Giving diamondback to the community: Nauru small boat fishers learn to target alternative species safely

Plans for this assignment were initially laid in mid-2016 as part of the Global Environment Facility's Ridge to Reef project to help community fishers cope with changes in fisheries development issues that affected their livelihoods. It got underway with community-based fisheries management consultations to educate communities so that they better understand their fisheries resources and can utilise them sustainably. The goal was to train community fishers and staff of the Nauru Fisheries and Marine Resources Authority (NFMRA) in fish aggregation device (FAD) work, safety at sea procedures on small boats, small fishing operations procedures, midwater fishing methods, and targetting alternative species such as diamondback squid and loligo squid. It took time to get the funding and logistics organised for the practical fishing component, but by mid-2019, everything was in place. With the advent of COVID, however, and the uncertainties thereafter, the assignment was delayed until September 2022.

Small fishing operation and small boat safety training

The small fishing operation and small boat safety training was housed in NFMRA's new coastal fisheries workshop and office building, with 20 representatives from eight districts in attendance: Aiwo, Anetan, Baitsi, Boe, Denig, Meneng, Uaboe and Yaren. But as word got around about the content and training, about 60 more fishers asked if they could join during the later stages. They were advised to wait until the next round of training as they had missed crucial information during the first two days and the format of the workshop was not conducive to large numbers of participants.

The training was structured in two parts over two weeks:

Week 1 - Introduction to what will be undertaken during the training; safe operation plans, procedures, and checklists; safe fishing practices; dealing with emergencies at sea; rigging fishing gear for the various fishing methods; and book-keeping.

Week 2 - Preparing boats for sea; loading and arranging gear for fishing operations; practical fishing; onboard handling and storage of catch; fish quality for the markets; and recording the catch.

Two practical fishing trips were conducted on separate days, both beginning with setting 6 vertical longlines then setting 10 midwater chum drift lines and moving on to trolling and jigging. All of the various fishing methods used produced atches. Small yellowfin tuna and skipjack were caught with the double lure trolling method; marlin was caught using a single troll with a shock absorber; yellowfin tuna, rainbow runner, trevally and bohar snapper were caught with the dropstone, cloth and chum methods; rainbow runner and small yellowfin tuna were caught with spreader rod jigging; and vertical longlines had some misses but caught several sharks that were released.

The presence of diamondback squid in Nauru has been confirmed. Image: ©William Sokimi, SPC

A freshly caught diamondback squid and the type of lure used during the trials. Image: ©William Sokimi, SPC

Diamondback squid trial

Diamondback squid (*Thysanoteuthis rhombus*) is a large oceanic species that has been relatively unexploited in the Pacific Islands region. As such, it offers a potential new resource for Pacific Island countries and territories. Trials confirming the presence of diamondback squid in other Pacific Islands – Cook Islands, Fiji[1] and New Caledonia – have previously been conducted, and now also in Nauru. This latest trial confirmed the presence of the species in Nauru's nearshore and offshore waters and publicised its presence and use as a potential food source. Carried out over four days on Nauru's west side, the NFMRA team were also trained in how to conduct additional trials and to train local fishers in how to catch diamondback squid.

The fishing gear used to catch diamondback squid includes a dropline to which are attached a waterproof light and three lures with two crowns of tiny barbless hooks at one end. The light and lures are dropped to depths of 450 m and more and the line is either jigged from the boat or left drifting attached to two floats on the surface.

Interestingly, the fishing gear used for the Nauru trial differed from the gear used for trials conducted around the region.[1] Usually, the reel used for small-scale diamondback fishing is a hydraulic or electrical reel specifically built for this purpose. The reel used in Nauru was ordered for multiple purposes such as to serve as a winch to haul vertical longlines and to conduct other trials should NFMRA wish to explore other prospects (e.g. deep-water snapper). Furthermore, a monofilament dropline was used instead of the much-preferred braid and wire dropline. As a cheaper option, the monofilament line has several limitations compared to wire and braid lines, such as taking up more space on the reel, thus reducing the number of mainlines that can be loaded on a spool, being susceptible to faster drift rates, arching of the midsection of the line under strong currents, and stretching under load.

Loligo squid trial

While Nauruan fishers have long been aware of the large numbers of loligo squid (*Loligo vulgaris*) in their waters, they are mostly caught randomly when targeting other species. There is a lack of knowledge regarding catch methods and fishing season, yet there is an interest in diversifying, and loligo squid offer market potential because imported squid is sold locally in eating houses and supermarkets. Understanding what species populate the waters, their respective seasons, and whether they can be caught in sufficient volume to satisfy local demand, remains to be determined.

The fishing trials were carried out on two nights, from 18:00 h to 24:00 h. Unfortunately, this was the wrong season to conduct loligo squid trials in Nauru but because the SPC team and the gear were in place, it was decided to at least familiarise the NFMRA team with the methods for when the season comes around. The weather was not suitable for fishing on the first night, with choppy seas and 15–20 kt winds blowing but the team set and hauled the lines anyway to test the gear. On the second night, only a single squid was caught. Despite trialling this method during the squid off-season, the NFMRA team got a chance to practice how the method works, how to set up the lights, set the sea anchor, and how to rig gear.

What's next?

While the participants benefitted from a practical training session on the principles of FAD rigging and deployment, weather conditions were not favourable for an actual deployment. So, this will take place in 2023 with a future visit to Nauru to complete this part of the training.

For more information:

William Sokimi
Fisheries Development Officer (Fishing Technology), SPC
williams@spc.int

[1] Sokimi W. 2014. Successful diamondback squid fishing trials in Fiji. SPC Fisheries Newsletter 144:14–16. https://purl.org/spc/digilib/doc/42ck6