

## Predation in the reindeer husbandry area in Finland during 1976–86

Rovdjursskador inom det finska renkötselsområdet under åren 1976–86.

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*Summary:* During the last ten years the number of semi-domesticated reindeer has increased markedly in Finland. During the years 1976–86 predators killed a total of 11 295 reindeer in the Finnish reindeer husbandry area. Predators killed mostly calves and hinds. With the exception of the Käsivarsi and Muotkatunturi reindeer herding cooperatives, kills of predators were concentrated in the reindeer herding areas on the eastern border. During 1976–86 predators killed most reindeer in April – June, and the majority of preys were calves. Most reindeer were killed by wolves (26.9%), bears (24.7%), wolverines (22.6%) and eagles (15.9%). Wolves, bears, wolverines and lynxes killed mainly adult reindeer, eagles killed mainly calves. Wolves killed reindeer mainly during October – January, lynxes during January – April, wolverines during February – April, eagles during May – July and bears during May – October. During the last years the number of reindeer killed by lynxes has increased in Finland.

**Key words:** reindeer, large predators, losses, wolves, bears, wolverines, lynxes, eagles

**Rangifer**, 8 (1): 25–34

**Nieminen, M. & Leppäluoto, J.** 1988. Petovahingot Suomen poronhoitoalueella vuosina 1976–86.

*Yhteenveto:* Viimeisen kymmenen vuoden aikana porojen määrä on lisääntynyt suuresti Suomessa. Vuosina 1976–86 pedot tappoivat Suomen poronhoitoalueella yhteensä 11 295 poroa. Pedot tappoivat pääasiassa vasoja ja vaatimia. Käsivarren ja Muotkatunturin paliskuntia lukuunottamatta petovahingot kohdistuivat lähinnä poronhoitoalueen itrajalla oleviin paliskuntiin. Vuosina 1976–86 pedot tappoivat poroja eniten huhtikesäkuun aikana. Eniten pedot tappoivat tuolloin vasoja. Eniten poroja tappoivat sudet (26.9%), karhut (24.7%), ahmat (22.6%) ja kotkat (15.9%). Sudet, karhut, ahmat ja ilvekset tappoivat pääasiassa aikuisia poroja, kotkat vasoja. Sudet tappoivat poroja lähinnä loka-tammikuussa, ilvekset tammi-huhtikuussa, ahmat helmi-heinäkuussa ja karhut touko-lokakuussa. Viime vuosina ilvesten tappamien porojen määrä on kasvanut Suomessa.

**Rangifer**, 8 (1): 25–34

**Nieminen, M. & Leppäluoto, J.** 1988. Rovdjursskador inom det finska renkötselsområdet under åren 1976–86.

*Sammandrag:* Under de senaste tio åren har antalet tamrenar ökat betydligt i Finland. Under åren 1976–86 dödade rovdjur totalt 11 295 renar i finska renkötselområdet. Kalvar och vajor utgjorde huvuddelen av dessa. Med undantag av Käsivarsi och Muotkatunturi renbeteslag, var rovdjursrivningarna koncentrerade i renbeteslagen närmast östra gränsen. Under åren 1976–86 blev de flesta renar rivna i april–juni. Av dessa var det flest kalvar. Varg tog flest renar (26,9%), björn 24,7%, järv 22,6%, och örn 15,9%. Varg, björn, järv och lo dödade mestadels vuxna renar, medan örn i huvudsak tog kalvar. Varg dödade ren väsentligen i månaderna oktober–januari, lo i januari–april, järv i februari–april, örn i maj–juli och björn genom månaderna maj–oktober. De senaste åren har antalet renar rivna av lodjur ökat i Finland.

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## Introduction

The reindeer husbandry area in Finland is about 122 317 km<sup>2</sup>. The total number of semi-domesticated and freely grazing reindeer during summer is about 366 000. About 100 000 calves (birth-weight 4–6 kg) are born every spring during May and June. During winter 1986/87 the number of counted reindeer (over 1-year-old) was 230 465. About two-thirds of Finnish reindeer live all year round in forests where there is deep snow during winter. During the last 10 years the number of reindeer has increased in different reindeer herding cooperatives, especially in the north (Fig. 1). It was estimated that there were 476 large predators (249 bears (*Ursus arctos*), 77 wolves (*Canis lupus*), 63 wolverines (*Gulo gulo*) and 87 lynxes (*Lynx lynx*) in 1984 in the Finnish reindeer herding area in 1984.

All semi-domesticated reindeer in Finland belong to Finns and Lapps. If a reindeer is killed or injured by predators, and if certain requirements are met, the reindeer's owner may receive compensation from state funds. One important requirement is that the prey must be found. During 1974–86 together 30 million FIM (mean 2.31 million FIM/year) was paid from predator damage funds to reindeer herders in Finland. The compensation system has been criticized by reindeer owners who claim that many kills, mainly calves, are never found. Reindeer owners can also not receive compensation for the time and work involved in searching for prey and in preventing predation.

This paper presents data on predation in the reindeer husbandry area in Finland during different seasons.

## Material and methods

Data about damage from predation in the reindeer husbandry area in Finland during 1976–86 were collected from the statistics of the Reindeer Herding Association (Paliskuntain Yhdistys).

## Results

The number of reindeer killed by predators in Finland has decreased during the last years (see Nieminen & Leppäluoto 1985).

Predators killed a total of 11 295 (mean 1 027 per year) reindeer in Finland during

1976–86. The highest number were in 1976 (1 661 reindeer) and 1977 (1 620 reindeer); Predators killed mostly calves and hinds (Figs 2 & 3). The highest number of reindeer was killed in Inari, Kuusamo and Sodankylä reindeer marking districts and in the reindeer herding co-operatives of Käsivarsi (1 058 reindeer), Sallan pohjoinen (826), Kemin-Sompio (802), Muotkatunturi (692), Ivalo (671), Hossa-Irni (669) and Salla (632) (Table 1, Fig. 4). With the exception of the Käsivarsi and Muotkatunturi reindeer herding co-operatives, predator damage was concentrated in herding areas on Finland's eastern border (Fig. 4 & Fig. 5).

Most reindeer during 1976–86 were killed by predators in April – June. The majority of reindeer killed by predators in May and June were calves (Fig. 6). Most reindeer were killed by wolves (26.9%), bears (24.7%), wolverines (22.6%) and eagles (15.9%) (Table 2, Fig. 7). Wolves, bears, wolverines and lynxes killed mainly adult reindeer, eagles killed mainly calves (Fig. 8). Wolves killed reindeer mainly during October – January; lynxes killed mainly during January – April; wolverines killed mainly during February – April; eagles killed mainly during May – July and bears killed mainly during May – October (Fig. 9).

The largest number of reindeer killed by wolves was in the Lappi and Sallan pohjoinen herding areas (Fig. 10). The largest number killed by wolverines was in Käsivarsi herding area (Fig. 11). The largest number killed by bears was in the Hammastunturi and Ivalo herding areas (Fig. 12). The largest number killed by eagles was in the Käsivarsi and Muotkatunturi herding areas (Fig. 13). The largest number killed by lynxes was in the Hossa-Irni herding area (Fig. 14). The proportion of reindeer killed by lynxes compared to other predators, has increased since 1982 (Fig. 15).

## Reference

- Nieminen, M. & Leppäluoto, J. 1985. Rovdjurskadorna inom Finlands renskötselområde under åren 1976–83. — *Rangifer* 5 (1): 15 – 25.

Table 1. Numbers of reindeer killed by predators during 1976–86 in different reindeer herding co-operatives in Finland.

*Tabell 1. Antalet renar dödade av rovdjur i olika renbeteslag i Finland under åren 1976–86.*

Co-operatives	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	Total
Paistunturi	9	48	4	13	2	5		3	3	7	3	97
Kaldoaivi				9					1		6	16
Näätämo			6	7	4	5			73	50	6	151
Muddusjärvi	17	14	37	26	15	20	10	19	21	2	6	187
Vätsäri	12	16	6	20	7	13	5	4	14	20	14	131
Ivalo	71	135	61	104	63	49	33	18	27	71	39	671
Hammastunturi	94	111	49	112	73	48	11	18	21	25	11	573
Sallivaara		70	75	75	40	33	17	27		12	6	355
Länsi-Inari	335											
Muotkatunturi		154	120	86	85	38	12	8	36	141	12	692
Näkkälä	20	24		3		5	7	6	1	6	12	84
Käsivarsi	152	196	192	100	135	34	7	57	114	69	2	1058
Muonio				7	5	14	10	5	3		1	45
Kyrö	6	1		16		1	2	5	45	2		78
Kuivasalmi	13	17		5						1		46
Alakylä	10	13	2	9	1	7	3	8	4	4	2	63
Sattasniemi	31	24	14	19	4	17	6	14	2	16	8	155
Oraniemi	15	6	11	2		8			1	4		47
Syvjärvi	13	25	22	16	15	17	6	8	5	19	7	153
Pyhäjärvi			3	1			17		2	8		31
Lappi	201	150	68	60	134	43	9	20	32	12	25	754
Kemin-Sompio	226	208	129	76	31	16	18	27	40	24	7	802
Sallan pohjoinen	123	38	146	66	119	40	71	29	71	97	26	826
Salla	81	49	34	56	92	17	56	61	85	81	20	632
Hirvasniemi			10	3	6	3	2	9	1	13	7	54
Kallio	4	11	1		3				3	3	2	27
Vanttaus		6		1	3							10
Poikajärvi	7	3	2	5	2	23	1	2				45
Lohijärvi				1						1		2
Palojärvi	10			10	4	6		6	2	9	11	58
Orajärvi		1						1	6		5	13
Kolarin alanen						6		3			5	14
Jääskö								1				1
Narkaus				3		4	4	6	26	8	3	54
Niemelä	3		2	11	4	2	3	5	4	9	9	52
Timisjärvi	2	20	4		2		3	7		3	3	44
Tolva	2		2	3	4	10		7	7	6	3	44
Posion Livo		5		9	2	4	21		8	14	7	70
Isosydänmaa	4		1				16		12	7	5	45
Mäntyjärvi						2	7	11	6	27	4	57
Kuukas			1				1		2	3	3	10
Alakitka	115	50	24	122	38	9	14	12	43	33	38	498
Akanlahti	4	8	4	2		8	3	7	2	1		39
Hossa-Irni	32	27	66	113	63	44	137	68	55	27	37	669
Kallioluoma		54	27	92	46	44	44	17	38	32	20	414
Oivanki	18	21	25	26	17	8	6	16	13	35	10	195
Jokijärvi	2		5	22	4		3	3	6	12	4	61
Taivalkoski	11		14	11	10	4	5	6	6	7	10	84

Table 1. contd.:

Co-operatives	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	Total
Pudasjärvi		11	25	3	5	9	2	6	1	23	14	99
Oijärvi							1	2		2	2	7
Pudasjärven Livo	6	2			5	3	10	10	7	12	14	69
Pintamo	2	9	5	22		5	12	5	3	3	7	73
Kiiminki-Kollaja							15	1	1	7	1	25
Ikonen	4		6			1			1	3		15
Näljänkä	6		2	8	2	1	2		1	4	7	33
Halla		93	29	111	11	14	43	20	78	25	8	432
	1661	1620	1234	1466	1056	640	655	568	933	1010	452	11295

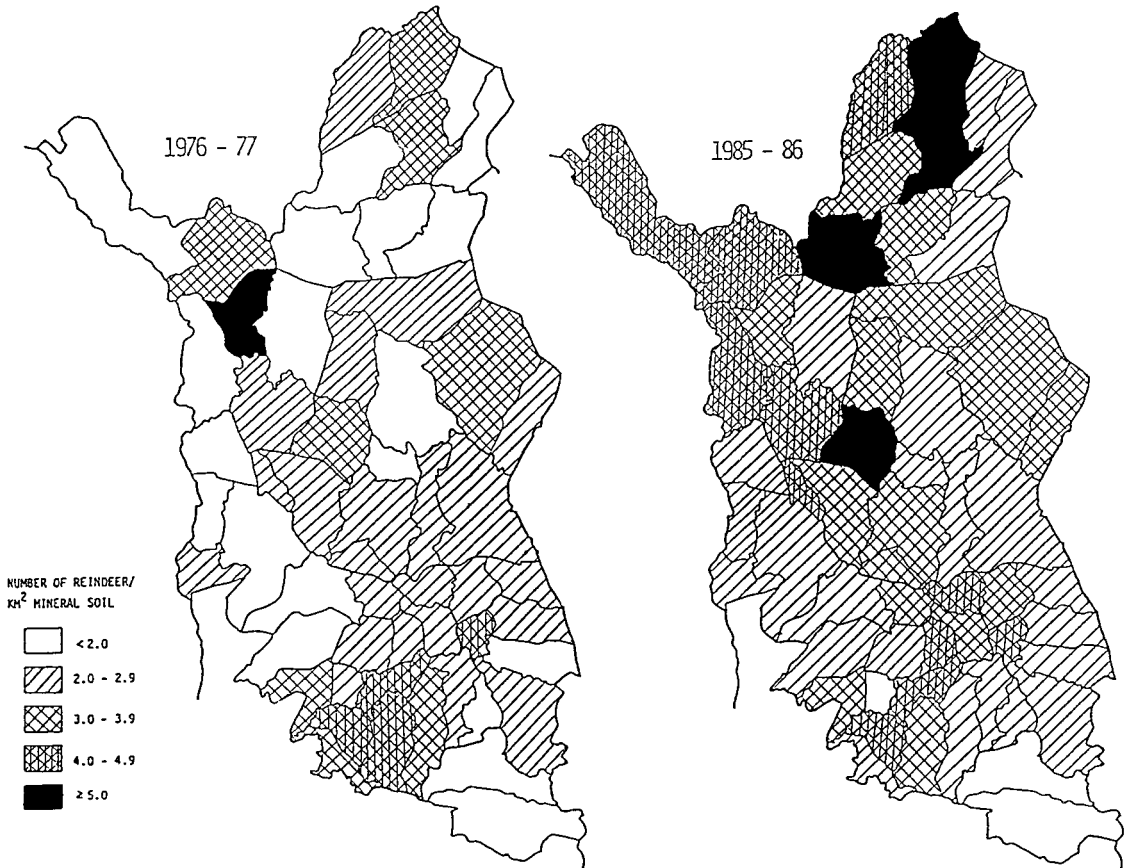


Fig. 1. Numbers of reindeer (over 1-year-old) counted in different reindeer herding co-operatives in 1976-77 and 1985-85 in Finland.

Fig. 1. Antalet renar (över 1 år gamla) räknat i olika renbeteslag i Finland i 1976-77 och 1985-86.

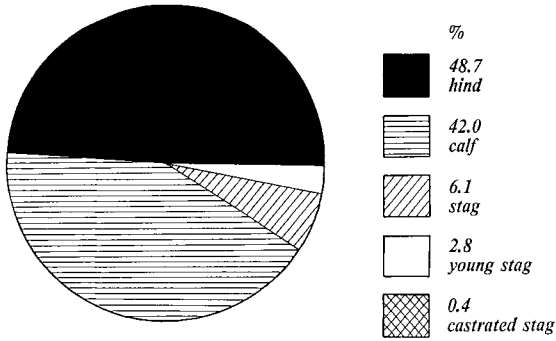


Fig. 2. Proportion (%) of different types of reindeer killed by predators during 1976-86 in Finland.

Fig. 2. Andelen (%) av olika rentyper dödade av rovdjur under åren 1976-86 i Finland.

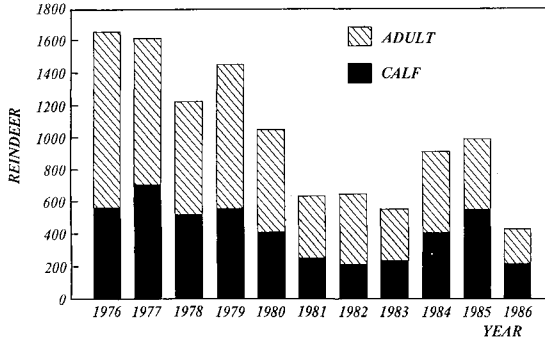


Fig. 3. Number of adult reindeer and calves killed by predators during 1976-86 in Finland. Almost half of the reindeer killed by predators were calves (black).

Fig. 3. Antalet vuxna renar och kalvar rivna av rovdjur under åren 1976-86 i Finland. Nästan hälften av de rovdjursrivna renarna var kalvar (svart).

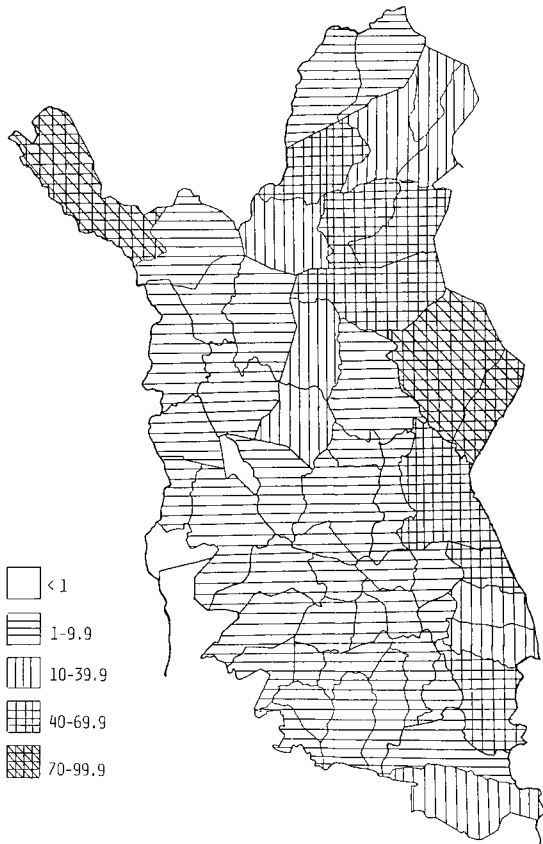


Fig. 4. Average number of reindeer killed by predators during 1976-86 in different reindeer herding co-operatives in Finland.

Fig. 4. Genomsnittlig antal renar dödade av rovdjur 1976-86 i olika renbeteslag i Finland.

Table 2. Reindeer killed by various predators during 1976-86 in Finland.

Tabell 2. Renar dödade av olika rovdjur i Finland under åren 1976-86.

	Wolf	Bear	Wolverine	Lynx	Eagle	Other	Total
Adult Stag	200	200	256	29	1		686
Castrated stag	18	17	11	1			47
Young stag	80	74	120	23	18		315
Adult hind	1870	1547	1681	363	36	4	5501
Calf (female + male)	873	952	483	305	1739	394	4746
<b>Total</b>	<b>3041</b>	<b>2790</b>	<b>2551</b>	<b>721</b>	<b>1794</b>	<b>398</b>	<b>11295</b>

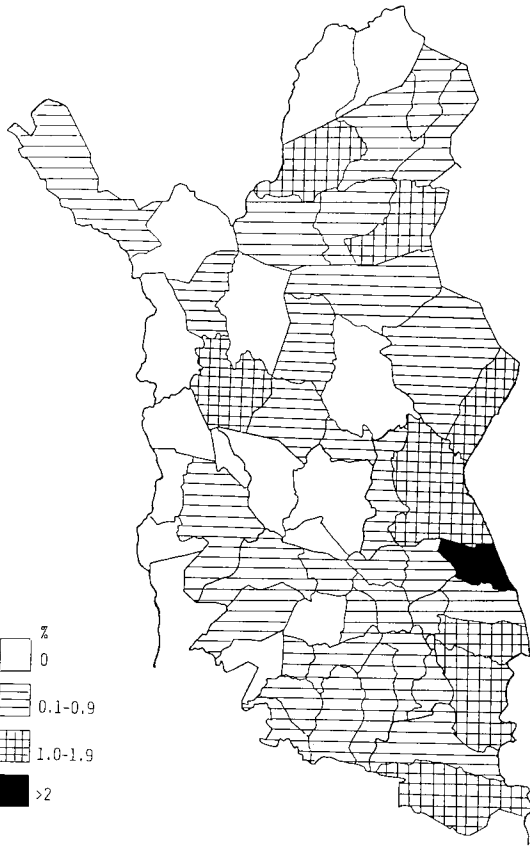


Fig. 5. Proportion (%) of total numbers of reindeer killed by predators in different reindeer herding co-operatives during 1976-86 in Finland.

Fig. 5. Andelen (%) av totalantalet renar dödade av rovdjur i de olika renbeteslag i Finland under 1976-86.

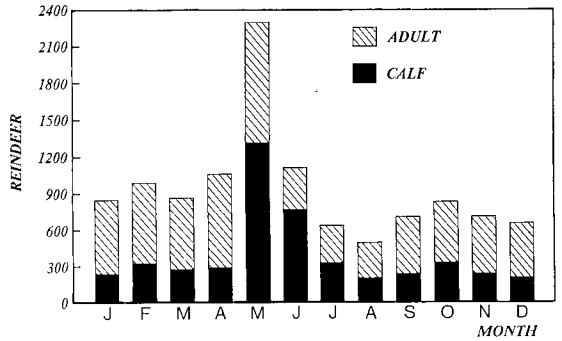


Fig. 6. Number of reindeer killed by predators in different months during 1976-86 in Finland. In May - June the majority of reindeer killed by predators were calves (black).

Fig. 6. Antalet renar dödade av rovdjur i olika månader under 1976-86 i Finland. I mai-juni var de flesta dödade renar kalvar.

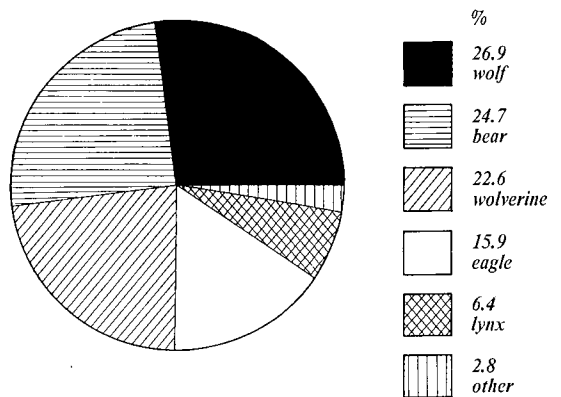


Fig. 7. Proportion (%) of reindeer killed by different predators during 1976-86 in Finland.

Fig. 7. Andelen (%) av renar dödade av olika rovdjur 1976-86 i Finland.

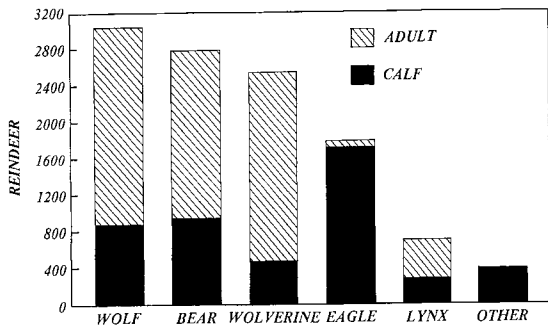


Fig. 8. Numbers of adult reindeer and calves killed by predators during 1976-86 in Finland. Wolves, bears, wolverines and lynxes killed mainly adult reindeer, eagles calves (black).

Fig. 8. Antal vuxna renar och kalvar dödade av rovdjur 1976-86 i Finland. Varg, björn, järv och lo dödade huvudsakligen vuxna renar, örnar kalvar (svart).

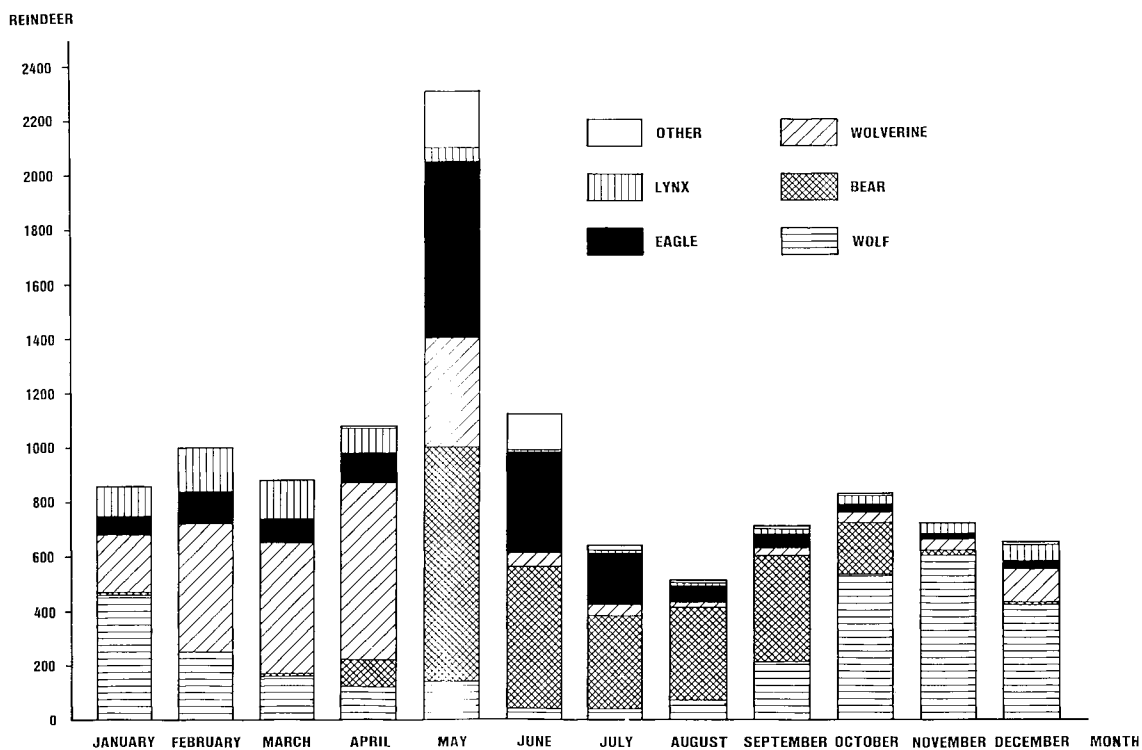


Fig. 9. Reindeer killed by various predators monthly during 1976-86 in Finland.

Fig. 9. Renar dödade av olika rovdjur i Finland 1976-86, månadsvis.

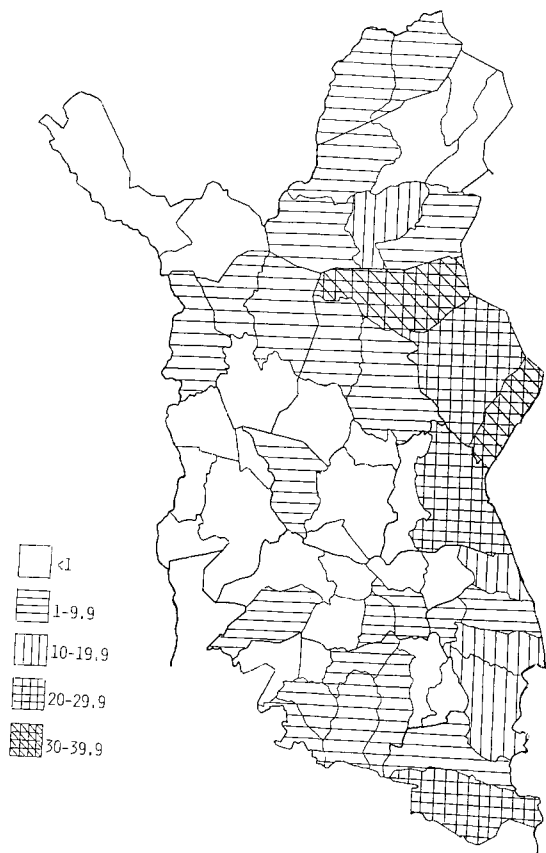


Fig. 10. Average number of reindeer killed by wolves each year during 1976–86 in different reindeer herding co-operatives in Finland. The highest number of reindeer killed by wolves was found in the Lappi and Sallan pohjoinen co-operatives.

Fig. 10. *Genomsnittlig antal renar dödade av varg varje år under 1976–86 i olika renbeteslag i Finland. Högsta antalet vargrivne renar var i Lappi och Sallan pohjoinen renbeteslag.*

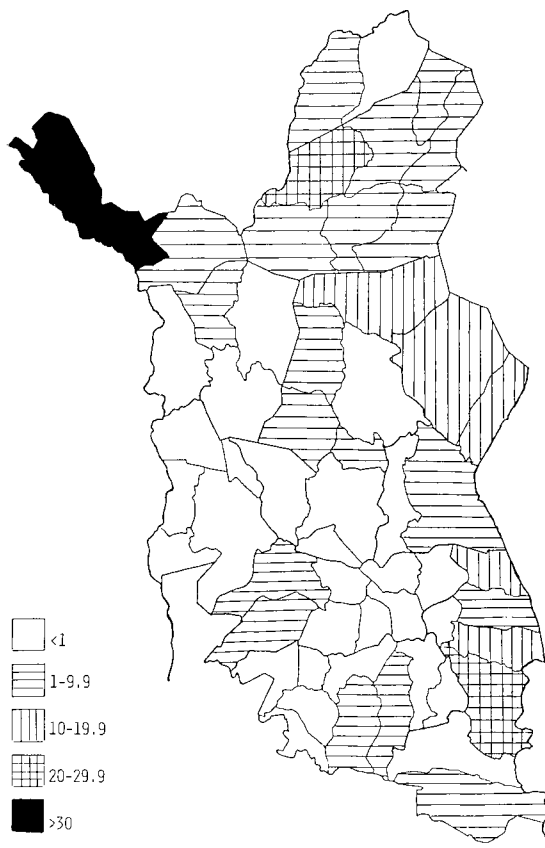


Fig. 11. Average number of reindeer killed by wolverines during 1976–86 in different reindeer herding co-operatives in Finland. The highest number of reindeer killed by wolverines was found in the Käsivarsi co-operative.

Fig. 11 *Genomsnittlig årlig antal renar dödade av järv under 1976–86 i olika renbeteslag i Finland. Högsta antalet renar rivna av järv funnits i Käsivarsi renbeteslag.*



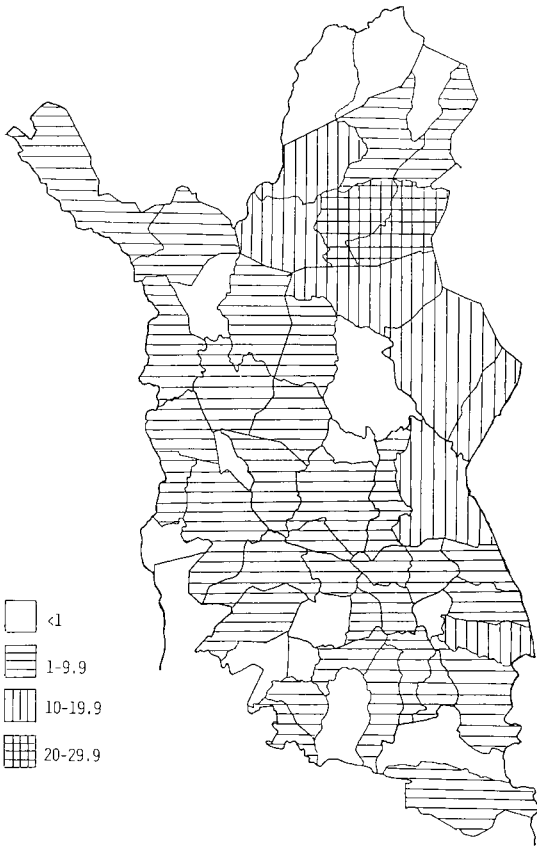
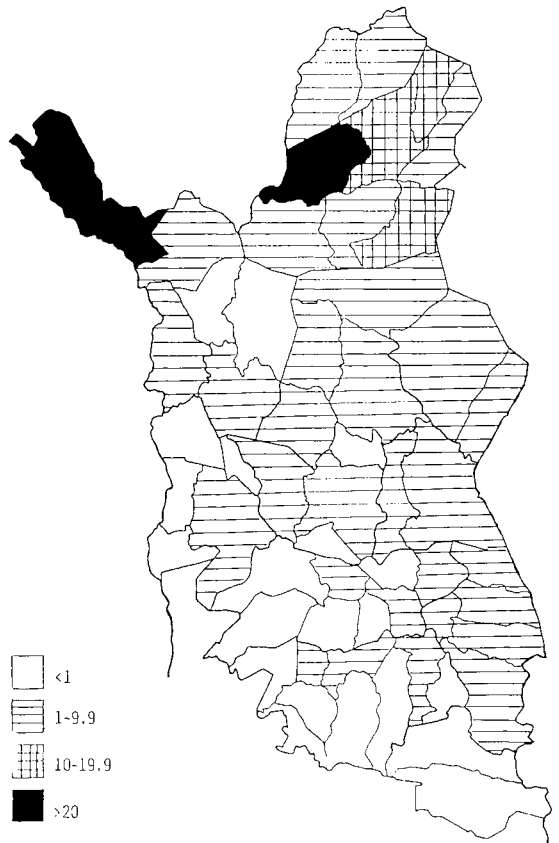


Fig. 12. Average number of reindeer killed by bears each year during 1976-86 in reindeer herding co-operatives in Finland. The highest number of reindeer killed by bears was found in the Hammastunturi and Ivalo co-operatives.

Fig. 12. *Genomsnittlig årlig antal renar dödade av björn under 1976-86 i olika renbeteslag i Finland. Högsta antalet renar rivna av björn funnits i Hammastunturi och Ivalo renbeteslag.*

Fig. 13. Average number of reindeer killed by eagles each year during 1976-86 in different reindeer herding co-operatives in Finland. The highest number of reindeer killed by eagles was found in the Käsivarsi and Muotkatunturi co-operatives.

Fig. 13. *Genomsnittlig årlig antal renar dödade av örn under 1976-86 i olika renbeteslag i Finland. Högsta antalet renar dödade av örn funnits i Käsivarsi och Muotkatunturi renbeteslag.*



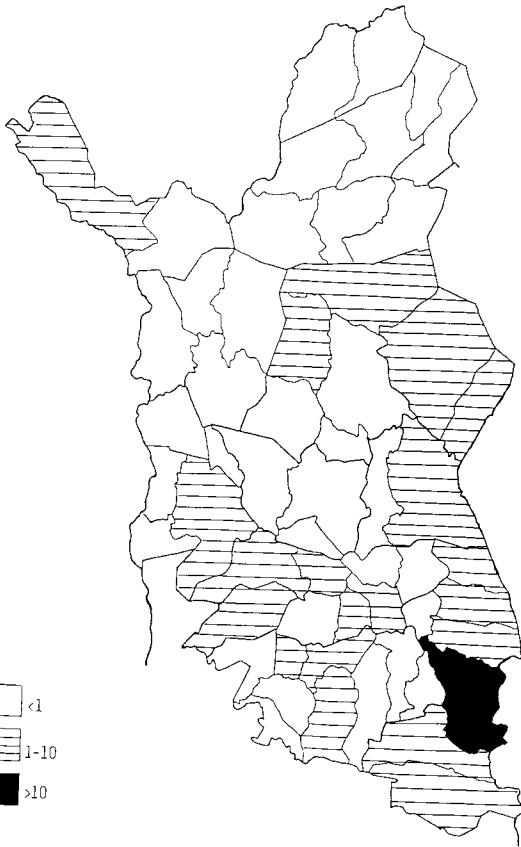


Fig. 14. Average number of reindeer killed by lynxes each year during 1976–86 in different reindeer herding co-operatives in Finland. The highest number of reindeer killed by lynxes was found in the Hossa-Irni co-operatives.

Fig. 14. Genomsnittlig årlig antal renar dödade av lodjur 1976–86 i olika renbeteslag i Finland. Högsta antalet renar rivna av lodjur funnits i Hossa-Irni renbeteslag.

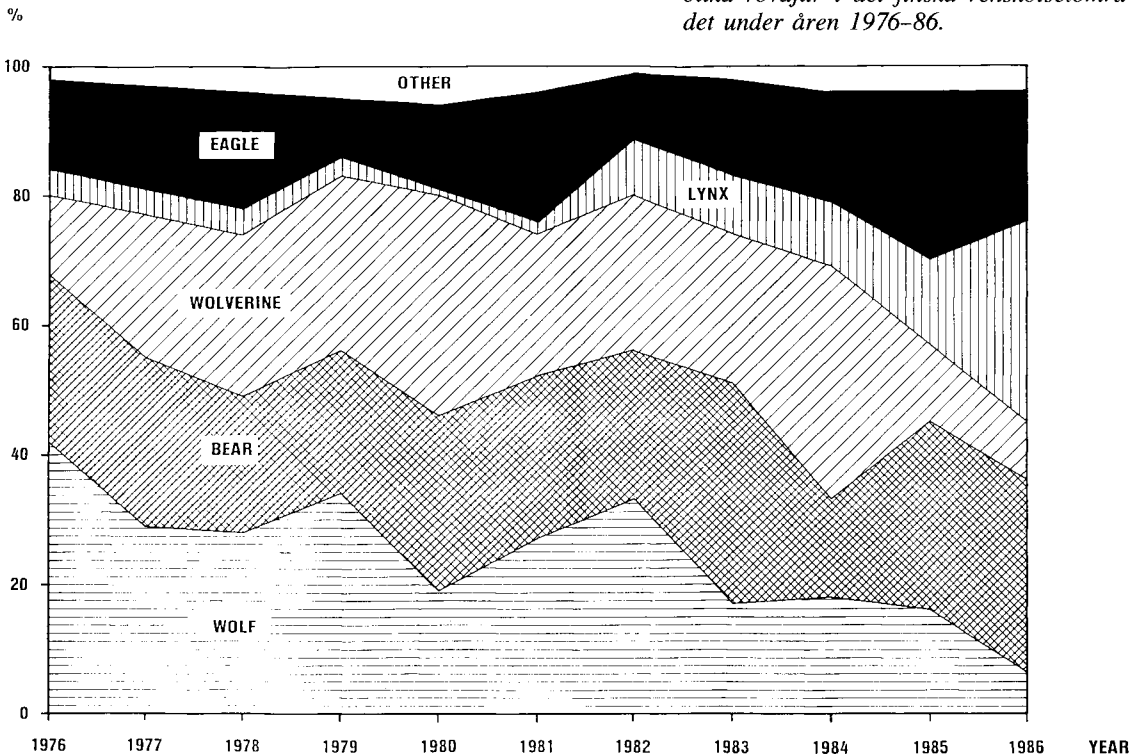


Fig. 15. The changes (%) of the reindeer numbers killed by different predators in the Finnish reindeer herding area during 1976–86.

Fig. 15. Ändringar (%) av antalet renar dödade av olika rovdjur i det finska renskötselområdet under åren 1976–86.