



Stakeholder Workshop Durban Report - Digging into Sediments and Microbes for Nature Conservation (DiSeMiNation)

Date: April 25th-26th, 2018
Venue: Len Baumann Conference Hall, uShaka Sea World
Education Centre, SAAMBR, 1 King Shaka Avenue,
Point Durban
Participants: see attendance list in annex 1
Workshop organisation: Bevis Fedder (bevis.fedder@leibniz-zmt.de)
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Table of Content

Background.....	1
1. Introductory talks	1
2. Workshop Sessions	2
3. Excursion to Durban mangrove site (<i>guide: Santosh Bachoo</i>).....	8
4. Major Outcomes	9
Annex1: Attendance List.....	10
Annex 2: Agenda	11
Annex 3: PowerPoint Presentations	11

Background

Many mangrove ecosystem services – such as provision of food and material, coastal protection, and climate change mitigation – are controlled by microorganisms in the mangrove sediment. By combining modern methods of biology, chemistry, and social sciences, the research project DiSeMiNation conducted by the “Leibniz Centre for Tropical Marine Research” (ZMT) and the project partners “Leibniz-Institut DSMZ-Deutsche Sammlung für Mikroorganismen und Zellkulturen”, “Leibniz Institute of Ecological and Regional Development” (IOER), and “Leibniz Institute of Plant Biochemistry” aims to investigate how the flora and fauna as well as their uses by humans affect microorganisms in the sediment and thus how microbial ecosystem processes and services will change over time and space. In close cooperation with stakeholders in the partner countries, the project will suggest measures for the protection and sustainable management of these important and vulnerable ecosystems. Through a series of stakeholder workshops in the partner countries, the project initiates the cooperation with representatives from the government, civil society, and business sectors. Those workshops pursue the goals of building stakeholder relationships, evaluating ecosystem services, and developing ideas for the cooperation between the research project and the stakeholders. The first stakeholder workshop took place in Singapore, see the according minutes. This report addresses the outcome of the second workshop in Durban, South Africa, that again brought together representatives from national authorities, NGOs, and research (see attendance list in annex).

1. Introductory talks

Two plenary talks introduced the research project to the stakeholders and outlined the status and value of the mangroves in Singapore.

“DiSeMiNation” by Prof. Dr. Martin Zimmer

Martin Zimmer introduced the research project DiSeMiNation (Digging into Sediments and Microbes for Nature Conservation) to the workshop participants. DiSeMiNation aims at unravelling how the floral and faunal communities, environmental conditions, and human resource-uses govern service-relevant microbial processes in mangrove sediments and how the services that arise from these processes create benefits for users. The results will indicate the interrelation between flora, fauna, microbial composition and activity, and sediment processes. In combination with mapping and evaluating relevant services and threats, the project can serve as a basis for planning networks of protected areas, based on ecosystem processes, service provision, and carbon/nitrogen fixation. The project has a global scope, integrating different research sites from Singapore, Colombia, Brazil, South Africa, Oman, and Australia. Project partners in Germany are the ZMT, the *Leibniz Institute of Ecological, Urban and*

Regional Development (IÖR), the Leibniz Institute German Collection of Microorganisms and Cell Cultures (DSMZ), and the Leibniz Institute for Plant Biochemistry (IPB). More information about the project can be found here: <http://www.leibniz-zmt.de/en/research/research-projects/disemination.html>.

Status, Importance, Threats & Management of Mangroves in South Africa by Janine Adams

The history of mangrove research in South Africa started 1963. Between Kosy Bay in the north and Tyolomnqa in the south, 31 estuaries with mangrove forests cover 1700 ha on the ZA east coast. The main species are *Avicennia marina*, *Rhizophora mucronata*, and *Bruguiera gymnorhiza*. The climate change-driven increase in temperature causes an expansion of mangrove areas by about 0.06 ha per annum. Therefore, an adaption of the borders of protected areas must be considered. Threats are sea level rise, harvesting, agriculture, and pollution in particular by nurdles (plastic granulates). This issue is scrutinized by the recent Minisass project www.minisass.org. In general, protection should be not only estuary-based but catchment-based, since the pollution comes from rivers feeding the estuaries. A main impact in Durban area was connected with the port construction. Several areas, their ecosystem services and spatial changes have been shown, among others using the DPSIR approach. The relating laws have been mentioned. The estuary spatial platform provides data. An important event for science transfer is the National Marine Week every year. New insights to the values of mangroves are necessary and materials for tour guides. Janine provided a list of relevant literature and data about mangroves in South Africa.

2. Workshop Sessions

Two workshop sessions have evaluated ecosystem services and developed ideas for research-stakeholder cooperation.

Workshop session "Ecosystem service evaluation" (moderation: Ralf-Uwe Syrbe)

This session served the objective to implement protected areas and promote their natural processes in order to warrant ecosystem services to the local human community. The session started with a talk by Karsten Grunewald introducing the concept of ecosystem services to the invited stakeholders for mangrove areas. The slides of this presentation are attached in Annex 3. Then, all involved stakeholders have been invited to complete questionnaires about the importance of ecosystem services, the threats to the ecosystems, about governance issues and research gaps. Third, the results of the precedent questionnaires and comparable values from other areas (Brazil and Singapore) were presented by Ralf-Uwe Syrbe. The final discussion captured these results and caused a refined and concerted assessment of the local ecosystem services.

Workshop session “Planning science-stakeholder activities I”: (moderation: Karsten Grunewald)

This session served the objective to connect DiSeMiNation to local and national efforts to manage and conserve mangrove ecosystems. First, selected stakeholders briefed the workshop team on potential and general science-stakeholder activities (e.g. from their working experience). Second, based on the previous discussions, the workshop team developed ideas on science-stakeholder activities specifically for DiSeMiNation. Third, these ideas were collected and elaborated by the DiSeMiNation team afterwards to prepare the second workshop on Thursday that refined different criteria (e.g. specific outcomes, target groups, timing, measures, indicators, etc.)

Introduction and recapitulation of Day 1, goals for Day 2 (by Martin Zimmer)

The recapitulation of Day 1 stressed a lack of public awareness and knowledge of –and even interest in– mangroves in South Africa. Thus, an important step in promoting sustainable use, management and conservation of mangroves will require a clear definition of aims and targets of stakeholder-communication and of the content of stakeholder-communication, ideally focusing on the potential outcome of DiSeMiNation, to identify the group of stakeholders for whom the findings will be relevant. A central aspect in this communication will have to address competing interests in land-use: the conservation-versus-business conundrum warrants spatial conservation prioritization and planning. Placing "price-tags" on mangroves, i.e., estimating monetary values of mangroves, will catch the attention of policy- and decision-makers but might be irrelevant for other stakeholders. Along the very same line, a spatial or temporal hierarchy of involving stakeholders will depend on the aims of mangrove management and conservation. Thus, both "language of communication" and the "currency of mangrove value" will have to be adjusted to the stakeholder target.

Workshop session “Planning science-stakeholder activities II”: (moderation: Ralf-Uwe Syrbe)

During this session, the stakeholders rotated in a world coffee style between three group sessions that were titled according to the outcome of the first workshop session. Due to the rotation, each participant took part in each group. The topics and results of the three groups sessions are described below.

Group session Q1 “What are the groups of stakeholders and how to address them?”

The topic had been defined by the 1st stakeholder session on Wednesday. The discussion took place in three rounds in the world café format. The results for the three main questions that were dealt with are the following:

1. Stakeholder groups that should be addressed with the project outcomes

Stakeholders had been initially classified into several levels, differentiated by color of the moderation

notelets (s. Fig. 1). The national resp. governmental level (blue on yellow notelets) encompasses stakeholders from conservation authorities (national / provincial):

- DEA = Dept. of Environmental Affairs with the sections Ocean + Coasts and the South African National Biodiversity Institute
- EDTEA = Economic Development, Tourism and Environmental Affairs
subordinated: KwaZulu-Natal Wildlife (KZN)
- DWS = Dept. of Water and Sanitation
- DAFF = Dept. of Agriculture Forestry and Fisheries

Other important authorities would be:

- Municipalities
- COGTA = Co-operative Governance + Traditional Affairs
- DMR = Dept. of Mineral Resources
- DST = Dept. of Science and Technology
- DPE = Dept. of Public Enterprises
subordinated: (Transnet National Ports Authorities)
- D Tourism (unclear if double to EDTEA above)
- DoE = Dept. of Education.

There are more stakeholder groups who do not belong to the national level, but are of high importance to address with our research results (blue on red notelets):

- Scientists
- Environmentalists from NGOs or Conservancy agencies
- NPOs = Non-profit organizations such as [Wildoceans Wildtrust](#), [DAPP](#) = Durbanites against Plastic Pollution, [DDCT](#) = Dusi Umgeni Conservation Trust, [SAAMBR](#) = South African Association for Marine Biological Research
- Communities such as residents, groups, harvesters
- Educators
- Chambers of Commerce
- Tour Operators and their associations
- Property developers (Estate Agencies)
- Municipalities.

The first mentioned are very important, because they have strong relations/links to the stakeholders on the yellow notelets and can redirect research outputs to them.

2. Target outcomes and possible products

Starting from the above-mentioned stakeholders, the world café participants aimed at defining possible products to transport the outcome of the project in a target-oriented way. The proposals which have been notified in green color on pink notelets were:

- Monitoring systems that must be clearly directed and specified for decision makers
- A new way of marketing mangroves for economists, NGOs or enterprises; a suggestion was to set up a kind of stock for mangroves similar to the “MoorFutures” in Germany
- Offers to participate in research should be directed to scientists, but as far as possible also to common people in the sense of citizen science, which is supposed to grow
- Mobile phone apps must be made sexier so that they can better inform and encourage citizens in particular of younger age groups. Possibilities are cell phone games or GPS-guided educational trails (the project team has such experiences from Germany)
- A best practice study could collect successful examples how to transfer ecological knowledge from science to the application level and how this information can reach people.

3. Next steps + contact persons who are interested to be involved

The three discussion rounds proposed to do the following soon (red on white notelets):

- Identify urgent problems and challenges
- Find information gaps (e.g. sensitive data gaps that could be filled)
- Give support for spatial planning
- Formulate ideas how to transfer scientific knowledge into policy / regulation / compliance
- feed outputs to local scientists who can forward them to the other stakeholder groups

Some participants noted their names (green on white cards) to further cooperate with the project team on proceeding with the identified steps:

- Hanno Langenhoven (Community involvement conservation / research planning - mangrove management)
- Steven Weerts (research system imports/exports, connectivity)
- Janina Adams (research)
- Nikki Forbes
- Jone Porter (citizen science education)
- Jabulile Nhleko (monitoring systems)
- Fiona Mackay (science & link science – management).

- ***Lack of communication to the public***

What we should know, what we need

- Evaluation of the extension of the damage (need for indicators; monitoring)
- Reassessment of the threats (improved monitoring and compliance)
- Definition of tipping-points
- Indicators of remediation
- Find opportunities for rehabilitating mangroves
- Impact of mangroves health on human health
- Remediation tools (e.g. oil spill in mangrove ecosystems)
- Common goals (across governmental agencies/administrative bodies)

What we should consider

- Temporal aspects (consider not only present but also future threats)
- Spatial aspects (threats might not be directly in mangrove ecosystems but in adjacent ones) and connectivity among ecosystems
- Not focus only on mangrove trees (that can still be a good proxy) but also consider the other compartments of the ecosystems, and their services
- Not to forget mangroves out of World Heritage Sites

Who are the main stakeholders?

- Politics, municipalities
- Local communities
- General public

The communication tools should be adapted to each target group accordingly:

- Values (\$)
- Direct exchange (discussion)
- Notices, boards, leaflets, newspaper articles etc.

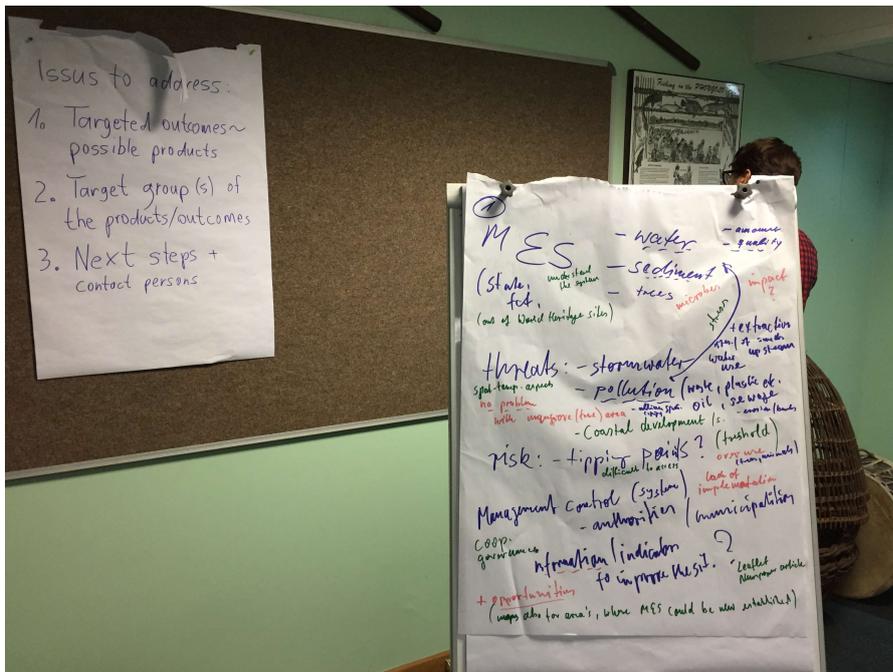


Fig. Group II outcome in brief during the final presentation

Group Session Q3: “What kind of research do the stakeholders need?”

Issues that should be addressed by the DiSeMiNation project and other future research projects:

- How mangrove sediment communities act as filters
- Mangrove as hosts and drivers of biodiversity
- When is a mangrove functional?
- What are the indicators for mangrove functionality?

3. Excursion to Durban mangrove site (guide: Santosh Bachoo)

On the afternoon of second day, the project team visited the Beachwood Mangroves Nature Reserve, with 76 ha the largest mangrove forest in Durban. We used the inner wooden trail and saw different animals, plants and landforms of the area between a river mound and the ocean beach (s. Photo).



Photo: The excursion trail (yellow)

4. Major Outcomes

- Scientific-practice exchange about the research project and South Africa's mangroves.
- An assessment of South Africa's mangrove ecosystem services via questionnaires and discussions (scientific analyses in progress).
- Interests of stakeholders identified in research questions relevant for practice.
- Ideas for developing outreach material to raise public awareness on the importance of mangrove microbes.
- Identification of alternative sampling sites.

Annex1: Attendance List

Count	Name	Institution	mail
1	Martin Zimmer	Leibniz-Centre for Marine Tropical Research (ZMT)	martin.zimmer@leibniz-zmt.de
2	Véronique Helfer	Leibniz-Centre for Marine Tropical Research (ZMT)	veronique.helfer@leibniz-zmt.de
3	Hauke Reuter	Leibniz-Centre for Marine Tropical Research (ZMT)	hauke.reuter@leibniz-zmt.de
4	Ralf-Uwe Syrbe	Leibniz Institute of Ecological and Regional Development (IOER)	r.syrbe@ioer.de
5	Karsten Grunewald	Leibniz Institute of Ecological and Regional Development (IOER)	k.grunewald@ioer.de
6	Olga Jeske	Leibniz-Institut DSMZ-Deutsche Sammlung für Mikroorganismen und Zellkulturen	oje12@dsmz.de
7	Fiona MacKay	ORI	fmackay@ori.org.za
8	Janine Adams	Nelson Mandela University	Janine.Adams@mandela.ac.za
9	Noloyiso Walingo	Ugu Distric Municipality	Noloyiso.Nkqeto@ugu.gov.za
10	Santosh Bachoo	Ezemvelo KZN Wildlife	Santosh.Bachoo@kznwildlife.com
11	Steven Weerts	CSIR Coastal Systems	SWeerts@csir.co.za
12	Luke Moore	ICLEI Local Governments for Sustainability	luke.moore@iclei.org
13	Seokwang Modise	Department Agriculture, Fishery and Forestries of South Africa	SeokwangM@daff.gov.za
14	Trevor Hill	University of KwaZulu-Natal	HillT@ukzn.ac.za
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17	Jone Porter	uShaka ORI	jporter@seaworld.org.za
18	Jabulile Nhleko	Department Of Environmental Affairs	JNhleko@environment.gov.za
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20	Nicolette Forbes	MER	nicolette@mer.co.za
21	Anthony Forbes	MER	
22	Hanno Langenoven	Wild oceans wild trust	HannoL@wildtrust.co.za
23	Omar Parak	ED TEA	Omar.Parak@kznedtea.gov.za
24	Ayanda Mnyusgua	Department of Agriculture, Forestry and Fisheries (DAFF)	Ayandamny@daff.gov.za
25	Khanyisa Vundle	DAFF	

Annex 2: Agenda

Time	Wednesday, 25 th April 2018 Workshop: @ORI, Len Baumann Conference Hall, 1 King Shaka Avenue, Point Durban
09:15-09:30	Introduction Ralf-Uwe Syrbe on goals and structure of workshop
09:30-10:00	Plenary talk Prof. Dr. Martin Zimmer (ZMT) introducing DiSeMiNation to stakeholders/partners
10:00-10:45	Plenary talk Prof. Janina Adams: Mangrove status, services, management situation in South Africa
10:45-11:15	<i>coffee break</i>
11:15-13:15	Workshop session "Ecosystem service evaluation" [chair: Dr. Ralf-Uwe Syrbe]
13:15-14:15	<i>lunch break</i>
14:15-16:15	Workshop session "Planning science-stakeholder activities I": developing broad ideas [moderation Dr. Karsten Grunewald]
16:15-16:45	<i>coffee break</i>
16:45-17:15	Plenary: final discussion, wrap-up, feedback
Thursday, 26th April 2018 Workshop and excursion to mangrove site	
9:00-9:15	Introduction Prof. Martin Zimmer recap Day 1, goals Day 2
9:15-10:45	Workshop session "Planning science-stakeholder activities II": refining ideas into concrete action [chair: Dr. Ralf-Uwe Syrbe]
10:45-11:15	<i>coffee break</i>
11:15-12:30	Plenary final and open discussion on research project and outlook
12:30-13:30	<i>lunch break</i>
13:30	<i>Leave for excursion (interested participants)</i>
14:00-17:00	<i>Guided excursion to Durban mangrove site (Santosh Bachoo)</i>
18:00	<i>arrive at hotel/home</i>

Annex 3: PowerPoint Presentations

(as separate files)