

SMALL CARNIVORE CONSERVATION

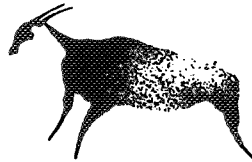


The Newsletter and Journal of the IUCN/SSC
Mustelid, Viverrid & Procyonid Specialist Group

IUCN
The World Conservation Union

Number 21

October 1999



SPECIES SURVIVAL COMMISSION



Pygmy spotted skunk (*Spilogale pygmaea*) from Chamela, Jalisco, Mexico - Photo: Lisette Cantú

The production and distribution of this issue has been sponsored by
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SMALL CARNIVORE CONSERVATION

The Newsletter and Journal of the IUCN/SSC
Mustelid, Viverrid & Procyonid Specialist Group

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We are particularly grateful to Walter Rasmussen for reading the manuscripts and improving the English style.

The aim of this publication is to offer the members of the IUCN/SSC MV&PSG, and those who are concerned with mustelids, viverrids, and procyonids, brief papers, news items, abstracts, and titles of recent literature. All readers are invited to send material to:

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Badgers (*Meles meles* L., 1758) in a mountain area north of Varese (Lombardy – Italy)

C. M. BIANCARDI and L. RINETTI

Introduction

The ecology of badgers (*Meles meles*) in alpine and pre-alpine environments, where food availability is scarce and subject to seasonal fluctuations, is poorly known. Our research began in 1989 in a mountain area of Italian Pre-Alps and this work presents our results in several aspects of badger ecology: food, sett distribution and use, interactions with humans and historical data.

Study area

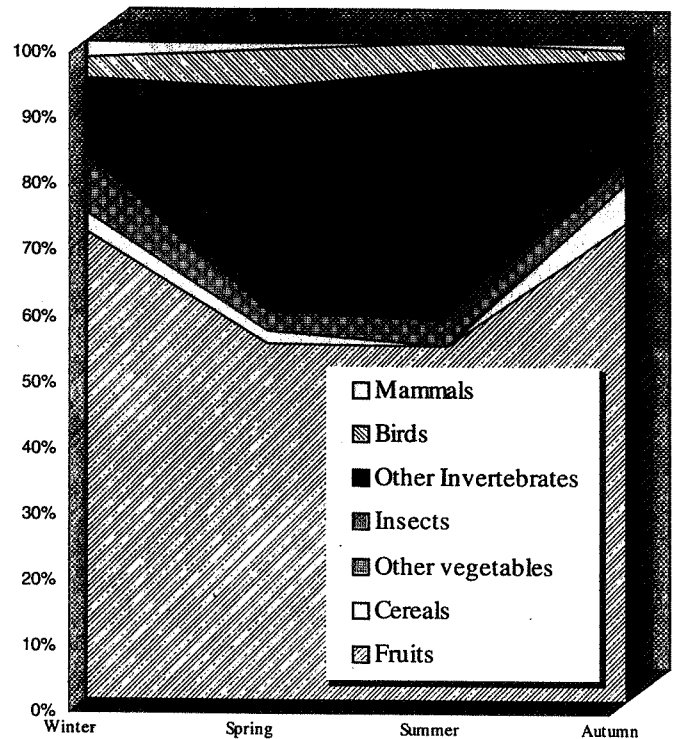
The study area consists of 180 km² between the eastern coast of Lake Maggiore and the Swiss border; the main town is Luino (46°00'N; 08°77'E) in the county of Varese. The altitude ranges between 200 – 1,600 m ASL. The climate is temperate sub-maritime (Mennella, 1967), with high rainfall (average 1,469 mm/y) mainly in spring and late summer but with a high number of annual hours of sunshine (average = 2,309 h/y). The mean temperatures range from +2.8°C in January to +20.9°C in July (Spinedi, 1992).

Large chestnut (*Castanea sativa*) woods grow in the vegetational belt between the lake shore and 700-900 m. Chestnut trees, whose dispersal is favoured by man, replaced the original oak woods in almost the whole area; only on arid and warmer slopes does the *Quercus pubescens* remain. Cherry trees (*Prunus avium*), hazel (*Corylus avellana*) and ash (*Fraxinus excelsior*) are other species in these woods. Beech (*Fagus sylvatica*) woods lie in the central vegetation belt, mainly on cold and humid slopes. This coniferous presence is due to reforestation activity in small patches in the area. Poor grassland and abandoned pasture (*Nardetum*) characterise the higher vegetation belt.

Methods

218 badger faeces were collected between October 1989 and December 1991 and analysed as described by Kruuk & Parish (1981); see further details in Biancardi, Pavesi & Rinetti (1995). During that period we began a periodic survey of all setts, a survey that is still going on. We have collected information about the kind of sett and its use, its altitude, its orientation on the slope, the vegetation, the percentage of coverage and of soil (Biancardi & Rinetti, 1998).

Although radio-tracking could improve our knowledge on badgers' movements, territory size and social behaviour, it is very



Graph. 1: Seasonal variation in badger's diet

difficult to adapt that technique to mountain environments except to diurnal mammals: e.g. large ungulates such as chamois and ibex, or rodents like squirrels. Therefore, we are now attempting to define badger territories through Dirichlet tessellation (Doncaster & Woodroffe, 1993).

Information on the historical presence of badgers and their interactions with humans was collected in interviews with elderly people, former hunters or poachers. The Local Volunteers Ecological Guards (GEV) help us to collect more information, e.g. about road kills.

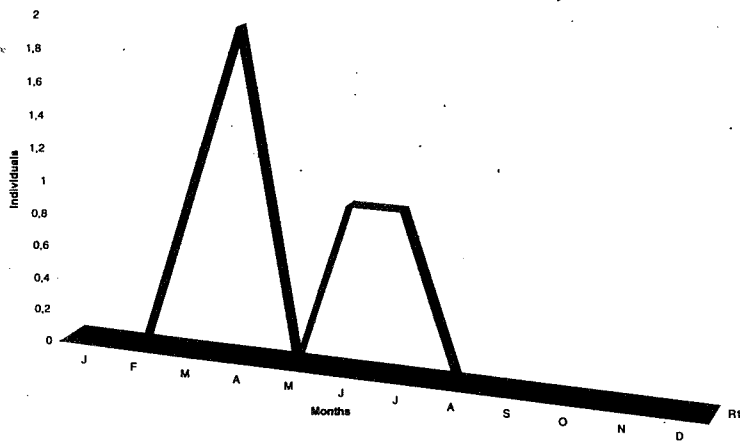
Results

Food

Fruits and insects, mainly Coleoptera, represent over 85% of the volume of badger diet in our study area. Seasonal variations are shown in Graph. 1; the importance of fruits decreases in spring and summer, when many more insects are available.

Fruits	Water	Proteins	Lipids	Glucids			Energy Kcal
				Soluble	Starch	Fibre	
Chestnut (<i>Castanea sativa</i>)	41,0	3,5	1,8	8,1	34,3	8,4	189
Hazelnuts (<i>Corylus avellana</i>)	5,7	13,0	62,9	1,8	0,0	6,7	625
Walnuts (<i>Juglans regia</i>)	19,2	10,5	57,7	3,4	2,1	0,0	582
Cherries (<i>Prunus avium</i>)	86,2	0,8	0,1	9,0	0,0	1,3	38
Cereals							
Maize (<i>Zea mais</i>)	12,5	9,2	3,8	2,5	66,0	0,0	355

Table 1: Composition of some foods items (% of edible fraction). From: Carnovale E. & Miuccio F., 1989



Graph. 4: Road kills (1991-92)

As shown, methods as bait marking here are unpracticable for defining the territory boundaries. Moreover, the geomorphology of the study area, with steep slopes and thick vegetation, does not easily allow night-time radio-tracking. Other methods "on paper" as Dirichlet tessellation give results showing enormous territory size, probably due to two factors: (i) the lack of information (not all setts are known) and (ii) the large areas deserted by badgers (some northern slopes, the poor alpine beech woods). We are now thinking of mapping all known badger paths with a GPS device.

The distribution of setts appears to be related to food availability and is relatively independent from different geological aspects of the study area (Biancardi & Rinetti, 1998). These results are partial and many more studies are needed before an accurate account of badger behaviour in alpine and pre-alpine environments can be produced.

Badgers and humans

Several former hunters and poachers said that they could find a difference between two "varieties" of badgers: "tass canin" (dog badger), with long hairs, weighing around 8 kg, not edible and "tass purscell" (pig badger), with short hair, weighing around 15 kg, edible. This distinction has no systematic meaning, but frequently occurs in Italy (Gandolfi, 1996; Griffiths & Thomas, 1997) and also in Croatia (Griffiths, pers. comm.); these differences may be due to seasonal variation in weight and hairs (Griffiths, pers. comm.) or, perhaps, to animals of a different age class. The fattest badgers hunted in the Luino area weigh 18 kg.

Badgers were hunted because they were considered to be an agricultural pest: farmers said that badgers would eat potatoes and tomato roots, knock down maize plants to eat their cobs, and rummage in the dunghills to find larvae and dung-beetles. Badgers were hunted also as an economic and a gastronomic resource: in the period between the two world wars catching a badger meant enough money on which to live for 2–3 weeks and meat at dinner for the family; badger furs were sold on the Luino market, badger fat was sold to chemists to make unguents and badger meat was cooked in different ways. We also collected some old recipes as evidence of old local traditions (Biancardi & Rinetti, 1995). Hunting was carried out with traps or dogs (terriers or dachshunds), usually in October–November; sometimes dogs were seriously injured or killed by badgers, and dogs were sometimes "trapped" in the badger sett. We recorded one case of a man who had a tame badger in the 1950s. The two of them were not well-liked when they went in the local "osteria" (bar) because of the badger's smell.

Nowadays badgers are protected by law but, occasionally, somebody still attempts to catch them: in July 1991 a gamekeeper from Dumenza, a village near Luino, found and set free an adult male which had been trapped (probably in order to have a badger at dinner). Road-kills have become a serious cause of death. Our preliminary data, that refer to the years 1991–92 report four adult females and one male killed in road-accidents (Graph. 4). Our data are few and incomplete, but the seasonal course of road mortality seems to agree with the observations of Davies, Roper & Shepherdson (1987).

Acknowledgements

The studies were funded by Comunità Montana Valli del Luinese. We are grateful to L. Cagnolero (director), E. Banfi, M. Pavesi and C. Leonardi of the Natural History Museum of Milan; the GEV and all the people who helped us during the field work; H. Kruuk and T. J. Roper for helpful suggestions; dr. S. Kroenker for improving our English. We will never forget E. Neal, who opened the track on badgers paths and encouraged our research.

We would like to thank H. I. Griffiths for his help and for welcome comments on the first draft.

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is most welcome.**