

*Our invitation to you from*

# **Flourishing Oceans**



Photo by Reinhard Dirscherl  
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**Research & Collaboration  
with the Minderoo Foundation**



Minderoo Foundation's Flourishing Oceans initiative, launched in 2018, has dedicated \$100 million and several other assets to facilitate research and advocacy. Our collective aim is to allow healthy oceans survive the anthropocene.

Minderoo is investing in critical terrestrial and marine infrastructure to promote sustainable and healthy marine environments, that will support the work of scientists across a range of key areas. Capabilities include monitoring fish stocks to mapping ocean pollution. This will only be achieved with full global collaboration between the science, policy, and advocate communities.

We invite your institution and your researchers to join us. Working together we multiply our ability to return our damaged marine world to its original flourishing state.

Ningaloo

Perth





# Pangaea *Ocean Explorer*

Pangaea Ocean Explorer (POE) is a 60-metre ice class motor yacht available to support research around our coastal facilities in Western Australia, as well as carry out its own extensive research in the open ocean and overseas. The POE will predominantly travel in the Indian Ocean and surrounding seas, from Palau in the western Pacific Ocean to Antarctica. At cruising speed (~ 11.5 knots), POE has a range of up to 18,000 nautical miles and total fuel capacity of more than 245,000 litres.



This vessel safely delivers marine research in remote areas, with facilities that support sampling from reef flats to offshore locations and research diving. It also allows for on-board storage of samples and scientific equipment and facilitates real-time information processing with high speed internet. Her tender garage includes a ten-metre fish sample catamaran, a seven metre RIB for scuba diving, and a 10m NIAD for benthic and pelagic BRUVS (Stereo-Baited Remote Underwater Video Systems) as well as two compact fishing skiffs.



She accommodates up to 12 guests split across six rooms, while the crew quarters are suitable for staff of up to 13 people. Her crew includes fishing guides that are experienced in supporting a range of marine research programmes globally, including capturing and releasing fish, BRUVS, and use of multi-beam hydroacoustic techniques to estimate fish biomass.



*We are seeking research projects to be conducted aboard POE in 2019, its first full year of operations. Minderoo is open to new proposals and ideas that bring us closer to a future with flourishing oceans.*



An initial research focus will be quantifying levels and impacts of plastic pollution, collecting environmental data that supports predictive modelling of ocean variables (e.g. ocean temperature, dissolved oxygen) and quantifying pelagic fish abundance, distribution, movements and behaviours.

In collaboration with organizations from Australia and overseas, POE will be utilised to monitor levels of plastic pollution in the Indian Ocean. Detailed assessments will be conducted in the Indian Ocean 'garbage patch' and across selected coastal and island communities that showcase different levels of plastic pollution and have economies that are heavily dependent on marine resources. This mapping effort is proposed to characterize and quantify plastics at the sea surface, in the water column, along shorelines and deposited in sea floor environments. Minderoo is also focused on supporting ocean plastic remote sensing R&D activities and experimenting with methods to utilise animals to monitor ocean pollution levels in their habitats. This will include exploring ways to combine satellite-tracking data with measurements of plastic additives in animal body tissues to quantify the chemical impacts of plastic pollution to wildlife.



Pangaea Ocean Explorer can be configured with a variety of smaller support vessels as pictured. The support vessel fleet is capable of undertaking a wide variety of research activities, including remote camera and scientific equipment deployments; marine animal tagging; catch and release fishing; scientific diving (on-board membrane-system Nitrox compressor) and much more.



# Ningaloo *Research Centre*

The Ningaloo Research Centre (NRC) in the heart of Exmouth, includes multiple wet and dry labs, walk-in freezer and chiller rooms, secure equipment and boat storage, wash-down areas, on-site meeting and function facilities and state-of-the-art experimental aquarium facilities are in development. The centre is ideally-suited for conducting long-term research and monitoring studies of coral reef, seagrass and mangrove ecosystems, including laboratory experiments, observational and tracking activities related to fish, mammal and reptile ecology, and processing of samples for pollution and environmental DNA analyses.

Marina facilities in Exmouth offer easy access for field research in the northern parts of Ningaloo Marine Park, the offshore Muiron Islands and around Exmouth Gulf, while boat launching and mooring facilities at Tantabiddi Creek, 36 km from town also offer convenient access to the reef and nearby pelagic waters. The Ningaloo centre provides a wide range of meeting and function facilities, with the capacity to host conferences of up to 300 delegates in a variety of configurations. On-site exhibition facilities also offer the ability to present research activities to the local community and tourists.







Ningaloo Reef, a 240km long fringing coral reef system and the Cape Range limestone escarpment are among the United Nations World Heritage listed Ningaloo coast's most outstanding natural assets. Ningaloo Reef provides key habitats to a wide range of marine organisms, including many IUCN Red List Threatened Species. The Ningaloo coast also has an extensive shallow gulf, containing seagrass, mangrove, offshore island and pelagic environments that serves as a nursery for humpback whales and hosts resident populations of threatened dugongs, Indo-Pacific humpback dolphins, turtles, short-nosed sea snakes, grey nurse sharks and seasonal aggregations of whale sharks and manta rays. The mangrove systems on the eastern margins of the Gulf are areas of high primary productivity, feeding and restocking both the Gulf and the nearby Ningaloo Reef.







# Perth *Research Centre*

Minderoo is working with local authorities to provide facilities within the Perth region to attract Australian and international research teams, as well as showcase regional ecology to school and university students. The centre will provide state-of-the-art research services and accommodation for students and senior researchers and include wet and dry labs, experimental aquaria, freezer and chemical storage, gear preparation and wash-down areas, on-site office, meeting and exhibition facilities.

Perth is located close to the head of Australia's largest underwater canyon, which is a hotspot of primary productivity in the generally oligotrophic waters of the south-eastern Indian Ocean. This localised upwelling supports extraordinarily high concentrations of marine life, including feeding aggregations of blue whales, with sperm whales and orcas also being recorded in the area..







Located 15 km off the mainland coast, Rottnest Island sits in the migratory pathway of numerous marine species, including several species of sharks, tunas, billfishes (marlin and swordfish), humpback and southern right whales. The southward-flowing Leeuwin Current maintains local water temperatures above those expected at these latitudes, providing an onshore flow and thermal regime that allow tropical species, including soft and hard corals, to survive.

The waters around Rottnest are also home to several threatened and protected marine species such as grey nurse sharks, long-nosed fur seals and Australian sea lions (on nearby Carnac Island).



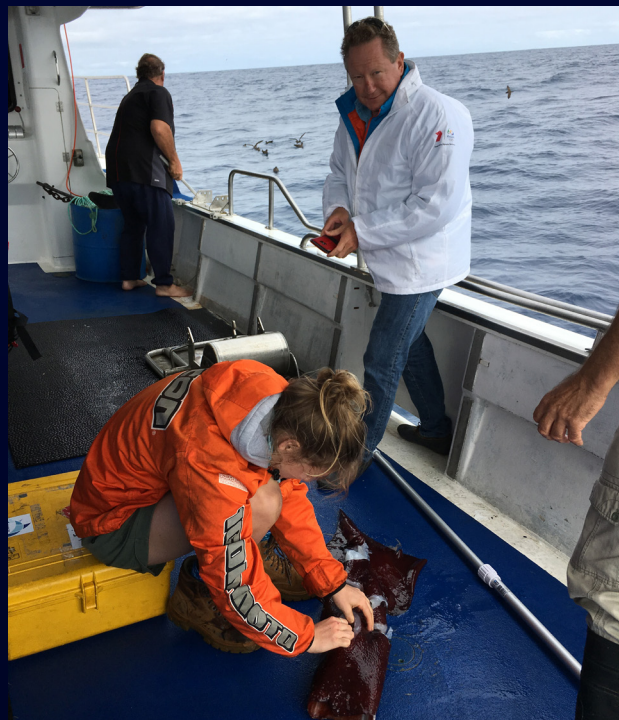
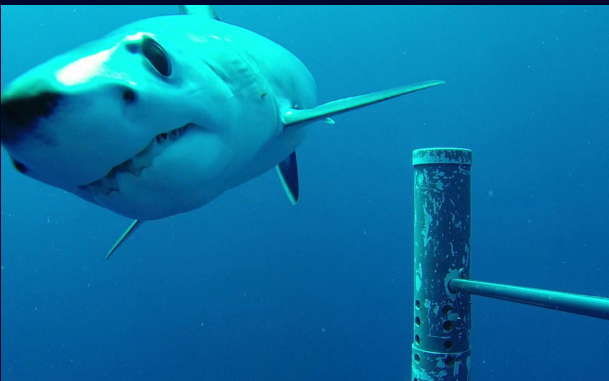




# Research *Focus*

Our vessels and research centres will support short to long-term marine research studies by bringing together multi-disciplinary scientific teams working on a wide range of ocean research and conservation topics.

We will bring together the best researchers in the world to ensure that we are working towards returning the oceans to their flourishing state. Whenever possible, we will add outreach and eco-tourism components to our activities to encourage hands-on experience with marine environments and wildlife.





*For further information  
on these collaborative  
research opportunities,  
please contact  
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**We want to support research that advances global scientific understanding of:**

- + marine ecosystem health, productivity and resilience;
- + threatened, at-risk and migratory species conservation;
- + marine wildlife (e.g. fish, endangered species) movements, behaviour, distribution, abundance, population connectivity and ecology;
- + anthropogenic threats to marine environments and communities;
- + sources, distribution and impacts of plastic pollution on marine ecosystems and food chains;
- + spatio-temporal patterns of physical and chemical oceanographic parameters;
- + development of novel approaches for assessing and monitoring the status of marine organisms and environments.
- + coral reef health, productivity, resilience and restoration;
- + ecology of mangrove, seagrass and other biologically important areas;
- + environmental science and management training;
- + the biological and geophysical properties of the Perth Canyon and its contribution to marine productivity.

Minderoo also proposes to use the Ningaloo reef as our first key site for deploying advanced satellite transmitters to marine megafauna such as large fish, sharks, rays, turtles and mammals. We will explore ways to collate this data with existing datasets on the horizontal movements of marine megafauna, currently under ownership of various universities and oil and gas companies. Aggregating these data sets could help enrich our understanding of how these animals migrate and feed in local and surrounding waters.



*[minderoo.com.au/](http://minderoo.com.au/)*

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