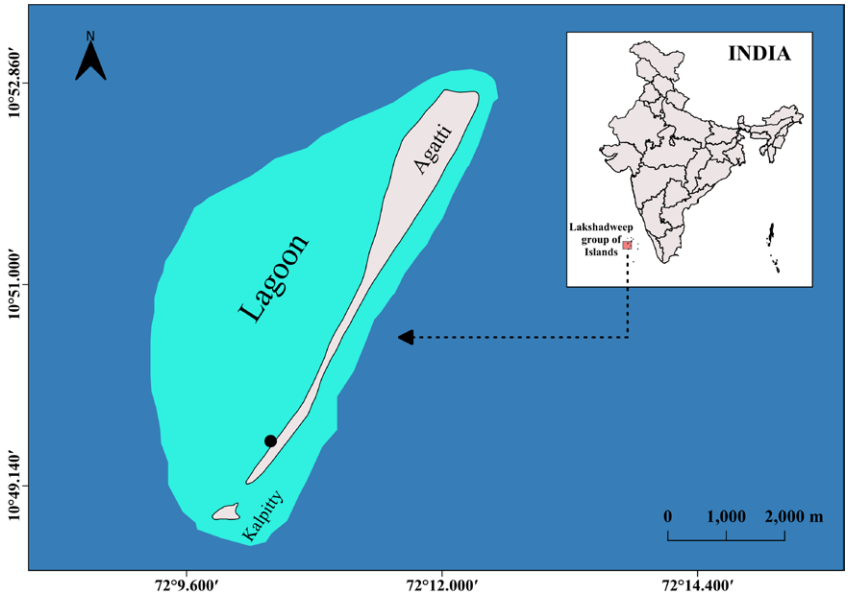
# Mass stranding of Purpleback flying squid in Agatti Island, Lakshadweep




Location (closed circle) of mass stranding of *Sthenoteuthis oualaniensis* on the southwestern beach of Agatti Island in the Arabian Sea


Photographs of *Sthenoteuthis oualaniensis* strandings in the Agatti Island of the Arabian Sea. A: live squids in close proximity to the shore, B: Stranded squids on the shoreline. Photos are screen captures from the video and hence in low quality.

The "flying squids" of the family Ommastrephidae (suborder Oegopsida) make up over 50% of the global cephalopod species that are commercially exploited. Among this, the purpleback flying squid *Sthenoteuthis oualaniensis* (Lesson, 1830) is the dominant squid in the oceanic waters of the Arabian Sea and is reported to have a complicated population structure (viz. middle-sized, dwarf, and giant forms) (Jeena *et al.* 2023). Purpleback flying squid is referred to by the sobriquet 'Master of the Arabian Sea' due to its abundance, large size, fast growth, and dominance in the higher trophic niche and the mean abundance of this species in the Indian EEZ portion of the Arabian Sea was estimated to be 4.21 tonnes/km$^2$ (Mohamed *et al.* 2018).

On June 9, 2022, on the southwestern shore of Agatti Island, Lakshadweep, India, local fishermen sighted mass beaching of hundreds of squids in the morning. This article is based on a short video of this episode that the authors were able to view despite not being able to obtain a sample of the squids. Many squids stranded on the beach (estimated at ~3000) were subsequently identified as *Sthenoteuthis oualaniensis* (Ommastrephidae). The approximate size of the individuals ranged from 8 to 12 cm in dorsal mantle length (DML), indicating that they are sub-adults. Eyewitnesses informed that this is the first instance of squid stranding in the area. These squids that were stranded, swam directly to the shore and were beached by the ebbing tide. They were alive while they were stranded. Most of the stranded squids were gathered by residents for consumption, mostly being preserved by pickling and utilized as bait for tuna fishing.

It is reported that the maximum biomass of *S. oualaniensis* in the Indian EEZ is

between 11°N and 72°E (Mohamed *et al.,* 2018), which is close to Agatti Island. Additionally, it has been indicated that the spawning grounds of *S. oualaniensis* might be in the southeastern Arabian Sea around the Lakshadweep Archipelago (09˚04´N–15˚04´N, 73˚44´E–75˚36´E) with high abundances of paralarvae (38–270 number/1000 $m^3$) and juveniles (1,201–3,003,003 number/$km^2$) observed during January–April, and October (Sajikumar *et al.,* 2018). Mass stranding events of marine whales have been reported in Indian tropical waters (Regunathan *et al.,* 2013; Jeyabaskaran *et al.,* 2018). Mass strandings of various ommastrephid squid species such as jumbo squid *Dosidicus gigas* (Ibanez *et al.,* 2023) from the eastern Pacific Ocean and seven-star flying squid *Martialia hyadesi* from Macquarie Island (O'Sullivan *et al.,* 1983) and New Island, Falkland Island (Nolan *et al.,* 1998) and Shortfin squid, *Illex illecebrosus* from Cape Cod Bay, North Atlantic Ocean, have been attributed to a wide variety of circumstances, such as oceanographic anomalies (temporal shifts in frontal zones), post-spawning mortality, human disturbance, and toxins from harmful algal blooms. However, there is no previous evidence for the mass stranding of squid in tropical Indian waters. Earlier reports hypothesized post-spawning mortality, high temperatures, toxins from harmful algal blooms (extremely potent brain toxins), and human disturbances, as reasons for the mass stranding of squids. However, in this study, no conclusive evidence supported these hypotheses. It is fairly well established that the purpleback flying squid does not die after spawning (Harman *et al.,* 1989). It is proposed that despite being an oceanic form, its presence in the shallow lagoon of Agatti Atoll may have been chased by a predator into the lagoon and subsequently onto the beach. During earlier cruises in the region, we observed instances of this species fleeing predators by gliding and landing on the vessel deck after being chased by tunas and other larger pelagic predators. Therefore, the current beaching could be due to a predator attack. Moving forward, researchers should be vigilant for such occurrences in the future to gain a better understanding of this unusual behaviour of squids.

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