

In this issue:

- Making a Positive Difference in the Cienfuegos Watershed— the GEF-IWCAM Cuba Demonstration Project (pgs. 1,2,3)
- Caribbean participates in 5th World Water Forum (pgs. 1, 7)
- Background on the GEF-IWCAM Project (pg.2)
- Cuba Demo—His nickname used to be “Candelita”(pg. 2)
- “Weh yuh dash weh nuh wash weh” : Community Involvement in the Jamaica Demo Project (pg. 4—5)
- Is time running out for Buccoo Reef? (pg. 6)
- Reflecting on Lessons Learned (pg. 7)
- Signs of Trouble – Marine Algae (pg. 8)

Caribbean participates in 5th World Water Forum

The GEF-IWCAM project supported participation of representatives from the Caribbean, who were also actively involved in the build up to the region’s representation at the Forum. These included the Honourable Dr. Horace Chang, Minister for Water in Jamaica, and Cyrián Gibson, the President of the Caribbean Water & Wastewater Association (CWWA). Regional partners at the Forum included the Global Water Partnership (GWP)-Caribbean, the Caribbean Environmental Health Institute (CEHI), and the Organization of American States (OAS).

Minister Chang addresses the Forum



The six-day meeting was attended by over 25,000 persons and involved a number of parallel sessions, an exposition, and a high-level Ministerial segment. GEF-IWCAM was represented formally in two sessions: the Americas Region session on March 17, and the Session: ‘Local Action – Thinking beyond the water box: What adaptation to global and climate change?’ which took place on the afternoon of the same day.

(Continued on page 7)

Feature Article:

Making a Positive Difference in the Cienfuegos Watershed - the GEF-IWCAM Cuba Demonstration Project



Cienfuegos Bay

Since it’s official launch in February 2008, Cuba’s Demonstration Project: “Application of IWCAM

Concepts at Cienfuegos Bay and Watershed” has made significant progress in introducing and demonstrating best practices in land use and management for more integrated management of the watershed and coastal areas (IWCAM).

Environmental Monitoring linked to the decision-making process

Data is collected, analyzed and made available through a functional Geographic Information System (GIS) to a specially created Local Authority and other relevant stakeholders. In January 2009 their database, the Sistema Integral de Gestión de Información Ambiental (SIGIA) was introduced to stakeholders at the First Provincial Environmental Monitoring Programme meeting.

This has resulted in significant strengthening of wastewater management as the Local Authority and linked institutions have a complete and updated inventory of point sources of pollution in the area along with an evaluation of contaminant loads. Alain Muñoz Caravaca, the Demonstration Project Manager, has stressed that with the introduction of this system, IWCAM issues are being addressed with better collaboration and coordination amongst all stakeholders.

Model farms for IWCAM

In the agricultural and forest sectors, demon-



Soil conservation training for farmers

(Continued on page 2)



BOX A:

“His nickname used to be ‘Candelita’”

The farmer on the right used to be known in his part of Cienfuegos Province for his affection for slash and burn farming. In the past, he would jump at any opportunity to burn fields. His fellow farmers at the Sarduy farm in the Cienfuegos Province of Cuba are now looking for a new name for him, since he has seen with his own eyes the benefits of composting, and other soil conservation techniques.

The Sarduy Farm is a medium sized farm, with about 10 agricultural workers. It is being used as a pilot in the GEF-IWCAM Project in Cuba to demonstrate best agricultural practices. Their hard work is yielding impressive results. The leader of the farm, Mr. Sarduy, told a visiting group that they have noticed that some of their crop yields (most notably tomatoes), have increased substantially. They are even getting extra (unexpected) crops in each season.

In addition to composting, the workers at the Sarduy farm are also using live barriers, shifting the orientation of their crops to better follow the contour of the land, and increasing the efficiency of their irrigation practices. Mr. Sarduy is proud of the work of the farm and is eager to share this information with others, having already hosted one training session for nearby farms and looking forward to more. His enthusiasm for the work is contagious - he has already recruited much of his family to work with him, including his previously retired 76 year old father.

The lessons learned in the Sarduy farm, and the seven other demonstration farms included in this component of the demonstration project, are being documented, with help from the Institute of Soils in the Ministry of Agriculture.



BACKGROUND ON THE GEF-IWCAM PROJECT:

The Global Environment Facility-funded Integrating Watershed and Coastal Areas Management in Caribbean Small Island Development States (GEF-IWCAM) Project was approved by the Global Environment Facility (GEF) in May 2004. Implementing agencies are the United Nations Environment Programme (UNEP) and the United Nations Development Programme (UNDP). Executing agencies are the Secretariat of the Cartagena Convention (UNEP-CAR/RCU) and the Caribbean Environmental Health Institute (CEHI) and the UN Office for Project Services (UNOPS). The thirteen participating SIDS are: Antigua and Barbuda, The Bahamas, Barbados, Cuba, Grenada, Dominica, Dominican Republic, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago. The length of the Project is 5 years and commenced in the second quarter of 2005. The Project Coordinating Unit is located at the CEHI, as agreed by the Implementing and Executing Agencies and the participating countries.

(Continued from page 1)

stration areas of best practice in land use and management are being implemented (see Box A, page 2). On-going training activities are important aspects of these initiatives because it is recognized that replication of good practice at community level gives workers new environmental knowledge, increases production and helps protect fragile ecosystems.

The “14th July” sugar factory within the watershed is being used to demonstrate best land-use practices in agriculture. Water is recycled and consumption has been reduced. Sugar plantations are irrigated with sugar cane wastewater in a program on water quality for irrigation and soil conservation. Bio-waste is conserved and applied in the field; a practice which seems to be improving crop yields.

Ensuring learning and replication

Efforts are being made to provide informa-
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tion on best practice to targeted sectors. The education of workers at every level is seen as important and is an on-going and systematic process. A manual titled: "Guidelines for better environmental practices in the agro-industrial sugar sector" has been completed and is being distributed to other Cuban enterprises. In addition an English version has been prepared to assist other Caribbean SIDS involved in sugar production.

Public Education

CEAC and the University of Cienfuegos jointly run the environmental education programme which began in 2008 and has already made some significant inroads.



SIPEAC session

In the rural fishing community of Castillo, which is serving as a pilot site for many of the public education activities under the GEF-IWCAM Project, an Information Centre for Community Environmental Education

(Sala de Información Para la Educación Ambiental Comunitaria, SIPEAC) was established.

SIPEAC provides residents of Castillo with important environmental and cultural information and activities related to the Cienfuegos Watershed. Some examples include identification of traditional meals from the sea, data and research on local aquatic species, ways to save the mangrove, the establishment of 'Circles of Interest' on issues such as pollution, coastal and mangrove vegetation, macroalgae, and mollusks, which bring to-



A Circle of Interest

gether youths with similar interests to explore such common themes.

In 2008, the demonstration project completed the



Students—an important target group

accreditation process for an MSc in Integrated Coastal Zone Management, an expansion of an initiative of the Canadian and Cuban Governments and other partners.

Three cohorts have already been enrolled in this course and a fourth will begin this year, based for the first time in Cienfuegos. The project team is working with others to evaluate the possibility of establishing a similarly-oriented doctoral degree.

CEAC and the University of Cienfuegos, under the public education and awareness component of the demonstration project, have also completed a training needs assessment and stakeholder identification exercise. This is helping them to better target their interventions and activities. Based on this information, they have already planned two training



Training Programme

workshops in 2009 and more in 2010. The creation of a community-based working group which will take an integrated approach to management of the area is also being planned.



The city of Cienfuegos

"Weh yuh dash weh nuh wash weh"

Community Involvement in the Jamaica Demo Project

Once a month the Driver's River Stakeholders Group meets to share information on Project activities and progress, and to make decisions on the way forward. This is the means by which the various communities throughout the Driver's River Watershed participate in Project decision-making.

From the onset the GEF-IWCAM Jamaica Demonstration Project has used a participatory approach very effectively. An earlier feature article, in *Caribbean WaterWays*, Vol. 1, Issue 3, September 2007, described the Project's scope and objectives. It recognized that environmental challenges in the area are rooted in a number of interrelated causes which have physical, socio-economic and institutional dimensions.

Stakeholders were initially involved, through participation in a Stakeholder's Workshop which began the process of strategic planning during the early stages of the project. The Project Management Unit, which is based at the National Environment and Planning Agency (NEPA) in Kingston, included stakeholder input in preparing the Project Work Plan and Budget. The Stakeholders Group was established in the early stages of the Project and has continued to meet throughout project implementation.

Buy-in to the Project by the several communities which make up the Driver's River Watershed is significant, as evidenced by the range of activities initiated by and discussed at the rather lively Stakeholders Meetings.

Four sub-Committees were fielded early from amongst Project staff as well as stakeholders. Here is a quick look at some of the activities managed by the various sub-Committees:

- Governance and Enforcement
- Sanitation and Livelihoods
- Environmental Monitoring
- Public Awareness

Governance and Enforcement:

The Governance and Enforcement Committee coordinated the conduct of a Knowledge, Attitudes and Practices (KAPS) Survey in the Demonstration Project Area. It reached 735 households in the watershed. The results of the survey were presented and discussed at a Governance Workshop which was subsequently held in October 2008. Participants felt that the Stakeholder Analysis helped them to better understand the needs of the community and how they might make a positive contribution to the Project.

The Governance Workshop addressed the following issues: stakeholder analysis (who they are and how to improve part-



nership?); the role of governance in fixing issues within communities of local Stakeholders; and the importance of partnership with government and non-government organizations. It was described by those who participated as being very interactive. Committee members acted as facilitators and there were over forty participants. There was the sharing of Best Practices from other communities (Boundbrook and Prospect) which were involved with the Coastal Water Quality Improvement Project (CWIP) and the Ridge to Reef Watershed Project (R2RW). Outputs included a Vision Statement, the development of a one year Action Plan for the Watershed and a Victory Statement for the Project.

Most significantly, the Workshop led to the strengthening of the human resources of the Project's sub-Committees as participants were co-opted to serve on and become involved in their work. There was a significant increase in awareness of land-use and pollution problems in the watershed accompanied by a willingness to seek solutions. This is seen in the fact that members of the Governance sub-Committee are involved in a wide range of activities. An illegal dump in Long Bay, for instance, was successfully removed with their assistance late last year. The group also recognized the need for, and planned, an Enforcement Workshop in December 2008.

Sanitation and Livelihoods:

This vibrant sub-Committee addresses sanitation and livelihood issues throughout the project area. As part of the Improved Livelihood component of the Project, for instance, following the heavy damage

Flooding after Tropical Storm Gustave



caused by Tropical Storm Gustave in September 2008, much of the Committee's energy went to helping subsistence farmers get on their feet once again. This included: the supply of baby chicks to 9 women and one high school within the Watershed; efforts to procure

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the 5 seed crops and organic fertilizer and pesticides for distribution to farmers and coconut seedlings for some areas along the coast. The farmers were chosen based on a needs assessment done through the Rural Agricultural Development Authority (RADA). Fair Prospect High School also received 34 chicks for their school farm.

Training events such as Farmers Training Days (Hectors River, September 2008, Rowlandsfield, October 2008, and Manchioneal, December 2008), and Fisher Folk Workshops (Manchioneal, and Bryans Bay, November 2008) are planned by the

Committee, often to coincide with wider events such as National Wood and Water Day (NWWD).

The Farmers Training Day held in Rowlandsfield in October 2008 was typical. Forty farmers attended along with representatives from local branches of RADA, as well as NEPA who provided technical



expertise. The Pesticide Control Authority also attended. The training day focused on land husbandry, soil stabilization, and composting techniques. In addition the farmers were trained in proper tree planting techniques for fruit trees such as Jew Plum, Naseberry, Otaheite Apple, and Jackfruit. Some attendees received fruit trees as an incentive for their level of participation in the training.

The commemoration events for National Wood and Water Day (NWWD) were particularly well planned and participation was excellent. They took place over a two day period, with Fair Prospect High School hosting the planting of cassava sticks on the Friday and a community planting day on the Saturday at Long Bay and Manchioneal.

Environmental Monitoring:

The Environmental Monitoring sub-Committee (EMC) oversees water quality, stream flow and metrological monitoring within the Project area. Water quality sampling is carried out by trained volunteers from the communities. Analysis is done by NEPA, and the EMC makes decisions for action to be taken. This sub-Committee consists of a number of state agencies as well as community stakeholders and has the technical expertise to guide the proper management of the Watershed. The EMC meets monthly to discuss the results of monitoring. Hotspot communities are selected. A town meeting is then held informing communities of the results and engendering solutions, which almost always lead to a clean-up of some kind. This mechanism for informing the community of water quality results is a particularly interesting one because it means that data collected is put to practical use.

The Water Resources Authority measures stream flow while Meteorological Services is responsible for rainfall data. The EMC receives reports on these efforts and deals with matters such as the training of new volunteers (as some are lost over time).

The EMC took the lead on International Coastal Cleanup Day (ICCD) which was marked with an event which took place 20 – 21 September 2008 in Manchioneal and Long Bay. Over the two days, 174 volunteers participated including members of the community, students, Peace Corps and National Youth Service (NYS) volunteers.



Public Awareness:

The Public Awareness Committee leads a range of public awareness and education activities within the Demonstration Project area. These include: debating and poster competitions in schools; day camps for children aged 9 – 13 years; and, project awareness initiatives around certain themes or events (e.g. National Wood and Water Day) such as the planning of a "Town Cry". In addition support is given to the advertising of meetings and assistance with information and logistics for project and community events such as Wood & Water Day and Farmer's Field Day.

Lisa Kirkland, Demo Project Manager, stresses that an integrated approach is always taken to problem solving. Although a particular committee may take the lead on a particular issue, all committees and stakeholders are involved in a number of cross-cutting events.

By successfully including watershed stakeholders in project implementation since its beginning, the Jamaica Demonstration Project has been able to achieve much that is of benefit to the community. There is significant "buy-in" by people who live in the watershed. They are encouraged, energized and empowered as they see that by their actions, and with a little support, they can achieve positive results. Already there is discussion about creating a Sustainable Management Committee to ensure sustainability – and this initiative is from the stakeholders themselves!

IWCAM **GEF** **NEPA**
National Environment and Planning Agency

Nonsuch!

Dis one a fi You!
A Town Meeting!
at Iona Watson's Shop.
Come and talk about
Sanitation in your Community

with
The Global Environment Facility – Integrating Watershed and Coastal Areas Management/ National Environment and Planning Agency Project (GEF- IWCAM/NEPA), NSWMA, Parish Council and our other Stakeholders

On
Thursday 16th October 2008 – starting at 6pm
Sound System provided by HI.POWER
Featuring a performance by
HEAVY D (Michael Hamilton)
Make NONSUCH CLEANER now!
and
Let's Make Drivers River Watershed the BEST in the Caribbean!

Is time running out for Buccoo Reef ?

The GEF-IWCAM National Demonstration Project for Trinidad and Tobago: *Land-Use Planning and Watershed Restoration in the Courland Watershed and Buccoo Reef Area*, seeks to reduce the impact of the Courland Watershed and other smaller watersheds from Cas-tara in the North, to Crown Point in the Southwestern end of Tobago, upon coastal areas, from Little Englishman's Bay to Buccoo Reef. This Demonstration Project is being implemented by the Buccoo Reef Trust (BRT), in close collaboration with the Tobago House of Assembly (THA). The BRT has established a Project Management Unit (PMU).

In January 2007 a long-term reef monitoring program was begun by the Buccoo Reef Trust as part of the GEF-IWCAM Project. The study includes a detailed mapping and baseline data-collection project and a reef monitoring program using fixed stations.

These sites, which were designed to provide long-term data on the condition of the reefs over time, are routinely being monitored by the research team for: water quality, reef communities (e.g. fish and habitat surveys), bleaching and disease. Data collection started in January 2007 using sediment traps, water quality testing and underwater video.

A series of twelve permanent monitoring stations were established on the main coral reefs around Tobago. Eight of these sites are located on the leeward side of the island (the Caribbean coast), and four of them on the windward side (the Atlantic coast). These include several monitoring stations which are outside the project area for the sake of comparison.

Monitoring during the latter part of 2008 found that the average percentage of live hard coral cover dropped from 18.07% in the period July-September to 15.29% in the October-December quarter in the monitoring sites that are inside the IWCAM area. This is the biggest reduction in live reef building corals since the beginning of these surveys in January 2007.

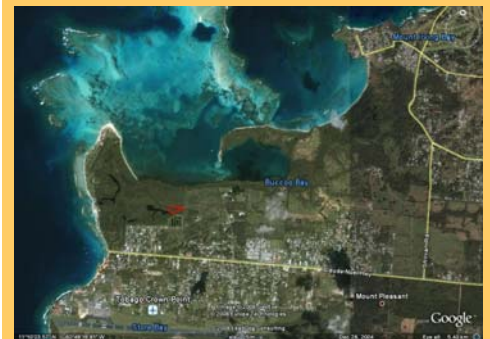
The decrease observed can be attributed to a relatively high abundance of diseases present in Tobago's reefs (specifically yellow blotch disease) with direct effects on reef building species of corals like the star coral, *Montastraea faveolata*. Other factors which have a negative effect on coral reefs are sediments which come from inland areas after land has been exposed to the elements, pollution from poor sewage treatment, rising sea temperatures, and others.

For the same period, monitoring showed that both Kariwak Reef and Little Englishman's Bay had significantly high amounts of sediments settling on the corals. Both of these stations have rivers nearby which could be transporting sediment washed off land which is being cleared in surrounding areas.

In addition, macroalgae cover was reduced from 6.8% in July-September to 2.5% in October-December. This is an unexpected result since the rainy season was expected to trigger algal reproduction. The amount of macroalgae present in the monitoring stations from July to December 2008 has been significantly lower than in previous surveys. This would seem to indicate that some features of Tobago's coastal waters could be changing or that some other variation is taking place in this aquatic environment, such as grazing animals feeding more voraciously on the algae.

The Trinidad and Tobago GEF-IWCAM Demonstration Project is working to educate and involve stakeholders in its conservation programmes. School children are participating in land-sea interaction education programmes. Local community groups are involved in reforestation efforts and water quality monitoring. Farmers are being encouraged to use more traditional, environmentally sustainable agricultural practices.

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Reflecting on Lessons Learned



Cornelius Isaac

Saint Lucia's Demonstration Project Manager, Cornelius Isaac, reflects on Lessons Learned, some of the Challenges faced and the Critical Success Factors:

Cornelius Isaac has been the Saint Lucia Demonstration Project Manager since its beginning in 2007. His experience working with the Government of St. Lucia, since 1982, which included being the Regional Forest Manager, as a Project Officer on a Canadian-funded forest management project, and on the NOAA-funded Watershed Project in Soufriere where there were good results, has helped with many aspects of this project. Excerpts from an inter-

view with him on the Rainwater Harvesting (RWH) Initiative, in the Fond D'or watershed, site of the Saint Lucia Demonstration Project, follow:

"On-the-ground activities were important because we needed to find ways to showcase IWCAM. People have basic needs and if you don't address them first you can't talk to them about anything else."

"When the project began there was a great deal of anger in the community aimed at WASCO (the Water and Sewerage Company) which was seen as the source of water and responsible for all problems related to water. The Project has helped the community instead to focus on the entire river system and watershed; the entire drainage system, and their roles. Before the Project they did not believe that they had a say or made a contribution to the problem, much less the solutions. The community now feels greater responsibility and realizes that WASCO is just one user of the river, that they can do more to help themselves ...they feel empowered."

Demonstrating direct and tangible benefits to the community is in Cornelius' view critical to the success of the Project. Other critical success factors include: the use of appropriate and accessible technology; successful co-operation with other projects; and, strong linkages with various resource agencies for the sharing of information, and initial and ongoing support.

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Caribbean participates in WWF5 cont'd...



Vincent Sweeney, RPC, addresses WWF5

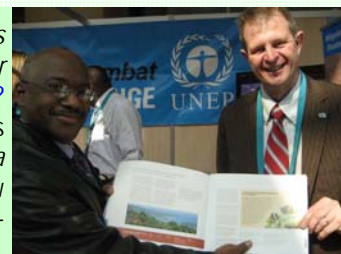
The Americas Region session was attended by well over 200 persons and took place in the second largest hall at the WWF. It included presentations from Minister Chang, Patricia Aquino (CEHI's Executive Director), and the GEF-IWCAM RPC. Recommendations made and positions stated at the Water Forum of the Americas (known as the Message of Iguassu Falls, MIF) in November 2008 were presented for consideration by the WWF.

The GEF-IWCAM RPC was able to present a Case Study on behalf of the Caribbean sub-region which highlighted success stories in IWCAM, considered to be of most relevance to the sub-region. The presentation focused on the St. Lucia and Jamaica demonstration projects and the IWRM work being catalyzed by the project. This has been included in GEF:International Waters publication titled "Ridge to Reef", which was launched at the Forum (see: <http://www.gefweb.org/uploadedFiles/>

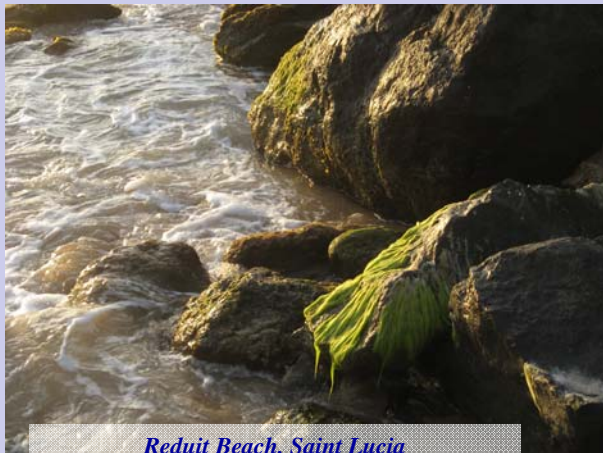
[Publications/GEF_RidgetoReef_CRA_lores.pdf](http://www.gefweb.org/uploadedFiles/Publications/GEF_RidgetoReef_CRA_lores.pdf)).

The GEF-IWCAM PCU also, through the Technical Coordinator, Sasha Gottlieb, co-wrote (with the Pacific Islands Applied Geoscience Commission – SOPAC) a perspective document for the Session which focused upon *Small islands – Perspectives on Water in Pacific and Caribbean small island countries – Adapting to Climate Change in water resources and water services* (see: <http://www.waterandclimate.org/index.php?id=5thWorldWaterForumpublications810>). The GEF-IWCAM RPC participated in this session as well as in the Round Table discussions on *Areas with Increasing Precipitation, Run Off and Sea Level Rise*. He emphasized the distinctions between SIDS and large developed countries in how they are able to respond to climate change impacts, such as severe weather, storm surges, sea-level rise, floods and water shortages.

RPC and Christian Severin, GEF Secretariat



Signs of Trouble...



Reduit Beach, Saint Lucia

Marine algae like this can be seen on many Caribbean beaches. You might think it's quite pretty but it is often a sign that the water is polluted and should be considered a warning to us.

Such algae grows when the water is nutrient-rich. Phosphorous in detergents, as well as other nutrients are washed into our drains and eventually end up in the sea. There they encourage the growth of algae. This algae as it becomes more abundant, depletes oxygen in water, leading to the eutrophication of coastal waters.

Rapid growth of marine algae can quickly overgrow corals, smothering them in the process.

Where does this pollution come from? There are many sources: point sources such as manufacturing plants and marine vessels; urban non-point run-off (stormwater runoff and combined overflow discharges); non-urban point runoff (farms



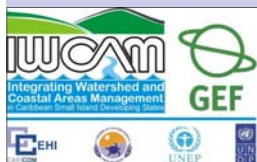
Colihaut coastal area, Dominica

and livestock pastures); irrigation return flows; and a variety of sources upstream.

Act now! Learn more about the problem and how you can help!



Grand Anse Bay, Grenada



Participating Country Focal Points, Demonstration Projects and others are invited to submit articles. Please contact Donna Spencer at dspencer@cehi.org.lc

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