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

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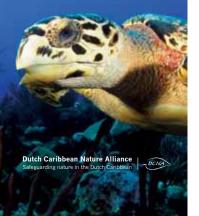
BioNews is a monthly newsletter featuring results and implications from recent biodiversity research and monitoring on and around the six islands of the Dutch Caribbean as well as an overview of recent publications, current efforts and upcoming events.

Welcome to BioNews

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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Sea Turtle Conservation Curaçao

Six species of sea turtles are found in the waters surrounding the Dutch Caribbean islands with regular nesting activity occurring annually on the sandy beaches of Aruba, Bonaire, Curaçao, St. Eustatius and St. Maarten Because sea turtles undertake remarkably long transboundary migrations and because they are slow to reach sexual maturity (20 - 30 years), they require significant international cooperation and long-term monitoring in order to best understand their population trends.

Once amazingly abundant, Caribbean sea turtles have seen a rapid decline since the time of European expansion in the Americas. Scientists estimate that in the 1600s, over 90 million Green Turtles were present the Caribbean seas. Today the number is estimated at a mere 300,000. Hawksbills have plunged 99.7% from 11 million to 30,000. Fishing gear entanglement, illegal harvesting, coastal development, marine pollution and climate change still remain serious threats to the recovery of global sea turtle populations.

Having been involved with sea turtle conservation for more than two decades, Sea Turtle Conservation Bonaire (STCB) has gained important knowledge and understanding not only of sea turtles ecology and biology, but also of best practices for conducting scientific research. STCB staff and volunteers are well-experienced in catching, measuring and weighing the animals while causing the least amount of stress, they know when and where to do beach patrols and they know how best to protect sea turtle nests.

Editor's Notes

This month's issue focuses on marine monitoring. The results of the 2013 lobster fisheries monitoring project on the Saba Bank are in and on Curação a sea turtle monitoring programme is developing in line with regional efforts. Monitoring with standardised protocols, using appropriate methods, guarantees the collection of comparable data and provides added value to our islands and the region as a whole.



Measuring sea turtles during the Sea Turtle Monitoring Workshop



Hawksbill turtle released during sea turtle workshop on St. Maarten.

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>> Continued from page 1: Sea Turtle Conservation Curação

After becoming an established organisation on Bonaire and widely respected within the regional sea turtle conservation community, STCB is actively sharing its knowledge in an attempt to strengthen and support sea turtle monitoring and conservation efforts on the other Dutch Caribbean islands. In addition to leading workshops on Bonaire with several visiting island conservation organisations, STCB recently visited St. Maarten to conduct an assessment of potential sea turtle feeding areas, providing important information to support the St. Maarten Nature Foundation in implementing appropriate and effective in-water monitoring efforts.

On Curação, 2013 brought increased sea turtle conservation and protection on the island with the establishment of four new Ramsar sites and the legal ban on destructive gillnet practices, which will come into effect in May 2014. Additionally, a dialogue between STCB and CARMABI began with the idea of developing and implementing a sea turtle nest monitoring programme on Curação using Bonaire as a model. In February 2014, Curação has officially taken the next step in the protection of the island's charismatic and threatened sea turtles. Recent discussions between the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC), the Dutch Ministry of Economic Affairs, STCB, the Curaçaoan Ministry of Health, Environment and Nature and the Ministry of Foreign Affairs as well as CARMABI and Uniek Curação have led to a collaborative

agreement to develop a monitoring programme to asses the health and status of Curaçao's sea turtle populations. The aim is to initiate a beach patrol programme to monitor nesting activity of sea turtles on the Shete Boka beaches throughout the nesting season (May - December) and perform head count surveys of feeding sea turtles in one of the key feeding areas on Curação – Boka Ascension. The data collected will not only be used to determine the presence and species composition of sea turtles in Curação and identify trends over time, but will also contribute to a regional dataset that monitors Caribbean-wide sea turtle population trends and will allow Curação to properly manage this precious endangered species.

To learn more about or get involved with sea turtle conservation on Curaçao, contact the Ministry of Health, Environment and Nature, CARMABI or Uniek Curaçao.



STENAPA has been monitoring sea turtle nesting on Zeelandia beach for over a decade using a standard protocol.

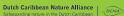
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Research Overview

Below you will find an overview of the research work underway in the Dutch Caribbean in February 2014.

Category	Subject	Islands	Organisation: Lead Scientist
Mammals	Invasive Vervet Monkey survey	SXM	Nature Foundation: Etienne Lake
Mammals	Bat population status	SXM	Nature Foundation: Tadzio Bervoets
Birds	Pilot study of post-fledging survival of Yellow-shouldered Amazon Parrots	BON	Echo: Sam Williams
Plants	Phenology study of Yellow-shouldered Amazon Parrot food tree species	BON	Echo: Sam Williams
Plants	Seagrass beds assessment (extent, health impacts and threats)	SXM	Nature Foundation: Tadzio Bervoets
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
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 February 2014. 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	BON, SAB,	BON: Martin de Graaf SCF: Kai Wulf
Warming.	maine manina signangs	EUX, SXM	STENAPA: Jessica Berkel Nature Foundation: Tadzio Bervoets
Mammals	Bat abundance, distribution, reproduction and behaviour	ARU, BON	FPNA: Indra Zaandam STINAPA Bonaire: Fernando Simal CARMABI: Clifford de Lannoy IVIC: Jafet Nassar
Birds	Annual Yellow-shouldered Amazon parrot roost counts	BON	DRO: Frank van Slobbe STINAPA: Fernando Simal Echo: Sam Williams
Birds	Red-billed Tropicbirds diet composition	SAB	Adrian Delnevo and students SCF: Kai Wulf
Birds	Red-billed Tropicbirds breeding success (and egg loss)	SAB, EUX	Adrian Delnevo SCF: Kai Wulf STENAPA: Hannah Madden
Birds	Flamingo abundance (monthly counts)	BON	DRO: Frank van Slobbe STINAPA Bonaire: Fernando Simal
Reptiles	Sea turtle in-water surveys	SXM	Nature Foundation: Tadzio Bervoe
Reptiles	Sea turtle foraging grounds monitoring	BON	STCB: Mabel Nava
Reptiles	Sea turtle sightings	BON, EUX, SXM	STCB: Mabel Nava STENAPA: Jessica Berkel Nature Foundation: Tadzio Bervoe
Fish	Fisheries landings	BON, SAB, EUX	IMARES: Martin de Graaf, Teun Boon, Erik Tichelaar (Bonaire) SCF: Jimmy van Rijn (Saba) LVV: Erik Boman (St. Eustatius)
Fish	Shark tagging and migration	SXM	Nature Foundation: Tadzio Bervoe
Fish	Shark observations by divers	SAB	IMARES: Martin de Graaf & SeaSab
Mollusks	Queen Conch reproduction, distribution & abundance	SAB, EUX	IMARES: Martin de Graaf SCF: Jimmy van Rijn LVV: Erik Boman (St. Eustatius)
Crustaceans	Lobster reproduction	EUX	IMARES: Martin de Graaf SCF: Jimmy van Rijn LVV: Erik Boman
Crustaceans	Lobster larvae abundance	SAB, EUX	IMARES: Martin de Graaf SCF: Jimmy van Rijn LVV: Erik Boman
Plants	Seagrass monitoring	SXM	Nature Foundation: Tadzio Bervoe
Plants	Reforestation project on Klein Bonaire	BON	STINAPA: Elsmarie Beukenboom
Plants	Phenology study of cyclic activity columnar cacti and agave (associated with ongoing bat monitoring programme)	ARU, BON	FPNA: Indra Zaandam STINAPA Bonaire: Fernando Sima
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 Curação	ARU, BON, CUR	Naturalis/WUR: André van Proosc
Terrestrial Biodiversity	Habitat structure, composition, and diversity; remote and automated monitoring of invertebrates, mammals, birds, amphibians and reptiles	SAB	Adrian Delnevo SCF: Kai Wulf
Invasives	Lionfish abundance	ARU, BON, CUR, SAB, EUX, SXM	STINAPA Bonaire: Ramon de Leor CARMABI: Mark Vermeij SCF: Jimmy van Rijn STENAPA Nature Foundation: Tadzio Bervoe
Environmental	Water quality in Simpson Bay Lagoon and Great Bay and ponds	SXM	Nature Foundation: Tadzio Bervoe 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
Human impact	Diver visitation	BON, SAB, EUX, SXM	STINAPA Bonaire: Ramon de Leon SCF: Kai Wulf STENAPA Nature Foundation: Tadzio Bervoe

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

Would you like secure storage IMARES to develop a userfriendly process for data input, management and basic analysis, including statistics, **Dutch Caribbean Biodiversity**

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Spiny Lobster (Panulirus argus)
Photo credit: Rudy van Geldere

'Research of the Month':

The Effects of Trap Fisheries on the Populations of Caribbean Spiny Lobster and Reef Fish Species at the Saba Bank

The Saba Bank is making a name for itself as one of the world's marine biodiversity hotspots. Several explorations since the 1980s have uncovered the area's incredibly rich marine life, prompting the Bank to be declared a National Park in 2010 and designated as a Particularly Sensitive Sea Area (PSSA) by the International Maritime Organisation in 2012. What people are less aware of is that the Bank actually holds great economic importance for nearby islands, notably the island of Saba. Local fishermen have used the area for centuries. Nowadays, as is the case with most of the Caribbean islands, the main fishery on the Bank is for the Caribbean Spiny Lobster (*Panulirus argus*). Lobsters are typically fished with traps, and the catch is sold to nearby islands, among others St. Maarten.

The decline of spiny lobster populations has become a significant environmental and economic concern within the Caribbean region, with total annual landings in decline since 1995. Although the lobster trap fisheries mainly target lobsters, shallow water reef fish like small groupers are also landed. If not properly managed, trap fisheries like any other type of fishery in the Caribbean may result in over-fishing and biodiversity loss and may even alter the ecosystem structure. Assessing the status of the lobster and reef fish population and the possible impact of the lobster trap fishery on the Saba Bank's marine life is

therefore vital to ensure the protection and sustainable use of the area's natural resources.

The status of the Saba Bank's Caribbean Spiny Lobster fishery and its effect on the Bank's fish stock was the focus of a recent study by MSc Imke van Gerwen (2013). Her study is part of the Fish and Fisheries Research Programme that is being conducted on Saba, St. Eustatius and Bonaire under the supervision of Dr. Martin de Graaf of IMARES and Dr. Leo Nagelkerke of Wageningen University on behalf of the Ministry of Economic Affairs, Van Gerwen collected basic

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Lobster traps filled with lobsters

Photo credit: Hans Leijnse

fisheries data throughout 2012 and compared it to similar studies conducted in 2000 and 2007, as well as analysed biologically relevant data such as length frequency of the caught lobsters and reef fish, size at maturity of lobster and species composition of landed and discarded reef fish.

One of the main findings of the study is that the Saba Bank's spiny lobster population may be showing signs of decline, following a similar trend to the rest of the Caribbean. While the number of lobster traps hauled per fishing trip has increased (from 59 to 80 between 1999 and 2012), the number of lobsters landed per trip has actually decreased (from 83 to 52 between 1999 and 2012). The total catch of lobster was estimated as 62 tonnes in 1999, 92 tons in 2007 and 38 tonnes in 2012. The high catch in 2007 was attributed to the higher number of estimated fishing trips in 2007 (1000) compared to 1999 (650) and 2012 (600). No obvious changes in fishing areas on the Saba Bank were observed during 1999-2012.

Of the 49 reef fish species recorded as landed catch, the most common were grunts (White Grunt, Cottonwick), small groupers (Red Hind, Coney) and Queen Triggerfish. Throughout 2012, eight to ten tonnes of mixed reef fish were landed, and an additional ten tonnes of mixed fish were discarded, mainly consisting of grunts, boxfishes and nurse sharks.

The study does, however, highlight some noteworthy achievements towards a more sustainable lobster fishery on the Saba Bank. A 2000 study of the Bank's fisheries (Dilrosun, 2000. Monitoring the Saba Bank Fishery) found that there was a high percentage of under-sized and berried (carrying eggs) lobsters in the catch. Nowadays, a number of regulations are in effect, such as the required use of a biodegradable panel in traps to prevent 'ghost-traps', the ban on landing berried lobsters, and the establishment of a legal size limit for landed lobsters. This 2013 study found that compliance to these regulations is high as the number of under-sized lobsters in the catch has decreased, and practically no berried lobsters and lobsters in ecdysis (moulting phase) are brought in. Furthermore, the mean size of landed male and female lobster showed that predominantly large, mature lobster are landed, well above the minimum legal size of 95 mm carapace length.

"Ghost-traps" refer to traps that have been left or lost in the ocean by fishermen, for example due to storms or passing boats, and continue to catch fish and lobster, creating an endless fishing mechanism

To ensure that fishermen, wholesalers, restaurants and consumers can continue to benefit from harvest of Caribbean Spiny Lobster in a sustainable way without endangering the Bank's marine life, status of lobster and reef fish populations will be closely monitored, assessment models will be developed to determine the stock status and, if required, additional rules and regulations may be implemented.



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Conservation Organisations of the Dutch Caribbean



Aruba

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Anolis schwartzi from St. Eustatius in a characteristic sit-and-wait foraging position.

Investing in Natural Capital of St. Eustatius

On Tuesday 23 April 2014 a workshop on investing in the natural capital of St. Eustatius will be held amongst St. Eustatius' political, commercial and environmental leadership.

The results of the research "What is St. Eustatius' Nature Worth?" demonstrate that nature of St. Eustatius is worth \$25 million per year and contributes enormously significantly to the wellbeing of its people. Over a 1,000 people including local residents, tourists and citizens of the Netherlands took part in this research. Development scenarios such as livestock management, agricultural development, and tourism expansion were assessed on their profitability. The research programme TripleP@Sea presents the research topics that support the island of St. Eustatius in its development of sustainable food production, expansion of the tourism sector and land-use scenarios. The provision of a toolbox for sustainable development of tropical islands is the focus point of this four-year project with seven PhD tracks.

The results of both projects provide excellent input and rational for the development of the St. Eustatius Nature Policy Plan. During the workshop further steps will be taken in the development of the Nature Policy Plan, which should specify the policy necessary to ensures longterm social and economic values that are provided by St. Eustatius' natural resources.

You are invited to discuss the sustainable development of St. Eustatius!

Content:

Presentation of the results of What is St Eustatius' Nature Worth?, kick-off of the St. Eustatius Nature Policy Plan and introduction of the project TripleP@Sea.

When and where:

CNSI building, St. Eustatius, April 23 2013 from 8:00 a.m.

Organisers:

VU University Amsterdam and WKICS (What is St Eustatius' Nature Worth?); Wageningen UR (TripleP@Sea)

Contact:

Stijn Schep (Stijn@wkics.com) for What's St. Eustatius' Nature Worth? Diana Slijkerman (Diana.slijkerman@wur.nl) for TripleP@Sea

Reports and Publications

Below you will find an overview of the reports and publications on biodiversity related subjects in the Dutch Caribbean that have recently been published. The listed publications can be downloaded from the Dutch Caribbean Biodiversity Database (DCBD) - www.dcbd.nl/resources

Hagen, F.; Chowdhary, A.; Prakash, A.; Yntema, J.; Meis, J.F. (2014)

Molecular characterization of Cryptococcus gattii genotype AFLP6/VGII isolated from woody debris of dividivi (Caesalpinia coriaria), Bonaire, Dutch Caribbean. Revista Iberoamericana de Micología. doi: 10.1016/j. riam.2013.10.007.

Lang, M.A.; Sayer, M.D.J. eds. (2013)

- Ali, F.; Collins, K.; Peachey, R.B.J. (2013)
- Deep reef observation project (DROP): A Smithsonian-Substation Curação collaboration. page 13-17.
- Chamberland, V.F.; Petersen, D.; Vermeij, M.J.A. (2013) Restoration of critically endangered Elkhorn Coral (Acropora palmata) using sexually produced recruits. page 43-48.

Loh, T.; Pawlik, J.R. (2014)

Lucke, K.; Scheidat, M.; Geelhoed, S.C.V.; Debrot, A.O. (2014)

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Mège, P.; Schizas, N.V.; Garcia Reyes, J.; Hrbek, T. (2014)

List of Acronyms

		LVV	Department of Agriculture, Animal Husbandry and Fisheries
BON		Min EZ	Ministry of Economic Affairs
CUR	Curação	NBC	Naturalis Biodiversity Center, Leiden, the Netherlands
BON		NIOZ	Royal Netherlands Institute for Sea Research, The Netherlands
SAB		SCF	Saba Conservation Foundation
EUX		SLAC	Simpson Bay Lagoon Authority Corporation, St. Maarten
SXM		STCB	Sea Turtle Conservation Bonaire
		STENAPA	St. Eustatius National Parks
CaMPAM	Caribbean Marine Protected Areas Management	STINAPA	Stichting Nationale Parken Bonaire
CARMABI	Caribbean Research and Management of Biodiversity Foundation	TEEB	The Economics of Ecosystems and Biodiversity
CBD	Convention on Biological Diversity	UoS	University of Sheffield, UK
CIEE	Council on International Educational Exchange	VU	Amsterdam University, the Netherlands
DCBD	Dutch Caribbean Biodiversity Database	WIDECAST	Wider Caribbean Sea Turtle Network
DCNA	Dutch Caribbean Nature Alliance	WKICS	WolfsKater International Consultancy Services B.V.
DRO	Directorate of Spatial Planning and Development, Bonaire	WUR	Wageningen University and Research Center, the Netherlands
EPIC	Environmental Protection In Caribbean	UoB	University of Bristol, UK
EEZ	Exclusive Economic Zone	UoS	University of Sheffield, UK
FPNA	Fundacion Parke Nacional Arikok	VU	Amsterdam University, the Netherlands
IMARES	Institute for Marine Resources and Ecosystem Studies	WIDECAST	Wider Caribbean Sea Turtle Network
IUCN	International Union for the Conservation of Nature	WKICS	WolfsKater International Consultancy Services B.V.
IMO	International Maritime Organization	WSNP	Washington Slagbaai National Park
IVIC	Venezuelan Institute for Scientific Research	WUR	Wageningen University and Research Center, the Netherlands

Conservation **Organisations of** the Dutch Caribbean



Curação

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Saba Conservation Foundation tel: +599-416-3295 www.sabapark.org



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St. Maarten **Nature Foundation** tel: +721-544-4267 www.naturefoundationsxm.org



St. Maarten

Emilio Wilson Estate FDN tel: +1-721-524-1516 www.sxmconservationfoundations.org/ewef

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More events to add to this calendar? Please contact us 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.

March

17 - 21	Conference	World Climate Research Program Conference - Latin America & Caribbean: Developing, Linking and Applying Climate Knowledge - Montevideo, Uruguay
		DCNA Board Meeting - St. Eustatius
		National Bird Count - Aruba
20		EEZ Committee meeting - St. Eustatius
24 - 28	Meeting	47th Meeting of the Ramsar Standing Committee - Gland, Switzerland
26 - 28	Meeting	15th Session Western Central Atlantic Fishery Commission (WECAFC) - Port of Spain, Trinidad
31 - 4	Workshop	GEF/UNEP/CABI Workshop "Policies, Strategies and Best Practices for Managing Invasive Alien Species in the Caribbean" - Port of Spain, Trinidad

April

7 - 11	Symposium	Mangrove Symposium. Annual Meeting of the Western Division of the American Fisheries Society -
		Mazatlan, Mexico
8 - 9	Meeting	Wider Caribbean Sea Turtle Network (WIDECAST) annual meeting
9 - 12	Meeting	2 nd Convention on Biological Diversity (CBD) Dialogue Seminar on Scaling up Finance for Biodiversity - Quito, Ecuador
10 - 17	Meeting	34th Annual International Symposium on Sea Turtle Biology and Conservation - New Orleans, Louisiana (USA)
21 – 25		STINAPA Bonaire Junior Rangers Exchange with Saba Conservation Foundation (Bird and fish monitoring) - Saba
23 - 24	Meeting	UNEP-CEP Meeting on Scenarios for Transboundary Marine Mammal Management in the Wider Caribbean - San Juan, Puerto Rico
24 - 25		Opening of the Caribbean Netherlands Science Institute (CNSI) - St. Eustatius
28		Caribbean Endemic Bird Festival - St. Eustatius
28 - 8	Meeting	27 th Meeting of the CITES Animals Committee, 21st Meeting of the CITES Plants Committee and Joint AC/PC Session - Veracruz, Mexico

May

5 - 8		Wetland Education Workshop - Bonaire
6 - 7	Workshop	Workshop "Towards the creation of a strategy for the control of lionfish in the Mesoamerican reef" -
		Guatemala City, Guatemala.
6-9	Conference	33 rd Session FAO Regional Conference for Latin America and Caribbean - Santiago de Chile, Chile
12 - 14		Workshop on "Invasive Alien Species management strategies" - Saint Martin
14	Conference	World Coral Reef Conference - Manado, Indonesia
19 - 23	Meeting	NetBiome CSA meeting - Canary Islands, Spain
26 - 30	Conference	39th Annual Conference of the Caribbean Studies Association - Mérida, Mexico

June

2-6	Symposium	2 nd Sharks International Symposium 2014 - Durban, South Africa
3 - 5	Meeting	7 th Meeting of the Consultative Committee of Experts of the Inter-American Sea Turtle Convention (IAC) - Tampa, Florida
23 - 27	Meeting	18 th Meeting of the CBD Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) - Montreal, Canada

July

TBD	Meeting	SPAW Scientific and Technical Advisory Committee (STAC) meeting - Cuba
2 - 4	Conference	38th Annual Conference of the Society for Caribbean Studies - Glasgow, Scotland, UK
7 - 11	Meeting	65th Meeting of the CITES Standing Committee - Geneva, Switzerland

DCNA Contact Information

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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 on research@DCNAnature.org