



SYMPOSIUM | Noumea, 4-6 December 2019



ManaCo | SYMPOSIUM & WORKSHOP

Seascape genomics: a new tool to support Coral reef Management

Goal: To promote seascape genomics as a new element in support of reef heritage management

Means:

- 1- Bring together stakeholders and scientific from South Pacific, North Pacific, Caribbean, Indian ocean and Red Sea islands and territories.
- 2-Create an international consortium to disseminate and develop the approach.

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Abstract :

The degradation of the ocean conditions worldwide is threatening the persistence of coral reefs, the most biodiverse ecosystem in our oceans. The future survival of this habitat relies on the capability of corals to adapt to stressful environmental conditions. However, this important aspect is often neglected in conservation strategies. During this symposium (ManaCo, Noumea, 4-6 December 2019), the results of the SABLE project (“A Seascape genomics Approach to improve coral reefs conservation strategies against BLEaching”), supported by the International Reef Initiative (ICRI) and the United Nations Environment Programme (UNEP), aiming to characterize the adaptive potential of corals in New Caledonia, will be presented (<https://youtu.be/7qexlLs9tVw>). A dedicated interactive workshop will show how this information can be used to model the future of some reef areas, to optimize the chances of survival of existing protected or unprotected marine areas, or even serve as an additional tool in the choice of new protected areas. ManaCo will gather scientists, decision-makers, managers, technicians and volunteers around the issue of the sustainability of protected areas and will serve as a platform to reproduce the approach on other species of interest such as holothurians or clams as well as in other marine areas.

ManaCo PROGRAM

Sessions, round tables and lunches will take place at SPC. Simultaneous interpretation in French & English.

DAY 1 : WEDNESDAY 4 DECEMBER 2019
STATUS REPORT ON CORAL REEFS AND THEIR MANAGEMENT
FOR EACH PARTICIPATING COUNTRY

7h30 Registration and welcome coffee
8h00 Customary welcome
8h45 Group photograph
9h00 Opening Session

❖ Morning session: South Pacific

9h30 **Presentation (45 mn)**
Pr Madeleine van Oppen (University of Melbourne, Australia)
Designer corals and the future of coral reefs

10h15 **Coffee break**

10h30 **Short Presentations (15 min)**

10h30 Cook Islands: Dr Lara Ainley (Ministry of Marine Resources)
Status and trends of live coral cover in the Cook Islands

10h45 Fiji: Dr Stuart Kininmonth (University of South Pacific)
Vicinus symbiology and the future of coral reefs

11h00 French Polynesia: Raimana Doucet (Director of Environnement)
Management of marine protected areas in French Polynesia

11h15 Solomon Islands: Dr Stephen Mosese (Ministry of Fisheries and Marine Resources)
The coral reef status and marine protected areas of Solomon Islands

11h30 Tonga: Siola'a Malimali (Fisheries Department)
Status of coral reefs, protected areas and restoration plans in Tonga

12h00 **Lunch**

❖ Afternoon session: South Pacific, North Pacific, Caribbean and Indian ocean

13h30 **Presentation (45 mn)**
Pr. Noriyuki Satoh (Prof. Emeritus of Kyoto University, Prof. Okinawa Institute of Science and Technology Graduate School North Pacific-Japan)
Genome Scientific Contribution to Coral Reef Preservation in Okinawa

14h15 **Short Presentations (15 min)**

14h15 Vanuatu : Hudson Feremaito (Fisheries Department)
Status of coral reefs (healthy and not healthy reefs), protected areas (MPAs) and restoration plans in Vanuatu

- 14h30 Wallis et Futuna : Ateliana Maugateau (Environment Department)
Strengthening the monitoring of coral reefs and seagrass beds in Wallis and Futuna
- 15h00 **Caribbean**
Antilles: Dr Malika René-Trouillefou (Antilles University)
PMA in the French West Indies, a strengthened network with contrasting situations, in the context of global coral reefs decline in the Caribbean
- 15h20 **Coffee break**
- 15h35 **Indian Ocean**
15h35 Madagascar: Pr. Jean MAHARAVO (CNRO/ Station de Recherche Océanographique de Vangaindrano)
Status of coral reefs, protected areas and restoration plans in Madagascar (videoconference)
- 15h50 Reunion Island: Dr. Hélène Magalon (University of Reunion Island)
Status and trends of live coral cover in the Reunion Island
- 16h10 **South Pacific**
New Caledonia: Dr Nathalie Baillon (Conservatory of Natural Areas)
Health status and management of coral reefs in New Caledonia

DAY 2 : THURSDAY 5 DECEMBER 2019
PRESENTATION OF THE SABLE PROJECT, TRAINING AND ROUND TABLES

- 9h00 **Presentation of the Seascape genomics SABLE project in New Caledonia**
- SABLE : project, results and perspectives (1)**
(O. Selmoni, H. Magalon, L. Vigliola, F. Benzoni, G. Lecellier, S. Joost and V. Berteaux-Lecellier)
- ✓ Overview
 - ✓ Environmental Parameters / Site Selection
 - ✓ Genetic approaches
- 10h00 **Coffee break**
- 10h30 **SABLE : project, results and perspectives (2)**
(O. Selmoni, H. Magalon, L. Vigliola, F. Benzoni, G. Lecellier, S. Joost and V. Berteaux-Lecellier)
- ✓ Modeling
 - ✓ Innovative ways for MPAs : New Caledonia and Ryukyu archipelago examples
- 11h00 **Seascape genomics pilot project in Red Sea**
Presentation (45 mn)
Pr. Anders Meibom (University of Lausanne, Switzerland)
The Transnational Red Sea Center
- 12h00 **Lunch**
- 13h30 **Interactive training session** (below, ANNEX 1)
- 14h30 **Round tables** (videoconferences)

Round table #1: Innovation in coral reef conservation strategies.

15h30 **Coffee break**

15h45 **Short presentation:** Dr. Antoine Collin (EPHE Dinard, France)
Remote sensing of tropical waters: observing and modelling from 1Km to 1m

16h00 **Round table #2:** Technical advances in seascape genomics

DAY 3 : FRIDAY 6 DECEMBER 2019
CONCLUSIONS AND PERSPECTIVES RESULTING FROM THIS MEETING

9h30	Creating a network of scientists and stakeholders of coral reef conservation to catalyze the cross-talk between science and policy makers and to promote this tool.
10h30	Coffee break
11h00	Writing of a meeting review paper
12h00	Lunch
❖ <i>Afternoon: Free</i>	
13h30	Optional, on registration
	Visit of the New Caledonia aquarium (Aquarium des lagons)
17h00	Closing Cocktail - Nouvata

ANNEX 1

The **digital reef adaptive potential evaluator (DRAPEAU)**. In reef conservation planning, prioritization of areas requires objective and quantifiable indices. In the SABLE project, we developed three spatial indices to describe how reefs are interconnected and what is their adaptive potential facing peculiar climatic constraints (e.g. heat stress). The DRAPEAU app is a bridge between seascape genomics research and conservation management. The user can create an assortment of corals (“digital reef”) and predict which reefs are expected to be more or less isolated or which ones are expected to carry adaptive traits against climatic stresses. Furthermore, two interactive modes allow the user to draw, evaluate and compare the emplacement of conservation actions such as marine protected areas and coral nurseries.

The use of this app and transfer of skills will be a key point of the meeting and may be the subject of dedicated courses as needed

