



DUTCH CARIBBEAN NATURE ALLIANCE

WORKSHOP REPORT

Workshop: Google Geo Tools and ArcGIS

Dates: September 2011

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Date: 18-10-2011

1 Background

The Dutch Caribbean Nature Alliance (DCNA) supports the six Dutch Caribbean islands in their efforts to preserve their unique natural world through focused capacity building. Effective conservation requires exceptional management, and exceptional management requires objective, reliable data that can be used to measure progress and make critical decisions. In 2009, nature managers flagged the development and effective use of geographic information systems (GIS) as pressing needs in achieving their conservation goals. Thus, in 2010 DCNA established GIS as a capacity building theme.

A pilot project was launched in 2010 with the goal of enabling STINAPA Bonaire to become GIS-capable. Necessary hardware and software was acquired and a seven-day introduction to GIS training was held on Bonaire in which staff from Funadación Parke Nacional Arikok, Aruba and CARMABI, Curacao also attended. The following four major action points were outputs of that workshop:

1) Build capacity in the interpretation of GIS data and tools

PROGRESS

- In May of 2011 a second GIS training was held on Saba in which the Saba Conservation Foundation, the St. Maarten Nature Foundation and Funadación Parke Nacional Arikok attended. Google Earth was an added component of this workshop as requested by the parks.
- A third GIS workshop (described in this report) was held in September of 2011 on Bonaire. A DCNA GIS User Manual was also developed for this workshop (see appendices).
- DCNA has now held three GIS workshops (14 total days) for 12 participants from all six Dutch islands (of which four staff have attended multiple workshops). Section six of this report describes GIS capacity on Aruba, Bonaire, Curacao.

2) Compile and make accessible GIS data and layers to the islands

PROGRESS

- Lack of accessibility to existing data was identified as the biggest hindrance to GIS use. In order to put useful data in nature manager's hands, DCNA launched the project, "Data Development in the Dutch Caribbean". Data was collected from numerous sources, repaired and standardized. The data is currently shared with the islands via Dropbox complete with an overview (see appendices) and the user manual mentioned above.

3) Acquire GIS software for Dutch Caribbean Parks

PROGRESS

- Through a generous grant from ESRI International and local support from GIS 4C in Curacao, the DCNA Secretariat and all six park management organizations have attained ArcInfo 10 Concurrent licenses. This is the leading GIS software valued around \$14,000 per license annually.
- Through a generous grant from Google, the DCNA Secretariat and all six park management organizations have attained Google Earth Pro valued at \$400 per license annually.
- Software has been distributed to all of the parks. Approximately 6 hours of installation and start-up support has been given to Saba, St. Eustatius, Bonaire and Aruba.

4) Recommend standard approaches to the collection, storage and use of GIS data

PROGRESS

- Through the “Data Development in the Dutch Caribbean” project standard practices of GIS use have been described. Agreements on the storage, editing, sharing and creation of new data were determined in this workshop and are incorporated as protocols in the user manual.

2 Introduction

The purpose of this workshop was to follow-up on DCNA's first GIS training offered in October 2010 on Bonaire, where participants from Aruba, Bonaire and Curacao spent three days learning the basics of ArcGIS and four days experimenting with conservation applications of GIS.

Supporting information may be found on -
<https://sites.google.com/site/bonairegisworkshop2011/>

The goals of the workshop were to:

- 1) Explore and learn about Google Geo Tools technologies
- 2) Evaluate capacity level for GIS users on Aruba, Bonaire and Curacao
- 3) Present progress of "Data Development in the Dutch Caribbean" project while refreshing GIS skills by working through the "DCNA GIS User Manual"
- 4) Determine GIS next steps for the parks and other conservation organizations of the Dutch Caribbean

3 Participants

Diego Marquez – FPNA, Aruba (previous ArcGIS training, September 2010)
Julio Beaujon – FPNA, Aruba (previous Google and ArcGIS training, April 2011)
Fernando Simal – STINAPA, Bonaire (previous ArcGIS training, September 2010)
Eneida Fajardo – STINAPA Bonaire volunteer
Sabine Engel – Conch Restoration Project, Bonaire (previous ArcGIS training, April 2011)
Kate Walker – STENAPA, St. Eustatius
Kalli De Meyer – DCNA

4 Instructors

Eseld Imms led ArcInfo Training
Nathaniel Miller led Google Geo Tools Training

5 Course Overview

Monday 26-09-2011

Introduction / Course Goals
Islands' Current GIS Work
Google Geo Tools Training

Tuesday 27-09-2011

DCNA Data Development Project Overview
ArcGIS Key Concepts and Tools
Viewing and Mapping DCNA Layers
Editing and Modifying DCNA GIS Files
Creating new DCNA Layers
Habitat Mapping on Bonaire Discussion

Wednesday 28-09-2011

Individual Project Support
Mapping Values and Threats Exercise
Habitat Mapping on Bonaire cont.

6 Discussion and Outcomes in Relation to Workshop Goals

- 1) Explore and learn about Google Geo Tools technologies
 - Google Geo Tools, especially Google Earth is a popular GIS and mapping tool for the Dutch Caribbean conservation organizations, in particular for communicating with maps. While Google has a general user manual, it would be valuable to modify some of the more common Google Earth tools to the Dutch Caribbean and incorporate them into the DCNA GIS User Manual.
 - **ACTION – Modify and incorporate Google Earth in a version two DCNA GIS User Manual**
- 2) Evaluate impact of GIS training to date on capacity level for users on Aruba, Bonaire and Curacao (note: SSS islands to be assessed in 2012)
 - **Aruba** – Three staff at FPNA are actively using GIS. Park infrastructure and user areas such as trails and entrances have been inputted to GIS. Vegetation maps for Arikok national park have been produced (although data may have been lost in server crash), some bird monitoring data has been inputted (although bird monitoring has currently been halted), and some reptile data has been inputted.

- **Bonaire** – One staff at STINAPA Bonaire is using GIS. He has found that half-a-day per week is not enough time to make any significant progress in a reasonable period of time, not even to get over the initial hurdle of GIS familiarity. Google Earth is being used to produce data maps for reports such as bird monitoring, cave mapping and other management documents.
 - **Curacao** – Although not available for this workshop, at least one staff at CARMABI is actively using GIS and at least two are proficient in GIS use. CARMABI is mapping the distribution of rare species in Christoffel National park and assessing the relationship between those species and plant communities, such as disturbance impact.
 - **ACTION – Assess Saba, St. Eustatius and St. Maarten’s GIS capacity in first quarter of 2012**
- 3) Present progress of "Data Development in the Dutch Caribbean" project while refreshing GIS skills by working through the "DCNA GIS User Manual"
- The "Data Development in the Dutch Caribbean" project has addressed a major gap of lack of accessible data to nature managers. This data overview needs to be managed to remain effective. An additional next step is to address the gaps for which data does not exist.
 - **ACTION –DCNA Secretariat will actively manage the data overview and shared data as well as make available to nature organizations and other entities. A new gap analysis will be conducted identifying the next important data fields to fill (such as habitat, value and threat maps).**
 - "DCNA GIS User Manual" version 1.0 was created as a training tool specific for Dutch Caribbean nature GIS users. It was determined to be very useful during the workshop and is nice complement to the detailed and all-encompassing ESRI ArcInfo manuals. Some small edits and amendments have been made to the User Manual based on feedback including protocols on how to share edited/updated/new data; and an exercise or template on metadata.
 - **ACTION – Version two of the user manual will be considered in 2012**
- 4) Determine GIS next steps for the parks and other conservation organizations of the Dutch Caribbean
- There are varying degrees of necessary technical support from the islands - from software installation issues to full project development. The majority of participants would like to have support, but still retain project implementation.
 - **ACTION – Parks and other conservation organizations using GIS in the Dutch Caribbean should contact the Secretariat for "basic technical support", such as software troubleshooting and user manual questions. All basic technical support from GIS 4C in Curacao should go through the DCNA Secretariat first in order to maintain a log of support hours and manage total support time.**

- **ACTION – The Secretariat will develop a simple application process for more advanced GIS support by the end of 2012. This will include data analysis and the creation of maps, amongst other GIS projects. As budgets are constrained, this support will be limited to a certain amount of hours per islands.**
- Habitat maps for practical nature management purposes have been identified as the largest base data gap on the ABC islands.
- **ACTION – DCNA Secretariat will pursue the development of habitat maps for the Dutch Caribbean in 2012 as financially feasible. DCNA partners will be consulted for input.**
- Cloud sharing of GIS data and online mapping applications are attractive options for the parks, but may not be financially feasible.
- **ACTION – DCNA Secretariat will investigate the feasibility of a dedicated server for GIS as well as other valuable information. In the meantime a new structure for sharing GIS files will be created in Dropbox, which saves space.**
- **ACTION – The Secretariat will pilot a small online mapping application with data that is already available in order to encourage full incorporation of GIS and demonstrate communication power.**
- STENAPA and Fundación Park Nacional Arikok would like to have a few staff members trained in the basics of their GIS system once they are fully established. This will include the input and maintenance of data. This training may be able to take place in house. STENAPA is lacking hardware to fully incorporate GIS.
- **ACTION – No GIS workshop is currently scheduled. GIS Training needs will be evaluated every six months. The SSS islands will be consulted at the end of 2011 on their training needs for 2012. The May 2012 DCNA Board Meeting on Saba could be complimented with a GIS workshop.**

7 Course Feedback

Average scores from participant questionnaire (1 being least favorable, 5 being most favorable)

Content:	4.7
Presenter/Facilitator:	4.8
Workshop Location:	4.5
Procedures & Information:	5.0

8 Photographs



Photo 2: Kate Walker of STENEPA mapping Stattia Morning Glory locations



Photo 1: Eseld Imms presenting overview of DCNA's "Data Development in the Dutch Caribbean" project



Photo 4: Fernando Simal of STINAPA Bonaire reviewing a vegetation map for Bonaire



Photo 3: Eseld Imms presenting a certificate of completion to Diego Marquez of Fundación Park Nacional Arikok

9 DCNA GIS Data Overview at a Glance

	Aruba	Bonaire	Curacao	Saba	St Eustatius	St Maarten
LAND TOPOGRAPHY						
COASTLINE	✓	✓	✓	✓	✓	✓
CONTOURS	✓	✓	✓	✓	✓	✓
CLIFFS		✓	✓	✓		✓
INLAND ISLANDS		✓	✓			✓
HYDROLOGY						
INLAND WATER BODIES	✓	✓	✓			✓
WATERSHEDS	✓	✓	✓	✓	✓	
GEOLOGY		✓				
SOILS	✓					
VEGETATION (Inc. artificial areas)		✓	✓	✓	✓	✓
SEABED BATHYMETRY	✓	✓	✓	✓	✓	✓
MARINE ENVIRONMENT						
NATIONAL PARKS	✓	✓	✓	✓	✓	✓
RAMSAR SITES	✓	✓	N/A	N/A	N/A	N/A
IMPORTANT BIRD AREAS (IBAs)	✓	✓	✓	✓	✓	✓
LAND AND SEA TENURE AND JURISDICTION						
EEZ / TZ (MARINE)	✓	✓	✓	✓	✓	✓
LAND TENURE	✓					
ADMINISTRATIVE BOUNDARIES						
BASIC ISLAND INFRASTRUCTURE						
BUILDINGS	✓			✓	✓	✓
ROADS	✓	✓	✓	✓	✓	✓
PLANTATION BOUNDARIES		✓				
POINTS OF INTEREST	✓	✓	✓	✓	✓	✓
LOCATIONS / PLACE NAMES	✓	✓	✓	✓	✓	✓
INDUSTRY						
SALT PANS	N/A	✓	N/A	N/A	N/A	N/A
OIL REFINERIES					✓	
TOURISM - RESORTS	✓					
TOURISM - CRUISE SHIP PORTS	✓	✓	✓	N/A	N/A	✓
WASTE MANAGEMENT (dumps)				✓		
RECREATIONAL ACTIVITY SITES AND ATTRACTIONS						
DIVE SITES AND MOORINGS	✓	✓	✓	✓	✓	✓
HIKING TRAILS				✓	✓	
WORLD HERITAGE AND PROPOSED WORLD HERITAGE SITES	N/A	N/A	✓	N/A	N/A	N/A

10. Appendices

DCNA GIS User Manual ver. 1.0