

Disappearance of fishing cats

Climate change is one of the major challenges of this century and India will be among the countries that will be greatly affected. The global mean temperature is rising and is attributed to increased CO₂ concentration in the atmosphere. According to the most recent projections, global mean temperature could rise by around 2–4°C (compared to 1850 baseline) by 2100. Extreme temperatures, an increase in the number of extreme/severe weather events, rising sea levels, increased ocean acidification, and other consequences are projected as a result of higher CO₂ levels in the atmosphere and shifting climatic conditions. With the increasing awareness, climate change is no more a mere science problem, but involves international policy, health, food, water, energy security, insurance, economics and law.

Climate change is also having an impact on the habitats of some species. Even minor variations in average temperatures can have a substantial impact on sensitive ecosystems. There are just two options: adapt or relocate to more suitable environments. Ecosystems are interconnected, and the extinction of a species can have a wide-ranging influence on ecological functions. A concept known as the 'bioclimatic envelope', which is the range of temperatures, rainfall, and other climate-related factors in which a species presently thrives, is used to estimate or determine the impact of climate change on species. Climate change will cause considerable shifts in the positioning of climatic envelopes. As a result, the species will relocate to more suitable habitats since they can no longer live in their current settings. Such migration is not always possible due to rivalry from existing species in a region, as well as geographical or human-made barriers. While a major fraction of the species is vulnerable to habitat loss due to climate change, some species will adapt to the new environment. Species with tiny populations and minimal migration capabilities are more likely to suffer as a result of rapid climate change. By 2050, most species on our planet will encounter climatic conditions unfamiliar to them.

Even if greenhouse gas emissions are reduced, the Earth will continue to warm for a while. Some species may be able to adapt or evolve as a result of climate change. However, global warming may offer a problem for many, particularly species that are already scarce and live in limited climatic envelopes.

Healthy ecosystems and biodiversity are fundamental to life on Earth. According to a report from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), around 1 million species are under threat of extinction. Approximately, 0.1% of all species will become extinct each year. There are around 2 million distinct species on our planet. That means 2000 extinctions will occur every year.

One such example is the disappearance of the fishing cat. The fishing cat (*Prionailurus viverrinus*) is a medium-sized wild cat that belongs to the Felidae family of 38 species. It has coarse olive-grey to ashy grey fur with darker stripes on the shoulder and near round (oval) patterns on the sides and flanks. The ears are small and rounded, with a white spot on the rear. The ears are located low on the head. Two stripes go down the cheeks, and four run from above the eyes between the ears to the shoulder. It has a white underside with two rows of dots around the throat. It has a short tail (less than half the length of its head and body). It has an elongated face. It is approximately twice the size of a domestic cat (*Felis catus*). It is stocky and muscular, weighing 5–16 kg, with a length of 57–78 cm with tailing ranging from 20 to 30 cm. The paws have claws that are not fully sheathed. Webbed paws are characteristic of the fishing cat.

From their characteristics, it is obvious that the fishing cat has an affinity for water. The fishing cat is primarily distributed in the Himalayan foothills of India and Nepal, eastern India, Bangladesh and Sri Lanka. Populations have also been recorded on the coast of Thailand. Their preferred habitats are wetlands: swamps and marshlands, reed beds, alluvial floodplains, tidal creeks, coastal deltas and mangrove forests. Their existence in India has been recorded in Ranthambore Tiger Reserve (Rajasthan), Sur Sarovar Bird Sanctuary (Agra, Uttar Pradesh), Krishna Wildlife Sanctuary (Andhra Pradesh), Coringa Wildlife Sanctuary (Andhra Pradesh) and the surrounding reserve forests in Andhra Pradesh. They are also found in the Western Ghats.

Fishing cats are primarily nocturnal. They can swim for long distances, at the surface or underwater. Their primary prey is fish, which is around three-quarters of their diet. They also feed on birds, insects, crustaceans, reptiles (e.g. frogs, snakes) and small rodents. They also scavenge on carcasses

of larger animals. They have been seen hunting around the borders of watercourses, catching prey directly from the water and even diving underwater to obtain fish further away from the banks. It sits by bending its front legs and stretching the rear limbs on the bank and watches the water's surface without any movement, even under sudden bright lights pointed at it. The lack of oxygen in the water at night provides prey when they reach the surface.

On the International Union for Conservation of Nature (IUCN) Red List, the fishing cat is classified as Endangered. It is included in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) under Appendix II (they are not necessarily threatened with extinction, but may become so unless trade in specimens of such species is subject to strict regulation to avoid utilization incompatible with the survival of the species in the wild). The fishing cat is protected from hunting in India under Schedule I of the Indian Wildlife (Protection) Act, 1972.

The main threat to fishing cats is habitat destruction due to anthropogenic activities and climate change. Most of India's wetlands are at risk of destruction due to human settlement, drainage for agriculture, pollution and logging. Another concern is the shortage of its primary food, fish, which is mostly caused by unsustainable fishing activities. Other threats include retaliatory and target killings; due to human-animal conflict.

Studies have been done by the Fishing Cat Project in West Bengal (Priyanka Das, 'Stories of the Fishing Cat are Entering their Last Act', *thewire.in*, 6 June 2018). She details her experiences promoting community-based conservation of the fishing cat in a region of the Howrah district, which has a habitat of marshlands with reed beds. Das also lists the damage done by the dam construction in Damodar Valley to the local flora and fauna, and the resulting necessity to use commercial fertilizers for agriculture. The dwindling numbers of molluscs, frogs, native freshwater fishes and birds pose a loss of prey to the fishing cat. Commercial fishing practices cause conflict when the local villagers

claim loss of livelihood due to the alleged actions of fishing cats. The cats are also blamed for the loss of goats and chickens. However, a study by the Fishing Cat Project using camera traps has revealed that the human theft was the more predominant cause for the large loss of fishes than the fishing cats. Another problem identified by the Fishing Cat Project was habitat loss due to land re-utilization. Cultivation of the reed beds (khori; used in betel leaf cultivation) has been discouraged in favour of cash crops. The less intense but still high probability flooding continues to cause damage to the crops. Other factors are the loss of market for the betel leaf and proposed extensions to industrial land. The study concludes that community-based conservation can only marginally postpone the endangerment of the fishing cat while the political, social and economic issues pose a more serious threat to their habitat in Howrah.

There are 38 species under Felidae (wild cat), which include the domestic cat (*Felis silvestris catus* or *Felis catus*). While the rest of the wild cat family have declining populations with threats of extinction, the domestic cat has spread and prospered. The cat family, despite consisting of predators, is under threat from humanity. Humans are the greatest enemy to the wild cat species; habitat destruction or conflict being the major causes. The population of the wild members of the Felidae family combined make up less than 1% of the population of *Felis catus*. Even though it is termed as a domestic cat, *Felis catus* has been subject to human breeding for less than 1000 years, and as such does not have much genetic differentiation from their wild cousins.

All these point to the urgent need of advance actions to protect the fishing cat from the threat of extinction due to spread of human activities, as well as climate change.

S. K. Satheesh

Divecha Centre for Climate Change, and
Centre for Atmospheric and Oceanic Sciences,
Indian Institute of Science,
Bengaluru 560 012, India
e-mail: satheesh@iisc.ac.in