



ProEcoServ
Project for Ecosystem Services

Trinidad and Tobago

How Ecosystems Support Us

Shoreline Protection from Coral Reefs, Seagrass and Mangroves in Buccoo, South-western Tobago

Coastal ecosystems support people and nature

Coral reefs, seagrass beds and mangrove forests form natural barriers that protect our coastlines from erosion, flooding and storm damage. They are also important habitats and sources of food for many organisms and species of fish, shellfish and birds, some of which are in turn sources of food and income for people. However, as human populations increase so too does the demand for space and resources in coastal areas. Not only does this lead to potential conflicts, for example between fishers and oil exploration, it also threatens these ecosystems and the services they provide, such as food, fisheries, and shoreline protection.

More information for better decision-making

Use of Tobago's coastal areas has intensified. Planners and decision-makers are increasingly confronted with decisions about different and sometimes competing uses of coastal resources. Ideally, these decisions should be weighed against impacts on ecosystems and their services. But the value of the goods and services that coral reefs, seagrass meadows and mangrove forests provide is not always fully reflected in development planning and decision-making. Often it is not until some of their functions have to be replaced by expensive engineering solutions, such as artificial breakwaters to protect eroding beaches and prevent property damage, that they receive attention.

In Tobago, the Project for Ecosystem Services (ProEcoServ) is working in collaboration with the Tobago House of Assembly to fill an information gap. In the past, researchers have examined

the threats to the island's coastal ecosystems, such as pollution, physical destruction and climate change, and attempted to identify solutions. However, there isn't much information available on the **value** of the goods and services they provide in support of Tobago's development. And there are no tools that decision-makers can use to weigh up how different management and development objectives could affect these habitats and their ecosystem services or to assess the economic and environmental tradeoffs of different uses.

Research focus

The goal of ProEcoServ's research in Tobago is to improve how decisions are made about managing and using the coastal ecosystems responsible for shoreline protection in south-western Tobago. Together with the results and findings from ProEcoServ's other pilot sites (Nariva Swamp and eastern Northern Range), the south-western Tobago research project is expected to contribute to a more complete picture of the value of Trinidad and Tobago's ecosystem services and to the integration of these values into national planning and accounting.

Research activities are focused on:

- Mapping and valuing the shoreline protection services of Buccoo's coral reefs, sea grass and mangrove environments;
- Investigating the linkages between coral reef shoreline protection and socio-economic benefits;
- Identifying how management decisions and tradeoffs affect the ability of coastal ecosystems to continue to provide ecosystem services at an optimal level for shoreline protection; and
- Developing a policy instrument to enable the integration of the



Most of Tobago's coral reefs, sea grass beds, and mangroves are found in the south western part of the island. Photo: Owen Day

shoreline protection ecosystem service into planning, policy decisions and reporting.

Methodology

The research methodology being used for Tobago has three components:

- *Describe and model ecosystem services:* Using existing information and a combination of ecological, statistical and remote sensing techniques, researchers will describe the features of the coral reefs, seagrasses and mangroves that support coastal protection.
- *Mapping and valuing ecosystem service production:* The economic value and benefit to human well being will be mapped, for inclusion into a decision support framework.
- *Scenario and trade-off analyses:* Scenario planning tools and trade-off analysis will be used to understand how different management or development objectives for the area could affect the future supply of the goods and services produced by coral reef, seagrass and mangrove ecosystems.

Buccoo's reefs are a magnet for tourism and recreation. Photo: Owen Day



Results

ProEcoServ will produce maps and a GIS for south-western Tobago that show an up-to-date distribution of coastal ecosystems and the services they provide. The GIS will allow planners and decision makers to visualise and compare different segments of the project area and will help in prioritising coastal targets for planning and development.

This information will feed into a computer-based information system that is being developed under the ProEcoServ Trinidad and Tobago component. The coastal ecosystems data that feed into the decision support system will allow national and local planners to understand the economic and ecological implications of different planning and development choices used when deciding how to use coastal resources.

The Tobago arm of the project is coordinated by Jahson Alemu I as part of his research at the Institute of Marine Affairs and the University of the West Indies. Jahson began his research in 2011 and expects to complete it in 2014. For more information, contact Jahson via email: jahsonb@gmail.com

The Project for Ecosystem Services (ProEcoServ) 2010 - 2014

The Project for Ecosystem Services (ProEcoServ) is a four-year global initiative that aims to better integrate ecosystem assessment and economic valuation of ecosystem services into poverty reduction and sustainable national development planning.

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Programme in Trinidad and Tobago, Chile, Vietnam, South Africa and Lesotho.

ProEcoServ Trinidad and Tobago is led by the Department of Life Sciences, University of the West Indies, St. Augustine Campus and the Ministry of Planning and Sustainable Development, in collaboration with a consortium of local partners.



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For more information on ProEcoServ and the Trinidad and Tobago component go to <http://www.proecoserv.org/>

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