

Integrating Ecosystem Services Into a Prioritization Model for Surf Protected Areas

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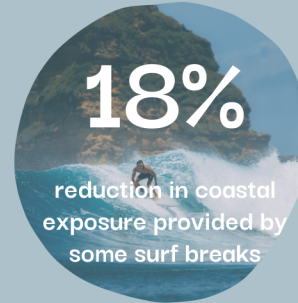
Client: Surf Conservation Partnership (Conservation International and Save the Waves Coalition)

Environmental Problem

Surf-based conservation has gained momentum over the past decade as surfers and environmentalists have made the connection between healthy coastal environments, vibrant local economies, and good waves. Surf Protected Areas (SPAs), a conservation approach utilized by the Surf Conservation Partnership (SCP), are one mechanism being used to protect surf resources. A variety of threats, including processes like deforestation and urban development, are degrading coastal ecosystems and surf breaks alike. Additional pressure is being put on surf breaks as the global surfing population continues to grow. Overcrowding and unmanaged use of these areas can create a host of social and ecological problems that imperil the

surf experience. Surf conservation is a powerful tool that aligns recreation and ecosystem protection. Using the Surf Conservation Index (SCI) - a model that quantifies the pressure on, state of, and human response to these pressures at a surf break and prioritizes multiple breaks in relation to each other - was used to identify possible areas for SPAs in Brazil. We expanded on this model by adding a Climate Index that included an assessment of carbon storage and coastal protection provided by natural environments surrounding surf breaks. Recognizing a need for consistent approaches to surf conservation, we conducted a review of existing initiatives at a global level and organized findings into a "good practices" document.

Results



We identified 547 surf breaks across all of Brazil, only 1 of which is currently designated as a SPA. Our analysis identified 48 surf breaks as high priority locations for potential SPA establishment. We found that habitats adjacent to surf breaks including coastal forests, mangroves, and coral reefs contribute significantly to coastal protection and carbon storage. We estimate that 22.6 million tons of carbon are stored in all surf-associated mangroves with over half of this carbon concentrated around just 27 surf breaks. Our models found that Brazil's coastal habitats within surf break areas could reduce exposure to coastal erosion by up to 18%. With and without the inclusion of the Climate Index, hotspots were identified in two states: São Paulo and Rio de Janeiro. These locations received high scores across multiple categories including: biodiversity, surf quality, high tourist infrastructure, and existing protections, making them ideal locations for surf conservation. However, addition of the Climate Index to the SCI shifted the location of top-ranking surf breaks towards the mangrove rich northeast region of Brazil, particularly in the states of Amapá, Pará, and Maranhão.

Impact

Our findings show that including ecosystem services in conservation planning processes can alter which locations are prioritized. Adding the Climate Index to the SCI drew attention toward locations in the north and northeastern regions of Brazil that provide valuable ecosystem services and were not highlighted in the previous prioritization approach.

If these features are not considered during the initial scoping phase, conservationists may be missing an opportunity to protect surf breaks with environments that provide valuable regulating services such as carbon storage and coastal protection. The results of

this analysis will aid the Surf Conservation Partnership (SCP) and their Brazil partners in protecting surf areas that not only provide recreational, economic, and socio-cultural benefits, but also safeguard rich natural habitats with considerable climate benefits.

Results of this analysis serve as a resource to calibrate SCP's scoring system and provide guidance for the selection of surf breaks to protect. Altogether, this is an important tool that will allow SCP to protect surf breaks and sustainably manage millions of hectares of coastal marine habitat that otherwise might not be conserved.

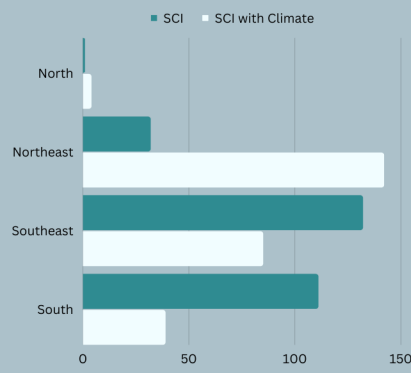


Figure 1. Change in prioritization of surf breaks with and without the Climate Index by region. The lighter shade represents the number of surf breaks prioritized higher under the SCI with the Climate Index and the darker shade represents the number of surf breaks prioritized higher under the SCI without the Climate Index.



Surf Conservation Good Practices

Ranking potential SPA sites is only one aspect of surf conservation. The implementation process requires an understanding of the wider coastal management landscape and coordination with local and regional partners. To help practitioners scale their surf management programs, we synthesized lessons from surf conservation efforts around the globe and provided thoughtful analysis on the "good practices" from these projects.

We addressed four key aspects of surf conservation, including: 1) Identifying Surf Resources, 2) Protection Strategies 3) Surf Tourism Management, and 4) Surf Break Valuation. Several key findings emerged from this study:

- Proactive measures can mitigate threats to surf resources.
- Focusing on individual breaks is inefficient if the goal is to achieve broader protection of surf resources.
- The best surf management plans address each of the four major aspects highlighted in the report.

Establishing consensus around what the surf resource includes and key threats is a necessary baseline for management. Leveraging knowledge of use patterns and available policy support can create a foundation for more comprehensive protection plans.