

Winter Penetration and Movements of a Male Lynx

ZIMOWA PENETRACJA I CHARAKTERYSTYKA PRZEMIESZCZANIA SIĘ SAMCA RYSIA

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Kossak S., 1988: Winter penetration and movements of a male lynx. Acta theriol., 33, 25 : 354—360 [With 2 Figs].

In winter seasons since 1971 till 1979 traces of a male lynx passing through the forest adjacent to the forester's lodge, the ploughland, and the yard of the lodge were noted. In 1976, lynx trails were followed for 67 days. Between the 10th of January and the 18th of March the lynx passed near the forester's lodge 17 times. Most often the animal returned after 24 to 72 hours. Three times the animal was absent for a longer period — from 5 to 17 days. The lynx moved by: (1) transfers — on the distance of several hundred metres to several kilometres it went in a chosen direction, often using forest paths and repeating the routes from previous days, (2) penetration — the lynx dodged searching for prey. The remains of the lynx quarries showed that the killed animals were: calves and female red deer, roe-deer, and hares.

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1. INTRODUCTION

The numbers of lynx, *Felis lynx* Linnaeus, 1758 in Central Europe has been constantly decreasing due to broadly understood antropoppression as well as the hunting policy aiming at the elimination of big predators. Except the Scandinavian Peninsula and the European part of the USSR, lynx is menaced with extinction; in some countries it has already been exterminated. In recent years the reintroduction of the species into its former range was undertaken (Čop, 1977; Sommerlate *et al.*, 1980; Breitenmoser, 1983; Haller & Breitenmoser, 1986) and some studies on the biology of this species have started. The results, however, concern mainly the populations living in mountain areas, whereas the data about lynxes living in lowlands are still lacking.

The purpose of this note was to gather information about penetration of the forest area by lynx within several winters and to characterize the pattern of its movements. The research area was the Białowieża National Park and the neighbouring managed treestands of Białowieża Primeval Forest. The Białowieża National Park has been the remnant of European lowland virgin forests and at the same time it is the refuge of lynxes.

2. MATERIAL AND METHODS

On the border of the Białowieża National Park in section 403 a forester's lodge is situated. The observer settled down there in 1971 (Fig. 1, 2). Traces of a single passing lynx were noted in the nearest neighbourhood of the settlement within winter 1971—1980. The lynx penetrated the wood adjacent to the settlement 5—10 times each winter. The trail was always single. Since in winter a female lynx creates family groups with her growing young, a lonely lynx was most probably a male. Additionally, the repetition, from year to year, of a characteristic behaviour of the animal in penetrating the area testified that it was constantly the same specimen. Simultaneously the remains of lynx's quarries were searched for in winter and the vegetative season in sections neighbouring with the forester's lodge. In 1971—80 the number of wolves in the Białowieża Primeval Forest oscillated from 0 to 2. Therefore, I assumed that the remains found in the area penetrated by the lynx came from its quarries.

In winter 1976 I attempted to define the frequency of the lynx's movements near the forester's lodge and the routes it moved along. For 67 days (from the 10th of January till the 18th of March) the routes leading to the forester's lodge were checked and if the trail was found, it was then followed. With the use of a compass, the approximate routes of the lynx were marked on the map in the scale of 1:10 000. The maximum daily distance covered by the observer was 3 km in the difficult area of a reserve and about 4 km in an easier area (forest roads, managed tree stand).

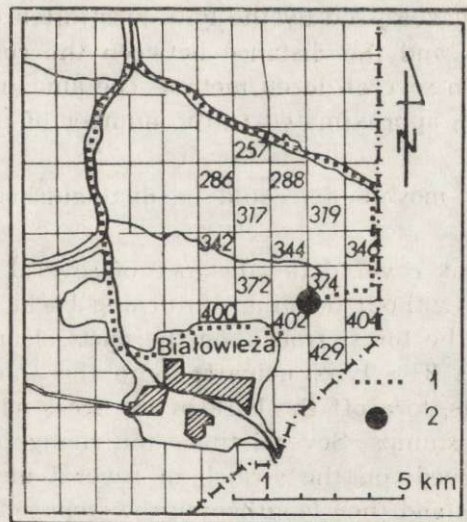


Fig. 1. Schematic map of the Western part of the Białowieża Primeval Forest. 1 — border of the Białowieża National Park (a reserve), 2 — forester's lodge.

3. RESULTS

During all winter seasons since 1971/72 till 1979/80 the lynx penetrated sections 374, 402, and 403, moved through the open meadow belonging to the settlement, and even through the yard. In a young pine wood in

section 404, in the distance of about 200 m from the buildings there were found the excrements and the trails left on the mound of earth over an unused cellar. Within the area of the settlement in the distance of around 60 m from the building there were visible the traces of the lynx lying on a bare hill from which the yard and the buildings could be seen.

The lynx appeared in the neighbourhood of the forester's lodge till 1980. Beginning with next winter, not even one trace of its presence was noticed. One of the local poachers confessed to the observer that at the end of winter 1980 about 1 km from the forester's lodge *he* killed, with the help of two dogs, a big male lynx. The place of hunting, the sex of the killed animal, together with the lack of signs of the lynx's presence after this date, give the basis for thinking that the poached animal was the one which was the object of observation.

During the tracking carried out in 1976, 17 passes of the animal were discovered. Striking was the frequency of its appearance (Fig. 2). Three times the lynx passed near the forester's lodge night after night, 4 times after 2 days, twice after 3 days, and once after 4 days. Three times there occurred a longer break — 5—12, and 17 days. A wide road, frequented by people and vehicles, was crossed by the lynx most often on the border of sections 403 and 404, and the distance between the consecutive passes ranged from several to several dozen metres. The amount of passes from the north to the south approximated to the number of passes in the opposite direction.

Two types of lynx movements could be distinguished: transfers and penetration.

Transferring, the lynx covered the distance of several hundred metres to several kilometres without dodging or turning back. The route often led in the middle of the forest tracks, on the parts cleared of snow and traces left by people. The lynx urinated onto the snow, the roadside trees and section posts, tore off the bark of the trees with its claws and also the moss of the stumps. Several times the change of the rhythm of the march was observed: on the stretch of several metres the animal made very small steps and then lengthening the steps again.

In the penetrating type of movement the lynx route was winding, the lynx circled, dodged and turned back. It often used the lying trees, went along their whole length and, if possible, jumped onto the other ones. It crept under windfallen trees, rummaged the soil and the sand which indicated searching for rodents. On short stretches it followed the trails of deer and wild boars, circled through the colonies of badgers coming close to den entrances.

Transfers (500—1000 m) alternated with penetration. Transfers were rather conservative — if the lynx came across a forest track, it repeated the route of the proceeding crossings, whereas penetrating each case took a new course.

The characteristic thing of all the roams was avoiding damp places. The lynx passing the marshlands of the sources of the river Orłówka in sections 344, 345, and 347 chose the route in such a way that even if the ice-cover was thin and insecure, the observer following its trail walked across dry-shod.

In several winters I noted that in some cases the trails of the fox overlapped those of the lynx. Both animals ran in the same direction, but the fox tended to avoid longer straight stretches of the road — di-

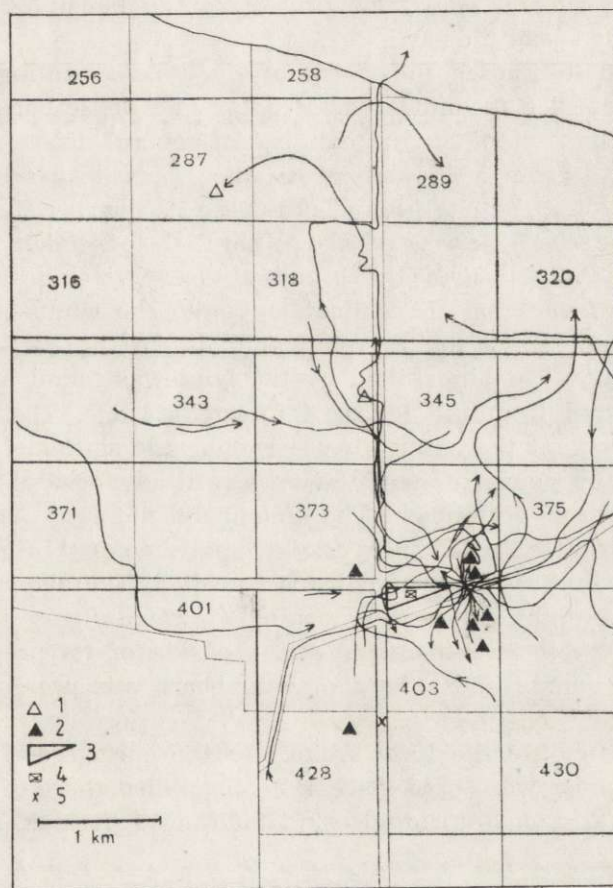


Fig. 2. Routes of the lynx between the 10th of January and the 18th of March 1976. 1 — Unsuccessful hunting attempt, 2 — the remains of quarries, 3 — the area of the forest settlement, 4 — forester's lodge, 5 — the place where the lynx was poached. The numbers are forest sections numbers.

verged into the wood to follow the lynx's trail again after several dozen metres. For example, on a straight line about 1 km long, the fox crossed the lynx's trail 6 times. On the 10th of February in section 373 the remains of the fox were found. The lack of traces made the explanation of the event impossible, but the fox's trail stopped appearing on that of the lynx. It suggests that the fox might have been killed by a bigger predatory animal.

I searched for the lynx's quarries mainly in sections 374 and 403 where the traces of the lynx were found most often (Fig. 2). In the winter of 1972/73 in section 403 a killed female red deer was found, in spring 1973 — a female roe-deer, in summer 1975 — the remains of female red deer. In February 1976 in section 374 the frozen remains of a hare were found (hind legs and spine) hanging from the bough of a hornbeam about 2 metres above the earth.

Trailing led to finding the traces of the lynx's huntings. In section 287 the animal tried to hunt a hare feeding in a dense hornbeam undergrowth. The lynx crept on the distance of several dozen metres, using natural covers. From a 10 metres' distance it made a series of jumps but failed to catch the hare. It did not chase its quarry. Marching in the middle of the road cleared of snow, parallel to section 344, without lurking, the lynx attacked the group of deer crossing the road. The torn-off fur proved that the animal leapt onto the rump of the passing deer. It did not chase the escaping animals. In the early morning in March 18, a year-old hind killed by the lynx was found in section 374, about 50 metres from the fence of forester's lodge. The trails of the deer suggested that the animals were leaving the settlement area where they had fed on young pines. The lynx's trail advanced obliquely to the direction the deer were going. The animal did not lurk and did not use natural covers. It attacked from the ground, among thin growing trees. The attacked hind made several leaps and died. The event happened at the end of the night, for in the morning the carcass was still warm and soft. The lynx bit into the nape and the side of its prey. It did not return to its quarry and a herd of wild boars was present near a kill since evening.

In September 1978 the lynx broke into the enclosures in section 403 in which roe-deer were bred since 1977 and killed three of them during one night. It kept on returning to kill for 5 days (Kossak, in press).

4. DISCUSSION

Methodical difficulties in defining individual characteristics of a predatory animal trailed on snow make it impossible to obtain data whether lynxes maintain the same home range for all their lives. The degree of

conservatism in the behaviour of this species is also unknown. The specimen described in this paper remained in the same area for a few consecutive years, and conservatism was characteristic of its behaviour. However, observations of one specimen are not enough to define to what extent its behaviour was typical of the species, and to what degree it resulted from its individual characteristics.

All persistent efforts to find the lynx's permanent lair failed. A supposition can only be made from the frequency of penetrating the neighbourhood of the forester's lodge that the lair was situated in an important point of the animal's area. In sections adjacent to the lodge other lynxes did not appear which also proves the rightness of the above statement. Leaving the excrements in section 402 did not have the function of marking the borders of the territory.

The striking characteristics of the lynx was conservatism in crossing the road — many times it almost followed its own trace. Such behaviour cannot be explained by the fear of passing the dangerous part of the road (because of the frequent presence of people on it) since the lynx was noted to have covered on this road the distance of 3 km.

It is necessary to make a comment on the lynx's attitude towards people. Persistently, for many years, the animal passed the coppice belonging to the forester's lodge and the open area of a meadow, and even through the yard, despite the presence of people inside the building. It lay on an uncovered mound from which the house and the yard could be seen. While trailing, several times it followed the trace left by the observer, and in one case followed her. It proves that he did not fear the people in the forester's lodge too much, but something aroused his curiosity. Simultaneously, the animal was so cautious that a direct encounter took place only once. The lynx stood on the road about 150 metres from the buildings. It stood sideways to the road with its head turned towards the observer and after a long while of watching, it slowly went back to the wood.

The frequency of the animal's returns seems to be an interesting problem. The returns made in short intervals (24—48 hours) may prove the lack of hunting success or the catching of small quarries only (rodents) for it has been ascertained that lynxes remain near a big kill for many days (Novikov, 1971; Kossak, in press). The lynx's longer absence might have had three causes: (1) a considerable hunting success supplying food for several days or more, (2) hunting in the distant parts of the territory, or (3) staying in the territory of a female (February/March).

According to the information obtained in the Alps (Haller & Breitenmoser, 1986), in the reproduction period, 4—6 days before the encounter

with a female, a male circles in a distance shorter than 4—6 km from the spot where the encounter is going to take place, and already on the second day after the copulation, the distance from the meeting point amounts to 20 km, or even more.

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