

A Comprehensive Economic Valuation of U.S. Coral Reef Ecosystem Services

Federal Partners Communicating on the Insular Areas

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Project Team



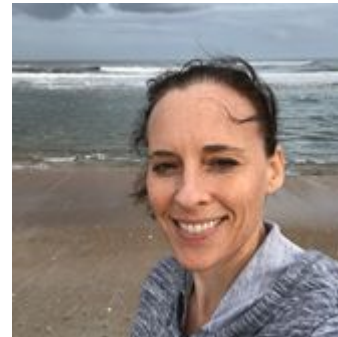
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Agenda

- Introduction
- Previous studies
- Project goal
- Year 1: Project Scoping
- Looking Ahead
- Questions for You



Image: Rose Atoll Marine National Monument
<https://sanctuaries.noaa.gov/earthisblue.html#photos>

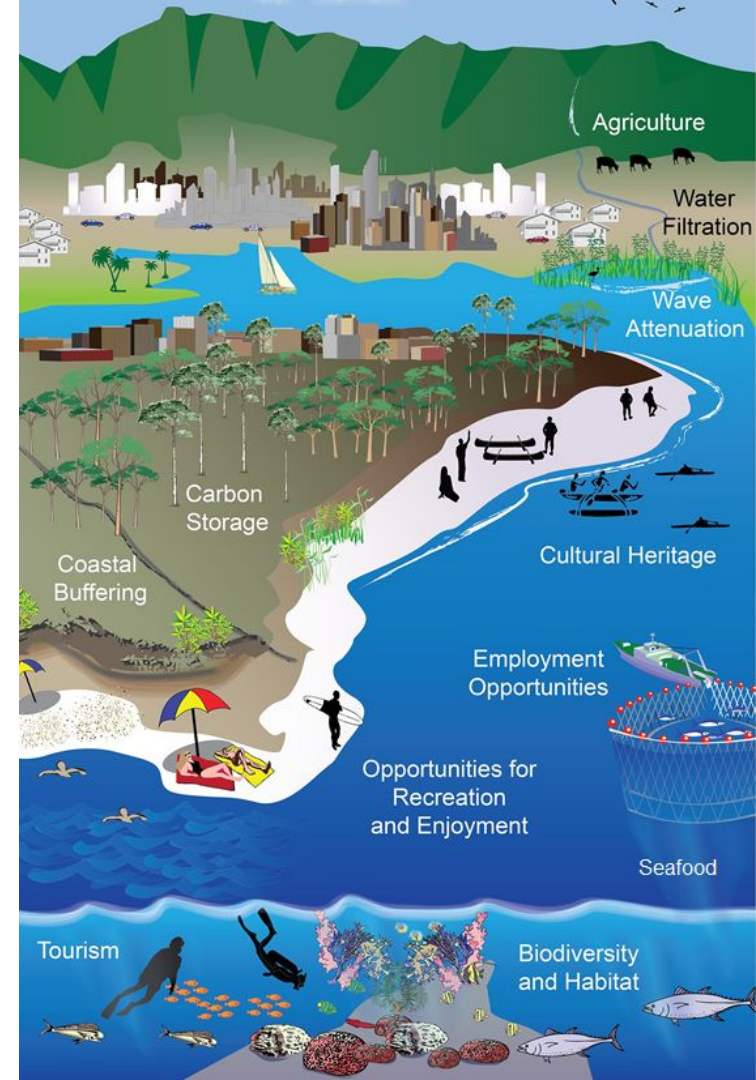
NOAA Coral Reef Conservation Program

- Multidisciplinary program
 - Fisheries
 - Climate
 - Land based sources of pollution
 - Coral restoration
- Recognize people as part of the coral reef ecosystem
- Conduct social and economic assessments to understand the human connections to coral reefs



Coral Reef Ecosystems

- Coral reefs provide a variety of benefits to society known as “ecosystem services”
- Also face pressures from overfishing, pollution, climate change, etc.
- Trade-offs between human uses/benefits and ecosystem conditions



Research Questions

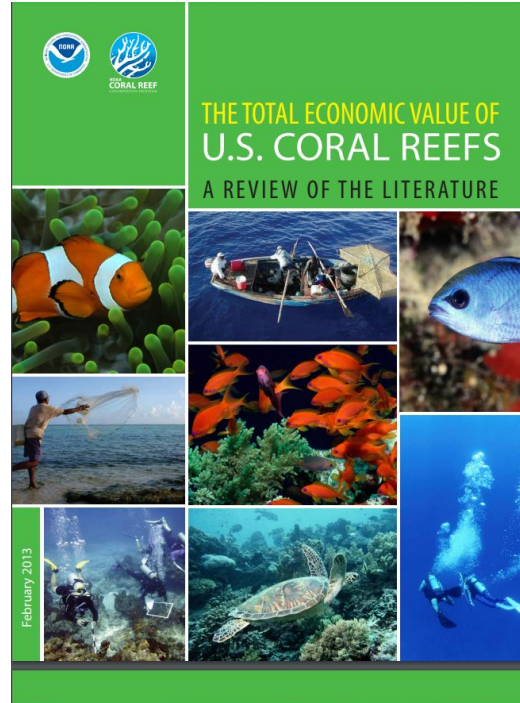
- What ecosystem services do coral reefs provide, and how do we measure their value?
- How much are coral reefs worth to society?
- What local, social and cultural practices can we include in valuation?



Previous Studies



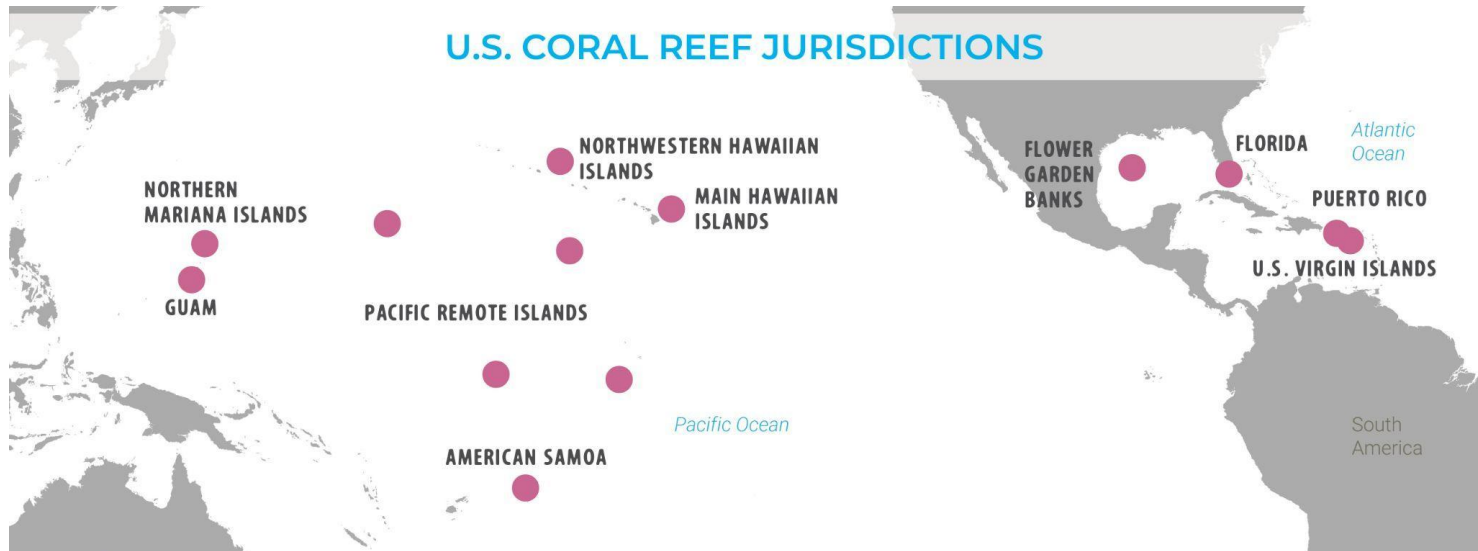
\$3.4 billion value every year, benefiting fisheries, tourism, and coastal communities



Reports available at https://www.coris.noaa.gov/activities/economic_summary/

Project Goal

Provide updated economic values of U.S. coral reefs and associated ecosystem goods and services.



Year 1: Project Scoping

1. Identify ecosystem services in each jurisdiction, previous studies, and data gaps
 - a. Literature review and gap analysis
 - b. Preliminary development of defensibility score
 - c. Jurisdictional Workshops (September 2021)
2. Determine appropriate methods for data collection
 - a. Socioeconomic Workshops (January-February 2022)
3. Determine general scope and project activities for following years
 - a. Recommendations report for Years 2-3

Ecosystem Goods and Services Framework

Provisioning

Products obtained from ecosystems



Cultural

Nonmaterial benefits obtained from ecosystems



Regulating

Benefits obtained from the regulation of processes



Supporting Services

Services necessary for the production of ecosystem services



How are Ecosystem Services Valued?

Economic methods

- Primary data collection methods
 - Stated preference
 - Revealed preference
- Benefit-transfer methods

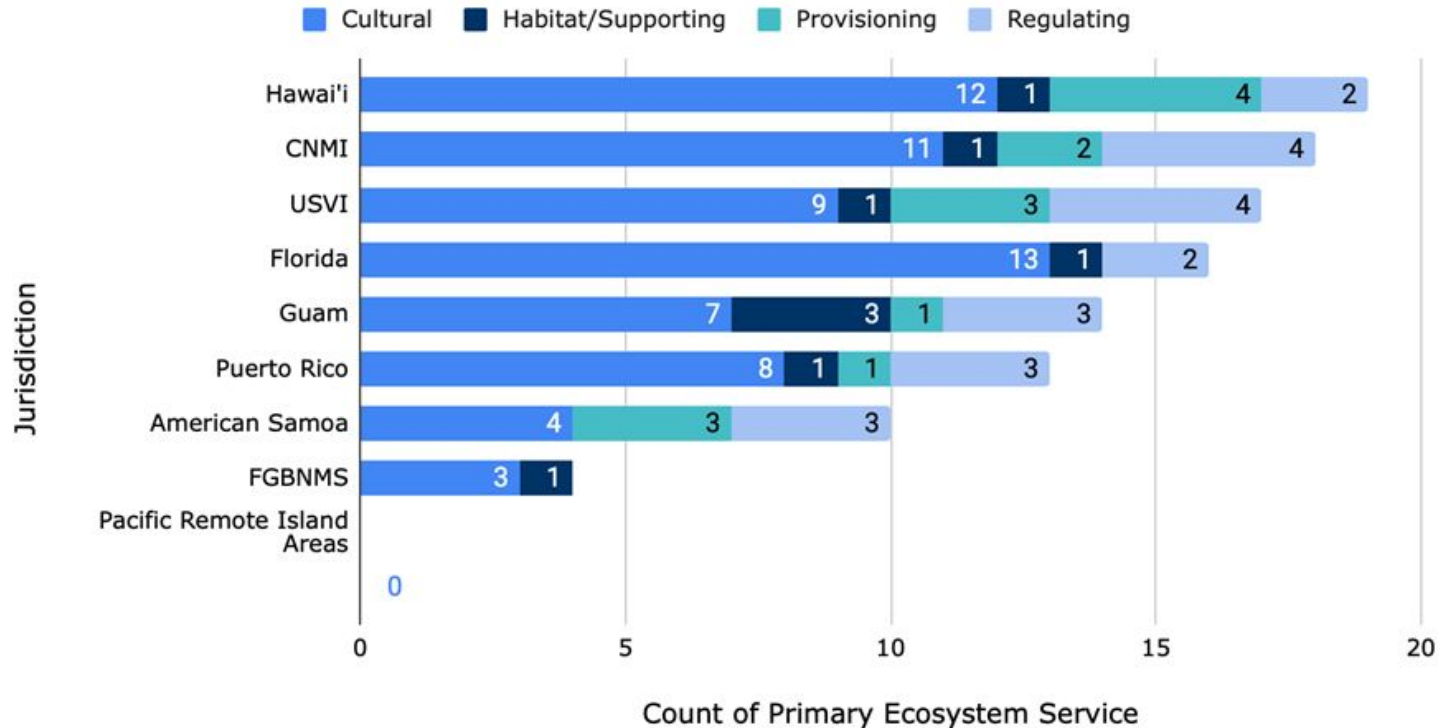


Image: <https://sanctuaries.noaa.gov/earthisblue.html#photos>

Economic methods may not be appropriate for demonstrating the importance of some cultural ecosystem services

- How do we employ other ways to represent these values?

Literature Review of Valuation Studies



Defensibility Score

- When doing benefit transfer, can't pull and apply numbers directly
- Laid the groundwork for how #s will be adjusted to new areas
- Several criteria identified include:
 - Major storm even (i.e., hurricane)
 - Any conflict of interest in the studies
 - Methodological concerns in primary data collection estimate
 - Damages to reef health/quality
 - Others
- When doing the benefit transfer, will be applying this score

Workshops

Jurisdiction technical working group (TWG) workshops to:

- Identify ecosystem services and where they occur
- Who benefits
- Barriers to accessing those services
- Where reefs have been damaged

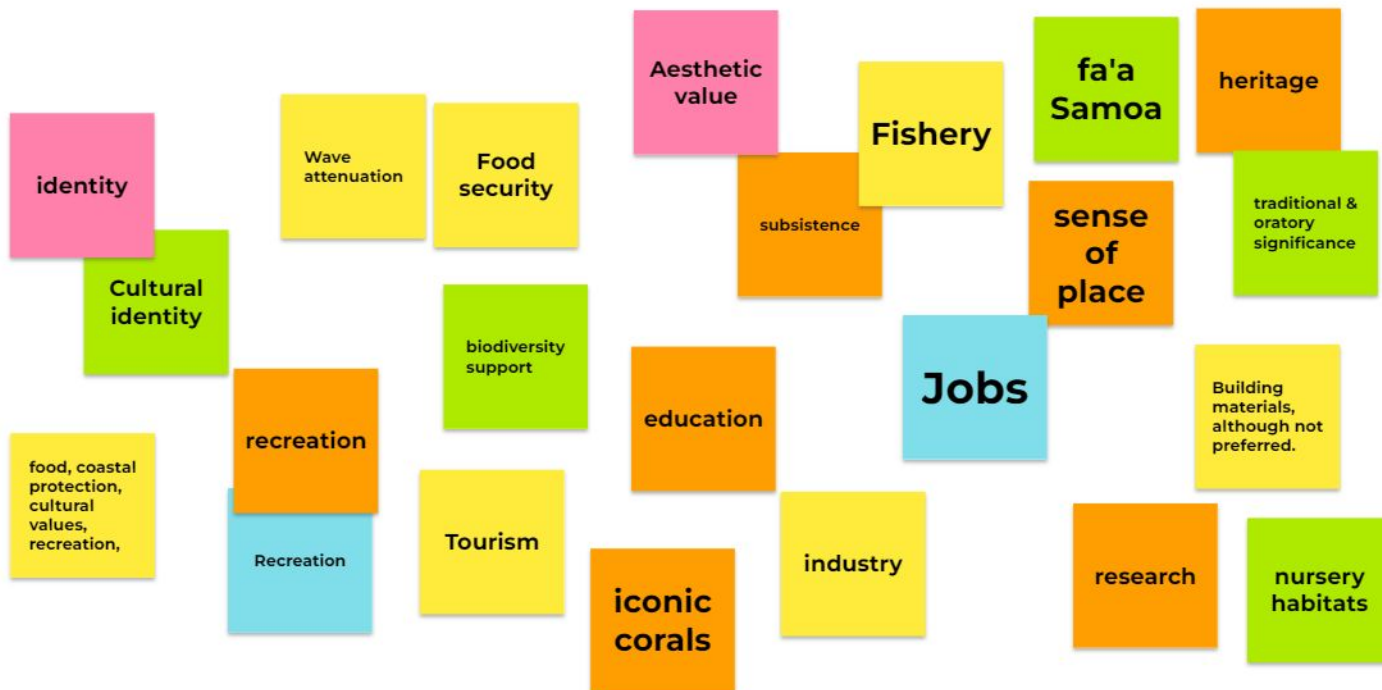
Socioeconomic TWG workshops to:

- Discuss appropriate valuation methods
- Defensibility criteria
- Approaches to cultural ES

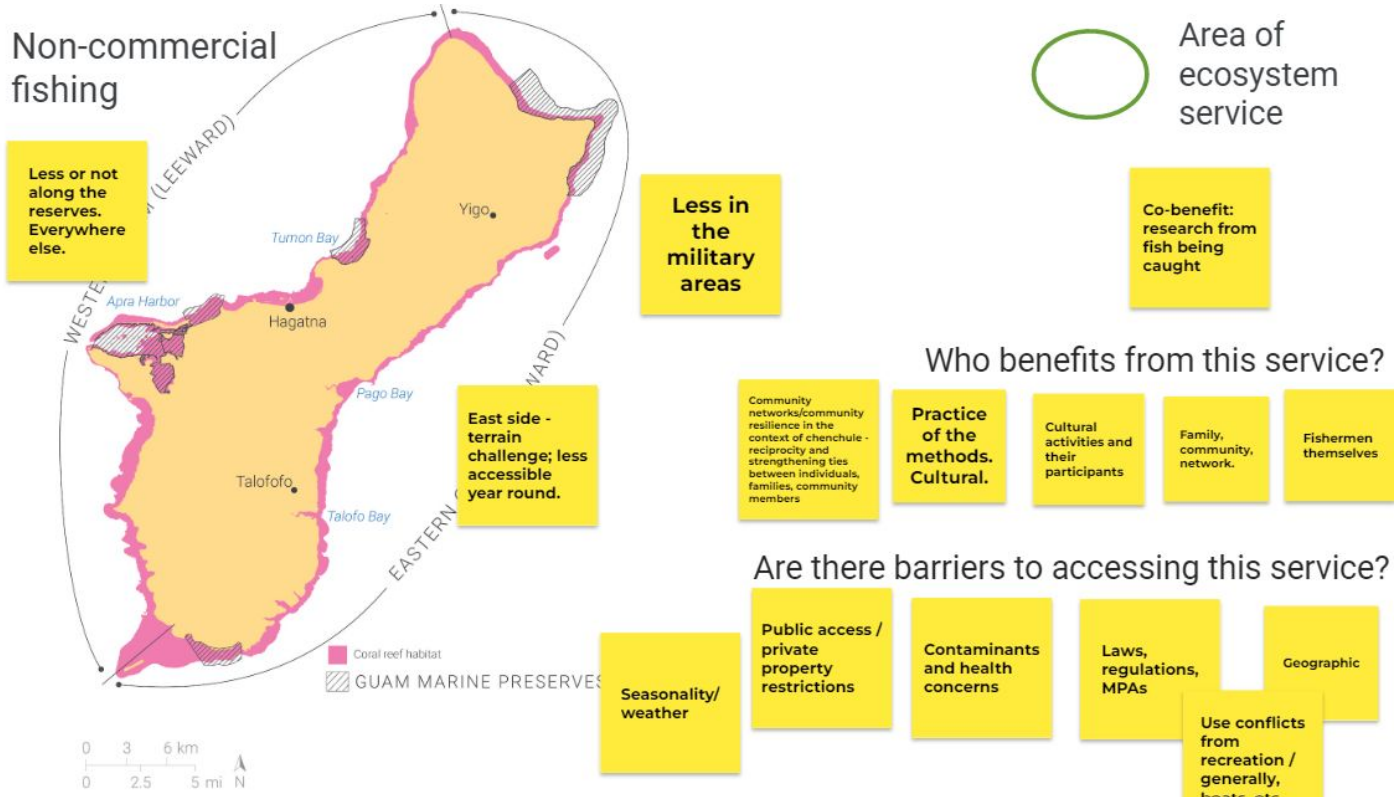
Workshops: Jamboard

American Samoa

What are the ecosystem goods and services provided by coral reefs in your jurisdiction?

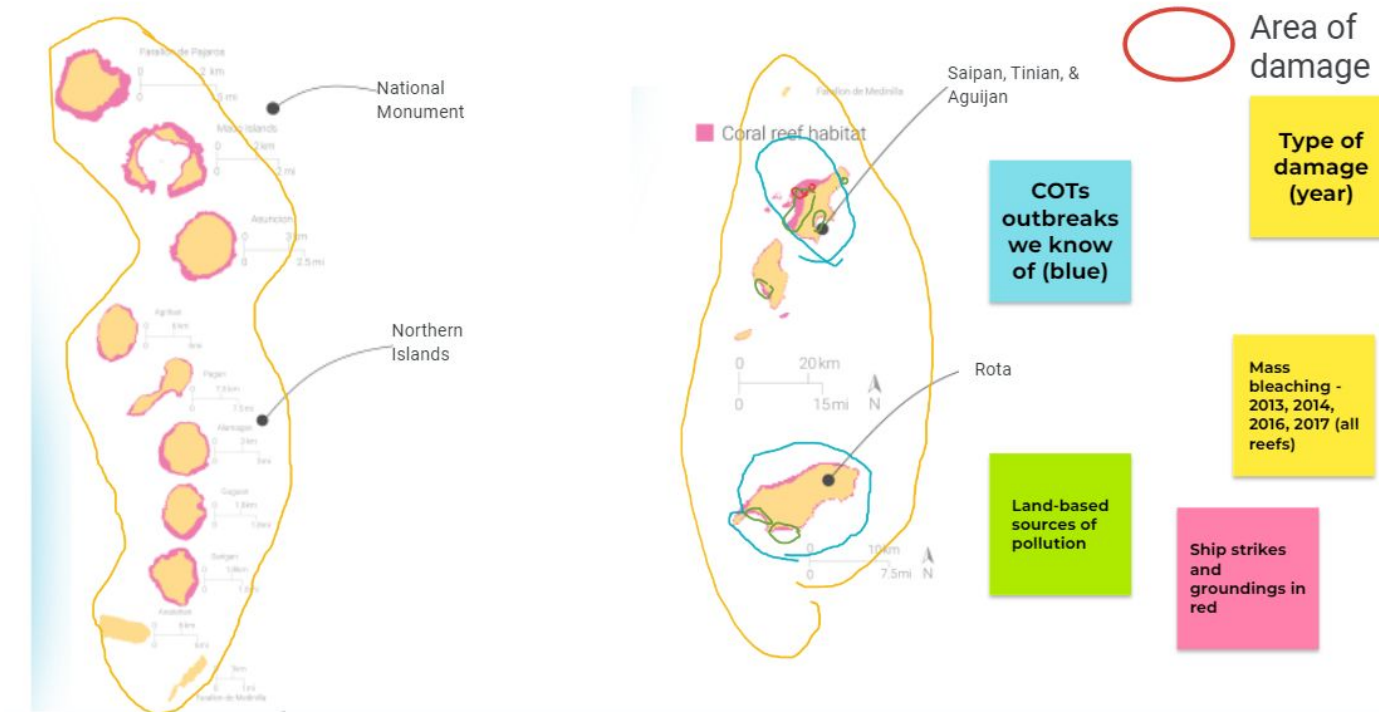


Workshops: Distribution of Benefits



Workshops: Reef Health / Quality of ESV

Please mark any parts of the reef that have been damaged (i.e., bleaching events, ship strikes, pollution) and are less or no longer supporting/providing specific services.



Year 1: Summary of Findings

- Gaps in existing ESV literature found for every jurisdiction; many can potentially be filled via benefit-transfer
- Reef health and quality are important considerations for determining present applicability of an ESV
- Cultural ecosystem services are a priority for inclusion

Incorporating Cultural Ecosystem Services

Many other CES in addition to recreation and tourism:

- Cultural heritage and identity
- Traditions and customs (e.g., Fa`a Samoa)
- Social cohesion - catch sharing
- Spiritual value
- Sense of place
- Artistic inspiration
- Cultural keystone species



Incorporating Cultural Ecosystem Services

- One way cultural ecosystem services can be defined is as *“the ways place-based and indigenous groups interact with their surroundings to derive all forms of sustenance and maintain connection to place.”* (Pascua et al. 2017)
- Adapt a hybrid approach to tell a more robust story of the values and importance of coral reefs
- Enhance diversity, equity, and inclusion; who benefits

Looking Ahead

Years 2 and 3 (FY22 and FY23):

- More workshops with technical working groups (TWGs) of local stakeholders and socioeconomic experts
- Gathering existing online data for EGS that aren't in literature
- Applying benefit transfer to two case study areas (FY22) and remaining study areas (FY23)
- Developing deliverables, such as final products for myriad uses

Questions for You

- Are you aware of similar or planned projects in the Insular Areas that relate to this project?
- What are your thoughts on how to demonstrate cultural value?
- How or why might you use these numbers?
 - How or why might partners you work with use these numbers?
- What are examples of outputs that you'd look for these end values to appear in (i.e., story map, video, website, table of \$s, etc.)?

Thank You!

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Project Website:

https://www.coris.noaa.gov/activities/coral_esv_project/welcome.html



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