

- GEORGE, W. (1979): Conservatism in the karyotypes of two African mole rats (Rodentia, Bathyergidae). *Z. Säugetierkunde* 44, 278–285.
- GOLDBLATT, P. (1978): An analysis of the Flora of Southern Africa: its characteristics, relationships and origins. *Ann. Missouri Bot. Garden* 65, 369–346.
- HOWELL, W. M.; BLACK, D. A. (1980): Controlled silver staining of nucleolus organizer region with a protective colloidal developer. A 1 step method. *Experientia* 36, 1014–1015.
- HSU, T. C.; PATTON, J. L. (1969): Bone marrow preparation for chromosomal studies. In: *Comparative Mammalian Cytogenetics*. Ed by K. BENIRSCHKE. New York: Springer Verlag. 454–460.
- LEVAN, A.; FREDGA, K.; SANDBERG, A. A. (1964): Nomenclature for centromeric position on chromosomes. *Hereditas* 52, 201–220.
- MATTHEY, R. (1956): Nouveaux apports à la cytologie comparée des Rongeurs. *Chromosoma* 7, 670–692.
- NEVO, E. (1979): Adaptive convergence and divergence of subterranean mammals. *Ann. Rev. Ecol. System.* 10, 269–308.
- NEVO, E. (1983): Population genetics and ecology: the interface. In: *Evolution from molecules to man*. Ed. by D. S. BENDALL. Cambridge: Cambridge Univ. Press. 287–321.
- NEVO, E.; CORTI, M.; BEN-SHLOMO, R.; BEILES, A.; JARVIS, J. U. M.; HICKMAN, G. G. (1985): Karyotype and allozyme differentiation in the endemic subterranean mole rats of Africa, the Bathyergidae. Fourth Int. Theriological Congress, Abstracts of Papers. Edmonton.
- PATTON, J. L.; SHERWOOD, S. W. (1983): Chromosomal evolution and speciation in Rodents. *Ann. Rev. Ecol. System.* 14, 139–158.
- ROBERTS, A. (1951): *The Mammals of South Africa*. Johannesburg: The Mammals of Africa Book Fund.
- SEABRIGHT, M. A. (1971): A rapid banding technique for human chromosomes. *Lancet* 2, 971–972.
- SUMNER, A. T. (1972): A simple technique for demonstrating centromeric heterochromatin. *Expl. Cell Res.* 75, 304–309.
- WILLIAMS, S. L.; SCHLITZER, D. A.; ROSSIES, L. W. (1983): Morphological variation in a natural population of *Cryptomys* (Rodentia, Bathyergidae). *Proc. 3rd Int. Coll. on Ecology and Taxonomy of African small mammals*.

*Authors' addresses:* E. NEVO, Institut of Evolution, University of Haifa, Mount Carmel, 31999 Haifa, Israel; E. CAPANNA and M. CORTI, Dipartimento di Biologia Animale e dell' Uomo, Università di Roma, via Borelli 50, I-00161 Roma, Italy; J. U. M. JARVIS, Zoology Department, University of Cape Town, 7700 Rondebosh, South Africa; G. C. HICKMAN, Department of Zoology, University of Natal, Pietermaritzburg, Natal RSA

## WISSENSCHAFTLICHE KURZMITTEILUNGEN

### Behaviour and orientation of a released Pine marten (*Martes martes*)

By E. PULLIAINEN

*Receipt of Ms. 7. 5. 1985*

According to the familiar area hypothesis, animals tend to become familiar with their surroundings and having learned to do so tend to move within this familiar area (PULLIAINEN 1974; BAKER 1978, 1982). The present author's previous field studies on the pine marten (*Martes martes* L.) have suggested that frequent scent-marking may play a considerable part in the orientation of an individual of this species within its home range

<sup>1</sup> This paper constitutes Report No. 160 from the Värriö Subarctic Research Station of the University of Helsinki.

(PULLIAINEN 1981b, 1982). One possibility for studying the behaviour of an animal within an unfamiliar area is therefore to follow the movements of introduced individuals.

For this purpose, pine martens were captured in various parts of northern Finland, kept in captivity for varying periods, brought to eastern Finnish Forest Lapland, furnished with radio transmitters and released. Two such experiments were spoiled by the great mobility of the martens, the low effective radius of the radio transmitters and especially the bad weather conditions, but one rather successful attempt is described here.

This male marten was captured in Ostrobothnia, kept in captivity for two years in Central Ostrobothnia, brought by car to eastern Finnish Forest Lapland, furnished with a radio transmitter and released on 6 Febr. 1985 (direct distance from captivity site 580 km). It was tracked more or less successfully until 22 Feb., when it crossed into the Soviet Union. The air temperature varied between  $-17^{\circ}$  and  $-28^{\circ}\text{C}$  during this period, and the marten sank 0–6 cm into the snow when moving on the surface. The track record is shown in Fig. 1.

The main observations made during tracking were as follows: This marten moved only 0.5 km for the first four days after its release, which seems to be typical behaviour in this kind of releasing situation. This "civilized" individual moved long distances along tracks left by snowmobiles, which is not typical of the local pine martens. While the local pine martens regularly avoid entering areas without any overhead cover (PULLIAINEN 1981b), this individual even crossed an open bog 200 m wide. In other respects it moved like its

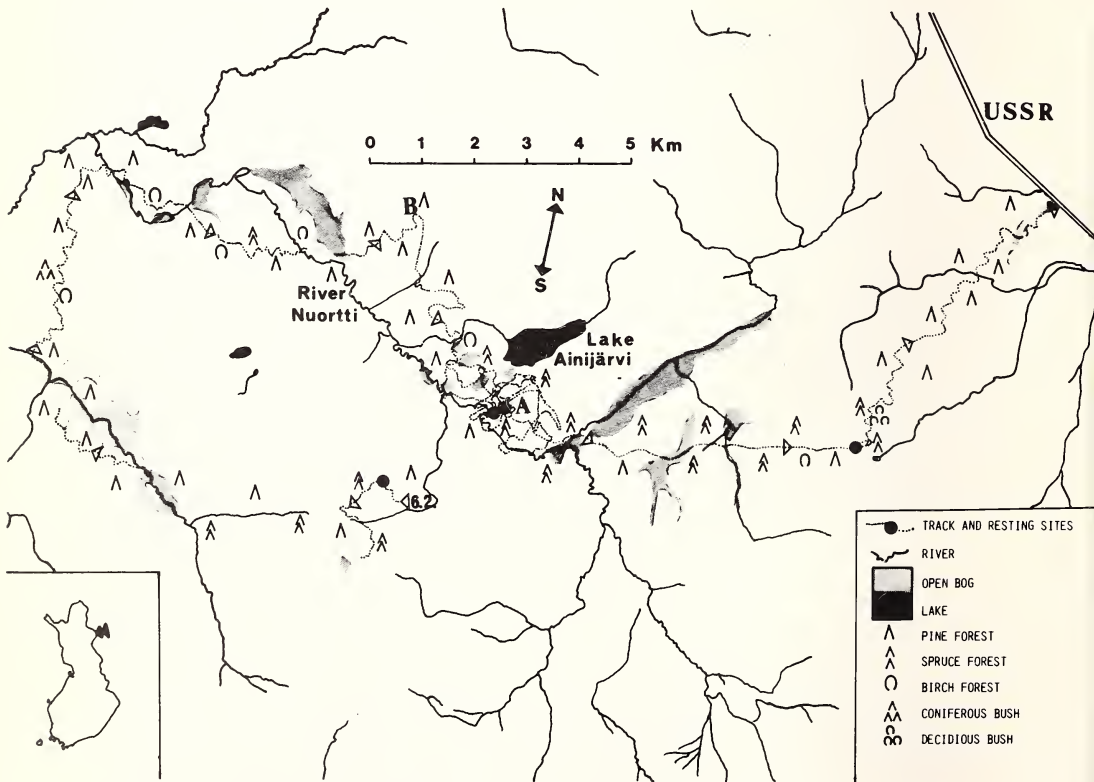


Fig. 1. The track of the released pine marten in Finnish Forest Lapland. The marten was released at the point "6.2", and later on seen at the point "B". A indicates the resting site which it used during five successive days. Only those habitats are described which are locating at both sides of the track

wild counterparts, i.e. along the snow surface and under fallen trees, digging tunnels into the snow and resting under the surface. Usually the pine martens move about in the dark (PULLIAINEN 1981b), but this individual was also seen at 2.00 p.m. (B, Fig. 1). This marten rested at the same site ("A", Fig. 1), under a fallen tree, for five successive days (16–21 Feb.), during which time the lengths of its nightly trips were 1.2, 0.5, 0.3, 4.6 and 10.9 km respectively. It had only once scent-marked this area from its anal glands. When the marten left this area, it went almost directly into the Soviet Union. It had been tracked in Finland for approx. 80 km. Three of the five samples of faeces studied contained hair from voles (no bones) and two of them remains of buns (left by a frontier soldier).

Some of these notes merit further discussion. Firstly, it is significant that none of the martens released set out towards their previous "permanent" home range. A generalist mammal like the pine marten (PULLIAINEN 1981a) scarcely has enough inner motivation to try to do this even though it may possess the necessary orientation sense (cf. *Ursus arctos*, MILLER and BALLARD 1982). On the other hand, it seems reasonable for it to explore a rather large area of its new surroundings from the standpoint of both its food resources, and other martens and enemies. This is relevant, although great mobility also means a risk to become a victim of a predator.

When staying in the same part of its new area for five successive days, the pine marten showed a remarkable capability for finding its way back to its resting site (A). I have suggested previously that scent-marks may play a significant role here (PULLIAINEN 1982), but the present data suggest that they are not necessary for orientation, although they may be helpful. It may be that the marten's own tracks are enough for this purpose, or that the animal possesses some other orientation system.

#### References

- BAKER, R. R. (1978): *The Evolutionary Ecology of Animal Migration*. London: Hodder and Stoughton.
- (1982): *Migration paths through time and space*. London: Hodder and Stoughton.
- MILLER, S. D.; BALLARD, W. B. (1982): Homing of transplanted Alaskan brown bears. *J. Wildl. Manage.* **46**, 869–876.
- PULLIAINEN, E. (1974): Seasonal movements of moose in Europe. *Naturaliste can.* **101**, 379–392.
- (1981a): Food and feeding habits of the pine marten in Finnish Forest Lapland in winter. In: *Proc. First Worldwide Furbearer Conf.*, Aug. 3–11 1980, Frostburg, Maryland, USA. Ed. by J. A. CHAPMAN and D. PURSLEY. Frostburg: Worldwide Furbearer Conf. Inc.
- (1981b): Winter habitat selection, home range, and movements of the pine marten in Finnish Forest Lapland. In: *Proc. First Worldwide Furbearer Conf.*, Aug. 3–11 1980, Frostburg, Maryland, USA. Ed. by J. A. CHAPMAN and D. PURSLEY. Frostburg: Worldwide Furbearer Conf. Inc.
- (1982): Scent-marking in the pine marten (*Martes martes*) in Finnish Forest Lapland in winter. *Z. Säugetierkunde* **47**, 91–99.
- Author's address:* Prof. Dr. ERKKI PULLIAINEN, Department of Zoology, University of Oulu, and Väriö Subarctic Research Station, University of Helsinki, Linnanmaa, SF-90570 Oulu, Finland

# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Mammalian Biology \(früher Zeitschrift für Säugetierkunde\)](#)

Jahr/Year: 1985

Band/Volume: [51](#)

Autor(en)/Author(s): Pulliainen Erkki

Artikel/Article: [Behaviour and orientation of a released Pine marten \(Martes martes\) 49-51](#)