

To Jim Sanderson
with best wishes from a fellow
nationalist.

Tom Roberts
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THE MAMMALS OF PAKISTAN

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WITH A FOREWORD BY HIS ROYAL HIGHNESS
PRINCE BERNHARD OF THE NETHERLANDS



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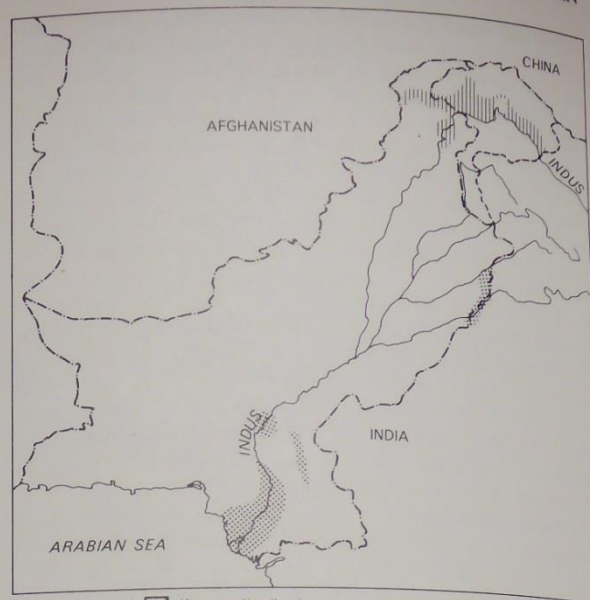
breeds of domestic cats in Pakistan, the Leopard Cat appears to have longer legs and a slightly shorter tail and its ears are more rounded and shorter. Specimens from the northern regions have a rather thick tail with woolly under-fur. The ground colour varies from some shade of tawny to pale yellowish-buff and the whole body is handsomely marked with solid black spots. These are smaller on the lower part of the legs and coalesce into one or two broad longitudinal streaks in the region of the scapulars. The tail bears irregular black spots except for its extreme distal portion which bears one or two indistinct rings and a black tip. The forehead also is patterned with four or five vertical narrow black stripes in contrast to the spots on the forehead of *Felis libyca*. The belly fur is creamy-white and long and silky in winter coat with a few scattered black spots. The backs of the ears are black with conspicuous circular white spots which pattern occurs in the Fishing Cat (*Felis viverrina*), Tiger (*Panthera tigris*) and Marbled Cat (*Felis marmorata*). The naked rhinarium is reddish-brown. The iris is pale golden-green and there are well developed white vibrissae. There is also a conspicuous area of black hairs surrounding the inner corners of the eye and a broad irregular black streak extending from the outer corner of the eye to the base of the ear.

The population inhabiting Pakistan is referable to the Subspecies *Felis bengalensis trevelyani* which is distinguished by its comparatively larger size, and paler greyer ground colour to the pelage with longer fur. Specimens from the extreme north (Gilgit) are much bigger than domestic cats and more grey in colour. Specimens from the Murree Hills are slightly smaller and more creamy-yellow in body colour. A female from Dunga Gali had the head and body length 53.5cm (21in.) with the tail 27cm (10.6in.), the hind foot 11.5cm (4½in.) and the ear 4.5cm (1¾in.). There are no fresh measurements available for specimens from Gilgit but judging from trade skins they are considerably bigger than the measurements given for this Dunga Gali specimen. The weight varies from 2.4 to 5kg (5.2–11lb).

Distribution and Status: The Leopard Cat is a forest species normally associated with Himalayan moist temperate forest in Pakistan but it has penetrated into Himalayan dry coniferous in regions further north.

Because of its richly spotted fur this cat has been highly prized by furriers and much persecuted so that it has become extremely rare throughout most of its former haunts in Pakistan. It still occurs in the Murree Hills and the forests of the Neelum Valley in Azad Kashmir as well as the Kaghan Valley around Shoghran. It also occurs in Swat Kohistan and northern Dir and it is also known in the forests of lower Chitral though local hunters allege that it is very rare. A very sparse and scattered population appears to have been able to spread northwards into Gilgit. A specimen has been collected from the forest regions of Chilas District and another one from Ishkoman which is relatively arid and a treeless region.

The southern distribution of this cat in Pakistan presents some fascinating puzzles. It appears to have extended its range sparsely through the Safed Koh Mountains and higher forested ranges of Waziristan, though Peshawar furriers say that they seldom get skins from these regions. There is in the British Museum a skin of this species collected in extreme south east Baluchistan in Las Belas in the 1920s. I have also seen incomplete trade skins from the arid hills of Dadu and Larkana District which are heavily spotted and resemble *F. bengalensis*. The present very limited evidence however



Felis bengalensis Known distribution
Probable range
Felis viverrina Known distribution

Distribution Map 60 Leopard Cat.
Fishing Cat.

suggests that it is unlikely that this forest dwelling cat succeeded in penetrating so far south into regions which appear to have been treeless for many hundreds of years. Since *F. bengalensis* and *F. libyca* have been known to hybridize with domestic cats, these heavily spotted specimens from Sind Kohistan and Las Belas may represent an unusually marked population of *F. libyca* though the single skin in the British Museum labelled from Las Belas appears to be *Felis bengalensis*.

Extra-limitally the Leopard Cat extends throughout the warmer tropical forests of south east Asia including Indonesia, the Philippines, Malaysia, Borneo, Taiwan, China and Korea. In India it is confined to the forested regions of the Himalayas, south India and Assam (Prater, 1965). In Russia a very big subspecies with rather paler brownish spotting on its pelage occurs in the deciduous oak forest region of south east Siberia in the Amur and Ussuri Basin (Bobrinskii et al., 1965). Many recent Russian authorities still refer to this subspecies as *Felis euphilura* (Sokolov et al., 1963, and Flint et al., 1965).

Since the skin of the Leopard Cat fetches a high price, they are killed whenever encountered by local hunters. In 1967 a Peshawar fur trader (pers. comm.) stated that he seldom received any skins of this cat from the surrounding hills of Khyber and Kurram agencies whereas he formerly used to obtain many specimens from these regions. However such traders still maintain big stocks of skins of this species, which they allege come from Swat and Dir and it is in danger of becoming almost extinct in Pakistan region if there is no restriction on the trade in its pelt. It must, however, be recognized that the Leopard Cat has a wide distribution in other parts of the world and is still relatively common in regions such as Assam and Malaysia (Gee, 1964 and J. Harrison, 1966).

Biology: The Leopard Cat is seldom encountered because it is strictly nocturnal in habits and lives in areas of relatively thick vegetative cover. They climb trees frequently

and are believed to be more arboreal than any other wild cat species found in Pakistan. By day they may shelter in some hole in a tree or occasionally in a crevice under the roots of a tree or between rocks. They appear to feed principally on small birds, but probably also hunt Wood Mice (*Apodemus sylvaticus*) and Flying Squirrels (*Hylopetes* spp.) which frequent the same habitat. In parts of India as well as Malaysia they are notorious for attacking and killing domestic chickens (Jerdon, 1874 and J. Harrison, 1966).

In India breeding apparently normally takes place in the spring and summer months (Prater, 1965) with two to three kittens being the normal litter size. In south India a litter of four was discovered in May (Sterndale, 1884). They have also been recorded as interbreeding with domestic cats (Sterndale, op. cit.). They have been successfully bred in captivity (Dathe, 1968). Nothing is known about the breeding of this species in Pakistan but it is presumed that they breed only once a year owing to the severeness of the winter in regions where this species occurs. Five litters from one captive breeding pair were produced in successive years, in March, April, June and August and in each case comprised three kittens (Dathe, 1968). In spite of leaving the kittens with the mother for 12 months a second litter was produced. In one instance the pair bred twice in the year, in March and early August, but it is noteworthy that the March litter was not successfully reared.

Many authors indicate that the Leopard Cat is particularly savage and untameable in captivity (see, for example, Jerdon, 1874; Finn, 1929; and Prater, 1965). However there is an

account of a female obtained as a kitten in north Bengal (India) which became completely tame and even affectionate (Gee, 1962). This cat appeared to like water and it swam readily. By day she preferred to sleep in the branches of a tree ignoring the box provided for her. It is noteworthy that captive specimens in East Berlin Zoo preferred sleeping at the extremities of branches rather than the nesting box provided and they appeared able to relax and sleep in fantastic postures (Dathe, 1968).

An adult female shot at Dunga Gali was encountered sitting motionless on a forest path just at dusk. Its stomach was empty but contained several unidentified parasitic roundworms about 35 mm (1.4 in.) in length. Specimens in captivity have lived up to 13 years.

FELIS VIVERRINA

Felis viverrina Bennett, 1833; Fishing Cat (see Illustration 44).

Description: The Fishing Cat is broadly classed among the smaller cats and the small rounded ears with black dorsal surfaces bearing conspicuous white patches show its close affinity with *Felis bengalensis* as also the relatively long narrow skull. Here, the resemblance ends, however, because the Fishing Cat lacks the long legs and graceful lines of *Felis bengalensis* and an adult male appears quite massive and powerful with a deep body and relatively short thick tail. An adult male can weigh as much as 11.3 kg (25 lb) and a specimen

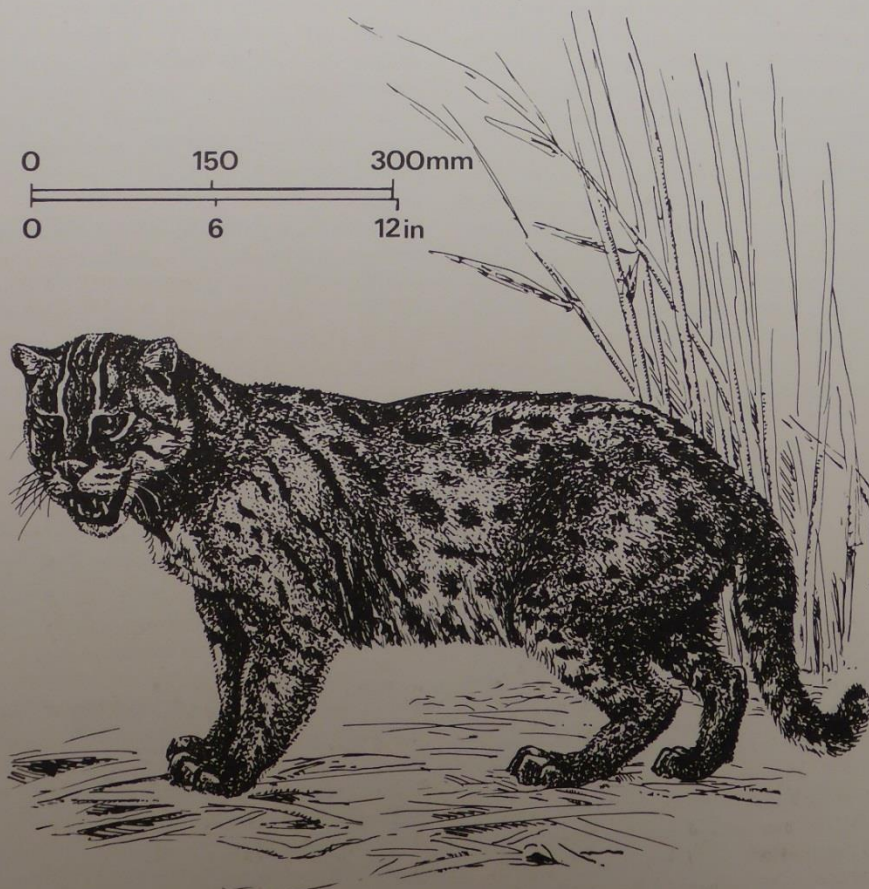


Illustration 44 *Felis viverrina*: Fishing Cat. (Based on live captive specimen in possession of J. A. W. Anderson, adult male three year old from Haleji, Sind.)

from Sind had the head and body length 720mm (28.4in.) with the tail 288mm (11.3in.) and hind feet 158mm (6.2in.) and the ear 57mm (2.2in.). The ears appear comparatively small and there are four or five narrow vertical stripes running down the crown to above the eyes with other black stripes radiating from the corners of the eyes. The area around the muzzle and lower cheeks is white as well as a conspicuous rim around the upper margin of each eye. The naked gums are black and the tongue a typical bright pink colour. There is a conspicuous patch of smooth black hairs below the inner corner of the eye similar to that in *Felis bengalensis*. The body fur is an earthy-grey colour with a more olivaceous tinge along the spinal area and it is covered all over with small elongated black spots running in horizontal lines. In places these spots merge into short streaks. The fur is comparatively coarse and harsh though the belly fur is soft and longer and of a creamish-grey colour with scattered black spots. The tail appears very thick and muscular in its proximal part, no doubt an adaptation to its use as a steering device when the animal is swimming. There are five or six black rings around the tail which terminates in a black tip. The outer extremities of the limbs have a scattering of small spots and there is a partially developed web of skin between each of the digits, much more conspicuous than those of domestic cats for example. The claws are not fully retractable into their sheaths.

With its heavy body and longish face the Fishing Cat looks distinctly malevolent. Females appear to be markedly smaller according to my observations of two different pairs captured in Sind.

Distribution and Status: In Pakistan the Fishing Cat is confined to riverain or swamp areas wherever there is permanent water in conjunction with extensive reed beds and tall grasses such as *Saccharum spontaneum*. It also inhabits coastal areas where mangrove and tamarisk bushes intermingle and is never found far from water.

It is now very rare in Pakistan, which country forms the extreme western limit of its world distribution. It is mainly confined to the Indus riverain tract in its southern portions, with an occasional straggler in the extreme north east wandering down the Ravi or Sutlej Rivers. Animal exporters within the past four or five years captured specimens from Haleji and Kalri Lakes around Thatta as well as in some of the 'dhands' on the east bank of the Indus around Sujawal. It appears still to survive precariously in the swamps around Jamroa Head in the east Nara (Karim Dad Junejo, pers. comm., 1973). A few still survive in the Indus riverine forests south of Sukkur (Mir of Khairpur, H. H. Mirali Murad Talpur, pers. comm., 1973). (See Distribution Map 60.)

In the north eastern region of the Punjab a large male was killed 12 miles north of Lahore near Batapur by Mr. Krebb in 1968. Another male was shot by Major S. A. Khan near the Sutlej River beyond Kasur in 1966. R. D. Taber (1967) describing the mammals of Lyallpur region refers to a large cat killed in the reeds alongside the Chenab River in the early 1960s, believed to have been this species.

Extra-liminally the Fishing Cat is a uniquely endemic oriental faunal zone species, apparently with a rather restricted and discontinuous distribution. It occurs in the Himalayan foothill region of the Terai in India extending eastwards to Nepal and Assam. It also occurs in coastal swamps of Kerala (South India) and Ceylon. It has not been recorded from Malaysia or with certainty from Burma but specimens have been collected from Thailand and Indonesia (Ellerman and Morrison-Scott, 1951).

Southern Sind was the only stronghold of this cat in Paki-

stan and it is now fast disappearing because of increased cultivation adjacent to the Indus river and the shrinking of inundation areas from that river. Increased human exploitation of the remaining swamp areas, both by fishing and cattle grazing, with its attendant reed burning, has driven the Fishing Cat out of most of its former haunts.

Its skin is esteemed by the fur trade and this rare and interesting cat must be protected if it is to remain on the list of Pakistan's fauna.

Biology: Inhabiting regions of dense cover, *F. viverrina* is rarely seen, particularly as it appears to be largely nocturnal in habits.

Because of its size it is a powerful and formidable hunter, and can adapt itself to catch prey in almost any kind of terrain. Many earlier writers have cited instances of the Fishing Cat successfully attacking and eating dogs, young calves and even unattended infants (Jerdon, 1874 and Sterndale, 1884). Pocock (1939) states that its teeth are not especially modified for catching fish and that it probably feeds upon any terrestrial vertebrate animal which it can overcome. Eates (1968) also cites instances of this cat having seized babies slung in hammocks from tree branches while their mothers went to cut grass nearby. Prater (1965) states that it does not enter water in pursuit of its prey and this has been asserted by other authors (Carrington, 1949). According to my own observations, and information from local animal trappers, the Fishing Cat is very much at home in water, being able to swim powerfully with its body completely submerged as well as on the surface. A specimen pursued by dogs was observed to swim a considerable distance down a narrow channel without exposing any part of its body. It appeared to have its eyes open the whole time and propelled itself by powerful strokes of its hind feet. In Sind its main food appears to consist of waterfowl, which it catches by swimming up to them whilst fully submerged and seizing them from underneath. Coots (*Fulica atra*) and ducks are secured in this way.

Undoubtedly the Fishing Cat deserves its reputation for strength and boldness. Several authors record that it will attack and kill feral dogs (Pocock, 1939 and Prater, 1965). An animal trapper named Hasham recounted to me the pursuit of a large male Fishing Cat encountered near Thatta by three dogs. It appears that the cat after trying to shake off its pursuers turned round and struck one of the dogs such a blow with its paw that it ran away howling and was later found to have broken its jaw. The second dog was grasped around the neck and thrown to the ground whilst the third dog was actually seized and carried away by the cat. Sterndale (1884) records that a captive Fishing Cat in his possession attacked and killed a leopard cub twice its size and J. A. W. Anderson had a young captive which attacked and killed a Tawny Eagle (*Aquila rapax*). The eagle was secured by jesses but was still a formidable prey for any carnivore to overcome.

Fishing Cats have been bred in captivity in both Frankfurt and Philadelphia Zoo. Observations at Philadelphia indicated that two appeared to be the usual litter size which agrees with the observations of animal trappers in Sind. The kittens born in Philadelphia were blind and unable to crawl at birth, becoming physically mobile at 12 days old. They still continued to suckle until about six months of age and did not eat their first solid meal until 53 days old (Ulmer, 1968). These captive kittens made an almost bird-like chirrup when calling their parents. They became very playful as they grew older. It was also noted that when newly born the ears of these kittens were closed, the pinna being folded forwards over the orifice.

In southern Sind young kittens have been captured in January and February but they may well be capable of breeding throughout the year. One Fishing Cat's lair, discovered near Sujawal, consisted of a rough nest of reeds in a dense thicket of *Phragmites*. The remains of a Coot (*Fulica atra*) and a Wood Sandpiper (*Tringa glareola*) were found in this nest (J. A. W. Anderson, pers. comm.).

Zoo captives have been described as excessively wary, so that their normal behaviour is difficult to observe (Ulmer, 1968). Mr. Blyth in Jerdon (1874) stated that he had kept several specimens which became quite tame and J. A. W. Anderson kept a male for over three years from the time it was a small kitten, secured near Haleji. This specimen was affectionate and could be handled freely by its owner. It climbed trees well and enjoyed swimming when taken near water. At this time I observed it swimming with its head well clear of the water and using both fore and hind legs with the tail acting as a rudder. It was never heard to 'purr' but occasionally at night-time it would call in a rapidly repeated 'eh-eh-eh' (J. A. W. Anderson, pers. comm.). F. A. Ulmer (1968) described a similar call emitted by the male at Philadelphia Zoo during the mating season. Captive specimens have lived 10 years (Dover, 1933).

Genus PANTHERA Oken, 1816

Very large and powerful cats with the larynx modified to allow great distension at the back of the mouth for resonance.

Key to the Subgenus PANTHERA

Dorsal profile of skull flattish with no concavity where the muzzle passes into the frontal interorbital region. (See Fig. 44.)

Key to the Pakistan Species of PANTHERA

- (a) Pattern of body fur consisting of black spots arranged in rosettes against a tawny-buff background. No prominent black stripe from inner corner of the eye to the mouth. Tail relatively slim.
... *Panthera pardus*
- (b) Very large size. Body with orange-tawny ground colour and thin vertical black stripes.
... *Panthera tigris*

PANTHERA PARDUS

Panthera pardus Linnaeus, 1758; Panther or Leopard (see Illustration 45).

Subspecies *Panthera pardus fusca* Meyer, 1794
Panthera pardus saxicolor Pocock, 1927
Panthera pardus sindica Pocock, 1930
Panthera pardus millardi Pocock, 1930

Taxonomy: M. S. Siddiqi (1961) lists all the above four subspecies in his checklist of mammals relating to Pakistan territory. The present day population is so thinly distributed that it is hardly possible to separate individual specimens into so many recognizable subspecies though the population from southern Baluchistan and Sind Kohistan averages smaller in size than those from the northern Himalayan regions. Throughout its range, there is considerable individual variation in the pattern and density of the spots or rosettes on the body.

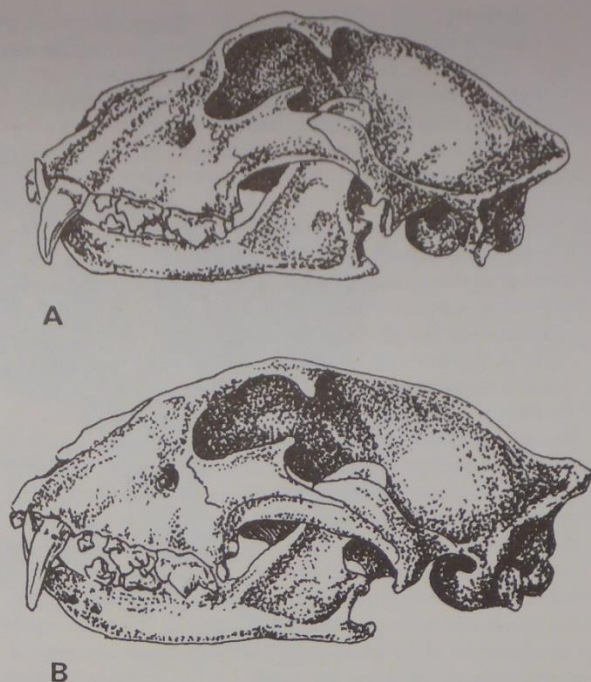


Fig. 44 Lateral view of skulls showing difference between Snow Leopard and Panther.

- A. *Panthera uncia*. Note less prominent sagittal crest and dished or concave profile in front of orbits.
- B. *Panthera pardus*. Note relatively smooth convex profile of skull in region of temple.

Description: The Panther, belonging to the group of large cats, is too familiar an animal to warrant detailed description. A large male may stand up to 66cm (26in.) at the shoulder and measure 117cm (46in.) head and body length. The tail which is long and slender averages about two-thirds of the head and body length, but can vary considerably in individual length. Dunbar Brander (1931) records a variation from 71–96.5cm (28–38in.) in tail length of Indian specimens. Panthers from the more arid regions of Baluchistan weigh not more than 40kg (90lb) and measure 91.5cm (36in.) from nose-tip to root of tail. Large specimens from India have been killed weighing as much as 69kg (152lb). Females are invariably smaller weighing about 6.8kg (15lb) lighter than males.

The panther has a deep, laterally compressed body with comparatively short stout legs and very broad massive forepaws (see Fig. 45). The neck is thick and muscular and the muzzle rather long and broad. The short rounded ears are black on their dorsal surface with conspicuous round white spots. The body colour varies from a golden orange colour to a paler greyish-fawn closely marked all over with black rosettes comprised of four or five concentric spots. Specimens from the Himalayan mountain regions of Pakistan have a long thick pelage in winter, the belly fur being particularly long. Specimens from southern Baluchistan, Waziristan and Sind Kohistan have short harsh fur. Captive specimens from Chitral and Swat, seen by me varied from paler greyish-fawn to tawny-buff in ground colour. The tail bears spots throughout its length and the forehead is also patterned with small spots. There are two authentic records of Black Panthers having been killed in Sind, one near Jacobabad in 1928 and the other just north of Karachi in 1939 (Eates, 1943 and