TRAINING PLAN FOR GLOBAL GRANTS

Grant number: # 3267 matching grant GG # 2465202

Improving people's knowledge and skills is a key component of every global grant. Examples include teacher training, hygiene education, professional training, natural resource management workshops, or skill development. For each training activity included in the project, answer the following questions. Add additional training topics as needed. Share any documents that give details such as the training content or the trainer's qualifications.

TRAINING 1 TANZANIA FISHERIES RESEARCH INSTITUTE KINODONI DAR ES SALAAM

What is the title of the training?

Biorock technology for marine ecosystem regeneration, sustainable mariculture, shore protection, blue carbon, and building materials production.

What is the purpose or goal of the training?

Training in local applications for regenerating coral reefs, seagrasses, mangroves, sustainable mariculture of oysters, fish, lobster, and seaweeds, regrowing eroded beaches, adaptation to global warming and sea level rise, fish aggregation devices, and low-cost carbon-negative building materials.

What knowledge and skills will trainees learn from the training?

Project activities accomplish this goal

Main Objective of the Project:

To develop local capacity to address climate change adaptation and improved production of marine resources in coastal areas, promoting regeneration of marine ecosystems and an inclusive and sustainable blue economy.

Project Activities:

1.Reef Regeneration: Use Biorock technology to restore reefs and protect coastlines.

2.Application of Biorock Methods: Improved mariculture productivity.

3 .Mapping and Analysis: Assessing health of marine ecosystems for marine spatial planning.

4.**Professional Training:** Develop local capacities for the management and regeneration of marine

ecosystems.

How did you choose this training?

The use of Biorock technology is the best way to improve coastal ecosystems, increase biodiversity, and store carbon sustainably.

How will it address any gaps in the knowledge and skills of the beneficiaries that were identified during the community assessment?

It will greatly expand their ability to manage marine resources by training in more effective methods of ecosystem regeneration

Is this new training as a result of this grant?

Yes

What methods (such as presentations, discussion groups, hands on activities, or case studies) will be used to conduct the training?

Day 1. Lectures and videos on theory and application.

Demonstration project.

Construction of pilot projects.

Day 2. Installation of pilot projects (in the water)

Day 3. Transplantation onto pilot projects (in the water)

Follow through student research projects.

How many hours of training will each trainee receive? (Training duration must address the topic adequately.)

In Dar es salaam At Tanzania Fisheries Research Institute - Dr Kimeri and other stakeholders

Invitation by Hon Minister Ulega abdallah to advise the Government

Climate change adaptation, Environmental Management, Marine Science, and Architecture programs at local universities, local mariculture cooperatives, Marine Protected Area managers, and Government environmental management agencies.

How many times will this training be offered to each trainee? (Follow-up training is required for most project types.)

Twice after 6 months

Who will conduct the training? What are the trainer's qualifications? (Trainers must have professional expertise in the topic.)

Dr Thomas Goreau will conduct the training with Prof Sulemain Mohamed.

Brief Biography

Thomas J. Goreau, Ph.D.
President
Global Coral Reef Alliance
37 Pleasant Street
Cambridge MA 02139

Dr. Tom Goreau is President of the Global Coral Reef Alliance, a non-profit organization for coral reef protection and sustainable management, and Coordinator of the United Nations Commission on Sustainable Development Partnership in New Technologies for Small Island Developing States. He has dived longer and in more coral reefs around the world than any coral scientist. His father was the world's first diving marine scientist, and he grew up swimming in coral reefs as soon as he could walk.

He was previously Senior Scientific Affairs Officer at the United Nations Centre for Science and Technology for Development, in charge of global climate change and biodiversity issues.
He has published around 200 papers in all areas of coral reef ecology, and on global climate change, the global carbon cycle, stabilization of atmospheric CO2, changes in global ocean circulation, tropical deforestation and reforestation, microbiology, marine diseases, soil science, atmospheric chemistry, community-based coastal zone management, mathematical modeling of climate records, visualizing

turbulent flow around marine organisms, scientific photography, and other fields.
He developed the method to predict the location, timing, and severity of coral bleaching from satellite data with Ray Hayes.
He holds patents with the late Wolf Hilbertz for new methods for preserving coral reefs from global warming and pollution, restoring marine ecosystems, shore protection, mariculture, and non-toxic methods of preserving wood from marine boring organisms, termites, rot, and fire, in order to increase the lifetime of wood and decrease logging.
In 1998 he and Wolf Hilbertz were awarded the Theodore M. Sperry Award for Pioneers and Innovators, the top award of the Society for Ecological Restoration.
Dr. Goreau led developing country NGO efforts in marine and climate issues at the United Nations Conference on Environment and Development (Rio de Janeiro, 1992), the UN Summits on Development of Small Island Developing States (Barbados, 1994, Mauritius, 2005), the UN World Summit on Sustainable Development (Johannesburg, 2002), and the UN Convention on Climate Change (Bali, 2007).
Dr. Goreau works with tropical fishing communities around the world to restore their coral reefs and fisheries, especially the Kuna Indians of Panama, the only native people of the Americas who have preserved their cultural and political independence.
He is also a hereditary leader of the Yolngu Dhuwa Aboriginal clan of Arnhem Land, Australia, who preserve the oldest

creation myth in the world. Of Panamanian origin, he was educated in Jamaican primary and secondary schools, at MIT (B.Sc in Planetary Physics), Caltech (M.Sc in Planetary Astronomy), Yale, Woods Hole Oceanographic Institution, and Harvard (Ph.D. in Biogeochemistry), and is a certified nuisance crocodile remover.

Education

Ph.D., Biogeochemistry, 1981, Harvard University, MA, USA

Master of Science, Planetary Astronomy, 1972, California Institute of Technology (Caltech), CA, USA

Bachelor of Science, Planetary Physics, 1970, Massachusetts Institute of Technology, MA, USA

Selected Publications

- Assessing Coral Reef Health. Science, Thomas J. Goreau
- Balancing Atmospheric Carbon Dioxide, Thomas J. Goreau
- Balancing Atmospheric Carbon Dioxide, Thomas J. Goreau
- Caribbean Sea Surface Temperatures and Coral Bleaching 1989—1996,Thomas J. Goreau, Raymond Hayes, and Alan Strong
- Climate Change Impacts Have Been Underestimated, Thomas J. Goreau
- Community-Based Whole-Watershed and Coastal Zone Management in Jamaica, T. J. Goreau, L. Daley, S. Ciappara, J. Brown
- Control of Atmospheric Carbon Dioxide , Thomas J. Goreau
- Coral Bleaching In The Seychelles--Impacts and Recommendations, Thomas J. Goreau, Ph.D.
- Coral bleaching and ocean "hot spots" AmbioGoreau, T.J. and R. L. Hayes. 1994.
- Coral Recovery From Bleaching in Alphonse and Bijoutier, Seychelles, Thomas J. Goreau, Ph.D.
- Coral Recovery From Bleaching in Seychelles, Thomas J. Goreau
- Coral Reef Protection in Western Jamaica, Thomas J. Goreau
- Coral Reefs Rainforests of the Ocean: Thomas J. Goreau
- Coral Reefs, Sewage Treatment, and Water Quality Standards, Thomas J. Goreau
- Elevated Sea Surface Temperatures Correlate with Caribbean Coral Reef Bleaching , Thomas J. Goreau
- Energy Systems, Environment and Development, Thomas J. Goreau

- Environmentally Sound Technology for Sustainable Development, Thomas J. Goreau
- Monitoring and Calibrating Sea Surface Temperature, Thomas J. Goreau
- Negril & Green Island Area Environmental Protection Plan--October 1995, T. Goreau, J. Brown, E. Gordon, et.al
- Rapid Spread of Diseases in Caribbean Coral Reefs, Thomas J Goreau, James Cervino, Maya Goreau, et al.
- Reef Restoration Using Seawater Electrolysis in Jamaica, Thomas J. Goreau and Wolf Hilbertz
- Reduced Growth Rate of Montastrea Annularis Following the 1987-1988 Coral-Bleaching Event, T. J. Goreau and A. H. Macfarlane
- Scientific Correspondence Coral Bleaching in Jamaica, Thomas J. Goreau
- Third Generation Artificial Reefs, Wolf Hilbertz and Thomas Goreau
- Tracking South Pacific Coral Reef Bleaching by Satellite and Field Observations, T. J. Goreau1, R. L. Hayes2, and A. E. Strong
- Tropical Deforestation: Some Effects on Atmospheric Chemistry, Thomas J. Goreau and William Z. de Mello
- Tropical Ecophysiology, Climate Change, and the Global Carbon Cycle, Thomas J. Goreau
- Water quality in Negril, Maya Goreau & Thomas J. Goreau

Attached is the cv.

Who will receive the training? How many men? How many women?

Mtu chake Trust Group ,Magogoni (WWF- Scouts) ,fisherman,University of Dar Marine Students ,State university of Zanzibar Students .

How will trainees continue to use the knowledge and skills they learned from the training after the grant activities are completed?

They will keep building Biorock structures and following up with consiultant WWF and SUZA -Professor Suleiman

How will this training be evaluated to determine its effectiveness and improve future training?

By results in the field as shown by marine ecosystem health and growth, which are hoped to have a catalytic impact on marine communities

TRAINING 2 AT SUZA- ZANZIBAR

What is the title of the training?

Biorock technology for marine ecosystem regeneration, sustainable mariculture, shore protection, blue carbon, and building materials production.

What is the purpose or goal of the training?

Applications for regenerating coral reefs, seagrasses, mangroves, sustainable mariculture of oysters, fish, lobster, and seaweeds, regrowing eroded beaches, adaptation to global warming and sea level rise, fish aggregation devices, and low-cost carbon-negative building materials.

What knowledge and skills will trainees learn from the training?

New methods to solve problems of climate change adaptation and sustainable marine resource management

How did you choose this training?

TG invented this technology in Jamaica in the 1980s and has trained groups around the world to apply it

How will it address any gaps in the knowledge and skills of the beneficiaries that were identified during the community assessment?

It will add to their existing knowledge and skills with training in new and improved methods

Is this new training as a result of this grant?

Yes

What methods (such as presentations, discussion groups, hands on activities, or case studies) will be used to conduct the training?

3 days in Zanzibar at SUZA - 18 hrs

Shorter versions of the workshop will be given as

1) a lecture to Fisheries and MPA managers and staff,

2) local villages in Dar es Salaam, Zanzibar, and Pemba.

Environmental Management, Marine Science, and Architecture programs, local mariculture cooperatives, Marine Protected Area managers, and Government environmental management agencies.

Participants: Students and researchers from the State University of Zanzibar (SUZ), https://www.suza.ac.tz/ Environmental Management, Marine Science, and Architecture programs, local mariculture cooperatives, Marine Protected Area managers, and Government environmental management agencies.

Shorter versions of the workshop will be given as 1) a lecture to Fisheries and MPA managers and staff, 2) local villages in Dar es Salaam, Zanzibar, and Pemba.

How many hours of training will each trainee receive? (Training duration must address the topic adequately.)

18 hrs

How many times will this training be offered to each trainee? (Follow-up training is required for most project types.)

One workshop with follow through

Who will conduct the training? What are the trainer's qualifications? (Trainers must have professional expertise in the topic.)

Dr Goreau

Who will receive the training? How many men? How many women?

Zanzibar Environmental Management, Marine Science, and Architecture programs, local mariculture cooperatives, Zanzibar Marine Protected Area managers, and Government environmental management agencies.

How will trainees continue to use the knowledge and skills they learned from the training after the grant activities are completed?

Community follow-through is always the most important, people are generally open to new ideas to be more productive and less destructive, but lack the means to follow through. That's where government policy and funding to invest in coastal community resource management are needed.

Dr Pandu,Dr Issa and Dr Sulemain

to set up a hands-on training workshop at the University of Dar for algae mariculture and other important regenerative development technologies -

How will this training be evaluated to determine its effectiveness and improve future training?

Through improvements in marine ecosystem health and productivity

TRAINING 3 AT NEW AFRICA HOTEL

What is the title of the training?

Biorock technology for marine ecosystem regeneration, sustainable mariculture, shore protection, blue carbon, and building materials production.

What is the purpose or goal of the training?

1.Village Goverence in local communities in sustainable use and management of coral reef.

2. Training local communities to regenerate their resources in places where they have seen them decline and want them back again to promote sustainable mariculture.

What knowledge and skills will trainees learn from the training?

How to improve the health and productivity of local marine resources

How did you choose this training?

We invented the technology in Jamaica in the 1980s and have trained coastal communities in its use around the world.

How will it address any gaps in the knowledge and skills of the beneficiaries that were identified during the community assessment?

It will build on to what they know with new concepts and skills

Is this new training as a result of this grant?

yes

What methods (such as presentations, discussion groups, hands on activities, or case studies) will be used to conduct the training?

Day 2 5 hrs with Minister from Presidents Office Regional Administration Local Government – village Leaders (Kigamboni) ,District Council (Temeke) ,Marine Park Authority for Kigamboni

How many hours of training will each trainee receive? (Training duration must address the topic adequately.)

5 hrs

How many times will this training be offered to each trainee? (Follow-up training is required for most project types.)

Twice after 6-8 months Follow up with local communities and WWF

Who will conduct the training? What are the trainer's qualifications? (Trainers must have professional expertise in the topic.)

Dr Thomas Goreau

Who will receive the training? How many men? How many women?

with Minister from Presidents Office Regional Administration Local Government – village Leaders (Kigamboni) ,District Council (Temeke) ,Marine Park Authority for Kigamboni , Rotary clubs and other Ngo .

20 women and 10 men

How will trainees continue to use the knowledge and skills they learned from the training after the grant activities are completed?

This will depend on whether funding can be found for coastal communities to regenerate their local marine resources.

How will this training be evaluated to determine its effectiveness and improve future training?

By individual interviews with participants

TRAINING 4 VILLAGE MAGOGONI TUNGI KIGAMBONI DAR ES SALAAM

What is the title of the training?

Biorock technology for marine ecosystem regeneration, sustainable mariculture, shore protection, blue carbon, and building materials production.

What is the purpose or goal of the training?

Applications for regenerating coral reefs, seagrasses, mangroves, sustainable mariculture of oysters, fish, lobster, and seaweeds, regrowing eroded beaches, adaptation to global warming and sea level rise, fish aggregation devices, and low-cost carbon-negative building materials.

What knowledge and skills will trainees learn from the training?

How to regenerate the health and productivity of local marine ecosystems

For a pilot Biorock coral reef project, hold a hands-on training workshop with local divers and students to show them how to build, install, monitor, maintain, and repair the structures, and hope that they will maintain them for their own benefit. The workshop can take place over about a week, with training first in theory and construction, then installation and coral propagation.

How did you choose this training?

Because local communities face declining marine resources and seek training to improve them

How will it address any gaps in the knowledge and skills of the beneficiaries that were identified during the community assessment?

Ir will build on their existing knowledge with new concepts and skills

Is this new training as a result of this grant?

Yes

What methods (such as presentations, discussion groups, hands on activities, or case studies) will be used

to conduct the training?

Day 3-5 - 24 hrs of application in the water at Kigamboni .

Application of Biorock technology in water .

How many hours of training will each trainee receive? (Training duration must address the topic adequately.)

24 hrs

How many times will this training be offered to each trainee? (Follow-up training is required for most project types.)

Twice and follow up training will be done by WWF -January with Local communities in sustainable use and management of coral Reef.

Who will conduct the training? What are the trainer's qualifications? (Trainers must have professional expertise in the topic.)

Dr Thomas Goreau and two WWF marine scientists.

Who will receive the training? How many men? How many women?

Mtu Chake Group 20 women 4 men from Beach Mangmeent Unit and 10 women from neighbouring village Mjimwema . total 30 women and 6 men.

How will trainees continue to use the knowledge and skills they learned from the training after the grant activities are completed?

Community follow-through is always the most important, people are generally open to new ideas to be more productive and less destructive, but lack the means to follow through (that's where government policy and funding are needed, but it's not a political priority anywhere)."

Dr Kimeri and Michale Sangiwa from Ministry of Fisheries to set up a hands-on training workshop at the University of Dar for algae mariculture and other important regenerative development technologies - Roof to reefs and sustainable mariculture.

Will continue to build Biorock structures and build a green wall to next village.

WWF – will do follow up training on

1.Adaptive Management of coral reefs

2. Coral Reefs and Marine Protected Areas

3 Coral Reef Monitoring and methods.

4. Local communities in sustainable use and management of coral Reef.

How will this training be evaluated to determine its effectiveness and improve future training?

By interviews with participants

Workshop to be advised by Dr Tom Goreau

"Training local communities to regenerate their resources, in places where they have seen them decline and want them back again

A small team of good divers interested in practical climate change adaptation, and that we can institutionalize the project within the University of Zanzibar marine science and sustainable environmental management programs.

For a pilot Biorock coral reef project, hold a hands-on training workshop with local divers and students to show them how to build, install, monitor, maintain, and repair the structures, and hope that they will maintain them for their own benefit. The workshop can take place over about a week, with training first in theory and construction, then installation and coral propagation.

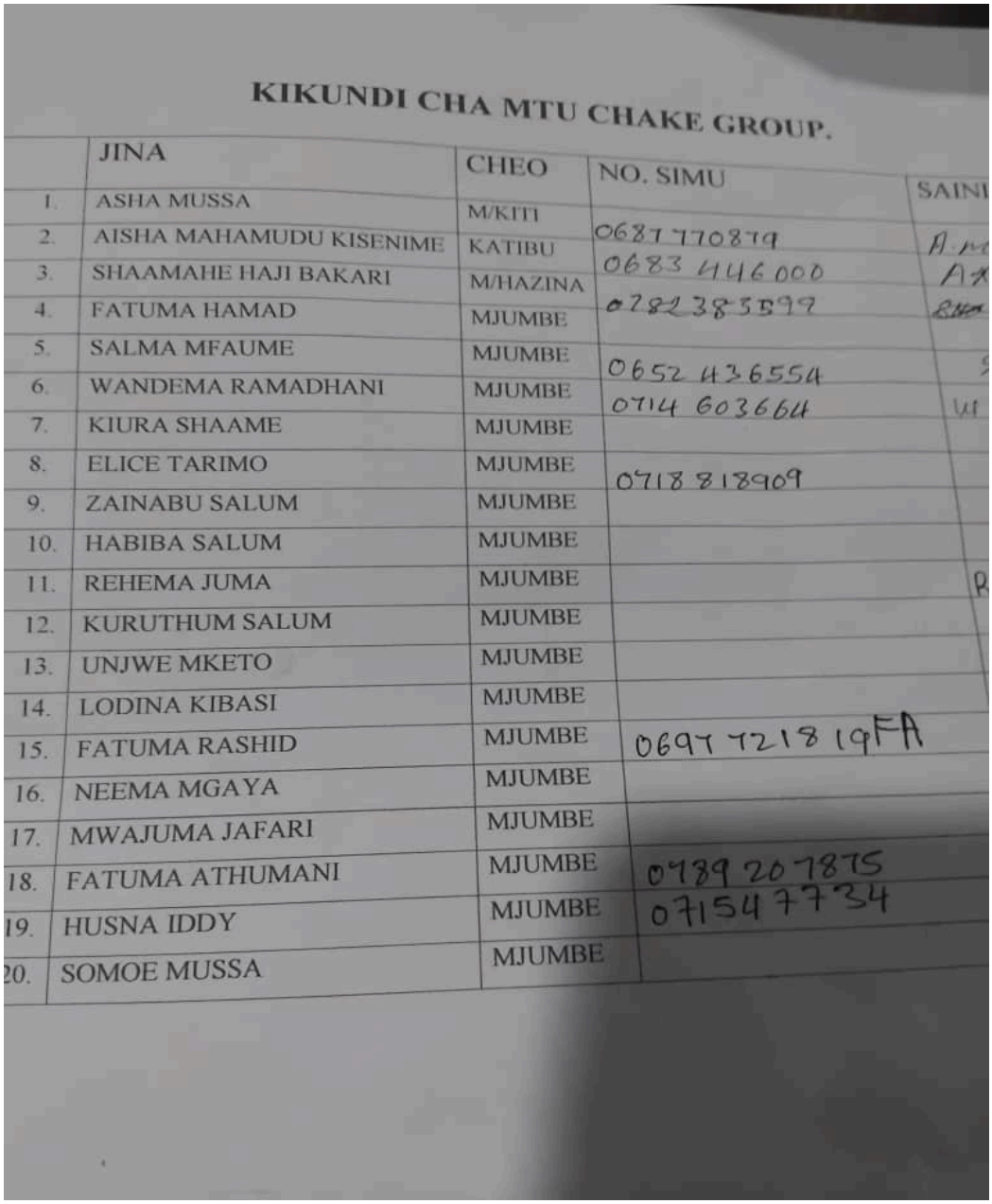
Community follow-through is always the most important, people are generally open to new ideas to be more productive and less destructive, but lack the means to follow through (that's where government policy and funding are needed, but it's not a political priority anywhere)."

Dr Pandu,Dr Issa and Dr Sulemain

to set up a hands-on training workshop at the University of Dar for algae mariculture and other important regenerative development technologies

Participants List

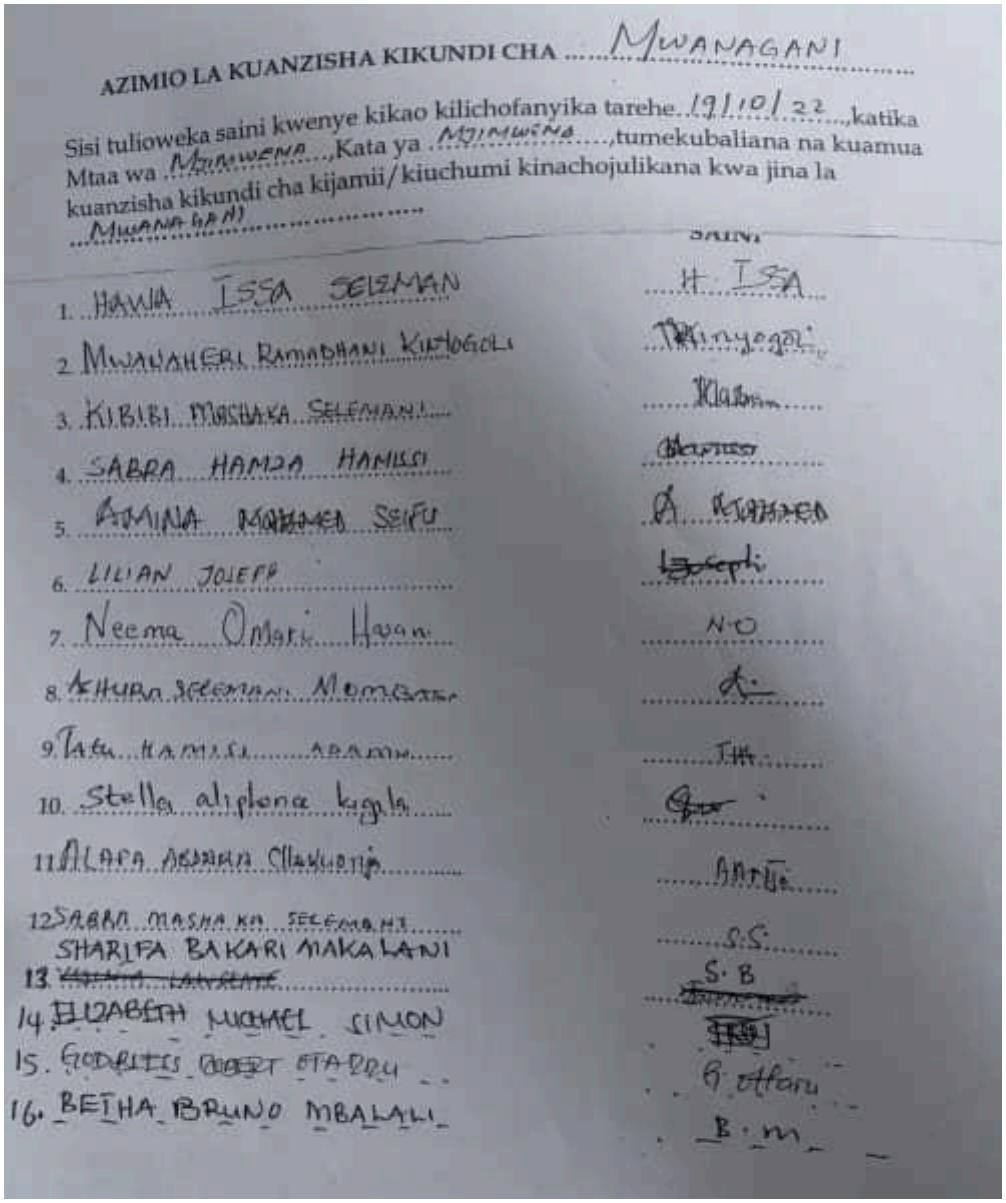
From Magoogni Village



KIKUNDI CHA MTU CHAKE GROUP.

	JINA	CHEO	NO. SIMU	SAINI
1.	ASHA MUSSA	M/KITI		
2.	AISHA MAHAMUDU KISENIME	KATIBU	0687770879	
3.	SHAAMAHE HAJI BAKARI	M/HAZINA	0683 446000	
4.	FATUMA HAMAD	MJUMBE	0782383599	
5.	SALMA MFAUME	MJUMBE		
6.	WANDEMA RAMADHANI	MJUMBE	0652 436554	
7.	KIURA SHAAME	MJUMBE	0714 603664	
8.	ELICE TARIMO	MJUMBE		
9.	ZAINABU SALUM	MJUMBE	0718 818909	
10.	HABIBA SALUM	MJUMBE		
11.	REHEMA JUMA	MJUMBE		
12.	KURUTHUM SALUM	MJUMBE		
13.	UNJWE MKETO	MJUMBE		
14.	LODINA KIBASI	MJUMBE		
15.	FATUMA RASHID	MJUMBE	0697 7218 19FA	
16.	NEEMA MGAYA	MJUMBE		
17.	MWAJUMA JAFARI	MJUMBE		
18.	FATUMA ATHUMANI	MJUMBE	0789 207875	
19.	HUSNA IDDY	MJUMBE	0715477734	
20.	SOMOE MUSSA	MJUMBE		

Mjiwema - Mwanagani Group

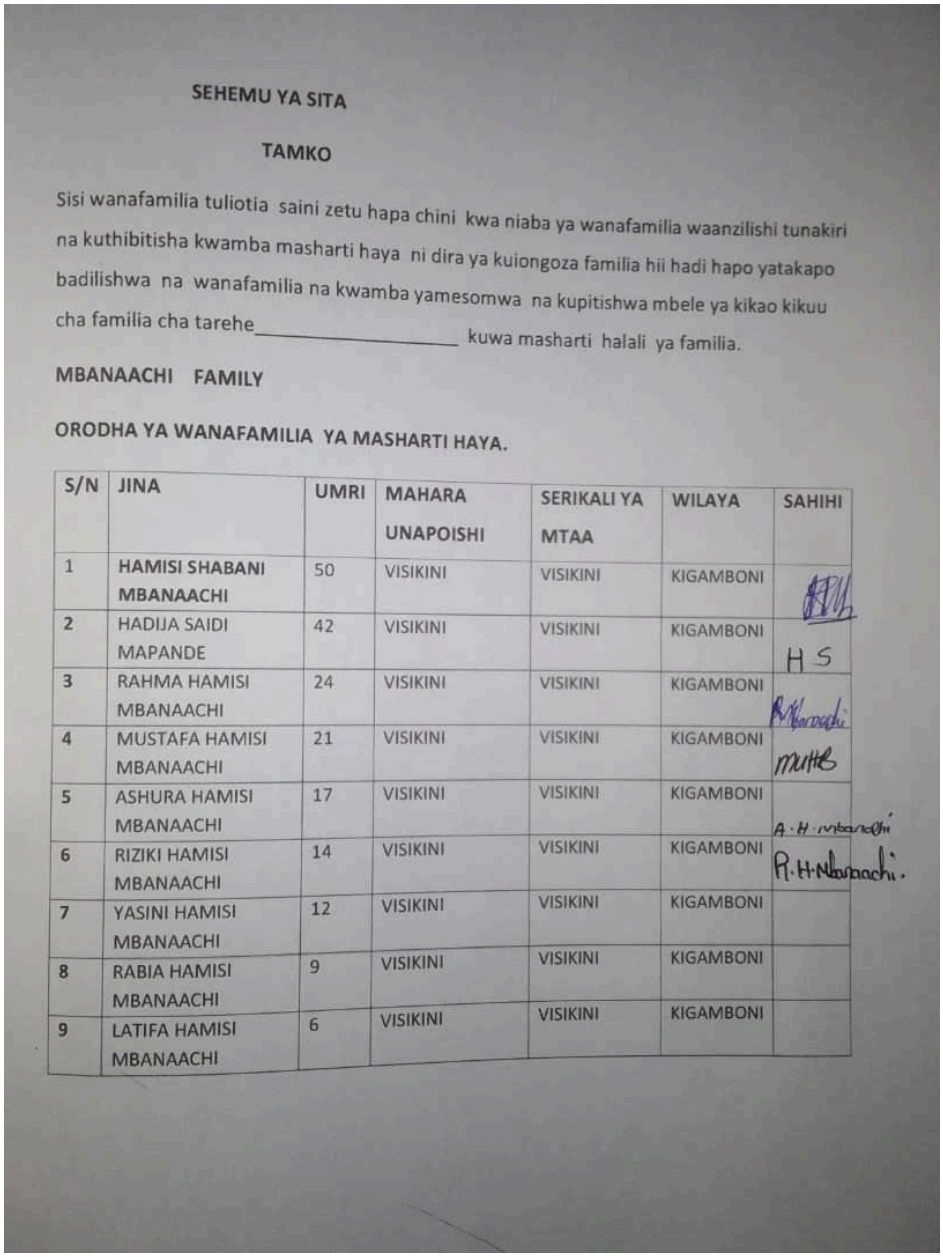


AZIMIO LA KUANZISHA KIKUNDI CHA ..... MWANAGANI .....

Sisi tulioweka saini kwenye kikao kilichofanyika tarehe 19/10/22, katika Mtaa wa MJIMWEMA, Kata ya MJIMWEMA, tumekubaliana na kuamua kuanzisha kikundi cha kijamii/kiuchumi kinachojulikana kwa jina la MWANAGANI

	SAINI
1. HAWA ISSA SELEMAN	H. ISA
2. MWAWAHERI RAMADHANI KITOGOLI	
3. KIBIBI MASHAKA SELEMANI	
4. SABRA HAMZA HAMISI	
5. [illegible]	
6. LILIAN JOSEPH	
7. Neema Omari Hasan	N.O
8. [illegible]	
9. [illegible]	
10. Stella alphonce kigola	
11. [illegible]	
12. SABRA MASHAKA SELEMANI SHARIFA BAKARI MAKALANI	S.S
13. [illegible]	S.B
14. ELIZABETH MICHAEL SIMON	
15. GODBLESS ROBERT ETADRU	
16. BETHA BRUNO MBALALI	B.M

Ras Dege - Mwongozo - women and Youth from Mbanaachi



SEHEMU YA SITA

TAMKO

Sisi wanafamilia tuliotia saini zetu hapa chini kwa niaba ya wanafamilia waanzilishi tunakiri na kuthibitisha kwamba masharti haya ni dira ya kuiongoza familia hii hadi hapo yatakapo badilishwa na wanafamilia na kwamba yamesomwa na kupitishwa mbele ya kikao kikuu cha familia cha tarehe_____ kuwa masharti halali ya familia.

MBANAACHI FAMILY

ORODHA YA WANAFAMILIA YA MASHARTI HAYA.

S/N	JINA	UMRI	MAHARA UNAPOISHI	SERIKALI YA MTAA	WILAYA	SAHIHI
1	HAMISI SHABANI MBANAACHI	50	VISIKINI	VISIKINI	KIGAMBONI	
2	HADIJA SAIDI MAPANDE	42	VISIKINI	VISIKINI	KIGAMBONI	H S
3	RAHMA HAMISI MBANAACHI	24	VISIKINI	VISIKINI	KIGAMBONI	
4	MUSTAFA HAMISI MBANAACHI	21	VISIKINI	VISIKINI	KIGAMBONI	
5	ASHURA HAMISI MBANAACHI	17	VISIKINI	VISIKINI	KIGAMBONI	A·H·Mbanaachi
6	RIZIKI HAMISI MBANAACHI	14	VISIKINI	VISIKINI	KIGAMBONI	R·H·Mbanaachi.
7	YASINI HAMISI MBANAACHI	12	VISIKINI	VISIKINI	KIGAMBONI	
8	RABIA HAMISI MBANAACHI	9	VISIKINI	VISIKINI	KIGAMBONI	
9	LATIFA HAMISI MBANAACHI	6	VISIKINI	VISIKINI	KIGAMBONI	

Research Students from University of Dar Es Salaam

1. Yussuf Bakari Salim
   Msc Fisheries and Aquaculture
   University of Dsm
2. Theodora Reginald
   Bsc Aquatic Sciences Institute of Marine Sciences

WWF Consultant : January Ndagala
whatsapp: 255 786143042
Email :

Professor Sulemain Mohamed
State University of Zanzibar
Email:
Whatsapp :

CURRICULUM VITAE - DR MOHAMMED SULEIMAN

PERSONAL HISTORY

Full Name: M**ohammed Suleiman Mohammed**

Date of birth: 12 September 1969

Nationality: Tanzanian

Marital status: Married

Language: Kiswahili English

CONTACT ADDRESS

P.O. Box 3260

Zanzibar

Mobile255 777 460247

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mohammed_sule@hotmail.com

EDUCATION

Primary School: Forodhani Primary school, Zanzibar 1976 –1984 Secondary School: Haile Selassie Secondary School, Zanzibar 1985 – 1987

High School: Lumumba Secondary School, Zanzibar 1988 – 1990
University: University of Dar es Salaam

Undergraduate B. Sc. 1995

Postgraduate M. Sc. 2000

Postgraduate Ph. D. 2016

ACADEMIC QUALIFICATION:

B. Sc. in Marine Biology and University of Dar es salaam 1995 Microbiology

M. Sc. in Marine Biology University of Dar es salaam 2001 Ph. D. in Marine

Science University of Dar es Salaam 2016

CURRENT ACTIVITIES:

- Research on Coral Reef Diseases Prevalence in Tanzania. 2008 – current.
- Monitoring of selected Zanzibar coral reefs biophysical, health and water quality status. May 2015 – current
- Survey of Benthic Ecology on Tanzania Seascapes. June 2023 – current
- Mapping of Fishing Grounds along the Tanzania coast. June 2023 – current

EMPLOYMENT HISTORY

- Ministry of Agriculture Livestock and Natural Resources 2001 – 2004
- The State University of Zanzibar (SUZA) 2004 – 2023
- Wildlife Conservation Society (WCS) 2003 - Current

CURRENT EMPLOYER

Wildlife Conservation Society (WCS)

CURRENT POSITION

Marine Scientist

PUBLICATIONS AND SCIENTIFIC REPORTS

1. Ussi, A. M., Mohammed, M., Muhando, C. A. and Yahya, S. A. S. 2019 Ecological Impact of Thermal Stress in Reefs of Zanzibar Following the 2016 Elevated Higher Sea Surface Temperature. Yanda, Z. P., Bryceson, I., Mwevura, H. and Mung'ong'o, C. G. (Eds). Climate Change and Coastal Resources in Tanzania, Studies on Socio-Ecological Systems' Vulnerability, Resilience and Governance. Springer. ISBN 978-3-030-04896-9.
2. Mohammed, M.S. 2016. Distribution and Abundance of Diseases on Reef Corals in Tanzania. A Thesis Submitted in Fulfilment of the Requirements for the Degree of Doctor of Philosophy (Marine Science) of the University of Dar es Salaam. pp172.
3. Sheikh, M.A., Juma, F.S.,Staehr, P., Dahl, K., Rashid, R.J., **Mohammed, M.S**., Ussi, A.M and Ali, H. R. 2016. Occurrence and distribution of antifouling biocide Irgarol-1051 in coral reef ecosystems, Zanzibar, *Marine Pollution Bulletin*, http://dx.doi.org/10.1016/j.marpolbul.2016.05.035

4. van der Ven, R. M., Triest, L., De Ryck, D., Mwaura, J.M., **Mohammed, M.S**. and Kochzius, M. 2015. Population genetics of the stony coral *Acropora tenuis* show variable

connectivity in East Africa, *Journal of Biogeography* 43:510-519.

5. Keshavmurthy, S., Yang, S., Alamaru, A., Chuang Y., Pichon M., Obura D., Fontana,S., De Palmas S., Stefani, F., Benzoni F., MacDonald A., Noreen, A.M. E., Chen, C., Wallace C.C., Pillay, R.M., Denis, V., Amri, A.Y., Reimer, J. D., Mezaki, T., Sheppard, C., Loya, Y., Abelson, A., **Mohammed, M.S**., Baker, A.C., Ghavam, P. M., Suharsono, B.A. and Chen, C. A. 2013. DNA barcoding reveals the coral ''laboratory-rat'', *Stylophora pistillata* encompasses multiple identities. Sci. Rep. 3, 1520; DOI:10.1038/srep01520 (2013). 6. Muhando CA and **Mohammed MS,** 2012. Coral Reefs in Chwaka Bay and Adjacent Areas. In: de la Torre-Castro M. and Lyimo T.J. (eds.). *People, nature and research: past, present and future of Chwaka Bay, Zanzibar.* 500pp. WIOMSA book series

7. **Mnembuka, B.V., Akil, J.M., Saleh, H.H. and Mohammed M.S. (Editors) 2010.** Proceeding of the 1st Annual Agricultural Research Review Workshop: A Gateway Towards the Green Revolution, Zanzibar, 30 -31 July 2009.

8. **Gan, C.,Tee, S.' Tang, P., Yang, J.M., Freire, F., Mcgowan, A., Jiddawi, N., Mohammed, M.S., Hsieh, H., Chen, C., Sheppard, C. and Chen, C.A. 2008**. Isolation and characteristics of 10 microsatellite markers from the endangered coconut crab (*Birgus latro*). *Molecular Ecology Resources* 8:1448-1450.

9. **McClanahan, T. R., Ateweberhan, M., Muhando, C. A. and Mohammed M. S**. **2007**. Climate change and spatio-temporal variation in seawater temperature effects on coral bleaching and mortality in East Africa. *Ecological Monographs,* 77:503–525.

10. **Mohammed M. S.; Machano, H.; Daniels, C, Tyler C.E, Jiddawi, N, and Yahya S.2004**. Status of Some Coral Reefs in Tanzania. Proceedings of the 10th International Coral Reef Symposium, 28 June 28 – July 2 2004. Okinawa Japan. Pp 1039-1044.

11. **Obura, D., Church, J., Daniels, C., Kalombo, H., Schleyer,. M. and Mohammed, S. 2004**. Status of Coral reefs in East Africa 2004: Kenya, Tanzania, Mozambique and South Africa. Vol. 1.

12. **Mohammed, M.S. 2002.** Maisha ya Pwani: Kufahamu Matumbawe na Ubwachi. 31 pp.

13. **Muhando, C.A and Mohammed, M.S. 2002.** Coral Reef Benthos and Fisheries in Tanzania Before and After the 1998 Bleaching and Mortality Event. *Western Indian Ocean Journal of Marine. Science 1:1, pp. 43-52* .

14. **Mohammed, M.S. and Mgaya, Y.D. 2001** Nutrient levels and their Dynamics in the Coral Reefs off Zanzibar Town. In Richmond, M.D. and Francis, J. (Editors), 2001. Marine Science Development in Tanzania and eastern Africa. Proceedings of the 20th Anniversary

Conference on Advances in Marine Sciences in Tanzania.28 June-1 July 1999, Zanzibar, Tanzania. IMS/WIOMSA. 569pp.

15. **Richmond, M.D. and Mohammed, M.S. 2001**. A review of the fisheries of the Misali Island Marine Conservation Area. (MIMCA), Pemba, with recommendations for monitoring. CARE Tanzania/Commission of Natural Resources, Zanzibar, Tanzania. 49 pp +.

16. **Muhando, C.A and Mohammed, M.S. 2001**. Status of Coral Reefs of Tanzania. Paper presented in the WIOMSA Conference in Dar es Salaam. 22-26 October, 2001. 17. **Mohammed, S.M.; Muhando C.A; Wagner G.M; Mbije N.; Jiddawi N.S; Moh'd N, and Verheij E.** 2001. Paper presented in International Coral Reef Initiative Country Report: Tanzania; Regional ICRI Workshop for the Indian Ocean, Maputo. November 26- 28, 2001

18. **Mohammed, M.S. 2000.** Nutrient dynamics in the sediments and water column on selected coral reefs off Zanzibar town. A thesis submitted in fulfilment of the requirements for the degree of Master of Science (Marine Biology) of the University of Dar es salaam.77pp.

19. **Mohammed MS, Muhando CA and Machano H. 2000**. Assessment of coral reef degradation in Tanzania: Results of coral monitoring 1999. In: Souter, D., Obura, D., and Linden, O. (eds.) 2000. Coral Reef Degradation in the Indian Ocean: Status Report 2000. CORDIO. pp 35-42.

20. **Muhando, C.A., Mohamed, M.S., and Francis, J., 1997**. Report on the Misali Island Marine Conservation Area (MIMCA) Boundary Delimitation. Consultancy report Commissioned and Sponsored by Zanzibar Protected Area Project (ZPAP). 10 pp + 3 maps.

21. **Johnstone, R. and Mohamed M.S. 1997.** Some aspects of the interaction between pollution and nutrient dynamics on coralreefs around Zanzibar. *In*: Johnstone. R. W., Francis, J and Muhando, C.A. (eds) 1998. Coral Reefs: Values. Threats and solutions. Proceedings of the National (IYOR) Conference on Coral Reefs, Zanzibar, Tanzania. Institute of Marine Sciences, Zanzibar. Pages 45-50.

22. **Muhando, C.A. and Mohamed. S. 1996**. Report on the establishment of Menai Bay Conservation Area Boundaries. A Consultancy project commissioned and sponsored by Sub-Commission of Fisheries and WWF, Zanzibar. 9 pp + 3 maps.

COURSES AND WORKSHOPS ATTENDED

- Training Course on Community Based Sea Cucumber Aquaculture, Technician Training Course held at Mariculture Hatchery Beit el Ras, Unguja Island Zanzibar on 30th January to 1st February 2019. Organised by the Food and Agriculture Organization of the United Nations (FAO).

- Regional Training Course 'Practical tools in Quantitative Fisheries Stock Assessment' Pwani University, Kilifi, Kenya 16th-26th July 2018.

- Research scientist in RV *Dr F. Nansen* Survey of Regional Resources and Ecosystem off Southeast Africa, the coast of Tanzania (Leg 1.4) where I participate as Fisheries scientist, 6- 18 April 2018.

- Training course on Culture of Natural Food and Mangrove Crab, March 22 – 31, 2018 at the State University of Zanzibar Nkurumah, Beit-el-Ras Zanzibar. Organised by the Food and Agriculture Organization of the United Nations (FAO).

- Training visit on Molecular methods and use of PCR and DGGE for genetic analysis of microbial communities in corals, April- July 2010 in Coral Reef Evolutionary Ecology and Genetics Laboratory, Biodiversity Research Centre, Academia Sinica, Taipei, TAIWAN.

- Workshop on Methods in Microbial Ecology - Aquatic & Marine Applications, 7 to 16 May, 2008, Institute of Marine Science, Zanzibar, Tanzania

- Regional training workshop on Coral Diseases 7 April 2006 Institute of Marine Sciences, University of Dar es Salaam, Zanzibar.

- Training visit on Sponge Taxonomy (tissue and spicule preparation and Identification), 1st August-8th September 2006, Queensland Museum, Brisbane, Australia. • Training workshop

on Sponge Identification, December 12 – 16, 2005. Mombasa Kenya

- Training course on Planning for Sustainable Tourism, 22-30 October 2003, Zanzibar Tanzania.
- Regional course in training of trainers for voluntary monitoring of coral reefs, 30 June-4 July 2003, Malindi, Kenya.
- Regional International Coral Reef Initiative Workshop for the Indian Ocean, Maputo. November 26-28, 2001
- Workshop on Coral Reef Degradation in the Indian Ocean. Palace Hotel Lamu 10-12th February 2000.
- Meeting on the Coral Reef Degradation in the Indian Ocean. Hilton Hotel Colombo 25 - 29th January 1999.
- Training workshop on Coral Disease in East Africa, April 3-7, 2006. Zanzibar- Tanzania. International Tropical Marine Ecosystem Management Symposium. Townsville Australia 23-26th, November 1998.
- Course in Coral Taxonomy and Identification. Institute of Marine Sciences, Zanzibar 10-14th, February 1997.
- Workshop on the Coral Reefs of the Western Indian Ocean. Bamburi Beach Hotel Mombasa, Kenya. 25th Feb. – 1st March 1997.
- Course in Experimental Design and Statistics in Marine Life Sciences. Institute of Marine Sciences, Zanzibar 03rd–7th, March 1997.
- Training in the design and procedure of the rapid assessment of the Biophysical

Characteristics of the Coral Reef. Xai-Xai Mozambique 2-9th, May 1997. • Sida/SAREC Regional course in Ecologgy and Physiology of Tropical Seagrass. Institute of Marine Sciences, Zanzibar. 12-18th, February 1996.

- Course on Scientific Data Presentation and Publication. Institute of Marine Sciences, Zanzibar18-22nd, March 1996.

- Course on Research Methods for Phytoplankton Primary Production and Bacterioplankton

Secondary Production. Institute of Marine Sciences, Zanzibar. 26-29th, March 1996. • Course in Coral Reef Monitoring. Institute of Marine Sciences, Zanzibar 09-26th, April 1996.

OTHER TRAINING

- Open water diving course at One Ocean Dive Center Zanzibar, October 1995. •

Research diving course at the Institute of Marine Sciences Zanzibar, April 1996.

POSITIONS HELD

- Coordinator of Tropical Research Centre for Oceanography, Environment and Natural Resources, 2013 – August 2019
- Coordinating Coral Reef Monitoring Programme in Tanzania and Country Coordinator of the Coral Reef Degradation in the Indian Ocean (CORDIO) Project 1999 - 2001.

WORKING EXPERIENCE

- Environmental and Social Impact Assessment of Miwi Island, Marine Environment section, 2023
- Environmental and Social Impact Assessment of Mkoani Port; Marine Environment Section, 2023
- Environmental and Social Impact Assessment of Shumba Port; Marine Environment Section, 2023

- Environmental and Social Impact Assessment of Mangapwani Port, Marine Environment Section, 2023
- Environmental and Social Impact Assessment of Mnemba Island Marine Environment Section, 2023
- Coordinating establishment of the Aquaculture facilities at the Tropical Research Center for Oceanography, Environment and Natural Resources (TROCEN), State University of Zanzibar. (Crab hatchery and Bivalve hatchery)
- Lecturer at State University of Zanzibar 2014 – current
- Assistant lecturer at State University of Zanzibar 2004 to 2014
- 24 years SCUBA diving and underwater research experience (including coral reef assessment and monitoring, benthic chamber experiments),
- Trainer of Coral reef monitoring for fishermen of Menai Bay Conservation Area under CODECOZ and Small Island State project March-April 2014
- Coral relocation (underwater moving of large coral structures) for the laying of Zanzibar Interconnector Cable from Ras Kiromoni Dar es Salaam to Ras Fumba Zanzibar, August 2012
- Environmental and Socio-Impact monitoring as a Field Officer for the laying of Zanzibar Interconnector Cable from Ras Kiromoni Dar es Salaam to Ras Fumba Zanzibar, May 2012
- Environmental and Social Impact Assessment of Muyuni Hotel and SPA Ltd Project at

Makangale North Region of Pemba Island as a marine Ecologist 2011. • Extension of Marine Protected Areas; Mnemba Conservation Area (MIMCA) and Menai Bay Conseravtion Area (MBCA) as a field Consultant 2008.

- Assistant lecturer in Chukwani College of Education Zanzibar (Part time) 2002-2005. •

Chief trainer in Coral reef monitoring for Menai Bay Conservation Area rangers 2003 •

Establishment of Pemba Channel Conservation Area (PECCA) Boundaries 2004 as a field scientist.

- Fisheries data collector at Chwaka Bay landing site for 2 months under supervision of Dr. Jiddawi from Institute of Marine Sciences, Zanzibar.

- Participation in the environmental monitoring in the Misali Island Conservation Project as a field coordinator 2001.

- Rapid assessment of coral reef biophysical and socioeconomic condition in Chwaka Bay and Paje coast 1999 as a coordinator and principal researcher.

- Participation in the marine environmental awareness to the public since 1998 (including film making, excursions with school children to the coral reef areas, Making environmental awareness calendar, making of Swahili booklet, newsletter, seminars to school teachers as a resource person)

- Participation in the establishment of Menai Bay Conservation Area Boundaries 1996 and participation in the Boundary Delimitation of the Misali Island Marine Conservation Area (MIMCA) 1997.

Mohammed Suleiman Mohammed

TRAINING WORKSHOP IN BIOROCK TECHNOLOGY FOR MARINE ECOSYSTEM REGENERATION AND SUSTAINABLE BLUE ECONOMIES

Tom Goreau
Global Coral Reef Alliance

Regenerative marine ecosystems for a Blue Economy

Principles of sea water electrolysis

Results

Design of Biorock structures

Construction: Hands-on training

Installation: Hands-on training

Coral transplantation: Hands-on training for divers

Shore protection