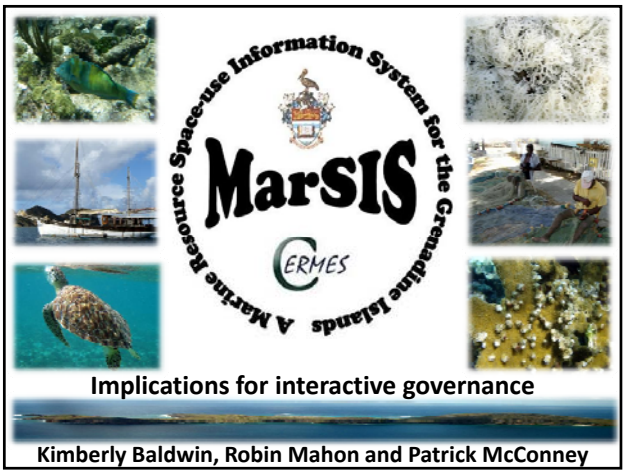
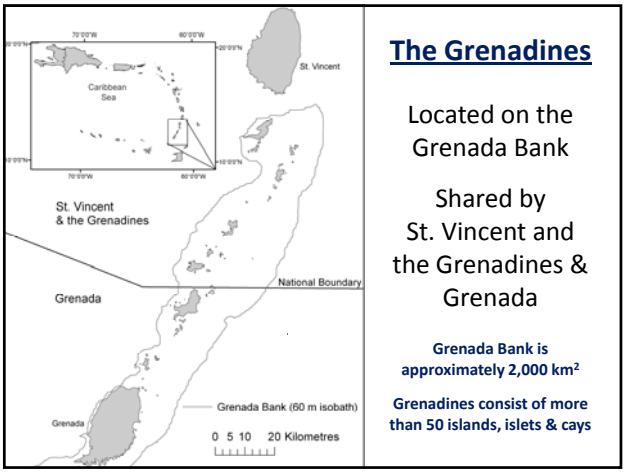





## The Grenadines

Located on the Grenada Bank

Shared by St. Vincent and the Grenadines & Grenada

**Grenada Bank is approximately 2,000 km²**

**Grenadines consist of more than 50 islands, islets & cays**

## Grenadine Islands

Marine-based activities & resources provide core of economy, culture & livelihood

BAY WATCH

## Planning & management of Grenada Bank marine resources is complex

Transboundary island chain

Large diversity of users

Information not integrated between :

- –Countries
- –Government Agencies
- –Knowledge Systems

## In order to manage resources

Good information that is integrated between

- –Countries
- –Sectors (tourism, fisheries, planning, etc.)
- –Islands

Accessible to all stakeholders

- –Government
- –NGOs
- –Communities

## With integrated information we can answer questions like:

- Distribution & extent of marine resources
- Areas & patterns of resource use
- Linkages between resources & livelihoods
- Areas of multiple use & potential conflicts

**Plan sustainable development**

## Challenges faced by SIDS

- Financial
- Technological
- Baseline information
- Human capacity
- Locally relevant information
- Sectoral approach to management
- Legitimacy for 'interactive governance'

## Participatory GIS (PGIS)

### Demand-driven & user-centered GIS

– Based on action research principles (PLA & PRA)
– Spatially merges local knowledge & socio-economic information with conventional scientific
– Validation, control & access by stakeholders

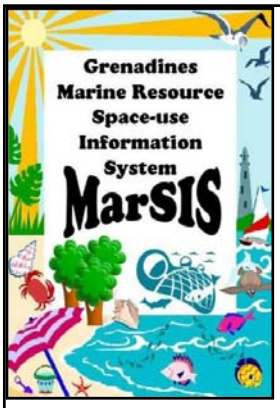
## *PROCESS & PRODUCT*

**Principles of PGIS**

Inclusive
Collaborative
Equitable
Accessible
Appropriate
Ownership

## PGIS can provide for:

- More holistic, functional & transparent framework
- Support for usefulness of local knowledge
- Strengthen stakeholder education, capacity & legitimacy
- Increase acceptance for management




A Transboundary Marine Resource & Space-use Information System (MarSIS)

To facilitate sustainable development

– *By integrating scientific information & local knowledge*

In a transparent & participatory fashion involving a variety of stakeholders

## Stakeholder participation was essential

- Government Agencies
  - Fisheries, Planning, Forestry, Tourism, Environment, Coast Guard, Port Authority, Statistics, Maritime Administration
- Marine Resource Users
  - Fishers, Divers, Yachters, Water-taxis, Day Tour Operators, Ferries, Ships & Recreation
- NGOs
  - Local, Regional, International
- Community groups/schools

## Stakeholder Engagement

### Communication mechanisms

- Newsletters, emails, maps, summary reports, radio, tv
- Yahoo E-group, website, periodic stakeholder meetings

### Research mechanisms

- Key informant interviews, participant observation, inventories, field surveys, semi-structured focus group interviews & participatory mapping exercises

## Validation, Feedback & Evaluation

Sharing, verification of information produced & feedback

For learning in methods

Increases understanding for information generated

Foster a transparent participatory management environment

## MarSIS has information on…

Marine habitats*
- reefs, mangroves, seagrass beds, beaches, rocky shores

Infrastructure
- seaports, marinas, roads, hotels, desalination plants

Marine resource users*
- Dive shops, tourism facilities, fish landing sites, communities, etc.

Marine space-use*
- anchorages, dive sites, fishing grounds, shipping lanes, recreation areas

Sensitive biological & heritage areas*
- sea turtle nesting beaches, seabird nesting sites, marine protected areas, nursery grounds, historical sites, shipwrecks

Areas of threat*
- sand-mining, beach erosion, dumping, land-based sources of marine pollution, mangrove cutting

## Data Collection and Inventories

Institutions &
Marine Resource Users

– Interview key informants *(87)*

– Surveys of marine resource users *(>984)*

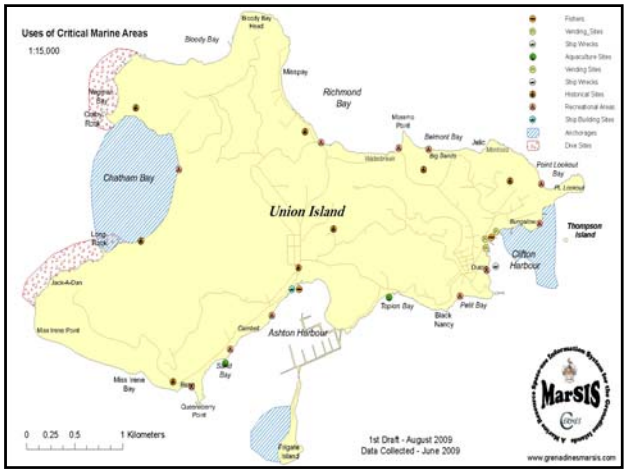
– Collect existing information & management plans, legislations

– Create MarSIS database

## Series of Mapping Exercises

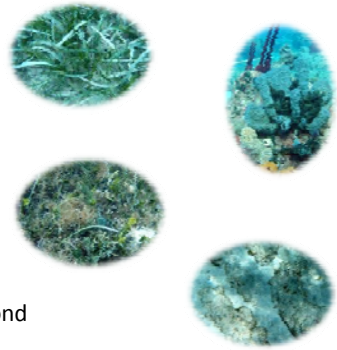
- Local place names
- Marine space-use patterns
- Critical conservation & livelihood areas
- Issues/problems

Marine Resource Users
- Individual interviews
- Focus groups

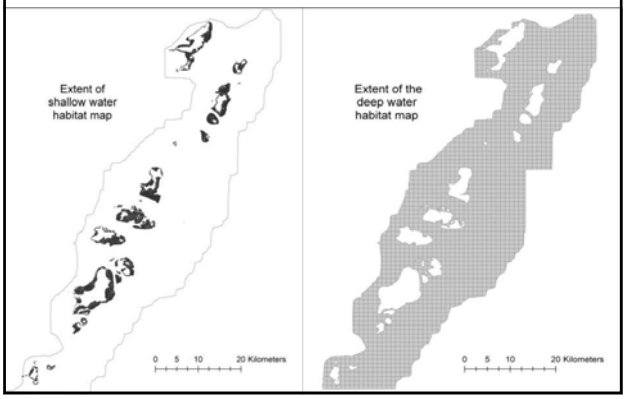



## Marine Habitat Map

- Sand
- Seagrass
- Coral Reef
- Mixed Live-bottom
- Hard-bottom
- Mangrove / Salt pond



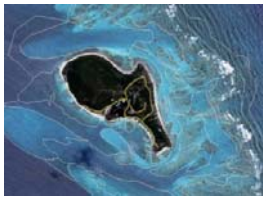
## Marine Habitat Map



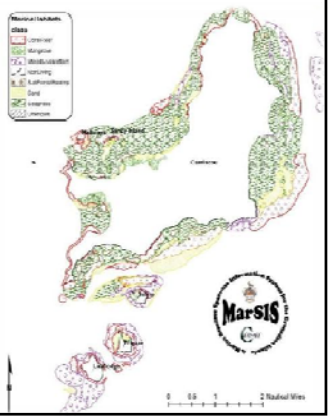
## Marine Habitat Map

Shallow-water habitat

- Satellite imagery & aerial photos



& then local knowledge and field surveys to improve map accuracy



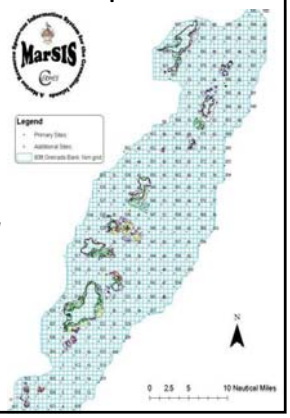
## Marine Habitat Map

Deep-water habitat

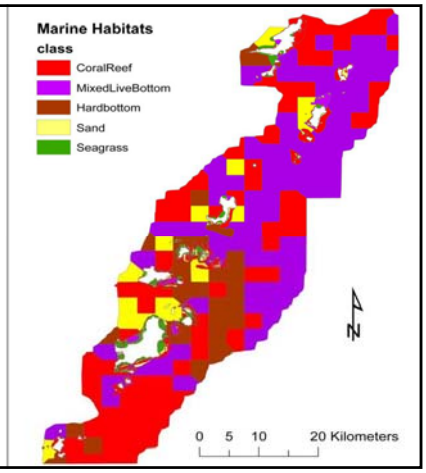
Video drop-camera used

1 km$^2$ grid & 20% sample

*Fishing knowledge was also collected*



## Grenada Bank Marine Habitat Map




## MarSIS in Google Earth

## MarSIS Geodatabase Utilization

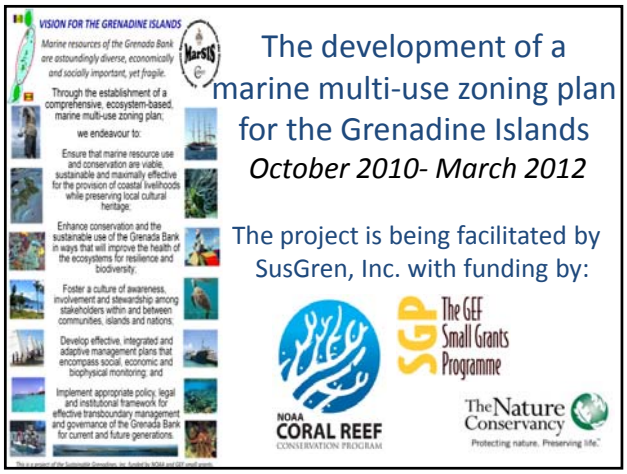
Series of evaluation workshops to test :

- Functional application
- Usefulness of multi-knowledge & interdisciplinary information
- Cost & benefits of using PGIS tested using a survey

*By a variety of stakeholders*

## PGIS framework was found to

- Improve an ecosystem approach
  - Take advantage of the diversity of information stakeholders have to offer
- Support interactive governance
  - Building partnership, capacity, ownership & legitimacy
  - Collaborative learning & adaptive management
- Be cost effective (yet time consuming)
- Allow for the production of appropriate & functional information


VISION FOR THE GRENADINE ISLANDS
Marine resources of the Grenada Bank are astoundingly diverse, economically and socially important, yet fragile.
Through the establishment of a comprehensive, ecosystem-based, marine multi-use zoning plan;
we endeavour to:
Ensure that marine resource use and conservation are viable, sustainable and maximally effective for the provision of coastal livelihoods while preserving local cultural heritage;
Enhance conservation and the sustainable use of the Grenada Bank in ways that will improve the health of the ecosystems for resilience and biodiversity;
Foster a culture of awareness, involvement and stewardship among stakeholders within and between communities, islands and nations;
Develop effective, integrated and adaptive management plans that encompass social, economic and biophysical monitoring; and
Implement appropriate policy, legal and institutional framework for effective transboundary management and governance of the Grenada Bank for current and future generations.
MarSIS
The development of a marine multi-use zoning plan for the Grenadine Islands
October 2010- March 2012
The project is being facilitated by SusGren, Inc. with funding by:
NOAA CORAL REEF CONSERVATION PROGRAM
SGP The GEF Small Grants Programme
The Nature Conservancy
Protecting nature. Preserving life.

Thank you!
Questions/Comments
Kim Baldwin
CERMES Department
University of the West Indies, Barbados
baldwin.kimberly@gmail.com
www.grenadinesmarsis.com