

**Cultural Connections to the Deep Ocean:
A Conversation with Nicole Yamase, the first Pacific Islander to visit the Challenger Deep
Tuesday, 27 July, 2021
Webinar Summary**

Introduction and Background

The National Government of the Federated States of Micronesia, The Pew Charitable Trusts, and RESOLVE convened a webinar on Tuesday, 27 July, 2021, to hear from two scientists from Small Island Developing States (SIDS) regarding their experiences with ocean research. The webinar also provided an opportunity to hear from the National Government of the Federated States of Micronesia (FSM) about the importance of the traditional knowledge of Indigenous Peoples and local communities in managing our relationship with the deep ocean.

Andrew Friedman, The Pew Charitable Trusts, welcomed webinar participants, thanked the panelists for their time, and thanked the government of the FSM for their partnership in hosting the webinar. Mr. Friedman expressed his appreciation for the opportunity to learn about how to honor our linkages to the deep ocean floor in future decision making at International Seabed Authority (ISA), especially via traditional knowledge held by Indigenous Peoples and local communities.

Her Excellency Ambassador Jane J. Chigiyal, Permanent Representative of the FSM to the United Nations in New York City, thanked the co-conveners and expressed her enthusiasm for the presentation from two exceptional ocean scientists from SIDS who are committed to understanding the diversity of marine environments while also championing meaningful involvement of women and girls from SIDS in the scientific community and international fora. Ambassador Chigiyal also noted that the webinar would provide a key opportunity to hear the FSM's views on incorporating cultural considerations in a holistic approach to ocean management, including respectful engagement of traditional knowledge of Indigenous Peoples and local communities as a complement to the best available scientific information for management of the deep ocean.

The webinar was facilitated by Paul De Morgan, RESOLVE. The webinar agenda, slides presented, participant list, and recording are available on [RESOLVE's website](#).

SIDS Scientists Experience with Ocean Research: A Conversation

Mr. De Morgan introduced the two panelists, Nicole Yamase and Dr. Diva Amon, before turning to their conversation.

Ms. Yamase is from the islands of Pohnpei and Chuuk in the Federated States of Micronesia and is a PhD Candidate at the University of Hawaii at Manoa, where she focuses on the ecophysiology of shallow macroalgae. In March 2021 she became the first Pacific Islander to visit the Challenger Deep and hopes that her journey will inspire more young Pacific Islanders to not only pursue science, technology, engineering, and math fields but also to always remember they are descendants of voyagers and are people of the sea.

Dr. Amon is a marine biologist from Trinidad and Tobago whose work focuses on the little-known habitats and animals of the deep ocean, and how human actions impact them. She works at the nexus of science, policy, and communication and has a deep desire to see stewardship measures applied to the deep ocean, as well as the engagement of a broader group of global stakeholders on the issue.

The conversation between Dr. Amon and Ms. Yamase is summarized below.

Dr. Amon: Tell us about the Challenger Deep. How did you get to the bottom?

Ms. Yamase described the Challenger Deep, noting it is the deepest part of the ocean at a depth of around 10,920 meters or 35,827 feet. The Challenger Deep is located at the southern end of the Mariana Trench, within the FSM exclusive economic zone (EEZ). Ms. Yamase was nominated by the Micronesia Conservation Trust and Waitt Institute to represent FSM on a voyage to the bottom of the Challenger Deep.

Ms. Yamase traveled to the Challenger Deep with Victor Vescovo in a submersible called the DSV Limiting Factor. The interior of the submersible resembled a small two-seater airplane, with small windows and balloons to help buoyancy. The trip took 10 hours in total, including 4 hours to travel down, 2 hours at the bottom, and 4 hours to travel back up to the surface.

Dr. Amon: In addition to being the first Pacific Islander, you were also the fourth woman and one of the youngest people to visit Challenger Deep. What were you thinking and feeling as you were preparing? How did you prepare for the journey?

Ms. Yamase's preparation focused on the cultural importance of the journey and she spent a lot of time considering how best to represent the FSM and Pacific Island community in her role as the first Pacific Islander to visit the Challenger Deep. For example, she wore her *urohs en Pohnpei* (Pohnpeian skirt) and *mwaramwar* (seashell headband and necklace), and brought flags for all the countries in the Micronesian region. On the voyage in the Limiting Factor she brought additional items, including photos of two botanists, Dr. Isabella Abbott and Dr. Roy Tsuda, who had an impact on her studies and a small wooden canoe. Ms. Yamase said she felt extremely honored to represent the Pacific Island community on the journey, and worked hard to share her culture and values with everyone involved.

Dr. Amon: What led you to this moment? What events and experiences made you want to pursue a career in marine science?

Ms. Yamase explained that her interest in marine science started early in childhood. When growing up, she lived on several different islands due to her father's career, including Pohnpei, Chuuk, Palau, and Saipan. She has rich memories of spending time around the ocean and swimming in clear water from this time. Her father loved the ocean, and also shared that passion with her. She learned about climate change in high school, which sparked a passion for protecting the environment and an interest in pursuing science. During her undergraduate studies at Chaminade University of Honolulu, she started doing research at the University of Hawaii at Manoa where she had the opportunity to work with other Pacific Islanders. Over time, through a number of summer internships and research opportunities, she recognized her love for the ocean and decided to pursue marine science as a career.

Dr. Amon described a similar experience, noting that like Ms. Yamase, she was surrounded by the sea in her early childhood and her earliest memories are all of the ocean. Her father also helped shape her passion for the ocean however, Dr. Amon noted she wasn't exposed to deep-sea science until she reached university. Dr. Amon explained that marine science is not a major area of interest in Trinidad and Tobago, despite being surrounded by the ocean, and highlighted her interest in building marine scientific capacity among people in the Caribbean region.

Dr. Amon: Tell us more about your journey to the Challenger Deep. What did you see? What was it like on the ocean floor?

Ms. Yamase described the visit to the deepest part of the ocean as a surreal experience, and she felt honored to have had the opportunity to participate in the voyage. She believes her ancestors would be proud she was able to travel to the Challenger Deep, and suggested the accomplishment did not belong to her alone, but rather was a collective accomplishment for the people of FSM and Pacific Islanders.

As she travelled to the ocean floor, Ms. Yamase saw marine snow drifting down from the surface. Once reaching the bottom, Ms. Yamase and Mr. Vescovo spent two hours exploring. They explored the eastern part of the western pool of the Challenger Deep, visited a wall, travelled along a small slope, and looked for a lander that travelled down with the Limiting Factor. She emphasized that although the Challenger Deep may look like an underwater desert or the surface of Mars, with fine sediment and scattered rocks on the seafloor, it doesn't mean the area is devoid of life.

They did not see any animals during the trip to the Challenger Deep, which she attributed to the bright lights and relatively loud noises coming from the submersible that likely scared away any deep-sea creatures. Previous dives by Mr. Vescovo and the crew have found thriving bacterial communities in sediment samples collected from the area. While they did not see any fauna during their voyage, Ms. Yamase expressed disappointment at seeing trash at the bottom of the Challenger Deep – likely a vehicle tether. She felt it was a signal that people need to work together to protect places that are unique or sacred to indigenous peoples, and to work to avoid reaching a point where trash is building up at the bottom of the ocean.

Dr. Amon: What items of significance did you take with you to Challenger Deep?

Ms. Yamase described the significance of the small wooden canoe she brought with her on her journey, sharing why the canoe is important to her family and an important symbol of shared heritage and ancestry for the broader Pacific Island community. The idea of bringing a small canoe on the journey was suggested by Nainoa Thompson, a native Hawaiian navigator and advocate for traditional voyaging arts. Ms. Yamase said the canoe represents her family. The canoe belonged to and represents her father, who inspired her love for the ocean. It also represents her mother, who is from Micronesia. It represents the Pacific Island community and Ms. Yamase's heritage and ancestry. She described the connection to Papa Mau Piailug, a grand traditional navigator and Micronesian who used traditional navigational techniques to travel in a double-hulled canoe, the Hōkūle'a, from Hawaii to Tahiti in 1976. His voyage was key in demonstrating to the world that Pacific Islanders had historically used advanced navigation techniques to travel between islands.

Dr. Amon: Were you nervous about making the trip?

On the morning of the dive, as they were getting ready to board the Limiting Factor submersible, Ms. Yamase looked out at the ocean and wondered how her ancestors must have felt as they sailed across vast oceans in canoes. She felt grounded, calm, and excited before the trip – like she was going to see a relative, or going home.

Dr. Amon: How has your journey to Challenger Deep, one of the most remote places on earth, helped connect you to your culture?

Ms. Yamase described the Pacific Island traditional spiritual connection to the deep sea, which existed despite their inability to access it. This connection is evident through songs, legends, and stories about the deep sea as a place of darkness and mystery, with creatures that come from the deep sea and transform themselves into humans to interact with people on land as well as goddesses from the deep who were called up to protect the islands. The connection to the deep sea is also evident through language, where words used for the deep ocean are also used metaphorically to describe deep connections and love for family or community.

Ms. Yamase values the deeper connection she's gained to her ancestry and traditional knowledge through the journey, as well as the knowledge of western science. She described her Pacific Island ancestors as the original scientists, sharing the basics of scientific methods of observing, asking a question, planning an experiment, and analyzing data.

Dr. Amon echoed the perspective that human connections to the deep sea are often underestimated, emphasizing the strong spiritual connections people throughout history have had to the deep sea despite not being able to visit or see it, or understanding the nuanced role it plays in global oceanic patterns.

Dr. Amon: In thinking about the confluence of traditional knowledge and western science, how did your experience change the way you thought about the ocean?

For Ms. Yamase, the voyage emphasized the connectivity of the ocean and environment. In her PhD research, Ms. Yamase studies shallow water macroalgae. With the visit to the Challenger Deep, she feels lucky to have seen the ocean from the top to the bottom. While traveling down through the water column in the Limiting Factor, watching marine snow drift down around her, she thought about how the macroalgae she studies near the ocean's surface provides an energy source for the life found at the bottom of the ocean. Similarly, seeing the trash on the seafloor in the deepest part of the ocean also emphasized the connectivity and impacts people have on the environment. What humans do on land – even on mountain tops – can have an impact on the deepest parts of the ocean.

Dr. Amon emphasized this point and the limitations of working in silos. She recommended thinking about what's happening on land, on reefs, and in the deep sea together because activities in one location likely impact what is happening at the other.

Ms. Yamase: What unique things have you seen in the deep sea? Have you had experiences that define you as a scientist?

Dr. Amon explained that her work in the deep ocean has reinforced that the ocean is always changing and is relatively poorly explored. As a scientist and an islander, Dr. Amon also acknowledged that while she has had the opportunity to study areas of the deep ocean all over the globe, she has only been able to spend three days exploring the deep ocean in Trinidad and Tobago, her home country. Dr. Amon suggested the ocean-science community should work to design more inclusive and equitable approaches to conducting scientific research.

Q: What advice could you give to other young women from small islands who want to pursue or are pursuing a career in the sciences?

Ms. Yamase encouraged young women to remember where they come from and what motivates them as they pursue their goals. She explained that she draws inspiration and motivation from her roots when times are tough, and remembers where we come from can help make hard work more meaningful and enjoyable. Dr. Amon agreed and added that it is also key to have integrity in your work.

Federated States of Micronesia Perspective

Clement Yow Mulalap, Legal Adviser for the Permanent Mission of the FSM to the United Nations in New York City, provided an introduction to cultural considerations important to ensuring the effective management of the deep ocean from the perspective of the FSM. Mr. Mulalap, hailing from the island of Wa'ab in the FSM, is an international law consultant who specializes in international environmental law (particularly climate change law and biodiversity conservation law), the law of the sea, and international Indigenous law, with several articles and chapters published on those matters. Among other responsibilities, he is currently the Legal Adviser for the Permanent Mission of the Federated States of Micronesia to the United Nations in New York City and has represented the Federated States of Micronesia in various multilateral fora, including meetings for the United Nations Framework Convention on Climate Change and the Convention on Biodiversity, the development of the mining code for the ISA, and negotiations for the Biodiversity Beyond National Jurisdiction instrument.

The slides associated with Mr. Mulalap's presentation are available on [RESOLVE's website](#).

Mr. Mulalap began his presentation by reminding participants that humanity evolved from the ocean and remains deeply connected to the ocean. Mr. Mulalap reviewed key working definitions related to Indigenous Peoples and local communities and the traditional knowledge held by such Peoples and communities. He highlighted that the ISA Mining Code should reflect, in particular, the principle of connectivity from traditional knowledge (with respect to marine flora and fauna that migrate between coastal waters and deep ocean waters), as well as complementary best environmental practices that take into account ecological connectivity. Mr. Mulalap used the example of marine sanctuaries for particular animals such as sharks and cetaceans to show how the range of traditional ecological knowledges held by different island societies can be taken into consideration to develop a holistic, protective management plan. In addition to ecological protections, Mr. Mulalap also noted that the ISA's Mining Code should include considerations for protecting sensitive or lost historical artifacts and human remains, including the locations of shipwrecks and resting sites for victims of the trans-Atlantic slave trade. Mr. Mulalap also underscored the relevance of traditional knowledge about the high seas acquired through millennia of instrument-free traditional navigation, echoing the earlier discussion by Ms. Yamase and Dr. Amon on this point.

Mr. Mulalap reviewed key areas of the draft ISA regulations relating to traditional knowledge, Indigenous Peoples, and local communities that could better reflect traditional knowledge and its holders. A key starting point is the recognition of traditional knowledge holders as a unique group, including an invitation to participate in ISA deliberations. Mr. Mulalap closed his presentation by drawing on examples from international instruments and processes that actively engage traditional knowledge holders, including the UN Framework Convention on Climate Change and the Convention on Biological Diversity, which explicitly acknowledge the rights of Indigenous Peoples and local communities and incorporate traditional knowledge in the establishment of protected areas and other environmental measures. Mr.

Mulalap reminded participants on the webinar that the Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ) negotiations are ongoing, and because these regulations are likely to have extensive overlap with ISA's Mining Code, both the Mining Code and BBNJ instrument should be compatible.

In response to a question on the scope for direct input by traditional knowledge holders into ISA's work, Mr. Mulalap suggested that Indigenous Peoples and local communities could be treated like other stakeholder groups that are regularly invited for feedback during consultation processes by the ISA. He noted that while it may be possible for some individuals to join existing delegations in order to participate in ISA deliberations, more work needs to be done to allow for more engaged in-person participation with the ISA.

Closing Remarks and Next Steps

Mr. Friedman closed the webinar by thanking the panelists and participants for their time, and then inviting participants to share thoughts on topics for future webinars in the series of substantive discussions Pew will sponsor before the next meeting of the ISA Council.

In an effort to ensure wide participation of stakeholders in different time zones, the timing for future webinars will be staggered, and sessions will be recorded and shared. Please visit [RESOLVE's website](#) for more information on future webinars in this series on draft regulations for seabed mining.

Webinar Participation

Panelists

- Dr. Diva Amon, Deep-Sea Biologist and Director, SpeSeas, Trinidad and Tobago
- Mr. Clement Yow Mulalap, Legal Adviser for the Permanent Mission of Federated States of Micronesia to the United Nations in New York City
- Ms. Nicole Yamase, Ph. D Candidate University of Hawaii at Manoa, Honolulu

Participants

- Gabriella Berman, Scripps Institution of Oceanography
- Kathryn Bomey, The Pew Charitable Trusts
- Stephanie Cartwright, Department Of Marine Resources
- Emma Critchley, UC Santa Barbara
- Carol Curtis, Self
- Michelle DAN, Smithsonian Museum of Natural History
- Amanda Fraser, Ministry of Foreign Affairs
- Patricia Garrote, Aveiro University
- Paul Granger, University College London, Faculty of Laws
- Peter Houk, University of Guam Marine Laboratory
- Elise Huffer, CEESP, IUCN
- Imogen Ingram, KOUTU NUI
- Gerson Jackson, Dept. Resources & Economic Affairs
- Aline Jaeckel, IASS & UNSW
- Alan Jamieson, UWA
- Megan Jungwiwattanaporn, The Pew Charitable Trusts
- Terena Koteka-Wiki, Te Ipukarea Society
- Oliver Lilford, Australian National University
- Phil McCabe, DSCC
- Elizabeth Miller, University of Hawaii
- Thabo Molefe, South Africa Permanent Mission to the UN
- Angela Palacious, Govt. Min of Transport
- Mary Beth Reissen, United Nations Association- St. Louis
- Milton Rolle, Bahamas Government
- Patrik Schotte, Federal Public Services Economy, S.M.E.'s, Self-employed & Energy
- Elham Shabihat, Independent
- Samantha Smith, Blue Globe Solutions
- Akuila Tawake, Pacific Community
- Andrew Thaler, Blackbeard Biologic
- Mary Turnipseed, Gordon and Betty Moore Foundation
- Cindy Van Dover, Duke University
- Rufino Varea, The University of the South Pacific
- Marjo Vierros, Coastal Policy and Humanities Research
- Martin Zvachula, Micronesia Mission to the UN

Organizers

- Laura Bartock, RESOLVE
- Maya Breitburg-Smith, RESOLVE
- Anindita Chakraborty, The Pew Charitable Trusts
- H.E. Ambassador Jane Chigiyal, Permanent Mission of Federated States of Micronesia
- Paul De Morgan, RESOLVE
- Andrew Friedman, The Pew Charitable Trusts
- Chris Pickens, The Pew Charitable Trusts
- Joan Yang, The Pew Charitable Trusts