

Genetta genetta – Small-spotted Genet



Regional Red List status (2016)	Least Concern
National Red List status (2004)	Least Concern
Reasons for change	No change
Global Red List status (2015)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	No

The Small-spotted Genet is the only African carnivore who has been – intentionally – introduced to Europe. Molecular and phylogeographic studies suggest that this happened prior to 300 BC, possibly via Phoenicians' commercial routes (Gaubert 2016).

Taxonomy

Genetta genetta (Linnaeus 1758)

ANIMALIA - CHORDATA - MAMMALIA - CARNIVORA - VIVERRIDAE - *Genetta* - *genetta*

Synonyms: *afra* G. Cuvier 1825; *albipes* Trouessart 1904; *balearica* Thomas 1902; *barbar* Wagner 1841; *barbara* C.E.H. Smith 1842; *bella* Matschie 1902; *bonapartei* Loche 1857; *communis* Burnett 1830; *dongolana* Hemprich and Ehrenberg 1832; *gallica* Oken 1816; *grantii* Thomas 1902; *guardafuensis* Neumann 1902; *hararensis* Neumann 1902; *hispanica* Oken 1816; *isabellae* Delibes 1977; *leptura* Reichenbach 1836; *ludia* Thomas and Schwann 1906; *lusitanica* Seabra 1924; *melas* Graells 1897; *neumanni* Matschie 1902; *peninsulae* Cabrera 1905; *pulchra* Matschie 1902; *pyrenaica* Bourdelle and Dezillière 1951; *rhodanica* Matschie 1902; *senegalensis* J.B. Fischer 1829; *tedescoi* de Beaux 1924; *terraesanctae* Neumann 1902; *vulgaris* Lesson 1827.

Common names: Small-spotted Genet, Common Genet (English), Kleinkolmuskejaatkat (Afrikaans), Insimba (Ndebele, Swati), Tshipa ya Dithokolo tse Nyenyane (Sepedi), Tshipa, Tshipo e Matheba a Masesane

(Sesotho), Nsimba-maxanatsi (Tsonga), Tshipa (Tswana), Tsimba (Venda), Inyhwagi (Xhosa), Insimba Enamabala (Zulu)

Taxonomic status: Species

Taxonomic notes: There is a high degree of phenotypic variation in this species which resulted in the description of several subspecies; the validity of many of these remains untested, while others may actually represent distinct subspecies or even species (Gaubert et al. 2004, 2005, 2009). A recent mtDNA-based study suggested at least four distinct geographic lineages within the species circumscribed to the Mediterranean Basin, western Africa (also spread into North Africa), southern Africa and the Arabian Peninsula (Gaubert et al. 2011). The taxonomic status of *Genetta felina*, a lineage endemic to southern Africa, remains debated (see Gaubert et al. 2004, 2005; Gaubert & Begg 2007).

Assessment Rationale

The Small-spotted Genet is listed as Least Concern as this species has a wide distribution within the assessment region, is locally common, and has a very broad habitat tolerance that includes being commensal with human settlements in urban and rural landscapes. Small-spotted Genets are also present in many protected areas across the region.

Regional population effects: The species' range within the assessment region is continuous with the rest of its southern African range and given the ecological versatility of the species, we suspect that there is dispersal across regional boundaries (although no empirical and genetic data supporting this assertion are available).

Distribution

It is a widespread species, occurring in North Africa (Morocco, Algeria, Tunisia), and then in open and dry savannah zones throughout sub-Saharan Africa in three large blocks, corresponding roughly to West Africa, East Africa and southern Africa (Delibes & Gaubert 2013). It also occurs in coastal regions of Arabia, Yemen and Oman (Harrison & Bates 1991); records from Palestine are erroneous (Schlawe 1981; Kock 1983). The range of elevation from where it was been recorded varies from the sea level to almost 2,700 m asl. in the Atlas Mountains in Morocco (Delibes and Gaubert 2013). It was introduced in Europe, possibly via Phoenicians' commercial routes (Gaubert 2016), and now occurs in the South Western Europe fringe (Portugal, Spain, France and northwest Italy) (Gaubert et al. 2008; Delibes & Gaubert 2013). It is also present on some of the Balearic Islands (Delibes 1999; Gaubert 2016).

In South Africa, the Small-spotted Genet is common in the Eastern and Western Cape provinces, parts of KwaZulu-Natal, and in the Free State Province (Larivière & Calzada 2001). Although it occurs in Lesotho, it is absent from Swaziland.

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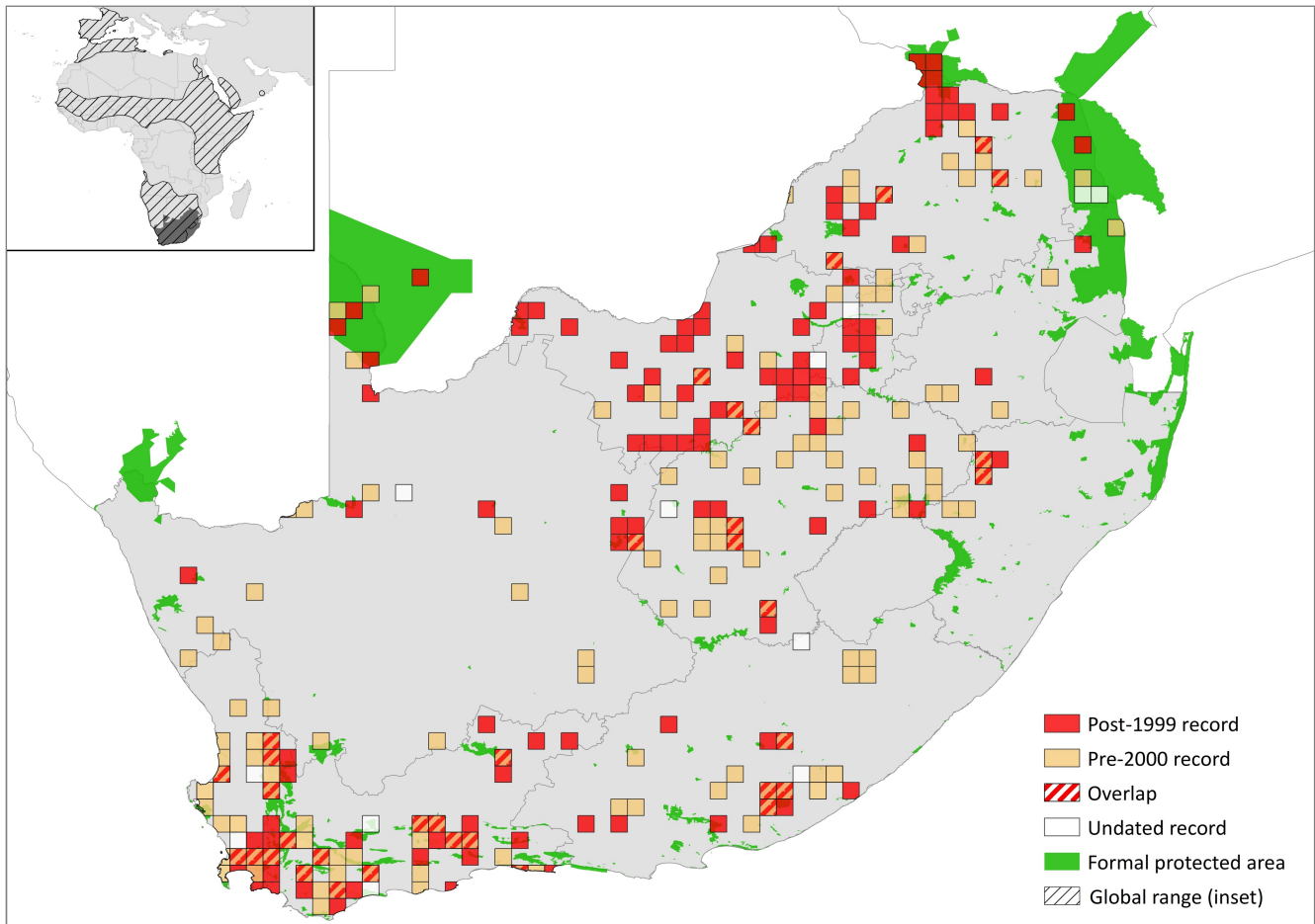


Figure 1. Distribution records for Small-spotted Genet (*Genetta genetta*) within the assessment region

Table 1. Countries of occurrence within southern Africa

Country	Presence	Origin
Botswana	Extant	Native
Lesotho	Extant	Native
Mozambique	Extant	Native
Namibia	Extant	Native
South Africa	Extant	Native
Swaziland	Absent	-
Zimbabwe	Extant	Native

Population

The Small-spotted Genet is one of the most common small carnivores in its native range, though detailed data on density in Africa are scarce; in Serengeti, Waser (1980) estimated a density of 1.5 ± 0.37 individuals / km². Another study reported densities of 0.18 individual / km² in Senegal (Sillero-Zubiri & Marino 1997). In Europe, this species is moderately abundant, with increasing populations in France, and densities of 0.3–0.98 individual / km² were recorded in two studies in Spain (Palomares & Delibes 1994; Camps & Llimona 2004). In Portugal, studies from camera-traps and capture–recapture analysis showed a density varying from 0.19–0.92 individual / km² (Sarmiento et al. 2010, 2014). The genet is common in suitable habitat throughout the Iberian Peninsula (Palomo & Gisbert 2002), where populations are either stable or slowly increasing (J. Herrero pers. comm. 2007). On Ibiza, habitat is declining and becoming

more fragmented, thus this species is suspected to be declining (Calzada 2007).

No detailed information is available on the abundance of this species in the assessment region. However, trapping (E. Do Linh San pers. obs. 2005–2011), camera-trapping (MammalMAP) and road mortality data (W. Collinson unpubl. data; MammalMAP) in different areas of South Africa suggest that it is relatively abundant.

Current population trend: Probably stable, based on wide habitat tolerance, extent of occurrence and lack of severe threats.

Continuing decline in mature individuals: Unknown, but probably not.

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: It is not currently possible to determine whether there are clearly delineated subpopulations, and if so, how many.

Severely fragmented: No. Small-spotted Genets have a broad habitat tolerance and can also exist in agricultural and rural landscapes.

Habitats and Ecology

Small-spotted Genets are found in a large variety of habitats, but availability of prey and shelters for resting constitute key factors in habitat selection (Larivière & Calzada 2001; Carvalho et al. 2014). In Africa, the few

studies that have been conducted so far showed that Small-spotted Genets tend to inhabit all types of wooded habitats (deciduous and evergreen) and bush areas, where they are often associated with rivers and brooks (Delibes & Gaubert 2013; Gaubert et al. 2015). They avoid open habitats, but may occur in even small fragments of woodland in farmland or near villages, and usually are absent from rainforests, dense woodlands and woodland–moist savannah mosaics (e.g. miombo woodland in Angola) (Pereira & Rodríguez 2010; Delibes & Gaubert 2013). Small-spotted Genets are also sometimes found in proximity to people and human buildings (e.g. Admasu et al. 2004) and are a common sight in rural and urban gardens. They can live in areas without trees, but then in most cases these areas correspond to rocky outcrops where they rest in rock crevices (Livet & Roeder 1987; Larivière & Calzada 2001). They rest mainly in hollow trees and in burrows dug by other animals (e.g. Aardvark *Orycteropus afer*, hares, etc.) (Delibes & Gaubert 2013). In Europe, several authors found that they select and are especially abundant in oak (*Quercus* spp.) forests, but they are also often present in olive (*Olea europaea*) groves, riparian copses, ash (*Fraxinus* spp.) groves and scrublands, being rare or absent in open areas, marsh and cereal crops (Carvalho et al. 2011, 2014, 2016; Delibes & Gaubert 2013). The latter habitats may however be crossed during dispersal, whenever riparian or hedgerow corridors are present (Carvalho et al. 2016). In some Spanish regions Genets also prefer pine forests and ravine areas (Camps & Alldredge 2013). In Europe, recent studies on resting ecology pointed out a great prevalence of hollow trees (> 48%) with peaks of more than 70% during the wet season (autumn–winter), followed by nests in tree tops or under shrubs and dens in riverbanks under shrubs or tree roots (Carvalho et al. 2014). Sporadically Genets also use rock crevices and human buildings (Camps 2011; Carvalho et al. 2014).

Small-spotted Genets feed mainly on small mammals, but will also take birds, other small vertebrates, insects and fruits (Delibes & Gaubert 2013). In South Africa, only one study (Matolengwe 2010), based on scat analysis, reports the diet of this species. In the Great Fish River Nature Reserve (Eastern Cape Province) its diet consisted essentially, in terms of percentage of occurrence, on mammals (rodents and Macroscelidae; 93%), followed by arthropods (79%) and plant materials (exclusively grass; 42%). As supplementary prey items, fruits, birds and reptiles were recorded, but not amphibians or fish (Matolengwe 2010). Regarding the relative volume (RV) of food remains in the scats, results were similar with mammals being the main food category (66%) followed by arthropods (22%) and plant material (8%), respectively. The RV of some prey varied significantly across seasons, with higher volumes of arthropod remains recorded in spring and summer, and of reptile remains in summer (Matolengwe 2010). However, we caution that the above study was conducted in an area where Small-spotted Genet occurs in sympatry with Cape Genet (*Genetta tigrina*), and therefore results could be based on scat samples from both species. In North Africa, Small-spotted Genets also revealed a preference for mammals and arthropods, followed by birds and plants. They also showed a seasonal dietary variation with arthropods peaking in summer, mammals and birds in winter, and high-energy plants in autumn (Amroun et al. 2014). Several dietary studies have been conducted in Europe and overall, it appears that the Small-spotted Genet's diet is flexible and highly opportunistic. The diet varies from

being almost specialised on predation of Wood Mouse (*Apodemus sylvaticus*) in areas where this prey is abundant, to more generalist where other mammals, reptiles, amphibians, fish, crabs, arthropods, fruits, grass and eggs are also consumed (Virgós et al. 1999; Rosalino & Santos-Reis 2002). The genet's diet in Europe also varies seasonally with birds and amphibians eaten more frequently in spring and winter, fruits in summer and autumn, and reptiles and arthropods in summer (Virgós et al. 1999; Rosalino & Santos-Reis 2002).

Some studies in Ethiopia and Kenya reported nocturnal activity during the whole night but with more incidences in the first hours after sunset (Ikeda et al. 1982, 1983; Waser 1980). In South Africa, radio-tracked genets were also crepuscular, starting activity on average around 18h00 (but as early as 16h30) and ceasing around 04h00 (but as late as 07h20). Genets were active between 5 and 13 hours and travelled over 1.7–7.9 km per night, depending on the sex and season (Matolengwe et al. 2011). Home ranges in Africa seem to be smaller than in Europe and range from 0.34–0.75 km², with no intersexual differences (Ikeda et al. 1982, 1983; Waser 1980). In Europe, recent studies confirmed that Small-spotted Genets are nocturnal with peaks just after sunset and before sunrise (Camps & Llimona 2004; Camps 2008). Sometimes juveniles can be active during the day (Palomares & Delibes 1994; Larivière & Calzada 2001). There, home ranges were greater, ranging in average from 0.29–7.8 km² (Palomares & Delibes 1994; Camps & Llimona 2004). In Portugal, a recent study yielded an average size of 3.9 km² with no differences among sexes (Carvalho et al. 2014; Carvalho 2015). Small-spotted Genets are solitary but may form pairs during the breeding season (Larivière & Calzada 2001; Delibes & Gaubert 2013). They are territorial, with male home ranges including that of several females but no other adult males, and adult female home ranges do not overlap (Larivière & Calzada 2001; Zuberogoitia et al. 2002; Carvalho 2015). Similar to what is observed in other genet species, intraspecific communication is mainly done through olfaction, notably with scats deposited at conspicuous latrines (Palomares 1993; Espírito-Santo et al. 2007). These are usually strategically located in the animals' home range boundaries, such as large tree branches and high rocks, where they are less likely to be washed away and the scent might be more effectively spread (Larivière & Calzada 2001; Espírito-Santo et al. 2007). *Genetta genetta* can use several calls, where the most important one permits contact among individuals and plays an important role in the mother–offspring relationships and during the mating period (Livet & Roeder 1987; Larivière & Calzada 2001).

Ecosystem and cultural services: Given its reliance on small rodents as the main energetic intake, the species is likely to play a role in controlling rodent populations and potential vectors of zoonosis. It may also play a secondary role in seed dispersal. Potential to become a symbol/indicator of urban wildlife and integration of development with natural landscapes.

Use and Trade

Genetta genetta is occasionally eaten by people in some localities, and body parts are used for medicinal purposes, while skins may be used for the manufacture of karosses in southern Africa (Delibes & Gaubert 2013); in North Africa, too, the species is hunted for its fur for decorative purposes (Cuzin 2003). Within the assessment

Table 2. Use and trade summary for the Small-spotted Genet (*Genetta genetta*)

Category	Applicable?	Rationale	Proportion of total harvest	Trend
Subsistence use	Yes	Subsistence hunting for food, medicine or skins.	Limited	Unknown, probably stable.
Commercial use	Yes	Selling of individuals as pets (or breeding stock).	Unknown	Increasing (mostly in the USA).
		Local commercial use in traditional medicine trade and trophy hunting.	Limited	Probably stable.
Harvest from wild population	Yes	Localised and opportunistic harvest for the traditional medicine trade. Trophy hunting.	Limited	Traditional medicine probably stable; trophy hunting predicted to increase.
Harvest from ranched population	No	-	-	-
Harvest from captive population	Yes	Production of offspring to be sold as pets (or breeding stock).	Unknown	Increasing (mostly in the USA).

region, there are few reports of this species being utilised as either bushmeat, traditional medicine, or for clothing and thus we suspect that such localised use does not have a negative impact on the population.

Several species of genets are kept as pets by people. While this seems to be common in the USA, it does not seem to be popular in southern Africa. We suspect that a large majority of pet genets originate from captive breeding programmes rather than from the wild. The number and proportion of Small-spotted Genets kept as pets both globally and in the assessment region is unknown.

Threats

Overall, we suspect there are currently no major threats to Small-spotted Genets within the assessment region. Besides the suspected localised bushmeat and traditional medicine use (Delibes & Gaubert 2013), they are also sometimes persecuted by farmers as a response to poultry predation (Larivière & Calzada 2001) and occasionally hunted for trophies (R.J. Power pers. comm. 2016). The extent of road mortality (Photo 1) on *G. genetta* populations is unknown, although individuals of this species have been recorded in the Endangered Wildlife

Trust's road collision database (W. Collinson unpubl. data).



Photo 1. Roadkilled Small-spotted Genet (*Genetta genetta*). Note that individuals from southern Africa notably differ from their European (cf. profile picture) and other African congeners by the presence of conspicuous “black socks”, i.e. the coloration of the whole hindfoot and that of the posterior part of the forefoot is completely dark (Alastair Kilpin).

Table 3. Threats to the Small-spotted Genet (*Genetta genetta*) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)

Rank	Threat description	Evidence in the scientific literature	Data quality	Scale of study	Current trend
1	4.1 Roads & Railroads: road collisions.	W. Collinson unpubl. data	Empirical	National	Increasing with road construction and habitat fragmentation.
2	5.1.1 Hunting & Collecting Terrestrial Animals: hunting for food, fur and cultural purposes; collecting animals for the pet trade; trophy hunting.	-	Anecdotal	Local	Stable due to cultural use being localised.
		-	Anecdotal	-	Pet trade unknown.
		R.J. Power pers. comm. 2016	Empirical	Local	Very low but increasing trophy hunting incidences.
3	5.1.2 Hunting & Collecting Terrestrial Animals and 5.1.3 Persecution/Control: persecution (hunting, trapping, and poisoning) either directly or as bycatch.	-	Anecdotal	Local	Probably limited and stable.

Table 4. Conservation interventions for the Small-spotted Genet (*Genetta genetta*) ranked in order of effectiveness with corresponding evidence (based on IUCN action categories, with regional context)

Rank	Intervention description	Evidence in the scientific literature	Data quality	Scale of evidence	Demonstrated impact	Current conservation projects
1	2.1 <i>Site/Area Management</i> : install road-crossing structures in key habitats at road collision hotspots.	Collinson et al. 2015; Carvalho et al. 2016	Anecdotal	-	-	-
2	4.3 <i>Awareness & Communications</i> : establish local campaigns to educate farmers, landowners and public about the key role played by genets in controlling rodent populations and potential vectors of zoonosis.	-	Anecdotal	-	-	-

In Europe, *G. genetta* used to be trapped for its fur (Livet & Roeder 1987; Delibes 1999). In Portugal and Spain, genets are illegally killed in predator trapping for hunting management, and in Portugal 65% of the roadkilled animals are subadults, which may affect their persistence in a medium-long term (Carvalho 2015). On Ibiza, the Genet is threatened by the loss and fragmentation of habitat caused by urbanization and infrastructure and tourism development. The ability of genets to live close to humans and their domestic animals could have implications for disease transmission (Admasu et al. 2004).

Current habitat trend: As for all genet species in general, where the preference for forest habitats is evident, it is predicted that *G. genetta* distribution may become constrained to protected areas due to the increase of logging activity and intensive agricultural activities. Accordingly, genets may be forced to cross open areas more often where the risk of predation will be higher, and to move into urban areas, hence increasing the risk of conflicts with humans (Larivière & Calzada 2001; Pereira & Rodríguez 2010; Schuette et al. 2013).

Conservation

Within the assessment region, no major and immediate conservation interventions are necessary, however regular distribution and abundance assessment should be performed. Education should be used to raise the profile of this species and encourage farmers to live with rather than against genets, especially because this species mostly relies on rodents and arthropods (Matolengwe 2010; Amroun et al. 2014). Marketing and awareness campaigns can also be used to position the presence of this species as a point of pride for urban and rural landowners, and conservationists should encourage better land management to facilitate genet conservation.

Recommendations for land managers and practitioners:

- In order to reduce the risk of collisions with vehicles (Larivière & Calzada 2001; Carvalho et al. 2014), mitigation measures such as road fencing and improvement of habitat near road crossing structures (for example, underpasses) should be carried out whenever possible (Collinson et al. 2015; Carvalho et al. 2016).

Research priorities:

- Establish and/or update the distribution range across the country.

Data Sources and Quality

Table 5. Information and interpretation qualifiers for the Small-spotted Genet (*Genetta genetta*) assessment

Data sources	Field study (literature, unpublished), indirect information (literature, expert knowledge), museum records
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Author consensus
Risk tolerance	Evidentiary

- Initiate a study to understand the ecological separation between different species which can then be used to predict distribution.
- Collect representative specimens and place in appropriate institutions for training and collect DNA to establish population structure.
- The differentiation between *G. genetta* and the putative (cryptic) species *G. felina*. Indeed, Small-spotted Genets from the southernmost distribution of their southern African range have longer, brighter hairs and darker markings than their northernmost congeners (Gaubert et al. 2004, 2005). This may reflect phenotypic plasticity due to climatic variability across the species' range or genuine evolutionary processes. Further investigations are in progress and needed to clarify the status of *G. felina* in southern Africa.

A research group at the University of Fort Hare is currently studying the ecology and behaviour of sympatric Small-spotted Genet and Cape Genet. The project aims to describe the spatial behaviour, habitat use, activity patterns, diet and use of latrines while at the same time trying to understand the mechanisms underlying competition between, and co-existence of, these two morphologically very similar species. Contact details: Prof. Emmanuel Do Linh San, Department of Zoology and Entomology, University of Fort Hare, Alice, 5700, South Africa. Email: Edolinh-san@ufh.ac.za. Website: <https://www.ascaris.org>.

Encouraged citizen actions:

- Report sightings of any genet species on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas,

as well as to Emmanuel Do Linh San (emmanuel.dolinhсан@gmail.com). GPS locations and photographs would be of great assistance.

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Assessors and Reviewers

Filipe Carvalho^{1,2}, Tembisa Matolengwe^{2,3}, David Camps⁴, Philippe Gaubert^{5†}, Emmanuel Do Linh San^{2†}

¹CIBIO - University of Évora, ²University of Fort Hare, ³RuLIV, ⁴Biodiversity and Animal Protection Service (Government of Catalonia), ⁵Institut de Recherche pour le Développement

[†]IUCN SSC Small Carnivore Specialist Group

Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology*.