

### Pearls of the sand dunes

The sand cat (*Felis margarita* Loche, 1858) is one of the smallest wild cats (Felinae subfamily), and it can live in the most arid areas which are too hot and dry for other desert species. Therefore, it is a typical inhabitant of the arid regions of North Africa, the Middle East, and Central Asia. Captain Victor Loche, a French military officer and naturalist, "discovered" this desert cat in 1856 in eastern Algeria (in Négonça) during an expedition led by General Jean-Auguste Margueritte. Loche used the name of that French military and diplomatic mission commander to describe the small, sand-colored cat with grey-brown striations, the fascinating pearl of the sand dunes.

### Known and unknown subspecies

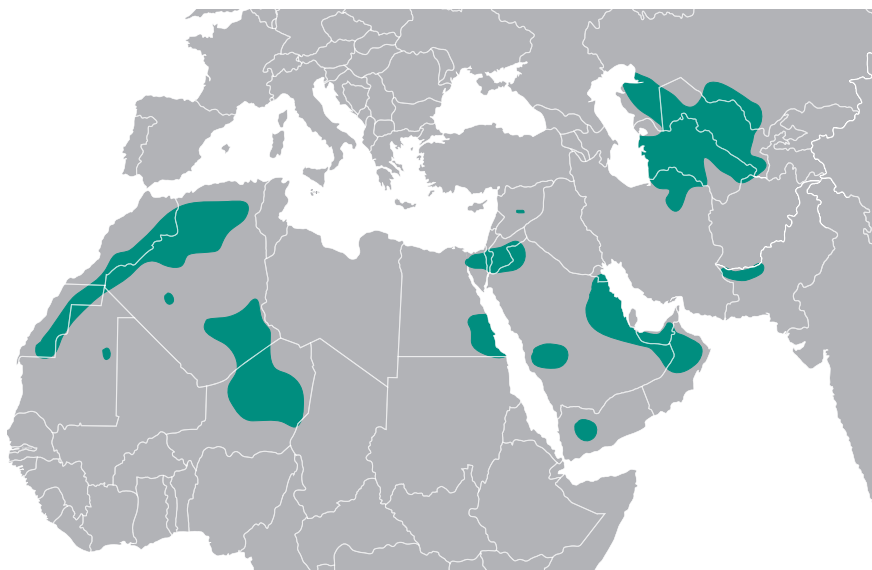
The sand cat grows to a length of between 45 and 57 cm. A male's weight ranges from 2.1 to 3.4 kg; a female's from 1.4 to 3.1 kg. Its distinctive feature is its big ear pinnas, which have thick hair to protect the hearing organ from sand blown by the wind

in the desert. It has highly developed senses of hearing and smell, even being able to hear prey moving under a layer of sand.

Current taxonomy recognizes four easily distinguishable subspecies of sand cat: Saharan (*F. m. margarita*), Arabic (*F. m. harri-soni*), Pakistani (*F. m. scheffeli*), and Central Asian (*F. m. thinobia*). In addition to these four, some zoologists claim that there are two more subspecies: one from Niger (*F. m. airensis*) and the other from Algeria (*F. m. meinertzhageni*). The very extensive area of the sand cat's habitat has been poorly explored, which greatly supports the hypothesis that there might still be several unknown isolated populations concentrated around the giant sand dunes in the immense deserts of the Sahara.

### Environment, way of life

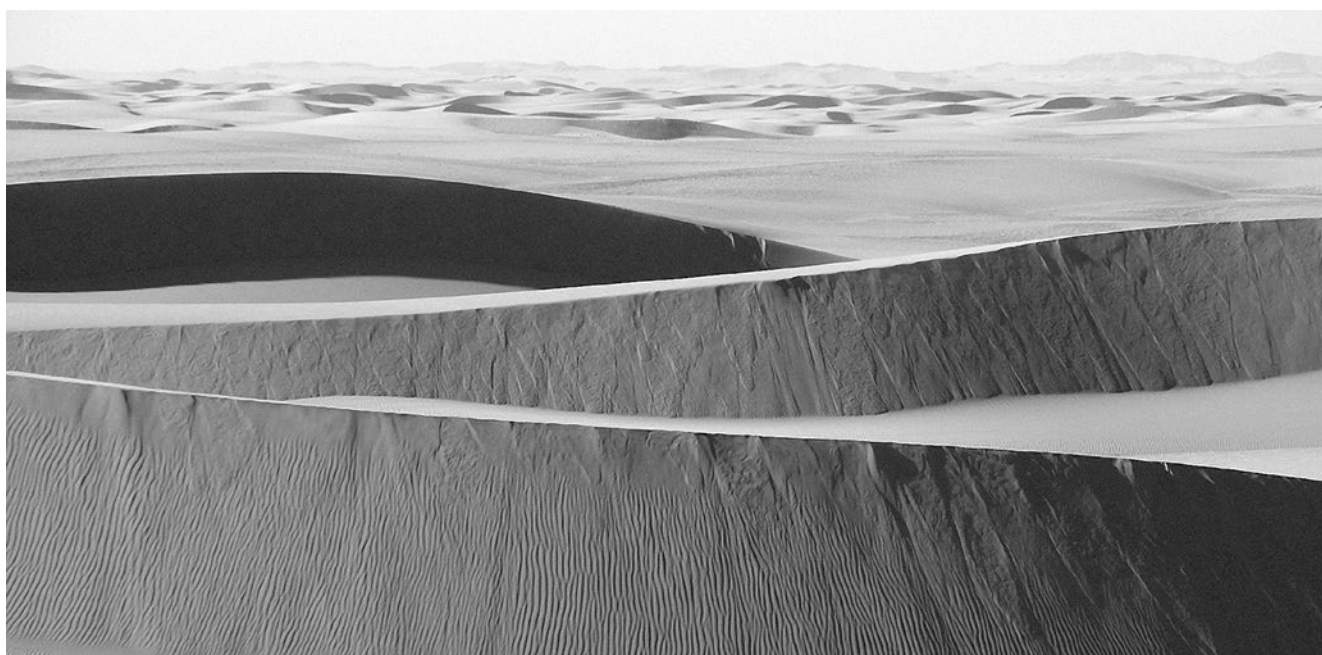
The environment in which sand cats live influences and, to a large extent, determines their way of life. Their main habitat is sandy and rocky desert, where the cat is able to cope with extreme temperature changes within 24 hours. Daytime air temperature in the shade can rise to as high as 58 °C, while at night it can drop to minus 0.5 °C! In northern latitudes, snow is a regular occurrence in winter, and temperatures can drop to -25 °C or less. Two different habitats of the sand cat in eastern Egypt may serve as examples of the type of environmental extremes it inhabits. One is the sandy plains near Lake Nasser, which



Habitat of sand cats



Sand cat kittens in Brno Zoo



Sand dunes in northern Niger, a sand cat habitat.

Photo John Newby/Sahara Conservation Fund



Sand cat kitten in Brno Zoo

is without any vegetation; the other is a nearby rocky valley, which is overgrown with bushes and trees.

In the past, the sand cat was considered a very rare animal, which could be explained by the inhospitable and sparsely populated places where they live. Even today, counting of individuals in nature remains very difficult. The problem of monitoring them is enhanced by their primarily nocturnal activity, as they spend most of the day in shallow burrows dug in the dunes. They leave hardly any traces in the sand, as they have thick fur on the bottom of their feet. The fur color on other parts of the body makes them almost

invisible against the dunes. This cat's manner of moving, especially while hunting, is also unique: With its belly pressed against the ground, it can run at high speed – up to 25 km per hour in short spurts, interrupted by occasional jumps.

There is little information on what they eat. After examination of the stomach contents and feces analysis of 182 cats from three deserts of Central Asia, it was found that the main components of their food are different kinds of sand rats from the *Gerbillinae* subfamily and gerbils from the *Dipodidae* family. The sand cat also likes to hunt small species of lizards and birds. People of the Sahara admire the cat for its skillful hunting of the horned viper (*Cerastes cerastes*): It first stuns the snake with quick paw blows to the head and then bites its head off. The water contained in their prey is all they need, which also shows their high degree of adaptation to life in the dry desert.

The birth of sand cat kittens was observed in the Sahara between January and April, in Turkmenistan in April, and in Pakistan in September and October. Seasonality of reproduction has not been recorded in zoos.

## Protection of the species

According to the IUCN Red List of Threatened Species, the *Felis margarita scheffeli* is in the EN category (endangered species), and their trading is subject to Annex 1 in the Convention on International Trade in Endangered Species (CITES I). Other subspecies belong to the NT category (near-threatened species), and their trading is subject to CITES II.

Numbers of sand cats in the wild are estimated by the International Union for Conservation of Nature (IUCN) staff at 10,000 individuals, but, as we said, population monitoring is very difficult. For example, during a monitoring of the westernmost population of sand cats lasting nine nights (from April 25 to May 4, 2013), Grégory Breton and Alexander Sliwa used powerful searchlights mounted on the roofs of two cars. On the road between Dakhla (on the Atlantic coast) and the villages of Aousserd and Bir Anzarane (in Western Sahara inland), they drove 991 km at 20–30 km/h, pointing the searchlights in the desert for 52 hours. They spotted fennec foxes (*Vulpes zerda*),

Region	Males	Females	Animals total	Institutions total
Europe	32	27	59	20
North America	12	16	28	13
Middle East	38	42	80	10
Asia	2	5	7	1
<b>Total</b>	<b>84</b>	<b>90</b>	<b>174</b>	<b>44</b>

Table 1. Sand cat (*Felis margarita*) population in human care as of Jan 31, 2013





Three sand cat kittens born in Brno Zoo in 2014  
Photo Michal Balcar

Rueppell's foxes (*Vulpes rueppellii*), African wildcats (*Felis silvestris lybica*), and Saharan striped polecats (*Ictonyx lybica*); but they spotted and photographed only three sand cats.

Mapping of the sand cat, with its ecology and protection, has been included by the international NGO Sahara Conservation Fund in the project entitled Ecology and Protection of Saharan Carnivores in Niger, which includes Niger National Park Termit Massif & Tin Toumma Desert.

## Breeding in captivity

Cincinnati Zoo (in the United States) became the first zoo to breed sand cats. In 1969, two kittens were born, one of which was successfully raised artificially. In Europe, the first cats were bred by Walter Scheffel, a private breeder from Maintal near Frankfurt in Germany. In 1973, three kittens were born there, two of which were raised.

Until 1967, the sand cat was rarely seen in zoos. The first two individuals lived in the Cairo zoo around 1912. Two more were raised in 1925 in Moscow Zoo; Paris Zoo also held two in 1930; nine sand cats



Female sand cat with kittens in Brno Zoo

lived in the former Soviet Union two years later; and one animal was in London Zoo between 1952 and 1959.

After the discovery of the *Felis m. scheffeli* subspecies in 1966 in Pakistan, its population became nearly extinct due to trapping for commercial purposes over the next six years. At present, none of these live in any institution.

European zoos keep only the Arab subspecies *F. m. harrisoni*, which is also predominant in North American zoos, and they also have cross-breeds with *F. m. scheffeli*. The Sand Cat International Studbook states that, since its inception (1988) until 2013, 111 institutions bred 853 sand cats, of which there were 357 males, 325 females, and 171 individuals of undetermined sex.

According to that document, the world's population in human care in 2013

consisted of 174 individuals in 44 institutions (see Table 1). The European Endangered Species Programme (EEP) was founded in 1998 with eighteen individuals (founders of new breeds), five of which were still alive in 2013. In addition, the 2013 European studbook records 125 living descendants of the founders. Of the 130 animals kept within the EEP, twelve are over 12 years old, so they are expected to die of natural causes in the not-distant future. Because the recommendations of the expert group from the European Endangered Species Programme (EEP TAG) for felines defines a sustainable population as being at least 150 individuals of a species, expansion of breeding in other establishments is welcome. Six couples put together according to the EEP coordinator recommendations had 24 kittens in 2012, of which exactly half survived. From 2009 to 2012, ten institutions brought up 26 kittens from a total of 61 births (see Table 2). Eight of these surviving kittens were born in Brno Zoo.

The population of sand cats in zoos is adversely affected by the small number of founders of new breeds and the associated very high degree of relatedness among the bred individuals (inbreeding). For successful development of the European rescue plan, and to ensure population growth in European zoos, it will be necessary to increase the number of founders. These, however, can only be obtained from the wild. It follows that other institutions seriously interested in breeding sand cats are still welcome.

Michal Balcar,  
Breeder

Place of the zoo	Country	BORN (male.female.sex unknown)	BRED
Al Ain	United Arab Emirates	1.1.0	0.0
Brno	Czech Republic	7.3.4	6.2
Eskilstuna	Sweden	4.3.4	2.1
Mulhouse	France	4.1	2.0
Nesles	France	1.2	0.0
Novosibirsk	Russia	4.4	1.2
Pont-Scorff	France	2.0	2.0
Ramat Gan	Israel	2.3.4	2.3
Tallinn	Estonia	3.2.1	0.2
Wuppertal	Germany	0.1	0.1
<b>Total</b>		<b>28.20.13</b>	<b>15.11</b>

Table 2. Reproduction (outside the USA) of sand cats (*Felis margarita*) between 2009 and 2012



A gaggle of greater white-fronted goose

Photo Petr Suvorov

## Birdwatching helps both learning and relaxation

Especially in recent decades, urban people have tended to go outdoors, eager to see at least some wilderness. Different people have different purposes in this – some pick mushrooms, others bike, some take long walks with dogs, and we ornithologists usually go birdwatching. It is a form of tourism which is spreading from the U.S. and Western Europe.

We all know grouse, owls, eagles, herons, or hoopoes from hearsay or images, but . . . let's face it . . . who saw these birds in the wild? Why not combine business with pleasure, work out a little, and learn something new? All you need is binoculars, outdoor clothing, the determination to see and learn, and a bird guide. Birds can be found virtually everywhere – from rural areas to urban centers – and, unlike other groups of animals, they do not hide so often. Even if we cannot trace them with our eyes, we can hear them.

Each bird species has a specific voice and speech. Some, in addition, can imitate others very well. Domestic birds with such skills include jays (*Garrulus glandarius*), common ravens (*Corvus corax*), and starlings (*Sturnus vulgaris*). Among exotic birds, many species of starlings, common hill mynas (*Gracula religiosa*), and parrots are excellent imitators, for example. The

most advanced imitators are apparently two species of the Australian Menuridae family. Their ability to imitate is so perfect that their beaks often produce such sounds as an emergency siren, or a chainsaw, or the clicking of a camera.

There are many ways to find birds in nature. Birdwatching is popular in many places around the world, and there are even specialized centers for this form of tourism, and famous sites where people flock en masse to observe thousand-headed flocks. One example is Israel's Agamon Hula Valley, known for huge flocks of storks, cranes, and hundreds of migrating pelicans.

Observatories, at which the birds are counted, are often found at these centers. People come from all over the world to help count migrating birds at such places as Gibraltar, the mountains of Georgia, and the Middle East.

Most birds keep their distance from humans. Often, when we approach, the birds get scared and fly away. The number one principle is to keep quiet and move very carefully. How close birds allow us to come to them is referred to as the minimum escape distance. Mute swans (*Cygnus olor*) are not frightened of humans, so their escape distance is very short. On the other hand, coming close to a white heron (*Casmerodius albus*) is extremely difficult, as it is very shy. It should be borne in mind that it is correct to observe birds from a distance from which they are not frightened. Birds are most sensitive while breeding, and

disturbances while nesting may result in the abandonment of their eggs. Sometimes the bird will never again nest in the same place after a major disturbance.

For some enthusiasts, birdwatching has become a sport. They record numbers of species seen in a lifetime or in a given period. Whether or not such a sport is somehow beneficial is difficult to tell.

It is nice to have a reason for excursions to nature, but we must not forget that we go outdoors mainly to relax and that something must remain there for us to have a reason to go. Let us treat the environment in a way that does not bother those who live there. The disturbance of birds during their nesting period is illegal, and is subject to fines.

Despite the fact that it is necessary to respect the rules of the wild, it is still very important for people to know the natural world, to go into it, actively to explore it, and, above all, to protect it. For these reasons, it is very important for nature lovers to maintain careful records of what they see, along with where and when the sighting took place, whether in the form of a log, photographs, or systematic data entered into electronic databases (e.g., <http://birds.cz/avif>). Data recorded in this way can then be used for land-use planning, amongst other things.

I wish all you nature lovers beautiful watching!

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Curator of birds