FIRST RECORD OF EURASIAN OTTER (*Lutra lutra*) FROM CHILIKA LAGOON: A RAMSAR SITE SITUATED ON THE EAST COAST OF INDIA

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Abstract

*Little is known of the distribution and abundance of the Eurasian otter (*Lutra lutra*) in India, although it was historically recorded from Northern and Southern India. We recorded the Eurasian otter along with the smooth-coated otter during a fishing cat specific camera trap study undertaken in 1070km^2 area around Chilika lagoon, one of India's oldest Ramsar Sites. Our findings along with recent unpublished records of Eurasian otter presence in Satpura and Kanha landscapes in peninsular India as well as in Bhitarkanika and Coringa mangroves) in India's East coast suggest that 'missing link' populations do persist between Eurasian otter populations in the Himalayas and South India. This provides renewed thrust to detect these populations in order to bring them under the radar of research and conservation.*

Keywords: *camera trap; Chilika; Eurasian otter; fishing cat; Ramsar; smooth-coated otter*

INTRODUCTION

The Eurasian otter (*Lutra lutra*) is the most widely distributed among the 13 otter species and ranges throughout Europe and Asia as well as in parts of North Africa and the Middle East. It is classified as 'Near Threatened' in the IUCN Red List of Threatened Species with 55 out of 77 countries having unknown/declining status of populations (**Conroy et al., 1998, Yoxon and Yoxon, 2019**). Even though it has been extensively studied in Europe, where conservation efforts have resulted in a certain degree of recovery of the species, its distribution, abundance and current conservation status in North Africa, Russia and the whole of Asia remains largely unknown (**Yoxon and Yoxon, 2019**).

Researchers demonstrated the alarmingly limited availability of highly suitable otter habitat in Pakistan (**Ahmad et al., 2017**) while the Eurasian otter population in Bangladesh is critically endangered and its presence has not been confirmed since 1995 (**Feeroz, 2007**). The species has not been sighted for the last 30 years in Nepal whereas they are present but rare in Sri Lanka with new regular sightings from the central area (**Yoxon and Yoxon, 2019**).

In India, historical records of the Eurasian otter exist from Kashmir, the Himalayas and

Assam in the North, and from states of South India (**Prater, 1965**). The same pattern of a disjunct Northern and Southern population is also portrayed in the current IUCN distribution map found online (**Roos et al., 2015**). This raises questions: if there are no connecting populations in between, how could the Eurasian otter come to occur in South India?

In this context, recent reports of Eurasian otter from various places in the middle such as Satpura and Kanha landscapes, as well as unpublished records from the Eastern coast of India such as from Bhitarkanika and Coringa mangroves (**Joshi et al., 2016**; **Conroy et al., 1998; Jain, 2016**), suggest the persistence of 'missing links' in between the Northern and Southern populations in India. They also provide impetus for more Eurasian otter targeted surveys.

All otter species found in India are protected under the Indian Wildlife (Protection) Act, 1972, which lists the Eurasian otter as a Schedule II species. Thus hunting or attempting to even injure otters are punishable offences by law.

STUDY SITE

We conducted our study at Chilika, an estuarine lagoon situated on the Indian East coast during 2017–2019 (Figure 1). It is one of the oldest Ramsar sites of India and is influenced by three hydrological systems – the tributaries of the Mahanadi river system, rivers flowing into the lagoon from the Western catchment, and the saline waters flowing in from the Bay of Bengal. It is also a major wintering ground for migratory waterfowl in the Indian subcontinent and considered to be a biodiversity hotspot (**Ghosh et al., 2006**).

The North and Northeastern sections of Chilika are seasonally flooded by delta distributaries of the Mahanadi and rivulets of the Western catchment (**Chilika Development Authority, 2001**). This area receives the maximum freshwater inflow (75%) and also the maximum annual sediment load (74%, average annual sediment load of 1 million MT) of the lake. The heavy sediment load has contributed to the shallow character of the lake in this section. Here, *Phragmites*-dominated emergent vegetation proliferated since 1990 possibly due to heavy siltation and episodes of the closure and reopening of the entrance to the sea (**Chilika Development Authority, 2001**).

The soil in the upland habitat and hill tracts is predominantly lateritic with hill streams creating deep gullies and ravines interspersed with fertile depressions filled with alluvium. Upland land cover types consist of crop fields and are interspersed with terrestrial vegetation (trees, bamboo groves, shrubs and mono-plantation), human habitation and road networks. Hill tracts are covered with mixed deciduous forests with settlements and roads.

In the Southeast, the main lagoon is connected with the Bay of Bengal through an artificial mouth opening which is about 12km away from the main lagoon and at the Southwest, a 14m long channel (called the Palur canal) connects to the sea through the Rushikulya river mouth.

Figure 1: Location of the study site, Chilika

Chilika basin has a tropical climate, with average maximum and minimum annual temperatures of 39°C and 14°C respectively and average annual rainfall of about 1240 mm, 75% of which is received during June to September. The winter season starting from November marks the onset of the dry season whereas July to October is the monsoon season.

METHODS

We analysed camera trap data from a study conducted to estimate fishing cat occupancy around Chilika during 2017–2019. Camera trap images/footage of other species were also identified and all otter images/footage was segregated. After this, a film was made on our findings from Chilika and uploaded to YouTube. The link was shared on our social media platforms and members of the IUCN Otter Specialist Group contacted us and informed us that they could identify two otters from the images/footage provided in our film. Following this, we sent out nine pieces of video footage of otters (otter_28_02_2017.AVI, otter_run.AVI, IMG_0456.AVI, IMAG_0453.AVI, IMAG_0767.AVI, IMAG0768.AVI, IMAG0771.AVI, IMAG0776.AVI, IMAG3075.AVI) obtained from camera traps at different locations in Chilika to four independent experts of the group and requested them to identify the otters. The members were Nisarg Prakash, Daniel Willcox, Will Duckworth and Dr Syed Ainul Hussain from the Wildlife Institute of India, Dehradun.

RESULTS

Table 1 shows the results of the expert opinion survey.

VIDEO ID	NISARG PRAKASH		DANIEL WILCOX		WILL DUCKWORTH		DR SA HUSSAIN	
	ID	Comments	ID	Comments	ID	Comments	ID	Comments
VIDEO 1 (otter_28_02_2017.AVI)	X		X	*Unsure*	X		Eurasian	*1) Elongated muzzle*
VIDEO 2 (otter_run)	X		X		X		Eurasian	*2) Long and thick vibrissae*
VIDEO 3 (IMAG_0453.AVI)	Possibly smooth-coat		Smooth-coat	*Smooth-coat. (Tail looks very large and appearing flattened on the final 2/3rds, which is diagnostic)*	Possibly smooth-coat		Smooth-coat	*1) Short muzzle* *2) Flattened tail*
VIDEO 4 (IMAG_0456.AVI)	Possibly smooth-coat		X	*Unsure, though based on face shape and snout length I would be leaning towards smooth-coat.*	X		Smooth-coat	*3) Less vibrissae*
VIDEO 5 (IMAG_0767.AVI)	Eurasian		Eurasian	*Long, broad snout, and where visible, tail is rounded in cross-section.*	Eurasian		Eurasian	*1) Elongated muzzle*
VIDEO 6 (IMAG_0768.AVI)	Eurasian		Eurasian		Eurasian		Eurasian	*2) Long and thick vibrissae*
VIDEO 7 (IMAG_0771.AVI)	Eurasian		Eurasian		Eurasian		Eurasian	*3) Rounded tail*
VIDEO 8 (IMAG_0776.AVI)	Eurasian		Eurasian		Eurasian		X	
VIDEO 9 (IMAG_3075.AVI)	Eurasian		Eurasian		Eurasian		X	

Table 1: Table depicting decisions and comments from experts from IUCN Otter Specialist Group and Wildlife Institute of India.

DISCUSSION

The discovery of the Eurasian otter from Chilika happened by chance when we were analysing data from fishing cat specific studies conducted in the area from 2017 to 2019. During the same time, around 1000 interviews were conducted to collect information on the fishing cat and its sympatric species. We showed interviewees, most of whom were fishermen, photographs of otters and asked if they had seen these animals in their area. Most locals reported seeing otters from a large proportion of the 1070km^2 study area. They referred to these as 'Uddho' – a generic term for otters – and reported seeing them in groups. None of them reported the presence of two different otter species. This makes the findings of this study a discovery indeed, and underlines the importance of conducting intensive camera trap surveys designed to detect wetland mammals.

Moreover, most of the reports of otter sightings come from within protected areas which are more regularly surveyed by researchers than the vast amount of landscape existing outside the protected areas. Camera trapping in human-dominated landscapes is a challenge in itself. Even though a lot of reports of otters also exist from outside protected areas within human modified landscapes like from Cauvery, Goa and Tamil Nadu to name a few (**Yoxon and Yoxon, 2019**), small mammal surveys outside protected areas have only just begun to receive attention. Therefore, there is a possibility that otter populations have remained undetected, especially because targeted surveys on semi-aquatic mammals are even lesser in number.

However, under no circumstances should we undermine the possibility that such populations could be the remnants of much wider occupancies. It is common knowledge that much of otter habitat in India has been intensively modified or has contaminated waterbodies (**Bhattacharya et al., 2019**). We would like to highlight that our camera trap surveys on the fishing cat from Howrah district in South Bengal returned zero records of the otters whereas older locals reported seeing otters very commonly even 30 years back. If the Eurasian otter is present in Sundarbans (**Sanyal, 1999)** and Bhitarkanika mangrove forest (**Conroy et al., 1998**), it is highly likely that they were present in Howrah district of South Bengal but have probably become locally extinct there.

Eurasian otter populations might be persisting outside protected areas yet remain outside the purview of any protection and scientific vigilance. In the absence of previous distribution and abundance estimates, there is no way to understand population decline that has probably happened in the recent past. However, populations that still persist must be mapped and their conservation threats assessed in order to create baseline data. For example, Chilika is a Ramsar site situated outside protected areas and has two other globally threatened wetland carnivores in addition to the Eurasian otter. The presence of these wetland carnivore trio calls for the creation of a broad platform with species-centric groups like otter working groups and fishing cat working groups as well as wetland community and ecosystem-centric groups/organisations/institutions like Chilika Development Authority (CDA) to collaborate for science and conservation.

In addition, otters are often perceived as a threat to fishing gear such as fish baskets made of thinly cut bamboo sticks. These baskets are set in shallow channels by indige-

nous fishing communities, and otters reportedly break open the baskets to take the fish. This situation is conducive to the development of negative interactions between humans and otters. This, in some cases, even leads to retaliatory persecution of otters although we did not detect large-scale killing of these species anywhere around Chilika. Otters that sometimes become entangled in fishing nets are reportedly killed and their meat eaten, according to local fishermen.

Some of the prominent threats to otters worldwide come from the international demand for its fur, as well as from the pet trade. Online information like scientific publications, news articles and social media posts might be inadvertently helping these illegal and immoral networks to thrive. Therefore, we should be careful while disseminating sensitive information about otters, and location details should only be available to researchers and not be in the public domain. However, our study also shows that social media has enabled us to network like never before to the benefit of science.

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Disclosure Statement

No potential conflict of interest was reported by the authors.

Author Biographies

TIASA ADHYA has worked for a decade on fishing cat conservation and research and was presented with the Nari Shakti Puruskar (the highest civilian award for women in India) in recognition of her work.

PARTHA DEY is a veteran naturalist and conservationist with more than 20 years' experience in the field. He is interested in species, community and ecosystem conservation and loves to interact with local communities, who according to him are knowledge powerhouses.

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