

Department of Environmental Protection and Conservation  
Bioprospecting Permit VAN-ENV-03419

Preliminary Report on Authorized Activity  
January 7-12, 2024



Post Nesting Migrations of Hawksbill Turtles (*Eretmochelys imbricata*) Nesting at Moso Island, Republic of Vanuatu

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This is a preliminary report on the research activities conducted on Moso Island during the nights of January 7 to January 12, 2024 pursuant to the conditions stipulated in the Bioprospecting Permit VAN-ENV-04022 issued by the Vanuatu Department of Environmental Protection and Conservation.

The goal of this work is to deploy GPS satellite tags on post nesting hawksbill turtles on Moso Island, Republic of Vanuatu to study their internesting range, post nesting migrations and home forage ground range. Appended to this preliminary report (Appendix A) is the final report submitted on October 10, 2018 outlining the first phase under a Department of Fisheries Research Permit and results of the project that was conducted from January 5-11, 2018. In this report the procedures and methods are outlined and were followed during the most recent expedition. The only additional aspect of the research contained in this current permit is the collection of small tissue samples for the purpose of genetic analysis. This was discussed with our primary village contact, Nolan Kelmelu, the son of the Chief of Tassariki, who explained this addition and cleared it with the community on our behalf.

### **Activities (January 7-12, 2024)**

As had been done on the previous 4 trips to Moso Island, the research team motored from Tranquility Dive Resort (TDR-our base of operations for the trip) around the western end of Moso Island to the nesting beaches on the north shore. Camp was set up on a small beach in the center of the area (-17.521445°, 168.243383°) from which we conducted monitoring (1 km to the west and 2 km to the east of the camp site). Nesting beaches were monitored from approximately 2000 h to 0300 h every couple of hours by teams walking along the beaches and connecting bush trails to the east and west of our campsite. If a turtle was sighted, monitoring for additional turtles was suspended until we successfully attached a satellite tag to the turtle. Red lights were used so as not to disturb the turtles during our walks and tagging work.

During the three days of monitoring we observed numerous turtle tracks that were one or two days old indicating that there was a significant amount of nesting activity occurring this year. On the western beaches we counted between 15-20 tracks (7-10 turtles) and on the eastern we counted 18-20 tracks (9-10 turtles) that were likely 1 to 2 days old.

At approximately 2100 h on 1/7/2024, a fresh track was observed and a turtle was identified as nesting up in the bush. The turtle was unobtrusively observed using infrared (IR) binoculars and when she had completed her nesting we captured her by surrounding her with a plywood enclosure at 2125 h. A Telonics TGW-4\*7\* Iridium GPS tag was safely and securely attached to the third central scute. Once the polyester resin had solidified and was deemed secure, the turtle was released from the plywood enclosure and she made her way safely back to the ocean at 2345 h. This turtle was named Bule Lapa (Table 1).

On monitoring day 2 (1/8/2024) fresh tracks were observed at approximately 2230 h. The turtle was observed using IR binoculars and we noted that she was in an area that was covered with large stones and coral boulders with very little soft sand available to dig a nest, and she found it very difficult to dig an egg chamber. She moved from one spot to another, started digging an egg chamber and gave up. This behavior continued until she made her way back to the ocean at 0400 on the 9th of January. We did not confirm egg laying as her last attempt had been in an area with high vegetation and therefore we were unable to observe using the IR binoculars. She was safely contained in the plywood box at 0415 h. A Telonics TGW-4\*7\* Iridium GPS tag was safely and securely attached to the second central scute. Once the polyester resin had solidified and was deemed secure, the turtle was released from the plywood

enclosure at 0520 h and she made her way safely back to the ocean. This turtle was named Vatu Mau (Table 1).

On monitoring day 3 (1/11/2024) fresh tracks were observed at approximately 2030 h. The turtle was observed using IR binoculars and it was found that she was in the last stages of nesting. She completed her nesting and began to move back to the sea at 2120 h and she was safely captured at 2136 h. A Telonics TGW-4\*7\* Iridium GPS satellite tag was safely and securely attached to the second central scute. Once the polyester resin had solidified and was deemed secure, the turtle was released from the plywood enclosure at 2242 h and she made her way safely back to the ocean. This turtle was named Vonu e Rao (Table 1).

During the time we were waiting for Vonu e Rao to complete nesting, we observed Vatu Mau (our second turtle (Table 1)) leaving the beach about 150 meters west of where we found Vonu e Rao. She had apparently been nesting because she departed Moso Island the next day and headed toward her forage grounds in New Caledonia.

We had observed some significant changes in the beach topography and nearby coastal forests since our last visit to this area in January 2023. There had been a number of cyclones that had impacted this area as outlined below. TC Lola made landfall on Pentecost island on October 25th, 2023 with sustained wind speeds of 215 km/h. TC Irene came close to Efate on January 18, 2023 with wind speeds of 102 km/h with gusts to 120 km/h. TC Kevin and Judy (both -Cat 4) produced destructive-hurricane force winds of 150 km/h with peak gusts up to 220 km/h that directly affected Efate and Moso islands. The impacts we observed included that the storms had thrown up coral stones and boulders over the beaches, eroded the upper beaches into steep berms that were, in some areas, too steep for turtles to surmount them to obtain access to the coastal forest where they normally nest. In addition, the coastal forest was transformed into a tangled maze of fallen trees, vines and branches that potentially made it difficult for turtles to navigate their nesting area to find a suitable site to excavate a nest. Our colleagues from Moso Island that were assisting us reported that this has led to the death of some turtles in the past that get caught amongst the tangled vegetation when attempting to nest and can't free themselves.

We also encountered people from nearby villages camping on the turtle nesting beaches as we had encountered in other years. Due to the bright lights, fires and noise found on these beaches, often with spearfishermen in the water with bright torches, these beaches are likely not available for the turtles to safely use for nesting purposes.

Table 1. Post-nesting hawksbill turtles captured from January 7 to 11, 2024 and outfitted with Telonics TGW-4\*7\* Iridium GPS satellite tag and, where needed, metal flipped tags.

Turtle number/ Name	Date	CAPTURE TIME	RELEASE TIME	Capture/Release Lat/Long	CCL (cm)	CCW (cm)	LFL TAG	RFL TAG	Telonics tag number	Tissue Sample
33/Bule Lapa	1/7/2024	2125	2345	-17.522599°/ 68.237859°	90	-	R56296	R56295	742633A	Right Shoulder
32/Vatu Mau	1/9/2024	0415	0520	-17.523480°/ 168.236822°	92	77	R31530	R31531	742632A	Right Shoulder
87/Vonu e Rao	1/11/2024	2136	2242	-17.522642°/ 168.237739°	94	78.1	R56301	R56302	734087A	Left Shoulder

Figure 1. Telonics TGW-4\*7\* Iridium GPS satellite tag securely attached to the carapace of Bule Lapa on 1/7/2024.



Figure 2. Vatu Mau, carrying a Telonics TGW-4\*7\* Iridium GPS satellite tag makes her way back to the ocean.



Figure 3. Vonu e Roa with a Telonics TGW-4\*7\* Iridium GPS satellite tag firmly attached to her second central scute is ready for release at 2242 on 1/11/2024.

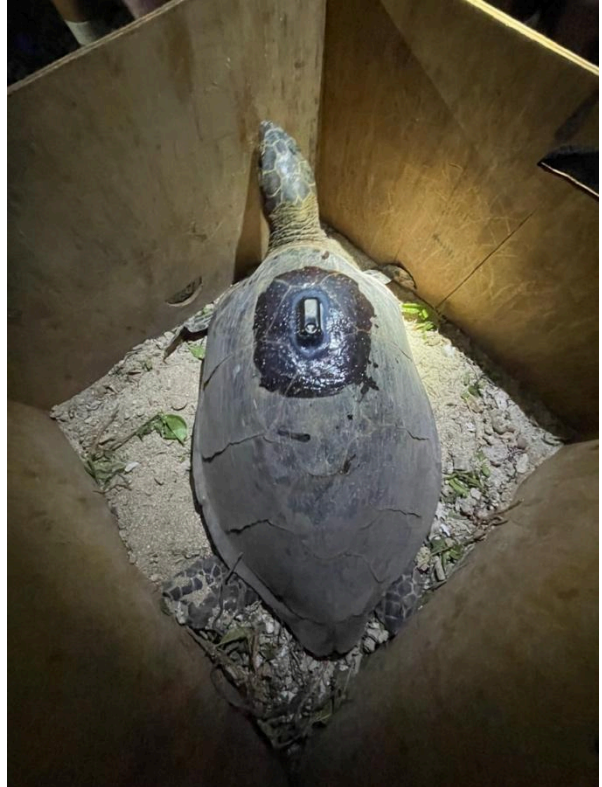


Figure 4. Facial images of three post-nesting hawksbills that were satellite tagged.

Left side of face

Right side of face

Bule Lapa (33)



Vatu Mau (32)



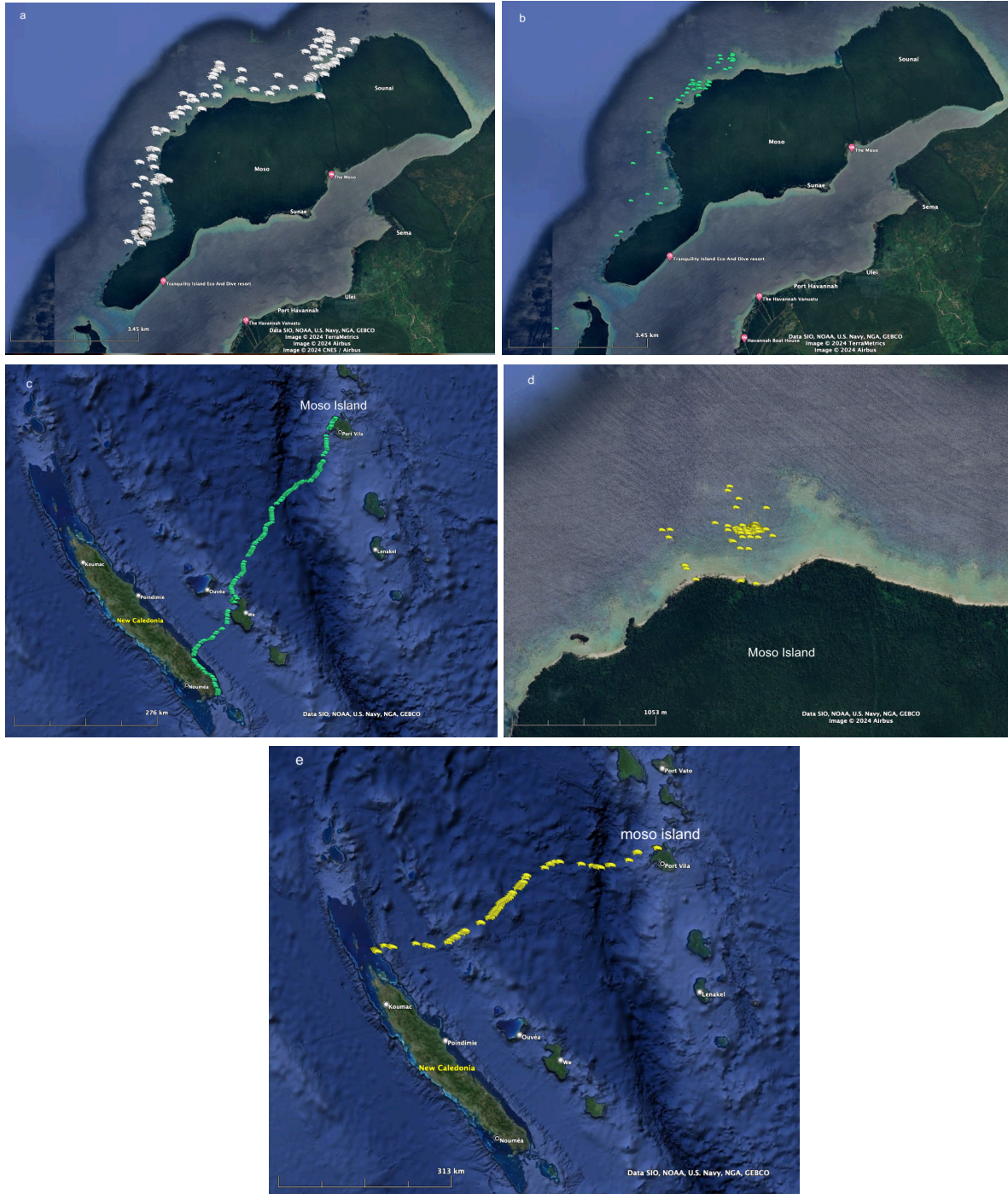
Vonu e Rao (87)



## Turtle Location Status as of February 6, 2024

As of 2/6/2024 all three hawksbills are transmitting accurate positions. Vatu Mau is still in the vicinity of the nesting beaches while Bule Lapa and Vonu e Rao have headed back to their forage grounds.

Figure 3 a-d. Trajectories of Vatu Mau (3a), Bule Lapa (3b, 3c) and Vonu e Rao (3d, 3e) as of 2/6/2024.



## **Acknowledgements**

Our great appreciation to Vanuatu's Department of Environmental Protection and Conservation for facilitating our research permit. In addition, Owen Drew, owner of Tranquility Resort, who was very helpful with organizing the logistics surrounding our research work and accommodations. Again, our work would not have been possible without assistance from Moso Islanders Paul Kalsef, George Kaltaupei, Keith Reviso Valia, Timothy Kalsef, Redly Kalsef and a special thanks to Chief Marimelu and Chief Alikau who kindly provided us access to the nesting beaches.