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Genetta genetta.

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Genetta Oken, 1816

Viverra Linnaeus, 1758:45. Type species *V. genetta.*
Genetta Oken, 1816:1010. Renaming of *Viverra genetta* Linnaeus.
Odmaelurus Gloger, 1841:72. Renaming of *Genetta* Oken.

CONTEXT AND CONTENT. Order Carnivora, family Viverridae, subfamily Viverrinae. The number of species in the genus is controversial (Ansell 1978; Coetzee 1977; Crawford-Cabral 1966; Crawford-Cabral and Pacheco 1989; Schlawe 1980, 1981). The following key is based on Wozencraft (1993) for 9 species:

1 Length of head and body >55 cm; present only in northeastern Zaire and western Uganda ..... *G. victoriae*
Length of head and body <55 cm; present outside northeastern Zaire and western Uganda 2
2 Present in Africa, Europe, Spain, and Arabian Peninsula ..... *G. genetta*
Present only in Africa 3
3 Present only north of equator 4
Present south of equator 5
4 Present in Ethiopia, Sudan, and Somalia ..... *G. abyssinica*
Not present in Ethiopia, Sudan, and Somalia 8
5 Present only south of equator; well-defined crest of dorsal hair ..... *G. angolensis*
Present north of equator; no well-defined crest of dorsal hair 6
6 Tail not tapered; black rings uniform around tail; dark spots small and densely distributed ..... *G. servalina*
Tail tapered; black rings paler on underside of tail; dark spots large and sparsely distributed 7
7 Six or 7 pale rings on underside of tail; spots large; feet mostly black ..... *G. tigrina*
Eight to 10 pale rings on underside of tail; spots medium; feet with little or no black ..... *G. maculata*
8 Tail with uneven and incomplete dark rings ..... *G. thierryi*
Tail with evenly spaced and complete dark rings ..... *G. johnstoni*

Genetta genetta (Linnaeus, 1758)

Common Genet

Viverra genetta Linnaeus, 1758:45. Type locality "Spain."
Viverra felina Thunberg, 1811:165. Type locality not given.
Genetta hispanica Oken, 1816:1010. Type locality "Ronda, Malaga, Spain."
Viverra gallica Oken, 1816:1010. Alternative name for *G. hispanica,* not of Kerr, 1792.
Genetta afra Cuvier, 1825:plate 195. Type locality "Barbary."
Genetta vulgaris Lesson, 1827:173. Renaming of *G. genetta.*
Genetta bonapartei Loche, 1857:385. Type locality "Algeria."
Genetta senegalensis Noack, 1889:169. Type locality unknown (presumably Senegal).
Viverra macrura Jentink, 1892:112. Renaming of *V. felina* Thunberg.
Genetta melas Graells, 1897:174–175. Type locality "Sierra Morena," Spain.
Genetta bella Matschie, 1902:1140. Type locality "Loanda, coastal northwestern Angola."
Genetta granti Thomas, 1902a:487. Type locality "Azraki Ravine, Haushabi, 5,200 feet, Arabia."
Genetta pulchra Matschie, 1902:1139. Type locality "Okavango River, northern southwest Africa."
Genetta rhodanica Matschie, 1902:1139. Type locality "Montpellier, Herault, France."
Genetta terraesanctae Neumann, 1902:183. Type locality "Mount Carmel, Palestine."
Genetta peninsulae Cabrera, 1905:266. Type locality "El Pardo, near Madrid, Spain."
Genetta ludia Thomas and Schwann, 1906:579. Type locality "Klein Letaba (west of Kruger National Park), northeastern Transvaal."

CONTEXT AND CONTENT. Generic context as above. *Paragenetta* and *Pseudogenetta* are valid subgenera. As few as 3 and as many as 30 subspecies have been described (Schlawe 1981; Schwarz 1930; Vassart et al. 1986). We follow Delibes (1977), Ellerman and Morrison-Scott (1966), and Ellerman et al. (1953) and list 10 subspecies.

G. g. afra Cuvier, 1825:plate 195, see above (*barbara* Hamilton-Smith and *bonaparti* Loche are synonyms).
G. g. balearica Thomas, 1902b:162. Type locality "Inca, Majorca, Balearic Islands."
G. g. felina Thunberg, 1811:165, see above (*macrura* Jentink is a synonym).
G. g. genetta (Linnaeus, 1758:45), see above (*gallica* Oken, *granti* Thomas, *hararensis* Neumann, *hispanica* Oken, *melas* Graells, *neumanni* Matschie, *peninsulae* Cabrera, and *vulgaris* Lesson are synonyms).
G. g. granti Thomas, 1902a:487, see above.
G. g. hintoni Schwarz, 1929:47. Type locality "Ndola (near Congo border), northern Rhodesia."
G. g. isabelae Delibes, 1977:140. Type locality "Sta. Eulalia, Ibiza, Balearic Islands."
G. g. pulchra Matschie, 1902:1139, see above (*bella* Matschie, *ludia* Thomas and Schwann, and *senegalensis* Fischer are synonyms).
G. g. rhodanica Matschie, 1902:1139, see above.
G. g. terraesanctae Neumann, 1902:183, see above.

DIAGNOSIS. *Genetta genetta* (Fig. 1) is very similar to several other genets, and geographic distribution is necessary to differentiate it from most other species. Morphologically, typical features of *G. genetta* include a dorsal crest of long, black hair, even longitudinal rows of black spots, parallel tail rings, and a white-tipped tail (Shortridge 1934). However, the common genet is the

FIG. 1. Adult *Genetta genetta.* Photograph by Javier Calzada.

FIG. 2. Dorsal, ventral, and lateral views of cranium and lateral view of mandible of female *Genetta genetta* from Kenya (Royal Ontario Museum [ROM] 28365). Greatest length of cranium is 88.9 mm.

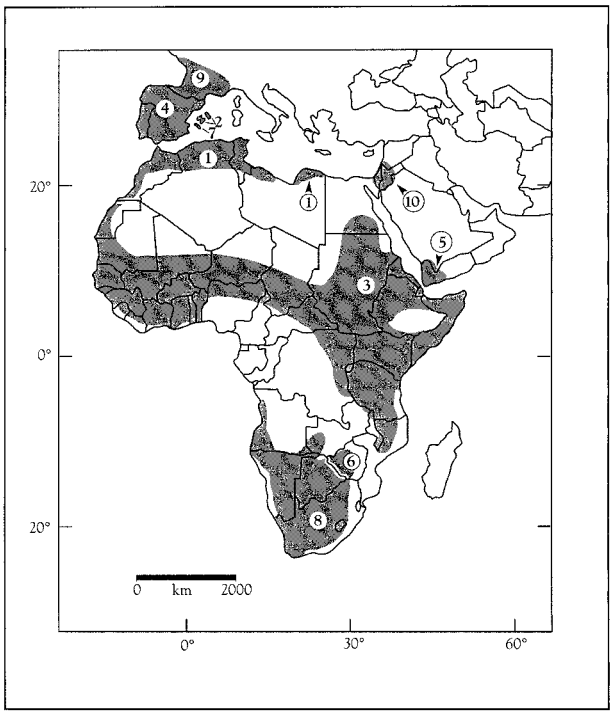

FIG. 3. Distribution of *Genetta genetta*: 1, *Genetta genetta afra*; 2, *Genetta genetta balearica*; 3, *Genetta genetta felina*; 4, *Genetta genetta genetta*; 5, *Genetta genetta granti*; 6, *Genetta genetta hintoni*; 7, *Genetta genetta isabelae*; 8, *Genetta genetta pulchra*; 9, *Genetta genetta rhodanica*; and 10, *Genetta genetta terraesanctae* (modified from Calzada 1998; Corbet 1966; Gasperetti et al. 1985; Harrison 1968; Pringle 1977; Schlawe 1981).

most variable morphologically of all genets (Crawford-Cabral 1981; Schlawe 1981) and is often misidentified. *G. genetta* also resembles linsangs (*Poiana*), but *G. genetta* is larger (>1 kg) with parallel tail rings and black markings in front of each eye (Kingdon 1997).

GENERAL CHARACTERS. *Genetta genetta* has a long, cat-like body, pointed muzzle, and long, tapering tail with 8–13 black rings. Legs are short. Feet are cat-like. Digits are short with semiretractile claws. Soles of feet are hairy, except for pads, and have a naked longitudinal band in metatarsial region (Dorst and Dandelot 1970; Hufnagl 1972).

Pelage is soft with dense, woolly underfur. Color is pale throughout with several longitudinal rows of dark spots. A median dorsal stripe of black hairs is present, starting on shoulder and broadening toward rump. Nape is striated with about 7 irregular dark lines. Flanks and back are marked with about 5 lines of spots on each side of the dorsal stripe. Ventral fur is grayish olive (Shortridge 1934). Melanistic individuals are rare (Schauenberg 1966).

A black stripe on forehead and a broad black marking on each side of eyes are present. Sides of muzzle, chin, lower lip, and throat are white. Vibrissae are well developed and ca. 60–70 mm in length. Eyes are large. Ears are large, higher than wide, oval in outline, with round tips.

Males are slightly larger than females. Body measurements (in mm) of *G. genetta* from Botswana (Smithers 1971), average (*n,* range), for males and females, respectively: total length, 953 (42, 860–1,050), 936 (12, 890–1,024); length of tail, 464 (42, 430–516), 459 (12, 417–516); length of hind foot, 90 (37, 82–97), 88 (11, 83–92); and length of ear, 54 (35, 50–60), 55 (12, 51–65). Body measurements (in mm) of *G. genetta* from Cape province, South Africa (Stuart 1981), average (*n,* range), for males and females, respectively: total length, 968 (25, 885–1,059), 936 (17, 840–1,020); length of tail, 454 (25, 410–494), 433 (17, 410–470); length of hind foot, 85 (25, 73–95), 81 (18, 70–88); and length of ear, 51 (23, 40–56), 47 (16, 40–52). Body measurements (in mm) of *G. genetta* from Spain (Calzada 1998), average (*n,* range), for males and females, respectively: length of body, 490 (18, 432–552), 470 (14, 435–510); length of tail, 434 (18, 331–452), 415 (13, 365–441); length of hind foot, 86 (18, 80–90), 84 (14, 80–89); and length of ear, 48 (17, 44–51), 47 (14, 40–54). Body mass (kg), average (*n,* range), of males and females, respectively: 2.0 (20, 1.8–2.3) and 1.8 (10, 1.5–2.2) in Botswana (Smithers 1971) and 1.9 (19, 1.5–2.5) and 1.8 (11, 1.4–2.0) in Cape Province, South Africa (Stuart 1981).

Skull of *G. genetta* (Fig. 2) is slender and elongated. Rostrum is moderately long, slightly concave dorsally. Orbits are large and upwardly directed. Zygomatic arches are slender without orbital processes. Braincase is elongated, and sagittal crest is only developed over posterior braincase (Kingdon 1977). Tympanic bullae are elongated and twice as long as they are wide (Harrison 1968). Greatest length of skull (in mm) from *G. genetta* in South Africa (Stuart 1981), average (*n,* range), for males and females, respectively: 90 (12, 86–95) and 89 (6, 86–92).

DISTRIBUTION. *Genetta genetta* occurs in the Mediterranean zone of Europe, from Iberia to France, in North Africa, Arabia, and throughout the Savannah zone of Africa, south of the Sahara (Fig. 3). In South Africa *G. genetta* is common in the west-central part of KwaZulu-Natal (Pringle 1977), in Cape Province (Stuart 1981), and in QwaQwa National Park in the Free State province (Avenant 1997). It is common in Morocco (Cuzin 1996), but rare in Libya, Egypt, and Zambia (Ansell 1978; Hufnagl 1972).

FOSSIL RECORD. The genus *Genetta* is known from the Pliocene in Langebaanweg (Hendey 1974) and in Morocco (Geraads 1997). *G. genetta* is absent from the Pleistocene in Europe (Kurtén

1968), but appears during Early Pleistocene of Africa in Omo and East Turkana, and later in Late Pleistocene deposits in Barbary (Savage 1978).

FORM AND FUNCTION. *Genetta genetta* has large and dense sebaceous glands in cheeks, neck, flanks, and foreleg regions. Glands are used in scent marking by flank rubbing (Roeder et al. 1989).

Dental formula: i 3/3, c 1/1, p 4/4, m 2–3/2–3, total 40–44 (Harrison 1968). Males have a small vestigial baculum. Baculum is mildly arched and slightly larger at each end than in middle. Measurements of 3 bacula (Chaîne 1925), average (range): total length, 5.3 mm (5–6), width of distal end, 1.5 mm (1–2), and width in midsection, 0.75 mm (0.5–1.0).

ONTOGENY AND REPRODUCTION. Mating occurs from January to September, with a major peak in February and March and a minor peak in July and August (Delibes 1974). Gestation lasts 10–11 weeks (Aymerich 1982; Delibes 1974). Births may occur anytime between March and November, but a first peak occurs in April and May, and a 2nd peak in September and October (Aymerich 1982; Delibes 1974; Livet and Roeder 1987; Smithers 1971). Litter size is 1–4, most often 2–3, and sex ratio at birth is 1:1 (Smithers 1971; Volf 1959, 1965).

Neonates weigh 60–85 g (Bouchardy et al. 1986; Stuart 1981). Cubs emerge from the natal den when 45-days old (Aymerich 1982) and start eating meat in the 7th week. Hunting behavior is completely developed after 2–4 months. Nonetheless, cubs may nurse for up to 4 months, at which time dispersal starts. Genets reach sexual maturity at 2 years of age (Bouchardy et al. 1986; Livet and Roeder 1987), when body mass nears 1.5 kg in males and 1.6 kg in females (Calzada 1998).

ECOLOGY. *Genetta genetta* inhabits diverse habitats. Prey availability and shelter for resting are key factors in habitat selection. In Europe *G. genetta* is abundant in *Quercus* forests, but it also occurs in olive (*Olea europaea*) groves, riparian copses, ash (*Fraxinus*) groves, pine forests, rocky areas, and scrublands. The common genet is rare in open areas, marshes, and cereal croplands (Cugnasse and Riols 1984; Delibes 1974, 1977; Livet and Roeder 1987; Virgós and Casanovas 1997). Despite their abundance along watercourses (Cugnasse and Riols 1984; Livet and Roeder 1987), presence of water is not essential (Delibes 1974; Virgós and Casanovas 1997). Common genets prefer to live at low altitudes, especially in northern areas, and are rare above 800 m in France (Livet and Roeder 1987) or 1,200 m in central Spain (Virgós and Casanovas 1997). However, *G. genetta* occurs up to 2,000 m in Algeria (Desmet and Hamdine 1988; Hamdine et al. 1993). *G. genetta* tolerates close proximity to humans (Delibes 1974; Virgós and Casanovas 1997).

Genetta genetta is an opportunistic carnivore with a euryphagous diet. Small mammals, up to rabbit size, are the most common components of the diet, but *G. genetta* will also eat birds and their eggs, reptiles, amphibians, fish, insects, fruits, and mushrooms (Du Toit 1980; Smithers 1971).

Where their ranges overlap, the wood mouse (*Apodemus sylvaticus*) is the main prey (Calviño et al. 1984; Chanudet et al. 1967; Livet and Roeder 1987; Lodé et al. 1991; Palomares and Delibes 1991; Virgós et al. 1999). Arthropods, birds, and reptiles are eaten opportunistically (Delibes et al. 1989; Hamdine et al. 1993). Typically, birds and amphibians are important in winter and spring (Cugnasse and Riols 1979, 1984; Delibes 1974; Le Jacques and Lodé 1994; Virgós et al. 1996), fruits in summer and autumn (Calviño et al. 1984; Cugnasse and Riols 1984; Virgós et al. 1996), and reptiles and insects in spring or summer (Delibes et al. 1989; Le Jacques and Lodé 1994; Virgós et al. 1996). In urban areas of northwestern Spain, poultry, carrion, and fruits are seasonally important (Calviño et al. 1984).

Where the wood mouse is absent or rare, the diet of common genets is catholic, and other rodents, arthropods, birds, and reptiles dominate (Alcover 1982, 1984; Clevenger 1995, 1996; Ruiz-Olmo and López-Martín 1993; Virgós et al. 1996). In Cabrera, rats (*Rattus*) comprised 70% of the diet of common genets. Plant material is consumed seasonally and consists of graminoids, figs (*Ficus carica*), carobs (*Ceratonia siliqua*), and fruits of dwarf palm (*Chamaerops humilis*) and juniper (*Juniperus phoenicera*—Alcover 1982, 1984; Clevenger 1995, 1996).

Adults are mostly solitary, and the home ranges of adults display large intersexual, but little intrasexual, overlap. Home range size is similar for adult males and females, but juveniles maintain smaller ranges (Livet and Roeder 1987; Palomares and Delibes 1988, 1994). Average home range size in Doñana National Park, Spain, is 7.8 km² (Palomares and Delibes 1994). In France, 1 adult female occupied a range of 2 km² (Lodé et al. 1991).

In Doñana National Park the density for adults was 0.33 individuals/km² and 0.67/km² when young animals are included (Palomares and Delibes 1994). Fewer individuals occur from southwest to northeast both in Spain and in France (Delibes 1974; Livet and Roeder 1987; Schauenberg 1966), and North African populations are denser than European ones (Desmet and Hamdine 1988).

In Spain the average distance between consecutive resting locations was 0.73 km. Young animals use closer consecutive resting places (Palomares and Delibes 1994), but this average distance increases up to 2.2 km during dispersal (Palomares and Delibes 1988). In Doñana the mean distance covered during 1 day was 2.8 km. Distance was positively correlated with body mass, distance between 2 consecutive resting places, and vegetation structure inside the home range. The young travel shorter distances, except during dispersal when the daily distance traveled may be ≤14 km (Palomares and Delibes 1988, 1994). One adult male radiotracked in Doñana National Park ranged over 50 km² during its dispersal (Palomares and Delibes 1988). Common genets may use culverts to cross major roads (Yanes et al. 1995).

Domestic dogs and Iberian lynx (*Lynx pardinus*) may kill genets (Delibes 1999; Palomares and Caro 1999; Palomares and Delibes 1994). In some Mediterranean forests where Iberian lynx are common, density of common genets can be 23 times lower than in similar forests where lynx are absent (Palomares et al. 1996). The great owl (*Bubo bubo*) and golden eagle (*Aquila chrysaetus*) may eat common genets, although whether as prey or carrion is unknown (Cugnasse and Riols 1984; Livet and Roeder 1987).

Common genets can live 13 years in captivity (Bouchardy et al. 1986; Flower 1931; Livet and Roeder 1987). Mortality is greater for males and juveniles than for females. The most common causes of mortality are interspecific killing, roadkills, and poaching (Livet and Roeder 1987; Palomares and Delibes 1994).

Parasitic helminths are common. Depending on locality, common genets may host *Ancylostoma braziliense*, *A. caninum*, *A. genettae*, *A. martinezi*, *A. tubaeforme*, *Brachylaima*, *Cyathospirura nouveli*, *C. seurati*, *Diplopylidium acanthotetra*, *D. genettae*, *D. monoophorum*, *Joyeuxiella dongolensis*, *J. gervaisi*, *J. pasqualei*, *Mastophorus muris*, *Mesocestoides ambiguus*, *Metorchis albius*, *Molineus genettae*, *Physaloptera praepuytialis*, *Protospirura numidica*, *Pterygodermatites affinis*, *P. leiperi*, *Rictularia cahirensis*, *R. leiperi*, *R. macdonaldi*, *R. proni*, *Taenia latocollis*, *T. parva*, *Toxocara canis*, *T. genettae*, and *Trichinella spiralis* (Alvarez et al. 1990; Feliu et al. 1996; Iori and Lanfranchi 1996; Livet and Roeder 1987, Macchioni 1995; Miquel et al. 1992; Rounds 1968).

No ectoparasites were collected on common genets in France (Livet and Roeder 1987). However, ticks, fleas (*Hippobosca*), and lice are common parasites in southern Spain (J. Calzada, in litt.). Common genets also host the phithirapteran *Eutrichophilus genettae* (Martín Mateo 1977) and *Lorisicola (Paradoxuroecus) genettae* (Pérez-Jimenez et al. 1990).

Genetta genetta can be captured alive with boxtraps or with padded foothold traps and can be immobilized with ketamine hydrochloride and xylazine hydrochloride (Palomares 1993a). Common genets can be radio-tracked with either collars or harnesses (Lodé et al. 1991; Palomares and Delibes 1988, 1994).

BEHAVIOR. Common genets are nocturnal, and the highest levels of activity occur following sunset and just prior to sunrise. Juveniles may be active during the day. In Doñana National Park they were active for an average of 28% of the day (Palomares and Delibes 1994).

Common genets most often use areas with ground cover, both when active and resting (Palomares and Delibes 1994). However, common genets may hunt in open areas (Lodé et al. 1991) or cross open areas during dispersal (Palomares and Delibes 1988).

Common genets use thickets and hollow trees as diurnal resting places. In Doñana National Park they use thickets of *Rubus*, *Tamarix*, *Pistacia lentiscus*, *Quercus*, and ash trees. Hollow trunks are also used for resting. Bird nests, pine-needle tufts, or branches are used less frequently. Genets reuse the same resting places fre-

quently: over a minimum of 70 days, 7 individuals in Doñana National Park used a mean of 16 resting places with a reuse rate of 5.3 days, and only 1 resting place per day (Palomares and Delibes 1994). Parturition sites are in rocky crevices and hollow trees (Delibes 1974).

Copulation occurs at night. Mounting lasts 2–3 min and may be repeated 4–5 times in the same night. When a female accepts a male, she beds down in front of the male; the male holds the female with his forelegs during copulation (Livet and Roeder 1987).

Olfactory marking behavior is well documented in captive genets (Roeder 1978a, 1978b, 1980a, 1980b, 1983a, 1983b; Roeder and Thierry 1994). Two different types of marks have been defined (Roeder 1978a): deposition of secretion of perineal glands and urine, and flank and hind leg rubbing (Roeder 1978a, 1978b).

Ano-urogenital marking is performed differently by males and females. Urine marking is mostly used by males, whereas females commonly use perineal gland secretion. Marking activity in males inhibits marking in females. Male marking behavior increases during the breeding season, although females mark more intensively than males at all other times. When males stop marking, after mating, females increase their marking frequency again. Immediately before and during the first month following parturition, females mark less often (Livet and Roeder 1987; Roeder 1978a). Hostile behavior may increase ano-urogenital marking by males. In these periods of aggression, flank and hind leg rubbing becomes more frequent in both sexes (Roeder 1978a, 1983a, 1983b). The offensive threat consists of erection of the dark central dorsal band of hair, an arch-back stance, opening the mouth, and showing the teeth (Livet and Roeder 1987).

Scent marks permit assessment of social status and may allow individual recognition and recognition of relatives (Roeder 1978b, 1980b). Synchrony between males and females is also under olfactory control. The "hiccup" of the male in the mating period occurs after sniffing the ano-urogenital region or flank of an estrous female or sniffing where she marked (Roeder 1978a). Males can distinguish pregnant and not pregnant females using olfactory cues from flank rubbing (Roeder 1978a).

Common genets defecate in latrines situated in elevated points, such as tree branches, rocks, raptor nests, or in human constructions, such as roofs and walls. Occasionally, scattered feces occur on the ground (Livet and Roeder 1987; Palomares 1993b; Roeder 1980a) and are easily confused with those of larger carnivores. Common genet droppings are longer (mean length = 15.6 cm, n = 82) and thicker (mean diameter = 1.42 cm, n = 82—T. Lodé, in litt.) than expected for this small animal (Calzada 1998). Common genets tend to deposit droppings over the whole available surface of latrines, and fresh feces are deposited only over old ones (Palomares 1993b).

Latrines have a communicative function. Feces are scent impregnated with the anal sac secretions (Roeder 1978b, 1980b). Latrines seem to be used by several genets and are situated along the edge of the most used habitats (Palomares 1993b).

Common genets use 5 calls (Livet and Roeder 1987). The hiccup call, which permits contact among individuals, plays an important role in the mother–offspring relationships and during the mating period. Females emit this call during the first 5 months following parturition, and it is used to call the litter. During the mating period only males emit this call. The purr is emitted by young only during their 1st week of life (Faugier and Condé 1973). The dependent young emit a moan or mew. The growl is emitted by the young after the complete development of predatory behavior and is used during aggressive interactions. Finally, the click is the typical vocalization during aggressive and offensive threats (Faugier and Condé 1973).

Common genets locate their prey mainly by smell, but also by hearing and sight (Düker 1965). Small rodents are captured by the back and killed with a bite at the head (Delibes 1974; Niort 1951). Common genets start eating small mammals and birds from the head, swallowing prey in 2–4 portions. When larger animals are consumed, they are eaten in small bites. Arthropods and fruits are swallowed completely if they are small, but pits are often removed from olive fruits (Delibes 1974).

GENETICS. *Genetta genetta* has 2n = 52 with 23 pairs of meta- and submetacentric, and 2 pairs of very small acrocentric autosomes. X chromosome is a large meta- or submetacentric, and Y chromosome is a medium-sized acrocentric (Wurster and Benirschke 1968).

CONSERVATION STATUS. Common genets are protected in France and Spain. Only 1 subspecies, *G. g. isabelae*, is considered rare and is listed by the International Union for the Conservation of Nature (Wozencraft 1993).

REMARKS. The taxonomy of genets is not resolved, partly because of confusion between species similar to *G. genetta*, such as *G. tigrina* and *G. maculata* (Crawford-Cabral 1989), and due to numerous proposed subspecies of *G. genetta*, which likely arose because of geographic and habitat-specific variation in coat color.

Prior to domestication of the cat (*Felis catus*) in the Middle Age, common genets were used as pets to control rodents around households (Bouillault and Filloux 1955). Other vernacular names include European genet, small-spotted genet, genette européenne (French), genette commune (French), and ginsterkatze (German). The etymological origin is either from the Greek prefix *gen* meaning "bear" and the New Latin suffix *etta* meaning "small" (Borror 1960), or a derivation of the Arab name "Djarnet."

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