

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

GULF OF CHIRIQUÍ ISRA

Central and South American Pacific Region

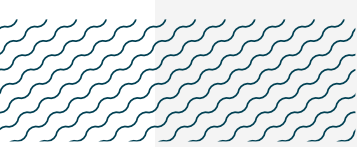
SUMMARY

Gulf of Chiriquí covers a large portion of the continental shelf in western Pacific Panama. It includes Coiba National Park and its special zone of marine protection which is a World Heritage Site. The area encompasses 38 islands, including Coiba Island, the largest island in the Pacific Central-American Coastal Large Marine Ecosystem, with a diversity of coastal and benthic habitats. These include rocky shores, sandy substrates, mangrove ecosystems, coral reefs, pelagic waters, and a prominent seamount. Within this area there are: **threatened species** (e.g., Pacific Smalltail Shark *Carcharhinus cerdale*); **reproductive areas** (e.g., Scalloped Hammerhead *Sphyrna lewini*); **feeding areas** (Whale Shark *Rhincodon typus*); **resting areas** (Whitetip Reef Shark *Triaenodon obesus*); areas important for **movement** (Whale Shark); and the area sustains **a high diversity of sharks** (22 species).

CRITERIA

Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas; Sub-criterion C2 - Feeding Areas; Sub-criterion C3 - Resting Areas; Sub-criterion C4 - Movement; Sub-criterion D2 - Diversity

PANAMA
 0-1,000 metres
 7,394 km²





DESCRIPTION OF HABITAT

Gulf of Chiriquí covers a relatively large area of continental shelf in western Pacific Panama within Chiriquí and Veraguas provinces. It includes Coiba National Park and its special zone of marine protection, a reserve identified by UNESCO as a World Heritage Site. The area sits in the Corredor Marino del Pacífico Oriental Tropical Ecologically or Biologically Significant Marine Area (EBSA). The Gulf of Chiriquí encompasses 38 islands, including Coiba Island, the largest island in the Pacific Central-America Coastal Large Marine Ecosystem. The coastal and shallow areas have a great diversity of environments that range from sandy bottoms and rocky shores to mangroves, seagrasses, and coral reefs (Guzman et al. 2004). The substrate is varied including hard carbonate, coral communities, seagrass, algae, sand, and mud (Benfield et al. 2007).

Gulf of Chiriquí covers inshore, coastal, and insular depths to the continental shelf break at the southern end of Coiba, Jicaron, and Jicarita Islands in the southeast of the area, Montuosa Island in the southwest of the area, and Hannibal Bank (a submerged seamount that rises to ~20 m below the water surface). The area includes one of the largest reef areas (1.36 km²) in Pacific Panama (Maté 2003). The area is also regionally significant as part of the Tropical Eastern Pacific Marine Corridor, a network of Marine Protected Areas (MPAs) that includes Galápagos (Ecuador), Cocos (Costa Rica), Malpelo, and Gorgona (Colombia). This extensive network of MPAs is connected by a series of currents and other oceanographic conditions that promote a high diversity of species.

This Important Shark and Ray Area is delineated from inshore and surface waters (0 m) to a depth of 1,000 m based on the outer edge depth contour of the area (Navionics 2022).

ISRA CRITERIA

CRITERION A - VULNERABILITY

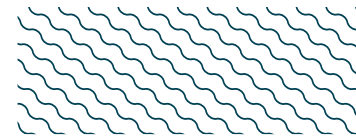
Twenty-two Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species™ regularly occur in the area. Threatened sharks comprise five Critically Endangered species, four Endangered species, and six Vulnerable species; threatened rays comprise seven Vulnerable species (IUCN 2022). These species are regularly observed or landed in local artisanal fisheries supporting their regular occurrence in the area (Guzman et al. 2018, 2022; Ruiz-Leotaud & Pauly 2018; Vega & Villarreal 2003; Vega et al. 2019; 2023).

SUB-CRITERION C₁ - REPRODUCTIVE AREAS

Gulf of Chiriquí is an important reproductive area for two shark species. In a study examining catches of artisanal fisheries during 2009–2010, Scalloped Hammerheads represented 56.7% (n = 421) of all shark captures and included young-of-the-year and gravid females (Vega et al. 2023). The mean size of the individuals captured was 66.3 cm total length (TL), with embryos recorded from 18.1 cm TL. Reported size-at-birth of Scalloped Hammerhead in the Eastern Pacific includes 47–55 cm TL for Ecuador (Estupiñán-Montaña et al. 2021).

Captures of Pacific Smalltail Shark in the Gulf of Chiriquí include individuals representing young-of-the-year based on size. Ninety individuals with sizes between 35.5 and 97 cm TL with a mean of 65.9 cm TL were recorded in a study of artisanal fishery catches during 2009–2010 (Vega et al. 2023). Reported size-at-birth of Pacific Smalltail Shark is >30 cm TL (based on size of near-term embryos; Castro 2011) with the smallest Gulf of Chiriquí individuals representing young-of-the-year based in their size.





SUB-CRITERION C₂ - FEEDING AREAS

Gulf of Chiriquí is an important foraging ground for one shark species. Whale Sharks form a seasonal aggregation in the area (Guzman et al. 2022). Within the Panama Pacific, the primary foraging sites for Whale Shark were shown to be the Gulf of Panama and the Gulf of Chiriquí (Guzman et al. 2022). Concentrations of chlorophyll-a and primary productivity were significantly correlated with the foraging behaviour of Whale Sharks in these areas (Guzman et al. 2022).

SUB-CRITERION C₃ - RESTING AREAS

Gulf of Chiriquí is an important resting area for one shark species. Whitetip Reef Sharks are commonly observed resting around the rocky shore and coral reef areas of Coiba National Park (Vega et al. 2019). This is a known documented resting behaviour for this species (Randall 1977).

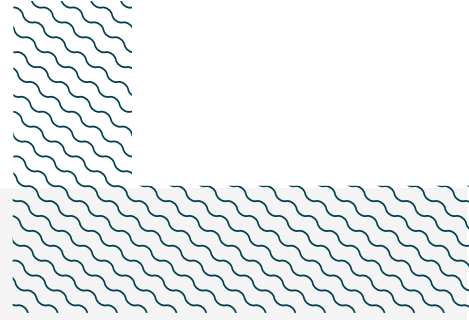
SUB-CRITERION C₄ - MOVEMENT

Gulf of Chiriquí is an important movement area for one shark species. Spatial analysis of satellite tracking data from Whale Sharks shows that this area is situated within an important migratory route for this species in the Pacific Ocean (Guzman et al. 2018, 2022). Data comes from 25 Whale Sharks tagged in the Gulf of Chiriquí (Guzman et al. 2018). Some Whale Shark individuals tagged in Panama have been shown to move north to Mexico, south to Ecuador, and west to the open ocean, highlighting the connectivity between the Gulf of Chiriquí and other areas in the Eastern Tropical Pacific. Recent studies have also documented a trans-Pacific migration of 20,000 km of a female Whale Shark from Gulf of Chiriquí (Coiba Island) to the western Pacific (Mariana Trench) (Guzman et al. 2018). This finding illustrates the migratory connectivity between two ocean basins, the eastern Pacific and western Pacific.

SUB-CRITERION D₂ - DIVERSITY

Gulf of Chiriquí sustains a high diversity of Qualifying Species (22 species). This exceeds the regional diversity threshold (17 species) for the Central and South Pacific American region.

These species are regularly observed or landed in local artisanal fisheries supporting their regular occurrence in the area (Guzman et al. 2018, 2022; Ruiz-Leotaud & Pauly 2018; Vega & Villarreal 2003; Vega et al. 2019, 2023).



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QUALIFYING SPECIES

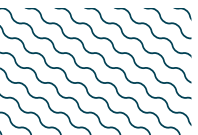
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met										
				A	B	C1	C2	C3	C4	C5	D1	D2		
SHARKS														
<i>Alopias pelagicus</i>	Pelagic Thresher	EN	0-300	X										
<i>Carcharhinus cerdale</i>	Pacific Smalltail Shark	CR	0-40	X		X								
<i>Carcharhinus falciformis</i>	Silky Shark	VU	0-500	X										
<i>Carcharhinus leucas</i>	Bull Shark	VU	0-164	X										
<i>Carcharhinus limbatus</i>	Blacktip Shark	VU	0-140	X										
<i>Carcharhinus longimanus</i>	Oceanic Whitetip Shark	CR	0-1,082	X										
<i>Ginglymostoma unami</i>	Pacific Nurse Shark	VU	0-13	X										
<i>Nasolamia velox</i>	Whitenose Shark	EN	0-192	X										
<i>Rhincodon typus</i>	Whale Shark	EN	0-1,928	X			X		X					
<i>Rhizoprionodon longurio</i>	Pacific Sharpnose Shark	VU	0-100	X										
<i>Sphyrna corona</i>	Scalloped Bonnethead	CR	0-100	X										

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		
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR	0-1,043	X		X								
<i>Sphyrna media</i>	Scoophead Shark	CR	0-100	X										X
<i>Sphyrna tiburo</i>	Bonnethead Shark	EN	0-90	X										
<i>Triaenodon obesus</i>	Whitetip Reef Shark	VU	0-330	X				X						
RAYS														
<i>Aetobatus laticeps</i>	Pacific Eagle Ray	VU	0-60	X										X
<i>Hypanus longus</i>	Longtail Stingray	VU	0-118	X										
<i>Mobula munkiana</i>	Munk's Pygmy Devil Ray	VU	0-30	X										
<i>Narcine entemedor</i>	Cortez Numbfish	VU	0-100	X										
<i>Pseudobatos leucorhynchus</i>	Whitesnout Guitarfish	VU	0-50	X										
<i>Pseudobatos glaucostigmus</i>	Grey-spotted Guitarfish	VU	0-110	X										
<i>Rostroraja velezi</i>	Rasptail Skate	VU	30-300	X										

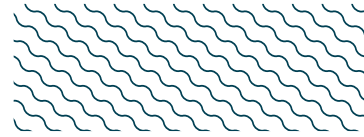
SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Galeocerdo cuvier</i>	Tiger Shark	NT
<i>Mustelus lunulatus</i>	Sicklefin Smoothhound	LC
<i>Mustelus dorsalis</i>	Sharptooth Smoothhound	VU
RAYS		
<i>Diplobatis ommata</i>	Pacific Dwarf Numbfish	LC
<i>Urobatis halleri</i>	Haller's Round Ray	LC
<i>Urotrygon chilensis</i>	Blotched Round Ray	LC
<i>Zapteryx xyster</i>	Southern Banded Guitarfish	VU

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

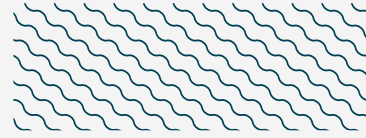


SUPPORTING INFORMATION



There are additional indications that this area is important for the reproduction of four shark species. Courtship and mating behaviour of Whitetip Reef Sharks has been observed and documented with photographs around Coiba Island (Vega et al. 2019). However, observations are limited, and further information is needed on the regularity of this behaviour in the area.

Size of captures of the small hammerhead species, Scalloped Bonnethead, Scoophead Shark, and Bonnethead Shark, suggest the area may be used as a nursery ground for these species. This is based on the small size of individuals caught in the small-scale fisheries operating in the area. The minimum, maximum, and mean size of Scalloped Bonnethead was: 41.0, 103.0, 77.8 cm TL (n = 7) (Vega et al. 2023). Reported size-at-birth for Scalloped Bonnethead is 28 cm TL in the Eastern Pacific (Gilbert 1967) and 22–23 cm TL in Colombia (Orozco Guarín et al. 2015). The minimum, maximum, and mean size of Scoophead Shark was: 34.90, 61.00, and 48.70 cm (n = 9) (Vega et al. 2023). Reported size-at-birth for Scoophead Shark is 23 cm TL with samples primarily from the Eastern Pacific (Gilbert 1967). The minimum, maximum, and mean size of Bonnethead Shark was: 35.70, 11.85, and 56.30 cm TL (n = 24) (Vega et al. 2023). Reported size-at-birth for Bonnethead Shark is 22–30 cm TL (Lombardi-Carlson et al. 2003) and 23–24 cm TL (Ulrich et al. 2007), both from the Western Atlantic. Further information is needed on the regular presence of neonates, young-of-the-year, and gravid females.



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