



Integrating Underwater Videos and Local Ecological Knowledge to Assess Fish Assemblages in three Reef Passages around Ovalau Island, Fiji

Introduction

This poster presents the preliminary results of the research work I carried out on **Ovalau** between **24/09** and **06/10/2025**, as well as the next steps to be taken between **15/11** and **06/12/2025**.

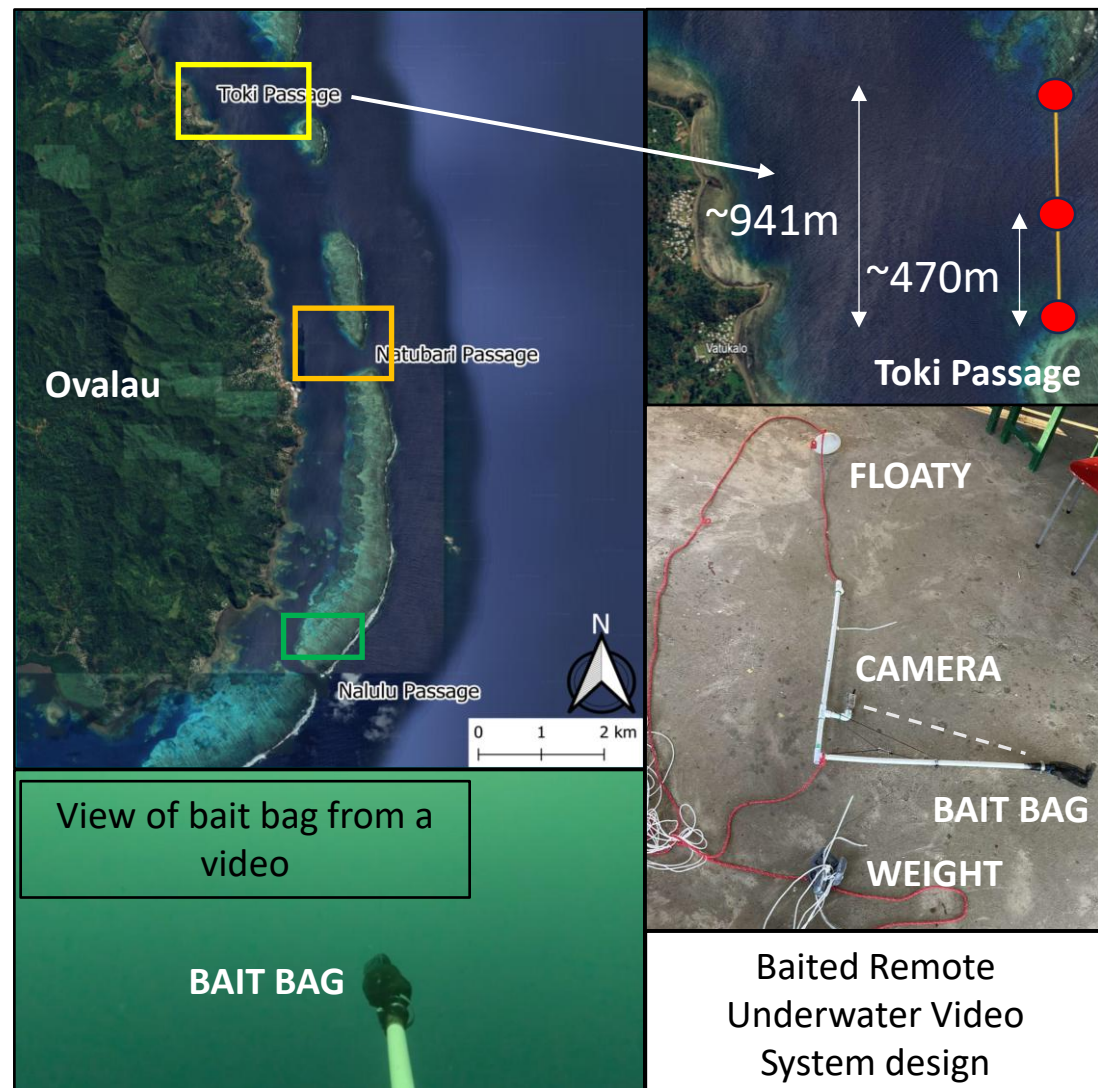
During the **first phase**, we interviewed local experts to get information on reef passages, fishing methods and species commonly observed or caught in or near these passages, other ecological characteristics and fishing bans.

For the **second phase**, underwater videos will be used to provide an ecological snapshot of the fish species diversity present in these reef passages.

Preliminary Results

From seven interviews from Vatukalo village, Levuka Vaka Viti, and Levuka Town:

- 🐟 A total of 42 marine species were mentioned (Table 1), spanning reef, pelagic, and megafaunal taxa.
- 🐟 Nine species mentioned were listed as Globally *Vulnerable*, *Endangered*, *Near Threatened* or *Critically Endangered* in the IUCN Red List.
- 🐟 Seasonal patterns were noted for fish species—such as *Sabutu*, *Kawakawa*, *Kawago*, and *Nuqa*—which were said to be most abundant between September and December.
- 🐟 Common fishing methods included handline and spearfishing, with the mention of net fishing (including *qoli samu*) in shallow environments, with trolling used mainly outside the passages.
- 🐟 Interviewees described reef passages as important fishing and breeding grounds, often characterized by strong currents (Table 2).



Underwater Videos

Baited Remote Underwater Video Surveys/System (BRUVs) will be deployed:

- 🐟 In three reef passages (Toki passage, Natubari passage, Nalulu passage).
- 🐟 Each passage will have three BRUVs (red dots above) twice during incoming and outgoing tides (total 12 hours of recording from one passage).
- 🐟 Tuna offcuts will be used as the bait.

At the end of the surveys, the videos will be analyzed to present a snapshot of the different fish species present in these reef passages



Table 1: Summary of marine animals mentioned and reef passages animal is observed or caught from seven interviews from Levuka town, Levuka Vaka Viti and Vatukalo village. Sorted in alphabetical order of iTaukei local name. IUCN world status abbreviations: LC = Least Concern, VU = Vulnerable, NT = Near Threatened, EN = Endangered, CR = Critically Endangered, LD = Largely Depleted

	Fish Grade	IUCN Status	English common name	Scientific name	Reef passages where this fish is observed or caught
TBA	TBA	LC	Albacore Tuna	<i>Thunnus alalunga</i>	TBA
TBA	TBA	VU (depends on species)	Bull shark	<i>Carcharhinus leucas</i>	Natubari, Nailobaloba
TBA	TBA	CR	Hammerhead shark	<i>Sphyrinidae</i>	Nailobaloba
TBA	TBA	LC	Humpback whale	<i>Megaptera novaeangliae</i>	Natubari (Levuka passage), Nailobaloba
TBA	TBA	LC	Skipjack Tuna	<i>Katsuwonus pelamis</i>	TBA
TBA	TBA	VU	Sperm whale	<i>Physeter macrocephalus</i>	TBA
TBA	TBA	NT	Tiger shark	<i>Galeocerdo cuvier</i>	Nailobaloba
TBA	TBA	EN, LD	Whale shark	<i>Rhincodon typus</i>	Nailobaloba
TBA	TBA	VU	White-tip reef shark	<i>Triaendon obesus</i>	Nailobaloba
TBA	TBA	LC	Yellowfin Tuna	<i>Thunnus albacares</i>	TBA
Babaloa	TBA	TBA	TBA	TBA	Nuku
Balaginawa	TBA	LC	Yellowfin Surgeonfish	<i>Acanthurus xanthopterus</i>	TBA
Damu	C	LC	Mangrove red snapper	<i>Lutjanus agentimaculatus</i>	TBA
Damu Nubu	TBA	TBA	TBA	TBA	Toki, Nuku, Nailobaloba
Dokonivudi	A	LC	Longface emperor	<i>Lethrinus olivaceus</i>	TBA
Donu	B	LC	Leopard coral grouper	<i>Plectropomus leopardus</i>	Nailobaloba, Toki
Droudroua Ika Mama, OR Mama	TBA	TBA	TBA	TBA	TBA
A	LC	LC	Humpnose Big-eye bream	<i>Monotaxis grandoculis</i>	Nailobaloba
Kabatia	C	LC	Thumbprint emperor	<i>Lethrinus harak</i>	TBA
Kake	C	LC	Russels snapper	<i>Lutjanus russelli</i>	TBA
Kavu	B	TBA	Salmon Cod	<i>Serranus sp.</i>	N/A
Kawago	A	LC	Spangled emperor	<i>Lethrinus nebulosus</i>	Nailobaloba
Kawakawa	A	Depends on species	Grouper	<i>Epinephelus sp.</i>	Nailobaloba
Maimai	TBA	LC	Common Dolphinfish	<i>Coryphaena hippurus</i>	Waitovu, Toki, Nuku, Nailobaloba
Meto, Dridri	TBA	LC	Surgeonfish	<i>Acanthurus lineatus and/or Ctenochaetus striatus</i>	TBA
Nuqa, Nuqalevu	A	LC	Vermiculated spinefoot/ Rabbitfish	<i>Siganus vermiculatus</i>	TBA
Ogo	C	LC	Barracuda	<i>Sphyraena sp.</i>	Toki, Nuku, Nailobaloba, Waitovu
Pakapaka	A	LC	Jobfish	<i>Pristipomoides sp.</i>	TBA
Qio	TBA	Depends on species	Shark (generally)	<i>Carcharhinidae</i>	Natubari (Levuka passage), Nailobaloba, Waitovu
Rosiloa	A	LC	Timor snapper	<i>Lutjanus timoriensis</i>	Nailobaloba
Rosinibogi	A	LC	Malabar blood snapper	<i>Lutjanus malabaricus</i>	Toki
Sabutu	A	LC	Emperor, Bream, Pacific yellowtail emperor	<i>Lethrinus obsoletus, Lethrinus atkinsoni</i>	Toki, Nuku, Nailobaloba
Sabutukula	A	LC	Pacific yellowtail emperor	<i>Lethrinus atkinsoni</i>	Nailobaloba
Saqa	B	LC	Trevally	<i>Caranx sp.</i>	Nailobaloba, Nuku
Saqa Donu	TBA	TBA	TBA	TBA	TBA
Saqaleka, Saqalevu	B	LC	Giant Trevally	<i>Caranx ignobilis</i>	Nailobaloba
Sinu iwasa	TBA	TBA	TBA	TBA	TBA
Sucuwalu	TBA	EN	Bêche-de-mer, Seacucumber	<i>Holothuria scabra, Holothuria sp.</i>	TBA
Ta	C	LC	Bluespine Unicornfish	<i>Naso unicornis</i>	Toki
Tamasimas i	C	LC	Brown Unicornfish	<i>Acanthurus sp.</i>	Toki
Tovuto	TBA	Depends on species	Whale (generally)	<i>Cetacean</i>	Natubari (Levuka passage), Nailobaloba
Tovuto / Ulavi	TBA	LC	Dolphin	<i>Stenella sp.</i>	Natubari, Nailobaloba
C	LC	LC	Parrotfish	<i>Hipposcarus sp., Chlorurus sp.</i>	TBA
Uluqa	A	LC	Saddle-back snapper	<i>Paracaesio kusakarii</i>	Nailobaloba
Walu	A	NT	Spanish Mackerel	<i>Scomberomorus commerson</i>	Gavo, Nailobaloba, Waitovu, Toki, Nuku
Wau	A	LC	Wahoo	<i>Acanthocybium solandri</i>	Waitovu, Nailobaloba, Nuku, Toki

Table 2: Summary of interviewee observations and local knowledge of reef passages around Ovalau, including their characteristics, fishing practices, marine species observed, seasonal patterns, and associated tabu or fishing restrictions.

Name of a reef passage mentioned by this interviewee	Characteristics of this reef passage according to the interviewee	Fishing practices in this reef passage according to the interviewee	Fish and other marine animals observed in this reef passage by the interviewee	Fish seasons and Tabu/bans	Other Comments
Nailobaloba	TBA	TBA	TBA	TBA	TBA
Waitovu	TBA	Trolling, Handline	Walu, Sharks (generally), Wau	TBA	TBA
Gavo	“Especially good for Walu during strong currents.”	Handline, Trolling	Walu	TBA	TBA
Toki	“After Winston, a new sandbank appeared in Toki.”	“Plenty of fish, good for handline.”	Donu, Walu, Wau	TBA	The interviewee mentions that strong winds and cyclones move the sand around.
Natubari (Levuka passage)	“After Winston, the lighthouse at Natubari was lost and the shape of the reef changed.”	Handline	Humpback whale, Whales (generally), Sharks (generally), Dolphins	TBA	Mentions the sandbank near a reef passage (Toki passage infront of Vatukalo) wasn’t there before and that after a cyclone it formed.
Nailobaloba	“Lots of fish, breeding grounds, strong currents, deep water”	Handline	Humpback whale, Whale shark, Donu, Kawago, Kawakawa, Sharks (generally), Saqa	TBA	In the colonial times, dynamite was used to widen Levuka passage. “Now people don’t really damage passages. No more poison fishing either.” “The further they go, the better the yield — bigger fish for less effort. Closer in, the fish are smaller. The outer islands are less populated, so there’s less pressure.”
Nailobaloba	TBA	Line fishing, Spear fishing (mostly at night)	Sharks (in general), Saqa	TBA	TBA
Toki	TBA	Line fishing	TBA	TBA	TBA
Waitovu	TBA	Line fishing	TBA	TBA	TBA
Nailobaloba	TBA	Handline	Kawakawa	TBA	TBA
Nuku	TBA	Handline	TBA	TBA	TBA
Navusovuso?	TBA		TBA	TBA	TBA
Waitovu	TBA	Handline, Spearfishing	Maimai, Walu, Ogo, Wahoo	Sabutu, Kawakawa,	TBA
Toki	TBA	Handline, Spearfishing	Maimai, Walu, Ogo, Wahoo, RosiniBogi, Donu, Sabutu, Ta, Tamasimasi	Kawago and Nuqa caught in seasons, mostly during	TBA
Nuku	TBA	Handline, Spearfishing	Maimai, Walu, Ogo, Wahoo, Babaloa, Saqa	September-December.	TBA
Nailobaloba	Breeding ground for many fishes and it one of the deepest passages.	Handline, Spearfishing	Maimai, Ogo, Wahoo, Sabutukula, Kawago, Saqa, Saqaleka, Saqalevu, Hammerhead sharks, Bull sharks, Tiger sharks, White-tip reef sharks, Sperm whale, Humpback whale		TBA
Nailobaloba	Not sure about the depth	Line fishing	Saqa, Sharks (generally)	TBA	Calling the Saqa:
Toki	~50m depth	Line fishing	Saqa	TBA	-
Waitovu	~30m depth	Line fishing	Whales (generally), Saqa	Whale season is August – September in Ovalau	First the fisher/diver dives under the water and removes their mask and blows/forces bubbles from their mouths with the lips tight together. This attracts the Saqa closer.
Natubari (Levuka passage)	~60m depth. Has the strongest currents compared to other passages in Ovalau	Line fishing	Saqa, Bull shark	TBA	Calling the Mama: - The bait used here is the hermit crab or Kasikasi. The hermit crabs are smashed and thrown in the water; this attracts the mama fish to the surface. Then the fishermen will knock on the boat floor / side with a rock, the knocking on the boat with the rock makes the mama fish bite the bait.
Toki	TBA	Hand line	Ogo, Sabutu, Damu nubu	TBA	TBA
Nuku	TBA	Hand line	Ogo, Sabutu, Damu nubu	TBA	TBA
Nailobaloba	TBA	Hand line	Ogo, Sabutu, Damu nubu, Sharks (generally), Rosiloa, Kawakawa, Ika Mama, Uluqa, Saqa, Donu	TBA	TBA