

Quelimane, January 2023

1- Introduction to School

2-Teaching – Undergraduate and Graduate

3-Research and Outreach.



Vision - To be a school of national, regional and international reference in creating and disseminating scientific knowledge and innovation, highlighting research as the basis of teaching-learning and outreach processes for the sustainable development of marine and coastal areas.

Mission - promote, teaching, research and outreach for the exploitation, development and sustainable use of marine and coastal resources for the benefits at local, country and regional levels.



Objectives of the school

Teach undergraduate, graduate and short-term courses and programs;

Undertake multi-disciplinary research and outreach activities related to sustainable use and exploitation of the sea and coastal areas;

Contribute to the maintenance and conservation of marine and coastal biodiversity; and

Contribute to the conservation of marine and coastal archaeological heritage.



Teaching – Undergraduate and Graduate

BSc Courses

Duration: 4 Years

Oceanography (2006)

Marine Biologia (2006)

Marine Chemistry (2009)

Marine Geology (2014)

(Students – 317)

MSc Course

By Cousework – 2 Years

Applied Oceanography (2010)

Sustainable Aquaculture(2010)

Sustainable Fisheries (2010)

Students – 35

MSc By Research – 2 years

Applied Marine Science (2024)

Research lines

Aquaculture

Fishing Technologies and Fisheries Management

Renewable energy

Oceanography and Marine Services

Total Number of students (BSc+MSc) = 427



Number of Students by Courses

B.Sc Courses (2022)	Total	Female	Male	% Female
Marine Biology	107	53	54	50
Marine Chemistry	69	35	34	51
Marine Geology	63	21	42	33
Oceanography	78	20	50	26
Total	317	120	197	41

M.Sc. Courses (2022)	Total	Male	Female	% Female
Applied Oceanography	11	9	2	18
Sustainable Aquaculture	12	4	8	67
Sustainable Fisheries	7	6	1	14
Total	31	19	11	35



Number of Lecturers

Lecturers (Full Time)	Total	Male	Female	% Female
P.hD	6	5	1	17
M.Sc	13	5	8	61
B.Sc (M.Sc. candidates)	4	3	1	25
Total	23	13	10	43

Part-Time Lecturers (MSc)

Total - 13

Female - 1

Male - 12



Graduate Employment of students

Working Institutions or NGOs	Working in High Education	Research/Studying Institution
MCTES – Science and Tech.	UNI-LICUNGO	Scottish (Uni-Starling)
MIMAIP – Fisheries and Sea	UNI-ROVUMA	USA (U. Califórnia)
MTC (INAHINA, INAMAR)	UNI-LURIO	England (U. Nottingham Trent)
MADER (Agriculture end Rural Development)	UNI-SAVE	Spain (U. Alicante)
Ministry of Trading	UP-MAPUTO	Italy (U. Bologna)
MDN (Marine Navy)	ISPG	China (U. TONGJI)
TOTAL – Oil and Gas	UNI-PUNGUE	India (U. Parul)
AQUAPESCA – Aquaculture farmers	UNI-ZAMBEZE	South Koreaia(U.N. Pukyong)
CRUSTAMOZ – Fishing Company		Brazil (UFSC, FURG, UFF, UFRJ)
		Cuba (U. Havana)
		Portugal (U. Algarve, Lisbon)



Research Activities at School

Research Topics / Lines

- Aquaculture;
- Fisheries Ecology and Management;
- Marine and Coastal Renewable energy;
- Marine Geology;**
- Marine Chemistry;**
- Marine Biology and Ecology;
- Oceanography and Marine Services;
- Climate impacts on fisheries and costal communities;
- and
- Conservation of Marine and Coastal Ecosystems



Cooperation Institutions

National

- **MCTES: FNI/IBE**
- **AQUAPESCA**
- **MIMAIP: IIP/DPMAIP**
- MTC, INAHINA, INAM
- CRUSTAMOZ
- USAID/CCAP
- BIOFUND
- CMCQ
- ANAMA
- WWF
- ISPG
- MMAIP-InoM
- Blue Forest
- WCS

International

- WIOMSA
- C-RISe
- WWF – EFN
- CAPES
- NSFC
- FCT- Portugal
- USAID-USFS
- RBINS
- University of Algarve (Portugal)
- University of Lisbon (Portugal)
- University of Alicante (Spain)
- University of Bergen (Norway)
- ORI;
- KMFRI (Kenya)
- TAFIRI
- University of Victoria (Canada)
- University of Lilongwe (Malawi)
- University of Dar-Es-Slaam (TZ)





UNIVERSIDADE
EDUARDO
MONDLANE

Research Facilities



Small Boat
(In the process of
acquiring a new
engine)

Access to Scientific Journals from

- **WIO jrs**
- RGCI
- EMERALD
- Virtual Library (UEM)
- **Scencedirect.com** (Elsivier.com)





Aquaculture Laboratory:

Required equipment (Blowers, Pumps, heaters, among others)



Biology and Chemistry Laboratory:

Require to renew equipments
(e.g: Microscopic, Spectrophotometer, photometer, reagentes, etc).



Infra-estruturas de apoio a Investigação e Extensão



Soil Laboratory: Specific equipments are need



Oceanographic Lab.

Require resolution computer

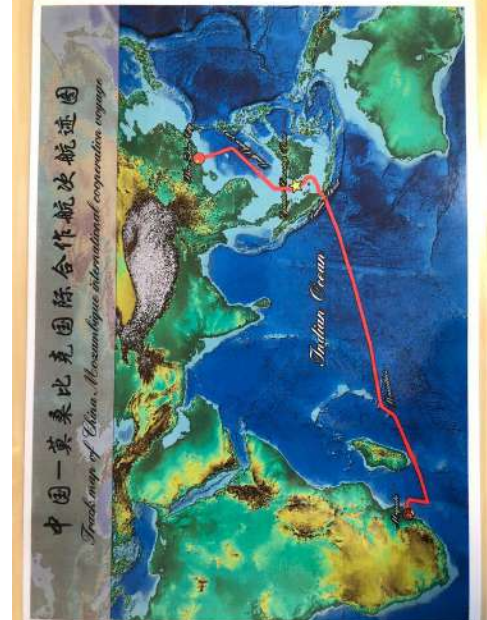
For large data processing



Research, Outreach and Publications



Project of Mozambique EE extension (Mozambique and China) in Indian Ocean 2021



Mangrove restoration and reforestation in Mozambique Coastal habitat



Students involved in coastal ecosystem restoration (Mogrove)



Innovation – Water desalinate powered by solar energy



Results:
Water desalinated;

Participation in Scientific Events – National Level



Participation in Scientific Events – National Level

Regional Scientific Conferences,

- Local: Porto Louis - Maurícias
- Year: 2019



Participation in Scientific Events

Event	Organize Institution	Date	Participant
Ocean Conference day	InOM, ESCMC, UniLurio	Virtual: 5 a 7/06/2023	- Maria Helena - Halaze Manhice - Bonifacio Manuessa
IV Internacional Conference of Scientific Research	FNI	Maputo: 19 -20 de Out 2023	- Fialho Nehama
Regional Training on Research and Inovation Proposal design	FNI e UniPungue	Virtual: 13 - 14 de Junho 2023	
Webinar on data propection and privancy	CCLP	Virtual: 12/05/2023	- Horacio Respeito
Webinar on Coastal Zone Management		Virtual, 12/05/2023	
Webinar on International Funding and advanced training		Virtual: 17/07/2023	
Webinar on Breaking the Mould: Exploring the Impact of Peer Reviu Inovation on the future	CACTUS & EASE	Virtual: 26/09/2023	

Participation in Scientific Events

Event	Organize Institution	Date	Participant
EAF-Nansen Training Course on Basic Taxonomy and Identification of Marine Fish and Macroinvertebrates	CepTMar	Maputo: 9-19/05/2023	-Anildo Naftal
RStudio Training on Data Analysis Using R Programming Language	UEM	Online: 31/07 a 4/08/2023	
Training on Advanced Statistics and Experimental Design	UEM	Online: 31/07 a 4/08/2023	
Advanced training on student supervising	CeRQES/UE M, GaPQEI	Maputo: 25-27/10/202	
Dr. Fridjof Nansen Scientific cruise in	FAO	Junho – Julho 2023	
XIII Jornadas Científicas da UniLurio		Virtual: 25 - 26/10/2023	
Cruzeiro Dr. Fridjof Nansen	FAO	31/06 a 12/08/2023	
Curso de GIS	CEPTMAR	Maputo: Aug/2023	- Carlota Alves
Annual Workshop OWSD Early Career Fellowship 2023	OWSD & UNESCO	Trieste, Italia: 29/6 – 2/6/2023	- Maria Helena

Participation in Scientific Events

One Ocean Expedition under Statsraad Lehmkuhl ship



Janeiro 2023,
From Maputo to Cape Town.

28th Meeting da Indian Ocean Rim Association (IORAG)



26-27 Setembro 2023, Cape Town



Cruzeiro Dr. Fridtjof Nansen on Epipelagic Fish and benthic diversity in the Mozambique Channel

Jun-Jul, 2023



Fridtjof Nansen no Arquipelago de Bazaruto sobre Dinâmica do RECIFES DE CORAIS



Agosto, 2023



Alumin workshop to ESCMC



PALESTRA
 APLICAÇÃO DO DNA BARCODING NA
 DESCRIÇÃO DE ESPÉCIES DE FAUNA: USO
 DO COI COMO FERRAMENTA PARA
 IDENTIFICAÇÃO DE ESPÉCIES
 AMEAÇADAS

QUINTA-FEIRA
 10 DE AGOSTO DE 2023

HORA
 12:00H

ORADORA
 MSc. ÉRICA TOVELA
 INVESTIGADORA DO MUSEU DE HISTORIA NATURAL

MODERADORA
 MSc. HALAZE MANHICE
 CHEFE DO CENTRO DE ESTUDOS COSTEIROS

LOCAL: SALA 2 DA UEM-ESCMC (CAMPUS DE CHUABO DEMBE) QUELIMANE

PRODUÇÃO: UNIVERSIDADE EDUARDO MONDLANE ESCMC

Seccas, DNA, Barcode

Visit Professor Dr. Masanori Kobayashi from, Tokyo, Japão.



Scientific seminar at School of Marine and Coastal Science, 2023

- 20 topics (5 thematic areas);
- **Students (MSc) and Dr from School**
- **Research Institution and partners**
- Total of participants – 160 Presencial e Virtual.

14 - 15 Set, 2023



**UNIVERSIDADE
EULÁBIO
MONDLANE**

**ESCOLA SUPERIOR DE CIÊNCIAS
MARINHAS E COSTEIRAS**

**“Pesquisas científicas em prol do uso sustentável
dos recursos marinhos e costeiras”**

**VIII JORNADAS CIENTÍFICAS
DA UEM-ESCMC**

QUELIMANE, 14 E 15 DE
SETEMBRO DE 2023

**INSCRIÇÃO DOS PARTICIPANTES
E SUBMISSÃO DOS RESUMOS:
08/08 a 30/08/2023**

**PARA O ENDEREÇO ELECTRÓNICO:
jc.uem.escmc@gmail.com**

**OBTENHA O FORMULÁRIO DE
INSCRIÇÃO NO LINK:
<https://ln.run/FkOT8>**

**DIVULGAÇÃO DOS RESULTADOS:
01/09/2023**

PRESENCIAL E VIRTUAL

+258 82 619 6047 Organização: +258 84 609 1630

ESCMC

Research on Mangrove

Ocean day in partnership with InoM.



Students and lecturer



Actividade de Técnica de Processamento e Conservação de Pescado envolvendo Estudantes

Secado Solar de peixe



Research Projects 2023



BioFish Project (Quality Life)

Integrated approach to improving the quality of life in fishing communities in the Bons Sinais Estuary, Mozambique

Parceria: CCMar-UniAlgarve (FCT e AKDN), ESCMC e InOM

At the School:

Fellowship: 5 monographs, 2 theses and 3 doctoral scholarships;
Acquisition of equipment (magnifying glass and 2 computers and 1 freezer) ;

Strengthening relationships and partnerships (visit from the vice-rector of the University of Algarve)





At the Community level:

- Assembly of a fish dryer in the village of Maribune. Lectures in 5 fishing communities on biodiversity and fishing.

“Projecto BioFish promove pesca sustentável no estuário de Bons Sinais”

- Dr. Jeremias Mocuba, coordenador do projecto

A Escola Superior de Ciências Marinhas e Costeiras da Universidade Eduardo Mondlane (ESCMC), em parceria com o Centro de Ciências do Mar da Universidade de Algarve (Portugal) e o Instituto Oceanográfico de Moçambique, está a desenvolver um estudo denominado BioFish, que visa melhorar a qualidade de vida das comunidades de pescadores no Estuário dos Bons Sinais.

Este estuário é utilizado diariamente por populações locais altamente dependentes da pesca, tanto como fonte de rendimento como de alimento (pesca de subsistência). Segundo o coordenador local do projecto, Dr. Jeremias Mocuba, apesar da importância das pescarias na área, as informações científicas são escassas (biológicas, ecológicas ou socioeconómicas) sobre a pesca que apoiem um plano de manejo sustentável e de longo prazo baseado no ecossistema. As limitações do conhecimento sobre o estado dos recursos e fragilidades na gestão associadas ao aumento da população ao longo das áreas estuarinas podem trazer várias implicações nos ecossistemas, com consequentes impactos socioeconómicos e da biodiversidade.

Dr. Jeremias está a coordenar um projecto de pesquisa denominado BioFish. Qual é o objectivo desse projecto?

O objectivo do projecto é desenvolver colaboração científica entre as instituições en-

promovemos campanhas de educação ambiental junto das comunidades piscatórias. Os resultados das pesquisas científicas mostraram que o estuário é berçário de várias espécies de peixes, caranguejos e camarões, que o usam como local de crescimento antes de retornarem ao mar aberto onde completam o seu ciclo de vida.

Estes aspectos são importantes para a gestão das pescarias e conservação do ecossistema como um todo. Foram publicados dois artigos científicos sobre a Biologia das espécies de peixes mais importantes do ponto de vista socioeconómico.

Que metodologia foi usada para interação com as comunidades? Qual é a situação actual da pesca nessas comunidades abrangidas?

Privilegiamos o contacto directo com os líderes comunitários, pescadores e autoridades locais. No início, foram realizados encontros na ESCMC para apresentação e discussão do



licenciatura, que participaram nas tarefas do projecto e tiveram facilidades na realização



- Assembly of a fish dryer (drying rack) in the village of Maribune



Lectures to disseminate the Project Results in communities and primary schools on Fishery Biodiversity in the Bons Sinais Estuary



- Icídua,
- Gazelas,
- Marrubuni e
- Chuabo Dembe



Blue Forest Project

Partnership CepTMar (2022 – 2028)

Conservation of mangrove forests



Lecturer included

Financing of subsistence activities chosen by communities in the Coastal Districts of Zambezia

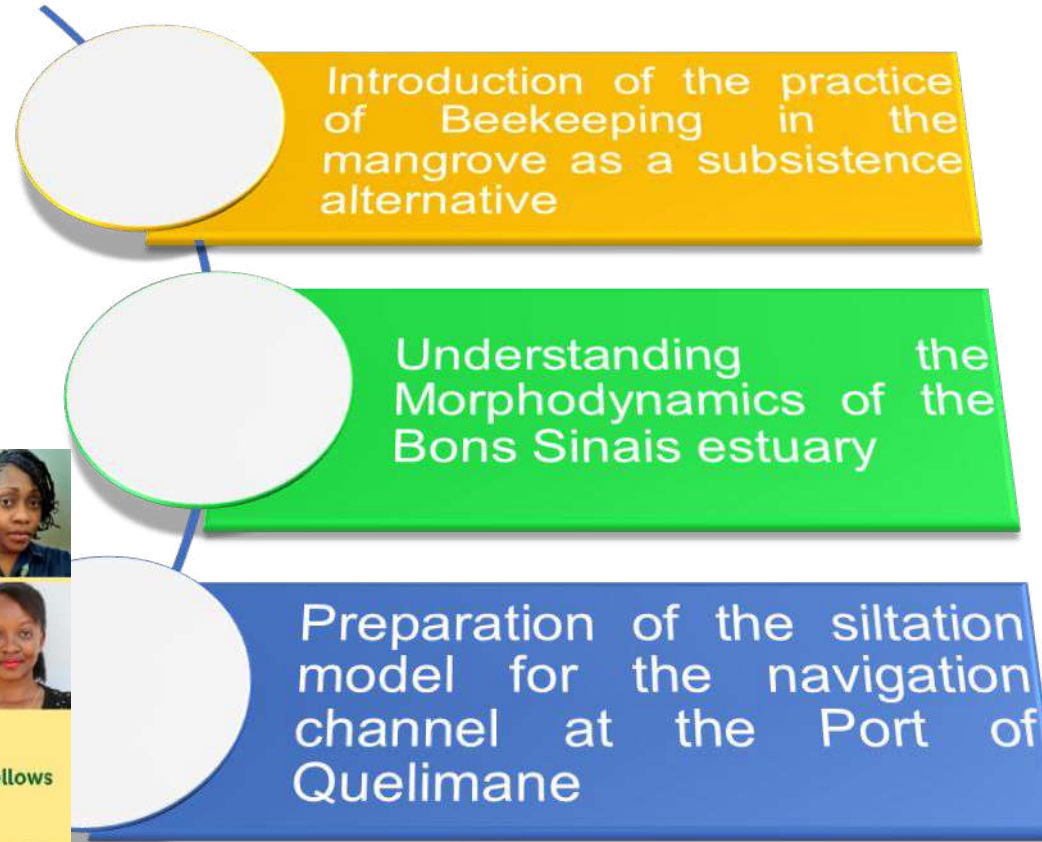


Gain from Carbon Subsidy sequestered by preserved forests



Assessment of morphodynamics and its implications for fishing sustainability and mangrove preservation in the Bons Sinais Estuary

- Funding Source:
OWSD/UNESCO
Actividades: 2023 – 2025



Annual Orientation Workshop for the 2022 Cohort of the OWSD Early Career Investigators funding program

29/5 – 2/6, 2023

Trieste, Itália



Ongoing activity

□ Introduction of the practice of Beekeeping in the mangrove as a subsistence alternative.



Future Projects

- Production and supply of fry and alternative feed to promote aquaculture;
- Establishment of a greenhouse for the production and experiments of flail seedlings;
- Assessment of coastal risks based on remote sensing and Artificial Intelligence for sustainable development of the economy and tourism;
- Implementation of sustainable Aquaculture in coastal communities;
- Recovery of the artisanal fishing stock of the Cilla Serrata crab along the Bons Sinais Estuary, through fattening and restocking;
- Macro-algae cultivation as a climate-resilient strategy and socioeconomic well-being for coastal communities in Mozambique (SFCRS);
- Interconnectivity between climate change and productivity in rice fields in Nanti, Maganja da Costa district;
- Connectivity between the Zambezi River ecosystems and the Sofala Bank – Energy production balance trend and ecosystem health in the Zambezi delta.

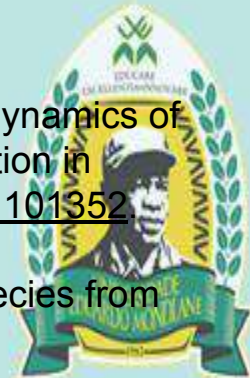
Publications in the last 2 Years

1. **PAULO, M. H;** Muelbert, J. H; **Fernandes, R. H. L. (2020).** Human-induced influence on eggs and larval fish transport in a subtropical estuary- Biogeosciences Discussion. DOI: <https://doi.org/10.5194/bg-2020-281>.
2. **Machaieie, H. A;** Silva, C. G, de Oliveira, E. N; **Tamele, H. J;** Almeida, H. A. (2020). Variability and Trends of Precipitation in Quelimane, Central Mozambique, and Their Relation to El Niño Southern Oscillation. Journal of Geoscience and Environment Protection 08(07):1-16; DOI: [10.4236/gep.2020.87001](https://doi.org/10.4236/gep.2020.87001)
3. **Hoguane, A. M; Gammelsrød, T; Mazzilli, S; PAULO, M. H; Silva, N. B. F. (2020).** The hydrodynamics of the Bons Sinais Estuary: The value of simple hydrodynamic tidal models in understanding circulation in estuaries of central Mozambique. Regional Studies in Marine Science. DOI: [10.1016/j.rsma.2020.101352](https://doi.org/10.1016/j.rsma.2020.101352).
4. Costa, F. S; **Mocuba, J;** Oliveira. D; Teodósio; Leitão, F. (2020). Biological aspects of fish species from subsistence fisheries in “Bons Sinais” estuary, Mozambique. Regional Studies in Marine Science. DOI:<https://doi.org/10.1016/j.rsma.2020.101438>
- 5 António, M., Fernandes, E., Muelbert, L., 2020. Impact of jetties configuration changes on the hydrodynamics of the subtropical Patos Lagoon Estuary, Brazi, [Doi:10.3390/w12113197](https://doi.org/10.3390/w12113197)
6. Carvalho, S., Oliveira, J., Pedersen, F., Manhice, H., 2020. A changing Amazon rainforest: Historical trends and future projections under post-Paris climate scenarios, *Global and Planetary Change* <https://doi.org/10.1016/j.gloplacha.2020.103328>
7. Pederse, J., Manhice, H., 2020. The hidden dynamics of household waste separation: An anthropological analysis of user commitment, barriers, and the gaps between a waste system and its users, *Journal of Cleaner Production*, <https://doi.org/10.1016/j.jclepro.2019.03.281>



Some Publications

8. António, M., Fernandes, E., Muelbert, L., 2020. Impact of jetties configuration changes on the hydrodynamics of the subtropical Patos Lagoon Estuary, Brazi, [Doi:10.3390/w12113197](https://doi.org/10.3390/w12113197)
9. Carvalho, S., Oliveira, J., Pedersen, F., **Manhice, H.**, 2020. A changing Amazon rainforest: Historical trends and future projections under post-Paris climate scenarios, *Global and Planetary Change*
<https://doi.org/10.1016/j.gloplacha.2020.103328>
10. Pederse, J., **Manhice, H.**, 2020. The hidden dynamics of household waste separation: An anthropological analysis of user commitment, barriers, and the gaps between a waste system and its users, *Journal of Cleaner Production*,
<https://doi.org/10.1016/j.jclepro.2019.03.281>
11. **PAULO, M. H;** Muelbert, J. H; **Fernandes, R. H. L. (2020)**. Human-induced influence on eggs and larval fish transport in a subtropical estuary- Biogeosciences Discussion. DOI: <https://doi.org/10.5194/bg-2020-281>.
12. **Machaieie, H. A;** Silva, C. G, de Oliveira, E. N; **Tamele, H. J;** Almeida, H. A. (2020). Variability and Trends of Precipitation in Quelimane, Central Mozambique, and Their Relation to El Niño Southern Oscillation. *Journal of Geoscience and Environment Protection* 08(07):1-16; DOI: [10.4236/gep.2020.87001](https://doi.org/10.4236/gep.2020.87001)
13. Hoguane, A. M; Gammelsrød, T; Mazzilli, **S;** **PAULO, M. H;** **Silva, N. B. F. (2020)**. The hydrodynamics of the Bons Sinais Estuary: The value of simple hydrodynamic tidal models in understanding circulation in estuaries of central Mozambique. *Regional Studies in Marine Science*. DOI: [10.1016/j.rsma.2020.101352](https://doi.org/10.1016/j.rsma.2020.101352).
14. Costa, F. S; **Mocuba, J;** Oliveira. D; Teodósio; Leitão, F. (2020). Biological aspects of fish species from subsistence fisheries in “Bons Sinais” estuary, Mozambique. *Regional Studies in Marine Science*. DOI:<https://doi.org/10.1016/j.rsma.2020.101438>



Some Publications

15. Hoguane, A.M., Gammelsrød, T., Furaca, N.B., **Cafermane, A.C., António, M.H.P. (2021)** The residual circulation profile of the Bons Sinais Estuary in central Mozambique - potential implications for larval dispersal and fisheries. *WIO Journal of Marine Science Special Issue 1*:17-27. doi: <http://dx.doi.org/10.4314/wiojms.si2021.1.2> [in press]
16. **Francisco, R.P.**, Hoguane, A.M., Simbine, R.L., **Mabota, H.S.** (2021) Household dependence on fish-based farming systems in the Bons Sinais Estuary in Mozambique. *WIO Journal of Marine Science Special Issue*: 29-41. doi: <http://dx.doi.org/10.4314/wiojms.si2021.1.3> [in press]
17. **Furaca, N.B.**, Hoguane, A.M., Mackay, F., Willemse, M., **Langa. A.A.** (2021) Exploring urbanization and critical habitat loss through land cover change around the Bons Sinais Estuary, Mozambique. *WIO Journal of Marine Science Special Issue 1*: 43-58. <http://dx.doi.org/10.4314/wiojms.si2021.1.4> [in press]
- Groeneveld, J.C., **Hoguane, A.M.**, Kuguru, B., MacKay, F., Munga, C., Santos, J. (2021). Estuarize-WIO: A socio-ecological assessment of small-scale fisheries in estuaries of the Western Indian Ocean. *WIO Journal of Marine Science Special Issue 1*: 1-15. <http://dx.doi.org/10.4314/wiojms.si2021.1.1> [in press]
18. **Nataniel, A.**, Lopez, J., Soto, M.(2021). Modelling seasonal environmental preferences of tropical tuna purse seine fisheries in the Mozambique Channel, *Fisheries Research (243)* <https://doi.org/10.1016/j.fishres.2021.106073>
19. **Mugabe, E.D.**, Madeira, A., **Mabota, H.S., 2, Nataniel, A. N.**, Santos, Jorge, J. Groeneveld,C. 2021. Small-scale fisheries of the Bons Sinais Estuary in Mozambique with emphasis on utilization of beach seine and chicocota nets, *WIO Journal of Marine Science Special Issue 1 / 2021* 59-74. <http://dx.doi.org/10.4314/wiojms.si2021.1.5>
20. Nhatasve,G.V., **Machaieie,H.** (2021). Análise comparativa da distribuição dos sedimentos em duas praias da província da Zambézia, Moçambique. *Revista Brasileira de Geomorfologia v. 22, nº 3 (2021)* <http://dx.doi.org/10.20502/rbg.v22i3.1765>



Some Publications

21. **Anildo Naftal Nataniel, Antonio Mubango Hoguane**, Tor Gammelsrød, Eva Falck, Inocência Paulo Antonio & Soufiane Haddout (2022) Nutrient fluxes in the Bons Sinais Estuary (Mozambique) – sources and sinks, *International Journal of River Basin Management*, DOI: [10.1080/15715124.2022.2114483](https://doi.org/10.1080/15715124.2022.2114483)
22. Muhala, V., Guimarães-Costa, A., Macate, I. E., **Tembe, S., Mula, Y.**, Tóvela, É., ... & Sampaio, I. (2022). First record of mudskipper *Boleophthalmus dussumieri* (Gobiidae: Oxudercinae) on the coast of Mozambique and evidence of two putative lineages along its known distribution range. *Journal of Fish Biology*.
23. **Nehama, F. P. J.**, Veriua, Z. D. H., Maueua, C., Hibbert, A., Calafat, F., & Cotton, P. D. (2022). Validating Sea-Level Altimetry Data against Tide Gauge for Coastal Risk Analysis in Mozambique. *Journal of Marine Science and Engineering*, 10(11), 1597.
24. Langa, A. A., & **Machaieie, H. A.** (2022). Reconstrução da paleoprodutividade e sua relação com as contribuições continentais no estuário de Macuse, Centro de Moçambique. *Journal of Environmental Analysis and Progress*, 7(1), 001-008.
25. **Machaieie, H. A., Nehama, F. P. J.**, Silva, C. G., & de Oliveira, E. N. (2022). Satellite Assessment of Coastal Plume Variability and its Relation to Environmental Variables in the Sofala Bank. *Frontiers in Marine Science*, 1436.
- Nataniel, A., Lopes, P.F.M., Lopez, J. & Soto, M.** (2022) Socio-ecological and economic aspects of tropical tuna fisheries in the Mozambique Channel. *Fisheries Management and Ecology*, 00, 1–16. <https://doi.org/10.1111/fme.12520>
- Nataniel, A., Pennino, M. G., Lopez, J., & Soto, M.** (2022). Modelling the impacts of climate change on skipjack tuna (*Katsuwonus pelamis*) in the Mozambique Channel. *Fisheries Oceanography*, 1–15. <https://doi.org/10.1111/fog.12568>



Needs and Challenges

- Scholarships for training specialized staff at MSc and PhD level;
- Equipping our labs (Aquaculture, Chemistry and Geology);
- Install specific lab for remote sensing;
- Need partners to enabling application for research funding
▪ worldwide.
- Funds for short training, internship abroad, visiting professor
- Partnership for fund rising for research and capacity building



Thank you for attention!

