



# Why is it Urgent to Improve the Conservation of Costa Rica's Pacific Marine Ecosystems?



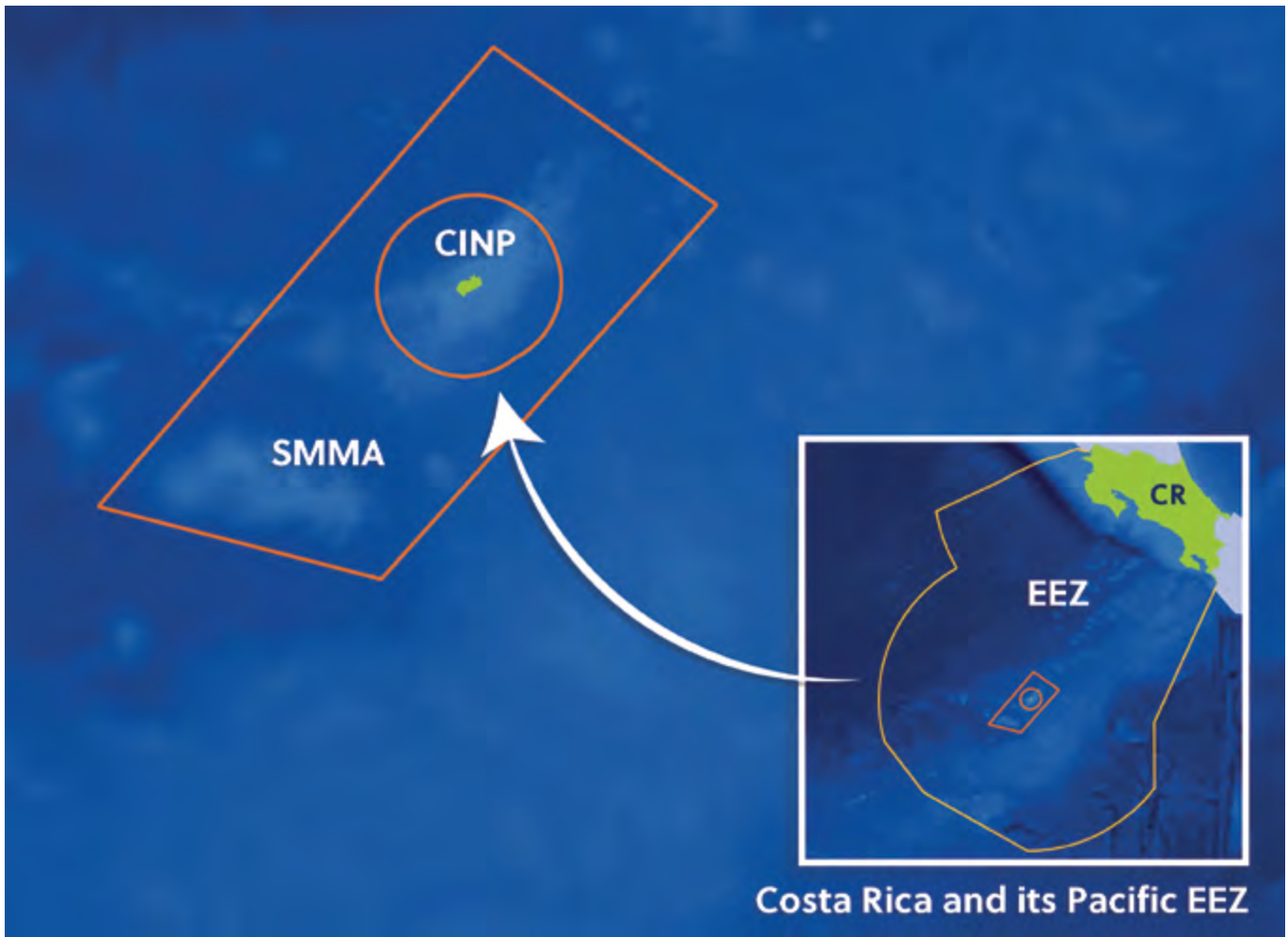


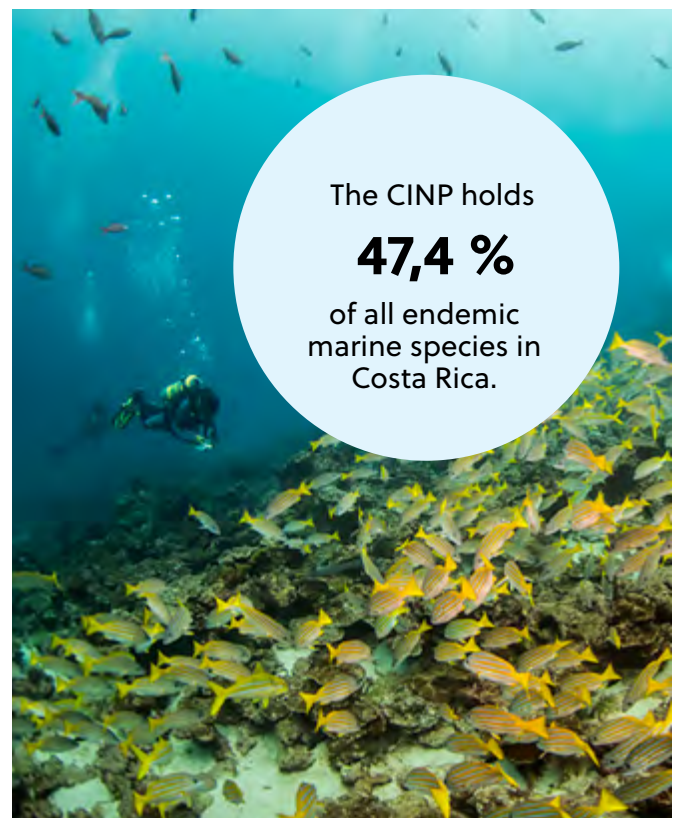
FIGURE 1

## General Description

This report summarizes the results of a study that highlights the importance of the ecosystems and biodiversity of the Cocos Marine Conservation Area (CMCA), which includes two marine protected areas (MPAs) located within the Exclusive Economic Zone (EEZ): the Cocos Island National Park (CINP) and the Seamounts Marine Management Area (SMMA).

The CINP, created in 1978, is located 342 miles (500 km) southeast of Costa Rica's Pacific coast and covers an area of 785 sq miles (2034 km<sup>2</sup>). The island comprises an area of about 9 sq miles (23 km<sup>2</sup>) and the marine area covers the remaining 776 sq miles (2011 km<sup>2</sup>). The SMMA was created in 2011 and was the first protected wildlife area in this category in Costa Rica. It encompasses 3725 sq miles (9649 km<sup>2</sup>) of the Pacific Ocean waters around the CINP (Figure 1).

Due to the extraordinary diversity of species that live in these waters, these sites have been described as unique within the Eastern Tropical Pacific (ETP), a marine corridor that also includes The Galapagos Islands in Ecuador, Malpelo and Gorgona in Colombia, and Coiba in Panama.



The CINP holds  
**47,4 %**  
 of all endemic  
 marine species in  
 Costa Rica.

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The CINP is home to 1688 species of marine fauna, of which 45 are endemic. This represents 47,4 % of the endemism in Costa Rica. In other words, the CINP contributes half of the country's unique biological richness.

Even though these MPAs show indicators of good health, they face pressures such as overfishing, illegal, unreported, and unregulated fishing, climate change, and ENSO effects (El Niño/La Niña).

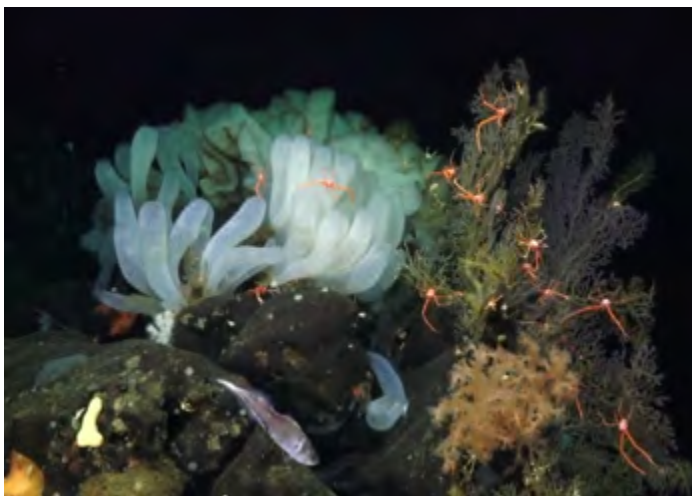
Biodiversity and marine ecosystems play a fundamental role in the planet's health and human well-being. Because of this, it is necessary to have an integrated focus on conservation and sustainable use of resources such as seamounts and species like tuna and sharks.

## Ecosystems and Marine Biodiversity

### SEAMOUNTS

#### Importance

- i. Seamounts are submarine elevations that rise above the seafloor and are considered biodiversity hot spots because they:
- ii. Host endemic species.
- iii. Contribute to the upwelling of nutrients from the ocean floor and therefore promote productivity, biomass, and biodiversity.



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- iv. Are feeding sites, transit areas, navigation routes, and/or spawning areas for migratory pelagic species such as sharks, tunas, swordfish, and turtles.
- v. Attract pelagic marine predators of high commercial value like tuna and marlin.
- vi. Host resident populations of deep-sea species unique to these ecosystems, such as corals, sponges, and echinoderms.
- vii. Are part of the Cocos Submarine Range, considered the cornerstone of larval dispersal connectivity of diverse marine species between both ends of the ETP.
- viii. "Las Gemelas" Seamounts are one of the highest fish biomass sites in the ETP, with a higher density than that observed in Cocos Island.

## Pressures

- Pressures on these ecosystems have increased over the last 25 years.
- Anthropogenic pressures: overfishing, illegal, unreported and unregulated fishing, and ocean pollution.
- Natural pressures: they are in a very sensitive region to the extreme climate changes related to the ENSO phenomena (El Niño/La Niña).

## Impact

- Since they are home or passing site to many species, including some that are of touristic or fishing interest, pressures affect the entire biodiversity chain, generating ecological and socioeconomic consequences.



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## TUNA

### Importance

- Fish from the Scombridae family form the basis for high-value commercial fishing and are also valued in sport and subsistence fishing.

### Pressures

- Tuna purse seine fishing is carried out intensively throughout Costa Rica's EEZ. The most sought-after species is yellowfin tuna, which accounts for 85 % of the tuna catch in the country's Pacific.

### Effects

- Yellowfin tuna is the most caught species in illegal fishing lines in Cocos Island, even though this species is classified as "near threatened" according to IUCN.
- Tuna purse seine fishing generates large quantities of bycatch of non-target species such as sharks and rays.



# SHARKS

## Importance

- As top predators, sharks are fundamental to the structure and stability of marine food webs. An abundance of top predators is an indicator of a thriving marine ecosystem.
- At least 36 species of sharks are reported in the CINP and SMMA, including hammerhead, thresher, silky, tiger, and whitetip reef sharks.
- Shark diving is the main attraction for tourists visiting the CINP.

## Pressures

- Most shark species have lower growth and fecundity rates compared to bony fish. These traits make them particularly vulnerable to pressure from fishing.

- Longline and purse seine fishing generate the most pressure in the area.
- There are 18 pelagic species that interact with longline fishing in the SMMA.
- Silky sharks are targeted for finning throughout the ETP.

## Impact

- Of the 36 species of rays and sharks reported in the SMMA, 11 are near threatened, 11 are vulnerable, 3 are endangered, and one is critically endangered.
- A recent global assessment revealed that 25 % of shark and ray species in the world are endangered.
- The hammerhead shark population is estimated to have declined by 45 % in the last 30 years.



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## The Importance of Improving the Conservation of the Adjacent Waters to the CMCA Marine Protected Areas

Improving marine conservation is a strategic action for the following processes:

- The preservation of existing ecosystem services in the CMCA, which generates USD 54 million per year for various sectors like tourism, research and education, sport fishing, and longline fishing.
- The population recovery of commercially important pelagic species such as mahi-mahi, yellowfin tuna, and billfish like marlin and sailfish, which are caught near CINP and SMMA.
- The protection of pelagic species like sharks depends mainly on the size of the MPAs for their population maintenance, as they are particularly vulnerable to fishing when they leave the protected area boundaries.
- The recovery of populations of high touristic interest like sharks, as while alive, they represent profits for USD 15 million per year.
- The reproduction and growth of highly migratory species such as billfish, sharks, rays, turtles, and dolphins.
- The protection and recovery of the yellowfin tuna stock in the Pacific. This species is classified as "near threatened" due to the drastic decline of its populations.
- Support Costa Rica's efforts to manage fisheries in the Pacific's EEZ.

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SINAC (Sistema Nacional de Áreas de Conservación). 2018. Importancia de los ecosistemas y las poblaciones del sitio de interés: Parque Nacional Isla del Coco (PNIC), Área Marina de Manejo Montes Submarinos (AMM MS) y aguas adyacentes. Área de Conservación Marina Cocos. San José, Costa Rica. 68 p.