BASIC CARTAGENA
BASIN SEA INTERACTIONS WITH COMMUNITIES
INTERACCIONES ENTRE CUENCAS, MAR Y COMUNIDADES

BASIC CARTAGENA
Project Newsletter

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The BASIC Cartagena Project is an applied research project on Basic Sea Interactions with Communities focused on the generation adaptation tools for integrated coastal water resource management in the coastal zone of Cartagena, Colombia. Started in July 2014, this 3-year multidisciplinary project is financed by the International Development Research Centre (IDRC) of Canada. Implementation of the project is led by EAFIT University, in collaboration with the University of Los Andes, University of Cartagena, the Foundation H.E.O., and the Regional Corporation CARDIQUE.

Editorials

The multiple management plans of the coastal zone of Cartagena

The environmental state of the coastal zone of Cartagena is the result of multiple interventions which directly or indirectly have been in development over the past decades, and which systematically, accumulatively and persistently have degraded the zone´s physical, biological and environmental components. For this reason, until now the studies and processes of management and planning that influence this zone could be considered deficient in the sense that contributions towards integrated sustainability have not been clear. Multiple studies and proposals of management at local, municipal, departmental, regional and national scales have still not achieved an articulation that permits a transversal identification of the coherencies of the territory´s sustainable management. However, over the last year there has been a noted institutional interest in sustainable management of the bay and that in this sense scientific and administrative authorities are developing actions towards holistic management together with the communities and economic stakeholders.

Testimonies from the Barú community on drinking water

The community of Barú is located at the end of a peninsula of the same name, about 35 km from Cartagena. Given its remote location, the community is not connected the city´s drinking water system. As a result, the inhabitants of Barú depend on water transported from the city periodically by boat, available to purchase at $600 pesos / gallon.

With the collaboration of the Foundation HEO, we asked some of the inhabitants of Barú what they believed to be the principal environmental problem in their community, and their first responses were all related to the scarcity of drinking water. Here we relate some of the perceptions concerning this problem, the solutions they hope for, and their views on pollution.

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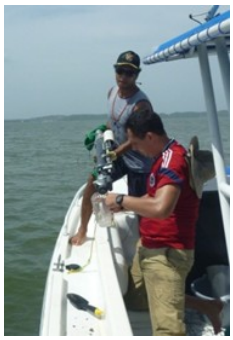
Research Activities

Outreach with community leaders of Barú and Ararca

On February 27th, meetings were held with community leaders from Barú and Ararca to socialize the BASIC project. Speakers from EAFIT, UniCartagena and the Foundation HEO presented the main components of the project and clarified questions of the participants. Leaders of Barú were interested in how results would be used, the benefit of products for the community, and the potential to help solve environmental and health problems. In Ararca the leaders were most interested in the health component and how it could help its inhabitants. The meetings were successfully concluded with an explanation of the products and benefits of the project in its generation of new knowledge, better health practices, community strategies, environmental protection and recommendations on integrated management plans. Community leaders expressed their intent to collaborate so that activities can meet their objectives.

Monitoring of the marine waters and sediments of Cartagena

The project´s marine water and sediment monitoring program continued monthly during the first semester of 2015. Implemented by researchers from EAFIT, the objective of the monitoring program is to assess the water and sediment quality with respect to its adequacy for the purposes of fishing, recreation and ecosystem health. Monitoring focuses on 16 stations in Cartagena Bay, Barú Point and "Playa Blanca" Beach where *in situ* measurements are taken along with samples for posterior analysis in the laboratories of Cardique, AguaCar and Cordoba University. This semester saw the use of new equipment obtained by the project, including an anemometer, depth-sounder, and sondes for O_2, pH, turbidity and chlorophyll-a with which the water´s physical characteristics can be measured along vertical profiles of the water column. To date, the first 10 of 24 monthly sampling sessions have been completed.

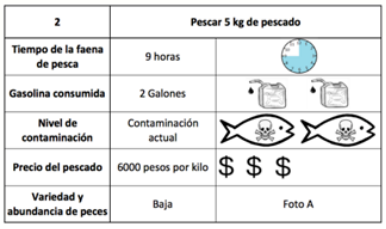


Research Activities

Monitoring of fishes in the coastal zone of Cartagena

Researchers from Los Andes University carried out various activities of fish monitoring during the first semester of 2015. These activities were focused on the processing of fish tissue samples in the laboratory. Fish species were identified genetically after obtaining the mitochondrial DNA, which allowed for a comparison with other populations of the same species in other parts of the world with different environmental conditions. This analysis permitted the determination of the population structure and genetic diversity of the populations that inhabit Cartagena Bay. Additionally, a second field trip to Cartagena was made from the 15th-19th of April, where researchers met up with fishermen from the communities of Ararca, Barú and Caño del Oro to collect samples. These samples were then sent to the laboratory to carry out further genetic and ecotoxicological analyses.

Economic valuation of pollution and biodiversity in artisanal fisheries



2	Pescar 5 kg de pescado	
Tiempo de la faena de pesca	9 horas	
Gasolina consumida	2 Galones	
Nivel de contaminación	Contaminación actual	
Precio del pescado	6000 pesos por kilo	$ $ $
Variedad y abundancia de peces	Baja	Foto A

Recent activities of researchers from Los Andes University have been focused on the development and piloting of an instrument for the economic valuation of pollution and biodiversity in artisanal fisheries. For this reason, socioeconomic information and fish data (fishing gear, fish prices, fuel costs, labor time) were gathered from the communities of Ararca and Barú. The instrument consists of a series of cards depicting scenes of fishing, which fishermen must organize from the most to the least preferred. After having built the instrument, researchers conducted a pilot trial with some of the fishermen of the communities on April 14-17. With the results of the pilot trial, the instrument will be improved, and then in early July, the final instrument will be applied in the communities.

Research Activities

Pilot survey of the nutritional status of the population of Ararca

Researchers from UniCartagena, with support from EAFIT and the Foundation HEO, carried out a first survey of the nutritional status of the adult population of Ararca. On March 27th 2015, inhabitants of the community were visited in their dwellings where measures of weight, height, waist circumference, hip perimeter and others (e.g. blood pressure, heart rate) were employed to determine nutritional status and related indexes. According to observations, it is possible that the population's nutritional state may have been influenced by the progressive scarcity of sea-food leading to the introduction of diets elevated in fats and carbohydrates. This scenario may contribute to the presence of malnourished and overweight adult groups in the community.

Events

Inauguration of UniCartagena´s new laboratory of tropical medicine

The University of Cartagena celebrated the inauguration of its new laboratory of tropical medicine on March 6th 2015 with the participation of the director of Colciencias, Dr. Yaneth Giha Tovar. The laboratory is designed for high quality research in the area of health sciences in line with the doctorate program of tropical medicine directed by the UNIMOL research group. Located at Zaragocilla campus of the University of Cartagena, the infrastructure includes equipment of the latest technology and a controlled environment of high standards. This new lab represents an important advancement in the technical capacity of medicinal research for the group, the university and the city of Cartagena.

Awards & Recognition

AHF 2015 Latin American awards to combat dengue

In June 2015, the UNIMOL research group of the University of Cartagena received an award from the Americas Health Foundation (AHF) and the "Break Dengue" initiative in support of UNIMOL´s "Youth Leadership" project. This international competition selected winners from 3 countries in Latin America including the University of Cartagena, Colombia, and other winners from Brazil and Mexico. UNIMOL´s "Youth Leadership" project seeks to train young leaders as educators and promoters of appropriate practices for the prevention of dengue through a series of lectures, games and educational activities in the schools of Cartagena. AHF applauded the project for its commitment in the fight against Dengue with a refreshing and innovative view to orient the focus of new generations.

Capacity Building

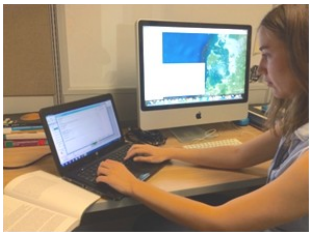
Erasmus Mundus PhD program in marine and coastal management

As part of the project, the coastal component's lead researcher, Marko Tosic, began PhD studies in the Erasmus Mundus program for marine and coastal management. This international program is implemented by a consortium of 5 European universities, coordinated by the University of Cadiz, Spain. The program's first semester of studies focused primarily on research on coastal hydrodynamic modeling, oceanography, coastal meteorology, and sediment quality monitoring, along with 6 other courses. The knowledge gained from this PhD research program will be applied directly to implementation of BASIC´s coastal hydrology component.

Capacity building of Naval School cadets in field monitoring

The project´s collaboration with the Admiral Padilla Naval School (ENAP) in Cartagena has continued during the first semester of 2015 through capacity building activities with ENAP´s cadets. These activities focussed on capacity building in water and sediment monitoring techniques. The cadets had the opportunity to participate in the project´s monthly field sessions in which they took measurements and samples of marine waters and sediments using specialized equipment such as a CTD Castaway, niskin bottle, sediment dredge, secchi disk, anemometer, and depth-meter. This collaboration is planned to continue throughout the project´s coastal monitoring program towards the development of the scientific capacity of ENAP´s cadets.

National and international internships



In January 2015, two interns began participating in the project with sponsorship from Intern Latin America and Colciencias. The interns have benefitted from research and practical experiences through the project´s coastal hydrology component. Research experience included aspects of marine geochemistry, drinking water as well as national and international reference values for the analysis of water and sediment quality. Practical experience included field visits for sample collection, equipment calibration in the laboratory and spatial interpolation techniques for the generation of vulnerability maps. The interns also focused on database management through the organization, digitalization and verification of field data.

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Testimonies from the Barú community on drinking water

José Acuña, who lives in Barú since 2005, states that the problem he sees in Barú is principally related with water. In his opinion, water management has evolved thanks to the storage tanks that the community uses to collect water. However, he highlights that before these tanks existed, the community continually suffered due to the lack of water and had to wait for rainfall in order to collect and store its water. In terms of solutions, José mentions the possibility of a connection from Punta Iguana or from the community of Santa Ana, where drinking water is available. Furthermore, José does not view the installation of a desalinization plant as a viable solution due to the short duration of water that it could process.

Laudith Hernández, a native of the Barú community and a teacher by profession, expresses her concern for the existing necessities in the community, including that of drinking water. According to Laudith, although the storage tanks are of some help, they are not sufficient for the community´s supply. For this reason, the community has made various atttempts with the city´s water authority, Aguas de Cartagena, to create a water supply that extends to Barú, however, this has not been possible to date. In terms of solutions, Laudith hopes that Aguas de Cartagena will solve the challenge of bringing this service to the Barú community.

Eva Barrios, who originates from Barú and returned to live there over the past 40 years, also highlights the lack of drinking water as the principal problem in the community. She points to a lack of regulation in the supply of the storage tanks and the comercialization of water sold by the gallon as another problem which merits attention, as it results in a disproportionate distribution among the inhabitants. As a solution, Eva proposes that this vital resource be provided equally to all in the community.

Alfredo Paternina de la Rosa, native of Barú, maintains that the community´s greatest wish is to have drinking water that comes directly from the city. For this reason, Alfredo affirms that it is indispensable to attempt all of the possible solutions available to provide a direct water connection to each and every household tap in the community.

When we asked them about their views on pollution, it was interesting to note that none of those interviewed mentioned the possibility of water contamination. The most common response related to pollution was related to the garbage which accumulates in the community faster than it can be collected. It could be concluded that it would be beneficial to undertake community capacity building excercises on the potential risks of water pollution. Though the most definitive conclusion is that the scarcity of drinking water presents the most important environmental challenge for the people of the community.