

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

CABO PULMO ISRA

Central and South American Pacific Region

SUMMARY

Cabo Pulmo is located in the southern Gulf of California, in the state of Baja California Sur, Mexico. It is considered the northernmost coral reef in the Eastern Pacific. The seabed in this area is mostly coarse sand, although there are some rocky portions. This area includes a Wetland of International Importance (Ramsar site) and the National Park Cabo Pulmo: one of the few fully protected areas in Mexico. Within this area there are: **threatened species** (e.g., Bull Shark *Carcharhinus leucas*); **reproductive areas** (Bull Shark); and **undefined aggregations** (Blacktip Shark *C. limbatus*).

CRITERIA

Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas; Sub-criterion C5 - Undefined Aggregations

—	—
MEXICO	—
—	—
0-450 metres	—
—	—
95.88 km²	—
—	—





DESCRIPTION OF HABITAT

Cabo Pulmo is located near the entrance of the Gulf of California in a transitional zone between the tropical and temperate Eastern Pacific within the Baja California Sur state of Mexico. Situated within the Gulf of California Large Marine Ecosystem, this is the latitudinal section with the highest coral abundance and richness in the Gulf of California. It is the northernmost coral reef area in the Eastern Pacific (Brusca & Thomson 1975; Robinson & Thomson 1992; Soto-Mardones et al. 1999). Due to its locality, Cabo Pulmo is also under the influence of the cold waters of the California Current. In the boreal summer and autumn, the currents move in a northward direction, while during the boreal spring they move southward (CONANP 2006). As a result of these variable conditions, patterns of fish community structure are different from other reefs in the same region, in addition to seasonal changes in the assemblages of transient pelagic organisms (Trasviña-Castro et al. 2012). The seabed in this area is mostly coarse sand, although there are some rocky portions.

The protected area in Cabo Pulmo was initially designated as a National Marine Park in 1995, and then in 2000 modified to a National Park. The Cabo Pulmo National Park consists of 71.1 km², 99% of which is located in the marine zone (CONANP 2006). This area also includes a Wetland of International Importance (Ramsar site), the Parque Nacional Cabo Pulmo (Ramsar 2022).

This Important Shark and Ray area is delineated from inshore and surface waters (0 m) to a depth of 450 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 this area. These are the Vulnerable Bull Shark (Rigby et al. 2021b) and Blacktip Shark (Rigby et al. 2021a).

These species are regularly present in this area, according to visual and coastal census, and drone monitoring (Asúnsolo-Rivera 2016; El Saleh 2016; Ayala-Bocos et al. 2018; Perusquia-Ardón 2020; Ayres et al. 2021b).

SUB-CRITERION C₁ - REPRODUCTIVE AREAS

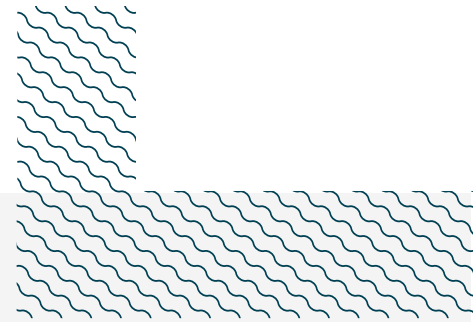
Cabo Pulmo is an important reproductive area for one shark species. Adult female Bull Sharks are regularly observed between November-May (cold season), with fresh mating scars, suggesting that this area could be a mating area (Frida Lara-Lizardi pers. obs. 2022). Acoustic tagging (n = 28) suggests sexual segregation in this area, with females having higher residency than males, especially during December (Lara-Lizardi et al. 2022).

SUB-CRITERION C₅ - UNDEFINED AGGREGATIONS

Cabo Pulmo is an important aggregation area for one shark species. Blacktip Sharks have a seasonal presence from December to April in coastal habitats in the northern part of Cabo Pulmo. Higher abundances have been recorded at sea-surface temperatures <25°C. Aggregations are composed mostly of adults with aggregation sizes between 7-1,229 individuals (El-Saleh 2016; Ayres et al. 2021a; Ayres 2022) which is greater than in other areas (Ayres et al. 2021a). The purpose of these



aggregations is currently unknown. However, there are reports of females with recent mating scars, so this area may be used for mating purposes (Asúnsolo-Rivera 2016).



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QUALIFYING SPECIES

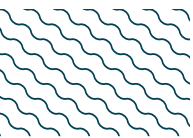
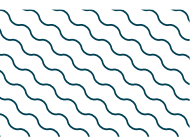
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
SHARKS												
<i>Carcharhinus leucas</i>	Bull Shark	VU	0-164	X		X						
<i>Carcharhinus limbatus</i>	Blacktip Shark	VU	0-140	X						X		

SUPPORTING SPECIES

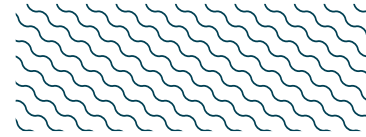
Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Alopias vulpinus</i>	Common Thresher	VU
<i>Carcharhinus albimarginatus</i>	Silvertip Shark	VU
<i>Carcharhinus falciformis</i>	Silky Shark	VU
<i>Carcharhinus galapagensis</i>	Galápagos Shark	LC
<i>Carcharhinus longimanus</i>	Oceanic Whitetip Shark	CR
<i>Carcharhinus obscurus</i>	Dusky Shark	EN
<i>Galeocerdo cuvier</i>	Tiger Shark	NT
<i>Ginglymostoma unami</i>	Pacific Nurse Shark	EN
<i>Isurus oxyrinchus</i>	Shortfin Mako	EN
<i>Mustelus lunulatus</i>	Sicklefin Smoothhound	LC
<i>Nasolamia velox</i>	Whitenose Shark	EN
<i>Negaprion brevirostris</i>	Lemon Shark	VU
<i>Prionace glauca</i>	Blue Shark	NT
<i>Rhincodon typus</i>	Whale Shark	EN
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR
<i>Sphyrna zygaena</i>	Smooth Hammerhead	VU
<i>Squatina californica</i>	Pacific Angelshark	NT
<i>Triaenodon obesus</i>	Whitetip Reef Shark	VU
RAYS		
<i>Aetobatus laticeps</i>	Pacific Eagle Ray	VU
<i>Diplobatis ommata</i>	Pacific Dwarf Numbfish	LC
<i>Gymnura marmorata</i>	California Butterfly Ray	NT
<i>Hypanus dipterurus</i>	Diamond Stingray	VU
<i>Hypanus longus</i>	Longtail Stingray	VU
<i>Mobula birostris</i>	Oceanic Manta Ray	EN
<i>Mobula munkiana</i>	Munk's Pygmy Devil Ray	VU
<i>Mobula tarapacana</i>	Sicklefin Devil Ray	EN
<i>Mobula thurstoni</i>	Bentfin Devil Ray	EN
<i>Myliobatis californica</i>	Bat Ray	LC
<i>Myliobatis longirostris</i>	Longnose Eagle Ray	VU

<i>Narcine entemedor</i>	Cortez Numbfish	VU
<i>Pseudobatos productus</i>	Shovelnose Guitarfish	NT
<i>Rhinoptera steindachneri</i>	Pacific Cownose Ray	NT
<i>Urobatis concentricus</i>	Bullseye Round Ray	LC
<i>Urobatis halleri</i>	Haller's Round Ray	LC
<i>Urobatis maculatus</i>	Spotted Round Ray	LC
<i>Zapteryx exasperata</i>	Banded Guitarfish	DD

IUCN Red List categories: *CR*, Critically Endangered; *EN*, Endangered; *VU*, Vulnerable; *NT*, Near Threatened; *LC*, Least Concern; *DD*, Data Deficient.



SUPPORTING INFORMATION

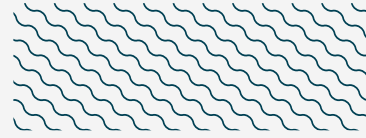


There are additional indications that Cabo Pulmo is an important area for reproduction, feeding, and movement. There is information suggesting that the area may be important for reproduction of Lemon Sharks, but more evidence is needed to confirm this. Based on drone census, neonates ($n = 2$) have been observed in shallow waters along with adult seasonal aggregations near the coast, which suggest that it may be used as a nursery area (Posadas-Prado 2020; Ayres et al. 2021b). This is supported by the fact that the habitats where these neonates were observed are very similar to those used by the species in other parts of the world as nurseries (Wetherbee et al. 2007; Reyier et al. 2008; Henderson et al. 2010). Lemon Sharks are the most frequently observed shark species during drone surveys (Ayres et al. 2021b). Furthermore, based on a coastal census, aggregations are regularly observed in areas near the shore, mostly during May-July (Asúnsolo-Rivera 2016). It is currently unknown if these aggregations are linked to the presence of neonates in the area.

Stable isotope analysis showed that adult Blacktip Shark ($n = 20$) feed in Cabo Pulmo, where the species plays the role of top predator in local food webs (Ayres 2022). However, more evidence is needed to confirm the importance of this area for feeding purposes. Satellite telemetry data for Blacktip Sharks ($n = 4$) showed that individuals move to other areas along the Gulf of California coast. Sharks tagged were caught in the coast of Sinaloa (240 km to the east) and Sonora (900 km northwards) after 4.2 years and 69 days at liberty, respectively (Ketchum et al. 2020). In addition, two other tagged sharks were caught off the coast of Guaymas and Puerto Peñasco, 585 and 900 km to the northeast, respectively (Ayres 2022).

Acoustic tagging of Bull Sharks between 2016–2018 have shown that this species had more detections in shallow areas (<20 m) that are characterised by having high abundance of bony fishes like Yellowtail Amberjack *Seriola lalandi*, Longfin Yellowtail *Seriola rivoliana*, and Gulf Grouper *Mycteroperca jordani*. This suggests that these sharks may potentially be using this area for feeding purposes (Asúnsolo-Rivera 2016; Lara-Lizardi et al. 2022). However, more information is needed to confirm this.

Based on traditional knowledge and visual census from 2000–2014 and 2018, Tiger Sharks and Whale Sharks have been reported as common species in this area that form aggregations (Reyes-Bonilla et al. 2016; Perusquia-Ardón 2020). According to divers, Whale Sharks have been observed feeding but it is unknown if these are truly feeding aggregations. More evidence is needed to confirm the regular presence of these aggregations.



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