

Biodiversity Monitoring and Databases in the Dutch Caribbean

October 2013

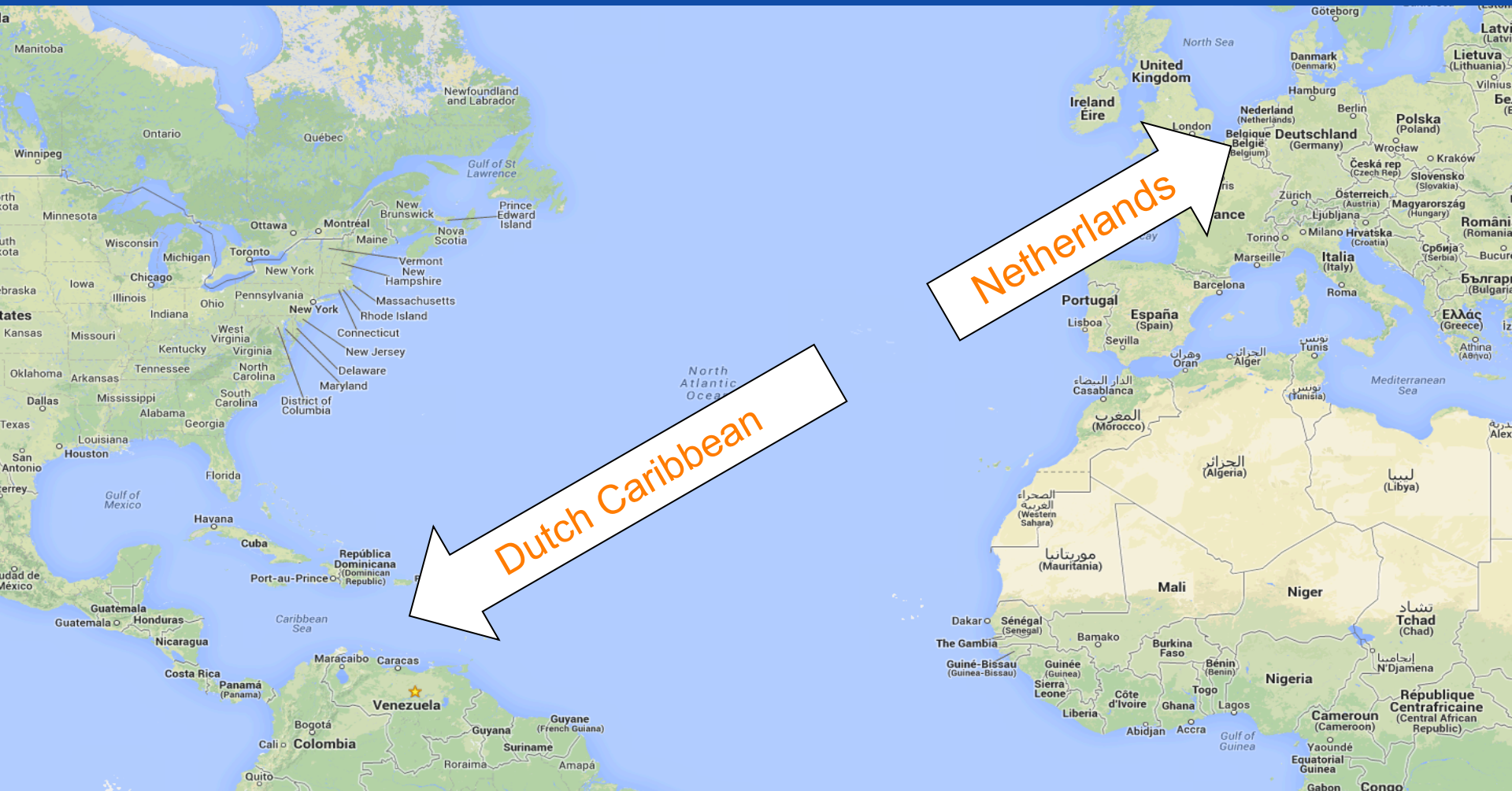
Nathaniel Miller
Dutch Caribbean Nature Alliance

Outline



1. Biodiversity Monitoring Strategy
2. Dutch Caribbean Biodiversity Database
3. Citizen Science: Lionfish Control Application

The Netherlands and the Dutch Caribbean



A closer look



St. Maarten, Aruba and
Curaçao are separate
countries within the Kingdom

A closer look

St. Maarten, Aruba and
Curaçao are separate
countries within the Kingdom

Bonaire, Saba and St.
Eustatius are Dutch
municipalities and
known as “Caribbean
Netherlands”



Dutch Caribbean = six islands with 5 MPAs and 5 TPAs



Six Islands: Protected Area Management Organisations



Fundacion Parke Nacional Arikok
www.arubanationalpark.org



STINAPA Bonaire
www.stinapa.org



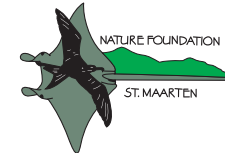
CARMABI
www.carmabi.org



Saba Conservation Foundation
www.sabapark.org



STENAPA
www.statiapark.org



St. Maarten Nature Foundation
www.naturefoundationsxm.org

Biodiversity

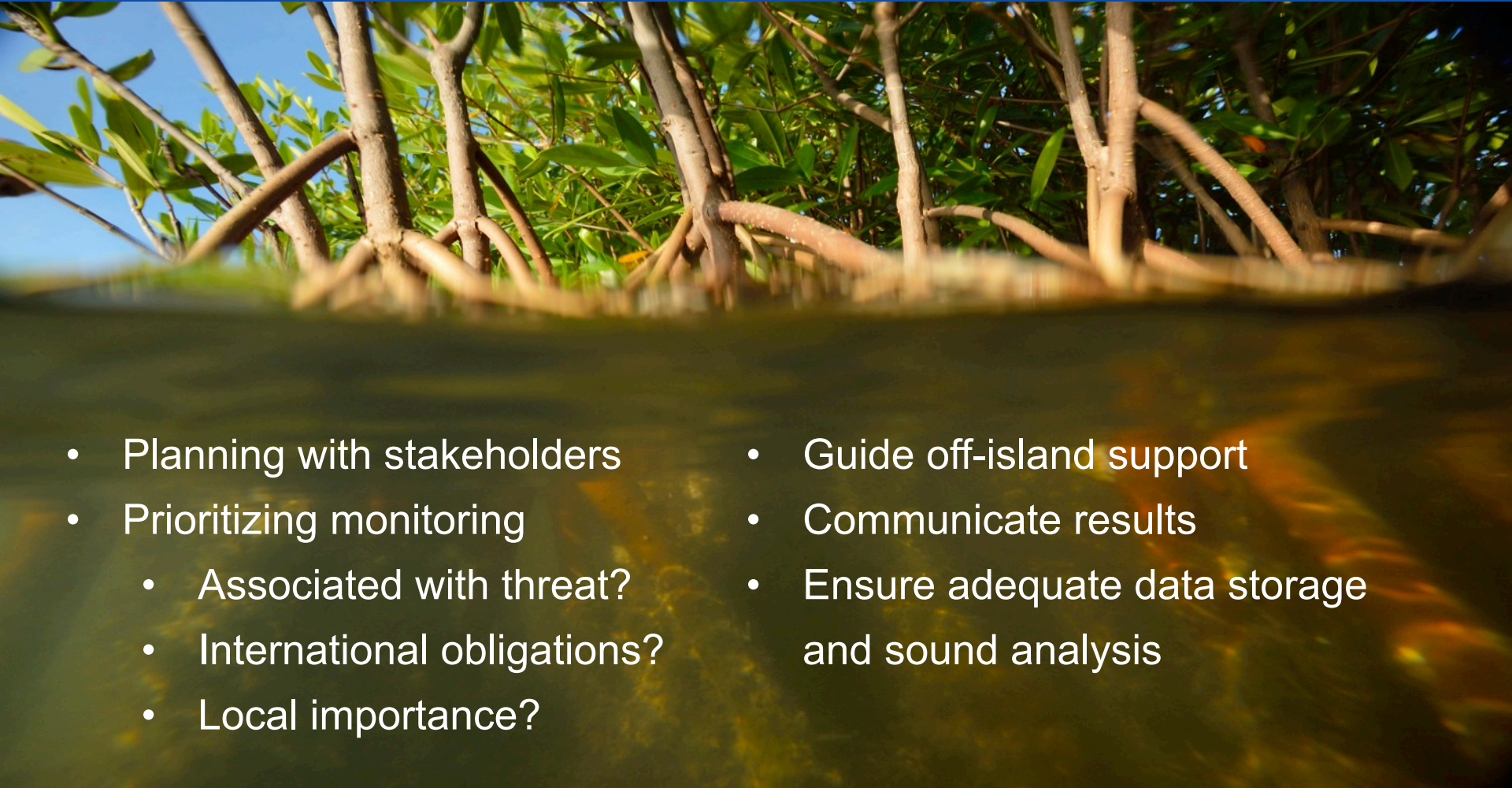


Biodiversity Monitoring Strategy - goals



- Support management
- Provide information
- Guide policy
- Build awareness
- Support regional/global initiatives

Biodiversity Monitoring Strategy - challenges



- Planning with stakeholders
- Prioritizing monitoring
 - Associated with threat?
 - International obligations?
 - Local importance?
- Guide off-island support
- Communicate results
- Ensure adequate data storage and sound analysis

Dutch Caribbean Biodiversity Database (www.dcbd.nl)



Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN BIODIVERSITY DATABASE

monitoring maps resources

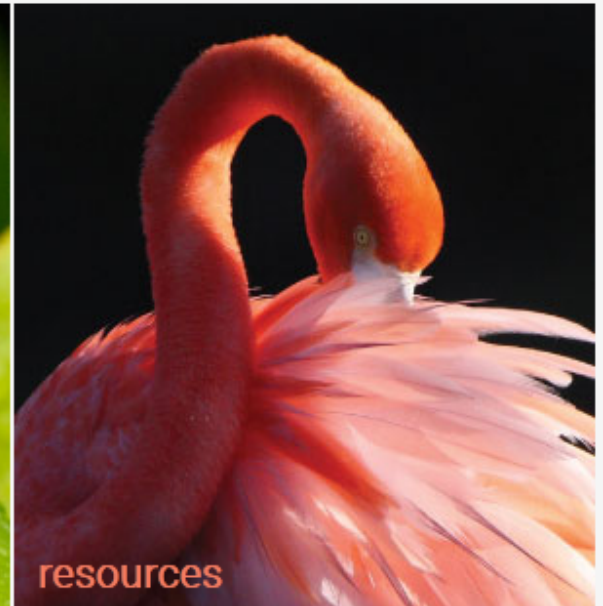
A central storage facility for long-term biodiversity monitoring data, providing a safe and secure storage and a user-friendly interface to input data and perform analyses. It facilitates international reporting and enhances nature management.



Interactive maps containing up-to-date geographic nature data for the Dutch Caribbean. Monitoring data can be plotted over specific base maps, including vegetation, geological, soil, land use, protected areas and spatial zoning maps.



A central archive for research and monitoring reports, journal articles and other valuable documents concerning biodiversity in the Dutch Caribbean for all interested parties to easily access relevant biodiversity information.

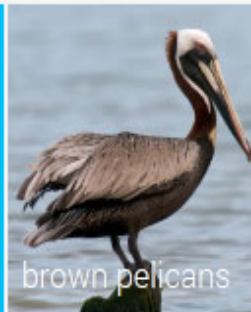


Dutch Caribbean Biodiversity Database (www.dcbd.nl)

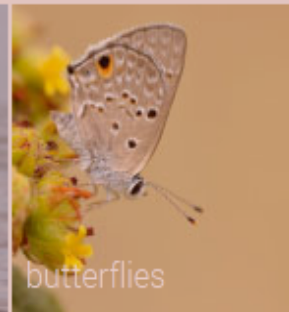
DUTCH CARIBBEAN BIODIVERSITY DATABASE

[monitoring](#) [maps](#) [resources](#)

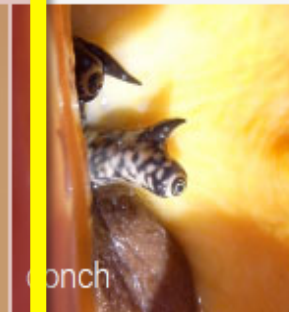
The core goal of the Dutch Caribbean Biodiversity Database is to safely store long-term biodiversity monitoring data that facilitates international reporting and enhances nature management. The Monitoring section of the database not only provides data collectors with safe and secure storage, but also offers a user-friendly platform to input data, perform analysis and identify errors. All site visitors can browse through monitoring programme overviews and summarized outputs. Data collectors can login to input, edit, download and analyze data.



brown pelicans



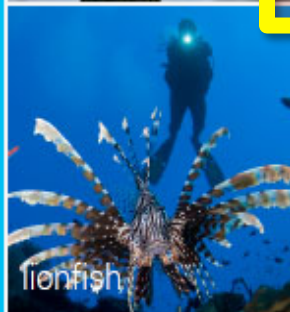
butterflies



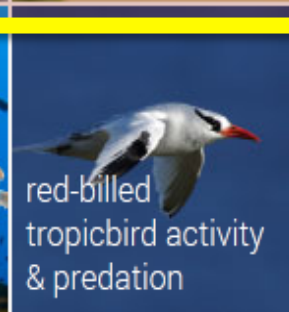
conch



flamingos



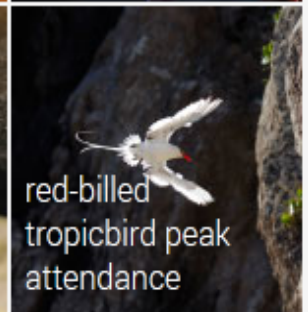
lionfish



red-billed
tropicbird activity
& predation



red-billed
tropicbird breeding
success



red-billed
tropicbird peak
attendance



seagrass



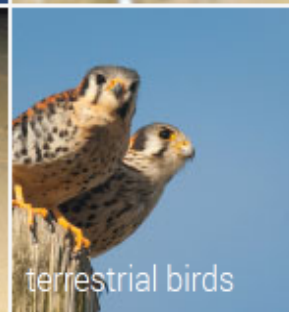
sea turtle in water



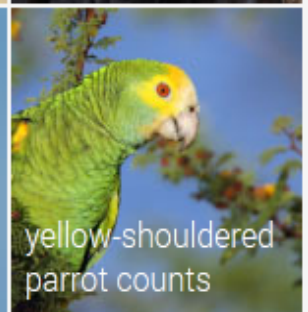
sea turtle nesting



sea turtle tracking



terrestrial birds



yellow-shouldered
parrot counts

Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
BIODIVERSITY DATABASE

monitoring maps resources

observation data



butterflies

objective

On the island of St. Eustatius a butterfly monitoring programme is in place to monitor and analyse the distribution and relative abundance of butterfly species in key locations on the island in order to assess the impact of climate change and to focus conservation efforts. Butterflies are key indicator species of ecosystem health and are some of the species most vulnerable to climate change.

contacts

[Dolfi Debr...](#)

The maps and/or graphs, containing non-sensitive information about this monitoring program, are coming soon.

related resources

- a survey of butterflies from aruba and bonaire and new records for curacao
- nieuwe nederlandse vlinders op saba
- nederlandse vlinders op tropisch eiland

Dutch Caribbean Biodiversity Database (www.dcbd.nl)

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RESOURCES

Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
BIODIVERSITY DATABASE

monitoring maps resources

WORK IN
PROGRESS

observation data

butterflies



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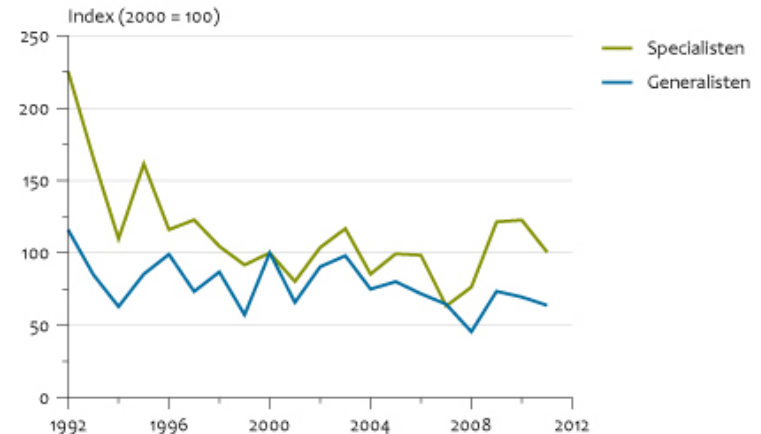
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Maps / Graphs

Specialisten en generalisten vlinders



related resources

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Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
BIODIVERSITY DATABASE

monitoring maps resources

general information

Monitoring program:

Organisation:

+ Add new visit...

ID

Authentication Required



A username and password are being requested by http://www.dcbd.nl. The site says: "Dutch Caribbean Biodiversity monitoring"

User Name: Hannah Madden

Password:

OK

Cancel

Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
BIODIVERSITY DATABASE

monitoring maps resources

general information

Monitoring program:

Organisation:

+ Add new visit...

Start date	Location	Complete?	Wind speed [m/s]	Cloud cover (%) [%]	Temperature [° °]	Notes	
Tue Jan 13 2009 01:...	BC01 - QUILL	true	4.2	0	27.4		-
Tue Jan 13 2009 01:...	BC02 - QUILL	true	0.2	0	31		-
Tue Jan 13 2009 01:...	BC03 - QUILL	true	0	0	31.6	1 little white moth	-
Tue Jan 13 2009 01:...	BC04 - QUILL	true	1.3	0	31.4		-
Tue Jan 13 2009 01:...	BC05 - QUILL	true	1.2	0	29.5		-
Tue Jan 13 2009 01:...	BC06 - QUILL	true	1.1	0	28.6		-
Tue Jan 13 2009 01:...	BC07 - QUILL	false	0	0	0		-
Tue Jan 13 2009 01:...	BC08 - QUILL	false	0	0	0		-
Tue Jan 13 2009 01:...	BC09 - QUILL	false	0	0	0		-
Tue Jan 13 2009 01:...	BC10 - QUILL	true	1.3	5	28.5		-
Tue Jan 13 2009 01:...	BC11 - QUILL	false	0	0	0		-
Wed Jan 28 2009 01:...	BE01 - VENUS - GILB...	true	2.3	5	30.2		-
Wed Jan 28 2009 01:...	BE02 - VENUS - GILB...	true	2.7	15	32.3		-
Wed Jan 28 2009 01:...	BE03 - VENUS - GILB...	true	2	10	33		-

Page 1 of 18

Displaying 1 - 30 of 535

Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
BIODIVERSITY DATABASE

monitoring maps resources

general information

Monitoring program:

Organisation:

+ Add new visit...

Start date	Location
Tue Jan 13 2009 01:...	BC03
Tue Jan 13 2009 01:...	BC03
Tue Jan 13 2009 01:...	BC03
Tue Jan 13 2009 01:...	BC04
Tue Jan 13 2009 01:...	BC05
Tue Jan 13 2009 01:...	BC06
Tue Jan 13 2009 01:...	BC07
Tue Jan 13 2009 01:...	BC08
Tue Jan 13 2009 01:...	BC09
Tue Jan 13 2009 01:...	BC10
Tue Jan 13 2009 01:...	BC11
Wed Jan 28 2009 01:...	BE01
Wed Jan 28 2009 01:...	BE02
Wed Jan 28 2009 01:...	BE03 - VENUS - GILB...

Date:*

01/13/2009

Location:*

BC03 - QUILL

StartTime:*

00:00

Duration [minutes]:*

00:05

Windspeed [m/s]:

0

Cloud cover [%]:

0

Temperature [degr. Celsius]:

31.6

Survey completed:

☒

Remarks:

1 little white moth

+ Add new observation...

Butterfly	Count
Pyrgus oileus	1
UNID black HESP	2
Heliconius charitonius	3
Hemiargus sp.	1
Biblis hyperia	1
Pheobis sennae	1
White PIER	3
UNID LEP	1
Dione vanillae	
Dryas iulia	
UNID black HESP	
Danaus plexippus	
Urbanus proteus	
Ephyriades arcas	
orange HESP	
Urbanus obscurus	
Pyrgus oileus	
Species TBC	

Cancel

Save

Cancel

Notes

1 little white moth

Displaying 1 - 8 of 8

Save

Cancel

Page 1 of 18

Displaying 1 - 30 of 535

Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN BIODIVERSITY DATABASE

monitoring maps resources

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Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
BIODIVERSITY DATABASE

monitoring **maps** resources

The Maps section of the Dutch Caribbean Biodiversity Database contains a GIS-based map viewer containing the most accurate and up-to-date geographic nature data for the Dutch Caribbean. This allows nature managers to visualize their cause and builds public support for conservation by allowing the world to interact with Dutch Caribbean maps such as vegetation, geology, soil, land use, protected areas and zoning plans. These base layers are projected on an interactive central map where data collectors can also view in their monitoring data.

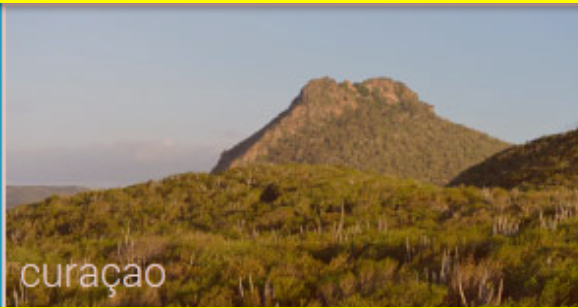
To download GIS data please visit our [GeoServer](#)



aruba



bonaire



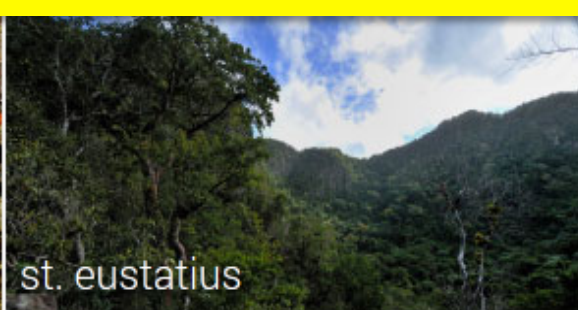
curaçao



saba



saba bank

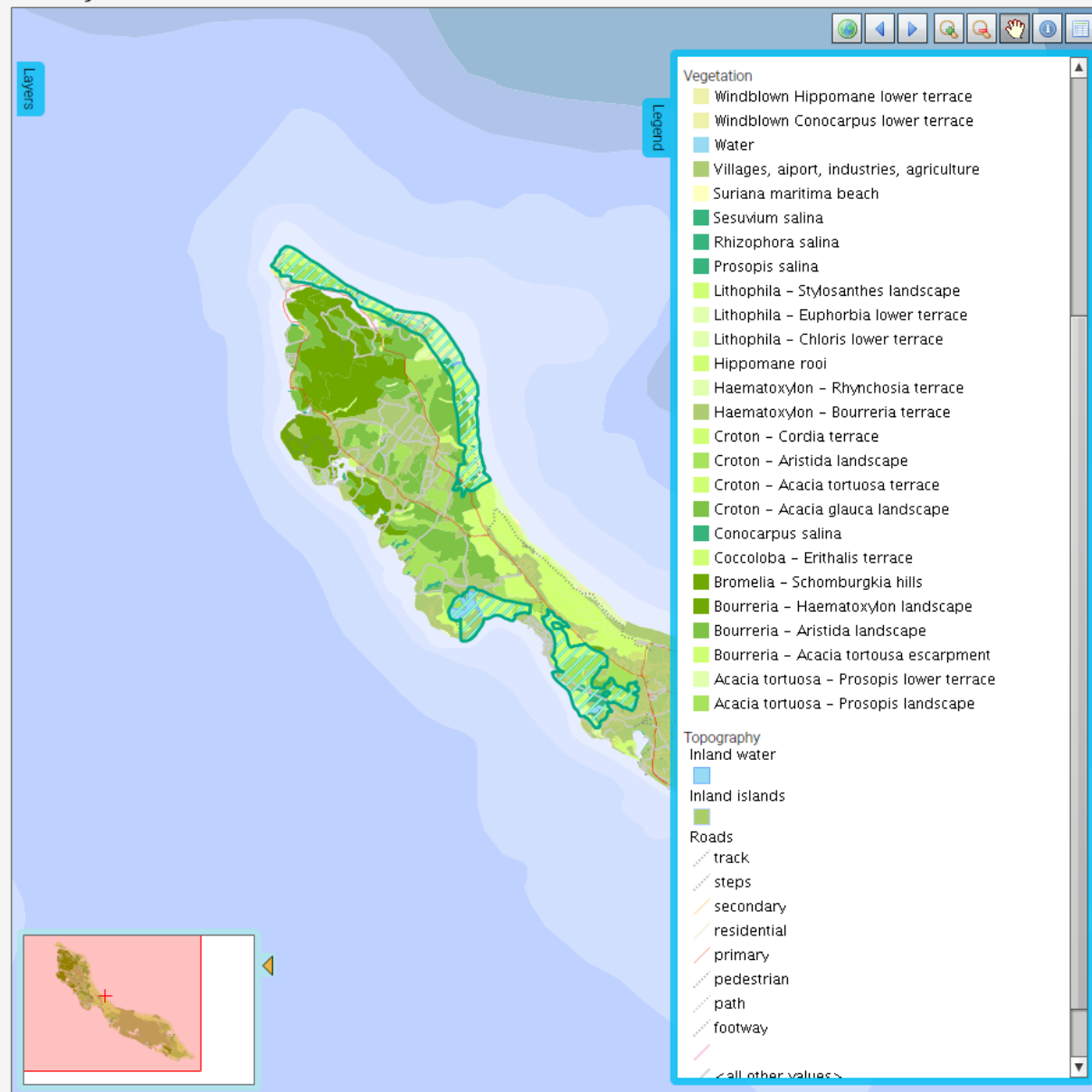


st. eustatius



st. maarten

Curaçao

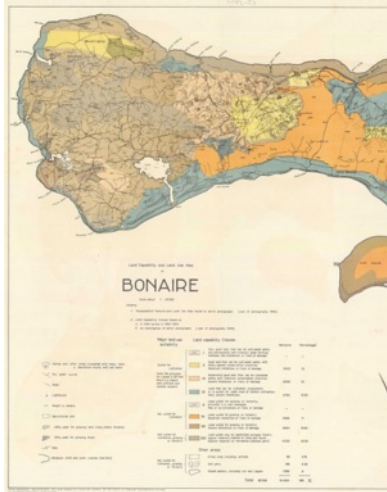


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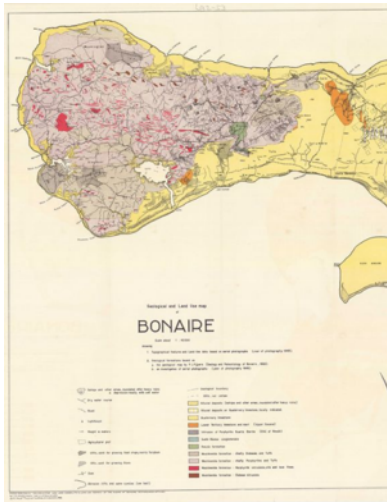


Bonaire

Land capability

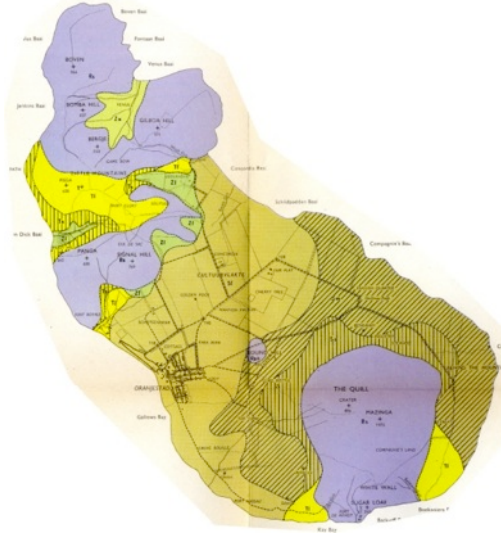


Geology and land use



St Eustatius

Soil

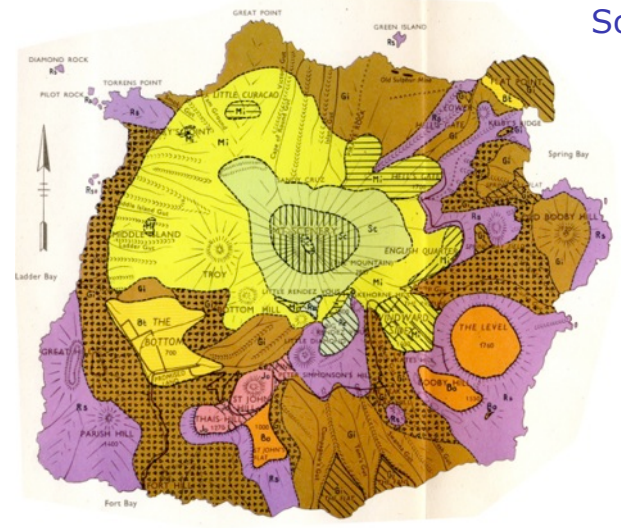


Geology

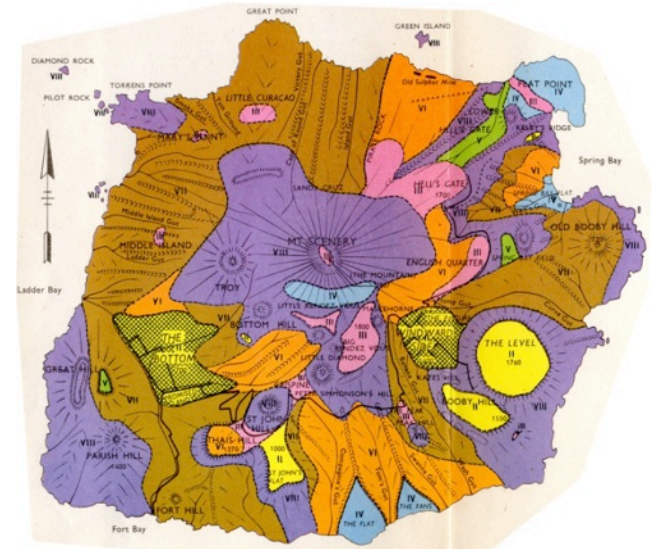


Saba

Soil



Land use

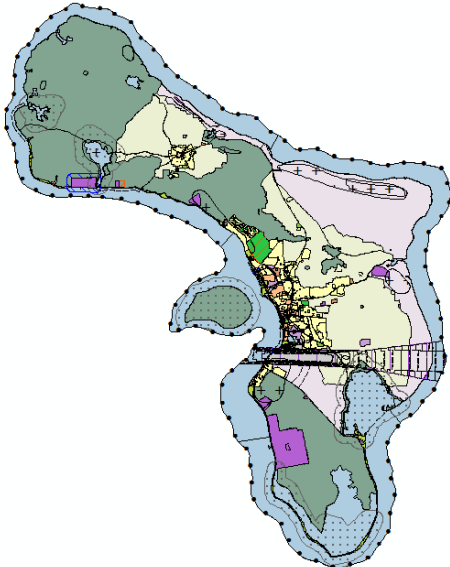


Bonaire

Topography and vegetation

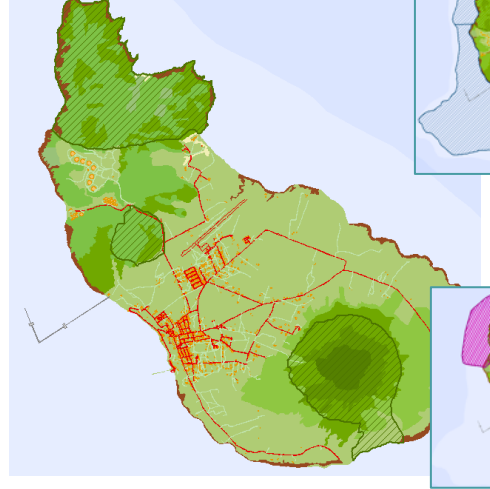


Zoning plan

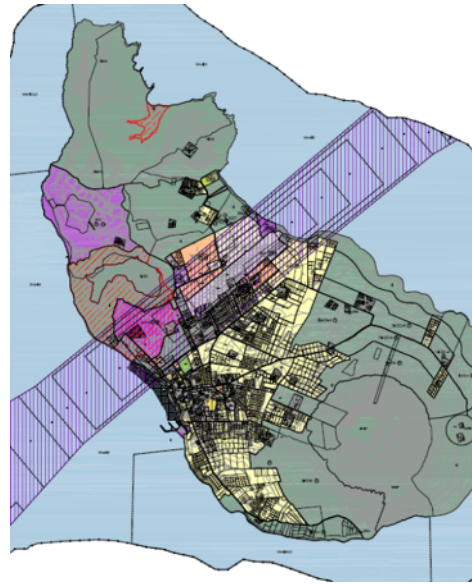


St Eustatius

Topography and vegetation

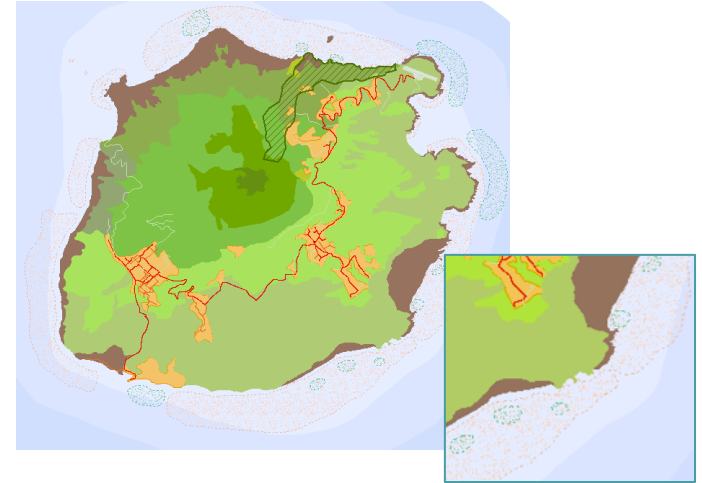


Zoning plan

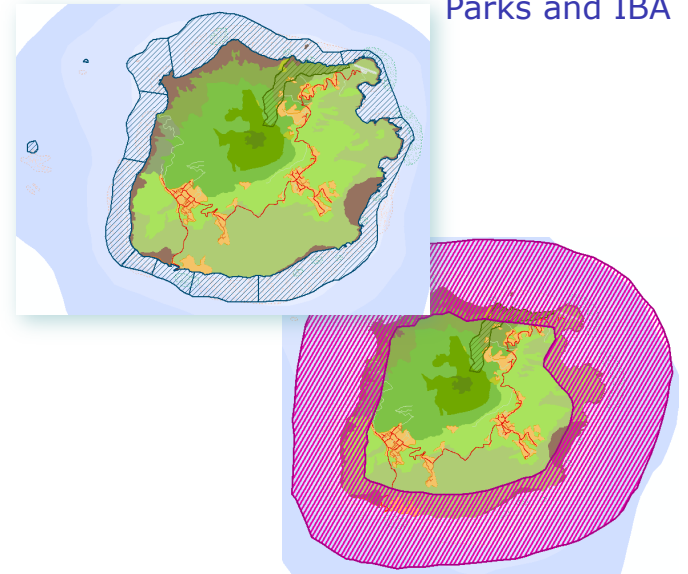


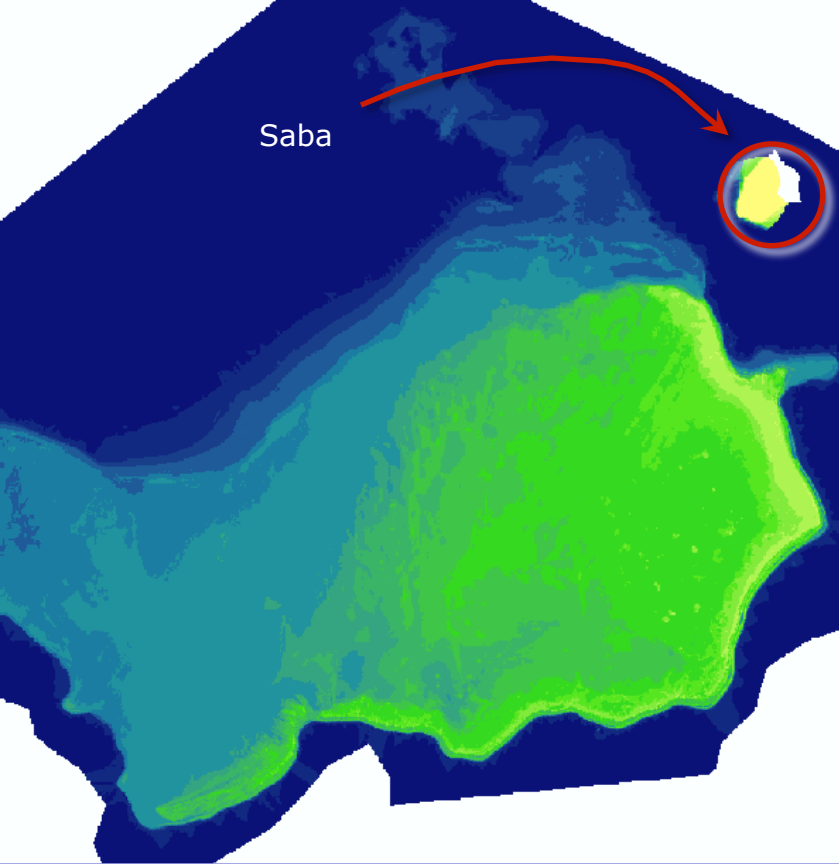
Saba

Topography and vegetation



Parks and IBA

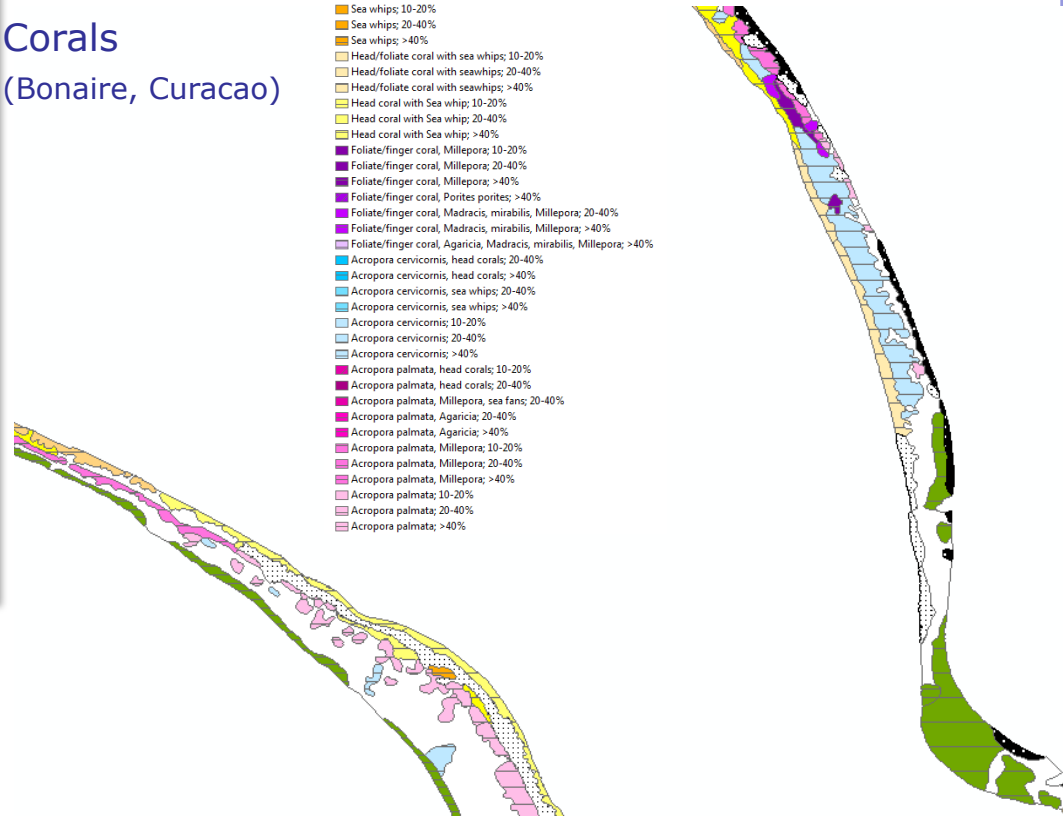




Saba

Saba bank depths

Corals (Bonaire, Curacao)



Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN BIODIVERSITY DATABASE

monitoring maps resources

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[about](#) [disclaimer](#) [log in](#)

 **WAGENINGEN UR**
Research & Innovation

Dutch Caribbean Nature Alliance
Safeguarding nature in the Dutch Caribbean

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Safeguarding nature in the Dutch Caribbean



Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
BIODIVERSITY DATABASE

[monitoring](#) [maps](#) [resources](#)

search

- [data type](#)
- [geographic location](#)
- [theme](#)

Clear

Search

search results: 311

- [Book \(1\)](#)
- [Documents \(34\)](#)
- [Information portal \(7\)](#)
- [Journal article \(110\)](#)
- [Maps and Charts \(7\)](#)
- [Monitoring protocol \(7\)](#)
- [Report \(145\)](#)

Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
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monitoring maps resources

Search "coral reef"

search

coral reef

→ data type

→ geographic location

→ theme

Clear

Search

search results: 78

78 hits

→ Documents (2)

↓ Information portal (1)

- [The Sponge Guide](#)

Sponges are important members of coral reef ecosystems. They filter water, cycle nutrients, and...

→ Journal article (33)

→ Monitoring protocol (2)

→ Report (40)

Dutch Caribbean Biodiversity Database (www.dcbd.nl)

DUTCH CARIBBEAN
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← results

The Incomplete Guide
of St. Martin

→ download document

author

Yokoyama, M.

date

2010

geographic location

St. Maarten,

theme

education and outreach

data type

book

submitted by

Paul Westerbeek on 2013-0

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Dutch Caribbean Nature Alliance
Safeguarding nature in the Dutch Caribbean

BioNews

Bringing you the latest in research and monitoring
news from the Dutch Caribbean

www.DCNAnature.org

08

ISSUE
SEPTEMBER
2013

This Issue

Orchid Study Saba and St. Eustatius	1
Monitoring Overview	3
Shark and Ray Research St. Maarten	4
Research Overview	6
Reports and Publications	7
Calendar	8

Welcome to BioNews

BioNews is a monthly newsletter produced by the Dutch Caribbean Nature Alliance (DCNA), which provides an update on the research and monitoring efforts currently underway on and around the six islands of the Dutch Caribbean as well as an overview of important events and meetings in the near future.

For any questions or feedback, or if you would like to make a contribution, please contact us at research@dcnanature.org

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SHAPE Photography & S.S. & H.D. Kirkby
unless otherwise credited.
Layout & Design: Robert Jan van Oosten.



Editor's Notes

This month's issue focuses attention on the conservation efforts on the Windward side of the Dutch Caribbean. On St. Maarten, these days sharks are protected by law, largely due to the determination of the Nature Foundation. Their Shark Research Project is aimed at determining whether these protective measures have the desired effect and shark numbers are indeed

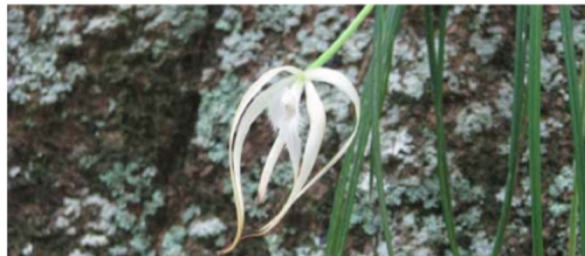
rising again. On Saba and St. Eustatius James Ackerman and Raymond Tremblay of the University of Puerto Rico have continued their long-term population viability study of two beautiful and rare orchid species in order to produce management recommendations to save these species from local extinction.

Small Island Survival: The Fate and Fortunes of a Fabulous Orchid

by James D. Ackerman and Raymond L. Tremblay (University of Puerto Rico)

One of the loveliest orchids of the Lesser Antilles is *Brassavola cucullata*, a species that grows on shaded boulders and tree trunks and each new shoot produces a single, nocturnally fragrant flower. Although geographically widespread, populations of these orchids may be suffering from habitat destruction, collecting, and invasive species.

In 2009, Jim Ackerman and Raymond Tremblay, orchid specialists and professors from the University of Puerto Rico, joined Hannah Madden of STENAPA to establish a monitoring program of the two known populations of *B. cucullata* on St. Eustatius. Every year since then, they gather demographic data, which will be used to assess population viability and make recommendations for management. **Continued on page 2...**



Brassavola cucullata
Photo credit: James D. Ackerman

[maps](#) [resources](#)

The species included are
photographed. That said, this
island. Certain taxa are

ly true of species and
Antilles. For example, many
on about them is
species present

representative

DCNA logo Dutch Caribbean Nature Alliance
Safeguarding nature in the Dutch Caribbean

Lionfish Control Application (lionfishcontrol.org)



Welcome to DCNA's Lionfish Control Map

View and record real-time sightings and captures of lionfish.



Dutch Caribbean Nature Alliance
Safeguarding nature in the Dutch Caribbean



Learn more about
the lionfish here...

Use the  buttons for
info throughout the site.

Lionfish Control Application (lionfishcontrol.org)

Dutch Caribbean Nature Alliance
Safeguarding nature in the Dutch Caribbean



Mapping

Stats

Data Layers

Background data

MPAs

St. Maarten

- ☐ Marine Park conservation zone
- ☐ Proposed conservation zone extension
- ☐ Marine Park traffic zone

Dive sites

Show

Lionfish records

Lionfish data

Hide



- ☒ Observed ☒ Caught ☒ Got away

Time range: oldest data to Now

Length range: 0cm to 50cm+ ☒ Show all

Depth range: Surface to 30m+ ☒ Show all

Depth range: Surface to 30m+ ☒ Show all

Heatmaps

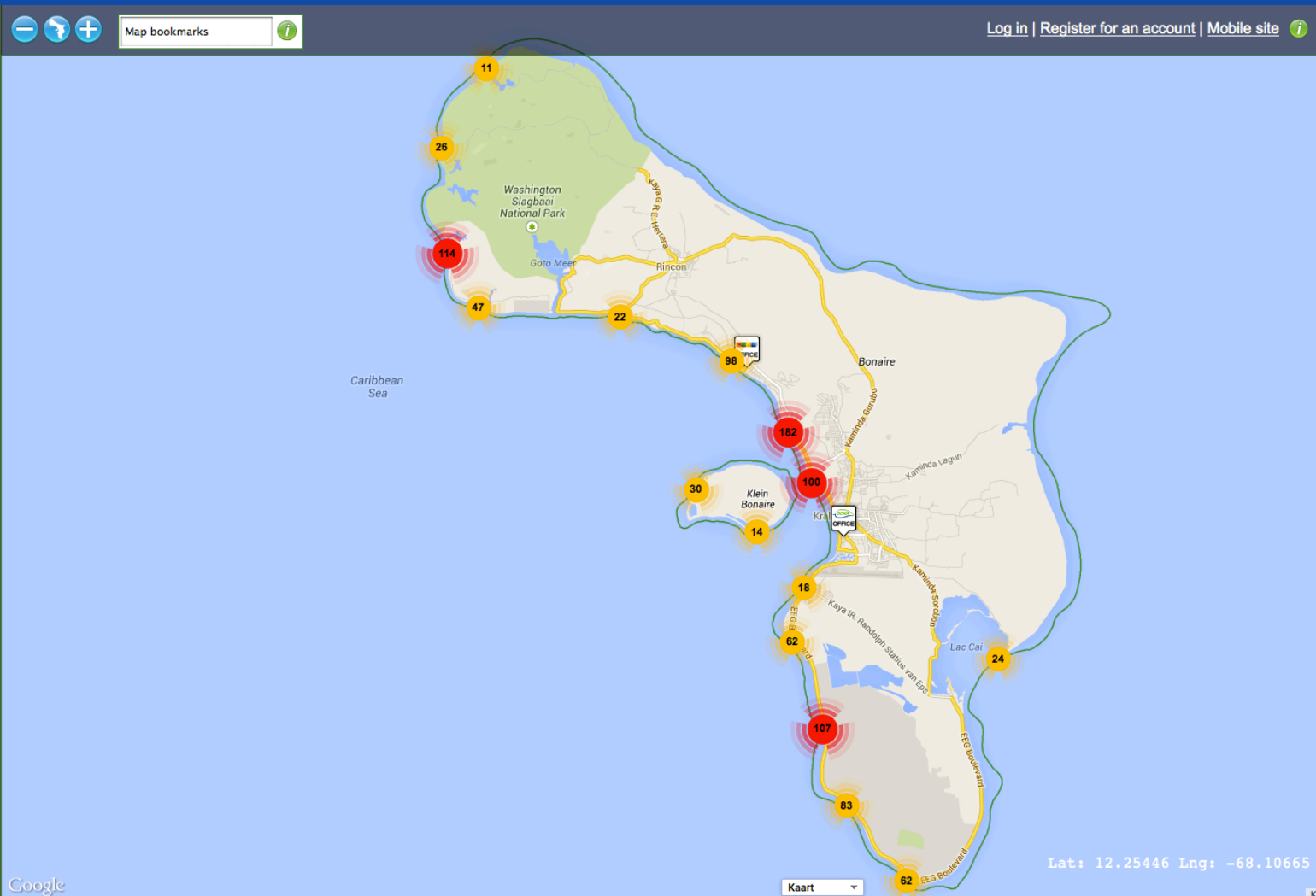
All lionfish

Show

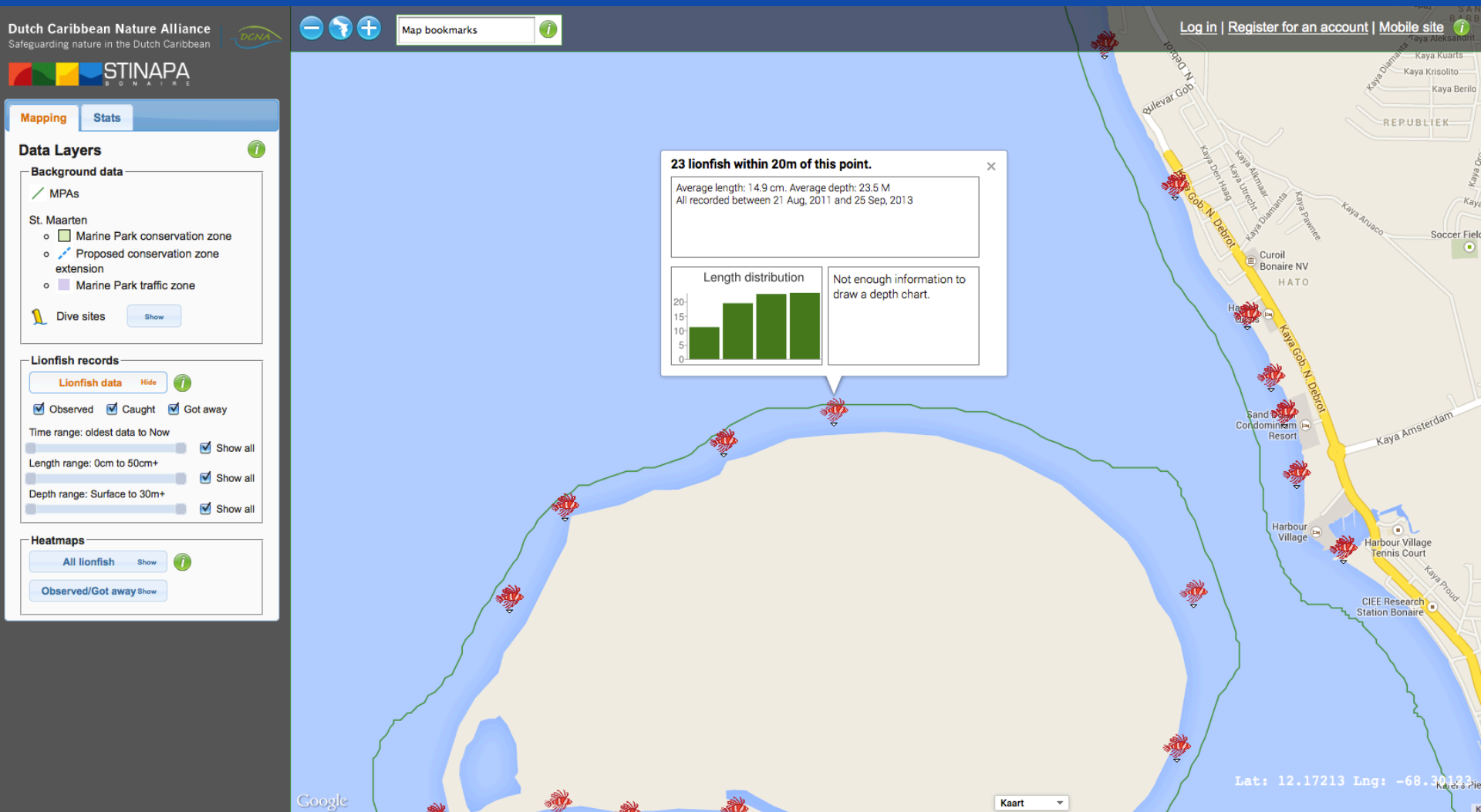


Observed/Got away

Show



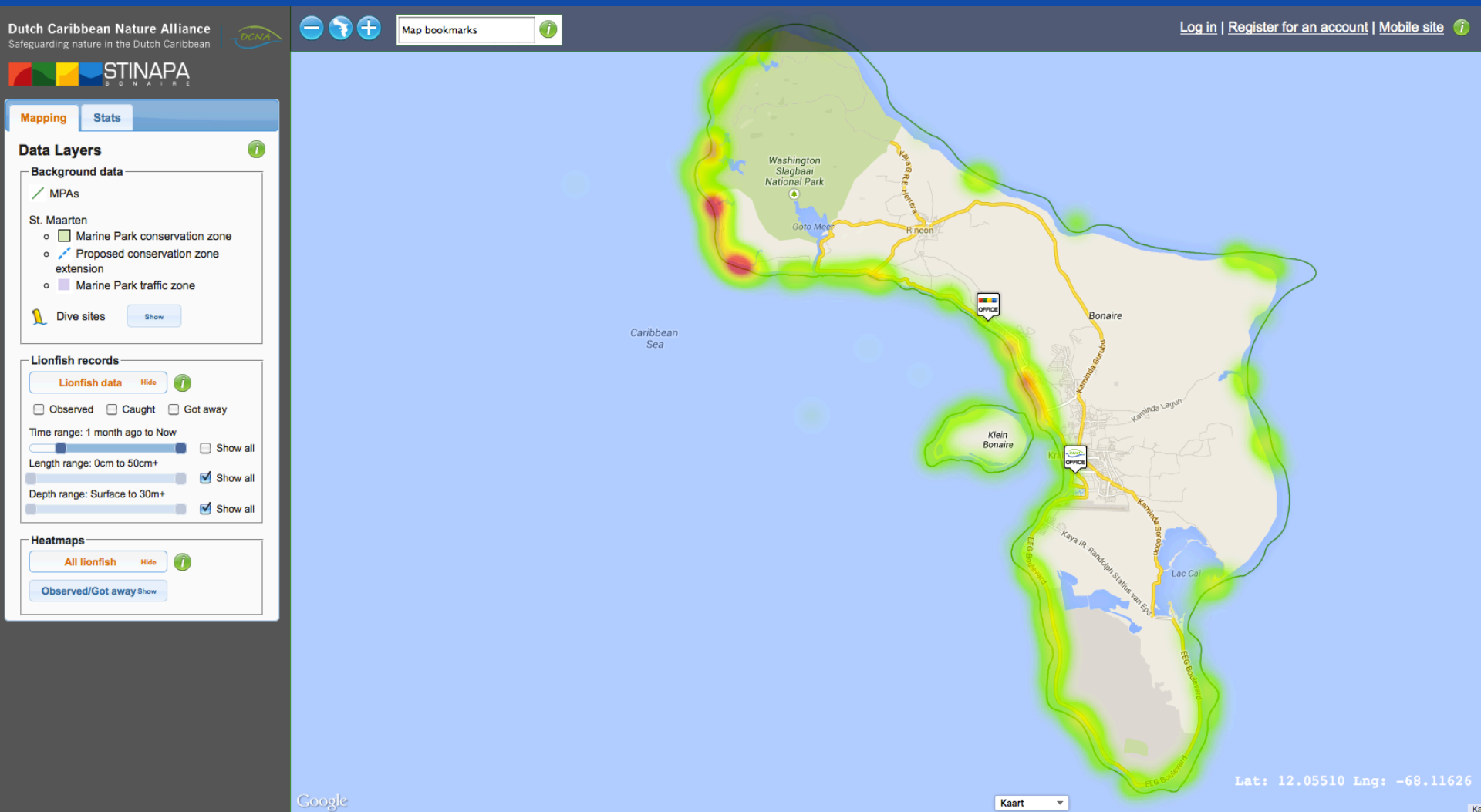
Lionfish Control Application (lionfishcontrol.org)



Lionfish Control Application (lionfishcontrol.org)



Lionfish Control Application (lionfishcontrol.org)





Thank you