

WIOMSA

Coasts Ocean and People



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11TH SCIENTIFIC SYMPOSIUM

ANNUAL REPORT 2019

WESTERN INDIAN OCEAN
MARINE SCIENCE ASSOCIATION

25 years

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COVER PHOTOS

A selection of photos from the 11th WIOMSA Scientific Symposium, Mauritius. © WIOMSA, Sparks Events, Design Lounge, and the University of Mauritius.

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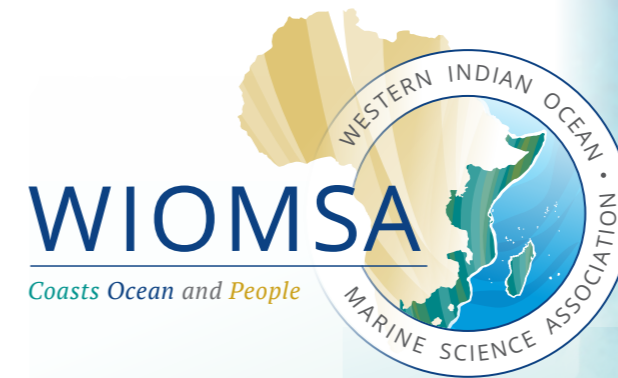
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ANNUAL REPORT 2019



11TH
SCIENTIFIC SYMPOSIUM

*In celebration of the
11th WIOMSA Scientific
Symposium*

25
years

*Celebrating the past,
shaping the future*

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2019 KEY FIGURES

GRANTS APPROVED AND AWARDED THROUGH MASMA, THE CITIES & COASTS PROJECT AND MARG

- 4 research projects
- 4 workshops
- 1 publication
- 39 MARG grants

TASK FORCES ESTABLISHED

- 1 group of experts on marine litter and microplastics established

11TH WIOMSA SCIENTIFIC SYMPOSIUM

- 32 countries represented
- 300 symposium travel grants to support participants
- 157 oral presentations
- 468 poster presentations
- 10 mini-symposia
- 7 keynote presentations
- 30 themed sessions
- 23 special sessions
- 11 exhibitions

650
PARTICIPANTS
Highest number ever

CAPACITY AND PROFESSIONAL DEVELOPMENT

- 50 PhD and MSc students supported through the MASMA, Cities & Coasts project and MARG programmes.
- 238 participants attended WIOMSA capacity development workshops and training.
- 8 Marine Protected Area Professionals (MPA PROs) certified.
- 1 postdoctoral fellow supported



NEW PARTNERSHIPS DEVELOPED

- 5 partnerships developed through the Cities & Coasts project with UN-Habitat, Macquarie University (Australia), and the Hexagon Geospatial (Australia/New-Zealand & Africa) and WIO SAP
- 4 partnerships fostered through the MASMA programme with WIO-SAP, SAPPHERE, Macquarie University and UN Environment - GPA

NEW MEMBERSHIPS

- 1 WIOMSA membership to the Indian Ocean Rim Association (IORA) as an observer approved.
- 1 new institutional member, ENVASSES International, joined WIOMSA
- 70 individuals signed up for WIOMSA membership

MOUS SIGNED

- 2 MOUs signed with the Food and Agriculture Organization of the United Nations (FAO) and with Rhodes University in Grahamstown, South Africa

A WORD FROM THE PRESIDENT

Throughout 2019, I am proud to be able to say that WIOMSA has worked mindfully and effectively to take advantage of the opportunities presented to us to work at the intersection of science, management, policy and society in the coastal and marine environment of the Western Indian Ocean region.

Looking back on the achievements of the year, we can see that our capacity development initiatives, communication and engagement, our research and policy outreach and strategic partnerships and our new project on Cities and Coasts have had an impact on changing the coastal and marine resource management landscape in the region. We have remained steadfast in pursuing the realization of our strategic goals, which is generating knowledge, capacity development, integrating science with policy and practice, and strengthening our Association. Here, I will point out some of the key achievements of the Association, among the many highlights you will read in this 2019 Annual Report.

The year 2019 was a special one for me in my capacity as a Senior Scientist at the Kenya Marine and Fisheries Research Institute (KMFRI) and as WIOMSA President.

In July 2019, I was awarded the 2019 NK Panikkar Memorial Medal by the Intergovernmental Oceanographic Commission (IOC) of UNESCO in recognition of my work in capacity building in marine science at regional and national levels.



The award was presented to me after delivering the NK Panikkar Memorial Lecture, which focused on the journey of WIOMSA and the region in capacity building since the establishment of the Association and the partnerships that have led to the development and growth of the scientific dialogue in the WIO region.

WIOMSA achieves membership of the Indian Ocean Rim Association

In line with one of the Association's priorities to promote strong and effective interactions between the scientific community and decision-makers at the regional level, WIOMSA applied for observer status in the inter-governmental organization, the Indian Ocean Rim Association (IORA). IORA is a regional body of countries bordering the Indian Ocean with a membership of 22 countries. IORA aims at facilitating and promoting economic co-operation, bringing together inter-alia representatives of Member States' governments, businesses and academia. I am proud to report that WIOMSA's membership application was discussed and approved by the IORA Council of Ministers, in its 19th meeting held in Abu Dhabi, United Emirates, in November 2019. This would not have been possible without the strong support and endorsement from the Government of Tanzania for which we are extremely grateful.

Commitment to regional processes remains a priority

Our commitment to regional processes remains as high as ever. As most of the countries in the region have embarked on the development of the blue/ocean economy, engendering partnerships with Regional Economic Commissions (RECs) is truly relevant to WIOMSA's core activities. RECs are the implementing arms of the African Union, charged with promoting African economic integration, development, and governance. WIOMSA played a key role in two events that were organized by the Nairobi Convention and attended by the RECs in the WIO region, including Common Market for Eastern and Southern Africa; East African Community; Intergovernmental Authority on Development; the Southern African Development Community and the Indian Ocean Commission – Commission de l'Océan Indien. These interactions with RECs have laid a good foundation for future collaboration in areas of common interest.

Enhancing the use of data and information generated from scientific research

In 2019, the WIOMSA Board of Trustees made two major decisions with major implications in WIOMSA's efforts in enhancing the use of data and information generated from scientific research for different purposes.

First, we approved the inception of an innovation for sustainability grant programme, whose main aim is to promote sustainability as a key focus for innovations related to the coastal and marine environment. It also encourages collaboration between different actors, including researchers, communities, government authorities and the private sector, to co-invest in ideas that can generate greater impact in the planned and on-going management efforts in the coastal and marine environment. It is envisaged that through this programme, people-centred innovative solutions will be identified and tested, and the lessons learned from their results will contribute to bringing about more sustainable behavioural and social/environmental changes.

Secondly, the Board approved WIOMSA's Data Governance and Management Policy, whose objectives are to monitor and evaluate the use of WIOMSA data; communicate the value of WIOMSA project outputs, outcomes and impacts; reduce duplication of investment in data, and ensure that WIOMSA data can be known (discovered) and contribute to a regional pool of knowledge. This policy creates conditions for improvement of the return on the investment made in scientific data collection. The discoverability and availability of data may result in the avoidance of overlapping studies and encourage the re-use of existing data. It will also make comparative studies, both spatial and temporal, more likely and comprehensive.

WIOMSA's sustainability is essential

Attaining sustainability for WIOMSA remains a priority of the Association. Succession in the position of the Executive Secretary is one of those areas in which our Board of Trustees, focused our attention on in 2019, carrying out the recruitment processes for the position with the expectation that the new Executive Secretary, Arthur Tuda, will take up office in 2020.



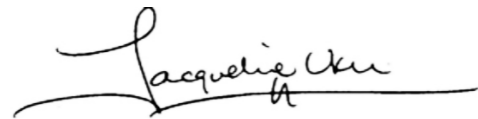
Over the past 25 years, Dr Julius Francis's vision, drive and performance focus, combined with his commitment to serving the best long-term interests of WIOMSA, have materially strengthened the Association. As he exits WIOMSA, Julius leaves behind a more agile and resilient Association, well placed to thrive in this fast-changing and dynamic environment. The Board would like to thank him for his contribution to WIOMSA.

In terms of financial sustainability, although the core contributions from our principal donor, the Government of Sweden, remains the bedrock of WIOMSA's financing, we are enhancing our capacity to leverage our existing assets to capitalise the WIOMSA Trust Fund which we believe will be the vehicle to WIOMSA's future sustainability. We have also made considerable efforts to enhance our engagement with an increasingly diversified and broadened donor stakeholder base. We continue to improve our financial management systems and internal controls. I am pleased to report that the Association achieved impressive results in the 2019 financial year amidst a challenging global environment, as you will see in the financial reports further on in this Annual Report.

Our success in 2019 could not have been achieved without the support of our staff, members, partners and stakeholders. I am thankful for the dedication shown by these groups as we continue to work hard to deliver on our strategic goals, improve our performance and make an impact in the region.

I am fortunate to be part of an exceptional group of people making such a significant and lasting difference. On behalf of the Board of Trustees, I wish to thank each one of you. We look forward to your continued support to reach even higher levels in the future.

All the best in 2020!



FROM THE WIOMSA SECRETARIAT DESK

The year 2019 has seen many projects and initiatives planned by the Association come to fruition. The year has been marked by strong cooperation with various partners and stakeholders as the Association continues to pursue its strategic goals of generating knowledge

based on high-quality science, building capacity driven by identified needs, applying effective communication strategies, developing strategic partnerships and sharing scientific and policy-relevant knowledge. Some major achievements and activities in 2019 are highlighted here.



Coastal and beach vegetation at Dwesa- Cwebe Marine Park, Eastern Cape, South Africa. © Peter Chadwick.

Science to Policy platform

In line with the goal of the current phase of the Marine and Coastal Science for Management (MASMA) programme – the operationalization of a regional Science to Policy Platform by 2022 – the Association has acted to increase the integration of science and regional policy processes and expanded its spheres of influence in the policy in 2019.

In 2019, WIOMSA worked closely with the Nairobi Convention to carry out several activities aimed at ensuring the realization of the platform. Key steps in the establishment and operationalization of the Science to Policy Platform were undertaken during a workshop organized by the UNEP/Nairobi Convention in collaboration with the Government of Mauritius and WIOMSA in Mauritius in May 2019. The workshop, which was attended by representatives of governments and regional organizations and experts, reviewed and approved the terms of reference of the platform, its membership structure and modus operandi. The approved procedures will be used in the preparation of the 10th Conference of Parties to the Nairobi Convention planned for 2021.

Strategic partnerships

One of WIOMSA's key success factors is the Association's ability to foster strategic partnerships to leverage more resources, capacity and data in support of regional activities.

In 2019, we initiated various types of partnerships to carry out joint activities. We made progress in our quest to make research data in the region more accessible, we sought joint funding to implement activities and successfully obtained university accreditation for one of WIOMSA's training courses.

WIOMSA and the Food and Agriculture Organization of the United Nations (FAO) signed a Memorandum of Understanding (MOU) to collaborate in marine research and capacity development under the framework of the EAF-Nansen Programme. The purpose is to establish a strong and effective foundation for collaboration and ensure harmony and synergy between the two organizations' goals. Its purpose is also to strengthen the knowledge on the WIO marine and coastal ecosystems and the research capacity of the WIO coastal countries. Through this agreement, MASMA-supported activities will have access to data collected through the EAF-Nansen Programme with the vessel, R/V Dr Fridtjof Nansen.

A second MOU was signed with Rhodes University in Grahamstown/Makhanda, South Africa, for delivery of the first Regional Training in Marine Protected Area (MPA) Management Course to be accredited by the University. WIOMSA and Rhodes University's Department of Ichthyology and Fisheries Science (DIFS) have been in discussion for several months about the offering of a regional introductory Marine Protected Area Management Course that is fully accredited by the University. The Rhodes University Senate agreed to the course content proposition and the two institutions signed an agreement in October 2019 that will see the first course held in 2020.

This training is considered a key intervention, especially for professionals embarking on their careers in the MPA sector. It provides a strong foundation for the skills and understanding required for effective MPA management. The course has been adjusted according to the regional context, based on the MPA introductory course developed and offered in South Africa over the past ten years and the regional MPA management training course designed and offered by WIOMSA since 2000.

In 2019, WIOMSA developed a unique partnership with the Department of Earth and Environmental Sciences at Macquarie University in Sydney, Australia. Through this partnership, an application was made to the university's Co-Funded Fellowships Scheme to support a joint post-doctoral research associate shared between the two organizations. This scheme is designed to encourage collaboration and partnership between Macquarie University and relevant partners such as industry, government, non-government organisations/not-for-profits and other research-intensive institutions.

Through this scheme, both partners share the remuneration and travel costs of the Co-Funded Fellow for the duration of their appointment. The recruited post-doctoral research Associate, Dr Vera Horique, is responsible for supporting science/policy integration and marine spatial planning efforts in the region. She is also responsible for analysing large data sets and evaluating the potential of existing data to produce decision support output for policy and management.

Development of a Regional Ocean Governance Strategy

Another important process initiated in 2019 was the development of a Regional Ocean Governance Strategy. This was in response to the Decision CP.9/6 of the 9th Conference of Parties to the Nairobi Convention on Ocean Governance in the Western Indian Ocean (WIO) region. The process started with the special session on "Ocean Governance in the WIO region" held at the 11th WIOMSA Scientific Symposium in July 2019. This was followed by the WIO workshop on Regional Ocean Governance held in Seychelles in September 2019. At this workshop, two background documents were discussed: "The State of Ocean Governance in the Western Indian Ocean" and "Future options on a regional ocean governance strategy for the Western Indian Ocean". The outcomes of the meeting

were presented at the African Ministerial Conference on Environment (AMCEN) held in South Africa in November 2019. This initiative was implemented under the SAPHIRE project and WIOMSA coordinated its implementation.

Use of existing data

Recognizing the existence of unanalysed data, especially data from research cruises undertaken in the region, the MASMA Programme Committee made a deliberate decision to encourage the analysis of the data and its publication by supporting three projects based solely on the existing data. These are:

The Three Projects

1. a research project titled "Identification, characterisation and vulnerability assessment of benthic ecosystems in the WIO (WIO-Benth)", using mainly data from RV Dr Fridtjof Nansen;
2. a regional training workshop on the use of underwater camera systems to sample benthic invertebrate communities of the WIO region, using mainly data from RV Agulhas II and RV Dr Fridtjof Nansen; and
3. a publication titled "The identification guide on fish larvae of the Western Indian Ocean", which will use data from surveys from RV Mtafiti and RV Dr Fridtjof Nansen.



Scientists and school pupils play the MARECO Game- a coral reef conservation game- during a special session at the 11th WIOMSA Scientific Symposium. © IRD

The 11th WIOMSA Scientific Symposium

One of the main highlights of the year was the organisation of the 11th WIOMSA Scientific Symposium held in Mauritius in July. The 11th Symposium was a special event which will be recorded in the annals of WIOMSA's history as the last symposium in the biennial symposium series. Future symposia will be held every three years.

The 11th Symposium was one of the largest marine and coastal science events in the region, bringing together policy, private sector, industry, academia and subject matter experts to present their insights and perspectives on the theme, "People, Coasts and Oceans: Opportunities for a Changing Future". The symposium attracted 650 delegates from 32 countries, the largest number of participants ever to grace the WIOMSA Scientific Symposium since its inception in 1997.

With 30 separately themed sessions, the symposium provided a multidisciplinary perspective of what currently touches marine and coastal sciences and how it affects the realms of policy and management. A total of 625 papers were presented in oral and poster sessions, reflecting how much knowledge has been developed, systematized and disseminated in the region over the years. It also reflected how much the different components of research have gradually penetrated policy-making and management decisions in recent years.

For the first time, ten mini symposia were held covering different topics from "Blue Carbon" and "Science Communication" to "Plastic Pollution" and allowed conveners to focus on specific topics that currently attract widespread regional attention. At a symposium of this size, it was good to recognize the urgent need for reconciliation and bridging between the marine and coastal science and society, policy, management, and private sector objectives.

One of the important outputs of the 11th Symposium was a synopsis of the key points that emerged from the keynote presentations, oral presentations and mini symposia. These outputs will contribute to the regional Ocean Governance Strategy currently being developed for the WIO under the Nairobi Convention.

Production of high impact products

In 2019, WIOMSA produced three products which attracted more feedback than usual. Two videos were produced: "WIOMSA at 25: Celebrating the past, shaping the future" and "Women in Marine Science". The first was developed to commemorate the 25th anniversary of the establishment of the Association. It features the pioneers of WIOMSA; brave personalities who played pivotal roles in the creation and development of WIOMSA. The second video was produced by the Women in Marine Science (WiMS) network, featuring inspiring women marine scientists working in the Western Indian Ocean region.

The WIOMSA Magazine returned to our publications fold after a four-year hiatus with the release of the WIOMSA

Magazine, Issue Number 9, the first of a two-part series featuring the stories of women working in the marine and coastal field in the Western Indian Ocean region and beyond.

The Secretariat wish to thank the Board, the MASMA Programme and Cities & Coasts Project Committees, the WIOMSA Trust trustees, the editorial board of the Western Indian Ocean Journal of Marine Science, the WIOMSA Country Coordinators, our members, donors and partners for their continued commitment to and support of the Association, without which the achievements highlighted in this report would not have been realized! Your advice, encouragement and critique were vital to our success in 2019.

Ringnet fishers, Kisera, Tanga.
© January Ndagala



GOVERNANCE AND BOARD DECISIONS

The WIOMSA Board of Trustees aims to continuously strengthen its structure through streamlining and optimizing its governance and operations.

The Board governs the work of the Association, shaping WIOMSA's direction through key policy decisions that guide its day-to-day activities and providing guidance for the accomplishment of the organization's strategic mission and objectives.

The Board aims to build strong institutional governance within WIOMSA and provide effective management tools for the Association. The WIOMSA Board of Trustees held its 40th meeting in March 2019 and made key strategic decisions on digital platforms throughout the year, as highlighted in this section of the Annual Report.

*The "Vonihara" of Besambay
monitoring fish catches. Madagascar.
© WWF Madagascar*



I KEY BOARD DECISIONS IN 2019

Recruitment of a new Executive Secretary

The Board initiated the process of recruiting a new Executive Secretary as part of the implementation of the WIOMSA succession plan. The Board views succession planning as a vital component of WIOMSA's sustainability and an ongoing activity that is integrated into the broader strategy of WIOMSA. During the recruitment process, the Board identified the skills required for the position and the kind of Executive Secretary that will be required to execute the WIOMSA strategy and drive the Association forward. Two interview processes were conducted in 2019: the first in March 2019 and a fresh one in October 2019.

Seaweed farmers on the East Coast, Paje, Zanzibar. © Rahim Saggaf



Following the second round of interviews, **Arthur Tuda from Kenya was appointed as the new Executive Secretary**. He will take over his new position in 2020. Recognizing the complexity of the Executive Secretary position and the importance of a mentorship and transition period for the incoming Executive Secretary, the Board has requested **Dr. Francis to continue in the role for a set term, supporting the transition process from recruitment, into the second half of 2020.**

Development of the WIOMSA Strategic and Business Plan

The Board made progress in the development of the WIOMSA Strategic and Business Plan agreeing on three strategic goals: supporting the generation of high-quality science, integration of science into policy and practice and the institutional strengthening of WIOMSA. The WIOMSA Secretariat is in the process of finalizing the strategy by developing a monitoring and evaluation plan. The strategy will be launched in 2020.

Innovation and Sustainability Grant

The WIOMSA Board approved the initiation of a grants programme to support innovative actions (demonstration and pilot projects) through the Marine and Coastal Science for Management (MASMA) programme and the Cities and Coasts (C&C) project.

The Innovation for Sustainability Grant (ISG) programme has been established to address modern-day marine sustainability challenges and to bridge the gap between marine research and innovation.

Through the ISG programme, WIOMSA aims to provide competitive grants that drive innovation for a sustainable marine environment. The goal of the ISG programme is to support the development and testing of transformative, paradigm-shifting concepts, and approaches that address and enhance our understanding of marine and coastal environmental issues. The inaugural call for concept notes will be launched in 2020.

WIOMSA Data Governance and

Management Policy

The Board launched a data governance and management policy for WIOMSA. The new policy emphasizes the need for open data and the openness of products funded by the Association. Its objectives are to monitor and evaluate the use of WIOMSA data for regional impact; to communicate the value of WIOMSA project outputs, outcomes and impacts, including the long-term value of regionally important data; to reduce duplication of investment in data; and to ensure that WIOMSA data can be known (discovered) and contribute to a regional pool of knowledge. Under the data governance and management policy, WIOMSA project grantees, both past and present, are expected to demonstrate how and where project outputs and data have been or are expected to be published. Secondly, all WIOMSA and MASMA projects are required to develop a clear and achievable plan to curate project data and make it available (as data or metadata) to regional and global initiatives and appropriate platforms and repositories such as OceanDocs (IODE Project Office), Nairobi Convention Clearinghouse, OBIS as a condition of receiving WIOMSA funding. The policy provides guidelines for metadata management; data citation; data repositories; data storage, retention, and backup; discoverability; access, sharing and reuse; publications; and standards.

Formalizing the relationship between WIOMSA and the Western Indian Ocean Early Career Scientists Network

The WIOMSA Board and the leadership of the Western Indian Ocean Early Career Scientists Network (WIO-ESCN) reached an agreement on the integration of the network into the broader WIOMSA family as core constituents of the Association. Under the guidance of Dr. Louis Celliers, WIO-ESCN will work with WIOMSA to develop a proposition of the relevant institutional arrangements and activities of the network

STRENGTHENING RESEARCH CAPACITY

This component is one of the Association's largest programme areas in terms of activities. The budget allocated to it accounts for more than half of WIOMSA's total budget.

This component aims at developing and improving the capacity of individuals and institutions to produce high-quality research outcomes and to monitor changes in the marine and coastal environment to enable better ecosystem-based management and decision-making.

*Pectoral fin of a humpback whale,
Madagascar. © Cetamada.*



I RESEARCH GRANTS

In 2019, WIOMSA awarded funding through the competitive research grants process for research (MASMA, Cities and Coasts Project and MARG) and set up monitoring programmes for ocean acidification and marine litter as part of its activities for strengthening scientific research.

Marine Research Grants

Marine Research Grants (MARG) is not only an important mechanism to support emerging scientists to conduct research and provide them with opportunities for data analysis and presentation in regional and international forums, but also a means for building research capacity. A total of 39 MARG I, MARG II and III grants were awarded in 2019.

For most of the MARG I grantees, this was their first successful research proposal after completing a graduate degree.

Octopus catch, Zanzibar.
© Rahim Saggaf



MARG I

Number of approved MARG I recipients for 2019 per country and gender (a total of 67 applications were received, 17 applications were approved)

COUNTRY	FEMALE	MALE	TOTAL
Kenya	4	3	7
Madagascar	1		1
Mauritius	1		1
Mozambique	1		1
Seychelles	1		1
Tanzania	1	5	6
Grand Total	9	8	17

MARG II

Number of approved MARG II recipients for 2019 per country and gender (a total of 14 applications were received; 8 applications were approved)

COUNTRY	FEMALE	MALE	TOTAL
Kenya		2	2
Madagascar	1		1
Mozambique		1	1
Tanzania	1	3	4
Grand Total	2	6	8

MARG III

Number of approved MARG III recipients in 2019 per country and gender (a total of 47 applications were received; 14 applications were approved)

COUNTRY	FEMALE	MALE	TOTAL
Kenya			
Madagascar	2		2
Mauritius		3	3
South Africa	4	2	6
Tanzania	1	2	3
Grand Total	7	7	14

MASMA grants

There are seven research projects currently supported by the MASMA Programme. In 2018, the MASMA Programme Committee (PC) approved four projects covering a wide range of topics, including fish recruitment, restoration of seagrass habitats, under exploited coastal tuna species and microplastics pollution. Further to this, in 2019, three projects were approved, all focusing on fisheries. In 2019, one call for research proposals was issued which elicited 29 proposals out of which three were approved for funding:

a. Billfish Interactions, Livelihoods, and Linkages for Fisheries sustainability in the Western Indian Ocean (BILLFISH - WIO), aims to provide a comprehensive understanding of billfish species in the Indian Ocean to support efforts on ensuring their sustainability.

b. Slippery resource in peril: Ecology of Western Indian Ocean Anguillid eels and their contribution to sustainable fisheries and livelihood along the East Coast of Africa, aims to understand the contribution of eels to subsistence fisheries along the WIO coastal region, and consequently the contribution of these migratory fish to community livelihoods.

c. Identification, characterization & vulnerability assessment of benthic ecosystems in the WIO (WIO-BENTH), aims to describe, model and map continental shelf and upper slope seabed habitats and their benthic communities in the western part of the Western Indian Ocean (WIO), to assist with regional marine spatial planning. **Countries covered:** South Africa, Mozambique, Tanzania and Kenya

Algoculture by the CBO Velondriake in Mahafaly, Beheloke village. © WWF Madagascar



Research grants in the Cities and Coasts project

The two projects which were approved in 2018 and started their implementation in 2019 are:

1. “Smart and sustainable transitioning for coastal cities in the face of global environmental change: Prototyping transdisciplinary networks for peer-to-peer learning for Mombasa (Kenya) and eThekweni/Durban (South Africa)”, and
2. “Cities and Climate Change in Coastal Western Indian Ocean a Grand Challenge (CICLICO)”.

Their implementation is on course. Both projects have recruited MSc and PhD students, while the CICLICO project also recruited a post-doctoral fellow. The smart city project has developed the city-to-city peer learning exchange framework that will be evaluated as part of the MSc associated with the project. The first learning exchange took place in November 2019, with officials of the first eThekweni Municipality in Durban visiting the County Government of Mombasa.

These two coastal cities share many similarities and challenges, and both have committed to improving the functioning of their governments and addressing climate change through engaging in a series of learning exchanges, including solid waste, wastewater, stormwater, transport, energy and biodiversity.

In 2019, the Cities and Coasts Programme Committee approved a third project, “Impacts of large-scale infrastructure developments on coastal biodiversity: A case of LAPSSET infrastructure project in Lamu, which is undertaken jointly by WWF Kenya, National Environment Management Authority (NEMA) and LAPSSET Corridor Development Authority (LCDA)”.

Lamu, as a growing urban coastal town, provides a good case study to examine anticipated impacts and policy gaps as a result of the LAPSSET infrastructure project, including:

- **loss of critical biodiversity assets** through dredging of the seabed and degradation of the marine environment (mangroves, seagrass, coral reefs etc.) and terrestrial environment (forest, wildlife, grasslands, dhuris (shrines), etc);
- **high cost of LAPSSET infrastructure maintenance** due to sedimentation (as result of sea wave action and land use-related activities);
- **population growth** and demand for associated social and physical infrastructure (housing, water, sanitation, roads, etc.);
- **community access** to land resources and livelihoods; and
- **inadequate institutional capacity** to monitor the impacts of the project.

I MONITORING PROGRAMMES

Monitoring programmes are important as they provide the first steps in establishing baselines against which to measure change, particularly in establishing the degree of success of mitigation strategies. Such monitoring simultaneously sets priority targets for interventions necessary to ensure that countries track their progress toward fulfilling their SDGs. Under this sub-component, the MASMA programme supports the establishment of monitoring programmes for ocean acidification and marine litter in some countries in the region.

- The ocean acidification monitoring programmes were initiated in 2018 in Kenya, Mauritius, Mozambique, Seychelles, South Africa and Tanzania, and are making good progress in their implementation.
- In collaboration with the IOC/UNESCO, International Atomic Energy Agency (IAEA), Ocean Acidification International Coordination Centre (OA-ICC) and the Gothenburg University, WIOMSA completed several activities contributing towards meeting the target 14.3: **Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels in 2019. These include identification of:**
 - existing human and technical capacities;
 - individual equipment needs;
 - training needs; and
 - possible collaboration to use existing technical capacities and follow-up training courses to address the identified needs.

Through these activities, a community of practice in the region for ocean acidification was created and collaboration with international programmes and organizations working on OA enhanced.

The marine litter monitoring programme was also initiated in 2018 in Kenya, Madagascar, Mauritius, Mozambique, Seychelles and Tanzania. These monitoring programmes aim to set baselines for SDG indicator 14.1.1, which measures floating plastic litter as a global indicator of marine pollution.

In collaboration with the African Marine Waste Network, two workshops were organized to:

- synchronise methodologies to ensure data collected is regionally comparable;
- plan for synchronized samplings; and
- identify and address capacity-building needs.

Two important means of communication and information sharing have been created: a page in wiomsa.org which details national monitoring programmes, and a quarterly newsletter, “**Litter Catch Up**”, which reports on the progress of these programmes in seven countries, including South Africa.

Fishing boat in Tanga, Tanzania.
© January Ndagala



CAPACITY DEVELOPMENT

WIOMSA's capacity development initiatives continue to contribute to enhanced capacity to undertake evidence-based decision-making among institutions in the WIO, and support regional ocean governance capacity priorities.

This section of the Annual Report focuses on the capacity development activities of the MASMA programme and Cities and Coasts project in 2019.

*11th WIOMSA Scientific Symposium side event: Students interacting with the Bis Lamer Mobile Education Unit, Mauritius.
© IRD and Reef Conservation.*



Capacity development initiatives under the MASMA programme aim to build the capacity of institutions to manage and undertake inclusive decision-making to respond and adapt to changing circumstances.

Those under the Cities and Coasts project aim to strengthen the research and management capacity

of different stakeholders, such as local authorities, city planners, policy-makers from central government, academics, the private sector, civil society and citizens to address the complex challenges that coastal cities in the WIO region face, to improve broader planning of coastal cities and to identify opportunities for coastal cities to promote sustainable development.

| MASMA programme

Two training workshops were held in 2019: the first was on the identification of zooplankton and fish larvae and the second was on quantification and valuation of marine and coastal ecosystem services. Based on the number of applicants, these two workshops were very popular, attracting 208 applicants and 175 applicants, respectively.

In addition to the knowledge gained by the participants in these training courses, the immediate legacy of the zooplankton workshop was the acquisition of three new high-resolution stereo microscopes suitable for zooplankton and ichthyoplankton analysis, as well as a camera and monitor for training purposes. These pieces of equipment have remained at the Institute of

Marine Science (IMS), Tanzania, and are available for use by anyone in the WIO region. Two other microscopes were donated, one each to IMS and TAFIRI, by South Africa's Department of Environmental Affairs and the Nelson Mandela University, respectively.

As a follow-up to the zooplankton workshop, the preparation of an introductory guide to the zooplankton of the WIO region has begun.

From the quantification workshop, a draft regional guideline for conducting ecosystem services valuation was drafted and is currently under review.

"The practical exercises where content presented was applied to actual projects with facilitators ready and willing to assist. The fieldwork gave a good idea of how to apply the methods and what scenarios to look out for when conducting valuation studies." Participant in the workshop on *"Quantification and Valuation of Marine and Coastal Ecosystem Services"*

| Cities and Coasts project

The capacity development activities organized in 2019 included two workshops. The first was a regional training workshop on the use of constructed wetlands systems (CWS) for wastewater treatment, held in Mombasa, Kenya, in November 2019.

The management of wastewater remains a challenge for many coastal cities, particularly in the Western Indian Ocean region. Constructed wetlands are natural wastewater treatment systems. They are designed to maximize the removal of wastewater contaminants and consist of beds of aquatic macrophytes (wetland plants). The aim of the CWS training was to shed light on the status of coastal wastewater

pollution issues, and how this simple technology can be used to address the challenges, especially in the region.

The training course attracted 35 participants; 13 of whom were female. The participants were from Kenya, Tanzania, Seychelles, Mauritius, Mozambique, Comoros, Madagascar and South Africa. They were from a diverse range of professions, including local city employees, board members, engineers and architects who design and build the infrastructure that is used in CWS. Also in attendance were urban and spatial planners, biologists and marine scientists dealing with marine pollution and its effects on the marine environment.

"The workshop was one of a kind as it brought together a leading private sector firm in geospatial technology (Hexagon Geospatial), geospatial service providers and resellers of hexagon products in East Africa, and of satellite imagery (Oakar Services) and educators in spatial information science at Macquarie University. While the partnership between the private sector and academics to deliver training to practitioners is unique with few (if any) precedent, it is necessary considering that the private sector is at the forefront of geospatial technology and tools development. The significance of this partnership was also reflected during the workshop, where cutting edge tools and technology were demonstrated and taught." Participant at the *"Geospatial Technology Application for Sustainable Smart Coastal Cities"* training

The second was the training on "Geospatial Technology Application for Sustainable Smart Coastal Cities" that was organized by Macquarie University in collaboration with Hexagon Geospatial, an Australian firm working on urban issues, which provided its services and software on a pro bono basis.

The course addressed the lack of capacity in the application of geospatial tools in a sustainable and smart coastal cities context and demonstrated existing and emerging decision support tools and technology.

The workshop was attended by 26 trainees from different coastal cities in the region, including South Africa, Mozambique, Comoros, Seychelles, Madagascar, Tanzania and Kenya. Nine of the 26 participants were

female. The diverse group of professionals included aspiring geographers, urban planners, conservationists, researchers and environmentalists.

“The overall content of the training workshop was both challenging as well as exciting. **Through short lectures, practical exercises and peer-driven group discussions, we learnt how to model and map urban growth patterns, including land use classification for change detection using a futuristic software in 2019 – ERDAS Imagine 2020 software by Hexagon Geospatial** – to determine the expansion trajectory of coastal cities such as Mombasa. Among other methods, we learnt about decision support tools and created our own mobile mapping and data collection applications using the M.App Enterprise platform, another revolutionary, yet fun geospatial tool by Hexagon Geospatial. **The facilitators’ emphasis on being all round tech-savvy scientists** through exposing us (the participants), to updated, contemporary yet practical skills like geospatial analysis, such as R programming, was particularly inspirational and unique.”
– Participant in the “Geospatial Technology Application for Sustainable Smart Coastal Cities” training



Diana Landscape in Ambodivahibe, Madagascar. © WWF Madagascar |

Grants to support capacity development

In 2019, 12 MSc and 9 PhD students benefitted from MARG grants and 12 MSc and 11 PhD students from MASMA grants.

Overall, in 2019, over 200 individuals from all the countries in the WIO region benefitted from different capacity development activities implemented.

CAPACITY DEVELOPMENT EVENTS	NUMBER OF PARTICIPANTS	FEMALE	MALE
Workshops/courses supported by grants			
MASMA PROGRAMME			
Identification of Zooplankton and Fish Larvae of the Western Indian Ocean	21	10	11
Quantification and Valuation of Marine and Coastal Ecosystem Services	20	11	9
CITIES AND COASTS PROJECT			
Training on Geospatial Technology Application for Sustainable Smart Coastal Cities	26	15	9
Regional training workshop on the use of constructed wetlands technology for wastewater treatment	35	13	22
Targeted workshops/training courses			
National GIS Training, Mauritius	30	14	16
WIOMSA Ocean Acidification Workshop	11	3	8
Regional training course on Ocean Acidification experimental set up: from the scratch to results approach	23		
WIOMSA Marine Litter Workshop	17	10	7
WIOMSA Marine Litter Monitoring Programme Workshop	19	12	7
IWC Workshop on Bycatch Mitigation Opportunities in the Western Indian Ocean and the Arabian Sea	6	2	4
WIOMCOMPAS Certification			
Level 1 assessment	12	6	6

SCIENCE TO POLICY INTERACTIONS

The overall goal of the Marine and Coastal Science for Management (MASMA) Programme is to contribute to the establishment and operationalization of the regional science to policy platform under the Nairobi Convention. Through the platform, WIOMSA supports the generation of new knowledge, capacity building, resource mobilization, and sharing of scientific and policy-relevant knowledge to assist the WIO region in delivering on Agenda 2030 for oceans, islands and coasts, and climate change.

The following section highlights WIOMSA and partner actions in the science-policy realm in 2019.

Fishermen weighing fish at landing site, Kipini, Kenya. © Pascal Thoya



In 2019, WIOMSA, in collaboration with the Nairobi Convention, undertook several activities to operationalize the regional science to policy platform and strengthen the interactions between the scientific community and decision-makers.

This is to support the various decisions adopted by the contracting parties to the Nairobi Convention during the Conference of Parties (COP) to strengthen the link

between science, policy and action to enhance informed decision-making for the management of coastal and marine resources in the Western Indian Ocean (WIO) region. One such decision is the decision CP 9/12, which requested the Nairobi Convention Secretariat to convene regular science-policy dialogues. This decision emphasizes the importance of the linkages between science and policy for the decisions taken at meetings of the contracting parties.

INSTITUTIONALIZATION OF THE SCIENCE TO POLICY PLATFORM

In May 2019, the WIO Regional Science to Policy Workshop was held in Mauritius to establish and operationalize the Science to Policy Platform as a core structure within the Nairobi Convention.

The workshop was organized by the UNEP/Nairobi Convention in collaboration with the two GEF-funded projects, WIOSAP and SAPPHIRE, the Government of Mauritius and WIOMSA. Specifically, the meeting reviewed and approved the terms of the platform, its membership structure and modus operandi.

The partnership with the Nairobi Convention to establish a regional Science-Policy Platform began following the COP decisions on the Science-Policy Platform in the seventh and eighth meetings of the contracting parties to the Nairobi Convention held in Maputo, Mozambique and Seychelles, respectively. Following these meetings, special consideration was given to strengthening the Forum of Academic and Research Institutions (FARI) in the WIO to

act as the science arm of the platform. WIOMSA hosts the FARI network.

Further, similar structures with functions comparable to the platform envisaged by the Nairobi Convention and WIOMSA were also proposed by WIOSAP and SAPPHIRE. The WIOSAP project has proposed the establishment of a science-policy exchange platform (SSP) under the Nairobi Convention for policy and for consensus on key measures for the protection of the marine and coastal environment of the WIO from land-based sources and activities (LBSA) and integrated coastal zone management (ICZM) issues in the WIO region; while the SAPPHIRE project has proposed the establishment of a scientific and technical advisory panel (STAP) to serve as a key point (bridge) for a science to policy interface for improving ocean governance, evidence-based decision-making and adaptive management.

In the Mauritius workshop, the countries agreed to merge the WIOSAP SPP and SAPPHIRE STAP to form a joint science to policy platform with FARI remaining as the science pillar to the Nairobi Convention. The joint SPP will be a permanent structure lasting beyond the duration of these projects.

GROUP OF EXPERTS ON MARINE LITTER AND MICROPLASTICS LAUNCHED

The 9th Conference of Parties to the Nairobi Convention held in Mombasa, Kenya, in August 2018, requested the Secretariat, in collaboration and cooperation with WIOMSA and other partners, to establish a marine litter regional technical working group in the WIO region.

In response to the decision, WIOMSA and the Nairobi Convention Secretariat in collaboration with other partners, set up a Group of Experts on Marine Litter and Microplastics. The main objective of the group is to provide a forum for sharing and exchange of information; providing policy guidance and advice to the Nairobi Convention and other regional frameworks; and synthesizing information on the topic from different

sources to produce peer-reviewed publications and other products.

The group, which draws its membership from the private sector, research and academic institutions, governmental and non-governmental organizations, and regional and international organizations, held its inaugural meeting in June 2019, at the University of Cape Town, intending to establish the working parameters of the Group of Experts on Marine Litter and Microplastics.

Community members preparing mangrove propagules for planting, Belo sur Mer, Manambalo Tsiribihina Landscape.
© WWF Madagascar



TOWARDS A WIO REGIONAL OCEAN ACIDIFICATION ACTION PLAN

The Nairobi Convention, in collaboration with the IUCN-chaired Ocean Acidification international Reference User Group (OAIiRUG) and WIOMSA, organized the Indian Ocean Regional Ocean Acidification workshop in Zanzibar, Tanzania on 28 and 29 October 2019. The workshop was organized with the financial support of the Prince Albert II Foundation, the UN International Atomic Energy Agency (IAEA), the Nairobi Convention and WIOMSA through its MASMA programme.

The workshop built on the outcomes of the “WIOMSA Ocean Acidification workshop – developing regional capacity for ocean observations in support of SDG target 14.3” held in Dar es Salaam, Tanzania in October 2017, and the Decision CP.9/9 (2) on Ocean Acidification of the 9th Conference of Parties to the Nairobi Convention that took place in Mombasa, Kenya, in August 2018.

The main objectives of the workshop were to take stock of current regional knowledge and actions on ocean acidification, and identify priorities to be included in a draft regional action plan for consideration by the parties to the Nairobi Convention for the WIO region that will guide the response to this challenge.

Approximately 40 regional invitees comprised of government representatives, end-users and resource managers participated in the workshop. A few ocean acidification scientists provided information, outlined the current global scientific knowledge about ocean acidification, and also commented on current and planned activities in the region.

The main output from the event is the “Workshop Report” and a series of priority actions to be included in a draft action plan for the region for consideration by the Nairobi Convention.

Cocobeach public beach, Dar es Salaam, Tanzania. © January Ndagala



SPECIAL EVENTS

KEY MPA NEWS: 2019 ACTIVITY ROUND-UP!

Capacity building and professional development in Marine Protected Areas (MPAs) have been among the Association's priorities since its establishment. This is because WIOMSA recognises the importance of having well-trained and motivated personnel for effective management of MPAs in the Western Indian Ocean.

WIOMSA'S GROWING PORTFOLIO OF FISHERIES INITIATIVES

In 2019, initiatives focusing on various aspects of fisheries increased. WIOMSA has supported several fisheries projects in different years, but since the launch of the MASMA programme, the largest number of fisheries projects to be approved at one time was in 2019, making it an exceptional year.

*Youth in Beheloke, South Madagascar, in
Mahafaly Landscape. © WWF Madagascar*



KEY MPA NEWS: 2019 ACTIVITY ROUND-UP!

Capacity building and professional development in Marine Protected Areas (MPAs) have been among the Association's priorities since its establishment.

This is because WIOMSA recognises the importance of having well-trained and motivated personnel for effective

management of MPAs in the Western Indian Ocean. WIOMSA has been at the forefront of designing innovative courses and professional development initiatives such as WIO- COMPAS. WIOMSA has also enhanced its interaction with the LMMAs, as described in this report.

WIOMSA and Rhodes University sign historic MOU for the region's first-ever university-accredited course on MPA management

WIOMSA and the Rhodes University Department of Ichthyology and Fisheries Science (DIFS) have been in discussion for several months about the offering of a regional introductory MPA management training course that is fully accredited by the university.

The course has been adapted for a regional context from the introductory course developed and offered in South Africa for the past ten years, and the regional MPA management training course designed and delivered by WIOMSA that has been running since 2007.

The Rhodes University Senate finally agreed to the course content proposition and the two institutions signed an agreement in October 2019, that will see the first course held in 2020.

The regional introductory MPA management training is recognised as a key training intervention, particularly for professionals embarking on their careers in the MPA sector. It provides a strong foundation for the skills and understanding required for effective MPA management.

The course content covers ten topics relevant to the management of MPAs, including purpose, role and challenges, MPA proclamation criteria, institutional arrangements for MPAs, marine ecology, fisheries management and other topical issues facing MPAs, such as climate change. The training, to be run over five days, will include field visits, and pre- and post-course assignments. The training course is intended for individuals and core teams of people from conservation agencies and organisations with responsibilities for the management of MPAs, and management of marine and coastal areas in general.

The Western Indian Ocean MPA practitioners hold network meeting

WIOMSA and the Kenya Wildlife Service hosted the first MPA practitioner's meeting for the Western Indian Ocean (WIO) in December 2019.

This was done in recognition that globally, social networks of MPA practitioners are being established to facilitate learning and coordination of MPA networks by linking the people and institutions involved in MPAs into a coordinated and holistic initiative.

The objective of this inaugural meeting was to discuss the institutional framework of the MPA network and develop its terms of reference. The meeting deliberated on the draft terms of reference of the network, the role and function of the network, the institutional arrangement, membership criteria, decision-making structure, the role and mandate of the network, the mission, vision, objectives and activities of the network, the relationship between the network, WIOMSA and WIO-COMPAS, and lastly, the sustainability of the network. The meeting agreed on the establishment of the network, which will be housed at WIOMSA and will be known as the Western Indian Ocean Marine Protected Areas Practitioners Network (WIOMPAN). It is expected that WIOMPAN will be officially launched in 2020.

Reef monitoring survey in Mnazi Bay Ruvuma Estuary Marine Park, Tanzania. © January Ndagala





MPAs well represented at the 11th WIOMSA Scientific Symposium

Marine Protected Areas and associated issues have been one of the main topics in the past at WIOMSA symposia, and the 11th Symposium was no exception.

Apart from MPAs being an important tool for fisheries and biodiversity management, they also attract research interest for various reasons.

This interest was reflected in the number of participants and sessions dedicated to MPAs at the 11th WIOMSA Scientific Symposium in July 2019.

At least ten MPA management agencies and locally managed marine areas (LMMA) representatives were present, including Tanzania Marine Parks and Reserves Unit, Kenya Wildlife Service, Madagascar National Parks, Moheli National Park, Comoros, MIHARI Network Madagascar, Nature Seychelles, Parc Naturel Marin de Mayotte et des Glorieuses, Commune de Fenerive- Est Madagascar, and the Réserve Naturelle Marine de La Réunion.

The scientific programme included an oral session dedicated to MPA management. Presentations covered included:

- understanding how spatial resilience thinking can help address scale mismatches in marine protected areas;
- getting to evidence-based management of Western Indian Ocean MPAs;
- partnerships as an approach to enhance conservation outcomes in MPAs;
- exploring the social and economic objectives of MPAs, and
- perceptions of different stakeholders to changing MPA regulations.

Several poster sessions focused on MPAs, especially capacity building and co-management, as well as the use of coastal and marine technologies in gauging the management effectiveness of MPAs. The Nairobi Convention and WIOMSA convened a special session dedicated to MPAs. The session, "Promoting MPAs as a tool for management in the WIO region: Progress towards achieving SDG 14", was jointly organised by the Nairobi Convention and WIOMSA and drew many participants, including policymakers, MPA managers, marine and conservation scientists, conservation practitioners, resources users and students.

Its objectives were:

- to appreciate the current spatial extents of MPAs across the region as a basis for progress towards SDG14.5;
- to understand current management effectiveness and opportunities for enhanced MPA performance;
- to understand contemporary drivers of change impacting on MPAs in the region;
- to discuss the role of research and science in MPA management;
- to discuss the opportunities for cross-border MPA establishment and management; and
- to initiate the establishment of an MPA network in the WIO region.

Outputs from the session included recommendations on the establishment of an MPA network in the region; improving MPA management effectiveness; how research can inform and strengthen MPA management; and the potential opportunities for transboundary MPA establishment, management and stakeholder engagement in the process.

Mapping the future: WIO-COMPAS holds strategic meeting

The WIO-COMPAS core team comprising of WIOMSA staff and experts from Kenya and South Africa who have been involved in the programme from the beginning, held a strategic planning session to discuss priorities and the future direction of the programme.

Several issues were deliberated during the meeting, including:

- a mentorship and leadership training programme for WIO-COMPAS professionals;
- representation of the WIO-COMPAS certification model in the global arena, including at the IUCN World Conservation Congress 2020 in Marseille, France, the United Nations Convention on Biological Diversity's 2020 UN Biodiversity Conference in China, and the 2020 United Nations Ocean Conference in Lisbon, Portugal, among others;
- renewal of WIO-COMPAS certification for MPA professionals;
- modelling of the regional MPA training courses to respond to the competence gaps and the priority issues facing MPAs in the WIO region; and
- inclusion of WIO-COMPAS in the network of MPA practitioners.

Coral reef, Ruvula channel, Mtwara.
© January Ndagala



WIO-COMPAS certifies eight new MPA professionals

The certification of MPA professionals continues to be a priority activity for WIOMSA. There is a growing demand among MPA staff to assess themselves against the competencies set out in the Western Indian Ocean Certification of Marine Protected Areas Professionals (WIO-COMPAS) programme.

In 2019, 28 applicants applied for the WIO-COMPAS Level 1 certification assessment event. Twelve were selected to attend the certification, and following a thorough assessment of their competences, eight candidates were certified as Level 1 MPA PROs.

Lydia Illa (Malindi Marine Park, Kenya), Tima Dago (Mombasa Marine Park, Kenya), Theodora Abraham (Tanga Coelacanth Marine Park, Tanzania), Betty Ojuka (Mombasa Marine Park, Kenya), Salim Polleh (Kisite Mpunguti Marine Park, Kenya), Samuel Muriithi (Malindi Marine Park), Nelson Mdogo (Tanga Coelacanth Marine Park, Tanzania) and Amos Singo (Mnazi Bay Ruvuma Estuary Marine Park, Tanzania) have joined the ranks of certified WIO region MPA PROs which stands at 103. This growth in numbers represents steady progress towards the development of a 'critical mass' of competent MPA professionals needed to ensure the effective management of MPAs in the Western Indian Ocean region.

Lydia Illa (third from left) a WIO-COMPAS MPA PRO Level 1 leads a beach clean up exercise, Malindi Marine Park. © Lydia Illa



“Strengthening East African Marine Protected Areas” project comes to an end

This two-year project, funded by the United States Department of State (DOS), started in September 2016 and ended in March 2019. Its overall goal was to increase the management effectiveness of marine resources at three field sites in Kenya, Tanzania and Madagascar, linked to the larger WIO regional network. The project was implemented by five institutions: WIOMSA, the University of Rhode Island-Coastal Resources Center (URI), Blue Ventures, Kenya Wildlife Service and Tanzania Marine Parks and Reserves Unit.

The project was implemented in three countries, with two field sites in the shared marine waters between

Tanga, Tanzania and Kisite, Kenya, with the third site near Tsifota in south-west Madagascar. The focus of the project was on building the capacity of locally managed marine areas as opposed to the national protected area agencies that often get support. In Kenya, the project worked with 22 Beach Management Units (BMUs) – which are equivalent to LMMAs in Kenya – between Diani and Vanga, while in Tanzania the project focused on the Boma-Mahandakini LMMA, which is composed of seven villages – Boma, Pitukiza, Zingibari, Moa, Mahandakini, Ndumbani and Mayomboni. For Madagascar, the project's focus was on two neighbouring LMMA sites, Teariake and Manjaboake, in south-west Madagascar.

Some examples of the project's accomplishments include:

- **Capacity building and leadership workshops** for LMMA leaders in the three sites were organised and the new skills applied to management interventions.
- **In Tanzania and Kenya, comic-based guidebooks and outreach campaigns** were used at workshops and meetings to raise awareness about LMMAs and their roles to BMU members and other stakeholders while in Madagascar.
- Based on surveys of LMMA communities in Kenya and Tanzania, **priority competencies for the leadership and management body of LMMAs were identified and developed into a self-assessment tool.** This is believed to be the first of its kind for LMMAs.
- **An English and Kiswahili guide to local management of marine resources was produced and disseminated in Kenya and Tanzania** to accompany extension officers as they educate community members. This guide provides information on how to establish LMMAs, the local legal context, and competencies and criteria/characteristics for LMMAs.
- The project successfully strengthened sister-park partnerships between marine protected areas and LMMAs around them. In Kenya, Kenya Wildlife Service, Kisite MPA and the LMMAs around the park successfully implemented several activities, including compliance assessment and development of a joint LMMA compliance plan and a stakeholder network analysis. In Tanzania, the project, working with officers from the Fisheries Department and Tanzania Marine Parks and Reserves Unit, conducted various activities including awareness-raising meetings and workshops to BMU members and other key stakeholders, leadership training, compliance and competence assessment, re-established joint patrols and developed standardised monitoring protocols.

WIOMSA'S GROWING PORTFOLIO OF FISHERIES INITIATIVES

In 2019, initiatives focusing on various aspects of fisheries increased. WIOMSA has supported several fisheries projects in different years, but since the launch of the MASMA programme, the largest number of fisheries projects to be approved at one time was in 2019, making it an exceptional year. This is a major shift from a coastal ecosystems' perspective (coral reefs, mangroves and seagrass beds), which has been the focus of most of the MASMA-funded projects over the years.

In 2019, three research projects, focusing on fisheries resources, were approved for funding. Together with the "Coastal Tuna Species (Kawakawa and Skipjack)" project approved for funding in 2018, there are currently four projects focused on fisheries resources that are being implemented in the current MASMA work programme. These projects have attracted the participation of the national department of fisheries, national fisheries research institutes and regional fisheries bodies", and UN Food and Agriculture Organization (FAO).

Research projects focusing on fisheries resources

1. Billfish Interactions, Livelihoods, and Linkages for Fisheries Sustainability in the Western Indian Ocean (BILLFISH-WIO)

Lead and partner institutions:

African Billfish Foundation (Kenya), Kenya Marine and Fisheries Research Institute (Kenya), University of Dar es Salaam (Tanzania), One Earth Future, Secure Fisheries (Somalia), Community Centred Conservation (Madagascar), and the Oceanographic Research Institute (South Africa).

Countries covered:

Somalia, Kenya, Tanzania, Mozambique, South Africa and Madagascar. The goal is to advance knowledge of billfish species to promote their conservation and management.

The project focuses on:

- examining the historical and present status of billfish species;
- evaluating the socio-economic contribution and governance of billfish;

- evaluating the genetic structure of key species; and
- determining the spatial and temporal distribution of billfish species.

The project was officially launched in Kilifi, Kenya, in November 2019, bringing together 20 regional experts, global partners and students. To recognize the diversity of the project team and participants, the project has translated its strategy and data collection tools to Kiswahili, Somali, Portuguese and French.

The highly migratory nature of billfish species necessitated partnering with experts, private and public institutions, sport fishing clubs, and fishers in Somalia, Kenya, Tanzania, Mozambique, South Africa and Madagascar. The project also brings together an interdisciplinary team of experts and researchers, including a post-doctoral position, one PhD and four MSc students.



Billfish. © Isigi Kadagi

Five exciting things have been achieved by the Billfish project in its first year:

1. It has developed a standardized protocol for billfish DNA isolation in partnership with experts at Pwani University.
2. BILLFISH-WIO is working with Secure Fisheries to collect catch data across the Somalia coastline;
3. Collaboration has been established with Centre National De Recherches Oceanographiques (CNRO) in Madagascar.
4. The project has gathered historical sportfishing records from 1956 and 1982 from Mozambique and Kenya.
5. It is the first MASMA project that will be implemented in Somalia.

2. Slippery resource in peril: Ecology of Western Indian Ocean Anguillid eels and their contribution to sustainable fisheries and livelihood along the East Coast of Africa

Lead and partner institutions:

University of Mpumalanga and University of KwaZulu-Natal (South Africa); Egerton University, Kenya Marine Fisheries Research Institute (KMFRI) (Kenya), and IIP (Mozambique).

Countries covered:

South Africa (Thukela), Mozambique (Inkomati, Limpopo) and Kenya (Tana, Ramisi).

The project has adopted a multidisciplinary (bio-ecological, socio-economic and socio-cultural surveys and case studies) and multi-country approach in selected estuaries.

The aim of the project is to understand the contribution of eels to subsistence fisheries along the WIO coastal region, and consequently the contribution of these migratory fishes to community livelihoods.

The project focuses on:

- reviewing existing knowledge regarding their ecology, use and threats;
- characterization of the recruitment and escapement ecology in selected estuaries;
- evaluation of their contribution to local fisheries and livelihood; and
- undertaking of a regional scale ecological risk assessment

3. Identification, characterization & vulnerability assessment of benthic ecosystems in the WIO (WIO-BENTH)

Lead and partner institutions:

Oceanographic Research Institute (ORI); Centre d'Etudes et du Développement des Pêches (CEDP); Kenya Marine and Fisheries Research Institute (KMFRI); Tanzania Fisheries Research Institute (TAFIRI); Instituto Nacional de Investigação Pesqueira (IIP), and Institute of Marine Research (IMR) of Norway.

Countries covered:

Kenya, Madagascar, Mozambique, South Africa and Tanzania.

This project aims to make use of extensive existing survey data, hitherto only superficially analysed or not at all, to increase the knowledge of habitats (deeper soft sediments) which are poorly known. In the process, it will also start to build understanding of their functioning and provide capacity development of people to enable analysis and interpretation of the data underpinning the knowledge.

The project focuses on the continental shelf and upper slope to approximately 500m depth, in the western part of the WIO, where most of this data was collected. The project will independently and jointly undertake data analysis and species-habitat modelling in numerous workshops, and mentor junior scientists and students.

The project integrates well with other current regional research initiatives. It is particularly pertinent to Blue Economy initiatives, providing information to assist WIO

countries in achieving their Sustainable Development Goals, and to plan future surveys in the region.

The ultimate goal of the project is to produce the first regional spatial analysis and interpretation of benthic habitats and communities to assist with marine spatial planning. A key output will be an atlas depicting the spatial extent of habitats and their associated communities, which will be available to the public, scientists, managers and decision-makers.

The WIO-BENTH project secured the approval of the governments of Kenya, Tanzania, Mozambique, Madagascar and South Africa and FAO to use the data collected by RV Dr Fridtjof Nansen cruises for their research. This clearly demonstrates the importance of this research to WIO countries.

The request to use the data collected by the RV Dr Fridtjof Nansen is what led to the development of the MOU between WIOMSA and FAO for collaboration on marine research and capacity development under the framework of the EAF-Nansen Programme. The MOU does not only establish a strong and effective base for collaboration and ensure harmony and synergy in the work of the two organisations, but also provides MASMA-supported initiatives with access to data collected through the EAF-Nansen Programme with the R/V Dr Fridtjof Nansen.

3. Other research projects

Apart from the WIO-BENTH project, other initiatives that were approved in 2019 and which will use the EAF-Nansen Programme with the R/V Dr Fridtjof Nansen and other data are:

- **a regional training workshop** on the use of underwater camera systems to sample benthic invertebrate communities of the WIO region and the production of a publication, and
- **an identification guide** on fish larvae of the Western Indian Ocean.



Leawin African and Kate Rich with a Giant Mottled Eel in Zimbali, South Africa. © Celine Hanzen



Fish Catch- Mackerels, Tanga, Tanzania. © January Ndagala

COMMUNICATION AND ENGAGEMENT

REFLECTING ON THE 11TH WIOMSA SCIENTIFIC SYMPOSIUM

In July 2019, a staggering 650 participants descended on the Paul Octave Wiehe Auditorium at the University of Mauritius to attend the 11th WIOMSA Scientific Symposium. We reflect on the happenings at the event in this section.

NEW PUBLICATIONS AND MEDIA

- Western Indian Ocean Journal of Marine Science (WIOJMS) Volume 18, Issue 1 (2019)
- A Guide to the Sea Slugs of the Maputaland Coast
- Local Management of Marine Resources: A Guide for Communities in Kenya and Mainland Tanzania
- WIOMSA 2018 Annual Report
- The WIOMSA Magazine Issue 9
- WIOMSA videos

The Grande Finale of the 11th WIOMSA Symposium





REFLECTING ON THE 11TH WIOMSA SCIENTIFIC SYMPOSIUM

In July 2019, a staggering 650 participants descended on the Paul Octave Wiehe Auditorium at the University of Mauritius to attend the 11th WIOMSA Scientific Symposium. Mauritius, one of the most scenic and idyllic islands of the Western Indian Ocean (WIO) offered the perfect setting for the local organising committee to provide a spectacular opening ceremony for the symposium.



The troupe of Mauritian cultural dancers who accompanied dignitaries and organisers to the auditorium, added pomp and colour to mark the opening of a symposium that was doubly special to WIOMSA's history: the 11th Symposium coincided with the culmination of the year-long celebration of the Association's 25th anniversary, and the fact that it was the last symposium to be held in a two-year cycle. Going forward, WIOMSA Symposia will be held every three years, with the next in 2022.

The décor at the symposium venue was resplendently marine- the backdrop for the podiums, exhibition booths and banners as well as the symposium bags and giveaway material all featured an intricately designed Indian Ocean scene teeming with marine life, including octopus, whales, different fish species, corals and other marine creatures. A walk through the venue confirmed that the committee had succeeded in creating a visual connection to the ocean!

One of the parallel sessions at the symposium



The value of knowledge and research

With 32 nationalities present, the 11th WIOMSA Scientific Symposium drew a wide variety of participants, including scientists, students, managers, decision-makers, community groups and the private sector.

Jointly organised by WIOMSA, the University of Mauritius and the Nairobi Convention, the symposium had a rich scientific programme with 157 oral and 468 poster presentations, ten mini- symposia focusing on specific areas currently attracting significant regional interest, and seven keynote presentations on topics of regional and global importance.

Topics covered by the keynote speakers ranged from fishery declines and human nutrition to elimination of harmful subsidies, to the application of natural capital accounting to a blue economy. Other topics covered included coral reef devastation, reorganisation and recovery, ocean acidification and gender and ocean. The overall theme of the symposium was "People, Coasts and Oceans: Opportunities for a changing future". Due to the extraordinarily wide range of research activities that continue in the WIO, and the extensive interest in presenting at this event, the guiding themes of the 11th Symposium were wide-ranging and included 30 separately themed sessions.

"As a first-time attendee of the symposium, the event exceeded my expectations. It provided the opportunity to engage with delegates from multidisciplinary backgrounds and countries, gain an insight to the science being generated in the region, and better understand the challenges and needs of students and researchers when conducting studies in the field. It also brought insight on how decision-makers have access to the knowledge collected and generated by researchers in the WIO region and the overarching implications". Karen Bowles

Special sessions

The special session programme proved to enhance the overall symposium experience with most being well attended. The 11th Symposium attracted a record 23 sessions, which allowed regional and international stakeholders to focus on particular subjects with many colleagues present in one place at one time. The increased attendance at the symposium also provided enough participants to spread evenly among the various special sessions.

Diverse subjects were covered in the special sessions, ranging from seagrass ecology, to MPAs, sharks and rays in the WIO, SA-IORAG, octopus closures, seabed mapping, digitisation of cultural heritage, and ocean modelling, among others. Several of these sessions provided the opportunity

for committees and ongoing regional initiatives to report back to their constituencies and stakeholders. These included sessions on the WIO Mangrove Network and the WIO Sea Turtle Network, the Indo-Pacific and WIO Seagrass Networks, and the Coral Reef Task Force.

The Nairobi Convention, WIOMSA and the Institute of Advanced Sustainability Studies (IASS-Potsdam) also organised a Special Session on Ocean Governance for the WIO region, to discuss and identify the governance needs and priorities for a safe, secure, clean and sustainably managed Western Indian Ocean. It provided a basis and context for policy discussion on ocean governance. The outputs from this session were presented and discussed at a Regional Ocean Governance workshop held in Seychelles in September 2019.

A networking hub

In addition to sharing scientific information, the symposium also provided an opportunity for students and young scientists and practitioners to showcase their work and receive feedback from their peers in and outside of the region. It offered the chance to build networks and collaborations to take their career forward. Importantly, it provided an exciting environment where many social activities happened both at a formal and informal level.

As usual, WIOMSA partially or fully supported the costs of about 300 regional students to enable them to participate in the symposium. Communication and networking were enhanced during the symposium with the inclusion of two newsletters during the week, an active symposium blog, and dedicated Twitter hashtags. These communication tools provided platforms to share information and keep participants up to date with any important announcements or changes to the programme.

The workshops, special sessions and networking events organised by the network of the Women in Marine Science (WiMS) Network and the Western Indian Ocean Early Career Scientist Network (WIO-ECSN) ensured that the various WIOMSA constituent groups were kept active during the week. One of the more unique networking activities was a special session organised by the French Research Institute for Sustainable Development (IRD) in collaboration with a local NGO, Reef Conservation. **This brought local Mauritian school pupils between the age of 12 and 14 to meet the scientists and discuss the conservation of coral reefs.** This was preceded by a field visit by the students to a local reef, resulting in questions from the pupils that put the scientists through their paces during the special session.

Registration at the 11th WIOMSA Scientific Symposium



“The exhibitions were a very powerful tool at the WIOMSA conference which worked well for us. You get to have a one-on-one interaction with the participants and receive quick feedback.”
Pascale Thoya

Exhibitions

This year’s symposium attracted 11 exhibitors whose artfully designed booths attracted not only attendees, but also residents of Mauritius who visited the stands.

The ZMT booth attracted a lot of attention with their 3D virtual coral reef. Based on scientific simulations, the display showed a live response of the virtual reef to environmental stressors, all while allowing participants to dive in using a virtual reality headset. Participants could also identify the inhabitants of the reef and solve small tasks to virtually mitigate some of the damage that humans cause to coral reef ecosystems.

The SOLSTICE-WIO booth was also very popular with its display of the on-going marine robotics mission in the Pemba Channel and material dedicated to SOLSTICE MOOC; a massive online open course entitled “Ocean Science in Action: Addressing marine ecosystems and food security in the Western Indian Ocean”, which is currently being developed by a partnership of ten WIO and UK institutions and will be offered online in October 2020.

Exhibitors included the:

- Oceans and Lakes Programme of Vrije Universiteit Brussel;
- Sustainable Oceans Livelihoods and Food Security Through Increased Capacity in Ecosystem research in the Western Indian Ocean (SOLSTICE-WIO);
- Leibniz Centre for Tropical Marine Research (ZMT) from Germany;
- Terres Australes Et Antarctiques Françaises;
- Fisheries and Resources Monitoring System (FIRMS)
- MeerWissen: African-German Partners for Ocean Knowledge from Germany;
- Bazaruto Centre for Scientific Studies from Mozambique;
- The Nature Conservancy;
- Save Our Mangroves Now; and
- WIOMSA.

Le Grand Finale:

The symposium winners

The closing gala of the symposium, held at the Restaurant Reve D’R, Mont Mascal, Petit Raffray on the north of the island, served as the setting to award the various symposium competition winners.



School Art Competition

En route to the venue, symposium participants visited the Rajiv Gandhi Science Centre to view the National School Art Competition exhibition, one of the publicity activities organized by the local committee ahead of the 11th WIOMSA Scientific Symposium. The competition was open to all primary and secondary schools in Mauritius. It was a huge success as more than 200 schools submitted works of art with 1 172 entries received! The school art competition, which allowed paintings only, had to reflect the overall symposium theme and entries were not judged solely by the quality of their art, but rather by their ability to portray the theme accurately. The competition was a beautiful way of integrating science and art and proving that the two can complement each other. While the prize-giving ceremony for the competition was held in June 2019, symposium participants could still appreciate the winning entries at the exhibition.

Oral and poster competition

The standard of entries for the student oral and poster competition was high, indicating the value that the students view the competition with and its value to their development as emerging scientists and researchers. There were 60 oral presentations, up from 42 at the 10th WIOMSA Scientific Symposium. Similarly, poster presentations for students increased from 61 at the 10th Symposium to 170 in the 11th Symposium.

The winners of the student competition were feted at the gala. Rima Beesoo took the top spot as the overall winner in the oral competition category, while Ella Kari Muhl, Sammy Wambua, Ratsimbazafy Hajaniaina, Gabriel Juma and Luke Moore won various prizes in the daily oral presentations category. Ewout Knoester pipped the other poster competition entrants to the post, taking the overall prize in the poster competition. Other poster competition winners included Joshua Adrian and Lisa Ah Shee Tee Julia Carpouren, Marisa Antha, Ada Barbanera and Mahery Randrianarivo.

Photo Competition

The winners of the 11th WIOMSA Scientific Symposium photo competition received their prizes at the closing gala. The winning photo was by Toufiek Samaai, featuring a mother and child subsistence harvesting in Black Rock, South Africa. Second place went to Nuri Steinmann, with his photo of kids playing with sailing boats made out of old thongs in Jambiani, Zanzibar. Third placed was Mattia Ghilardi, with his photo titled: "Growing the next generation of fishermen. A young father crafting the first pirogue for his son in south-west Madagascar". A total of 120 entries were made to the photo competition, the highest ever. Symposium participants voted for the winner from the 20 photos pre-selected by a jury and displayed during the symposium week.

Final reflections

The icing on the symposium cake was the last plenary session which was a synopsis of key points emerging from the keynote and oral presentations and mini-symposia that were compiled by session chairs (with support of rapporteurs) and conveners of mini-symposia. These outputs were intended to contribute to the regional Ocean Governance Strategy currently being developed for the WIO under the Nairobi Convention. It was agreed that the symposium provided a unique opportunity to provide input to this process.

The strategic focus is the attainment of the objectives of the 2030 agenda and the Sustainable Development Goals (SDGs), in particular, goal 14. The ocean governance strategy aims at strengthening existing regional oceans governance mechanisms and frameworks, and where necessary, provide options and alternative arrangements to support Blue Economy and marine biodiversity conservation in the region.

"The conference provided a comfortable environment for young researchers such as myself to partake in conversations with leading principle investigators in the field from various international research institutes/organizations. The most worthwhile aspect of the conference was the ease at which younger researchers could discuss ideas with leaders in the field and subsequently grow their knowledge. The presentation questions/discussions period were also fruitful as many aspects of the marine biology field, as well as techniques, were covered, thus providing a broad-spectrum discussion among attendees." Ashrenee Govender

Participants during the opening ceremony of the symposium



NEW PUBLICATIONS AND MEDIA

Western Indian Ocean Journal of Marine Science (WIOJMS) Volume 18, Issue 1 (2019)

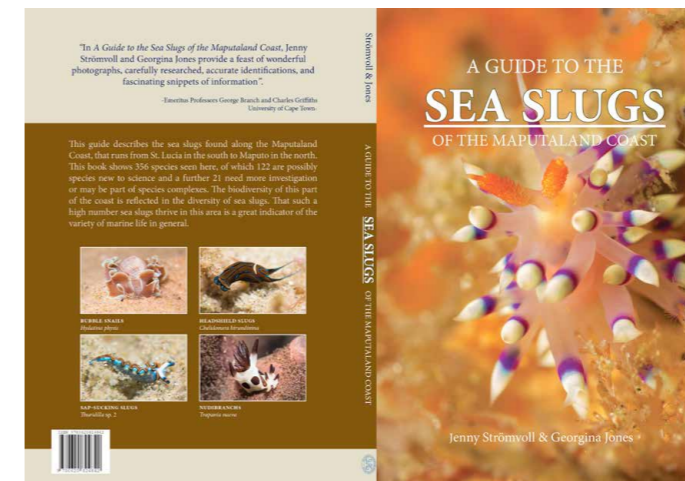
<https://www.ajol.info/index.php/Wiojms/Issue/View/18302>

WIOJMS published one issue in 2019 with the following papers:

- i. Shelf life assessment of hot smoked African catfish stored under different storage conditions from Lake Kenyatta, north coast, Kenya. Maurice O. Obiero, Cyprian O. Odoli, Peter O. Odote, Raymond K. Ruwa, Maurice O. Omega.
- ii. Post-bleaching mortality of a remote coral reef community in Seychelles, Western Indian Ocean. Elena Gadoutsis, Clare A.K. Daly, Julie P. Hawkins, Ryan Daly.
- iii. Improving bycatch mitigation measures for marine megafauna in Zanzibar, Tanzania. Yussuf N. Salmin, Narriman S. Jiddawi, Tim Gray, Andrew J. Temple, Selina M. Stead.
- iv. Hook size selectivity in the artisanal handline fishery of Shimoni fishing area, south coast, Kenya. Mary B. Ontomwa, Benerd M. Fulanda, Edward N. Kimani, Gladys M. Okemwa.
- v. Ecological classification of estuaries along the Tanzanian mainland: a tool for conservation and management. Lulu T. Kaaya.
- vi. The status of Mtwapa Creek mangroves as perceived by the local communities. Judith A. Okello, Victor M. Alati, Sunanda Kodikara, James Kairo, Farid Dahdouh-Guebas, Nico Koedam.



- vii. A review of nudibranch (Mollusca: Euthyneura) diversity from the Republic of Mauritius: status and future work. Lisa K.Y. Ah Shee Tee, Daneshwar Puchooa, Vishwakalyan Bhojroo, Chandani Appadoo.
- viii. A first account of the elasmobranch fishery of Balochistan, south-west Pakistan. Mauvis Gore, Umer Waqas, Mohammed M. Khan, Ejaz Ahmad, Asghar S. Baloch, Abdul R. Baloch.
- ix. The cavernicolous swimming crab *Atoportunus dolichopus* Takeda, 2003 (Crustacea, Decapoda, Portunidae) reported for the first time in the Western Indian Ocean during technical dives in the mesophotic zone. Gabriel Barathieu, Olivier Konieczny, Joseph Poupin.



A Guide to the Sea Slugs of the Maputaland Coast

Co-authored by Jenny Strömvoll and Georgina Jones, "A Guide to the Sea Slugs of the Maputaland Coast", is out. The book, supported by WIOMSA through its MASMA Programme, is a guide to the sea slugs found along the Maputaland Coast, which runs from St Lucia in the south to Maputo in the north.

This book covers 356 species, 122 of which may be species new to science, and 21 require more investigation or could be part of species complexes.

"In 'A Guide to the Sea Slugs of the Maputaland Coast', Jenny Strömvoll and Georgina Jones provide a feast of wonderful photographs, carefully researched, accurate identifications, and fascinating snippets of information" – Emeritus Professors George Branch and Charles Griffiths, University of Cape Town



Local Management of Marine Resources: A Guide for Communities in Kenya and Mainland Tanzania

This publication, available in both English and Kiswahili, has been published. It is designed to guide community members and resource users who want to manage their natural resources by developing a strategy for local management of their coastal areas and marine resources.

It is meant not as a comprehensive step-by-step guide, but rather as an introduction to the important ideas and processes involved in establishing local management. The guide provides some links where those interested can find out further information or can request support and practical assistance. <https://www.wiomsa.org/publications/local-management-of-marine-resources-a-guide-for-communities-in-kenya-and-mainland-tanzania/>

WIOMSA 2018 Annual Report

In 2018, WIOMSA celebrated its 25th Anniversary. The WIOMSA President, Dr Jacqueline Uku takes a special walk down memory lane in her editorial piece for Annual Report, highlighting the achievements, key success factors, challenges, opportunities and new directions for WIOMSA. <https://www.wiomsa.org/wp-content/uploads/2019/10/Wiomsa-AR-FINAL-LR.pdf>



WIOMSA videos



WIOMSA at 25: Celebrating the past, shaping the future

<https://youtu.be/augwe0oE6hQ>

The video features the pioneers of WIOMSA's history, a few brave personalities who played pivotal roles in the creation and development of the Association. The speakers reflect on the progress of WIOMSA and the difference the Association has made during in its 25-year history. The future pathways for the Association are also highlighted.

Women in Marine Science

<https://youtu.be/G4j7laCX1SE>

This video features some of the inspiring women marine scientists who work in the Western Indian Ocean region. They offer reflections on their careers and the challenges they have faced as women in marine science.

"Proud of Dr Nyawira, she inspires many." Beatrice Jerop, Kenya

"This is why I am pursuing my Master's in Marine Biology. Great minds!" Refiloe Mofokeng, South Africa

"This is a wonderful video! Thanks to everyone who made it! I love it and can't wait to share it! Such inspiring stories!" Anushka Rajkaran, South Africa

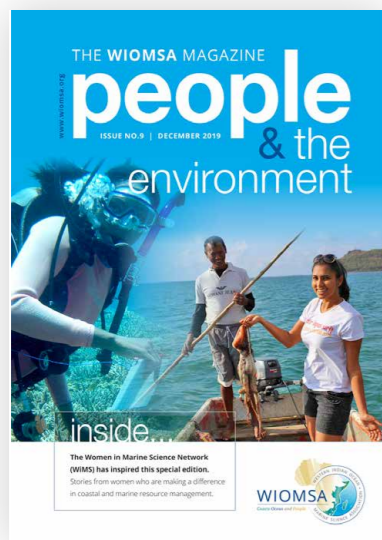
"Congratulations to one of the pillars of marine sciences in this fantastic but fragile oceanic region. Climate change, ecosystem health, habitat degradation, and fishing pressure are amongst the main concerns in this region. The science supported by WIOMSA is a sentinel to protect the status of marine ecosystems and investigate solutions for their sustainability. It is a challenge for the future generation. WIOMSA onwards, onwards!" Pa Bak.

"Congratulations with the 25th anniversary which is a tremendous achievement! It's great to see some of my colleagues in the video again after such a long time. I wish you all the best and hope to see you and other old friends again!" Peter Pissierssens, UNESCO/IOC Project Office for IODE

"What a wonderful retrospective on all of the important and impactful work that has been done over the years. And what a delightful stroll down memory lane and to see so many familiar faces. None of us have aged one bit!" Mark Amaral

The WIOMSA Magazine Issue 9

This issue features the stories of women working in the marine and coastal field in the Western Indian Ocean region and beyond, who are making a difference in the management of vital coastal and marine resources. https://www.wiomsa.org/wp-content/uploads/2020/06/WIOMSA-magazine-issue-10_May2020.pdf



"I love it! Brilliant content and inspiring yet relatable role models! Congratulations to all involved" Nashreen Soogun, Mauritius

"Great articles and very good initiative!" Mercy Amai, Kenya

"Humbled to be featured in the WIOMSA Magazine, People and the Environment, inspired by the WiMSnetwork which celebrates remarkable women working in the marine and coastal field." Josheena Naggea, Mauritius

"This special issue of the WIOMSA Magazine is full of stories and advice, all told by women in the field! A truly brilliant issue. Congratulations!" Nina Wambiji

PARTNERSHIPS AND NETWORKS

An essential part of WIOMSA's work is to engage with different partners and networks to further the cause of a sustainably managing coastal and marine environment for the Western Indian Ocean Region (WIO).

WIOMSA recognises that the challenges facing the coastal and marine environment cut across multiple sectors and are transboundary in nature. They are dynamic and require collaborative action to address. Hence, WIOMSA established partnerships with governments, non-state actors, the academic community and many others.

*The Constructed Wetlands Technology for
Waste Water Treatment workshop*



PARTNERSHIP WITH GIZ FOR THE MEERWISSEN PROGRAMME

The **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)** entered into a grant agreement with **WIOMSA** to assist with aspects of implementation of the **MeerWissen Programme**.

The MeerWissen Programme was initiated in 2018, recognising that the ocean and its resources are indispensable for food security and economic development. Nevertheless, pollution and overuse has increased due to intense population growth and unregulated urbanization along the coasts, among other things, and scientific knowledge is not always available to allow informed decision-making. MeerWissen recognises that it is essential for science and policy to work together to tackle the complex issues in the marine and coastal arena and allow scientific results to be reflected in decision-making, as well as to streamline research and political agendas.

Meerwissen partnered with WIOMSA because of the Association's strong regional network which allows WIOMSA to act as a regional hub for marine science policy efforts in the region, linking individual projects and integrating

results into regional science policy processes. The partnership with WIOMSA includes logistical and technical backstopping as well as advice during implementation of African-German Partnership projects to ensure strong and sustained regional support in the WIO region.

The activities carried out through the grant funding in 2019, included:

- organising a regional co-design workshop for African-German Partnerships in the WIO in South Africa in March 2019;
- the establishment of a community of practice for African-German Partnerships;
- the production of guidelines to facilitate the uptake of research results from African-German partnerships into regional policy frameworks; and
- support of participants to the 11th WIOMSA Scientific Symposium.

Fishing boats and mangroves, Chwaka Bay, Zanzibar. © Rahim Saggaf



PARTNERSHIP FOR MARINE LITTER MONITORING

WIOMSA established some notable partnerships in 2019. One of these with the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities was for the implementation of a workshop on, "Implementation on UN Environment Assembly Resolutions on Marine Litter and Microplastics".

Through the partnership – involving WIOMSA, the National Environment Management Authority in Kenya, the Environment Department of Seychelles and Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) – **44 government employees from Kenya and Seychelles were trained on marine litter**

monitoring while also collecting good baseline data on marine litter in these countries.

During the workshop, participants tested the draft methodology for Sustainable Development Goal (SDG) indicator 14.1.1 on marine litter and refined it based on their field experiences. Robust baseline data on the state of marine litter in Kenya and Seychelles was collected that will inform the national source inventory in these two countries. Once analysed, the data will contribute to the development of national action plans on marine litter for Kenya and the Seychelles.

THE WOMEN IN MARINE SCIENCE NETWORK

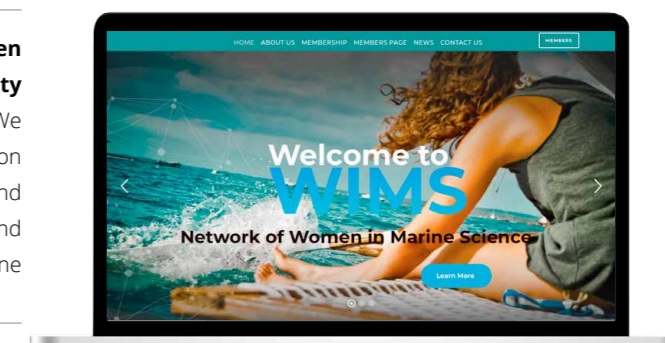
2019, was the first year of operation for the Women in Marine Science Network (WiMS) hosted by WIOMSA. A number of activities were implemented, including the appointment of two members to the WiMS steering committee: Batuli Yahya representing Zanzibar and Anne-Elise Nieblas representing La Réunion.

The first major milestone for WiMS during the year, was the launch of the network's website (wims.wiomsa.org) on International Women's day, 8 March 2019.

The WiMS website is a one-stop resource for women to engage, share their stories, build their capacity and foster partnerships among themselves. We believe that the website will help increase the participation of female marine scientists in research projects and decision-making bodies and be a source of inspiration and motivation for young women to pursue careers in marine

science. Women scientists of all ages and from different fields are encouraged to use the site to increase their visibility by sharing their stories.

The website features information about WiMS, including objectives and mission, the leadership team, news and events. The website also includes a members' portal – a safe space for women – where members can create their own professional profiles, create forums and groups, discuss current topics, and search for collaborators and network with other women marine scientists from around the world. As the WiMS membership grows, there are plans to include a resource database.



I WiMS at the 11th WIOMSA Symposium

WIOMSA scientific symposia offer unique opportunities for networks such as WiMS to gather and interact. Indeed, that was what happened at the 10th WIOMSA Symposium in 2017 when WiMS was officially launched. During the 11th WIOMSA symposium in Mauritius in 2019, WiMS organized several events which attracted members and non-members.

WiMS started off the symposium week on 30 June with a pre-symposium workshop – **“Women and Ocean Workshop: Implementation of the SSF Guidelines and their gender dimension”** – organized by WiMS in collaboration with Mundus Maris. The event focused on discussion about gender dimension in marine science and practice. About 30 leading researchers, academics, scientists, policy makers, practitioners and students from Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, Reunion (France) and Tanzania came together to discuss, “what could we start to do here and now together towards gender equity in the context of our work on conservation and sustainable use of the WIO?”.

The second major event during the symposium was a speed networking lunch that was attended by 115 symposium participants. It offered a short introduction to WiMS before participants were divided into groups and tasked with discussing some questions and presenting the outcome of these discussions in plenary sessions.

WiMS also attended and delivered a presentation about our work at the special session organized by the Western Indian Ocean Early Career Scientist Network (WIO-ECSN) and offered future scientists the opportunity to shadow one of its leading women marine scientists at the symposium.

Community engagement and awareness: Primary school pupils during a marine ecology lesson, Mafia Island Marine Park, Tanzania. © January Ndagala



I WiMS communication and social media

WiMS carried out several communication activities. One important part of this work is carried out by WiMS' social media accounts (Facebook, Instagram and Twitter). **The platform with the most followers is the WiMS Twitter account, reaching over 2 000 followers during the year, followed by Facebook with 957 followers by the end of the year, and Instagram with over 400 followers.**

A popular feature on the social media platforms during 2019 was the introduction of the WiMS Steering Committee members. Each member answered a couple of questions, giving our followers a unique opportunity to get to know our leadership team better.

In December 2019, a special edition of the WIOMSA Magazine was published, featuring stories of women working in the marine and coastal field in the WIO region and beyond. The theme of Issue 9 was “Breaking the class ceiling: stories from women who are making a difference in coastal and marine resource management”.

Part I of this series contained 14 articles and was edited by Claire Attwood. Claire best explains the connection between the women featured in the magazine when she describes it as “a golden thread running through the wonderful collection of stories. It is a thread that connects social scientists, to natural scientists, managers to policy makers, senior researchers to upcoming ones, science to the community and the WIO region to the globe”. This issue was the first of two focused on women in marine science. The second will be released in 2020.

f Facebook:
Network of Women in Marine
Science - @WiMSnetwork

t Twitter:
Women in Marine Science
(WiMS) - @WiMSnetwork

ig Instagram:
wims_network

A coastal fishing village in Belo sur Mer, Manambalo Tsiribihina Landscape. © WWF Madagascar



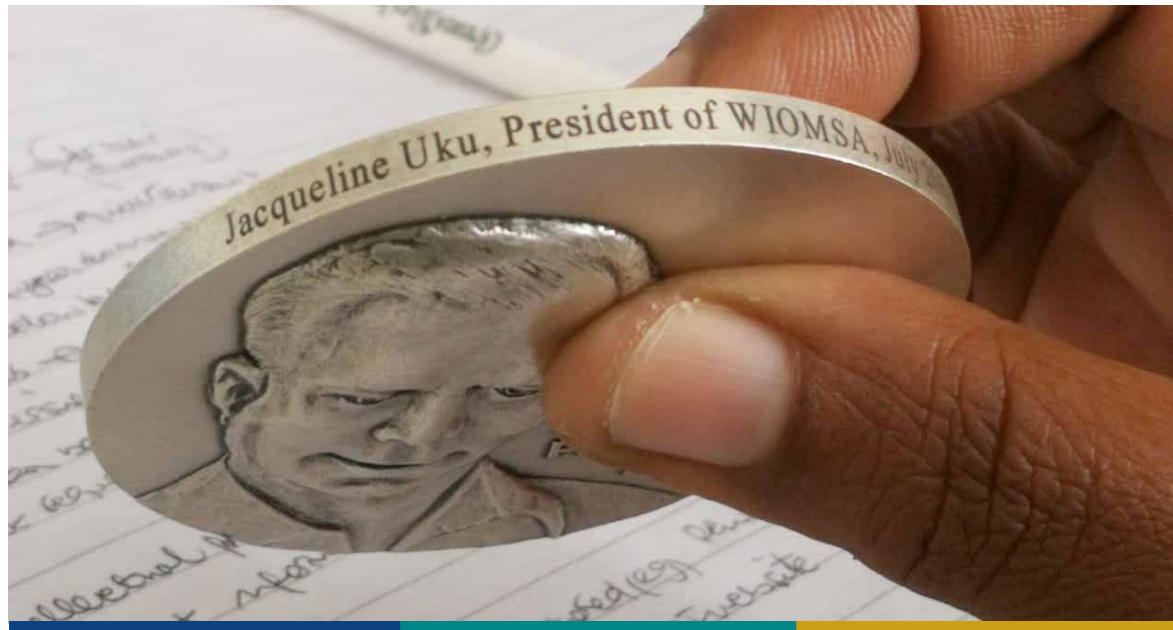
MEMBERS' CORNER

One of WIOMSA's strongest assets is its membership. We encourage members to share their highlights, skills and achievements. This section of the Annual Report is dedicated to sharing the stories of WIOMSA members as well as news from the WIOMSA Secretariat.

*Community Algoculture in Belo sur Mer,
Manambalo Tsiribihina Landscape.*
© WWF Madagascar



WIOMSA PRESIDENT WINS PRESTIGIOUS NK PANIKKAR MEMORIAL AWARD



Dr Jacqueline Uku was awarded the 2019 NK Panikkar Memorial Award for her work in capacity building in marine science issues at regional and national levels. The award was presented in July 2019, following Dr Uku's NK Panikkar Memorial Lecture and a live streaming question and answer session.

Dr Uku's lecture focused on the journey of WIOMSA and the region in capacity building since the establishment of the Association and the partnerships that have led to the development and growth of the scientific dialogue in the WIO region. The memorial lecture was well attended by over 180 delegates at the IOC of UNESCO General Assembly currently taking place in Paris, France.

The NK Panikkar Memorial Lecture Series is dedicated to the memory of the noted Indian oceanographer, Dr NK Panikkar. Following a proposal by the German delegation during the 18th session of the IOC Assembly (1995), which received the support of the Indian delegation, it was decided to hold a Dr Panikkar Lecture during each IOC Assembly to address capacity building in marine science issues at regional and national levels.

JAMES KAIRO NAMED AS A PEW FELLOW IN MARINE CONSERVATION

Dr James Kairo, chief scientist at the Kenya Marine and Fisheries Research Institute and a WIOMSA fellow member, was named as a 2019 Pew fellowship recipient. Dr Kairo was selected based on his project, "Assessing blue carbon from mangrove forests to inform Kenya's nationally determined contributions under the Paris Agreement".

The project seeks to boost conservation of Kenya's mangrove forests by supporting their inclusion in the country's climate mitigation strategy, based on their potential to store carbon.

Dr Kairo will use his Pew tenure to measure the size, productivity and biodiversity of mangrove forests in Lamu County, Kenya, which contains 70 percent of

the country's mangroves. He will estimate how much carbon these mangrove forests store and the amount of carbon emissions that would result from their loss or degradation. He will also assess the risks of mangrove deforestation at different geographic scales. Dr Kairo will provide this information to the Kenya Forest Service and other agencies that are considering integrating blue carbon into Kenya's nationally determined contribution under the Paris Accord. This information could affect how mangroves are valued, managed and protected.

Pew fellows and their projects are selected for their significant promise in protecting a diverse group of marine species and habitats. Since 1996, the Pew Fellows Programme in Marine Conservation has recognised 172 marine experts in 39 countries. Fellows receive \$150 000 each to pursue a three-year project to address a pressing ocean conservation challenge.



AWARD WINNING SCIENTIST AND WIOMSA STUDENT MEMBER

Rima Beesoo won the L'OREAL UNESCO Women in Science Award for Africa among 14 other exceptional young women scientists. Rima is a PhD candidate and WIOMSA student member from Mauritius, who has attended several scientific symposia which she partly credits for her recognition in the marine sector in the region, indeed in Africa.

"I would like to thank WIOMSA for the experience, knowledge and skills gained from attending the symposia which has led me to win the L'OREAL-UNESCO Women in Science Award for Africa for my work in the field of marine science in the WIO region. The only WIOMSA student member and African woman marine scientist to win this so far!" said Rima.

"Attending the WIOMSA Scientific Symposium as a PhD student since 2013 has benefitted me both professionally and personally," she adds.

"It has given me the opportunity to share and learn best practices for my research work and participate in a wide range of networking opportunities with eminent marine scientists around the world. It also allowed me to build up my team management skills by providing a forum where I was able to take the pulse of what is happening with regard to innovative new developments in the marine science area in response to emerging trends."



NEW WIOMSA COUNTRY COORDINATOR FOR COMOROS



The WIOMSA Board of Trustees appointed **Mohamed Mrovili as the new Country Coordinator for Comoros.**

Mohamed holds a Master's degree in Biodiversity and

Marine Ecosystem Management from the department of Marine Science of the Sudan University of Science and Technology in Khartoum, Sudan. He is currently working

at the Department of Fisheries, Ministry of Environment and Agriculture in Comoros. He heads the research team for marine science research and supports the development of policies on marine biodiversity. His vision as the Country Coordinator for Comoros is to promote WIOMSA in Comoros, including recruiting new members to the Association and increasing participation of Comorian experts in WIOMSA's activities.

POST-DOCTORAL RESEARCH FELLOW JOINS WIOMSA STAFF



Dr Vera Horigue joined WIOMSA as a postdoctoral research fellow in October 2019, to work through a co-funded fellowship under Macquarie University (Australia) and WIOMSA. Vera specializes in

marine conservation planning and Marine Protected Area (MPA) management and governance.

Originally from the Philippines, Vera started out as a marine biologist working on both coral reefs and fisheries. Her involvement with conservation organisations and various development projects shaped her interest in marine conservation. Seeing how human activities and actions severely impacted and continue to threaten coastal and marine ecosystems, Vera realized how important it is to improve environmental planning and governance. This led her to pursue post-graduate studies in Europe and Australia to further increase her knowledge

and experience of integrated coastal management and systematic conservation planning.

Vera has a joint MSc degree in Water and Coastal Management from Universidad de Cadiz, Spain, and the University of Plymouth, United Kingdom. She earned her PhD at the ARC Centre of Excellence for Coral Reef Studies at James Cook University, Australia. After concluding her PhD, she worked as a post-doctoral research fellow at the University of the Philippines Marine Science Institute with the "Capturing Coral Reefs and Related Ecosystems" project – funded by the World Bank/Global Environment Facility – where she developed tools and capacity building modules to support MPA design for fisheries management.

Working with WIOMSA and stakeholders, Vera is looking forward to helping develop management solutions and strategies to support the implementation of marine spatial planning in the WIO region. Using her experience in the Philippines and the Coral Triangle region, she hopes to further abate exploitation and degradation of marine resources in the WIO region.

RESOURCE MOBILIZATION

While core contributions from our principal donor, the Government of Sweden, remains the bedrock of WIOMSA's financing, we are enhancing our capacity to leverage our existing assets to capitalise the WIOMSA Trust Fund, which we believe will be the vehicle to WIOMSA's future sustainability. Considerable efforts have been made to enhance the Association's engagement with an increasingly diversified and broader donor base. In addition, WIOMSA has put substantial effort into strengthening its overall financial management systems and internal control framework.

Lion fish © Malindi Marine Park



I RESOURCE MOBILIZATION

In 2019, resource mobilization efforts focused on three main fronts:

1. **WIOMSA continues to benefit from its traditional sources of income**, including project overheads, book sales, membership fees, office rentals, etc. All these sources raised enough funds in 2019 to enable the Association to contribute US\$80 000 towards the capitalization of the WIOMSA Trust.
2. **The support provided by different organizations to the 11th WIOMSA Symposium**, including the University of Mauritius, IOC-UNESCO, Scientific Committee on Oceanographic Research (SCOR), the Indian Ocean Commission, the Nairobi Convention Secretariat, GEF and several Mauritius-based organizations.
3. **The projects from which WIOMSA accrued management fees in 2019, including new and on-going projects.**

The on-going projects included:

- the USA's State Department-funded project, **"Strengthening East African Marine Protected Areas"**;
- the Africa-Union funded project, **"GMES-Africa Marine and Coastal Service Development for Southern Africa"** (MarCoSouth);
- the GEF-funded project, **"Support the Implementation of the Strategic Action Programme for the protection of the Western Indian Ocean from land-based sources and activities"** (WIO-SAP);
- the UK's Global Challenges Research Fund (GCRF) project, **"Sustainable Oceans, Livelihoods and food Security Through Increased Capacity in Ecosystem research in the Western Indian Ocean"** (SOLSTICE-WIO); and
- the World Bank-funded project, **"Conducting institutional support and technical backstopping for priority marine fisheries research in Tanzania"**.

Coral reefs in Ambodivahibe, Nosy Hara National Park © WWF Madagascar



The new projects are:

- the Blue Action Fund-funded project, **"Creating a network of resilient MPAs in globally significant areas of the Western Indian Ocean region"**. This project, led by the Wildlife Conservation Society (WCS) and WIOMSA, is one of the co-investigators. The project is being implemented in the proposed Kenya-Tanzania Transboundary Conservation Area and in Madagascar.
- the GEF-funded project, **"Support the Implementation of the Western Indian Ocean Large Marine Ecosystem Strategic Action Programme Policy Harmonization and Institutional Reforms"** (WIO LME SAPPHIRE). Through this project, WIOMSA is coordinating the production of these outputs:
 - o a working document for the regional workshop on Ocean Governance in the WIO region; and
 - o draft Ocean Governance Strategy and Regional Ecosystem Monitoring Guidelines for WIO large marine ecosystems.
- UNEP's Global Programme of Action for the Protection of the Marine Environment from Land-based Activities-funded project, **"Implementation on UN Environment Assembly Resolutions on Marine Litter and Microplastics"**. The UN Environment in collaboration with WIOMSA implemented this project aimed at building capacity in marine litter monitoring while simultaneously collecting a strong baseline of data on marine litter in Kenya and the Seychelles.

Community members preparing mangrove propagules for planting, Belo sur Mer, Manambalo Tsiribihina Landscape. © WWF Madagascar

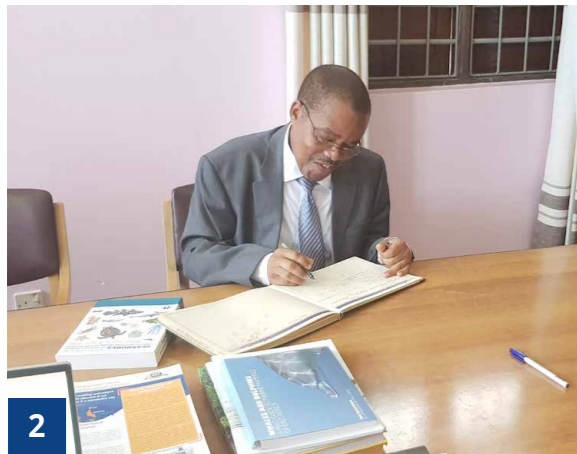


| WIOMSA DIARY 2019



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1. LMMA leaders workshop, Mombasa, Kenya, January 2019. 2. IORA membership: Courtesy call by the Ministers of Foreign Affairs Tanzania and Zanzibar, Zanzibar, February 2019. 3. Sida & WIOMSA Annual Review meeting, Zanzibar, March 2019. 4. WIOMSA Board of Trustees meeting, Nairobi, March 2019. 5. Cities and Coasts: MIJIBORA Project launch meeting, Mombasa, Kenya, March 2019.



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6. ICZM Protocol: 4th negotiations meeting, Dar es Salaam, March 2019. 7. MARG I Projects Review Committee meeting, Dar es Salaam, March 2019. 8. MASMA: Larval fish production and dispersal in critical habitats of coastal East Africa project launch, Mombasa, Kenya, March 2019. 9. Launch workshop for WIOMSA's marine litter projects, Mombasa, April 2019. 10. MASMA: Zoo plankton Identification workshop, Zanzibar, March 2019. 11. MASMA: Seagrass Protect' project inception meeting, Dar es Salaam, April 2019.

WIOMSA DIARY 2019



12. Meerwissen kick-off and co-design workshop, Langebaan, South Africa, March 2019. **13.** WIOMSA President meeting with Secretariat staff, Zanzibar, May 2019. **14.** Regional Economic Communities and Commissions Meeting Durban April 2019. **15.** MASMA PC meeting, Nairobi, May 2019. **16.** WIMS Speed networking, Mauritius, July 2019. **17.** Group on Experts on marine litter launch workshop, Cape Town, June 2019



18. Quantification and Valuation of Coastal Ecosystem Services Workshop, Mombasa, June 2019. **19.** MASMA: WIO Anguillid Eel Project Inception meeting, Mombasa, November 2019. **20.** 11th WIOMSA Scientific Symposium, Mauritius, July 2019. **21.** Western Indian Ocean Regional Ocean Governance workshop, Seychelles, August 2019. **22.** Registrar of NGOs courtesy visit, Zanzibar, August 2019.



WIOMSA DIARY 2019

23. WIOMSA & partners marine litter monitoring and data collection workshop, Mombasa, August 2019. **24.** WIOMSA & partners marine litter monitoring and data collection workshop, Seychelles, September 2019. **25.** Ocean Acidification workshop on sample collection and setting up of laboratory experiments, Mombasa, October 2019. **26.** WIOMSA & partners: Indian Ocean Regional Ocean Acidification workshop Ocean, Zanzibar, October 2019. **27.** Joint MASMA and Cities & Coasts Grantees meeting, Mombasa, November 2019



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28. MASMA: Billfish WIO Inception meeting, Mombasa, November 2019. **29.** Cities & Coasts: Geospatial Technology workshop, Mombasa, November 2019. **30.** Cities & Coasts: Mijibora Peer Learning Exchange visit, Mombasa, November 2019. **31.** Cities & Coasts: Kenya Planners Conference, Mombasa, November 2019. **32.** WIO-COMPAS Level 1 Certification Event, Mombasa, Kenya. **33.** WIOMPAN scoping workshop, Mombasa, Kenya. **34.** Cities & Coasts: Constructed Wetland Systems workshop, Mombasa, November 2019.



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FINANCIAL STATEMENT

WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION CONSOLIDATED STATEMENT OF RECEIPT AND PAYMENTS FOR THE PERIOD ENDED 31/12/2019

	Note	2019 US\$	2018 US\$
Fund at the beginning of the year	1	3,298,060	860,043
Add Income received			
Other Income	2	1,427,771	1,278,962
Income from Sida	3	<u>4,257,905</u>	<u>4,274,371</u>
Total Amount Available		8,983,735	6,413,375
Less Payments			
Masma Payments	7	3,521,286	1,519,972
Cities and Coasts Payments	8	842,088	136,355
Other projects Payments	9	1,511,102	1,425,020
Trust fund investment expenses	12	13,740	39,207
Total payments		5,888,216	3,120,554
Surplus/(deficit) for the year		3,095,520	3,292,821
Add back Amount transferred to Trust funds		-	5,239
Fund balance		3,095,520	3,298,060

NOTES TO FINANCIAL STATEMENT

1. BASIS OF PREPARATION OF THE FINANCIAL STATEMENTS

- i) These financial statements have been prepared in accordance with Cash Basis of accounting in compliance with General Accepted Accounting Principles - GAAP. No account is taken of income not yet received and liabilities for goods and services remaining unpaid at the end of the financial period.
- ii) These financial statements have been prepared under Historical Cost Convention and records are kept on historical cost.

2. ADVANCE PAYMENTS

These constitute of overdrawn projects of which its subsequent/ or final tranches are expected soon.

3. PROJECT BALANCES

These constitute on-going projects/activities with credit balances.

4. SOURCES OF FUNDS

WIOMSA is mainly funded by SIDA under MASMA and Cities and Coasts program, other donors normally contribute or finance specific activity(s) and last when the financed Projects or activity is completed. Other sources include sale of WIOMSA products such as journal, membership fees and registration fees from WIOMSA symposium.

5. TERMINAL BENEFIT

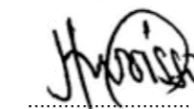
All WIOMSA staffs are employed on contractual basis and their terminal benefit are taken care off and paid at the end of the contract.

6. TAXATION

WIOMSA being non-profit organization is exempted from income taxes.

WESTERN INDIAN OCEAN MARINE SCIENCE ASSOCIATION CONSOLIDATED BALANCE SHEET AS AT 31ST DECEMBER 2019

ASSETS	NOTE	2019 US\$	2018 US\$
Building		315,268	315,268
Furniture		5,156	5,156
Cash and Bank	4	3,095,520	3,298,060
Short term Investments	11	1,355,741	1,297,644
Advance Payments	5	<u>304,740</u>	<u>212,722</u>
Sub-total		5,076,425	5,128,850
Less Projects balances	6	3,113,350	3,260,751
Total net Assets		1,963,075	1,868,099
Financed by			
Capital fund	10	320,268	320,268
Trust Fund	9	30,864	30,864
Endowment Fund		1,611,943	1,516,967
TOTAL		1,963,075	1,868,099



Executive Secretary



Finance Officer

NOTES TO FINANCIAL STATEMENT (Continued)

7. FINANCIAL INSTRUMENTS

WIOMSA uses only non-derivate financial instruments as part of its ordinary activities. The financial instruments in operation are such bank accounts, account receivables and account payables.

8. REPORTING CURRENCY

The reporting currency as per these financial statements is US Dollars.

9. FOREIGN CURRENCIES

Transactions in other than reporting currency are translated at the rate of exchange prevailing at the date of the transactions. Monetary assets and liabilities are translated at the rate of exchange prevailing at the reporting date. The resulting gains or losses are recognized in the statement of financial performance.

10. PRINCIPAL ACTIVITIES

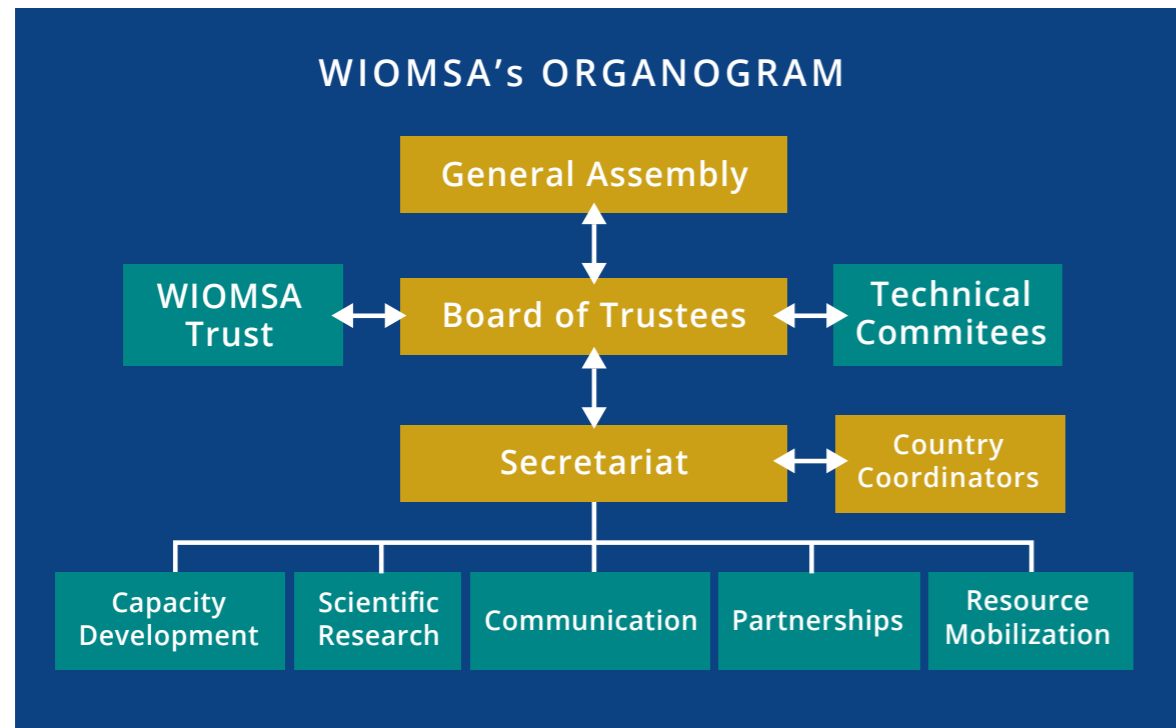
The principal activities of WIOMSA are promoting the educational, scientific and technological development of all aspects of marine science.

11. ACCOUNTING PERIOD

The accounting period starts on 1st January and ends on 31st December each year.

ORGANIZATIONAL STRUCTURE

By 2020, WIOMSA will be widely recognized as a leader in promoting the development of marine and coastal science professionals, advancing marine and coastal science and promoting the conservation and sustainable development of coastal and marine environment.



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WIOMSA

Coasts Ocean and People



ABOUT WIOMSA

The Western Indian Ocean Marine Science Association promotes the educational, scientific and technological development of all aspects of marine sciences throughout the Western Indian Ocean region with a view towards sustaining the use and conservation of its marine resources.

CELEBRATING

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