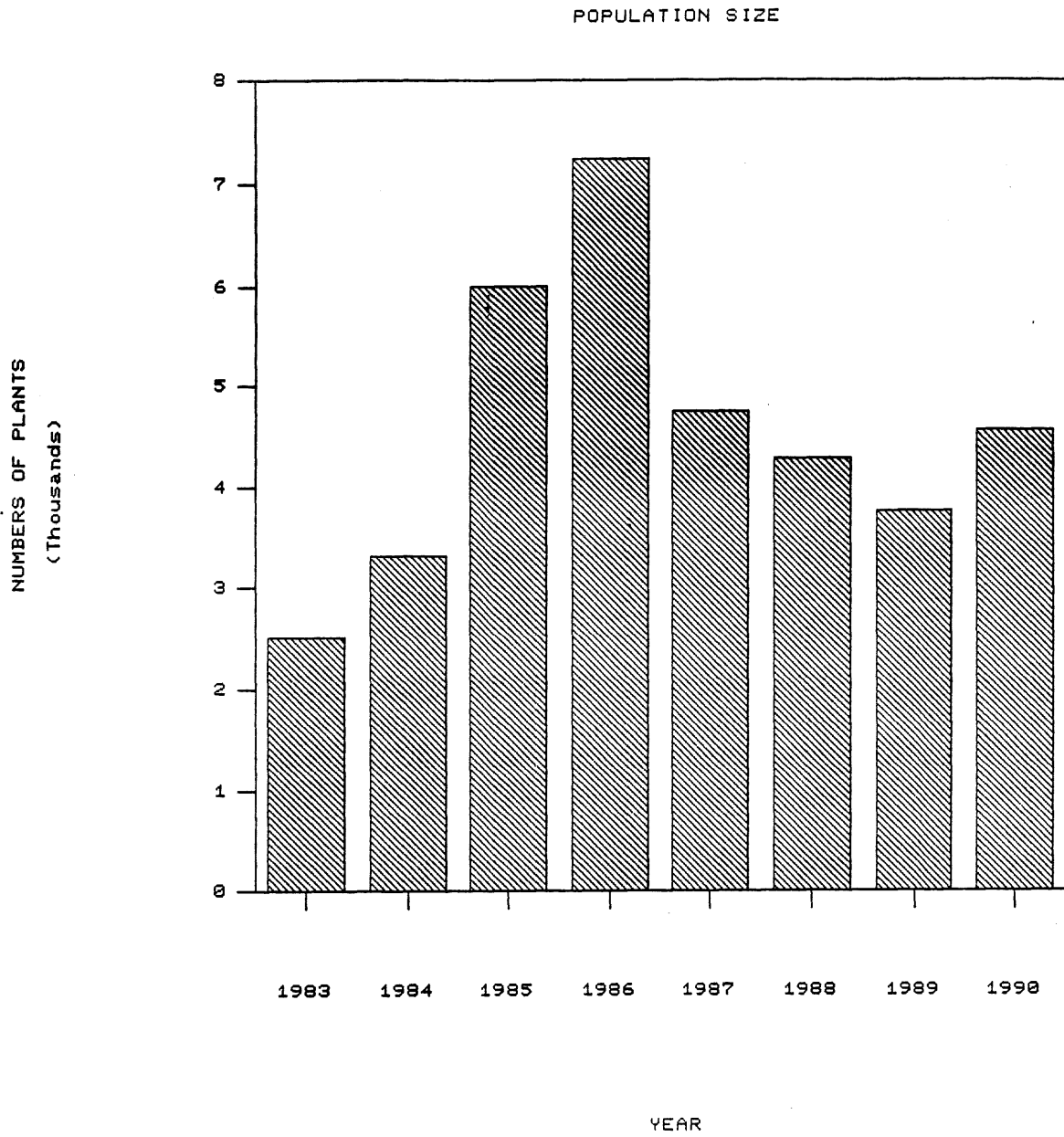


FIGURE 2. PRAIRIE BUSH CLOVER

NUMBER OF PLOTS WITH PLANTS

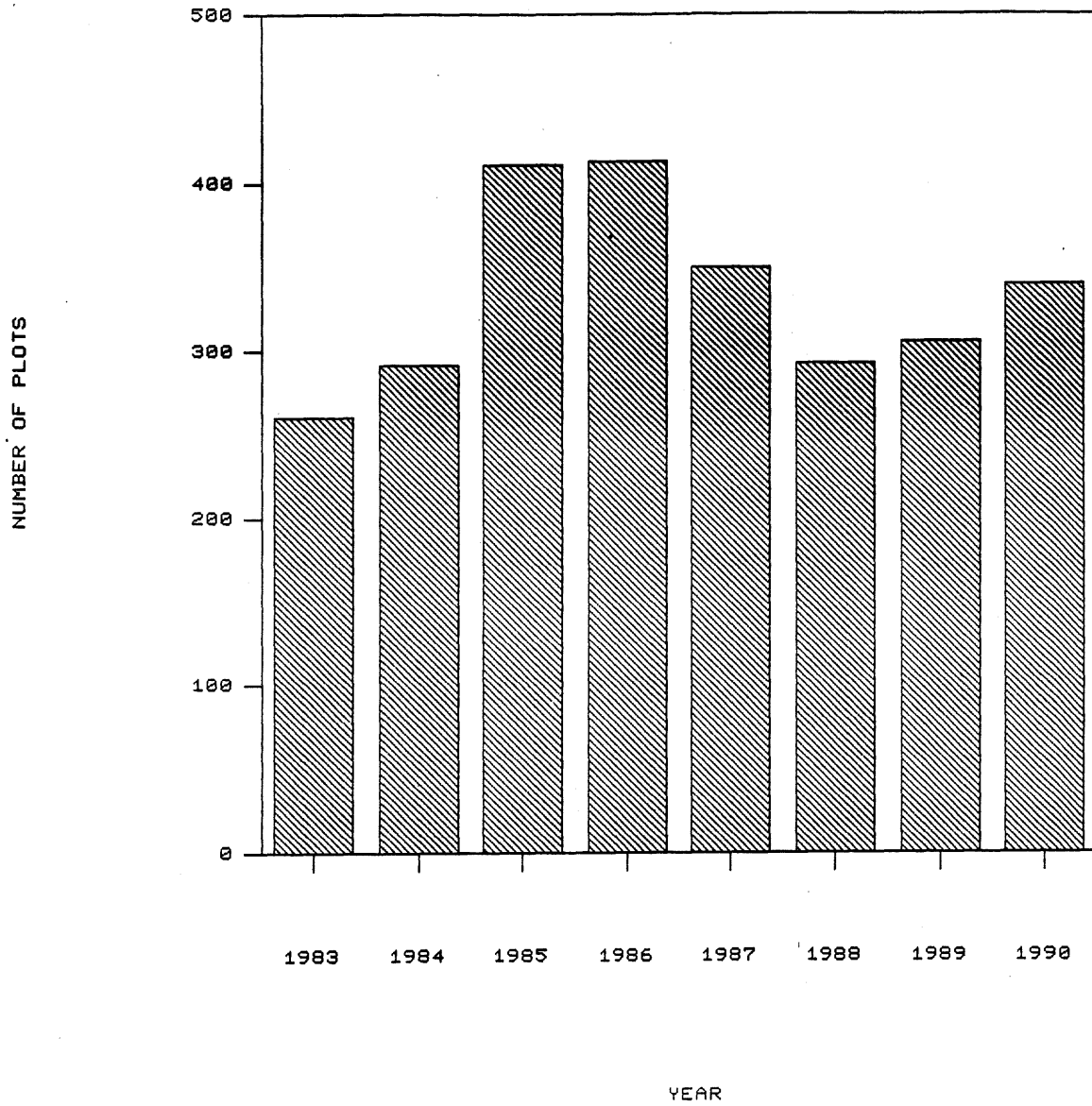
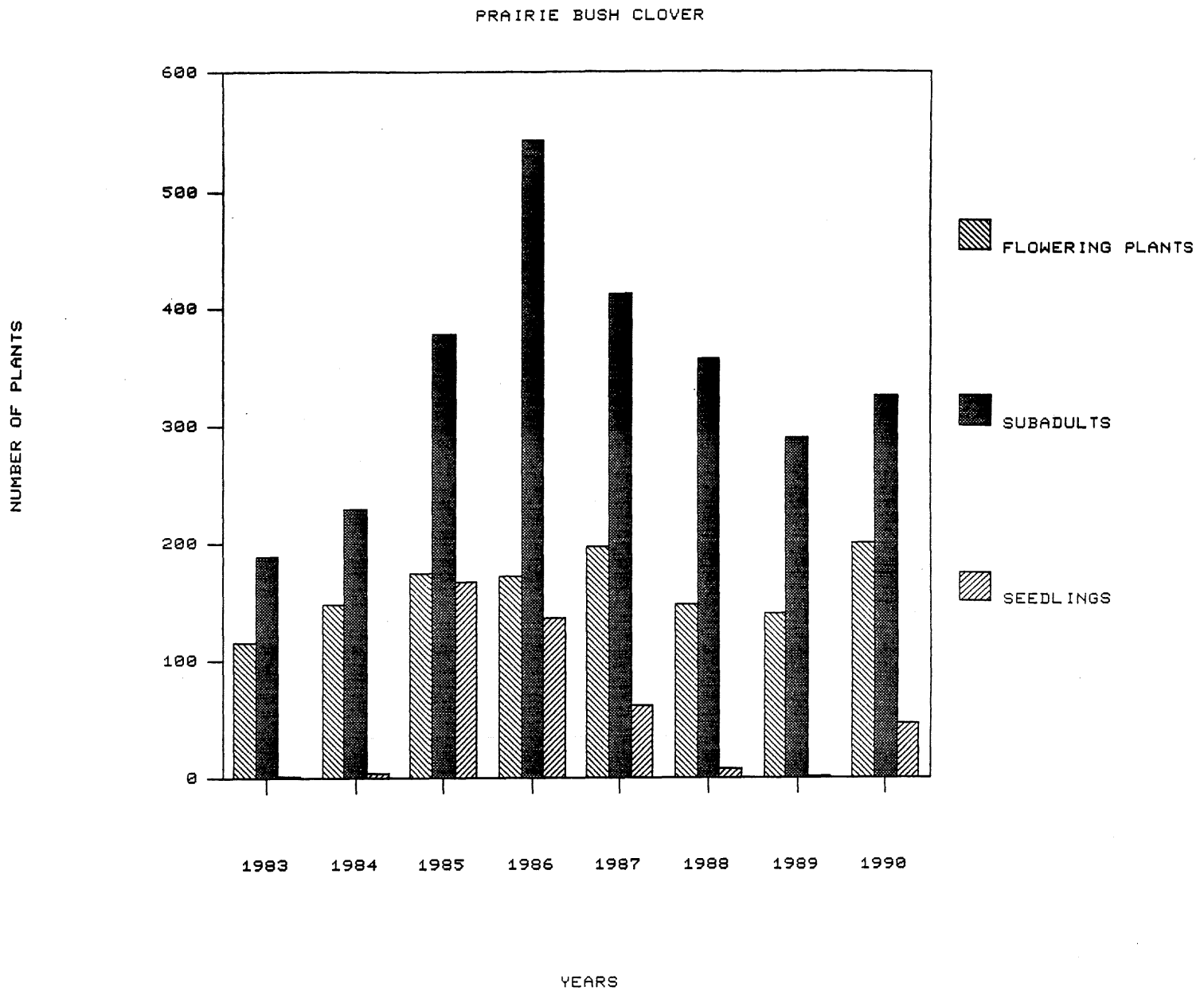


FIGURE 3. PLANTS IN EACH LIFE STATE



Density and Extent of *L. leptostachya*
in Study Area, Kilen Woods State Park: 1990

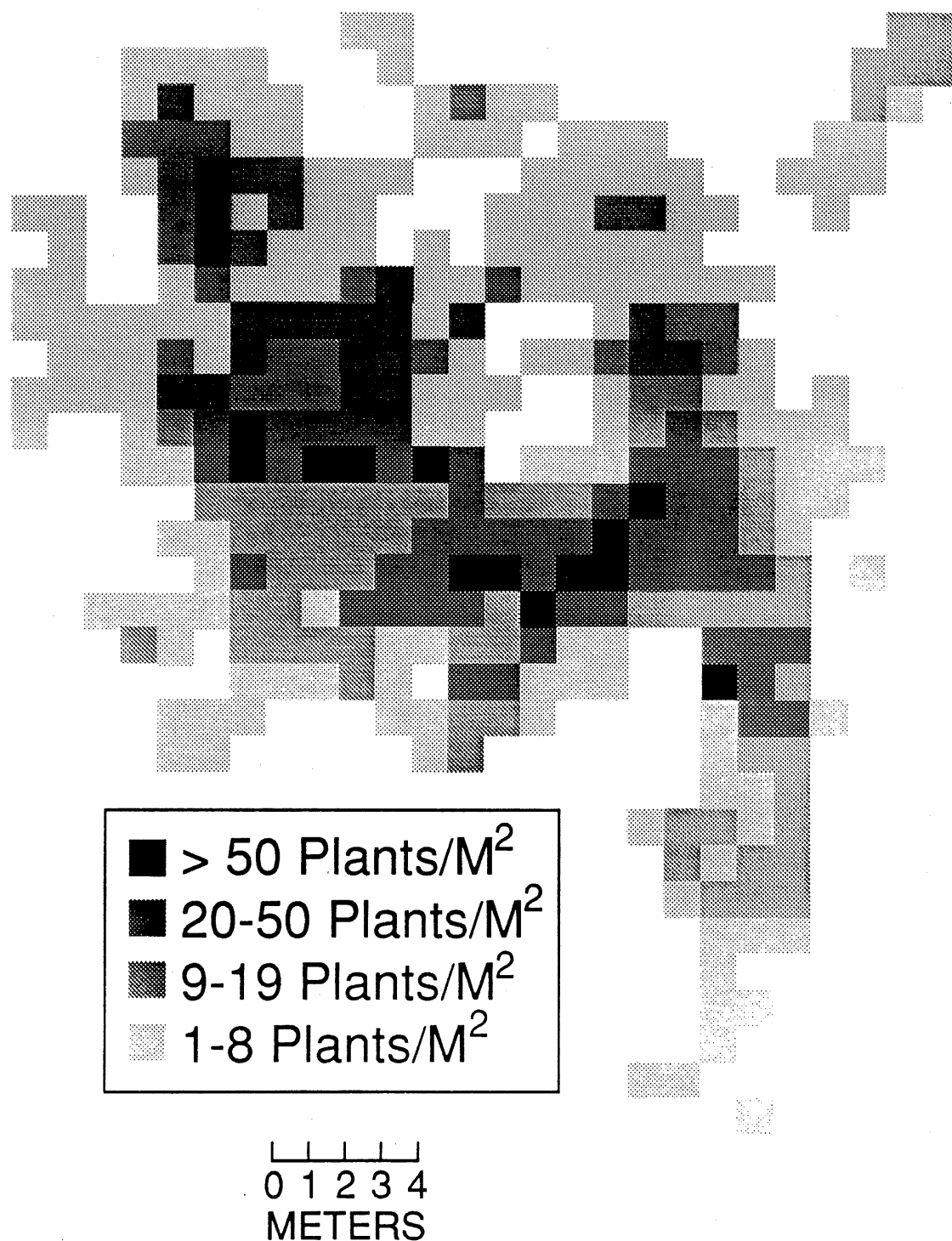


FIGURE 4.

FIGURE 5.
(Key on following page)

A PROPOSED DECISION MAKING CHART FOR PRAIRIE BUSH CLOVER PESTICIDE PROTECTION ACTIONS

PRAIRIE SIZE IN TRACT (INCLUDES PASTURE)		IS TRACT PART OF A LARGER DESIGNED PRESERVE	COMMUNITY RANK	LANDOWNER ATTITUDE/ INFLUENCE	INITIAL CONTACT	PURSUE AGREEMENT	APPLY 'INTERNAL BUFFER' DNR WILL MONITOR	APPLY EXTERNAL BUFFER	HIGHEST PRIORITY TO ENROLL	DROP AGREEMENT IF RESISTED
CONDITIONS					ACTIONS					
OVER 1000 PLANTS	OVER 80 ACRES	YES								
		NO								
	UNDER 80 ACRES	YES	AB	C						
			CD	P						
		NO	AB	C						
			CD	P						
500 TO 1000 PLANTS	OVER 80 ACRES	YES	AB	C						
			CD	P						
		NO	AB	C						
			CD	P						
	UNDER 80 ACRES	YES	AB	C						
			CD	P						
		NO	AB	C						
			CD	P						
200 TO 500 PLANTS	OVER 80 ACRES	YES	AB	C						
			BC	P						
		NO	AB							
			BC							
	UNDER 80 ACRES	YES								
		NO								
0 TO 200 PLANTS	OVER 80 ACRES	YES								
		NO								
	UNDER 80 ACRES	YES								
		NO								

** C-COOPERATIVE P-PROBLEMATIC

*Population sizes reflect known numbers at most recent visit and are ranked in order of number of plants within a given ownership. There are three cases of more than one EO in a single ownership. In these cases the multiple EOs are listed consecutively. Where populations have declined severely, former size is given in parentheses and date of former record is included in parentheses.

Key to headings:

EO# & RANK- Lespedeza EO number and the rank for the Lespedeza occurrence. Rank for the Lespedeza occurrence is in capital letters.
OWNER- Last name of the owner
PLANTS- Number of Lespedeza plants as explained above.
COMM.ACRES- Community acres (not "site" acres) from the community EO
COMM.RANK- Rank of the community EO in lower case letters.
COMM. EO#- Community code and EO#, detail below.
IN PRES.DSN.-Is the community part of a designed preserve (whether or not protection has been achieved)? Actual protection status is reflected in the owner column.
CTY- County of occurrence, codes below

Key to community types:

GTHP=Glacial Till Hill Prairie
MPSWSI= Mesic Blacksoil Prairie SW, Sioux Quartzite Subtype
BP= Bluff Prairie

Key to Counties:

C=Cottonwood
B=Brown
G=Goodhue
J=Jackson
Red=Redwood
Ren= Renville
Ri=Rice

Each EO has a corresponding community EO. In cases where there are multiple EOs of Lespedeza within a single ownership there is only one corresponding community EO which reflects the overall quality of the prairie community, despite internal variability. Where there are multiple EOs within a single ownership and the community is continuous between Lespedeza EOs the acres listed represent the entire community. In the case where the remnants are discontinuous, acreages are listed for each remnant in which Lespedeza is found. In three cases quality prairie remnants are contained within larger areas of native pasture of the same community type. In this case "community size" refers to the total acreage within the single ownership with the acreage of the quality remnants in parentheses under the EO rank. These three cases are highlighted with a ! in the EO RANK column. Protection actions in process are noted in this chart as "pending".

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #1
Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: UPPER MINNESOTA RIVER COUNTRY
SITE : RED ROCK PRAIRIE CBS Site #: 0
OWNERSHIP : MN State Historical Society
MANAGED AREA(s): JEFFERS PETROGLYPH HISTORIC SITE
OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 1 verified EO Size: 0
Date of Information: 11 August 1988 Record Updated: 11/09/1990 # of Archived Records: 2
Map Margin #: 2 EO Rank: B Voucher: 630429 MIN Collection #: S.N.
Source: ROEFER, F.
REMARKS: NWNENW SEC 9 T107N R35W. (PREV COLL: MORLEY, T. (1275), 1972.) 1988: SATHER AND ROEFER COUNTED 98 PLANTS IN PARKING CIRCLE AND 52 E OF PARKING AREA. 1989: SATHER AND FREDEN COUNTED 91 PLANTS IN PARKING CIRCLE AND 38 E OF PARKING AREA. 1990: SATHER AND ROEFER COUNTED 204 PLANTS IN PARKING CIRCLE WITH L. CAPITATA AND HYBRID, 187 E OF CIRCLE AND SEVERAL IN UNCOUNTED NEW CLUMPS S OF CIRCLE.

LOCATION: COTTONWOOD County, MN
Legal : T107N R35W NENW09 Region: 4
Quad Map: SANBORN SE (V09D)
Latitude: 44 5' 38" Long: 95 3' 16"
Precision: within 0.25 mile, confirmed
TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 6 Intended Status: 6

*** SITE THREATENED ***

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #2
Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: SOUTHERN OAK BARRENS
SITE : STANTON 19 CBS Site #: 226
OWNERSHIP : Private Ownership
MANAGED AREA(s): not managed or no record
OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 2 verified EO Size: 0
Date of Information: July 1972 Record Updated: 02/25/1991 # of Archived Records: 2
Map Margin #: 1 EO Rank: D Voucher: 623336 MIN Collection #: 1273
Source: MORLEY, T. (1273)
REMARKS: GENTLE N-FACING SLOPE IN OPEN PRAIRIE WITH AMORPHA, ACHILLEA, STIPA, HEUCHERA, LITHOSPERMUM, SPOROBOLUS. 30-35 PLANTS IN AREA 100X50 FT, JUST S OF GATE NEAR TOP OF HILL. T112N R18W, NENW SEC 19. (SINCE 1972, NO PLANTS HAVE BEEN SEEN). AREA LOOKS LIKE A FEEDLOT AS OF AUGUST 1983. IN 1990, H. DUNEVITZ AND P. JENSEN DID NOT FIND PLANT AFTER SEARCH AT ORIGINAL COLLECTION SITE.

LOCATION: GOODHUE County, MN
Legal : T112N R18W NENW19 Region: 5
Quad Map: DENNISON (U17A)
Latitude: 44 29' 52" Long: 93 1' 53"
Precision: within 0.25 mile, confirmed
TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: Intended Status:

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #3
Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: COTEAU DES PRAIRIES
SITE : CIHAK PRAIRIE CBS Site #: 0
OWNERSHIP : Private Ownership
MANAGED AREA(s): not managed or no record
OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 3 verified EO Size: 0
Date of Information: 6 August 1977 Record Updated: 11/09/1990 # of Archived Records: 2
Map Margin #: 0 EO Rank: D Voucher: 267290 MIN Collection #: 1
Source: DANA, R.
REMARKS: CA 1/2 WAY UP NE-FACING PRAIRIE SLOPE. CA 40 PLANTS IN 2 OR 3 ACRE AREA, WITH SORGHASTRUM NUTANS, ASTER SERICEUS, HEUCHERA, MONARDA, BOUTELOUA CURTIPENDULA, LESPEDEZA CAPITATA. SWSWNE SEC 10, T102 R35W. PLANTS SEEN BY W. SMITH IN 1986. NONE SEEN BY L. MUELLER IN 1990.

LOCATION: JACKSON County, MN
Legal : T102N R35W SWNE10 Region: 4
Quad Map: LAKEFIELD NE (X09A)
Latitude: 43 39' 12" Long: 95 1' 23"
Precision: within 0.25 mile, confirmed
TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 1 Intended Status: 89

APPENDIX 1

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #4
Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: UPPER MINNESOTA RIVER COUNTRY
SITE : MORTON OUTCROP PRAIRIE CBS Site #: 0
OWNERSHIP : Private Ownership
MANAGED AREA(s): not managed or no record
OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 4 verified EO Size: 0
Date of Information: August 1977 Record Updated: 03/13/1984 # of Archived Records: 0
Map Margin #: 0 EO Rank: C Voucher: 520054 MIN Collection #: S.N.
Source: DANA, R. (S.N.)
REMARKS: GRANITE OUTCROP, WEST SIDE OF MORTON. SW-FACING SLOPE. (NOT SEEN BY SMITH IN
1980, SEEN BY MORLEY AT NORTH END OF SITE (ON N-FACING ASPECT) IN 1982.)
109 SEEN AUG. 1986 AND 136 IN 1987 BY N. SATHER, N SLOPE OF WESTERN KNOB ON/E.
OF TRAIL.

LOCATION: RENVILLE County, MN
Legal : T113N R34W NWNW31 Region: 4
Quad Map: MORTON (T10C)
Latitude: 44 33' 15" Long: 94 59' 32"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 1 Intended Status: 79

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #5
Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: PINE MORAINES
SITE : site not named or no record CBS Site #: 0
OWNERSHIP : Private Ownership
MANAGED AREA(s): not managed or no record
OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 5 unverified EO Size: 0
Date of Information: August 1890 Record Updated: 03/13/1984 # of Archived Records: 0
Map Margin #: 0 EO Rank: Voucher: 138946 MIN Collection #: 87
Source: MACMILLAN AND SHELDON(87)
REMARKS: ON DRY, SANDY HILLSIDE NEAR GULL LAKE. (LOCATION UNKNOWN. MAPPED IN CROW WING
COUNTY, BUT GULL LAKE EXTENDS INTO CASS COUNTY ALSO.)

LOCATION: CROW WING County, MN
Legal : T134N R29W SESE03 Region: 3
Quad Map: GULL LAKE (M12A)
Latitude: 46 26' 45" Long: 94 18' 35"
Precision: within quadrangle map

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: Intended Status:

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #6
Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: COTEAU DES PRAIRIES
SITE : PRAIRIE BUSH CLOVER SNA CBS Site #: 0
OWNERSHIP : MN DNR Parks and Recreation
MANAGED AREA(s): PRAIRIE BUSH CLOVER SNA KILEN WOODS STATE PARK
OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 6 verified EO Size: 0
Date of Information: August 1980 Record Updated: 11/09/1990 # of Archived Records: 2
Map Margin #: 5 EO Rank: A Voucher: MIN Collection #: 3417
Source: SMITH, W.R. (3417)
REMARKS: SEVERAL HUNDRED TO ONE THOUSAND PLANTS HERE. IN WELL-DRAINED PRAIRIE SOIL ON
W-FACING SLOPE. WITH SORGHASTRUM, ANDROPOGON, BOUTELOUA CURTIPENDULA. CA 400 FT
NE OF EO 7. SWSW SEC 17, T103N R35W. 401 PLANTS SEEN IN 1990 BY N.P. SATHER,
C. NELSON AND P. NELSON, JR.

LOCATION: JACKSON County, MN
Legal : T103N R35W SWNE17 Region: 4
Quad Map: LAKEFIELD NE (X09A)
Latitude: 43 43' 34" Long: 95 3' 46"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 9 Intended Status: 9

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #7

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: COTEAU DES PRAIRIES

SITE : PRAIRIE BUSH CLOVER SNA

CBS Site #: 0

OWNERSHIP : MN DNR Parks and Recreation

MANAGED AREA(s): PRAIRIE BUSH CLOVER SNA KILEN WOODS STATE PARK

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 7 sight rec.

EO Size: 0

Date of Information: August 1980

Record Updated: 11/09/1990

of Archived Records: 2

Map Margin #: 0 EO Rank: A

Voucher:

Collection #:

Source: SMITH, W.R. (SIGHT RECORD)

REMARKS: PROBABLY 3,000 OR MORE PLANTS HERE. IN WELL-DRAINED PRAIRIE SOIL ON NW-FACING SLOPE, WITH SORGHASTRUM, ANDROPOGON, BOUTELOUA CURTIPENDULA. CA 400 FT SW OF EO 6. NENESW SEC 17, T103N R35W. 4974 PLANTS SEEN IN 1990 IN CENSUS PLOTS AND ADJACENT KNOLLS IMMEDIATELY TO EAST AND WEST. ANNUAL DEMOGRAPHIC MONITORING BY DNR.

LOCATION: JACKSON County, MN

Legal : T103N R35W SENW17 Region: 4

Quad Map: LAKEFIELD NE (X09A)

Latitude: 43 43' 30" Long: 95 3' 53"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 9 Intended Status: 9

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #8

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: SOUTHERN OAK BARRENS

SITE : MCKNIGHT PRAIRIE (35 acres approx.)

CBS Site #: 229

OWNERSHIP : Other Non-Profit Organizations (BSA, YMCA, Audubon, etc.)

MANAGED AREA(s): MCKNIGHT PRAIRIE

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 8 sight rec.

EO Size: 0

Date of Information: August 1988

Record Updated: 02/25/1991

of Archived Records: 2

Map Margin #: 0 EO Rank: C

Voucher:

Collection #:

Source: MCKONE, M. (SIGHT RECORD)

REMARKS: CA 57 PLANTS ON N-FACING PRAIRIE SLOPE. IN GRAVELLY SOIL WITH ANDROPOGON SCOP, KUHNIA EUPATORIODES, BOUTELOUA CURTIPENDULA, AMORPHA. SESW SEC 18, T112N R18W NO SPECIMEN. CA 25 PLANTS SEEN BY W. SMITH IN 1980.

LOCATION: GOODHUE County, MN

Legal : T112N R18W SWSE18 Region: 5

Quad Map: RANDOLPH (T17D)

Latitude: 44 30' 6" Long: 93 1' 58"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 2 Intended Status: 7

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #9

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: COTEAU DES PRAIRIES

SITE : WALINGA PRAIRIE

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 9 verified

EO Size: 0

Date of Information: October 1982

Record Updated: 11/09/1990

of Archived Records: 3

Map Margin #: 0 EO Rank: D

Voucher: MIN

Collection #: 7626

Source: SMITH, W.R. (7626)

REMARKS: SENW SEC 8, T105 R36W. ABOUT 200 METERS SE OF CO HWY 14 ALONG NE-FACING HILLSIDE IN THE DES MOINES R VALLEY. 17 PLANTS COUNTED IN DRY-MESIC PRAIRIE HABITAT WITH SORGHASTRUM NUTANS, BOUTELOUA CURTIPENDULA, ANDROPOGON SCOPARIUS. IN 1988, OVER 20 PLANTS COUNTED. IN 1990, ENTIRE PASTURE SEARCHED, ONLY 1 PLANT FOUND IN PREVIOUS LOCATION BY N. SATHER, D. HAGEMAN AND R. PURRINGTON.

LOCATION: COTTONWOOD County, MN

Legal : T105N R36W SENW08 Region: 4

Quad Map: HARDER LAKE (W09B)

Latitude: 43 54' 52" Long: 95 11' 36"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 2 Intended Status: 9

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #10

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : RED ROCK PRAIRIE

CBS Site #: 0

OWNERSHIP : The Nature Conservancy

MANAGED AREA(s): RED ROCK PRAIRIE

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 10 verified

EO Size: 0

Date of Information: 25 September 1988 Record Updated: 10/22/1990

of Archived Records: 1

Map Margin #: 0

EO Rank: A

Voucher: MIN

Collection #:

Source: WELLS,D.

REMARKS: ABOUT 5000 PLANTS PROBABLY PRESENT, COUNTED IN 1986 BY SATHER, 300 IN 1982 BY WELLS. N-FACING SLOPE, THIN SOIL OVER QUARTZITE. ANNUAL MONITORING BY DNR OF SAMPLE PLOTS IN 2 MANAGEMENT UNITS. SITE-DEGRADED BY PAST CULTIVATION AND GRAZING.

LOCATION: COTTONWOOD County, MN

Legal : T107N R35W SWNE11 Region: 4

Quad Map: SANBORN SE (V09D)

Latitude: 44 5' 16" Long: 95 0' 27"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 9 Intended Status: 9

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #11

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : RED ROCK PRAIRIE

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 11 verified

EO Size: 0

Date of Information: 11 August 1983

Record Updated: 11/09/1990

of Archived Records: 1

Map Margin #: 0

EO Rank: C

Voucher: MIN

Collection #: 2492

Source: CONVERSE,C.(2492)

REMARKS: 3 PLANTS SEEN BY CONVERSE. T107N R35W, SE SEC 5. IN 1988, 65 PLANTS SEEN BY N. SATHER AT BASE OF NORTH FACING SLOPES, EAST AND WEST ENDS OF TRACT. THIN SOIL, DRY PRAIRIE WITH AMORPHA CANESCENS, ANEMONE PATENS, PETALOSTE MUM PURPUREUM.

LOCATION: COTTONWOOD County, MN

Legal : T107N R35W SESE05 Region: 4

Quad Map: SANBORN SE (V09D)

Latitude: 44 5' 42" Long: 95 3' 55"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 2 Intended Status: 79

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #12

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: COTEAU DES PRAIRIES

SITE : YONKER PRAIRIE

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 12 verified

EO Size: 0

Date of Information: September 1984

Record Updated: 11/09/1990

of Archived Records: 2

Map Margin #: 0

EO Rank: D

Voucher: MIN

Collection #: 9910

Source: SMITH,W.R.(9910)

REMARKS: CA 1 MILE SE OF PETERSBURG. NORTH-FACING PRAIRIE HILLSIDE IN THE DES MOINES RIVER VALLEY. 20 MATURE AND SOME IMMATURE PLANTS COUNTED IN ONE SMALL AREA. WITH SILPHIUM LACINIATUM, COREOPSIS PALMATA. T101N R34W, E1/2 NW1/4 SE1/4 SEC 27. IN 1990, ENTIRE PRAIRIE SEARCHED BY L. MUELLER AND P. NELSON, SR. AND ONLY 1 PLANT FOUND EAST OF PREVIOUS LOCATION.

LOCATION: JACKSON County, MN

Legal : T101N R34W NWSE27 Region: 4

Quad Map: JACKSON (X10C)

Latitude: 43 31' 17" Long: 94 53' 57"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 2 Intended Status: 7

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #13

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: COTEAU DES PRAIRIES

SITE : THOMPSON PRAIRIE

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 13 sight rec.

EO Size: 1

Date of Information: August 1986

Record Updated: 11/09/1990

of Archived Records: 2

Map Margin #: 0

EO Rank: A

Voucher:

Collection #:

Source: THOMPSON, T. AND VALENTINE, E. (SIGHT RECORD)

REMARKS: POPULATION MONITORED BY TNC INTERN FOR OWNER IN 1986. SENE SEC. 7 T103N R35W. IN 1990, AT LEAST 2000 PLANTS SEEN BY T. THOMPSON, N. SATHER AND L. MUELLER: CODOMINANT WITH SCHIZACHRIUM SCOPARIUM IN DENSE PATCH ABOUT 30 X 40 M IN DIAMETER; POPULATION EXTENDS ABOUT 40 X 200 M IN LARGE INTERMITTENTLY GRAZED B RANK PRAIRIE, BURNED PERIODICALLY BY OWNER.

LOCATION: JACKSON County, MN

Legal : T103N R35W SENE07 Region: 4

Quad Map: LAKEFIELD NE (X09A)

Latitude: 43 44' 30" Long: 95 5' 32"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 1 Intended Status: 9

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #14

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : RED ROCK PRAIRIE (512 acres)

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 14 sight rec.

EO Size: 1

Date of Information: 1 September 1987

Record Updated: 10/26/1990

of Archived Records: 1

Map Margin #: 0

EO Rank: B

Voucher:

Collection #:

Source: SATHER, N.P. AND HAGEMAN, D. (SIGHT RECORD)

REMARKS: 324 PLANTS SCATTERED IN PATCHES ON N-FACING SLOPE THROUGHOUT TRACT. GREATEST CONCENTRATION IN UNMOWED DITCHES ON E SIDE. DITCH COUNTED ANNUALLY BY DNR VOLUNTEER: 7 IN 1987, 177 IN 1988, 269 IN 1989, 226 IN 1990. ON N-FACING SLOPE IN AN A QUALITY PRAIRIE.

LOCATION: COTTONWOOD County, MN

Legal : T107N R35W NESENE10 Region: 4

Quad Map: SANBORN SE (V09D)

Latitude: 44 5' 22" Long: 95 1' 13"

Precision: not recorded

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 1 Intended Status: 89

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #15

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : COTTONWOOD RIVER PRAIRIES (125 acres)

CBS Site #: 0

OWNERSHIP : MN DNR Wildlife (Scientific and Natural Areas)

MANAGED AREA(s): COTTONWOOD RIVER PRAIRIE SNA

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 15 verified

EO Size: 3

Date of Information: 14 September 1988

Record Updated: 01/03/1991

of Archived Records: 2

Map Margin #: 0

EO Rank: A

Voucher: MIN

Collection #: 88-16

Source: SATHER, N.P. AND HAGEMAN, D. (88-16)

REMARKS: AT LEAST 1117 PLANTS ON MIDSLOPE AND BASE OF NORTH-FACING HILLS, GLACIAL TILL HILL PRAIRIE, WITH ASTER LAEVIS, SOLIDAGO NEMORALIS, BOUTELOUA CURTIPENDULA, HELIANTHUS LAETIFLORUS, SPOROBOLIS HETEROLEPIS, MATURE PLANTS WITH PODS, SUBADULT, AND JUVENILE PLANTS PRESENT, SOME AREAS AS DENSE AS 40 PLANTS PER SQUARE METER.

LOCATION: BROWN County, MN

Legal : T109N R35W NWSW33 Region: 4

Quad Map: SANBORN NE (V09A)

Latitude: 44 12' 2" Long: 95 3' 53"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 9 Intended Status: 9

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDeza LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #16

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : STATELY 29 (56 acres) CBS Site #: 0
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 16 verified EO Size: 1
Date of Information: 31 August 1988 Record Updated: 10/23/1990 # of Archived Records: 1
Map Margin #: 0 EO Rank: B Voucher: MIN Collection #: 88-07

Source: HAGEMAN, D. AND SATHER, N. P. (88-07)

REMARKS: 500 PLANTS IN 4 CLUMPS ON NORTH-FACING SLOPES. GLACIAL TILL HILL PRAIRIE. AREA
PRESENTLY GRAZED AND LESPEDeza SLIGHTLY DAMAGED BY HERBICIDE. MATURE PLANTS
WITH PODS, SUBADULTS AND JUVENILES PRESENT. ASSOCIATED SPECIES INCLUDE STIPA
SPARTEA, BOUTELOUA CURTIPENDULA, SOLIDAGO MEMORALIS, PETALOSTEMUM PURPUREUM, POA
PRATENSIS, SPOROBOLUS HETEROLEPIS, ARTEMISIA LUDOVICIANA.

LOCATION: BROWN County, MN
Legal : T108N R35W SWSE29 Region: 4
Quad Map: SANBORN SE (V09D)
Latitude: 44 7' 22" Long: 95 4' 10"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 2 Intended Status: 79

ELEMENT: LESPEDeza LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #17

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: COTEAU DES PRAIRIES

SITE : CARSON 5 (3 acres approx.) CBS Site #: 0
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 17 verified EO Size: 2
Date of Information: 17 September 1988 Record Updated: 11/09/1990 # of Archived Records: 2
Map Margin #: 0 EO Rank: C Voucher: MIN Collection #: 88-22

Source: WINTERS, R. AND SATHER, N. (88-22)

REMARKS: AT LEAST 186 PLANTS ON WEST-FACING SLOPE, 3 ON EAST-FACING SLOPE AND 1 ON NORTH-
FACING SLOPE. MORE APPARENTLY SUBADULT THAN MATURE AND JUVENILE PLANTS. BIGGEST
PATCH OF PLANTS ARE IMMEDIATELY ADJACENT TO ROADSIDE DITCH. IN UNGRAZED PRAIRIE
REMNANT, BURNED 1988 AND 1986. DOMINANTS INCLUDE ANDROPOGON GERARDI, SOLIDAGO
MEMORALIS, SOLIDAGO CANADENSIS, ASTER LAEVIS, PETALOSTEMUM PURPUREUM. LANDOWNER
MONITORED.

LOCATION: COTTONWOOD County, MN
Legal : T106N R35W SWSWNW05 Region: 4
Quad Map: SANBORN SE (V09D)
Latitude: 44 0' 54" Long: 95 4' 44"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 2 Intended Status: 2

ELEMENT: LESPEDeza LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #18

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : RED ROCK PRAIRIE (512 acres) CBS Site #: 0
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 18 sight rec. EO Size: 30
Date of Information: 24 September 1988 Record Updated: 11/09/1990 # of Archived Records: 1
Map Margin #: 0 EO Rank: B Voucher: Collection #:

Source: SATHER, N. (SIGHT RECORD)

REMARKS: AT LEAST 726 PLANTS ON NORTH-FACING SLOPES IN SCATTERED PATCHES THROUGHOUT TRACT
WITH EUTHAMIA GYMNASPERMOIDES, POA PRATENSIS, POA COMPRESSA, STIPA SPARTEA,
ASTER ERICOIDES, ASTER LAEVIS, COREOPSIS PALMATA, SOLIDAGO RIGIDA. POPULATION
MAPS IN BIOLOGICAL REPORT #12.

LOCATION: COTTONWOOD County, MN
Legal : T107N R35W NW11 Region: 4
Quad Map: SANBORN SE (V09D)
Latitude: 44 5' 18" Long: 95 0' 43"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 2 Intended Status: 8

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #19

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: SOUTHERN OAK BARRENS

SITE : UMBANHOWER PRAIRIE (50 acres approx.) CBS Site #: 222
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 19 sight rec. EO Size: 5
Date of Information: 27 July 1989 Record Updated: 02/25/1991 # of Archived Records: 3
Map Margin #: 0 EO Rank: BC Voucher: Collection #:

Source: UMBANHOWER, C., SMITH, W.R. AND SATHER, N.P. (SIGHT RECORD)

REMARKS: ABOUT 200 FLOWERING PLANTS ON NORTHEAST-FACING SLOPE OF LIMESTONE BASED HILL
WITH ANDROPOGON GERARDI, BOUTELOUA CURTIPENDULA, VERGENA SP., MONARDA FISTILOSA.
FORMERLY GRAZED PASTURE, BURNED BY OWNER FOR FIRST TIME SPRING 1989.

LOCATION: GOODHUE County, MN

Legal : T111N R18W SENE07 Region: 5
Quad Map: DENNISON (U17A)
Latitude: 44 26' 17" Long: 93 1' 19"
Precision: not recorded

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 2 Intended Status: 2

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #20

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: COTEAU DES PRAIRIES

SITE : CARSON 5 SOUTHWEST (38 acres) CBS Site #: 0
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 20 verified EO Size: 1
Date of Information: 30 August 1989 Record Updated: 11/09/1990 # of Archived Records: 2
Map Margin #: 0 EO Rank: D Voucher: MIN Collection #: 89-23

Source: SATHER, N.P. (89-23)

REMARKS: ABOUT 2 DOZEN PLANTS SEEN ON SLUMPING EAST FACING SLOPE OF RAVINE. WITH POA
PRATENSIS, ANDROPOGON GERARDI, ANDROPOGON SCOPARIUS, BOUTELOUA CURTIPENDULA,
PANICUM VIRGATU, PANICUM LEIBERGII, SORGHASTRUM NUTANS, ARTEMISIA LUDOVICIANA,
SOLIDAGO CANADENSIS, RATIBIDA PINNATA, ASTER ERICOIDES, SOLIDAGO RIGIDA, ZIZIA
APTERA. AREA IS NOT GRAZED.

LOCATION: COTTONWOOD County, MN

Legal : T106N R35W NESW05 Region: 4
Quad Map: SANBORN SE (V09D)
Latitude: 44 0' 42" Long: 95 4' 23"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 1 Intended Status: 79

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #21

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : COTTONWOOD RIVER PRAIRIES (974 acres) CBS Site #: 0
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 21 verified EO Size: 0
Date of Information: 16 August 1989 Record Updated: 11/09/1990 # of Archived Records: 2
Map Margin #: 2 EO Rank: D Voucher: MIN Collection #: 89-03

Source: HAGEMAN AND SATHER (89-03)

REMARKS: 19 PLANTS NEAR CREST OF N-FACING RAILROAD CUT, SOUTH SIDE OF TRACK, NEAR BASE OF
DEAD TREE. WITH SOLIDAGO CANADENSIS, SYMPHORICARPOS, SOME BROMUS INERMIS, UPHILL
OF ANDROPOGON GERARDI. REMNANT PRAIRIE ON LOWER SLOPE.

LOCATION: BROWN County, MN

Legal : T109N R35W SESWNW32 Region: 4
Quad Map: SANBORN NE (V09A)
Latitude: 44 12' 15" Long: 95 5' 6"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 0 Intended Status: 29

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

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ELEMENT: LESPEDeza LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #22

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : COTTONWOOD RIVER PRAIRIES (974 acres)

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 22 verified

EO Size: 15

Date of Information: 16 August 1989

Record Updated: 10/15/1990

of Archived Records: 1

Map Margin #: 3

EO Rank: A

Voucher: MIN

Collection #:

Source: HAGEMAN AND SATHER 89-01

REMARKS: OVER A THOUSAND PLANTS (1515 IN 1989) OF ALL SIZE CLASSES IN MIDSLOPE AREA OF NORTH-FACING SLOPE. WITH SOLIDAGO RIGIDA, ANDROPOGON GERARDI, ANDROPOGON SCOPARIUS, KUHNIA EUPATORIODES, STIPA SPARTEA, BOUTELOUA CURTIPENDULA, PETALOSTEMUM PURPUREUM, SPOROBOLUS HETEROLEPIS, ASTER ERICOIDES, AMORPHA CAN-ESCENS, LIATRIS ASPERA, ANEMONE PATENS, GEUM TRIFLORUM, COREOPSIS PALMATA. NARROW BAND OF PRAIRIE ON HILLSIDE ONLY, UNGRAZED IN 1989.

LOCATION: BROWN County, MN

Legal : T109N R35W SENW32 Region: 4

Quad Map: SANBORN NE (V09A)

Latitude: 44 12' 13" Long: 95 4' 45"

Precision: within 0.25 mile, confirmed

TNC RECORD:

Code: PDFAB27090

Global Rank: G2

State Rank: S1

Current Status: 7

Intended Status: 7

ELEMENT: LESPEDeza LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #23

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : COTTONWOOD RIVER PRAIRIES (974 acres)

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 23 verified

EO Size: 40

Date of Information: 17 August 1989

Record Updated: 10/23/1990

of Archived Records: 2

Map Margin #: 0

EO Rank: A

Voucher: MIN

Collection #: 89-02

Source: HAGEMAN, D. AND SATHER, N. (89-02)

REMARKS: OVER 2221 COUNTED IN 1989 AND 1990 OF ALL SIZE CLASSES IN SEVERAL INTERRUPTED PATCHES ALONG N-FACING SLOPE FOR MOST OF A MILE. POPULATION INTERRUPTED IN SENW 31 FROM BASE TO CREST OF HILL AT EAST END OF SECTION. WITH ANDROPOGON SCOPARIUS, STIPA SPARTEA, SPOROBOLUS HETEROLEPIS, RATIBIDA PINNATA, ANEMONE PATENS, LESPED-EZA CAPITATA, GEUM TRIFLORUM, PETALOSTEMUM PURPUREUM, ANEMONE CYLINDRICA, ASTER ERICOIDE, COREOPSIS PALMATA, GENTIANA PUBERULA, CHRYSOPSIS VILLOSA. GRAZED.

LOCATION: BROWN County, MN

Legal : T109N R31W SENE31 Region: 4

Quad Map: SANBORN NE (V09A)

Latitude: 44 12' 17" Long: 95 5' 31"

Precision: within 0.25 mile, confirmed

TNC RECORD:

Code: PDFAB27090

Global Rank: G2

State Rank: S1

Current Status: 1

Intended Status: 29

ELEMENT: LESPEDeza LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #24

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : COTTONWOOD RIVER PRAIRIES (974 acres)

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 24 verified

EO Size: 4

Date of Information: 17 August 1989

Record Updated: 11/09/1990

of Archived Records: 2

Map Margin #: 0

EO Rank: BC

Voucher: MIN

Collection #: 89-04

Source: HAGEMAN, NELSON AND SATHER (89-04)

REMARKS: 277 PLANTS OF ALL SIZE CLASSES IN GRAZED PASTURE, WITH POA PRATENSIS, STIPA SPARTEA, SPOROBOLUS HETEROLEPIS, BOUTELOUA CURTIPENDULA, ANDROPOGON SCOPARIUS, HEUCHERA RICHARDSONII, RATIBIDA PINNATA, SOLIDAGO RIGIDA.

LOCATION: BROWN County, MN

Legal : T109N R35W SWNW31 Region: 4

Quad Map: SANBORN NE (V09A)

Latitude: 44 12' 14" Long: 95 6' 22"

Precision: within 0.25 mile, confirmed

TNC RECORD:

Code: PDFAB27090

Global Rank: G2

State Rank: S1

Current Status: 0

Intended Status: 29

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

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ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #25

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: COTEAU DES PRAIRIES

SITE : GREAT BEND 17

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 25 verified

EO Size: 0

Date of Information: 17 August 1990 Record Updated: 10/26/1990

of Archived Records: 1

Map Margin #: 5 EO Rank: A Voucher: MIN

Collection #: 90-56

Source: SATHER, N., HAGEMAN, D. AND PURRINGTON, R.

REMARKS: ESTIMATED 3000 PLANTS IN 2 KNOWN SUBPOPULATIONS. ABOUT 2500 FLOWERING PLANTS IN SMALL UNGRAZED PRAIRIE REMNANT IN NESE SEC 17 ADJOINING ELSTON AND WALINGA PROPERTIES; WITH SPOROBOLIS HETEROLEPIS, PETALOSTEMUM PURPUREUM, SOLIDAGO RIGIDA, ASCLEPIAS TUBEROSA. SECOND PATCH JUST N OF FARMHOUSE IN GRAZED PASTURE IN N1/2 SESE SEC 17; ABOUT 100 PLANTS SEEN IN CURSORY OVERVIEW.

LOCATION: COTTONWOOD County, MN

Legal : T105N R36W OSNWSW16 Region: 4

Quad Map: HARDER LAKE (W09B)

Latitude: 43 53' 45" Long: 95 10' 56"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: Intended Status:

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #26

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : AMBOY 24

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 26 verified

EO Size: 0

Date of Information: 29 August 1990 Record Updated: 11/09/1990

of Archived Records: 1

Map Margin #: 60 EO Rank: D Voucher: MIN

Collection #: 90-59

Source: HAGEMAN, D. AND SATHER, N. (90-59)

REMARKS: 32 PLANTS SEEN IN SMALL PRAIRIE REMNANT PROBABLY LESS THAN 5 ACRES. NORTH-FACING SLOPE NEAR HEAD OF LITTLE COTTONWOOD RIVER. WITH ASTER ERICOIDES, SOLIDAGO RIGIDA, ECHINACEA PALLIDA, OENOTHERA SERRULATA, SOLIDAGO MISSOURIENSIS, AMORPHA CANESCENS, ANDROPOGON GERARDI, SORGHASTRUM NUTANS, SCHIZACHYRIUM SCOPARIUM, SPOROBOLUS HETEROLEPIS, BOUTELOUA CURTIPENDULA, POA PRATENSIS.

LOCATION: COTTONWOOD County, MN

Legal : T107N R36W NESENE24 Region: 4

Quad Map: SANBORN SE (V09D)

Latitude: 44 3' 40" Long: 95 6' 7"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 0 Intended Status: 2

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #27

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : STATELY 29

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 27 verified

EO Size: 0

Date of Information: 15 September 1990 Record Updated: 11/09/1990

of Archived Records: 2

Map Margin #: 58 EO Rank: D Voucher: MIN

Collection #: S.N.

Source: HAGEMAN, D.

REMARKS: 68 PLANTS OBSERVED IN PRAIRIE REMNANT WITH SOLIDAGO RIGIDA, ASTER ERICOIDES, PETALOSTEMUM PURPUREUM, ON NORTH FACING SLOPE. PRAIRIE CONTINUES WESTWARD.

LOCATION: BROWN County, MN

Legal : T108N R35W SESW29 Region: 4

Quad Map: SANBORN SE (V09D)

Latitude: 44 7' 23" Long: 95 4' 22"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 1 Intended Status: 7

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #28

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : COTTONWOOD RIVER PRAIRIES

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 28 verified

EO Size: 0

Date of Information: 29 August 1990 Record Updated: 11/09/1990

of Archived Records: 1

Map Margin #: 19 EO Rank: C Voucher: MIN

Collection #: 90-67

Source: HAGEMAN, D. AND SATHER, N. P. (90-67)

REMARKS: 146 PLANTS SEEN IN GRAZED PRAIRIE WITH NOTICEABLE SPRING FLORA. WITH GEUM TRIFLORUM, SOLIDAGO NEMOROSA, VIOLA PEDATIFIDA, POTENTILLA ARGUTA, PETALOSTEMUM PURPUREUM, ASTER ERICOIDES, BOUTELOUA CURTIPENDULA, KOEHLERIA CRISTATA. ON NORTH FACING SLOPE OF HILL.

LOCATION: BROWN County, MN

Legal : T109N R35W SWNE32 Region: 4

Quad Map: SANBORN NE (V09A)

Latitude: 44 12' 12" Long: 95 4' 33"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 1 Intended Status: 7

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #29

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : GERMANTOWN 1

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 29 verified

EO Size: 0

Date of Information: 29 August 1989 Record Updated: 11/09/1990

of Archived Records: 1

Map Margin #: 21 EO Rank: D Voucher: MIN

Collection #: 90-62

Source: HAGEMAN, D. AND SATHER, N. P. (90-62)

REMARKS: 30 PLANTS IN SMALL PATCH ABOUT 2X3 M JUST WEST OF FENCELINE ON EAST SIDE OF WESTERNMOST PINE PLANTATION. ABOUT 10 M ABOVE BASE OF HILL IN TINY PRAIRIE REMNANT DOMINATED BY BOUTELOUA CURTIPENDULA, ASTER ERICOIDES, BROMUS INERMIS THIS IS A MARGINAL POPULATION BECAUSE SO LITTLE HABITAT IS LEFT. HABITAT MAINLY DESTROYED BY PINE PLANTATIONS.

LOCATION: COTTONWOOD County, MN

Legal : T108N R36W SESENW01 Region: 4

Quad Map: SANBORN NE (V09A)

Latitude: 44 11' 35" Long: 95 6' 41"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 1 Intended Status: 2

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #30

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : GERMANTOWN 1

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 30 verified

EO Size: 0

Date of Information: 29 August 1990 Record Updated: 11/09/1990

of Archived Records: 1

Map Margin #: 22 EO Rank: D Voucher: MIN

Collection #: 90-63

Source: HAGEMAN, D. AND SATHER, N. (90-63)

REMARKS: 20 PLANTS SEEN ON HEAVILY PLUM-INVADDED PRAIRIE SLOPE ABOVE SMALL HAYFIELD. MAINLY ADULT WITH FEW JUVENILE PLANTS, WITH SOLIDAGO MISSOURIENSIS, SORGHASTRUM NUTANS, BROMUS INERMIS, SYMPHORICARPUS OCCIDENTALIS, LESPEDEZA CAPITATA, ANDROPOGON GERARDI, SCHIZACHYRIUM SCOPARIUM. ONE PLANT THAT LOOKS LIKE LESPEDEZA LEPTOSTACHYA X CAPITATA ALSO PRESENT HERE, PATCH JUST DOWNHILL & E. OF AN ASH ABOUT 5CM DBH. 1 ADDITIONAL PATCH OF 7 PLANTS RIGHT W. OF SEC. LINE FENCE, VERY BRUSHY

LOCATION: COTTONWOOD County, MN

Legal : T108N R36W NENE01 Region: 4

Quad Map: SANBORN NE (V09A)

Latitude: 44 11' 39" Long: 95 6' 8"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 1 Intended Status: 2

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

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ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #31

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : STATELY 6 CBS Site #: 0
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 31 verified EO Size: 0
Date of Information: 29 August 1990 Record Updated: 11/09/1990 # of Archived Records: 1
Map Margin #: 23 EO Rank: CD Voucher: MIN Collection #: 90-66

Source: HAGEMAN, D. AND SATHER, N. P. (90-66)

REMARKS: 90 PLANTS NEAR HEAD OF NORTH-FACING DRAW BEING INVADDED DOWNHILL BY PLUM. PATCH ABOUT 12 X 7 M. PLANTS OF ALL AGES. BEST PATCH ALONG THIS RIDGE. WITH SOLIDAGO CANADENSIS, SOLIDAGO RIGIDA, ASTER ERICOIDES, RATIBIDA PINNATA, ASTER SERICEUS, POA PRATENSIS, BOUTELOUA CURTIPENDULA, ANDROPOGON GERARDI, SPOROBOLUS HETEROLEPIS. UPHILL OF BIG PATCH OF LESPEDEZA CAPITATA.

LOCATION: BROWN County, MN

Legal : T108N R35W NENWNW06 Region: 4
Quad Map: SANBORN NE (V09A)
Latitude: 44 11' 41" Long: 95 5' 47"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 1 Intended Status: 2

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #32

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: COTEAU DES PRAIRIES

SITE : GREAT BEND 9 CBS Site #: 0
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 32 verified EO Size: 0
Date of Information: 19 August 1990 Record Updated: 10/03/1990 # of Archived Records: 0
Map Margin #: 6 EO Rank: A Voucher: MIN Collection #: 90-57

Source: PURRINGTON, R. AND SATHER, N. (90-57)

REMARKS: ABOUT 1500 PLANTS IN 3 PATCHES, LARGEST WITH 1000 PLANTS, ONE WITH 473 PLANTS EXCELLENT POPULATION STRUCTURE, ONE WITH 80 PLANTS FEW JUVENILES ON NORTH AND EAST FACING SLOPES OF B-C QUALITY PRAIRIE. WITH MONARDA FISTULOSA, ASTER ERICOIDES, BOUTELOUA CURTIPENDULA, SPOROBOLUS HETEROLEPIS, BROMUS INERMIS. LAND-OWNER MONITORING PLOTS ESTABLISHED 1990; 3 PLOTS IN EACH PATCH.

LOCATION: COTTONWOOD County, MN

Legal : T105N R36W SWSE09 Region: 4
Quad Map: HARDER LAKE (W09B)
Latitude: 43 54' 24" Long: 95 9' 56"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 1 Intended Status: 2

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #33

Federal Status: THREATENED State Status: ENDANGERED
Landscape Region: UPPER MINNESOTA RIVER COUNTRY

SITE : HONNER 19 CBS Site #: 0
OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 33 verified EO Size: 0
Date of Information: 27 September 1990 Record Updated: 11/09/1990 # of Archived Records: 2
Map Margin #: 12 EO Rank: D Voucher: MIN Collection #: S.N.

Source: PARTSCH, R.

REMARKS: FOURTEEN PLANTS SEEN ON GENTLE SOUTH FACING SLOPE OF REMNANT PRAIRIE ASSOCIATED WITH OUTCROP WEST OF MANN RESIDENCE NORTH OF ROUTE 9 ABOUT 3/4 MILE WEST OF NORTH REDWOOD. WITH LESPEDEZA CAPITATA AND PUTATIVE HYBRID. WITH BOUTELOUA CURTIPENDULA, ANDROPOGON GERARDI, SCHIZACHYRIUM SCOPARIUM, ASTER SERICEUS, SPOROBOLUS HETEROLEPIS.

LOCATION: REDWOOD County, MN

Legal : T113N R35W SWSWNW19 Region: 4
Quad Map: REDWOOD FALLS (T09D)
Latitude: 44 34' 44" Long: 95 6' 54"
Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090
Global Rank: G2 State Rank: S1
Current Status: 0 Intended Status: 2

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #34

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: COTEAU DES PRAIRIES

SITE : CHRISTIANIA 19 (60 acres approx.)

CBS Site #: 0

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 34 verified

EO Size: 2

Date of Information: 14 September 1990 Record Updated: 11/09/1990

of Archived Records: 1

Map Margin #: 5 EO Rank: C Voucher: MIN

Collection #: S.N.

Source: HAGEMAN,D.

REMARKS: 126 PLANTS ON N-FACING SLOPE OF GRAZED NATIVE PRAIRIE IN RAVINE EAST OF DES MOINES RIVER. WITH PETALOSTEMUM PURPUREUM, RATIBIDA PINNATA, BOUTELOUA CURTIPENDULA, SOLIDAGO NEMORALIS, SOLIDAGO CANADENSIS, SPOROBOLIS HETEROLEPIS.

LOCATION: JACKSON County, MN

Legal : T104N R35W NESW19 Region: 4

Quad Map: WINDOM (W09D)

Latitude: 43 47' 46" Long: 95 5' 10"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 1 Intended Status: 2

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #35

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: SOUTHERN OAK BARRENS

SITE : HOWIE'S PRAIRIE (11 acres)

CBS Site #: 120

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 35

EO Size: 1

Date of Information: 31 August 1990 Record Updated: 11/06/1990

of Archived Records: 0

Map Margin #: 12 EO Rank: C Voucher:

Collection #:

Source: DAHLE,R. AND RICHARDS,M.(PHOTO RECORD)

REMARKS: OBSERVED ON DEGRADED BLUFF PRAIRIE 1 MI N OF DENNISON CLOSE TO DRIVEWAY OF HOWIE HOME. ON LOWER SW FACING SLOPE. 16 PLANTS (13 IN FRUIT) IN 500 SQ. METER PATCH WITH POA PRATENSIS, PANICUM OLIGOSANTHES, SOLIDAGO CANADENSIS, & AMBROSIA ARTEMISIFOLIA. JUNIPERUS VIRGINIANA & DECIDUOUS TREES, SHRUBS INVADING. OCT. 25,1990 8 ADD. PLANTS (ALL IN FRUIT) OBS. BY H. DUNEVITZ ON CREST OF MESA NEAR RADIO TOWER IN DEGR PRAIRIE W/BROMUS INERMIS, POA PRA., LESP. CAP., & SOLID. NEMORALIS

LOCATION: RICE County, MN

Legal : T111N R19W OENE13 Region: 5

Quad Map: DENNISON (U17A)

Latitude: 44 25' 32" Long: 93 2' 33"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 1 Intended Status: 2

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #36

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: SOUTHERN OAK BARRENS

SITE : WARSAW 18 (70 acres)

CBS Site #: 221

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 36

EO Size: 1

Date of Information: 28 August 1990 Record Updated: 11/28/1990

of Archived Records: 1

Map Margin #: 14 EO Rank: D Voucher:

Collection #:

Source: DUNEVITZ,H., DAHLE,R., RICHARDS,M., O'NEILL,M., AND FORSBERG,M.(PHOTO RECORD)

REMARKS: OBSERVED ON DEGRADED BLUFF PRAIRIE ONE HALF MILE NORTH OF DENNISON AND ONE MILE EAST OF PRAIRIE CREEK. 2 PATCHES, ONE OF 7 PLANTS, ONE OF 3, GROWING ABOUT 5 FEET FROM PATCH OF LARGE JUNIPERUS VIRGINIANA, AND POPULUS TREMULOIDES, UPHILL AND NORTH OF PINE PLANTATION. ON UPPER NW-FACING SLOPE OF BLUFF PRAIRIE. WITH LIATRIS PUNCTATA, EUPHORBIA COROLLATA, SOLIDAGO SPECIOSA, BROMUS INERMIS, SOLIDAGO RIGIDA, CONYZA CANADENSIS, ZIZIA APTERA, BAPTISIA BRACTEATA.

LOCATION: GOODHUE County, MN

Legal : T111N R18W NWNW19 Region: 5

Quad Map: DENNISON (U17A)

Latitude: 44 24' 48" Long: 93 2' 16"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 0 Intended Status: 2

MINNESOTA NATURAL HERITAGE PROGRAM
ELEMENT OCCURRENCE RECORDS

12:51 Friday, MARCH 1, 1991

ELEMENT: LESPEDEZA LEPTOSTACHYA (PRAIRIE BUSH CLOVER) #37

Federal Status: THREATENED

State Status: ENDANGERED

Landscape Region: SOUTHERN OAK BARRENS

SITE : STANTON 19 (120 acres)

CBS Site #: 226

OWNERSHIP : Private Ownership

MANAGED AREA(s): not managed or no record

OCCURRENCE RECORD: Code: LD.BC9 Occurrence #: 37 sight rec.

EO Size: 1

Date of Information: 1 October 1990 Record Updated: 11/14/1990

of Archived Records: 1

Map Margin #: 18 EO Rank: D

Voucher:

Collection #:

Source: DUNEVITZ, H. AND JENSEN, P. (SIGHT RECORD)

REMARKS: 7 PLANTS OBSERVED ON NO. FACING BLUFF PRAIRIE. WITH POA PRATENSIS, MUHLENBERGIA CUSPIDATA, AND VERBEAN STRICTA. ALL PLANTS IN FRUIT. PRAIRIE IS BEING INVADED BY JUNIPERUS VIRGINIANA, ULMUS PUMILA, OTHER BRUSH. PRAIRIE IS DOMINATED BY POA AND BROMUS INERMIS, BUT HAS MODERATE SPECIES RICHNESS OF NATIVE GRASSES AND FORBS. DOMINANTS INCLUDE SCHYZACHYRIUM SCOP., BOUTELOUA CURTIPENDULA. PRAIRIE EXTENDS ON TO FLAT CREST. YOUNG PINES PLANTED ON LOWER SLOPE JUST BELOW LESPEDEZA.

LOCATION: GOODHUE County, MN

Legal : T112N R18W NENE19 Region: 5

Quad Map: DENNISON (U17A)

Latitude: 44 29' 47" Long: 93 1' 22"

Precision: within 0.25 mile, confirmed

TNC RECORD: Code: PDFAB27090

Global Rank: G2 State Rank: S1

Current Status: 0 Intended Status: 2

APPENDIX 2

**MINNESOTA NATURAL HERITAGE PROGRAM
PROJECT EVALUATION**

NAME OF PROJECT: Fredin Prairie **COUNTY:** Cottonwood

LANDSCAPE REGION: 218, **DNR QUAD CODE:** W9b
Upper Minnesota River Country

PHYSIOGRAPHIC REGION Blue Earth Till Plain

LEGAL DESCRIPTION: SW 1/4 Section 16, T 105 N, R 36 W

PRESENT STATUS: Unprotected prairie remnant and active pasture

APPROXIMATE ACREAGE: (from English area grid and ASCS photos)
10 acres ungrazed remnant prairie
38 acres cropland
8.5 acres woodland
123 acres actively grazed pasture

OWNERSHIP: Mrs. Merlin Fredin
Route 3, Box 316
Windom, Mn.
(507) 831-4948

RECOMMENDED ACTION: Obtain an easement on the 10 acre prairie remnant that harbors prairie bush clover.

Introduction and context:

The property included in this report is a part of a series of hillside pastures extending along the west side of the Des Moines River from County 17 southward to just west of Windom. All these pastures are native prairie, but some have suffered serious degradation from overgrazing and herbicide application. The southwest portion of the Fredin tract is an example of a badly eroded area as a result of overgrazing.

The Fredin tract was searched for Prairie Bush Clover in August 1990 as part of a project to search the entire set of pastures on the west side of the Des Moines River because one small population of Prairie Bush Clover was known from the north end of the Kenneth Walinga pasture in NW section 8. Areas searched on the west side of the river included all the hills in sections 8, 17 and 21, and hills in the west half of section 16. The east half of section 16 remains unsearched because it is a buffalo pasture. Portions of sections 22, 27 and 28 remain to be searched. The Fredin tract was the only area west of the river found to have a reasonable population of Prairie Bush Clover. The population of over 20 plants on the Walinga tract has declined to only 2 plants.

Map 1 shows the topographic setting of the prairie, with Lespedeza populations highlighted. The Fredin tract is truncated on the east by the Des Moines River but extends south across the section line because the road runs south of the line. Map 2 and photo 1 show ownership and present land use in section 16.

Ecological attributes:

The 10 acre ungrazed prairie remnant in S 1/2 NW SW 16 is by far the most impressive feature on this tract. This remnant harbors an estimated 2000 Prairie Bush Clover plants, based on an actual count of 684 plants in roughly one fifth of the area occupied by plants. The population consists of individuals of all ages. The patch of Lespedeza is roughly 250 meters long and 50 meters wide.

Additional species noted in this prairie remnant are listed in Appendix 1. Relieve 90-19 gives an estimate of cover and abundance occurring in one 10x10 meter area within the Lespedeza population.

The grazed pasture was not surveyed with any intensity, but over 50 Prairie Bush Clover plants were observed on the north-facing hills east of the highly eroded gully in the southwest part of the tract.

Protection considerations:

The Fredin family operates the stockyards in Springfield and it appears from a preliminary conversation that they use their own pasture to move cattle through. The ungrazed remnant is continuous with their grazed pasture on the east, separated by a straight fence that cuts across the ravine. The south and west sides of the ravine are surrounded by cropland. The ravine is probably functionally protected by the topography and the cost of fencing the exterior boundaries of such a small acreage.

Mrs. Fredin told us that her husband passed away several years ago. Her son Scott lives with her and apparently manages the farm. The family was at one time approached by the DNR about enrolling the prairie remnant in "some program", but were told that in order to do so they would need to fence the area. Given the irregular boundaries of the ravine fencing seemed unreasonably expensive. The property is presently not in the Prairie Tax Exemption program, probably because of this fencing issue. Mrs. Fredin uses it to gather plums in the ravine and was aware that it was a native prairie. She has been informed of the presence of Prairie Bush Clover. Our volunteer Dennis Hageman plans to follow up on encouraging her interest in the prairie as his mother was a friend of Mrs. Fredin's.

Recommendations:

Despite the small size of the ungrazed remnant its Lespedeza population is significant. Efforts should be made to bring this population into protection, perhaps through a conservation easement. Because the Department of Agriculture's Pesticide Agreement program is certain to require some buffer for spraying of the cropland about 20 meters uphill of the bush clover, it would be wise to include an appropriate buffer in the easement at the outset. Funds for fencing of the remnant can be obtained through Recovery 2000 funding.

Preparer: Nancy Sather, Botanist/Ecologist

APPENDIX 1. SPECIES OBSERVED IN FREDIN PRAIRIE REMNANT

FORBS:

Amorpha canescens
Petalostemum candidum
Petalostemum purpureum
Asclepias tuberosa
Prenanthes racemosa
Aster sericeus
Potentilla arguta
Solidago rigida
Solidago canadensis
Physalis heterophylla
Zizia aptera
Agrimonia sp.
Monarda fistulosa
Apocynum sibericum
Heuchera richardsonii
Galium boreale
Anemone patens
Viola pedatifida
Coreopsis palmata
Aster ericoides
Allium stellatum
Asclepias syriaca
Asclepias verticillata
Rosa arkansana
Sporalea esculenta
Psoralea argophylla
Cirsium flodmanni
Aster laevis
Echinacea pallida
Ratibida pinnata
Linum sulcatum
Lespedeza capitata
Lespedeza leptostachya
Lathyrus venosus
Lithospermum canescens
Verbena stricta
Vicia americana
Achillea millefolium
Oxalis dillennii
Helianthus maximiliani
Artemisia ludoviciana
Ambrosia artimisiifolia
Tragopogon dubius

WOODY SPECIES

Symphoricarpos occidentalis
Prunus americana
Rhus radicans

GRASSES:

Poa pratensis
Sorghastrum nutans
Stipa spartea
Sporobolus heterolepis
Panicum virgatum
Bromus inermis
Bouteloua curtipendula
Schizachrium scoparium
Andropogon gerardi
Stipa viridula

RELEVE DATA SHEET
VEGETATION

Surveyor's Relve Number: 90-19 Surveyor's Name Nancy Sather
MN County: Cottonwood Legal description: SW Sec 16
T 105 N
R 36 W

Date: 8/17/90 Relve size 100 sq.m. Site name: Fredin Prairie

Species Name Cover-Abundance

D 1-2 a

Prunus americana	+1
Symphoricarpos occidentalis	+1


H1-2c

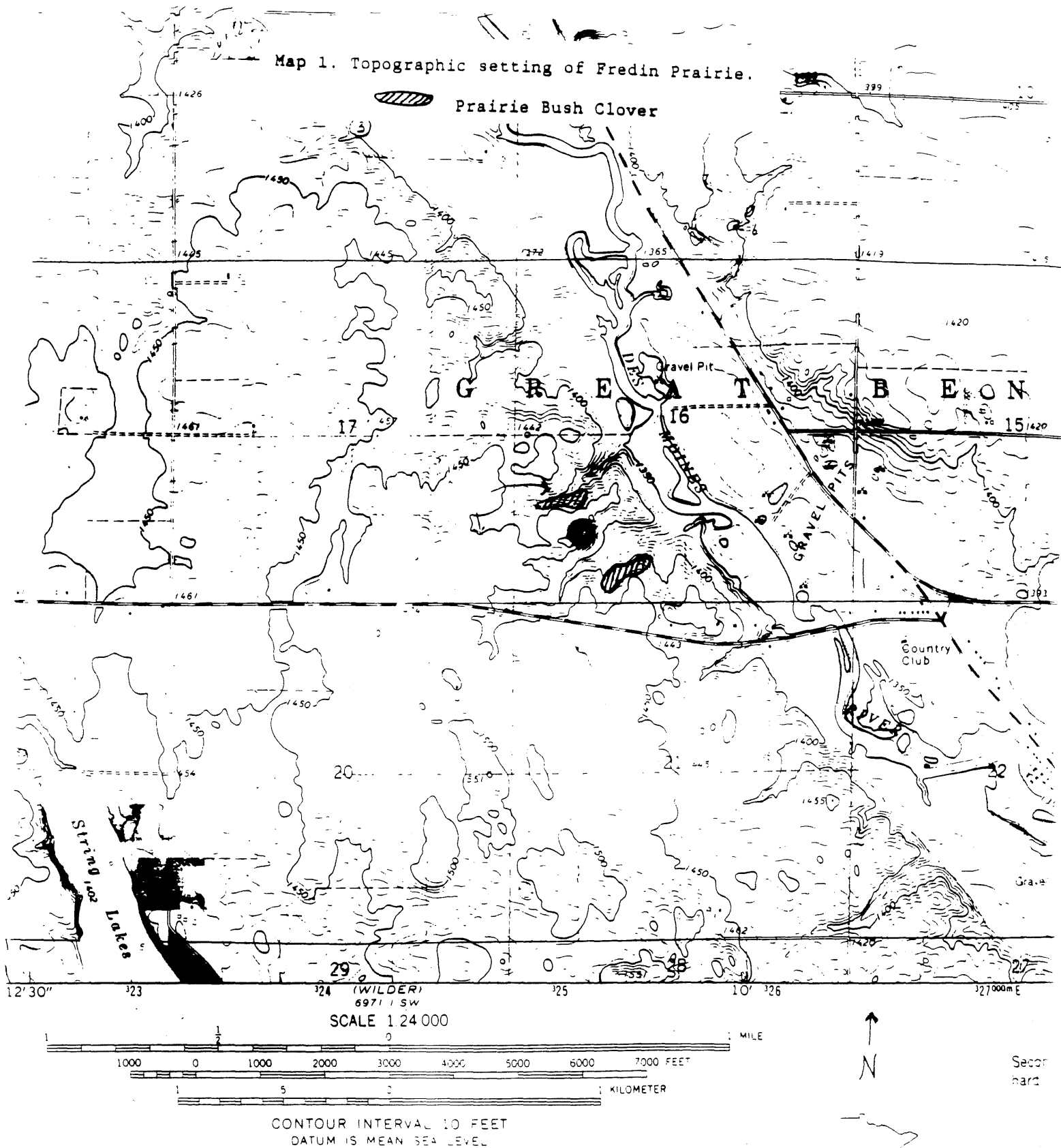
Solidago canadensis	3.3
Solidago rigida	3.3
Liatris aspera	2.2
Monarda fistulosa	2.2
Lespedeza leptostachya	2.2
Amorpha canescens	1.1
Aster ericoides	1.1
Aster sericeus	1.1
Zizia aptera	+1
Viola pedatifida	+1
Potentilla arguta	+1
Verbena stricta	+1
Heuchera richardsonii	+1
Galium boreale	+2
Lycopus americanus	r.1
Tragopogon dubius	r.1
Lithospermum canescens	r.1
Prenanthes racemosa	r.1

G1-2c

Andropogon gerardii	2.2
Sporobolus heterolepis	3.4
Stipa spartea	+2
Poa pratensis	+2
Bouteloua curtipendula	+2
Schizachrium scoparium	+2

Map 1. Topographic setting of Fredin Prairie.

 Prairie Bush Clover



RTM
ET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

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