

## *Prionailurus viverrinus*, Fishing Cat

Assessment by: Mukherjee, S. et al.



*View on [www.iucnredlist.org](http://www.iucnredlist.org)*

**Short citation:** Mukherjee, S. et al. 2016. *Prionailurus viverrinus*. The IUCN Red List of Threatened Species 2016: e.T18150A50662615. <http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T18150A50662615.en> [see full citation at end]

**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:** *Prionailurus viverrinus* (Bennett, 1833)

### Common Name(s):

- English: Fishing Cat
- French: Chat Pêcheur
- Spanish: Gato Pescador

### Taxonomic Notes:

Taxonomy is currently under review by the IUCN SSC Cat Specialist Group. Placed in *Prionailurus* according to genetic analysis (Johnson *et al.* 2006, O'Brien and Johnson 2007). No modern analysis of subspecies available.

## Assessment Information

**Red List Category & Criteria:** Vulnerable A2cd+3cd+4cd [ver 3.1](#)

**Year Published:** 2016

**Date Assessed:** June 21, 2016

### Justification:

Recent surveys suggest that Fishing Cat populations are still in decline within all range countries at an alarming rate, particularly in Southeast Asia. A severe paucity of recent records in Viet Nam, Cambodia, Thailand, Myanmar, Java, and, if the species occurs there at all, Lao PDR, indicate that these populations are very small, and have been since at least 2000. There are no recent records from Sumatra (Indonesia), where the species has never been confirmed to occur, although in the light of only limited appropriate survey effort in these areas, the species's current status should be considered unknown. In South Asia, although relatively widespread, it occurs largely in human-dominated landscapes (often hugely so), which are under locally severe threat from urbanization (Sri Lanka and India) and industrialization (India). Estimates of population size and trend, and of extents of habitat, are very speculative, given that research on this species has been initiated only in 2009 (Cutter 2015). Yet, research reveals a declining population facing an array of severe threats from habitat destruction to active persecution due to perceived conflict (Mukherjee *et al.* 2012, Cutter 2015, Adhya 2016). Poaching and retribution killing were the major causes for a high Fishing Cat mortality of 84% in Thailand, where 16 individuals have been monitored over a three-year radio-telemetry study (Cutter 2015).

The current known global Fishing Cat strongholds are Sri Lanka, Bangladesh, West Bengal in India and the Terai-Duar belt of the Himalayan foothills in India and Nepal. Habitat loss along with the killing of Fishing Cats because of conflict with local people throughout the species' range has led to a global population decline suspected to be 30% or more in the past 15 years (three generations). Outside these strongholds, declines may be considerably steeper, but such populations are believed now to comprise

such a small proportion of the global population that they will have negligible effect on the overall global population decline rate. Habitat destruction and retaliatory killings continue and the process of reducing this loss through several measures is likely to be very slow. Irreversible losses of around 10% of Fishing Cat habitat in Sri Lanka, 30% in the Ganges-Brahmaputra Delta and 10% in the Terai-Duar savanna and grasslands ecoregion of India and Nepal are likely in the next 15 years (Ashan Thudugala, Anya Ratnayaka, Tiasa Adhya, Shomita Mukherjee, Murthy Kanti Mahanti, Giridhar Malla, Rama Mishra, Sagar Dahal pers. comm. 2015). These rates being compounded by ongoing retaliatory killing, it is likely that in the next 15 years there will be a decrease of a further 30% in the global Fishing Cat population. Thus, the species is categorized as Vulnerable under A2cd+3cd+4cd.

The change in Red List category is a non-genuine change reflecting the very recent increase in information quality; it does not indicate an improved conservation status for the species since the last assessment.

### **Previously Published Red List Assessments**

2010 – Endangered (EN) – <http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T18150A7673993.en>

2008 – Endangered (EN)

2002 – Vulnerable (VU)

1996 – Lower Risk/near threatened (LR/nt)

1994 – Insufficiently Known (K)

## **Geographic Range**

### **Range Description:**

The natural distribution of the Fishing Cat is unclear throughout its global range, with many unauthenticated, ambiguous and erroneous records clouding understanding (Pocock 1939, Duckworth *et al.* 2009, Janardhanan *et al.* 2014, Appel 2016, Duckworth 2016, Willcox 2016). In addition the species is not well recorded by typical modern general faunal surveys, meaning that absence of records from areas without specific Fishing Cat surveys should not be taken to imply absence of the species (Duckworth *et al.* 2009, 2010, Janardhanan *et al.* 2014, Appel 2016). Other factors also hinder determination of current range: putative introductions, sporadic records from regions not included in past distribution assessments, persistence in small pockets but with drastically reduced numbers and potentially amid areas of widespread extirpation, and possible recent extinctions through much of its range (Adhya *et al.* 2011, Mukherjee *et al.* 2012, Willcox *et al.* 2014, Adhya 2016, Duckworth 2016, Kanti Mahanti 2016, Mukherjee 2016, Willcox 2016).

The Fishing Cat is widely distributed in South and Southeast Asia from Pakistan in the west to Cambodia in the east, and from the Himalayan foothills in the north to Sri Lanka and peninsular Thailand in the south. Its distribution was probably always patchy because of its strong association with wetlands. Current known occurrence is extremely localized across the range except for West Bengal in India, Bangladesh and Sri Lanka. Results of a molecular analysis of Fishing Cat faeces from five protected areas in India indicated that in the past Fishing Cat populations were connected from the Terai in northern India to the Coringa mangroves on India's east coast; it is unknown whether contemporary populations are still connected physically (Mukherjee *et al.* 2012, Mukherjee 2016). Also unknown is whether

population units in the Terai-Duar savanna and grasslands ecoregion at the base of the Himalayas are connected outside protected areas or along river courses.

More recently, the species has been recorded in areas where it was never observed before, such as in southern Andhra Pradesh, India, and in the far south of coastal Thailand. It had presumably been overlooked in these areas previously; they are unlikely to indicate recent range extension. Elsewhere in Southeast Asia its occurrence is likely to be extremely patchy in Viet Nam, Lao PDR (if it occurs there at all), Thailand, Myanmar, Cambodia and Java, Indonesia.

Detailed country-wise distributions are provided below:

**Pakistan:** this population was thought to be close to extinction in the early 1970s (Roberts 1977), but Islam *et al.* (2015) camera-trapped individuals in the Chotiari Reservoir area in the Sanghar District of Sindh Province. There are also reports of individuals being sold and seized in a wildlife market in Karachi (Bhatti 2015, Faraz Ubairi *in litt.* 2015).

**Nepal:** intensive camera trapping surveys for Tiger *Panthera tigris* monitoring since 2008 corroborated the Fishing Cat's presence in Suklaphanta Wildlife Reserve in the far western Terai, but failed to record it in Bardia National Park (Babu Ram Lamichhane and Shailendra Yadav pers. comm. 2016). It is present in and around Jagadishpur Reservoir, a Ramsar site in south-western Nepal (Dahal *et al.* 2015) and in Chitwan National Park in the central Terai (Dahal and Dahal 2011, Mishra 2016). In south-eastern Nepal, it has been recorded in and around Koshi Tappu Wildlife Reserve (Pandey *et al.* 2012, Taylor *et al.* 2016, Sagar Dahal and Angie Appel *in litt.* 2016). Whether these populations are connected outside protected areas remains unknown.

**India:** protected areas hosting Fishing Cat populations include Dudhwa Tiger Reserve and Soor Sarovar Bird Sanctuary in Uttar Pradesh (Mukherjee *et al.* 2012, Baiju Raj *in litt.* 2016), Corbett Tiger Reserve, Uttarakhand (Abishek Harihar *in litt.* 2012), Sundarbans Tiger Reserve in West Bengal (Yadavendradev Jhala *in litt.* 2015), Keoladeo Ghana National Park (Mukherjee *et al.* 2012) and Ranthambhore Tiger Reserve in Rajasthan (Sadhu and Reddy 2013), Kaziranga Karbi Anglong Landscape (Jimmy Borah *in litt.* 2012) and Manas Tiger Reserve in Assam (Qamar Qureshi *in litt.* 2016), Valmiki Tiger Reserve in Bihar (Qamar Qureshi *in litt.* 2016), Coringa Wildlife Sanctuary in Andhra Pradesh (Mukherjee *et al.* 2012, Malla and Sivakumar 2014) and Namdapha Tiger Reserve in Arunachal Pradesh (Aparajita Datta *in litt.* 2012). Outside protected areas, records exist from Pilibhit Forest Division in Uttar Pradesh (Meraj Anwar *in litt.* 2011), in small wetland patches in West Bengal near Kolkata and its suburbs like the Howrah and Hooghly districts (Anonymous 1989, Adhya *et al.* 2011), in Medinipur and Nadia districts and in the human-dominated north-eastern part of Chilika Lake and Tangi district in Odisha (Tiasa Adhya *in litt.* 2016). The Fishing Cat has also been recorded recently in areas lacking historical records viz. the Krishna River mangroves in Andhra Pradesh (Kantimahanti 2016). There are also historical statements of occurrence in the Western Ghats and the western coast of India (Pocock 1939), which have not been confirmed by recent targeted searches and may have been in error (Janardhanan *et al.* 2014).

In the Duars of north-eastern India, superficially suitable habitat may extend into Bhutan, but a number of general surveys there have not recorded the species (e.g. Tempa *et al.* 2013, Banerjee and Bandopadhyay 2016).

Sri Lanka: Fishing Cat is present in protected areas along the coast and in the island's interior (Andrew Kittle *in litt.* 2012). Individuals have also been recorded in densely human-populated urban areas of Colombo and outside protected areas in Kandy, Mathle and Nuwaraeliya districts (Ratnayaka 2016, Thudugala 2016).

Bangladesh: Fishing Cat is present in protected areas of the Sundarbans (Rahman 2016, Adam Barlow pers. comm. 2016), in unprotected wetlands in the Brahmaputra river basin (Rahman and McCarthy 2014, Chowdhury *et al.* 2015) and in the Chittagong hill tracts (Chakma 2015, Karim and Ahsan 2016). However, Chakma (2015) obtained only three potential records of which two were pugmarks and one was a video from a camera-trap which was not authenticated as Fishing Cat and could have been a Leopard Cat *P. bengalensis*.

In Myanmar, there are only two certain field records: one from the early 20th century in the Hukaung Valley in the north, and one from Meinmahla Kyun Wildlife Sanctuary in the Ayeyarwady (= Irrawaddy) delta in or around 2015 (Than Zaw *in litt.* 2016). This corroborates reports that a few captive individuals in the country are said to be descendants of animals captured in or around the 1990s in the Ayeyarwady delta (Than Zaw *et al.* 2014).

Thailand: during targeted surveys Fishing Cat was recorded inside Khao Sam Roi Yot National Park and Thale Noi Non-Hunting Area along the coast, but not in protected areas farther inland that were previously thought to harbour Fishing Cat (Cutter and Cutter 2009, Tantipisanuh *et al.* 2014). An incidental record came from the coast in southern Thailand (Buatip *et al.* 2013; confirmed by photograph examined by J.W. Duckworth and W. Chutipong pers. comm. 2016), which constitutes the southernmost valid record with a precise locality to date in mainland Southeast Asia.

Cambodia: camera-trap records are scarce and limited to Kulen Promtep Wildlife Sanctuary in the country's north-east (Rainey and Kong 2010), and mangrove habitats in Peam Krasaop Wildlife Sanctuary and Ream National Park on the coast (Thaung and Herranz Muñoz 2016). Despite extensive camera-trapping in eastern and northern Cambodia including Kulen Promtep Wildlife Sanctuary in recent years, Fishing Cat was not recorded. (Edwards *et al.* 2012, Gray *et al.* 2012, Simon Mahood pers. comm. 2016). A kitten found orphaned in Botum-Sakor National Park was identified as Fishing Cat, but may have been a Leopard Cat (Royan 2009). Of many other claims in the last 15 years, most are certainly in error, but a critical evaluation of all has not been performed.

In Lao PDR most claims are either in certain error or non-assessable; only one sounds credible but this is a sight-record that cannot be validated (Duckworth *et al.* 2010).

Viet Nam: Fishing Cat may persist in the Mekong Delta, where it was last camera-trapped in 2000 (Willcox 2016). There is a very small possibility that it occurs in the Red River Delta (where it has never been confirmed), though there have been no targeted surveys to be confident of genuine absence or local extinction (Willcox *et al.* 2014).

Indonesia: it is known to have occurred only along the west and north coast of Java within 15 km of the coast (Sody 1936, Melisch *et al.* 1996), but there are no records of wild-living individuals since 2000. The inferences of Melisch *et al.* (1996) are based on a single track and some scats, neither of which can be treated as conclusive evidence. Alain Compost photographed Fishing Cats in Java in the 1990s and

suggested that some may still survive in the Banten Bay region and in Ujung Kulon National Park (Alain Compost *in litt.* 2012). Until 2000, he photographed Fishing Cats in Pulau Dua Bird Sanctuary, a protected mangrove forest on the northern coast, but learned of all Fishing Cats been poisoned there by 2006 (Alain Compost *in litt.* 2012). Fishing Cat was not recorded during intensive camera-trapping targeting Javan Rhinoceros *Rhinoceros sondaicus* in Ujung Kulon National Park (Jim Sanderson *in litt.* 2016); the overlap, if any, of camera-trap stations with microhabitat suitable for Fishing Cat is not known.

There is no certain record from Sumatra, but historical testimony from a hunter who was familiar with the species from Java, and a captive individual in the 2000s in a local zoo indicate that the species might inhabit the island (Duckworth *et al.* 2009, contra Sanderson 2009).

Occurrence in Peninsular Malaysia is also open to doubt (Duckworth *et al.* 2009), but the Thai locality record in Bua tip *et al.* (2013) is very close to the Malaysian border. Past claims for Borneo, Taiwan and China lack any credible basis (Nowell and Jackson 1996, Sunquist and Sunquist 2002, Jutzeler *et al.* 2010).

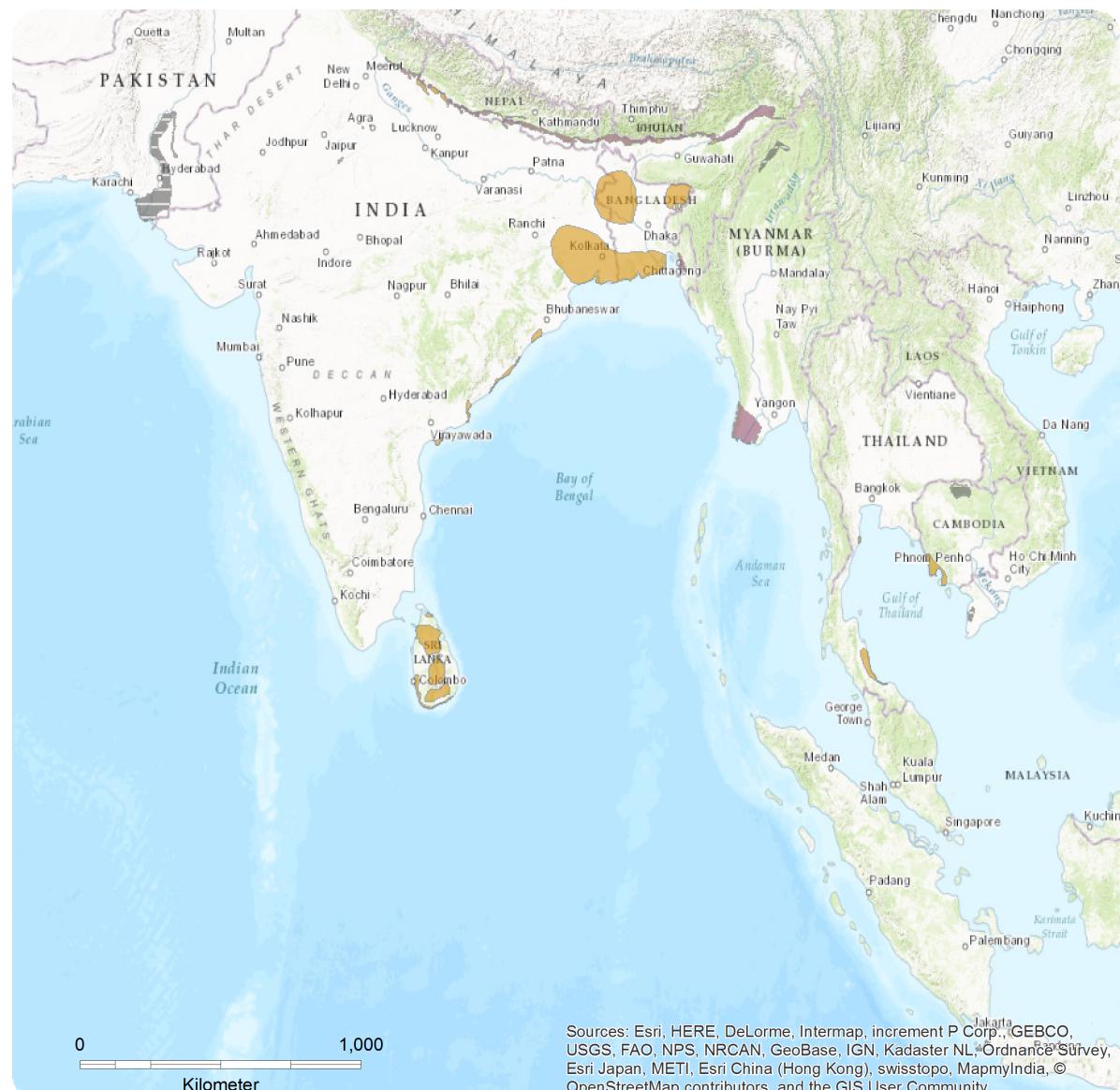
The species is known from sea level in parts of its range, and in the northern parts it is likely to occur only in the lowlands. Recent reliable elevation records in the Terai of India and Nepal are all from below 150 m, such as Pilibhit Forest Division and Katerniaghata Wildlife Sanctuary (Meraj Anwar *in litt.* 2016), Jagadishpur Reservoir area, Chitwan National Park (Dahal *et al.* 2015, Dahal and Dahal 2012) and Koshi Tappu Wildlife Reserve area (Angie Appel *in litt.* 2016), except one at 330 m on the southern edge of Corbett Tiger Reserve (Abishek Harihar *in litt.* 2012). However, Pocock (1939) accepted a Fishing Cat skin from Barkot near Dehra Dun on the banks of the upper Yamuna river as evidence of at least occasional high-altitude occurrence at about 5,000 ft (ca. 1,500 m), but did not explain whether this individual was killed there, or whether there was any possibility that, while a skin had been procured at that altitude, the animal had originated elsewhere. In Sri Lanka, Fishing Cat has been recorded at elevations up to 1,800 m (Ashan Thudugala *in litt.* 2016). However, the Sri Lankan altitudinal range seems to be an exception as all other authentic locality records are much lower than that.

#### **Country Occurrence:**

**Native:** Bangladesh; Cambodia; India; Myanmar; Nepal; Pakistan; Sri Lanka; Thailand

# Distribution Map

*Prionailurus viverrinus*

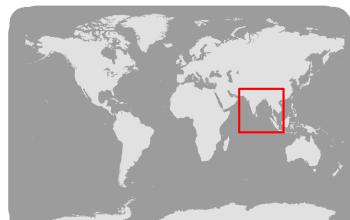


## Range

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

## Compiled by:

Fishing Cat Working Group



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

## Population

Fishing Cat populations and habitat in Southeast Asia are severely stressed and the species' current stronghold is in eastern and southern parts of South Asia. According to Melisch *et al.* (1996), in West Java, Fishing Cat populations were fragmented and restricted to coastal areas. However, this was in the 1990s and the evidence was based solely on visual identification of tracks and scats, which may not be reliable; the last photographic evidence of the species in the wild on Java dates to 2000 (A. Compost *in litt.* 2012). The Fishing Cat was not recorded during intensive camera-trapping targeting Javan Rhinoceros in Ujung Kulon National Park (Jim Sanderson *in litt.* 2016). It is unclear the extent, if any, to which these surveys covered microhabitat suitable for Fishing Cat. In sum, it is impossible to speculate on current population size in Java, if the species even survives there at all. In Viet Nam the species is perhaps extinct in most or even all of its former range but it was confirmed to persist in the Mekong Delta until at least 2000 (Willcox *et al.* 2014). It is not known if it ever occurred in the Red River Delta; given general levels of hunting and persecution in the country it seems unlikely that any large population remains anywhere in Viet Nam (Daniel Willcox *in litt.* 2015).

In Thailand too, the species seems to be highly localised and recent surveys and incidental records suggest that it is restricted to coastal parts of Central and Southern Thailand (Cutter and Cutter 2009, Buatip *et al.* 2013, Tantipisanuh *et al.* 2014). There is at least one historical Thai specimen identified as this species from well inland (Duckworth *et al.* 2010), but the extent to which the species ever occurred widely across inland Thailand, if at all, remains unclear. Outside Khao Sam Roi Yot National Park, coastal Thailand, (Cutter 2015) documented 84% mortality of radio-collared Fishing Cats due to poaching and unknown causes over her three-year study period.

Its presence in the Ayeyarwady delta in Myanmar was recently confirmed (Than Zaw pers. comm. 2016), but there is no indication of the population size there, although given the extent of the habitat it could be large.

Extensive camera-trapping in the general area of the only historical locality record from Myanmar, the Hukaung Valley, did not find the species, but camera-traps were not set to target this species, so it is unclear whether it persists there (Than Zaw *et al.* 2014).

In South Asia, the Fishing Cat is currently widespread in Sri Lanka and Bangladesh. The Pakistan population of Fishing Cat was feared to be close to extinction (Roberts 1977), but there are camera-trap records of Fishing Cat from the Chotiari Reservoir in the Sindh Province of Pakistan (Islam *et al.* 2015) and recent reports of individuals being sold in local markets in Karachi (Faraz Zubairi *in litt.* 2015). In Sri Lanka and in India there are small populations of Fishing Cat in densely human-populated urban areas (Adhya *et al.* 2011, Ratnayaka 2016). In Nepal it occurs along a narrow stretch bounding India, in the Terai region (Sagar Dahal *in litt.* 2015). It seems to be relatively safe in some protected areas in India, especially those under the Project Tiger scheme, such as Dudhwa Tiger Reserve, at the Indo-Nepal border and the Sundarbans Tiger Reserve bordering Bangladesh. In Bangladesh the Fishing Cat seems to be relatively safe in mangrove forests of the Sundarbans and in the north-eastern swamps (Rahman *et al.* 2016). However, on both sides of the India-Bangladesh border, very few surveys have been undertaken to assess the status and distribution of the Fishing Cat across the salinity gradient of the mangrove region.

A molecular analysis of population connectivity in India suggested that in the past Fishing Cat populations within India were connected from the Terai region of the Himalayan foothills to the Coringa mangroves in Andhra Pradesh on the east coast (Mukherjee *et al.* 2012). However, this analysis was restricted to the mitochondrial genome and is not comprehensive. Several small pockets of populations survive across the eastern coast and eastern states of India, and many are perhaps yet to be discovered (Adhya *et al.* 2011, Murthy Kantimahanti and Giridhar Malla *in litt.* 2015). Similarly, in the western semi-arid part of India a recent record in Ranthambhore Tiger Reserve (Sadhu and Reddy 2013) and protected wetlands in the areas neighbouring Rajasthan such as Soor Sarovar Bird Sanctuary near Agra (Baiju Raj *in litt.* 2016) suggest that populations either exist in pockets or are long-distance dispersers tracking suitable habitats. Extensive surveys are required to clarify this. Fishing Cat was thought to be extinct in Keoladeo Ghana National Park, Rajasthan, by 2007 (Mukherjee *et al.* 2012), but a later survey recorded an individual, and though numbers may be drastically reduced, some individuals may still persist there (Mukherjee *et al.* 2012, Abrar Khan pers. comm. 2011). North-eastern India is another region where the species is recorded from pockets e.g. Manas (Qamar Qureshi *in litt.* 2016) and Kaziranga Tiger Reserves (Qamar Qureshi *in litt.* 2016) in Assam and Namdapha Tiger Reserve in Arunachal Pradesh (Choudhury 2003, Aparajita Dutta *in litt.* 2012). Though there have been several camera-trap surveys in this region targeting Tiger, these may not have adequately covered the habitat of Fishing Cat. Focussed surveys along the several river courses in the region are required to gauge population connectivity and status of Fishing Cat.

Habitat loss and destruction along with the killing of Fishing Cats by local people throughout the species' range has led to a global population decline suspected to be 30% or more, in the past 15 years (three generations). Outside the strongholds, declines may have been considerably steeper, but such populations are believed now to comprise such a small proportion of the global population that they will have negligible effect on the overall global population decline rate. Habitat destruction and retaliatory killings continue currently, and the process of reducing this loss through several measures is likely to be very slow. Irreversible losses of around 10% of Fishing Cat habitat in Sri Lanka, 10% in the Terai-Duar savanna and grasslands ecoregion of India and Nepal and 30% in the Ganges-Brahmaputra Delta are likely in the next 15 years. These rates being compounded by ongoing retaliatory killing, it is likely that in the next 15 years there will be a drop of a further 30% in the global population.

**Current Population Trend:** Decreasing

## **Habitat and Ecology (see Appendix for additional information)**

In India the Fishing Cat is strongly associated with water bodies, marshlands constituting tall bed-forming graminoid species like the reed *Phragmites vallatoria*, the reedmace *Typha elephantina* and locally cultivated grass species like *Saccharum narenga* and swamps (Adhya 2015). Most known records are from the lowlands, but in Sri Lanka Fishing Cat occurs also in wetlands in hilly areas (Thudugala 2016).

The Fishing Cat is largely nocturnal (Mukherjee 1989, Sunquist and Sunquist 2002, Lynam *et al.* 2013). It is a dietary generalist consuming a variety of prey such as murid rodents, birds and fish (Mukherjee 1989, Haque and Vijayan 1993, Adhya 2015). Two species of rodents that figured prominently in the diet of the Fishing Cat from the Howrah district of West Bengal, a rapidly developing urbanised zone, were *Rattus rattus* (*sensu lato*) and *Bandicota bengalensis*. A conservative estimate of rodent consumption by the Fishing Cat suggests that each individual eats between 365 and 730 rodents per year (Adhya 2015).

A radio-telemetry study on four Fishing Cats in Chitwan National Park in Nepal showed that they mostly used dense tall and short grasslands; the home ranges of three females was estimated at 4-6 km<sup>2</sup> while that of a single male was estimated at 16-22 km<sup>2</sup> (Sunquist and Sunquist 2002). A more recent radio-telemetry study in Khao Sam Roi Yot National Park, Thailand, demonstrated that protection of resources such as food and daytime resting sites and reduction of poaching can ensure the persistence of the Fishing Cat in human-modified agricultural areas (Cutter and Cutter 2009). A 84% mortality of radio-collared cats, due to poaching and unknown causes, was reported during the three-year study (Cutter 2015).

Generation Length (GL) was estimated at 5 years, using the Pacifici *et al.* (2013) formula,  $GL = AFR + [z * Rspan]$ , [where z (slope) is estimated at 0.3]; Rspan (Age at Last Reproduction – AFR), assuming 12 years as the average life span of the Fishing Cat in the wild and the Age at First Reproduction (AFR) around 1 year.

**Systems:** Terrestrial, Freshwater

## Use and Trade

The Fishing Cat is killed for consumption and a very recent report from Howrah district, India, reveals the rampant killing of the species outside protected areas in human-dominated landscapes for consumption as part of a cultural practice. Such cases most often go unnoticed or are ignored unless some interested people and non-governmental organisations pursue the case until the perpetrators are convicted (Adhya 2015). In Cambodia, the Fishing Cat is killed by local people for consumption or in retaliation for damaging fishing nets (Thaung and Herranz Muñoz 2016). In Thailand a radio-telemetry study (Cutter 2015) demonstrated that poaching is a major threat when five of 16 radio-collared individuals were killed by poachers (for consumption and retaliation) within the three-year study period. Cutter (2015) documented 84% mortality of radio-collared individuals attributed to poaching and unknown causes. Opportunistic trading of skins and potentially other parts is likely to occur in mainland Southeast Asia, where such trading is at very high levels and involves a wide diversity of species (e.g. Willcox *et al.* 2014), but there is no evidence of its being particularly sought after there. Similarly, in Java individuals are sometimes seen in the island's intensive live animal ('pet') trade (e.g. Duckworth *et al.* 2009), but again there is no indication that it is (yet) a specific target.

## Threats (see Appendix for additional information)

The Fishing Cat faces a high risk of extinction throughout its range and is thought to be amongst the most vulnerable of the small and medium-sized cats in Southeast Asia, reflecting the very low overlap of occupied habitat with protected areas and other conservation interventions, rather than any particular inherent higher susceptibility than shown by the other small cats (e.g. Duckworth *et al.* 2014). The major threat across its South Asian range appears to be habitat loss and fragmentation by developmental activities such as urbanization, industrialization, agriculture and aquaculture (prawn and shrimp farms), whereas in Southeast Asia persecution is the major threat (Melisch *et al.* 1996, Cutter and Cutter 2009, Tantipisanuh *et al.* 2014, Willcox *et al.* 2014). Outside Khao Sam Roi Yot National Park, Thailand, Cutter (2015) reported 84% mortality of radio-collared Fishing Cats during the study period. Of 16 Fishing Cats that were radio-collared, three could not be located and could have either dispersed or died. Of the remaining 13, only two survived the almost three-year study period while five were

poached and six died of unknown causes. Five dead cats were located. In one case the poacher who shot an animal reported the cause of death when he returned its ear tag.

In India, much of its habitat comprises freshwater marshlands which are categorised as 'wastelands' under land use policies and are thus subject to conversion and degradation (Adhya 2015). Linked to this is conflict with humans, which is believed to be aggravated by habitat fragmentation and sharing of resources such as space (wetlands) and food (fish, goats, poultry) (Melisch *et al.* 1996, Kolipaka 2006, Cutter and Cutter 2009, Mukherjee *et al.* 2012, Chowdhury *et al.* 2015). Poisoning, trapping and clubbing seem to be common methods to kill Fishing Cats across the species' range. A survey in West Bengal recorded 27 deaths of Fishing Cats between April 2010 and May 2011 in that year in the Howrah district (1,600 km<sup>2</sup>) (Mukherjee *et al.* 2012). In Bangladesh, a compilation of reports from newspaper articles and web-based searches on the Fishing Cat (deaths, captures, rescues and releases) revealed 82 records and 30 confirmed deaths over a three-year period from January 2010 to March 2013 (Chowdhury *et al.* 2015). In both areas, almost all deaths could be traced to local people killing the cats (Mukherjee *et al.* 2012, Chowdhury *et al.* 2015). It should be taken as the minimum number killed because not all instances are recorded. In the Sundarbans of India, local people from Sagar Island admitted to having exterminated the cat from their island (Mukherjee *et al.* 2012). Chowdhury *et al.* (2015) noted that in Bangladesh and India more than 70% of the deaths occurred during the dry season, perhaps when Fishing Cat and human resources overlap maximally. A recent study (Adhya 2015) in the Howrah district of West Bengal reveals that Fishing Cat diet is largely composed of small mammals, fish and birds with a negligible portion (less than 5%) comprising of livestock and surmises that the killings are based on a perception of conflict because of the presence of the cat.

In Cambodia the Fishing Cat is killed by locals for consumption or in retaliation for damaging fishing nets (Thaung and Herranz Muñoz 2016). Such killings probably occur throughout its Southeast Asian range.

## **Conservation Actions (see Appendix for additional information)**

Fishing Cat is included in CITES Appendix II and protected by national legislation over most of its range. Hunting is prohibited in Bangladesh, Cambodia, India, Indonesia, Lao PDR, Myanmar, Pakistan, Sri Lanka, Thailand and Viet Nam. In Viet Nam Fishing Cat has the highest level of protection under the main species protection law (decree 32/2006/NĐ-CP) and is included in appendix I B. This completely prohibits any exploitation or commercial trade. There is no protection afforded outside protected areas in Nepal (Karan B. Shah, pers. comm. 2015).

Since 1985, the Fishing Cat has been confirmed to occur in protected areas (but it should not be assumed necessarily to survive in all) including the Sundarbans in Bangladesh and India; Suklaphanta, Chitwan and Koshi Tappu in Nepal; Corbett, Dudwha, Keoladeo Ghana, Coringa and Kaziranga in India; Yala, Wilpattu, Maduru Oya, Horton Plains, Dunumadallawa, Kalametiya, Sinharaja, Bundala and Uda Walawe in Sri Lanka; Khao Sam Roi Yot and Thale Noi in Thailand; Kulen Promtep, Peam Krasaop and Ream in Cambodia. Several wetlands that hold Fishing Cat populations are listed under the Ramsar Convention on Wetlands, an international treaty for the conservation and sustainable use of important wetlands, e.g. Sundarbans in Bangladesh, Chilika Lake, Keoladeo Ghana and East Kolkata Wetlands in India, Jagadishpur Reservoir in Nepal and Chotiari Reservoir in Pakistan.

The survival of the species depends on adequate protection of remaining wetlands in Asia, and prevention of indiscriminate trapping, snaring and poisoning.

## Credits

- Assessor(s):** Mukherjee, S., Appel, A., Duckworth, J.W., Sanderson, J., Dahal, S., Willcox, D.H.A., Herranz Muñoz, V., Malla, G., Ratnayaka, A., Kantimahanti, M., Thudugala, A. & Thaung R. and Rahman, H.
- Reviewer(s):** Nowell, K., Hunter, L., Breitenmoser-Würsten, C. & Lanz, T. and Breitenmoser, U.
- Contributor(s):** Adhya, T., Castaneda, L., Buck, N. & Mishra, R. and Sharma, B.

## Bibliography

- Adhya, T. 2015. Habitat use and diet of two sympatric felids - the Fishing cat (*Prionailurus viverrinus*) and the Jungle cat (*Felis chaus*) - in a human-dominated landscape in suburban Kolkata. MSc Thesis, National Centre for Biological Sciences Tata Institute of Fundamental Research.
- Adhya, T. 2016. Fishing Cat conservation in West Bengal, India. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 41–43.
- Adhya, T., Dey, P., Das, U. and Hazra, P. 2011. Status survey of Fishing Cat (*Prionailurus viverrinus*) in Howrah and Hooghly, West Bengal. Intermediate report submitted to the small grants programme, WWF, India.
- Anonymous. 1989. Cats around Calcutta. *Cat News* 11: 16.
- Appel, A. 2016. Fishing Cats and otters in Pakistan. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 61–63.
- Banerjee, A. and Bandopadhyay, R. 2016. Biodiversity hotspot of Bhutan and its sustainability. *Current Science* 110(4): 521–527.
- Bhatti, M.W. 2015. Fishing Cat, six monkeys seized in raid handed over to zoo. The News International, 18 October 2015. Available at: <http://www.thenews.com.pk/Todays-News-4-346300-Fishing-cat-six-monkeys-seized-in-raid-handed-over-to-zoo>.
- Blankespoor, B., Dasgupta, S. and Laplante, B. 2012. *Sea-Level Rise and Coastal Wetlands: Impacts and Costs*. The World Bank, Policy Research Working paper 6277.
- Buatip, S., Karntanut, W. and Swennen, C. 2013. Nesting period and breeding success of the Little Egret *Egretta garzetta* in Pattani province, Thailand. *Forktail* 29: 120–123.
- Chakma, S. 2015. Assessment of large mammals of the Chittagong Hill Tracts of Bangladesh with emphasis on Tiger (*Panthera tigris*). PhD dissertation. University of Dhaka, Bangladesh.
- Choudhury, A.U. 2003. *The Mammals of Arunachal Pradesh*. Regency Publications, New Delhi.
- Chowdhury, S.U., Chwodhury, A.R., Ahmed, S. and Sabir Bin Muzaffar. 2015. Human-fishing cat conflicts and conservation needs of fishing cats in Bangladesh. *Cat News* 62: 4–7.
- Cutter, P. 2015. Fishing Cat ecology: food habits, home ranges, habitat use and mortality in a human-dominated landscape around Khao Sam Roi Yot area, peninsular Thailand. A thesis submitted to the Faculty of University of Minnesota.
- Cutter, P. and Cutter, P. 2009. Recent sightings of fishing cats in Thailand. *Cat News* 51: 12–13.
- Dahal, S. 2016. Fishing Cats outside protected areas in Nepal Terai. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 27–28.
- Dahal, S. and Dahal, D. R. 2011. Trapping of Fishing Cat in Chitwan National Park, Nepal. *Cat News* 55: 10–11.

Dahal, S., Baral, S., Nepal, M. Neupane, K. R. and Dahal, B. V. 2015. Status of Fishing Cat in Jagadishpur Reservoir and Ghodaghodi Lake and assessment of threat. A report submitted to Mohamed bin Zayed Species Conservation Fund.

Davidson, N.C. 2014. How much wetland has the world lost? Long-term and recent trends in global wetland area. *Marine and Freshwater Research* 65 (10): 934-941.

Duckworth, J.W. 2016. Fishing Cat in Southeast Asia: speculations on status. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 19-23.

Duckworth J. W., Lynam, A. J. and Breitenmoser-Würsten, C. 2014. Non-*Panthera* cat species in Southeast Asia: present knowledge and recommendations. *Cat News* Special Issue 8: 62-67.

Duckworth, J.W., Shepherd, C.R., Semjadi, G., Schauenberg, P., Sanderson, S., Roberton, S.I., O'Brien, T.G., Maddox, T., Linkie, M., Holden, J. and Brickle, N.W. 2009. Does the Fishing Cat *Prionailurus viverrinus* inhabit Sumatra? *Cat News* 51: 4-9.

Duckworth, J. W., Stones, T., Tizard, R., Watson, S. and Wolstencroft, J. 2010. Does the Fishing Cat inhabit Laos? *Cat News* 52: 4-7.

Edwards, S., Allison, J. and Cheetham, S. 2012. Recent mammal records from the Oddar Meanchey portion of the Kulen-Promtep Wildlife Sanctuary, Northern Cambodia. *Cambodian Journal of Natural History* 2012(1): 8-12.

Ghoshal, A. 2014. Trapped Fishing Cat mistaken for Leopard in Greater Noida. *The Indian Express*. <http://indianexpress.com/article/cities/delhi/trapped-fishing-cat-mistaken-for-leopard-in-greater-noida/>.

Gray, T.N.E., Ou R., Huy K., Pin C. and Maxwell, A. L. 2012. The status of large mammals in eastern Cambodia: a review of camera trapping data 1999–2007. *Cambodian Journal of Natural History* 2012(1): 42-45.

Haque, N. M. and Vijayan, V. 1993. Food habits of the Fishing Cat *Felis viverrina* in Keoladeo National Park, Bharatpur, Rajasthan. *Journal of the Bombay Natural History Society* 90: 498-500.

Islam, S., Nawaz, R. and Moazzam, M. 2015. A survey of Smooth-coated Otter (*Lutrogale perspicillata sindica*) and Fishing Cat (*Prionailurus viverrinus*) in Chotiari Reservoir, Sanghar, Pakistan using camera traps. *International Journal of Biology and Biotechnology* 12 (4): 579-584.

IUCN. 2016. The IUCN Red List of Threatened Species. Version 2016-2. Available at: [www.iucnredlist.org](http://www.iucnredlist.org). (Accessed: 04 September 2016).

Janardhanan, R., Mukherjee, S., Karunakaran, P. V. and Athreya, R. 2014. On the occurrence of the Fishing Cat *Prionailurus viverrinus* Bennet, 1833 (Carnivora: Felidae) in coastal Kerala, India. *Journal of Threatened Taxa* 6(3): 5569-5573.

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.

Jutzeler, E., Xie, Y. and Vogt, K. 2010. Cats in China. Fishing Cat *Prionailurus viverrinus*. *Cat News* Special Issue 5: 48-49.

Kantimahanti, M. 2016. Community-based Fishing Cat conservation in the Eastern Ghats of South India. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and

Saltford, Bristol, United Kingdom, pp. 51-54.

Karim, R. and Ahsan, F. 2016. Mammalian fauna and conservational issues of the Baraiyadhala National Park in Chittagong, Bangladesh. *Open Journal of Forestry* 6: 123-134.

Kolipaka, S. 2006. Fishing Cat on India's east coast. *Cat News* 44: 22.

Lynam, A. J., Jenks, K. E., Tantipisanuh, N., Chutipong, W., Ngoprasert, D., Gale, G. A., Steinmetz, R., Sukmasuang, R., Bhumpakphan, N., Grassman Jr, L. I. and Cutter, P. 2013. Terrestrial activity patterns of wild cats from camera-trapping. *Raffles Bulletin of Zoology* 61(1): 401-415.

Malla, G. and Sivakumar, K. 2014. The Coringa Mangroves – realm of the Fishing Cat. *Sanctuary Asia* XXXIV No. 6.

Melisch, R., Asmoro, P. B., Lubis, I. R. and Kusumawardhani, L. 1996. Distribution and status of the Fishing Cat (*Prionailurus viverrinus rhizophoreus* Sody, 1936) in West Java, Indonesia (Mammalia: Carnivora: Felidae). *Faunistische Abhandlungen, Staatliches Museum für Tierkunde* 20(17): 311-319.

Mishra, R. 2016. Conservation status of the Fishing Cat in Chitwan National Park, Nepal. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 25-26.

Mukherjee, S. 1989. Ecological separation of four sympatric carnivores in Keoladeo Ghana National Park, Bharatpur, Rajasthan, India. Thesis, Wildlife Institute of India.

Mukherjee, S. 2016. Phylogeography of the Fishing Cat in India. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 15-18.

Mukherjee, S., Adhya, T., Thatte, P. and Ramakrishnan, U. 2012. Survey of the Fishing Cat *Prionailurus viverrinus* Bennett, 1833 (Carnivora: Felidae) and some aspects impacting its conservation in India. *Journal of Threatened Taxa* 4(14): 3355–3361.

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.

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.

Pandey, P., Kaspal, P. and Acharya, S. 2012. Status and conservation of Fishing Cat *Felis viverrina* in and around Koshi Tappu Wildlife Reserve, Nepal. Report submitted to Chicago Zoological Society, Chicago Board of Trade Endangered Species Fund. Himalayan Nature, Kathmandu, Nepal.

Pocock, R.I. 1939. *The Fauna of British India, including Ceylon and Burma, Mammalia*. Taylor & Francis, Ltd., London, UK.

Rahman, H., McCarthy, J and McCarthy, K. 2016. Status and conservation of Fishing Cat in Bangladesh. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 46-47.

Rainey, H. J. and Kong K. 2010. A Fishing Cat observation from northern Cambodia. *Cat News* 52: 8-9.

Ratnayaka, A. 2016. Radio-collaring Fishing Cats in urban wetlands. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 34–36.

Roberts, T.J. 1977. *The Mammals of Pakistan*. Ernest Benn, London, UK.

Royan, A. 2009. Confirmation of the endangered Fishing Cat in Botum-Sakor National Park, Cambodia. *Cat News* 51: 10-11.

Sadhu, A. and Reddy, G. V. 2013. First evidence of Fishing Cat in the Ranthambhore Tiger Reserve, Rajasthan, India. *Cat News* 58: 36-37.

Sanderson, J. 2009. How the Fishing Cat came to occur in Sumatra. *Cat News* 50: 6-9.

Shopan, A.A., Islam, A.K.M.S., Dey, N.C. and Bala, S.K. 2013. Estimation of the changes of wetlands in the northwest region of Bangladesh using Landsat images. In Proceedings of the 4th International Conference on Water & Flood Management (ICWFM-2013): 521-528. BUET, Dhaka, Bangladesh.

Sody, H.J.V. 1936. Seventeen new generic, specific, and subspecific names for Dutch Indian mammals. *Natuur Kundig Tijdschrift voor Nederlandisch-Indie* 96: 42-55.

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

Tantipisanuh, N., Chutipong, W., Ngoprasert, D., Lynam, A.J., Steinmetz, R., Sukmasuang, R., Jenks, K.E., Grassman, L.I., Jr., Cutter, P., Kitamura, S., Baker, M.C., McShea, W., Bhumpakphan, N., Gale, G.A. and Reed, D.H. 2014. Recent distribution records, threats and conservation priorities of small cats in Thailand. *Cat News Special Issue* Special Issue 8: 36-44.

Taylor, I.R., Baral, S.H., Pandey, P. and Kaspal, P. 2016. The conservation status of the Fishing Cat *Prionailurus viverrinus* Bennett, 1833 (Carnivora: Felidae) In Koshi Tappu Wildlife Reserve, Nepal. *Journal of Threatened Taxa* 8 (1): 8323–8332.

Tempa, T., Hebblewhite, M., Mills, L.S., Wangchuk, T.R., Norbu, N., Wangchuk, T., Nidup, T., Dendup, P., Wangchuk, D., Wangdi, Y. and Dorji, T. 2013. Royal Manas National Park, Bhutan: a hot spot for wild felids. *Oryx* 47(2): 207-210.

Than Zaw, Than Myint, Saw Htun, Saw Htoo Tha Po, Kyaw Thinn Latt, Myint Maung and Lynam, A. J. 2014. Status and distribution of smaller cats in Myanmar. *Cat News Special Issue* 8: 24-30.

Thaung R. and Herranz Muñoz, V. 2016. Identifying priority sites and conservation actions for Fishing Cat in Cambodia. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 37–40.

Thudugala, A. 2016. Fishing Cat conservation in hill country, Sri Lanka. In: A. Appel and J. W. Duckworth (eds) (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 29–31.

Willcox, D. 2016. Fishing Cat status in Vietnam. In: A. Appel and J. W. Duckworth (eds), Proceedings of the First International Fishing Cat Conservation Symposium, 25–29 November 2015, Nepal. Fishing Cat Working Group, Bad Marienberg, Germany and Saltford, Bristol, United Kingdom, pp. 44-45.

Willcox, D.H.A., Tran Q.P., Hoang M.D. and Nguyen T.T.A. 2014. The decline of non-*Panthera* cat species in Vietnam. *Cat News* Special Issue 8: 53–61.

## Citation

Mukherjee, S., Appel, A., Duckworth, J.W., Sanderson, J., Dahal, S., Willcox, D.H.A., Herranz Muñoz, V., Malla, G., Ratnayaka, A., Kantimahanti, M., Thudugala, A. & Thaung R. and Rahman, H. 2016. *Prionailurus viverrinus*. The IUCN Red List of Threatened Species 2016: e.T18150A50662615. <http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T18150A50662615.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?
1. Forest -> 1.5. Forest - Subtropical/Tropical Dry	Resident	Suitable	-
1. Forest -> 1.6. Forest - Subtropical/Tropical Moist Lowland	Resident	Suitable	-
1. Forest -> 1.7. Forest - Subtropical/Tropical Mangrove Vegetation Above High Tide Level	Resident	Suitable	Yes
1. Forest -> 1.8. Forest - Subtropical/Tropical Swamp	Resident	Suitable	-
1. Forest -> 1.9. Forest - Subtropical/Tropical Moist Montane	Resident	Suitable	-
3. Shrubland -> 3.5. Shrubland - Subtropical/Tropical Dry	Resident	Suitable	-
3. Shrubland -> 3.6. Shrubland - Subtropical/Tropical Moist	Resident	Suitable	-
4. Grassland -> 4.6. Grassland - Subtropical/Tropical Seasonally Wet/Flooded	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.3. Wetlands (inland) - Shrub Dominated Wetlands	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.4. Wetlands (inland) - Bogs, Marshes, Swamps, Fens, Peatlands	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.5. Wetlands (inland) - Permanent Freshwater Lakes (over 8ha)	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.7. Wetlands (inland) - Permanent Freshwater Marshes/Pools (under 8ha)	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.13. Wetlands (inland) - Permanent Inland Deltas	Resident	Suitable	Yes
14. Artificial/Terrestrial -> 14.1. Artificial/Terrestrial - Arable Land	Resident	Suitable	-
14. Artificial/Terrestrial -> 14.2. Artificial/Terrestrial - Pastureland	-	Suitable	-
14. Artificial/Terrestrial -> 14.4. Artificial/Terrestrial - Rural Gardens	-	Suitable	-
14. Artificial/Terrestrial -> 14.5. Artificial/Terrestrial - Urban Areas	-	Suitable	-

### 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	Minority (50%)	Slow, significant declines	Low impact: 5

		Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.1. Shifting agriculture	Ongoing	Minority (50%)	Negligible declines	Low impact: 4	
		Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Minority (50%)	Negligible declines	Low impact: 4	
		Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6	
		Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Minority (50%)	Negligible declines	Low impact: 4	
		Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5	
		Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.4. Marine & freshwater aquaculture -> 2.4.3. Scale Unknown/Unrecorded	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7	
		Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.1. Intentional use (species is the target)	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7	
		Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.2. Unintentional effects (species is not the target)	Ongoing	Majority (50-90%)	Negligible declines	Low impact: 5	
		Stresses:	2. Species Stresses -> 2.1. Species mortality		

5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.3. Persecution/control	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
5. Biological resource use -> 5.2. Gathering terrestrial plants -> 5.2.4. Motivation Unknown/Unrecorded	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.5. Motivation Unknown/Unrecorded	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.6. Motivation Unknown/Unrecorded	Ongoing	Majority (50-90%)	Causing/could cause fluctuations	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.1. Sewage	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.3. Type Unknown/Unrecorded	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.2. Industrial & military effluents -> 9.2.3. Type Unknown/Unrecorded	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.2. Soil erosion, sedimentation	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.4. Type Unknown/Unrecorded	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
9. Pollution -> 9.4. Garbage & solid waste	Ongoing	Minority (50%)	Negligible declines	Low impact: 4
	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 Research, Monitoring and Planning
Action Recovery plan: Yes

<b>Conservation Actions in Place</b>	
Systematic monitoring scheme:	No
In-Place Land/Water Protection and Management	
Conservation sites identified:	No
Occur in at least one PA:	Yes
Percentage of population protected by PAs (0-100):	51-60
Area based regional management plan:	No
Invasive species control or prevention:	Not Applicable
In-Place Species Management	
Harvest management plan:	No
Successfully reintroduced or introduced benignly:	No
Subject to ex-situ conservation:	No
In-Place Education	
Subject to recent education and awareness programmes:	Yes
Included in international legislation:	Yes
Subject to any international management/trade controls:	Yes

## Conservation Actions Needed

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

<b>Conservation Actions Needed</b>	
1. Land/water protection ->	1.1. Site/area protection
1. Land/water protection ->	1.2. Resource & habitat protection
2. Land/water management ->	2.1. Site/area management
2. Land/water management ->	2.3. Habitat & natural process restoration
4. Education & awareness ->	4.2. Training
4. Education & awareness ->	4.3. Awareness & communications
5. Law & policy ->	5.4. Compliance and enforcement -> 5.4.2. National level
5. Law & policy ->	5.4. Compliance and enforcement -> 5.4.3. Sub-national level

## Research Needed

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

<b>Research Needed</b>
1. Research -> 1.1. Taxonomy
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
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.2. Harvest level trends
3. Monitoring -> 3.3. Trade trends
3. Monitoring -> 3.4. Habitat trends

## Additional Data Fields

<b>Distribution</b>
Estimated area of occupancy (AOO) (km <sup>2</sup> ): 238006.00
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): No
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): No
Continuing decline in number of locations: Yes
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 0
Upper elevation limit (m): 1800
<b>Population</b>
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: No
Extreme fluctuations in subpopulations: No
<b>Habitats and Ecology</b>
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 5

## **Habitats and Ecology**

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](#).