

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

PUERTO CABUYAL ISRA

Central and South American Pacific Region

SUMMARY

Puerto Cabuyal is located in coastal mainland Ecuador and comprises the Puerto Cabuyal-Punta San Clemente Marine Reserve. The area is situated in the Equatorial Front and is characterised as a transition zone that separates cold waters rich in nutrients from warmer waters, generating a zone of high productivity. It contains a variety of habitats, including soft, hard, and mixed benthos, rocky shallows, and coral formations to 30 m depth. Within the area there are: **threatened species** (e.g., Scoophead Shark *Sphyrna media*) and **reproductive areas** (e.g., Smooth Hammerhead *Sphyrna zygaena*).

CRITERIA

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

— —
ECUADOR
 — —
0-30 metres
 — —
992.2 km²
 — —





DESCRIPTION OF HABITAT

Puerto Cabuyal is located in coastal mainland Ecuador and overlaps with the Puerto Cabuyal-Punta San Clemente Marine Reserve and is located in the province of Manabí. The area is situated in the Equatorial Front and is characterised as a transition zone that separates cold waters rich in nutrients from warmer waters, generating a zone of high productivity. Situated within the Pacific and Central-American Coastal Large Marine Ecosystem (LME), the area contains relatively shallow waters (<30 m). Among the most important geographical features are the estuary of the Chone River, the peninsulas of Punta Ballena, Punta Cabuyal, Cabo Pasado, Punta Napo, Punta Bellaca, and La Gorda, Punta San Clemente. These geographical features cause a continuous sinuosity in the bathymetry of the area; likewise, there are submarine geographical faults, considered of importance for the diversity and abundance of biota (Iturralde et al. 2021a). The benthos varies between soft bottoms, and hard or mixed bottoms (rock, sand/rock). The area in front of Cabo Pasado, Punta Bellaca - Punta Bikini stands out for the presence shallow rocky reefs and coral formations.

The region's climate has been defined as a dry to semi-humid tropical megathermal climate, characterised by annual rainfall between 500 and 1,000 mm, mainly between December and May. According to the National Institute of Meteorology and Hydrology (INAMHI), published with data up to 2013, the average temperature at the Bahía de Caráquez -PUCE- station is 25.1°C (ranging from 23.8 and 26.6°C), while rainfall is more variable with an average of 600 mm per year (247-906 mm annually) (Iturralde et al. 2021b).

This Important Shark and Ray Area is delineated from inshore and surface waters (0 m) to 30 m depth based on the depth ranges of Qualifying Species occurring in the area.

ISRA CRITERIA

CRITERION A - VULNERABILITY

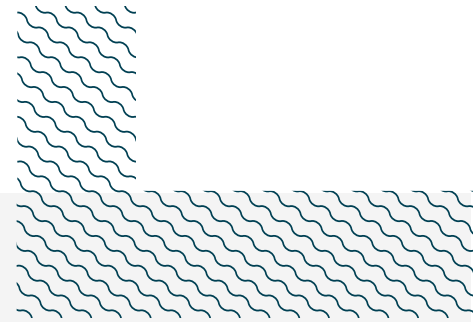
Three Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species™ regularly occur in the area. These are the Critically Endangered Scalloped Hammerhead (Rigby et al. 2019a) and Scoophead Shark (Pollom et al. 2020), and the Vulnerable Smooth Hammerhead (Rigby et al. 2019b).

SUB-CRITERION C1 - REPRODUCTIVE AREAS

Puerto Cabuyal Marine Reserve is an important reproductive area for four shark species. The area was designated based on its function as a shark nursery. Monitoring conducted in the area from 2019-2022 has identified this area as important for the reproduction of several species of hammerhead sharks: Scalloped Hammerhead *Sphyrna lewini* (544 individuals sampled), Smooth Hammerhead (87 individuals sampled), and Scoophead Shark (18 individuals sampled). All three species were caught in all monitoring years, with neonates and young-of-the-year identified by the presence of an umbilical scar. Neonate Scalloped Hammerheads have been considered as those measuring <75 cm total length (TL) (Alejo-Plata et al. 2018). Pupping appears to commence in the first half of the year coinciding with peak catches, e.g., mean size of sampled Scalloped Hammerheads from January to May 2022 was 49.5 cm TL (Espinoza et al. 2021).



Similarly, for Tiger Shark, eight neonates and juveniles have been sampled in August and September over the last four years of monitoring surveys (Espinoza et al. 2021), with fishers also confirming the regular presence of this species, suggesting this area is also an important site for the early life-stages of this species.



Acknowledgments

Jessica Johanna Moreira García (Ocean Blue Tree; INABIO; SENESCYT Ecuador), Eduardo Espinoza Herrera (INABIO; SENESCYT; MigraMar), Kevin Reyes (Ministerio del Ambiente, Agua y Transición Ecológica, Ecuador), Montse Amores (Ocean Blue Tree; UAB, Spain), and Mark Priest (IUCN SSC Shark Specialist Group - ISRA Project) contributed and consolidated information included in this factsheet. We thank the participants of the 2022 ISRA Region 12 - Central and South American Pacific workshop for their contributions to this process.

This factsheet has undergone review by the ISRA Independent Review Panel prior to its publication.

This project was funded by the Shark Conservation Fund, a philanthropic collaborative pooling expertise and resources to meet the threats facing the world's sharks and rays. The Shark Conservation Fund is a project of Rockefeller Philanthropy Advisors.

Suggested citation

IUCN SSC Shark Specialist Group. 2023. Puerto Cabuyal ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

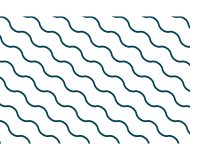
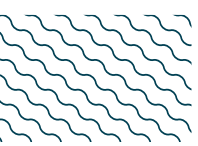
QUALIFYING SPECIES

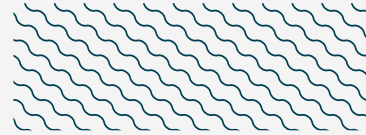
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met							
				A	B	C1	C2	C3	C4	C5	D1
SHARKS											
<i>Galeocerdo cuvier</i>	Tiger Shark	NT	0-1,043			X					
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR	0-1,136	X		X					
<i>Sphyrna media</i>	Scoophead Shark	CR	0-50	X		X					
<i>Sphyrna zygaena</i>	Smooth Hammerhead	VU	1-200	X		X					

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Carcharhinus altimus</i>	Bignose Shark	NT
<i>Mustelus henlei</i>	Brown Smoothhound	LC
<i>Nasolamia velox</i>	Whitenose Shark	EN
<i>Rhincodon typus</i>	Whale Shark	EN
<i>Sphyrna corona</i>	Scalloped Bonnethead	CR
<i>Sphyrna tiburo</i>	Bonnethead Shark	EN

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





REFERENCES

- Alejo-Plata MDC, Ahumada-Sempoal MA, Cerdenares Ladrón de Guevara G, Gómez-Márquez JL. 2018.** Population structure and reproductive biology of the scalloped hammerhead *Sphyrna lewini* (Carcharhiniformes: Sphyrnidae) caught in artisanal fisheries of Oaxaca, Mexico. *Hidrobiológica* 28(3): 265-275. <https://doi.org/10.24275/uam/izt/dcbshidro/2018v28n3/alejo>
- Espinoza E, Moreira J, Alvarez R, Garduño C. 2021.** Baby Shark Project. Annual report (3rd year). Ocean Blue Tree, MIGRAMAR.
- Iturralde MG, Mayra Vera H, Coronel J. 2021a.** Opportunities for implementing marine and coastal spatial planning in Ecuador, a case study in the northern coastal zone of the Province of Manabí. *Revista Costas* 2: 357-406. <https://doi.org/10.26359/costas.e1721>
- Iturralde G, Espinoza E, Moreira J, Reyes D. 2021b.** Study of management alternatives for the creation of the Puerto Cabuyal - Punta San Clemente Marine Reserve. Ocean Blue Tree, MIGRAMAR.
- Pollom R, Avalos C, Bizzarro J, Burgos-Vázquez MI, Cevallos A, Charvet P, Espinoza M, Faria V, Herman K, Mejía-Falla PA, Navia AF, Pérez-Jiménez JC, Rincon G, Sosa-Nishizaki O. 2020.** *Sphyrna media*. *The IUCN Red List of Threatened Species* 2020: e.T60201A3091753. <https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T60201A3091753.en>
- Rigby CL, Dulvy NK, Barreto R, Carlson J, Fernando D, Fordham S, Francis MP, Herman K, Jabado RW, Liu KM, Marshall A, Pacoureaux N, Romanov E, Sherley RB, Winker H. 2019a.** *Sphyrna lewini*. *The IUCN Red List of Threatened Species* 2019: e.T39385A2918526.
- Rigby CL, Barreto R, Carlson J, Fernando D, Fordham S, Herman K, Jabado RW, Liu KM, Marshall A, Pacoureaux N, Romanov E, Sherley RB, Winker H. 2019b.** *Sphyrna zygaena*. *The IUCN Red List of Threatened Species* 2019: e.T39388A2921825. <https://doi.org/10.2305/IUCN.UK.2019-3.RLTS.T39388A2921825.en>