Belize Sustainable Ocean Plan

Coastal Zone Management Authority & Institute

Multi-Stakeholder MSP Workshop 1: Assessments for Planning

May 8 – 10, 2024 – Day 2

Belize Biltmore Plaza Hotel, Belize City

Workshop Purpose

- Kickoff participatory spatial planning activities to achieve Milestones 4 and 6 within the scope and goals of the larger BSOP process.

- Define and initiate key assessments to enable spatial planning.

Desired Outcomes

Day 1

- Understanding of key MSP steps and assessments
- Awareness of areas under consideration for new protections
- Current conditions considered
- Possible future scenarios developed

Day 2

- **Success criteria and indicators defined**
- **Compatible and incompatible uses identified**
- **Zoning approach defined**

Day 3

- Understanding of the Ocean Use Survey (OUS) results
- OUS results verified
- Understanding how Marxan can inform and support the BSOP process

Agenda: Day 2

Time	Topic
9:15	Welcome and recap of day 1
9:30	Compatible and incompatible uses
10:45	*Coffee/tea break*
11:00	Defining criteria for planning (part I)
12:00	*Lunch, provided*
1:00	Defining criteria for planning (part II)
2:00	Developing the zoning plan for a MSP
2:30	Developing a BSOP zoning framework (part I)
3:00	*Coffee/tea break*
3:15	Developing a BSOP zoning framework (part I)
3:15	Developing a BSOP zoning framework (part II)
4:45	Closing session
5:00	Adjourn day 2

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Housekeeping reminder

- Restroom are located outside of the building on the left.
  - Exit the main doors and turn right to leave the building.
- Breaks, snacks & lunch provided
- Wifi network: BSOP Workshop
- Wifi password: WORKSHOP2024

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Ground rules for participation

1. Arrive and return from breaks on time.
2. Listen with an open mind. Assume good intent and refrain from side conversations or interrupting.
3. Seek first to understand, then to be understood.
4. Raise your hand to ask clarifying questions.
5. Share relevant information concisely and stay on topic.
6. Focus on interests, not positions.
7. Agree on the meaning of key words.
8. Silence phones. Take calls and check emails during a break.

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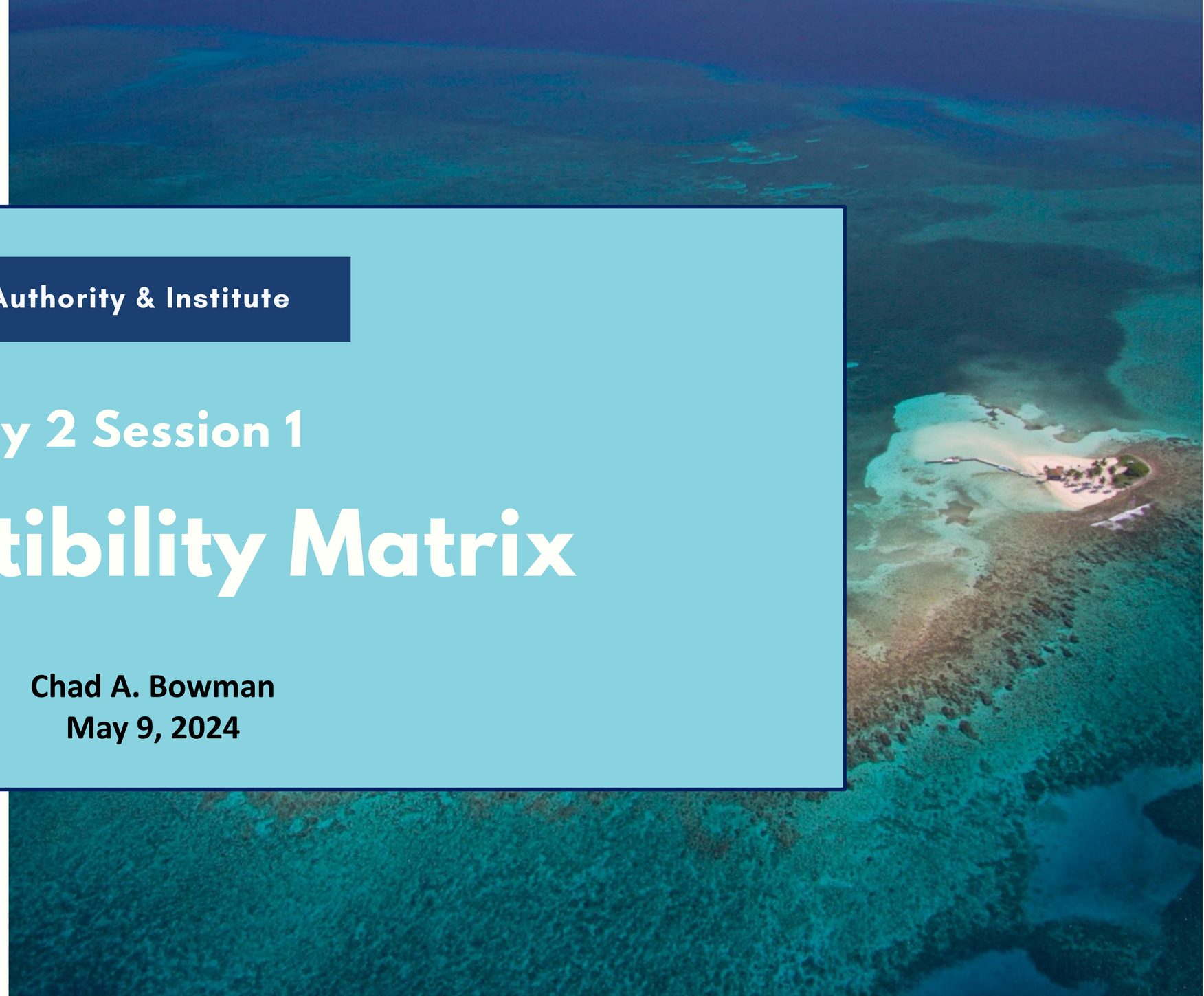
Day 2 Session 1

Compatibility Matrix

Chad A. Bowman

May 9, 2024



What is a compatibility matrix?

In most intensely used areas, spatial overlaps and dynamics exist among human activities, and between human activities and important natural areas which has great potential of harming the environment- referred to as a conflict

Conversely, when an activity does not hamper another activity, that is the two activities are independent of each other to a great extent and do not have any negative ecological impact- referred to as compatible

Conflicts occurring within the marine space weaken the ability of the ocean to provide the necessary ecosystem services upon which humans and all other life depend on.

A compatibility matrix is used to determine the compatibility/conflict among uses and the environment through a systematic approach.

Tailor et al. (2021); UNESCO-IOC/European Commission (2021)

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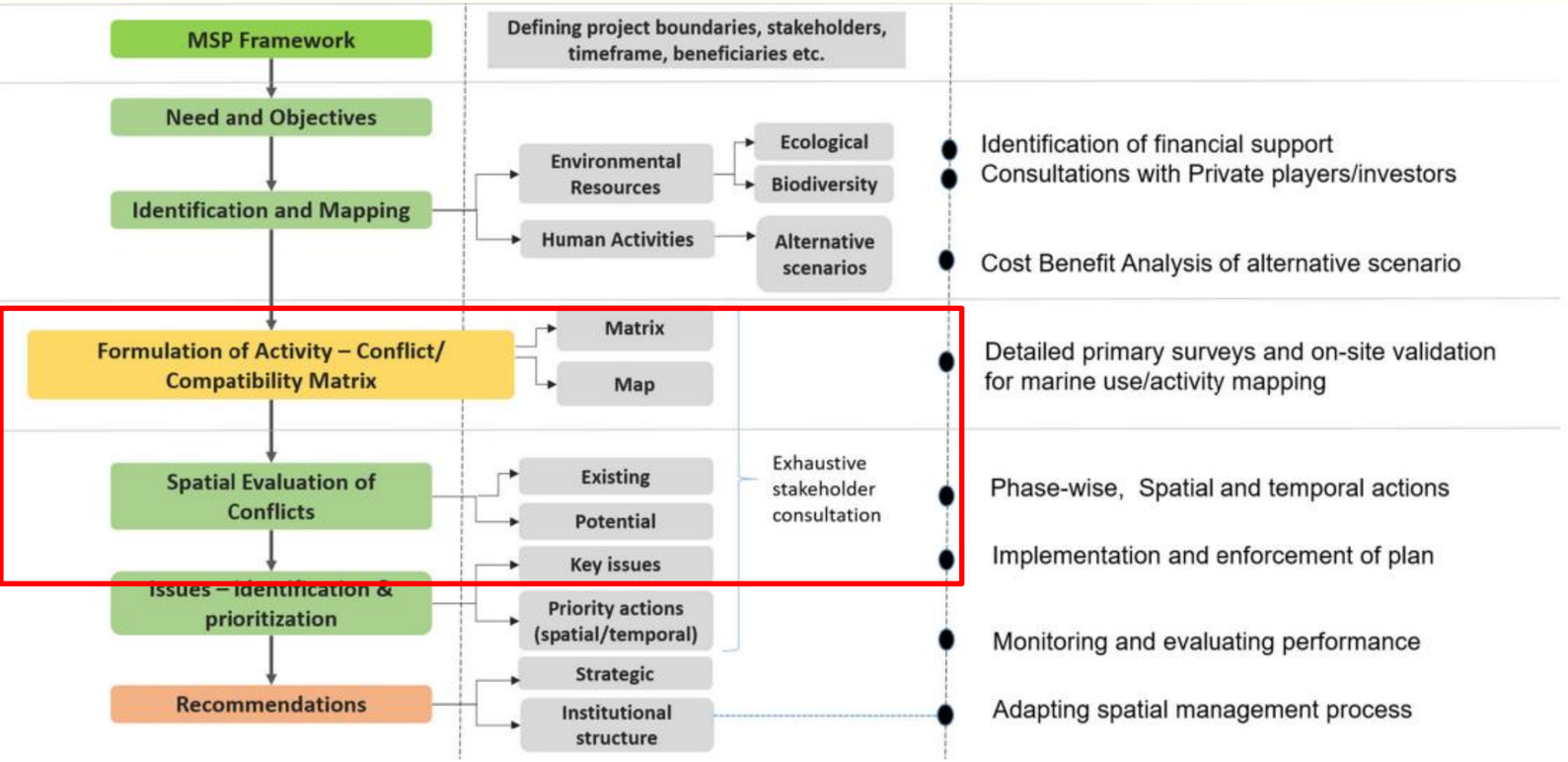
What is the role of the compatibility matrix within the MSP process?



- Marine Spatial Planning provides a way to improve decision making and delivering an ecosystem-based approach to managing human activities in the marine environment.

- After the identification and assessment of different socio-ecological aspects, the marine spatial planning (MSP) process seeks to identify conflicts and compatibilities.

- Due to data limitations, not all current conditions can be completely represented spatially.

- To overcome this challenge, a very suitable solution is to ask stakeholders to participate in a conflict/compatibility exercise using a matrix.

Tailor et al. (2021); UNESCO-IOC/European Commission (2021)

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What will be our approach?

The matrix utilizes the guidance provided in the MSP Global (2021) handbook for analyzing conflicts and compatibilities and couples it with an analytic framework known as a Multi-criteria Decision Analysis (MCDA).

MCDA- Combines the (1) values of each human use/feature and (2) weights of importance, as elicited by stakeholders, to determined the level of conflict among uses and or features (Known as a conflict coefficient).

Analytical Hierarchy Process (AHP), the most commonly used MCDA method will be used to compare conflict among uses/features.

Conflict Coefficient Table

Table showing qualitative rankings for different levels of conflict.

Standardized conflict scores (R_i')	Rankings of conflict locations i
0–0.2	Lowest
0.21–0.4	Low
0.41–0.6	Moderate
0.61–0.8	High
0.81–1	Highest

AHP Evaluation Table

The AHP scale for pair-wise comparison.

Intensity of importance	Definition
1	Equal importance
3	Weak importance
5	Essential or strong importance
7	Demonstrated/very strong importance
9	Absolute importance
2, 4, 6, 8	Intermediate values between the two adjacent judgments

Tailor et al. (2021); UNESCO-IOC/European Commission (2021); Ehler et al. (2009); Tuda et al. (2014)

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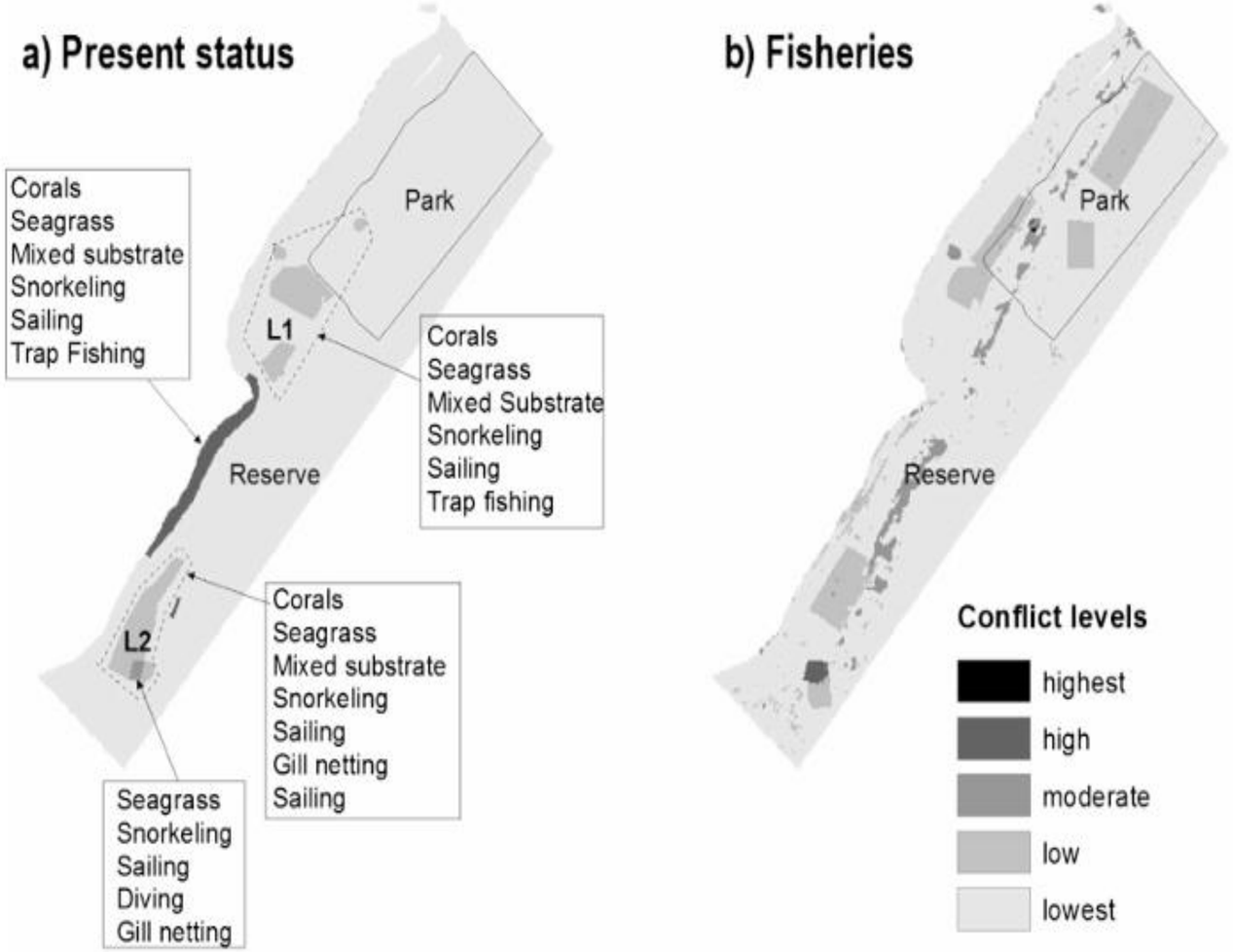
MCDA Example: Managing Conflicts in a multi-use coastal area in Kenya



- MCDA was used to calculate a conflict coefficient (CC) for each use or feature which gave insights into uses that contribute conflict the most and helped to inform future conditions.

- Pair-wise comparisons were done at two levels-
- - *First level was done at a high level by agencies and working group members who have interest in and knowledge of the uses and features. They assemble a high-level matrix and provide the basis for second level comparisons.*
- - *Second level was done by primary stakeholder who use the ocean space. They used the AHP table to compare uses*

- MCDA helped decision makers to understand how much specific uses contribute to conflicts occurring within specific areas.

Tuda et al. (2014)

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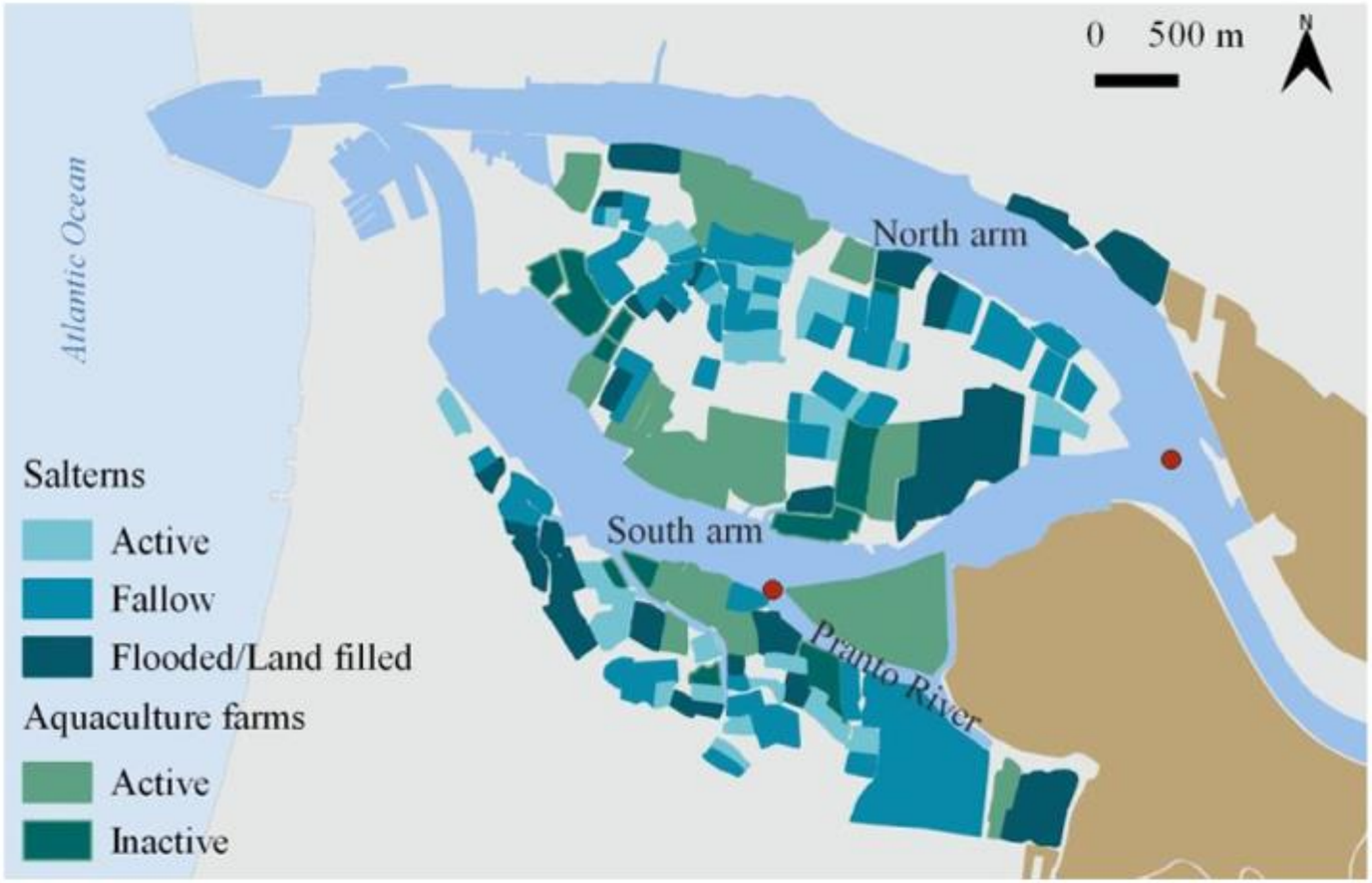
MCDA Example: Reducing conflicts and identification of aquaculture sites (Portugal)



In this study, AHP was used to identify suitable areas for aquaculture develop in a coastal areas dominated by salt work production ponds.

Proved to be a successful way to account for space competition between conflicting activities.

Pairwise comparison matrix for the sub-criteria.

Criteria	Status			
Sub-criteria	Inactive aquaculture	Fallow saltern	Flooded/Land filled	Weight
Inactive aquaculture	1	3	5	0.648
Fallow saltern	0.33	1	2	0.230
Flooded/Land filled	0.20	0.50	1	0.122
	Consistency Ratio = 0.004			
Criteria	Water input			
Sub-criteria	Estuary arm	Tidal creek	Water pond	Weight
Estuary arm	1	3	5	0.648
Tidal creek	0.33	1	2	0.230
Water pond	0.20	0.50	1	0.122
	Consistency Ratio = 0.004			

Teixeira (2018)

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The Process

BSOP Compatibility Matrix Development

1 Confirm list of uses

- List of uses reviewed by stakeholders
- Add or remove uses or features
- Confirm list to be used in matrix

Result: List of Uses/features

No.	USES	KEEP?	REMOVE?
1	Commercial Fishing: Lobster	✗	
2	Commercial Fishing: Conch	✗	
3	Commercial Fishing: Finfish	✗	
4	Sportfishing: Reef	✗	
5	Sportfishing: Flat	✗	
6	Sportfishing: Pelagic		✗
7	Non-commercial Fishing: Subsistence	✗	
8	Non-commercial Fishing: Traditional (beach traps)	✗	
9	Seaweed Farming	✗	
10	Sea cucumber Fishing		✗
11	Aquarium Trade Fishing		✗

Tailor et al. (2021); Tuda et al. (2014)

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The Process

BSOP Compatibility Matrix Development

1 Confirm list of uses

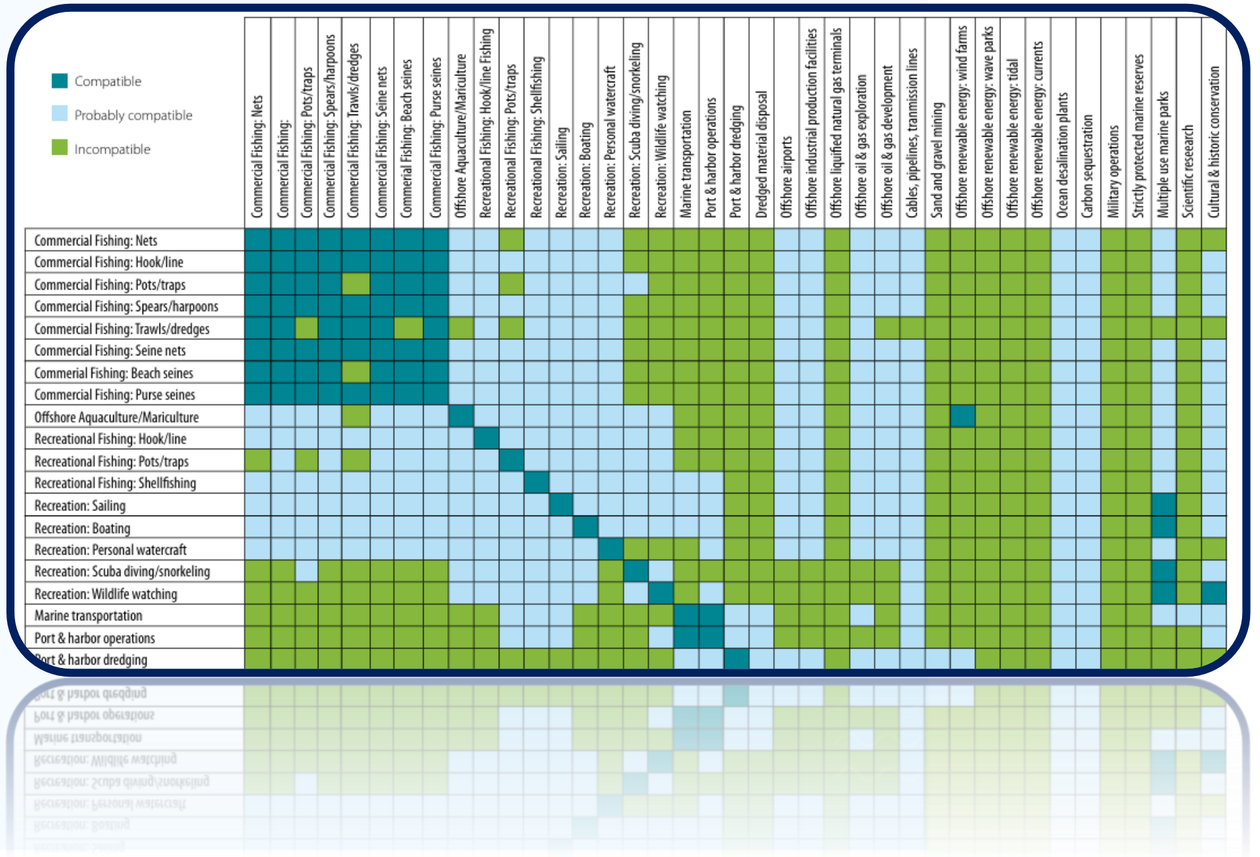
- List of uses reviewed by stakeholders
- Add or remove uses or features
- Confirm list to be used in matrix

Result: List of Uses/features

2 High level Comparisons

- Complete comparison of uses & features
- Identifying areas of conflict (listing uses/features involved)
- Identifying areas of compatibility (listing uses/features involved)

Results: 1. Draft high-level matrix
2. Key areas identified for second level comparison



Tailor et al. (2021); Tuda et al. (2014)

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The Process

BSOP Compatibility Matrix Development

- List of uses reviewed by stakeholders
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Result: List of Uses/features

- Complete comparison of uses & features
- Identifying areas of conflict (listing uses/features involved)
- Identifying areas of compatibility (listing uses/features involved)

Results: 1. Draft high-level matrix
2. Key areas identified for second level comparison

- Complete comparison using an AHP table.
- Conflict coefficient is calculated for each use/feature (sum of weights multiplied by the determined value for each use/feature
- Provide comments on current status of conflicts and potential solutions.

Result: Area-based conflicts & Compatibilities identified

Tailor et al. (2021); Tuda et al. (2014)

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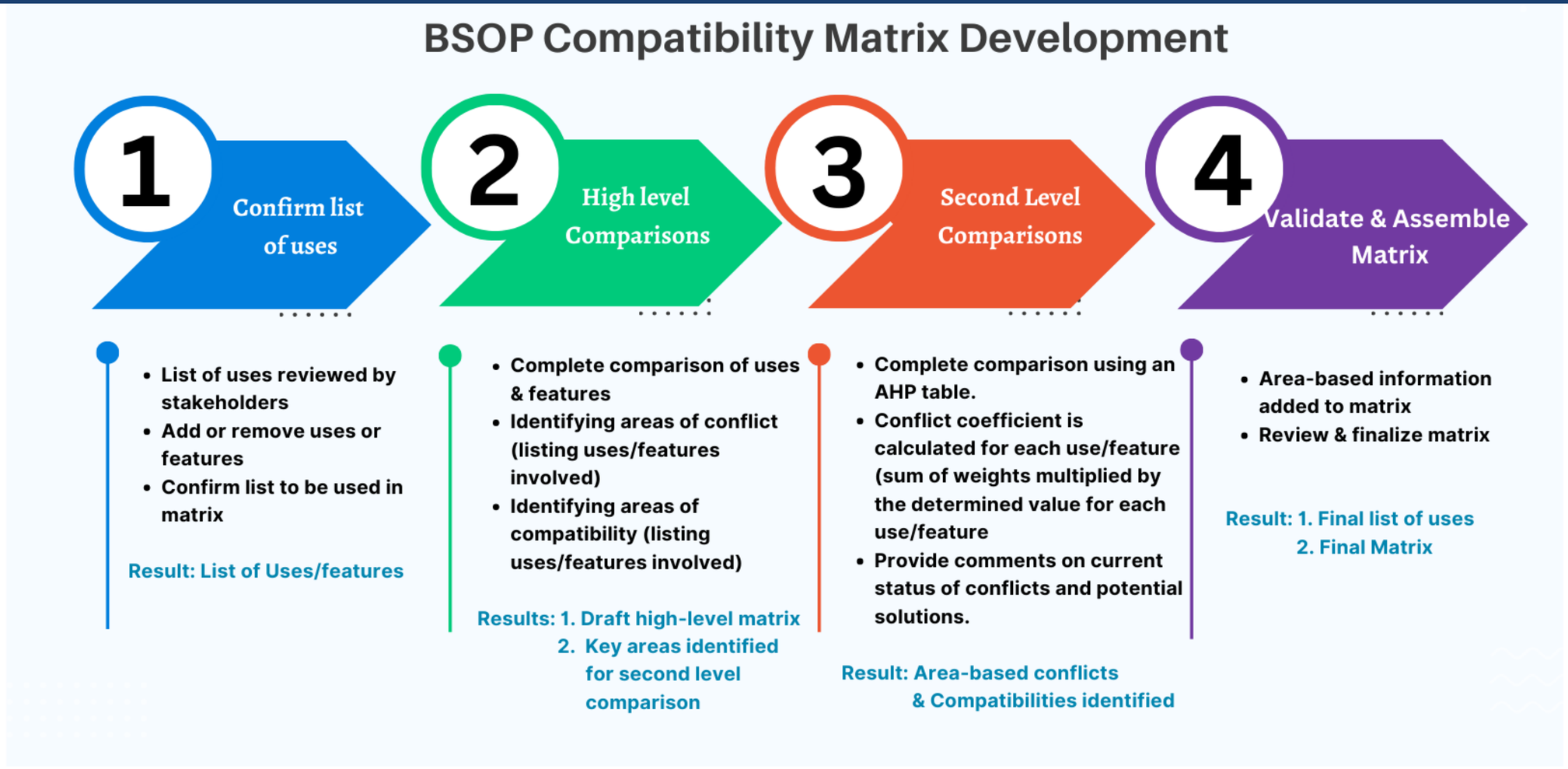
The Process



Tailor et al. (2021); Tuda et al. (2014)

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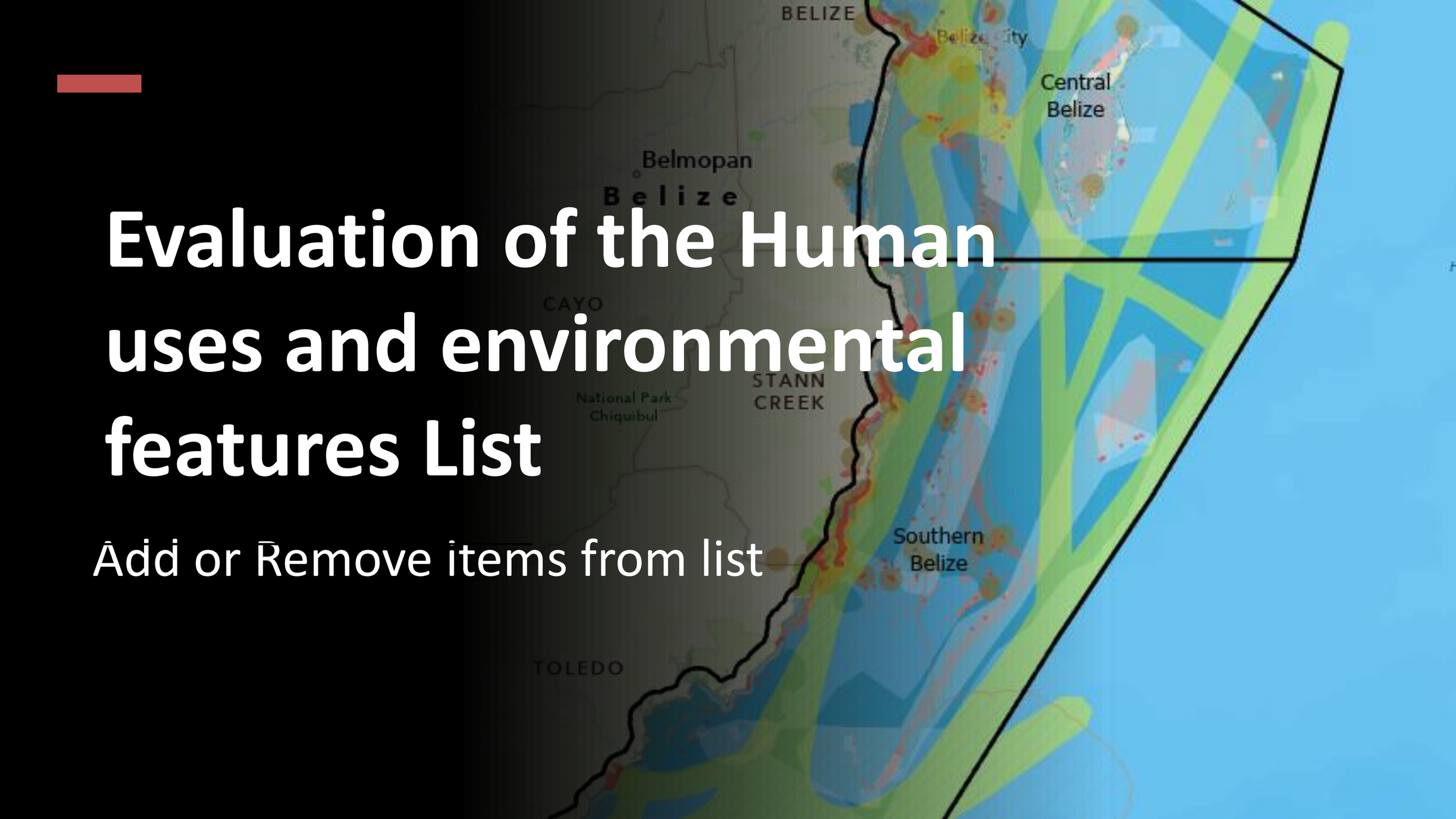

Evaluation of the Human uses and environmental features List

Add or Remove items from list

Evaluation of List

No.	USES	KEEP?	REMOVE?
1	Commercial Fishing: Lobster		
2	Commercial Fishing: Conch		
3	Commercial Fishing: Finfish		
4	Sportfishing: Reef		
5	Sportfishing: Flat		
6	Sportfishing: Pelagic		
7	Non-commercial Fishing: Subsistence		
8	Non-commercial Fishing: Traditional (beach traps)		
9	Seaweed farming		
10	Sea cucumber farming		
11	Aquarium trade fishing		

Ehler et al. (2009); Tailor et al. (2021); UNESCO-IOC/European Commission (2021)

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Evaluation of List

No.	USES	KEEP?	REMOVE?
12	Ecotourism: Swimming		
13	Ecotourism: Snorkelling/scuba diving & fishing		
14	Ecotourism: Educational		
15	Ecotourism: Animal watching (birds, dolphins, turtles, manatees)		
16	Cultural and historic conservation		
17	Water sports (Parasailing & Jet skiing)		
18	Nautical tourism		
19	Cruise tourism		
20	Ports and harbour operations		
21	Water taxi (maritime transportation of people)		
22	Maritime security and enforcement (defence operations)		
23	Moorings		

Ehler et al. (2009); Tailor et al. (2021); UNESCO-IOC/European Commission (2021)

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Evaluation of List

No.	USES	KEEP?	REMOVE?
24	Navigational aids (buoys)		
25	Shipping: Reefer, container, bulk, tanker		
26	Recreation: personal watercraft		
27	Over water construction		
28	Ports and harbour dredging		
29	Development dredging		
30	Dredged material disposal		
31	Sand and gravel mining		
32	Offshore infrastructure: cables, pipelines, transmission lines		

Ehler et al. (2009); Tailor et al. (2021); UNESCO-IOC/European Commission (2021)

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Evaluation of List

No.	USES	KEEP?	REMOVE?
33	Sand beaches and sand bars		
34	Seagrass beds		
35	Restoration: corals, seagrass, and mangroves		
36	Habitat and species protection		
37	Nesting and congregation areas (birds, turtles etc)		
38	Species migration routes		
39	Mangrove ecosystems		
40	Coral Reefs		
41	Mega marine fauna (dolphins, manatees, sharks etc)		
42	Marine Protected area		

Ehler et al. (2009); Tailor et al. (2021); UNESCO-IOC/European Commission (2021)

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Breakout Groups Activity

Instructions and Guidance

Tables & facilitators

TABLE ARRANGEMENTS

1 FISHERIES

Facilitator: Nidia Chacon

2 FISHERIES

Facilitator: Belizario Carballo

4 MARITIME

Facilitator: Jamani Balderamos

3 TOURISM

Facilitator: Safira Vasquez

8 ADDITIONS*

Facilitator:Chad Bowman

5 DEVELOPMENT

Facilitator: Devlwin Guevara

7 ECOSYSTEMS

Facilitator: Kat Griswold

6 ECOSYSTEMS

Facilitator: Samir Rosado

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ACTIVITY INSTRUCTIONS

01 Compare uses/features

Using the matrix table, complete pairwise comparison of uses and features. Scores are given according to the conflict/compatibility criteria table provided.

02 Identify areas of conflict

Using the worksheet maps, identify areas of conflicts. Using the writing aids, list uses or features that are competing for the space identified. Use the comments box to provide further details (i.e. key stakeholders, reasons for conflict etc).

03 Identify areas of compatibility

Using the worksheet maps, identify areas of compatibilty. Using the writing aids, list uses or features that are compatible for the space identified. Use the comments box to provide further details (i.e. key stakeholders, reasons for conflict etc).

CONFLICT/COMPATIBILITY CRITERIA

Score/Color code	Conflict/compatibility level	Description
1	Compatible	Where there is a high degree of compatibility among the two activities being considered
2	Moderately Compatible/low Conflict	Considerately compatible due to management systems, regulations seasonality, time, etc.
3	Moderately Conflict/low Compatible	Activities are allowed/must occur in the same space, but management and regulations do not mitigate against conflict
4	Conflict	Where there is a high degree of conflict between the activities being considered

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Assembly of draft Matrix

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DRAFT COMPATIBILITY MATRIX

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References

Ehler, Charles, and Fanny Douvere. Marine Spatial Planning: a step-by-step approach toward ecosystem-based management. intergovernmental Oceanographic Commission and Man and the Biosphere Programme. iOC Manual and Guides no. 53, ICAM Dossier no. 6. Paris: UNESCO. 2009 (English).

Tailer. F., A. Shukla and I. Trumbic. (2021). " Relevance of Marine Spatial Planning in coastal zone management planning: Opportunities and challenges in Indian context- case study of Odisha". *J. Earth Syst. Sci.* 130: 96-111.

Teixeira. Z., C. Marques, J.S. Mota and A. C. Garcia. (2018). " Identification of potential aquaculature sites in solar saltscapes via the Analytic Hierarchy Process". *Ecological Indicators. 93*: 231-242.

Tuda. A. O., T.F. Stevens and L. D. Rodwell. (2014). "Resolving coastal conflicts using marine spatial planning". *Journal of Environmental Management*. 133:59-68.

UNESCO-IOC/European Commission. 2021. MSPglobal International Guide on Marine/Maritime Spatial Planning. Paris, UNESCO. (IOC Manuals and Guides no 89)

Belize Sustainable Ocean Plan

Coastal Zone Management Authority & Institute

"Leading the sustainable use and planned development of Belize's coastal zone"

BELIZE COASTAL ZONE MANAGEMENT AUTHORITY & INSTITUTE

BSOP
Belize Sustainable Ocean Plan

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COFFEE BREAK

15 minutes

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Defining Criteria for Planning

Part I

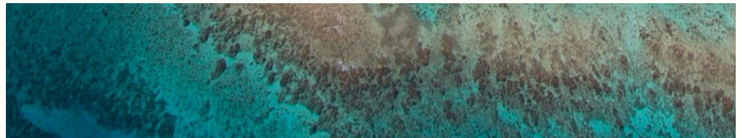
Chantal Collier, The Nature Conservancy

May 9, 2024

Defining Criteria for Spatial Planning Analyses …

… starts with framing questions based on the Vision, Goals and Objectives for the Planning Area.

- **Vision Statement**: A sentence or short paragraph providing *a broad, aspirational image of the future.*
    - usually far reaching, emotive, inspirational and unifying
    - conveys the framework for setting the goals and objectives of a strategy, organization, or planning process
- **Goals** are *broad statements of direction* that describe a desired future end state to be attained, or long-term accomplishments to be achieved.
- **Objectives** provide more *specific details* by breaking goals down into smaller, more manageable, short-term steps.



Defining Criteria for Spatial Planning Analyses

- Broad goals provide direction and purpose for the MSP but may be too general to inform spatial planning.
- Detailed objectives that are clearly defined and verifiable are needed to develop criteria (indicators with descriptions, metrics and scores) and planning analytics that inform decisions (i.e., SMART* objectives).

*SMART = Specific, Measurable, Achievable, Realistic, Timebound

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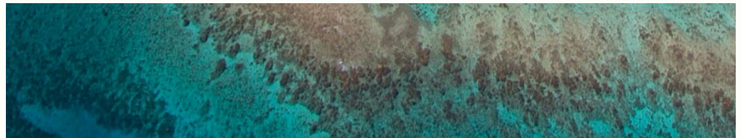
Defining Criteria for Spatial Planning Analyses

1. Which BSOP goals or objectives contain details that can be linked to qualitative or quantitative indicators for spatial planning?
2. What criteria will be used to evaluate alternative spatial management scenarios proposed during the MSP process, based on BSOP goals/objectives?



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BSOP Vision & Overarching Goal

Vision

A healthy, resilient, and equitably shared ocean that supports a thriving national economy and nurtures the culture and well-being of all Belizeans.

Overarching Goal

To enact and publish legislation required to legally enforce the Marine Spatial Plan that guides sustainable development and designates up to 30% of Belize's ocean as Biodiversity Protection Zones.

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BSOP Goals

Goal 1: Process Governance Goal
To design and implement a science-based, data-driven, participatory, equitable, and inclusive MSP process which delivers on Belize's MSP-related commitments under the Blue Loan Agreement and Conservation Funding Agreement, in conformance with the guiding principles for decision making.

Goal 2: Marine Conservation Goal
To legally protect up to 30% of Belize's Oceans as Biodiversity Protection Zones.

Goal 3: Blue Economy Goal
To support the sustainable growth and development of Belize's blue economy in alignment with legislation, policy, and planning frameworks

Goal 4: Equity Goal
To ensure fair and equitable access for all Belizeans to benefits derived from ocean resources and spaces, with respect for traditional social, environmental, cultural and economic uses.

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BSOP Goals with Spatial Objectives

Goal 2: Marine Conservation - Legally protect up to 30% of Belize's Oceans as Biodiversity Protection Zones*.

- **Specific Objective 1 -** Design Biodiversity Protection Zones to protect priority habitats, areas, and species identified through the MSP process, integrating climate resilient safeguards.
- **Specific Objective 2** - Strengthen the MPA network in conformance with national governance frameworks and ecological, economic, social, and cultural criteria set forth by the IUCN.
- **Specific Objective 3** - By November 3rd 2026, sign into law and Gazette *Biodiversity Protection Zones covering up to 30% of Belize's Ocean*** space using a phased approach.

* See Belize Conservation Commitments, Exhibit A, Clause 7 for definitions of Biodiversity Protection Zones.

** *"The MSP shall expand the percentage of Belize's Ocean in Biodiversity Protection Zones to whichever is the lower of:*

a. *30% of Belize's Ocean, with at least 15% in High Protection for Biodiversity Zones and 15% in Medium Protection for Biodiversity Zones, or*
b. *the percentage stated in the MSP."* (Belize Conservation Commitments, Exhibit A, Clause 1)

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BSOP Goals with Spatial Objectives

Goal 3: Blue Economy - Support the sustainable growth and development of Belize's blue economy in alignment with legislation, policy, and planning frameworks

- **Specific Objective 1 -** Identify and evaluate ocean spaces for their functional suitability to support projected sustainable expansion and management of traditional, existing, and emerging economic uses.*

  * *"The MSP shall … denote, in reasonable detail, the permissible activities that may be lawfully carried on in any part of Belize's Ocean."* (Belize Conservation Commitments, Exhibit A, Clause 1)

- **Specific Objective 2 -** Map, measure, and monitor blue carbon ecosystems to meet conservation targets and leverage conservation financing opportunities.

Goal 4: Equity - Ensure fair and equitable access for all Belizeans to benefits derived from ocean resources and spaces, with respect for traditional social, environmental, cultural and economic uses.

- **Specific Objective 2 -** Identify cultural, indigenous, social, and economic uses, through stakeholder engagement, to determine the allocation of ocean spaces to safeguard community traditions, livelihoods, and participation in emerging sustainable economic activities.

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CASE STUDY:

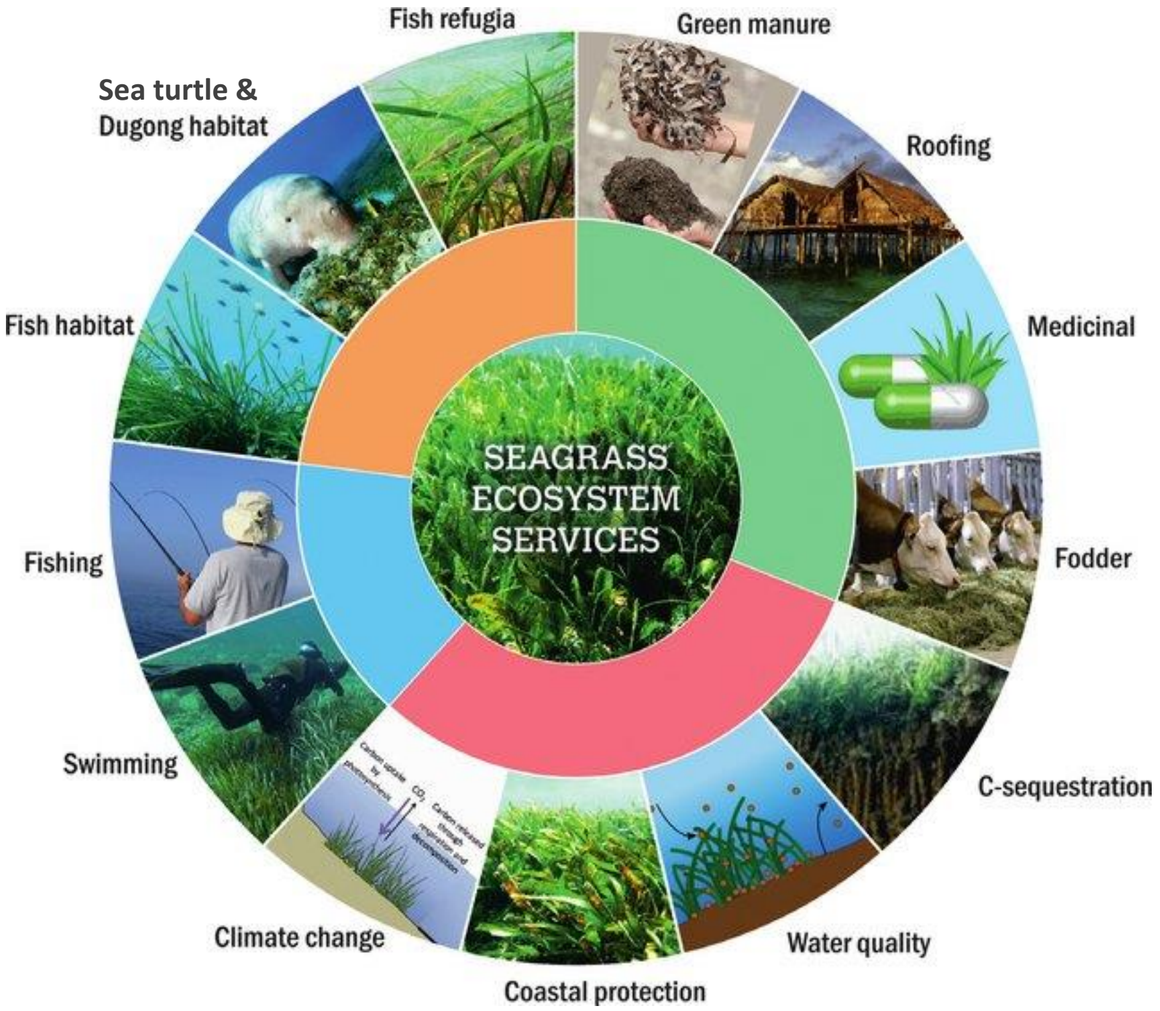
Developing performance measures for Seagrass Management Area planning in Long Island Sound, USA

Chantal E. Collier, The Nature Conservancy
William J. McClintock, University of California, Santa Barbara

The Nature Conservancy
Protecting nature. Preserving life.

NCEAS
National Center for Ecological Analysis and Synthesis
UC SANTA BARBARA

Seagrasses benefit wildlife and people



- **Support biodiversity and provide critical habitat** for species like summer flounder, black seabass, lobster, bay scallops, sea turtles, and brant geese
- **Sustain 20% of the world's largest fisheries** – 1 ha of seagrass can produce US$24,000 year^{-1} in commercially important fish
- **Improve water quality** – absorb nitrogen, generate oxygen
- **Dampen wave energy, reduce coastal erosion –** leaves, roots and rhizomes trap and stabilize sediment
- **Provide 2X more carbon storage** than terrestrial forests by area

Sources: Howard et al. 2017. Clarifying the role of coastal and marine systems in climate mitigation. *Frontiers in Ecology and the Environment* 15(1):42-50, Blandon & Ermgassen. 2014. Quantitative estimate of commercial fish enhancement by seagrass habitat in southern Australia.; *Estuarine, Coastal and Shelf Science* 141: 1-8; Pendleton et al. 2012. Estimating global blue carbon emissions from conversion and degradation of vegetated coastal ecosystems. PLoS ONE 7(9): e43542; Unsworth et al. (2019). Global challenges for seagrass conservation. *Ambio* 48, 801–815.

Seagrasses are disappearing

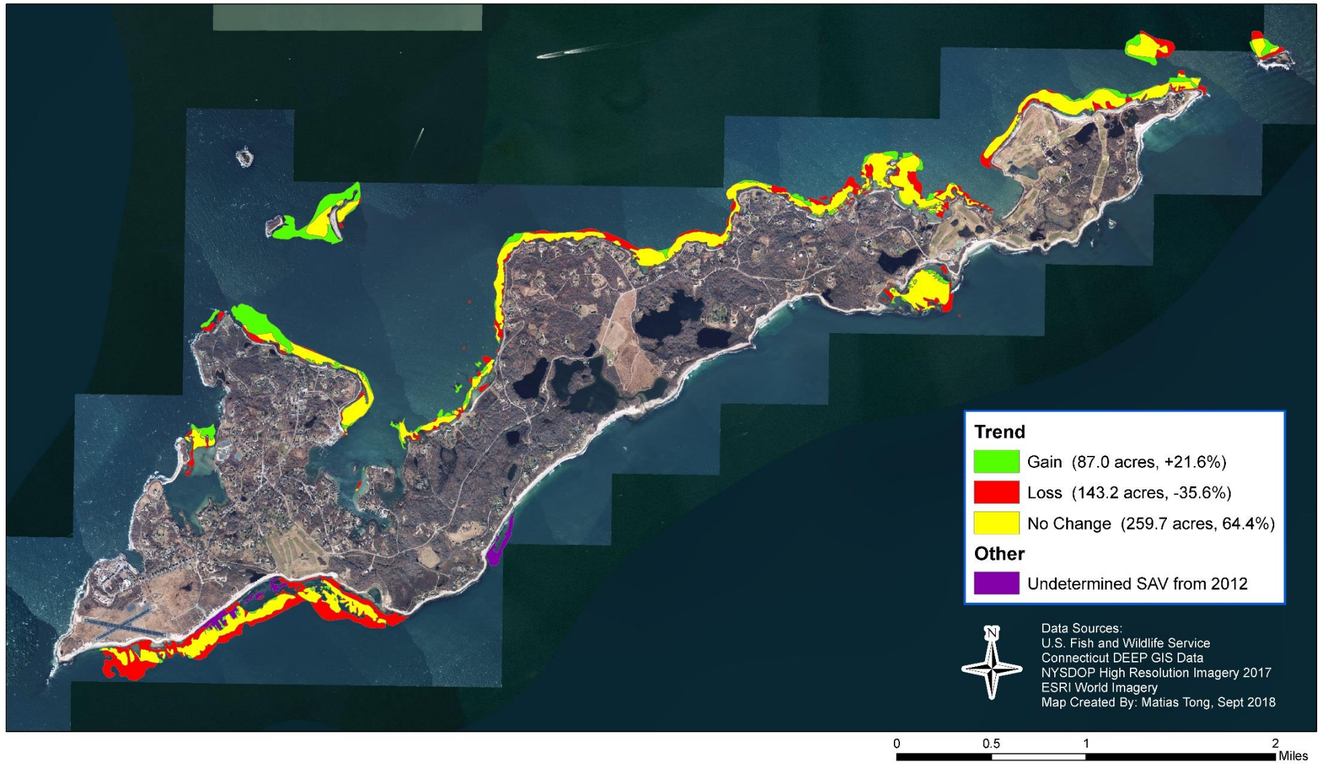
- Globally, ~30% of all seagrasses have been lost.
- Between 1940-1990, the rate of decline increased from 1% to 7% year $^{-1}$
- Major drivers of decline:
  - Nitrogen pollution
  - Climate change
  - Physical damage
  - Biological impacts
- In the northeastern USA, eelgrass ecosystems (*Zostera marina*) are in critical decline.
- In Long Island Sound, less than 10% of the historic extent of eelgrass remains

Sources: Short et al. (2011). *Extinction risk assessment of the world's seagrass species*. Biological Conservation 144 (7), 1961-1971; Waycott, M. et al. (2009). Accelerating loss of seagrasses across the globe threatens coastal ecosystems. *PNAS*. 106 (30), 12377-12381.

Protecting seagrasses in Long Island Sound (LIS)

Fishers Island, New York (NY):

- 24% of LIS eelgrass ecosystem
- Good condition, but at risk
  - 14% net loss from 2012-17
- Enabling legislation and State government support
  - Seagrass Protection Act
    (NY State Law ENV-Article 13-Title 7,
    13-0701 – 13-0705)
- Community-based leadership with established local conservation institutions



Fishers Island Seagrass Management Coalition

In 2017, the Henry L. Ferguson Museum and the Fishers Island Conservancy, with support from The Nature Conservancy, formed the Fishers Island Seagrass Management (FISM) Coalition to initiate
a collaborative planning process for protecting the island's enduring eelgrass ecosystem.

HENRY L. FERGUSON MUSEUM
FISHERS ISLAND

FISHERS ISLAND CONSERVANCY

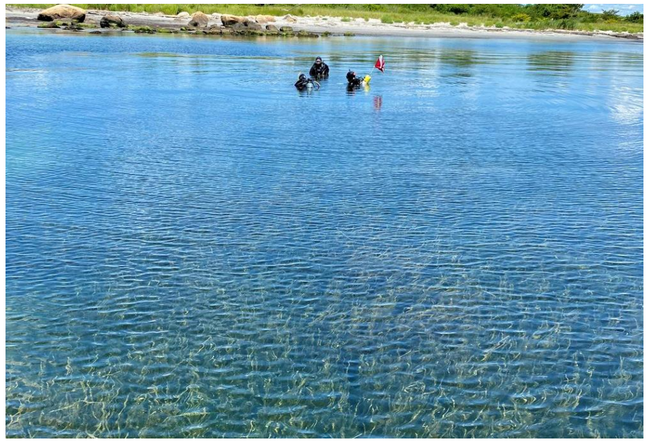
The Nature Conservancy

The FISM Coalition is a local group comprised of 20 island community stakeholder representatives that directly depend upon, interact with, or may affect the island's coastal and marine habitats.

Henry L. Ferguson Museum
Fishers Island Conservancy
Town of Southold
Island Community Board
Fishers Island Harbor Committee
Fishers Island Development Corp.
Fishers Island School
Fishers Island Ferry District
Fishers Island Yacht Club
Pirates Cove Marina

FISHERS ISLAND
SEAGRASS MANAGEMENT COALITION

Commercial Fishing
Aquaculture
Diving
Spearfishing
Recreational Fishing
Contracted Ferries
Landscapers
Hay Harbor Club
Fishers Island Club



FISHERS ISLAND SEAGRASS MANAGEMENT COALITION

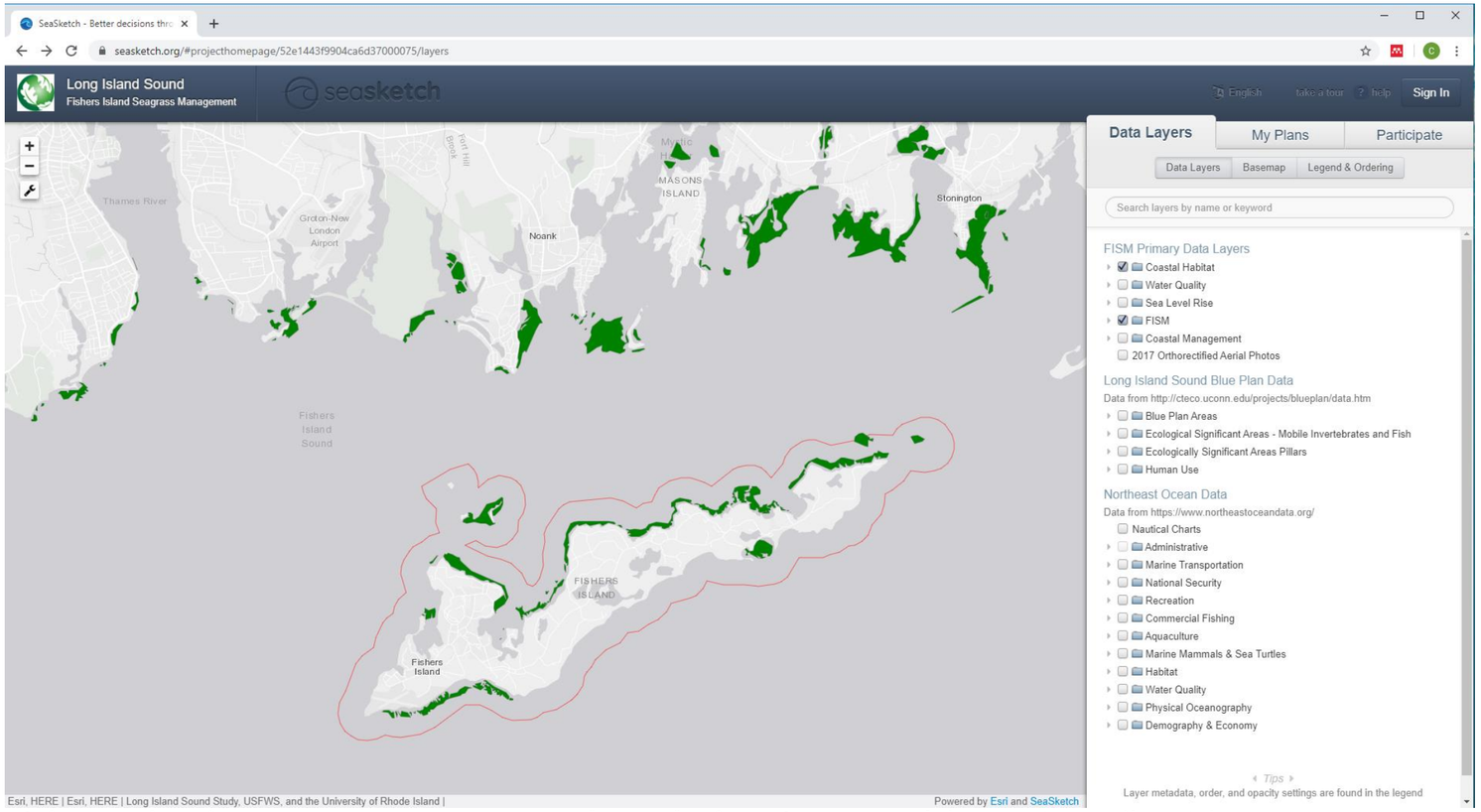
Vision: Fishers Island's thriving eelgrass ecosystem supports healthy marine systems, protects our coastal shorelines, and helps sustain our community's connection between the environment and our quality of life.

Conservation Goals:

1. 100% of the island's seagrass is effectively managed to sustain seagrass at a level that is greater than or equal to the 2017 extent of 347 acres (i.e., no net loss)
2. Maximize seagrass protection levels within Seagrass Management Areas (SMAs)
3. Maximize suitable area for eelgrass recovery or restoration with SMAs
4. Reduce nitrogen loading to SMAs from land-based sources on the island

A community-driven Marine Spatial Planning Process

- Led by the FISM Coalition
  - in cooperation with Town of Southold and NY State Dept. of Environmental Conservation
  - technical resources and support provided by The Nature Conservancy
- Using SeaSketch
  - a web-based decision support platform with tools designed for ocean planners, stakeholders and the public
  - supports inclusive, transparent, participatory, science-based planning
  - facilitated collaborative development of Seagrass Management Area Planning



Fishers Island Seagrass Management (FISM) Planning Area (shown in red), with 2017 seagrass ecosystem extent (shown in green), as seen in the FISM SeaSketch project.

seasketch project website: fism.seasketch.org

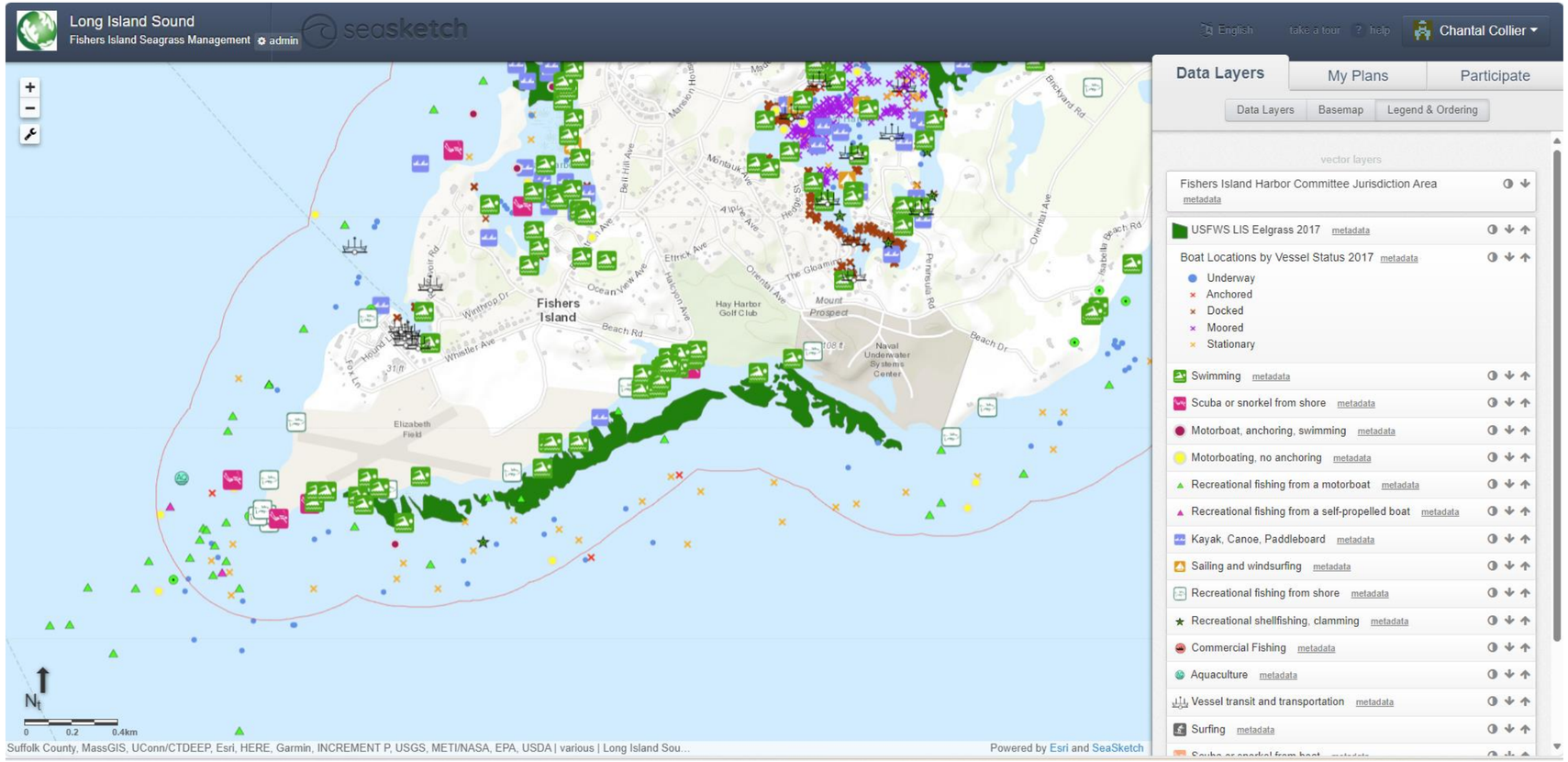
Seagrass Management Area Planning in Long Island Sound using SeaSketch

Survey Tool

- Ocean uses data collection

Data Viewer

- 300+ data layers uploaded
- Social and ecological data visualization and integration



Social and ecological data visualization and integration: Fisher Island Seagrass Management planning area (shown in red), 2017 eelgrass extent (shown in green), with ocean use survey results.

The Nature Conservancy

NCEAS
National Center for Ecological Analysis and Synthesis
UC SANTA BARBARA

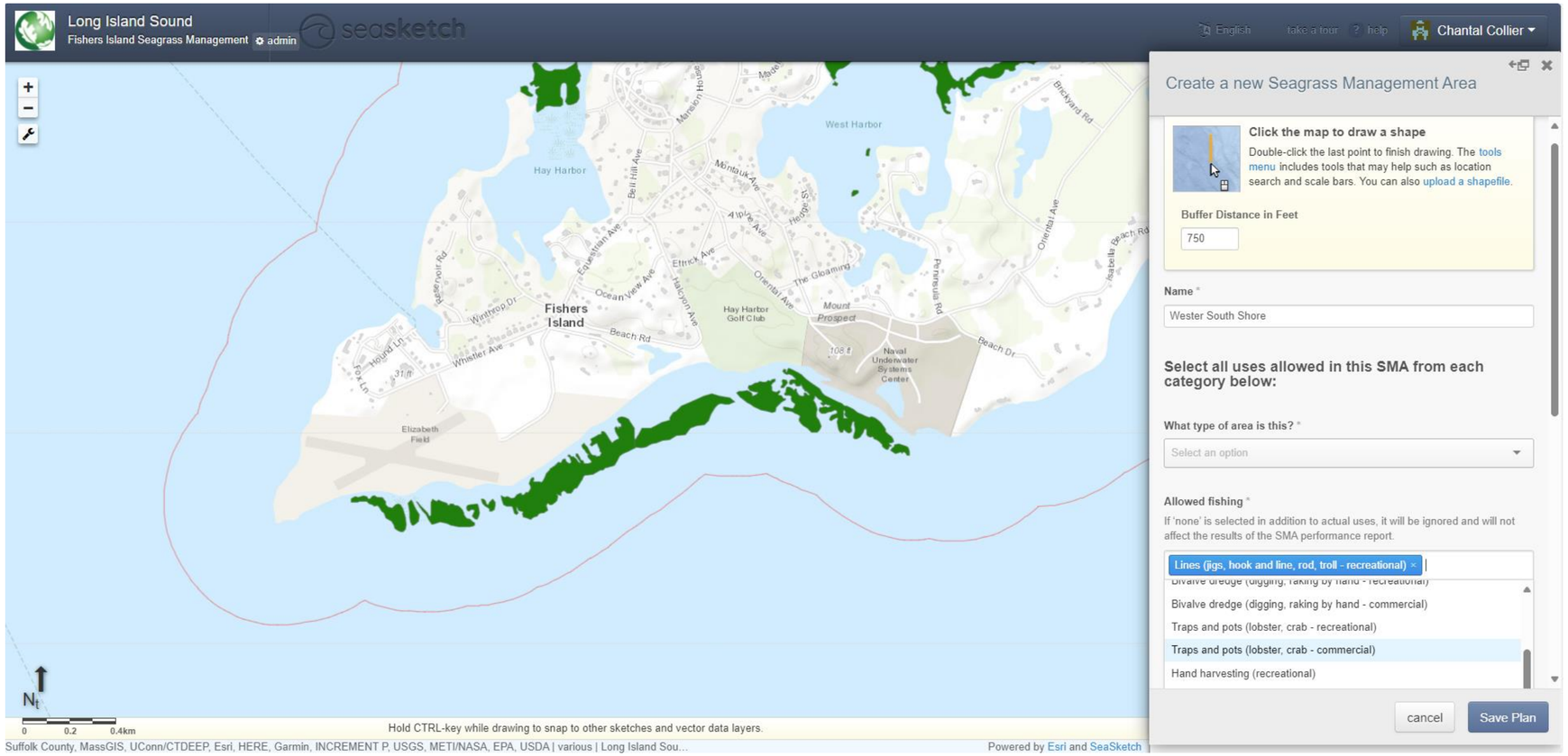
Design and evaluation of Seagrass Management Areas (SMA) using SeaSketch

Planning Tool

- Custom analytics, based on Fishers Island Seagrass Management Coalition conservation goals
- Facilitates SMA scenario development by stakeholders

Forums

- Enable interactive spatial planning discussions



Customized analytics facilitate the design and evaluation of proposed Seagrass Management Areas.

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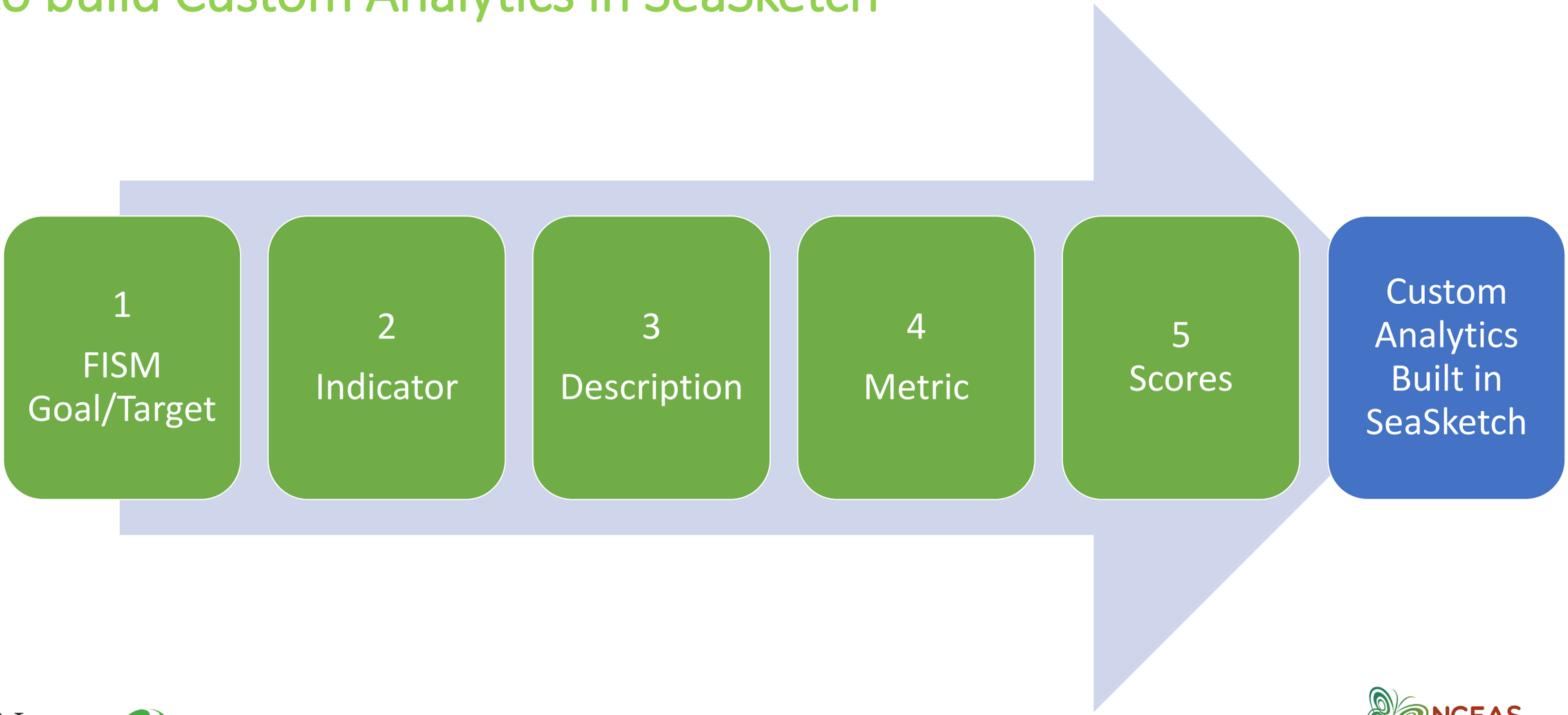
Developing Performance Measures from Conservation Goals to build Custom Analytics in SeaSketch



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Performance Measures for custom-built Seagrass Management Area Planning Analytics

1	2	3	4	5	
FISM Target/Goal	**Indicator**	**Description**	**Metric**	**Score**	**Notes & References**
100% of seagrass is effectively managed to sustain seagrass at ≥ to the 2017 extent of 347 acres (i.e. no net loss)	Seagrass Ecosystem Composition	a measure of the extent of the target ecosystem types present within the SMA boundaries	Percent of existing or recent seagrass ecosystem	0 = no seagrass 1 = <25% seagrass 2 = 26-50% seagrass 3 = 51-75% seagrass 4 = >75% seagrass	Calculate acreage and percent of 2017 seagrass extent in SMA. Show a table of percent existing, no-change and lost seagrass area (2012-17).
Maximize seagrass ecosystem protection levels within SMAs.	Seagrass Ecosystem Protection	a measure of the level of protection of biodiversity from extractive and destructive activities within the SMA boundaries	Protection level [1,2]	0 = not protected 1 = minimally protected 2 = lightly protected 3 = highly protected 4 = fully protected	To stabilize ecosystems and prevent further decline, scientists recommend protecting at least 30% of marine ecosystems in highly or fully protected areas. (BirdLife International et al., 2019; IUCN, 2016). Protection level analytics are based on research from Horta e Costa et al., 2016; Oregon State University et al., 2019.
Maximize suitable area for eelgrass recovery or restoration with SMAs.	Eelgrass Site Suitability	a measure of the extent of benthic habitat suitable for eelgrass colonization present within the SMA boundaries that did not contain eelgrass in 2017	Percent non-seagrass benthic area that is suitable for eelgrass	0 = no suitable area beyond 2017 extent 1 = <10% of non-eelgrass area could support eelgrass (≥50 threshold) 2 = 10-20% of non-eelgrass area could support eelgrass (≥50 threshold) 3 = >20% of non-eelgrass area could support eelgrass (≥50 threshold) AND LESS THAN half of that area is highly suitable for eelgrass (≥88 threshold) 4 = >20% of non-eelgrass area could support eelgrass (≥50 threshold) AND at least half of that area is highly suitable for eelgrass (≥88 threshold)	When choosing restoration sites, suitability model scores should be greater than 88 in some portion of the restoration site, though values above 50 may also be supportive of eelgrass. It is important to note that mature eelgrass beds modify the environment and are more resilient to stressors due to their larger size and dense coverage. A restoration planting is typically conducted in areas considered very well suited to eelgrass because newly planted beds are more sensitive to stressors relative to established beds. This is reflected in the minimum score of 88 for restoration plantings and a minimum score of 50 for established beds. (Vaudrey et al., 2013)
Reduce nitrogen loading to SMAs from land-based sources on the island (e.g. fertilizer use and wastewater)	Watershed Protection Level	a measure of the level of protection of seagrass from land-based sources of nitrogen pollution	Protection Level	0 = not protected 1 = minimally protected 2 = lightly protected 3 = highly protected 4 = fully protected	(Short et al., 2012; Watson et al., 2018; Woods Hole Group, 2014)

[1] Protection Level Definitions (from the 2019 MPA Guide, see references below):

Minimally protected: extensive extraction and other impacts are allowed while still providing some conservation benefit to the area

Lightly protected: some protection exists but moderate to significant extraction and impacts are allowed

Highly protected: only light extractive activities are allowed, and other impacts are minimized to the extent possible

Fully protected: no extractive or destructive activities are allowed, and all impacts are minimized

[2] Classification is based on the allowed uses within an SMA using methods defined in Horta e Costa et al. (2016) and outlined in the classification table below.

Developing Science-based Seagrass Protection Metrics & Scores

Marine Policy 72 (2016) 192–198

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A regulation-based classification system for Marine Protected Areas (MPAs)

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ABSTRACT

Marine protected areas (MPAs) are a global conservation and manager
of linked social-ecological systems with the aim of conserving biod
services for sustainable use. However, MPAs implemented worldwid
and management schemes from single to multiple-zoning and from
current IUCN categorisation of MPAs is based on management obje
significant mismatch to regulations causing a strong uncertainty wi
tiveness. A novel global classification system for MPAs based on regu
complementing the current IUCN system of categories is presented.
potential impact on biodiversity were built. Each zone within a M
integrates the zone scores. This system classifies MPAs as well as each
applicable and unambiguously discriminates the impacts of uses.
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1. Introduction

As anthropogenic activities expand worldwide threatening the maintenance of ecosystem services [20,31], marine protected areas (MPAs) have been increasingly seen as one of the most important tools for managing and conserving marine ecosystems [15]. The exclusion or reduction of extractive and destructive activities within MPAs has been adopted as a way to halt or reverse biodiversity loss and ecosystem degradation, maintain or enhance ecosystem services, and recover and manage exploited resources. After more than thirty years of systematic planning, implementing and monitoring MPAs, they have become part of any conservation and management strategy [15,21].

The current Aichi Biodiversity Targets of the Convention on Biological Diversity call for ten per cent of coastal and marine areas being conserved through MPAs and integrated into the wider seascapes by 2020 [4]. Despite this and other commitments, Spalding et al. [27] reviewed 10.280 MPAs showing that they represent only 5.51% of the areas u
0.17% of the high seas. Moreover
fishing activities therefore not prov
nents of biodiversity [8].

The recent designation of large
than 80% of the area under protect
containing 50% of that area [10,17,
international commitments leading
ignation, although many are place
agement plans, allow many types
enforced nor monitored, potential
protection by society at large [17,2
assessment of progress towards c
area coverage alone.

Additionally, the majority of M
zoning and management schemes,
ple-zoning and from no-take to
effective classification system for
variability is essential since misla
evaluation of the existing types of
accomplish stated objectives and g

The International Union for C
global categorisation of protected
gories based on their management

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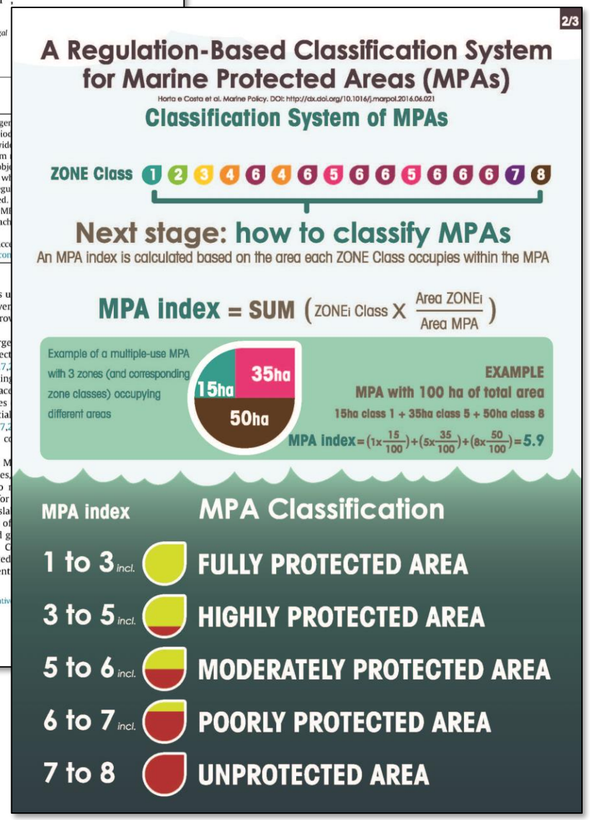


Horta e Costa et al. 2016. A regulation-based classification system for marine protected areas. *Marine Policy* 72: 192-198 + appendices. https://www.sciencedirect.com/science/article/pii/S0308597X16300197; Oregon State University, IUCN World Commission on Protected Areas, Marine Conservation Institute, National Geographic Society, and UNEP World Conservation Monitoring Centre.2019. *An Introduction to The MPA Guide*. https://www.protectedplanet.net/c/mpa-guide

Developing Science-based Seagrass Protection Metrics & Scores

SMA regulation-based use classification system. Use scores are based on the sum of unweighted impact criteria. Scores range from 0 = no impact, 1 = low impact, 2 = medium impact, 3 = high impact. Fishing scores are calculated based on the sum of scores per gear type impact on a) species selectivity, b) size selectivity, and 3) bottom impact. Adapted from Horta e Costa et al. (2016) for nearshore uses occurring at Fishers Island.

Category of use	Use types	Use impact score
Non-extractive recreational uses	Partially or unregulated boating	2
	Fully regulated boating (no motor or no wake in < 10' of water, no anchoring or conservation moorings)	1
	SCUBA diving	1
	Swimming/snorkeling	0
Bottom exploitation[3]	Construction of new coastal structures, or the expansion of existing coastal structures, movement of earth material (dredging, excavation, filling, dredge spoil placement, dune building, beach nourishment, grading, clearing/removing vegetation)	3
	Reconstruction of existing coastal structures (boat ramps, boat slips, docks, piers, wharves, boardwalks, groins, jetties, breakwaters, bulkheads, seawalls, retaining walls, rip-rap, dams, dikes, weirs, septic systems, roads, driveways, parking lots, bridges, drainage structures, buildings and building accessory structures)	2
	Other bottom structures	1
Aquaculture	Nearshore fish cages	3
	Offshore fish cages	2
	Shellfish and algae (suspension culture)	1
	Shellfish and algae (bottom culture)	1
Fishing	Beach/haul seines or surrounding nets near shore (recreational)	8
	Beach/haul seines or surrounding nets near shore (commercial)	8
	Bivalve dredge (mechanical - commercial only)	7
	Gill nets (commercial only)	6
	Traps (fish - commercial only)	6
	Lines (jigs, hook and line, rod, troll - recreational)	5
	Lines (jigs, hook and line, rod, troll - commercial)	5
	Bivalve dredge (digging, raking by hand - recreational)	5
	Bivalve dredge (digging, raking by hand - commercial)	5
	Traps and pots (lobster, crab - recreational)	4
	Traps and pots (lobster, crab - commercial)	4
	Hand harvesting (recreational)	4
	Hand harvesting (commercial)	4
	Spearfishing/diving (recreational)	3
	Spearfishing/diving (commercial)	3
	Cast nets (recreational)	3
	Cast nets (commercial)	3

[3] Activities occurring in or adjacent to (300' inland of wetland edge) vegetated and unvegetated flats and shorelines subject to tides, as defined by the NY Tidal Wetlands Act an regulated by NYSDEC. More information about the NYSDEC Tidal Wetlands Permit Program is available at: https://www.dec.ny.gov/permits/6359.html

SMA Protection Levels classified by use impacts

Use classification
1 – no extraction, no access
2 – no extraction, regulated access
3 – no extraction, unregulated access
4 – highly regulated extraction
5 – moderately regulated extraction
6 – weakly regulated extraction
7 – very weakly regulated extraction
A – regulated access
B – unregulated access

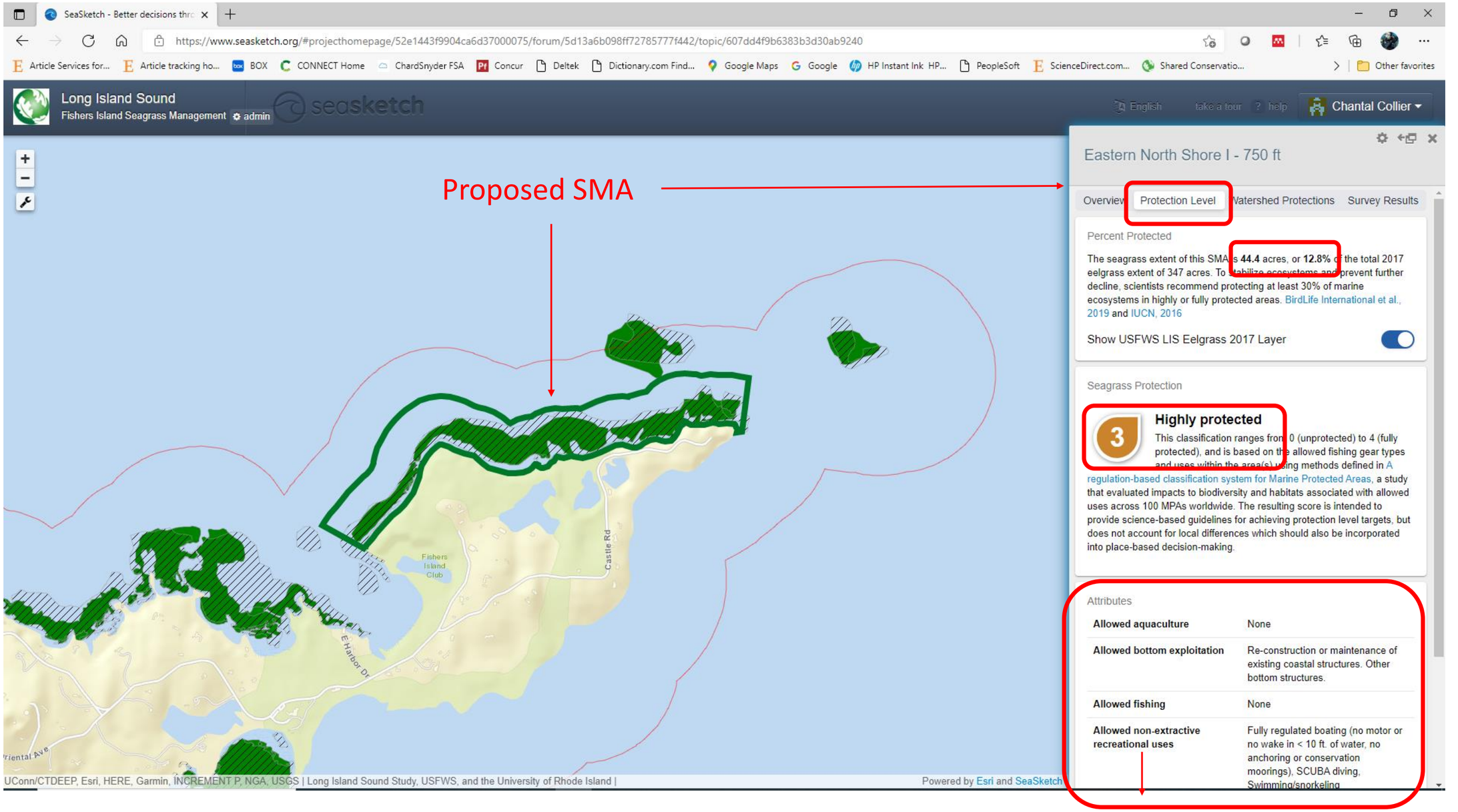
Use classifications	SMA protection level
1 or 2	Fully protected
3 or 4	Highly protected
4 and A	
5 or 6, and A	Lightly protected
6 or A	Minimally protected
7 and B	Unprotected

SMA Protection Level Definitions, derived from the 2019 MPA Guide[2]:

- **Minimally protected**: extensive extraction and other impacts are allowed while still providing some conservation benefit to the area
- **Lightly protected**: some protection exists but moderate to significant extraction and impacts are allowed
- **Highly protected**: only light extractive activities are allowed, and other impacts are minimized to the extent possible
- **Fully protected**: no extractive or destructive activities are allowed, and all impacts are minimized

[2] Oregon State University, IUCN World Commission on Protected Areas, Marine Conservation Institute, National Geographic Society, and UNEP World Conservation Monitoring Centre (2019*) An Introduction to The MPA Guide*. https://www.protectedplanet.net/c/mpa-guide

Developing Scenarios for Seagrass Management Areas (SMA)



Summary Results for proposed Seagrass Management Areas (SMA)

Results shown are based on:

- Human uses in proposed SMAs
- Eelgrass area in proposed SMAs
- Fishers Island Seagrass Management Coalition conservation goals 1 and 2:
  1. 100% of the island's seagrass is effectively managed to sustain seagrass at a level that is greater than or equal to the 2017 extent
  2. Maximize seagrass protection levels within SMAs

		Islets & Rocks alt I			Islets & Rocks alt II			Western South Shore				Western North Shore 500' and HH square				Western North Shore 750' and HH square			
Green=islands Yellow=south shore Blue=north shore		Wicopesset I	Seal Rocks I	South Dumpling & Flat Hammock I	Wicopesset II	Seal Rocks II	South Dumpling & Flat Hammock II	Western South Shore I	Western South Shore II	Western South Shore III	Western South Shore IV	I	II	III	IV	I	II	III	IV
	Boundary	750'	22' depth	triangle	750'	22' depth	triangle	500'	500'	750'	750'								
Allowed/Recommended Uses																			
Fishing	Beach/haul seines or surrounding nets near shore (recreational)																		
	Beach/haul seines or surrounding nets near shore (commercial)							x		x									
	Bivalve dredge (mechanical - commercial only)							x		x									
	Gill nets (commercial only)							x		x									
	Traps (fish - commercial only)	x	x	x	x	x	x	x		x		x		x		x		x	
	Lines (jigs, hook and line, rod, troll - recreational)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Lines (jigs, hook and line, rod, troll - commercial)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Bivalve dredge (digging, raking by hand - recreational)											x		x		x		x	
	Bivalve dredge (digging, raking by hand - commercial)							x		x		x		x		x		x	
	Traps and pots (lobster, crab - recreational)	x	x	x	x	x	x					x	x	x	x	x	x	x	x
	Traps and pots (lobster, crab - commercial)	x	x	x	x	x	x	x		x		x	x	x	x	x	x	x	x
	Hand harvesting (recreational)											x	x	x	x	x	x	x	x
	Spearfishing/diving (recreational)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Spearfishing/diving (commercial)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	yes	13	15	11	13	15	11	10	12	10	12	7	11	7	11	7	11	7	11
	no			1			1	1	1	1	1	2	1	2	1	1	1	1	1
	unsure			1			1	2		2									
Bottom Exploitation	Construction of **new** coastal structures, or the expansion of existing coastal structures, movement of earth material (dredging, excavation, filling, dredge spoil placement, dune building, beach nourishment, grading, clearing/removing vegetation)	--	--	--	--	--	--					x	x			x	x		
	Reconstruction of existing coastal structures (boat ramps, boat slips, docks, piers, wharves, boardwalks, groins, jetties, breakwaters, bulkheads, seawalls, retaining walls, rip-rap, dams, dikes, weirs, septic systems, roads, driveways, parking lots, bridges, drainage structures, buildings and building accessory structures), and other bottom structures	--	--	--	--	--	--	x	x	x	x	x	x	x	x	x	x	x	x
	yes	13		14	13		14	13	13	13	13	7							
	no																		
	unsure											1							
Aqua-culture	Nearshore fish cages	--	--	--	--	--	--	--	--	--	--								
	Offshore fish cages	--	--	--	--	--	--	--	--	--	--								
	Shellfish and algae (suspension culture)	--	--	--	--	--	--	--	--	--	--	(includes d	(includes d	(includes d	(includes d	(includes d	(includes d	(includes d	(includes d
	Shellfish and algae (bottom culture)	--	--	--	--	--	--	--	--	--	--								
	yes	13		14	13		14	13	13	13	13	9							
	no																		
	unsure							2	2	2	2								
Non-extractive Rec Uses	Partially or unregulated boating	x	x	x (includes designated															
	Fully regulated boating (no wake in < 10' of water, trim up motor, use of conservation moorings or no anchoring)				x	x	x (includes designated anchoring	x	x	x	x	x	x	x	x	x	x	x	x
	SCUBA diving	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Swimming/snorkeling	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	yes	13		13	13		13	14	14	14	14	8	8						
	no			1			1												
	unsure							1	1	1	1								
Watershed Protection	Unregulated fertilizer use and conventional septic systems	--	--	--	--	--	--												
	Partially regulated fertilizer use only (synthetic time release fert allowed)	--	--	--	--	--	--	x	x	x	x	x	x	x	x	x	x	x	x
	Fully regulated fertilizer use only (synthetic time release fert allowed)	--	--	--	--	--	--												
	Fully regulated fertilizer use and alternative onsite wastewater treatment systems that reduce nitrogen loading below seagrass tolerance thresholds (<3 g TN m-2 y-1)	--	--	--	--	--	--												
	yes	13		14	13		14	15	15	15	15	7	8						
	no																		
	unsure											1							
Seagrass Protection Level (0 = not protected; 1 = minimally; 2 = lightly; 3 = highly; 4 = fully)		2	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	2	2
Water (0 = not protected; 1 = minimally; 2 = lightly; 3 = highly)		n/a	n/a	n/a	n/a	n/a	n/a	1	1	1	1	1	1	1	1	1	1	1	1
Total acreage		77	25.4	64.2	77	25.4	64.1	125.6	125.6	185	184.8	322.1	322.4	322.5	322.5	464	462.8	462.5	463.5
Acres of seagrass		6.2	13.8	33	6.2	13.8	33	36.9	36.9	50.4	50.4	125.7	125.7	125.7	125.7	128.6	128.5	128.4	128.5
% of seagrass		1.8%	4.0%	9.5%	1.8%	4.0%	9.5%	10.6%	10.6%	14.5%	14.5%	36.2%	36.2%	36.2%	36.2%	37.1%	37.0%	37.0%	37.0%
	made in SeaSketch?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

THANK YOU

For more information, visit:

fiseagrass.org
fism.seasketch.org

For FISM Planning questions, contact:

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ccollier@tnc.org

For SeaSketch questions, contact:

William McClintock
will@ucsb.edu

Defining Criteria for Spatial Planning Analyses

1
BSOP Goal/Target

2
Indicator

3
Description

4
Metric

5
Scores

Custom Analytics for BSOP Planning Tools

Belize Sustainable Ocean Plan

LUNCH

1 hour

Belize Sustainable Ocean Plan

Belize Sustainable Ocean Plan

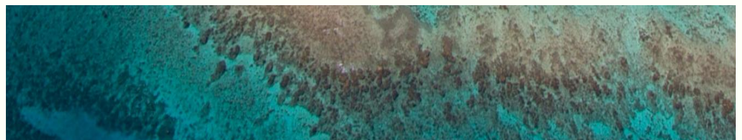
Defining Criteria for Planning

Part II

Chantal Collier, The Nature Conservancy

May 9, 2024

Defining Criteria for Spatial Planning Analyses

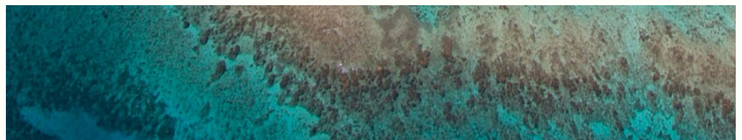


BREAKOUT GROUP ACTIVITY

1. Review BSOP goals and objectives
2. Verify the Activity Worksheet contains all BSOP goals or objectives that can be linked to qualitative or quantitative indicators for spatial planning. Identify any that may be missing and add them to the worksheet.
3. Choose a 1-2 goals/objectives your group will work on.

Belize Sustainable Ocean Plan

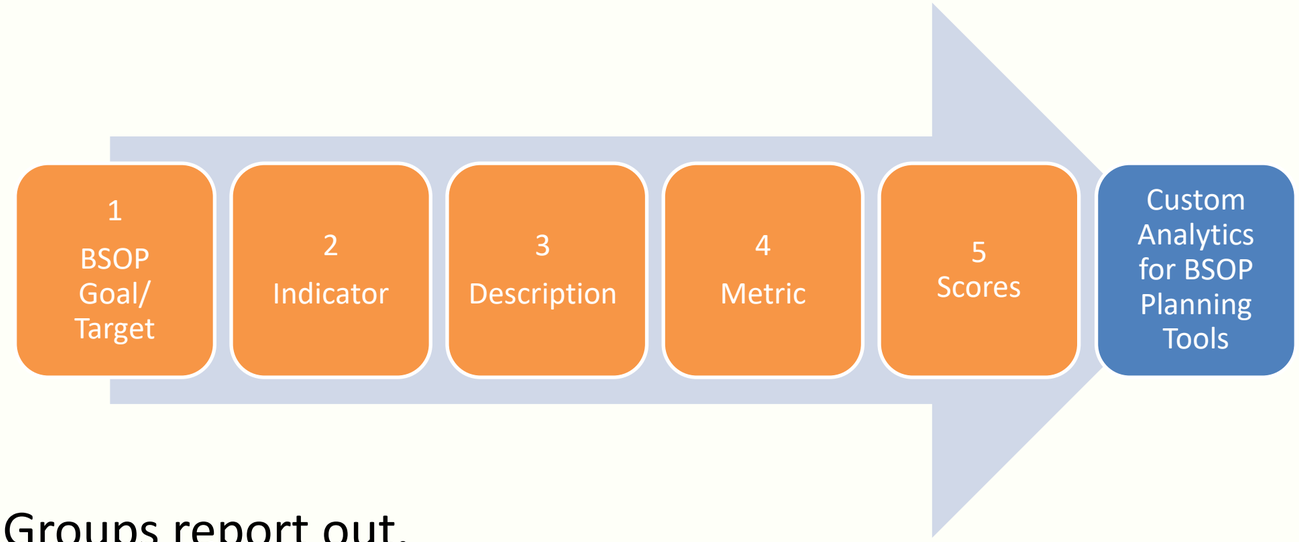
Defining Criteria for Spatial Planning Analyses



BREAKOUT GROUP ACTIVITY

4. Choose a reporter for your group.

5. Brainstorm criteria (science-based indicator, description, metrics, scores) that could used to evaluate alternative spatial management scenarios proposed during the MSP process, based on the BSOP goal/objective your group is working on.



6. Groups report out.

Belize Sustainable Ocean Plan

Belize Sustainable Ocean Plan

Developing the Zoning Plan for MSP

Kate Longley-Wood (TNC Global)
May 9, 2024

What is Ocean Zoning in MSP?

A key tool in MSP to manage, and where appropriate, to separate, human activities, based on knowledge of the distribution of ocean characteristics and the spatial distribution of all human activities

An ocean zone (or marine/ocean management area) is an area of ocean, inshore or offshore, where specific human uses are allowed or prohibited

Each zone allocates space for a type or multiple types of uses or different levels of use, depending on the area's suitability for those uses

From: MSP Global Guide (2021); Day et al. (2019)

Belize Sustainable Ocean Plan

Types of Zones

General Zone Types	Examples
General Use Areas: Existing uses continue unrestricted	Multi-use areas
Priority Use Zone: No use permitted that constrains the priority use	Shipping lanes, conservation areas (e.g., coral reef conservation area), existing or planned energy development areas, important fish habitats, cultural sites, tourism areas, precautionary/security areas
Restricted Access Zones: Some uses are prohibited	No-take zones, areas closed off to seafloor habitat disruption, energy development, military exclusion zones, shipping traffic, etc…

From: Necessary common minimum requirements for MSP in the Baltic Sea (Heinrichs & Gee, 2011)
Marine Spatial Planning: A Step-By-Step Approach (Ehler & Douvere 2009)

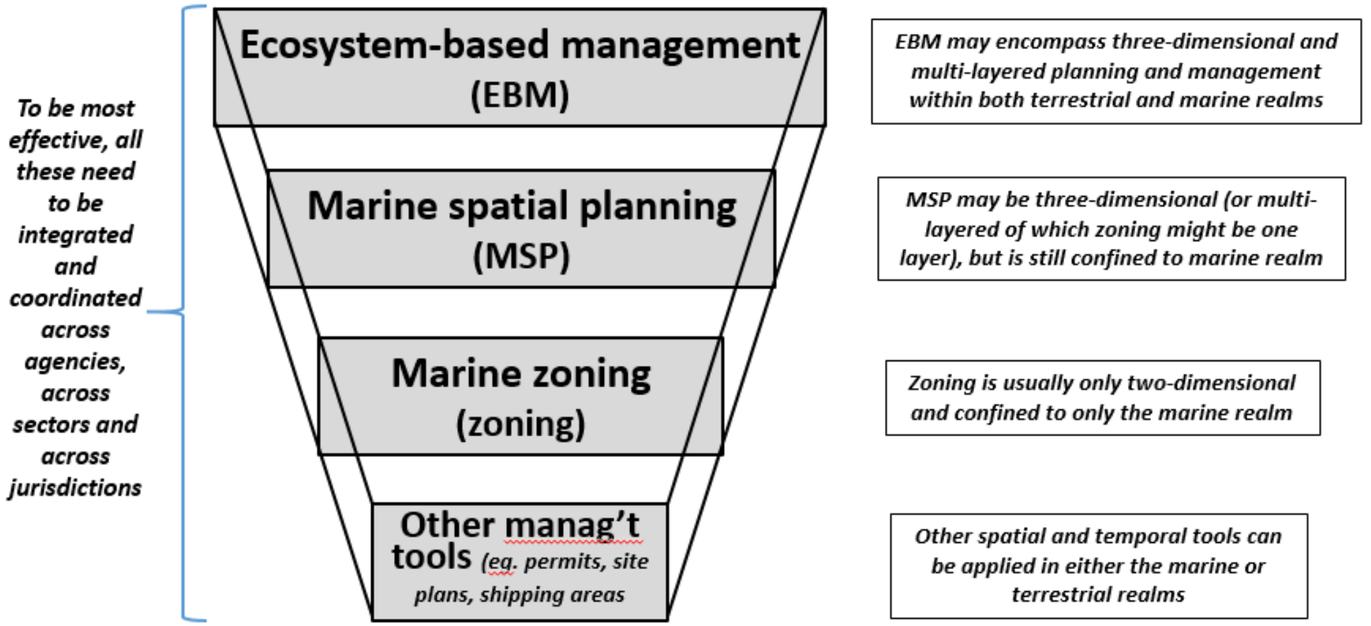
Belize Sustainable Ocean Plan

Why Have a Zoning Framework?

- Provide for biologically important habitats, ecosystems, and ecological processes
- Separate incompatible activities and reserve sites for most appropriate uses
- Identify areas for future or emerging uses
- Allocate areas for human uses while minimizing impacts on nature
- Preserve areas in their natural state from human disturbance
- Provide a foundation for management within the MSP planning area

Adapted from: MSP Global Guide (2021)

How Does Zoning Fit Into MSP?



Interrelationship of Zoning, MSP, and EBM as it occurs in the Great Barrier Reef Marine Park (Jon D. Day, 2019), from Panorama Solutions

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Key Elements of an MSP Zoning Approach

- Locating and designing zones based on the underlying topography, oceanography, and distribution of biotic communities
- Designing systems of permits, licenses, and use rules within each zone
- Establishing compliance mechanisms
- Creating programs, to monitor, review, and adapt the zoning system

From: Marine Spatial Planning: A Step-By-Step Approach (Ehler & Douvere 2009)

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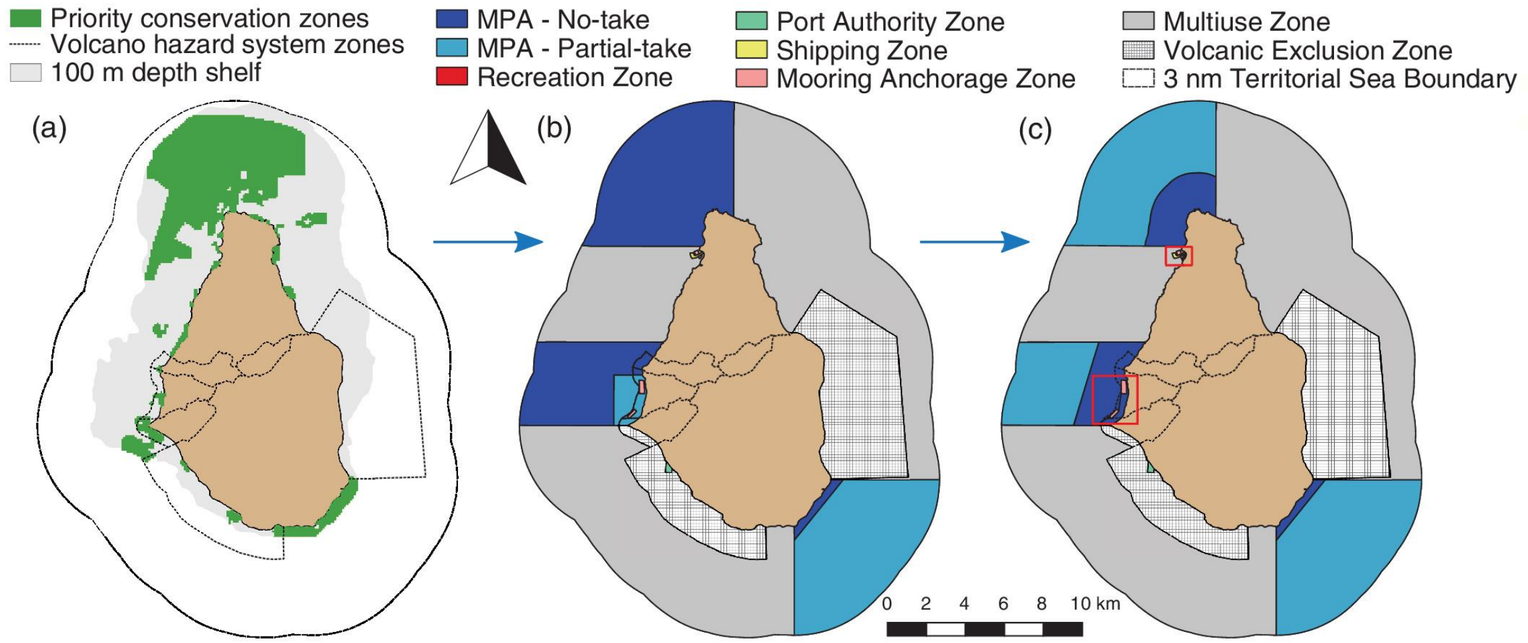

Priority conservation zones
Objectives met:
- 30% of each habitat protected
- 50% of total coral and fish species richness protected

Marine Spatial Plan: Draft 1
Zones coverage:
- 4 habitats meet 30% protection goal, 3 meet 20% protection, 1 meets 10% protection
- 20% in no-take MPAs
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Marine Spatial Plan: Draft 2 and Final Draft
Zones coverage:
- 4 habitats meet 30% protection goal, 3 meet 20% protection, 1 meets 10% protection
- 6% in no-take MPAs
- 27% in partial-take MPAs

From: Flower et al. (2020).

Zoning Best Practices for MSP

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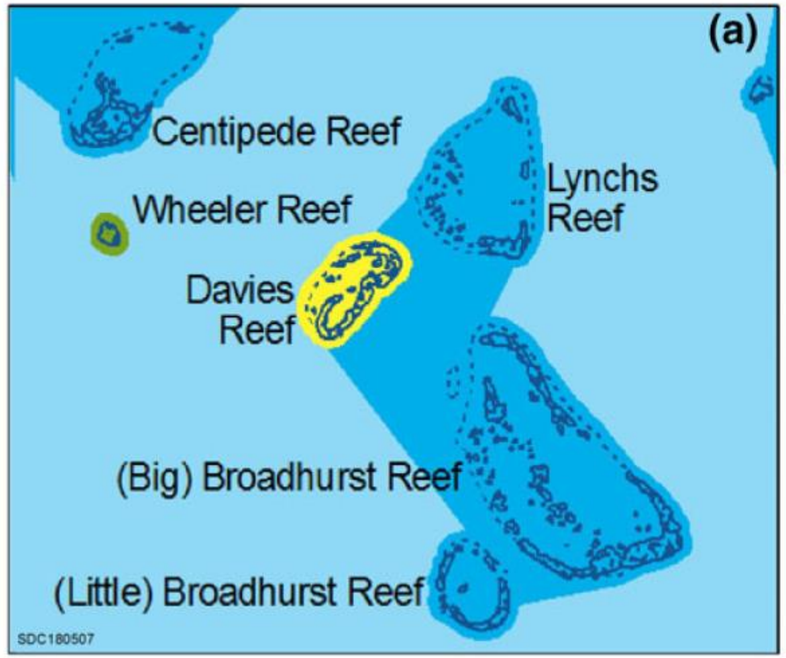
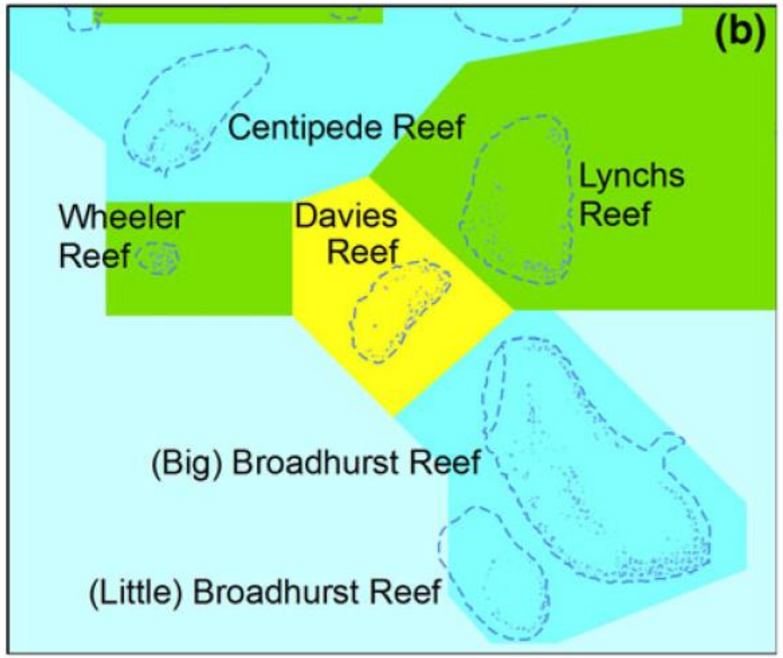
- Ecological features often have irregular/difficult to identify boundaries
- Boundaries defined by straight lines between coordinates, fully-encompassing ecological features, are easier to locate and enforce
- Improvements to GPS and other geospatial technology make it easier to determine location
- Where possible, incorporate recognizable landmarks and shoreline features (e.g., buoys)

Straight Line Boundaries Based on Coordinates





Great Barrier Reef Marine Park example from: Day et al. (2019)

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Zone Types by Objectives

- Compared to activity-based zoning, objective-based zoning provides more clarity on what activities could potentially be allowed in a given zone.
- Many marine activities are potentially complementary and can occur within the same zone– having a separate zone for each activity type is inefficient
- If a zone has multiple parts, there must be a clear hierarchy

Zone name	Zone colour	Legal objective(s) for the zone
General Use Zone	Light blue	to provide for the conservation of areas of the Marine Park, while providing opportunities for reasonable use
Habitat Protection Zone	Darker blue	(a) to provide for the conservation of areas of the Marine Park through the protection and management of sensitive habitats, generally free from potentially damaging activities; and (b) subject to (a), to provide opportunities for reasonable use
Conservation Park Zone	Yellow	(a) to provide for the conservation of areas of the Marine Park; (b) subject to (a), to provide opportunities for reasonable use and enjoyment, including limited extractive use
Buffer Zone	Olive green	(a) to provide for the protection of the natural integrity and values of areas of the Marine Park, generally free from extractive activities; (b) subject to (a), to provide opportunities for: (i) certain activities, including the presentation of the values of the Marine Park, to be undertaken in relatively undisturbed areas; and (ii) trolling for pelagic species
Scientific Research Zone	Orange (or green with an orange outline/border)	(a) to provide for the protection of the natural integrity and values of areas of the Marine Park, generally free from extractive activities; and (b) subject to (a), to provide opportunities for scientific research to be undertaken in relatively undisturbed areas
Marine National Park Zone	Green	(a) to provide for the protection of the natural integrity and values of areas of the Marine Park, generally free from extractive activities; and (b) subject to (a), to provide opportunities for certain activities, including the presentation of the values of the marine park, to be undertaken in relatively undisturbed areas
Preservation Zone	Pink	to provide for the preservation of the natural integrity and values of areas of the Marine Park, generally undisturbed by human activities
Commonwealth Islands Zone	Cream	(a) to provide for the conservation of the natural integrity and values areas of the Marine Park above low water mark; and (b) to provide for use of the zone by the Commonwealth; and (c) subject to (a), to provide for facilities and uses consistent with the values of the area

Great Barrier Reef Marine Park example from: Day et al. (2019)

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Zoning with Allowable Activities

- **Each MSP Zone is associated with an Allowable Activities table**
- **Articulating allowable activities by Zone provides certainty for the different economic sectors and/or user groups across the planning area**

GBRMP Zoning

(see relevant *Zoning Plans* and *Regulations* for details)

	General Use Zone	Habitat Protection Zone	Conservation Park Zone	Buffer Zone	Scientific Research Zone *	Marine National Park Zone	Preservation Zone
Aquaculture	Permit	Permit	Permit*	×	×	×	×
Bait netting	✓	✓	✓ *	×	×	×	×
Boating, diving, photography	✓	✓	✓	✓	✓ *	✓	×
Crabbing (trapping)	✓	✓	✓ *	×	×	×	×
Harvest fishing for aquarium fish, coral and beachworm	Permit	Permit	Permit *	×	×	×	×
Harvest fishing for sea cucumber, trochus, tropical rock lobster	Permit	Permit	×	×	×	×	×
Limited collecting	✓ *	✓ *	✓ *	×	×	×	×
Limited spearfishing (snorkel only)	✓	✓	✓ *	×	×	×	×
Line fishing	✓ *	✓ *	✓ *	×	×	×	×
Netting (other than bait netting)	✓	✓	×	×	×	×	×
Research (other than limited impact research)	Permit	Permit	Permit	Permit	Permit	Permit	Permit
Shipping (other than in a designated shipping area)	✓	Permit	Permit	Permit	Permit	Permit	×
Tourism programme	Permit	Permit	Permit	Permit	Permit	Permit	×
Traditional use of marine resources	✓ *	✓ *	✓ *	✓ *	✓ *	✓ *	×
Trawling	✓	×	×	×	×	×	×
Trolling	✓ *	✓ *	✓ *	✓ *	×	×	×

PLEASE NOTE: This guide provides an introduction to Zoning in the Great Barrier Reef Marine Park. Relevant Great Barrier Reef Marine Park Zoning Plans should be consulted for confirmation of use or entry requirements.

* Additional restrictions / conditions apply.

ACCESS TO ALL ZONES IS PERMITTED IN AN EMERGENCY.

Figure 2 from: Day et al. (2019)

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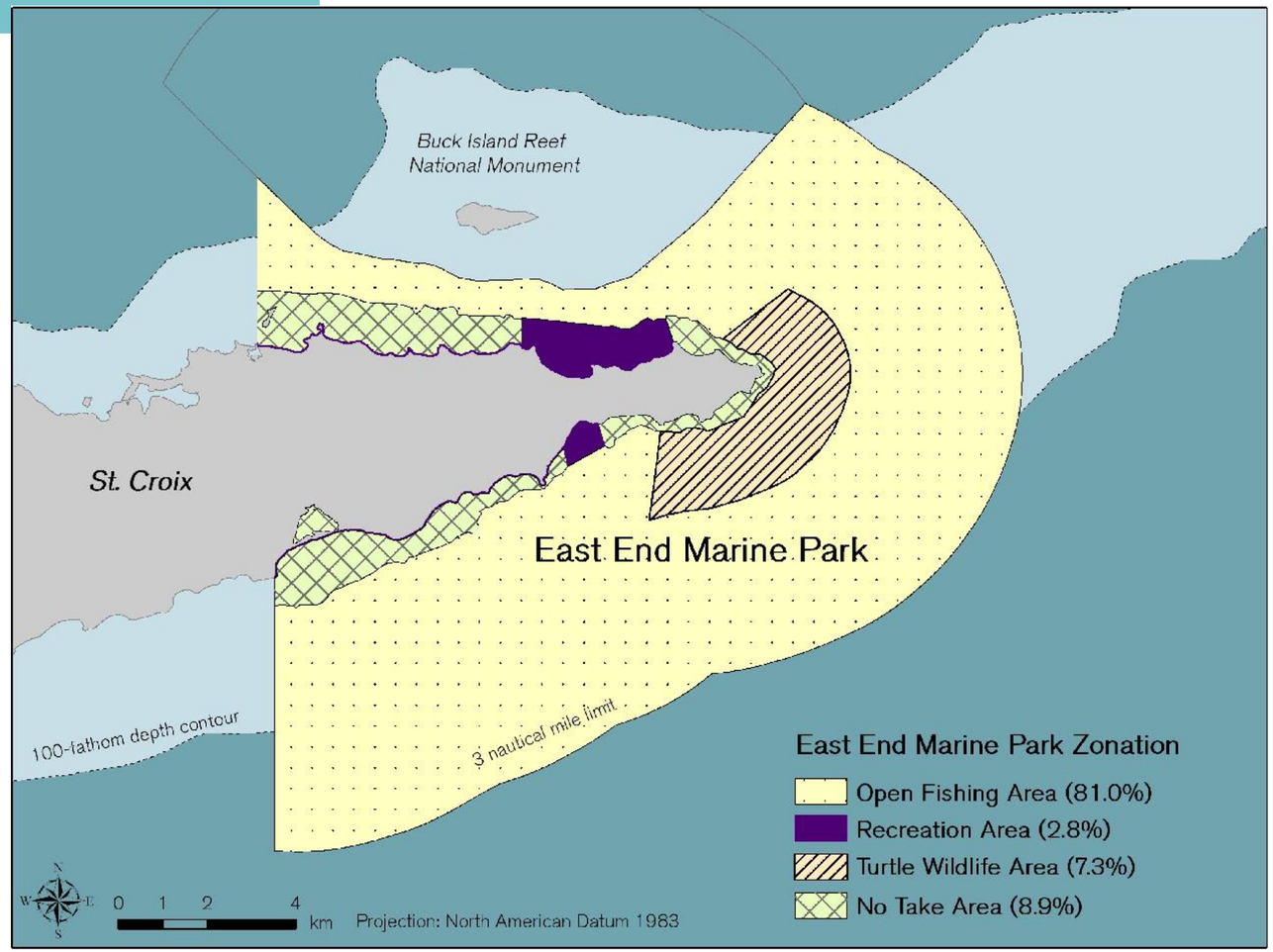
Fewer, Larger Zones

- Preferable to have a smaller number of larger zones
- Promotes connectivity (e.g., entire habitat feature can be present within a single zone)
- Reducing complexity promotes improved understanding and compliance among ocean users
- Fewer zone types to promote public understanding of allowed uses and rules



Proposed Zonation Map for East End Marine Park, St. Croix, from Mayor & Bruckner (2006)

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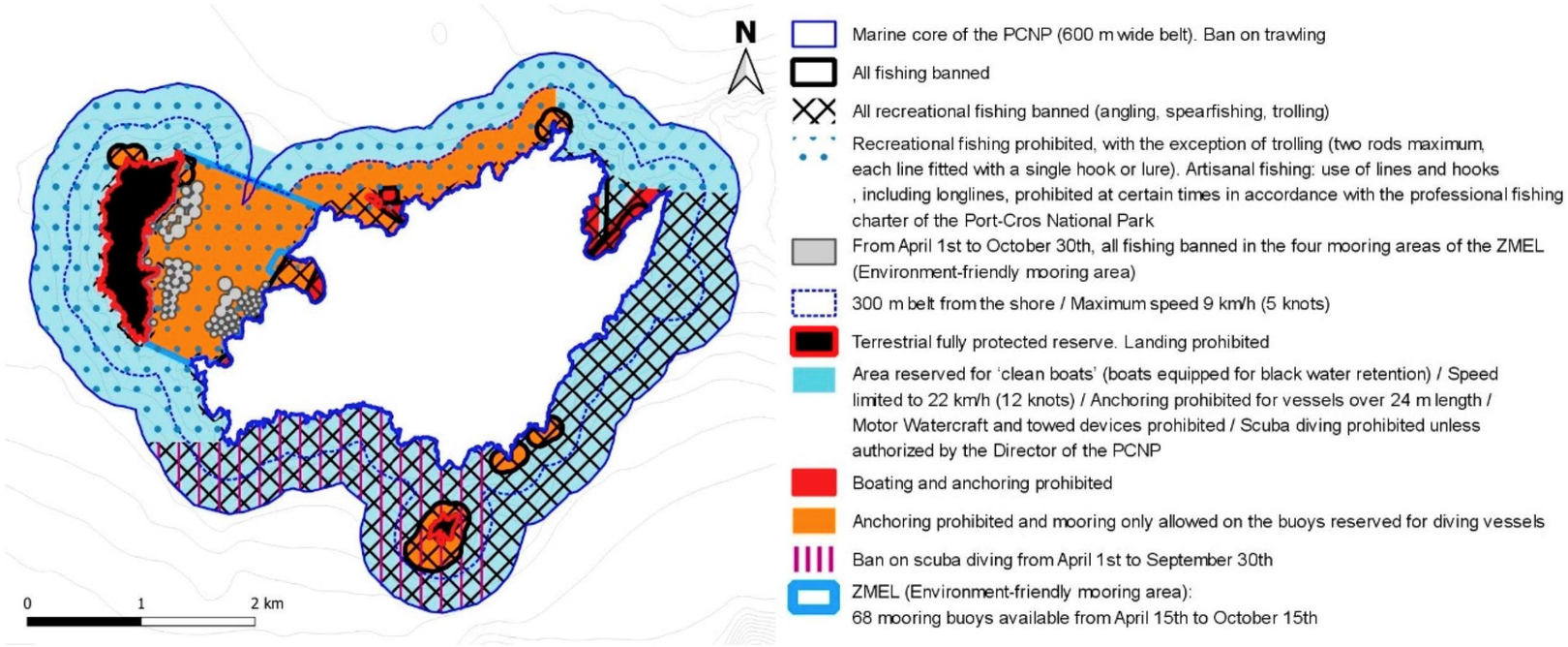
Adjacency and Complementarity

- Consider what management regimes and/or zones may already exist in neighboring jurisdictions
- Maximize placement of zones which complement and include present and future activities
- Consider impact of factors outside of the control of the MSP (e.g., land-based activities, climate change)
- Zones should account for ecological connectivity within marine systems
- Avoid sudden transitions between levels of protection in neighboring zone types



Example from Port-Cros National Park in the Mediterranean Sea. (Boudouresque et al., 2021)

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Other Best Practices

- Ensure sufficient replication
- Zones are based on science and expert knowledge
- Maximize opportunities for public understanding
- Incorporate ecological principles such as connectivity
- Select based on social costs and benefits
- Understand potential limitations of decision-support tools

Adapted from: Jon D. Day, 2019, Panorama Solutions

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High Protection for Biodiversity Zones

- Conserve and protect the top priority areas for marine and coastal biodiversity
- Designated for habitats and species that may be rare, endangered, unique or within narrow distribution ranges
- Could include breeding or spawning areas, key foraging habitat, fragile or sensitive species and habitats, and internationally significant areas
- Not suitable for extraction or sea-bed alteration and is considered a 'no-take' zone in common vernacular
- Examples are IUCN categories Ia, Ib, and II

Activities	Ia	Ib	II	III	IV	V	VI
Research: non-extractive	Y*	Y	Y	Y	Y	Y	Y
Non-extractive traditional use	Y*	Y	Y	Y	Y	Y	Y
Restoration/enhancement for conservation (e.g. invasive species control, coral reintroduction)	Y*	*	Y	Y	Y	Y	Y
Traditional fishing/collection in accordance with cultural tradition and use	N	Y*	Y	Y	Y	Y	Y
Non-extractive recreation (e.g. diving)	N	*	Y	Y	Y	Y	Y
Large scale low intensity tourism	N	N	Y	Y	Y	Y	Y
Shipping (except as may be unavoidable under international maritime law)	N	N	Y*	Y*	Y	Y	Y
Problem wildlife management (e.g. shark control programmes)	N	N	Y*	Y*	Y*	Y	Y
Research: extractive	N*	N*	N*	N*	Y	Y	Y
Renewable energy generation	N	N	N	N	Y	Y	Y
Restoration/enhancement for other reasons (e.g. beach replenishment, fish aggregation, artificial reefs)	N	N	N*	N*	Y	Y	Y
Fishing/collection: recreational	N	N	N	N	*	Y	Y
Fishing/collection: long term and sustainable local fishing practices	N	N	N	N	*	Y	Y
Aquaculture	N	N	N	N	*	Y	Y
Works (e.g. harbours, ports, dredging)	N	N	N	N	*	Y	Y
Untreated waste discharge	N	N	N	N	N	Y	Y
Mining (seafloor as well as sub-seafloor)	N	N	N	N	N	Y*	Y*
Habitation	N	N*	N*	N*	N*	Y	N*

Key:

No	N
Generally no, unless special circumstances apply	N*
Yes	Y
Yes because no alternative exists, but special approval is essential	Y*
* Variable; depends on whether this activity can be managed in such a way that it is compatible with the MPA's objectives	*

Table from: Guidelines for applying the IUCN protected area categories for MPAs (Day et al. 2019)

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Medium Protection for Biodiversity

- Sustainable uses are compatible with the biodiversity goals in these areas
- Proposed to conserve areas that are suitable for medium levels of biodiversity protection that are also compatible with some sustainable uses
- Include habitats and species with some tolerance to disturbance and human activities
- Suitable for some level of extraction and sea-bed alteration with appropriate management and direction
- Examples are IUCN categories V and VI, OECMs, and LMMAs

Activities	Ia	Ib	II	III	IV	V	VI
Research: non-extractive	Y*	Y	Y	Y	Y	Y	Y
Non-extractive traditional use	Y*	Y	Y	Y	Y	Y	Y
Restoration/enhancement for conservation (e.g. invasive species control, coral reintroduction)	Y*	*	Y	Y	Y	Y	Y
Traditional fishing/collection in accordance with cultural tradition and use	N	Y*	Y	Y	Y	Y	Y
Non-extractive recreation (e.g. diving)	N	*	Y	Y	Y	Y	Y
Large scale low intensity tourism	N	N	Y	Y	Y	Y	Y
Shipping (except as may be unavoidable under international maritime law)	N	N	Y*	Y*	Y	Y	Y
Problem wildlife management (e.g. shark control programmes)	N	N	Y*	Y*	Y*	Y	Y
Research: extractive	N*	N*	N*	N*	Y	Y	Y
Renewable energy generation	N	N	N	N	Y	Y	Y
Restoration/enhancement for other reasons (e.g. beach replenishment, fish aggregation, artificial reefs)	N	N	N*	N*	Y	Y	Y
Fishing/collection: recreational	N	N	N	N	*	Y	Y
Fishing/collection: long term and sustainable local fishing practices	N	N	N	N	*	Y	Y
Aquaculture	N	N	N	N	*	Y	Y
Works (e.g. harbours, ports, dredging)	N	N	N	N	*	Y	Y
Untreated waste discharge	N	N	N	N	N	Y	Y
Mining (seafloor as well as sub-seafloor)	N	N	N	N	N	Y*	Y*
Habitation	N	N*	N*	N*	N*	Y	N*

Key:

No	N
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Example: St. Kitts & Nevis

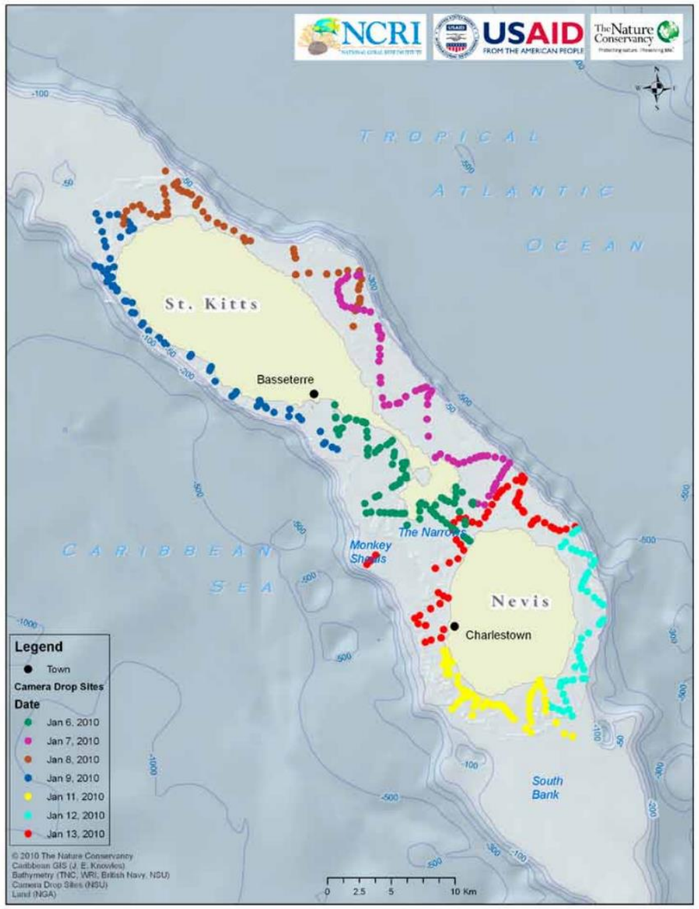


FIGURE 4. Camera Drop Sites: GPS locations of camera drop sites where underwater video was collected for each of the 12 benthic classes between Jan 6-13, 2010. The different colors represent the different dates that the videos were collected. These videos were interpreted and used to assist with the benthic habitat classification using the satellite imagery.

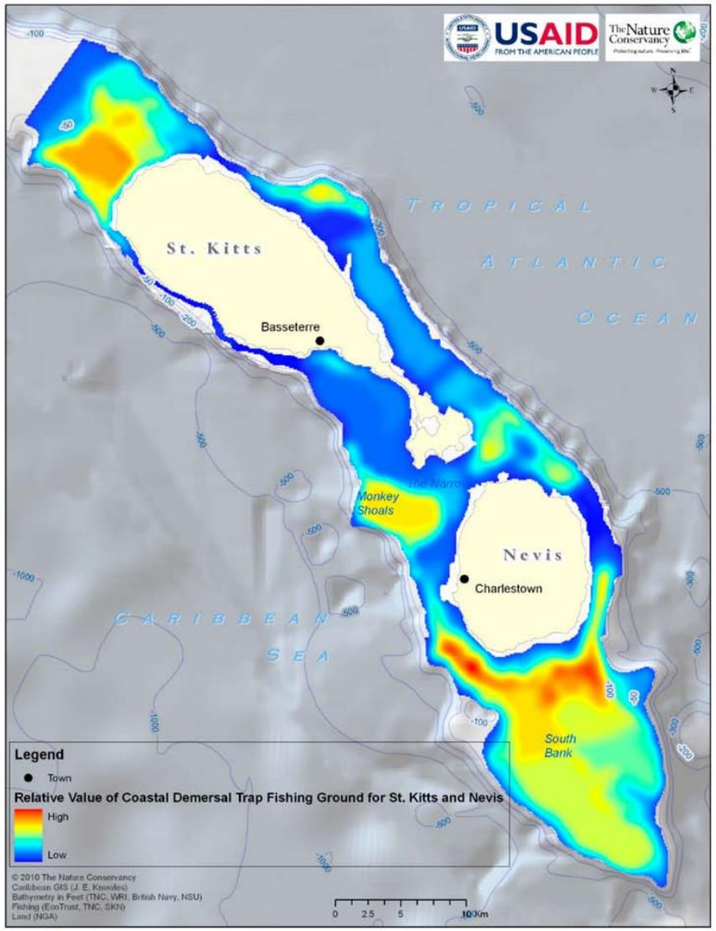


FIGURE 7. Sample fisheries uses and values map.

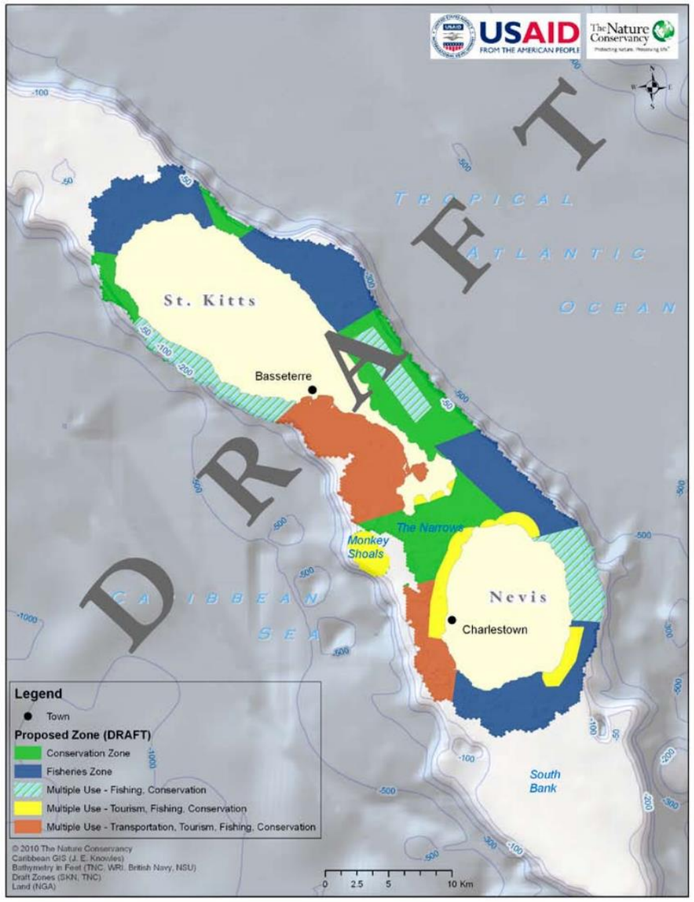
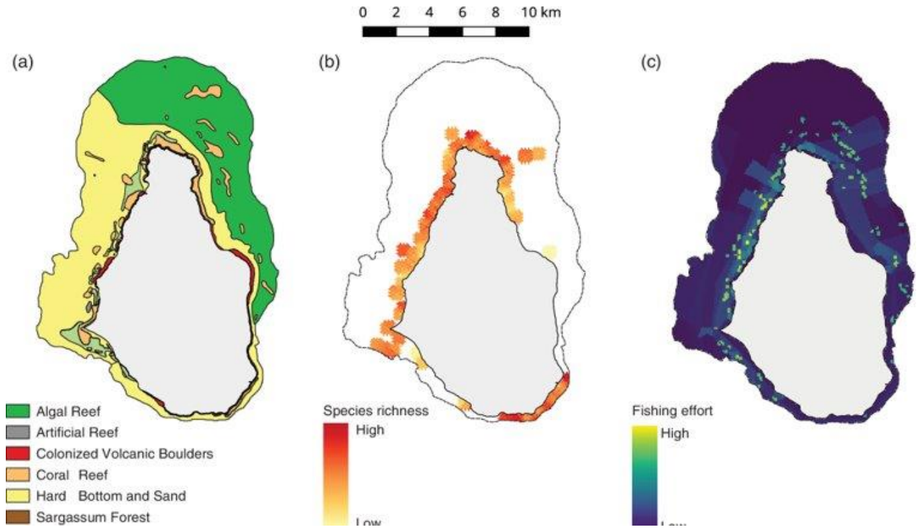


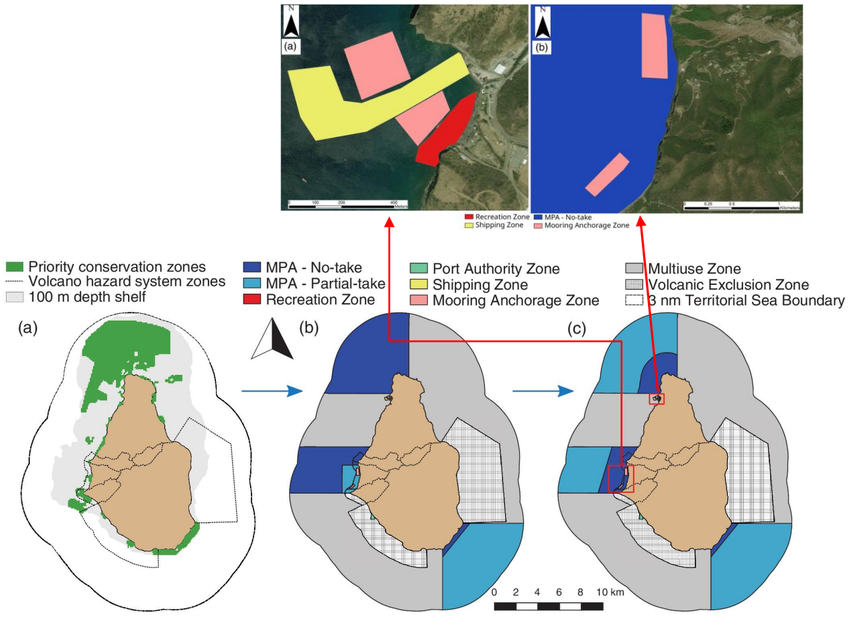
FIGURE 8. Final draft marine zoning design based on steering committee review.

From: Agostini et al. (2020).

Example: Montserrat

Planning goal: identify individual and shared actions to achieve ocean zoning, designation of sanctuary zones, sustainable fishing, and other measures to ensure long-term health of Montserrat's waters





Priority conservation zones
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- 30% of each habitat protected
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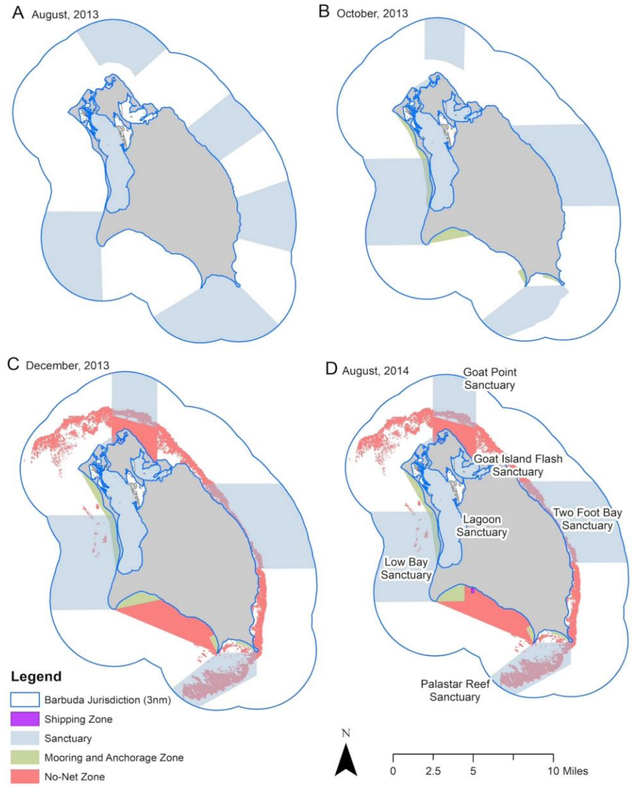
From: Flower et al. (2020).

Example: Barbuda



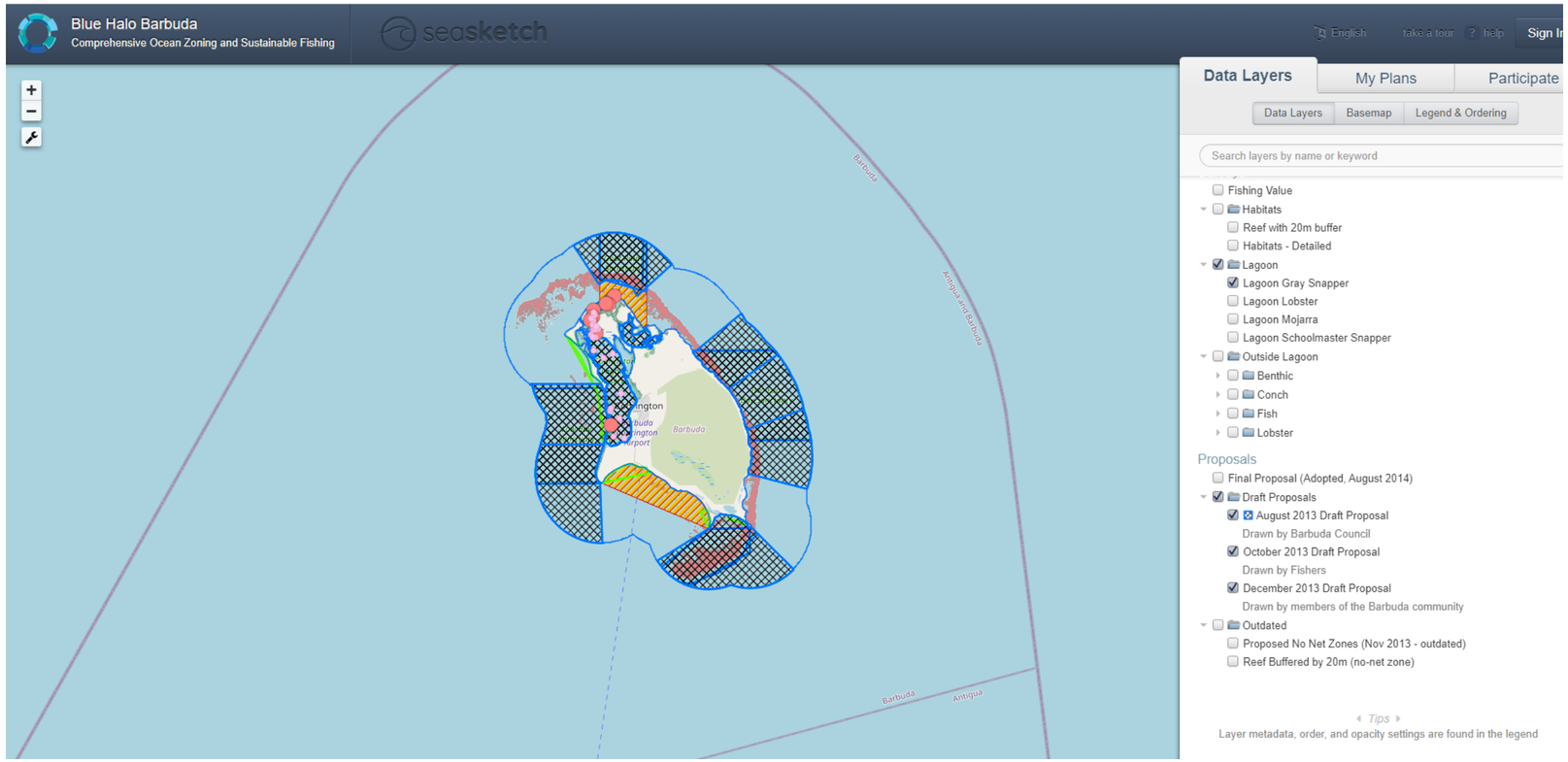


Figure 5. From Johnson et al. In the final plan (D), protected areas covered 33% of the jurisdictional waters and protected at least 1/3 of each key habitat

Example: Great Barrier Reef Marine Park

How it works

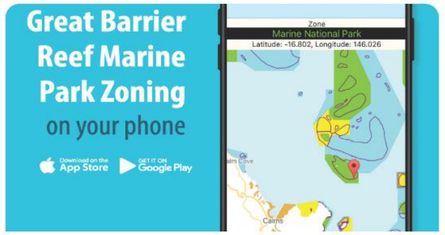
Zoning helps to manage and protect the values of the Marine Park and is an is an important component in managing marine areas.

LEARN MORE ›

Zoning maps

Before visiting the Reef, make sure you're familiar with the zoning rules. Download or pick up a zoning map to help you with the rules and avoid a fine.

LEARN MORE ›



Eye on the Reef app

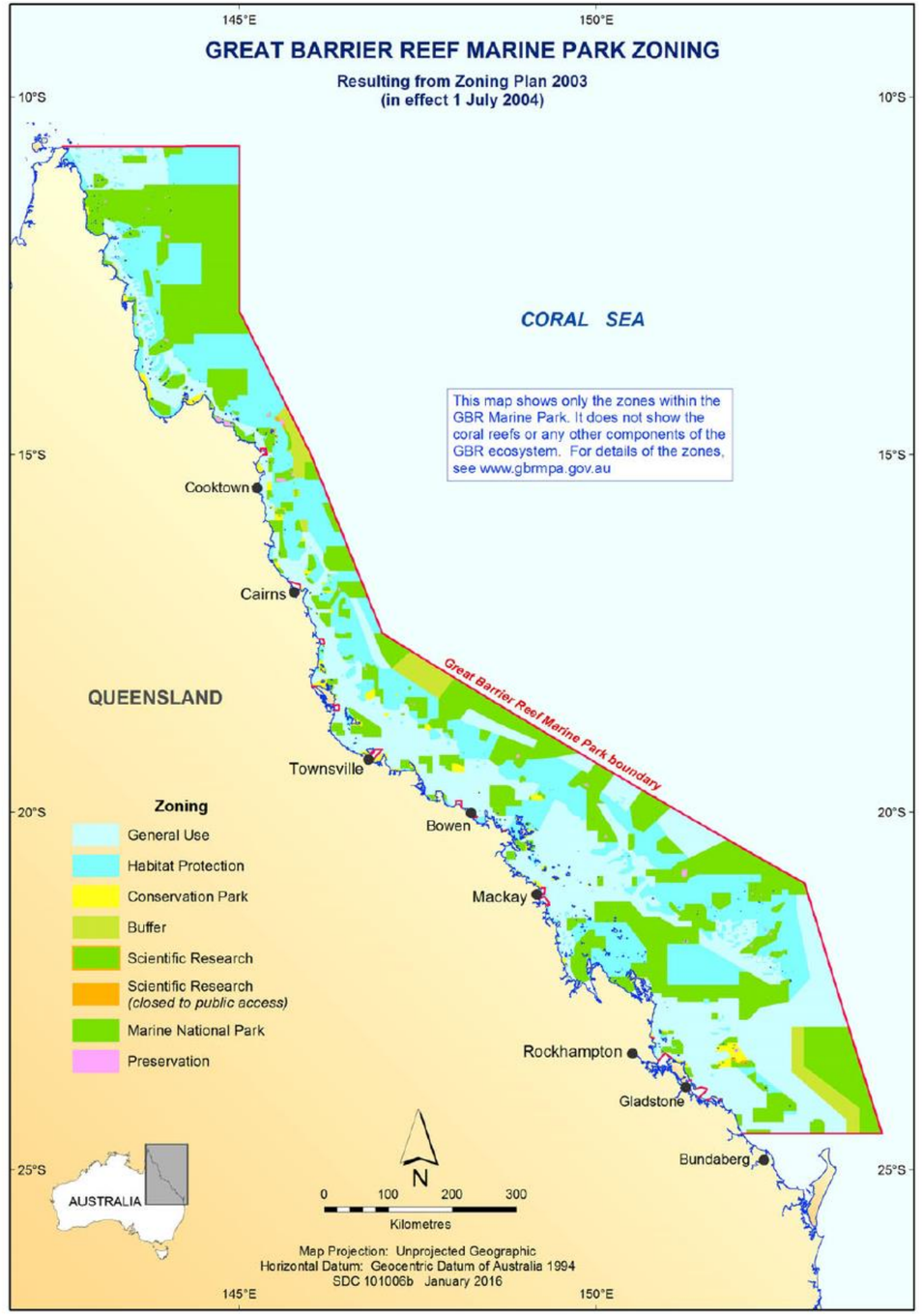
Know your zone and download this **free app** to access and understand zoning rules in the Great Barrier Reef Marine Park.

LEARN MORE ›

Interpreting zones

It is important that you are aware of the zone you are in while you are out on the water, so take time to check where you are going and what you can do there.

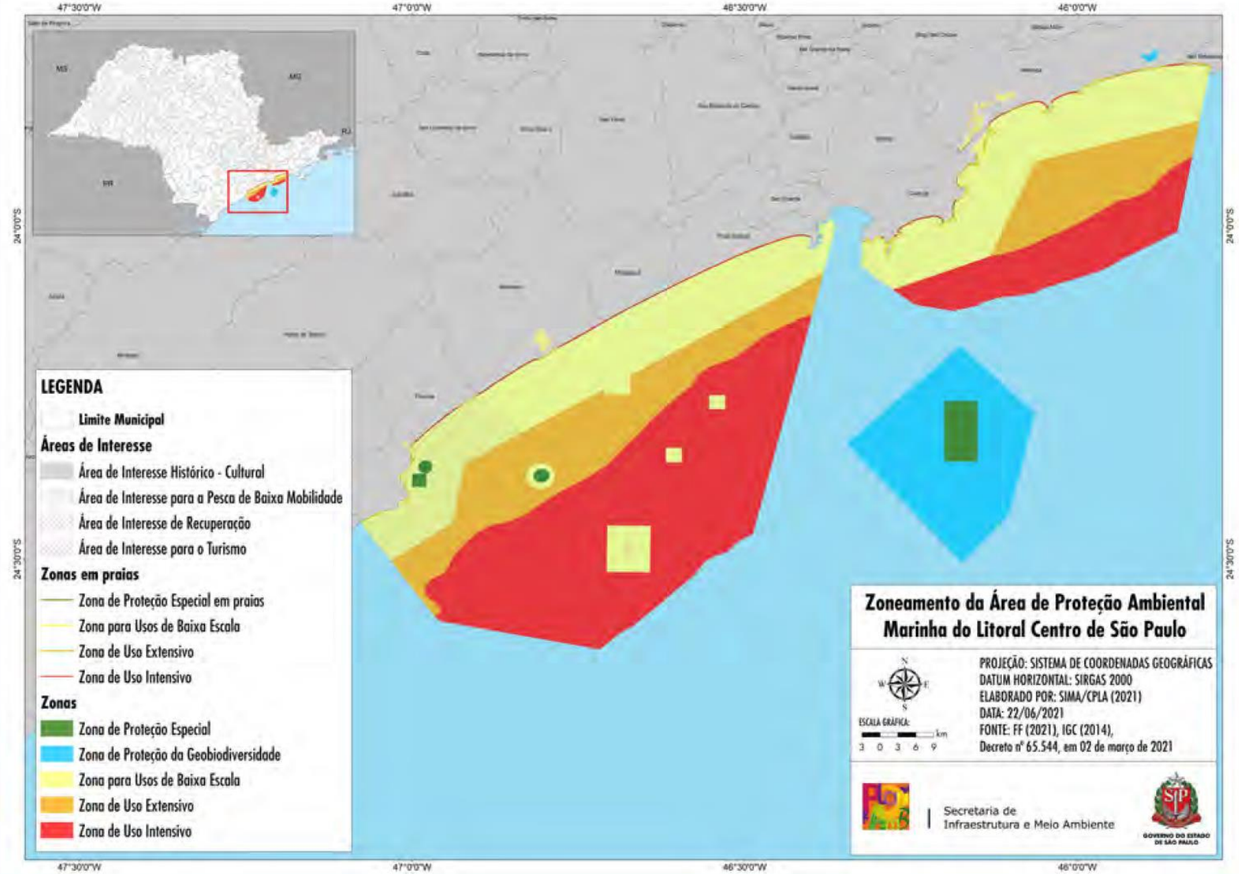
LEARN MORE ›



Australian Government Great Barrier Reef Marine Park Authority).

Example: Brazilian Marine Zones in São Paolo

Zones are classified by intensity of allowed use



Zoning legend:
green = no-take zone; blue = geobiodiversity protection zone; yellow = small-scale use zone; orange = extensive use zone; red = intensive use zone.

From: MSP Guide (2021) and © Secretariat of Infrastructure and Environment of the State of São Paulo, 2021.

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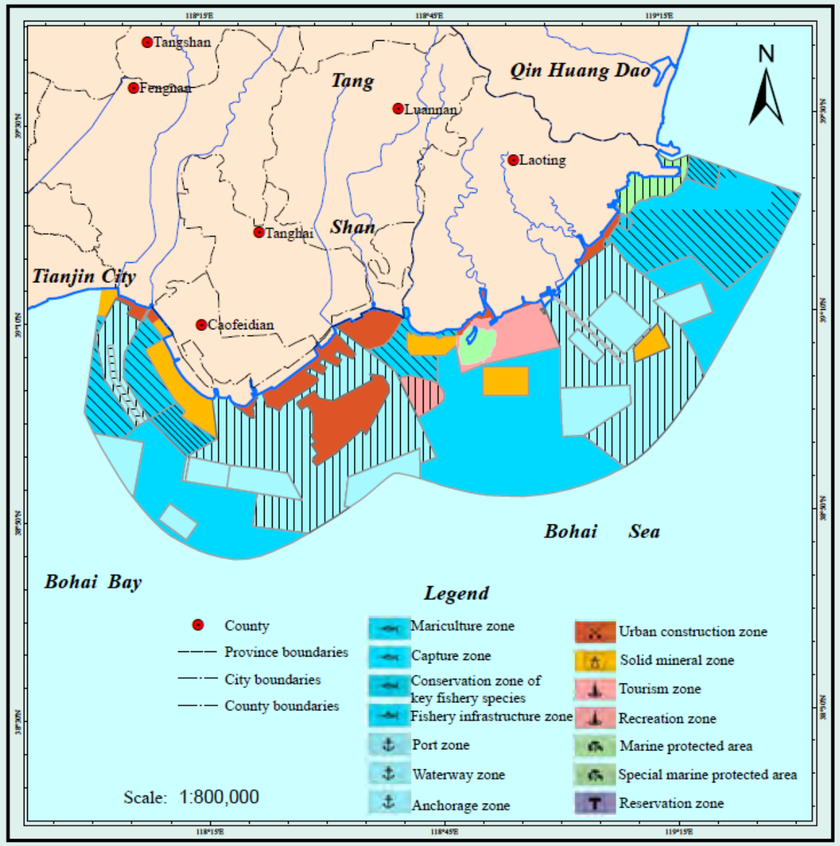
Example: Marine Functional Zones in China

- **Marine Functional Zone is an area with a "best use designation" assigned based on habitats, natural resources, environmental conditions, geographical location, state of development, use of the area, and stakeholder demands**
- **Science-based decision making process to prevent unplanned human activities by assigning basic uses and protection levels for specific areas**
- **System in China divided into 8 zones and 22 subzones**

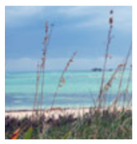


From: MSP Guide (2021)

Example: Florida Keys National Marine Sanctuary

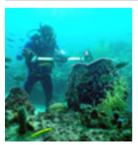
Ecological Reserves
Ecological Reserves are the largest of the sanctuary zones and are able to protect an entire range of marine habitats found in Florida Keys National Marine Sanctuary. More...

Sanctuary Preservation Areas
Sanctuary Preservation Areas (SPAs) within Florida Keys National Marine Sanctuary protect shallow reefs along the reef tract. SPAs encompass discrete, biologically important areas that help sustain critical marine species and habitats. More...



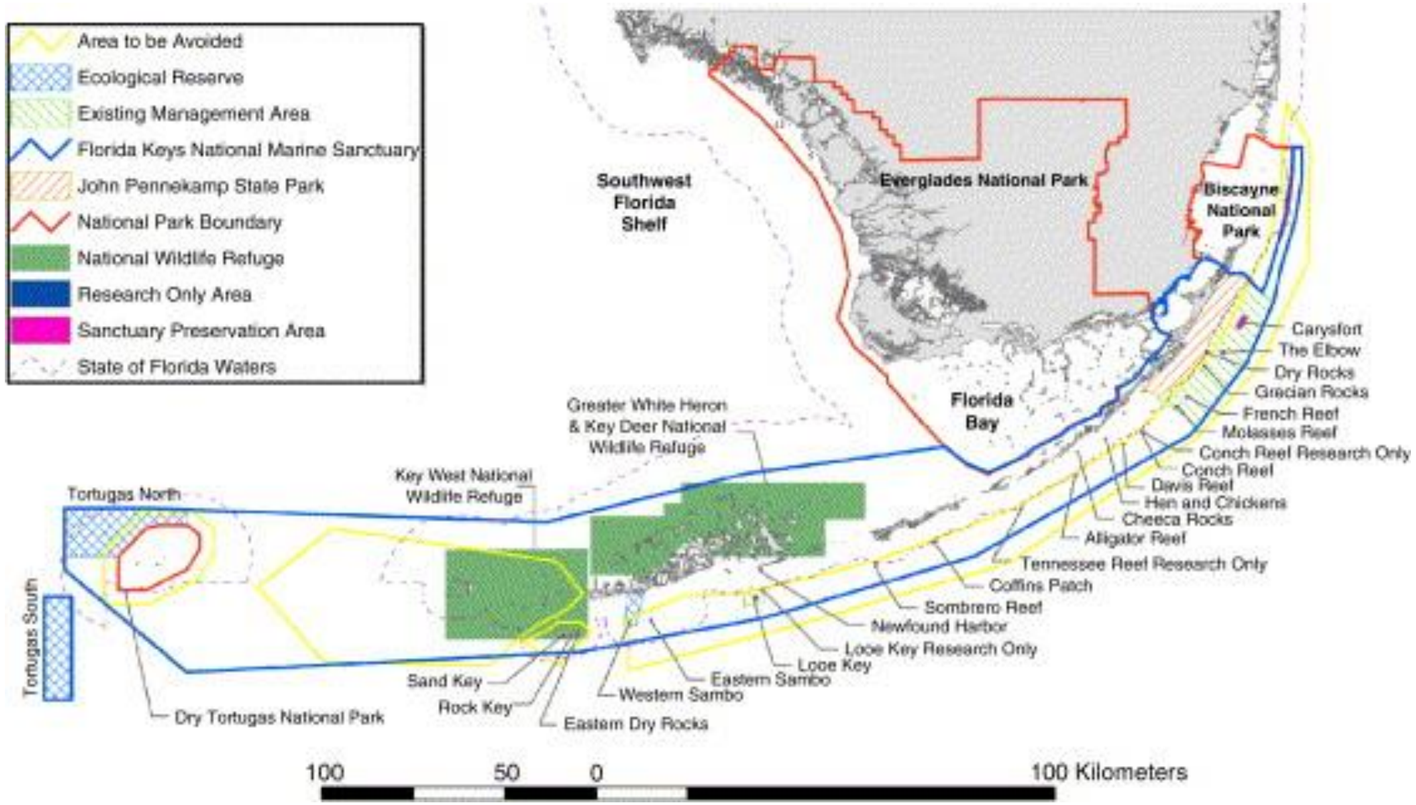
Wildlife Management Areas
Wildlife Management Areas are intended to minimize disturbance to sensitive or endangered wildlife and their habitats, such as bird nesting, resting or feeding areas, and turtle nesting beaches. More...

Exisiting Management Areas
Existing Management Areas are areas within Florida Keys National Marine Sanctuary that were established by NOAA or another federal agency prior to 1997 when sanctuary zoning regulations went into effect. More...



Special-use Areas
Special-use Areas are used to set aside areas for scientific research and educational purposes, restoration, monitoring, or to establish areas that confine or restrict activities. More...

From: NOAA/National Marine Sanctuaries



From: Keller & Causey (2005)

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Questions?

Kate Longley-Wood (TNC Global)
May 9, 2024

COFFEE BREAK

15 minutes

Belize Sustainable Ocean Plan

Belize Sustainable Ocean Plan

Developing a BSOP Zoning Framework

Part I

Andria Grinage, Ministry of Blue Economy & Disaster Risk Management
May 9th, 2024

BELIZE COASTAL ZONE MANAGEMENT AUTHORITY & INSTITUTE

The Nature Conservancy Belize

Developing a BSOP Framework

IOC-UNESCO guide provides frameworks and guidance on key steps and assessments that are consistent with international best practices for MSP

UNESCO's *"Step-by-step Approach for Marine Spatial Planning toward Ecosystem-based Management"* offers a 10-step guide on how to get a marine spatial plan started in your region. Explore the guide by choosing steps here.

Download Guide
(PDF 1.5MB)

- **STEP 1** Establishing Authority
- **STEP 2** Obtaining Financial Support
- **STEP 3** Organizing the MSP Process
- **STEP 4** Engaging Stakeholders
- **STEP 5** Analyzing Existing Conditions
- **STEP 6** Analyzing Future Conditions
- **STEP 7** Developing the Plan
- **STEP 8** Implementing the Plan
- **STEP 9** Evaluating Performance
- **STEP 10** Adapting the Process

Ehler, C. and F. Douvere. 2009. Marine spatial planning: a step-by-step approach toward ecosystem-based management. IOC-UNESCO

Developing a BSOP Framework

- Define Objectives and Scope
- Stakeholder Engagement
- Data Collection and Analysis
- Identify Priority Areas
- Spatial mapping
- Develop Policies and Regs
- Adaptive Management
- Legal & Institutional Framework

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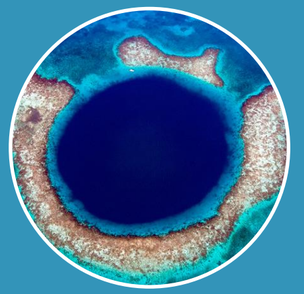
Importance of Marine Spatial Planning

Belize's marine ecosystems are diverse and ecologically sensitive, needing careful planning to balance conservation and development.

Central to Belize's development is the Belize Blue Economy.



The BSOP is meant to provide Belize with a blueprint for Blue Economy taking into consideration the conservation needs for a healthy blue space and the potential economic sectors.

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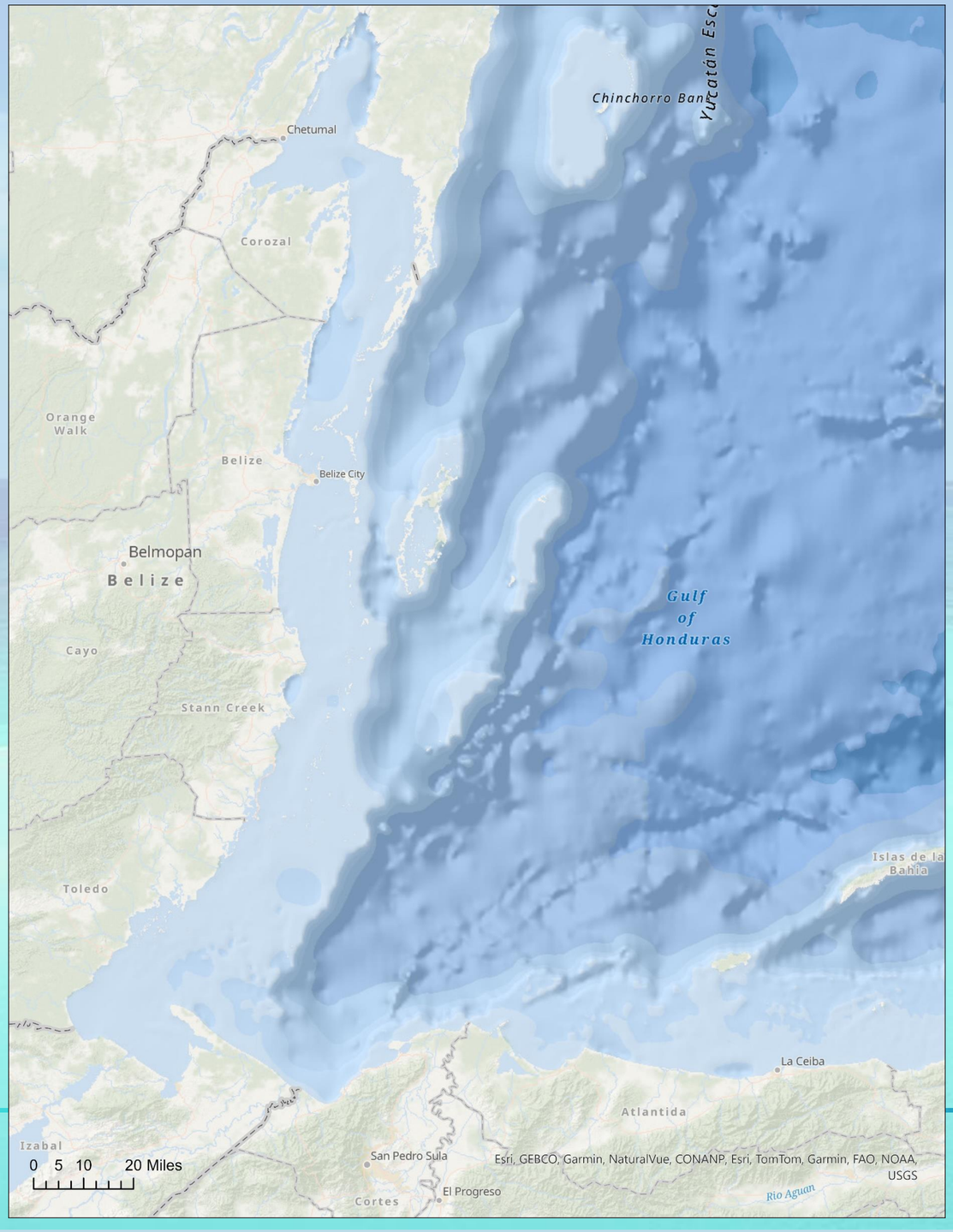
Human Uses and Ecosystem Services

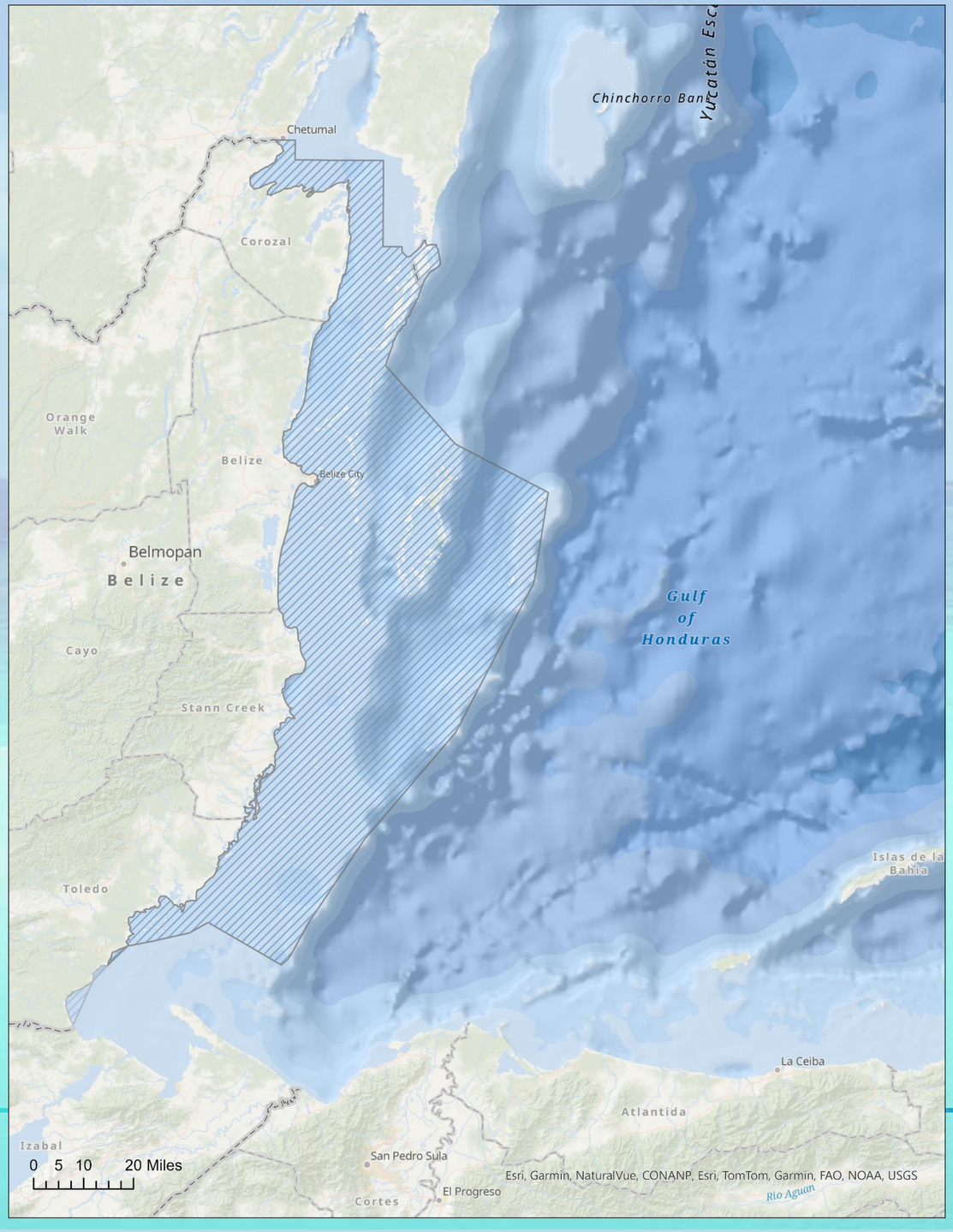
Belize Sustainable Ocean Plan

Belize's Blue Space



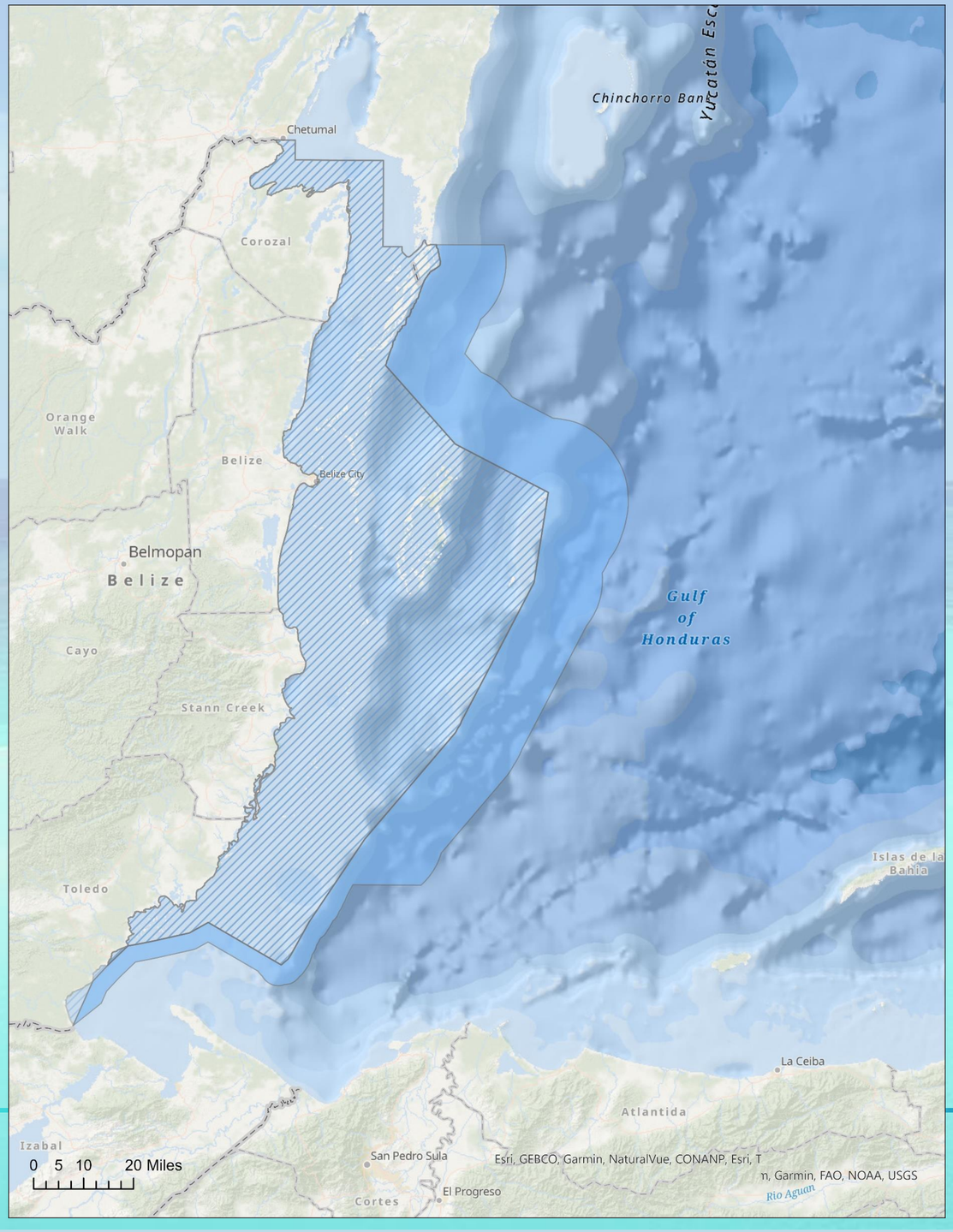
Belize Sustainable Ocean Plan

Internal Waters



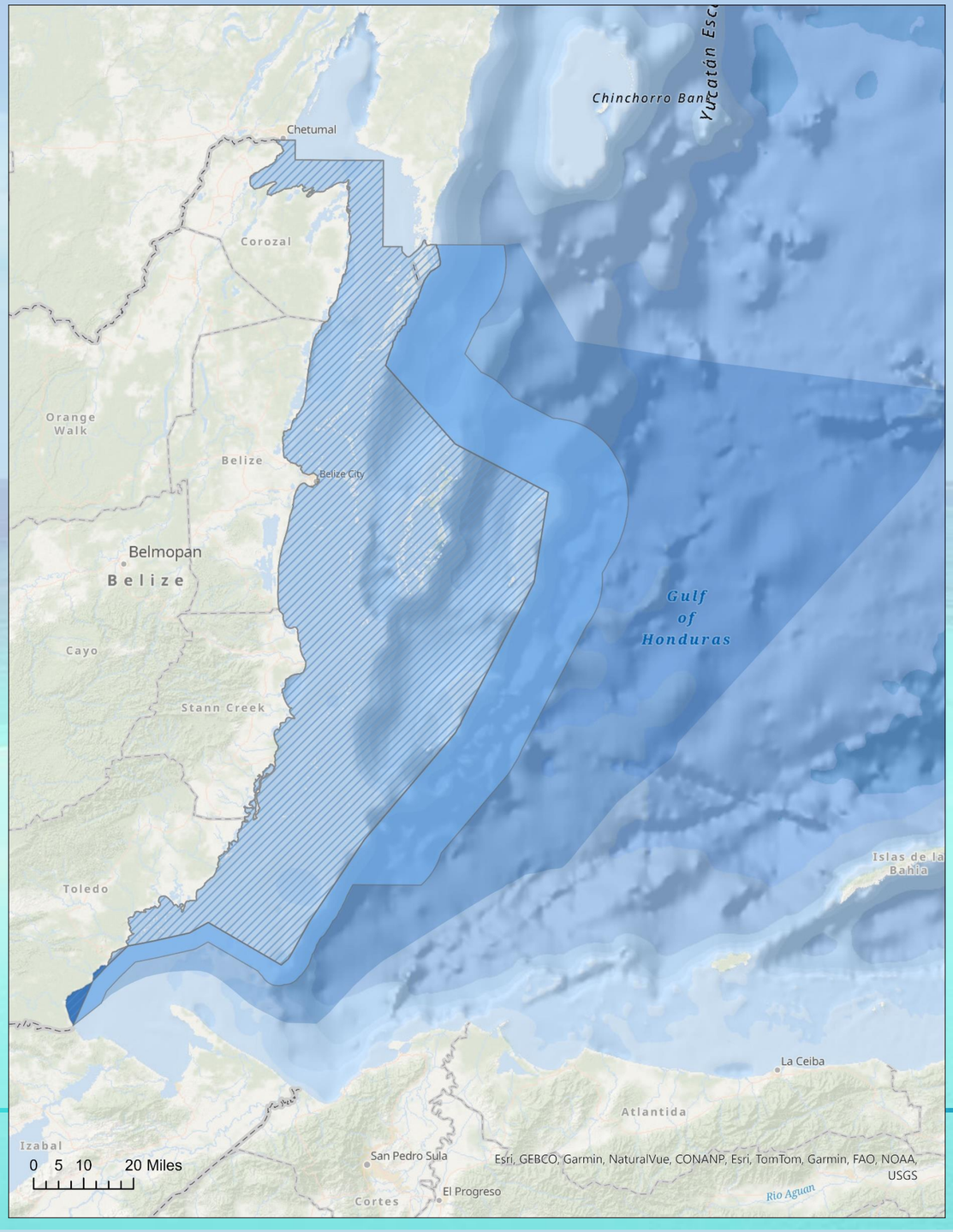
Belize Sustainable Ocean Plan

Internal Waters
Territorial Sea



Belize Sustainable Ocean Plan

Internal Waters
Territorial Sea
Exclusive Economicc Zone



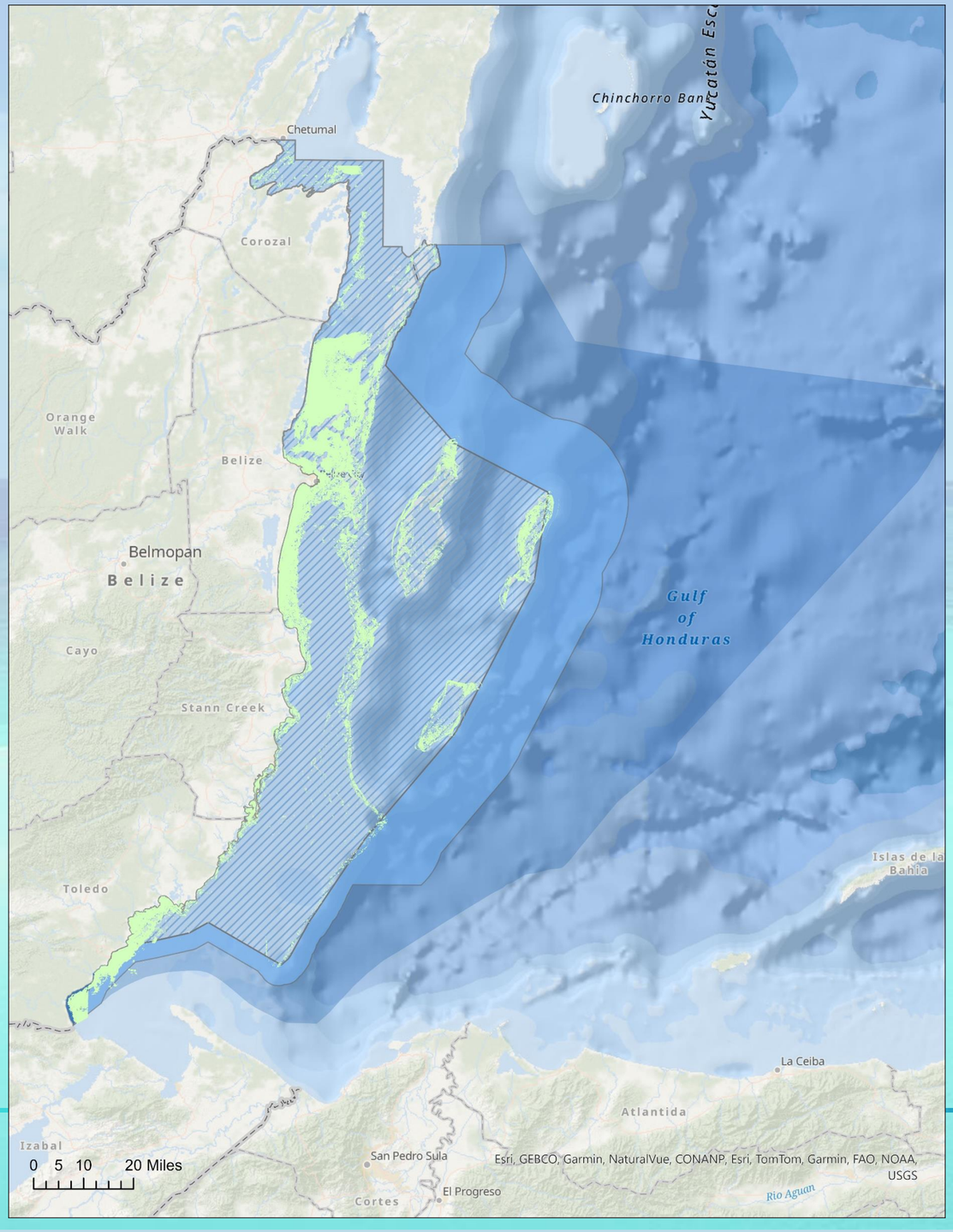
Belize Sustainable Ocean Plan

Internal Waters

Territorial Sea

Exclusive Economicc Zone

Seagrass beds



Belize Sustainable Ocean Plan

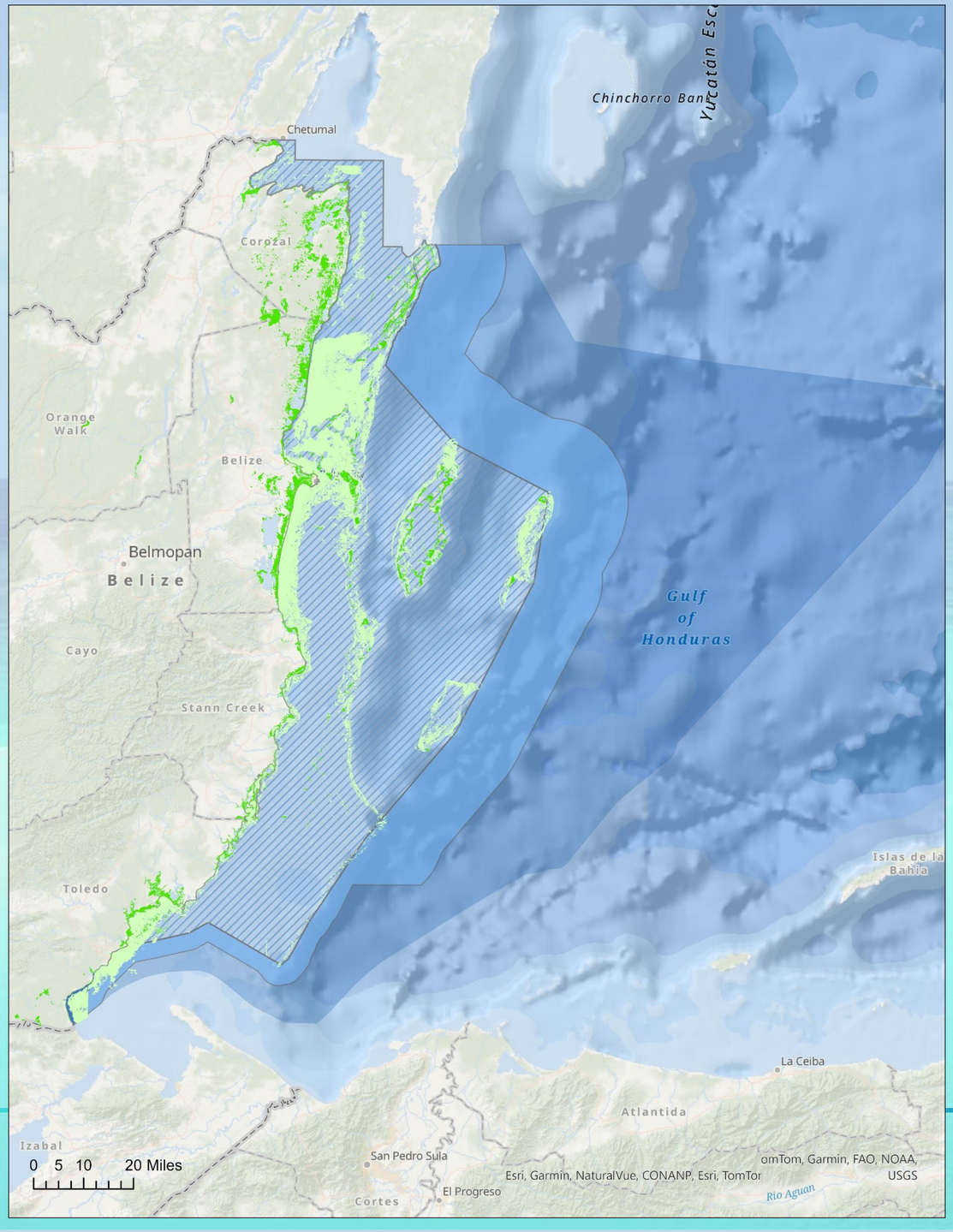
Internal Waters

Territorial Sea

Exclusive Economicc Zone

Seagrass beds

Mangrove Forests



Belize Sustainable Ocean Plan

Internal Waters

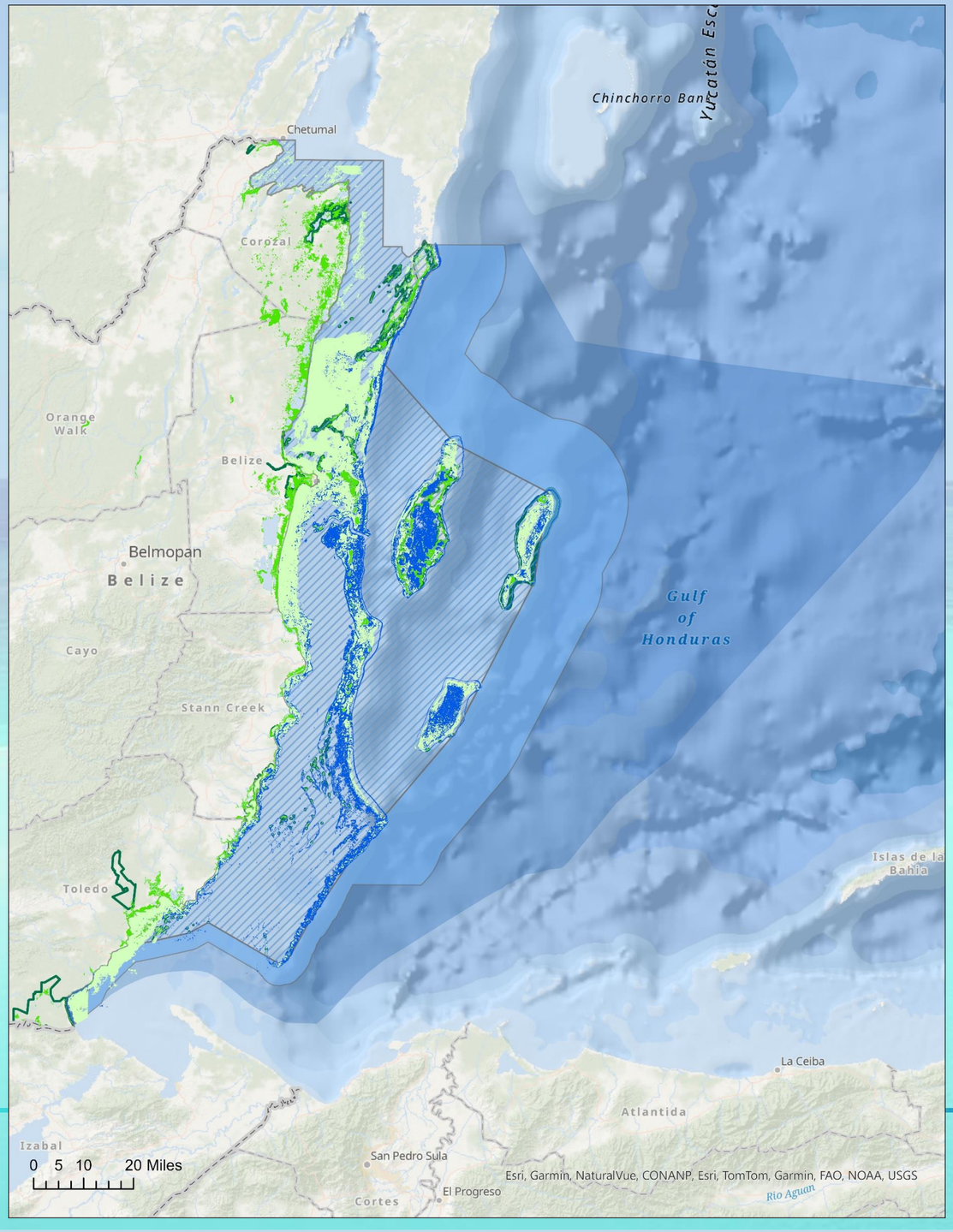
Territorial Sea

Exclusive Economicc Zone

Seagrass beds

Mangrove Forests

Priority Mangrove Areas



Belize Sustainable Ocean Plan

Internal Waters

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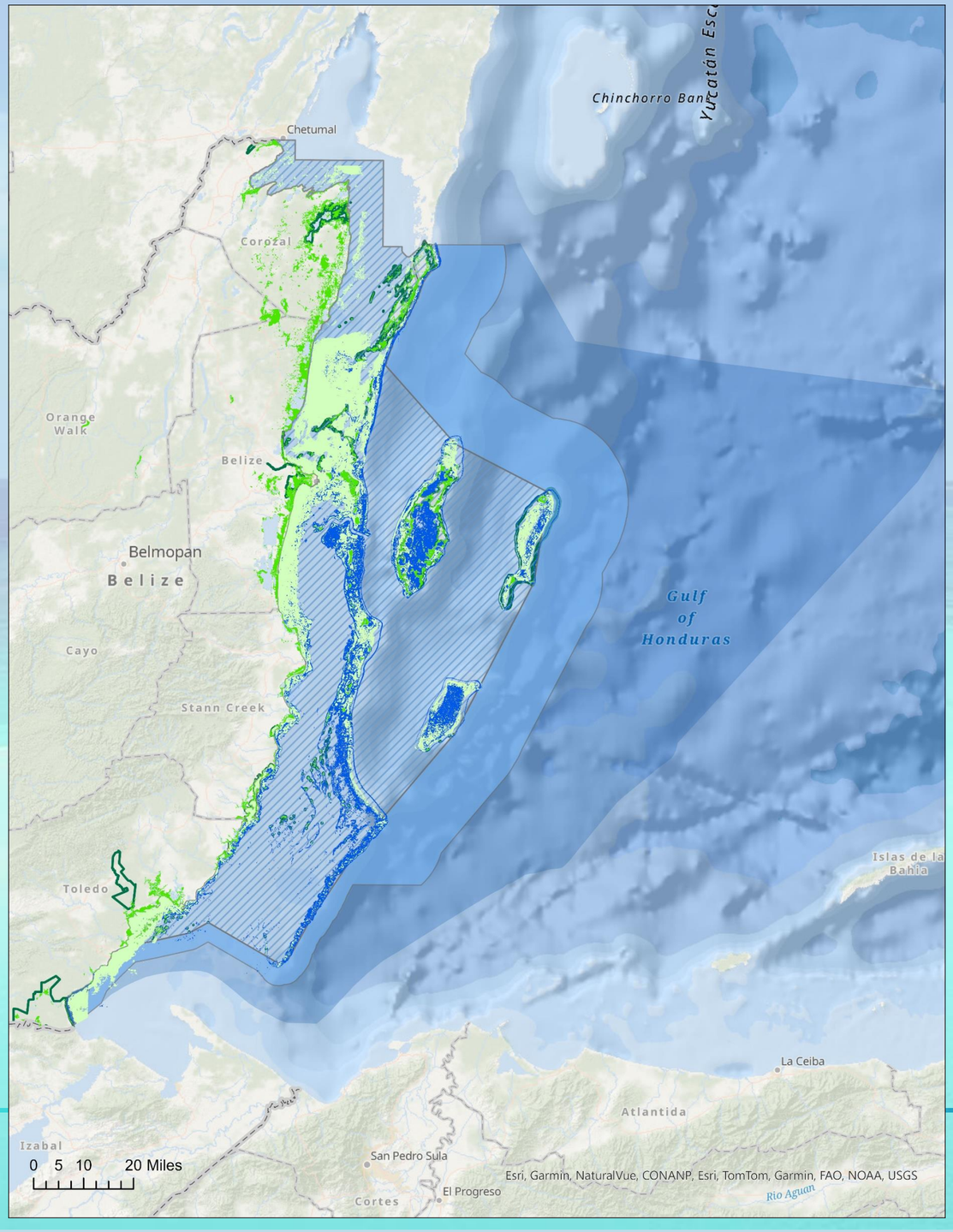
Mangrove Forests

Priority Mangrove Areas

Coral Reefs



Belize Sustainable Ocean Plan

Internal Waters

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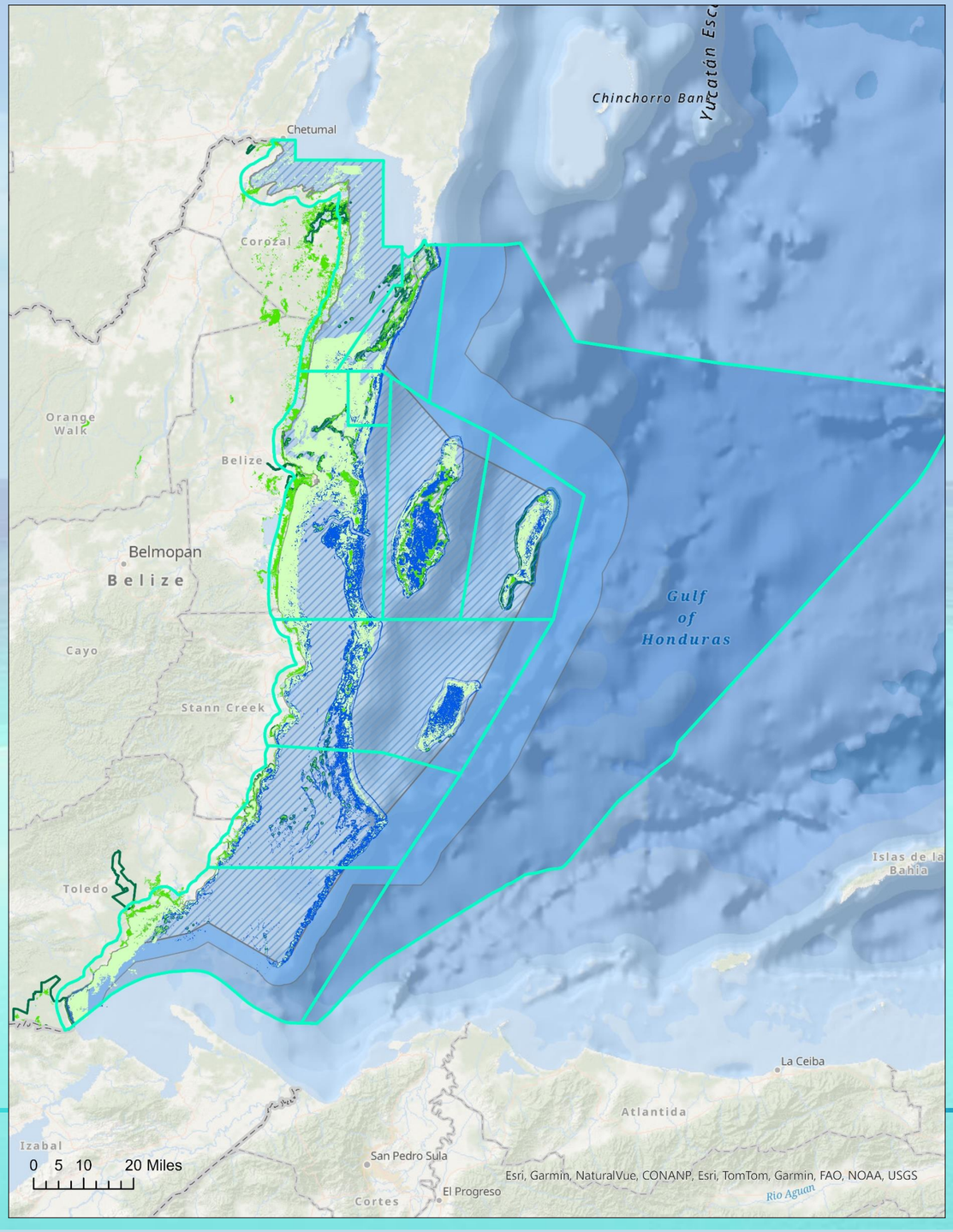
Mangrove Forests

Priority Mangrove Areas

Coral Reefs

Coastal Planning Regions



Belize Sustainable Ocean Plan

Internal Waters

Territorial Sea

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Mangrove Forests

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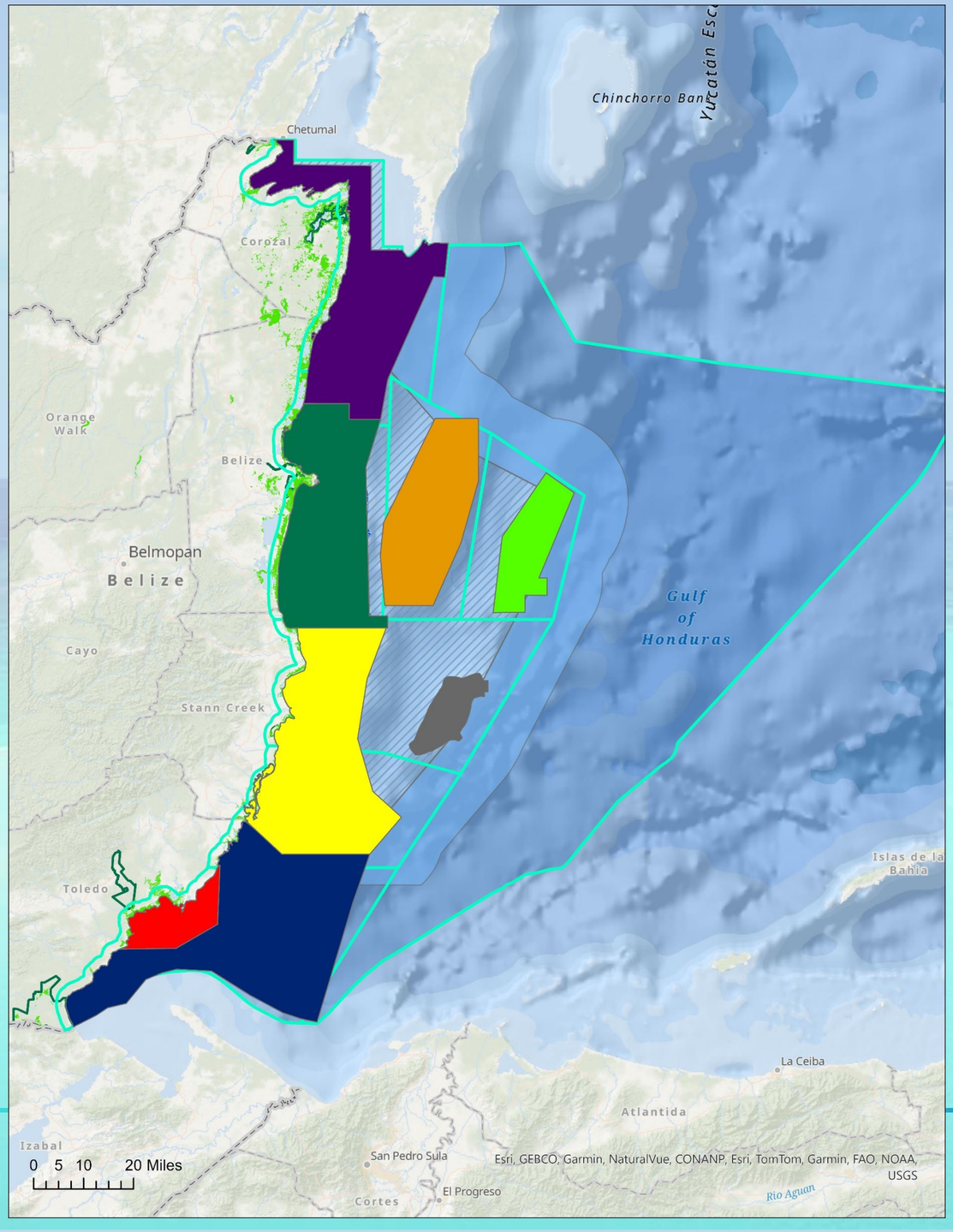
Managed Access Zones



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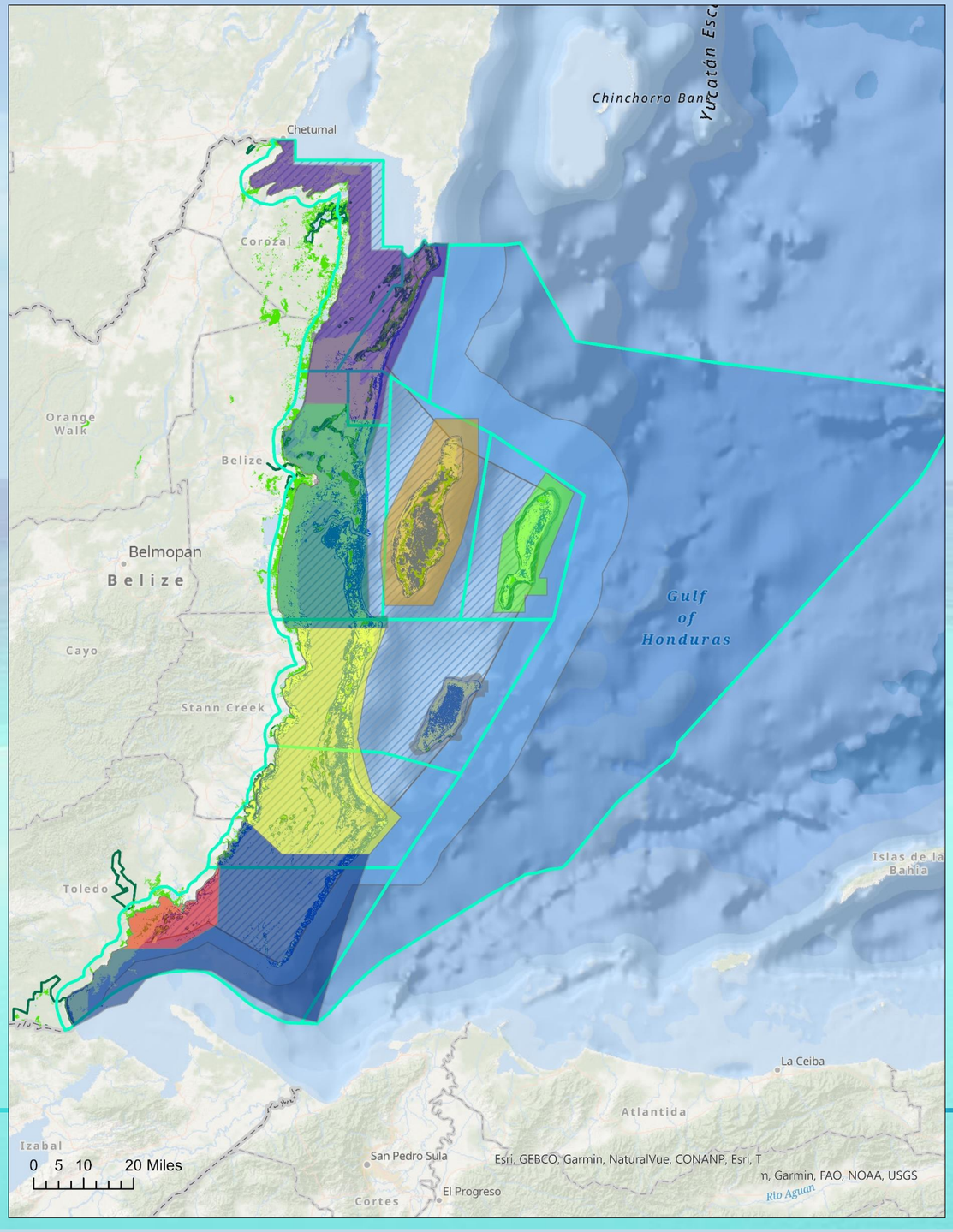

Belize Sustainable Ocean Plan

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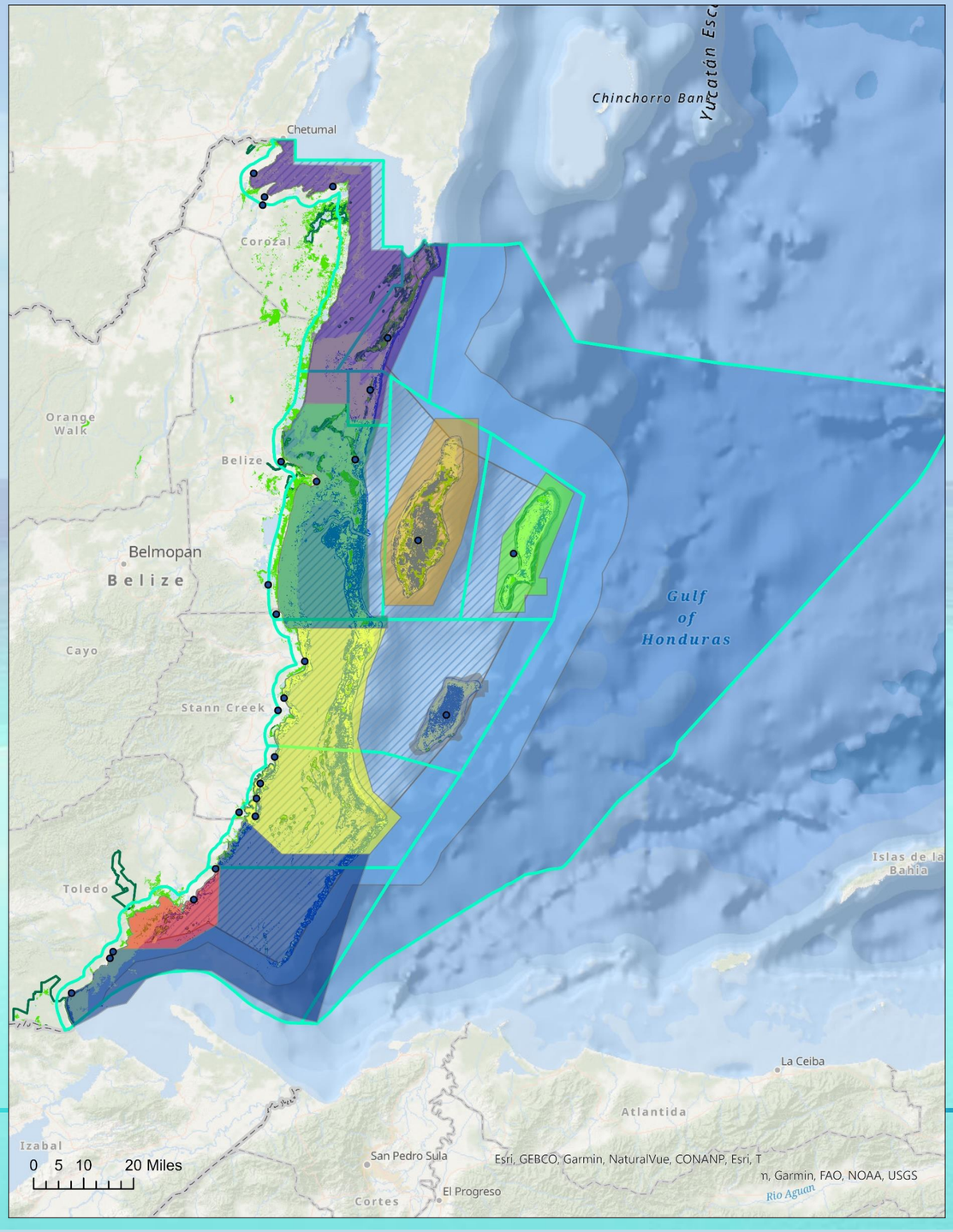

Belize Sustainable Ocean Plan

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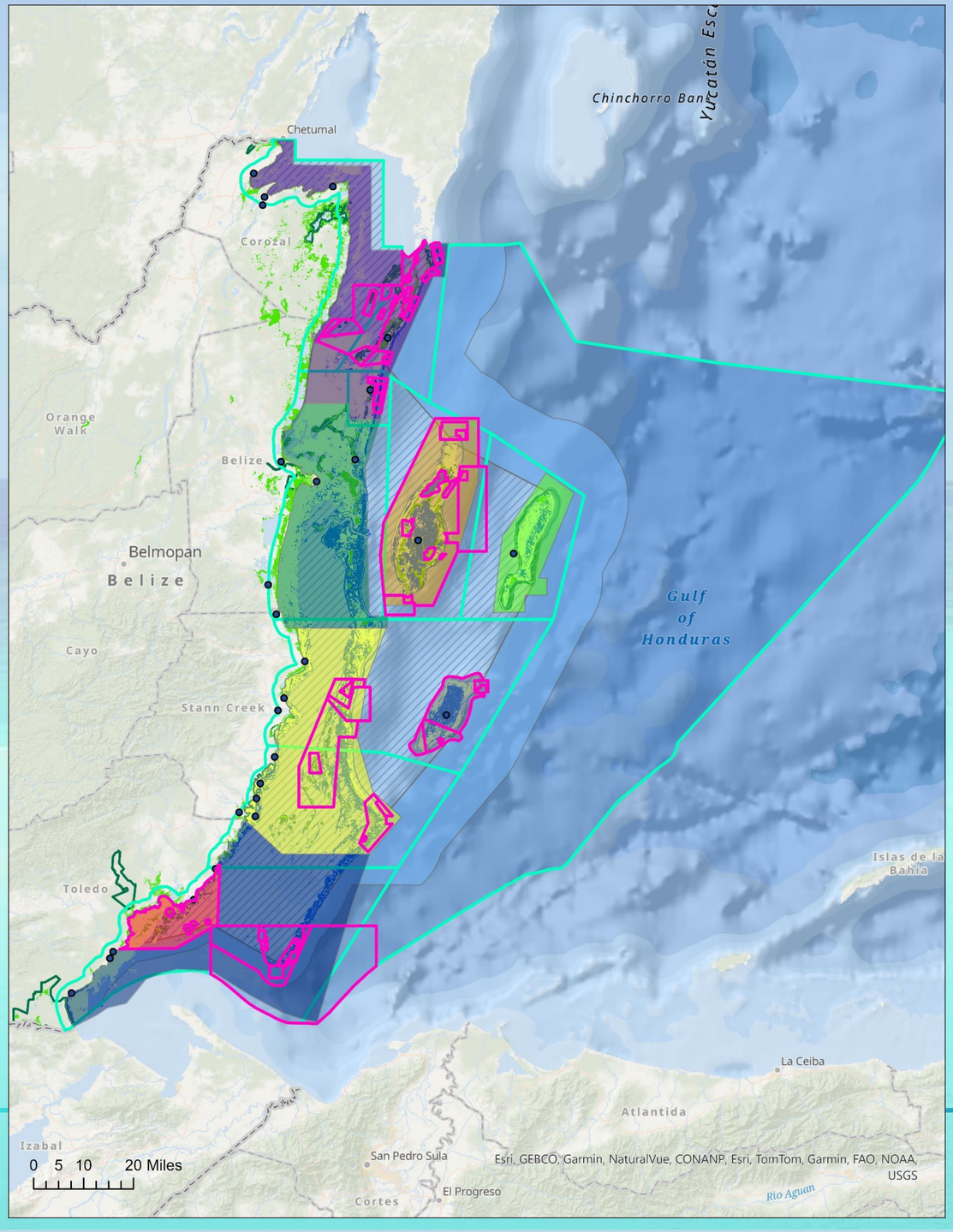

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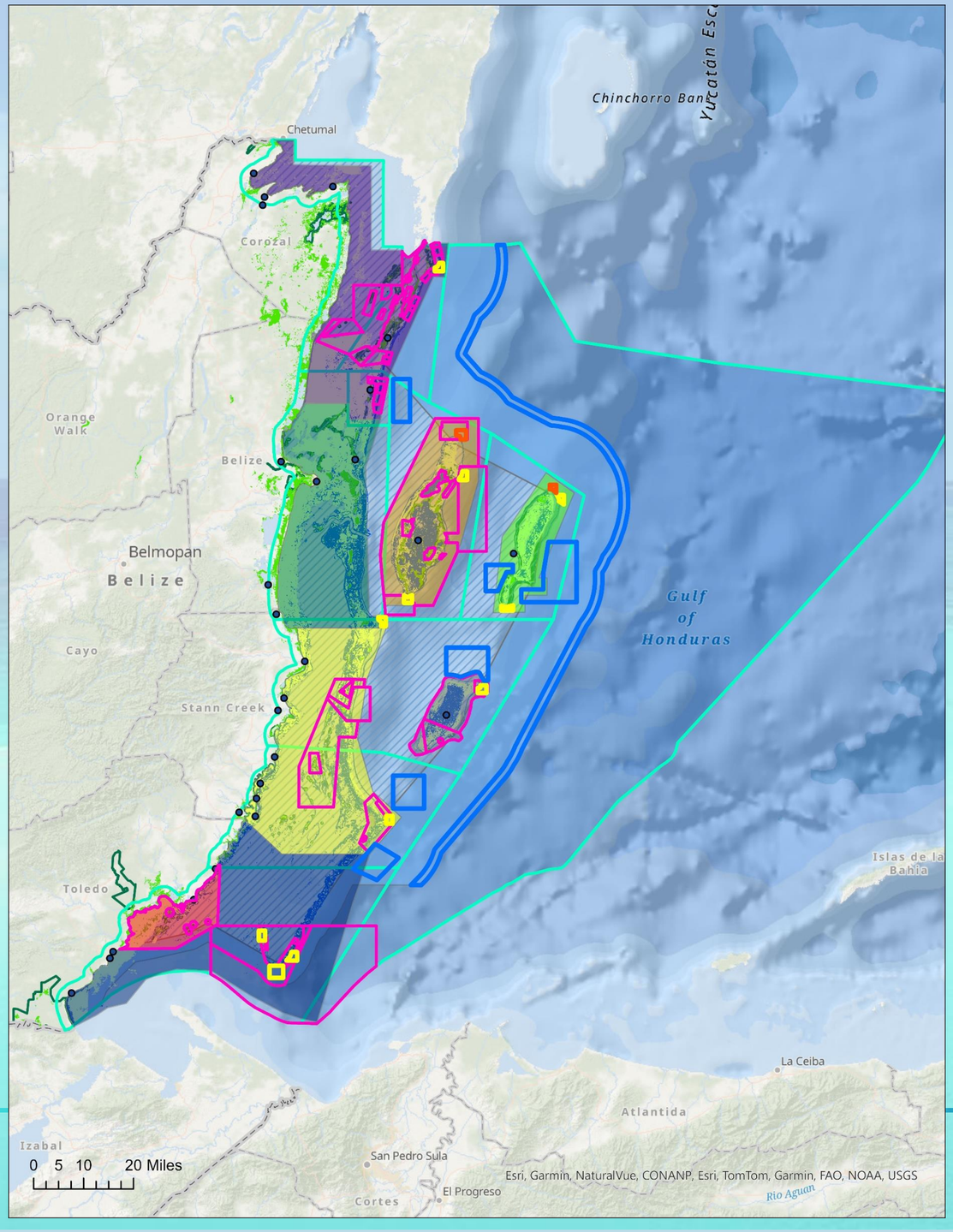

Spawning & Aggregation Sites, Nassau Grouper & Species Protection, High Biodiversity Zones

Belize Sustainable Ocean Plan

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Exclusive Economicc Zone

Seagrass beds

Mangrove Forests

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Coral Reefs

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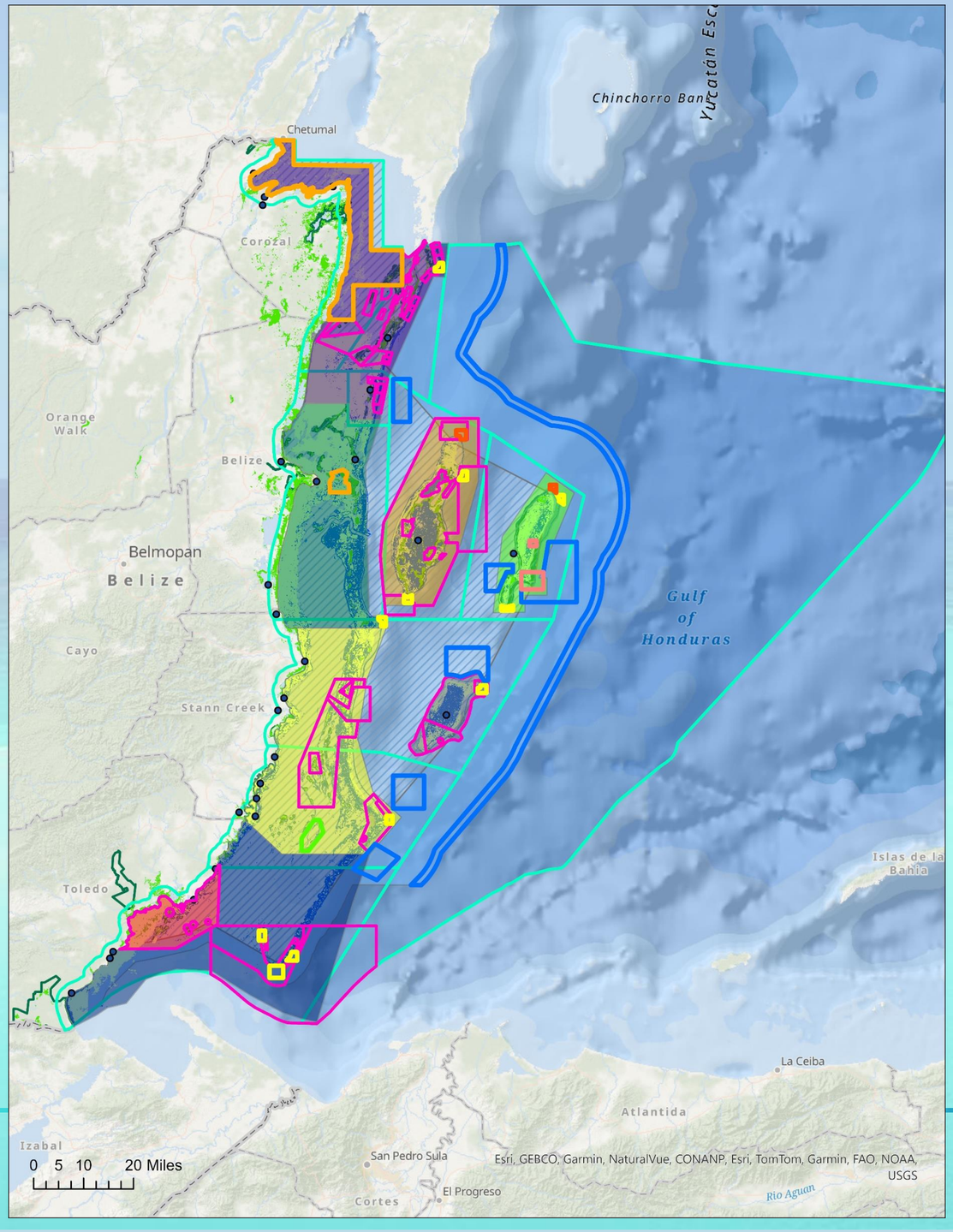
Coastal Communities

Marine Protected Areas



Spawning & Aggregation Sites, Nassau Grouper & Species Protection, High Biodiversity Zones

National Parks, Natural Monuments, Wildlife Sanctuary

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Seagrass beds

Mangrove Forests

Priority Mangrove Areas

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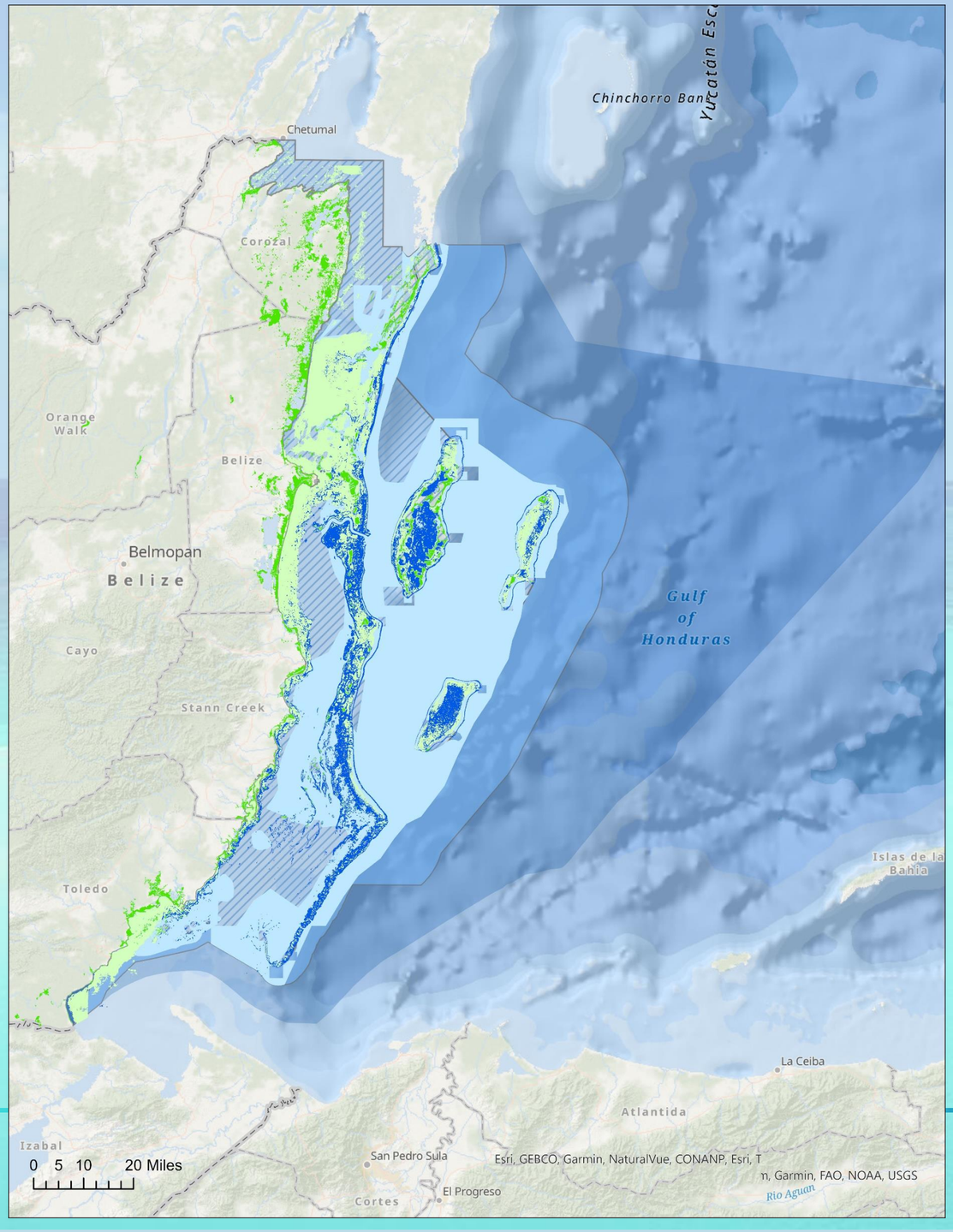
Coastal Planning Regions

Managed Access Zones

Coastal Communities

Marine Protected Areas



Spawning & Aggregation Sites, Nassau Grouper & Species Protection, High Biodiversity Zones

National Parks, Natural Monuments, Wildlife Sanctuary

Fishing

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Seagrass beds

Mangrove Forests

Priority Mangrove Areas

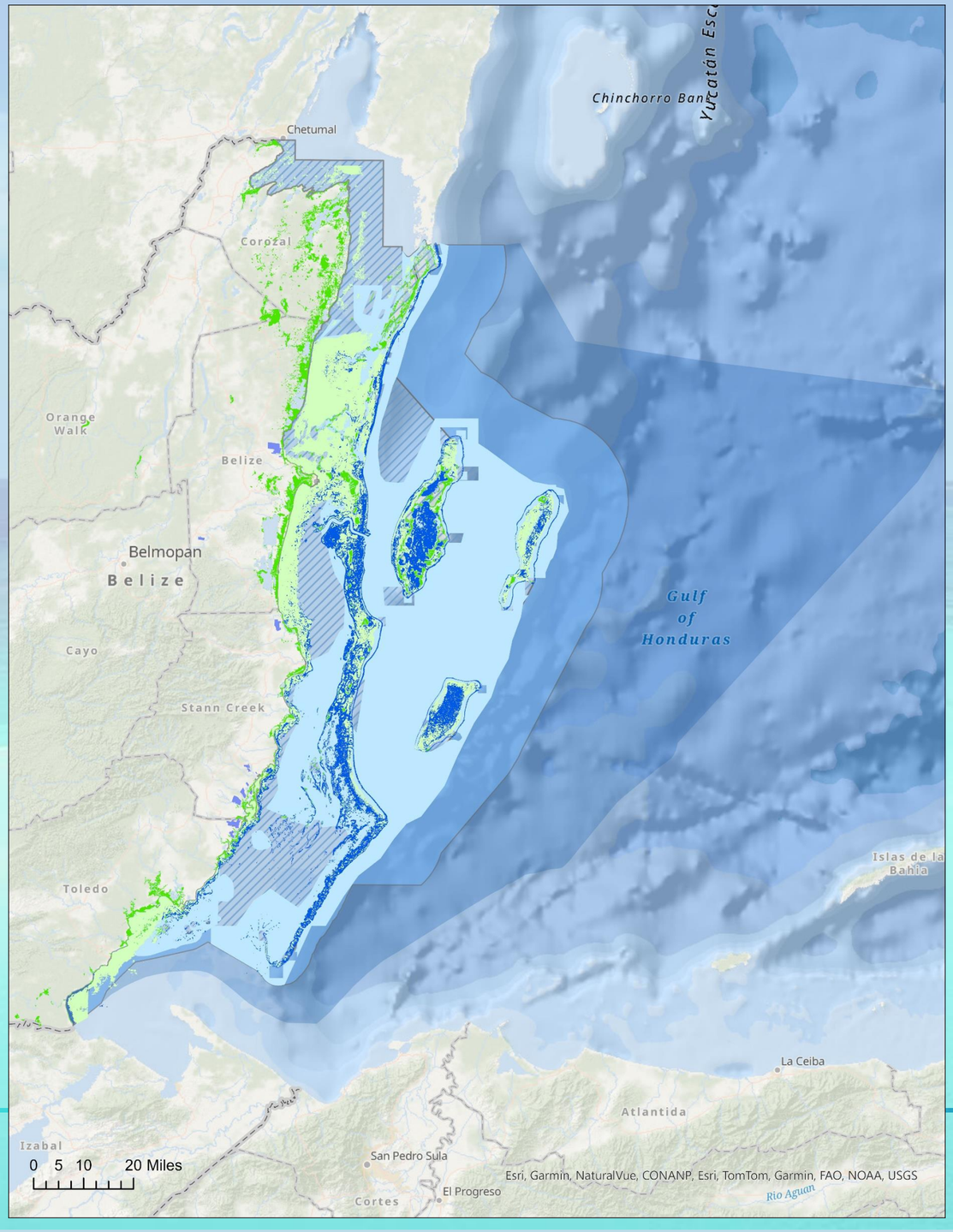
Coral Reefs

Coastal Planning Regions

Managed Access Zones

Coastal Communities

Marine Protected Areas



Spawning & Aggregation Sites, Nassau Grouper & Species Protection,

High Biodiversity Zones

National Parks, Natural Monuments, Wildlife Sanctuary

Fishing

Coastal Development

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Coastal Communities

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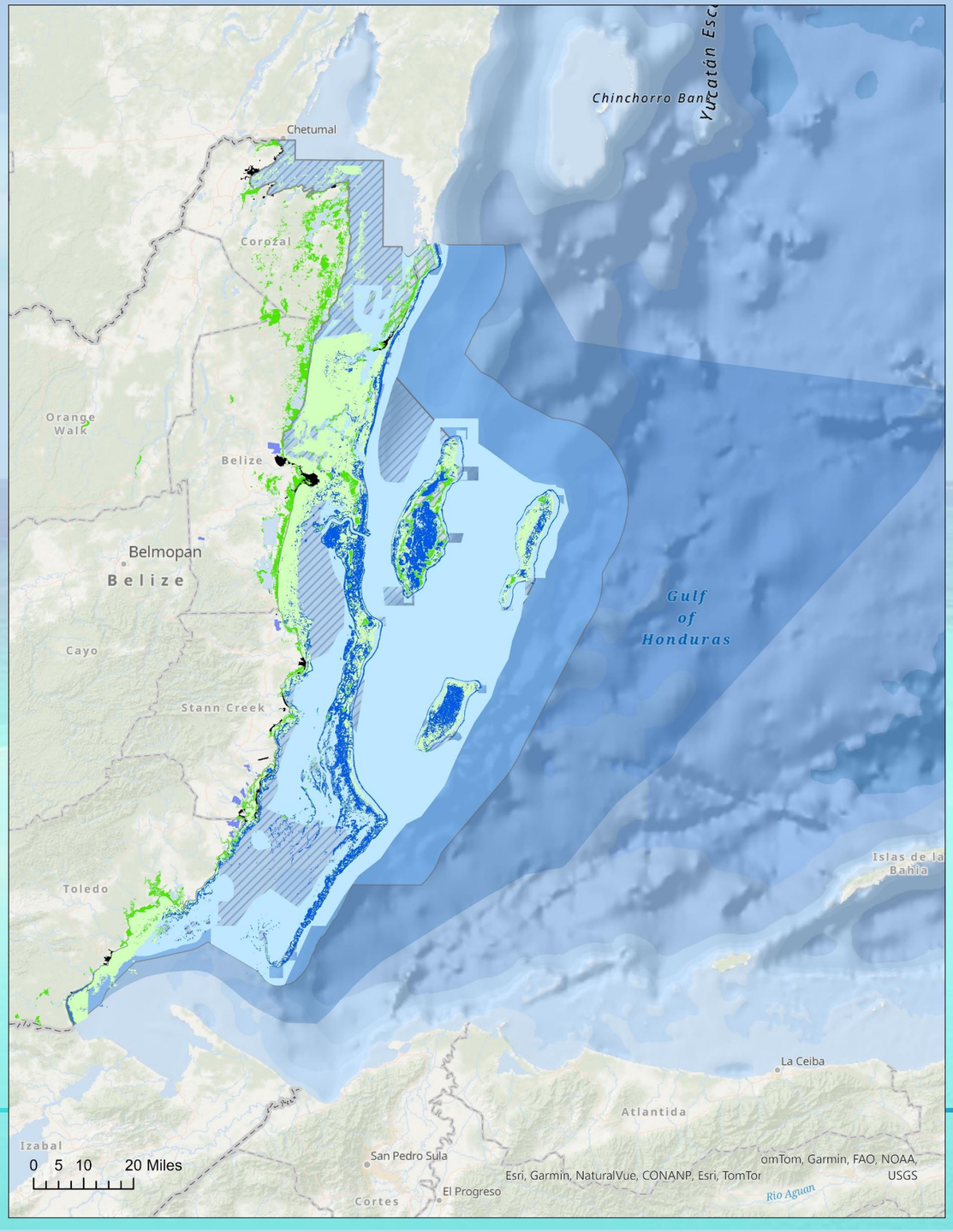

Spawning & Aggregation Sites, Nassau Grouper & Species Protection,

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National Parks, Natural Monuments, Wildlife Sanctuary

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Coastal Development

Belize Sustainable Ocean Plan

Internal Waters

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Priority Mangrove Areas

Coral Reefs

Coastal Planning Regions

Managed Access Zones

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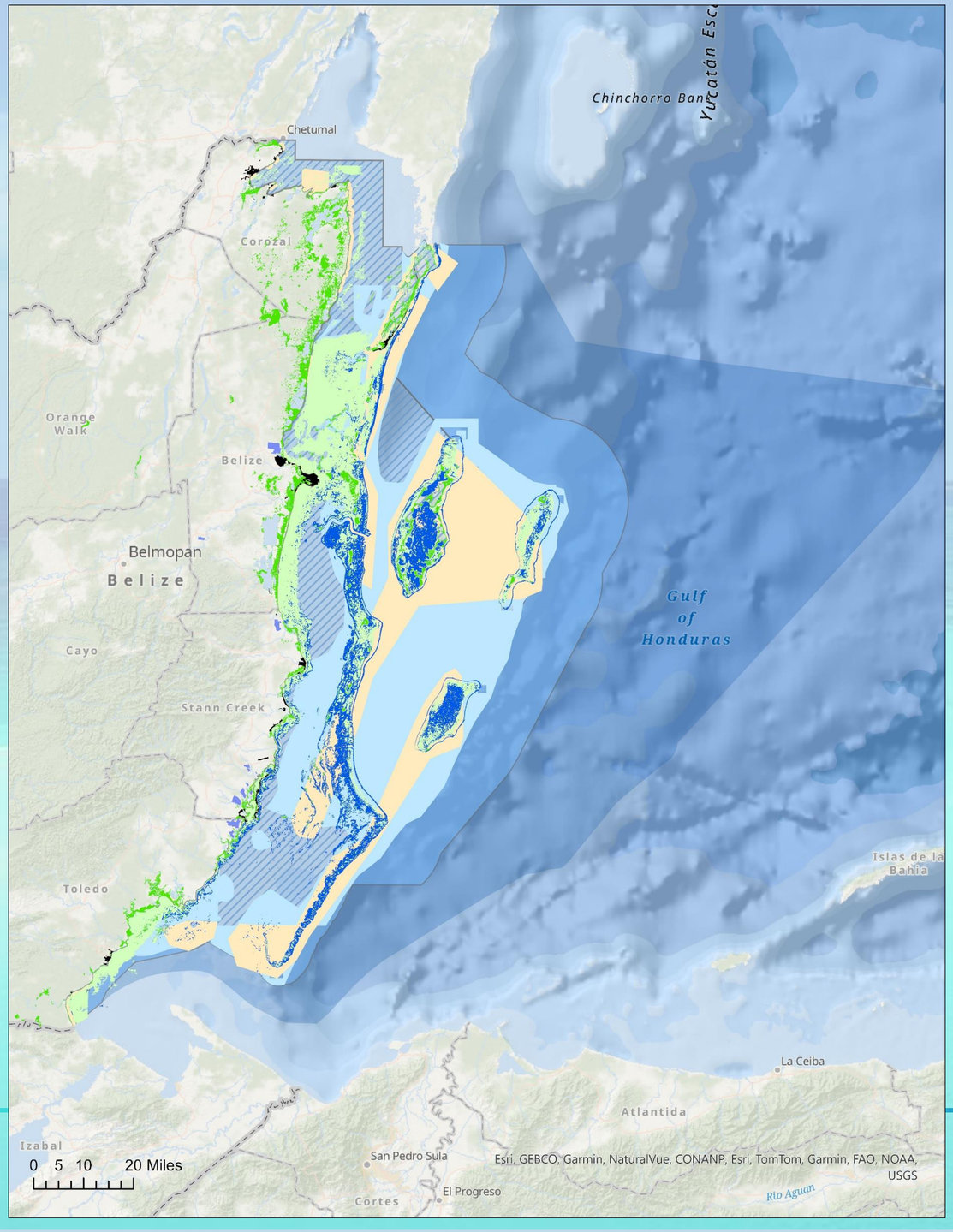
Marine Protected Areas



Spawning & Aggregation Sites, Nassau Grouper & Species Protection,

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National Parks, Natural Monuments, Wildlife Sanctuary

Fishing

Coastal Development

Marine Recreation

Belize Sustainable Ocean Plan

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Seagrass beds

Mangrove Forests

Priority Mangrove Areas

Coral Reefs

Coastal Planning Regions

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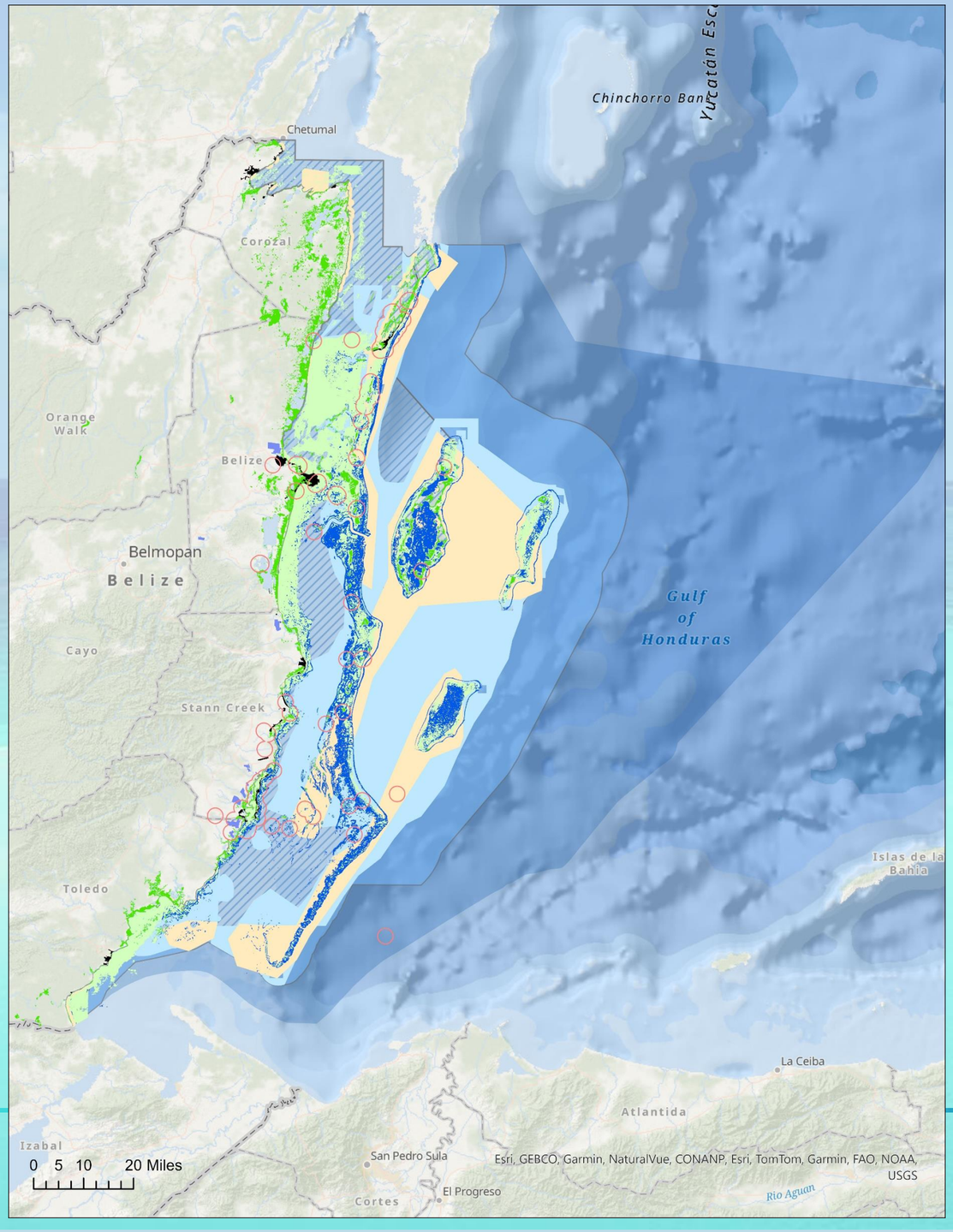

Spawning & Aggregation Sites, Nassau Grouper & Species Protection,

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National Parks, Natural Monuments, Wildlife Sanctuary

Fishing

Coastal Development

Marine Recreation

Dredging/Mining

Belize Sustainable Ocean Plan

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Seagrass beds

Mangrove Forests

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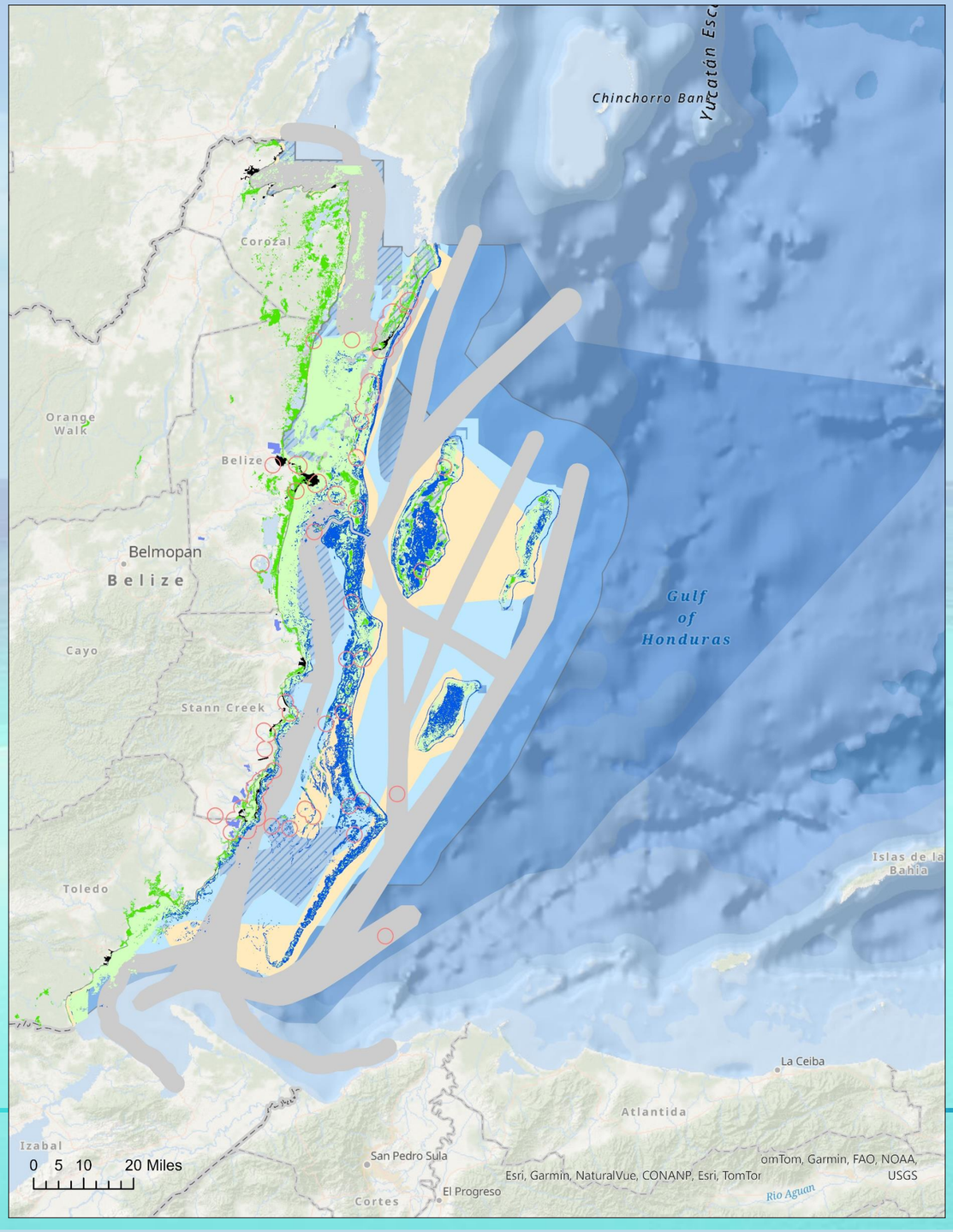
Coral Reefs

Coastal Planning Regions

Managed Access Zones

Coastal Communities

Marine Protected Areas



Spawning & Aggregation Sites, Nassau Grouper & Species Protection,

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Fishing

Coastal Development

Marine Recreation

Dredging/Mining

Transportation

Belize Sustainable Ocean Plan

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Mangrove Forests

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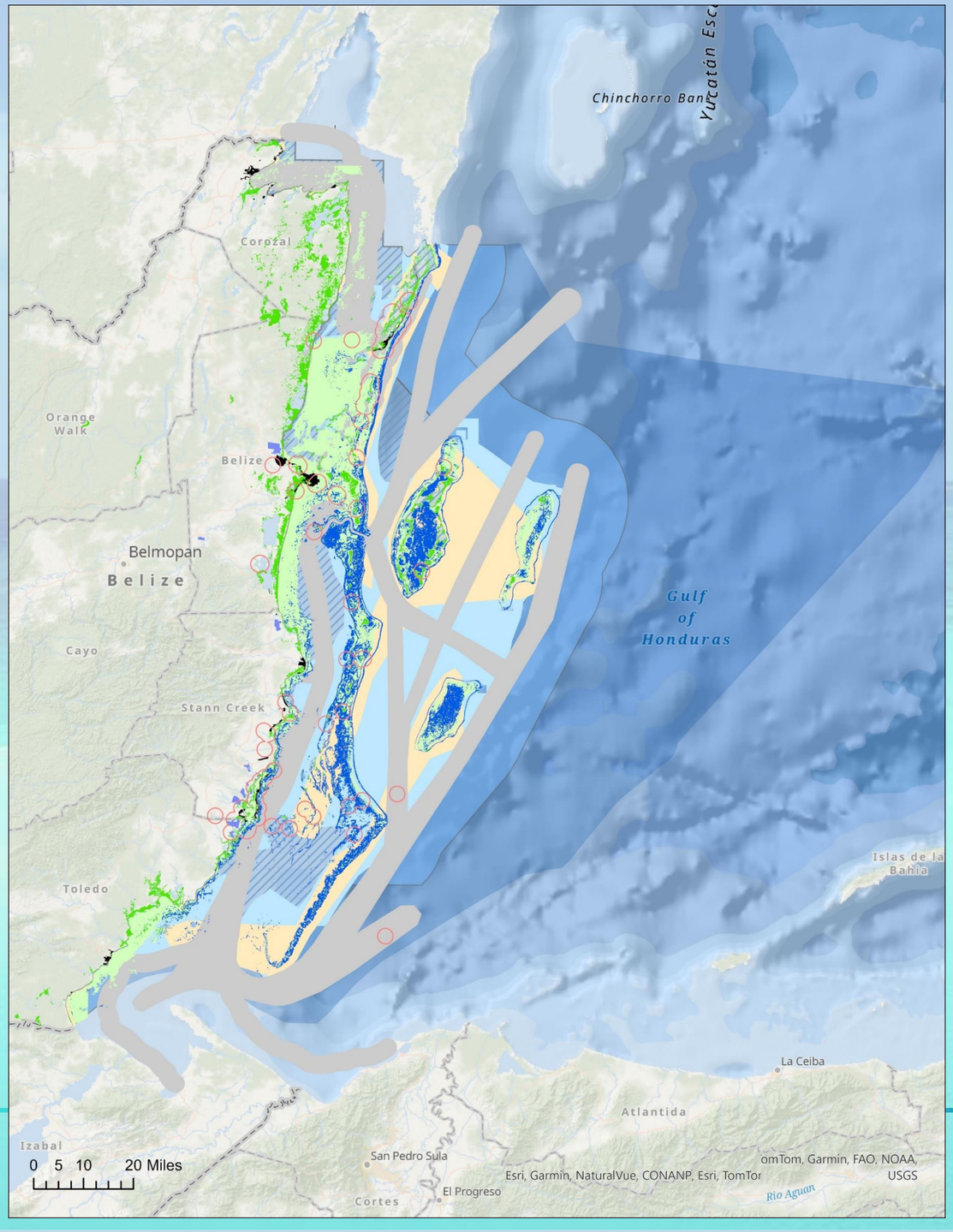

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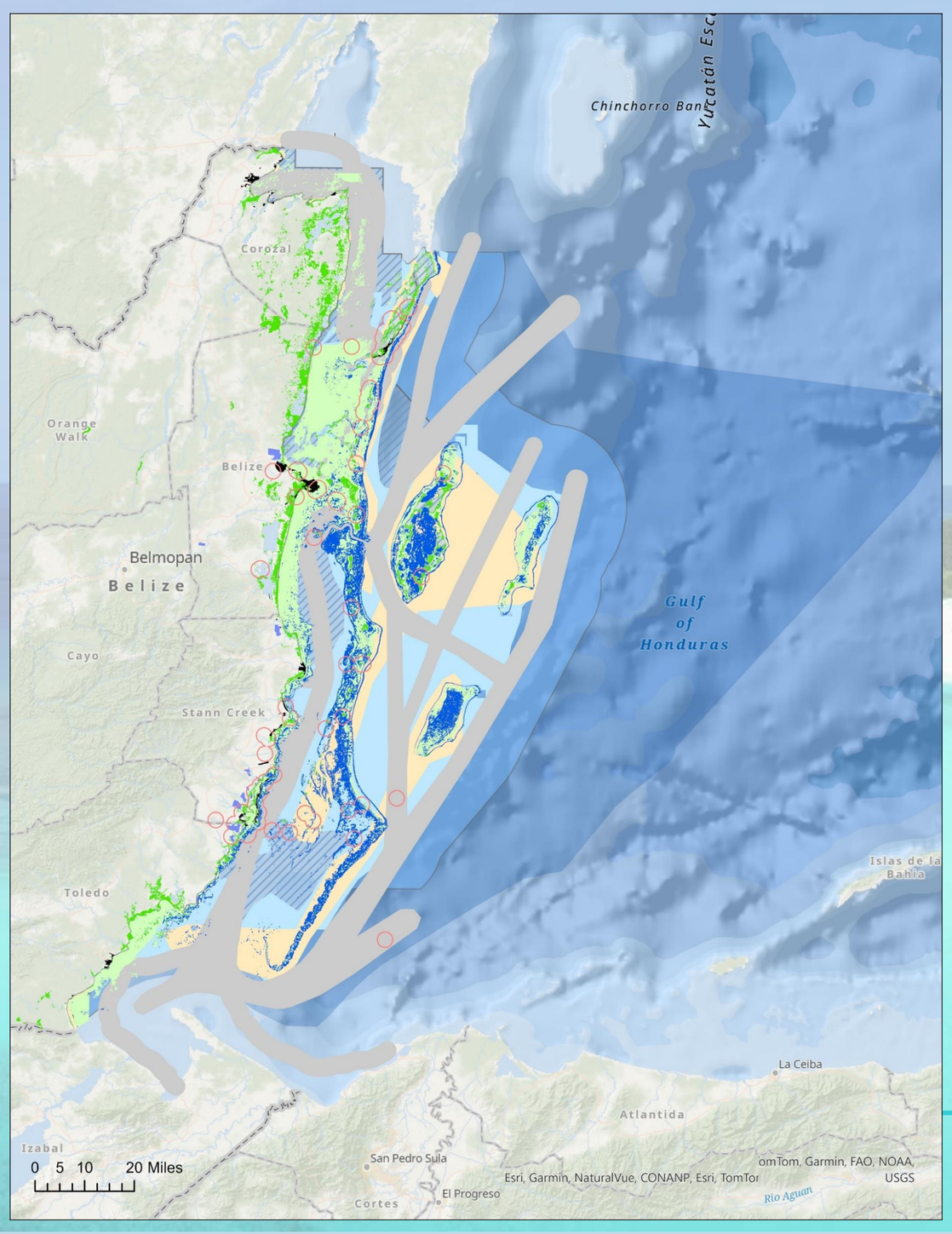
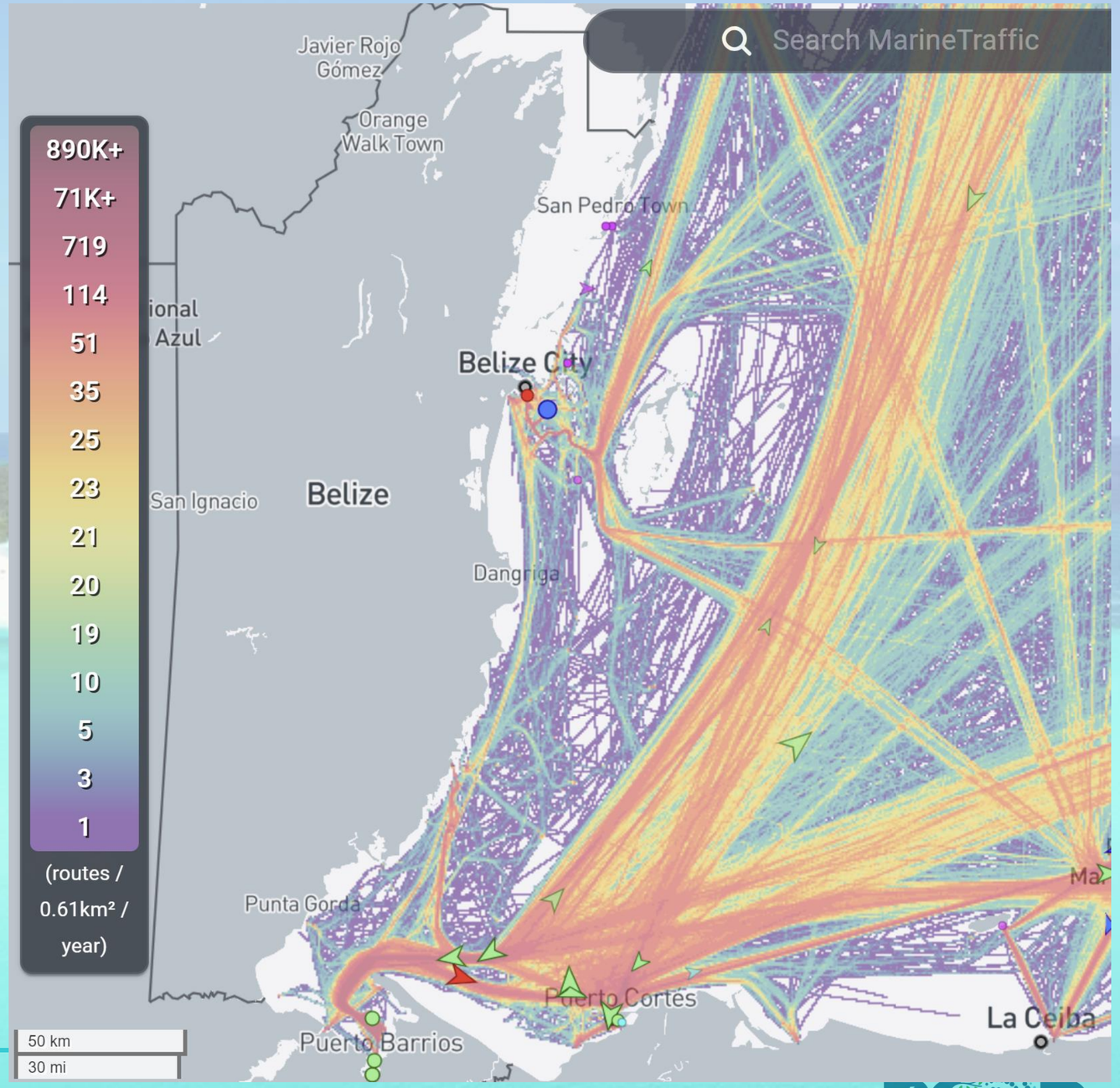
Transportation

Belize Sustainable Ocean Plan





Belize Sustainable Ocean Plan

Internal Waters

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Exclusive Economicc Zone

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Coral Reefs

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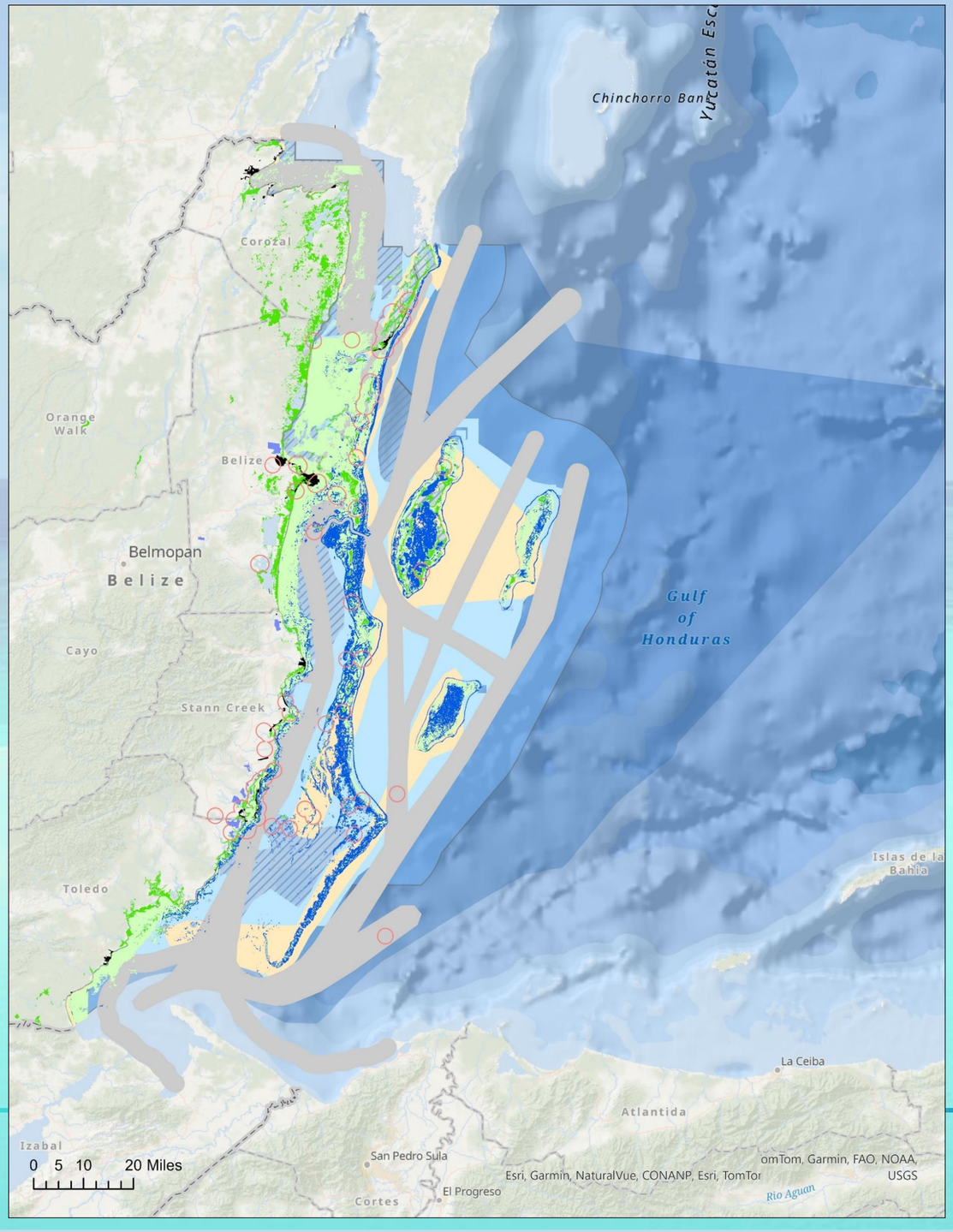

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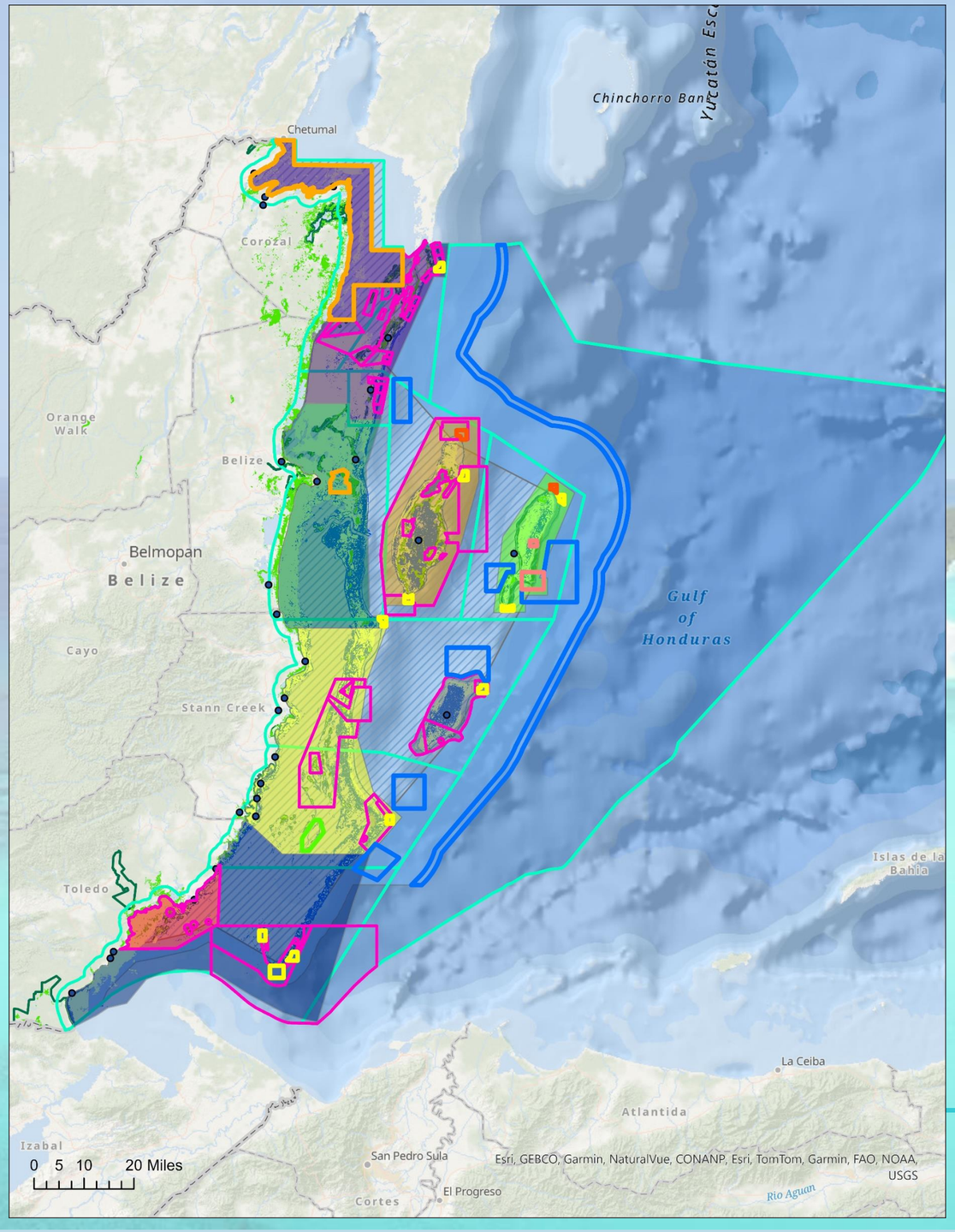
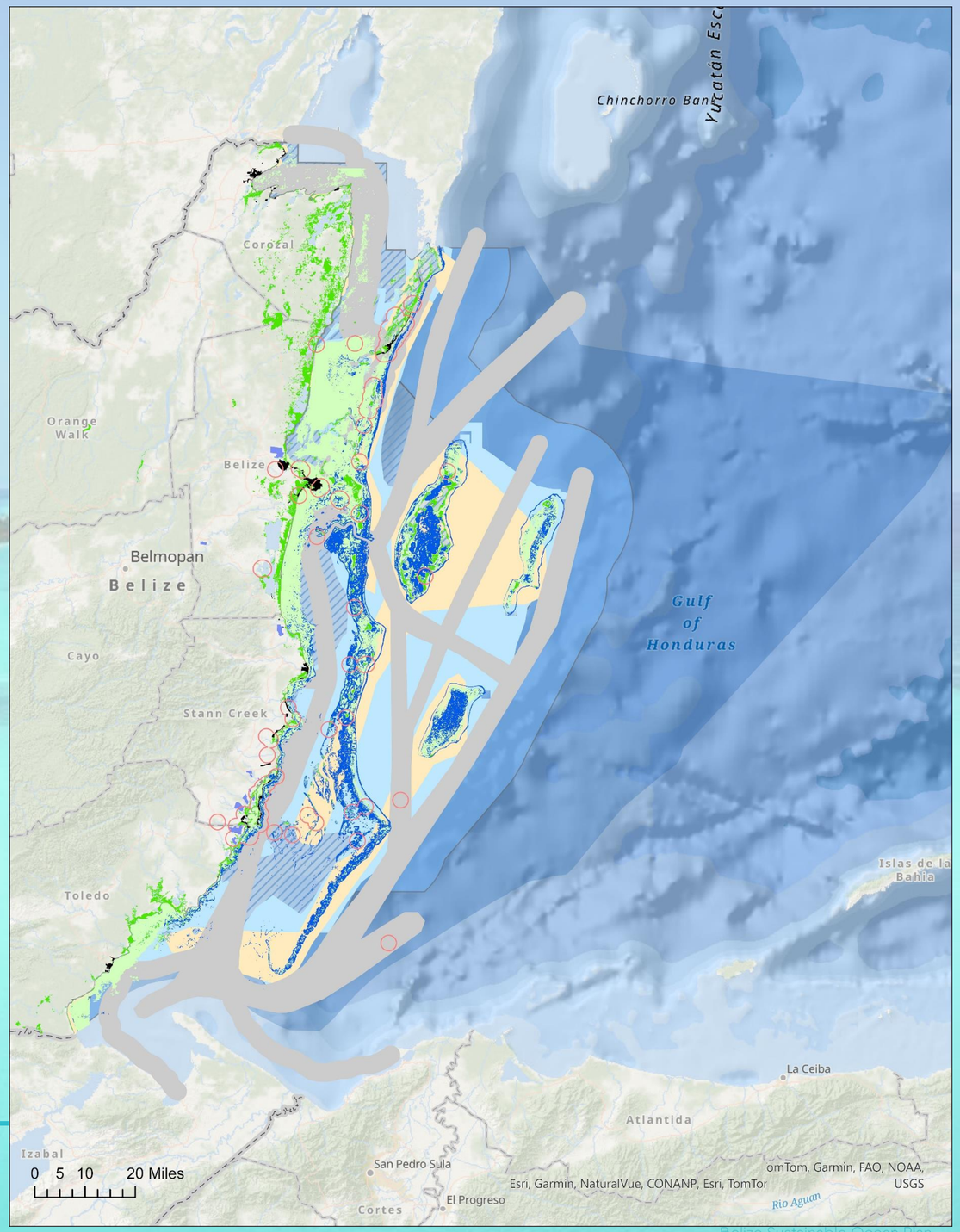
Belize Sustainable Ocean Plan


Chinchorro Ban
Yucatán Esc
Chetumal
Corozal
Orange Walk
Belize
Belmopan
Belize
Cayo
Stann Creek
Toledo
Gulf of Honduras
Islas de la Bahia
La Ceiba
Atlantida
Izabal
San Pedro Sula
El Progreso
Cortes
Rio Aguan
0 5 10 20 Miles
Esri, GEBCO, Garmin, NaturalVue, CONANP, Esri, TomTom, Garmin, FAO, NOAA, USGS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0 5 10 20 Miles
omTom, Garmin, FAO, NOAA, USGS
Esri, Garmin, NaturalVue, CONANP, Esri, TomTor

Current Approach to Zoning in Belize

Zoning is guided by legislation such as the National Protected Areas System Act, Forest Act, Fisheries Act, and the National Institute of Cultural Heritage Act.

Zoning aims to manage human activities while conserving marine biodiversity and ecosystem health.

The IUCN recognizes these international categories for protected areas.

National Protected Areas System Act

The NPAS Act, provides the legal framework for the management and conservation of protected areas in Belize.

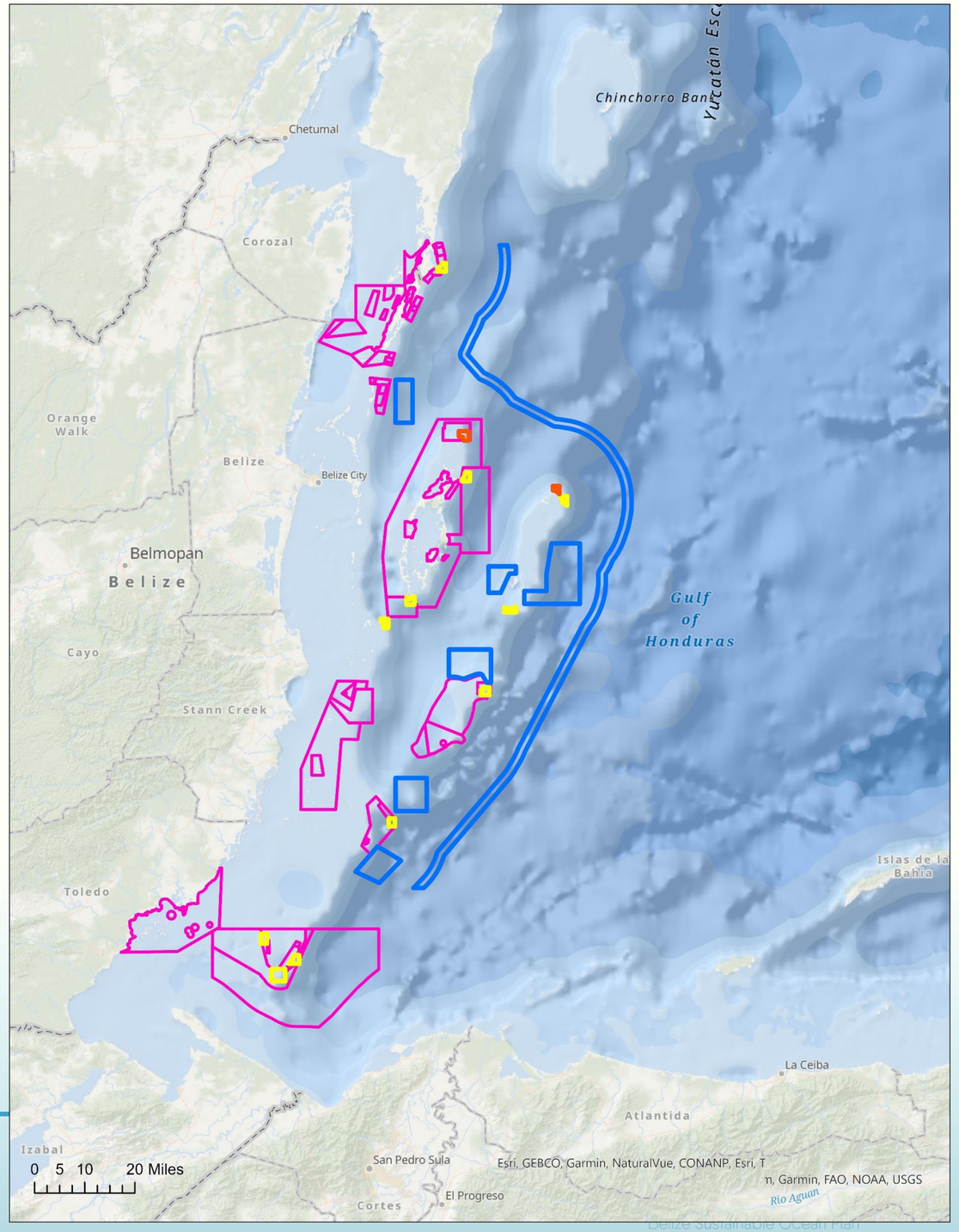
It establishes the National Protected Areas System, defines the roles and responsibilities of various stakeholders, and sets out the mechanisms for the establishment, management, and protection of protected areas throughout the country.

Marine Reserves

Spawning & Aggregation Sites

Nassau Grouper & Species Protection,

High Biodiversity Zones



National Parks

Nature Reserves

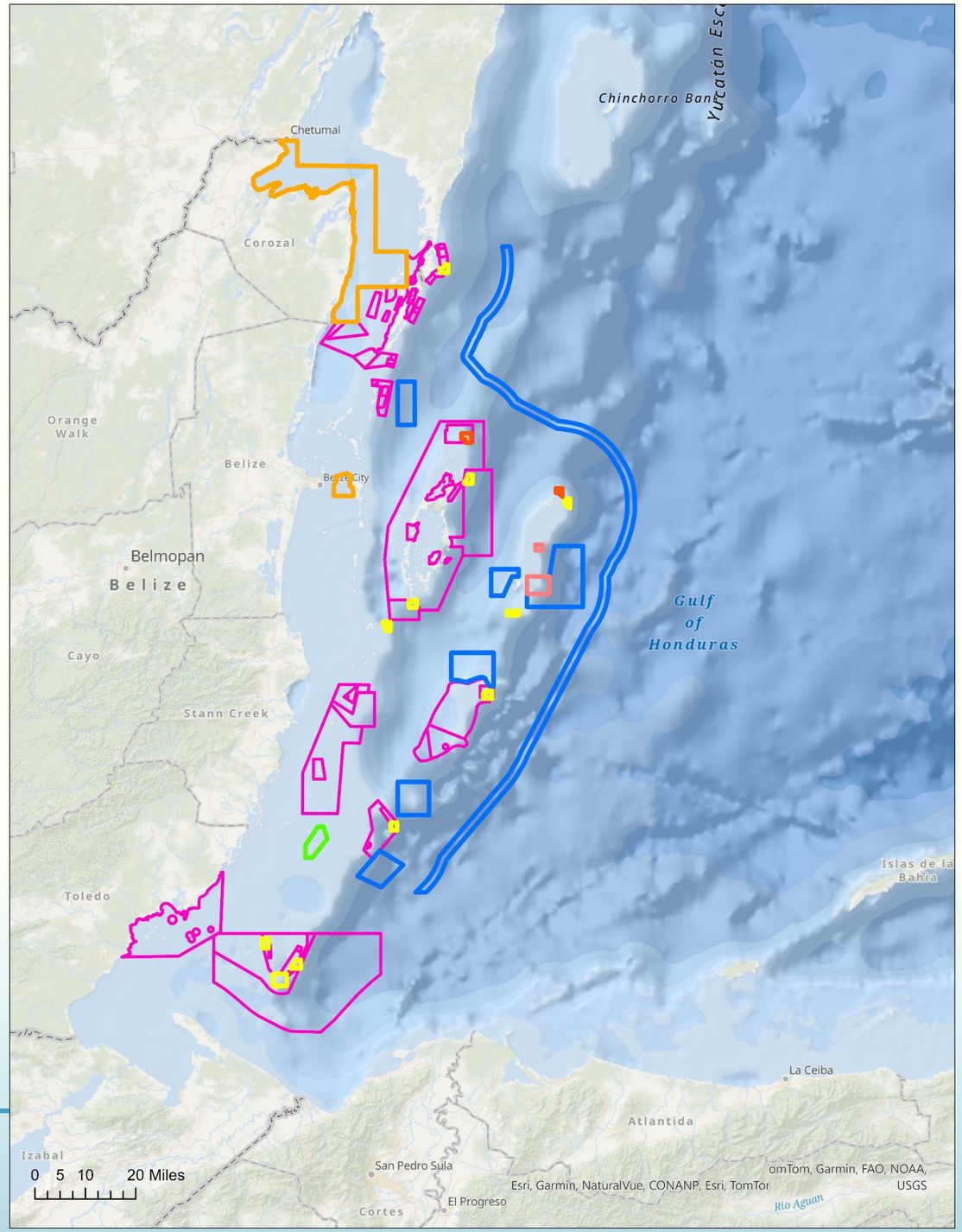
Wildlife Sanctuary 1 & 2

Natural Monument

Forest Reserves

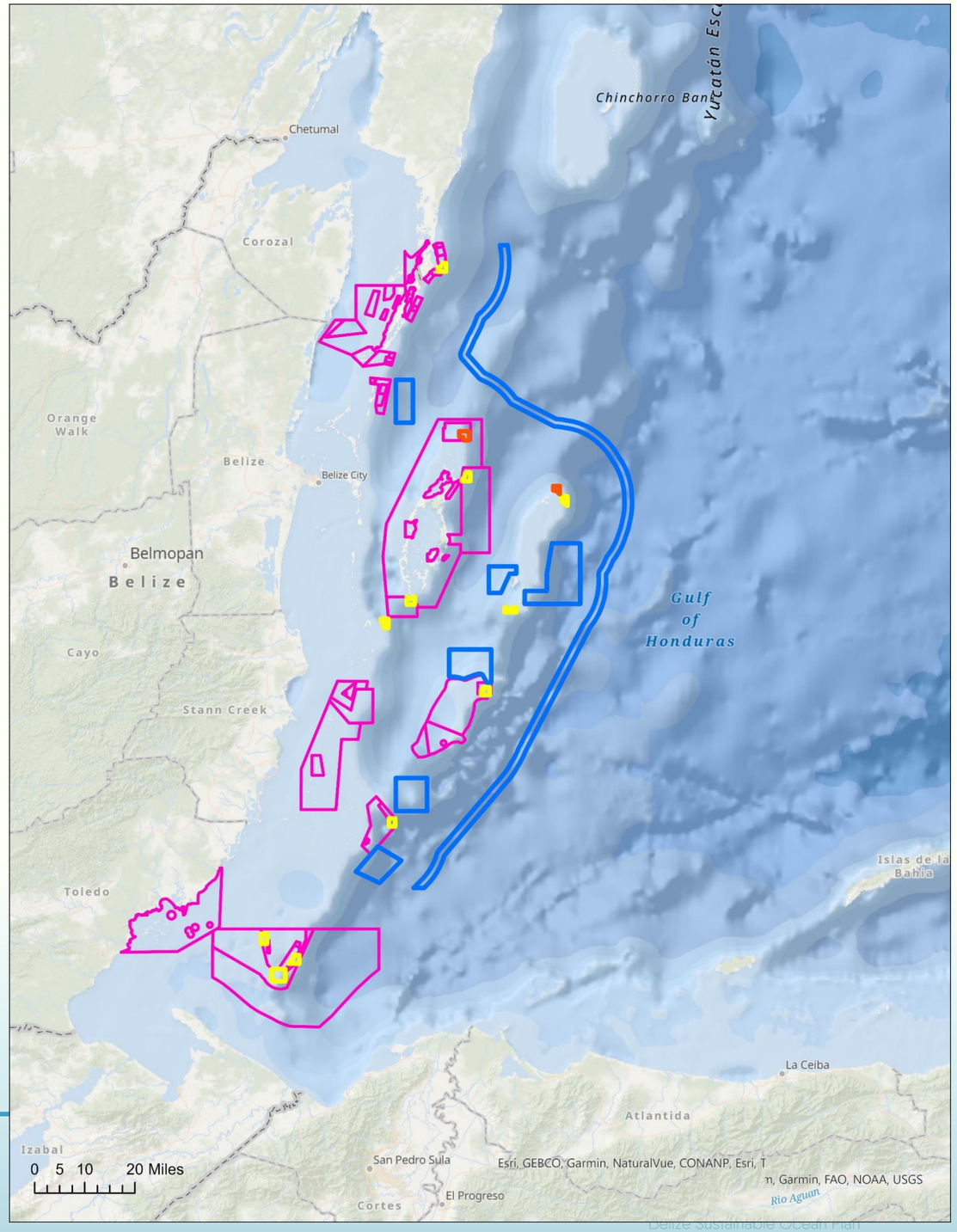
Private Protected Areas

Special Management Area



national institute of culture and history

Archeological Reserves (National Institute of Cultural and History Act)



Inclusive and Adaptive Approach

- By adopting an inclusive and adaptive approach to zoning, Belize can balance conservation with the socio-economic development of its marine resources.

- Developing a marine spatial plan involves collaboration among governmental agencies, stakeholders and communities.

- Requires comprehensive data collection, stakeholder engagement and Integrated decision-making processes.

Belize Sustainable Ocean Plan

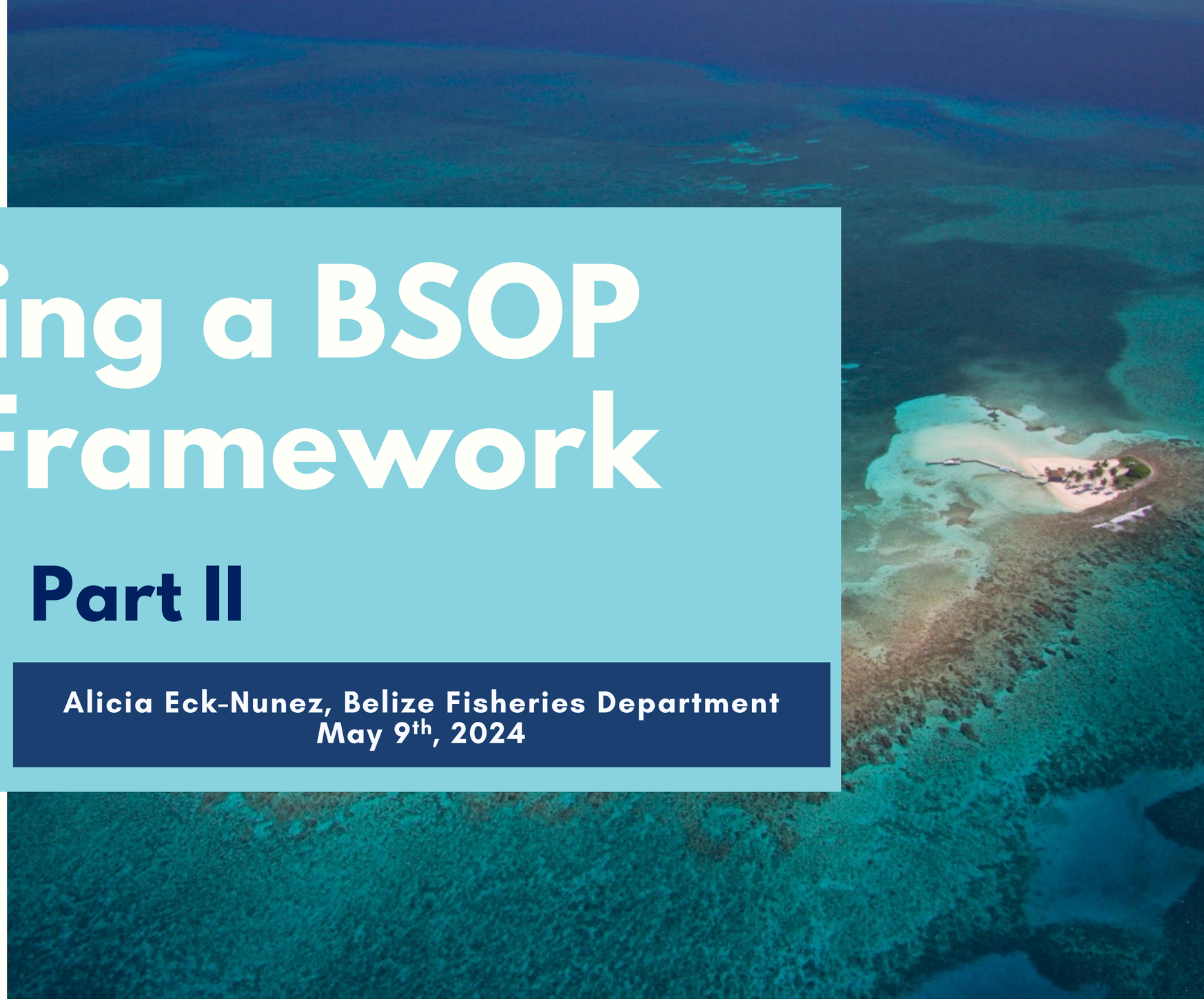
Thank you!

Belize Sustainable Ocean Plan

Developing a BSOP Zoning Framework

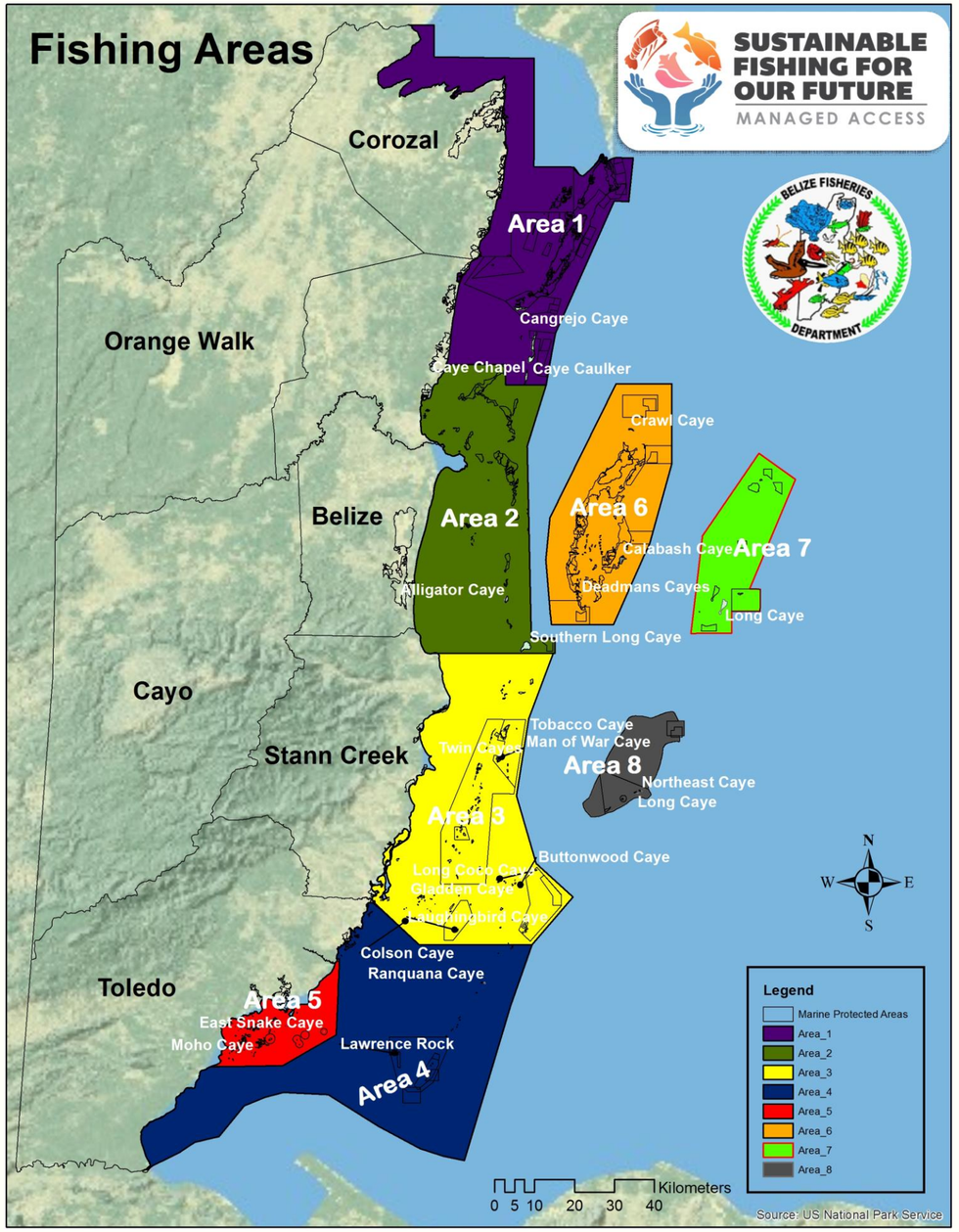
Part II

Alicia Eck-Nunez, Belize Fisheries Department
May 9th, 2024



Broad Zoning Scheme in Belize

- Fishing Zones



Belize Sustainable Ocean Plan

PA Categories

Nature Reserve	To protect biological communities or species, and maintain natural processes in an undisturbed state.	Research, education
National Park	To protect and preserve natural and scenic values of national significance for the benefit and enjoyment of the general public.	Research, education, tourism
Natural Monument	To protect and preserve natural features of national significance.	Research, education, tourism
Wildlife Sanctuary (1)	To protect nationally significant species, biotic communities or physical features.	Research, education, tourism
Wildlife Sanctuary (2)	To protect nationally significant species, biotic communities or physical features, and allow for traditional sustainable extraction of natural resource	Research, education, tourism, traditional sustainable natural resource extraction
Forest Reserve	To protect forests for management of timber extraction and/or the conservation of soils, watersheds and wildlife resources.	Research, education, tourism, commercial natural resource management and extraction (timber and NTFP)
Marine Reserve	To ensure, increase and sustain the productive service and integrity of the marine resources for the benefit of all Belizeans of present and future generations.	Research, education, tourism, commercial fishing
Private Protected Area	To complement the national lands through provision of connectivity, priority species protection, and improved ecosystem representation.	Research, education, tourism, sustainable extraction
Archaeological Reserve	To protect cultural heritage	Research, education, tourism,
Other Designations		
Spawning Aggregation Site	To protect spawning aggregation sites	Research, education, tourism, commercial fishing
Special Management Area	To protect biological corridors, critical nesting, roosting or congregation areas requiring active management	Research, education, tourism

Belize Sustainable Ocean Plan

Types of Marine Protected Areas Zones in Belize

Zones to Determine Activities

General Use Zone

- Commercial fishing with a valid license for the area
- Gear restrictions
  - No nets, n long lines
  - 85%

Preservation Zone

- No commercial or subsistence fishing of any kind
- No Tourism Activity
- No Boat Access unless authorized
- 5%

Belize Sustainable Ocean Plan

Types of Marine Protected Areas Zones in Belize

Zones to Determine Activities

Conservation Zone I

- No commercial or subsistence fishing of any kind
- Tour guides must follow BTB regulations for guiding
- 15%

Conservation Zone II

- No commercial or subsistence fishing unless under special permit
- Tour guides must follow BTB regulations for guiding

Special Management Area (SPAGs, Seasonal Closure)

- Fishing restricted to traditional users
- Seasonal restrictions
- Species restrictions

Belize Sustainable Ocean Plan

IUCN Categories

- **Ia Strict nature reserve:** Strict nature reserve, managed mainly for science, with limited human use

- **Ib Wilderness area**: Wilderness area, managed mainly for wilderness protection, similar to Category Ia but generally larger and less strictly protected

- **II National Park:** Managed mainly for ecosystem protection and recreation, similar in size to Category Ib but with more lenient human visitation

- **III Natural monument or feature:** Natural monument or feature, managed mainly for the conservation of specific natural features, such as a landform, sea mount, submarine cavern, geological feature, or living feature

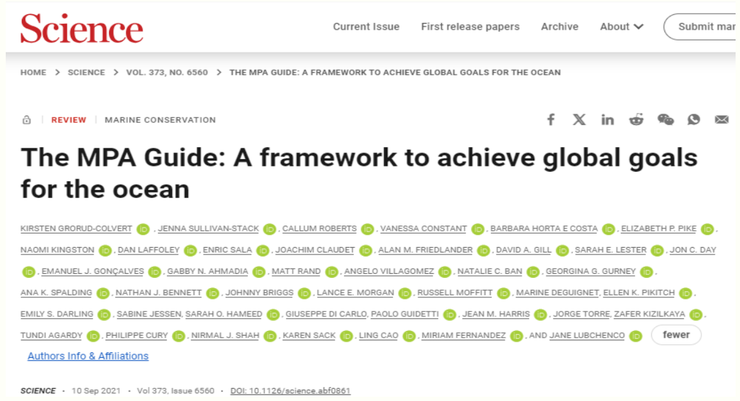
- **IV Habitat/species management area:** Areas to protect particular species or habitats, where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement of the category

- **V Protected landscape or seascape:** Where the interaction of people and nature over time has produced a distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values

- **VI Protected areas with sustainable use of natural resources:** Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aims

Belize Sustainable Ocean Plan

MPA Guide



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REVIEW | MARINE CONSERVATION

The MPA Guide: A framework to achieve global goals for the ocean

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1. Fully Protected: **No impact from extractive or destructive activities** is allowed, and all abatable impacts are minimized.

2. Highly Protected: Only **light extractive activities** are allowed that have low total impact, and all other abatable impacts are minimized.

3. Lightly Protected: Some protection of biodiversity exists, but **extractive or destructive activities that can have moderate to significant impact are allowed**.

4. Minimally Protected: **Extensive extraction and other activities** with high total impact are allowed, but the site can still be considered an MPA under the IUCN protected area definition and provides some conservation benefit.

BSOP
Belize Sustainable Ocean Plan

Blue Bonds Definition

- **<u>Medium Protection for Biodiversity Zones</u>** – means zones of the Ocean allocated for medium marine protection and biodiversity goals, for representative habitats and species. Sustainable uses are compatible with the biodiversity objectives in these areas. Medium biodiversity protection and sustainable use zones are proposed to conserve areas that are suitable for medium levels of biodiversity protection and are also compatible with some sustainable uses. These zones include habitats and species that have some tolerance to disturbance and human activities. These zones also include regionally and nationally significant areas. **This zone category is suitable for some level of extraction and sea-bed alteration, with appropriate management and direction, depending on the objective of each designated area.** Examples of medium protection status could include: Marine Protected Area **IUCN categories V and VI**, IUCN OECM category, and Locally Managed Marine Areas (LMMA).

Belize Sustainable Ocean Plan

Blue Bonds Definition

- **<u>High Protection for Biodiversity Zones</u>** – means Zones of the Ocean allocated for high marine protection and biodiversity goals, for representative habitats and species. High biodiversity protection zones conserve and protect the top priority areas for marine and coastal biodiversity. These zones are designated for habitats and species that may be rare, endangered, unique or with narrow distribution ranges. This zone includes breeding or spawning areas, key foraging habitat, fragile or sensitive species and habitats, and internationally significant areas. When combined, these zones provide habitats and species with long-term protection, and are sufficiently large to ensure ecological resilience and climate change adaptation. **This zone category is not suitable for extraction or sea-bed alteration and is considered a 'no-take' zone in common vernacular**. Examples of high protection status, depending on the objectives and allowable human activities, are: Marine Protected Areas in the **IUCN categories Ia, Ib, and II**.

Belize Sustainable Ocean Plan

Belize MPA Categories Aligned with other Categories

- High and full protection for Biodiversity Zones do **not allow commercial fishing** and include:
  - Areas where no extractive activities are allowed (fully protected)
  - Areas where catch and release recreational fishing is allowed (highly protected)

MPA category	Broad category/ Protection status	Activities allowed	IUCN category	MPA guide category
General Use Zone (MR)	Medium Protection for Biodiversity Zone	- Artisanal and subsistence fishing - Sport fishing - Tourism	VI – protected area with sustainable use of natural resources	Lightly protected
Conservation Zone I (MR)	High Protection for Biodiversity Zone	- Tourism - Sport fishing	II - national park	Highly Protected
Conservation Zone II (MR)	High Protection for Biodiversity Zone	- Sport fishing - Tourism - Subsistence fishing	II - national park	Highly Protected
Preservation Zone (MR)	High Protection for Biodiversity Zone		Ia - Strict nature reserve	Fully Protected
Wilderness Zone (MR)	High Protection for Biodiversity Zone		Ia - Strict nature reserve	Fully Protected
Seasonal closure (MR)	Medium Protection for Biodiversity Zone	- Artisanal and subsistence fishing - Sport fishing - Tourism	VI – protected area with sustainable use of natural resources	Lightly protected
Wildlife Sanctuary 1	High Protection for Biodiversity Zone	- Tourism	II- national park	Fully Protected
Wildlife Sanctuary 2	High Protection for Biodiversity Zone	- Subsistence fishing - Tourism	Ib – Wilderness area	Highly Protected
National Park	High Protection for Biodiversity Zone	- Tourism	II - national park	Fully Protected
Natural Monument	High Protection for Biodiversity Zone	- Tourism	III - National Monument	Fully Protected
Spawning aggregation sites	High Protection for Biodiversity Zone	- Tourism	Ib - Wilderness area	Fully Protected

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Activity: Identifying zoning Gaps

Existing Zone	Zoning GAPS	Categories	Activities	Conflicts	Comments

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Closing Day 2

Did we reach the desired outcomes for today?

1. Success criteria and indicators defined
2. Compatible and incompatible uses identified
3. Zoning approach defined

Closing Day 2

Looking ahead to tomorrow, Friday, May 10th:

- Day 3 Focus: Ocean Use Survey and Introduction to Marxan
- Please arrive promptly at 9am.

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Thank you for participating!