

DAVID O. OBURA, Ph.D.*Sustainability science, coral reefs*

Coastal Oceans Research and Development
in the Indian Ocean (CORDIO East Africa)
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Personal mission – as an individual and scientist with a passion for oceans and biodiversity, and bridging the developing and developed worlds, to play my part in moving people, communities and countries to greater sustainability.

Principal research interests and application to policy and management:**Corals, reefs & climate**

My technical background is in coral bleaching and reef resilience, reef recovery dynamics, coral life history strategies, climate change impacts and the biogeography and regional scale dynamics of coral reefs. I trained as a field ecologist and have done extensive surveys of reefs principally in the Indian Ocean, to understand large scale dynamics and change in relation to local to regional drivers. I have applied this knowledge to hazard (coral bleaching) forecasting, advising managers on management and building adaptive capacity for reefs, and planning for regional scale conservation and management, and global policy on coral reefs and climate change.

Sustainability

Through supporting fishery resource and local knowledge surveys, I have turned towards supporting work on adaptation and local governance in relation to climate variability and change, and understanding peoples' dependence on ecosystem services/contributions from nature. This work has infused societal relevance in my larger scale climate and sustainability work, to address local context and equity, support sustainable economy and adaptation across scales, and engage in local to global discourses on conservation, development and sustainability, to promote transformations towards the Sustainable Development Goals.

Regional to global policy

I participate in projects, working groups, partnerships and networks to foster sustainability at scale, from regional to global levels, and from coral reefs to ecosystems across land and seascapes. This includes the role of monitoring and data, in regional and global assessments, in bringing science to policy. Connecting across domains – oceans, biodiversity, conservation, sustainability is one of my priorities, and voicing African and Ocean perspectives, within a broader global vision.

Employment, academics and awards**CORDIO East Africa****1999 to date. Founding Director of CORDIO East Africa.**

CORDIO's activities include primary research, monitoring and coordinating partners in studies on the implications of coral bleaching and mortality on coral reef biophysical and socio-economic parameters, biogeography of coral reef species, fish ecology and reef fisheries, and using this knowledge in conservation planning, fundraising, and capacity building for coral reef science in the Western Indian Ocean. CORDIO is a member of:

- International Union for the Conservation of Nature (IUCN) – www.iucn.org. Member since 2008 (NG 25021).
- International Coral Reef Initiative (ICRI) – www.icri-forum.org. Member since 2002.
- Western Indian Ocean Marine Science Association (WIOMSA) – www.wiomsa.org. Member since 2000.
- Our Blue Future - <https://our-blue-future.org/>. Member since 2022.
- Consortium of NGOs for the Conservation of the Western Indian Ocean - www.wio-c.org. Member since 2008.

Academic positions

2020-23. *Adjunct Faculty*, Pwani University, Kilifi, Kenya
2017-23. *Adjunct Fellow*, School of Biological Sciences, U. of Queensland. Brisbane, Australia
2006-09. *Adjunct Senior Lecturer*, Faculty of Biological and Chemical Sciences (Centre for Marine Studies), University of Queensland. Brisbane, Australia.

Past positions

1997–98. *Research Fellow*, Coral Reef Conservation Program, Mombasa, Kenya
1995–96. *Senior Conservation Associate*, New England Aquarium, Boston, USA

Awards

2021, December. *Moran of the Burning Spear (MBS)*. Kenya Presidential awards.
2021. *Coral Reef Conservation Award*. International Coral Reef Society
2007. *Fellow*. Western Indian Ocean Marine Science Association.

Education

Academic

Doctor of Philosophy (Ph.D.), Univ. of Miami, USA, 1995. Division of Marine Biology and Fisheries, Rosenstiel School of Marine and Atmospheric Science (RSMAS). Dissertation title: Environmental Stress and Life History Strategies, a Case Study of Corals and River Sediment in Malindi, Kenya. Advisor: Dr. Peter W. Glynn.

Bachelor of Arts (B.A.) with Honours, Harvard University, USA, 1989. Biology Department. Thesis with Highest Honours.

International Baccalaureate (Distinction). Lester B. Pearson United World College of the Pacific. 1983-85. Victoria, British Columbia, Canada. CIDA fellowship.

Technical and policy roles

IUCN

International Union for the Conservation of Nature.

2019-present. *Red List of Ecosystems Partnership*, Steering Committee member

2008-present. *Commissions – Chair, Coral Specialist Group and Member, Connectivity Specialist Group, Species Monitoring Specialist Group, Species Survival Commission.*

2006-2012. *Chair, Working Group on Climate Change and Coral Reefs.* Global Marine Programme.

1999 to present – East Africa Marine programme – partner and contributing member.

IPBES and other global assessments

2021-2024. *IPBES Thematic assessment of the interlinkages among biodiversity, water, food and health (Nexus Assessment).* Co-chair, Intergovernmental Science- Policy Platform on Biodiversity and Ecosystem Services.

2019-ongoing. *Earth Commission.* Co-lead, *Biosphere working group (WGII).* Global Commons Alliance/Future Earth (Phases I and II)

2020-2021. *IPCC/IPBES Co-sponsored workshop report on biodiversity and climate change.* Section 2 co-lead: Biodiversity conservation in light of a changing climate)..

2017-2019. *IPBES Global Assessment.* Coordinating Lead Author - Chapter 2.2 - Nature.

High Level Panels and Working Groups

2023 - *Oceans Breakthroughs, supporting the High Level Climate Champions*
Five key ocean & coastal sub-sectors - Marrakech Partnership-Global Climate Action
Coral reefs - International Coral Reef Initiative (ICRI) and the Global Fund for Coral Reefs (GFCR)

2023-2024. *Africa-Europe Strategy Group on Ocean Governance.* Founding member, Africa-Europe Foundation.

2023. *Steering Committee: Marine Other Effective Conservation Measures (OECMs) High-Level Dialogues.* Oregon State University and partners.

2023. *Ocean Decade Vision 2030 – Working Group 3, Feeding the world.* Setting a collective strategic ambition for the Ocean Decade Challenges. UNESCO.

2019-2021. *Regional Ocean Governance – Marine Regions Forum.* Partner, in global conference (2019) and regional conference (2023, Western Indian Ocean). IIAS/IDDRI/TMU

2020-21. *UN Ocean Decade Monitoring and Evaluation Sub-committee*

2018-2022. *Informal Advisory Group, Ecologically and Biologically Significant Areas, CBD Secretariat.*

2017-2018. *International Sustainability Unit, The Prince's Charities.* Inf. Advis. Grp on coral reefs.

2015-16. *Sustainable Oceans Lab; GIZ Blue Solutions/Global Leadership Academy*

2013-2014. *Global Partnership for Oceans Blue Ribbon Panel,* to identify principle and criteria for investments for the GPO. See <https://globalpartnershipforoceans.org/>

Africa and Kenya high level

2023, May. *African Union Biodiversity Strategy And Action Plan (ABSAP) 2023-2030.* Drafting committee and conference preparation

2020-21. *Lead Negotiator COP26 delegation for Kenya and Africa Group of Experts.* COP26 Oceans preparation for Africa and lead author Policy Brief 9: Changing Oceans, Marine Ecosystems and Dependent Communities. AU-AGNES.

2020-ongoing. *Coral Research and Development Accelerator Platform.* Science Advisory Committee (CORDAP). G20/Saudi Arabia; Nominated by South Africa (G20 member)

2020-ongoing. *Africa Group of Negotiators on Biodiversity, African Union.* Through participation in Africa CSO Biodiversity Alliance (ACBA) Policy Working group and the Informal Biodiversity Support Group (IBSG).

2020-2021. *African Group of Negotiators Experts Support (AGNES), African Union.* Policy Brief:

	<p>Changing Oceans, Marine Ecosystems and Dependent Communities”.</p> <p>2020-2021. African Development Bank (AfDB). <i>Towards a Blue Economy Development Strategy for Africa: Opportunities and Challenges</i>. Commissioned by the African Natural Resources Centre (ANRC)</p> <p>2019-2022. <i>High Level Panel on Ocean Sustainability</i> - Technical Working Group supporting the President of Kenya and global Science Advisory Network.</p>
Science and monitoring	<p>2023-2024. <i>Member, Ad Hoc Technical Expert Group (AHTEG)</i> on indicators for the Kunming-Montreal Global Biodiversity Framework</p> <p>2021-2022. <i>Co-Lead, expert group on science briefs as inputs to the post-2020 Global Biodiversity Framework Open Ended Working Group (OWEG)</i> negotiations, Convention on Biological Diversity. Future Earth/biodiscovery and GEOBON.</p> <p>2021-ongoing. <i>Advisory Committee Of Monaco Explorations Indian Ocean Expedition</i>.</p> <p>2019-ongoing. <i>National Geographic Explorer</i>. Updating the global coral Red List of Threatened Species.</p> <p>2017-ongoing. <i>Global Coral Reef Monitoring Network</i>, International Coral Reef Initiative. Steering Committee; development of Implementation and Governance Plan (2019-2024).</p> <p>2014- ongoing. <i>MPA Action Group</i>, a grouping of NGOs and Foundations aligning messages and communications to support MPA expansion and enhancement globally, led by WWF Netherlands, Adessium Foundation.</p> <p>2017-2018. <i>Scientific Steering Group, 50 Reefs</i>. Global Climate Inst. (U. Queensland), Ocean Agency.</p> <p>2014-2022. <i>Global Ocean Observing System (GOOS) Biodiversity and Ecosystems Panel</i>.</p> <p>2014-2020. <i>Steering Committee, bioDISCOVERY (FutureEarth/DIVERSITAS)</i>.</p> <p>2012-2022. <i>GEOBON Oceans working group 5/Marine Biodiversity Observation Network (MBON)</i></p> <p>2005-2009. <i>World Bank-GEF – Coral Reef Targeted Research and Capacity Building project</i>. Member of the Bleaching Working Group.</p> <p>2000-2018, <i>Senior Research Associate</i>, Global Marine Programs, New England Aquarium, USA. Chief scientist on coral reef and marine biodiversity surveys of the Phoenix Islands leading to designation of the 2nd largest MPA and largest World Heritage site in the world, and endowment funding for conservation.</p>
NGO and other boards	<p>2022-2024. <i>Flipflop Foundation</i>. Board member since 2022.</p> <p>2000-present. <i>Kwetu Training Centre</i>. Chairman of the Board 2007-2015. Kwetu provides training and applied research on sustainable livelihoods in rural coastal areas.</p>

Experience

Research (basic and applied)

- 2023-2026. *Global coral biodiversity assessment*, focused on completion of the global Red List of Species for reef building corals, and extending the Red List of Ecosystems for coral reefs across all reef regions globally. IUCN RLE Unit, CORDIO. Mediterranean Shipping Company Foundation.
- 2022-2023. *Accelerating the Rapid Expansion of Locally-Managed Areas While Promoting Effective Implementation and Management in the Western Indian Ocean (WIO)*. Strengthening the foundations of, and expanding local-led ocean conservation at nested scales in the WIO, through applying ‘shared spaces/3 conditions’ principles and criteria for Other Effective Conservation Measures (OECM). IUCN East Africa office, WIOMSA and CORDIO. Blue Nature Alliance.
- 2019-2023. *Updating global policy with the extinction status of reef-building corals*. A project of the IUCN Coral Specialist Group updating the Red List of Species for scleractinian corals, with Arizona State University, the Zoological Society of London and London. Funded by National Geographic, Eurofins and the Mediterranean Shipping Company Foundation.
- 2018-2023. *Innovating and sharing knowledge for coastal resilience in Eastern Africa*. Foundation grant from Norad's South portfolio program to CORDIO East Africa, to scale up research on marine biodiversity and ecosystem services, protection of threatened and vulnerable coral reefs, and building resilience to climate change through community-based approaches.
- 2009 ongoing. *Northern Mozambique Channel Initiative/NOCAMO*. Strategic Advisor with WWF (2014-2018), partner on French grant (€1.5 M FFEM, 2019-2023) leading the development

of a regional initiative for sustainable use and development based on valuation and management of core assets. For CORDIO, this project grew out of a research project “*Is there a Western Indian Ocean “coral triangle?”*” funded by the WIOMSA Marine Science for Management programme (2008-11), leading to close engagement with the WWF Madagascar and Western Indian Ocean Islands programme (MWIOPO) and WWF International’s Global Marine Programme (www.cordioea.net/nmc). *Northern Mozambique Channel initiative.*

2015 ongoing. Coral reefs in global processes. Combined approach linking the Global Coral Reef Monitoring Network (GCRMN) and the IUCN Coral Specialist Group. Strategic leadership bringing together four main constituencies to strengthen global reporting on coral reef health: the coral reef conservation and monitoring community (ICRI/GCRMN); the biodiversity management and conservation community (represented by the IUCN members and commissions); the coral reef science community (ICRS/ISRS) and the global observation science community (GOOS /GEOBON). A 4-year action plan (2017-2020) to identify how to sustain global observing of coral reefs (under GCRMN) and direct this information into decision-support assessments and policy process (under the IUCN-Coral Specialist Group).

2009 ongoing. Adapting to climate change – coping with short term climate variability through seasonal forecasting of climate-related hazards, and use of climate adaptation information in Local Government. CORDIO, CSIR (South Africa), Kenya Meteorological Dept, U. of Cape Town and other partners. WIOMSA-MASMA.

2007 ongoing. Coral bleaching forecasting for the Western Indian Ocean. Principal investigator, CORDIO, and developing partnership with WIOMSA, UNESCO-IOC, IGAD-GHACOF, SERVIR Africa.

2005 ongoing. Coral reef resilience and health. Science to management, measuring resilience, advice to management partners and NGO/INGOs, Marine Spatial Planning. Multiple projects in which CORDIO is a partner (Kenya, Djibouti, Mozambique Channel countries), with IUCN, ICRAF (International Centre for Research in Agroforestry) and IRD (Institute for Research for Development, France).

1999 – ongoing. Global Coral Reef Monitoring Network in the Western Indian Ocean (GCRMN-WIO): Independent support since 1999 and ongoing consultancies (2013 to present) with the Indian Ocean Commission ISLANDS and Biodiversity projects, to support regional capacity and coordination for coral reef monitoring. Primary output currently will be a regional GCRMN report for the WIO, in 2016.

For indication of past projects, see publications list.

Management, responses and policy

2021-2022. 17 Rooms. Co-moderator of Room 14 – using SDG narratives. Brookings Institution and Rockefeller Foundation.

2020-2021. Towards a Blue Economy Development Strategy for Africa: Opportunities and Challenges. Lead author on policy brief on “Policy Brief 3: Changing Oceans, Marine Ecosystems and Dependent Communities” and technical assistance in coordination of Policy Brief 4: Extremes, Abrupt Changes and Managing Risks, and Policy Brief 5: Blue Economy. Commissioned by the African Group of Negotiators Experts Support (AGNES), African Union.

2020-2021. Towards a Blue Economy Development Strategy for Africa: Opportunities and Challenges. Commissioned by the African Natural Resources Centre (ANRC)/African Development Bank (AfDB) to prepare a policy paper on “Towards Climate Resilient Ocean Economies in Africa: Policies, Institutions and Investment Models”.

2016-19. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) - Global Assessment. Coordinating Lead Author - Chapter 2 (Nature).

2011-2018. Marine World Heritage. An ongoing role with the Marine Programme of UNESCO’s World Heritage Centre and IUCN’s World Heritage programme:

- potential marine World Heritage (mWH) sites in the Western Indian Ocean (2012);
- IUCN thematic guidance on expanding marine World Heritage globally (2014),
- advisory/contributor role in mWH in the Arctic (2016);
- advisory/contributor role in mWH in the High Seas (2016);
- coauthor: implications of coral bleaching to mWH sites with coral reefs (2017).

- 2011 June. *ASCLME/SWIOFP* (Agulhas-Somali Current Large Marine Ecosystems project/South West Indian Ocean Fisheries Project) Science to Governance workshop, South Africa.
- 2011 June. *WIOMSA COMPASS* Resource person in MPA managers course/accreditation.
- 2010 May. *UNEP/HABITAT Cities and climate change project*. Climate change sensitisation workshop for Mombasa Municipal Council.
- 2009 July. *Royal Society/Zoological Society of London/IPSO* – expert meeting and statement on “The coral reef crisis: addressing the threats of climate change & ocean acidification”
- 2009 May. *International Marine Conservation Congress*, Washington DC. Three sessions on reef resilience assessments and their application in management.
- 2009 January. *Regional Consultation Meeting* on the Development of the Global Climate Change Adaptation Network In Africa. UNEP Nairobi.
- 2009-ongoing – *Reef resilience training*. Participation in The Nature Conservancy-led managers training and capacity building in using resilience principles in management (technical role, workshops in Kenya, Sri Lanka, Indonesia, Zanzibar).
- 2008 October – *IUCN Conservation Forum and Congress*. Three forum sessions on reef resilience, management and climate change, and drafting of IUCN Resolution 4.080 “Mobilizing action to build resilience and assist adaptation to climate change of coral reefs and marine ecosystems and people that depend on them”
- 2008 January. *Madagascar national vulnerability assessment* for marine and terrestrial biodiversity. WWF-US and Conservation International, funded by Macarthur Foundation.
- 2006 November. *IUCN Delegation* to 12th Conference of Parties of the United Nations Framework Convention on Climate Change. Nairobi, Kenya.
- 2006 June. *Global Symposium for Africa 2006*. Impacts of climate change on marine ecosystems and fisheries. Conservation International. Tananarive, Madagascar
- 2006 April. *GBIF conference*. Climate change impacts on African tropical marine biodiversity – Cape Town, South Africa.
- 2005 October. *Climate change impacts on tropical marine biodiversity* - current trends and potential scenarios for scleractinian corals. Climate Change & Biodiversity in Africa. Royal Society/Natural History Museum/South African National Biodiversity Institute.
- 2003 October. *Resilience, coral bleaching and MPA design*. Plenary address, WIOMSA Third Scientific Symposium, 15th - 18th October 2003. Maputo, Mozambique
- 2003 October. *World Parks Congress, IUCN*, Durban, South Africa. Two Sessions: 1) Adaptive responses for nature conservation to climate change: Linkages in the Landscape; 2) Building protection of bleaching resistant sites into MPA networks: The Next 20 Years and Beyond: Incorporating Resilience into MPA Design and Management.

Science-policy communications

- 2022-23. *Managing and combatting multiple stressors in coastal marine ecosystems*. IUCN Oceans.
- 2021-2022. *Science briefs (8) and papers (5) as inputs to the Open Ended Working Group (OEWG) of the post-2020 Global Biodiversity Framework negotiations*. Future Earth & GEOBON
- 2020-21. *IPCC/IPBES Workshop report and Scientific Outcome*. Section lead.
- 2016-19. *IPBES Global Assessment Coordinating Lead Author* - Chapter 2 (Nature)
2015. *GEOBON Book chapter* - Methods for the observation of marine biodiversity
- 2013-14. *World Ocean Assessment*, contributing author to Chapters 34 and 35
- 2013-14. *Western Indian Ocean State of the Coast report*, Chapters 29-33
2011. *GEO-5 Report*: Contributing Author for Chapter 2: Options for Africa
2007. *State of the Environment, Coast, Kenya*. Member of core team.
2006. *IPCC*. Expert reviewer - WGII Fourth Assessment report
2006. *GEO-4 Report*. Peer reviewer – Global Environment Outlook report.
- 2002-3. *GIWA (Global International Waters Assessment) 2002-3* – member of Somali Coastal Current subregion team.

Community-based research and action, raising

- 2022-2023. *Mitigating Plastic Pollution through Heritage Boat Building*. Design and implementation of community-based monitoring of plastic waste in mangroves and beaches, Lamu archipelago. Flipflop Project Foundation, CORDIO, Portsmouth University, Northumbria University. SMEP programme UK.

awareness and adult education	<p>2011. <i>Biodiversity and natural resource monitoring</i>. Community Conservation Areas project with East African Wildlife Society. Darwin Initiative.</p> <p>2007-10. <i>Development of participatory adult education</i> model combined with capacity building for sustainable livelihoods and ICT4D. SPIDER, Sweden.</p> <p>2007-9. <i>Kuruwitu Conservation Area</i>. Technical support, natural resource monitoring.</p> <p>2001-ongoing. <i>SocMon WIO</i> - support to development and implementation of the Socioeconomic monitoring programme of the western Indian Ocean, with NOAA/SocMon global/GCRMN.</p> <p>1999-2006. <i>Participatory monitoring of fisheries</i>, Diani-Chale area, Kenya. CORDIO</p> <p>1997-98. <i>Participatory monitoring and indigenous knowledge mapping</i>, south coast, Kenya. MacArthur Foundation/AAAS</p>
Methods and manuals	<p>2021-ongoing. <i>Training Manual to Strengthen Capacity on Coral Reef Data Analysis using R for the Western Indian Ocean</i>. Remote course run in 2021, and revision prepared in 2023.</p> <p>2016-17. <i>Coral reef monitoring manual for the Island Conservation Society</i>, Seychelles Outer Island Project (GEF).</p> <p>2015. <i>Coral bleaching monitoring manual for the Western Indian Ocean</i>, Global Coral Reef Monitoring Network</p> <p>2014. <i>Coral reef monitoring manual for the SW Indian Ocean islands</i> Global Coral Reef Monitoring Network</p> <p>2009. <i>A Framework for Social Adaptation to Climate Change</i>, combining elements of the SocMon programme and social-ecological resilience concepts. IUCN working group on Climate Change and Coral Reefs. IUCN, Gland, Switzerland (Marshall et al. 2009)</p> <p>2007-9. <i>Resilience Assessment of coral reefs</i>. An assessment protocol for coral reefs, focusing on coral bleaching and thermal stress. IUCN working group on Climate Change and Coral Reefs. IUCN, Gland, Switzerland. Obura, D.O. and Grimsditch, G. (2009). www.iucn.org/cccr/publications. 70 pages. ISBN: 978-2-8317-1151-5</p> <p>2005. <i>Manual and guidelines for assessing Tsunami Damage to Coral Reefs</i>. International Coral Reef Initiative/International Society for Reef Studies</p>
Environmental Appraisals/ Impact Assessments	<p>Major projects</p> <p>2019-20. <i>Senior technical advisor to KPA and project consultants</i>. Focus on mitigating impacts to coral reefs by sand harvesting, including mitigation and monitoring, future EIA requirements and Strategic Environmental Assessment design. Kenya Ports Authority/Toyo Construction Company. JICA funded.</p> <p>2019. <i>Coral reef monitoring of the Tiwi-Waa coral reef, Kenya</i>. Implementation of coral reef monitoring as part of the Environmental Management Plan for sand harvesting by Kenya Ports Authority/Toyo Construction Company. JICA funded.</p> <p>Critical appraisals</p> <p>2021. <i>Independent assessment, coral reef impacts from Lamu Port dredging, Kenya</i>. Natural Justice and Katiba Institute, Kenya.</p> <p>2017. <i>Independent testimony on EIA for Amu Coal Plan, Lamu County, Kenya (LAPSSET Corridor project)</i>. Testimony in a case brought by Save Lamu/Natural Justice to the National Environment Tribunal, contesting the EIA license for the above project. Ongoing.</p> <p>2016. <i>Contribution in Environmental Impact Assessment of Fort Jesus seawall protection plan</i>. Technical assessment of marine environmental impacts and consequences of seawall/land in-filling proposal for Fort Jesus, on contract to National Museums of Kenya.</p> <p>2015. <i>Independent review of EIA for Lamu Port development, 1st phase (LAPSSET Corridor project)</i>. EIA on the first 3 berths of the Lamu Port, conducted by HezTech Engineering Services for the Ministry of Transport, February 2013. Expert witness in High Court Case brought by Save Lamu/Katiba Institute.</p> <p>2015. <i>Independent review of EIA for Sand Harvesting on coral reefs, Kwale County</i>. EIA conducted by Africa Waste and Environment Management Centre for the China Road and Bridge Corporation, March 2015.</p> <p>2014-5. <i>Independent review and expert witness of Whale Shark Adventures/Seaquarium</i> EIA on capture and captivity of whale sharks at Tiwi, Kenya. Critique contributed to rejection of EIA. Expert witness in ongoing National Environment Tribunal (Kenya) case.</p> <p>2013. <i>Contributor, evaluation of the EIA for Anadarko/ENI on natural gas mining and an</i></p>

onshore plant in Palma Bay, northern Mozambique. Led by IUCN.

2009. *Expert witness of Blazer Watamu* development plans, to National Environment Tribunal, Kenya. Critique contributed to revocation of EIA licence.

Study leader

2011 *Project leader, East African Wildlife Society*. EIA of Community Conservation Area management plans.

2007-11 *East Africa Submarine Cable* project (EASSy), TEAMS and LION2 submarine cable projects, Telkom Kenya.

1999 *Baseline Ecological surveys and EIA of TIOMIN Resources Inc.*, Kenya. Coast Environment Services, South Africa

1997 *Mombasa Wastewater Ocean Outfall*–Environmental Assessment. World Bank.

1994–95 *Rapid Biodiversity Resource Appraisal*, Canberra. World Bank–GEFAusAID.

Student supervision	<ol style="list-style-type: none"> 1. Mishal Gudka; PhD. Deakin University, Australia; 2021-2024; co-supervisor; biological. 2. Joseph Wambugu; PhD. U. Wageningen, Netherlands; 2021-2024; co-supervisor, socio-economic 3. Juliet Karisa; PhD; Academia Sinica; Taiwan; 2012-2020; co-supervisor; Biological 4. Florian Jouval; PhD; University of Reunion, 2016-18. PhD thesis panel. 5. Obed Matundura; MSc; University of Nairobi, Kenya. 2015-16; co-supervisor; climate 6. Jelvas Mwaura, PhD; Nagasaki University, Japan. 2013-2017; co-supervisor; Biological 7. Benjamin Cowburn; PhD; Oxford University; UK; 2012-2017; co-supervisor; Biological 8. Estelle Crochelet; PhD; Univ. of Reunion. 2015. Thesis reviewer; Biological. 9. Josphine Mutiso; Masters; Pwani University; Kenya; 2013-ongoing; co-supervisor; Biological 10. Innocent Wanyonyi; PhD; Kalmar University; Sweden; 2009-ongoing; co-supervisor; Biological 11. Sander den Haring; PhD; James Cook University; Australia; 2013; co-supervisor; Social 12. Oscar Henrikson; PhD; Stockholm University; Sweden; 2011; support; Biological 13. Michael Olendo; Masters; VLIR; Belgium; 2009; co-promoter; Biological 14. Sarah Ater; Masters; Newcastle University; UK; 2008; support; Social 15. Cosmas Munga; Masters; VLIR; Belgium; 2008; co-promoter; Biological 16. Juliet Furaha; Masters; Moi University; Kenya; 2008; co-supervisor; Biological 17. Stephen Mangi; PhD; York University; UK; 2008; support; Biological 18. Petra Souter; PhD; Stockholm University; Sweden; 2007; support; Biological 19. Sangeeta Mangubhai; PhD; Southern Cross University; Australia; 2006; support; Biological 20. Shakil Visram; PhD; York University; UK; 2006; support; Biological 21. Innocent Wanyonyi; Masters; Newcastle University; UK; 2005; support; Social 22. Rennatus Mdojo; Masters; University of Georgia; USA; 2000; support; Biological
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Field experience (coral reefs)

Regions	<p><i>Indian Ocean</i> – Kenya, Mozambique, Tanzania, Seychelles, Comoros, Mayotte, Iles Eparses/Scattered Islands (France), Madagascar, South Africa, St. Brandons island (Mauritius), Chagos, Myanmar.</p> <p><i>Red Sea/Gulf of Aden</i> – Saudi Arabia, Djibouti, Somaliland.</p> <p><i>Pacific Ocean</i> – Kiribati (Phoenix Islands, Line Islands), Fiji, Galapagos islands (Ecuador).</p>
Survey and research expeditions	<p>2021 Bazaruto Archipelago, Mozambique. ANAC/Africa Parks Foundation.</p> <p>2016 Mayotte & Europa, French territories/Iles Eparses, Mozambique Channel (IRD SIREME)</p> <p>2015 Quirimbas archipelago, northern Mozambique. Reef health assessments for Our Seas Our Life project (w. Zoological Society of London and Fauna and Flora International).</p> <p>2015 Pate/Lamu archipelago, Kenya. With The Nature Conservancy/Northern Rangelands Trust – Coast. Reef resilience and status in support of Community Conservation Areas.</p> <p>2014 Djibouti. Coral reef assessment for seascape conservation planning.</p> <p>2014 Myeik Archipelago, Myanmar, with Fauna and Flora International. Coral diversity and resilience assessment.</p> <p>2014 Pristine Seas/National Geographic expedition to Inhambane/Bazaruto, Mozambique</p> <p>2014 SeaKeys expedition to Sodwana Bay reefs, iSimangaliso Wetland Park, South Africa.</p> <p>2011 Quirimbas archipelago to Nacala, northern Mozambique. CORDIO/WIOMSA program on the WIO center of diversity.</p>

- 2011 Scattered Islands (Mozambique Channel – Glorieuse & Tromelin), France. Resilience assessments and coral biogeography.
- 2010 Tara Oceans, coral reef resilience scientist – Djibouti, St. Brandons (Mauritius), Mayotte.
- 2010 Conservation International Marine Rapid Assessment and Climate resilience study of northeastern Madagascar. Lead scientist. Conservation International.
- 2009 Southern Line Islands, Kiribati. Invited expert, National Geographic Society.
- 2009 Farquhar atoll, resilience assessment. National Geographic Society.
- 2008 Climate change vulnerability surveys of the Nosy Hara marine park, northwestern Madagascar. WWF Madagascar
- 2008 Saudi Arabian Red Sea. Living Oceans Foundation.
- 2008 Seychelles resilience assessments. Aldabra atoll, Amirantes group. IUCN/ICS
- 2007, 2009 Climate change vulnerability surveys of the Mafia Island Marine Park and Songosongo archipelago, Tanzania. WWF/GEF.
- 2006 Chagos Archipelago, Indian Ocean
- 2005 Northern Line Islands, Kiribati/USA. Invited expert, Scripps Institution of Oceanography.
- 2005 Mayotte, GIS/Lag-May expedition to western barrier.
- 2005 Seychelles - Tsunami impact assessment, UNEP/IUCN/CORDIO.
- 2004 Mafia Island Marine Park. Coral biodiversity surveys, WWF Tanzania.
- 2003 Mnazi Bay Marine Park, Tanzania. Baseline ecological surveys. IUCN/TMPRU
- 2003 Pemba, Mozambique. Coral biodiversity surveys, CORDIO.
- 2002 Cosmoledo atoll, Seychelles. CORDIO/ICS/Environment Dept, Seychelles
- 2000, 2002, 2005 & 2009. *Phoenix Islands*, Kiribati. Establishing and leading the development of the Phoenix Islands Protected Area (PIPA), and the PIPA Science programme.
- 1998-2007 (annual). Kiunga Marine Reserve, Kenya, WWF and Kenya Wildlife Service.
- 1998 Djibouti. IUCN
- 1998 Masoala Peninsula, Wildlife Conservation Society
- 1997 Saad ed Din islands, Somaliland. IUCN
- 1996 Galapagos Marine Survey #2.

Languages

English (fluent); French (working); Swahili, Spanish (basic)

Publications

Primary publications	8
Policy documents (high level)	13
Books	14
Methodologies	14
Other publications	14
Popular	16
Outreach (sample)	16

Primary publications

1. Rockström J, Gupta J, Qin D, et al (2023) Safe and just Earth system boundaries. *Nature*. <https://doi.org/10.1038/s41586-023-06083-8>
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