

Conservation Data and Decision-Support Tools for the Caribbean

The Nature
Conservancy



Protecting nature. Preserving life.™

Caribbean Program Strategies

- **Expanding and strengthening MPAs (Caribbean Challenge)**
- **Adaptation strategies that reduce coastal vulnerability and maintain livelihoods**
- **Promoting sustainable tourism and smart coastal development**
- **Supporting sustainable fishing practices**



Approach to the strategies

1. Developing accurate GIS **datasets** and **user-friendly support tools**
2. **Building capacity** at the local-level through education, training, and awareness-raising
3. Targeting and executing key **demonstration projects** that will become protocols for other island and coastal situations



Information Pyramid

DECISION-
MAKERS

TOOLS

Information
Products

Information

Managed Data

Primary Data

Packaging &
Dissemination

Analysis & Modeling

Management &
Quality Assurance

Data Creation
& Capture



Caribbean Decision Support System (CDSS)



Caribbean

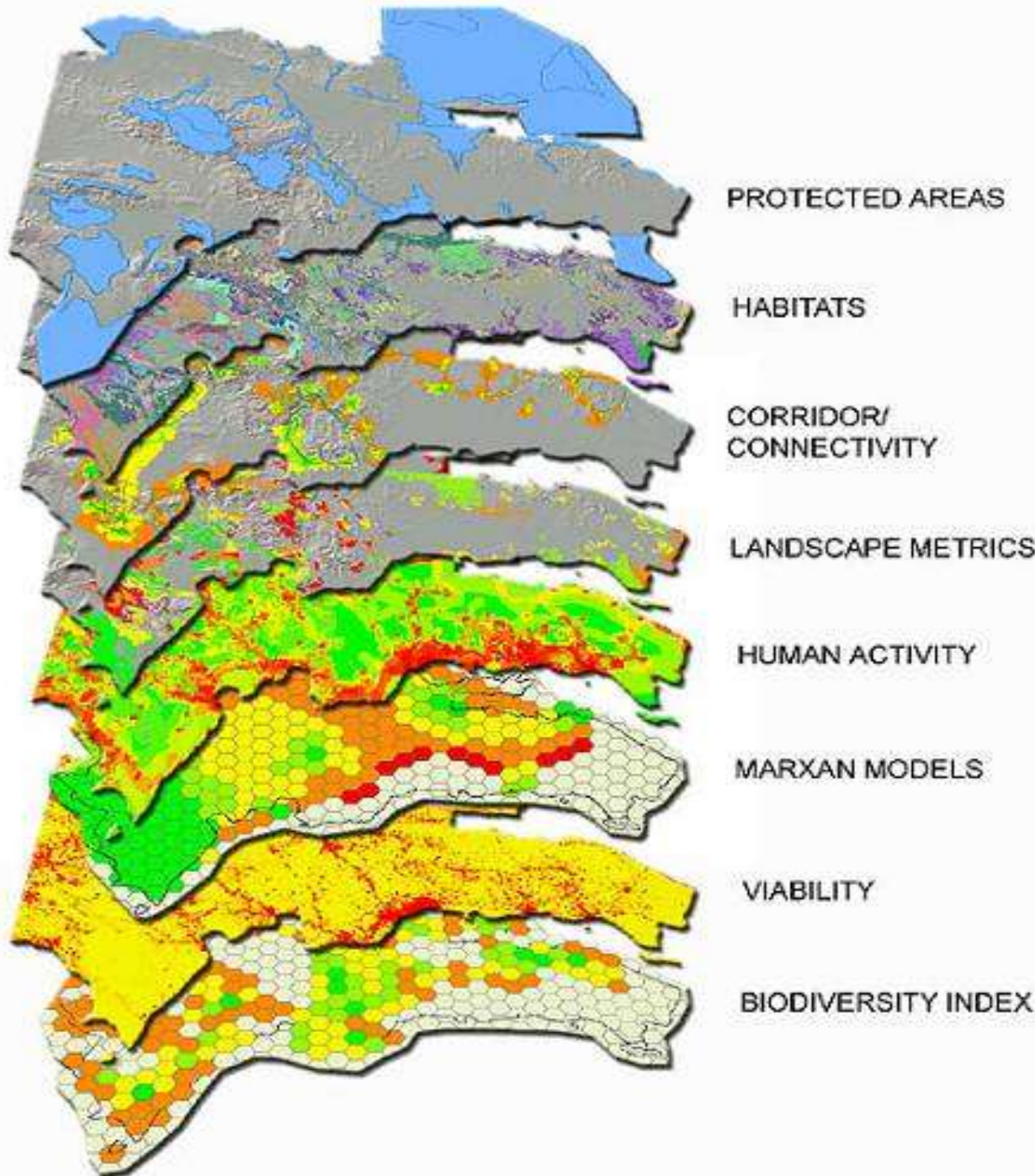
Decision Support System

3 components:

1. Insular Caribbean-wide database of conservation targets, protected areas, and threats to biodiversity
2. Methods and tools for setting priorities for biodiversity protection and sustainability
3. Identification of most persistent and viable areas of biodiversity



Caribbean Decision Support System



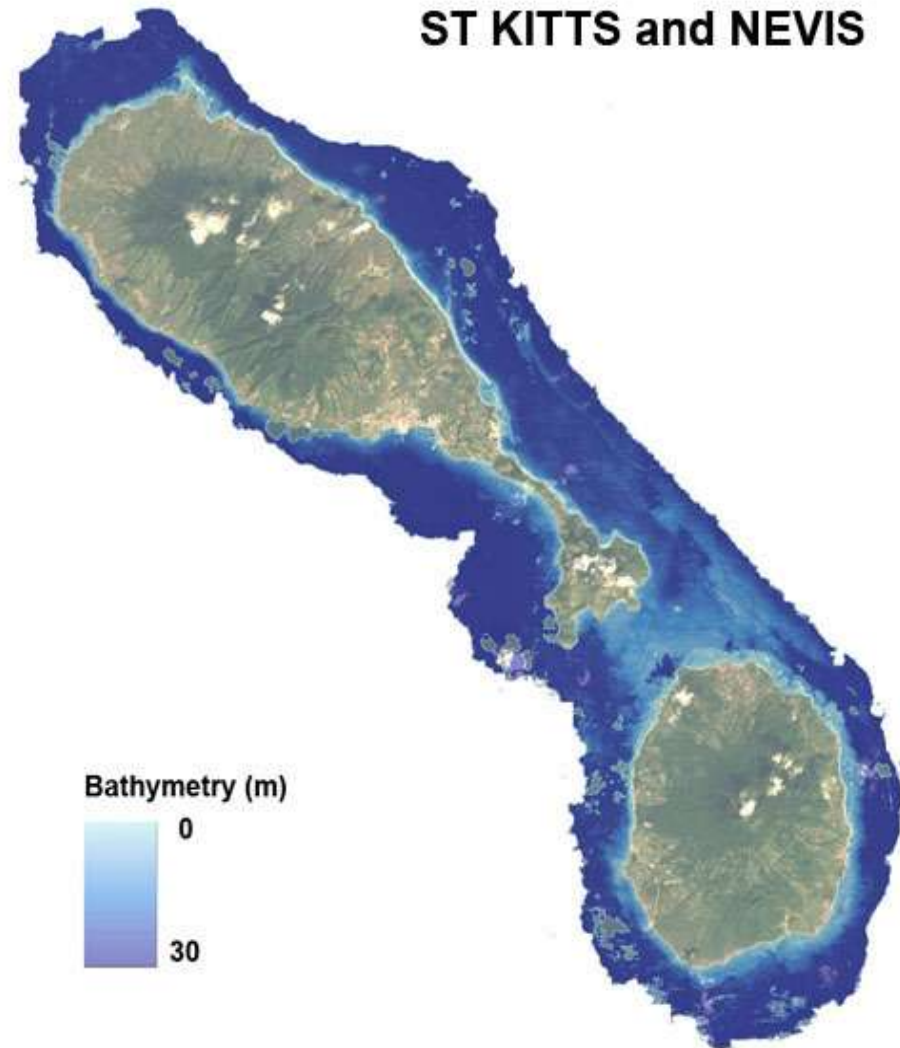
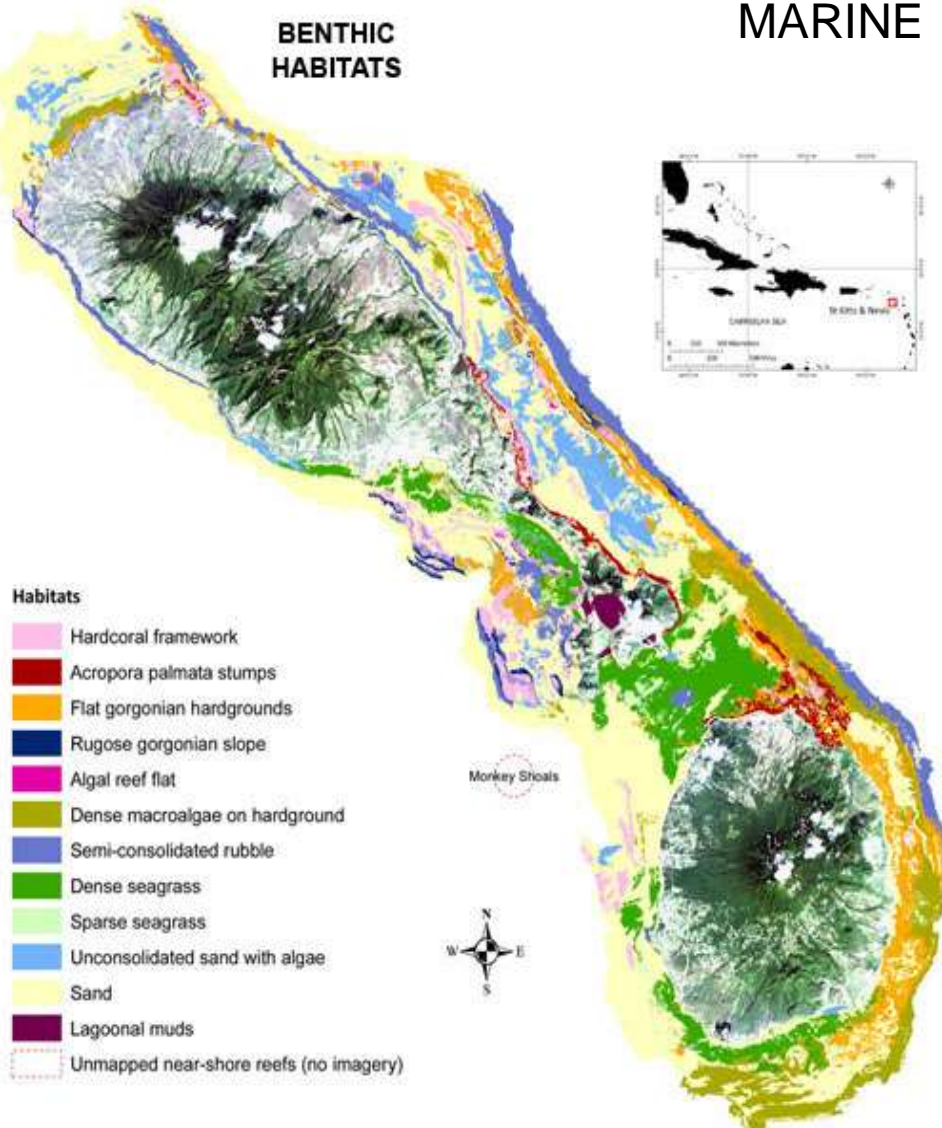
- Multiple scale management tool
- Evaluation of the protection of natural resources and assessing human well-being

Mapping and Modelling of Habitats

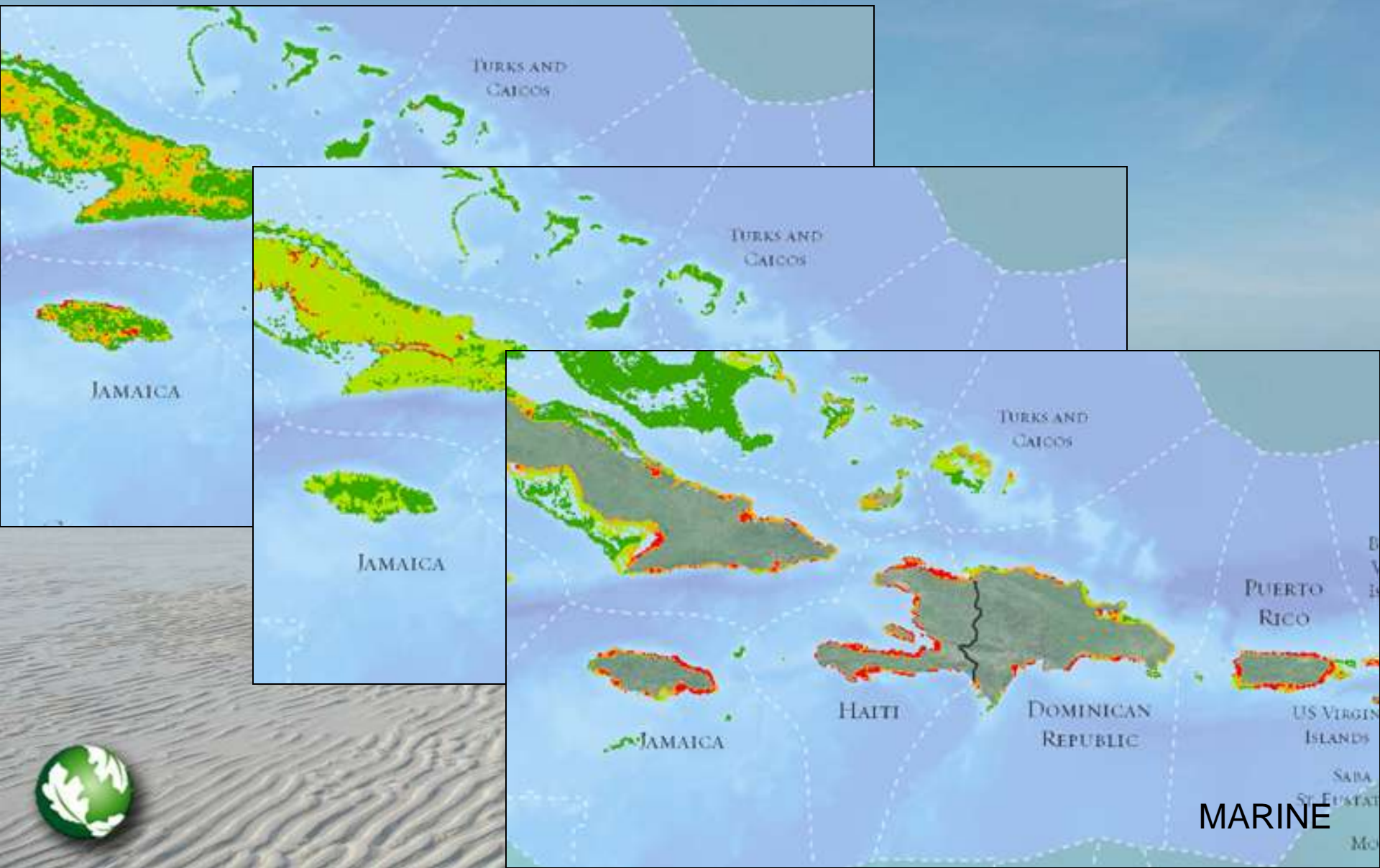
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MARINE

ST KITTS and NEVIS



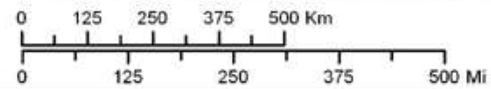
Mapping and Modelling of Threats



REGIONAL CONSERVATION ASSESSMENT FOR THE CARIBBEAN BASIN

MARINE CONSERVATION PORTFOLIO

Portfolio



Online Map Viewer: Protected Areas

The screenshot displays the 'Caribbean Protected Areas' online map viewer. The main map area shows the Caribbean islands with various colored overlays representing protected areas. A green header bar at the top left contains the title 'Caribbean Protected Areas' and a 'Current Action: Select by Point' indicator. Below this are four buttons: 'SELECT DATA', 'NAVIGATE', 'TOOLS', and 'HELP'. A scale bar in the bottom left indicates 500 km and 100 mi. On the right side, there are two panels: 'TNC Layers' and 'Find'. The 'TNC Layers' panel includes a 'Layer Legend' with categories for 'Protected Area Status' (Designated, Proposed) and 'Protected Area Conservation Status' (N/A, Very Good, Good). The 'Find' panel has a search box set to 'Protected Area Status' and instructions to click on tools for more details. The bottom right corner features the logos for 'The Nature Conservancy' and 'ESRI'.

<http://maps.tnc.org/CARIBPA/index.html>





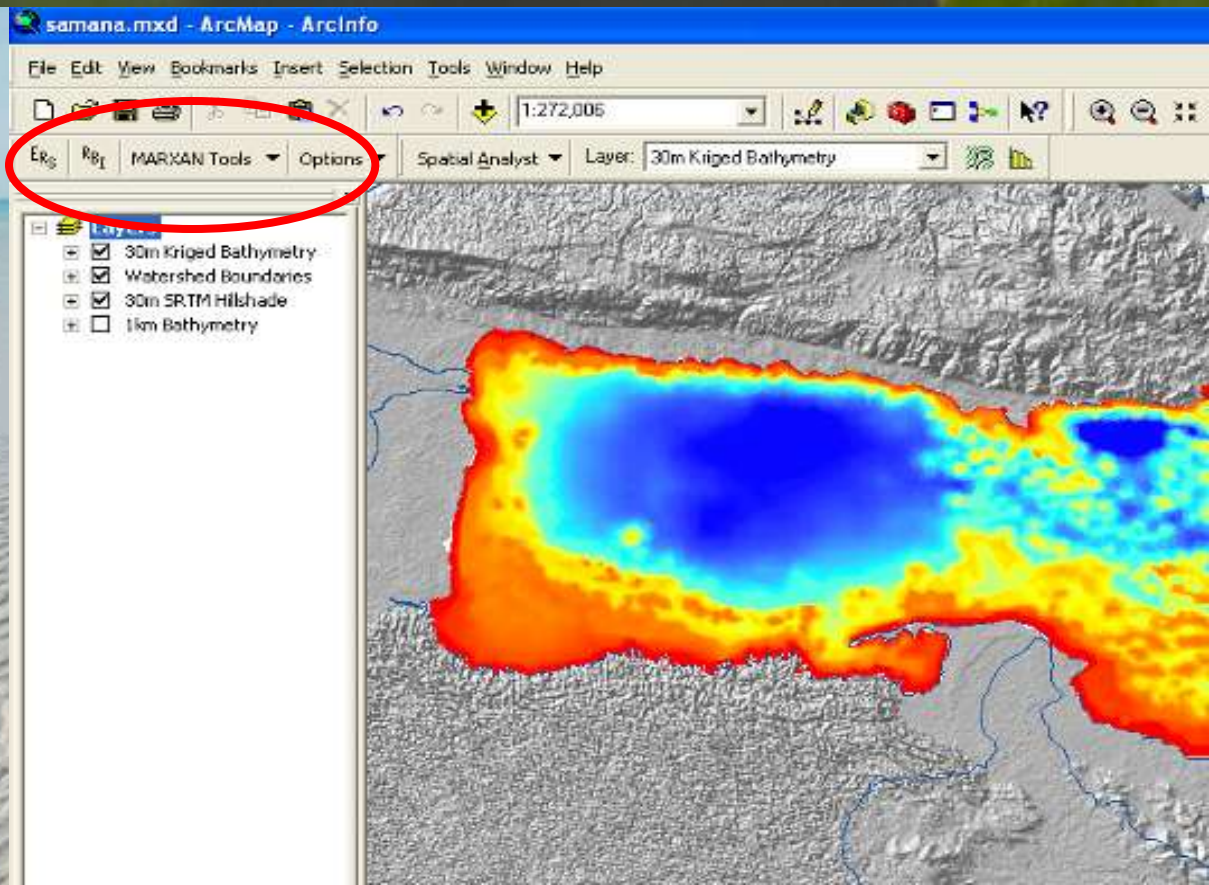
Protected Area Tools (PAT) for ArcGIS 9.3 Version 2.1

Three Modules:

1. Environmental Risk Surface (ERS)
2. Relative Biodiversity Index (RBI)
3. Marxan Tools

<http://www.gispatools.org>

Schill and Raber, 2008



Ecosystem Assessment and Reporting (EAR) Tool

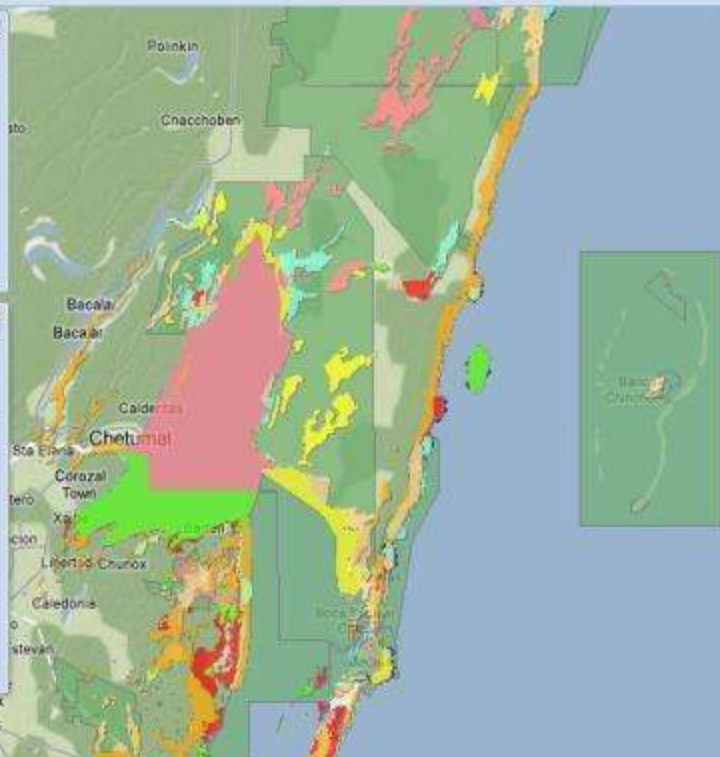
Example EAR Outputs

Map Services

Service Name	Service Type	SRS
Folder: EAR_Tool		
<input checked="" type="checkbox"/> MAR Example	ArcGIS Dynamic	ESR:102113
<input type="checkbox"/> Northern Andes Example	ArcGIS Dynamic	ESR:102113

EAR Projects

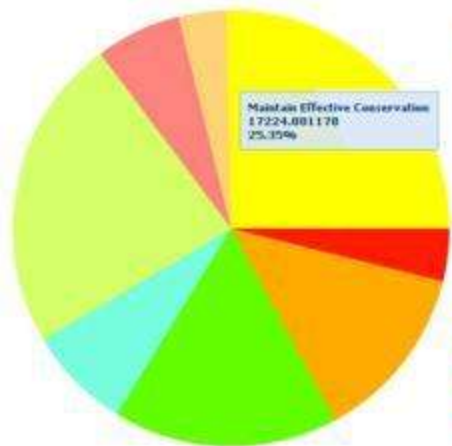
Project Name	Creation Date
Status: Completed (3 Projects)	
<input type="checkbox"/> Tester	29 November 2009 11:22:55
<input type="checkbox"/> MAR Example	02 January 2010 04:34:36
<input type="checkbox"/> MAR Example Copy	02 January 2010 22:21:45



Map Layers

Map Service: EAR_Tool MAR Example

Layer	Visible
Estuaries	<input checked="" type="checkbox"/>
Abate Threats	<input type="checkbox"/>
Abate Threats and Implement Better Management	<input type="checkbox"/>
Implement Better Management	<input type="checkbox"/>
Improve Biodiversity	<input type="checkbox"/>
Improve Biodiversity and Abate Threats	<input type="checkbox"/>
Improve Biodiversity and Implement Better Management	<input type="checkbox"/>
Maintain Effective Conservation	<input type="checkbox"/>
No Status	<input type="checkbox"/>
Lagoons	<input checked="" type="checkbox"/>
Manatees	<input checked="" type="checkbox"/>
Output Summary Table	<input type="checkbox"/>



Ecosystem Assessment and Reporting

Ecosystem Charts
Choose an Ecosystem to chart:

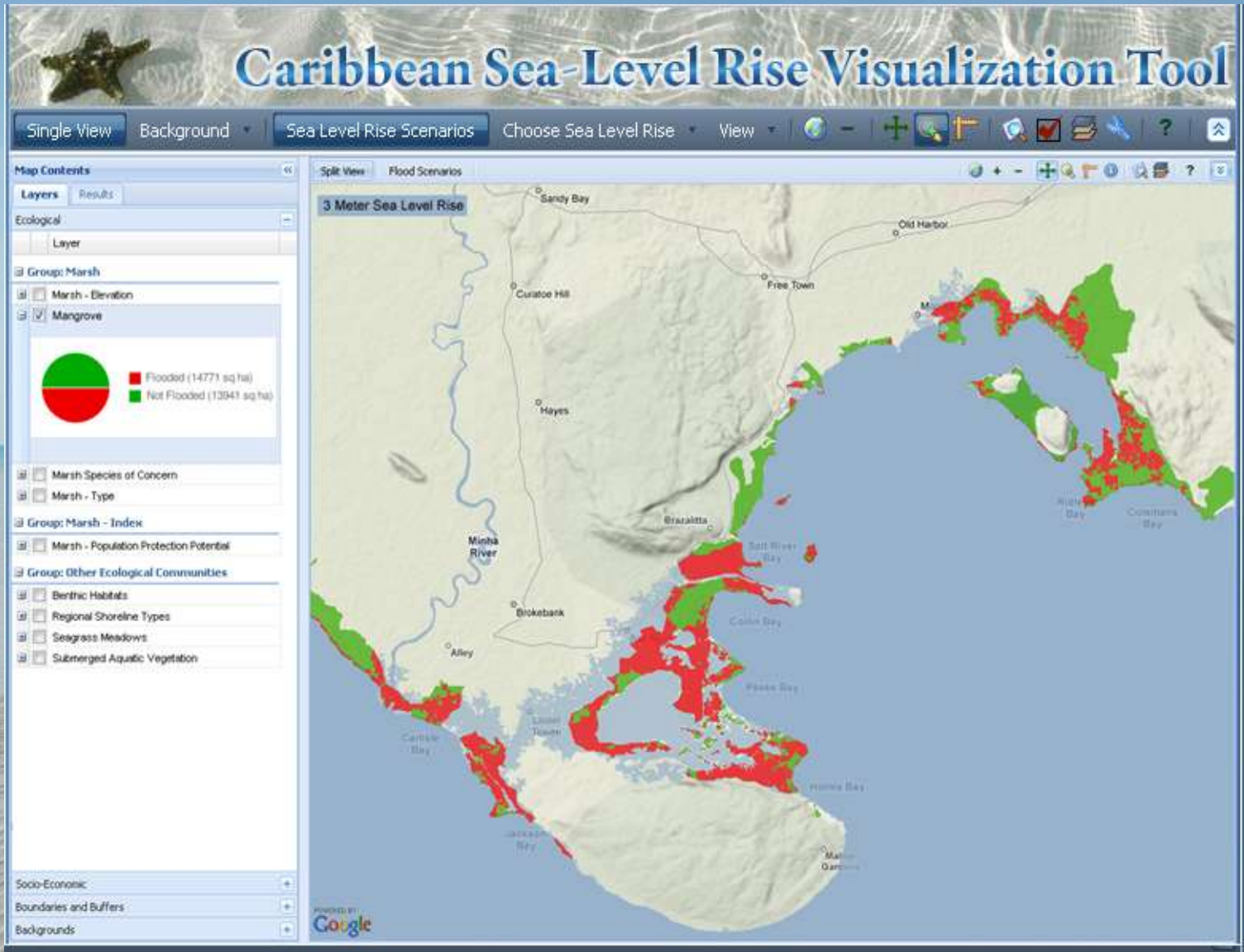
- Maintain Effective Conservation
- Improve Biodiversity
- Abate Threats
- Implement Better Management
- Improve Biodiversity and Abate Threats
- Abate Threats and Implement Better Management
- Improve Biodiversity and Implement Better Management
- No Status

Ecosystem Charts

Ecosystem Report

Protected Area	Area	Per.	St.	St%	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
0 Results																						
Arrecife de Puerto Morelos	215	01	23.5	100%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Arrecife de Cozumel	40	00	40	100%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Protected Area Report																						
Arrecife de Puerto Morelos																						
Area	215	01	23.5	100%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Subarea	400	01	400	100%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Manejo	307	00	00	00%	37	100%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Turtle Nest	808	01	00	00%	740	74.3%	247	25.4%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
El Yagual	607	04	401	200%	1339	176.3%	247	25.5%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Arrecife de Cozumel																						
Area	40	00	40	100%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Coro Nest	1405	14	00	00%	00	00%	00	00%	00	00%	1405	100%	00	00%	00	00%	00	00%	00	00%	00	00%
Lagunas	09	00	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Manejo	40	00	00	00%	40	100%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%	00	00%
Turtle Nest	1002	10	204	20.4%	480	54.2%	00	00%	00	00%	420	25.7%	00	00%	00	00%	00	00%	00	00%	00	00%
El Yagual	1407	12	284	20.1%	480	34.2%	00	00%	00	00%	1247	100%	00	00%	00	00%	00	00%	00	00%	00	00%

Caribbean Sea-Level Rise Tool



Conclusions

- TNC is committed to developing systematic GIS databases for conservation decision-making
- Data are the engine that drive many of the GIS-based decision support tools
- The CDSS is a comprehensive Caribbean-wide system that provides data and tools for conservation decision-making.
- TNC continues to seek for new opportunities for both funding and collaboration



MORE INFORMATION:

- Dr. Steve Schill: sschill@tnc.org
- Protected Area Tool:
<http://gg.usm.edu/pat/>
- Ecosystem Assessment and Reporting Tool: <http://gg.usm.edu/ear/eardata/>
- Online map tool:
<http://maps.tnc.org/CARIBPA/index.html>
- CDSS:
<http://conserveonline.org/workspaces/Cari>
bbean.conservaion



Thank you for your attention

