



**BLUE
PROSPERITY
VANUATU**

Ocean Use Survey Emau Pilot Report

January 2026



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Figure 1: Pilot OUS interview, Emau Island, December 2025, photo © Brooke Dixon

1 ACRONYMS

BPC: Blue Prosperity Coalition

BPV: Blue Prosperity Vanuatu

MFOMA: Ministry of Fisheries, Oceans, and Maritime Affairs

UCSB: University of California, Santa Barbara

OUS: Ocean Use Survey

2 ACKNOWLEDGEMENTS

The pilot Blue Prosperity Vanuatu Ocean Use Survey would not have been possible without the guidance and participation of the **Chiefs and communities of Emau Island** and the leadership of the Government of Vanuatu through the Department of Ocean and Maritime Affairs. This report was prepared by Brooke Dixon (The Waitt Institute) and Peter Menzies (SeaSketch) in collaboration with the MFOMA and BPV teams.

Chief and Community of Emau

We thank the Paramount Chiefs and the People of Emau Island for allowing the pilot to be undertaken throughout all of Emau Island, including the six villages and their hospitality to ensure the pilot project was completed successfully.

The Vanuatu Ministry of Fisheries, Oceans, and Maritime Affairs (MFOMA) is the Government of Vanuatu's lead agency responsible for driving integrated ocean governance and sustainable marine development. Its mandate covers the oversight and coordination of marine activities and broader ocean management, ensuring that marine resources are protected while supporting national development. MFOMA works to strengthen governance and institutional coordination, improve policy implementation and compliance, and advance initiatives that increase revenue, enhance food security, expand production and market access, and promote long-term sustainable use of Vanuatu's ocean and coastal resources.



Blue Prosperity Vanuatu is a partnership between the Government of Vanuatu and the Waitt Institute to strengthen sustainable ocean management and support a healthy ocean, thriving communities, and a brighter future for the people of Vanuatu. The program will support the National Ocean Policy, 100% sustainable ocean management, and full protection of 30% of Vanuatu's marine waters.



The Waitt Institute is a non-profit that partners with committed governments and local communities to create and implement sustainable ocean plans to benefit people, the economy, and the environment. The Waitt Institute brings a team of technical experts to help facilitate the policymaking process and capacity building for effective implementation and long-term success through expertise, funding, and tools focusing on marine spatial planning, blue economy, and sustainable fisheries. The Waitt Institute is the founding member and organizing body of the Blue Prosperity Coalition, which currently has Blue Prosperity partnerships with the Azores, Bermuda, the Federated States of Micronesia, Fiji, Samoa, Tonga, and Vanuatu.



SeaSketch is an open-source mapping platform designed to enable participatory marine spatial planning processes and developed by the McClintock Lab at the University of California Santa Barbara's National Center for Ecological Analysis and Synthesis. SeaSketch provides ocean planners, stakeholders, and the public with a tool that can be used to synthesize complex data and generate detailed reports to inform marine management decisions.



3 EXECUTIVE SUMMARY

Blue Prosperity Vanuatu (BPV) is a partnership between the Government of Vanuatu and the Waitt Institute to strengthen sustainable ocean management in alignment with the National Ocean Policy and advance 100% sustainable ocean management, and achieve full protection of at least 30% of the nation’s marine waters.

The Ocean Use Survey is one tool utilized globally by Blue Prosperity programs to understand how communities use and value the ocean. The survey has helped gather local knowledge about where ocean activities take place and why these areas are important. This information supports decision-makers in developing ocean management strategies that reflect the needs and priorities of communities.

In December 2025, an Ocean Use Survey was piloted in Emau Island in North Efate. Emau Island was selected because many residents depend on the ocean for their food security and livelihoods. Before planning for the pilot study, consultations were held with the six paramount chiefs and representatives of Emau Island to seek approval in implementing the pilot in Emau’s six villages.

A total of 102 interviews, representing 403 individuals, were completed during the pilot. Participants mapped 463 locations, showing different ocean uses and values around Emau Island. Fishing was the most commonly mapped activity, with 125 locations identified, followed by mining activity, with 122 locations mapped.

The results of the pilot show how the people of Emau Island use and value their ocean and marine resources. These data establish an important baseline to support future ocean management and marine spatial planning efforts in Emau Island and provide guidance that can be applied more broadly across Vanuatu. By grounding decision-making in accurate, place-based information, the Ocean Use Survey supports the implementation of the Ocean Act, which recognizes the responsibility of communities to manage their inshore reef areas and the adjacent 100-meters zone.

Figure 2: Pilot OUS launch event, Emau Island, December 2025, photo © Ellian Bangtor



4 INTRODUCTION

4.1 Ocean Use Survey

The Ocean Use Survey is a tool that helps understand how people use and value the ocean. It is used in many parts of the world to support ocean planning and management by working directly with ocean users to collect information about which areas are most important to them and where different activities take place (Figure 1). The survey provides important information so that decisions about ocean management are made using data on how the ocean is currently being used and valued.

The Ocean Use Survey has been applied at different scales in other countries and regions. National-level surveys were completed in the Maldives and the Azores in 2022, and state-wide surveys have been carried out in Kosrae (2022) and Yap (2025) in the Federated States of Micronesia. A pilot study was also completed in Vanua Navakavu in Rewa Province, Fiji, in 2024. These applications demonstrate that the survey can be adapted to different cultural and geographic contexts, including island nations and coastal communities similar to Vanuatu.

The survey is carried out using a participatory mapping tool called [SeaSketch](#), developed at the University of California, Santa Barbara (UCSB). Participants identify the ocean activities they are involved in, draw the areas they use on a map, and indicate how important each area is to them (Figure 3). Areas drawn by respondents are summarized within different activities by producing heatmaps where higher values indicate places of higher importance. These maps help decision-makers see where different uses overlap and support planning that balances environmental protection with food security, livelihoods, customary practices, and recreation.

Figure 3: Pilot OUS interview, Emau Island, December 2025, photo © Brooke Dixon



5 METHODOLOGY

5.1 Planning

The Blue Prosperity Vanuatu Ocean Use Survey questionnaire and pilot implementation plan were developed collaboratively by the Department of Ocean and Maritime Affairs and the Blue Prosperity Vanuatu team and included feedback from representatives within the Ministries of Fisheries, Ocean, and Maritime Affairs, Tourism, Climate Change, and Planning, the Cultural Centre and the Bureau of Statistics.

In December 2025, a locally-based team of enumerators piloted the Ocean Use Survey in Emau Island in North Efate. Emau Island was selected because many residents depend on the ocean for their livelihoods. Before planning for the pilot study began, consultations were held with village leaders to seek approval to carry out the pilot in Emau's six villages.

5.1.1 Stakeholder Sectors

Ocean-based activities in Vanuatu were broadly categorized into nine key stakeholder sectors for respondents to select from when completing the survey:

1. Aquaculture and Mariculture
2. Cultural Use
3. Development and Infrastructure
4. Fishing
5. Maritime Transportation
6. Mining
7. Recreation and Tourism
8. Research and Conservation
9. Waste Management

5.1.2 Survey Targets

To yield high resolution maps suitable for coastal planning at the community and sector level, a 90% confidence interval and a 10% margin of error were used to calculate statistically rigorous survey targets (Table 1) based on best available population data provided by the Vanuatu Bureau of Statistics. The following sample size formula was used to calculate targets:

$$\text{Sample size} = (z^2 \times p(1 - p) / e^2) \div [1 + (z^2 \times p(1 - p) / (e^2 \times N))]$$

where N is the population size, e is the margin of error (0.10), and z is the z-score (1.65) which correlates with the desired confidence interval (0.9).

Table 1: Survey Targets

Region (District)	Villages	Population	Target
Emau	Lausake	78	37
	Mangarongo	123	44
	Mapua	90	39
	Marou	266	55
	Ngurua	61	33
	Wiana	119	44
Total		737	253

5.1.3 Survey Design

To participate in the Ocean Use Survey, respondents were required to provide their name, location of primary residence, identify which sector(s) they represented, and provide spatial data on areas they find important. Respondents were asked to assign a quantitative value for each shape drawn in a single sector via a sliding scale with “Low” representing least valuable areas and “High” representing most valuable areas. Group responses, where multiple individuals contributed to or were reflected in a single response, were accepted.

5.2 Implementation

5.2.1 Enumerator Training

A team of six locally-based enumerators participated in a two-day standardized training program to moderate the survey for respondents in Emau Island (Figure 4). Training, which is administered by OUS leadership, includes question comprehension, interview techniques, and error prevention strategies, as well as a comprehensive orientation to the BPV program. Standardized training of the enumeration team is an essential component of OUS implementation as it contributes to the consistency and accuracy of information administered to a respondent as well as the objectivity and credibility of the survey results.

5.2.2 Data Collection

Data collection for the Blue Prosperity Vanuatu pilot Ocean Use Survey was conducted by a locally-based enumeration team from 10-11 December 2025.

Survey responses were directly entered into the offline tool by survey enumerators or respondents. Individual and group responses were accepted, and respondents were permitted to record their use in multiple sectors.

Enumerators used simple random and judgmental sampling methods to achieve established population-based targets in Emau Island villages.

5.3 Analytics and Review

5.3.1 Analytics

Ocean Use Survey data are visually represented in the form of heatmaps, which use color to represent different values identified by respondents. The general steps of heatmap production involved aggregation of respondents' used areas and the application of spatial weighting based on respondents' assignment of value (Yates & Schoeman, 2013). Heatmaps were produced by the McClintock Lab at UCSB for each key stakeholder sector.

5.3.2 Review

In January 2026, the MFOMA and BPV team returned to Emau Island, where the results of the pilot Ocean Use Survey were shared and discussed with the Emau Council of Chiefs, the Area Administrator, and the Area Secretary at the Ngurua village nakamal (Figure 10). Chiefs noted that the OUS heatmaps highlighted new and relevant information, such as locations used for waste disposal, and most importantly, enabled the Council to view all activities together in a single map. This helped improve a collective understanding of areas of high use within the island's inshore waters. The Chiefs of Emau unanimously agreed that the survey results will support more informed decision-making in the future.

Figure 4: Pilot OUS Enumerator Training, Port Vila, December 2025, photo © Ellian Bangtor



6 RESULTS

A total of 102 responses, representing 403 individuals, were submitted during the pilot. Participants drew 463 shapes showing different ocean uses and values around Emau Island.

- “Responses” indicates the collective number of interviews conducted and responses submitted.
- “Individuals represented” indicates the cumulative number of people represented, including those reflected through group responses who may or may not have been present during the interview.
- “Shapes drawn” indicates locations mapped by participants in the SeaSketch mapping tool.

Data collected during the pilot Blue Prosperity Vanuatu Ocean Use Survey are summarized below.

6.1 Group Responses

- Total group responses (more than one person represented): 63
- Average group size: 6 people
- Largest group surveyed: 17 people

Figure 5: Pilot OUS group interview, Emau Island, December 2025, photo © Brooke Dixon



6.2 Participation by Village

On 11 December 2025, following an event marking the launch of the Ocean Use Survey, enumerators commenced interviews in the village of Wiana, where the event was held. The team then traveled to Marou to conduct interviews with residents and stayed overnight. On 12 December, the enumeration team split into two groups: one group conducted interviews in Mangarongo and Mapua, while the other worked in Lausake and Ngurua.

Approximately equal time was spent conducting interviews in each village. Participation levels were generally consistent across villages (Table 2), and the survey achieved its statistical population-based target in all villages except Wiana. Despite efforts to reach the target in Wiana, the number of residents available for interviews was lower than expected, which is likely due to overrepresentation of population size in the most recent census, or that residents may have moved to Takara village in Efate Island.

Table 2: Responses and individuals represented by residence

Region (District)	Villages	Population	Target (Individuals)	Responses	Individuals Represented
Emau	Lausake	78	37	14	61
	Mangarongo	123	44	13	69
	Mapua	90	39	13	57
	Marou	266	55	24	110
	Ngurua	61	33	18	76
	Wiana	119	44	20	30
Total		737	253	102	403

Figure 6: Pilot OUS interview, Emau Island, December 2025, photo © Ellian Bangtor

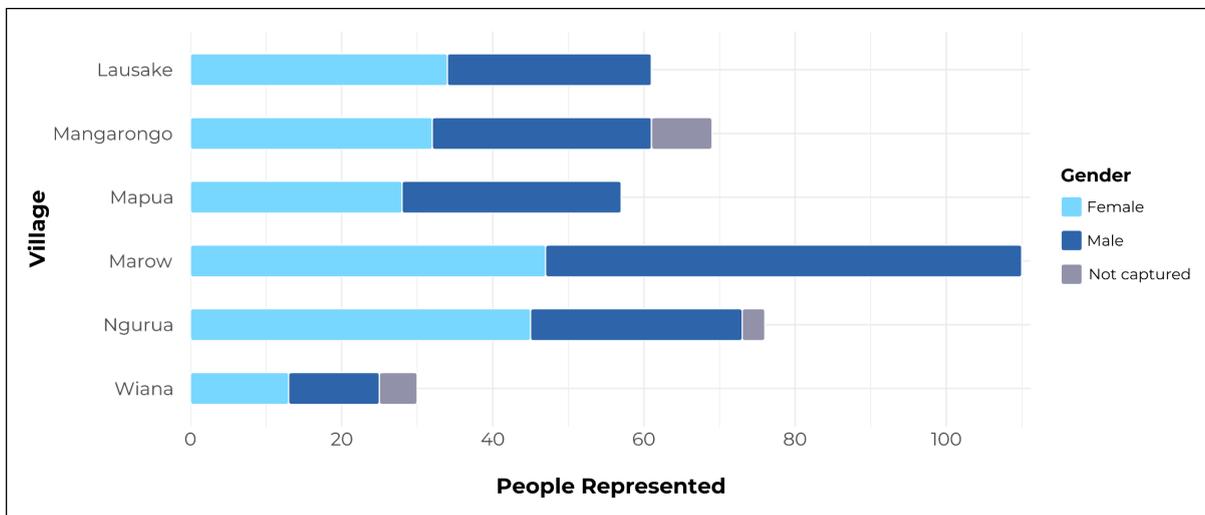


6.3 Respondent Demographics

Participants were asked to provide age range, gender, and ethnicity for all individuals represented in their responses; however, providing this information was optional. Demographic data were captured for the majority of individuals represented in the survey, with age range identified for 95% and gender and ethnicity for 96% of individuals reflected in the pilot Ocean Use Survey.

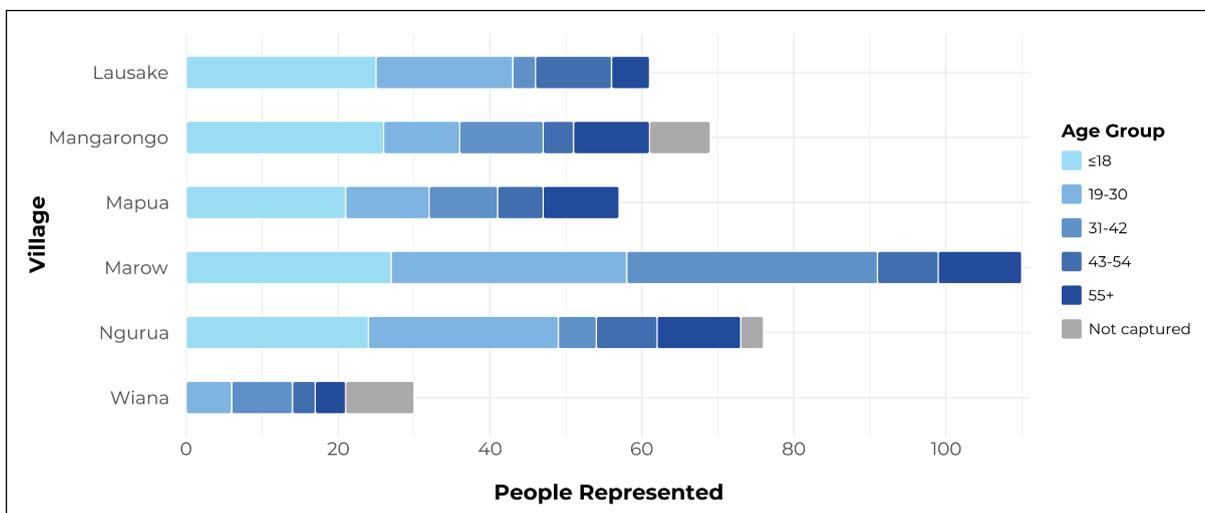
Overall, women accounted for slightly more of the total identified gender representation, comprising 49% of individuals represented in the survey. The gender of the interview respondent was also recorded separately, with 51% of respondents who reported their gender identifying as male. No single village showed a strong skew toward one gender, suggesting that participation across Emau Island was broadly balanced and the survey captured perspectives from both women and men in each community (Figure 7).

Figure 7: Gender representation by village



Most individuals whose age range was identified fell within the under-18 age category (123 individuals), followed by the 19–30 age range (101 individuals). The 43–54 age range was the least represented in the survey (Figure 8).

Figure 8: Age range representation by village



6.4 Participation by Sector

Responses were collected across all nine ocean-use sectors during the pilot on Emau Island. Participants were able to map activities in multiple sectors and, when responding on behalf of a group, were asked to indicate how many individuals were represented in each sector. This information is presented in the “individuals represented by sector” column in Table 3. To avoid double counting individuals across sectors, group respondents also recorded a single total number of individuals represented, which was used to assess survey targets and report overall participation.

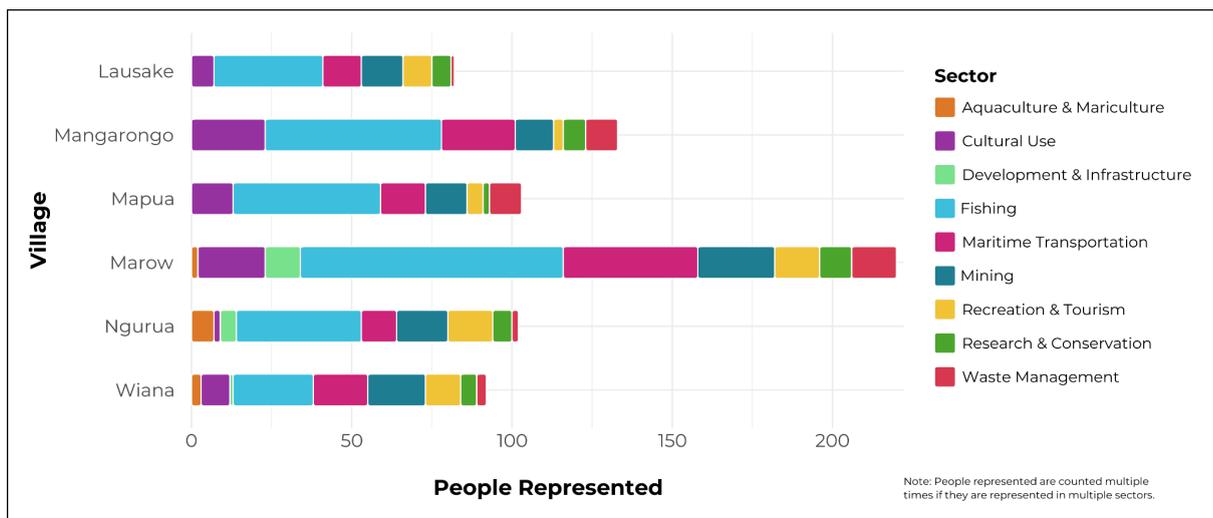
Nearly all responses (99%) included fishing as an ocean-use sector. Sand and limestone extraction (mining) was also widely represented, with 94% of responses including this activity, while 55% of responses included recreation and tourism.

Table 3: Representation and Shapes Drawn by Sector

Sector	Sector Responses	Individuals Represented	Shapes Drawn
Aquaculture and Mariculture	7	12	7
Cultural Use	17	75	26
Development and Infrastructure	4	17	3
Fishing	101	281	125
Maritime Transportation	44	119	64
Mining	96	96	122
Recreation and Tourism	56	56	66
Research and Conservation	36	36	41
Waste Management	9	40	9

Sectors mapped (Figure 9) were generally consistent across villages. Fishing was the most frequently mapped sector in each village, reflecting its importance to livelihoods throughout Emau Island. Responses related to sand and limestone extraction and maritime transportation were also proportionally similar across villages, indicating broadly comparable patterns of ocean use among communities.

Figure 9: People and sectors represented by village



6.5 Heatmaps

Heatmaps which summarize survey responses collected during the pilot Ocean Use Survey in Emau Island in each sector of ocean use with 5 or more responses are shown below.

Figure 10: BPV Country Manager Jeremie Kaltavara presenting OUS results to the Emau Council of Chiefs, Emau Island, January 2026, photo © Ellian Bangtor

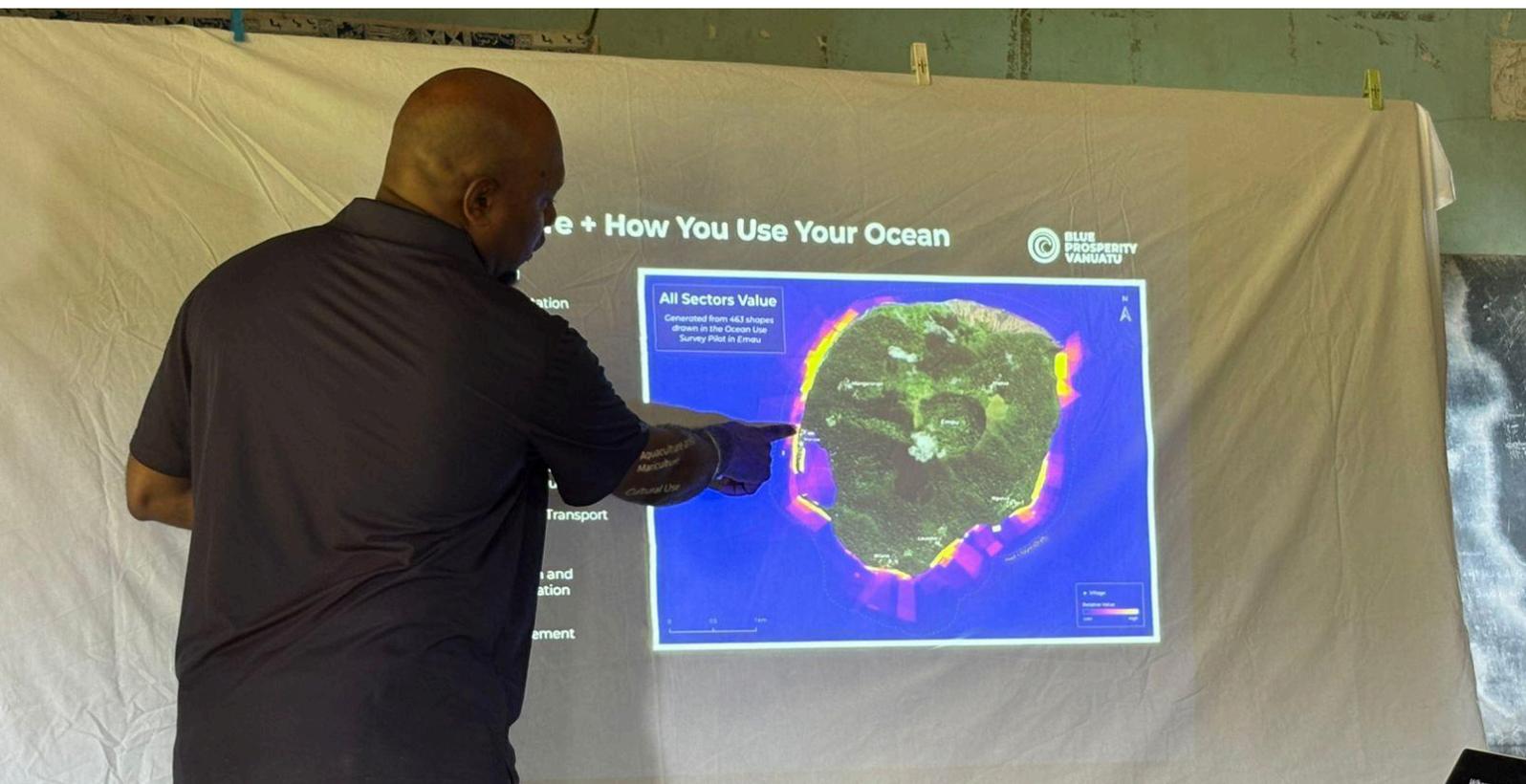


Figure 11: Aquaculture and Mariculture Heatmap

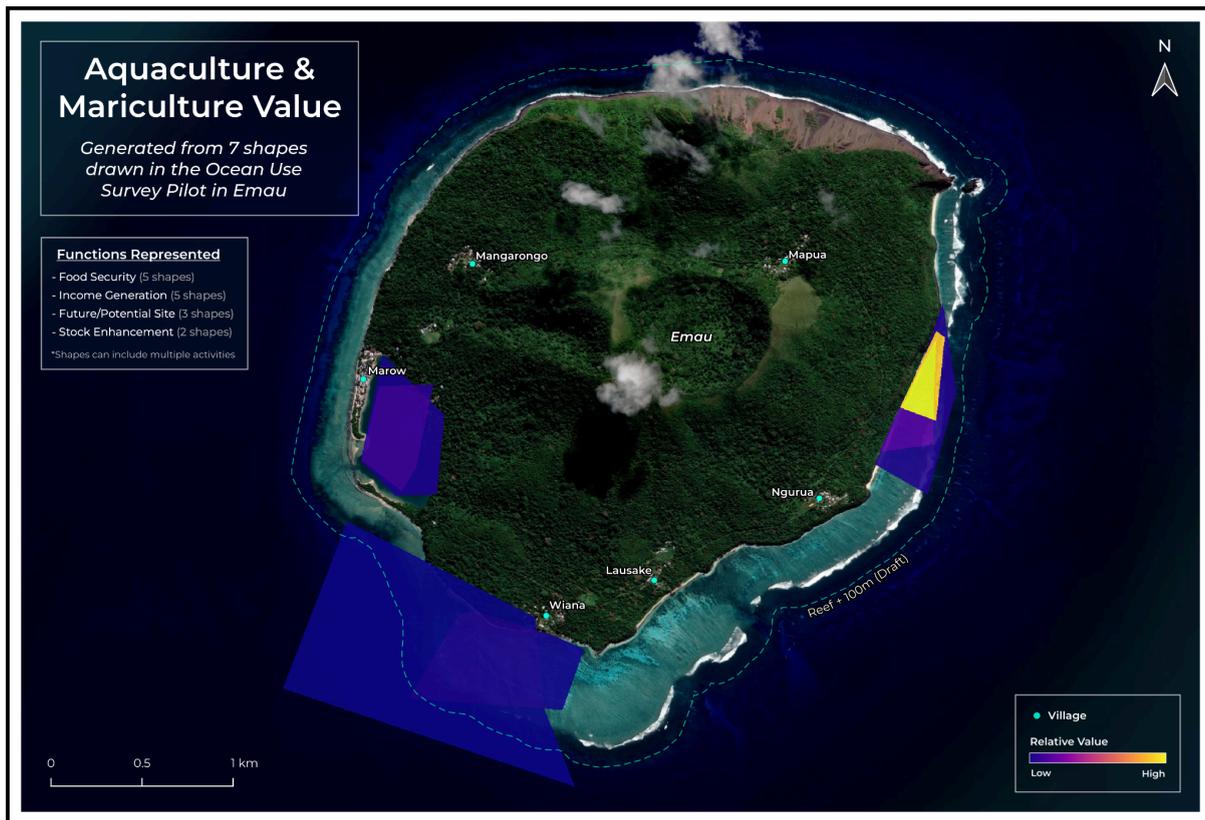


Figure 12: Cultural Use Heatmap

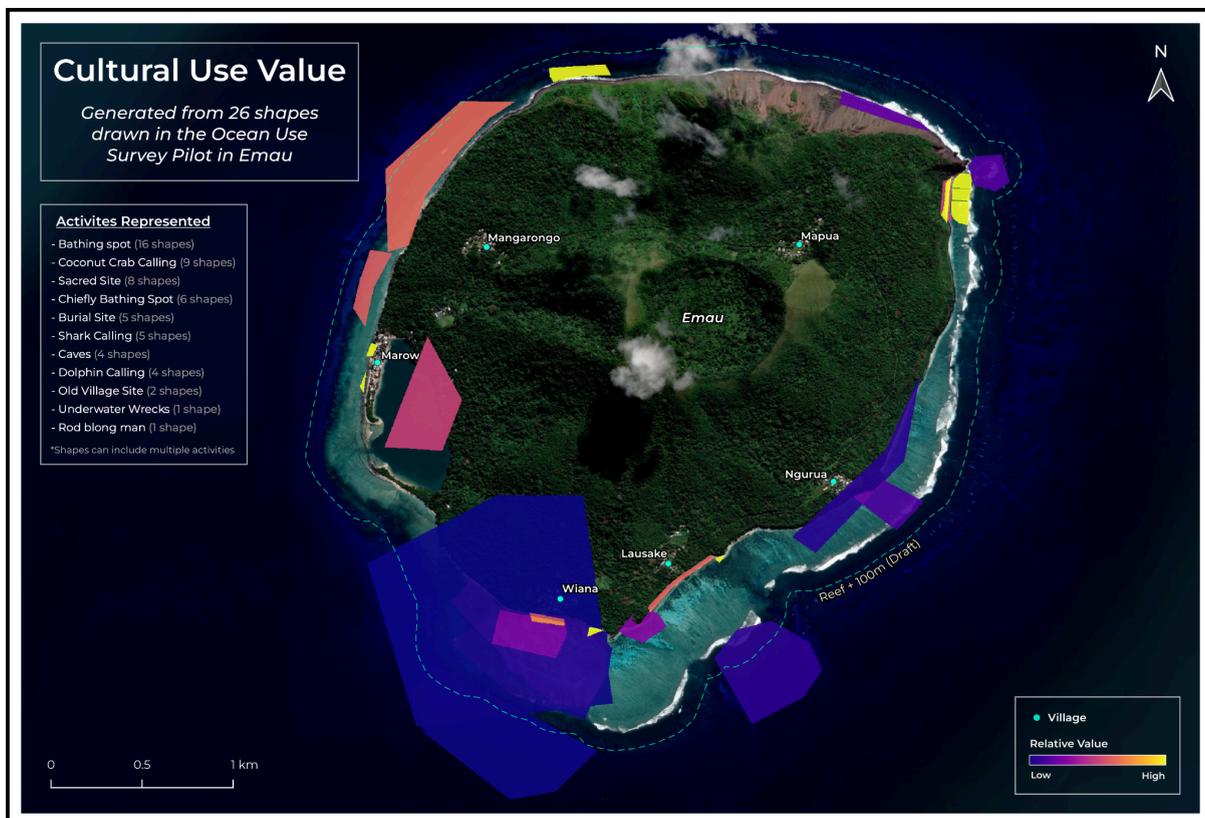


Figure 13: Fishing Heatmap

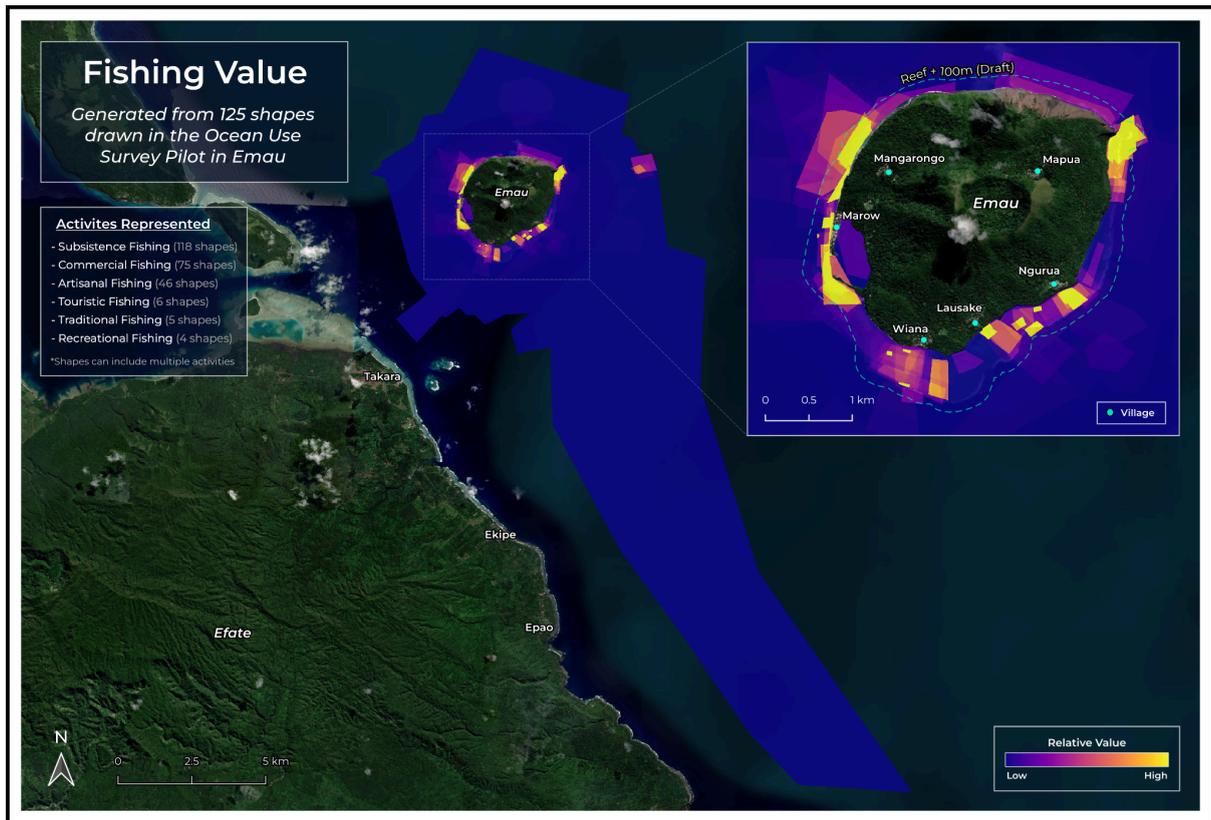


Figure 14: Subsistence Fishing Heatmap

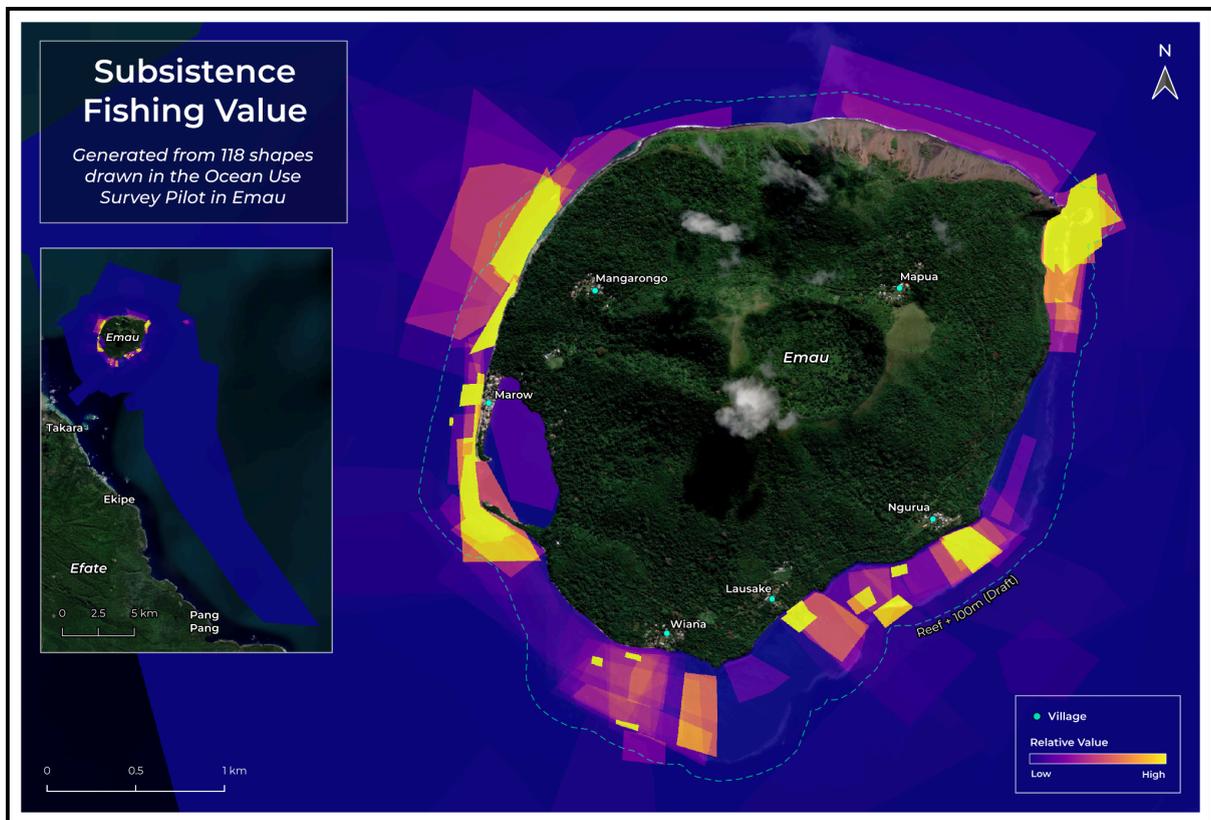


Figure 15: Commercial Fishing Heatmap

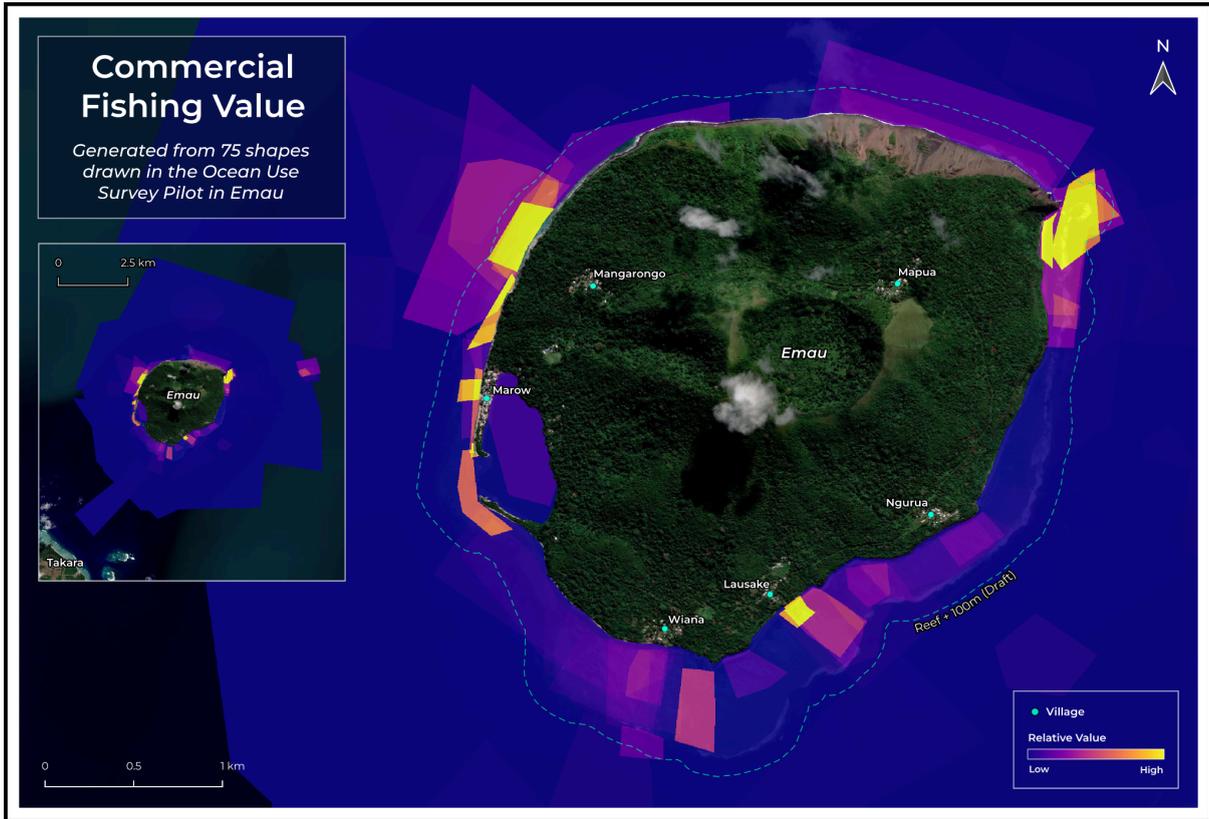


Figure 16: Maritime Transportation Heatmap

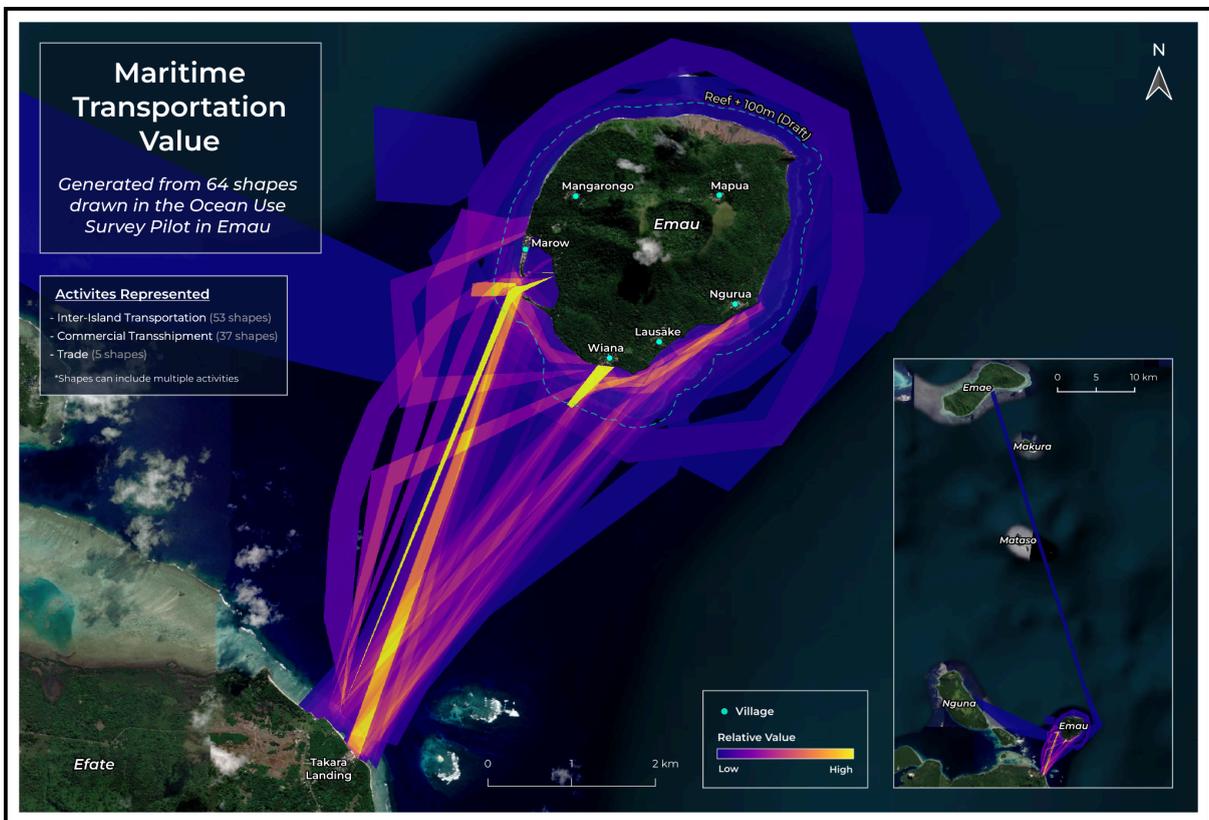
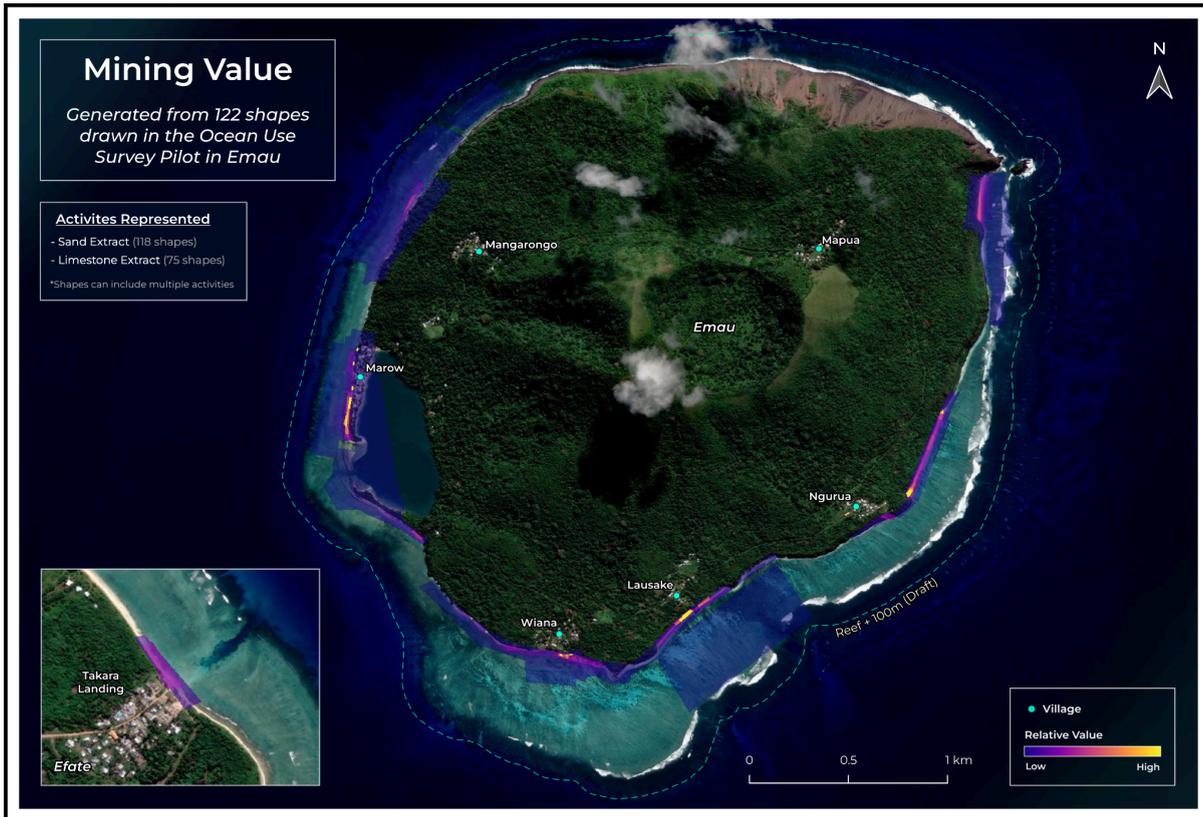


Figure 17: Mining Heatmap*



*The opacity in this map was increased to reduce the intensity of single respondent shapes

Figure 18: Recreation and Tourism Heatmap

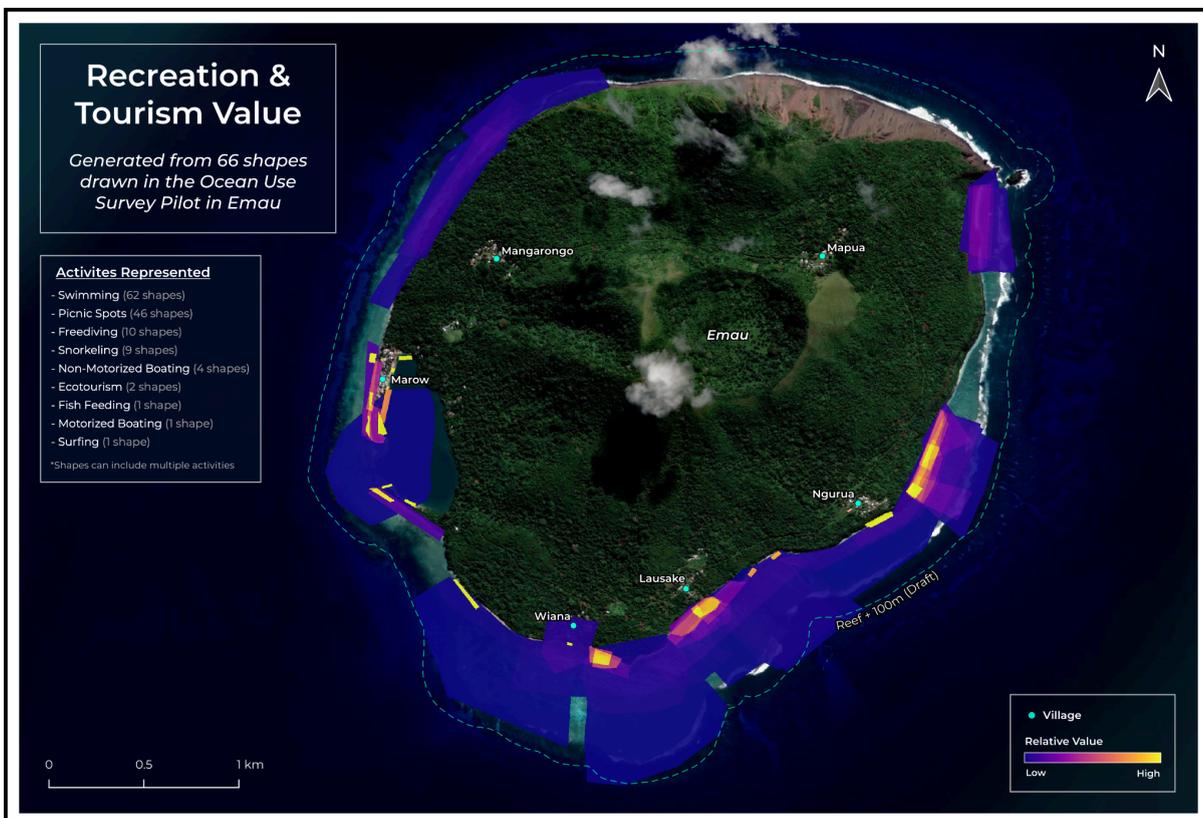


Figure 19: Research and Conservation Heatmap

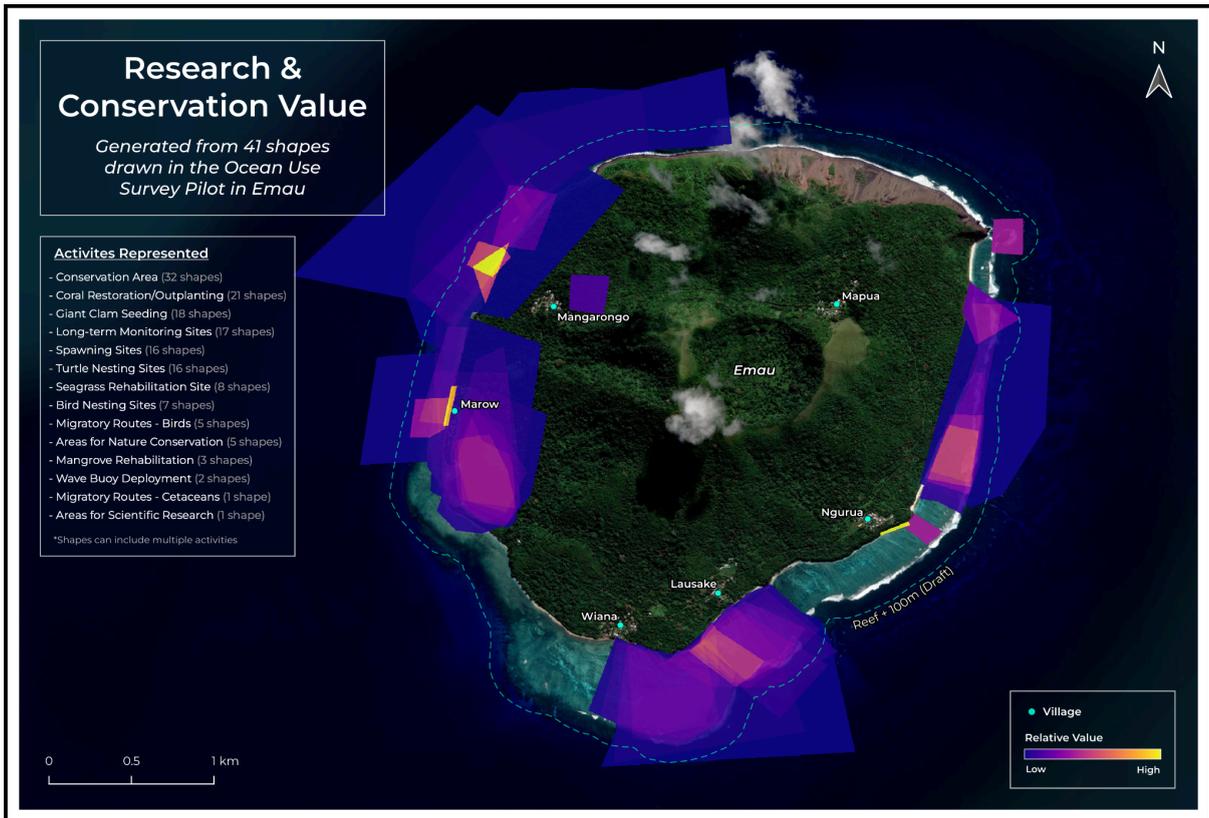
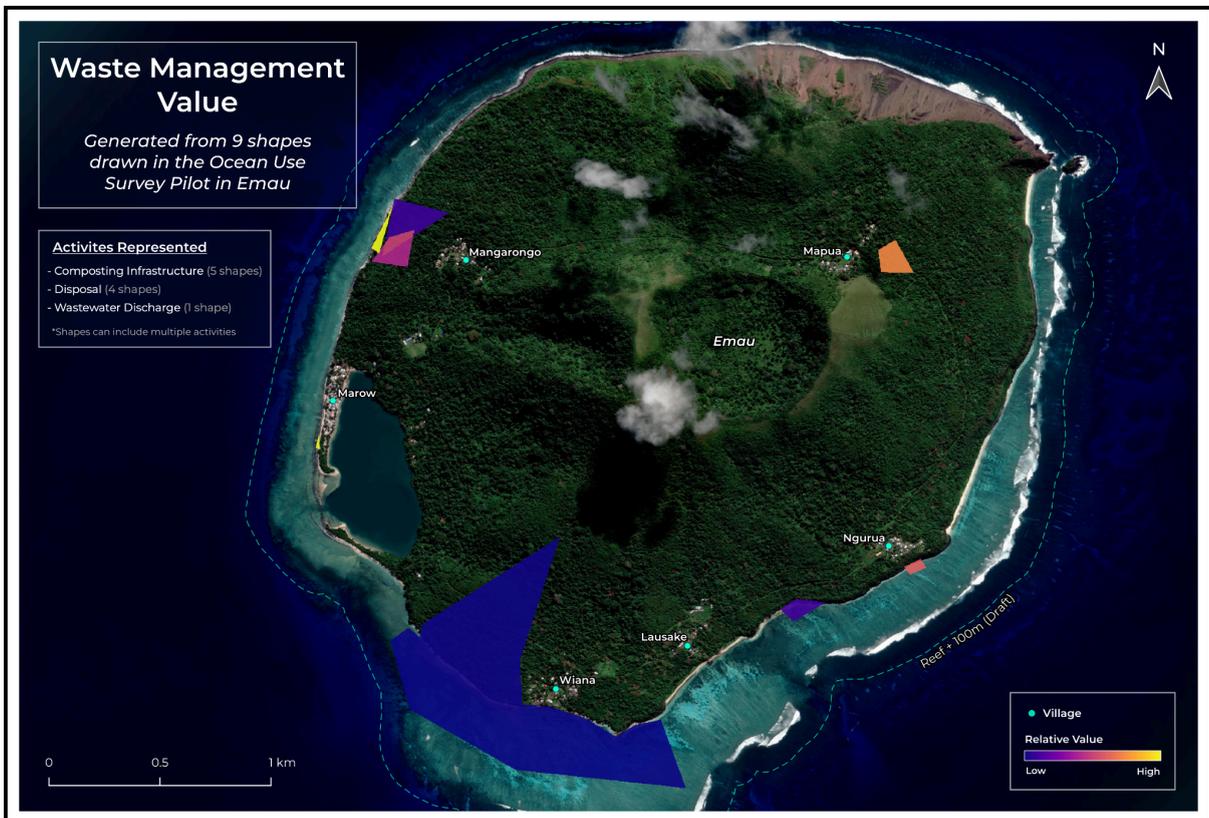


Figure 20: Waste Management Heatmap



7 CONCLUSION

The pilot Ocean Use Survey conducted on Emau Island demonstrates its effective use as a means to support the inshore Marine Spatial Planning process as part of the implementation of the Ocean Act. The SeaSketch platform is a participatory mapping tool that was adapted to Vanuatu's geographic, cultural, and community context. The pilot successfully generated spatial information that establishes a baseline understanding of where and how the ocean around Emau Island is used and valued. These results provide a strong foundation for balanced and informed ocean management decisions that reflect both local ocean use and community perspectives and support future rollout across Vanuatu.

7.1 Challenges

While the pilot Ocean Use Survey was successfully implemented, several challenges were identified. The standardized training program for enumerators is typically delivered over a full week; however, training was shortened to two days in order to complete the pilot before the holiday period. This limited the amount of time available for practice and familiarity with the survey tools.

In addition, the development of the survey questionnaire was completed under an expedited timeline. As a result, areas requiring further refinement and clarification were identified during implementation, indicating the need for additional review before future deployments.

Another challenge encountered during the pilot was the clarity of the satellite imagery used for offline survey implementation. In some cases, the resolution and visual detail of the imagery made it difficult for participants and enumerators to clearly identify specific coastal features and locations.

7.2 Recommendations

To address the challenges identified during the pilot, the following recommendations are proposed:

- Convene a multi-agency working group to review and refine the Ocean Use Survey questionnaire. This process should clarify definitions of activities and survey components, incorporate feedback from enumerators, and consider suggestions raised by pilot participants.
- Extend the duration of enumerator training to allow more time for practice, discussion, and clarification of survey questions. Additional focus should be placed on addressing potential language barriers to ensure consistent understanding and delivery of the survey.
- Explore options to increase the resolution and clarity of satellite imagery used in the offline SeaSketch tool.
- Use provincially-based teams of enumerators for OUS implementation.
- Increase in-country capacity to support OUS deployment in each province of Vanuatu.

8 Appendix A: OUS Questionnaire

Sector	Initial Prompt	Required prompt(s) for each shape drawn	Optional prompt(s) for each shape drawn
Aquaculture & Mariculture	<p>Use the map to indicate the most valued locations for this sector. You can draw multiple areas and prioritize them individually.</p> <p>Add as many polygons as needed to represent the areas that have value for this activity in this industry, then adjust their relative priority below.</p> <p>This information will be added to all other responses to create a heat map of the assessed areas. [New Shape]</p>	<p>How important is this area? [Low/Average/High Scale Bar]</p> <p>Please indicate which type(s) of aquaculture or mariculture you use or value this space for:</p> <ul style="list-style-type: none"> Corals Green Snails Giant Clams Spider Crab Mussels Mountain Mulletts Mangrove Oysters Milkfish Mud Crabs Pearl Farming Prawn Shrimp Sea Cucumbers Seaweed Tilapia Trochus Other 	<p>Please indicate the aquaculture or mariculture function(s):</p> <ul style="list-style-type: none"> Future/Potential Site Stock Enhancement Food Security Income Generation Other <p>Please indicate the status of this space:</p> <ul style="list-style-type: none"> Active Inactive Interest in Developing
Recreation & Tourism		<p>How important is this area? [Low/Average/High Scale Bar]</p> <p>Which activity or activities do you use or value this space for:</p> <ul style="list-style-type: none"> Motorized Boating Non-Motorized Boating Wildlife Watching Ecotourism Cruise Tourism Freediving Picnic Spots SCUBA Diving Fish Feeding Snorkeling Surfing Swimming Other 	<p>Are there financial benefits derived from tourism in this area? [Yes/No]</p> <p>If this space is used for tourism, please indicate the status of it:</p> <ul style="list-style-type: none"> Active Inactive Interest in Developing

Sector	Initial Prompt	Required prompt(s) for each shape drawn	Optional prompt(s) for each shape drawn
Cultural Use	<p>Use the map to indicate the most valued locations for this sector. You can draw multiple areas and prioritize them individually.</p> <p>Add as many polygons as needed to represent the areas that have value for this activity in this industry, then adjust their relative priority below.</p> <p>This information will be added to all other responses to create a heat map of the assessed areas. [New Shape]</p>	<p>How important is this area? [Low/Average/High Scale Bar]</p> <p>Please indicate which activity or activities you use or value this space for:</p> <ul style="list-style-type: none"> Burial Site Chiefly Bathing Spot Bathing Spot Dolphin Calling Fish Calling First Landing Spot Old Village Site Coconut Crab Calling Site Rod Blong Man Sacred Site Shark Calling Sunken Islands Traditional Voyaging Turtle Calling Sites Underwater Volcano Underwater Springs Underwater Wrecks Caves Other 	
Development & Infrastructure		<p>How important is this area? [Low/Average/High Scale Bar]</p> <p>Please indicate how this space is used for Development and Infrastructure:</p> <ul style="list-style-type: none"> Anchorage Jetty Fish Aggregating Devices Floating Pontoon Sea Wall Shipwreck Dump Site Port Landing Site Other 	Beacon Status: Working/Not Working
Mining		<p>Please indicate mining activities this space is used for</p> <ul style="list-style-type: none"> Limestone Extract Sand Extract Other 	

Sector	Initial Prompt	Required prompt(s) for each shape drawn	Optional prompt(s) for each shape drawn
Research & Conservation	<p>Use the map to indicate the most valued locations for this sector. You can draw multiple areas and prioritize them individually.</p> <p>Add as many polygons as needed to represent the areas that have value for this activity in this industry, then adjust their relative priority below.</p> <p>This information will be added to all other responses to create a heat map of the assessed areas.</p>	<p>Please indicate which activity or activities you use or value this space for:</p> <ul style="list-style-type: none"> Bird Nesting Sites Coral Restoration/Outplanting Giant Clam Seeding Conservation Area (CCA/CBFM/Tabu) Long-term Monitoring Sites Mangrove Rehabilitation Migratory Routes - Birds Migratory Routes - Cetaceans Seagrass Rehabilitation Site Spawning Site Turtle Nesting Site Relevant Areas for Nature Conservation Relevant Areas for Scientific Research Wave Buoy Deployment Other 	
Maritime Transportation	<p>[New Shape]</p>	<p>How important is this area? [Low/Average/High Scale Bar]</p> <p>Please indicate the type(s) of maritime transportation activity you use or value this space for:</p> <ul style="list-style-type: none"> Inter-Island Transportation Commercial Transshipment Trade Other 	<p>Please answer the following questions if you use this space for inter-island transportation:</p> <p>Registration Status: Registered/Unregistered</p> <p>Vessel Type: Motorized/Non-Motorized</p> <p>Engine Size: 5-10hp/15-40hp/50-110hp/110+hp</p>
Waste Management	<p>[New Shape]</p>	<p>How important is this area? [Low/Average/High Scale Bar]</p> <p>Please indicate the type(s) of waste management activity you use or value this space for:</p> <ul style="list-style-type: none"> Disposal Composting Infrastructure Wastewater discharge 	<p>Please indicate the methods of disposal used here</p> <ul style="list-style-type: none"> Bury Burn Compost Community Dump Site Recycle

Sector	Initial Prompt	Required prompt(s) for each shape drawn	Optional prompt(s) for each shape drawn
Fishing	<p>Use the map to indicate the most valued locations for this sector. You can draw multiple areas and prioritize them individually.</p> <p>Add as many polygons as needed to represent the areas that have value for this activity in this industry, then adjust their relative priority below.</p> <p>This information will be added to all other responses to create a heat map of the assessed areas. [New Shape]</p>	<p>How important is this area? [Low/Average/High Scale Bar]</p> <p>Please indicate the subsector(s) of fishing you use and value this space for: Artisanal Aquarium Commercial Recreational Subsistence Touristic Traditional</p> <p>Please indicate the method of fishing you do here: Big Game Bottom Longline Deep Sea Dropline Drifting Longline Gill Nets Gleaning (hand collecting) Handline Traditional - Fish Poisons (i.e., herbs, vines, fruits) Pole and Line Spear Traditional Fish Drive Traps Trolling Underwater Breathing Apparatus Other</p>	<p>Please indicate the species you fish for here: Fish Barracuda Emperor Goatfish Grouper Grunts Jack/Trevally Mackerels Marlin Mulletts Parrotfish Rabbitfish Rays Sharks Snapper Surgeonfish Tuna Turtles Other Invertebrates Black-Lip Pearl Oyster Cephalopods Coconut Crabs Giant Clam Lobsters Mangrove Crabs Prawns Sea Cucumber Sea Urchin Trochus Other Aquarium Fiji devil/South-seas Demoiselle Angelfish Butterflyfish Anthias Anenomefish Triggerfish Surgeonfish Coris Other Aquatic Plants Sea Grapes Seaweed Other</p> <p>Month(s) of the year you fish in this space January/February/March/April/ May/June/July/August/ September/October/ November/December</p>

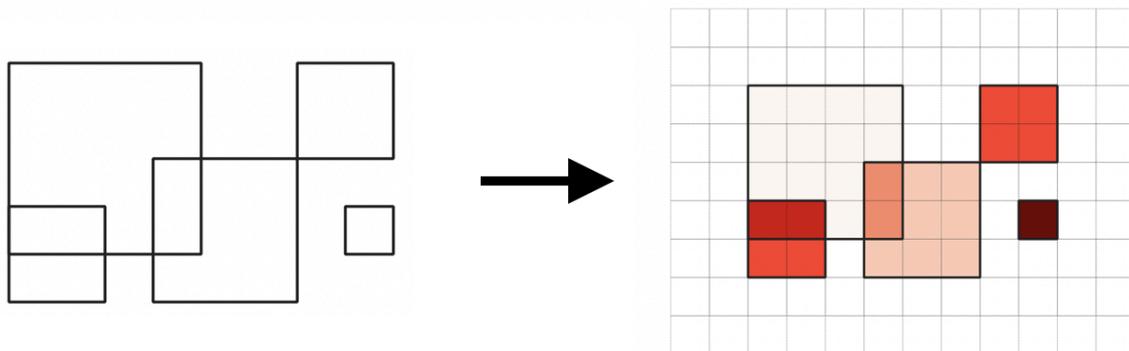
9 Appendix B: Heatmap Methodology

The heatmaps which summarize responses for each sector of ocean use are created using the Spatial Access Priority Mapping (SAPM) method proposed by Yates and Shoeman¹. SAPM entails weighting locations of value based on “importance” and area. During the survey process, each respondent assigns importance, a relative value between 1 and 100, to each shape they draw on the map. Respondents have 100 points of importance to allocate among their shapes for a particular sector. Area is calculated after land is clipped from all shapes (any shapes located entirely on land are not included in heatmaps).

The ultimate “value” of each shape is calculated by multiplying importance by the number of individuals represented by the response, and then dividing that product by the shape's area in square kilometers. In dividing by area, this approach attributes greater weight to smaller shapes—this is based on the rationale that the smaller an area of value is, the greater the loss of that space would be per unit area. Calculating the value of a given shape is summarized by the following equation.

$$value = \frac{individuals\ represented * importance}{area\ (km^2)}$$

The shapes from all responses within a sector are rasterized, burning in each shape's calculated value to overlapping pixels. All rasters are then summed to create a final aggregate heatmap. The pixel values of the resulting heatmap represent relative value in the associated ocean use sector. This general process is illustrated below.



¹ Yates KL, Shoeman DS (2013) Spatial Access Priority Mapping (SAPM) with Fishers: A Quantitative GIS Method for Participatory Planning. PLoS ONE 8(7): e68424. doi:10.1371/journal.pone.0068424

Figure 21: MFOMA and BPV teams meeting with the Emau Council of Chiefs, January 2027, photo © Ellian Bangtor

