BioNews

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

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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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Layout & Design: Robert Jan van Oosten.

Editor's Notes

This month's issue highlights the Saba Bank Expedition that took place from 19 to 27 October. As a follow up to the Saba Bank survey in 2011, an international team of experts investigated the ecological functionality of the Bank, focussing on corals, fish, genetics, nutrients and dissolved organic carbon. The first glance at the results appears promising with coral cover increasing and algae cover decreasing, but final results will be published by next year.

The publication of a study on the island of Saba shows that invasive predators, such as feral cats, can have a large impact on breeding colonies of Red-billed Tropicbirds. Cat densities were investigated and varied largely between elevation levels. In some parts of the island, overall cat health turned out to be very poor. This already influenced the decision to stop releasing spayed/neutered cats back into the wild. Hopefully this will aid in decreasing the overall feral cat population and save the beautiful Red-billed Tropicbird, which has become an iconic symbol for the island of Saba.

BREAKING NEWS:
New spider species during 'Sea & Learn' on Saba

During the entire month of October, the annual 'Sea & Learn' event took place on Saba. People travel from all over the world to the island to see experts present their findings and learn about nature. During the day, fieldtrips are organised and in the evening presentations are given by leading scientists on their field of expertise, often accompanied by a well-deserved dinner.

From orchids to birds and spiders and from seaweed to corals and fish; every topic was touched on at least one day. During one of the fieldtrips, even two new species of spider were discovered on Saba by arachnid expert Dr. Lauren Esposito.

According to Dr. Esposito the discovery is not that surprising, since Saba is a "hotspot" of biodiversity in the Caribbean. A previous study showed that Saba had more species of arachnids than surrounding islands, even though Saba is much smaller. It's Saba's unique features of steepness and altitude that account for this. In geological terms, Saba has never been part of a larger landmass, and its spider species composition turns out to be more related to that of the Virgin Islands than islands that are geographically closer.

Of Saba's two new spider species, one is of the Ochyroceratidae family, which are tiny with long legs, a distinctive purple body, and typically live under rocks. The other one is a new type of goblin spider. These specimens will undergo extensive genetic testing to categorise them properly before official recognition. Spiders in the Ochyroceratidae family tend to be endemic to single islands, but so far none have been described for Saba. It is estimated that only 10% of world spider population has been identified to date.

Reports and Publications

Below you will find an overview of the reports and publications on biodiversity related subjects in the Dutch Caribbean that came out in or around October 2013. The listed publications can be found in the Dutch Caribbean Biodiversity Database (DCBD) - www.dcbd.nl/resources

Bongaerts, P.; Frade, P.R.; Ogier, J.J.; Hay, K.B.; Bleijswijk, J. van; Englebert, N.; Vermeij, M.J.A.; Bak, R.P.M.; Visser, P.M.; Hoegh-Guldberg, O. (2013)
Sharing the slope: depth partitioning of agariciid corals and associated *Symbiodinium* across shallow and mesophotic habitats (2-60 m) on a Caribbean reef. BMC Evolutionary Biology 13: 205.

Chan, C.J. (2013)
Interactions between invasive mammals and their effects on Red-billed Tropicbird (*Phaethon aethereus*) nesting productivity. MSc. Thesis. 46 p.

Engel, M.; May, S.M.; Frenzel, P.; Scheffers, A.M.; Kelletat, D.H.; Brückner, H. (2013)
Holocene tsunamis in the southern Caribbean: Evidence from stratigraphic archives and the coarse-clast record. Proc. 4th Int. PATA.

Freitas, J.A.; Rojer, A.C. (2013)
New plant records for Bonaire and the Dutch Caribbean islands. Caribbean Journal of Science 47: 114-117.

Lewis, C.; Bentlage, B.; Yanagihara, A.; Gillan, W.; Blerk, J. van; Keil, D.P.; Bely, A.E.; Collins, A.G. (2013)
Redescription of *Alatina alata* (Reynaud, 1830) (Cnidaria: Cubozoa) from Bonaire, Dutch Caribbean. Zootaxa 3737(4): 8. doi: 10.11646/zootaxa.3737.4.8

Slijkerman, D.; León, R. de; Vries, P. de; Koelemij, E. (2013)
Water quality of the coastal zone of Bonaire Results field monitoring 2011-2013. Wagingen IMARES Report number C158/13. 66 p.

Willette, D.A.; Chalifour, J.; Debrot, A.O.; Engel, M.S.; Miller, J.; Oxenford, H.A.; Short, F.T.; Steiner, S.C.C.; Védie, F. (2013)
Continued expansion of the trans-Atlantic invasive marine angiosperm *Halophila stipulacea* in the Eastern Caribbean. Aquatic Botany (in press)

Research Overview

Below you will find an overview of the research work taking place in the Dutch Caribbean in October 2013.

Category	Subject	Islands	Organisation: Lead Scientist
Birds	Red-billed Tropicbird breeding success and effects of invasive predators (incl. predator control)	SAB	IMARES: Dolfi Debrot, Erik van der Woude & Martijn Terpstra
Birds	Pilot study of post-fledging survival of Yellow-shouldered Amazon Parrots	BON	Echo: Sam Williams UoS: Isabelle Dean
Birds	Determining terrestrial bird species presence across habitat types	BON	Echo: Sam Williams
Birds	Status and distribution of Audubon's Shearwater	SAB	Adrian Delnevo
Birds	Predictive GIS modelling for suitable nesting habitat for tropicbirds and Audubon's Shearwater	SAB	Adrian Delnevo
Plants	Phenology study of Yellow-shouldered Amazon food tree species	BON	Echo: Sam Williams
Invasives	Grazing pressure by feral goats	EUX	IMARES: Dolfi Debrot
Invasives	Invasive seagrass colonisation, productivity and herbivory by sea turtles in Lac Bay	BON	STCB: Mabel Nava STINAPA Bonaire: Sabine Engel VU: Tineke van Bussel
Geomorphology	Benthic habitat mapping	SAB	IMARES: Erik Meesters
Geomorphology	Tent Bay fill remediation preliminary survey	SAB	Jennifer Rahn
Socio-economic	TEEB (The Economics of Ecosystems and Biodiversity)study for Saba and St. Eustatius	SAB, EUX	VU: Pieter van Beukering WKICS: Esther Wolfs
Ecosystems	Quantitative Community/Ecosystem (flora & fauna)population ecology	SAB	Adrian Delnevo

Don't see your research on this list? Email us: research@DCNAnature.org

Monitoring Overview

Below you will find an overview of the monitoring programmes for which fieldwork took place on the islands in October 2013. Please check our website for a complete overview of all long-term monitoring programmes that are in place in the Dutch Caribbean (www.dcnanature.org/resources/research-monitoring)

Category	Subject	Islands	Organisation: Lead Scientist
Mammals	Marine mammal sightings[1]	SAB, EUX, SXM	SCF: Kai Wulf STENAPA: Steve Piontek Nature Foundation: Tadzio Bervoets
Mammals	Bat abundance, distribution, reproduction and behaviour	ARU, BON	FPNA: Indra Zaandam STINAPA Bonaire: Fernando Simal IVIC: Jafet Nassar
Birds	Red-billed Tropicbirds diet composition	SAB	Adrian Delnevo and students SCF: Kai Wulf
Birds	Red-billed Tropicbirds breeding success (and egg loss)	EUX	STENAPA: Hannah Madden
Birds	Flamingo abundance monitoring (monthly counts)	BON	DRO: Frank van Slobbe STINAPA Bonaire: Fernando Simal
Birds	Bridled Quail-dove	EUX	STENAPA: Hannah Madden
Reptiles	Sea turtle in-water surveys	BON, SXM	STCB: Mabel Nava Nature Foundation: Tadzio Bervoets
Reptiles	Sea turtle monitoring, including: • satellite tracking • foraging grounds monitoring • capture-mark-recapture • Hawksbill project at Lac Cai • Netting surveys in Lac Bay	BON	STCB: Mabel Nava
Reptiles	Sea turtle nesting and beach patrol	ARU, BON, EUX, SXM	Turtugaruba: E. & R. van der Wal STCB: Mabel Nava STENAPA: Jessica Berkel Nature Foundation: Tadzio Bervoets
Reptiles	Sea turtle sightings	BON, EUX, SXM	STCB: Mabel Nava STENAPA: Jessica Berkel Nature Foundation: Tadzio Bervoets
Fish	Fisheries landings	BON, SAB, EUX	IMARES: Martin de Graaf, Ronald Leeuwerik & Patrick Slijkerman (Bonaire) SBMU: Jimmy van Rijn (Saba) LVV: Erik Boman (St. Eustatius)
Fish	Shark tagging and migration	SXM	Nature Foundation: Tadzio Bervoets
Fish	Fish surveys using stereo baited remote video	SAB	IMARES: Martin de Graaf, Dolfi Debrot & Twan Schoffers (Saba) LVV: Erik Boman
Mollusks	Queen Conch reproduction, distribution & abundance	SAB, EUX	IMARES: Martin de Graaf SBMU: Jimmy van Rijn LVV: Erik Boman
Crustaceans	Lobster reproduction, distribution & abundance	EUX	IMARES: Martin de Graaf LVV: Erik Boman
Crustaceans	Lobster larvae abundance	SAB, EUX	IMARES: Martin de Graaf SBMU: Jimmy van Rijn LVV: Erik Boman
Plants	Phenology study of cyclic activity columnar cacti and agave (associated with ongoing bat monitoring programme)	ARU, BON	FPNA: Indra Zaandam STINAPA Bonaire: Fernando Simal
Plants	Phenology study of columnar cacti and native tree species on Bonaire	BON	STINAPA Bonaire: Paulo Bertuol & Fernando Simal
Plants	Ongoing study of flora of Aruba, Bonaire and Curaçao	ARU, BON, CUR	Naturalis/WUR: André van Proosdij
Invasives	Lionfish abundance	ARU, BON, CUR, EUX, SAB, SXM	STINAPA Bonaire: Ramon de Leon CARMABI: Mark Vermeij SBMU: Jimmy van Rijn STENAPA Nature Foundation: Tadzio Bervoets
Environmental	Water quality in Simpson Bay Lagoon and Great Bay and ponds	SXM	Nature Foundation: Tadzio Bervoets with SLAC
Environmental	Cloud forest monitoring of variable environmental parameters on Mt. Scenery, Windwardside and Fort Bay	SAB	SCF: Tom van 't Hof & Kai Wulf
Geomorphological	Beach profile change over time	SAB, EUX	Jennifer Rahn IMARES: Martin de Graaf WUR: Maaike Sander
Human impact	Diver visitation	BON, SAB, EUX, SXM	STINAPA Bonaire: Ramon de Leon SCF: Kai Wulf STENAPA Nature Foundation: Tadzio Bervoets

1. As part of fisheries monitoring on Saba and St. Eustatius by Meike Scheidat and Martin de Graaf (IMARES).

Don't see your monitoring programme on this list? Email us: research@DCNAnature.org

Would you like secure storage and dynamic analysis for your research and monitoring data? Work with us, Alterra and IMARES to develop a user-friendly process for data input, management and basic analysis, including statistics, graphics and maps, within the Dutch Caribbean Biodiversity Database (www.dcbd.nl).

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Red-billed Tropicbird in flight
Photo credit: Henkjan Kievit

Invasive Predator Research On Saba: The Case of the Red-billed Tropicbird

Saba and St. Eustatius are home to the Caribbean's largest nesting population of Red-billed Tropicbirds and may host the most significant breeding colonies in the world. After the discovery of zero breeding success for several Red-billed Tropicbird colonies on Saba during a workshop in April 2012, a monitoring programme was launched to discover the cause of the lack of recruitment. It turned out that feral domestic cats (*Felis catus*) were to blame and to date remain a major threat to nesting colonies of the Red-billed Tropicbird (*Phaethon aethereus*) on Saba. Cats and rats both pose a potential threat to the tropicbirds on Saba.

Feral cats have been a problem on Saba for a little more than a decade and cats have been unequivocally implicated in the depredation of tropicbird nests on Saba. Two recent studies have provided a greater understanding of the introduced predator – prey relationship on Saba. A study led by IMARES collected baseline data on cat and rat distribution as well as investigated cat diet and health. Additionally, a study conducted by Imperial College student Christina Chan analysed the camera trap data collected by Saba Conservation Foundation and STENAPA on St. Eustatius over the previous year with the aim of determining impacts of goats, cats and rats on tropicbird nesting success.

With baited camera traps that were deployed for a combined total of 142 trap nights and by collecting cat scat densities over 15 kilometres of transect from 11 trails, the IMARES study assessed cat density distribution among four habitat categories. This data was then extrapolated to a larger area. Additionally, the intestinal contents of 11 feral cats was studied.

Both cat scat densities and camera trap recordings showed large and statistically significant differences in cat density on trails between habitat zones. Cat densities in "trail areas"

Red-billed Tropicbird defending nest against feral cat.
Photo credit: Saba Conservation Foundation

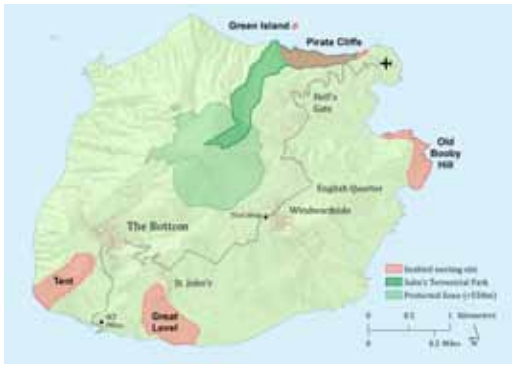
were lowest in the lush forest habitat found at higher elevations (4 cats/km^2) and highest in dry woodland and coastal scrub trail habitat at lower coastal elevations (107-166 cats/km^2). At the latter, cats were concentrated in more open areas where tropicbirds principally nest. Interestingly, from Chan's analysis of the camera trap data, is the positive relationship between goat visitation and cat visitation to nesting sites on Saba indicating that goats may be facilitating cat predation by increasing visibility and accessibility to nests. Cat densities around the island landfill, where ample food sources are available to them, averaged 286 cats/km^2. Constructing a varmint-proof concrete overnight pen for un-incinerated garbage could dramatically decrease the cat density at the site.

Rat densities, as documented using camera traps, were highest in the forest habitat where fruit trees are particularly abundant. Rat and cat density were markedly inversely related. Rats were the most important overall food species of the cats in all habitats, followed by reptiles and birds. However, at the landfill, where cat population densities were highest, birds and rats were strongly reduced in the diet, while garbage and reptiles were of greatly increased importance. Scats collected in the forest zone suggested a lower importance of rats as prey than at lower arid elevations. The cat scats collected in the urban environment had no prey species represented and were apparently all from well-fed house cats. The opportunistic and flexible food habits documented for cats in this study allows them to easily switch to preferred prey when available (for instance during the seabird breeding seasons).

Preliminary veterinary assessments on cats sacrificed at the landfill showed the animals to be in overall poor health. This suggest that releasing neutered cats into the wild is likely to be inhumane and caught feral cats should better be euthanised. Based on these results, the Saba Foundation for Prevention of Cruelty to Animals (SFPCA) has decided to discontinue its practice of releasing neutered cats into the wild.

An accompanying social study showed that only about 5% of pet cats on Saba have not yet been neutered. Two-thirds of the respondents believe feral cats on Saba are an environmental problem and a threat to wildlife and tropicbirds in particular. Three out of four respondents found registration, neutering and removal of cats from breeding colonies to be a good conservation strategy and euthanisation to be an acceptable method for use in cat control.

Saban authorities have had a rat control programme in place for more than 15 years now, but rats still remain a widespread and unrelenting problem on Saba. This suggests that the rats may well have become partly resistant to the main rodenticide used and that a switch to a different rodenticide is the next logical step. Alternating use of rodenticides is the most effective and internationally recommended practice for rat control. This is already being practiced on nearby St. Eustatius where rat problems are much less acute than on Saba, as evidenced by camera trap data.



Red-billed Tropicbird nesting areas on Saba
Map produced by: Eseld Imms

In order to decrease and eventually control the predation on Saba's iconic Red-billed Tropicbird by feral cats and rats, a number of management measures are recommended. These include the above-mentioned concrete varmint-proof overnight pen for un-incinerated garbage to rid the landfill of the exceptionally high feral cat densities, stopping to release spayed/neutered cats back into the wild and judiciously using euthanisation to address the acute overpopulation of cats in particularly sensitive areas (such as the mapped seabird colonies).

Concerning future research, the impact of rats as predators should be investigated, not only with respect to Red-billed Tropicbirds, but to native forest species in general as well as the effect of feral cat removal on the breeding success of the Red-billed Tropicbird, on rat population density, and on the broader predator-prey relationships on the island.

Awareness and willingness of the Saban resident population towards measures against cats and rats are clearly high and for this reason, a wide management scope exists to implement these measures. However, for it all to succeed and keep public support levels high, this would need to be accompanied by active, effective and transparent communication to the general public.

Sources

Debrot, A.O.; Ruijter, M.; Endarwin, W.; Hooft, P. van; Wulf, K. (2013) Predation threats to the Red-billed Tropicbird breeding colonies of Saba: focus on cats. Wageningen IMARES Report. 54 p. (in preparation)

Chan, C.J. (2013) Interactions between invasive mammals and their effects on Red-billed Tropicbird (*Phaethon aethereus*) nesting productivity. MSc. Thesis. 46 p.

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'Research of the Month':

Saba Bank Expedition 2013 with the "Caribbean Explorer II"

by Leontine E. Becking en Erik Meesters

From 19 to 27 October 2013, IMARES (Wageningen UR) organised an international research expedition to the Saba Bank, to investigate the ecological functionality of the Bank. Observations of thirty-three 50-metre long transects resulted in more than 2,000 images of the reef, and over 5,000 fish counts of almost 100 fish species. A preliminary comparison with the data from 2011 shows a reduction in snappers, groupers, and grunts, while there were noticeably more sharks present on the Bank. There were fewer algae than in 2011, possibly indicating a healthier reef, though there appeared to be a gradient in increased algae cover towards the island of Saba. It is unclear if this is related to anthropogenic activities on the island or due to natural causes, such as upwelling of nutrient-rich waters from the deep sea.

The Saba Bank is the largest submarine atoll in the Caribbean Sea, measuring roughly 40 by 60 kilometres and spanning an area of around 2600 km^2. Besides being designated as a National Park by the Netherlands, the Saba Bank also has international status as it is acknowledged by the Convention of Biological Diversity (CBD) as an Ecological and Biological Significant Area and by the International Martitime Organisation (IMO) as a Particularly Sensitive Sea Area. The expedition is a follow up to a survey of the Bank in 2011 and is part of the "Saba Bank Research Program 2011-2016" initiated by the Dutch Ministry of Economic Affairs (EZ) and the research forms part of the implementation of the Exclusive Economic Zone management plan for the Dutch Caribbean.

The Saba Bank houses an expansive coral reef ecosystem, being the most biodiversity-rich on its fringes, and is home to a vast number of species and as such, is also an important source for commercial fisheries for the nearby islands. The Saba Bank furthermore forms the largest protected area of the Kingdom of the Netherlands, after the Dutch part of the Wadden Sea in Europe. As there are no large land masses nearby, the Saba Bank can be considered as relatively pristine and remarkably free of diseases. Conservation International recently discovered fish species new to science and declared that 'nowhere in the Caribbean region the diversity of marine flora is as large as on the Saba Bank'. However, environmental threats, such as climate change, sea surface temperature rise and acidification also threaten the Bank's coral reefs.

On board of the "Caribbean Explorer II", an international team of marine scientists surveyed different aspects of the coral reef ecosystem.

Erik Meesters (IMARES), Jean Philippe Marechal (OMMM, Martinique), and Franck Mazeas (DÉAL, Guadeloupe) recorded the cover of major benthic groups and coral recruits with the use of under water photography. Corals, algae and sponges form essential components of the biodiversity of the Bank. Together they create and maintain the coral reef ecosystem which forms the Saba Bank, one of the major hotspots of biodiversity in the Caribbean.

An important factor for coral-reef resilience is the connectivity between and within coral reefs in different regions. A key question is how populations of reef organisms on the Saba Bank are connected with populations elsewhere in the region and in the entire Wider Caribbean. In order to answer this, Lisa Becking (IMARES and Naturalis Biodiversity Center) and Didier de Bakker (University of Amsterdam) investigated the population genetic structure of two common benthic species, the Giant Barrel Sponge (*Xestospongia muta*) and the Great Star Coral (*Montastraea cavernosa*), the Red Lionfish (*Pterois* volitans), an invasive species in the Caribbean, and two commercially relevant fish species, the Silk Snapper (*Lutjanus vivanus*) and the Red Hind (*Epinephelus guttatus*). Geographical surveys of genetic variation provide an indirect means of tracing dispersal patterns between marine populations by larvae and other dispersing life stages.

Ingrid van Beek (IMARES), Steve Pointek (STENAPA, St. Eustatius), Erik Boman (LVV, St. Eustatius), and Fleur Holtrop (Van Hall Larenstein) assessed the pelagic and benthic fish communities by underwater visual census and video monitoring. Great numbers of fish species inhabit the reefs and algal plains of the Saba Bank and these fish communities provide important information on the status of the ecosystem.

Nurse Shark (*Ginglymostoma cirratum*) swimming on the Saba Bank
Photo credit: Hans Leijnse

Giant Barrel Sponge (*Xestospongia muta*) on the Saba Bank
Photo credit: Hans Leijnse

Filming underwater video transects on the Saba Bank
Photo credit: Kai Wulf

Joe Phillipson (CAH Vilentum, the Netherlands) studied reef complexity. The topographic complexity of the reef has direct consequences for the biomass and diversity of fish living on a reef. Phillipson assessed the complexity at the sites using a variety of methods.

Sponges are essential, yet often neglected, components of the reef as vacuum cleaners of pathogens from the water and as producers of food and nutrients for other reef organisms. Fleur van Duyl and Ben Mueller (NIOZ, the Netherlands) have examined water quality and the diet of the dominant sponge species on the Saba Bank to obtain insight into nutrient cycles and carbon processes.

Maggy Nugues (CRIOBE, France) studied competitive interactions between algae and corals and will identify the macroalgae on the Bank that are the most damaging to corals, as well as the most susceptible coral species. Algae form an important component of the Bank, however, under adverse conditions they may outcompete corals in terms of growth and thus cause coral mortality by overgrowing neighbouring coral colonies.

The work of the researchers during this expedition, both above and under water, was recorded on film as part of the 'Marine Life' series for National Geographic.

The data generated by the fish survey, the benthic images, and the population connectivity study will now be further analysed in the Netherlands and results are expected in the summer of 2014.

List of Acronyms

ARU	Aruba
BON	Bonaire
CUR	Curaçao
BON	Bonaire
SAB	Saba
EUX	St. Eustatius (Statia)
SXM	St. Maarten
CaMPAM	Caribbean Marine Protected Areas Management
CARMABI	Caribbean Research and Management of Biodiversity Foundation
DCBD	Dutch Caribbean Biodiversity Database
DCNA	Dutch Caribbean Nature Alliance
DÉAL	Direction de l'Environnement, de l'Aménagement et du Logement, Guadeloupe
DOC	Dissolved Organic Carbon
DRO	Directorate of Spatial Planning and Development, Bonaire
EPIC	Environmental Protection In Caribbean
EEZ	Exclusive Economic Zone
FPNA	Fundacion Parke Nacional Arikok
IMARES	Institute for Marine Resources and Ecosystem Studies
IUCN	International Union for the Conservation of Nature
IVIC	Venezuelan Institute for Scientific Research
LVV	Department of Agriculture, Animal Husbandry and Fisheries
Min EZ	Ministry of Economic Affairs
NIOZ	Royal Netherlands Institute for Sea Research, The Netherlands
OMMM	Observatoire du Milieu Marin Martiniquais, Martinique
SBMU	Saba Bank Management Unit
SCF	Saba Conservation Foundation
SLAC	Simpson Bay Lagoon Authority Corporation, St. Maarten
SPAW-RAC	Specially Protected Areas and Wildlife - Regional Activity Centre
STCB	Sea Turtle Conservation Bonaire
STENAPA	St. Eustatius National Parks
STINAPA	Stichting Nationale Parken Bonaire
TEEB	The Economics of Ecosystems and Biodiversity
UoS	University of Sheffield, UK
VU	Amsterdam University, the Netherlands
WIDECAST	Wider Caribbean Sea Turtle Network
WKICS	WolfsKater International Consultancy Services B.V.
WSNP	Washington Slagbaai National Park
WUR	Wageningen University and Research Center, the Netherlands

Research of the Month

If you have suggestions for projects we could profile as 'Research of the Month' in BioNews, please let us know.

More events to add to this calendar? Please contact us at research@*DCNA*nature.org and we will include them in the next issue.

Calendar

BioNews provides you with an overview of nature conservation and management related events coming up in the next months.

November

1 - 13	Fieldwork	Marine mammal survey for Aruba, Bonaire and Curaçao – Meike Scheidat, IMARES
4 - 7	Meeting	Latin American and Caribbean Network of Environmental Funds (RedLAC) Assembly - San José, Costa Rica
4 - 8	Meeting	66th Gulf and Caribbean Fisheries Institute (GCFI) meeting - Corpus Christi, TX, USA
7	Workshop	Maritime Incident Response strategic workshop – organised by Rijkswaterstaat Zee & Delta - Saba/St. Eustatius
10 - 21	Fieldwork	Coral reef monitoring on Curaçao and Bonaire – Erik Meesters, Rolf Bak and Maggy Nugues
12 - 14	Workshop	SPAW–IWC Entanglement Response Training Workshop - Saint Martin
28 - 29	Workshop	Marine Protected Areas and Climate Change - organised by IUCN EU Oversees Programme, SPAW-RAC and CaMPAM - Saint Martin

December

3 – 5	Workshop	Caribbean Iguana Conservation Workshop: Exploring a Region-Wide Approach to Recovery – San Juan, Puerto Rico
6 - 8	Workshop	25th Turtle Hospital / Florida Keys Sea Turtle Workshop - Marathon FL, USA
9 - 13	Workshop	Sea Turtle Workshop - Curaçao

January

29 - 1	Congress	Eighth Caribbean Biodiversity Congress - Santo Domingo, Dominican Republic

April

8 - 9	Meeting	Wider Caribbean Sea Turtle Network (WIDECAST) annual meeting
10 - 17	Meeting	34th Annual International Symposium on Sea Turtle Biology and Conservation - New Orleans, Louisiana (USA)

June

3 - 5	Meeting	7th Meeting of the Consultative Committee of Experts of the Inter-American Sea Turtle Convention (IAC) - Tampa, Florida

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If you do not wish to receive future issues of BioNews, or if you have suggestions of colleagues you would like us to add to our mailing list, please contact us at research@*DCNA*nature.org