TIME AND SPACE USE BY TWO COMMON GENETS (*GENETTA GENETTA*) IN THE DOÑANA NATIONAL PARK, SPAIN

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Viverrids have not been studied in the same detail as other families of carnivores (Eisenberg, 1981). For common genets, *Genetta genetta*, references to its use of space and time are anecdotal, scarce, and usually included in papers on more general topics. Some studies undertaken in Africa on behavior of free-living *Genetta genetta* (Ikeda et al., 1983; Waser, 1980) must be attributed to *Genetta felina* after the taxonomic revision of the genus by Schlawe (1980). In this paper, we present information on patterns of activity, home-range size, habitat use, and daily movements of two common genets radio-tracked between September 1985 and April 1986.

The study was conducted at the Doñana National Park, which occupies 550 km² on the right bank of the mouth of the River Guadalquivir, in SW Spain (ca. 37°N, 6°30'W). It includes three main biotopes: the marshes or marismas, the scrubland, and the dunes. Usually the marshes are flooded in winter, and they were not used by the genets during this study. There are two main types of scrubland: a dry, xerophytic scrubland vegetated by *Halimium* sp. and *Rosmarinus* sp. that reach a height of 1.2 m and with relatively low ground cover, and a dense, mesic scrubland vegetated by *Erica* sp. and *Calluna vulgaris*, that may reach 3 m in height and cover the ground completely. In the dunes, there are mobile bare sand dunes and depressions or valleys in between, usually colonized by pine (*Pinus pinea*) forests. Climate is mediterranean subhumid, characterized by dry, hot summers and mild, wet winters.

We radio-tracked a young female (weight, 1,040 g; deciduous dentition) and an adult male (weight, 1,750 g; teeth showing no wear signs). Both were captured in live traps baited with sardines, immobilized by injection of a mixture of ketamine hydrochloride (ketolar) and tiazine hydrochloride (Rompun) and equipped with radio-collars (Wildlife Materials Inc.) with switch sensors.

The signal was received by a portable AVM LA-12 receiver. The locations were determined by triangulation from a vehicle. We located the genets at least once an hour during seven 24-h periods, and 155 times at random hours of the day apart from intensive tracking periods. A total of 330 locations was determined.

Home-range shape and size were estimated from the independent locations, using the smallest convex-polygon method (Macdonald et al., 1980). To determine the zones of most intense use we represented the utilization distribution (Van Winkle et al., 1973) on 10,000-m² squares.

To estimate hourly activity we used distances traveled at each hourly interval of the 24-h tracking periods. The switch sensor of the radio-collar allowed us to know if the animal was active during independent locations. The daily movements were estimated by adding straight-line distances between 25 consecutive hourly locations and multiplying the results by 1.46, an empirical value obtained by Palomares (1986) while tracking the Egyptian mongoose (*Herpestes ichneumon*) in the same area.

The activity of the adult male was exclusively nocturnal, as is usual in genets (Dücker, 1965; Waser, 1980). None of the 70 locations obtained during daylight hours revealed activity. Nevertheless, the young female was active in 19% of 62 locations made during daylight hours, the percentage increasing to 65% ($n = 51$) during the night. Previously, Ikeda et al. (1982) reported diurnal activity for a female *Genetta tigrina* in Ethiopia.

The partially diurnal activity of the young female we tracked may be explained by its age, as observations of captive genets by one of us (MD) suggest that nocturnality predominates as animals mature. Also, the animal lived exclusively in a dense heather scrubland, where high concealment could diminish interference competition with larger predators, allowing a relaxation of its schedule of activity.

Both genets showed greater activity from sunset to midnight, with a secondary peak of activity by the male just before sunrise (Fig. 1).

The home range of the young female from 26 September to 31 December was 1.4 km². On a monthly basis, however, home-range size was 0.2 km² in October, 0.7 km² in November and 1.2 km² in December, with the number of locations roughly similar for the three months (37, 38, and 47, respectively). These results suggest that the female, probably born in the zone, was increasing its familiar environment, as described by Rowe-Rowe (1970) from a young *Genetta rubiginosa* kept in captivity.

FIG. 1.—Percentage of the daily distance traveled each hourly interval from midnight to midnight by an adult male and a juvenile female common genet in Doñana National Park, Spain, 1985–1986.

Core areas (i.e., areas of intensive use) were detected within the home range of the female. These areas roughly coincided in October and November, but in December, as home-range size increased, the zone of greater use was displaced 1,400 m.

No clearly defined home range was observed in the male, because during the tracking period (10 November–23 March) the movements of the animal covered an area of approximately 50 km². In February, it reached the southern limit of the Doñana National Park, bounded by the Guadalquivir River and the Atlantic Ocean, a distance of 22 km from where it was captured and released. This behavior suggests a dispersing individual. However, experiments of capture-recapture of *Genetta rubiginosa* by Carpenter (1970) show that females are territorial, but males appear to be wanderers not attached to any specific area. This could be the case in our zone.

There is no information on the size of home ranges of *Genetta genetta* in other areas. The home range of *Genetta felina* in Ethiopia (referred to as *Genetta genetta*) has been estimated as 0.62 km² for a lactating female and 0.34 km² for a juvenile (Ikeda et al., 1983). In Serengeti, based on sightings of a single individual, Waser (1980) estimated the home range of *Genetta felina* as 0.25 km². These estimations are smaller than the size of the home range of the common genet in Doñana. However, use of feeding sites by Ikeda et al. (1983) and the sighting method employed by Waser (1980) probably underestimated the actual home-range size of feline genets.

Both individuals used areas with high ground cover, for resting and for activity. As diurnal resting places the genets used dense thickets (85.7% of the cases, $n = 7$, in the female and 35.7%, $n = 14$, in the male) and treetops (14.3% and 64.3%, respectively). When both structures were available, they usually selected thickets over treetops. Because of their inaccessibility, we were unable to discover the precise resting places inside thickets. In treetops, the genets generally used some support, either old bird nests or pine-needle tufts and dry pine branches, 4–15 m above the ground. Rowe-Rowe (1970) found a female *Genetta felina* with three young in a large bird nest 6 m above the ground.

Diurnal resting places were not permanent, but varied from day to day for both animals. The average distance between consecutive diurnal resting locations was 277 m for the female (30–1,350 m; $n = 23$; 65.2% of the cases from 100–200 m) and 2,175 m for the male (300–6,500 m; $n = 5$).

The entire home range of the young female was included within a dense mesic scrubland (only one of 182 locations was outside this biotope, in a neighboring rush), whereas the male traveled along the pine forests of the interdune valleys (five of 35 locations were on sand dunes, probably used as passages). In these areas wood mice (*Apodemus sylvaticus*) were common and probably were the main prey of the genets in the study area (Palomares, 1986).

The daily distances traveled by the female in two days of 24-h tracking were 2,905 m and 3,051 m. Average daily distance traveled by the male was 8,050 m (1,925–13,761 m; $n = 5$). We detected two types of movement: a zigzag run predominating in the two trackings of the female, and in the male when it did not leave a dune valley, and a more or less straight-line run when the male traveled across bare sand dunes. The former movement likely was associated with searching and hunting, the second with traveling. Dispersal behavior of the male and the abundance of open areas (where the animal did not search for prey) in its habitat could explain the greater daily distance it traveled.

We thank Mr. R. Laffitte for trapping the animals. Mr. J. Aldama, Mrs. N. Bustamante, and an anonymous referee also helped. The research was supported by CSIC-CAICYT (project 944).

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Submitted 1 April 1987. Accepted 10 August 1987.