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Journal of Threatened Taxa



Open Access



10.11609/jott.2023.15.12.24291-24450
www.threatenedtaxa.org

26 December 2023 (Online & Print)
15(12): 24291-24450
ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)



ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher
Wildlife Information Liaison Development Society
www.wild.zooreach.org

Host
Zoo Outreach Organization
www.zooreach.org

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Cover: The critically endangered *Lilium polyphyllum* in watercolour and acrylics. © Aishwarya S Kumar.



Recent record of Eurasian Otter *Lutra lutra* (Linnaeus, 1758) (Mammalia: Carnivora: Mustellidae) from Kerala part of the Western Ghats, India and an insight into the behaviour and habitat preferences

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Abstract: We report a recent record of the elusive Eurasian Otter *Lutra lutra* from Kerala, through a direct observation in the higher reaches of the Chinnar Wildlife Sanctuary within the Western Ghats, southern India. Field observation involved the sighting of two Eurasian Otters in a rocky-torrential stream in March 2020. The otters displayed a hyperactive foraging behaviour, searching among submerged rocks and crevices, followed by occasional dives. They seemed particularly interested in areas where water rushed with force, avoiding locations with low water flow or shallow pools. The observation site, at 1,275 m altitude in Chinnar Wildlife Sanctuary, located in the Western Ghats of Kerala region, featured wet evergreen vegetation, transitional sholas (stunted evergreen forests), and riparian patches along a stream characterised by rapid water flow, boulders, and fallen trees. This habitat, as observed by others, was also indicative of Asian Small-clawed Otter *Aonyx cinereus* suitability, suggesting potential resource partitioning between the two otter species. This discovery challenges previous assumptions about the preferred habitat of Eurasian Otters in the Western Ghats and emphasizes the need for comprehensive research on the taxonomy, distribution, population status, and behaviour of these possibly sympatric species of otters, the Asian Small-clawed Otter and the Eurasian Otter. Such studies are crucial for the conservation of both these species, which face threats from habitat loss, sand mining, hunting, and population decline. Preserving and restoring riparian vegetation in the higher reaches of the Western Ghats is essential for their protection within this biodiversity hotspot.

Keywords: Chinnar, conservation, small carnivores, montane forest, population decline, shola forests, riparian forests, Small-clawed Otter.

Malayalam: സംഗ്രഹം: അത്യപൂർവമായ യൂറേഷ്യൻ നീർനായയുടെ കേരളത്തിലെ സാന്നിധ്യം ഔദ്യോഗികമായി സ്ഥിരീകരിച്ചു കൊണ്ടുള്ള ആദ്യരേഖപ്പെടുത്തലാണിത്. തെക്കൻ പശ്ചിമഘട്ടത്തിന്റെ ഭാഗമായ ചിന്നാർ വന്യജീവി സങ്കേതത്തിലെ ഉയർന്ന പ്രദേശത്താണ് ഇവയെ കണ്ടെത്തിയത്. ചിന്നാർ നദിയുടെ ഉത്ഭവപ്രദേശത്തു നിന്നും 2020 മാർച്ച് മാസം രണ്ട് നീർനായകളെയാണ് കണ്ടെത്താൻ സാധിച്ചത്. ഫീൽഡ് നിരീക്ഷണത്തിൽ കൃത്യമായ ഉൾക്കടലുകളുള്ള ഇവ കട്ടുരുവിയുമായി കല്ലുകൾക്കിടയിൽ ഇരതേടുന്നതായാണ് കാണാൻ സാധിച്ചത്. അതേ സമയം, അരുവിയുടെ നീരൊഴുക്ക് കുറഞ്ഞ പ്രദേശങ്ങൾ ഇവ ഒഴിവാക്കുന്നതാണ് ശ്രദ്ധയിൽപ്പെട്ടത്. സമുദ്രനിരപ്പിൽ നിന്ന് 1275 മീറ്റർ ഉയരത്തിൽ സ്ഥിതി ചെയ്യുന്നതും ശക്തമായ നീരൊഴുക്കും അടങ്ങിയ മരങ്ങളും വീണുകിടക്കുന്ന ഈ അരുവിയുടെ ചുറ്റുമായി ആർദ്ര-നീത്യഹരിതവനങ്ങൾ, ചോലകാടുകൾ, പുൽമേടുകൾ, പുഴയോരക്കാടുകൾ എന്നീ ആവാസവ്യവസ്ഥകൾ കാണപ്പെടുന്നു. മറ്റു ഗവേഷണങ്ങളിൽ നിന്നുള്ള വിവരങ്ങൾ അനുസരിച്ച് ഈ പ്രദേശം മലനീർനായയുടെ കൂടി ആവാസവ്യവസ്ഥയായതിനാൽ ഈ രണ്ട് നീർനായകൾ തമ്മിൽ പരസ്പരയാരണയോടുകൂടിയ വിഭവവിനിയോഗവും നടക്കുന്നുണ്ട് എന്ന് വേണം കരുതാൻ. യൂറേഷ്യൻ നീർനായയുടെ ഈ കണ്ടെത്തൽ പശ്ചിമഘട്ടത്തിലെ അവയുടെ സ്വാഭാവിക ആവാസവ്യവസ്ഥയെ കുറിച്ചുള്ള നിലവിലെ ശാസ്ത്രനിലപാടിനെ ചോദ്യം ചെയ്യുന്നു എന്നതുകൂടി ശ്രദ്ധേയമാണ്. അതുകൊണ്ടു തന്നെ ഒരേ ആവാസവ്യവസ്ഥ പങ്കിടുന്ന യൂറേഷ്യൻ നീർനായയെയും മലനീർനായയെയും കുറിച്ചുള്ള ഗവേഷണ-നിരീക്ഷണങ്ങളും അവയുടെ വർഗീകരണം, എണ്ണം, വിന്യാസം, സ്വഭാവശാസ്ത്രം എന്നിവയെക്കുറിച്ചുള്ള വിശദമായ പഠനങ്ങളും ആവശ്യമാണ്. ആവാസവ്യവസ്ഥാഗവേഷണം, മണൽഖനനം, വേട്ടയാടൽ എന്നിവ മൂലമുണ്ടാകുന്ന നാശങ്ങളിൽ നിന്നും ഇവയെ സംരക്ഷിക്കുവാനായി ഇത്തരം പഠനങ്ങൾ അനിവാര്യമാണ്. ഇതിനു പുറമെ, പശ്ചിമഘട്ടത്തിലെ ഉയർന്ന വിതാനങ്ങളിലെ പുഴയോരക്കാടുകളെ പുനരുജ്ജീവിപ്പിക്കേണ്ടതും സംരക്ഷിക്കേണ്ടതും ഇവയുടെ നിലനിൽപ്പിന് അത്യന്താപേക്ഷിതമാണ്.

Editor: Nicole Duplax, Oregon State University, Corvallis, USA. **Date of publication:** 26 December 2023 (online & print)

Citation: Mohan, S.K., L.R. Nath, K.S. Subin, S.K. Govindankutty & P.O. Nameer (2023). Recent record of Eurasian Otter *Lutra lutra* (Linnaeus, 1758) (Mammalia: Carnivora: Mustellidae) from Kerala part of the Western Ghats, India and an insight into the behaviour and habitat preferences. *Journal of Threatened Taxa* 15(12): 24352–24356. <https://doi.org/10.11609/jott.8505.15.12.24352-24356>

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Funding: Kerala Agricultural University.

Competing interests: The authors declare no competing interests.

Author details & Author contributions: See end of this article.



Acknowledgements: We thank the Chief Wildlife Warden, Kerala Forest Department, for the study permit (BDC1-15371/2018). We thank the Wildlife Warden, Munnar WL Division, Divisional Forest Officer, Marayoor, Range Forest Officer, Marayoor, Assistant Wildlife Warden, Chinnar for the logistical support that enabled us to conduct hassle-free fieldwork in the remote forests of the sanctuary. We would like to extend our gratitude to the dedicated team of forest watchers who accompanied us throughout the trek, without whom the collection of data and observations would not have been possible. The critical reviews provided by the reviewers have been of immense help in improving the quality of the manuscript, and we are grateful to the reviewers.

Eurasian Otter *Lutra lutra* has been described as having *one of the widest distributions of all Palearctic mammals* (Conroy et al. 1998). They are opportunistic and have high foraging plasticity (Smiroldo et al. 2009) and their diets are mainly composed of aquatic invertebrates, crabs, fishes, and tetrapods (Almeida et al. 2012). In India, the species is restricted to the Himalayan foothills up to Sikkim, north of the Ganges, Assam in the north-east and to southern India (Wroughton 1920; Pocock 1941). They are considered to be absent from central India until photographic records appeared from Madhya Pradesh and Chhattisgarh (Joshi et al. 2016; Suraj et al. 2022). Despite extensive research on otters in the Western Ghats (Basnet et al. 2020), including many recent sightings and observations of Smooth-coated and Small-clawed Otters, there was no documented evidence, such as photographs or genetic studies, of Eurasian Otters in the region until recently. This could probably be because of the shy, often nocturnal and elusive habit of the Eurasian Otters, making it difficult to study in the wild by direct observations. Historical records indicate that Eurasian Otters were previously documented in the Coorg hills of Karnataka, Ooty in the Nilgiris, Palani hills, Pambar river in Kodaikanal, Tamil Nadu within the Western Ghats (Ryley 1913; Wroughton & Davidson 1920; Lindsay 1926; Pocock 1941; Prater 1971). Blanford (1888) examined a specimen that came from Pondicherry, southern India while *Lutra indica* Gray was originally described from Madras (Hinton & Fry 1923). Museum specimens in the British Museum of Natural History (BMNH) were misidentified in the past, making it extremely difficult to identify the *Lutra lutra* to the subspecies (Nicole Duplaix in litt. September, 2023). Molecular analysis has now made this straightforward, as evidenced by Mudappa et al. (2018), who made a significant rediscovery of this species in the Western Ghats, specifically in the Anamalai hills of Tamil Nadu, after an absence of nearly seven decades. Their identification was based on detailed morphological and molecular analyses of a carcass found as roadkill.

Three species of otters—Eurasian *Lutra lutra*, Smooth-coated *Lutrogale perspicillata* and Asian Small-clawed *Aonyx cinereus*—are known to occur in Western Ghats mountain ranges (Hussain 1999), Eurasian Otter is mostly confined to small rivers in elevations ranging 450–950 m (Raha & Hussain 2016). The Smooth-coated Otter occurs in large water bodies (Anoop & Hussain 2005). The Asian Small-clawed Otter is the smallest of the otters and seems to prefer lower-order streams above 500 m altitude in the Western Ghats (Perinchery et al. 2011; Mudappa et al. 2018).

Previous records of Eurasian Otters in the Western Ghats

were primarily based on surveys that relied on identifying spraints and tracks, conducted by Raha & Hussain (2015) in five protected areas within the southern Western Ghats. In their study, Eurasian Otters were identified in Periyar Tiger Reserve, Kerala based on track signs. However, it is important to note that precisely distinguishing between Smooth-coated Otters and Eurasian Otters based solely on tracks can be challenging, and confirmation through camera trap images is recommended (Conroy et al. 1998; Mudappa et al. 2018). This was further validated by Nameer (2015) where Eurasian Otter was not included in the checklist of mammals of Kerala. Some earlier studies mistakenly identified Smooth-coated Otters as Eurasian Otters in the coastal plains, leading to incorrect records of the species in peninsular India (Umapathy & Durairaj 1995; Umapathy 2000; Mudappa et al. 2018).

Previous research concentrating on small carnivores within Western Ghats' protected areas consistently documented the presence of Asian Small-clawed Otters in Eravikulam National Park (Perinchery et al. 2011; Nikhil & Nameer 2017), Silent Valley National Park (Sanghamitra & Nameer 2018), and Wayanad Wildlife Sanctuary (Sreekumar & Nameer 2018); and despite extensive camera trap sampling, none of these studies reported any Eurasian Otters in the region. However, in this paper, we present a remarkable observation of live Eurasian Otters from Chinnar Wildlife Sanctuary, southern Western Ghats of Kerala. This observation marks the first-ever direct sighting of live Eurasian Otters in the Western Ghats after an absence of nearly 70 years and represents an unmatched record for the state of Kerala.

During the 'Kerala Bird Atlas' project (Praveen et al. 2022) fieldwork near Olikkudy (10.3318°N, 77.1400°E) in Chinnar Wildlife Sanctuary, Idukki district, Kerala, on 07 March 2020, at 1800 h we observed a remarkable behavior of Eurasian Otters in the rocky-torrential streams of the Chinnar river. Two otters, one female and one of unidentified sex, were actively searching for food, demonstrating heightened activity among submerged rocks and crevices. Their dives lasted between 5–20 seconds, and they exhibited a clear preference for areas with strong water flow. While we did not witness them feeding above the water's surface, they consistently chewed on smaller prey-items after each dive, suggesting they obtained their food directly from underwater. After approximately 8–10 minutes of feeding, they left spraints on a nearby rock (Image 1) before resting on another rock located about half a meter away. This entire behavior was also captured on video (Video 1 & Video 2).

The individuals were confirmed as Eurasian Otter *Lutra lutra* after careful examination by the experts from the

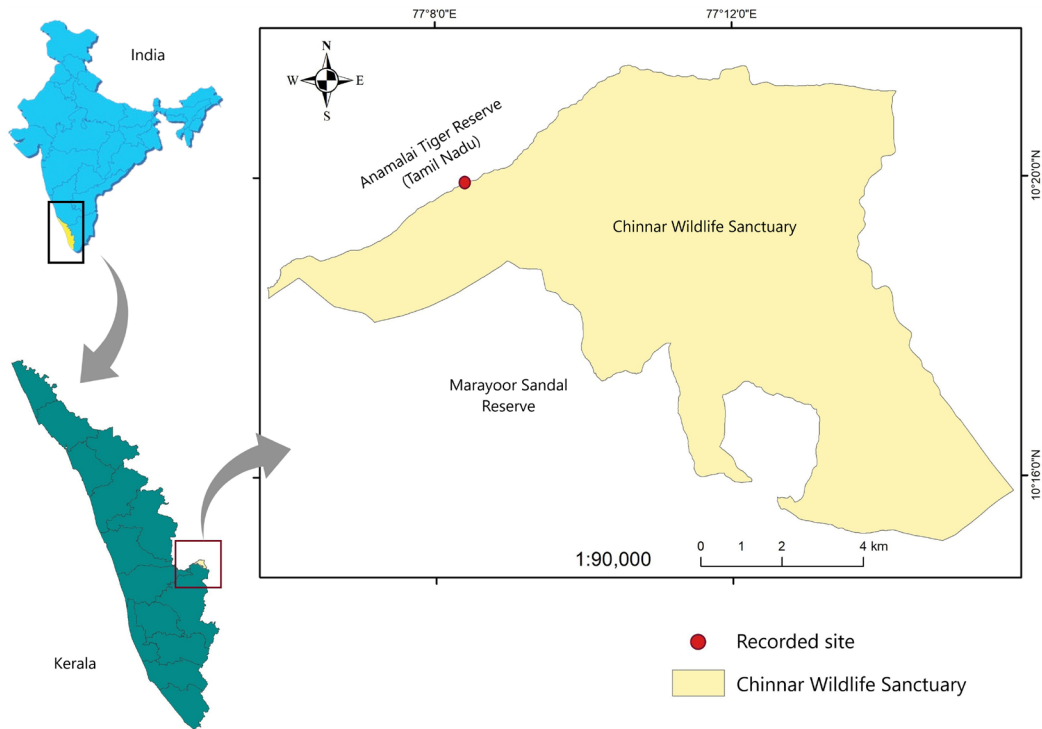


Figure 1. Recorded site of Eurasian Otter *Lutra lutra* from Chinnar Wildlife Sanctuary.



Image 1. Eurasian Otter *Lutra lutra* depositing spraints.



Image 2. Eurasian Otter *Lutra lutra* resting on a rock.

IUCN Otter Specialist Group (Jason Palmer in litt. September 2023; Nicole Duplaix in litt. September 2023; Anna Loy in litt. September 2023) and referring Hwang & Larivière (2005), Larivière & Jennings (2009), Hung & Law (2016) and Menon (2023). The morphological features such as the flattened head shape, nasal arrangement with double ridged rhinarium, webbed feet with visible claws and structure of the tail are definite for *Lutra lutra*. According to Larivière & Jennings (2009) and Hung & Law (2016), the morphometric details are as follows, head-to-body length: 50–82 cm, tail length: 33–50 cm, weight: 5–14 kg.

During the sighting, the otters were spotted at an altitude of 1,275 m on the western slopes of Chinnar Wildlife Sanctuary, amid wet evergreen vegetation, transitional sholas, and riparian patches (Image 4). The stream, ranging 0.2–1.2 m in depth, was nestled between two hill ranges adorned with montane sub-tropical forests and grasslands. Riparian vegetation included various tree species such as *Elaeocarpus tuberculatus*, *Elaeocarpus munronii*, *Litsea* spp., *Acronychia pedunculata*, *Actinodaphne* spp., *Meliosma simplicifolia*, *Oreocnide integrifolia*, and *Schefflera* spp., along with dominant

ferns of the *Cyathea* genus. The swiftly flowing stream was characterized by boulders and fallen trees (Image 4). Perinchery et al. (2011) noted this habitat as suitable for Asian Small-clawed Otters, suggesting potential resource partitioning between these two otter species in the area. It is worth noting here that these observations are counter-intuitive to the previously suggested idea by Raha & Hussain (2015), where it has been claimed that the species prefers moderate to slow-flowing rivers or dams in the Western Ghats. We could also find multiple spraints of the otters upstream in the subsequent days. The spraints dominated with finely macerated crabs, fishes and other fresh-water crustaceans laid over rocks or sand bars.

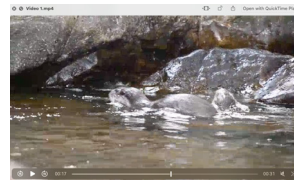
The Eurasian Otter has been listed in Appendix-I of CITES, Near Threatened as per IUCN Red list of Threatened Species (Loy et al. 2022) and largely depleted as per the IUCN Green status due to a decline in population (Loy et al. 2021). Within the Western Ghats, there is a notable lack of data regarding both the distribution and population status of the Eurasian Otter. Hung & Law (2016) reports 12 subspecies of *Lutra lutra* and the subspecies seen in southern India is *Lutra lutra nairi*. Phylogenetic studies



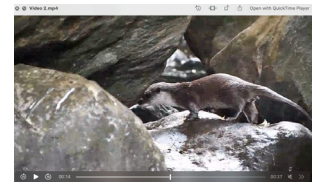
Image 3. Eurasian Otter *Lutra lutra*.



Image 4. Habitat of Eurasian Otter in Chinnar Wildlife Sanctuary.



Video 1. Eurasian Otter *Lutra lutra* actively foraging.
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Video 2. Eurasian Otter *Lutra lutra* depositing spraints.
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are needed to find out the exact taxonomic status of this otherwise wide-ranging species in the Western Ghats.

Conserving this otter species necessitates prioritizing efforts like preserving and restoring riparian vegetation, and mitigating threats such as habitat loss, sand mining, and hunting (Yoxon & Yoxon 2019; Basnet et al. 2020; Suraj et al. 2022). This observation highlights the need for comprehensive research on Eurasian Otters and other small carnivores in the Western Ghats, focusing on taxonomy, distribution, population status, habitat characterization, resource partitioning, and behavior. Such studies are integral to the conservation of these lesser-known mammal species in the biodiverse Western Ghats region.

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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

December 2023 | Vol. 15 | No. 12 | Pages: 24291–24450

Date of Publication: 26 December 2023 (Online & Print)

DOI: 10.11609/jott.2023.15.12.24291-24450

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