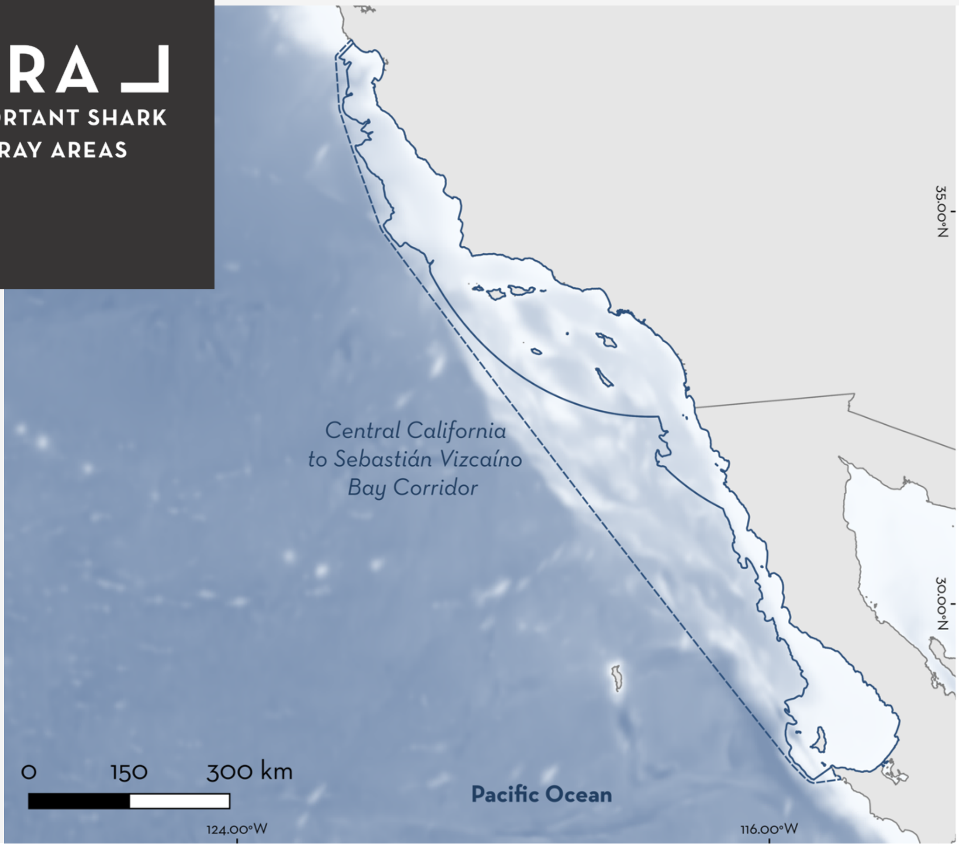
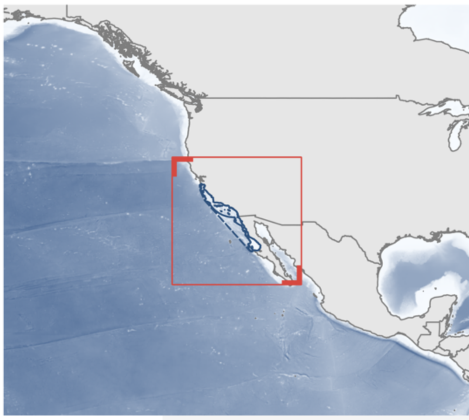
ISRA
IMPORTANT SHARK AND RAY AREAS





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

CENTRAL CALIFORNIA TO SEBASTIÁN VIZCAÍNO BAY ISRA

North American Pacific Region

UNITED STATES OF AMERICA

MEXICO

0–1,277 metres

103,730 km²

SUMMARY

Central California to Sebastián Vizcaíno Bay Corridor is located on the Pacific Ocean coast of North America. It is a transboundary area that extends from Monterey Bay in central California, United States of America, to Sebastián Vizcaíno Bay in northwest Baja California, Mexico. The area extends from coastal waters to continental shelf, slope, and abyssal waters, encompassing a range of habitats including kelp forests, rocky reefs, sandy substrates, submarine canyons, and open ocean pelagic environments. It is influenced by the California Current system characterised by coastal upwelling. Within this area there are: **threatened species** and areas important for **movement** (White Shark *Carcharodon carcharias*).

CRITERIA

Criterion A – Vulnerability; Sub-criterion C4 – Movement

DESCRIPTION OF HABITAT

Central California to Sebastián Vizcaíno Bay Corridor is located along the Pacific Ocean coast of North America. This area extends from Monterey Bay in central California southward to Sebastián Vizcaíno Bay in Baja California. It is a transboundary area situated within the exclusive economic zones of the United States of America (USA) and Mexico. The area extends from coastal waters to continental shelf, slope, and abyssal waters, encompassing a range of habitats including kelp forests, rocky reefs, sandy substrates, submarine canyons, and open ocean pelagic environments.

The area is influenced by the California Current system, one of the major eastern boundary upwelling systems in the world (Carr & Kearns 2003). North-westerly winds drive coastal upwelling along the corridor, bringing cool, nutrient-rich deepwater to the surface and resulting in high primary productivity (Hickey 1979; Checkley & Barth 2009). Sea surface temperatures along the corridor typically range from approximately 10–22°C, with cooler conditions in the north and during periods of active upwelling. The southern extent of the corridor around Sebastián Vizcaíno Bay represents a temperate–subtropical transition zone. Oceanographic conditions across the corridor are subject to interannual and decadal variability driven by El Niño–Southern Oscillation and Pacific Decadal Oscillation events, which can alter water temperatures, productivity, and species distributions (Checkley & Barth 2009). In recent years, the area has been subject to prominent marine heatwaves, with prolonged periods of anomalously high sea surface temperatures in the north of the area (Tanaka et al. 2021).

This Important Shark and Ray Area is pelagic and is delineated from inshore and surface waters (0 m) to 1,277 m based on the global depth range of the Qualifying Species.

ISRA CRITERIA

CRITERION A – VULNERABILITY

One Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occurs in the area. This is the Vulnerable White Shark (Rigby et al. 2019).

SUB-CRITERION C4 – MOVEMENT

Central California to Sebastián Vizcaíno Bay Corridor is an important movement area for White Sharks.

The area is a regular movement corridor for juvenile and sub-adult northeast Pacific Ocean White Sharks (Weng et al. 2007; White et al. 2019; Spurgeon et al. 2022; Freedman et al. 2023; Logan et al. 2024; Anderson et al. 2026; AE DiGiacomo et al. unpubl. data 2026; BA Block unpubl. data 2026; CG Lowe unpubl. data 2026). Research groups at Stanford University, California State University Monterey Bay (CSUMB), and California State University Long Beach (CSULB Shark Lab) tagged White Sharks at aggregation sites within the area (Monterey Bay, n = 14; Southern California Bight, n = 79) with acoustic transmitters from 2022–2025 and tracked 93 individuals ranging in size from 137–427 cm total length (TL; mean = 225.5 ± 48.7 cm TL) for over one year. An acoustic receiver array (82 receivers) across central and southern California, with receivers located within 300 m of the shoreline, indicated that much of the intra-regional movements follow the coastline. By contrast, adult White Sharks seasonally migrate between coastal waters of California and Baja California and offshore waters >2,000 km from the coast (Jorgensen et al. 2010). Tracked juvenile White Sharks exhibited considerable inter- and intra-regional movements among nursery hotspot areas in Monterey, Santa Barbara, Santa Monica Bay, Huntington Beach, Del Mar, and Sebastián Vizcaíno Bay, Mexico. Within a year, 35–50% of acoustically tagged individuals were detected in both central and southern Californian regions of the movement corridor. In total, 34 of 93 individuals (37%) of acoustically tracked individuals moved between central and southern Californian sites. In addition, of 10 neonate/young-of-the-year/juvenile White Sharks tagged at Sebastián Vizcaíno Bay with acoustic transmitters, seven were detected on receivers deployed in California and came back to Mexican waters the following year (García-Rodríguez 2020).

In a second study, 38 juvenile White Sharks (134–290 cm TL) were tracked with satellite tags (SPOT and PAT) between 2003 and 2020, yielding 10,442 quality-filtered positions (O'Sullivan et al. 2022). Track duration was shorter than for acoustic tags, with a mean of 173 days. Of these 38 individuals, 17 sharks (45%) connected Mexican and Californian waters over the track duration, demonstrating regular use of the movement corridor between central California and the Baja California peninsula. Three sharks used the full extent of the corridor, travelling between Monterey Bay in central California and Sebastián Vizcaíno Bay in Mexico, a straight-line distance of >1,000 km. A further nine sharks connected the Southern California Bight with Sebastián Vizcaíno Bay, while two additional sharks moved between central and southern California. Site-level analysis revealed that the Southern California Bight was the most heavily used area (32 of 39 sharks), followed by the Santa Barbara/Ventura region (20 sharks), and Sebastián Vizcaíno Bay (17 sharks). Movements into Mexican waters occurred predominantly between November and April, with sharks returning north to California during boreal summer months, indicating that temperature may be a driver of these movements. Kernel Utilisation Distribution analysis identified two large core-use hotspots (50% KUD): one in the Southern California Bight and a second encompassing Sebastián Vizcaíno Bay and the waters around Cedros Island. Their movements were concentrated in shelf and slope waters, but also included deeper areas, particularly in the Southern California Bight (O'Sullivan et al. 2022).

Young-of-the-year and juvenile White Sharks of the northeast Pacific Ocean are most commonly observed in shallow, nearshore beach environments of southern California and Baja California, generally remaining south of Point Conception, within this area (Klimley 1985; Weng et al. 2007; Oñate-González et al. 2017; White et al. 2019). However, increasing numbers of juvenile White Sharks have been sighted in Monterey Bay coastal habitats, at the northern boundary of this area, following the 2014–2016 heatwave (Tanaka et al. 2021) and have been observed there in regional annual surveys and detected on acoustic receivers since. As individuals grow, they spend more time in northern sites and eventually recruit to adult aggregation sites (Año Nuevo, Farallon Islands, Tomales Point, and Point Reyes; Logan et al. 2024) located outside of this area. This movement corridor is important for juvenile White Sharks, connecting coastal nursery sites and encompassing seasonal movements along the coast.

Acknowledgments

Alexandra E DiGiacomo (Stanford University), Evan E Byrnes (Stanford University), Salvador J Jorgensen (California State University Monterey Bay), Samantha Andrzejaczek (Stanford University), Christopher G Lowe (California State University Long Beach), Emily Spurgeon (California State University Long Beach), Ryan Freedman (University of California Santa Barbara), Barbara A Block (Stanford University), Oscar Sosa-Nishizaki (Centro de Investigación Científica y de Educación Superior de Ensenada [CICESE]), Emiliano García-Rodríguez (IUCN SSC Shark Specialist Group – ISRA Project), and Christoph A Rohner (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2026 ISRA Region 11 – North American Pacific region 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. 2026. Central California to Sebastián Vizcaíno Bay Corridor 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	D2
SHARKS												
Carcharodon carcharias	White Shark	VU	0–1,277	X					X			

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.

REFERENCES

Anderson JM, Rex PT, Spurgeon E, Stirling B, Lowe CG. 2026. Near but not neighbours: juvenile white sharks move together but stay apart. *Wildlife Research* 53: WR25070. https://doi.org/10.1071/WR25070

Carr ME, Kearns EJ. 2003. Production regimes in four Eastern Boundary Current systems. *Deep-Sea Research Part II: Topical Studies in Oceanography* 50: 3199–3221. https://doi.org/10.1016/j.dsr2.2003.07.015

Checkley Jr DM, Barth JA. 2009. Patterns and processes in the California Current System. *Progress in Oceanography* 83: 49–64. https://doi.org/10.1016/j.pocean.2009.07.028

Freedman RM, Anderson JM, Caldow C, Stirling B, Rex P, Spurgeon E, McCullough S, Lyons K, May III J, White CF, et al. 2023. Evidence of increasing juvenile white sharks' (*Carcharodon carcharias*) habitat use at the Northern Channel Islands. *Journal of Fish Biology* 103: 1226–1231. https://doi.org/10.1111/jfb.15503

García-Rodríguez E. 2020. Importance of Ojo de Liebre lagoon and Vizcaino Bay in the early life stages of white sharks: ecological and fishery issues. Unpublished PhD Thesis, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada.

Hickey BM. 1979. The California Current system — hypotheses and facts. *Progress in Oceanography* 8: 191–279. https://doi.org/10.1016/0079-6611(79)90002-8

Jorgensen SJ, Reeb CA, Chapple TK, Anderson S, Perle C, Van Sommeran SR, Fritz-Cope C, Brown AC, Klimley AP, Block BA. 2010. Philopatry and migration of Pacific white sharks. *Proceedings of the Royal Society B* 277: 679–688. https://doi.org/10.1098/rspb.2009.1155

Klimley AP. 1985. The areal distribution and autoecology of the white shark, *Carcharodon carcharias*, off the west coast of North America. *Memoirs of the Southern California Academy of Sciences* 9: 15–40.

Logan RK, Anderson JM, Burns ES, Samara Chacon Y, Freedman R, García-Rodríguez E, Lowe CG. 2024. Long-term tracking captures the timing of ontogenetic niche shifts in northeast Pacific white sharks. *Ecosphere* 15: e70034. https://doi.org/10.1002/ecs2.70034

Oñate-González EC, Sosa-Nishizaki O, Herzka SZ, Lowe CG, Lyons K, Santana-Morales O, Sepulveda C, Guerrero-Ávila C, García-Rodríguez E, O'Sullivan JB. 2017. Importance of Bahia Sebastian Vizcaino as a nursery area for white sharks (*Carcharodon carcharias*) in the Northeastern Pacific: A fishery dependent analysis. *Fisheries Research* 188: 125–137. https://doi.org/10.1016/j.fishres.2016.12.014

O'Sullivan JB, Lowe CG, Sosa-Nishizaki O, Jorgensen SJ, Anderson JM, Logan RK, White CF, O'Sullivan J, Weng KC, Winkler C, et al. 2022. A biologging database of juvenile white sharks from the northeast Pacific. *Scientific Data* 9: 142. https://doi.org/10.1038/s41597-022-01235-3

Rigby CL, Barreto R, Carlson J, Fernando D, Fordham S, Francis MP, Jabado RW, Liu KM, Marshall A, Pacoureau N, et al. 2022. *Carcharodon carcharias* (amended version of 2019 assessment). *The IUCN Red List of Threatened Species* 2022: e.T3855A212629880. https://dx.doi.org/10.2305/IUCN.UK.2022-1.RLTS.T3855A212629880.en

Spurgeon E, Anderson JM, Liu Y, Barajas VL, Lowe CG. 2022. Quantifying thermal cues that initiate mass emigrations in juvenile white sharks. *Scientific Reports* 12: 19874. https://doi.org/10.1038/s41598-022-24377-1

Tanaka KR, Van Houtan KS, Mailander E, Dias BS, Galginaitis C, O'Sullivan JB, Lowe CG, Jorgensen SJ. 2021. North Pacific warming shifts the juvenile range of a marine apex predator. *Scientific Reports* 11: 3373. https://doi.org/10.1038/s41598-021-82424-9

Weng KC, O'Sullivan JB, Lowe CG, Winkler CE, Dewar H, Block BA. 2007. Movements, behavior and habitat preferences of juvenile white sharks *Carcharodon carcharias* in the eastern Pacific. *Marine Ecology Progress Series* 338: 211–224. https://doi.org/10.3354/meps338211

White CF, Lyons K, Jorgensen SJ, O'Sullivan J, Winkler C, Weng KC, Lowe CG. 2019. Quantifying habitat selection and variability in habitat suitability for juvenile white sharks. *PLoS ONE* 14: e0214642. https://doi.org/10.1371/journal.pone.0214642