

An observation of aggressive physical interaction between free-ranging lynx

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During a study of *Lynx lynx* (Linnaeus, 1758) in the Jura Mountains of Switzerland, we observed a fight between a radio-collared adult female and an unmarked lynx. The resident female attacked the other lynx and finally drove it away.

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Introduction

Eurasian lynx *Lynx lynx* (Linnaeus, 1758) are usually described as solitary animals which limit intraspecific contact by mutual avoidance (Matjuschkin 1979, Haller and Breitenmoser 1986, Dötterer 1992, Breitenmoser *et al.* 1993, M. Wölfl and S. Wölfl, unpubl.). Physical interactions where lynx tolerate each other mainly occur when females are rearing their young(s) and when male and female meet during the mating season (Haller and Breitenmoser 1986, Dötterer 1992, Wölfl 1993). Observations of aggressive behaviour are rare, mostly described as fighting within the sexes during the mating season (Lindemann 1949, Werner 1953, Matjuschkin 1979). However, this paper presents an observation where an adult female attacked another lynx, obviously because a territorial dispute.

Results

During the winter of 1991/1992, we had located the radio-collared female F15 and her 9-month-old daughter at a roe deer *Capreolus capreolus* kill in a deep gorge at the edge of the female's established home range. On February 11th, we observed F15 as she moved down from a rocky ledge in an unusual stiff manner. The female disappeared behind a spruce tree and we heard a series of loud snarls and cries. A uncollared lynx tumbled down the slope from behind the tree. After

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rolling downhill for some meters, the lynx stopped sliding and snarled, lying on its side. F15 followed and moved slowly downslope, stopping shortly above the crouching lynx. Then she circled the hissing and snarling animal at a close distance and suddenly charged it, attacking with both front paws. The other lynx defended itself with its mouth and the front paws. Within a second F15 retreated and moved around a rocky outcrop. An instant later she reappeared accompanied by her young. They rubbed faces, then approached the still crouching third animal together. F15 and her young stopped and stared at the animal, which looked smaller than the adult female, but bigger than the 9-month-old young. The unmarked lynx got up, turned and slowly moved upslope towards the rocky ledge. Mother and daughter followed the animal at close quarters. A few seconds later, we again heard loud hissing and snarling. A lynx tumbled down the ledge, got on its feet and ran away. F15 appeared on top of the ledge and we noticed a slight movement behind her, probably her young. For the next 20 minutes, F15 moved restlessly back and forth on top of the ledge.

Discussion

The observed incident obviously was a territorial dispute between lynx. Usually, these physical, intraspecific confrontations can be avoided by a sophisticated scent-marking system. As long as fresh markings exist along the border of the home range, lynx apparently respect their neighbour's territory. However, if a lynx fails to demonstrate its presence regularly, the neighbours begin to investigate this 'lack of presence'. Dötterer (1992) described a sequence of movements of an adult male lynx, which expanded his home range step by step into his neighbour's territory, after this one had been poached. In this case, the neighbouring adult female of F15, F14, was killed by a car in November 1991. Therefore, no fresh marks could be found along the borders of her home range in February. We believe that the unmarked lynx moved into the vacant territory and explored it. F15 also reacted to the absence of F14 by intruding into F14's former home range. Then, in the deep gorge, the two lynx met, probably not warned of each other's presence by any fresh scent-markings.

From the observed details we can only speculate about the sex and age of the unmarked lynx. By the size we only can exclude an adult male. Because F15 was quite a big female, the unmarked lynx could have been an adult female as well as a subadult male/female exploring the vacant territory or roaming in search of the opposite sex during the mating season. There had been evidence before that the gorge was used sporadically by another unmarked adult female (Swiss Lynx Project, unpubl.).

Observations of aggressive interactions of other solitary cat species are rare: for bobcats *Lynx rufus*, Jackson and Jackson (1987) described a physical confrontation between a radio-collared adult female and an unmarked adult-sized

animal of unknown sex. Litvaitis *et al.* (1982) reported an incidence of cannibalism by a bobcat. Zedulak (1981) observed an adult male bobcat eating another bobcat which it apparently had killed, as evidenced by wounds in the victim's neck. Provost *et al.* (1973) watched an adult male bobcat chasing a juvenile male up a tree. McCord and Cardoza (1982) stated that causes of kitten mortality may induce both starvation and intraspecific aggression. For the ocelot *Felis pardalis*, Emmons (1988) reported an adult female chasing another female out of her territory. However, she did not observe any physical aggression. For the puma *Felis concolor*, Hornocker (1970) stated an incidence of infanticide by an adult male.

During eight years of radiotracking of lynx in Switzerland this was the first observation of aggressive interaction between lynx. Therefore, we emphasize the uniqueness of the confrontation. Apparently, even solitary carnivores risk injury by fighting conspecifics under certain circumstances.

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