



Research Note

First Live Sighting of Pygmy Killer Whale (*Feresa attenuata* Gray, 1857) in Indian Waters

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The study reports for the first time, the live sighting of the pygmy killer whale, *Feresa attenuata* Gray, 1857, from Indian waters adding valuable information on their limited records available from this region. The elusive nature of the species, along with its morphological similarities to the melon-headed whale (*Peponocephala electra*) and the false killer whale (*Pseudorca crassidens*), makes accurate identification challenging. Additionally, its predominantly nocturnal behaviour further contributes to the rarity of sightings worldwide. In the present study, a pod of 19 pygmy killer whales (*F. attenuata*) was sighted in the vicinity of Minicoy Island in the Lakshadweep Sea. This represents the first documented live encounter of the species in Indian waters, where previous records were limited to stranded individuals. The live observation of this rarely sighted delphinid provides valuable insights into its social interactions, behavioural patterns, and group dynamics.

Keywords: Pygmy killer whale, nocturnal behaviour, Lakshadweep Archipelago, marine mammal distribution, social behaviour, Indian water

Marine mammals play a vital role in maintaining the structure and function of marine ecosystems, owing to their wide distribution, predatory behaviour, significance within the marine food web, and larger body size. Of the total 130 marine mammals recorded globally (Heckel, Mar, Schramm, & Gorter, 2020), 27 are reported from the Indian waters (Jeyabaskaran, Vivekanandan, & Kripa, 2013). The

pygmy killer whale, belonging to the group Odontoceti and family Delphinidae, is largely distributed across tropical and subtropical waters between 40°S and 40°N (Caldwell & Caldwell, 1971). Though widely distributed across the Atlantic, Pacific, and Indian oceans, as evidenced by sighting and stranding reports, its cryptic nature and sporadic sightings limit understanding of their behavioural ecology, making it one of the least understood delphinids (Baird et al., 2011; Jeyabaskaran et al., 2013). In addition, their morphological similarity to both the melon-headed whale and the false killer whale further complicates their field identification (Donahue & Perryman, 2009). In Indian waters, records of the pygmy killer whale have been limited to the landing of two individuals at the Munambam fishing harbour, near Kochi, Kerala (Jeyabaskaran, Paul, Vivekanandan, & Yousuf, 2011). Despite the high diversity of cetaceans in Indian waters, knowledge of the pygmy killer whales remains limited. This study presents the first documented live sighting of the species in these waters, providing valuable insights into its behaviour and distribution.

As part of the marine mammal stock assessment survey program, dedicated line transect (LIT) surveys were conducted in the Lakshadweep Sea from 11th February to 26th February 2025, following the methodology of Buckland et al. (2001). Binoculars (Nikon 10x50 6.2° CF WP) and cameras (Canon EOS R6) were used to detect and document the animals and their behaviour, while laser range finders (Hawke LRF 900 Professional) were employed to estimate sighting distances. Species identification was done in the field, following established taxonomic references (Jefferson, Webber, & Pitman, 2011; Augustin, O'Keefe, & Riehl, 2025), based on diagnostic features such as the dorsal fin and flippers shape, melon profile, beak morphology,

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and body coloration patterns. Water quality parameters of the sighting location were measured using *in situ* Multi-Parameter Water Quality Probe (AQUA TROLL500 Multi-Parameter Water Quality Sonde). The observed behavioural patterns, social bonds, and group structures were documented at the sighting location itself. Resurfacing intervals, diving patterns, and acoustic or communication evidence such as whistles were also recorded. Photographic and video record were systematically analysed at the Marine Mammal Laboratory of ICAR–CMFRI to validate species identification based on diagnostic body features and to assess behavioural patterns. Verified and published records of pygmy killer whale sightings and strandings from 2011 to 2025 were compiled to corroborate the status of the present sighting (Table 1).

During a marine mammal survey conducted in the Lakshadweep Sea, a pod of 19 pygmy killer whales (*F. attenuata*) was sighted at 9°012 58.83 N, 73°202 52.13 E at 14:51 hours on 18 February 2025. The

group was observed at distances ranging from approximately 1 m to 600 m from the port side of the survey vessel, in waters with depths between 1,850 and 2,010 m. The surface water temperatures at the sighting locations were 28.7 °C, with salinity ranging from 35 to 36 ppt, dissolved oxygen at 6.82 mg/L, chlorophyll-*a* concentration of 0.13 µg/L, and a pH of 8.1. The sea state during the sightings was moderate, corresponding to a Beaufort scale of three to four.

The species was identified by its small size, rounded head with a gently sloping melon extending anteriorly beyond the mouth, absence of a pronounced beak, a dorsal fin positioned posterior to mid-back, and rounded flipper tips. These morphological characteristics confirm the identification of the species as pygmy killer whale, marking the first live sighting from Indian waters. The observed pod was recorded within a single line transect off Minicoy.

Table 1. Sighting/Stranding records of pygmy killer whale *Feresa attenuata* in the world oceans from 2011-2025

Country Region	Sighting/ Stranding & number	Period	Reference
Off Côte d'Ivoire, West Africa	Sightings	-	Weir, Goncalves, and May (2013)
New Caledonia	Stranding (6)	February 2006	Clua, Manire, and Garrigue (2014)
East Coast of Australia	Sighting	-	Owen and Donnelly (2014)
Tobago	Live Stranding (1)	19 September 2011	Naranjit, Nelson, and Ramsey (2015)
Gulf of California	Dead stranding (2)	October 2014	Elorriaga-verplancken et al. (2016)
North of Inhaca Island	Sightings	23 April 2017	Allport, Curtis, Simões, and Rodrigues (2017)
Ansley, Mississippi	Live stranding (2)	1 September 2015	Pulis et al. (2018)
Fogo Island, Canada	Sighting	10 September 2019	Berrow et al. (2020)
Off São Nicolau Island, Cabo Verde	Sighting (4)	3 June 2018	Legrand and Monticelli (2020)
Ma»alaea Bay, Hawaii	Sighting (6)	September 13,2019	Currie et al. (2021)
Ma»alaea Bay, Hawaii	Stranding (11)	August 29, 2019,	Currie et al. (2021)
Cuba	Stranding	6 September 2016	Alvarez-Aleman, Gonzalez-Socoloske, Garcia-Dulzaides, and Rodriguez-Viera (2021)
Central Atlantic	Sighting	01 November 2024	Augustin et al. (2025)

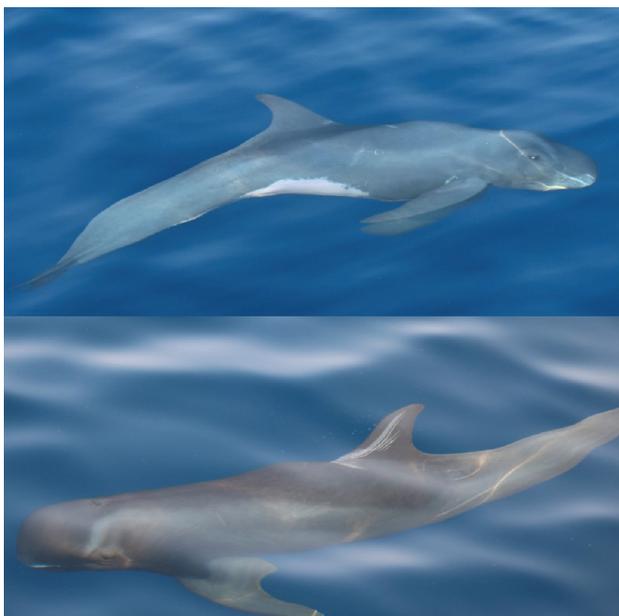


Fig. 1. Pygmy killer whales sighted off Minicoy, Lakshadweep Sea, showing distinct species morphological features. Rounded head with white lips extending onto the face, dark cape broadening into a crown in front of the blowhole, and prominent dorsal fin (Photo by Zainul Abid P. M.).

The pygmy killer whale is the smallest member of the family Delphinidae (Williams, Williams, & Brereton, 2002), with its distribution poorly understood due to the scarcity of verified observations and sightings (Pulis et al., 2018). Globally, a total of 115 events, comprising both sightings and strandings, had been documented up to 2011 (Jeyabaskaran et al., 2011). Since then, 13 additional verified sightings have been reported (Table 1), including the present observation, bringing the total global reports to 129. The probability of live sightings of pygmy killer

whales is comparatively low, as they are largely nocturnal, with 96% of their dives occurring at night and during daylight hours, individuals typically exhibit low-energy behaviours such as milling, resting, and logging (Pulis et al., 2018), while other delphinid species are often more sighted in large groups with visible acrobatic behaviours during daytime (Roberts et al., 2016). In the present sighting, in contrast to previous reports, nearly all individuals displayed active behaviours, including porpoising, bow-riding, whistling, fluke-slapping (Fig. 2), side-rolling, and breaching (Fig. 3A & B). Breaching is a playful social interaction which the young cetaceans frequently engage in, and is considered as a communication behaviour, depicting strength & power, territory marking, and hunting (Carwardine, 2020). The sightings were observed with multiple social sub-groups consisting of 4 to 6 individuals, occasionally merging into a single unit. One such subgroup consistently maintained a distance of about 300–500 meters from the survey vessel, with leisure swimming behaviour for about 20 to 30 minutes. Other sub-groups engaged in bow-riding, repeatedly surfacing and crossing in front of the vessel. Deep-diving patterns were also recorded, with average dive durations of 18 seconds and breathing intervals of 8 seconds. Snorkelling behaviour, where individuals remained just beneath the surface, was also observed. Pulis et al. (2018) recorded the longest dive of a pygmy killer whale at 9 minutes, reaching a maximum depth of 368 meters. A distinct social structure was evident within the pod, including a sub-adult identifiable by its body size. Minimal adjustments to the vessel's course were required to follow the animals, as they actively approached the vessel. Another notable behaviour observed was fluke-slapping, which likely served as a form of communication within the



Fig. 2. Continuous fluke-slapping behaviour observed, likely as a form of communication with other individuals, coinciding with diver entering the water.



Fig. 3. (A) The breaching behaviour, and (B) Side rolling behaviour



Fig. 4. White scars, often described as tooth rakes, observed on the body of a pygmy killer whale.

pod. A distinct behavioural response of rapid fluke-slapping (Fig. 2), seemingly functioning as a warning signal, was exhibited by the subgroup moving away from the vessel when a diver entered the water with an underwater camera to photograph the pod. Subsequently, a nearby individual displayed an unusual fluke movement forming an 'S'-shaped pattern. Shortly after, four individuals from a more distant subgroup approached the vessel, appearing to assess the situation and ensure the safety of the members closer to the boat. After observing the movements of the diver, they gradually returned to their original positions. During a second diving attempt, no noticeable reaction was observed. This daytime interactive behaviour provides new insights into the social structure and individual responses of pygmy killer whales.

The pygmy killer whale is a generalist feeder, with its diet comprising approximately 50% cephalopods, 30% fishes, and 20% other prey items (Pauly, Trites, Capuli, & Christensen, 1998). It employs a combination of raptorial and suction feeding strategies (Werth, 2000), and the feeding activity generally aligns with the vertical migration patterns of its prey species (Zerbini & Santos, 1997; Mignucci-Giannoni,

Toyos-González, Pérez-Padilla, Rodríguez-López, & Overing, 1999; Baird et al., 2011). The absence of observed foraging activity in the present sighting is presumed to be consistent with the characteristic nocturnal hunting and feeding behaviour of the species.

The observed pygmy killer whales represented different age groups, as indicated by variations in body size. Mature individuals were estimated to measure between 0.8 and 2.0 m in length. Key identification features, including rounded flipper tips, a distinctly rounded head profile in dorsal view, and a whitish area around the mouth, distinguish the species (Fig. 1) from the similar melon-headed whale (*P. electra*), which has pointed flippers and a tapered head (Baird, 2010). Misidentification with the false killer whale (*P. crassidens*) is also possible; however, pygmy killer whales have proportionately larger dorsal fins compared to the smaller fins of false killer whales (Baird, 2010).

The dorsal fin region of the pygmy killer whale exhibited distinctive white scars (Fig. 4). Scars and injuries are common among cetaceans and typically

result from both intraspecific (within-species) and interspecific (between-species) interactions (Kiszka, Pelourdeau, & Ridoux, 2008). In odontocetes, intraspecific scarring often arises from aggressive social behaviour, with males usually showing more scars, which are potential indicators of social rank or individual fitness within the group (MacLeod, 1998). In contrast, interspecific injuries are more often linked to predation attempts by killer whales or sharks and can be distinguished from wounds caused by human activities such as vessel strikes or fishing gear entanglement (Marley et al., 2024). These white marks, commonly known as tooth-rake scars, offer valuable insights into social interactions and can help identify the aggressor species based on tooth spacing patterns (Puig-Lozano et al., 2020). Photographic analysis studies have proven effective for documenting and assessing cetacean scarring, revealing that in some regions, injuries from predation are more frequent than those from fisheries, though both can cause significant trauma in these animals (Ashe, Williams, Morton, & Hammond, 2021).

This study presents the first confirmed live sighting of the pygmy killer whale (*F. attenuata*) in Indian waters, expanding the current understanding of the distribution, social behaviour, and ecological presence of this elusive species in the region. The observed pod displayed diverse social and interactive behaviours, offering valuable insights into the daytime activity, which is rarely documented. However, the study is limited by the short observation duration and the absence of acoustic and other biological data, including genetic data, which restricts deeper inferences on communication patterns and population structure. Future research integrating passive acoustic monitoring, and genetic analyses can help in improving knowledge on habitat use, population connectivity, and potential anthropogenic threats. Such efforts will be vital for developing informed conservation and management strategies for cetaceans in Indian waters.

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