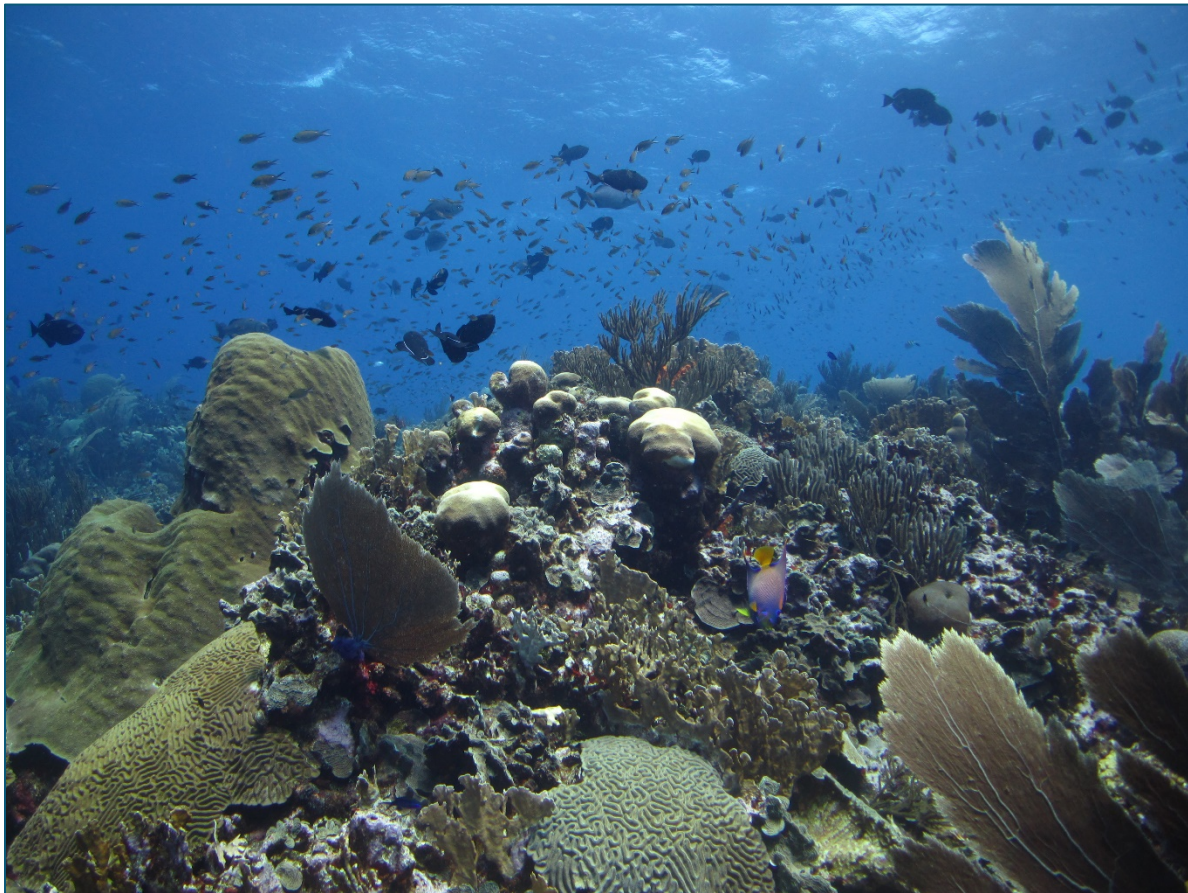


# Cruise Report

Curacao Scientific Assessment

| Nov 13-21, 2015



## Participants

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## Expedition Summary

The purpose of the Marine Scientific Assessment is to inform the development of a sustainable ocean policy that will improve the health of marine ecosystems and support coastal economies and livelihoods. The Institute provides this Scientific Assessment on the current condition, and use of Curacao's marine resources based on a marine resource survey, ocean use mapping, and secondary data sources. The marine resource survey evaluated the abundance and composition of reef fish communities as well as water quality at 148 sites around island. Additionally, the Waitt Institute and partners conducted a spatial analysis of ocean usages and their value base. The spatial analysis was based on 130 interviews with fishers and divers in Curacao who provided information on their fishing/diving locations and the importance of each area to their profession. Finally, the Scientific Assessment incorporates existing information to further evaluate the state of the coral reef resources in Curacao and the value of these systems for the people of Curacao.



## About Waitt Institute

The Waitt Institute endeavors to ensure ecologically, economically, and culturally sustainable use of ocean resources. The Institute partners with governments committed to developing and implementing comprehensive, science-based, community-driven solutions for sustainable ocean management. Our goal is to benefit coastal communities while restoring fish populations and habitats. Our approach is to

engage stakeholders, provide the tools needed to design locally appropriate policies, facilitate the policymaking process, and build capacity for effective implementation.

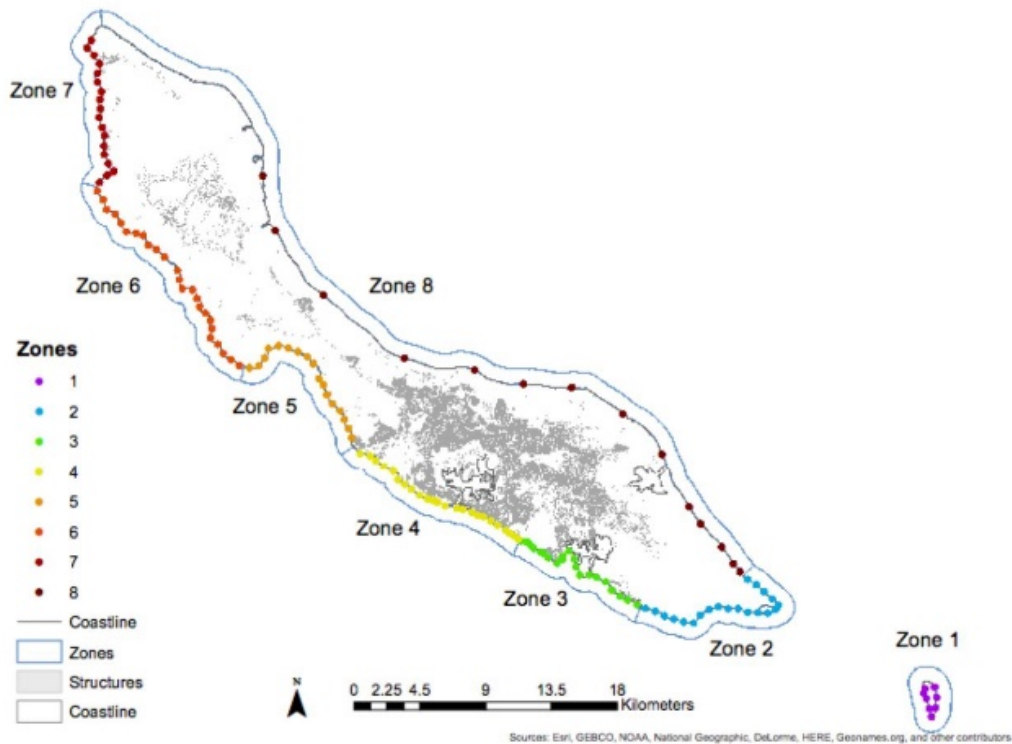
## About Blue Halo Curacao

The Blue Halo Initiative sets out to empower communities to restore their oceans, and use ocean resources sustainably, profitably, and enjoyably for present and future generations. This is done by partnering with government, communities and scientists to



develop and implement ocean policies, including sustainable fishing practices and comprehensive ocean zoning. The Waitt Institute provides the toolkit, and partner governments provide the political will. The Blue Halo Initiative engages stakeholders in their science-based, community-driven approach.

## What did we learn?



**Figure 1.** Results from a grouping analysis from 17 indicators, resulting in 8 zones.

The holistic sampling of Curacao in 2015 revealed the high level of variability across even one island, and demonstrated the need for comprehensive ocean planning. Understanding how the biology and ecology changes across the coastline, in addition to how humans value their resource, is implicit in creating the most effective ocean management plan.

By integrating high level ecological and socioeconomic data, a cohesive map of coral health, fish biomass, water quality, and stakeholder use (fishers & divers) was developed. A grouping analysis on data from all sites using Geographic Information System platform (GIS) revealed that eight distinct zones existed around the islands (Figure 1), whereby sites within each zone share ecological characteristics that statistically distinguish them from reef communities in other zones.



## What can we do with this information?

Knowing the location and characteristics (ecological, but also local stressors) for each zone and its dominant characteristics can help managers and decision-makers design appropriate and tailored protection measures.

As the purpose of the scientific assessment was to inform the development of a sustainable ocean policy that will improve the health of marine ecosystems, support coastal economies and support livelihoods, ten recommendations were submitted to the Government of Curacao and the Curacao Parliament in July 2016.

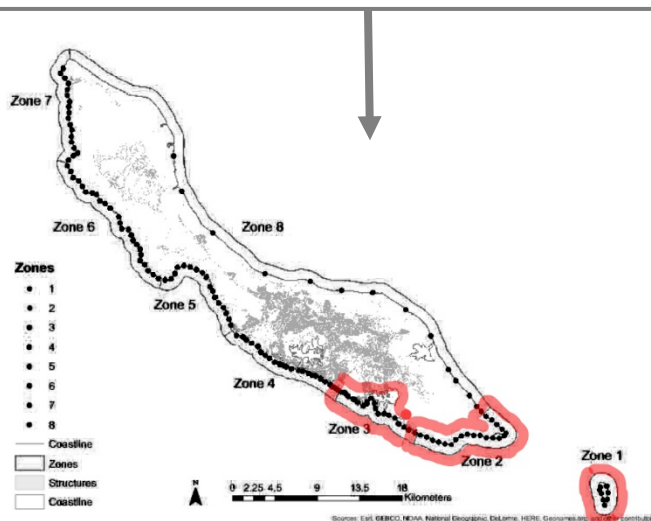


### ➔ Recommendation 1: Protect 30% as no-take reserves.

Based on the comprehensive survey effort, zones with high coral cover and high levels of fish biomass were identified, relative to the island of Curacao.



**Figure 2.** Percent coral cover and total fish biomass compiled from island-wide data.



By combining this ecological data with maps of human use (fishing & diving activity), zones 1, 2, and 3 were selected to encompass some level of no-take areas within. Among these, Zone 2 is the best candidate for protection in whole or in part, because it has the highest coral cover and high coral recruitment along with low fisher and diver use.

**Figure 3.** Recommendation for no-take reserves in Curacao