

Hope for Coral Conservation

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Caribbean Division
February 2017

The Nature
Conservancy 

Key Partners



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Area $\sim 2/3$ of the
contiguous USA



41+ million
people

70% live on coast

Rich cultural heritage

6+ languages spoken

4



Tourism ~15% of regional GDP

28+ million visitors per year

\$47 billion in annual revenues

Nearly 2.5 million jobs linked to tourism

~\$5 billion/yr. value of coral reefs

A split-level photograph showing a diver in the upper half, swimming just below the water's surface. The lower half shows a vibrant coral reef with various types of coral, including branching and plate corals, in clear blue water. The text is overlaid on the image in white.

70% of beaches eroding at significant rate

Fisheries are collapsing

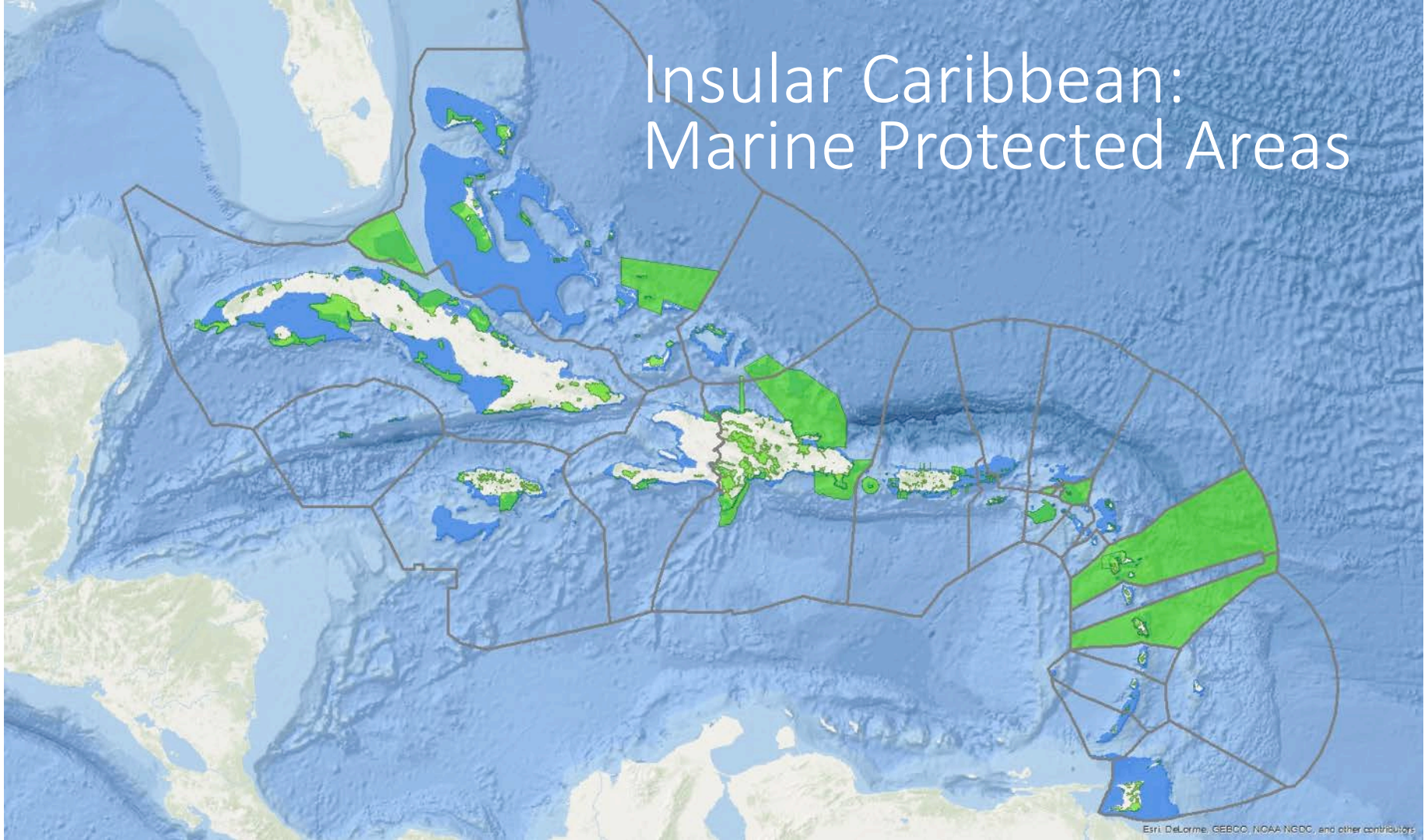
~60% decline in coral cover over last 30 years

Escalating Threats

An underwater photograph of a coral reef. The scene is dominated by various types of coral, including branching corals and a large, flat, plate-like coral in the foreground. The water is a deep, clear blue, and the lighting is natural, highlighting the textures and colors of the marine life.

- Development
 - Tourism
 - Agriculture
 - Infrastructure / Energy
- Climate Change
- Limited Resources for Protected Area Management

Insular Caribbean: Marine Protected Areas




Only ~23% high connectivity value reefs protected

 OPEN ACCESS  PEER-REVIEWED

RESEARCH ARTICLE

No Reef Is an Island: Integrating Coral Reef Connectivity Data into the Design of Regional-Scale Marine Protected Area Networks

Steven R. Schill, George T. Raber , Jason J. Roberts, Eric A. Trembl, Jorge Brenner, Patrick N. Halpin

Published: December 7, 2015 • DOI: 10.1371/journal.pone.0144199

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Abstract

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Abstract

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There is urgency and scientific momentum..



Climate-Related Death of Coral Around World Alarms Scientists



A turtle swimming over bleached coral near Heron Island, in the southern Great Barrier Reef. XL CATLIN SEAVIEW SURVEY

By MICHELLE INNIS



THE NEW YORKER

NEWS CULTURE BOOKS SCIENCE & TECH BUSINESS HUMOR CARTOONS MAGAZINE AUDIO

ANNALS OF SCIENCE | APRIL 18, 2016 ISSUE

UNNATURAL SELECTION

What will it take to save the world's reefs and forests?

BY ELIZABETH KOLBERT





“There is only one big risk you should avoid at all costs, and that is the risk of doing nothing.”

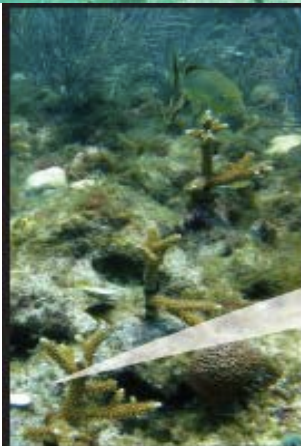
- Dennis Waitley

Coral Restoration 1.0

In-water nurseries

- Historical approach to coral restoration
- Slow growth rates
- Affected by storms and changing ocean conditions

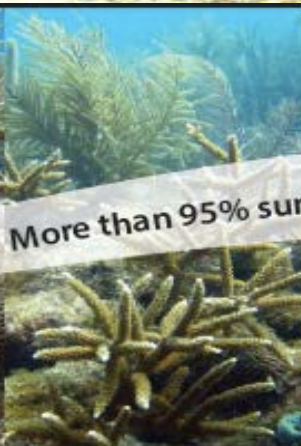




INITIAL - MAY 2013



JUNE 2013



OCTOBER 2013



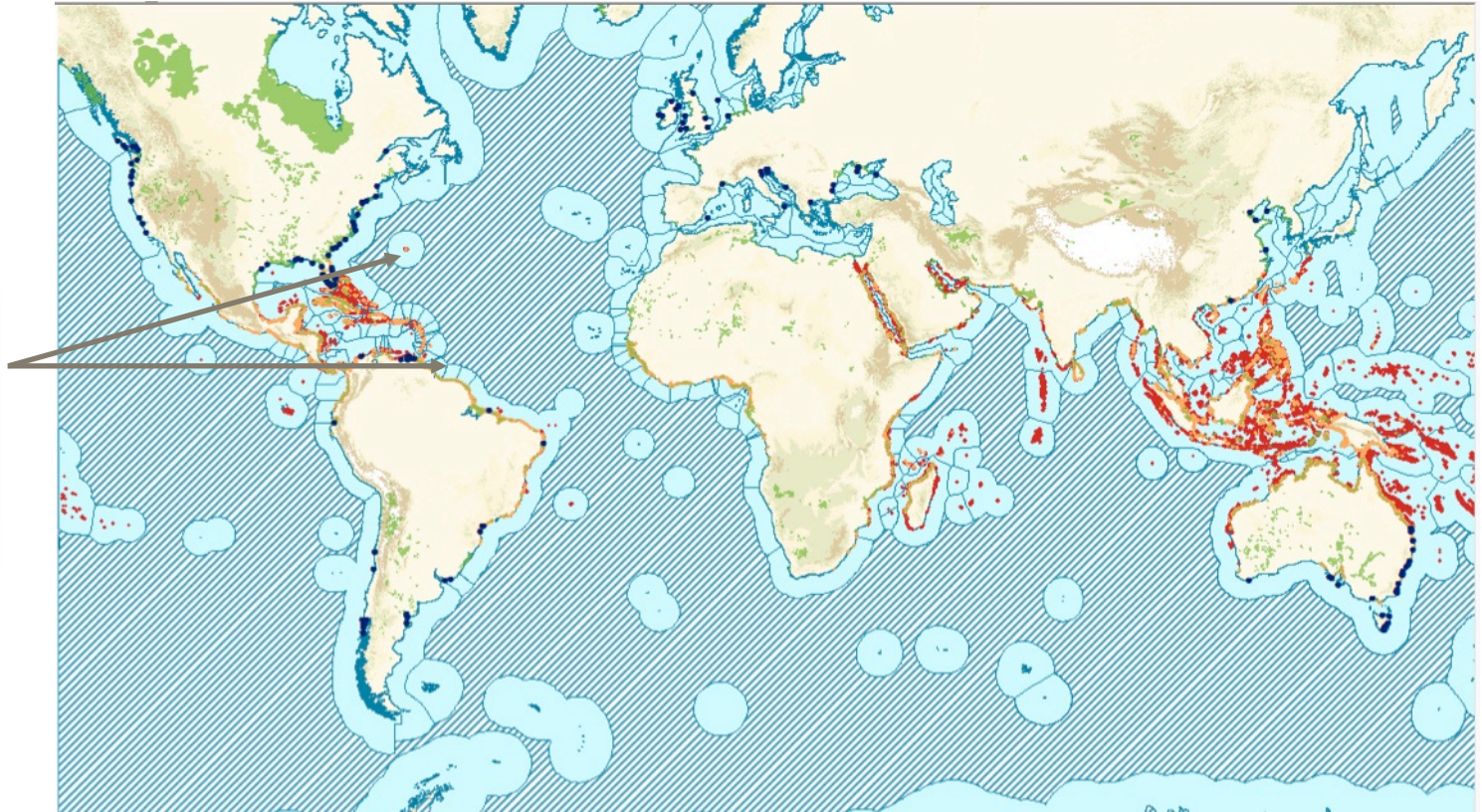
DECEMBER 2013



APRIL 2014

More than 95% survival after one year

The Scaling Challenge





Caribbean Corals Require Collective Action to foster innovation & achieve impact at scale

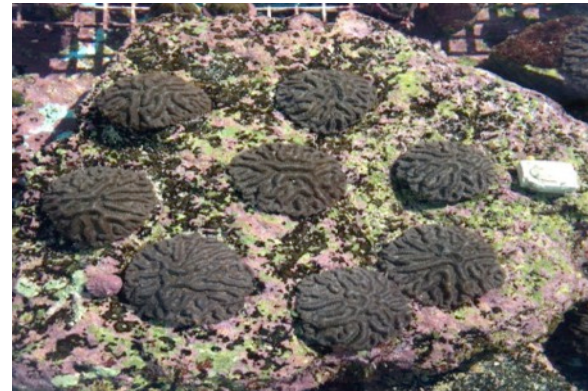
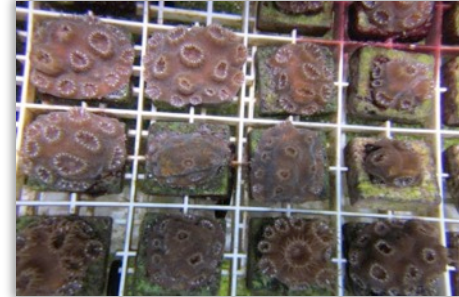
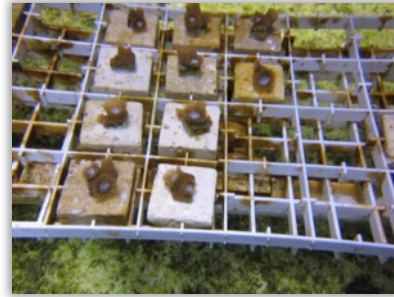
With **NOAA, Mote and other partners**, we are catalyzing a **Coral Innovation Network** that will:

1. Sponsor and bring together leading scientists and entrepreneurs to test innovative ideas that will restore resilient reef systems at scale
2. Apply cutting-edge technology to assess and monitor the state of reefs at an unprecedented scale
3. Design a resilient network of coral protected zones that capture adaptive genetics for future restoration
4. Take what we learn and share it globally to catalyze action

Coral Reef Restoration 2.0

New Coral Restoration Technologies

Microfragmentation



Land Based Coral Nurseries



University of the Virgin Islands

Coral Reef Restoration 2.0

New Coral Restoration Technologies

Sexual
Reproduction



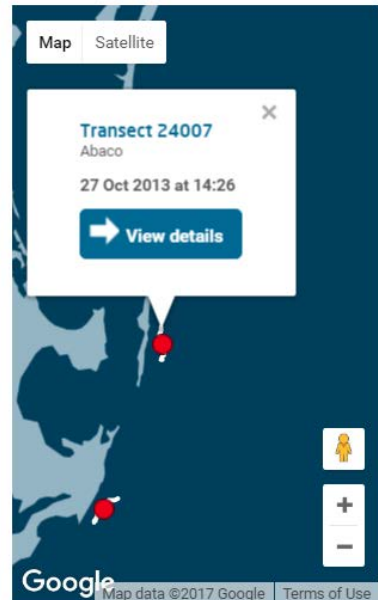
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Deploy High-Tech Assessment & Monitoring Systems

Abaco

Abaco
Bahamas
Caribbean
Bahamas



Explore Transects

View Image Analysis

Transects

24-007	27 Oct 2013 at 14:26	Abaco	📶
24-008	27 Oct 2013 at 16:22	Abaco	📶

- High-resolution images run through image recognition software to identify individual coral species and growth rates
- Hundreds of hectares per day – stored online and publically available





Opinion

Who Should Pick the Winners of Climate Change?

Michael S. Webster,^{1,*} Madhavi A. Colton,¹ Emily S. Darling,² Jonathan Armstrong,³ Malin L. Pinsky,⁴ Nancy Knowlton,⁵ and Daniel E. Schindler⁶

Concluding Remarks

Climate change and local impacts are creating immense challenges for species in terrestrial and aquatic ecosystems. We argue that the current focus of some climate-adaptation approaches on predict-and-prescribe conservation strategies might be insufficient for meeting these challenges because they rely on inherently uncertain predictions to pick a small number of climate-change winners. Instead, a more successful approach will be to develop networks that embrace existing portfolios of variability in environments, genotypes, species, and communities to provide a wide diversity of options. In other words, we need to protect biological diversity and let nature pick the winners.

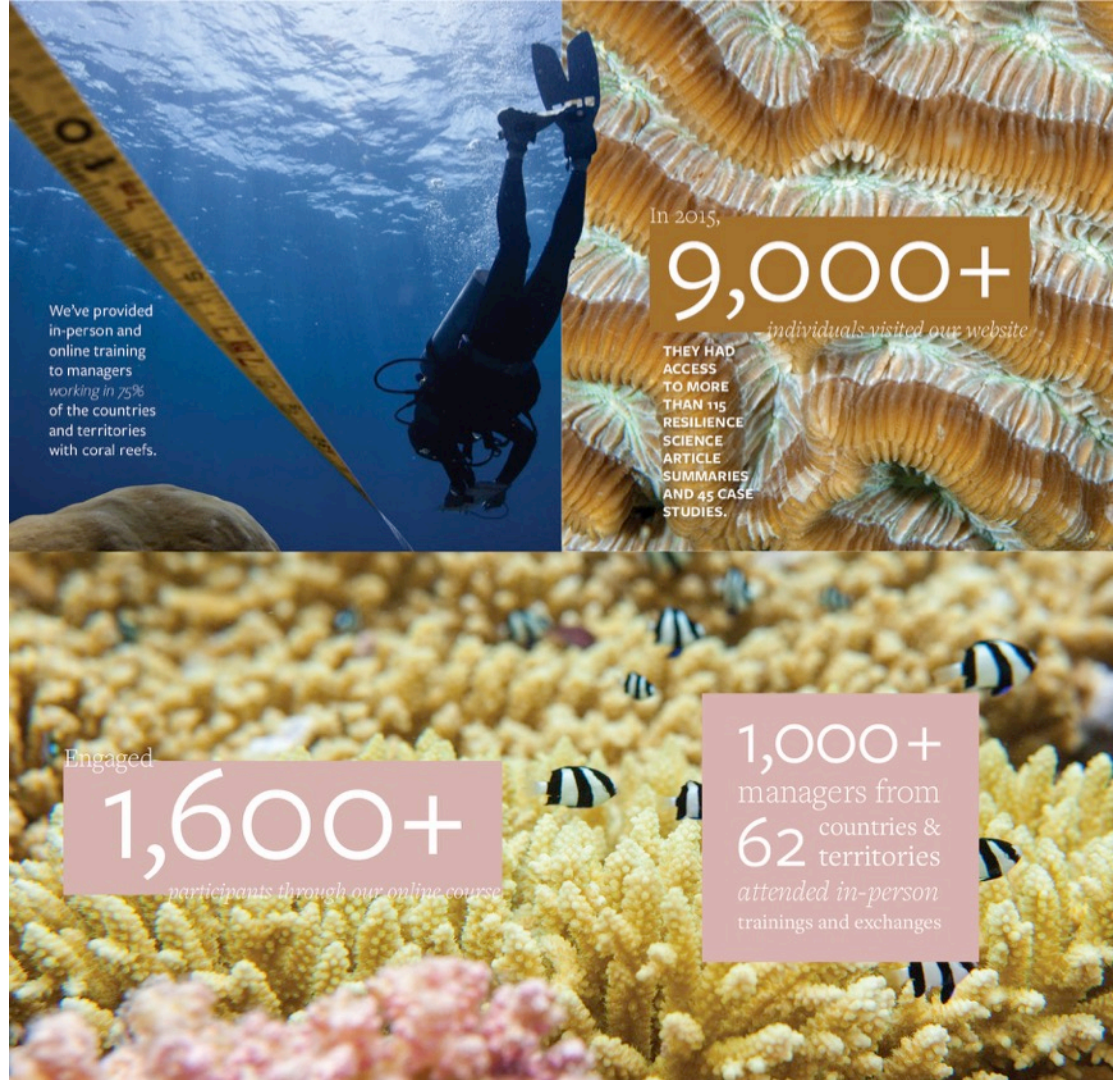
Design Network of Coral Protected Zones

A Portfolio Management Approach

- First application in the Caribbean with potential for global use
- Direct application to restoration and MMA work
- Will help us answer questions like:
 - *How many corals need to be out-planted to make a difference?*
 - *Where should restoration take place to be most effective?*

Catalyze action via a Global Coral Innovation Network

Leveraging the Reef Resilience
Network and NOAA's
convening capacity, catalyze
implementation of innovative
restoration practices that are
efficient and scalable



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Thank You

