

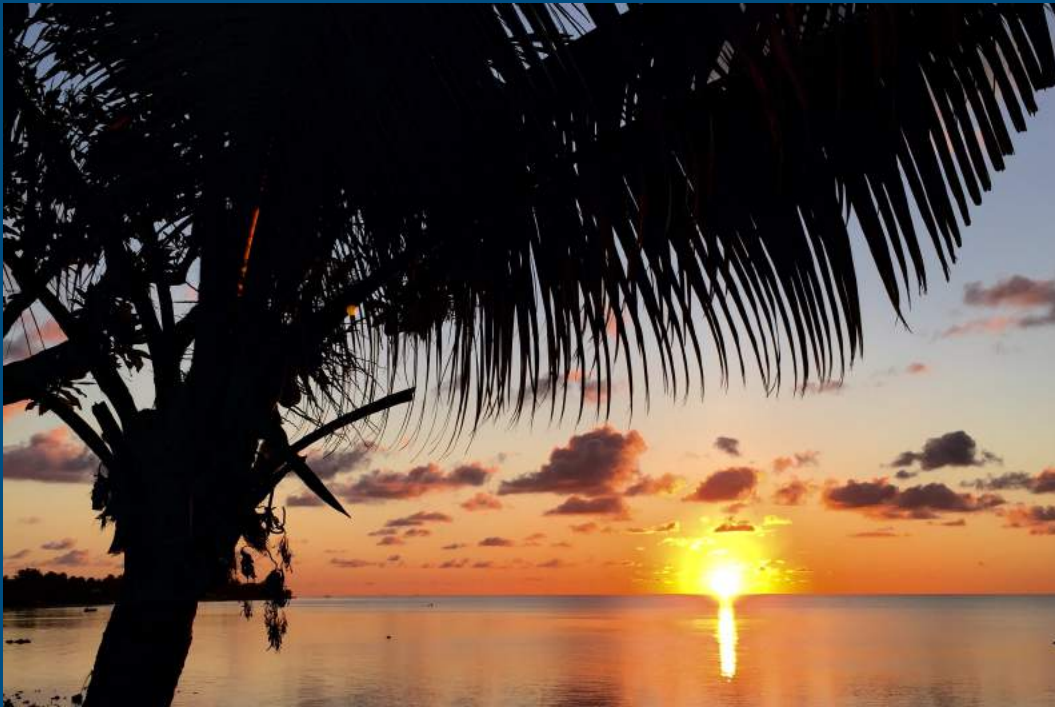


# Pole ← to → Pole

CONSERVATION

**CHANGING CONDITIONS  
&  
ARISING OPPORTUNITIES**  
**—2022 / 2023—**



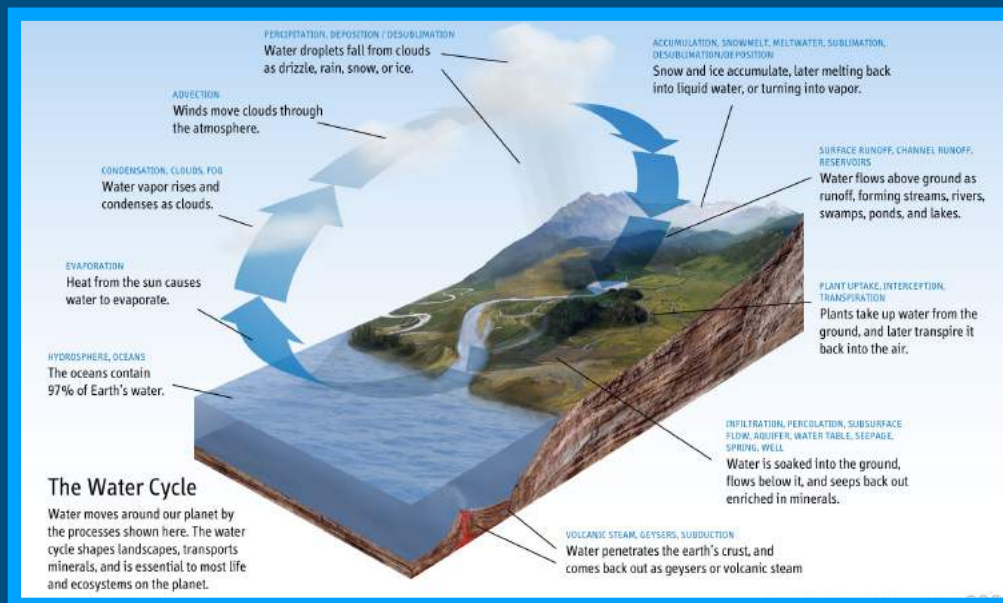


**Tarawa lagoon, the Republic of Kiribati**

# Treasure is a funny thing. Should we value it by what we discover or what we lose?

– *Peter Benchley*

We focus on the ocean because water is the greatest treasure on Earth. It is the only substance that exists in solid, liquid and gaseous states on earth. Water is necessary for all life as we know it because it is the universal solvent enabling the H<sub>2</sub>O molecule to attach itself to other elements or molecules for transport and release, a fundamental process for nutrient absorption and waste removal by living organisms, and many other processes in the global ecology of Earth. 95% of all water resides in ocean. Approximately every 33,000 years the entire volume of the ocean evaporates becoming sterilized because only H<sub>2</sub>O vaporizes leaving dissolved substances behind. The water falls back to earth via weather and condensation reabsorbing atoms in the endless almost magic hydrologic cycle.



"If there is magic on this planet, it is contained in water."  
– Loren Eisel

# Pole ← to → Pole CONSERVATION

Looking Back ← 2022 → Looking Forward

## Crafting A World We Can Look Forward To

Dear Friends,

Pole-to-Pole Conservation made positive impacts on the people, the environment, formed new partnerships, and enlarged our understanding of how nature and human civilization can work together in sustainable and restorative ways. Over the past years, key goals were achieved in our Indigenous Climate Adaptation Scholarship Program, our coral restoration programs and some exceptional opportunities arose in science and media we are embracing. We find working most effectively is a combination of having certainty in your direction and goals, while also allowing flexibility to changing conditions and arising opportunities.

Every year we stop and consider what we have accomplished and what we're planning for the future. We are proud to share this overview of our work. By design, we are a small close-knit organization and you are part of that family with our supporters, partners, and friends. Without you, we wouldn't be able to do what we do. There has never been a more important time for the world to work collectively on radically adjusting the impact of our civilization and our use of Earth's resources than now.

Thank you for your friendship, generosity, and being part of Pole-to-Pole Conservation in achieving these aims.

**Our mission at Pole-to-Pole Conservation is to find ways for people and the ocean to co-exist and support each other in the modern world.** At present we are hyper-focused on the abrupt climate change we are currently causing and suffering from. We are in peril and if we don't wake up now and take global actions together as a one earth society, civilization as we know it will not exist within several hundred years.

The persistent existential problems we face are uniquely hard to solve because one of their main root drivers is the chronic economic/geopolitical North/South divide on our planet. The global north demands products, services, and commodities which are provided by poor nations that have few economic alternatives. An amoral consequence of this structure is that developed countries often move their destructive, dangerous, and dirty industries to poor nations. These poor nations accept the practice because they need economic output and lack the policies, capacity, and legal frameworks to manage the negative environmental and human impacts, which can be immense.

At the end of the day we must narrow the vast difference in the quality of life between the have and have nots and this starts with increasing understanding between these two worlds. For example, while the billion or so of us that live in first world nations or economies fret over which new iPhone to buy, two billion people in developing nations can't afford a bicycle to take their goods to market quicker, their kids to school, and themselves to places where they can receive health care.



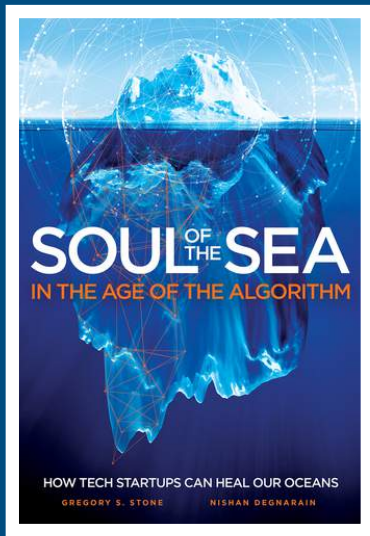
The inequities in education and business opportunity pave the way for "offshoring" the dark side of industries to developing countries enabling poor conditions for workers in one country to make life easy in another.

Humanity has had a slave-like economy since the ancient world. Today, it takes form in poor countries doing work for little money and living with inadequate health care, housing and education while the beneficiaries are in wealthy countries. It's a bitter irony that in many cases first world lifestyles depend on products and services from least developing or developing countries.

Often wealthy countries project their morality to poor countries to conserve nature even at the cost of economic opportunity to those developing countries. It's often the case that first world nations either destroyed their regions of wilderness and biodiversity during their development. Today we have an unprecedented demand (600-1000% increase) for metals, almost like we thirsted for oil in previous centuries, but this time it is for wind turbines, electric car and truck batteries, computers, computer servers, phones, and in the future we will be using massive batteries on ships and outside large cities. This is what a renewable energy future looks like and we must do it. Little do people who live in California or Brussels know what it's like to live near giant open-pit battery metal mines, which makes it so easy to sit comfortably behind a desk at a first-world university and criticize extractive industries elsewhere in the world.

Human population growth demands sustainable and renewable use of materials and energy if we are to avoid disaster. Looking ahead at the demands we will make on the already overwrought terrestrial, atmospheric and oceanic systems, which support all life on the earth, we must find alternative ways to meet our needs.

The Ocean Health index was the link transparent scientific measure of ocean health and it's link to human well-being. ([www.oceanhealthindex.org](http://www.oceanhealthindex.org)) The concept is also covered in the latest book by Pole-to-Pole co-founder Greg Stone ([SOUL OF THE SEA: IN THE AGE OF THE ALGORITHM](#)).

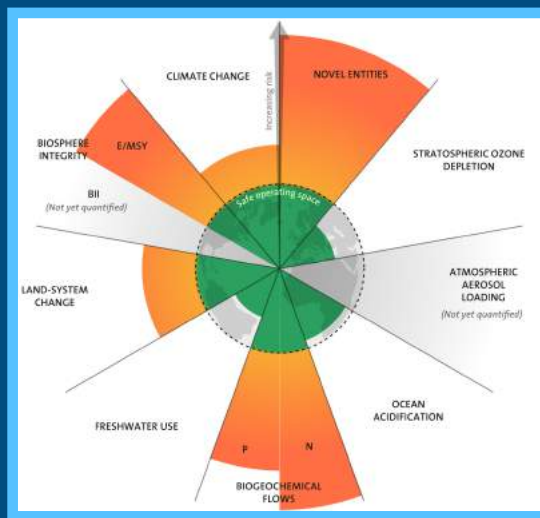


The renowned Stockholm center for resilience calls them "planetary boundaries" and they think we have already crossed four out of nine.

In short, we have run out or will soon run out of everything well before the entire world has



enjoyed the good quality of life experienced in developed nations. To many people, the industrial revolution is a single historical event that happened a couple of centuries ago.



***Analysis of Earth systems by the Stockholm  
Center for Resilience.***

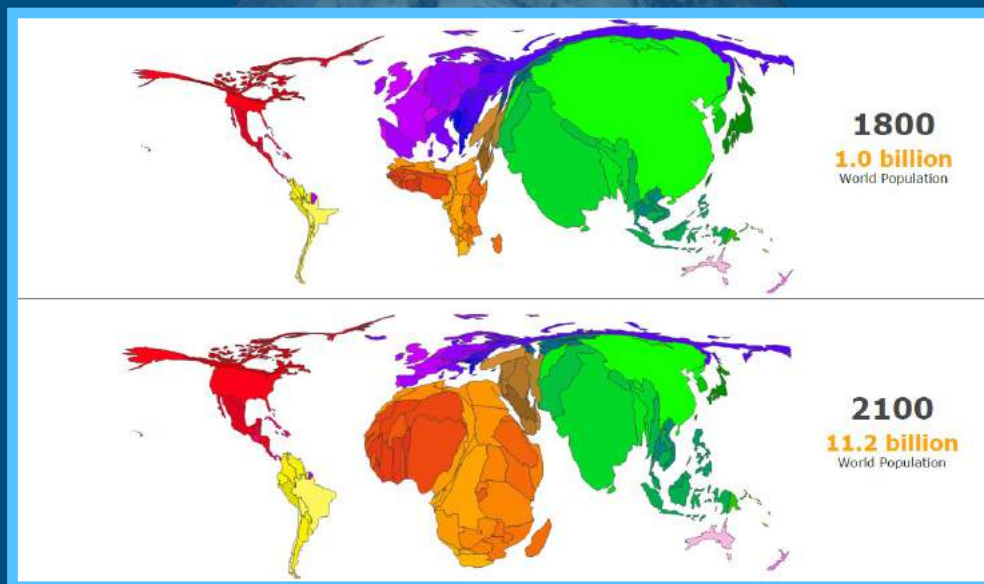
*Graphic by J. Lokrantz/Azote based on Steffen et al. (2015).*

To the 2 billion people who today still have no reliable electricity, clean water and health care, the industrial revolution is something that happened entirely to other people, not them. The 2021 Nobel Prize-winning chemist said what we are looking at is not just having shortages here and there, rather we are running out of everything. We need more materials to follow the last century of radical uptake and use of materials. "We need more atoms and molecules of everything," he said. This of course must lead us to a closed-loop material economy as soon as possible.

For millions of years, there were so few people that our environmental impacts were local and short-term and did not cause planetary-wide impacts. We wasted almost everything and the term "dilution is the solution" was true for a great many years after hominids arrived on the scene 6 million years ago. Things changed with the Agricultural Revolution. The Agricultural Revolution began when we domesticated animals and plants, which in turn provided us with stable living conditions, communities that stored and shared food. For the first time, we had "free time" from the all-consuming task of catching and gathering food to just stay alive. We developed a multiplex of abilities and technologies



with this free time that enabled us to unleash new forms of energy that in turn drove the current form of industrialization which our society relies on for housing, communication, materials science, and the list goes on and on, all of which made homo sapiens, the most dominant animal on the planet, equivalent to a force of nature. In fact, we have made so much change the next geological period will be called the Anthropocene. This is a big deal because it means in the future geologists will recognize in the very geology of the earth when human activity became the dominant influence on climate and the environment, strong enough to leave evidence in the physical geological record.



We did that while all other animals were stuck in that full-time job of just feeding themselves. As our civilization grew, humanity used various materials from the earth.

It took some two hundred thousand years for our species to migrate to all parts of the planet and first reach a population of one billion by 1800. Then we added another 6 or 7 billion people in only the next 200 years. The growth of our population came at the cost of many unintended consequences including climate change, pollution, destabilized ecosystems, biodiversity loss, material scarcity, and more.

For a very long time, our humanity's agricultural and hunting practices only needed natural rocks, wood, shells, and other materials found easily in the environment during the early stages of our evolution. However, several thousand years ago we began using and refining special elements found in the shallow parts of the earth's crust, which took us from the Stone age to the Bronze and Iron ages. Then rapid advancement in science and our discovery and use of high energy fuels like coal, oil, and nuclear triggered what has been called the fourth Industrial Revolution. It is no coincidence that the first phase of the Industrial Revolution started 200-300 years ago, the same time our population began exploding.

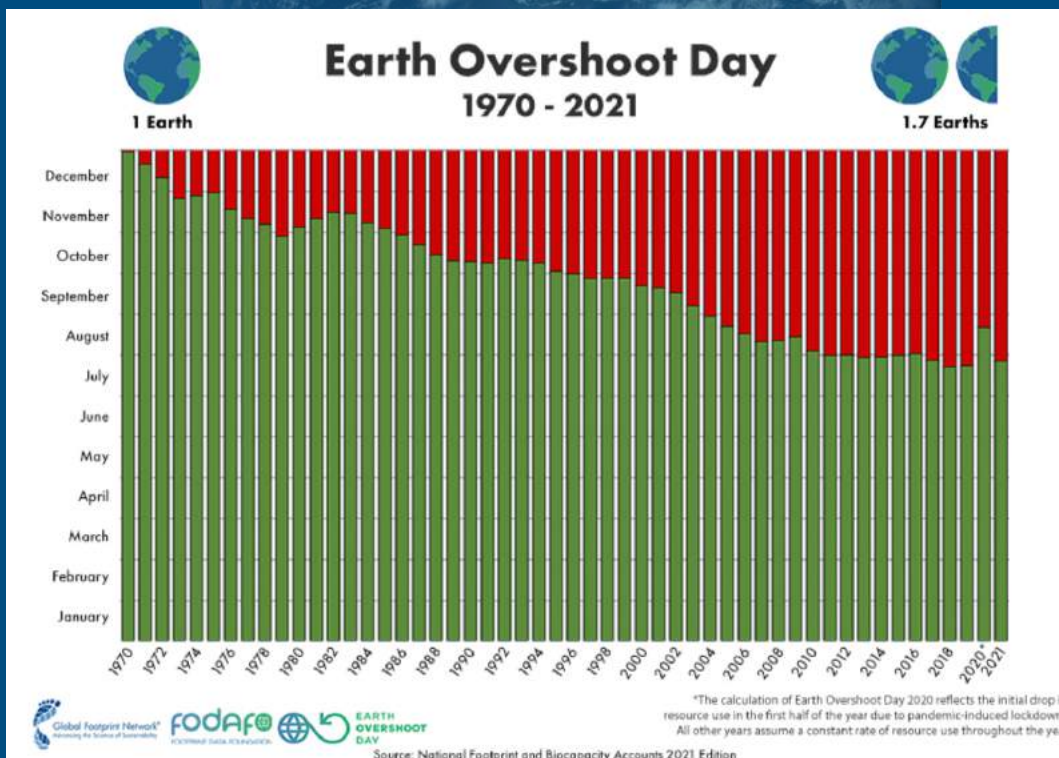
Science evolved rapidly and we became aware that we live in a closed system with finite resources on a planet traveling 67,000 miles per hour through the vacuum of space around the sun with no chance of resupply.

## **EARTH OVERSHOOT DAY**

Every year a day is designated as "earth overshoot" day, the day in the year when we have used resources at a level that is sustainable over the long term. Every day after that is taking vital resources from our decedents. In 2020 it was August 22. In 2021 it was July 29, a trend line leading to a collapse in supply. It means we currently need 1.5 earths, or around 18 months of Earth's operating budget for freshwater, food, and so on to meet our demands each year. At our current consumption level and way of operating, ratios likely to keep getting worse.



It is a certainty that if we do not change our behavior the earth will soon be a very uncomfortable place for humans, possibly a place we can no longer live. All of society needs to be part of the solution and change course, but here we focus on the Non-Profit, Non-Governmental Organizations, the area where Pole-to-Pole Conservation (P2P) exists. We need a radical restructuring of the nonprofit environmental sector from big and centralized to small, diverse, integrated, and flexible. P2P is such an organization or agent of change. As the arrow of time moves forward into an increasingly complex and technological world, it is likely these smaller strategic organizations will emerge and devolve from current Big International Non-Profit Organizations (BINGOs) headquartered mostly in the global north. These new organizations, which P2P seeks to model, will be culturally appropriate strategic organizations hybridized with businesses and other societal structures sensitive to local conditions and needs.



We applaud the catalytic role BINGOs played in the latter half of the 20th century when they awoke civilization to the consequences of rapid industrialization and population growth. We also comprehended there are limits to material and energy resources on earth, because everything we have had or ever will have has been on our planet from the beginning, and recycling and other conservation practices are imperatives. In response to an awareness of this paradigm, governments and civil society rapidly formed new policies and organizations. Businesses began developing sustainable practices to deliver goods and services, nations convened to adopt treaties to provide consensus approved sustainability targets, all of which coincided with the first-century humans occupied every continent and touched and used almost every resource.

While the problems are huge and planetary, the solutions are more granular and more efficiently carried out by right-sized purpose-built institutions integrated into society and eventually blended seamlessly. These organizations are small, interlinked, and recognize moral, financial, and ethical equity across all regions of the globe.

Pole-to-Pole Conservation is one such organization, our team has come from BINGOs, the Arts, businesses, and volunteer or work part-time. We do not pay large executive salaries and execute work through time-limited contracts. Instead, we send maximum resources directly to problems in developing countries.

We focus and create programs for areas of the planet we know best, the Pacific Islands while keeping the global view in mind. We develop and test solutions that can scale.



One of the co-founders, Christine Zinnemann is indigenous, born in Kiribati on the South Pacific atoll, Tarawa. While growing up in this remote and soon to be part of the beleaguered post-colonial wave sweeping through the region, she left at the age of 12, and was drawn into the international world of advertising. This gave her an unprecedented first world experience of society's values from the small atoll she was born, to the major cities of the world where industry thrived and as far from the values and world she grew up in. In her early 20s, she settled on the West coast of the United States along the rim of her beloved Pacific Ocean to become a designer and agent of social change ranging from successfully lobbying the California public school system to conduct preventative cancer screenings to creating marine protected areas in the Pacific Islands. Diversity is at the core of all we do. Other team members are actors, artists, chiropractors, nurses, musicians, and former college presidents. We need all sectors of society to understand and work together to overcome our global problems.

The details of the problems we face as a civilization are well known to all of you, so we don't focus on that here but can provide more details upon request. Two board members were co-founders of the ocean health index and one the architect of the world's first large Marine protected area.

## **Origins of Pole to Pole Conservation**

Our combined decades of experience pushed us all to a "New Realism" about solving environmental problems. It is not about saying no to everything. It's about making it work with what you have. Everyone must be taken into consideration.

The typical ideas that biodiversity must be protected at all costs were unrealistic dreams that originated in cocktail parties of conservationists in the global north with no understanding that for billions of people biodiversity was their daily source of food.

Co-founder and trustee Greg Stone spent most of his career underwater. He had a front-row seat to the modern environmental movement, the issues that inspired it, and was part of the birth of marine conservation in the early 1990s. His early jobs were in science and included a position with top-secret clearance under the U.S National Undersea Research Program whose mission was to put scientists underwater with every conceivable technology (think NASA of the oceans), spent three years flying aerial surveys from Nova Scotia to Mexico for the US government so they could plan offshore drilling. By the time he was 25, he had logged thousands of hours under and over the water and Greg noticed that things were wrong, terribly wrong, in the ocean.

It started on a spring day in 1990 at 18,000 feet underwater in the Sea of Japan where he was diving in the world's deepest submarine at the time, the Shinkai 6500.

He was exploring the seafloor life around an epicenter of an earthquake. After the long three-hour descent his submarine gently landed on the abyssal plain. He was shocked to find the seafloor covered in trash. This was a place that had not seen the light of day for billions of years and no humans had ever been near it. The lifestyle we had developed on the surface was spilling over and polluting our ocean down to the deepest remote regions.

There is a consequence to knowing something. If something is wrong and you can improve it, you must. So Greg's career veered off into the new world of marine conservation that had just been summoned into existence in the late 1980s when the NW



Atlantic Cod fishery unexpectedly collapsed from overfishing. Bringing with him his deep sea and marine technological skills he founded the nation's first marine conservation program at The New England Aquarium, led expeditions for National Geographic,



worked on UN treaties to protect the ocean as well as working with captains of industry at Davos, The World Economic Forum. Finally, he was recruited to lead the science and marine programs at one of the most prestigious BINGOs Conservation International.

While persistently developing international conservation policies, he expanded his research globally through a series of expeditions focused on understanding the problems impacting ocean health and documenting them through both popular media and over 70 scientific publications. He created solutions that could scale globally, always keeping a planetary view in mind.

During the search for the lost Malaysian Airliner, Greg became a regular on the news programs and was introduced as the "swashbuckling Indiana Jones of the Sea" by CNN Michael Smerconish for his many challenging undersea expeditions. He spent the first 30 years of his career documenting the problems in the ocean, developing tools to restore it,

helping hand-craft several international UN treaties to protect the ocean, held executive leadership roles at Conservation International, World Economic Forum's Ocean Council at Davos and before, was the science advisor for the United Nations Oceans Envoy. Afterwards Dr. Stone sought a role with the hands-on direct impact connect with countries in all stages of development. He focused this in his current role as Chief Ocean Scientist for the Metals Company described in more detail in the following pages.

Pole-to-Pole conservation also engages with the business sector, who are responsible for extracting things we all want from the ocean and disposing of things we don't into it. All the disastrous issues you read about in the news, like oil spills, are done by businesses we all rely on. They are not the bad guys, they are doing what we ask them to do and they make mistakes, but want to be part of the solution, they just seek guidance. We do are here do just that.



P2P uses the multiple connections our team has and understanding of people, especially in the developing world, to implement scholarships and projects that will get right to the heart of an issue without a big administrative organization in the way.



P2P aligns with The Metals Company which seeks to responsibly collect loose lying fist-sized rocks on the seafloor to obtain the 600-1000% more metal needed for renewable energy systems, and electric cars. It is estimated that in the next 30 years more metal will be mined from the earth than all the metal humans have collected previously, dating back thousands of years.

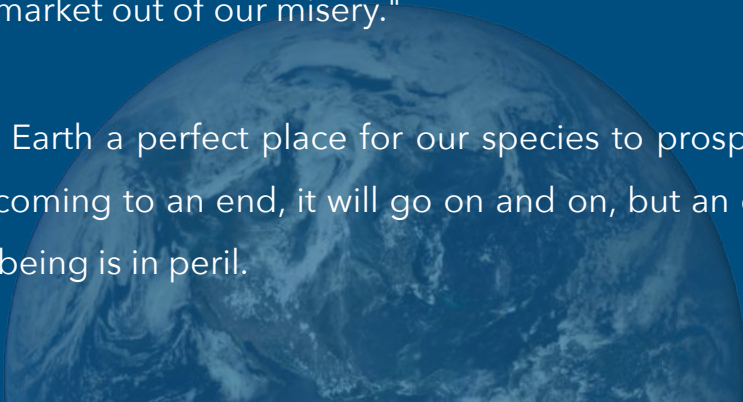
Because terrestrial mining is the worst single industry on the planet in terms of causing environmental harm, P2P is working to disrupt that paradigm and begin sourcing base metals from loose lying Polymetallic nodules lying on seafloor far out to sea in international waters. These metals are needed for renewable energy transformation. There is a simple and clean solution to supplying these metals because it is much lighter on the environment and moves us towards sustainable closed-loop recycling so that we never get into the nightmare of burning a resource over and over again to the destruction of the climate, like we did with fossil fuels

While sounding counterintuitive, gathering these rocks from a small part of the seafloor is far less damaging to the Earth system than terrestrial mining and will begin the restoration of a balanced planetary ecosystem.

Collecting loose lying fist-sized Polymetallic nodules, like these shown here on the seabed is less destructive to the planetary ecosystem than terrestrial mining. An area in international waters that is less than 1% of the global seafloor has enough Nickel, Cobalt, Manganese, and copper to provide for a renewable energy infrastructure with zero tailings.

In 2022 P2P, and the Metals Company Guest edited a special issue of the Marine Technology Society Science Journal on this subject titled Civilization at a Turning Point: The Case of Polymetallic Nodules. Change happens by empowering developing countries and guiding business operations. We no longer need BINGOs. They served a critical role in transition and awareness, but they eventually became expensive to operate and more funds should be spent directly on problems in developing countries, the true battlefield of conservation. One foreign minister from a developing country said, "big foreign organizations make a market out of our misery."

Conditions that made Earth a perfect place for our species to prosper are disintegrating fast. The world is not coming to an end, it will go on and on, but an earth with conditions favorable for our well-being is in peril.



***Polymetallic Nodules, 4km like these shown here on beneath sea sitting loose.***

***Toxic Tailings from Land Mining are absent with***

All of this makes people feel overwhelmed, but we cannot let that happen. As long as everyone does something at whatever scale we will solve this planetary calculus and persist. Everyone must be part of the solution and we invite you to work with us.

Our cornerstone programs include the **Indigenous Climate Adaptation Scholarship** and cultivating **Heat Resistant Corals** that may provide animals that can replace corals unable to cope with rising temperatures.

From 20 years of research, we found a natural group of corals that evolved to withstand heat fluctuations from being repeatedly exposed to the oscillations of El Niño for millennia. We believe that the long sought after genetically modified heat resistant coral was done for us by nature and if these corals can survive transplanting to distant locations they may provide a basis for a future where shallow-water coral is present. Coral provides the substrate for all the animals that live in a coral reef and many hundreds of millions of people in developing countries depend on reefs for food, businesses, and protection from storms.

We also believe providing tertiary education to students from developing countries is the best long-term strategy for ensuring there is local capacity to deal with navigating through this changing world.





***Pole to Pole co founder Christine Zinnemann with partners Pete Rive and an ECONOMIST film crew on expedition to Phoenix Islands to study heat resistant "Super Corals."***



***Dr. Greg Stone installing underwater temperature loggers at the Phoenix Islands***

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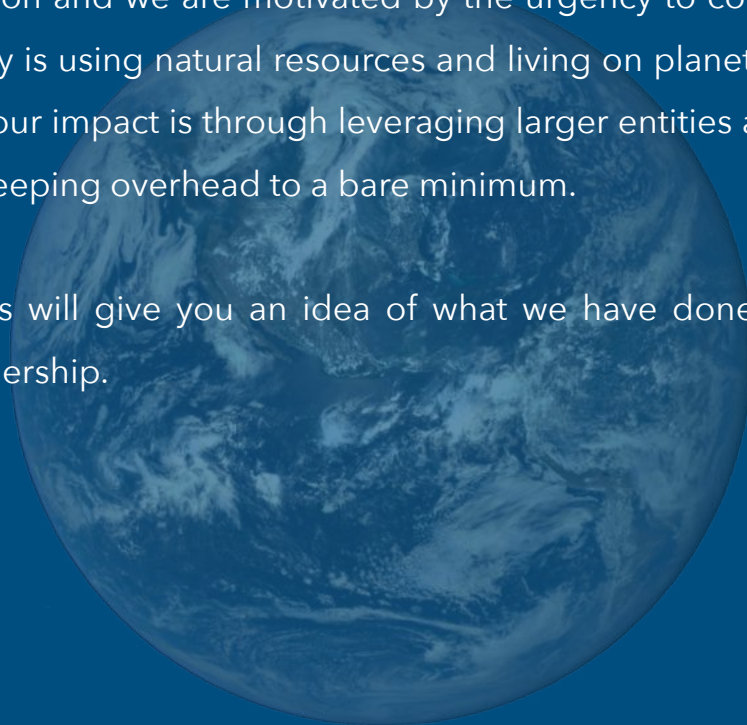
We chose undergraduate scholarships because we noticed the tendency of graduate students from developing countries to stay in the developed country they received their degree, but undergraduates want to go home after four years. We also focus on providing opportunities for our graduates to stay home and use their knowledge and skills in the country they were born in.

We also produce media for the communication of our programs and educating the world on our state of affairs. The focus of our content and programming is to pursue the necessary conversation through perspectives that are multi-dimensional and all inclusive.

Finally, we conduct research and interventions on an as-needed basis. We recently led an expedition to the Galapagos Islands inspecting the region for climate change. This past year we also collaborated with a major European shipping company to find ways for the private shipping sector, by far the dominant presence on the world ocean, to collect information opportunistically in the course of their normal business routes adding another tool in the quest for a climate solution.

Between the trustees and conservation fellows, P2P has decades of seasoned in-depth experience to draw on and we are motivated by the urgency to correct how badly and inequitably humanity is using natural resources and living on planet earth. We are small by design because our impact is through leveraging larger entities and creating models that can scale and keeping overhead to a bare minimum.

The following pages will give you an idea of what we have done with your support, friendship and partnership.



Where does this all lead to? A world with abundant renewable energy, basic internet access, education, and health care parity for every person born on Earth and to enable rational climate policy and mastery of recycling so that everything is used over and over again. That is a world one can look forward to.

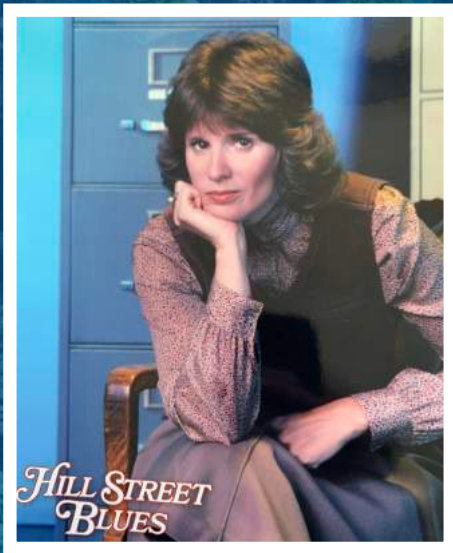
Thank you,

Pole-To-Pole Conservation Team





## The Barbara Bosson Initiative

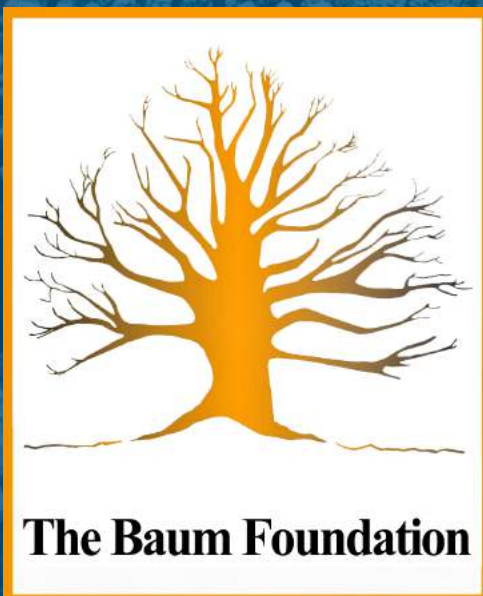


Pole-to-Pole is excited with the opportunity to launch the Barbara Bosson Initiative that will help support our Coral Restoration Program and our Indigenous Scholarship Program. These two pillars of the Initiative will forever stand as an expression of Barbara's passion and interest in the world and its people and their relationship with nature.



*Evii Tong, Barbara Bosson, Greg Stone*

## The Baum Foundation



The Baum Foundation places great importance on working closely with other organizations toward common goals. By establishing and maintaining effective partnerships with other groups, The Baum Foundation is able to create mutually beneficial relationships that maximize the use of resources and increase the impact of the programs we support.

Pole-to-Pole would like to acknowledge The Baum Foundation as Founding Donors and the support they provided in 2021.

P2P's philosophies are aligned with the Baum Foundation and we appreciate their support and the working relationship with Glenn and April (Baum Foundation). Thank you for your support. The Baum Foundation works across most of our programs and also advises.



## The Mary Schein Initiative

Pole to Pole Conservation is pleased to announce the Mary Schein Initiative that was instrumental in launching P2P and specifically supports our inaugural Coral Restoration Program (2022) as well as our Indigenous Climate Adaptation Scholarship Program. Mary shared our belief in a world where everyone lives happy, healthy, productive and creative lives. Her Initiative supports our work on the ocean because it covers most of the planet and is the major life support system for everyone on earth. We are honored to share our mission to apply practical solutions to the problems facing our oceans so that people of all socio-economic classes can thrive.

## The Trott Family Foundation



### Coral Restoration

Establish Coral Nurseries For Conservation and Socioeconomic Development  
In A Least Developed Country Under Extreme Threat of Climate Change

Pole-to-Pole is on the leading edge of the conservation and restoration of coral reefs, the primary habitat that hundreds of millions of people on earth depend on each day for their sustenance. The Trott Family Foundation will help support P2P's efforts with creating nurseries to cultivate and grow coral seedlings from the region to a chosen sight on Tarawa.



## Our Programs

### Pole ← to → Pole ICASP

This is a program in partnership with College of the Atlantic, ranked as the number one Green College in the country for three years, according to Princeton Review. This program fulfills the need for global understanding between distant cultures and nations that share not only a planet, but trigger stewardship of our environment. We focus at the Undergraduate level to build long term capacity in countries where we work.

### Pole ← to → Pole Coral Reefs

Pole-to-Pole is on the leading edge of the conservation and restoration of coral reefs, the primary habitat that hundreds of millions of people on earth depend on each day for their sustenance. P2P's efforts are focused on creating nurseries to cultivate and grow coral seedlings from the region to a chosen sight on Tarawa.

### Pole ← to → Pole Expeditions

P2P organizes and participates in expeditions for our friends, donors, and partners. In 2021 Greg and Evii Tong, our ICASP scholar, were guests of National Geographic on their recent trip to the Galapagos. As soon as travel permits P2P will host unique experiences in the Cooks, Bermuda, Kiribati, and The Sea of Cortez. Check our website for more information.

### Pole ← to → Pole Media

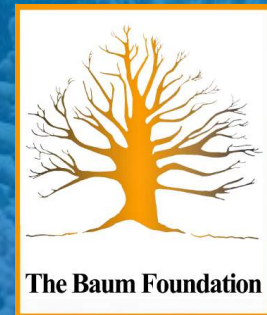
Pole-to-Pole realizes the significance of the power of storytelling when trying to initiate change and we look forward to our Media Outreach Program being a major catalyst for affecting the causes that we support. In the following year, we are expanding our slate to include scripted and non-scripted material. P2P's production entity, Ocean Renaissance, has optioned Peter Benchley's novel, "The Girl of the Sea of Cortez", with a projected 2025 release.



# Pole ← to → Pole CONSERVATION

## Thank You!

In the past 20 years we have identified many of the major problems on earth that are inevitably downgrading quality of life for people. We also know the solutions. Pole-to-Pole operates by influencing stakeholders to take actions because that is the primary impediment. This is how we can operate with such low overhead.



New England  
Aquarium



Aqualink



The Phoenix Island Protected Area (PIPA)



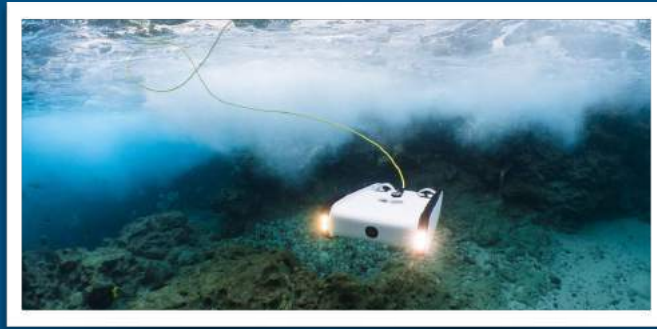
BENEATH THE WAVES



NATIONAL  
GEOGRAPHIC

EXPEDITIONS

# Pole ← to → Pole CONSERVATION



*The SOFAR Trident underwater drone diving beneath the surface.*

## The Fourth Industrial Revolution In Oceanography.

*"The Time has come for the human presence to be everywhere in the ocean."*

Dr. John Delany.

It is difficult to detect environmental conditions of the ocean because electromagnetic energy attenuates in water within millimeters to centimeters of water severely limiting what can be measured from space orbiting satellites electromagnetic energy is the only signal sensor that can be used from space to detect, temperature, chemical signatures including chlorophyll, and sea level by using radar. All other data must be detected with *in situ* technologies underwater using conductive material or acoustics. The ocean is approximately as deep as the life-sustaining atmosphere is high. When you see a weather map, you have details throughout the volume of the atmosphere and it makes planning and predicting much easier.

Ultimately, that kind of view of our oceans is what we need to monitor in real-time the major processes so that we can coordinate our human activity to optimize oceanic systems.



For example, if we knew the spawning sites and times of a highly migratory fish like tuna; fishing policies could be adapted daily depending on where the fish are and what stage their reproduction cycles are in. More importantly, we could sense the thermoregulatory status of the ocean, which is how the planet moves heat around, creates weather, wind, and storms. Today, unless we have a submarine or a line connected to a sensor or use acoustic signal processing, we are blind to what is happening in the ocean. This is especially important today with climate changing faster than it ever has. For example, in 2019 the Gulf Stream, a major component of the global thermo-haline circulation system stopped for a few days. The fact it stopped is worrisome enough, but the fact that the data to inform us it stopped took over a month of gathering and analysis to let us know is shocking.

To accurately understand the real-time state of the ocean for climate models and biological activities we need low-cost AUVs, ROVs, buoys, and other instruments that can be deployed and then transmit data back via surface buoys to satellites.

Two engagements with Pole-to-Pole have moved this technology significantly forward. In 2019, Peter Rive supported and participated in an expedition to the Phoenix Islands with P2P to install underwater temperature loggers with the ability to track the heating pattern of an incoming El Niño oscillation. At the time the state of the art technology was securing soda can-sized cylinders to the reef underwater using drill holes, stainless steel pins, glue, and a small buoy rising a meter from the logger but not to the surface. The device would then record the temperature every 30 seconds for two years, but it required us to retrieve it with no knowledge in between deployment and recovery. Peter, is an engineer, founder of Solar City, and former Tesla VP, quickly saw a model for buoys that could be installed on reefs with



a floating compartment on the surface powered from solar energy and sensors on the bottom connected to the surface buoy. This instantaneously enabled us to have real-time sensing of reefs. From this technology, he founded the company Aqualink.

Another advancement made through P2P projects was when we took former Google software engineer Alan Eustace diving in a submarine off the coast of Hawaii. He immediately saw an opportunity and founded a company that designs low-cost AUVs (*autonomously operated vehicles*) that could continually dive to the bottom collecting water profile data and return to surface upload data to satellite and recharge using wave energy and repeat this over and over again. Another leap forward in real-time sensing of the ocean.



***Alan Eustace at 30,000 ft practices stability in free fall under his drogue stabilizer chute.***

# Pole ← to → Pole

CONSERVATION



## Role of Commercial Vessels in Understanding our Changing Ocean:

### Ship of Opportunity Observing Program (SOOP)



### Oceanus Magazine

sense weather conditions in our atmosphere (John Delany, 2020) because some human activity must be mitigated real-time. The global ocean, covering 70% of the planet, containing much of the planet's biodiversity and having a controlling role in Earth's climate, is obviously a critical element determining the future of our planet and civilization. Understanding, quantifying, and predicting this role depends on having widespread data on conditions in the ocean.

The world is experiencing unprecedented and increasingly rapid changes in the structure and dynamics of Earth's oceans, with critical impacts on global climate, biological diversity and productivity, and the well-being of human societies.

There is an urgency to understand realtime changes in Earth's environment on as near a real time basis as possible. The time has come for the human presence, either through remotely operated sensing or *in situ* research, to be in all areas and depths of the ocean like we

To understand and respond in an effective and timely way to these circumstances requires new and sustained data on the physical, chemical, and biological state of the ocean.

Based on personal relationship with CEO Dan StenOlson P2P partnered with the large international commercial International shipping company, STENA, to assess whether commercial vessels (and there are about 60-7000 on the water every day carrying goods and raw materials to fuel our global economy) could also conduct research valuable for global monitoring. We examined the thesis whether ships of this type could collect important data about our oceans in the course off their normal business operations, thereby increasing data exponentially of the ocean.

We partnered with Dr. Larry Madin, former chief scientist of The Woods Hole Oceanographic Institute, to synthesize and write the report with Dr. Stone. That you can find at this link titled: [Role of Commercial Vessels In Understanding Our Ocean](#). While Stena is in the process of evaluating how they will engage, the report had the unexpected result in that a group of US scientists took the idea and wrote a National Science foundation proposal to support development of such systems. The proposal was funded at the level of 5 million dollars. This is a great example of how our small organization, when working with the right people and institutions at the right time, can have an amplified effect. The recent interest and enthusiasm in this report resulted from discussion between Dr. Greg Stone of Pole-to-Pole Conservation (P2P) and leadership of Stena AB in Sweden. Innovative approaches to ocean science are a focus of P2P, and that initial discussion with Stena about use of their ships to obtain ocean data has now simulated significant activity at the Woods Hole Oceanographic Institution (WHOI) and other research organizations toward implementing a large-scale Ship of Opportunity Observing Program (SOOP) data collection.





AltaSea at the Port of Los Angeles is dedicated to accelerating scientific collaboration, advancing an emerging blue economy through business innovation and job creation, and inspiring the next generation, all for a more sustainable, just and equitable world.

Dr. Greg Stone is an Ambassador for AltaSea His latest book, "The Soul of the Sea: In The Age of the Algorithm" aligns with much of AltaSea's mission and their progressive agenda.

Pole-to-Pole is excited to be a supporter of AltaSea and we look forward to 2022 and the unique possibilities our recently formalized MOU will bring to ocean conservation.



# the metals company



## **Bjarke Ingels Group and The Metals Company Design For Future.**

P2P is closely aligned with The Metals Company which is leading in development of a new industry offering the most realistic answer for how the world will meet the 600 --1,000% increase in demand for battery and other metals required for the transition to a sustainable and renewable world for energy and materials, while doing the least harm to earth's planetary ecosystem, upon which we all ultimately depend. The Metals Company's mission is building a carefully managed metal commons that will be used, recovered, and reused again and again—for millennia. No more metal lost to landfills. A society built with a metal metabolism, similar to how many biological systems have evolved over time. Here is a paper by P2P published in 2021 in the journal INTEGRATED ENVIRONMENTAL ASSESSMENT TITLED *Ethical Opportunities in the Collection of Polymetallic Nodules*.





University of California Channel Islands Dean Sean Anderson, Indigenous Climate Adaptation scholar, and P2P trustee Christine Zinnemann discuss plans for collaborative programs while touring spacious shoreside campus of new hidden gem in the California tertiary school system near Oxnard, CA. The University is developing innovative practical degrees to prepare students for jobs to solve environmental problems and to restore balance of nature and humanity in the rapidly expanding coastal populations predicted to grow in the next century



# EXPEDITIONS

Twice in 2021, Dr. Greg Stone was invited on National Geographic expeditions to the Galapagos Islands, one of the most important upwelling and biodiversity regions. There are changes happening based on current aberrations and other climate impacts, which appear to be showing up in Galapagos. Pole-to-Pole supports National Geographic and their history making our planet and its inhabitants and habitations accessible to everyday people everywhere.



Pictured above Indigenous  
Climate Adaptation  
Scholar Evii Tong during  
National Geographic  
expedition to Galapagos  
Islands, 2021

# Pole ← to → Pole CONSERVATION

## The Sea Has Many Voices A Ocean Podcast



**Nan Hauser**



**Kelly Slater**



**John Powell**



**Jared Diamond**



**Kimi Werner**



**Ian Somerhalder**



**Wyland**



**Philippe Cousteau**



**Marga Gual Soler**



**Randi Rotjan**

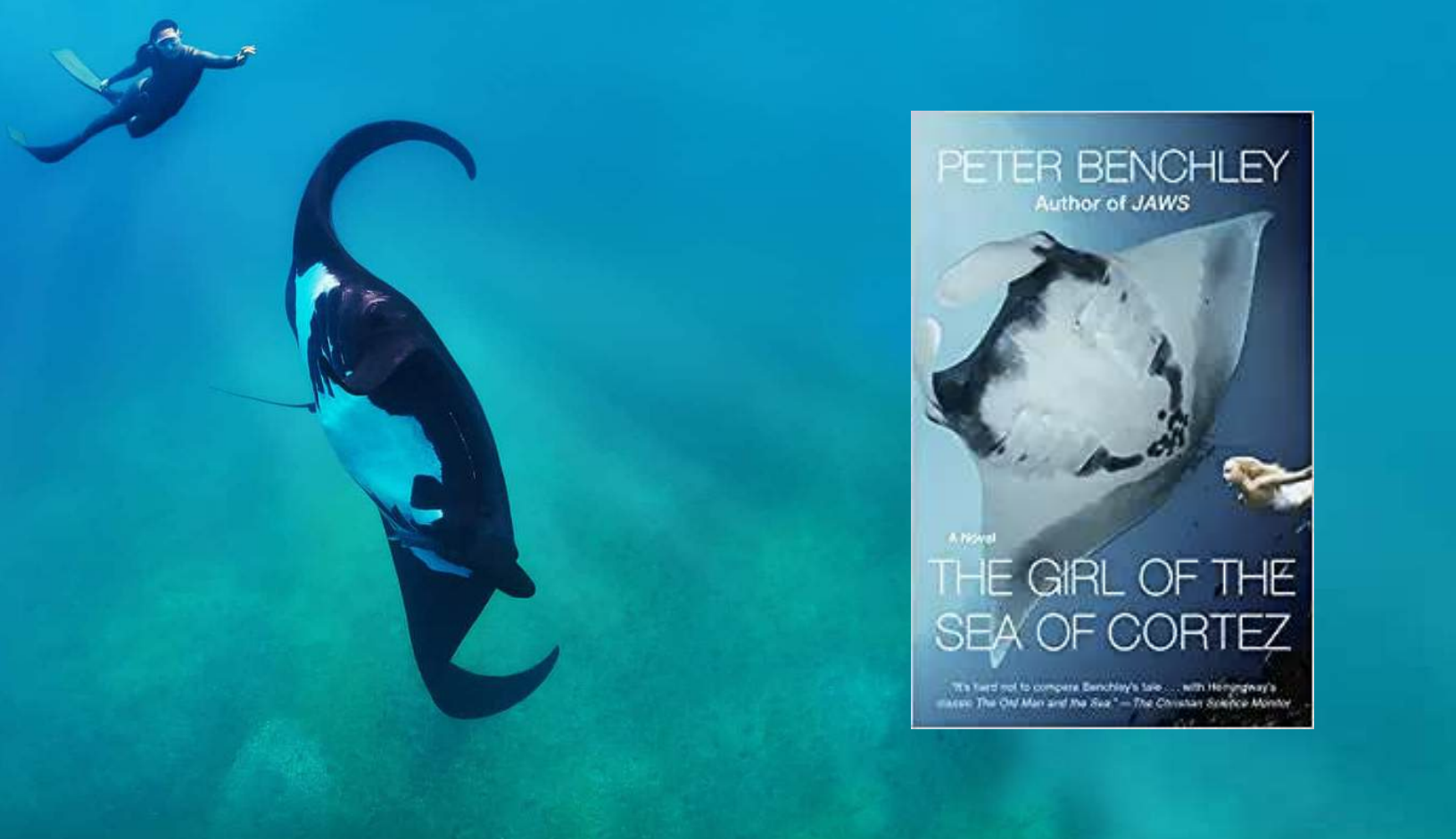


**Ocean Ramsey**



**Larry Matlin**

Our cornerstone of our media outreach is the podcast “The Sea Has Many Voices”, hosted by the foundation’s co-founder Dr. Greg Stone. This year we had a series of prominent and passionate leaders in ocean conservation and engaged our audience with perspectives from names like Jared Diamond, Ian Somerhalder, Philippe Cousteau, Kelly Slater, and Dr. Larry Matlin, just to name a few. As Greg often has said, “Everything starts with a conversation”, and this year we are proud of the dozens of conversations ignited by such a diverse group of people involved with our mission. The viewership and subscriptions continue to grow as we look forward to another year of producing this engaging podcast.



**Pole** ← to → **Pole**  
CONSERVATION

# The Girl of the Sea of Cortez

A Feature Film

P2P's production entity, Ocean Renaissance, has optioned Peter Benchley's novel, "The Girl of the Sea of Cortez", with a projected 2025 release. A beguiling John Steinbeck-type fable, The Girl of The Sea of Cortez, is about humanity's complicated relationship with the sea and was far and away Peter Benchley's best-reviewed book. It has attracted a considerable cult following since its publication (1982). "The Girl" signposted Benchley's growing interest in ecological issues and anticipated his future role as an impassioned and intelligent defender of the ocean imbalance between human activities and the marine environment.



Along with co-founder's Christine Zinnemann and Greg Stone mentioned previously, P2P also has two additional board members; **Ian Somerhalder**, and **Dr. Steven Katona**.

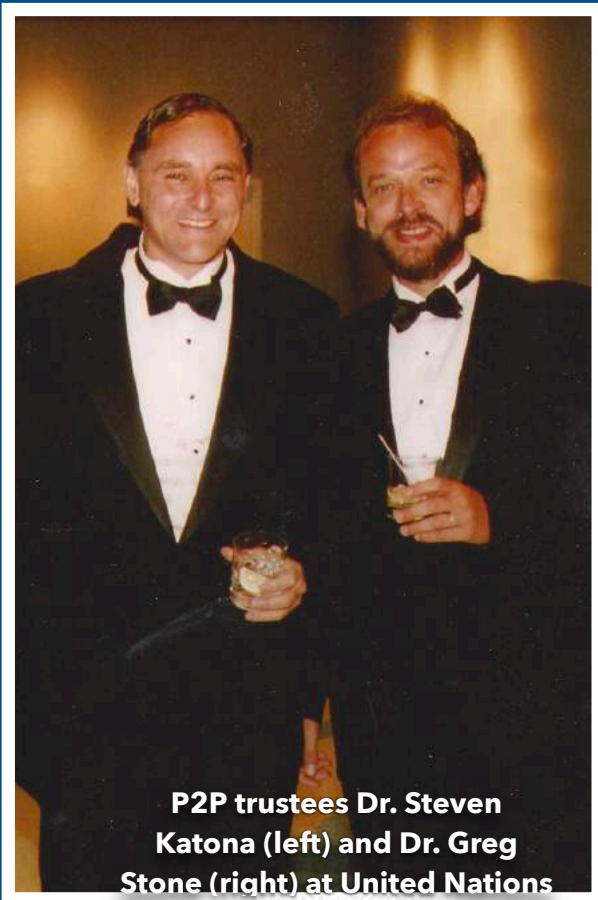
**Ian Somerhalder** and Greg first shared their passion for oceans when they dove down into the Aquarius undersea saturation diving habitat on World Ocean Day in 2016. Ian is a hugely popular actor, who can communicate via social media with hundreds of millions of people in an instant. He was born in Louisiana and is 25% native American. He participates in UN international treaty meetings on the environment and was appointed official United Nations Ambassador for Biodiversity in 2016. Ian brings his global network of contacts, his extraordinary talent for communications, his strategic thinking, boundless energy, and love to the P2P board. He also co-produces the Podcast, *The Sea has Many Voices*, with Greg.



Ian is also a UN Environment Programme (UNEP) Goodwill Ambassador who is passionate about tackling climate change. He was involved in the cleanup after the Deepwater Horizon oil drilling disaster on April 22, 2010. His efforts included cleaning of oiled wildlife and taping public service announcements to let the public know how they could help.

Notably, Ian has consistently engaged with international policy at the highest level, including the Paris Climate Agreements in 2016.

**Dr. Steven Katona** is a marine scientist, educator, and multidisciplinary thought leader. During the late 1960s his Harvard PhD research provided the first evidence that zooplankton use pheromones to find each other for reproduction in the open ocean. He was a founding faculty member and later president of the top environmental college in the United States, College of the Atlantic (COA), where he helped design the only



**P2P trustees Dr. Steven Katona (left) and Dr. Greg Stone (right) at United Nations**

degrees awarded by COA, the BA and MA in Human Ecology, through which students investigate the interrelationships between people and our natural, social and economic environments. Steve is a global authority on whale biology who rose to leadership during the surge of non-lethal whale science that emerged at the end of large-scale commercial whaling in the 1970s and 80s. He and the team of students, faculty and volunteers he assembled, Allied Whale, pioneered the use of photographs of the underside of the tails (flukes) for lifetime identification of individual humpback whales, enabling international collaboration among scientists working in the Atlantic, Pacific, Indian

and Southern Oceans to determine population abundance, structure and migrations of humpback whales.

Later, he was a co-founder of the Ocean Health Index. Steve's experience and skills help P2P navigate into the unpredictable future created by human industrialization.

### **Trustees**

Dr. Steven Katona  
Ian Somerhalder  
Dr. Gregory Stone  
Christine Zinnemann

### **Distinguished Fellows**

Dr. Sean Anderson  
Dr. Larry Madin  
Arora Akanksha  
Nabuti Mwemwenikarawa  
Dr. Nan Hauser  
Jenny Kruse  
Dr. Richard Sears  
Dr. Porter Turnbull

### **Music Director**

Dave Sorrendino

### **Legal Advisor**

Peter Shelley

### **Friends of Pole-to-Pole Conservation**

Wendy Benchley  
Barbara Bosson  
Sara and Frank Nichols  
John Powell  
Pete Rive  
Dr. Edgar Schein

### **Chief of Staff**

Clark Brandon

### **SPA Services Accountant**

Polovinchik, Frid and Novak, LLP

### **Our Partnerships**

AltaSea  
Aqualink  
Aquarium of the Pacific  
Baum Foundation  
College of the Atlantic  
Commonwealth Secretariat  
Common Earth  
The Metals Company  
Phoenix Island Protected Area Trust  
Stena Shipping  
Woods Hole Oceanographic Institution

**To support our work, please make checks out to Pole to Pole Conservation,  
and mail to:**

**POLE TO POLE CONSERVATION  
17350 Sunset Blvd. Suite 502  
Pacific Palisades, CA 90272. USA**

[info@poletopoleconservation.org](mailto:info@poletopoleconservation.org)

424-268-4986





The average thickness of Antarctic's ice cap is 2,160 meters with maximum of 4,776. It's the major driver of ocean circulation and planetary temperature regulation and distribution. If all this ice melted, sea levels around the world would rise 70 meters inundating or submerging every Pacific Island nation.

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