

Blue lines indicate the area meeting the ISRA Criteria; dashed lines indicate the suggested buffer for use in the development of appropriate place-based conservation measures

PHI PHI ISLANDS ISRA

Asia Region

SUMMARY

Phi Phi Islands is located in the Andaman Sea off the west coast of Thailand. The area is comprised of two major islands, Koh Phi Phi Don and Koh Phi Phi Lei, and the underwater pinnacles of Hin Bida, Hin Mu Sang, and Hin Jom. It is characterised by shallow waters and coral reefs and is influenced by the seasonal monsoon. The area falls within the Lower Western Coastal Sea Ecologically or Biologically Significant Marine Area and overlaps the Hat Noppharat Thara - Mu Ko Phi Phi National Park. Within this area there are: **threatened species** (e.g., Indo-Pacific Leopard Shark *Stegostoma tigrinum*); **reproductive areas** (e.g., Blacktip Reef Shark *Carcharhinus melanopterus*); and **resting areas** (Indo-Pacific Leopard Shark).

CRITERIA

Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas; Sub-criterion C3 - Resting Areas

— —
THAILAND

— —
0-35 metres

— —
481.77 km²





DESCRIPTION OF HABITAT

Phi Phi Islands is located in the Andaman Sea on the west coast of Thailand. The area comprises two major islands, Phi Phi Don and Phi Phi Lei, and the sites of Hin Bida, Hin Mu Sang (Shark Point), and Hin Jom (Anemone Reef). The Phi Phi Islands are large limestone islands with steep cliffs. Hin Bida is a pinnacle situated in the southern extent of the area, ~8 km from Phi Phi Lei. Hin Mu Sang and Hin Jom are two underwater pinnacles located at the western extent of the area, ~15 km from Phi Phi Don. The area is characterised by relatively shallow waters, protected beaches, and coral reefs. Gorgonian fans are common in the area, particularly around Koh Phi Phi Don.

Phi Phi Islands is influenced by the monsoon, resulting in two distinct seasons: the rainy season (May–December) and the dry/hot season (January–April) (Chatterjee et al. 2017). The average water temperature in the area ranges between 27–31°C (Sea Temperature 2024).

The area falls within the Lower Western Coastal Sea Ecologically or Biologically Significant Marine Area (EBSA; CBD 2024). The area overlaps with the Hat Noppharat Thara – Mu Ko Phi Phi National Park.

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 35 m based on the bathymetry of the area.

ISRA CRITERIA

CRITERION A – VULNERABILITY

Two Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occur in the area. These are the Endangered Indo-Pacific Leopard Shark (Rigby et al. submitted) and the Vulnerable Blacktip Reef Shark (Simpfendorfer et al. 2020).

SUB-CRITERION C₁ – REPRODUCTIVE AREAS

Phi Phi Islands is an important reproductive area for two shark species.

A long-term photo identification (photo-ID) project in the area from 1993–2019 has identified 333 individual Blacktip Reef Sharks, evidencing the regular and predictable nature of this species' habitat use in the area (Bindholt 2024). In addition, between November 2022–April 2023, photo-ID of Blacktip Reef Sharks identified 62 individuals in Maya Bay (this is an ongoing project). Out of 62 individuals, 36 individuals were identified as mature through size estimates (>100 cm total length [TL] for females) and presence of calcified claspers for males, and 26 individuals were considered immature based on size estimates (<100 cm TL) and the presence of umbilical scars (Maya Sharkwatch Project unpubl. data 2024). Baited Remote Underwater Video Station (BRUVS) and drone surveys conducted in Maya Bay, Phi Phi Leh Island, Phi Phi Don Island, and Mai Phai Island between 2018–2024 confirmed both neonates (estimated size range 30–60 cm TL) and mature individuals are seen using the area year-round (Department of National Parks [DNP] unpubl. data 2024). Size-at-birth for this species is 30–52 cm TL (Ebert et al. 2021). Anecdotal reports from divers and researchers have confirmed mating events of Blacktip Reef Sharks around the Viking Cave area of Koh Phi Phi Leh (Thai Sharks and Rays [TSAR] unpubl. data 2024). In addition, a Blacktip Reef Shark was observed giving birth within Maya Bay in December 2019 (S Arunrugstichai pers. obs. 2019).

There is evidence of reproductive activity of Indo-Pacific Leopard Sharks in the area. Since 1990, egg cases have been anecdotally reported by divers and photographed at 10–15 m depth, often around

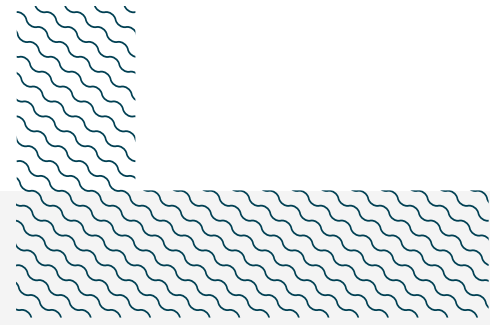
gorgonians (TSAR unpubl. data 2024). In earlier years, up to 100 egg cases were found per dive in the area, whereas in recent years this number is closer to ten egg cases per dive. Fresh eggs are laid seasonally, from the beginning of the northeast monsoon (October–November) each year and near-term embryos are observed up until the end of the northeast monsoon (April–May), supporting the seasonality of reproduction in the area. There are two main egg laying locations in the area: Koh Yung and Koh Phi Phi Don (S Chaktee pers. comm. 2024).

Between 2007–2023, pre-copulatory behaviour was recorded at least six times in the area at Hin Bida, Phuket Shark Point, and Garang Haeng (A Bumroong pers. comm. 2023; S Boonyapattanaphong pers. comm. 2023; D Naksanga pers. comm. 2023; S Wimonsitichai pers. comm. 2023). This behaviour involves males following females closely and biting their tails to restrain them. In addition, video footage of mating has also been recorded in this area. Mating is most commonly observed between October–May (S Arunrugstichai pers. obs. 2023), coinciding with the seasonality of egg cases observed in the area.

SUB-CRITERION C₃ – RESTING AREAS

Phi Phi Islands is an important resting area for one shark species.

Indo-Pacific Leopard Sharks are seen resting around the Phi Phi Islands throughout the year. Unless disturbed by divers, they are resting in the sand in >90% of observations (A Flam pers. obs. 2023; M Larsson pers. comm. 2023). This species is known to seek refuge and rest during the day, and likely forage at dusk and night (Dudgeon et al. 2013). Between 2008–2010, it was common to see 2–3 Indo-Pacific Leopard Sharks resting in close proximity in the sand at Bida Nok, Bida Nai, Hin Bida, and Phuket Shark Point (A Flam pers. obs. 2023), but groups up to five individuals have also been observed (eOceans: Ward-Paige et al. 2018). Between 2012–2016, 9,524 dives were conducted at 153 sites across Thailand (Ward-Paige et al. 2018). Sightings of two or more Indo-Pacific Leopard Sharks were recorded at 15 sites, and 11 of these fall within the Phi Phi Islands area, emphasising the importance of this area for resting aggregations of this species.



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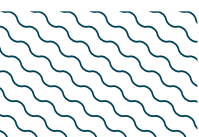
QUALIFYING SPECIES

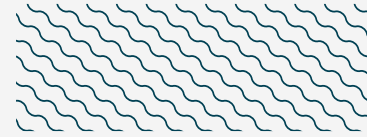
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
SHARKS												
<i>Carcharhinus melanopterus</i>	Blacktip Reef Shark	VU	0-75	X		X						
<i>Stegostoma tigrinum</i>	Indo-Pacific Leopard Shark	EN	0-90	X		X		X				

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Chiloscyllium griseum</i>	Grey Bambooshark	VU
<i>Rhincodon typus</i>	Whale Shark	EN
RAYS		
<i>Mobula birostris</i>	Oceanic Manta Ray	EN

IUCN Red List of Threatened Species Categories are available by searching species names at www.iucnredlist.org Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.





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