



# BBP in Brief

A NEWSLETTER OF THE BAHAMAS BIOCOMPLEXITY PROJECT

Produced by the American Museum of Natural History's Center for Biodiversity and Conservation (AMNH-CBC)

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## Welcome...

This is the newsletter of the Bahamas Biocomplexity Project, or "BBP," also available at <http://bbp.amnh.org/bbpinbrief/>. Here you can learn about the activities and progress of the BBP team and its partners. We welcome your submissions about research progress, upcoming field plans, meetings, or any other information you feel would be of interest to project partners. Submissions for consideration in future newsletters may be made to Kate Holmes or Christine Engels ([bbp.in.brief@amnh.org](mailto:bbp.in.brief@amnh.org)).

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## Community Perspectives on Marine Protected Areas

Kenny Broad (University of Miami) and James Sanchirico (Resources for the Future)

Recent fieldwork by the Bahamas Biocomplexity Project's Socioeconomic Working Group, which focuses on the interaction between local residents and their marine environment, is revealing a number of issues relevant in applying marine ecosystem-based management across the archipelago. The team conducted more than 200 interviews, 600 household surveys, extensive participant observations, and participatory mapping of resource use areas in six Bahamian settlements in Abaco, Bimini, Eleuthera, and San Salvador from 2001-2005.

Results indicate several key issues to consider in the design of environmental regulations:

1. *One size does not fit all.* Because of geographic and socioeconomic diversity, a regulation (such as a closed area) imposed on one settlement may be respected by some communities and not by others. For example, settlements with fewer employment options are less likely to support fishing restrictions.
2. *Local knowledge is important for adoption of regulation measures.* Community members, especially fishers, have strong and relatively homogenous opinions on key areas to protect and users to regulate, and are more likely to support initiatives that align with their perspectives.
3. *Demographic trends highlight the need for flexibility and adaptability in management.* There are more individuals getting involved in tourism-related activities than choosing fishing as their main occupation, which indicates a changing pattern of resource extraction. These changes include an increasing number of women entering the wage-based economy.
4. *Threat perception.* Locals identified several land-based threats to the marine environment that will not be directly mitigated through marine-based regulations, such as leaching from local dump sites and large tourist developments.
5. *Equity issues.* Locals feel that there is inconsistent enforcement of regulations, with boat-based, primarily American tourists fishing intensely with impunity, while Bahamians, whose livelihoods are more directly impacted, are subject to stricter enforcement.
6. *Parallel attitudes toward regulations.* Often locals will break regulations on size restrictions for fish or shellfish if taking for their own consumption, but will respect regulations if they are fishing for commercial purposes.

Upcoming plans for the Socioeconomic Working Group include fieldwork in additional settlements as well as research on activities and opinions of those individuals associated with the commercial "smack" fishing fleet. Finally, and most importantly, we plan to revisit all the settlements in which fieldwork has taken place to review preliminary findings with local government and other interested community members. Once we are confident in the results and have incorporated input from these follow-up visits to the settlements, we hope to meet with national-level governmental and non-governmental organizations to discuss the study's conclusions.



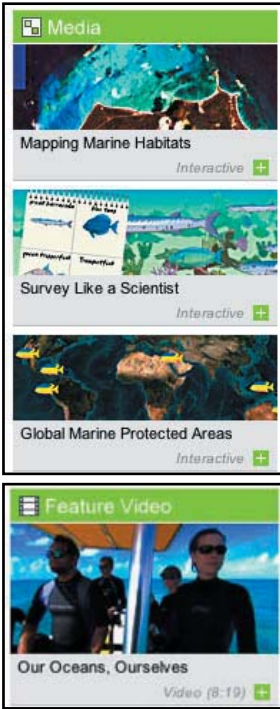
Formal and informal regulatory mechanisms coexist in The Bahamas. © K. Broad

## Interactive Website Features the Bahamas Biocomplexity Project (BBP)

Bancha Srikacha, Science Bulletins/AMNH; Christine Archer Engels and Kate Holmes, CBC/AMNH

This fall, BBP research is being featured in video bulletins and online as part of “Science Bulletins,” an innovative program of the American Museum of Natural History (AMNH). Science Bulletins brings current events and research to a variety of public venues, including museums, science centers, NASA visitor centers, and the Internet. It includes “Astro,” “Earth,” and “Bio” Bulletins that present the excitement of discovery in the natural world to an audience of over five million people. People of all ages and backgrounds can learn about BBP research and other current science topics through in-depth stories featuring scientists at work, nature news, and satellite images illustrating the changes in the biosphere.

The BBP was added as a Bio Bulletin feature, with a website that includes the video that is being shown at participating institutions, as well as essays, interviews, interactive maps, and activities to explore topics in depth. The video “Our Oceans, Ourselves,” features Dan Brumbaugh, Jessica Minnis, Kate Holmes, and other BBP researchers describing their study of the social, economic, and scientific interactions of marine ecosystems that could assist in the development of a network of marine protected areas in The Bahamas. An in-depth essay further describes BBP research by explaining how scientists are investigating the performance of the Exuma Cays Land and Sea Park to understand what a future network of marine protected areas could do to conserve important habitats and maintain fisheries. Another link takes the viewer to an interview with Steve Palumbi, a marine ecologist and BBP collaborator, who explains how studying the genetic makeup of important economic species such as conch, lobster, and grouper can help keep the populations of these species healthy. Interactive maps offer a way to view the distribution of different types of marine habitat off San Salvador and depict locations and descriptions of sample marine protected areas found throughout the world. The site also includes an interactive game that challenges players to tally Bahamian fish along transects through reef and mangrove habitats, just as field biologists do. To test your surveying abilities and learn more about the work of BBP researchers visit the Science Bulletins website (<http://sciencebulletins.amnh.org/bio/>) and navigate to “Humans and Oceans: Survival Strategies.”



Web-links to media and video bulletins. © AMNH

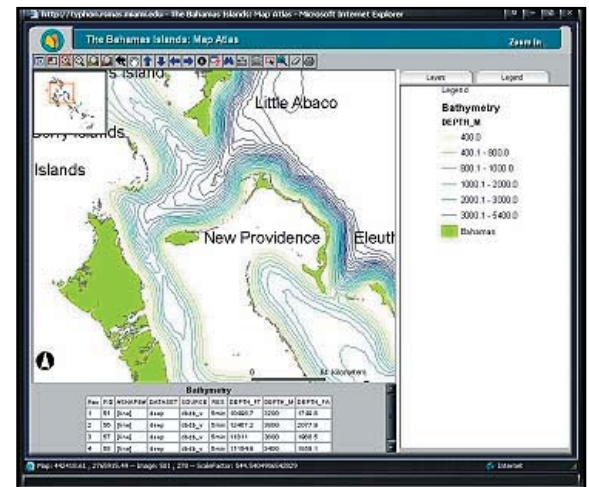
## The Bahamas Map Atlas Website: Mapping The Bahamas in Multiple Layers

Maria Villanueva and Felimon Gayanilo University of Miami – RSMAS

The BBP Geographic Information Systems (GIS) Working Group has developed a website called “The Bahamas Map Atlas,” a major source of Bahamas spatial data that has already attracted over 300 visitors since this past April. The site features Bahamas GIS layers, created and compiled from various sources of spatial data by the BBP GIS Working Group. The site is currently hosted by the National Center for Coral Reef Research (NCORE) at the University of Miami’s Rosenstiel School of Marine and Atmospheric Science (UM-RSMAS), <http://www.ncoreMiami.org>.

Multiple GIS layers are currently available:

- Entry points and arrival: including layers depicting ports, marinas, and censuses on visitors arriving in the country
- Dive sites and related structures: locations of dive sites, dive shops, and hotels
- Population census: depicts roads, major towns, and the population of each island
- Ports and marinas: layers that display the location of ports of entry and registered marinas
- Fisheries: major fishing grounds and fishing sites
- Storms: storm paths through The Bahamas from 1851 to 1996
- Bathymetry: water depths throughout the archipelago
- Bahamas Islands: Settlement areas in The Bahamas
- Remote images of the islands: a collection of remote images from throughout the country
- Reefs and reef status: reefs in the area and the sites where reports are available regarding coral spawning, coral diseases, and bleaching (generated from ReefBase)
- Benthic habitats: benthic habitats for Abaco, Bimini, and San Salvador islands using the classification scheme proposed by the project



The Graphic User Interface of the Bahamas Map Atlas depicting the Bahamas bathymetric map, one of the many maps available through the website. © RSMAS

When a user clicks to display a map, it will appear along with a toolbar that allows the user to navigate around the map, zoom in on areas of interest, and highlight regions to retrieve relevant data. All GIS layers from the website can also be viewed (or downloaded) with the program ESRI ArcExplorer. Some maps are not yet publicly accessible; users who want to have access to password-protected maps may contact Maria Villanueva ([mvillanueva@rsmas.miami.edu](mailto:mvillanueva@rsmas.miami.edu)) or Felimon Gayanilo ([fgayanilo@rsmas.miami.edu](mailto:fgayanilo@rsmas.miami.edu)). As the project progresses and other BBP working groups submit spatial data for digitalization, layers will be added and updated and new themes may be developed.

## “Fully-Protected Marine Reserves for the Future of Our Oceans” – A Companion Guide

Christine Engels (CBC/AMNH)

Earlier this year, a companion guide to the Bahamian traveling exhibition “Fully-Protected Marine Reserves for the Future of Our Oceans” was produced. Like the exhibition, the guide describes marine reserves, illustrates some of their benefits, features work of key players involved in the effort of creating a marine reserve network in The Bahamas, and offers suggestions for supporting marine conservation. The eight-page booklet is a take-home resource for visitors to the exhibition as well as a good source of information for students at the secondary level and others interested in marine reserve networks. The American Museum of Natural History’s Center for Biodiversity and Conservation collaborated with exhibition sponsors—The Bahamas Department of Fisheries, Bahamas Reef Environment Educational Foundation (BREEF), and The Nature Conservancy—to produce the guide. A free copy of the guide can now be downloaded from the following site: <http://cbc.amnh.org/center/pubs/pubsother.html>.



Educational booklet available for download. © AMNH-CBC

### ANNOUNCEMENTS



#### Bahamas National Trust to Receive Grant to Build Ecotourism Center in Andros

This September, the European Development Fund (EDF) announced its list of recommended projects to fund in The Bahamas. Included among the six projects that were selected was the proposal by the Bahamas National Trust (BNT) to build an ecotourism facility in Andros. The facility would serve as an environmental information center for visitors and provide a space for ecotourism training activities.

The EDF has a total of \$8.4 million dollars available for The Bahamas. Apart from the BNT’s center, other projects it will fund include an airport in Cat Island and in Ragged Island, a road in the Acklins, and a dock in Fresh Creek, Andros. According to the EDF, one of the strongest parts of BNT’s proposal was that “it provided a balance to the hard core roads and infrastructure projects” since it “adds an important socio-economic component to the package of projects.” Earlier in September, Minister Leslie Miller submitted the list of projects to the Cabinet and announced the government’s support for the projects. Although The Bahamas’ Cabinet still needs to approve the package of proposals, their endorsement is highly expected.

#### News Bites from The Bahamas Sportfishing and Conservation Association



The Bahamas Sportfishing and Conservation Association (BSCA), a non-profit organization committed to the preservation and conservation of marine ecosystems in The Bahamas, has recently opened an office in Nassau and has appointed Mr. Hank O. Ferguson as its new Executive Director. Twelve years ago, a group of Bahamian and international sportsmen created the organization that has been working with the fishing and tourism industries to develop, manage, and support conservation programs throughout the country. Earlier this year, BSCA partnered with the Ministry of Tourism on a new national training program for guides, which is already in operation in several of the Family Islands.

In the future the BSCA also plans to support the creation and development of public education programs that boost awareness among Bahamians and the international fishing community. For more information on BSCA’s mission and programs contact Mr. Hank O. Ferguson at (242) 327-7008, email [hankferguson@bahamasconservation.org](mailto:hankferguson@bahamasconservation.org), or visit the newly inaugurated Nassau office located in Cave Village, West Bay Street. For further information on branches throughout the Family Islands and the United States, log on to [www.bahamasconservation.org](http://www.bahamasconservation.org)

#### BBP Symposium at the Annual Meeting of the American Association for the Advancement of Science (AAAS) in Saint Louis, Missouri, February 2006



Attendees of this year’s AAAS meeting will have the opportunity to hear a symposium discussing BBP research and its relevance for marine ecosystem-based management. “Coral Reef Ecosystems and People in The Bahamas: Practical Applications of Biocomplexity Science,” scheduled for the morning session on February 20, 2006, includes eight different presenters from the U.S. and The Bahamas. Presenters will report on ongoing habitat and genetic research, consider the social and cultural perspectives of communities living around existing or potential marine protected areas, and discuss how to improve public understanding of marine ecosystems and ways for integrating policy and science about the marine environment. For symposium and presentation abstracts log on to [http://php.aaas.org/meetings/MPE\\_01.php?detail=1058](http://php.aaas.org/meetings/MPE_01.php?detail=1058). General information about the AAAS meeting is available at [http://www.aaas.org/meetings/Annual\\_Meeting/](http://www.aaas.org/meetings/Annual_Meeting/).

## BBP Collaborators and Partners



The College of The Bahamas



### What is BBP?

The Bahamas Biocomplexity Project (BBP) is a five-year initiative funded primarily by the National Science Foundation to investigate the complex environmental and social factors that affect the design, management, and effectiveness of networks of marine protected areas (MPAs). Researchers involved in the project include oceanographers, biologists, and social scientists from nine institutions working in collaboration with various governmental and non-governmental groups in The Bahamas.

Ultimately, the primary goal of the project is to integrate studies of natural and human processes, leading to a more sophisticated understanding of how individual MPAs work, and how they could work as part of a network throughout The Bahamas and in other coral reef ecosystems. Other important goals include the integration of this research with education and decision-making.

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