Photos taken during a visit by Brian Arbic to Damongo and Tamale, northern Ghana, December 2024. They show friends, former students, and former teaching colleagues from his 1990–1992 service as a Peace Corps volunteer math and physics teacher at Damongo Secondary School (DASS).

AUTOBIOGRAPHICAL SKETCH

Brian Kenneth Arbic

Professor, Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, MI, USA – arbic@umich.edu

I'm a physical oceanographer. My research group specializes in high-resolution supercomputer models of the ocean, with particular focus on barotropic tides, internal tides and gravity waves, mesoscale eddies, and interactions between these motions. Because global internal wave models have multiple applications, our funding comes from several US federal agencies, including NASA, Office of Naval Research, National Science Foundation, and Department of Energy.

Aside from the research, teaching, and service duties of a professor at a research-intensive institution, I spend a large amount of my time promoting international capacity sharing. We have been running the Coastal Ocean Environment Summer School In Nigeria and Ghana (COESSING; https://coessing.org) for one week every year since 2015. The school is designed to build collaborations between ocean scientists in West Africa and the rest of the world, and its roots date back to connections that I made while I was a Peace Corps volunteer (see accompanying photos).

One of my biggest challenges is finding time to pursue my international capacity sharing passion and performing all the related fundraising, promotional, and organizational activities while conducting my "normal" professorial duties at the University of Michigan. I can't easily walk away from the summer school—as proud as I am of the other things that I do, the summer school counts as my most important contribution to the oceanographic community.

My Peace Corps service was a long detour. If I had gone straight to graduate school out of my undergraduate studies, I would have completed my PhD about five years earlier than I actually did, with attendant consequences for my science career. On the other hand, if I had not served in the Peace Corps, I would never have ended up running an ocean science summer school in West Africa. The lesson is that you should follow your passions. If you really want to do something outside the box, then you should do it, regardless of how it fits into a conventional ocean science career narrative.

A related lesson is to be open to opportunities and where they might take you. Aside from my Peace Corps service, another opportunity that proved fortuitous was a research scientist position I took at The University of Texas at Austin. I wanted a tenure-track faculty position but was unable to get one at that moment. Furthermore, as someone from northern Michigan (the "cold part of Michigan"), I never thought that I would enjoy living in Texas for a long period of time. However, I grew to like Texas more than I ever thought I would, and I took advantage of the research position to do more research travel than would have been possible if my first permanent position had been a tenure-track professorship. The time I spent visiting the Naval Research Laboratory at Stennis Space Center in Mississippi paid off in the development of oceanic internal tide and gravity wave models, the topic that still underlies most of my research grants. It allowed me to develop expertise that has continued to serve me well.

AUTOBIOGRAPHICAL SKETCH

Debora Barros

PhD student, Universidade Federal do Rio Grande (FURG), Rio Grande, Brazil – debor@furg.br

Debora Barros participates in fieldwork in Maine, USA.

I graduated with a bachelor's degree in mathematics and later completed a master's degree in the history of science and epistemology. Years after finishing my studies, I decided to change the direction of my career and trained to become a harbor pilot in Rio Grande, a southern port in Brazil. For more than a decade, I maneuvered all kinds of vessels through the inlet of Patos Lagoon, the largest choked lagoon in the world. Over time, I developed a deep curiosity about the lagoon's unique dynamics and decided to return to university to expand my knowledge.

My goal was to find a way to integrate my practical experience of observing the interaction between the lagoon and the ocean with my academic background. Physical oceanography became the natural choice, especially considering that my hometown is the location of the Universidade Federal do Rio Grande (FURG), which has one of the most respected oceanography programs in Brazil.

Returning to academia in my 40s while maintaining my career as a harbor pilot and raising twin toddlers was undeniably challenging. However, it was this challenge that motivated me to push forward. Learning about a new field, engaging with passionate people, conducting fieldwork to collect in situ data, and even being invited to conduct part of my research abroad all contributed to a renewed sense of excitement and purpose. I felt as though a brand new world had opened up before me, fueling my enthusiasm for research and for sharing my discoveries in conferences, universities, and with my community.

In my initial discussions with my advisor in Brazil, Carlos Augusto Schettini, we identified a research gap in mixing processes within microtidal salt-wedge estuaries, a topic with significant global relevance. We decided I would focus on collecting the first mixing data for Patos Lagoon, an effort that would address both local and international scientific needs.

I had always hoped to conduct part of my research abroad, and Carlos encouraged this aspiration. Moving to Maine, USA, for a year with my family was a life-changing experience. My children embraced the adventure, learning a new language, making friends, and experiencing a different culture and climate. On a personal and professional level, the time I spent working with Lauren Ross at the University of Maine was invaluable. She guided me in using advanced equipment and data-processing techniques, and she introduced me to a network of researchers who enriched my understanding of the field.

Through these connections, I had the opportunity to present my findings, receive valuable feedback, and collaborate on fieldwork. This experience opened doors for me to participate in international conferences and even to join the organizing committee for the next LAPECO (Latin American Physics of Estuaries and Coastal Oceans). Upon returning to Brazil, I shared the knowledge and skills I had gained with my colleagues and established new partnerships with other professors at my university.

This experience strengthened my belief in the value of capacity sharing and international collaboration. Engaging with researchers from different institutions and countries not only enhances personal growth but also benefits the broader scientific community. I always encourage students to seek opportunities to study abroad, as the exchange of knowledge and perspectives creates lasting benefits for all involved.

Looking back, I am deeply grateful for the opportunities I've had and excited for the adventures that lie ahead. I look forward to continuing my journey as a scientist, exploring new horizons, and contributing to the global scientific community.

AUTOBIOGRAPHICAL SKETCH

Beatrice Omolola Bello

Chief Research Officer, Nigerian Institute for Oceanography and Marine Research, Lagos, Nigeria – trizb2006@gmail.com, belloob@niomr.gov.ng

Born on November 29, 1978, in the small town of Erusu Akoko, I am a proud Nigerian woman with roots firmly planted in Ondo State. From a young age, I embraced my Christian faith and began a journey leading me to the fascinating world of oceanography and environmental science.

My formal education began with a national diploma in science laboratory technology from Lagos State Polytechnic in 2002. This foundation fueled my desire to learn more, and in 2005, I earned a higher national diploma from Yaba College of Technology in the same field, specializing in environmental biology. Those early experiences in the laboratory sparked a passion for understanding the intricate workings of the natural world and the impact of human activity on the environment.

After briefly serving as a biology instructor in Jigawa State, a career in environmental research beckoned. I furthered my academic pursuits, earning a postgraduate diploma from Lagos State University in 2011 in environmental resources management. Eager to enhance my understanding of water quality, I enrolled at Olabisi Onabanjo University Ago Iwoye, where I earned a master's degree in 2014 in environmental science, specializing in water quality. This was followed by a PhD in 2024 in animal and environmental biology (environmental toxicology option) at Federal University Oye Ekiti, Ekiti State, Nigeria.

Throughout my career, I have embraced opportunities for professional development, including participation in various training courses; examples are the Safety of Life at Sea in 2020, the United Nations Food and Agricultural Organization's electronic library resources training on AGORA (Access to Global Online Research in Agriculture) and TEEAL (The Essential Electronic Agricultural Library) programs in 2016, and instrumentation training on an atomic absorption spectrophotometer and a UV/visible spectrophotometer, and in high performance liquid chromatography (2010).

My career at the Nigerian Institute for Oceanography and Marine Research (NIOMR), which began on January 2, 2008, has been the central focus of my professional life. I am currently Chief Research Officer in the Environmental Factor and Physiological Mechanism Session, Department of Biological Oceanography. My work involves researching the physical, chemical, and biological parameters of Nigeria's marine environment to assess pollution effects, study the impact of organic and inorganic compounds on aquatic organisms, and investigate the toxicity of produced water (water that is a byproduct of oil and gas extraction) and other pollutants on marine organisms, including microalgae, copepods, fish species, and luminescent bacteria. My focus is on providing baseline data and understanding the distribution and effects of pollutants in Nigeria's marine waters.

Beyond my research, I am committed to sharing my knowledge and experience. I was an instructor at the Coastal Ocean Environment Summer School In Nigeria (COESSING) in 2024 and at the Partnership for Observation of the Global Ocean (POGO) and NIOMR Advancing Oceanographic Data Collection in the Gulf of Guinea in 2022. I am also a Shipboard Fellow.

My dedication to environmental stewardship extends to my membership in the Nigerian Environmental Study Action Team (NEST).

My journey, from the small town of Erusu Akoko to the forefront of oceanographic research in Nigeria, has been driven by a deep curiosity, a passion for the environment, and a commitment to making a positive impact on our planet. I look forward to continuing my work, contributing to a better understanding of our ocean, and empowering the next generation of environmental scientists.

AUTOBIOGRAPHICAL SKETCH

Ratana Chuenpagdee

University Research Professor, Memorial University,
St. John's, Newfoundland, Canada, and Science Director,
TBTI Global Foundation – ratanac@mun.ca

Ratana Chuenpagdee at Quidi Vidi, a historic fishing village in St. John's, Newfoundland.

Growing up in a small town on the east coast of Thailand, I spent a lot of time on the beach. When it was time to choose an area of specialization for the Thai bachelor of science program, it was natural for me to declare "marine science" as my major. As part of this degree, I conducted research about sand transportation and its impact on coastal erosion, which meant that I spent the whole summer observing the shoreline. There, I started to see other things, such as fishing people going in and out on their boats and the bustling life of coastal communities.

Eventually, my interest shifted from coastal morphology and oceanography to fisheries, which I pursued in two masters' programs, one in the United States (1987) on fisheries management and resource economics and the other in the United Kingdom (1990) on fisheries biology and stock assessment. My diverse interests came together in PhD research at the University of British Columbia in Canada (1998), with a dissertation focusing on developing a non-monetary approach to assessing values of coastal and fisheries resources. A major turning point happened in 2003 when I was exposed to governance literature, particularly interactive governance theory, developed by Professor Jan Kooiman. The system analysis, the emphasis on interaction, and the focus on meta-order elements (like values, images, and principles), aligned well with my thinking about how to address issues and challenges facing fisheries worldwide.

Coming from Thailand, the different scales in fisheries have always been evident to me. This scale difference is also notable in Newfoundland, Canada, where I have been working since 2006. Yet, in the global discussion about fisheries sustainability, the distinction between large-scale and small-scale fisheries is not always clear. More often than not, and despite their contributions to food security, jobs, and community well-being, small-scale fisheries are marginalized and disadvantaged in policy and management decisions. This recognition brought many researchers interested in various aspects of small-scale fisheries together in 2012 to start a global research network, Too Big To Ignore (TBTI), designed to enhance knowledge and understanding about this important sector, to make it visible and viable.

The work on small-scale fisheries through TBTI has been the most rewarding aspect of my career for many reasons. TBTI offers space and opportunities to address big questions affecting small-scale fisheries worldwide. Through 100+ case studies, we have enhanced knowledge about the sector, calling attention to issues like justice and equity, and building research and governance capacity in the process. For the first time, we were able to see how our work matters. For instance, together with some TBTI colleagues, I contributed to the development and the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (SSF Guidelines), endorsed by the member states of the Food and Agriculture Organization (FAO) of the United Nations in 2014, as a key instrument guiding management and governance of small-scale fisheries.

Despite the progress, small-scale fisheries continue to face numerous challenges, including new ones related to development agendas, like the blue economy, that pay little attention to this sector. But it also means that there is still more work for my TBTI colleagues and me to do—and also for young scientists who are interested in interdisciplinary and transdisciplinary research.

Johanna, with her husband Kin, and two beautiful girls, Kinjo and Yohan, enjoy a warm New Year morning at the heart of Lumot Lake, Philippines.

AUTOBIOGRAPHICAL SKETCH

Johanna Diwa-Acallar

Deputy Capacity Development Global Coordinator of the Intergovernmental Oceanographic Commission of UNESCO (IOC/UNESCO) – jp.diwa@unesco.org

I am not an oceanographer. Following a pre-law course as an undergraduate, and while waiting to be admitted to law school, I found myself pursuing postgraduate studies in international development in Japan. I eventually earned a master's degree and completed doctoral course in Hiroshima University focused on education for sustainable development, employing transdisciplinary approaches in sustainability studies.

For almost two decades, I worked on capacity development programs under the United Nations, contributing to its international development agenda. My social science background shifted toward sustainability science when I joined the United Nations University as a Postgraduate Programme Coordinator for the MSc and PhD degrees in sustainability science, and the Joint Diploma program with the University of Tokyo—experiences that deepened my understanding of global challenges and sustainable solutions.

Then, with the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), an intergovernmental organization dedicated to ocean governance and sustainable development, I worked directly in sustainable ocean management and coastal development, coordinating capacity development efforts across East Asia. This work brought me to the heart of community-driven efforts in integrated coastal management, collaborating with local governments, academia, nongovernmental organizations, fisherfolk, youth, women, and more. It was the first time I saw the true power of community engagement in addressing environmental challenges.

Next, during the pandemic, I stepped into the world of oceanography as a capacity development consultant for the Intergovernmental Oceanographic Commission of UNESCO (IOC/UNESCO). Though it was an unexpected shift, it felt deeply aligned with my evolving mission to address global sustainability challenges. This new role connected me with the passionate members of the IOC Group of Experts on Capacity Development as I contributed to drafting and implementing the IOC Capacity Development Strategy 2023–2030. This experience underscored my belief in creating equitable access to expertise—across geography, generations, and genders—and allowed me to advocate for shared, global solutions to the ocean's most pressing challenges.

Joining IOC/UNESCO during the Decade of Ocean Science for Sustainable Development (2021–2030) felt like a defining moment in my journey. I realized that capacity development is not just about transferring knowledge—it's about catalyzing transformative solutions. To achieve this, we must avoid reinventing the wheel, build expertise through collaboration, and make resources available as widely as possible. Our issues are complex, and they demand coordinated, inclusive, and cohesive action.

While this path has not been without its challenges, particularly as a woman from a developing country like the Philippines, I've been fortunate to have incredible mentors along the way. Peter Pissierssens of IOC/UNESCO, in particular, was a key figure who gave me the confidence to contribute meaningfully to a transdisciplinary team despite not having a scientific background. His unwavering respect and trust in my abilities have been invaluable in helping me navigate a traditionally male-dominated field.

Balancing my career with family life has been an ongoing challenge, especially with two young children at home. While working remotely offered the benefit of staying close to my kids, traveling for work has occasionally posed difficulties. Yet, my mother's teachings overseas always echo in my mind: "You can achieve whatever you set your mind to." I grew up with a strong belief that gender would not be a barrier to my dreams, and I've passed that same mindset on to my daughters. I've tried to create an environment where they can thrive, free from limits based on gender or any other constraint.

And of course, none of this would be possible without my incredible husband, whose support has been instrumental in balancing my work and family life. His understanding and shared commitment to our family's happiness have allowed me to pursue a fulfilling career while cherishing the moments that matter most.

AUTOBIOGRAPHICAL SKETCH

Nicolas Moity

Senior Marine Ecologist and Geospatial Expert at Charles Darwin Foundation, Santa Cruz, Galápagos, Ecuador, and PhD student at University of New Hampshire, USA – nicolas.moity@fcdarwin.org.ec

Nicolas Moity conducts an underwater visual census of reef fish populations at a remote location off Española Island in the Galápagos Archipelago. *Photo credit: Sofia Green/CDF*

I grew up along the Mediterranean Sea coast in Calpe, Spain, and spent my childhood deeply connected to both the sea and the mountains. My family often went snorkeling to collect sea urchins, which is how I first started freediving—though at the time, I didn't even know it had a name. My greatest influences were my parents, who instilled in me a profound respect and love for nature and the ocean, and my uncle, who was a marine biologist on Jacques Cousteau's *Calypso*. I tried scuba diving for the first time when I was about 10 years old, and I was instantly hooked.

After spending a year in Australia perfecting my English and my diving, I pursued a bachelor's degree in biology at the University of Alicante in Spain, followed by a master's in biodiversity and conservation. I loved it, but I found it challenging to make a living doing what I was passionate about. Moreover, I struggled to become entirely comfortable within the confines of academia, which can often feel like an ivory tower. My ambition was to make a tangible difference in the world and contribute to the protection of the ocean that I love so deeply.

A turning point in my career came when I pursued postgraduate studies in remote sensing and education, including a master's in GIS at Ulster University, where I was awarded Best Dissertation in Northern Ireland. I then had the opportunity to go to the Galápagos Islands, where I developed a research project that had a direct and meaningful impact on conservation. It was truly a dream come true, although the journey wasn't without its challenges. Resilience proved essential. Working in the Galápagos has allowed me to engage in applied conservation science and experience nature at its most extraordinary, spending countless hours underwater.

One of the most rewarding aspects of my career is developing a deeper understanding of nature than I could in any other field. I also value the importance of continuous engagement in the process of learning and of staying curious.

However, one of the biggest challenges I faced was recognizing that academic excellence doesn't fully prepare you for the "hidden curriculum"—the unspoken tasks and skills needed for success in research. These include social skills, navigating politics, writing proposals, and effectively communicating with diverse audiences. Through experience, I realized the importance of publishing early and often, as well as prioritizing tasks based on their potential impact on my career. Asking "How will this benefit my career?" before starting a project is crucial, as it is easy to invest significant time and energy into work that remains invisible. Publishing is not just a way to share your work but also a means for advancing science and making your contributions visible.

It is important to complement your existing skills with new ones. For instance, if you have an undergraduate degree in biology, pursuing a master's in a complementary field like GIS, statistics, or social sciences can greatly expand your career opportunities and provide long-term benefits. These complementary skills are best learned through structured education. Additionally, learning languages—whether human languages like English, Spanish, or French, or programming languages like R or Python—can be invaluable assets.

Finally, I've learned the importance of surrounding myself with "positive contributors." Seek out mentors who are inspiring and who are also supportive and passionate about their work and eager to share their knowledge. Their enthusiasm and guidance can be transformative for your personal and professional growth.

Muelbert has found working in remote areas—Punta San Juan (Peru), Sable Island (Nova Scotia, Canada), and Elephant Island (Antarctica)—a challenge but also a privilege.

AUTOBIOGRAPHICAL SKETCH

Mônica Mathias Costa Muelbert

Research Fellow, National Ocean Observation and Monitoring Network (ReNOMO), Universidade Federal do Rio Grande, Brazil – monicamuelbert.furg@gmail.com

Born and raised in Rio de Janeiro, Brazil, I come from a family of seafarers who regard the ocean and the Southern Cross as guides that almost imperceptibly shape our lives and destiny. It is no surprise that I became an oceanographer.

I graduated with a bachelor's degree from the Federal University of Rio Grande, Brazil, and completed my postgraduate and postdoctoral studies abroad: MSc and PhD from the Department of Biology, Dalhousie University, Canada, studying lactation and weaning of harbor seals, and a postdoc at the Institute of Marine and Antarctic Studies, Tasmania, Australia, studying southern elephant seals. This mixture of local and international work provided me with both North and South perspectives and helped me adjust to the different working realities of these two hemispheres. Throughout my journey, encouragement from incredible mentors and colleagues led to some of the most enriching experiences I have ever had—working in remote areas such as Sable Island, Nova Scotia, Canada, and Elephant Island, Antarctica. In addition to formal education, I always had the support and encouragement of my family and of a soulmate who helped me form a new family and contributed to shaping my career.

My main research areas include ecology, biological oceanography, top predators as platforms for monitoring the environment, and ocean observing systems. I am particularly interested in the Southern Ocean and its connectivity to South America. I was the first woman sponsored by the Brazilian government to conduct studies on the biology of elephant seals with PROANTAR (Programa Antártico Brasileiro), which I did for more than 20 years. During the fourth International Polar Year, I led the Brazilian component of a pioneering joint initiative that simultaneously monitored the diving activities of polar pinnipeds and the environmental conditions they encountered. This initiative revolutionized oceanographic knowledge in the polar regions during winter and initiated the participation of marine animals as environmental monitoring platforms worldwide. Weather forecasts from Arizona, USA, to Zanzibar, Tanzania, benefit from data collected by these animals, illustrating the connection between global issues and regional/local scenarios.

One of my biggest challenges and greatest responsibilities was serving as one of the lead authors of the polar regions' chapter of the Intergovernmental Panel on Climate Change (IPCC) *Special Report on the Ocean and Cryosphere in a Changing Climate*. Working on this assessment with scientists who came from different fields and offered a variety of perspectives was a true networking experience. The breadth of topics was as diverse and as wide as our need to describe and summarize them. Having to express myself and convey messages in a language that was not my own was challenging, but the respect and encouragement of my peers was instrumental. I encourage everyone to take advantage of the several ways available to participate in the IPCC process.

Throughout my career I have advocated for women in science and technology, as well as gender equity and education at workshops, roundtables, events, and presentations as well as in many action plans. Since the OceanObs'19 conference, I have focused on the integration of programs (e.g., AniBOS, MegaMOVE, ReNOMO) to narrow observational and capacity gaps in order to raise inclusivity through sustainability, capacity development, and access to information and concepts in different languages and at different levels of understanding. Interaction among these groups represents opportunities to address, narrow, and eradicate gaps on a global level toward developing a truly sustainable ocean.

AUTOBIOGRAPHICAL SKETCH

Nubi Olubunmi Ayoola

Director, Physical & Chemical Oceanography Department, Nigerian Institute for Oceanography & Marine Research, Lagos, Nigeria – nubiao@niomr.gov.ng

I never thought of venturing into oceanography, as my focus was on studying medicine and surgery at the university to become a medical doctor. After two attempts at the entry examination, I decided to complete my first degree in chemical sciences and chart a new course for myself. That course led me to where I am today—an accomplished oceanographer with years of experience, multiple international collaborations, and a commitment to training the next generation of marine scientists.

Having earned a BSc in chemical sciences and an MSc in analytical chemistry, I received a job offer at an energy, environment, and engineering firm. This opportunity introduced me to environmental impact assessments (EIA) for developmental projects onshore and offshore. My first offshore EIA experience tested my seaworthiness and gave me hands-on experience in ocean data collection, sample analysis, instrument operation, and environmental reporting. These experiences prepared me for a career shift to full-time research when in 2004 I joined the Physical and Chemical Oceanography Department at the Nigerian Institute of Oceanography and Marine Research (NIOMR). During this period, the shortage of ocean experts and facilities in many West African countries posed a significant challenge to acquiring specialized training. However, I leveraged international platforms such as the Regional Programme of Physical Oceanography in West Africa (PROPAO) to gain hands-on experience, collaborate with global experts, and develop the expertise needed to advance ocean science in the region.

My professional development began with a short course on global ocean monitoring in 2005 at the University of Southampton, UK, where I was further exposed to analytical techniques for ocean monitoring. Over the years, I broadened my knowledge of ocean and coastal dynamics, marine pollution, climate change impact, ocean data analysis, and ocean governance through attendance at courses and workshops in different countries. These experiences enriched my skills and helped me contribute significantly to oceanographic research and environmental sustainability.

I have contributed to projects such as the Gulf of Guinea climate and ocean circulation study (EGEE), the International Indian Ocean Expedition (IIOE), and the Nippon Foundation–Partnership for Observation of the Global Ocean (NF-POGO) Shipboard Training for Early Career Scientists, all of which have strengthened my research profile and have allowed me to mentor young scientists. My involvement with POGO and the Scientific Committee on Oceanic Research (SCOR), in particular, has been a defining factor in my career. These platforms connected me with leading marine science institutions and professionals worldwide. Today, I serve as the Alternate and Scientific Point of Contact for POGO at NIOMR and contribute to SCOR's Capacity Development Committee, ensuring that knowledge-sharing and skill-building opportunities continue for young scientists.

As a visiting lecturer, I have been actively involved in academia. Teaching has allowed me to bridge research and education, inspiring students to pursue careers in ocean science. I have also supervised numerous graduate and postgraduate students, acting as an external examiner and a mentor to those eager to explore marine research. One of my key achievements in training the next generation of ocean scientists has been my active role in the Coastal Ocean Environment Summer School In Nigeria and Ghana (COESSING), where I have contributed to capacity building, mentorship, and hands-on training for the selected participants.

My journey in oceanography has been deeply fulfilling. While I initially aspired to become a doctor, I now recognize that my role as a marine scientist has been equally impactful. Having earned my PhD in physical oceanography and applications over a decade ago, I currently serve as the Director of the Physical and Chemical Oceanography Department at NIOMR. By training young oceanographers, leading research, and advocating for marine sustainability, I have played a role in shaping the future of ocean science. To the next generation of ocean scientists, I say: stay curious, embrace challenges, and never stop exploring. The ocean holds answers to some of the world's most pressing environmental questions, and it needs passionate individuals to uncover its secrets.

AUTOBIOGRAPHICAL SKETCH

Ngozi Oguguah

Chief Research Officer, Nigerian Institute for Oceanography and Marine Research, Lagos, Nigeria – ngozimoguguah@yahoo.com

Growing up far from the ocean, my journey into fisheries science was unconventional. My interest began during undergraduate studies, when I explored fish anesthetics. This led to an MSc in aquaculture focused on cost-effective fish farming for household food security. Over time, my work expanded to include pollution research and policy advocacy, driven by a passion for ensuring marine resources are managed responsibly for future generations. A personal milestone was earning my PhD the same year my twin sons completed their BSc degrees, a testament to the unwavering support of my husband and three sons, who have been my pillars of strength.

My current position is Chief Research Officer at the Nigerian Institute for Oceanography and Marine Research, with over 15 years of experience in marine research, focusing on environmental sustainability, fisheries science, and pollution control. My career is driven by a commitment to advancing scientific knowledge, fostering collaboration, and advocating for sustainable marine practices.

My investigations center on environmental pollution, particularly heavy metal contamination in Nigerian waters, and its impact on food safety and public health. I also engage in plastic pollution research, advocacy, and policymaking, working to promote marine conservation and sustainable practices. Beyond research, I collaborate with local and international institutions to build capacity and implement environmental projects that address critical challenges.

Collaboration has been a cornerstone of my career. I work with scientists, policymakers, and local fishing communities to address marine pollution, a global issue requiring cross-border efforts. Internationally, I partner with organizations to study microplastic contamination, climate change impacts, and sustainable fisheries management, contributing to global initiatives like the Intergovernmental Conference on Marine Biodiversity and the Ocean Knowledge Action Network. I also participate in shaping policies that promote generally to ocean health. Locally, I engage coastal communities in pollution monitoring and introduce eco-friendly practices to reduce overfishing pressures.

One of the greatest challenges in my field is the lack of funding and scientific infrastructure. To overcome this, I have formed partnerships with institutions that provide laboratory access and funding, while leveraging digital platforms to share knowledge and create opportunities for early-career scientists. Resilience, networking, and collaboration have been key to navigating these barriers.

My vision for capacity sharing emphasizes collaboration at local and international levels. Through mentorship programs, online forums, and research projects, I aim to empower young scientists and communities by helping them develop the skills they need to tackle environmental challenges. I advise future scientists to embrace interdisciplinary collaboration, seek mentorship, and engage with policymakers to translate research into actionable solutions.

Looking back, I would have focused on collaboration and skill-building sooner. Sharing knowledge and creating opportunities for others has been one of my most impactful contributions. Moving forward, I remain committed to fostering partnerships that drive sustainable marine conservation and pollution control, and to working toward a future where marine resources are preserved, pollution is minimized, and scientific knowledge is accessible to all.

AUTOBIOGRAPHICAL SKETCH

Samuel Olatunde Popoola

Focal Person for Nigeria, UNESCO-IOC-National Decade, and Chief Research Officer, Department of Physical and Chemical Oceanography, Nigeria Institute for Oceanography and Marine Research (NIOMR), Lagos, Nigeria – popoolaos@niomr.gov.ng

My work as a marine geochemist with the Nigerian Institute for Oceanography and Marine Research (NIOMR) is concerned with the ecological risk assessment of marine pollutants in sediment, water, and biota. In this work, I apply my expertise in marine pollution and its control and mitigation, in trace metal source-identification and its biogeochemical cycling, and in sustainable management of living and non-living ocean resources. My background includes a bachelor of technology degree in applied geology from the Federal University of Technology, Akure, Nigeria, a master's degree in mineral exploration (geochemistry options) from the University of Ibadan, Nigeria, and a PhD in marine resources and the environment from Zhejiang University, Hangzhou, China.

The most rewarding part of my 12-year career at NIOMR has been representing the institute in several organizations, such as the United Nations Educational, Scientific and Cultural Organization-Intergovernmental Oceanographic Commission (UNESCO-IOC-Nigeria National Ocean Decade Committee (https://www.nigoceanstakeholders.org/) and the International Seabed Authority (ISA) as the Africa Deep Seabed Resources (ADSR) project expert, and as a member of the intercessional expert group (IEG) supporting the Legal and Technical Commission of the ISA in developing binding environmental thresholds on toxicity. I am currently serving as member of the Pool of Experts (PoE) of the United Nations Regular Process for Global Reporting and Assessment of the State of the Marine Environment (Regular Process), in collaboration with the Division for Ocean Affairs and the Law of the Sea (DOALOS). This involves consultations to advance the understanding and governance of ocean-related issues, as well as scientific review and input on the third World Ocean Assessment (WOA III).

I chose my field of study based on my longstanding passion for understanding the ocean, climate change, pollution, and ecosystems, and how geological and chemical processes interact with the environment. One of the greatest challenges is obtaining project funding because of the competitive nature of research grants; however, some obstacles have been surmounted by participating in a strong collaborative network with other scientists. My major vision for capacity sharing locally to internationally is establishing partnerships between my institute and other global research institutions and with scientists across different countries to share knowledge, techniques, and resources. Such partnerships can lead to innovative solutions to common environmental challenges. Other capacity sharing aspirations include creating programs that focus on training the next generation of oceanographers through workshops, webinars, and open-access platforms for sharing research findings and datasets that can help build skills and confidence in both developed and developing regions.

I would offer the following advice to young oceanographers. Ensure that you cultivate a genuine interest in ocean science by engaging in self-directed learning, reading oceanography literature, and participating in relevant outreach activities. Find specific areas within oceanography that excite you, whether it's marine ecology, ocean physics, geochemistry, or policy. Moreover, volunteer for field trips, research cruises, or conservation projects—field experiences are crucial for understanding ocean dynamics and developing essential skills. Having risen to the position of Chief Research Officer, given the opportunity, I would have prioritized gaining adequate skills in science communication and public engagement and proactively participating in outreach programs that would have helped me bridge the gap between science and policy earlier in my career so that I would have been better equipped to convey research findings.

During a Plastic Punch cleanup at a turtle nesting beach in Ghana, Richmond Kennedy Quarcoo uncovered a turtle carapace, drawing attention to turtle and marine conservation.

AUTOBIOGRAPHICAL SKETCH

Richmond Kennedy Quarcoo

Founder and Executive Director, Plastic Punch, Accra, Ghana – richmond@plasticpunchngo.org

Ever since I was a child growing up along the beautiful Ghanaian coastline, I have been captivated by the ocean's mysteries. My journey in ocean science began when I trained as a Merchant Navy Officer and earned a bachelor's degree in nautical science from the Regional Maritime University in Accra, Ghana. Sailing worldwide, I gained firsthand insights into the wonders and challenges of the vast blue, deepening my respect for the ocean and its pivotal role in global trade and environmental dynamics.

My scientific interests span marine pollution, ecosystem protection, maritime security, alternative packaging solutions, and the impacts of climate change. In 2013, I wrote my bachelor's thesis on the viability of marine plastic pollutants as a raw material—a project that transformed my academic curiosity into a passion for innovative environmental solutions. This pivotal experience solidified my decision to devote my career to understanding and protecting our marine environments.

Serving as a participant, then instructor and organizer, at the Coastal Ocean Environment Summer School In Nigeria and Ghana (COESSING) broadened my knowledge of ocean systems and provided me with the opportunity to learn from aspiring and established scientists. My involvement with COESSING further enriched my understanding of marine dynamics, fueling my commitment to education, research, and development. Alongside these roles, I founded Plastic Punch, a citizen science-driven nongovernmental organization dedicated to inspiring behavioral change and influencing policy through evidence-based advocacy.

Thanks to citizen science data collected by Plastic Punch, Ghana became the first country to monitor marine plastic debris density according to United Nations guidelines. Our advocacy efforts have championed policies such as Extended Producer Responsibility, inspired conversations on banning problematic plastics, and helped to establish a Voluntary Pact for Businesses to Phase Down Single-Use Plastics by 50% by 2030. Additionally, we have promoted research and development of refill systems and alternative packaging solutions, ensuring that our work contributes to sustainable waste management.

Despite these successes, my journey has encountered significant obstacles. Inadequate research funding and infrastructural limitations have often impeded progress. Yet, these challenges have galvanized me to pursue local and international collaboration to democratize access to resources, knowledge, and innovative solutions; carve out new opportunities; and advocate for a more inclusive, collaborative future in ocean science.

For young oceanographers, aspiring policymakers, environmental activists, and scholars, my advice is to embrace curiosity, seek mentorship, and remain open to innovative approaches in tackling longstanding environmental problems. If I could change one aspect of my journey, I would have pursued international collaborations earlier, recognizing sooner the immense value of global partnerships. I also would have taken more time to savor the beautiful beaches of my youth and promoted greater environmental protection in the communities I serve.

Every challenge and triumph has shaped my journey and reinforced my commitment to marine research, sustainable practices, and the preservation of our ocean resources. I remain optimistic that by uniting diverse perspectives and harnessing the power of community science, we can forge innovative pathways to protect our planet's marine ecosystems for generations to come. My unwavering passion indeed fuels my ongoing quest for a sustainable marine future.

AUTOBIOGRAPHICAL SKETCH

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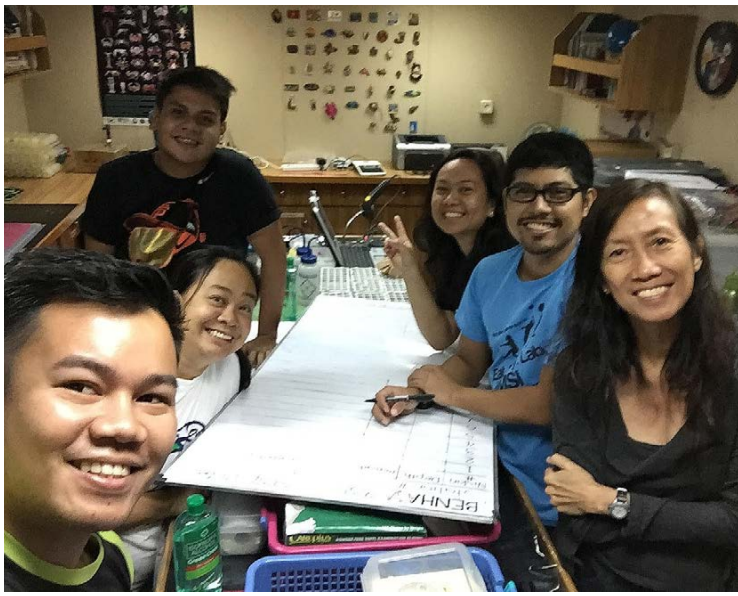

Maria Lourdes San Diego-McGlone (rightmost) on a cruise to Benham Rise with former research assistants who are now PhDs or soon to be PhDs. From the left: Peter Paolo Rivera, Mary Chris Lagumen, John Michael Aguilar, Charissa Ferrera, and Iris Orizar.

My journey toward becoming a chemical oceanographer began in high school when my chemistry teacher made the dreaded subject interesting and unexpectedly fun. I then took up chemistry for my undergraduate bachelor of science degree. After graduation, I chose to do research, first on a project designed to determine essential amino acids in Philippine fruits and vegetables, and then on a study of microbial protein and non-conventional feedstuff in animal production. A turning point came when, after a snorkeling experience, I fell in love with the sea and became a scuba diver.

It was then I decided to move to seagoing research, beginning with a project to examine primary production and nutrients in Tambac Bay, Northwest Philippines. I became the chemist who collected and analyzed seawater samples—with little knowledge of what the results meant. The first step to becoming an oceanographer was to do a master's in oceanography. I learned more about physical processes but missed the chemistry because there was no one to teach that part. So I enrolled at Old Dominion University in Norfolk, Virginia, USA, to study chemical oceanography. I not only earned a PhD but also married a wonderful man who came back home with me.

After six years, we returned to the Philippines, and I joined the Marine Science Institute of the University of the Philippines as faculty. I became one of the national pioneers in chemical oceanography and established the marine biogeochemistry laboratory with capabilities for field and oceanographic surveys, sample collection, and analysis of various water parameters. This facility allowed me to examine changing coastal water quality conditions, nutrient dynamics, and coastal ecosystem responses to anthropogenic stressors such as eutrophication and ocean acidification, and to undertake blue carbon estimation and harmful algal bloom mitigation. Being part of several multidisciplinary research programs enabled us chemical oceanographers to characterize the chemical hydrography of seas surrounding the Philippines, study the oceanography of harmful algal blooms, and develop conservation and adaptive management measures for coastal ecosystems suffering environmental impacts, among others. Our research helped provide science-based technical input to decision-making by government agencies and local government units.

Being a chemical oceanographer in an archipelagic country with over 7,000 islands is a relevant but challenging undertaking. The need to act on environmental protection, climate change mitigation, and sustainability in a developing country takes dedication and relentless effort. We also must continue to produce the next generation of chemical oceanographers to champion the cause. The challenge of recruiting students and providing meaningful postgraduate positions in a country with limited public and private resources dedicated to scientific endeavors needs to be addressed. But for as long as we have young people who discover and fall in love with the sea, there is hope for continued creation and nurturing of a new generation of chemical oceanographers.

P.S. My daughter also fell in love with the sea, and she is now a marine biologist.

Aileen Tan Shau Hwai (left) works with coastal community Malaysian women to empower them to venture into oyster farming.

AUTOBIOGRAPHICAL SKETCH

Aileen Tan Shau Hwai

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My career as a marine scientist was not a deliberate choice but rather a journey shaped by circumstance. At an early stage, I had no concrete plan to pursue this field. My academic path began when I was offered a place in the Natural Resources & Environmental Sciences program for my bachelor's degree. At that time, admission to a local university in Malaysia was a "take it or leave it" opportunity. Without much contemplation, I accepted the offer to study at Universiti Kebangsaan Malaysia (UKM)—a decision that set the course for my future in marine science.

I graduated with a degree in science and natural resources, majoring in botany, and conducted my final year project in microbiology—with no exposure to marine science at that stage. Reflecting on my journey, I resonate deeply with a quote by Marian Wright Edelman, an American children's rights activist: "You cannot be what you cannot see." However, being in the environmental sciences program broadened my perspective on future opportunities related to the environment, climate, and human interactions. Motivated by this, I pursued both master's and PhD degrees in marine science at Universiti Sains Malaysia (USM).

When I began my career as a marine biologist three decades ago, the field was still developing in the Asia-Pacific region, and female marine scientists were few and far between. Gender equality was not a topic of discussion at the time. Entering a male-dominated field meant that I had to adapt without expecting special treatment—after all, science is genderless.

Throughout my career, mental support has been crucial. I am grateful to have had an exceptional mentor, the late Prof. Dr. Zulfigar Yasin, and an outstanding team. In marine science, especially field-based research, teamwork is indispensable. I surely would not be where I am today without their support.

At the onset of my career, I made a conscious decision to prioritize community impact over personal achievements. To me, research should not be solely about academic publications for career advancement; rather, it should create meaningful change. Since 1995, alongside my research in marine science, I have been working with coastal communities, starting with the womenfolk of Johor Islands on giant clam conservation. Later, in 2001, I expanded my efforts to oyster farming initiatives for coastal communities.

I firmly believe that eradicating poverty is not just about financial aid but about providing hope—a hope nurtured through the transfer of knowledge and skills. I advocate for co-learning and co-production of knowledge, recognizing that traditional and local knowledge holds immense value in scientific research.

Through oyster farming, I sought to empower the coastal communities by creating alternative income opportunities. Seeing the local people take the lead in small businesses and contribute to their households brought profound fulfillment. The smiles on their faces were the greatest reward—far outweighing the challenges, setbacks, and failures encountered along the way. When science is successfully translated into real-world applications, it holds the power to transform lives.

Witnessing champions emerge from these communities is akin to seeing family members "graduate"—equipped with the knowledge and ability to secure better futures for themselves, their children, and their communities. These champions then become ambassadors of change, passing on scientific knowledge and converting research into real actions.

Professionally, my expertise lies in marine science, with a specialization in mariculture and the conservation of molluscs. My lifelong commitment has been to empower coastal communities, particularly the bottom billion, by promoting alternative livelihoods through sustainable and environmentally friendly aquaculture. I have dedicated substantial time and research to helping local communities balance economic sustainability with environmental conservation. My guiding principle remains steadfast: sharing knowledge to provide hope for the bottom billion.