

Recovery of the Timber Wolf - 1987-88

by Richard Thiel

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SUMMARY

This report contains two reports detailing the recovery activities from July 1987 to June 1988 and status report for October 1987 to September 1988.

Wolves were monitored during winter using ground tracking and radio telemetry. Census data for the current population was obtained from 4 of the 6 packs present in the state.

Activities of 11 wolves were monitored with telemetry techniques. Pups were confirmed in the North Central Study Area in August 1988. In Northwestern Wisconsin, a litter mysteriously disappeared during the fall of 1987. Human intervention is suspected in this disappearance. In addition, the Rainbow Lake Pack was further reduced by the disappearance of its alpha female. Two wolves were killed by cars this year.

Litters were produced in 5 packs in 1987. Some pups survived through winter 1987-88 in four of the packs. In 1988, litters were produced in at least 4 Wisconsin packs.

Mortality data from 36 radio-collared wolves captured between 1979 and 1984 were calculated. An annual mortality rate of 38 % was determined.

The Wisconsin wolf population has managed to "hold its own" during the past 10 years. The current population was estimated at 27 to 29 wolves, an increase from last year's estimates.

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WISCONSIN DEPARTMENT OF NATURAL RESOURCES

BOX 7921

MADISON, WI 53707

RECOVERY OF THE TIMBER WOLF  
PERFORMANCE REPORT

1 July, 1987 to 30 June, 1988

Prepared by Richard P. Thiel, Wolf Biologist  
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Job: 104.1 Develop a Wisconsin Timber Wolf Recovery Plan  
104.2 Monitor Wolf Activity  
104.3 Implement a Recovery Plan

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Job 104.1: DEVELOP A WISCONSIN TIMBER WOLF RECOVERY PLAN  
OBJECTIVE: Develop a guideline to implement management strategies to recover the timber wolf population in Wisconsin.

Actions of the 12 member Wisconsin Timber Wolf Recovery Team, begun in January 1986, were continued during this reporting period. Between July and October 1987 the Team prepared a Draft Wisconsin Timber Wolf Recovery Plan (hereafter referred to as Draft Plan). The Team utilized data from an ongoing study on wolf ecology in Wisconsin, and public input (see 1986-87 Performance Report) in developing the Draft Plan. The Draft Plan was released in October 1987, and a public comment period lasted until mid December 1987.

The Team modified the Draft Plan based on public comments received (Table 1) and prepared a revised Wisconsin Timber Wolf Recovery Plan (hereafter referred to as the Revised Plan) between January and April 1988. Table 2 yields information on differences between the Draft Plan and the Revised Plan. The Revised Plan was submitted to the Director of the Bureau of Endangered Resources and the Administrator of the Division of Resource Management for approval on 26 April 1988.

In mid May 1988 the Bureau of Environmental Analysis and Review recommended preparation of an Environmental Analysis and Record of Decision prior to granting approval of the Revised Plan to comply with provisions of the Wisconsin Environmental Policy Act. By the end of this reporting period a draft Environmental Analysis was in the process of being prepared.

**Public Participation:**

A Draft Plan was released for public review between mid October and mid December 1987. Approximately 1300 copies of the Draft Plan were mailed out and/or requested. Between October 1987 and January 1988 Team members held 19 meetings with interested and affected publics regarding the Draft Plan. Two news releases were made during this period; one announcing the availability of the Draft Plan (October 1987) and another updating the situation of canine parvovirus links to pup losses in the state (April 1988).

**Anticipated Time Schedule for Project Completion:**

Preparation of an Environmental Assessment has necessitated a delay in the anticipated date for approval of the Revised Plan. The Environmental Assessment should be completed by mid October 1988 and the Record of Decision on the Environmental Assessment should be approved by mid-November. Approval of the Revised Plan will be sought once the assessments have been completed.

JOB 104.2 MONITOR WOLF ACTIVITY OBJECTIVE: Monitor wolf activity by live-trapping, and radio-tracking wolves in northern Wisconsin.

Seven radioed wolves were monitored between July 1987 and January 1988. One radioed wolf was killed by a car in Minnesota while dispersing from its Lincoln County, Wisconsin pack in January. Contact with another wolf ceased in February following radio failure. In May 1988 three wolves were captured and collared. Monitoring of these 9 wolves continues. For more detailed information on wolf population monitoring consult Section 6 Performance Report 101, Status of the Timber Wolf in Wisconsin, period 1 October 1987 to September 1988.

**JOB 104.3 IMPLEMENT RECOVERY PLAN OBJECTIVE:**

No tasks were performed under this objective and none are scheduled to commence until completion of Job 104.1.

Table 1. Major Issues of Concern Expressed by Public in Response to the Draft Wisconsin Timber Wolf Recovery Plan.

- 1). Wolf predation on deer vs availability of deer for recreational hunting.
- 2). Access management may limit ability to log and market forest products, or limit motorized recreational activities in certain areas.
- 3). Question the Government's ability to control depredating wolves; and ability to control excess wolves in a recovered population.
- 4). Fault the Department for not being aggressive enough, ie., stocking wolves.
- 5). Fault the Department for being too aggressive, ie., disease abatement activities, stronger protective measures, etc.
- 6). The Department will spend - too much/too little - .

Table 2. Differences Between Major Management Activities of the Draft Plan and Revised Plan (plan period equals 10 years).

<u>Draft Plan</u>	<u>Revised Plan</u>
* Goal = 60 to 100 wolves	* Goal = 80 wolves
* Public Education Programs	* Public Education Programs
* Increased Protective Measures	* Increased Protective Measures
* Cooperative Habitat Management with Landowners	* Cooperative Habitat Management with Landowners
* Population Monitoring	* Population Monitoring
* Disease Surveillance and Abatement	* Disease Surveillance and Abatement
* Livestock Damage Control	* Livestock Damage Control
* Continue Citizen Participation	* Continue Citizen Participation
	* Periodical Evaluations to Monitor Program Success
	* Establish Committee to Develop Program for Recovered Wolf Population
	* Volunteer Program

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STATUS OF THE TIMBER WOLF IN WISCONSIN  
PERFORMANCE REPORT

October 1, 1987 to September 30, 1988

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Prepared by: Richard P. Thiel, Wolf Biologist.

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Funds were not issued in a timely fashion during this reporting period and they were insufficient to cover all aspects of the present study. Emphasis this year was placed on radio telemetry activities. Winter ground tracking surveys were not carried out under Job 101.1; no activities were conducted under Job 101.2; and only 2 field days were committed to work under Job 101.3.

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Job 101.1: MONITOR WOLF ACTIVITY

Objective: Monitor wolf activity in Northwestern and North-central Wisconsin by telemetry and ground work.

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Winter Population Census: Wolf censuses are conducted each winter in Wisconsin using ground tracking and radio telemetry information. This census reflects the population at its annual low point immediately prior to parturition (April); hence it reveals carry-over numbers and reflects year-to-year survival trends in this fragile wolf population.

Radioed wolves from 6 Wisconsin wolf packs were monitored during this period. Population census data was obtained from 4 of the 6 packs. In addition one radioed wolf provided information on wolf activity along the Wisconsin-Minnesota border. Sign observed during May 1988 trapping was used to supplement the winter census; activity of a pair of wolves was noted in an area without the aid of telemetry work.

The mid-winter 1987-88 Wisconsin timber wolf population (including the WI-MN border area) was estimated at 27 to 29 wolves (26 to 27, excluding TP II pack on the border)(Table 1). The 1987-88 estimate represents an increase from 18 to 20 wolves estimated in the previous winter and continues a 2 year trend of increases following a low estimate of 15 wolves in 1985-86.

Based on 5 radioed packs in Wisconsin during winter 1987-88 (Table 1), winter pack size averaged 3.2 wolves compared to 3.3 in 3 radioed packs during the previous winter. Based on the radioed packs, a mid-winter density of 1 wolf per 16 square miles (24 wolves per 1000 km<sup>2</sup>) was observed in occupied Wisconsin wolf ranges. This represents an increase over the previous winter's density estimate of 1 wolf per 19 square miles.

Telemetry Activities: Four wolves were captured in 508 trapnights (TN) effort in 1988 (1 wolf/127 TN)(Table 2). Capture data on the 4 wolves are given in Table 3. The activities of 11 wolves were monitored via telemetry during this period. Data on these wolves are presented in Table 4.

Significant Population Events, 1987-88:

Douglas County Study Area (DCSA): The 35 Pack (formerly known as the Hwy duo) produced a litter in 1987, but pups were not detected until telemetry flights during winter confirmed their presence. This pack also produced a litter in 1988, as evidenced by 059F who was lactating at capture in May. No surveys were conducted during summer 1988 to monitor pup survival.

An aged wolf, presumed to be the alpha female of the Moose Lake pack (MLP), continued to be observed with wolf 081F, radioed as a pup in fall 1985. During the 1987 deer season a hunter reported seeing 3 wolves, and ground tracking and visuals from flights during winter confirmed the occasional presence of a third wolf. Breeding is not suspected in this pack in 1988.

Sign of a pair of wolves was found in the old Bear Lake pack territory, located between 35P and MLP territories. Reproductive status of wolves in this area is not known.

Wolf 129F's movements basically outlined the boundaries of the Tripod II pack territory (as determined via 059F's telemetry locations in 1985-86) in northeastern Pine County, MN. However, in February she localized near the town of Kingsdale, MN and has remained in a 5 square mile area in that vicinity since. On one occasion she was seen with another wolf.

No monitoring of wolves in the Nemadji State Forest was possible this year because no wolves were radioed there. The status of this pack, or of wolves occurring between Highway 23 and the state line in Minnesota, is not known.



Northwestern Wisconsin (NWWI): The 1987 litter produced by the Rainbow Lake pack disappeared suspiciously between late August and early October. At least 2 to 3 pups were present there at the end of summer. Between 7 and 13 January, 1988 the pack was further reduced by the disappearance of the alpha female. The radioed alpha male, wolf 107, has remained alone in the RLP territory. No reproduction is expected in RLP.

Sign of a lone wolf was observed in May around Gordon, WI. A few ground checks in the Moose Lake - Venison Creek area of Sawyer County has not turned up evidence of wolves, despite reports of such activity.

North Central Study Area (NCSA): Five wolves were observed in the Bootjack pack in September 1987, but by early November and throughout the winter the pack consisted of 2 adults (one is alpha female wolf 099), and 2 pups. Wolf 099 denned in April 1988 and 2 to 3 pups were present throughout summer 1988. One yearling male, wolf 109, who was originally captured as a pup in 1987, was captured and collared in July 1988 (Table 3 & 4).

In November 1987 7 wolves were seen in the Averill Creek pack, including collared yearling male wolf 069 and 2 pups. Shortly thereafter wolf 069 dissociated from the pack, and in February 1988 he dispersed and was struck by a car on Interstate Highway 35 about 20 miles southwest of Duluth near Mahtowa, MN (Figure 1). The wolf dispersed 155 miles northwest in a maximum of 27 days. In May wolf 119F was collared in ACP. Two to 3 pups were confirmed in ACP in July 1988.

Wolf 071 produced a litter of pups in 1987 but remained undetected until early November when 2 adults and 2 pups were aerially observed. In early February 1988 wolf 071's radio failed and contact with Ranger Island pack (RIP) was lost. Location data indicated that she remained in ACP through the 1987 breeding season and up until just prior to denning. She denned along what was considered the northeast boundary of ACP. Subsequent movements indicated she held a home range of about 20 square miles. In May 1988 yearling female wolf 113 was captured in RIP. Pups were confirmed present in August on a homesite near a cattle farm where a single case of livestock loss was reported. An investigation concluded that a black bear had killed the cow and wolves had scavenged on the remains.

Northeastern Wisconsin: Reports of wolves were received from various areas in the northeast. Sign of a wolf was observed in the vicinity of Tipler, WI. Several parties reported sign of a group of 3 wolves east of Eagle River, and sign of a group of 4 wolves was reported south of Rhinelander. A single wolf was killed by a car near McNaughton in Oneida County in early May 1988 in an area where widespread reports of a wolf or wolves had been reported since fall 1987.

Pup Production and Survival: Litters were produced in 5 packs in Wisconsin in 1987 (35P; RLP; BJP; RIP; ACP). Some pups survived through winter 1987-88 in all but the RLP. That pack's litter disappeared during September 1987; human molestation is suspected. Two pups each survived in the 35P, BJP, RIP and ACP, for a total net production of 8 pups in 1987.

Litters were produced in at least 4 Wisconsin packs in 1988 (35P; BJP; RIP; ACP). Based on limited ground work there were 2-3 pups in BJP, 5-6 pups in RIP and 2-3 pups in ACP during mid-summer.

Human Activities/Access Studies Update: Aerial car count transects were established in a 21 square mile area of the DCSA in 1980, and these were expanded to an 11.75 square mile area of ACP in 1986 and an 8.25 square mile area of RLP in 1987 to obtain an index of human use of existing roads in certain Wisconsin wolf ranges. Road densities (ie. roads open to public travel - US Forest Service road standard equivalency of types A, B and C [Anon. N.d.]) in DCSA are beneath, while those in ACP and RLP (Table 6) approach and exceed the upper threshold of 1 mile per square mile described by Thiel(1985) and Mech et al. (1988). Flights in DCSA occurred only during Opening Day of deer season, while flights in ACP and RLP were conducted throughout fall (Figure 2).

An average of 2 to 4 cars were counted per flight throughout September, October and the pre-deer gun season days of November in ACP and RLP. During opening day of the deer gun season 63 and 68 cars were counted in ACP in 1986 and 1987, respectively, and 94 cars were counted in RLP. This represented in excess of a 15 fold increase in cars (and hence human activity) over pre-deer season levels (Figure 2).

Opening Day deer season car counts were significantly correlated with Road Densities ( $r=0.998$ ;  $P>.99$ )(Table 6). Similarly, a significant correlation existed between Opening Day car densities and Road Densities ( $r=0.974$ ;  $P>.95$ ). Conversely, car densities were not related to deer densities ( $r=0.594$ ). Hunter densities were more related to the level of roading than to deer densities.

Wolf reaction to human activity varies. In DCSA, where road densities are below threshold, wolf daytime locations during the deer season were generally in areas of their respective ranges greater than one half mile from roads. Few areas over half a mile from the nearest road exist in areas of Wisconsin where road densities approximate or exceed the threshold level. An important feature of such "marginal" wolf ranges is the presence of gated areas where public vehicular access is controlled.



Gated areas offer another example of how wolves learn to avoid excessive human activity. In the BJP a gated area owned by an industrial forest was utilized extensively during the fall hunting seasons by several radioed wolves. Vehicular access into the area was limited to persons involved in forest management and timber cutting during the hunting seasons. In ACP a gated area of privately owned hunting camps was utilized extensively by ACP wolves (085F, 069M) during spring and summer. But in fall, when hunters using these camps were active, wolf activity in this area was no more pronounced than in surrounding public and industrial forest lands. At that time human activity was evenly distributed both in public forest lands and in the 18.5 mi<sup>2</sup> of private hunting parcels behind the gates.

Vulnerability of wolves to humans is greatest during autumn and peaks during the deer season (See Mortality). This is further reinforced by the observation that wolf avoidance of roads (and thus humans) is more pronounced during fall than any other season.

Human activity associated with timber cutting operations, snowmobiling, and cross-country skiing was not known to have elicited avoidance behavior by radioed wolves.

Mortality: Two wolves were known to have died during the reporting period; both were hit by vehicles. Wolf 069M dispersed from ACP sometime after 29 January, 1988 and was struck by a car while crossing Interstate Highway 35 near Mahtowa, Minnesota on 25 February. An uncollared female wolf was killed by a car on Highway 47 near McNaughton on 6 May, 1988. This animal may have been a captive stray.

Mortality data from 36 radio-collared wolves captured between 1979 and 1984 were calculated using the technique described by Heisey and Fuller (1985). The only source of human caused mortality in this sample was from gunshot; natural sources included interspecific strife and disease. Table 7 lists the seasonal specific survival rates and daily survival rates within each season. As noted in Table 7, mortality caused by humans is greatest during fall, peaking during deer season. Natural mortality is limited to winter.

An annual mortality rate of 38 percent was determined using this same method. Keith (1983) expressed concern over the status of wolf populations subjected to mortality in excess of 30 percent. The Wisconsin wolf population, while displaying instability, has managed to "hold its own" during the past 10 years.

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JOB 101.2 : DETERMINE WOLF HABITAT

Objective: Determine suitable wolf habitat in northern Wisconsin.

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No work was conducted on this job.

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JOB 101.3 : MONITOR WOLF ACTIVITY ALONG THE WISCONSIN - UPPER  
MICHIGAN BORDER

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Ground tracking was conducted on 6 January, 1988 in cooperation with the Michigan Department of Natural Resources. Probable wolf sign was found once again along the Cedar River drainage basin in Menominee County, Michigan.

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Table 1. Wisconsin Wolf Population Estimates, 1985-86 through 1987-88.

Table 4. Socio-spacial dynamics of radioed wolves monitored in 1987-88.

<u>Wolf #</u>	<u>Capture Date</u>	<u>Sex</u>	<u>Age</u>	<u>No.</u> <u>Locations</u>	<u>Territory</u> <u>Size (mi<sup>2</sup>)</u>	<u>Pack</u>	<u>No.</u> <u>Wolves</u>
DCSA							
081	10-13-85	F	3*	165	est. 65	MLP	2-3
063	05-20-86	M	A	128	26	35P	4
059	05-12-88	F	A	8	26	35P	4
129	05-14-87	F	A	66	117	?	1
NWWI							
107	05-22-87	M	A	68	53	RLP	1
NCSA							
099	08-08-87	F	6*	50	36	BJP	4
109	07-22-88	M	1*	8	no est.	BJP	4+
069	05-11-87	M	1*	48	57	ACP	< 7
119	05-13-88	F	Y	9	no est.	ACP	no est.
071	07-25-86	F	Y	93	20	RIP	4
113	05-20-88	F	Y	10	no est.	RIP	no est.

\*known age - originally captured as pup.

Table 5. Annual fluctuations in wolf densities in Wisconsin based on radioed packs.

Winter	Cumulative Territory		No. of Wolves	W o l f   D e n s i t y			
	DCSA	State		DCSA		Statewide	
				mi <sup>2</sup> /wolf	wolf/1000km <sup>2</sup>	mi <sup>2</sup> /wolf	wolf/1000km <sup>2</sup>
1980-81	344		12	28.6	13.5		
1981-82	326		13	25.1	15.4		
1982-83	378		10	37.8	10.2		
1983-84	275		12-13	22.0	17.5		
1984-85							
1985-86	193		6	32.2	12.0		
1986-87 <sup>1</sup>	105(4)	190	10	26.3	15.0	19.0	20.0
1987-88 <sup>1</sup>	68(7)	177	14	9.75	39.6	12.6	30.5

<sup>1</sup>Figures in ( ) indicate no. of wolves counted in radioed DCSA packs, and figures appearing in No. of Wolves column are total statewide.

Table 6. Road densities, human activity measured via aerial car counts, and estimated fall deer densities in selected Wisconsin wolf ranges, 1987.

Pack	Pack Road Density	Opening Day Deer Season Car Count	Car Density Opening Day	Deer SAK Estimate
DCSA	0.60	61	2.8	13
ACP	0.87	68	3.0	24
RLP	1.59	94	7.6	25

Pack Road Density= No. A, B, and C (US Forest Service road standard type) roads open to public travel per square mile.

Car Density Opening Day= No. of cars counted in the survey area on opening day of the deer season per square mile (periphery road car counts were halved before making car density calculations).

Table 7. Seasonal and daily survival rates of radio-collared timber wolves from Wisconsin, 1979-84 (calculated using Heisey and Fuller, 1985) based on deaths caused by gunshot and through natural means.

Spring	Summer	Fall	Deer Season	Winter*
Season Interval:				
1.000	1.000	0.901	0.890	0.779*
				0.940**
Daily Interval:				
1.000	0.999	0.997	0.987	0.997

\*Natural mortality occurred only in winter season.

\*\*Value excluding natural mortality factor.

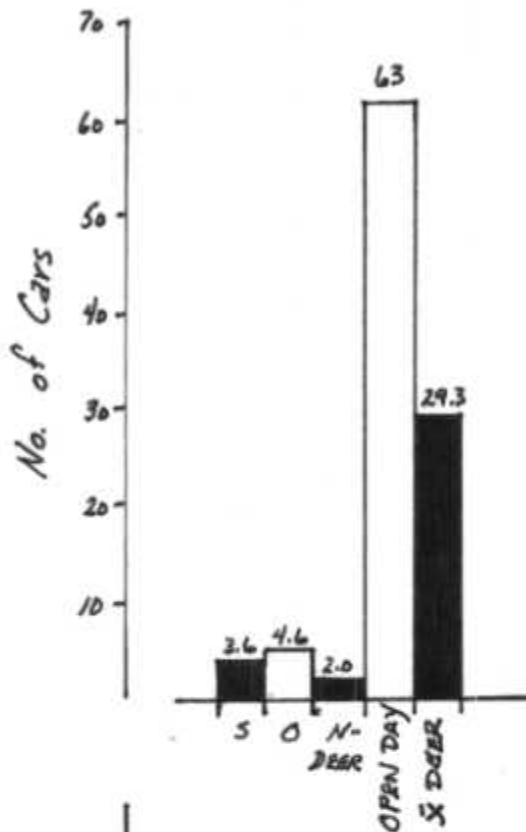


Figure 1. Dispersal of wolf 069 from ACP, in relation to known Wisconsin wolf packs and the limits of the contiguous northern forest area of Wisconsin.

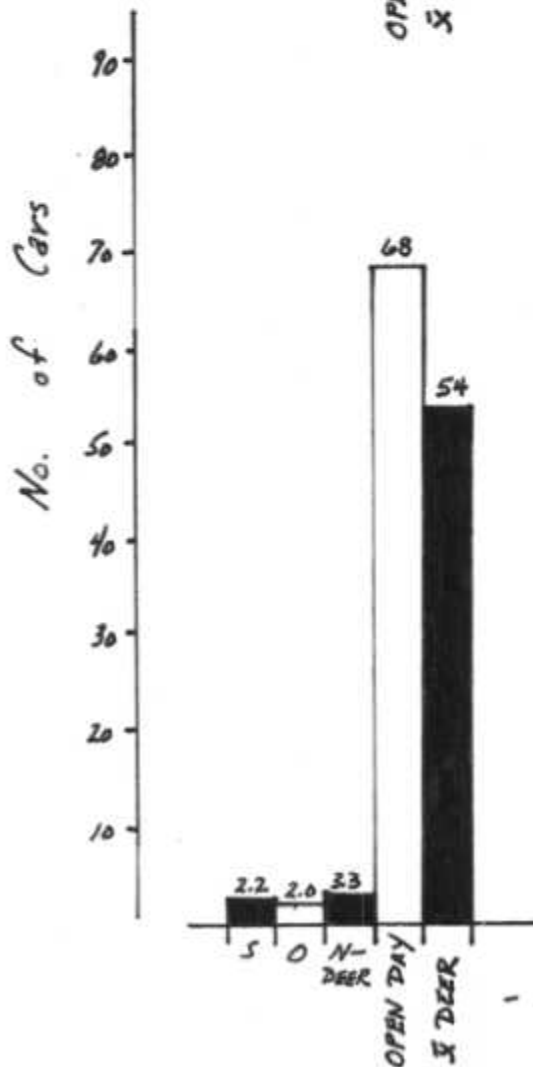


ACP

RLP



1986



1987

- Months -

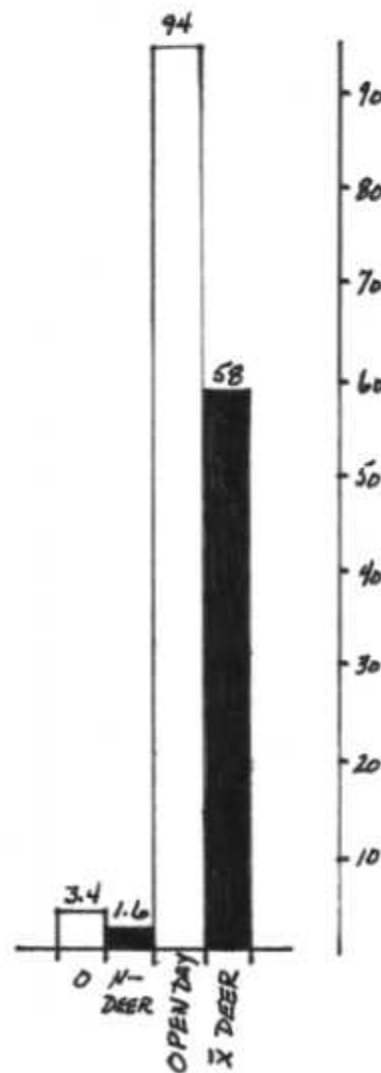


Figure 2. Fall aerial counts on road transects in ACP and RLP wolf ranges, 1986 and 1987. Numbers above bars represent monthly means, except opening day which gives the total count. N-deer = November non-deer season days; x deer = mean deer season counts.