Herpestes ichneumon – Large Grey Mongoose

The Large Grey Mongoose is widely distributed throughout Africa, from Senegal and Gambia to East Africa, then southwards in Angola, Zambia, Malawi and Mozambique. It is present in Gabon only in the south, but Bahaa-el-din et al. (2013) recently recorded the species 105 km north of its previously known range. It is absent from much of southern Africa, but is present in northeast Namibia, northern Botswana, northern and eastern Zimbabwe, and all along the South African coastline (Palomares 2013). In North Africa, it ranges in a narrow coastal strip from Western Sahara to Tunisia, and also from northern and eastern Egypt southwards to Ethiopia (Palomares 2013). It has been reported from sea level to 1,950 m asl in the Moroccan High Atlas, and to 3,000 m asl in the Ethiopian Highlands (Yalden et al. 1996). This species has not been introduced to Madagascar (Goodman 2012), contrary to what may have been suggested in some sources (e.g. Haltenorth & Diller 1980).

Extralimitally to the African mainland, this species is also found from the Sinai Peninsula to the south of Turkey (Delibes 1999), and on the Iberian Peninsula in southern and central Portugal (Borralho et al. 1995) and southwestern Spain (Delibes 1999). Herpestes ichneumon was initially believed to have been introduced by humans into Europe, based on zoogeographical considerations (Delibes 1999) and on the grounds that the species is absent from the European fossil record, although late Pleistocene and Holocene fossils are known from North Africa (Dobson 1998). However, a recent molecular and phylogeographic study rather supported a scenario of sweepstake dispersal across the strait of Gibraltar during Late Pleistocene sea-level fluctuations, followed by long-term in situ evolution throughout the last glaciation cycles (Gaubert et al. 2011).

Regional population effects: The Large Grey Mongoose can disperse across regional borders between South Africa and Mozambique, as its range is continuous across much of southeastern Africa, and this species is not constrained by fences. Considering that this mongoose has generally not been recorded very far inland (see Figure 1), it is, however, possible that dispersal and movements are at least partially dependent upon the presence of water corridors – and related (understorey) vegetation – such as permanent and seasonal rivers and streams, dam networks or wetlands.

Distribution

The Large Grey Mongoose is found mainly in sub-Saharan Africa, from Senegal and Gambia to East Africa, then southwards in Angola, Zambia, Malawi and Mozambique. It is present in Gabon only in the south, but Bahaa-el-din et al. (2013) recently recorded the species 105 km north of its previously known range. It is absent from much of southern Africa, but is present in northeast Namibia, northern Botswana, northern and eastern Zimbabwe, and all along the South African coastline (Palomares 2013). In North Africa, it ranges in a narrow coastal strip from Western Sahara to Tunisia, and also from northern and eastern Egypt southwards to Ethiopia (Palomares 2013). It has been reported from sea level to 1,950 m asl in the Moroccan High Atlas, and to 3,000 m asl in the Ethiopian Highlands (Yalden et al. 1996). This species has not been introduced to Madagascar (Goodman 2012), contrary to what may have been suggested in some sources (e.g. Haltenorth & Diller 1980).

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In the assessment region the Large Grey Mongoose is mostly present along the coast, from the Western Cape (as far north as Kleinsee; record not indicated on Figure 1) to KwaZulu-Natal through the Eastern Cape Province. The species is possibly extant in eastern Lesotho (Lynch 1994) and has been recorded in the Lubombo region of Swaziland (Skinner & Chimimba 2005). It is present in the extreme east of Mpumalanga Province, essentially in Kruger National Park. However, the species has been observed in Marievale Bird Sanctuary, Gauteng in 2016 (V. Pretorius & M. Pretorius pers. comm. 2016), as well as camera-trapped and observed at Sasol’s Synfuels Plant in Secunda, Mpumalanga, in 2014–2016 (K. Emslie et al. unpubl. data). These recent observations therefore suggest that the distribution range of the Large Grey Mongoose in the assessment region might be much larger than initially thought. Although range expansion cannot be excluded, the most parsimonious explanation is that the presence of this small carnivore has been overlooked in at least some areas due to its relatively low densities (see Population) and secretive nature. However, it is also possible that interspecific competition with other abundant and generalist small carnivores such as the Cape Grey Mongoose (*Herpestes pulverulentus*) and to a lesser extent the Slender Mongoose (*H. sanguineus*) might play a role, particularly in the Nama-Karoo and Grassland biomes, respectively. Additionally, the impact of mesopredators such as Black-backed Jackals (*Canis mesomelas*) and Caracals (*Caracal caracal*) on this mongoose is likely to be stronger in the more open habitats that characterise these two biomes. The importance of intraguild predation or at least predation pressure (creating a “landscape of fear”) on this species has been demonstrated in Spain where *Herpestes ichneumon* is rare in areas where the Iberian Lynx (*Lynx pardinus*) is abundant (Palomares et al. 1996). The presence of the Large Grey Mongoose in the inland biomes might be restricted to densely vegetated linear riverine habitats and pockets of wetlands – although it does not seem to be the case far inland (see Figure 1) – and where it may compete for food and safe resting sites with the Water Moongoose (*Atilax paludinosus*).

**Population**

In Europe the range and population size of the Large Grey Mongoose have increased over the past 35 years, in both Portugal and Spain, due to the reduction of this species’ natural predators (Delibes 1999), as well as land-use change and climate change (Barros et al. 2015).

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**Table 1. Countries of occurrence within southern Africa**

<table>
<thead>
<tr>
<th>Country</th>
<th>Presence</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>Extant</td>
<td>Native</td>
</tr>
<tr>
<td>Lesotho</td>
<td>Possibly extant</td>
<td>Native</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Extant</td>
<td>Native</td>
</tr>
<tr>
<td>Namibia</td>
<td>Extant</td>
<td>Native</td>
</tr>
<tr>
<td>South Africa</td>
<td>Extant</td>
<td>Native</td>
</tr>
<tr>
<td>Swaziland</td>
<td>Extant</td>
<td>Native</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>Extant</td>
<td>Native</td>
</tr>
</tbody>
</table>

In Europe the range and population size of the Large Grey Mongoose have increased over the past 35 years, in both Portugal and Spain, due to the reduction of this species’ natural predators (Delibes 1999), as well as land-use change and climate change (Barros et al. 2015).
On the African mainland, this species is widespread and locally common (Palomares 2013). Densities ranging from 0.1 (East Africa: Hendrichs 1972) to 1.2 individual(s) / km² (South Africa: Maddock 1988) have been recorded. Palomares and Delibes (1992a) estimated a density of 2 individuals / km² in optimal habitats in Spain. This is generally well below maximum densities documented for other mongoose species in the assessment region, but it is still relatively high. It is currently not possible to estimate population size precisely, but we infer that the population is currently stable based on this species’ extent of occurrence and the lack of major threats (see Threats).

Current population trend: Unknown, but probably stable.
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 the extent or number of subpopulations.
Severely fragmented: No. This species seems to have a relatively continuous distribution along the South African coast.

Habitats and Ecology

The Large Grey Mongoose is essentially associated with habitats possessing understorey vegetation in riparian, lacustrine and coastal (streams, rivers, marsh, swamps) habitats (Ben-Yaacov & Yom-Tov 1983; Palomares & Delibes 1993a; Angelici et al. 1999; Photo 1). It can, however, be very common locally in heavily grassed and cultivated areas, such as observed by Kingdon (1977) in East Africa. It has also been recorded in irrigated and cultivated areas in Morocco. This mongoose generally avoids humid forests and extreme deserts (Delibes 1999), but there are exceptions. For example, a large series of records originate from rainforests in the Democratic Republic of the Congo (P. Gaubert pers. obs. 2001–2005) and in southeastern Nigeria (Angelici et al. 1999); and in Egypt, Kasparek (1993) reported that the species inhabits desert areas far from the coast. In Europe, it is found in Mediterranean maquis, with a clear preference for humid and riparian habitats (Delibes 1999).

Large Grey Mongooses are entirely terrestrial, but they are good swimmers. They can sometimes be observed foraging along pond or dam banks (Photo 1), and in the shallow waters, as Water Mongooses do. Their strong forelimbs and long, curved claws also make them particularly suited to digging for prey. They are opportunistic, omnivorous feeders, and their diet may vary seasonally, regionally, and even between neighbouring family groups (Palomares 1993a). Accordingly, the range of prey is wide and includes small mammals, birds, reptiles and amphibians, fish, crabs, insects and arachnids, gastropods, carion, fungi, fruit and other plant material (Rowe-Rowe 1978; Smithers & Wilson 1979; Stuart 1983; Palomares 1993a; Angelici 2000). Small mammals such as Otomys spp., Rhabdomys pumilio and Mastomys spp. have locally been shown to dominate the diet. In Spain, young European Rabbits (Oryctolagus cuniculus) may locally constitute the main prey (Delibes 1976), while in Israel Ben-Yaacov and Yom-Tov (1993) found that they mainly fed on poultry and rats. Large prey are killed by a neck bite and small prey by a head bite (Estes 1991).

The Large Grey Mongoose is generally diurnal, with peaks of activity in the morning and late afternoon (Palomares & Delibes 1992b; Maddock & Perrin 1993). During the night it sleeps singly or in family groups (see below) in underground dens or dense thickets (Palomares & Delibes 1993b). The species is crepuscular in Israel (Ben-Yaacov & Yom-Tov 1983) and, according to Palomares (2013), nocturnal activity may take place where individuals are subject to human disturbance. Most of the active time is spent foraging, while travelling and social interactions only occupy a minimum of time every day (Palomares & Delibes 1992b, 1993c). Foraging is characterised by intense prey searching. Animals walk with the nose close to the ground, inspect every small hole, frequently

Photo 1. The Large Grey Mongoose (Herpestes ichneumon) – note the characteristic black tail-tip – is mainly associated with riparian, lacustrine or coastal habitats (Frieda Prinsloo)
excavating and sniffing around bushes and shrubs, and investigating larger burrows (Palomares 2013).

This species is predominantly solitary, although it is not rare to observe groups of one to four adult individuals – up to two or three females and one male – with their young (Maddock & Perrin 1993; Ben-Yaacov & Yom-Tov 1983; Palomares & Delibes 1993d), with even an exceptional record of a pack of 14 individuals in Namibia (Shortridge 1934). Males, however, often spend most of their time alone. Very little information is available on the spatial ecology of this species in the assessment region. In Vernon Crookes Nature Reserve, KwaZulu-Natal, Maddock (1988) found home range sizes of 2.77 km² for a female and 2.59 km² for a male that were tracked for nearly a year or more. In southwestern Spain, average home range sizes vary between 2.8 and 3.5 km² for young and adults (sex combined), respectively (Palomares 1994). Males are territorial over their entire home range, whereas females are only territorial in their core areas. Body mass plays an important role in this species’ spatial organisation and dominance relationships, with heavier females accessing richer food patches and heavier males encompassing more female home ranges in their territories (Palomares 1993b, 1994).

Large Grey Mongooses communicate both through olfaction and vocalisation. Temporary latrines – often found in open microsites near or inside thickets or next to dens – may be located within core areas (Palomares 1993c), while more permanent ones may be used to mark home ranges (Ben-Yaacov & Yom-Tov 1983). Individuals may also use perianal gland secretions to mark the ground, large stones or rock corners. Five different calls may also have been recorded in free-ranging individuals in Spain, and these were related to contact, alarm, aggression, intimidation and pain (Palomares 1991). The most frequently repeated is the contact call, which is a short duration call emitted repeatedly by every member of the group to maintain contact during foraging. The alarm call is a deep, sharp growl.

Little information is available on reproductive biology in the assessment region. In Africa, births have been recorded almost throughout the year (review in Palomares 2013). An average of 2.7 to 3.3 young (with a range of one to four) (Ben-Yaacov & Yom-Tov 1983; Palomares & Delibes 1992a) are born after a gestation period of 9–10 weeks. Normally females give birth to a single litter per year, but captive females breed again if they lose their cubs. Postnatal physical and behavioural development has been studied by Ben-Yaacov & Yom-Tov (1983). This species can live up to 13 years in captivity (Kingdon 1977).

Ecosystem and cultural services: Like other small carnivores, the Large Grey Mongoose may predate on pest species, such as rodents (including rats and mice in human-dominated habitats) and insects. In North Africa, this species is often protected by local people because it is valued as a predator of snakes (F. Cuzin & K. de Smet pers. comm. 2007). In fact the ancient Egyptians kept these mongooses as pets, presumably to control rodents and snakes (Maddock 1997); hence the other name given to this species, Egyptian Mongoose.

Use and Trade
To our knowledge this species is not harvested or traded in any form in the assessment region.

Threats
There are currently no major threats to the species in the assessment region. Like most small carnivores the Large Grey Mongoose occasionally falls victim to road traffic collisions (W. Collinson unpubl. data; see Ben-Yaacov & Yom-Tov 1983 for Israel). On farmland it might also accidentally be poisoned by carcasses set out for damage-causing predators such as Black-backed Jackals or Caracals. As this species is closely associated with riverine and wetland vegetation in a large part of its range, the loss of the corresponding habitats may potentially result in localised declines. The drainage of swamplands for conversion to arable land may, for example, constitute a local threat.

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**Table 2. Threats to the Large Grey Mongoose (Herpestes ichneumon) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Threat description</th>
<th>Evidence in the scientific literature</th>
<th>Data quality</th>
<th>Scale of study</th>
<th>Current trend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ben-Yaacov &amp; Yom-Tov 1983</td>
<td>Empirical</td>
<td>National</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5.1.2 Hunting &amp; Collecting Terrestrial Animals: accidental poisoning by carcasses set out for other species.</td>
<td>-</td>
<td>Anecdotal</td>
<td>-</td>
<td>Stable, but possibly increasing in some areas.</td>
</tr>
<tr>
<td>3</td>
<td>2.1.3 Annual &amp; Perennial Non-timber Crops: habitat loss from agricultural expansion. Current stresses 1.1 Ecosystem Conversion and 1.2 Ecosystem Degradation: drainage of wetlands and deteriorating ecological integrity of river systems.</td>
<td>Nel et al. 2007; Driver et al. 2012</td>
<td>Indirect (land cover change from remote sensing)</td>
<td>National</td>
<td>Increasing</td>
</tr>
<tr>
<td>4</td>
<td>7.2.3 Dams &amp; Water Management/Use: water abstraction through human settlement and agriculture. Current stresses 1.1 Ecosystem Conversion and 1.2 Ecosystem Degradation: drainage of wetlands and deteriorating ecological integrity of river systems.</td>
<td>Nel et al. 2007; Driver et al. 2012</td>
<td>Indirect (land cover change from remote sensing)</td>
<td>National</td>
<td>Increasing</td>
</tr>
</tbody>
</table>

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Grey Mongoose (Herpestes ichneumon)

Table 4. Information and interpretation qualifiers for the Large Grey Mongoose (Herpestes ichneumon) assessment

<table>
<thead>
<tr>
<th>Data sources</th>
<th>Field study (literature), indirect information (literature)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data quality (max)</td>
<td>Estimated</td>
</tr>
<tr>
<td>Data quality (min)</td>
<td>Inferred</td>
</tr>
<tr>
<td>Uncertainty resolution</td>
<td>Author consensus</td>
</tr>
<tr>
<td>Risk tolerance</td>
<td>Best estimate</td>
</tr>
</tbody>
</table>

Current habitat trend: Stable with possible localised habitat losses.

Conservation

The Large Grey Mongoose is listed on Appendix III of the Bern Convention, and Annex V of the European Union (EU) Habitats and Species Directive (Delibes 1999). In the assessment region, this species is present in many protected areas, including Kruger National Park. Because it is often associated with riparian habitats and wetlands though, we recommend monitoring in areas where development may be affecting water supply and/or quality, to determine potential negative impacts. It is indeed unclear whether this species is as tolerant of modified or disturbed habitats within the assessment region as observed elsewhere (see Habitats and Ecology).

As a precautionary measure, and in line with recommendations for other water-dependent species, water management practices, especially outside protected areas, should be carefully planned to avoid negatively impacting riverine ecosystems and wetlands. The most important interventions for this species are those that conserve watersheds and riparian valleys. There is a need to enforce the National Water Act (No. 36 of 1998) and to ensure that the tools provided for in this act – for example, ecological reserve determination and resource quality objectives – are applied to protect our freshwater ecosystems.

Recommendations for land managers and practitioners:

- As a general measure, maintain and improve the ecological integrity of river systems and wetlands.

Research priorities:

- Monitoring Large Grey Mongoose subpopulation trends and measuring the impact – if any – of water quality and quantity deterioration in areas where development takes place.
  - General studies on the biology and ecology of this species in different habitat types.

Encouraged citizen actions:

- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP), especially outside protected areas.
- Report illegal land- and water-use practices to the authorities.
- Protect sensitive riparian areas.

References


Table 3. Conservation interventions for the Large Grey Mongoose (Herpestes ichneumon) ranked in order of effectiveness with corresponding evidence (based on IUCN action categories, with regional context)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Intervention description</th>
<th>Evidence in the scientific literature</th>
<th>Data quality</th>
<th>Scale of evidence</th>
<th>Demonstrated impact</th>
<th>Current conservation projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.1 Site/Area Protection: protected area expansion of riverine and wetland habitats.</td>
<td>-</td>
<td>Anecdotal</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>1.2 Resource &amp; Habitat Protection: stewardship initiatives to protect riverine and wetland habitats.</td>
<td>-</td>
<td>Anecdotal</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
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The Red List of Mammals of South Africa, Lesotho and Swaziland

Assessors and Reviewers
Emmanuel Do Linh San1, Kevin W. Emslie2, Ant H. Maddock3, Mike R. Perrin4, Chris Stuart5, Mathilde Stuart6, Francisco Palomares6

1University of Fort Hare, 2University of Venda, 3Joint Nature Conservation Committee, 4University of KwaZulu-Natal, 5African–Arabian Wildlife Research Centre, 6Estacion Biologica de Doñana SCIC

IUCN SSC Small Carnivore Specialist Group, IUCN SSC Afrotheria Specialist Group

Contributors
Claire Relf1

1Endangered Wildlife Trust

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