The value and importance of ocean exploration in marine protected areas

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Phoenix Islands Protected Area (PIPA)

Map created by Kerry Lagueux
Largest & deepest UNESCO World Heritage Site
FIGURE 6 BEFORE AND AFTER THE FISHING BAN

Heavy fishing activity was detected by Global Fishing Watch in PIPA from January to October 2014, before the ban was enacted. Fishing activity was nearly non-existent in the first 10 months following the closure of PIPA to commercial fishing. Data was collected through October 15.*

January – October 2014

January – October 2015

LEGEND

- Management Plan Boundary
- Enforcement Boundary
- Fishing Effort

*The closure boundary given to the Forum Fisheries Agency does not perfectly align with the boundary mapped out in PIPA’s management plan due to shifts in EEZ delineations at the northwest edge of Kiribati’s central region. A gap exists between the two boundaries, excluding Winslow Reef in the northwest corner of the EEZ. There appears to be some continued fishing in that area. Oceana understands that Kiribati and the PIPA Trust intend to resolve this issue.

Source: Global Fishing Watch
PIPA Scientific Advisory Committee (SAC):

PIPA Scientists and collaborators:

PIPA Conservation Trust:
A PIPA scientific research program is part of World Heritage Status maintenance:

Section 45(1)(f) and 48(4)(d) (for World Heritage areas) of the Environmental Act 1999, as amended, requires scientific and research studies to support protected areas.

And the PIPA management plan:

SAP 1.10 – PIPA Science and Research
SAP 2 – PIPA ‘Issues to Results’
SAP 3 – State of the PIPA Report 2014
as required by the PIPA Regulations

– SAC, PIPA Science – meetings; advisory role
10 Year Research Plan: 2010-2020

Exploration
- Shallow reefs
- Mesophotic reefs
- Seamounts
- Deep sea floor

Climate Change
- Temperature
- Sea level rise
- Resilience
- Recovery

Connectivity
- Tuna & other large pelagics
- Mammals / Turtles
- Larval replenishment source

Emerging priorities:
- Ecological economics
- Recovery processes
- Population genetics

Ecological Economics
- PIPA as a global resource
10 Year Research Plan: 2010-2020

**Exploration**

- Mesophotic reefs
- Seamounts
- Deep sea floor

1. Okeanos Explorer: Jan – March 2017
2. Falkor: October 2017 (with OER support)
Resource-limitation for SIDS and the role of the US in regional exploration
Mapping (Jan / Feb 2017)
NOAA Okeanos EX-1703
8 dives in PIPA

Carondelet – 3/11
Athena – 3/12
Polo – 3/13
Winslow – 3/22
Teutana / McKean - 3/23
Kinono Hadal Trough - 3/24
Maibua - 3/25
Te Kaitira - 3/26
“Hiking up one tiny trail, at night, with nothing but a flashlight”....
“Hiking up one tiny trail, at night, with nothing but a flashlight”…. But it’s a giant leap in our understanding of never-before seen ocean areas.
So what do we do with this initial exploration?

How is it used?
1) Boundary and zoning decisions

Example: Winslow Reef
Figure 8. Comparison of the SRTM30 grid (transparent grey) and EX-17-03 bathymetry (rainbow color ramp). Note the 950m difference between the actual top of the seamount and the estimated seamount depth surface from the SRTM30 model. Previous comparisons between the Okeanos ship-based multibeam measurements and the SRTM30 grid have noted up to 1400m of difference in predicted depth elevations due to grid resolution constraints of the satellite/gravity models. The depth scale bar is for the EM302 multibeam data collected by the Okeanos Explorer. Image made in QPS Fledermaus software, 3x vertical exaggeration.
2) Setting baselines

**Example:** Kiribati EEZ
Hemicorallium (precious coral)
Gold coral (another precious coral) - Maibua
Hadal Trough feature – “Kinono”
3) New science and continued exploration

*Example:* Upcoming Falkor cruise
Cruise goals:
Potential new species?
4) Outreach and engagement:

- Broadcast on PIPA Facebook Page
- Broadcast on PIPA Twitter
- ABC Radio – “Pacific Beat”
- Kiribati Radio
- USP campus
- PIO (Betarim) as the telepresence Observer
A government research ship gives us a vivid reminder of the many amazing creatures living deep beneath our oceans.

nyti.ms/2n9UeME
Many possible paths
Thank you.