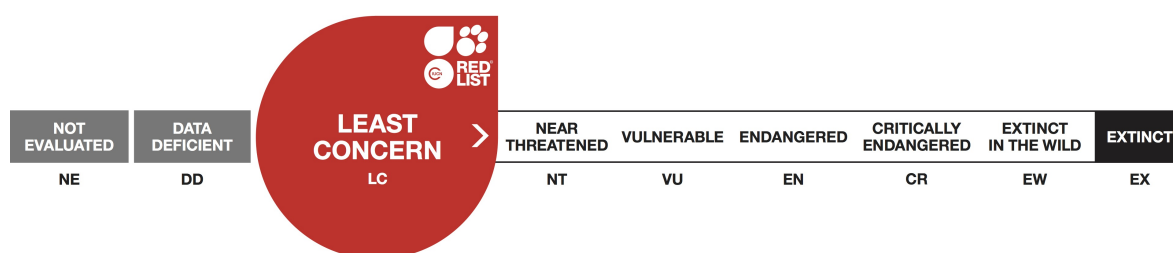


Felis margarita, Sand Cat

Assessment by: Sliwa, A., Ghadirian, T., Appel, A., Banfield, L., Sher Shah, M. & Wacher, T.



View on www.iucnredlist.org

Citation: Sliwa, A., Ghadirian, T., Appel, A., Banfield, L., Sher Shah, M. & Wacher, T. 2016. *Felis margarita*. The IUCN Red List of Threatened Species 2016: e.T8541A50651884.

<http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T8541A50651884.en>

Copyright: © 2016 International Union for Conservation of Nature and Natural Resources

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holder provided the source is fully acknowledged.

Reproduction of this publication for resale, reposting or other commercial purposes is prohibited without prior written permission from the copyright holder. For further details see [Terms of Use](#).

The IUCN Red List of Threatened Species™ is produced and managed by the [IUCN Global Species Programme](#), the [IUCN Species Survival Commission \(SSC\)](#) and [The IUCN Red List Partnership](#). The IUCN Red List Partners are: [BirdLife International](#); [Botanic Gardens Conservation International](#); [Conservation International](#); [Microsoft](#); [NatureServe](#); [Royal Botanic Gardens, Kew](#); [Sapienza University of Rome](#); [Texas A&M University](#); [Wildscreen](#); and [Zoological Society of London](#).

If you see any errors or have any questions or suggestions on what is shown in this document, please provide us with [feedback](#) so that we can correct or extend the information provided.

Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Felidae

Taxon Name: *Felis margarita* Loche, 1858

Regional Assessments:

- [Mediterranean](#)

Common Name(s):

- English: Sand Cat, Sand Dune Cat
- French: Chat des sables
- Spanish: Gato de las Arenas, Gato del Sahara

Taxonomic Notes:

Taxonomy is currently under review by the IUCN SSC Cat Specialist Group (2014). Placed in the genus *Felis* according to genetic analysis (Johnson *et al.* 2006, O'Brien and Johnson 2007). Four subspecies have been classically described: *F. m. margarita* in North Africa, *F. m. harrisoni* in Arabia, *F. m. thinobia* in Central Asia and *F. m. scheffeli* in Pakistan (Sliwa 2013, Banfield *et al.* 2014), but genetic analysis is needed to confirm subspecific partitioning, especially in light of possible large gaps in the species distribution.

Assessment Information

Red List Category & Criteria: Least Concern [ver 3.1](#)

Year Published: 2016

Date Assessed: April 20, 2014

Justification:

The Sand Cat is listed as Least Concern because even though it occurs naturally at low densities, and confirmed records are sparse (Nowell and Jackson 1996, Sunquist and Sunquist 2002, Sliwa 2013), it nonetheless exceeds both the extent of occurrence (EOO; 15,414,561 km²) and area of occupancy (AOO; 940,163 km²) thresholds for listing under B and the total population size (here conservatively estimated at 27,264 mature individuals) is estimated to exceed the threshold for threatened status under criterion C. Although some local declines have been reported, and several threats documented, there is no convincing evidence to support a range-wide decline over three generations that is substantial enough to qualify for Near Threatened or Vulnerable under A. Whether the rarity of the species is caused both in the past and currently by threats such as increasing habitat degradation and loss or the result of natural low density due to low primary productivity as well as difficulty in detection in its habitats is unknown.

Only very limited in-depth ecological research has been conducted since the last assessment in 2008, and the basic ecological needs of the Sand Cat are still poorly understood. Therefore, its distribution, status and the impact of threats on the species are difficult to assess. Moreover, there are still few

recent confirmed records across its range (Sliwa 2013), and its extant distribution and population size is not well understood, despite heightened interest and publication of mostly singular sightings. More research needs to be initiated to document present continuous occurrence and assess its status. There are several areas of likely population declines (Banfield *et al.* 2014, Sher Shah and Shobrak 2016 in prep). Apart from new localized records in both space and time about its presence in a few range countries, no easily measurable changes within its distribution area are apparent, although threats and human induced negative impact on desert ecosystems have rather increased.

Previously Published Red List Assessments

2011 – Near Threatened (NT) – <http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T8541A12917127.en>

2008 – Near Threatened (NT)

2002 – Near Threatened (NT)

1996 – Lower Risk/least concern (LR/lc)

1994 – Insufficiently Known (K)

Geographic Range

Range Description:

The global distribution of the Sand Cat appears to be markedly patchy. The Sand Cat is the only felid found primarily in true desert, and has a wide (EOO: 15,414,561 km²) but apparently disjunct distribution in the deserts of northern Africa and southwest and central Asia. It is not clear whether the gaps in known range are due to a lack of records or truly reflect species absence (Hemmer *et al.* 1976, Nowell and Jackson 1996). For example, sightings have been reported in Libya and Egypt west of the Nile (Sliwa 2013), but there are no confirmed historical records despite intensive collecting effort in this part of the Sahara (Hemmer *et al.* 1976) and this is unchanged to present.

In north Africa the Sand Cat occurs in former Western Sahara, currently administered by Morocco (records 2012- 2015, Chevalier *et al.* 2012, Webb *et al.* 2012, Sliwa *et al.* 2013, Chevallier *et al.* 2014, Rodríguez-Siles *et al.* 2015, Breton *et al.* 2016), in Algeria within and close to Ahaggar Cultural Park (Belbachir 2009, F. Belbachir, pers. comm. 2011, sighting was end of December 2010) further two individuals were killed in the Algerian Grand Erg Occidental (K. De Smet, pers. comm. 2014; undated killing) and the Béni Abbès region (R. Tahri, pers. comm. 2016, interview with hunter 2013, but undated killing) and one sighted in 2015 in the Tindouf area (I. Belbali, pers. comm. 2016), in Egypt in the northern Sinai peninsula (Saleh and Basuony 1998) and in 1984 in the rocky deserts of eastern Egypt (Goodman and Helmy 1986). Although there have been alleged sightings, no confirmed records exist from Tunisia, Libya, west of the Nile River in Egypt. There are recent camera-trap and sighting records from Niger and Chad (Rabeil *et al.* 2016), as well as sighting records from Mali (including a recent night time observation in the Lake Faguibine area: O. Hamerlynck pers. comm. 2011). In Mauritania, it is supposed to occur historically in the Adrar mountains and Majabat al Koubra (Lamarche 1980), however this is again unconfirmed by specimens or photographic records.

In Asia, the sand has been recorded in Syria, around the area of Palmyra (Serra *et al.* 2007). Its presence in Palestina is uncertain. Sand cats were first recorded in Iraq in 2012 in West Al-Najaf desert and from Al Jufaira oasis (Banfield *et al.* 2014, Mohammad *et al.* 2013). It has been recorded in Iran and east of

the Caspian Sea in Turkmenistan, Kazakhstan and Uzbekistan, but it is not known if the distribution is or was continuous to the Arabian Peninsula (Hemmer *et al.* 1976, Nowell and Jackson 1996, Sunquist and Sunquist 2002). In Uzbekistan, a breeding population of Sand Cats was discovered in 2013 in the Southern Kyzylkum Desert (Burnside *et al.* 2014). There are no recent reports on Sand Cats from Turkmenistan, although there is a report speculating on their continued presence in 1990 in the Karakum desert (Lukarevskiy 2001). In Kazakhstan, the Sand Cat is supposedly found on the Mangyshlak Peninsula, Ustyurt Plateau and the Kyzyl Kum Desert to the Syr Darya River (Institute for Zoology and Gene Pool of Animals of National Academy of Sciences of Republic of Kazakhstan 1996) but dated records are missing. A year-long study in the Kazakh Kysylkum in 2015 failed to find Sand Cats (G. Shakula via J. Sanderson, pers. comm. 2016). In Iran, Sand Cats distribution is limited to the desert habitats in the centre, east and southeast of the country but there are also some records from the north of the country (Farhadinia *et al.* 2008, Ghadirian *et al.* 2016). It is not known if the Sand Cat populations in Pakistan's Balochistan province are connected to the central Asian population via Afghanistan (Habibi 2004) and particularly what their status is after nuclear tests were done in the Nushki desert in the 1990s.

The Sand Cat shows a scattered distribution across the Arabian Peninsula. However, its status and distribution are not well known (Mallon and Budd 2011). The Sand Cat is considered very rare in Jordan and United Arab Emirates (Bunaian *et al.* 2001, Cunningham 2002, Mallon and Budd 2011, Banfield *et al.* 2014) and there are few post 2000 records. Sand Cats have been recorded in Oman from the Empty Quarter and Wahiba Sands (A. Spalton, pers. comm. 2016) and some protected areas in Saudi Arabia (Banfield *et al.* 2014, Mallon and Budd 2011, Sher Shah and Cunningham 2008, Strauss *et al.* 2007). There are also recent records from a systematic camera-trapping study from the western Empty Quarter in Saudi Arabia (T. Wachter pers. comm. 2016), which established a higher occupancy than expected from incidental sightings. Two records in Qatar were published in 1991 (Mallon and Budd 2011) and recent records in Kuwait close to the international borders with Saudi Arabia and Iraq (Banfield *et al.* 2014). Its presence in Qatar is uncertain and there have been no records in Yemen since 1952 (Mallon and Budd 2011) and it is possibly extinct.

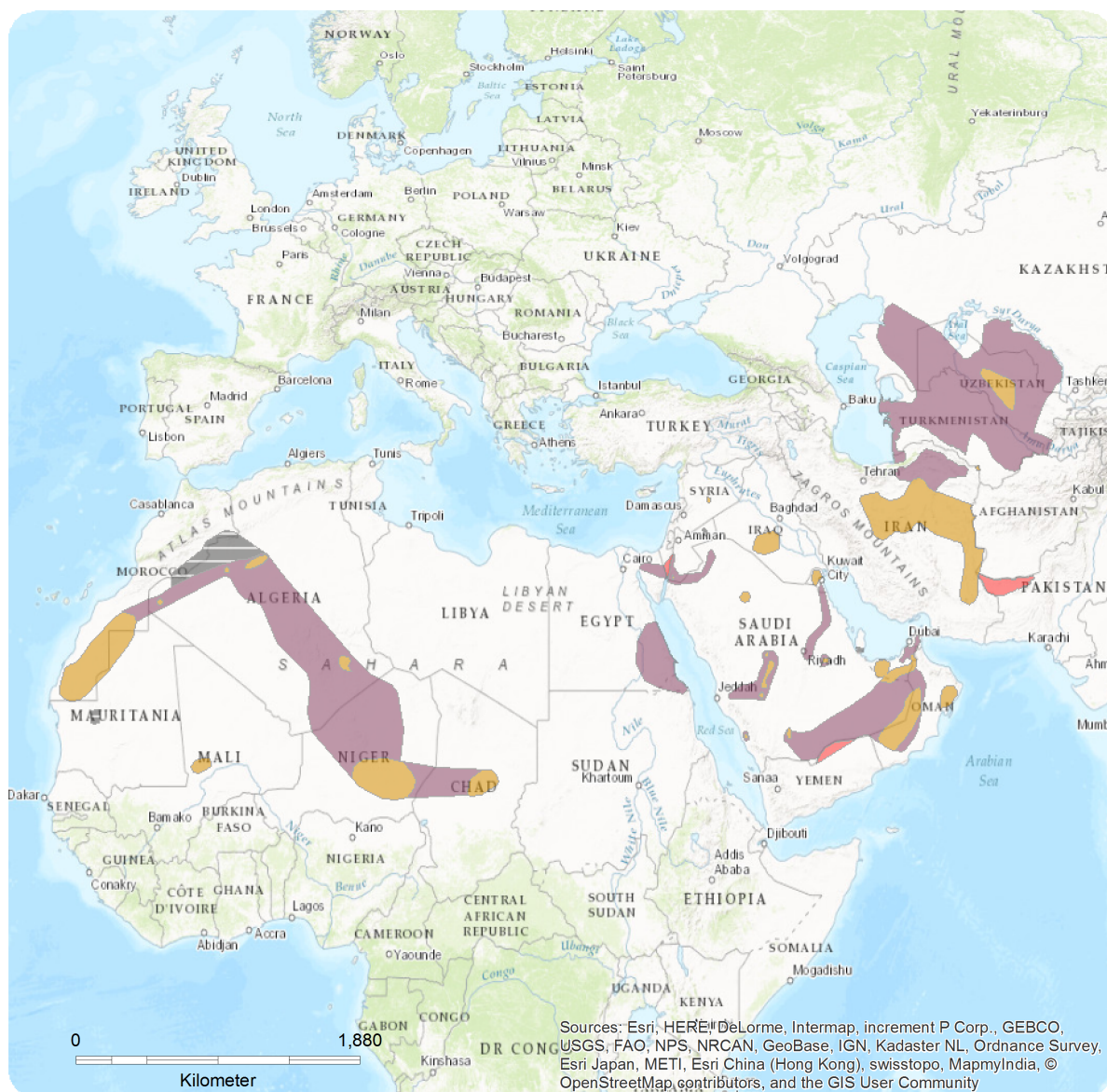
Country Occurrence:

Native: Algeria; Chad; Egypt; Iran, Islamic Republic of; Iraq; Jordan; Kazakhstan; Kuwait; Mali; Mauritania; Niger; Oman; Saudi Arabia; Sudan; Syrian Arab Republic; Turkmenistan; United Arab Emirates; Uzbekistan; Western Sahara

Possibly extinct: Israel; Pakistan; Yemen

Distribution Map

Felis margarita



Range

- Extant (resident)
- Possibly Extant (resident)
- Possibly Extant
- Presence Uncertain

Compiled by:

IUCN (International Union for Conservation of Nature)



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

There are relatively few records of Sand Cat and the species is often reported as rare (Sliwa 2013). It was recently recorded in isolated areas from where historical records do not exist, such as deserts in Syria, western Saudi Arabia, western Iraq and central Chad (Serra *et al.* 2007, Strauss *et al.* 2007, Mohammad *et al.* 2013, M. K. Mohammad, pers. obs. February 2016, Rabeil *et al.* 2016). However, recent records are lacking from several range countries such as from Jordan, Palestine, Qatar and Yemen (Banfield *et al.* 2014), where specific surveys have either not been conducted, or the species has not been detected due to its elusive habits or the species is absent and thus the conservation status of the Sand Cat is unknown there. In Israel, the species has not been recorded in the country on post-2000 surveys and is now considered locally extinct (Noam Leader, Israel Nature and Parks Authority, in litt. 2014).

The only available density estimates come from a telemetry study in southern Israel, where 11 Sand Cats were caught in the study area of 15 x 25 km (375 km²), resulting in an estimated density of 2.9/100 km² (M. Abbadi, in Sliwa 2013). Based on this density and the estimated AOO (based on only the extant species range), the total population is conservatively estimated at 27,264 mature individuals. In the Saja / Umm Ar-Rimth Protected Area, Saudi Arabia, the annual home ranges (95% MCP) of 7 Sand Cats were 19.6 – 50.7 km² (Sher Shah and Shobrak 2016 in prep). In the same area Sand Cats appear to occur at far lower densities than Rüppell's Fox *Vulpes rueppellii* (Strauss *et al.* 2007 and pers. comm. 2008). Sher Shah recorded 692 Rüppell's Foxes in comparison to 62 Sand Cat captured in a total of 4509 trap nights between 2001-2009 (Sher Shah *et al.* 2016 in prep). Particularly in the years 2006-07 there was heightened mortality in the 5 captured and radio-collared Sand Cats, three (60%) of them dying within a few months and the remaining two recorded missing after making large movements away from their initial home ranges. This 100 % mortality could have been due to the drought conditions the protected areas experienced (Sher Shah and Shobrak 2016 in prep, Sher Shah *et al.* 2016 in prep). This is also reflected by live-trapping in Saja / Umm Ar-Rimth Protected Area, Saudi Arabia where six Sand Cats were caught in a trap grid in 2002 reaching a potential density of 16.66 /100 km² (Sher Shah and Shobrak 2016 in prep, Sher Shah *et al.* 2016 in prep). Subsequent trapping sessions in 2005 with seven Sand Cats caught gave such trapping derived densities at 14.27 / 100 km². The capture rate decreased to 2.83 / 100 km² in 2006 with only one caught. In the years 2007 and 2009 no Sand Cats were caught in the same trapping grid (Sher Shah and Shobrak 2016 in prep, Sher Shah *et al.* 2016 in prep), documenting a possible local decline. Whether such calculations are valid estimators of densities is open to debate. A certain decline in capture rate could also have been due to trap shyness. In Mahazat As-Sayd Reserve no Sand Cat was seen between 2008 and 2009 (P. Cunningham, pers. comm. 2016). In low-quality habitat, such as shifting sand dunes, densities may be very low (Sliwa 2013). Numbers may fluctuate in response to environmental conditions leading to prey declines and recoveries (Sunkist and Sunkist 2002). The Sand Cat population on the Arabian Peninsula is considered to be declining at an unknown rate (Mallon and Budd 2011, Banfield *et al.* 2014), although this is difficult to prove, while in certain areas there may be more Sand Cats than previously expected (T. Wachter, pers. comm. 2016). There are no confirmed records from Yemen.

In the past 10 years (2006-2016) there seem to be repeated and regular reports of Sand Cats from Western Sahara, South Algeria, Niger, Chad, southwestern Saudi Arabia and the border area of southeaster Saudi Arabia with Oman and the United Arab Emirates, and Iran, probably strongholds for the species. This contrasts with the status in Central Asia and Pakistan, which is largely unknown, with only very few recent records available (Burnside *et al.* 2014). The same applies to the Karakum desert in

Turkmenistan, with no records within the past 25 years, most of the records being far older (cited in Heptner and Sludskii 1972) and thus at least 5 generations of Sand Cats ago.

Current Population Trend: Unknown

Habitat and Ecology (see Appendix for additional information)

The Sand Cat is a specialist of sandy desert, where it is unevenly distributed, localized around sparse vegetation which can support small rodent prey (Nowell and Jackson 1996). In Morocco, it was found in sandy areas with perennial grass, low bushes and Acacia trees (Sliwa *et al.* 2013). In Iran, its main habitats are sand dunes with *Saxaul* *Haloxylon* trees and arid flat plains with little vegetation (Ghadirian *et al.* 2016). In the Arabian Peninsula it mainly occurs in sandy habitats but also in areas of hard, rocky substrate, such as gravel plains and volcanic lava fields (Cunningham 2002, Banfield *et al.* 2014). It is present in stony desert (Nowell and Jackson 1996). With its thickly furred feet, it is well adapted to the extremes of a desert environment, living in areas far from water, and tolerant of extremes of hot and cold temperatures (Nowell and Jackson 1996, Sunquist and Sunquist 2002, Sliwa 2013). It is known to use burrows as resting sites (M. Strauss pers. comm. 2008, M. Sher Shah pers. comm. 2016) and is absent from areas where the soil is compacted (Heptner and Sludskii 1972). In Central Asia the Sand Cat is known to withstand 40° Celsius in summer (80° Celsius on sand surface) and -25° Celsius in winter (Ghadirian *et al.* 2016). Individuals have been observed to use dens to escape from the sun, that they either dug themselves or adopted from other species like Red Foxes *Vulpes vulpes* or Porcupines *Hystrix* sp. (Breitenmoser and Breitenmoser 2011, Banfield *et al.* 2014). In the Moroccan Sahara, it seems that, in winter, Sand Cats do not use dens but hide amongst rocks or under vegetation during the day (Breton *et al.* 2016). The Sand Cat appears to be primarily nocturnal (Abbadi 1993, Nowell and Jackson 1996) and in winter also crepuscular (Breton *et al.* 2016).

Small rodents is its primary prey, with records including Spiny Mice *Acomys* spp., Jirds *Meriones* spp., Gerbils *Gerbillus* spp., and Jerboas *Jaculus* spp. and *Allactaga tetradactyla*, but also young of Cape Hare *Lepus capensis* in Africa. It has also been observed to hunt small birds like Greater Hoopoe Lark *Alaemon alaudipes*, Desert Lark *Ammomanes deserti*, and to consume reptiles such as smaller Desert Monitor *Varanus griseus*, Fringe-toed lizards *Acanthodactylus* spp., Sandfish *Scincus scincus*, Short-fingered Gecko *Stenodactylus* spp., Horned and Sand vipers of the genus *Cerastes*, and insects (De Smet 1988, Abbadi 1993, Dragesco-Joffé 1993, Cunningham 2002, Sliwa 2013). Sand-dwelling rodents made up the majority (65–88%) of stomach contents from carcasses collected in Turkmenistan and Uzbekistan in the 1960s (Schauenberg 1974). Small mammals preys like Euphrates jerboa *Allactaga euphratica*, Libyan jird *Meriones libycus*, Cheesman's gerbil *Gerbillus cheesmanni* are presumed prey in western Iraq (M.K. Mohammad pers. obs. February 2016). On the Arabian Peninsula the Sand Cat was recorded to prey on Spiny-tailed Lizard *Uromastix aegyptia* and Jird *Meriones arimalius* and may also take locusts when they swarm (Cunningham 2002, Banfield *et al.* 2014). The Sand Cats' distribution coincides with that of Sand Skink *Scincus mitranus* and Arabian Toad-head Lizard *Phrynocephalus arabicus*; both reptiles are thought to be an important source of food for the cat (Sunquist and Sunquist 2002). The Sand Cat is capable of rapid digging to reach prey animals underground (Schauenberg 1974). It may cover kills with sand and return later to feed. It is independent of drinking water and capable of satisfying its moisture requirements from prey, but drinks readily if water is available (Sliwa 2013).

Home range sizes will likely vary according to ecological conditions and vegetation availability for prey animals, likely more favorable in suitable habitat of protected areas, where there is no major

disturbance through domestic stock grazing. In a study along a dirt road (piste) in southern Morocco, initial home ranges (100% MCP) of two males and one female followed during four to six days were 35.3 km², 21.8 km² and 13.4 km², respectively (Breton *et al.* 2016). A radio telemetry study in Israel suggests large home ranges, with one male using an area of 16 km² (Abbadi 1993). Seven annual ranges (95% MCP) in the Saja/Umm ar-Rimth reserve, Saudi Arabia, were estimated at 19.6–50.7 km² (mean 35.5 km²) (Sher Shah and Shobrak 2016 in prep). Home ranges of males may overlap with each other and there is a considerable overlap between seasonal ranges of males and females (Sher Shah and Shobrak 2016 in prep.). Sand Cats have been recorded to move long distances in a single night (5–10 km) (Abbadi 1993). In Morocco, one male travelled more than 14 km in a straight line in less than 30 hours (Breton *et al.* 2016). In the Saja / Umm ar-Rimth reserve, the weight of male Sand Cats averaged 2.41 kg (n=13) and that of females 1.82 kg (n=16) (Sher Shah *et al.* 2016 in prep.). In Morocco, males (n=2) had a weight of 2.14 and 2.36 kg and females (n=2) of 1.32 and 1.85 kg (Breton *et al.* 2016).

Systems: Terrestrial

Threats (see Appendix for additional information)

Habitat degradation and loss for example through fencing (Sher Shah and Cunningham 2008, Banfield *et al.* 2014) are considered to be the major threats to the Sand Cat. Many areas are also more heavily frequented by humans, their domestic animals and commensals (i.e. red fox, *Vulpes vulpes*). Vulnerable arid ecosystems are being rapidly converted by infrastructural development and human settlement and activity, especially degraded through livestock grazing (Allan and Warren 1993, Al-Sharhan *et al.* 2003, Ghadirian *et al.* 2016). Degradation of desert ecosystems continues to be widely acknowledged as an urgent conservation problem (Bunaian *et al.* 2001, Abahussain *et al.* 2002, Al-Sharhat *et al.* 2003, Mallon and Budd 2011, Sliwa *et al.* 2013) and could result in a decline of Sand Cat populations, caused by a declining prey base. The Sand Cat's small mammal prey base depends on having adequate vegetation, and may experience large fluctuations due to drought (Sunquist and Sunquist 2002, Sher Shah and Shobrak 2016 in prep), or declines due to desertification and loss of natural vegetation. In the Arabian Peninsula, sand dune habitat continues to decline (Mallon and Budd 2011). Human induced habitat destruction through underground nuclear tests in the late 1990ies in Pakistan, where Sand Cats were recorded in the 1960ies. Several of the areas have been affected by political strife, and war-like conditions that have accelerated habitat destruction. Habitat destruction through civil war i.e. in Syria. In Iraq, the location which the Sand Cat was recorded from (Mohammad *et al.* 2013) falls within the Arabian Desert and East Sahero-Arabian Xeric Shrublands (PA1303) which is considered to be "Critical/Endangered" (Republic of Iraq Ministry of Environment 2010, M. K. Mohammad pers. comm. 2016).

More recently, additional threats identified are the introduction of feral and domestic dogs and cats, creating direct competition for prey and through predation and disease transmission (Nowell and Jackson 1996, Ostrowski *et al.* 2003, Sliwa 2013, Sliwa *et al.* 2013). This applies particularly along roads through suitable habitat (Sliwa *et al.* 2013, Sliwa, pers. obs. 2015). They are also killed in traps laid out by inhabitants of oases targeting Red Fox, Rüppel's Fox and Golden Wolf (jackal) *Canis anthus* or in retaliation for killing their chickens or Houbara and MacQueen's bustard *Chlamydotis undulata* / *Ch. macqueenii* (De Smet 1989, Dragesco-Joffé 1993). Locally, Sand Cats may be threatened by the pet trade (Banfield *et al.* 2014, P. Cunningham pers. comm. 2016). In Iran, Sand Cats are reported to get killed by shepherd dogs and trapped in snares set for other species (Ghadirian *et al.* 2016). They also get stuck in fences (Sher Shah and Cunningham 2008) and are vulnerable to indiscriminate trapping and poisoning

of predators (Mallon and Budd 2011). There are occasional reports of Sand Cats shot in Saudi Arabia (M. Strauss pers. comm. 2008, Cunningham 2009).

Conservation Actions (see Appendix for additional information)

Included on CITES Appendix II. Hunting of this species is prohibited in Algeria, Iran, Israel, Kazakhstan, Mauritania, Niger, Pakistan, Tunisia, and United Arab Emirates (Nowell and Jackson 1996). On the African continent, the Sand Cat inhabits several protected areas, including Tassili n'Ajjer and Ahaggar Cultural Parks (Algeria), Aïr and Ténéré National Reserve (Niger), and possibly Djebel Bou-Hedma Biosphere Reserve (Tunisia) (Sliwa 2013). In Iran, it has been reported from the Abbasabad Naein Reserve, Kavir and Touran National Park (Semnan Province), Shaskooh and Mozaffari protected areas, Siahkooh National Park (Yazd province) and in Moteh and Touran protected areas (Ghadirian *et al.* 2016, Farhadinia *et al.* 2008, Nowell and Jackson 1996). On the Arabian Peninsula, the Sand Cat was recorded in the protected areas of Mahazat As-Sayd (not in 2008/9), Saja/Umm Ar-rimth and Uruq Bani Ma'arid, Harrat al Harrah Reserve (Saudi Arabia), in the Wadi Rum (Jordan), and in Baynunah and Umm Al Zumul Reserves (UAE) (Strauss pers. obs., Mallon and Budd 2011, Banfield *et al.* 2014).

Captive breeding populations exist in the range countries at Al Wabra (Qatar), The Scientific Centre (Kuwait), Al Ain Zoo, and the Breeding Centre for Endangered Arabian Wildlife (UAE), Omani Wild Animals Breeding Centre (Oman), Zoological Center Tel Aviv-Ramat Gan, Hai Bar Yotvata NR, I. Meier Segals Garden for Zoological Research, Tel Aviv (Israel). There are also captive breeding populations in the USA and Europe (Breton 2015).

The development of reliable survey methods is urgently needed (Mallon and Budd 2011). Furthermore, studies on the behaviour and ecology of the Sand Cat are crucial to apply appropriate conservation measures.

Credits

Assessor(s): Sliwa, A., Ghadirian, T., Appel, A., Banfield, L., Sher Shah, M. & Wachter, T.

Reviewer(s): Nowell, K., Hunter, L., Hoffmann, M., Breitenmoser-Würsten, C., Lanz, T., Breitenmoser, U. & Mallon, D.

Contributor(s): Gritsina, M., Breton, G., Belbachir, F., Mohammad, K.M., Burnside, J., Duckworth, J.W., Spalton, A., Manati, A., Cunningham, P., Amr, Z.S.S., Gil Sánchez, J. & Strauss, M.

Facilitators(s) and Compiler(s): Lanz, T. & Breitenmoser-Würsten, C.

Bibliography

- Abahussain, A.A., Abdu, A.S., Al-Zubari, W.K., El-Deen, N.A. and Abdul-Raheem, M. 2002. Desertification in the Arab region: analysis of current status and trends. *Journal of Arid Environments* 51: 521-545.
- Abbadi, M. 1993. Israel's elusive feline: sand cats. *Cat News* 18: 15-16.
- Allan, T. and Warren, A. 1993. *Deserts: the encroaching wilderness*. IUCN and Mitchell Beazley, London, UK.
- Al-Sharhan, A.S., Wood, W.W., Goudie, A.S., Fowler, A. and Abdellatif, E.M. 2003. *Desertification in the Third Millennium*. Swets and Zeltinger, Lisse, Netherlands.
- Banfield L.M., al Qahtani H. and Mallon D. 2014. Arabian Sand Cat *Felis margarita harrisoni* Status Reveiw and Conservation Strategy. Al Ain Zoo, Abu Dhabi, United Arab Emirates.
- Belbachir, F. 2009. Spotted: the elusive sand cat in Algerian Ahaggar Mountains, central Sahara. *Cat News* 50: 17-18.
- Breitenmoser, Ch. and Breitenmoser U. (eds.). 2011. *Cats of the World*. Stämpfli Publikationen AG, Bern.
- Breton, G. 2015. *Sand Cat (Felis margarita) International Studbook Volume XXII, current to 31 December 2014*. WAZA / Le Parc des Félines.
- Breton, G., Sliwa, A., Azizi, S. and Essalhi, A. 2016. Sand cats in the Moroccan Sahara, preliminary results if a new study. *Cat News* 63 (in press).
- Bunaian, F., Hatough, A., Ababane, D., Mashaqbeh, S., Yousef, M. & Amr, Z. 2001. The carnivores of the northeastern Badia, Jordan. *Turkish Journal of Zoology* 25: 19-25.
- Burnside, R.B., Koshkin, M. and Dolman, P.M. 2014. Breeding population of sand cat in the Southern Kyzylkum Desert, Uzbekistan. *Cat News* 60: 25-26.
- Chevalier, F., Thevenot, M. and Bergier, P. 2012. Notes sur quelques mammifères terrestres observés près de Dakhla, Oued Ad-Deheb . *Go-South Bull.* 9: 1-6.
- Chevallier, J., Goyaud, C. and Boutin, J. 2014. Voyage naturaliste au Sahara Occidental du 26 Mars au 9 avril 2014.
- Cunningham, P.L. 2002. Status of the Sand Cat, *Felis margarita*, from the United Arab Emirates. *Zoology in the Middle East* 25: 9-14.
- Cunningham, P.L. 2009. Persecution of Rüppell's fox in central Saudia Arabia. *Canid News* 12: 1-5.
- De Smet, K. 1989. The distribution and habitat choice of larger mammals in Algeria, with special reference to nature protection. Ph.D. Thesis, University of Ghent.
- Dragesco-Joffe, A. 1993. Le chat des sables, un redoutable chasseur de serpents [The sand cat - a formidable snake hunter]. *La Vie Sauvage du Sahara*, pp. 129 pp.. Delachaux et Niestlé, Lausanne, Switzerland.
- Farhadinia, M.S., Akbari, H., Beheshti, M., Sadeghi, A. and Halvani, M.R. 2008. Felids of Abbasabad Naein Reserve, Iran. *Cat News* 48: 14-16.
- Ghadirian, T., Akbari, H., Mohammadreza, B., Ghoddousi, A., Hamidi, A., Kh. and Dekhordi M.E. 2016. Sand cat in Iran: present status, distribution and conservation challenges. *Cat News Special Issue* 10 (in press).

- Goodman, S.M. and Helmy, I. 1986. The sand cat *Felis margarita* Loche, 1958 in Egypt. *Mammalia* 50: 120-123.
- Habibi, K. 2004. *Mammals of Afghanistan*. Zoo Outreach Organisation/USFWS, Coimbatore, India.
- Hemmer H., Grubb, P. and Groves C.P. 1976. Notes on the Sand Cat, *Felis margarita* Loche, 1858. *Zeitschrift für Säugetierkunde* 41: 286-303.
- Heptner, V.G. and Sludskii, A.A. 1972. *Mammals of the Soviet Union Volume II Part 2 Carnivora (hyaenas and cats)* . Vysshaya Shkola Publishers.
- Institute for Zoology and Gene Pool of Animals of National Academy of Sciences of Republic of Kazakhstan. 1996. The Red List of Kazakhstan. *Felis margarita*. Sand Cat. Available at: <http://www.redbookkz.info/species.php?num=105&lang=en>.
- IUCN. 2016. The IUCN Red List of Threatened Species. Version 2016-2. Available at: www.iucnredlist.org. (Accessed: 04 September 2016).
- Johnson, W.E., Eizirik, E., Pecon-Slattery, J., Murphy, W.J., Antunes, A., Teeling, E. and O'Brien, S.J. 2006. The late Miocene radiation of modern Felidae: A genetic assessment. *Science* 311: 73-77.
- Lamarche, B. 1980. L'Addax *Addax nasomaculatus* (Blainville). I. Biologie. Report to WWF-IUCN, Gland.
- Lukarevsky, V. 2001. *The leopard, striped hyena and wolf in Turkmenistan [Leopard, polosataya giena i volk v Turkmenistane]*. Signar Publishers, Moscow, Russia.
- Mallon D. and Budd. K. 2011. Regional Red List Status of Carnivores in the Arabian Peninsula. IUCN and Sharjah, UAE: Environment and Protected Areas Authority, Cambridge, UK and Gland, Switzerland.
- Mohammad, M.K., Lahony S.R. and Al-Rammahi H.M. 2013. First record of the Sand cat, *Felis margarita* Loche, 1858 (Mammalia: Carnivora, Felidae), from Iraq. *Zoology in the Middle East* 59(4): 358-359.
- Nowell, K. and Jackson, P. 1996. *Wild Cats. Status Survey and Conservation Action Plan*. IUCN/SSC Cat Specialist Group, Gland, Switzerland and Cambridge, UK.
- O'Brien, S.J. and Johnson, W.E. 2007. The evolution of cats. *Scientific American* July: 68-75.
- Otrowski, S., Van Vuuren, M., Lenain, D.M. and Durand, A. 2003. A serologic survey of wild felids from central west Saudi Arabia. *Journal of Wildlife Diseases* 39: 696-701.
- Pacifici, M., Santini, L., Di Marco, M., Baisero, D., Francucci, L., Grottolo Marasini, G., Visconti, P. and Rondinini, C. 2013. Generation length for mammals. *Nature Conservation* 5: 87–94.
- Rabeil, T., Wachter, T. and Newby, J. 2016. Sand cat sightings in Niger and Chad. *Cat News* 63 (in press).
- Republic of Iraq Ministry of Environment. 2010. Iraq 4th National report to the Convention on Biological Diversity (CBD) 2010.
- Rodríguez-Siles, J., Arredondo Acero, A., Díaz-Portero, M.A., Herrera-Sánchezm J.F., Valenzuela Serrano, G., Sáez, J.M., García-Cardenete, L. and Varillas, B. 2015. Recherche de faune à L'Oued Afra (Massiv Aydar) et à L'Oued Khat: Harmusch - mission Décembre.
- Saleh, M. A. and Basuony, M. 1998. A contribution to the mammalogy of the Sinai Peninsula. *Mammalia* 62: 557–575.
- Schauenberg, P. 1974. Données nouvelles sur le Chat des sables *Felis margarita* Loche, 1858. *Revue Suisse de Zoologie* 81: 949-969.

Serra, G., Abdallah, M.S. and Al Quaim, G. 2007. Occurrence of Ruppell's fox *Vulpes rueppelli* and Sand cat *Felis margarita* in Syria. *Zoology in the Middle East* 42: 99-101.

Sher Shah, M. and Cunningham, P. 2008. Fences as a threat to Sand cats *Felis margarita* Loche, 1958, in Saudi Arabia. *Zoology in the Middle East* 42: 99-101.

Sher Shah, M. and Shobrak, M. In prep. Annual and seasonal home range and habitat utilisation of sand cat *Felis margarita* in Central Saudi Arabia.

Sher Shah, M., Shobrak, M. and Boug A. In prep. Comparing carnivores (sand cat, Ruppells fox, red fox and wild cat) density and abundance along a fence line in Saja / Umm Ar-Rimth Protected Area and study of their morphology.

Sliwa, A. 2013. *Felis margarita*. In: J. S. Kingdon and M. Hoffmann (eds), *The Mammals of Africa*, Academic Press, Amsterdam, The Netherlands.

Sliwa, A., Breton, G. & Chevalier, F. 2013. Sand cat sightings in the Moroccan Sahara. *Cat News* 59: 28-30.

Strauss, W. M., Shobrak, M. and Sher Shah, M. 2007. First trapping results from a new sand cat study in Saudi Arabia. *Cat News* 47: 20-21.

Sunquist, M. and Sunquist, F. 2002. *Wild Cats of the World*. University of Chicago Press.

Webb, R., Blincow, J. and Goodgame, N. 2012. Saharan predators. Field report Morocco & Western Sahara 15-26 December 2012.

Citation

Sliwa, A., Ghadirian, T., Appel, A., Banfield, L., Sher Shah, M. & Wachter, T. 2016. *Felis margarita*. *The IUCN Red List of Threatened Species 2016*: e.T8541A50651884.

<http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T8541A50651884.en>

Disclaimer

To make use of this information, please check the [Terms of Use](#).

External Resources

For [Images and External Links to Additional Information](#), please see the [Red List website](#).

Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
8. Desert -> 8.1. Desert - Hot	-	Suitable	Yes

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
11. Climate change & severe weather -> 11.2. Droughts	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.1. Nomadic grazing	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.2. Unintentional effects (species is not the target)	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.3. Persecution/control	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Canis familiaris)	Future	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Felis catus)	Future	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions in Place
In-Place Land/Water Protection and Management
Occur in at least one PA: Yes
In-Place Education
Included in international legislation: Yes
Subject to any international management/trade controls: Yes

Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection

Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
3. Monitoring -> 3.1. Population trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 940163
Estimated extent of occurrence (EOO) (km ²): 15414561
Continuing decline in number of locations: No
Population
Population severely fragmented: No
Habitats and Ecology
Generation Length (years): 4
Movement patterns: Not a Migrant

The IUCN Red List Partnership



The IUCN Red List of Threatened Species™ is produced and managed by the [IUCN Global Species Programme](#), the [IUCN Species Survival Commission \(SSC\)](#) and [The IUCN Red List Partnership](#).

The IUCN Red List Partners are: [BirdLife International](#); [Botanic Gardens Conservation International](#); [Conservation International](#); [Microsoft](#); [NatureServe](#); [Royal Botanic Gardens, Kew](#); [Sapienza University of Rome](#); [Texas A&M University](#); [Wildscreen](#); and [Zoological Society of London](#).