Building capacity to understand, protect and manage coral reefs–linking science and tradition in the Micronesian outer Islands: One People One Reef Project

Yap Outer Islands 2018 Expedition: 5 July – 21 July 2018
Executive Summary of Activities, Prepared by One People One Reef Science team

nicrane@cabrillo.edu
jrulmal@gmail.com
Field Trip Participants and logistics:

The Project contracted with Yap fisheries to use the fishing vessel Mathawal Yap for our 2018 follow-up outer islands trip. The vessel had room for 4 US scientists, 2 from Ulithi, and one from Satawal. We took 1 from Ulithi and one from Satawal (the third, joined the team that stayed on Woleai Atoll due to space constraints). Due to long travel times and distances, and the ambitious schedule we had planned, we loaded the Mathawal Yap, and then flew with CIA to Woleai where we would get a head start on the work there and meet the vessel to continue the voyage. We then took CIA back from Woleai to Ulithi on the return journey. We had planned to take the Mathawal Yap to Sorol (the island we missed last year due to the Captain grounding the ship), then finishing back in Yap.

This year, we experienced some severe weather and it delayed us several times. We were unable to leave Woleai on time, both outbound to Satawal and return to Ulithi (due to weather and to pilot illness), we were also delayed one day on Ifaluk. Our travel times between islands were also extended due to high seas and bad weather. Because of this, we were forced to leave Ulithi by PMA (air) rather than the Mathawal Yap. This enabled us to visit Sorol and also return in time to not extend the Mathawal Yap’s contract.

Due to weather and delays, we were unable to visit the atoll of Feshailap and Eauripik. This was unfortunate as we have been trying to visit these atolls (we visited Eauripik briefly last year) and were hopeful that our planned visit this year would be carried out. We would like to be able to serve Feshailap and Eauripik, and will continue to plan to do so.

We split our teams due to the large size of Woleai Atoll and the number of communities there. The bad weather also meant that we were unable to visit any islands other than Falalop on our initial landing on Woleai this year. In 2017 we only had enough time to visit Falalop, Woleai. However, the team that stayed on Woleai this year was able to accomplish visits and training at all planned islands as well as gathering and training a team of youth to carry on the work. Our team of 6 was aboard the vessel, and a team of 6 additional youth and leaders from Ulithi remained on Woleai Atoll to work there for 2 weeks.

US Participants (Ship-based):
Nicole Crane, One People One Reef, Cabrillo College.
Michelle Paddack, One People One Reef, Santa Barbara City College
May Roberts, University of California Santa Cruz
Eric Tong, University of Hawaii

Outer Island Participants (Ship-based):
Mario Dohmai, (MogMog Ulithi)
Sabino Sauchomal (Satawal)

Ulithi Participants (Woleai Based): all youth have connections to Woleai
John Rulmal Jr (Falalop Ulithi) - Coordinator
Milo Tasopulu (Falalop Ulithi)
Nicalaus Talgumai (Falalop Ulithi)
Clancy Sewemor (Falalop Ulithi)
Ginger Dohwal(Falalop Ulithi)
Roderic Yoryol (Falalop Ulithi)

Justification for Expedition:

Many island communities are experiencing sharp declines in their subsistence fisheries and in overall health of the coral reefs that support them, threatening food security and livelihoods. Declines in abundance and size of targeted fishes have increased dependence on imported and canned foods contributing to human health problems. There is a lack of information and baseline data on the current ecological state of the reefs, resiliency of the system in the face of climate change, and the current impact of resource extraction activities (including associated fish and other food resources). These data are critical for local communities to be able to develop and implement effective adaptive management planning and ensure food security while maintaining culturally and historically relevant methods and knowledge. The status of reef health and fish resources can be quantified, and this information is critical to local management.

In 2017 our teams visited 8 atolls/islands and surveyed 33 sites. Part of that work was to establish local science teams for data collection on landed fish and seafood consumption calendars to track food resource use and acquisition by household.

In 2018 our main goal was to revisit these islands and to:
- Meet with communities to present fisheries data they submitted after our 2017 visit.
- Present main issues we see (data from 2017), and distribute and explain the ‘best practices’ and ‘coral reef handbook’ documents
- Meet with communities to discuss management, particularly what has changed since our 2017 visit, and obtain management plans
- Meet with communities to discuss plans for the future
- Collect examples of taboos and fishing practices from the past (and present) to tie them to western science to better inform people from both a traditional and western viewpoint
- Survey any sites needed to follow up on management and/or site characterization (sites not surveyed in 2017 and any of concern to communities)

Objective

Our objective is to build capacity for adaptive management of reef resources in the Yap outer islands. Our approach is to combine scientific assessments of reefs and fisheries, traditional management, and community education to provide support for development and refinement of marine resource (mainly fish) management plans by each island community.
At each of the communities we visited, we first met with the Chiefs and leaders, then conducted reef surveys, met with the local science teams to check in on data collection and refresh training, met with the women separately to discuss their concerns, and conducted on-one and small group interviews with Chiefs and fishers to gather more information on fishing pressure, traditional taboos and practices. We distributed and discussed the deliverables of last year (Best Practices and Coral Reef Handbook).

In addition, we planned to engage the communities of Woleai more fully, and especially reach out to their youth to develop youth participation in the program, similar to what has been accomplished on Ulithi.

**Specific Outputs:**

We visited 6 atolls and 1 island (Satawal): Woleai, Lamotrek, Elato, Ifilik, Satawal, Ulithi, Sorol. Following is a summary of what was accomplished at each.

**Woleai**

This year, we divided our team into two (one for Woleai and one for the additional outer islands) which allowed us to expand our training capacity on this large atoll and engage more people. This is critical because Woleai is a large atoll with one of the two high schools serving the outer islands. Engagement of each island on Woleai, as well as the youth, is important to the future of marine management on the Atoll. One youth community meeting, one community meeting.

**Local scientists:**

**Saliap:** John Firelmar, Casmiro Fagoilig, Basco Taiwerwong, Roland Yalishmai


**Fisheries workshops:**

In 2017 we were able only to conduct a fisheries workshop on Falalop, Woleai. This year we visited and worked with 4 additional islands. Fisheries workshops were conducted for 4 islands (3 workshops (Falalop, Tagailap), one of them had local scientists from 2 islands attending – Saliap and Wottagai). Due to traditional restrictions (Chufalu) on Falalus, we were not able to conduct the workshop there or sample for fish, but we did meet with the community.
Surveys:
Survey training with approximately 40 Woleai youth, 3 Woleai community youth liaisons and 1 local scientist.
Sea cucumber surveys at 5 sites (4 islands)
1 *Montipora* coral survey and mapping (10 transects)
1 Corallimorph mapping
1 Fish survey

Training and surveys were led by the team from Ulithi, coordinated by John Rulmal Jr. The Ulithi youth galvanized the Woleai youth into a team that became proficient in survey techniques, as well as field safety. They worked on public speaking and presentation of survey results, challenges, and solutions.

**Ifalik**
- **Local scientists:** 2 from each village
  - Iyefang: James Yangitelgie, Joshua Mangietal
  - Iyeur village: Serafin Peckaitig, Jeremy Yaemeng
  - Rawaii village: Dominic Yarofalush, John Yarofalpal
  - Felashig village: Peter Yangreit, Andrew Yaneisei

  **Fisheries workshop and meetings:**
  - 1 fisheries workshop follow-up with local scientists, 4 interviews with fishermen, interviews with chiefs and key individuals, community meeting, women’s meeting

  **Reef surveys** at 2 sites, 2 sea cucumber surveys

**Elato**
- **Local scientists:**
  - Vincent Saliweluo
  - Johannes Sewerailug
  - Jethrow Yarofaital

  **Fisheries workshop and meetings:**
  - One fisheries workshop follow-up with local scientists, 2 sea cucumber surveys, 4 interviews with fishermen, interviews with chiefs and key individuals community meeting, women’s meeting
  - **Reef surveys** at 2 sites

**Lamotrek**
- **Local scientists:**
  - Lambert Rachemal
  - Diano Yangreitig
  - Belarman Yarofalyango
  - Nicky Yarofalpal
Fisheries workshop and meetings:
One fisheries workshop follow-up with local scientists, 4 interviews with fishermen/community, interviews with chiefs and key individuals, women’s meeting.

Reef surveys at 3 sites, 2 sea cucumber surveys

Satawal
Local scientists:
Robert Erailug
Melvin Pyaeirag
Jeremiah Yesoumwai

Fisheries workshop and meetings:
One fisheries workshop follow-up with local scientists, 3 interviews with fishermen, interviews with chiefs and key individuals community meeting, women’s meeting, community meeting.

Reef surveys at 3 sites, 4 sea cucumber surveys

Sorol (There is no community living on Sorol)
Reef survey at one site, 2 sea cucumber surveys

Ulithi
Community meetings on all 4 islands
Reef surveys at 21 sites (42 transects), and community meetings at all 4 islands: Mog Mog, Falalop, Federai and Asor.
Sea cucumber surveys on 4 islands (9 sites – 220 transects)
Montipora coral monitoring survey (1 site – 25 transects)

Details:

1. Reef Surveys
Reef surveys were done to characterize reefs, assess resources and to inform management. We surveyed a total of 14 sites on 6 different atolls/islands in Yap State.

Fish Surveys:
At each site, we conducted 2-4 fish transects (50 m x 5 m) on the shallow reef (3-20 ft.) Individual fish were identified to species, counted, and their size estimated following published protocols (Crane et al 2017). A total of 16 fish transects were conducted. We also used a new method to survey sites rapidly given our time constraints, weather and the fact that we were not able to use scuba gear. We conducted 4 of these surveys, on Lamotrek and Sorol. We also conducted surveys for sea cucumbers to assess non-point source nitrogen based nutrient loads. These were conducted at two sites at each island.
Benthic Surveys:
Along each fish transect, 20 quadrats (0.25m²) were used to assess percent cover of reef-building corals, algae, and benthic invertebrates. Data were taken per coral colony on genus, relative size (% cover) and health (degree of paling, bleaching, disease). A total of 160 quadrats were conducted across all sites. Three benthic surveys were conducted using the new rapid assessment, on Lamotrek.

2. Local knowledge & Traditional Management
At each island community, we conducted community interviews to gather information about community concerns, current management techniques and strategies, and observations of changes on reefs and land. To obtain perspectives from different viewpoints we conducted community interviews, individual interviews, and meetings specifically with leaders, women, and youth. We also obtained management plans from each community. We distributed a total of 13 best practices documents, 13 coral reef handbooks (revised since 2017 with community input), and 13 fisheries monitoring handbooks.

3. Education & Outreach
This year our youth education and outreach efforts were focused on Ulithi and Woleai Atoll (see above).

Community meetings and interviews:
We conducted meetings separately with women, men and with individuals to get as much feedback as possible on the following issues: changes over time in resources (reef and land), fishing techniques, management and technology, and leadership structure. We asked community members to articulate issues, challenges, potential solutions, and things they were proud of and positive about. We also shared the scientific results and distributed and explained reports on best practices and coral reef ecology.

4. Fisheries data collection training and follow-up
We conducted follow-up fisheries workshops with the local science teams to address any questions or concerns they had. We have received data from 4 communities (Satawal, Lamotrek, Elato and Ifaluk) over the past year (both seafood consumption calendars and fish landings data).

5. Management plans
We obtained management plans for each community we visited.
Concluding remarks and future directions

Our objective of this work is to: build capacity for adaptive management of reef resources in the Yap outer islands by combining modern science and traditional management to assist with the development of management plans, and to assess reef health and potential island connectivity. Specifically, to help develop management plans, enhance fish resources, develop a fisheries database, and conduct reef surveys.

Outputs were:
1. Conduct reef surveys (benthos and fish) to inform management
2. Conduct community interviews
3. Education and outreach meetings
4. Implement fisheries landings training and seafood consumption calendars

These objectives and outputs were all completed (data are currently being compiled on reef and fish surveys, and fisheries landings data). Due to the size and capacity of the vessel used in year one of this work, we were able to accomplish the majority of the survey work then. Year two was devoted to community follow-up, additional surveys and data collection as needed, and a more intensive connection with Woleai Atoll. During our trip this year (2018), we were impressed by how much work communities had accomplished, and how they had embraced adaptive management - well aware of the need. Every community voiced appreciation of the work, said it was needed and asked us to come back to assist in the future. From our perspective, this work has achieved more than we could have hoped for. We hope to be able to continue it, and to expand into the outer islands of Chuuk, which no doubt have similar needs.

Our main deliverable for this work will be a modified best practices document specific to the Yap outer islands. We hope to be able to tailor our findings to each island based on what we have learned. We note that our objective is not to produce recommended management plans, but to enhance capacity by sharing knowledge and practices. We hope to unite the Yap outer islands around the importance of management and utilizing traditional practices, with an understanding of some of the impacts of gear and fishing practice changes in more recent times.

Each community shared with us that they would like the ‘deliverables’ in a form that is useful to multiple demographics. This includes the story of management on their islands/atolls in (among several suggestions) a translated document, with drawings for the youth, in song for the young adults, in a form that can be used in both the elementary and high schools (Woleai and Ulithi). They believe strongly that the more ways we can deliver this information, the better chance it has to remain a vital part of their planning into the future.

We hope to obtain additional funding to do this, as it is clearly important.