

Áreas Importantes para Tiburones y Rayas – ISRA

Pacífico de América Central y del Sur

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Áreas Importantes para Tiburones y Rayas (ISRA)

- Identificar hábitats críticos para priorizar su investigación, manejo y conservación.
- Proporcionar a los tomadores de decisiones y otros grupos de interés, los conocimientos para la implementación de estrategias de planificación espacial.



ISRA Criteria

CRITERION A - VULNERABILITY

CRITERION B - RANGE RESTRICTED

CRITERION C - LIFE-HISTORY

SUB-CRITERION C1
REPRODUCTIVE AREAS

SUB-CRITERION C2
FEEDING AREAS

SUB-CRITERION C3
RESTING AREAS

SUB-CRITERION C4
MOVEMENT

SUB-CRITERION C5
UNDEFINED
AGGREGATIONS

CRITERION D - SPECIAL ATTRIBUTES

SUB-CRITERION D1
DISTINCTIVENESS

SUB-CRITERION D2
DIVERSITY

CRITERION C - LIFE-HISTORY

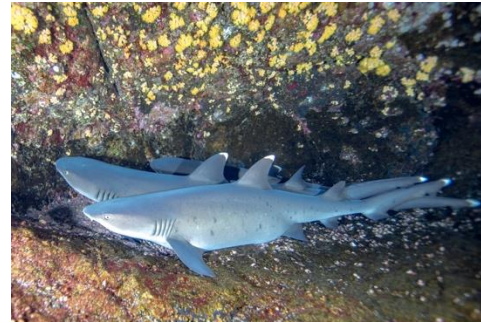
SUB-CRITERION C1 REPRODUCTIVE AREAS



SUB-CRITERION C2 FEEDING AREAS



SUB-CRITERION C3 RESTING AREAS



SUB-CRITERION C4 MOVEMENT

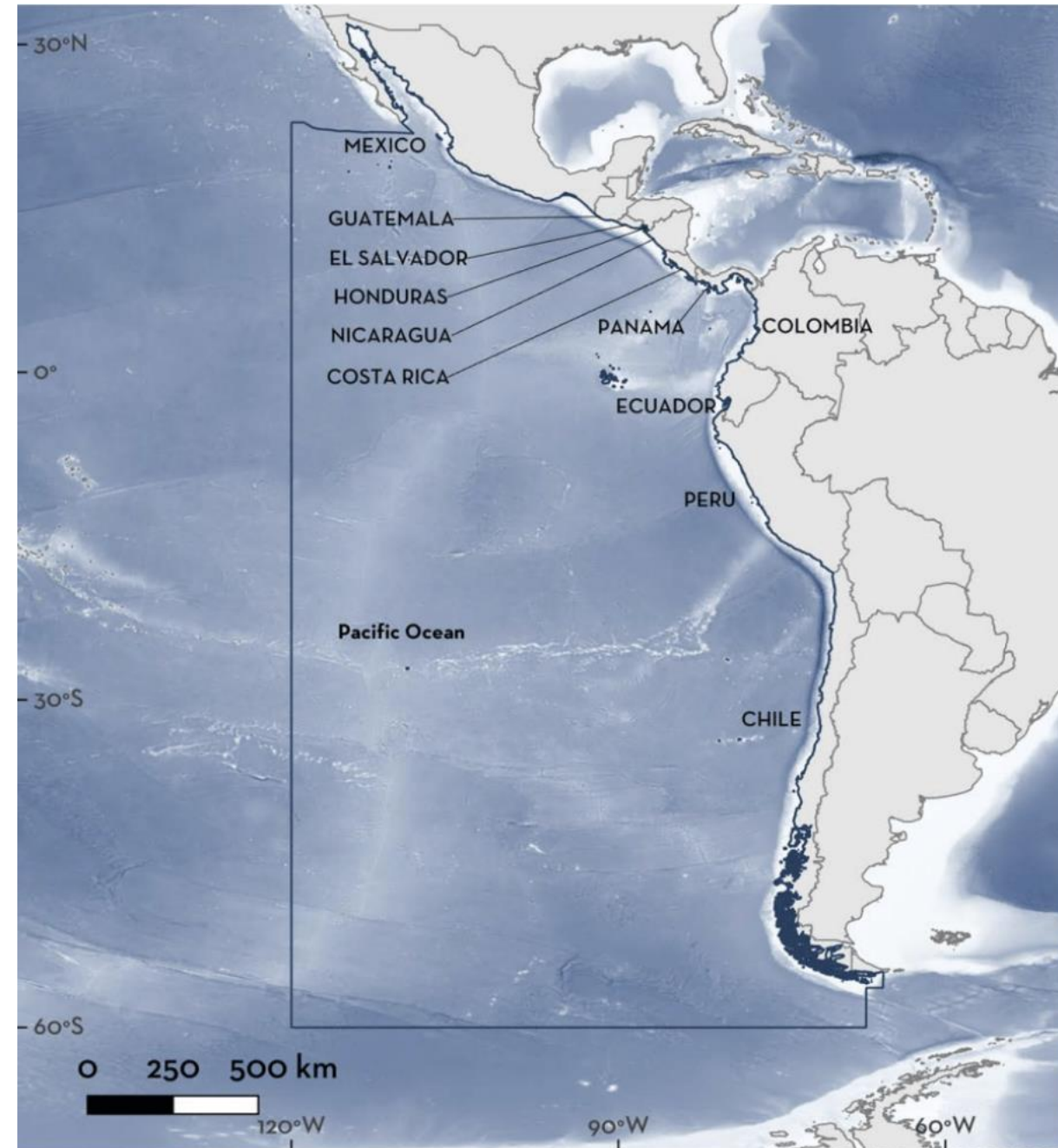


SUB-CRITERION C5 UNDEFINED AGGREGATIONS



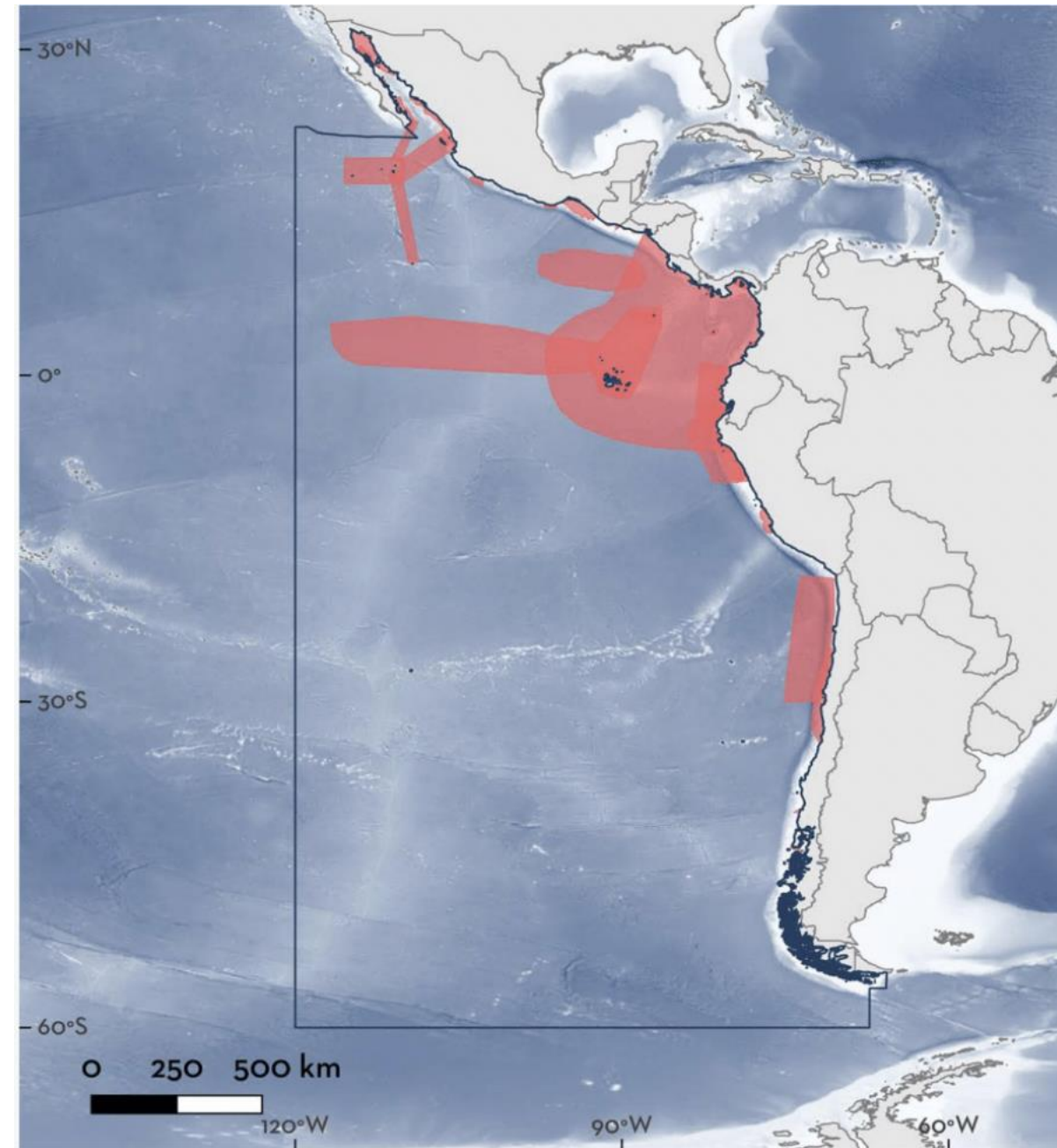
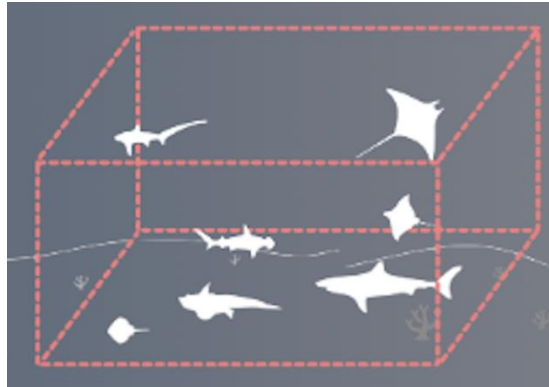
Identificación de ISRAs - Pacífico de América Central y del Sur

- Duración: julio 2022 – marzo 2023
- En octubre del 2022 se realizó en Bogotá un taller regional de expertos.
- Participaron un total de 80 contribuyentes



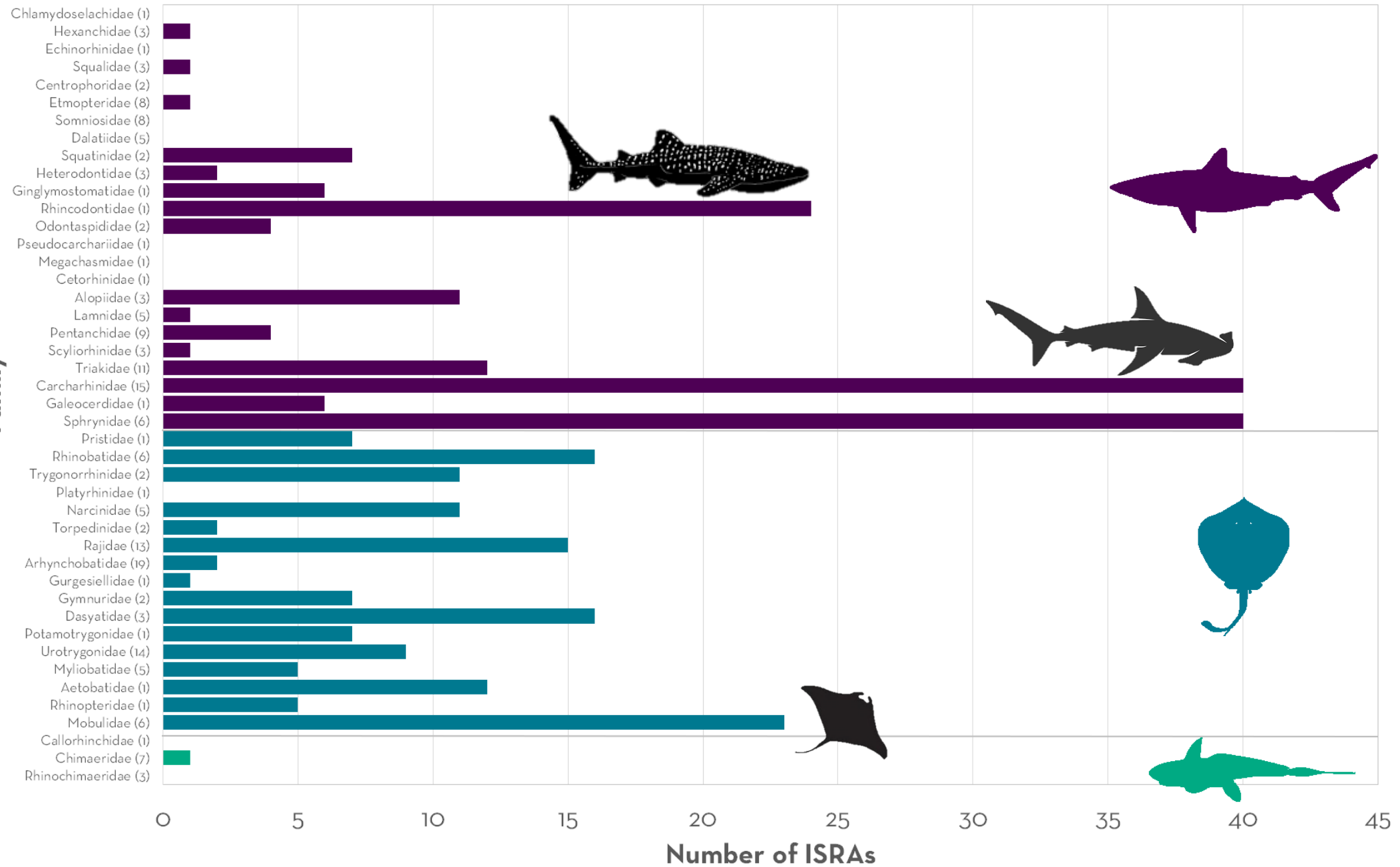
ISRAs – Pacífico de América Central y del Sur

En total se identificaron 65 ISRAs



ISRAs - Pacífico de América Central y del Sur





ISRAs - Pacífico de América Central y del Sur

Uso del habitat

Subcriterio C1
Áreas de Reproducción

n= 50, 77%

Subcriterio C2
Áreas de Alimentación

n= 28, 43%

Subcriterio C3
Áreas de Descanso

n= 27, 41%

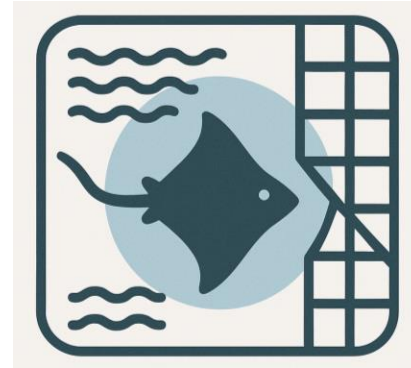
Subcriterio C4
Movimiento

n= 22, 34%

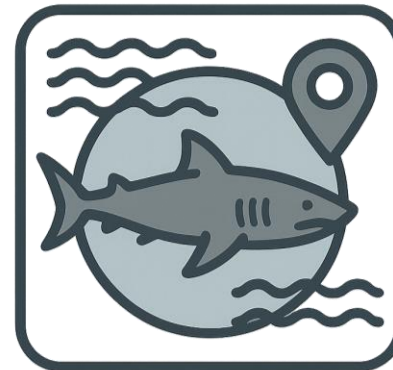
Subcriterio C5
Agrupaciones Indefinidas

n= 18, 28%

Método de colecta de datos:



Pesquerias



Ecología espacial

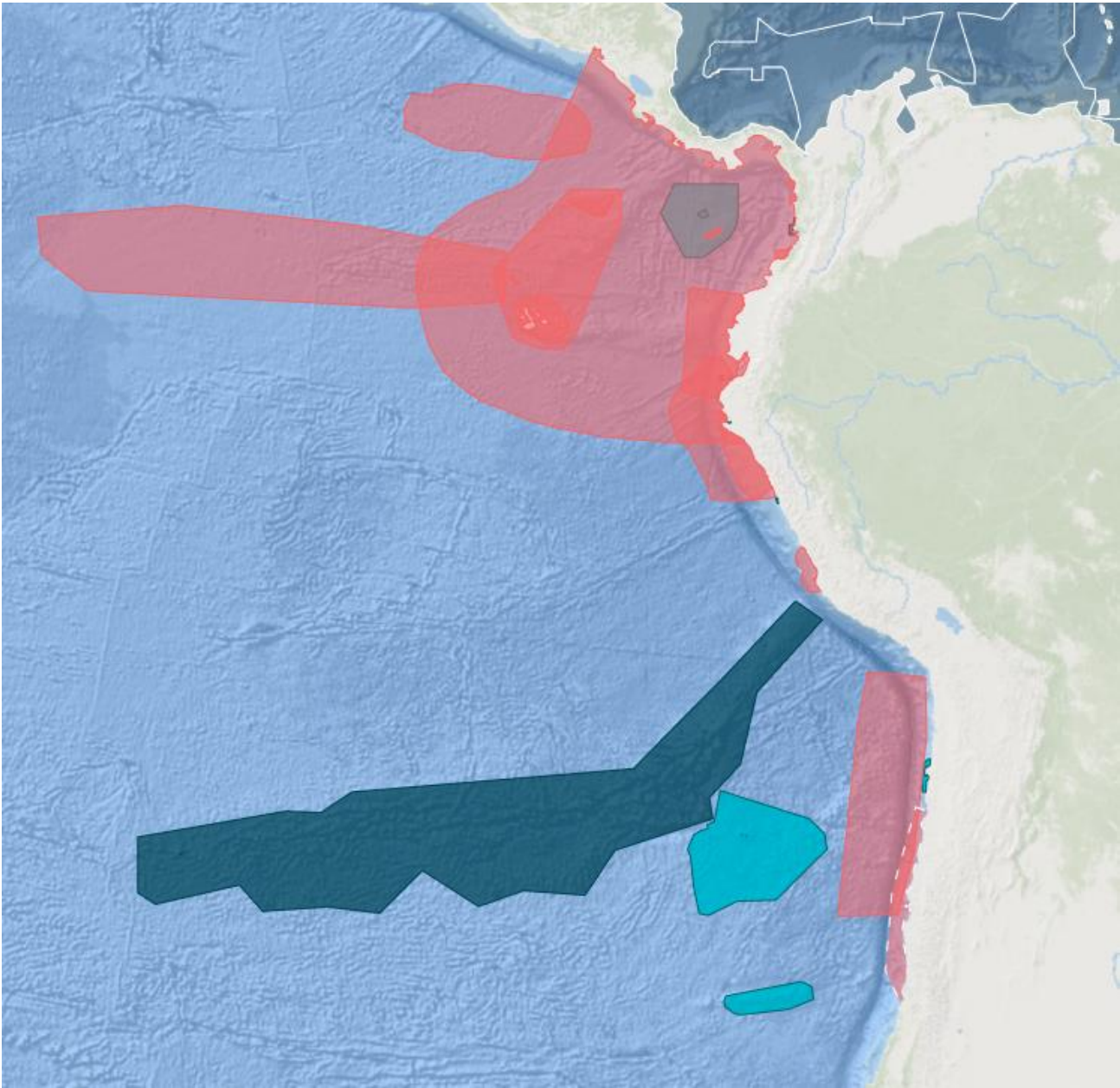
ISRAs - Pacífico de América Central y del Sur

- Se utilizaron **812** estudios para definir las ISRA, producidos principalmente desde 2012.
- **México** y **Ecuador** representaron el **59%** de los estudios consultados.



ISRAs - Pacífico Sudeste

Country	# ISRA
Costa Rica	9
Ecuador	7
Panama	6
Chile	5
Colombia	4
Peru	3
ABNJ, Ecuador	1
Costa Rica, Ecuador	1
Costa Rica, Nicaragua, El Salvador, Guatemala, ABNJ	1
Ecuador, Peru	1
Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Peru, ABNJ	1
Total	39

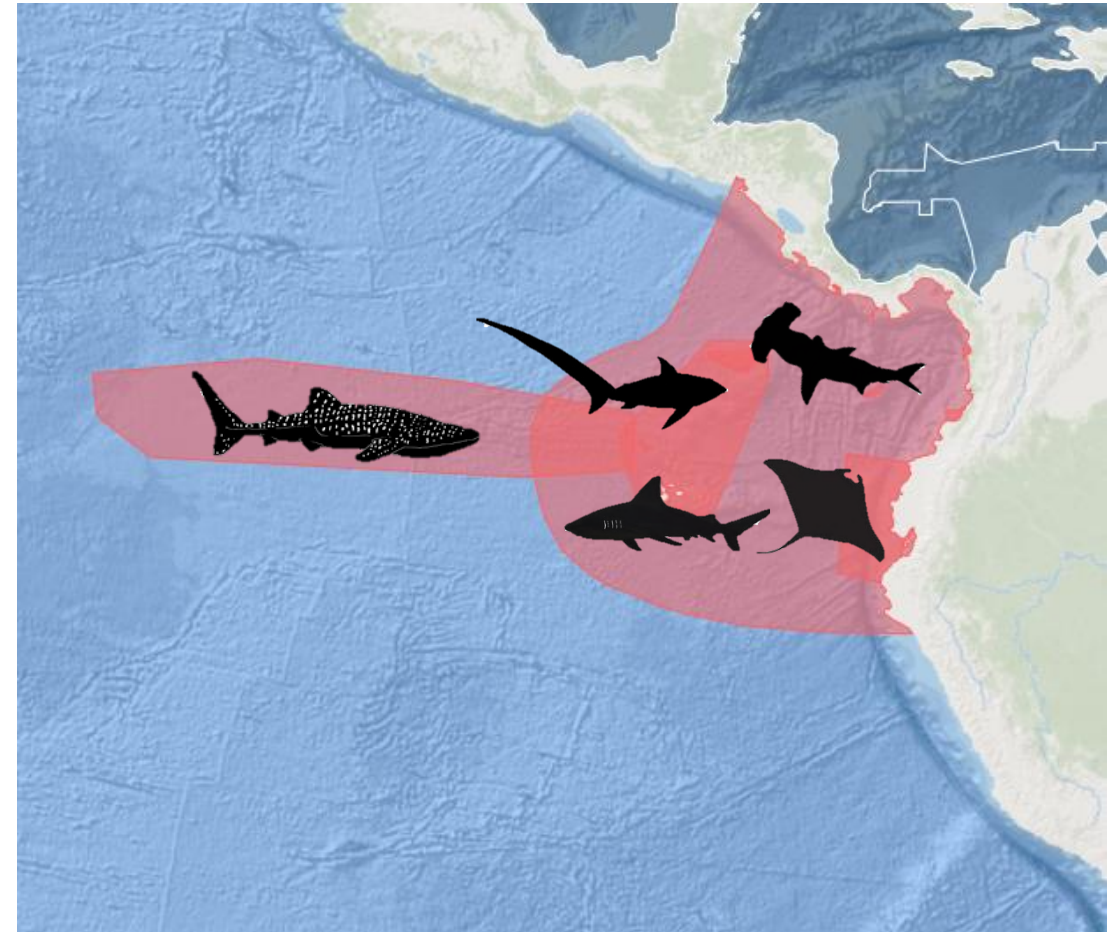


ISRAs - Pacífico sudeste

Áreas de Movimiento

14 ISRAs

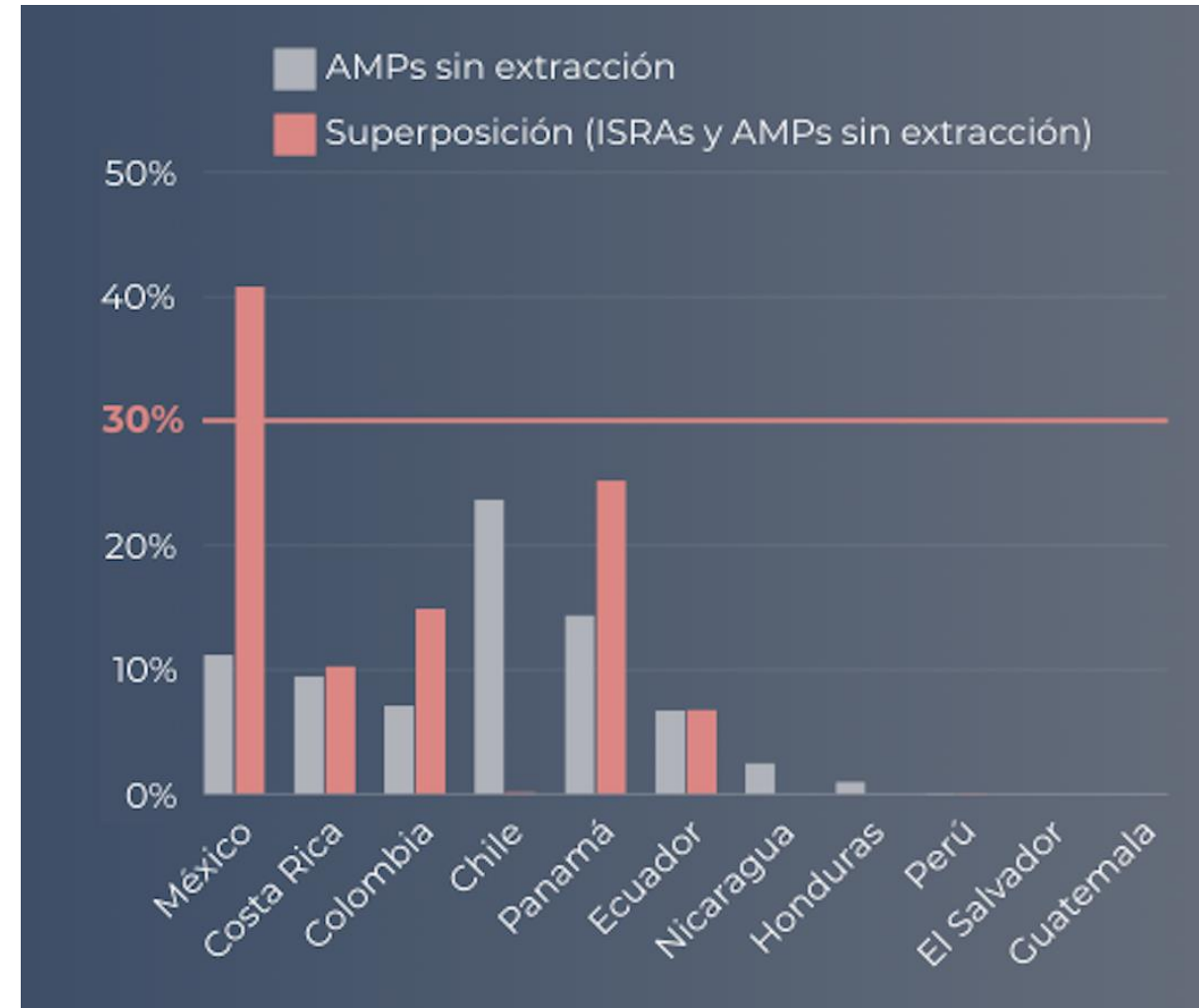
Pelagic Thresher
Silky Shark
Tiger Shark
Bull Shark
Galápagos Shark
Blacktip Shark
Silvertip Shark
Whale Shark
Smalltooth Sand Tiger
Scalloped Hammerhead
Oceanic Manta Ray
Reef Manta Ray



ISRAs - Pacífico de América Central y del Sur

Áreas Marinas Protegidas

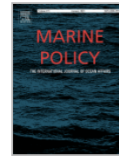
ISRAs se superponen con las AMPs en un **15.6%** y con las AMPs de no extracción en un **7%**.



Publicaciones científicas



Marine Policy
Volume 171, January 2025, 106448



Shortfalls in the protection of Important Shark and Ray Areas undermine shark conservation efforts in the Central and South American Pacific

[Théophile L. Mouton](#)^a, [Adriana Gonzalez-Pestana](#)^{a b}, [Christoph A. Rohner](#)^{a c}, [Ryan Charles](#)^a, [Emiliano García-Rodríguez](#)^a, [Peter M. Kyne](#)^{a d}, [Amanda Batlle-Morera](#)^a, [Giuseppe Notarbartolo di Sciara](#)^{a e f}, [Asia O. Armstrong](#)^{a g}, [Enzo Acuña](#)^h, [Joanna Alfaro-Shigueto](#)^{a b i}, [Randall Arauz](#)^{j k}, [Cristopher G. Avalos-Castillo](#)^{a l}, [Ely Augustinus](#)^a, [Sandra Bessudo](#)^{k m}, [Enrique Barraza](#)ⁿ, [Carlos Bustamante](#)^{a o}, [Elpis J. Chávez](#)^{k p}, [Eduardo Ramon Espinoza](#)^{k q r}, [Mario Espinoza](#)^{a k s t}...[Rima W. Jabado](#)^{a au av}

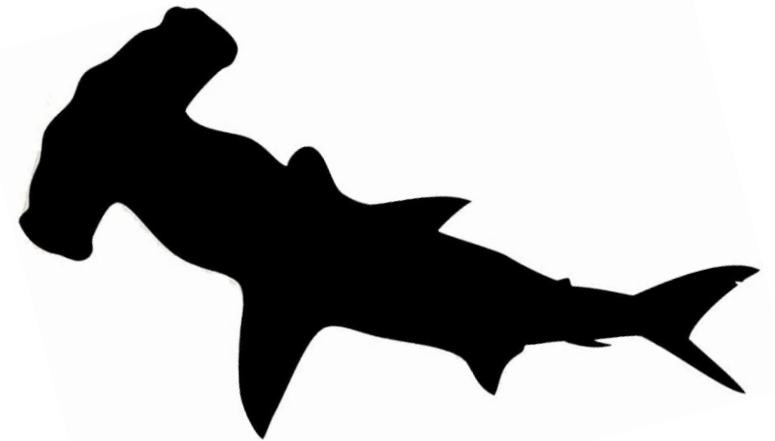
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RESEARCH ARTICLE

Mapping Important Shark and Ray Areas (ISRAs) in the Central and South American Pacific: Existing knowledge and data needs

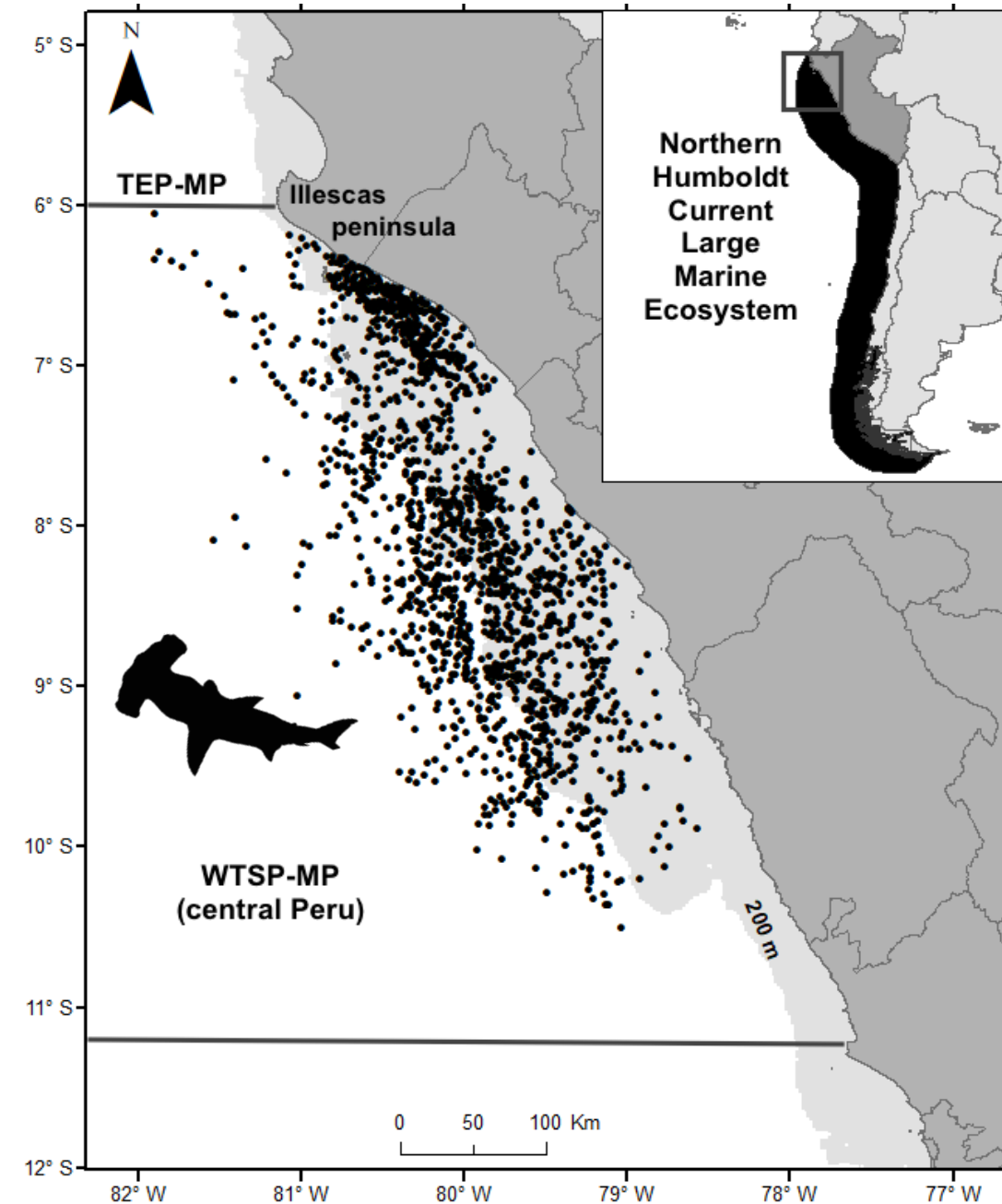
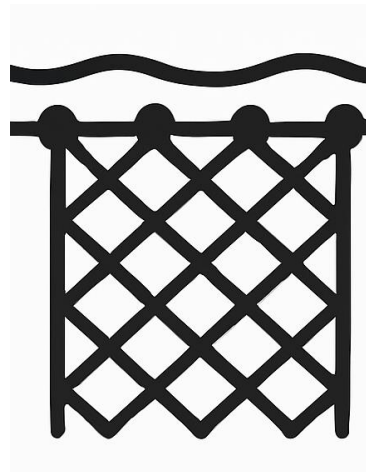
[Emiliano García-Rodríguez](#)^{1,2*}, [Adriana Gonzalez-Pestana](#)^{2,3,4}, [Ryan Charles](#)^{1,2}, [Marta D. Palacios](#)^{2,5}, [Giuseppe Notarbartolo di Sciara](#)^{2,6,7}, [Joanna Alfaro-Shigueto](#)^{2,3,4}, [Cristopher G. Avalos-Castillo](#)^{2,8}, [Elpis J. Chávez](#)^{9,10}, [Mario Espinoza](#)^{2,10,11,12}, [Ana Hacohe-Domené](#)¹³, [Alex R. Hearn](#)^{2,10,14}, [Felipe Galván-Magaña](#)¹⁵, [James T. Ketchum](#)^{10,16,17}, [Frida Lara-Lizardi](#)^{10,18}, [Jorge Manuel Morales-Saldaña](#)^{2,19,20}, [Naití Morales Serrano](#)^{21,22}, [Paola A. Mejía-Falla](#)^{2,23}, [Andrés F. Navia](#)^{2,24}, [César R. Peñaherrera-Palma](#)¹⁰, [Francisco Polanco-Vásquez](#)^{2,15,25,26}, [Yehudi Rodríguez-Arriatti](#)²⁷, [Luz E. Saldaña-Ruiz](#)^{1,28}, [Oscar Sosa-Nishizaki](#)^{1,2}, [Ximena Velez-Zuazo](#)^{2,29}, [Rima W. Jabado](#)^{2,30,31*}

**Prediciendo los efectos del
ENSO y el cambio climático
en la distribución del
tiburón martillo juvenil
(*S. zygaena*) en el norte-
centro del Perú**



Area de estudio

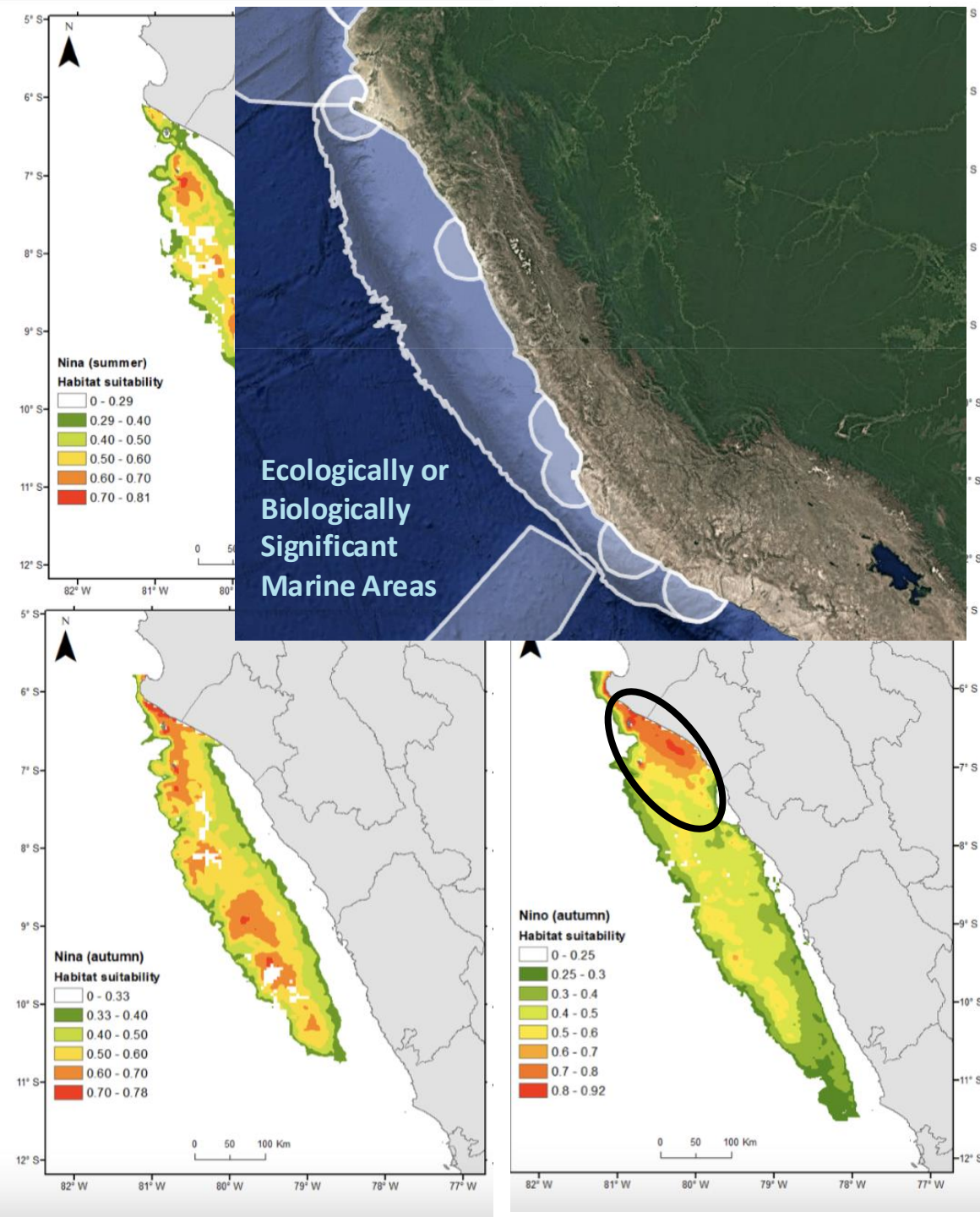
- ~ 3,000 ocurrencias de tiburones entre 2009–2017.
- Ocurrencias provenientes de la pesquería artesanal de enmalle.



Resultados: ENSO



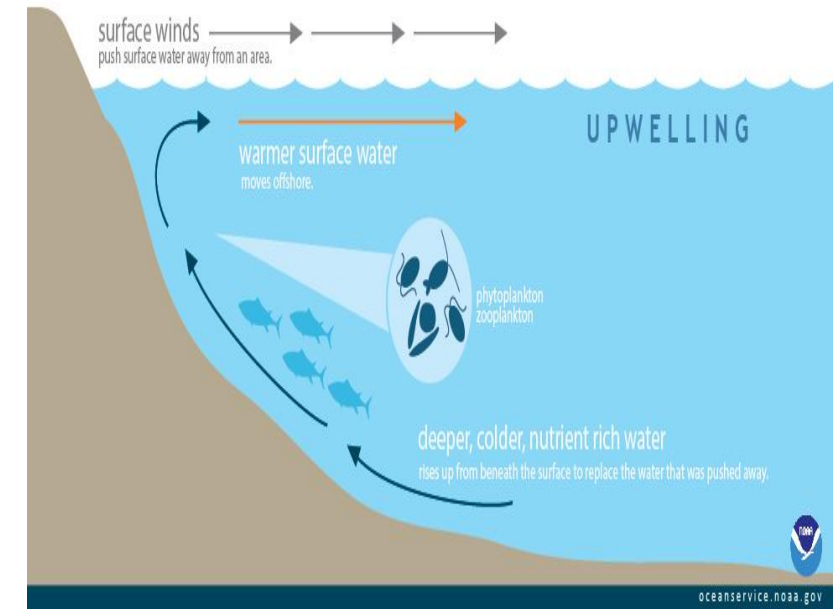
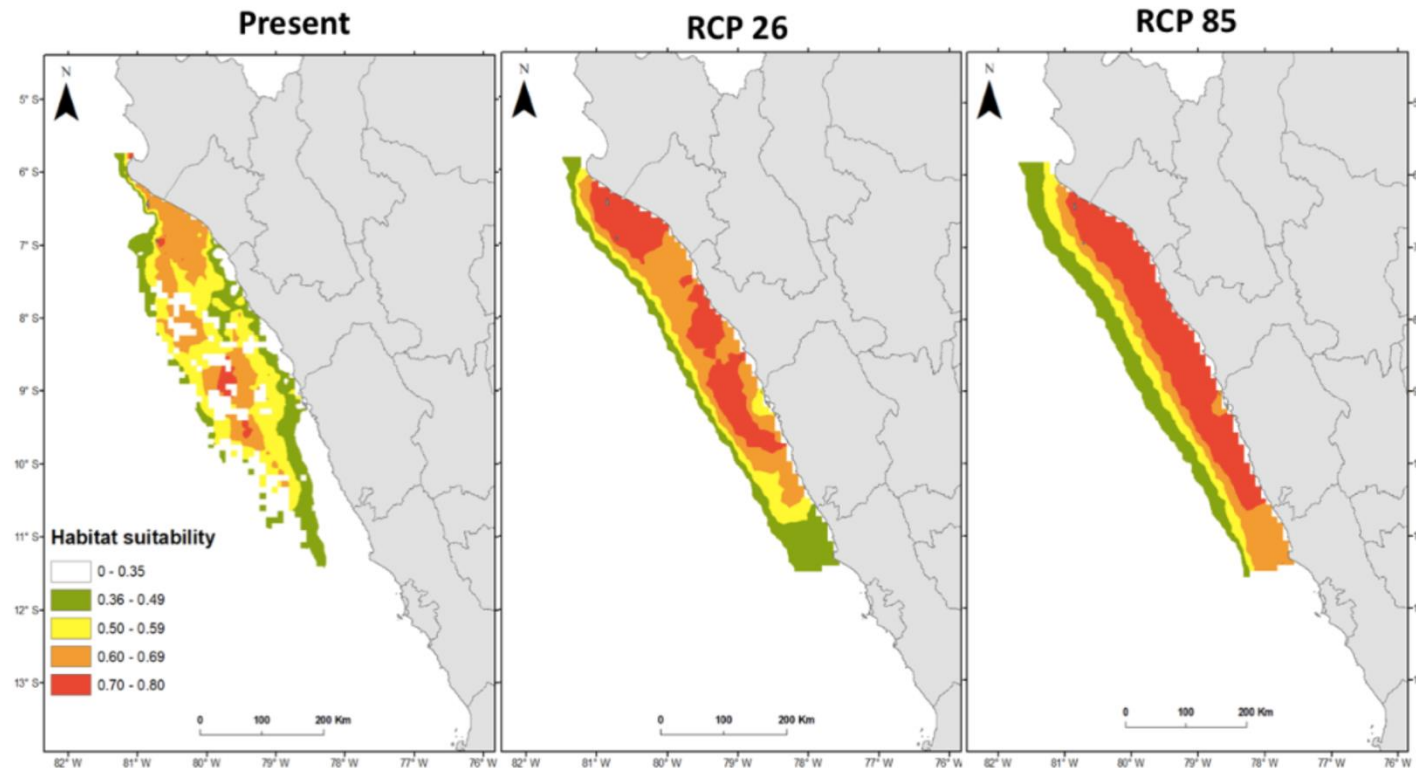
- La idoneidad del hábitat cambió con las condiciones del ENSO:
- Más oceánica durante La Niña
- Más costera durante El Niño.
- El valor máximo se registró en El Niño, en el límite norte del área de estudio.



Resultados: Cambio Climático



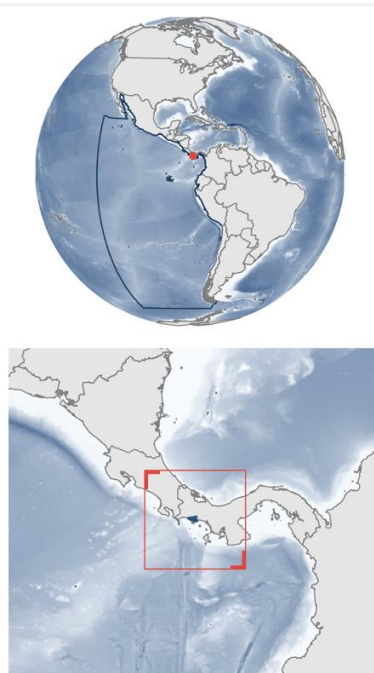
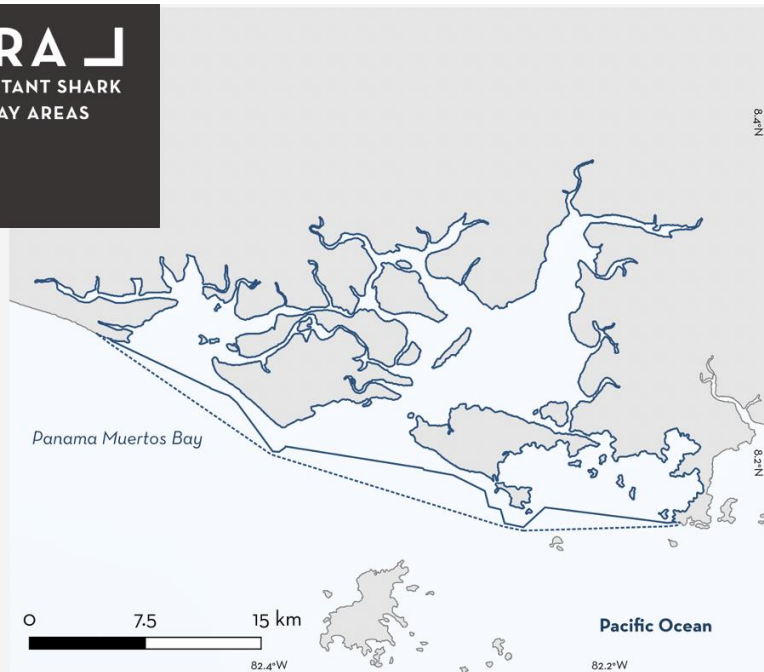
- Bajo el escenario RCP 2.6, el hábitat adecuado se volverá más costero en comparación con la distribución actual.
- Este patrón será aún más marcado bajo el escenario RCP 8.5.
- La TSM disminuirá cerca de la costa.



A large, greyish-brown shark is the central focus, swimming diagonally from the upper left towards the lower right. It has a prominent dorsal fin and a large, rounded head. The water is a deep, dark blue. Numerous smaller, lighter-colored sharks are scattered throughout the scene, swimming in various directions. The word "Gracias" is written in a large, white, sans-serif font across the middle of the image, partially overlapping the large shark's body.

Gracias

ISRA IMPORTANT SHARK AND RAY AREAS

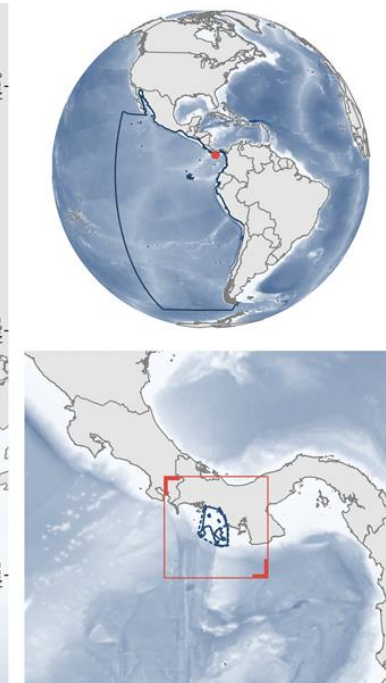
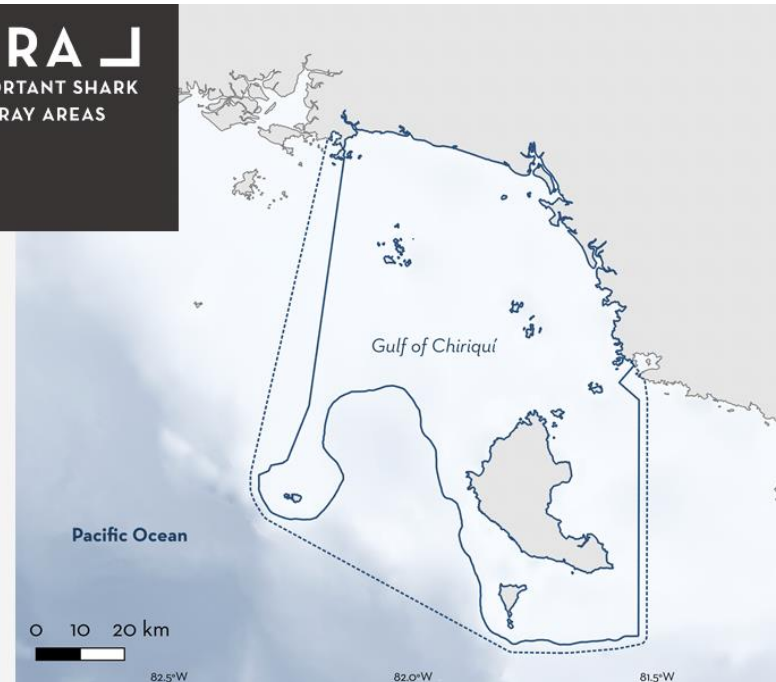


Panama Muertos Bay

SUMMARY

Panama Muertos Bay is a large estuarine and riverine area within the Gulf of Chiriquí in western Pacific Panama. It partially falls within the Eastern Tropical Pacific Marine Corridor Ecologically or Biologically Significant Marine Area (EBSA). The area has a diversity of marine, estuarine, and freshwater habitats including sandy beaches, mudflats, islands, rivers, and importantly, extensive mangrove forests in good ecological condition. The area is primarily shallow (<10 m depth) with large areas of exposed mudflats at low tide. Within this area there are: **threatened species** (e.g., Bonnethead Shark *Sphyrna tiburo*) and **reproductive areas** (e.g., Pacific Smalltail Shark *Carcharhinus cerdale*).

ISRA IMPORTANT SHARK AND RAY AREAS



Gulf of Chiriquí

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).



ISRA

IMPORT AND RAY

HOME

ABOUT

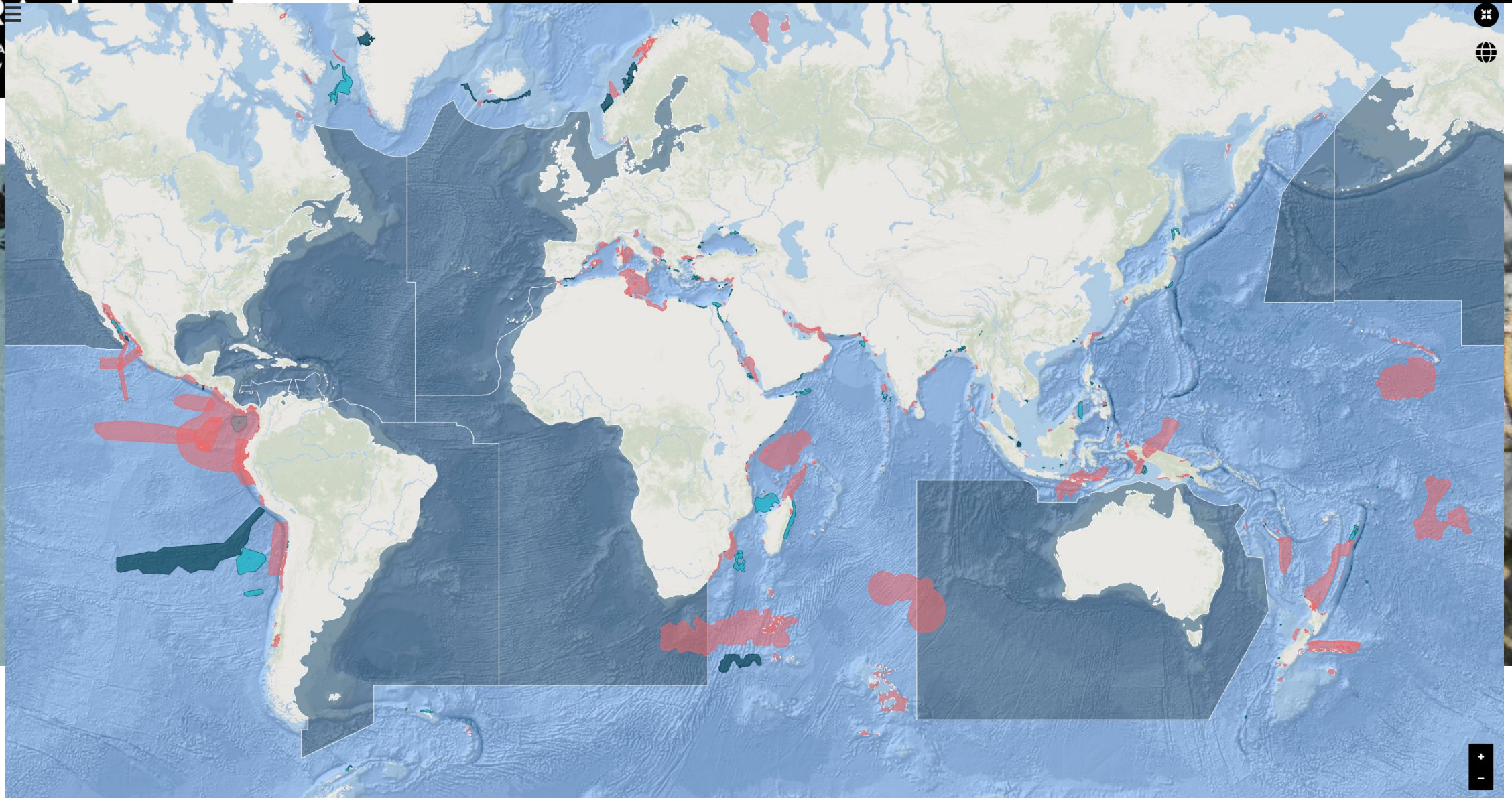
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AND RAY AREAS

— **CENTRAL AND SOUTH AMERICAN PACIFIC** —

A REGIONAL COMPENDIUM OF
IMPORTANT SHARK AND RAY AREAS

— **IUCN SSC SHARK SPECIALIST GROUP** —

— **MARCH 2023** —

