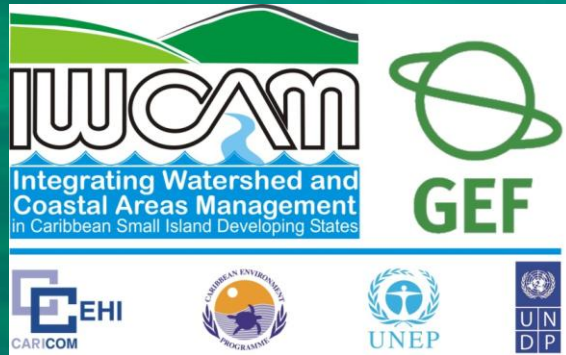


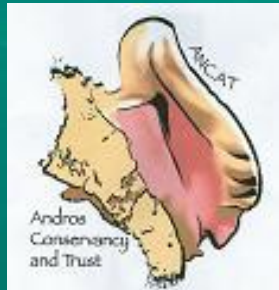
Global Environment Facility - Integrating Watershed & Coastal Areas Management (GEF-IWCAM): *Andros Demonstration Site*



Coastal Aquifer Management in Small Island
Developing States of the Caribbean:
Challenges and New Directions

St. Kitts & Nevis

October 11-12, 2010



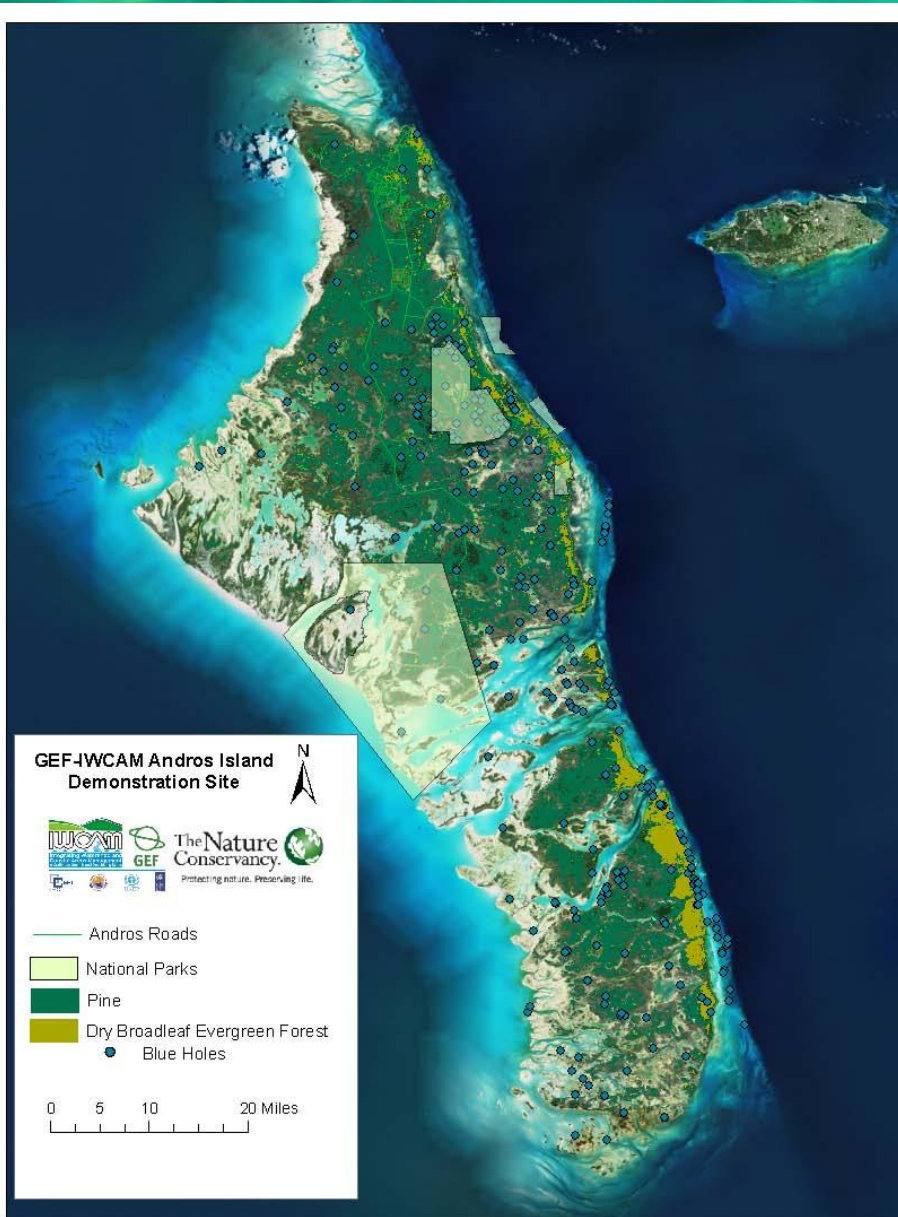
The Bahamas

- 700 islands & cays
- 80 km east of Florida,
80 km NE of Cuba
- Total land area -
13,939 square
kilometers
- 3,542 km of coast
- Entire country is
considered coastal
- Extremely flat –
highest elev 63 m



ANDROS ISLAND

- The largest island in The Bahamas
- 100miles long and 45 miles wide
- population of 8,000 (2005 est.)
- Small clusters of communities – east coast
- Largest groundwater resevoir



GEF-IWCAM Andros Project

- The primary objective of the IWCAM Andros project is to demonstrate active groundwater recharge area protection through the development of a Land and Sea Use Plan

GEF-IWCAM Andros Project Objectives

- Develop a land and sea use plan
- Develop baseline inventory of land & sea resources
- Integrated multi-sector approach to GIS
- Adoption of new technologies & approaches to address water resources
- Replication of lessons learned and practices

Terrestrial Surveys

Bird Assessment



Land Use/Land Cover



Popular Birds of Andros

- **Bahama Oriole**
 - Andros (only)

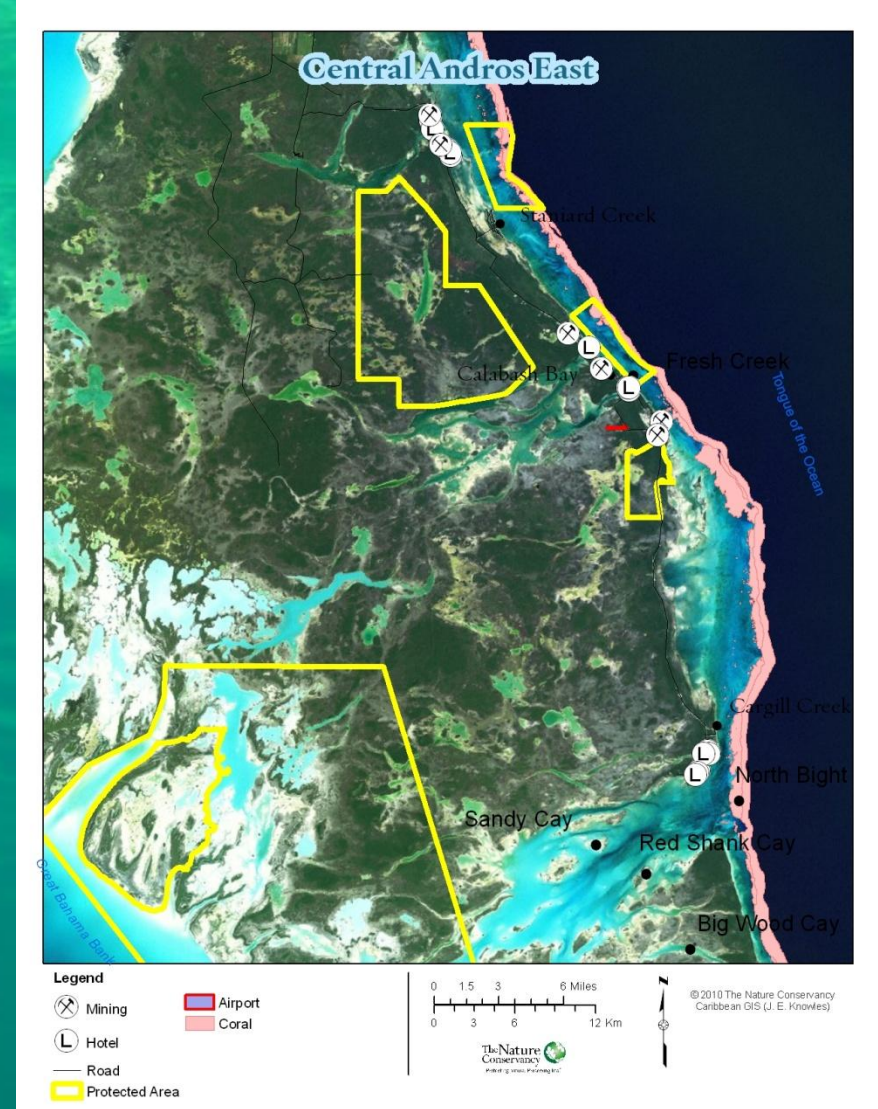
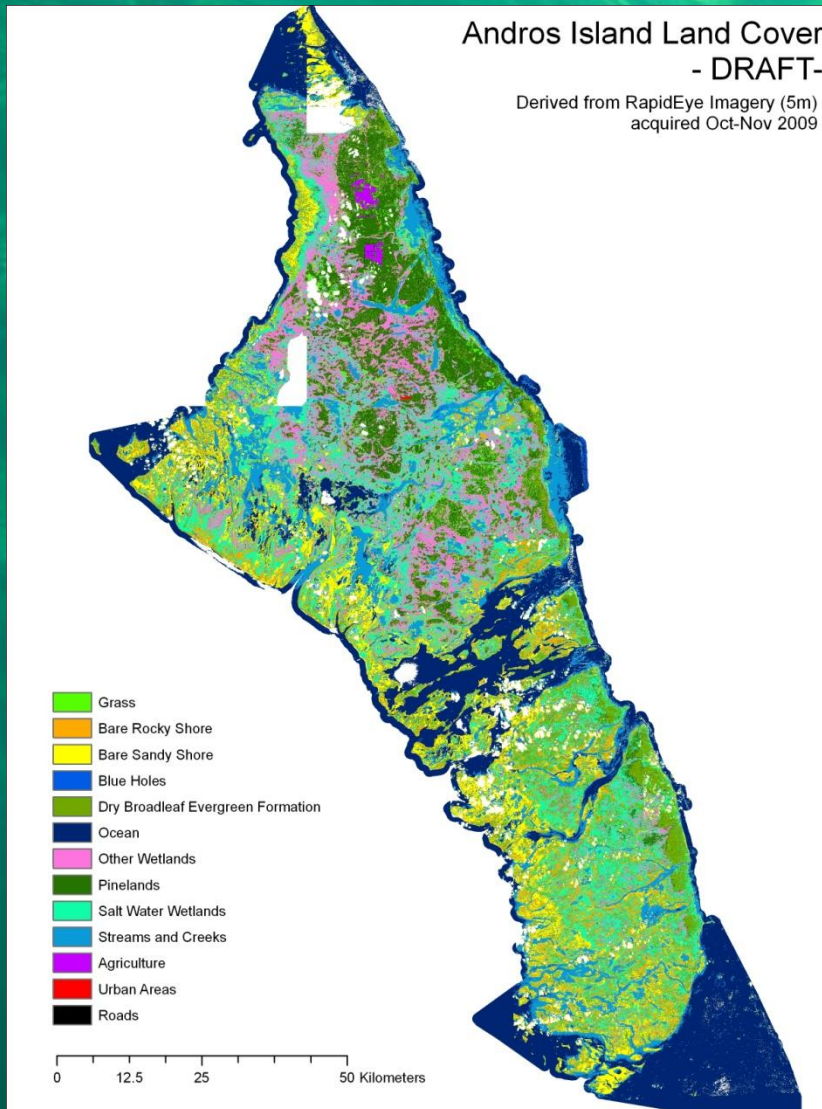


- **Bahama Woodstar**
 - Bahamas (only)
- **Bahama Yellowthroat**
 - Bahamas (only)

- **Great Lizard-Cuckoo,**
 - Andros and Eleuthera
- **Bahama Swallow**
 - Andros, Abaco, Grand Bahama, New Providence



Mapping of Biodiversity, Threats & Concerns



Economic Valuation of Natural Resources



- What is the economic impact? How do people make a living off the land and sea?
- What is the value of the natural resources of Andros?

Economic Valuation Results

Economic Impact

- Nature provides income and employment for 80% of Andros; 1,645 full time jobs and 8,000 part time jobs
- \$141 million
- Fisheries, Harvesting of land crabs, Crafts, Sportsfishing, Nature based tourism, etc

Value of Ecosystem Services

- The net benefit of fresh water on Andros is \$3.5 million each year.
- The habitats on Andros provide an estimated mean of \$46,000 per km² per year in ecosystem services, such as carbon storage, water supply and recreation

Water Conservation Strategy

- Existing water uses and threats
- Sector Specific Water Use
- Water and wastewater management efficiency
- Recommendations for water conservation on Andros



Public Awareness

- Workshops, Luncheons, Public Meetings (GIS, Economic Valuation & Ecotourism strategy)
- School Presentations, Poster Competition, Weather Station Installations

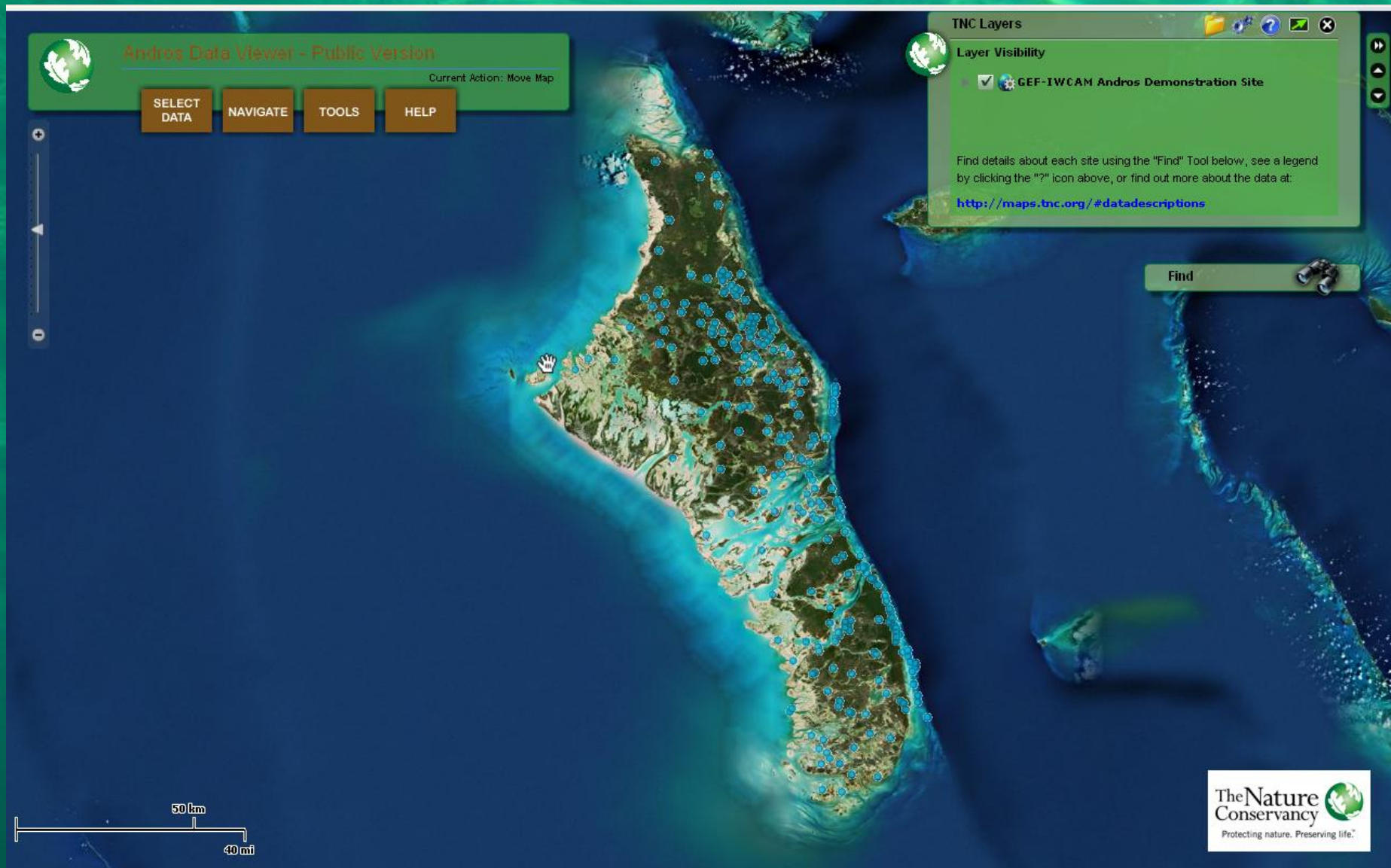


Weather Stations



Online GIS Web Map

www.maps.tnc.org/ANDROS





GEF-WYCAM Andres Demonstration Site

Current Action: Select by Point

SELECT
DATA

NAVIGATE

TOOLS

HELP

50 km

40 mi

TNC Layers

Layer Visibility

- ☐ Pine
- ☒ Groundwater lens
- ☐ Sparse mangroves

Zero in on individual features by using the "Find" Tool below, see a legend under the HELP toolbar, or for a quick tutorial on how to use this map click below:

<http://www.youtube.com/watch?v=rhvBbU5kJI>

Find

Project Website

www.nature.org/androsIWCAM



The mission of The Nature Conservancy is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive.

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Bahamas

Working with Local Communities to Manage Local Resources

The Nature Conservancy in the Bahamas

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In 2006, when Conservancy scientists set out to assess [Andros Island's](#) natural areas, they brought sophisticated monitoring equipment and cutting-edge technological tools. But "it was the **knowledge of the local community members**," notes Phil Kramer, Director of the Conservancy's Caribbean Program, "that was the core of the project's success. **The people of Andros know their island better than anyone.**"

Last year, when Andros was selected as a pilot project site to demonstrate land and sea use planning, the Conservancy and its partners turned to local community members again. Their knowledge – gained over years and decades of living on the island – provides an **important foundation for ensuring that all planning considers community needs and concerns.**

Around the world, the economic development of small, island nations can sometimes come at the expense of irreplaceable natural areas and resources. This is especially true in the Caribbean where tourism accounts for \$4 billion annually and fishing is a way of life for many small communities.

Unfortunately, development meant to support the tourist industry, such as dredging sandy bottoms to deepen marinas

[VIEW A SLIDESHOW](#)

Get Involved!

[JOIN NOW!](#)

[Join our online community](#) and you'll help The Nature Conservancy to protect nature and preserve life in the Caribbean!

Regional Programmes

- Water and Culture
 - UNESCO-IHP / Project WET Water and Education Programme for the Americas and the Caribbean. Mike Swann from the Bahamas has represented our interests.]
- Water Balance
 - Map of Arid and Semi-arid Zones. In October-2007 Member States of the Caribbean meet in the Bahamas to finalize the Maps for the Caribbean Territories.

Integrated Water Resources Management (IWRM)

- UNESCO-IHP
- Phase VII “Water Dependencies: Systems under Stress and Societal Responses”
 - THEME 1: Adapting to the impacts of global changes on river basins and aquifer systems
 - THEME 2: Strengthening Water Governance for Sustainability
 - THEME 3: Ecohydrology for Sustainability
 - THEME 4: Water and Life Support Systems
 - THEME 5: Water Education for Sustainable Development

Regional Activities: Phase VII

- UNESCO Graphic – North Andros Case Study
- UNESCO Caribbean Water Resource for SID's
- UNESCO Regional Center for the Development of Water Resources in Caribbean Island States

UNESCO Graphic

- GRAPHIC – Groundwater Resources Assessment under the Pressure of Humanity and Climate Change
 - The North Andros Wellfields to be utilized as the project site. Thru UNESCO-IHP activities.
 - The Bahamas shall assist additional Caribbean Territories and Small Island Developing States (SID's) with the management of their groundwater resources.

UNESCO GRAPHIC

Andros Site

- Develop and compile a geospatial groundwater database for Andros Island, populate the database with available data, and identify critical data gaps;
- Design and implement data collection and monitoring networks for the Andros Island fresh groundwater lens to fill identified data gaps through augmentation and enhancement of existing infrastructure
- Train local personnel in all aspects of the project including
- Information dissemination and technology transfer to other Caribbean nations

