

POLISH JOURNAL OF ECOLOGY (Pol. J. Ecol.)	54	2	325–328	2006
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Research note

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YEAR-ROUND DEFECATION PATTERN IN WILD GENETS
(*GENETTA GENETTA* L.) IN A MOUNTAIN FOREST
(TOLEDO, CENTRAL SPAIN)

KEY WORDS: Common genet, *Genetta genetta*, latrine, marking behaviour, mating season, midden, reproductive cycle

Faeces are used by many territorial carnivores as a communication tool (Gorman 1990). A lot of species, from small mustelids (Hutchings and White 2000) to big predators (Vilá *et al.* 1994, Matyushkin 2000), leave their scats in places where the probability of interception by other animals is maximal and which are associated with reference points that may visually and/or olfactorily increase the effectiveness of the signal. The pattern and frequency of marking within species varies with the sex, social and reproductive status of the individual (Macdonald 1980).

Common genet (*Genetta genetta* Linneus 1758) is a medium-sized carnivore distributed in south-western Europe (Larivière and Calzada 2001). It is a territorial species (Palomares and Delibes 1994, Zubergoitia *et al.* 2002, Munuera and Llobet 2004) that deposits its scats in latrines (Roeder 1980a, Virgós *et al.* 1996, 2001), which can be used multiply by the same individual or by familiar groups, using such latrines as marking tools (Roeder 1980a).

Ano-urogenital marking in males increases during the breeding season and decreases when this ends (Roeder 1978). Scent marks in common genets permit assessment of social status and may allow individual recognition (Roeder 1980b).

When present, rocks are the commonest defecation location, but other elevated points such as tree branches, walls or raptor nests can also be used (Livet and Roeder 1987, Palomares 1993, Virgós *et al.* 1996). Defecation behaviour of genets in the wild has been studied by Palomares (1993) in Doñana National Park (Southwestern Spain), where two annual peaks in the number of faeces at latrines were found. The first one, in February and March, could be related to the mating period. The second one, in November and December, is coinciding with the dispersal period of cubs and with a secondary rut season (Delibes 1974, Aymerich 1982). Rocks are not available in Doñana (Palomares 1993).

The aim of this study is to test whether the number of scats as well as the height of their deposition (above the ground) is related to the period of reproductive cycle.

The study was carried out in Toledo Mountains (Central Spain; 39°35'N, 4°41'W).

The altitude ranges from 750 to 1250 m a. s. l. The climate is Mediterranean, with average annual rainfalls of 640 mm. The forest is dominated by cork oak (*Quercus robur*) and holm oak (*Q. ilex*) while gum cistus (*Cistus ladanifer*) is the main bush in the scrubland (Vaquero, 1997).

Between November 1998 and October 1999 genet scats were collected over the area of 4000 ha for diet analysis (Barrientos and Virgós 2006), except for February and May, when visits could not have been carried out. Rocky outcrops, trees, walls and other potential locations of genet scats (Livet and Roeder 1987) were searched. During all the study period, nine latrines were monitored, collecting faeces once at the end of every month but for February and May. The height in metres over the ground was measured for each scat collected. Fresh faeces were removed to avoid double counting. The scat data was statistically analyzed for monthly variation in scat numbers using a Chi-square test and the Kruskal-Wallis test was used to examine differences in the height of scat deposition. If not stated otherwise, presented

values are means \pm SE. Tests were computed with STATISTICA 6.0 (LEAD Technologies Inc., Chicago, IL).

A total of 151 scats were collected year-round (Fig. 1). The number of scats collected per month varied (range 3–36; $\chi^2=103.489$, $P < 0.001$). With one exception (0.7%), all faeces were found on the top of rocky outcrops located inside the scrubland or forest. The height of faeces deposition ranged between 0–21 metres (Fig. 1) and was statistically different between months within the year (Kruskal-Wallis test, $P = 0.004$). Faeces were placed in highly located latrines from August to March (10.67 ± 0.40 m above the ground), with a decrease occurring from April to July (8.28 ± 0.39 m) (Mann-Whitney U-test, $Z = 1.981$, $P = 0.047$). A combination of both variables shows that the months from September to March – with the exception of October when the number of collected scats was low and February when visits could not have been carried out – is the period when genets increase the number of faeces at latrines and the height of their deposition (Fig. 1).

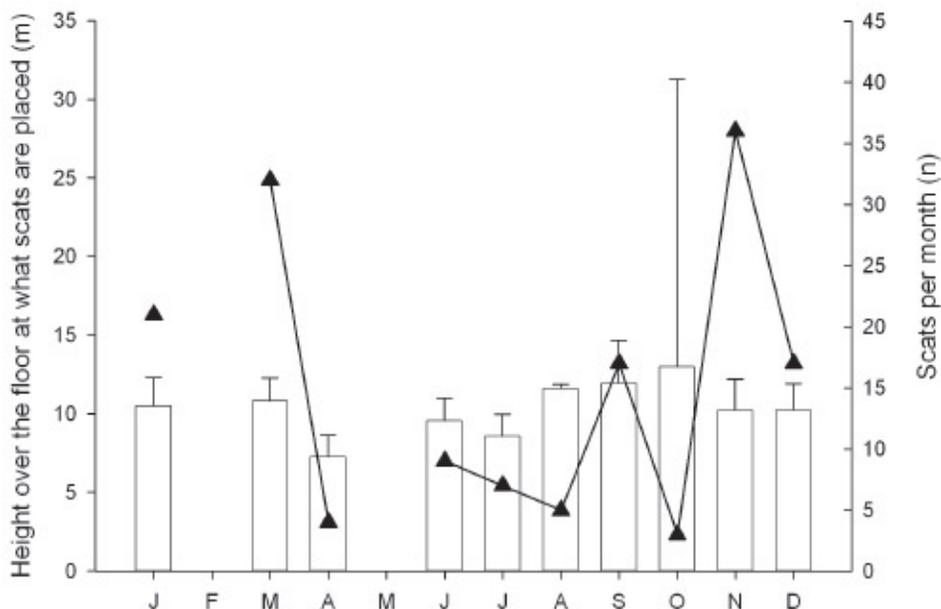


Fig. 1. Monthly variation in height where scats are placed (bars, left axis) and number of scats placed per month (line, right axis) by Common genet (*Genetta genetta* L.) from the area of 4000 ha in Toledo Mts. (Central Spain). Bars represent means \pm 95% CI. Absence of bars represents lack of data for these months.

The monthly variation in scat numbers presented in this study is in accordance with the results of Palomares (1993), although the study areas were very different. In my study, the higher number of scats collected from November to March is comparable to the findings of Palomares (1993), who detected two peaks in faeces deposition: February-March and November-December.

The vertical aspects of scat deposition were not measured by Palomares (1993). However, this variable appears to provide an indirect evidence of genet scent-marking optimization during the reproductive season, because faeces situated in higher positions can be dispersed further by wind (Vilá *et al.* 1994), particularly in forests as it was the case in this study. In fact, the rock overhangs located among the forest canopy, seem to be ideal for wind-dispersion of scent marks.

The parturition of genets has two peaks in Spain, the main from April to May, and the second one between September and November (Delibes 1974, Aymerich 1982). Gestation of captive genets takes 10–11 weeks (Volf 1959). Accordingly, the peak mating period in genets for Mediterranean Spain occurs from January to March. An increase in marking behaviour and the inspection of scent marking during the mating season has been observed in captive genets (Roeder 1978, 1980a, b). The results of the present study suggest that during the mating season and young dispersal period the Common Genet tends to leave more scats and deposits them in higher positions in order to increase the dispersal efficiency of scent marks (Macdonald 1980, Vilá *et al.* 1994). After the mating period, (i.e. during summer), genets decrease their scent marking optimization. This increases again during the dispersal period of juveniles (autumn) in order to reduce the intrusions of juvenile conspecifics into their territories (Palomares 1993). Scent marks are indirect means of territory maintenance and are used as important sex specific attraction signals for individuals of the opposite sex, whereas they serve the opposite function for the individuals of the same sex (Macdonald 1980). Males that have higher scent-marking rates normally also have greater mating success (Gould and Overdorff 2002). Since reproducing individuals

are those most likely involved in territory defence (Gese 2001), efficient scent marking increases the time devoted to mating behaviour by reducing territory intrusions. In conclusion, year-round defecation pattern in wild genets appears to be a behaviour that helps to optimize reproductive effort.

ACKNOWLEDGEMENTS: I am grateful to R. Václav and M. Ruiz-Rodríguez for their comments. A. Hillbricht-Ilkowska and an anonymous referee contributed to improve this manuscript.

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(Received after revising January 2006)