

MINNESOTA BURROWING CONSERVATION
1988 - 1989

A Report Submitted to
The Nongame Program
Minnesota Dept. of Natural Resources

by

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INTRODUCTION

This report summarizes conservation work undertaken in 1988 and 1989 with the Burrowing Owl, an endangered species in Minnesota (Coffin and Pfanmuller 1988). This work was done in three areas. First, releases of juvenile owls were continued at Lac Qui Parle Wildlife Management area. Secondly, surveys for returning released owls and wild nesting owls were conducted in western Minnesota. Finally, a variety of media were used to educate the public regarding Burrowing Owl conservation and to promote reporting of Burrowing Owl sightings.

In addition to the author, John Schladweiler, Minn. Dept. of Natural Resources (MDNR) helped coordinate and participated in all aspects of the project. An ad hoc advisory committee consisting of John Schladweiler, Lee Pfanmuller (MDNR), Dr. Francie Cuthbert (Dept. of Fisheries and Wildlife, Univ. of Minn.), Dr. Harrison Tordoff (Bell Museum, Univ. of Minn.) and Mark Martell (The Raptor Center, Univ. of Minn.) served as advisors during the course of the project.

Funding for the reintroduction was provided by the Nongame Program of the Minnesota Dept. of Natural Resources (MDNR) through a contract with The Raptor Center at the University of Minnesota (TRC). Additional support was provided by TRC, the Dept. of Fisheries and Wildlife at the Univ. of Minnesota, The North Central Forest Experiment Station USFS, and the Carpenter Nature Center.

Maureen Linder in 1988 and Linda Polglace in 1989 were hack site attendants and also assisted in survey and banding work. The assistance and hospitality of Dave and Diana Soehren made the reintroduction project possible and is gratefully acknowledged. Field assistance was also provided by Colleen Curran and Mary Beth Hoover.

The cooperation of Eileen Dowd, So. Dakota Department of Game, Fish, and Parks, and personnel of the Buffalo Gap National Grasslands is gratefully acknowledged.

REINTRODUCTION

Burrowing Owl reintroductions started in Minnesota in 1985 when 4 captively reared birds were released at Blue Mounds State Park in Rock county (Martell and Schladweiler 1987). In 1986 9 owls, and in 1987 17 owls, were released in Lac Qui Parle county as part of the authors thesis project to meet the requirements for a Masters of Science degree in Wildlife Conservation at the Univ. of Minnesota.

In both 1988 and 1989 juvenile owls were removed from prairie dog colonies using Haug traps (Haug 1985, Martell and Cuthbert 1987). In 1988 two trips, the first on 28-29 June, and the second on 15-16 July, were made to the Fort Pierre National Grasslands, approximately 8 km. south of Pierre (Stanley County, T109N R77W Sects. 33, 28, 20, 21; and T109N R79W Sect 30). Twenty pre-fledgling owls were caught and brought back to the hack site in Minnesota. In 1989 owls were trapped on the Buffalo Gap National Grassland located in western South Dakota. Trapping was done between 5 - 8 July in Pennington county (T1S R16E Sec 26, T2S R16E Sec11, T1S R17E Sec20, T1S R17E Sec15). Twenty eight juvenile owls were trapped, one of which died within 1/2 hour of being removed from the trap. I beleive the cause of death to be stress from handling and intense heat. This is the first owl to die in 4 years of trapping.

All birds were banded with USFWS bird bands and color marked with a unique combination of red, yellow, and green leg markers before being put into the pens (Table 1).

The release site was located on the Lac Qui Parle Wildlife Management Area (LQPWMA), approximately 1 km west of Lac Qui Parle Lake, 1 km north of County Road 66 and 1 km from the nearest farm (Fig 1). This area originally was part of the tall-grass prairie which characterized western Minnesota before European settlement (Heinselman 1974). It currently is a combination of grasslands, woody cover and wetlands managed for wildlife production by MDNR. Private lands surrounding the area are used for pasture or row crops.

The hack site was prepared by mowing a 40 m by 22 m area in the Wildlife Management Area grassland. An observation blind was constructed approximately 40m. from the pens. Three artificial burrows (Collins and Landry 1977, Henderson 1984) were placed along a fenceline bordering a heavily grazed pasture, containing over 48 natural burrows, 25 m from the pens.

The young owls were kept in hack pens with roof and sides made from cotton mesh fisheries netting (1.5 cm in diameter) strung along metal fence poles. In 1988 two pens were used, pen A was 7.6 m x 5.5 m x 1.7 m and pen B 4.8 m by 3.3 m x 1.7 m. The pens were placed 13 m apart. In 1989 a third pen approximately the same size as pen A was put up 10 m west of pen A. Artificial burrows were placed inside the pens.

Table 1

DISPOSITION OF INDIVIDUAL OWLS

1988 - 1989

BAND #	COLOR MARKERS	RELEASE DATE	LAST CONTACT DATE	DAYS OF SURVIVAL
1988				
	Rt. Lt.			
41	s/gr rd/yl	07/24/88	08/17/88	24+
42	s/gr rd/gr	07/24/88	08/17/88	24+
43	s/gr gr/yl	07/24/88	08/16/88	23+
44	s/rd gr/yl	07/24/88	08/14/88	21+
30	s/rd gr/yl	07/30/88	08/03/88	3
52	s/yl rd	07/24/88	08/17/88	24+ *
53	s/yl yl	07/24/88	08/17/88	24+
54	s/gr gr	07/24/88	08/15/88	22+
55	s/yl gr	07/24/88	08/14/88	21+
56	s/rd yl	07/24/88	08/17/88	24+
57	s/rd rd	07/24/88	08/16/88	23+
58	s/rd gr	07/24/88	08/06/88	13+
59	gr s/yl	07/24/88	08/05/88	12+
60	rd s/yl	07/24/88	08/17/88	24+
61	yl s/gr	07/24/88	08/16/88	23+
62	rd s/gr	07/24/88	08/17/88	24+
63	gr s/rd	07/24/88	08/17/88	24+
64	yl s/yl	07/24/88	08/15/88	22+
65	gr s/gr	07/24/88	08/17/88	24+
66	rd s/rd	07/24/88	08/16/88	23+
71	s gr/yl	08/17/88	---	-- **

DISPOSITION OF INDIVIDUAL OWLS

1988 - 1989

BAND #	COLOR MARKER	RELEASE DATE	LAST CONTACT DATE	# OF DAYS P-R	
1989					
	Rt.	Lt.			
67	sr	rd	07/18/89	8/21/89	34+
68	rd/yl	sr	07/18/89	8/21/89	34+
69	sr/rd	gr	07/18/89	8/21/89	34+
70	rd/gr	sr/rd	07/18/89	8/17/89	30+
73	sr/yl	rd	07/18/89	8/21/89	34+
74	rd	sr/yl	07/18/89	8/21/89	34+
75	sr/gr	gr/yl	07/18/89	8/19/89	32+
76	gr/yl	sr/gr	07/18/89	8/17/89	30+
77	sr	gr/yl	07/18/89	7/31/89	13
78	gr/yl	sr	07/18/89	8/21/89	34+
79	sr/gr	rd	07/18/89	8/12/89	25
80	gr/yl	sr/rd	07/18/89	8/21/89	34+
81	sr/gr	rd/yl	07/18/89	8/13/89	26
82	rd/yl	sr/gr	07/18/89	8/21/89	34+
Found dead (RTH) around 8/31 at HS					
83	sr/yl	rd/yl	07/18/89	8/21/89	34+
84	rd/yl	sr/yl	07/18/89	8/20/89	33+
85	sr	rd/gr	07/18/89	8/19/89	32+
86	rd/gr	sr	07/18/89	8/20/89	33+
87	sr/rd	rd/yl	07/18/89	8/20/89	33+
88	rd/yl	sr/rd	07/18/89	8/18/89	31+
89	sr/gr	rd/gr	07/18/89	8/20/89	33+
90	rd/gr	sr/gr	07/18/89	7/30/89	12
91	sr/yl	rd/gr	07/18/89	8/17/89	30
92	rd/gr	sr/yl	07/18/89	8/15/89	28
93	sr	gr	07/18/89	8/09/89	22
94	gr	sr	07/18/89	8/20/89	33
Found dead (RTH) around 8/31 at HS					
95	sr/rd	yl	07/18/89	8/20/89	33+

rd = red, s = silver (USFWS band), yl = yellow, gr = green

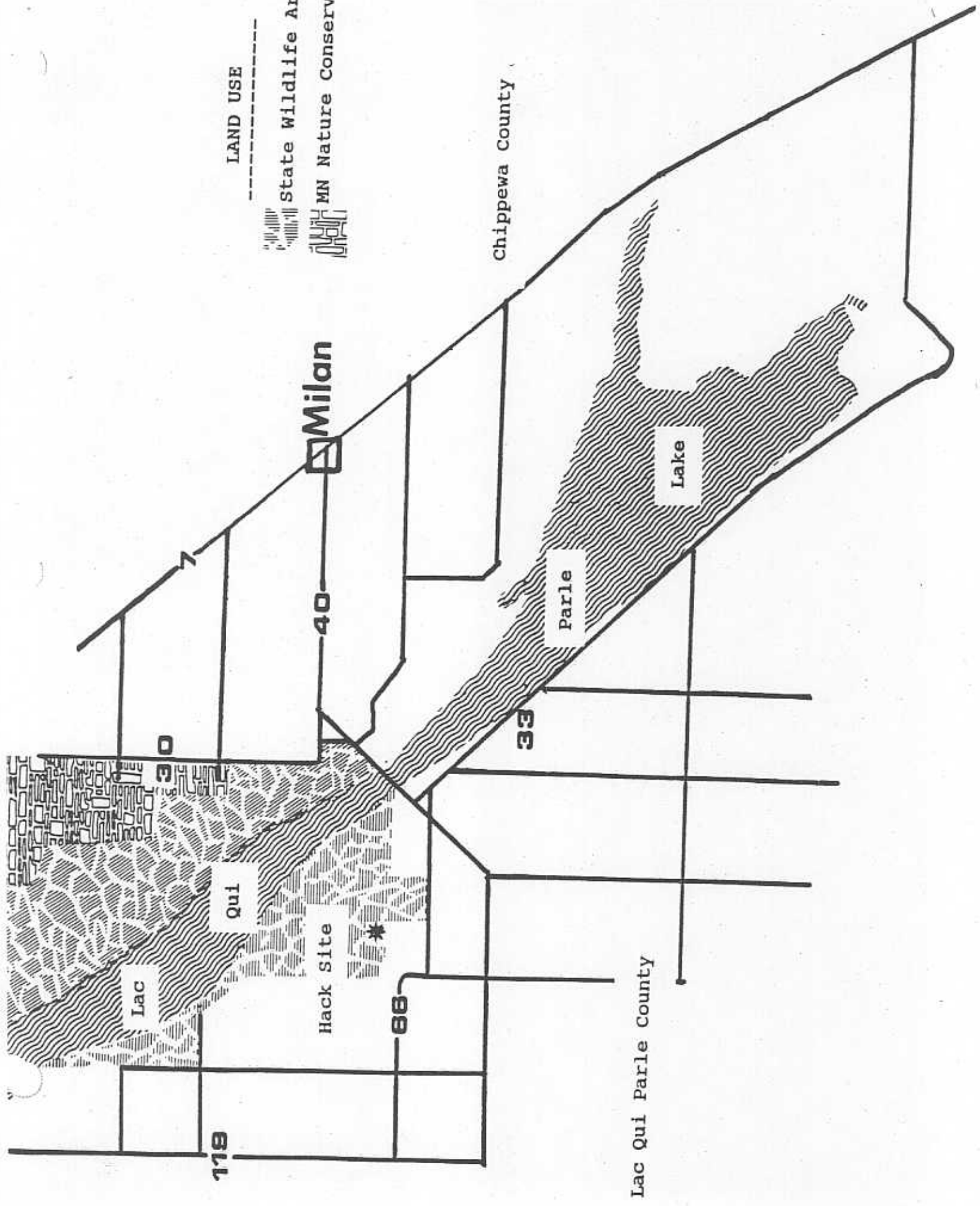
+ = Bird was last seen alive.

* Bird trapped in 1987, injured toe, released as SY in 1988 with radio collar, 3 August was recovery date of radio.



** Bird which broke leg earlier in summer, original band #51.

Figure 1

Lac Qui Parle Wildlife Management Area



LAND USE

-  State Wildlife Area
-  MN Nature Conservancy

Chippewa County

Lac Qui Parle County

Food was brought to the hack site in bags to prevent the owls from seeing humans with food. In both years the owls were fed dead laboratory mice and weanling rats daily while they were in the hack pen. Food was placed on 2 to 3 1 m x 1 m white "hack boards" inside each pen.

1988

In 1988 5 immature owls, one second year (sy) bird injured in 1987, and 3 adults were placed in pen A on 1 July. On 17 July, 6 more immatures were placed in A, and 9 in pen B. All of the juvenile birds were released on 24 July, the first group having been held for 23 days and the second group for 7 days. The adults were removed 18 August. Daily feeding at the hack site was continued for 33 days post-release (until 27 August). Feeding was cut back to every other day for 2 more weeks (until 10 Sept.) at which time it was discontinued.

No mortality was recorded in 1988. One bird suffered a broken leg on 13 July while in the hack pen. The break was repaired at The Raptor Center and the bird was released on 17 August at the hack site. The second year bird (#30 trapped in 1987) was released from the hack pen on 30 July with a radio collar. The bird's collar was recovered in the north pasture after it apparently fell off on 3 August and the bird was not seen again.

Of the remaining 19 birds all were accounted for until 14 days after their release (6 August). Eighteen of the 19 birds

(95%) were still being seen within 3 days of when daily monitoring of the hack site stopped (25 days after release). I considered these birds to have been successfully released. Ten birds were seen 30 days after release (53%), and 3 birds were seen on 2 September 41 days after release.

1989

In 1989 all 27 juveniles and 2 adults were brought to the hack site and placed in the pens on 9 July. The juveniles were released as a group on 18 July. Feeding and monitoring of the birds at the hack site continued on a daily basis for 33 days post-release (until 20 August) at which time the adults were removed. Feeding was cut back to every other day for the next 2 weeks and discontinued entirely after that.

Feather remains from one Burrowing Owl apparently killed by a Great Horned Owl (Bubo virginianus) were found on the morning of 31 July. After daily monitoring was discontinued an immature Red-tail Hawk (Buteo jamaicensis) began making daily feeding visits to the site (D. Soehren pers. comun). The hawk was seen taking food left for the Burrowing Owls, and was flushed off a Burrowing Owl carcass. Two other owl carcasses were recovered at the hack site during the same time period, and I attribute their deaths to this hawk.

This is the second time released Burrowing Owls in Minnesota have suffered mortality due to avian predation. The first occurrence was in 1986 when 3 owls were killed and 6 others

disappeared as a result of Great Horned Owls predation. This was the first known predation by a buteo on Burrowing Owls released in Minnesota.

Except for the mortalities noted above the releases in 1988 and 1989 were very successful. A total of 41 juvenile owls were released and survived for at least 3 weeks. The birds were observed hunting successfully in both years and pellet analysis done in 1988 showed an increasing use of wild-caught prey over the course of the summer.

PUBLIC CONTACT/EDUCATION

To solicit reports of Burrowing Owl sightings and promote the conservation of rare and endangered species in Minnesota an effort was made to increase public awareness of Burrowing Owls. This was done through posters, mailings, newspapers, radio, television, and live presentations. Much of this work was done by the education and public relations staff of the MDNR and TRC.

A color poster featuring 3 owls released in 1988 was produced by MDNR and distributed statewide during the winter of 1988-89 to promote the nongame tax checkoff. Burrowing Owls were used by MDNR personnel in 17 public appearances around the state. In addition, 47 articles or interviews promoting the reporting of Burrowing Owl sightings and the Nongame program were given (N. Gibson, MDNR, pers. commun.).

A black and white poster (Fig. 2) was produced in spring 1989 by TRC and MDNR. One thousand 17 x 11 in. copies were printed for distribution to MDNR personnel, and posting in conspicuous public locations. Another 10,000 8 x 11 copies were printed and sent to farm households in southwestern Minnesota along with Soil Conservation Service mailings.

Two live Burrowing Owls were put on public display at the Minnesota state fair in 1988, and at the Lac Qui Parle county fair in September of the same year. These birds are now on permanent display at the Gabbert Raptor Center on the University of Minnesota St. Paul Campus.

Figure 2
Request for Sightings Poster

Endangered Species



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Burrowing Owl

A small (9 - 11 inches), light brown owl, with long legs, short tail, and no ear tufts. Lives in burrows in grasslands, often seen perched during the day on fence posts or mounds of dirt.

Threatened Species



© 1984, State of Minnesota, Department of Natural Resources. Illustration by Veen Meng Wong

Short-eared Owl

A medium sized (15 inches) buffy brown owl, with a round face and very short ear tufts usually not visible. Its low flight pattern is very buoyant and shows the distinctive black patches at the owl's wrists. Nests and perches on the ground during the day in grasslands.

HAVE YOU SEEN THESE OWLS?

Sightings should include a detailed description specifying the identifying characteristics and other circumstances of the sighting.

Please include specific information on the location (to the 1/4 1/4 section or distance and direction from the nearest town or other conspicuous landmark), the date, observers name and address, and as many details as possible about the sighting particularly the surrounding habitat.

People reporting sightings that are confirmed will receive a colored poster of a Burrowing Owl.

Send sighting reports to:



The Raptor Center
University of Minnesota
1920 Fitch Avenue
St. Paul, MN 55108
(612) 624-4745

OR



Nongame Wildlife Program
Minnesota DNR

BOX 756, HWY. 15 S.
NEW ULM, MN 56073
PHONE: 507-354-2196

SURVEYS/NESTING BIRDS

Surveys for both returning hatched owls and wild nesting owls were conducted between April and August of 1988, and 1989.

Members of the Minnesota Ornithologists Union searched for owls in Lac Qui Parle and Chippewa counties in late April in both years as part of the clubs annual field trip to the area.

Participants were assigned locations that were prime owl habitat and they searched for owls for at least one hour before and two hours after sunset.

Between 17 May and 7 June 1988 a 109.4 km survey route involving 4 counties around the area of the hack site (Table 2) was conducted. The route was run between 0600-1000 hrs 3 times a week during this period. In 1989, 993 km of roads in 9 southwestern Minnesota counties were surveyed (Table 2). Owls were searched for in fields and roadsides using binoculars and a 15-60X spotting scope. In addition, Schladweiler and Martell checked all known nest locations from the 1980's, and reports generated from the public for nesting owls in both 1988 and 1989.

One owl was seen during the MOU survey in April of 1988. This bird which was sighted in western Lac Qui Parle county was not seen again after that. Nine nestings were recorded during the 2 years (Table 3) with a total of 21 young produced (range 2 - 8 young/nest). Fourteen of these young were banded and color marked with a red or green leg band. Habitat type selected included alfalfa field (33%), pasture (45%), roadside ditch (11%), and fence line between fields of row crops (11%).

Table 2

RETURNING OWL SURVEYS IN 1988 AND 1989

COUNTY	NUMBER OF KILOMETERS	
	1988	1989
Big Stone	48.3	115.9
Chippewa	8	57.9
Lac Qui Parle	37	371.7
Lincoln	--	59.5
Pipestone	--	74
Rock	--	109.4
Swift	16	9.7
Traverse	--	133.5
Yellow Medicine	44	70.8
Total	109.4	1002.5

This was the largest number of nestings reported in Minnesota, since 1965 (Grant 1965)

The nest locations are listed below along with production, banding information, and miscellaneous items.

LOCATION Pipestone County T105N R45W S20 (Pipestone 1)

HABITAT Roadside Ditch

YEAR OF ACTIVITY 1988

NUMBER OF YOUNG SEEN 1988 - 4

NUMBER OF YOUNG BANDED 1988 - 0,

MISC. Reported to John Schladweiler by area resident. Burrow was along side of road. One youngster was known to have been killed by a car after fledging.

LOCATION Pipestone County T108N R44W Sec 30 (Pipestone 2)

HABITAT Alfalfa field

YEAR OF ACTIVITY 1988 and 1989

NUMBER OF YOUNG SEEN 1988 - Min. 3, 1989 - 3

NUMBER OF YOUNG BANDED 1988 - 0, 1989 - 2

MISC. Located from poster mailing. According to the land owner this is the third straight year that this burrow has been active.

LOCATION Rock County T103N R45W Sec 7 (SW SE) (Rock 1)

HABITAT Rocky pasture surrounded by pasture land.

YEAR ACTIVITY 1988 - 1989

NUMBER OF YOUNG SEEN 1988 - Min. 3, 1989 - 5

NUMBER OF YOUNG BANDED 1988 - None, 1989 - 3

MISC. Reported in late summer 1988 after young fledged. When checked in 1989 there was the totally eaten remains of 2 burrowing owl legs and the left wing of an adult burrowing owl at the mouth of the burrow. Two adults had been seen during past visits, but at this time only the lighter colored bird of the pair was seen (which was probably the male). This leads both John Scladweiler and I to the conclusion that the female died and was eaten by the young.

LOCATION Rock County T104N R44W Sec15 (Rock 2)

HABITAT Actively grazed pasture with corn fields on 2 sides.

YEAR OF ACTIVITY 1989

NUMBER OF YOUNG SEEN 2

NUMBER OF YOUNG BANDED 1

MISC. Located from poster mailing.

LOCATION Rock County T103N R47W S13 (SE SE) County road 20 1 mile east of Min. Hwy 23 (Rock 3)

HABITAT Alfalfa field.

YEAR OF ACTIVITY 1989

NUMBER OF YOUNG SEEN 8

NUMBER OF YOUNG BANDED 8

MISC. Located from report generated by poster mailing. Field was mowed in the last few days before banding. Adults seen hunting on gravel section road. The pellets at the burrow had mostly grasshopper parts in them.

LOCATION Yellow Medicine County T115N R44W S8

HABITAT Fence Row

YEAR OF ACTIVITY 1988

NUMBER OF YOUNG SEEN 1988 - Min. 5

NUMBER OF YOUNG BANDED 1988 - 0,

MISC. Located from personal contact made by John Schladweiler at the Lac Qui Parle County fair. When checked by John Schladweiler and later by Mark Martell the owls had fledged. At least 7 owls were seen at the site in early Sept., at least 2 of which were immatures.

LOCATION Traverse County T126N R47W S24

HABITAT Pasture

YEAR OF ACTIVITY 1988

NUMBER OF YOUNG SEEN 1988 - Total of 5 birds seen in early Sept.

NUMBER OF YOUNG BANDED 1988 - 0,

MISC. Land Magazine

Table 3

BURROWING OWLS NESTING IN MINNESOTA
1988 - 1989

Year	County	Location	Habitat	No. Young	No. Banded
1988					
	Pipestone	T108N R44W S30	Alfalfa	>3	0
	Pipestone	T105N R45W S20	Roadside	>3	0
	Rock	T103N R45W S7	Pasture	>2	0
	Yellow				
	Medicine	T115N R44W S8	Fenceline	>2	0
	Traverse	T126N R47W S24	Pasture	>2	0
1989					
	Pipestone	T108N R44W S30	Alfalfa	>3	2
	Rock	T103N R47W S13	Alfalfa	8	8
	Rock	T103N R45W S7	Pasture	5	3
	Rock	T104N R44W S15	Pasture	2	1

Artificial nest boxes were placed at the Rock 1 and 2 and Pipestone 2 nest sites in October 1989. These boxes were placed to see if nesting pair or their offspring could be encouraged to return to these sites in subsequent years.

MANAGEMENT RECCOMENDATIONS

Future management of Burrowing Owls in Minnesota should involve research, habitat protection and management, and possibly, selected use of reintroductions.

More information on population status, including nesting success and mortality factors is needed. To do this continued landowner contacts using the black and white posters (Fig. 2), mailings, and the media should continue through 1991. An increased effort needs to be made in the counties north of Lac Qui Parle, a portion of the state which was historic range but no longer seems to be used by the owls. Nesting owls and their offspring should be banded and color marked and the nests monitored throughout the breeding season.

Habitat availability and use in Minnesota must also be explored. Active nest sites need to be analyzed for vegetative features, prey base, and burrow availability. These factors could then be used to census western Minnesota to determine the amount of habitat available to Burrowing Owls in Minnesota.

Longer range studies which are needed include examining the degree of philopatry shown by the birds nesting here. Again banding and color marking will be useful. This information is

also needed on stable populations and working with a larger population in South Dakota would be instructive. Location of the wintering ground, and migratory routes of Minnesota owls is needed. The possibility of high mortality factors or habitat loss occurring outside the state would nullify any attempts made to manage the species in Minnesota. The use of radio-telemetry on migrating birds may be one avenue to obtaining this information. Another possibility would be to work with researchers in Canada and the Dakota's and attempt to band and color mark large numbers of birds, then actively search for them in potential wintering areas.

Habitat management for Burrowing Owls in Minnesota should include preserving or creating areas of short vegetation. Because pastures and even alfalfa fields seem to be preferred nesting habitat large scale purchases of land is probably not needed. Rather incentives, either financial (through set-asides, or leases) or social (awards, recognition), should be used to maintain areas currently in use by nesting owls. Educating landowners to the value and uniqueness of this species and ensuring their cooperation will be the most successful long term strategy.

Burrows are of course an important component of Burrowing Owl habitat. Management for richardson's ground squirrels and badgers would be beneficial to Burrowing Owls in Minnesota. Artificial burrows are readily accepted by nesting pairs (Collins

and Landry 1977). Promotion of "Burrowing Owl Trails" similar to that done with Bluebirds and Wood Ducks may benefit Burrowing Owls in Minnesota. The Wildlife Club at the University of Minnesota (Dept. of Fisheries and Wildlife) has indicated an interest in continuing the nesting burrow project they worked on in the fall of 1989.

Without evidence of breeding by hacked owls it does not seem to be a wise course to begin a large scale reintroduction project in Minnesota. Using reintroduction to supplement wild production in Rock and Pipestone counties may be a good strategy.

Table 3

WILD BANDED BURROWING OWLS IN MINNESOTA

1988 - 1989

Date	Band #	Leg Marker	Location
7/17/89	614-10221	gr	Rock T104N R44W S15
(This bird had a cloudy left eye)			
7/20/89	614-10222	gr	Rock T103N R47W S13 (SE SE)
" "	614-10223	gr	" " "
" "	614-10224	gr	" " "
" "	614-10225	gr	" " "
" "	614-10226	gr	" " "
" "	614-10227	gr	" " "
" "	614-10228	gr	" " "
" "	614-10229	gr	" " "
" "	614-10230	rd	Rock T103N R45W S7 (SW SE)
" "	614-10231	rd	" " "
" "	614-10232	rd	" " "
7/21/89	614-10233	rd	Pipestone T108N R44W Sec 30
" "	614-10234	rd	" " "

All birds are HY, banded on left leg w/USFWS, rt leg w/color marker.

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