

2023 Blue Prosperity Fiji Ocean Science Expedition Preliminary Report



**BLUE
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FIJI**

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FOREWORD

I am honored to be the Co-Primary Investigator for the 2023 Blue Prosperity Fiji (BPF) Ocean Science Expedition. It gives me great pleasure to present this Blue Prosperity Fiji Preliminary Science Report which summarizes what was accomplished during the largest nationwide assessment of Fiji's coral reefs to date.

As Fijians, only we know what is best for our ocean. With this in mind, community consultations are at the heart of BPF's work. Community-based initiatives have been managing our important marine resources for many generations, such as the sustainable use of the qoliqoli, or customary fishing rights areas. These long-standing traditional management systems developed by local communities ensure rights, order, responsibility, and equity in support of long-term economic and environmental stability, secure livelihoods, and healthy and productive ocean ecosystems. Fiji's community members are the custodians of the coastal fishing grounds and keepers of the indigenous knowledge and practices, and our knowledge is integral to the success of BPF's mission.

One of the major goals of this BPF Expedition was to provide local communities with a comprehensive, up-to-date status report on the health of our ocean and its resources, which are crucial for our survival and our livelihoods. Ahead of the expedition's commencement, more than 100 qoliqoli owners were consulted using traditional processes. Every single customary fishing grounds owner offered their blessings for the expedition, recognizing the importance of integrating modern science with traditional knowledge.

In addition to scientific data, BPF has gathered historic, customary, social and cultural data to provide insight into the existing conditions of Fiji's resource governance, and to provide a baseline for future management decisions made by government and community leaders. We can and must use Fiji's traditional values, knowledge and practices to revive and strengthen traditional resource use by integrating these with scientific data.

BPF emphasizes collaboration with all stakeholders, including local communities, government and regional organizations, academic institutions and non-government organizations (NGOs) to ensure that good governance is articulated at all levels of society. The combination of proven traditional knowledge and good science will allow us to achieve transformational change.

With heartfelt gratitude, I acknowledge the effort of the BPF Team members and all of its generous and committed partners for the success that has resulted in the production of this Preliminary Report. This report is a testament to the genuine commitment and collaboration that have been woven into the foundation of protecting and sustainably developing our ocean resources for the benefit of generations to come.

Sincerely,
Dr. Joeli Veitayaki
 Strategic Adviser,
 Blue Prosperity Fiji



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EXECUTIVE SUMMARY

From May to August 2023, the Government of Fiji, in partnership with Blue Prosperity Fiji, local NGOs, and international collaborators, conducted the largest nationwide assessment of Fiji's coral reefs to date. The Blue Prosperity Fiji Ocean Science Expedition gathered critical data across 272 sites across Fiji, focusing on coral health, fish species, invertebrate populations, and water quality. This effort aimed to support Fiji's goal of sustainably managing 100% of its ocean, with a commitment to fully protect 30%.



Photo Credit: Joe Lepore



The expedition was divided into three legs:

- **Leg 1** surveyed Viti Levu, Beqa, Kadavu, Ovalau, and the Yasawa Islands.
- **Leg 2** covered Lomaiviti, Taveuni, Ringgold Islands, and Vanua Levu.
- **Leg 3** explored the Lau group of islands.

During the expedition, scientists collected data from qoliqoli areas and coastal habitats, contributing insights into the overall health of Fiji's marine ecosystems. While this information will not provide stock assessments for individual species, it will significantly enhance ongoing research and monitoring efforts. The data gathered will also be integrated into Fiji's Marine Spatial Planning (MSP) process, which combines scientific findings with traditional knowledge to guide sustainable ocean management.

This effort was led by the Government of Fiji through the Blue Prosperity Fiji Program, with guidance from the Office of the Prime Minister through the Department of Environment and the Climate Change Division, Ministry of Fisheries, and the Ministry of iTaukei Affairs, working in close collaboration with Nukubati Island Resort from the private sector, universities and non-governmental organizations including the Institute of Applied Sciences at the University of the South Pacific (IAS-USP), World Wide Fund for Nature (WWF), Conservation International (CI), Wildlife Conservation Society (WCS), Uto Ni Yalo (UNY), Pacific Blue Foundation (PBF), CRIOBE, Scripps Institution of Oceanography (SIO), and the Waitt Institute.

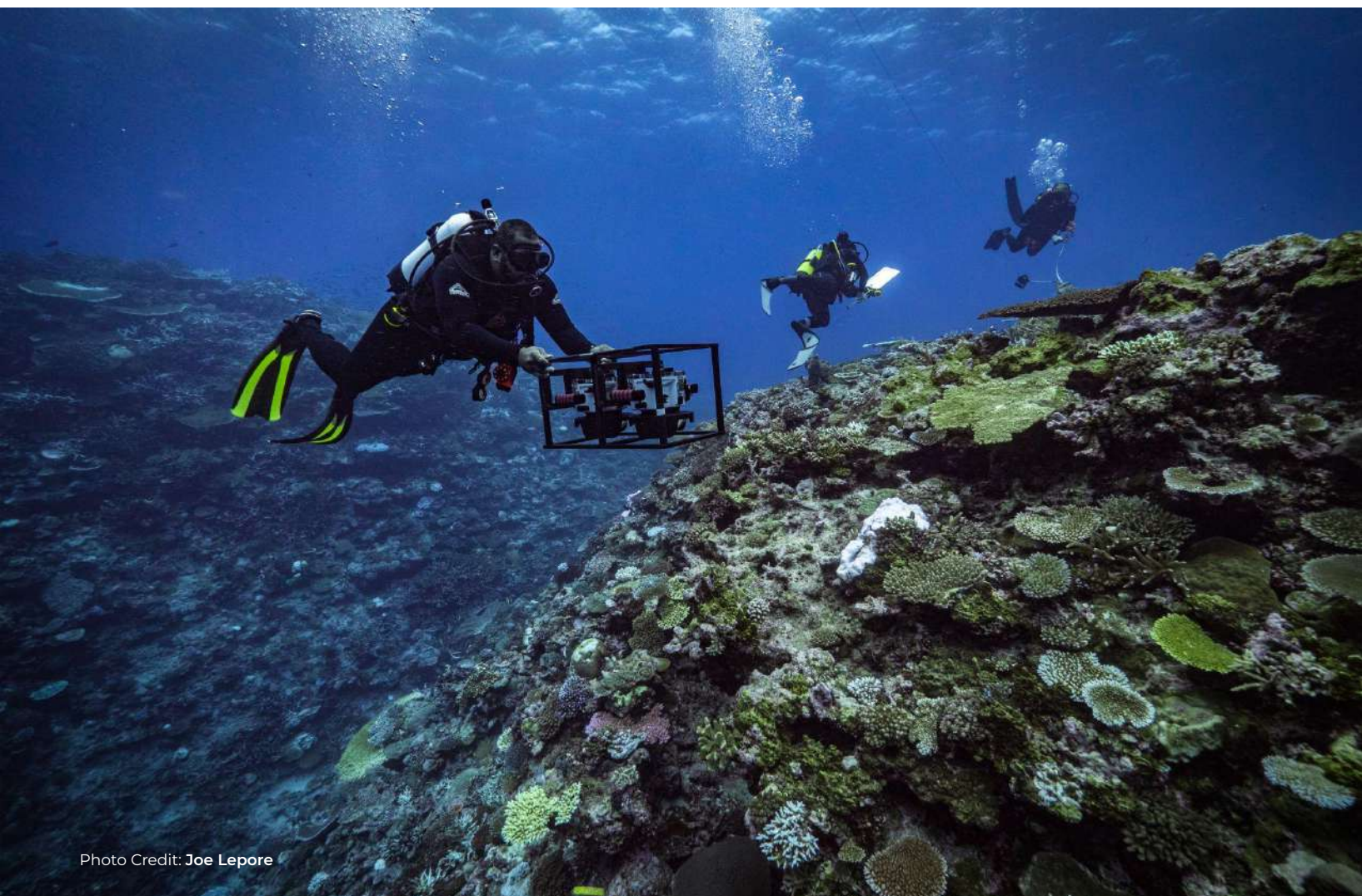


Photo Credit: Joe Lepore

The outcomes of this expedition will be shared through three primary deliverables:

- **Preliminary Science Report:** This document, which offers an overview of the expedition's methods and observational information, serves as the first stage of analysis.
- **Provincial-level Reports:** These will provide a snapshot of findings to communities, ensuring that local communities have access to relevant data.
- **Final Science Report:** The final nationwide report will offer a comprehensive summary of the expedition's findings, informing decision-makers and stakeholders on the health of Fiji's marine ecosystems. In addition to the report, a final work package will include summary data, work products, and access points. A media package will feature distributable underwater and aerial photos and videos. All reports will undergo thorough review processes and stakeholder input to ensure accuracy.



INTRODUCTION

Photos by: Joe Lepore

From May to August 2023, the Government of Fiji, along with Blue Prosperity Fiji and partners, completed the largest nationwide assessment of Fiji's coral reefs. Dr. Joeli Veitayaki, Blue Prosperity Fiji Strategic Advisor, is the Co-Primary Investigator for the expedition from Fiji, along with Waitt Institute Director of Science, Andrew Estep.

The Blue Prosperity Fiji Ocean Science Expedition aimed to gather important information about Fiji's coral reefs to better understand the status of marine life and resources and support the implementation of sustainably managing 100% and fully protecting 30% of Fiji's ocean. This data is meant to assist decision-makers, including the government, non-governmental organizations, and resource owners, help support traditional governance and decision making for coastal planning and establish a baseline for continuing to detect changes in Vanuatu's coral reefs as well as the effectiveness of management interventions aimed to improve coastal ecosystems. Specifically, this information will be incorporated into Fiji's Marine Spatial Planning process and aims to build upon extensive traditional and scientific knowledge and existing monitoring and research efforts in Fiji.

Expedition goals and objectives were aligned with national priorities and commitments stipulated in Fiji's National Ocean Policy. The expedition objectives were endorsed by the National Ocean Policy Steering Committee and vetted through an expert working group, which included representatives from The Ministry of Fisheries, the Ministry of Environment, and the Climate Change Division.

Blue Prosperity Fiji (BPF) is a program led by the Government of Fiji that supports a healthy ocean, thriving communities, and prosperous economies. It incorporates community consultations, scientific research, and traditional knowledge in planning to sustainably manage 100% of Fiji's ocean, including fully protecting 30% and growing Fiji's Blue Economy. The program is coordinated by a Fiji-based team and experts from the Waitt Institute, a U.S.-based non-profit that provides technical expertise, capacity, and funding to Blue Prosperity Fiji.



DEVELOPMENT OF THE SCIENCE PLAN

The **Science Strategy** for the expedition was developed through close coordination between the Government of Fiji, the expedition's Co-Primary Investigators, and Blue Prosperity Fiji. This strategy outlined both the areas to be surveyed and the methods used to collect data. Extensive consultations with NGO partners were also critical in refining this approach. The strategy was endorsed by government bodies and NGOs, and formal permissions were secured from the necessary government agencies to conduct the expedition.

SCIENTIFIC ASSESSMENT

WORKING GROUP MEMBERS

- Ministry of Economy
- Ministry of Environment
- Ministry of Fisheries
- Ministry of iTaukei Affairs
- Ministry of Tourism
- Conservation International (CI)
- Fiji Locally Managed Marine Areas (FLMMA)
- International Union for Conservation of Nature (IUCN)
- University of the South Pacific (USP)
- Wildlife Conservation Society (WCS)
- Blue Prosperity Fiji Site Team
- World Wildlife Fund Pacific Office
- Pacific Blue Foundation
- Manta Trust Fiji
- Fiji Navy Hydrographic Office
- The Pacific Community
- National Trust of Fiji
- cChange
- Uto ni Yalo Trust
- Sandin Lab at Scripps Institution of Oceanography, UC San Diego
- University of California, Santa Barbara - McClintock Lab
- Waitt Institute



DIVE SITE SELECTION

Survey areas were chosen strategically, considering ecological significance, relevance to ongoing monitoring, and potential to visit areas that have not yet been surveyed in previous studies. Sites were selected near both inhabited and uninhabited islands to support broader data collection on coral reef ecosystems and potential human impacts. Weather and operating considerations were incorporated into the final dive site selection, and not all areas initially scoped were able to be surveyed due to weather.

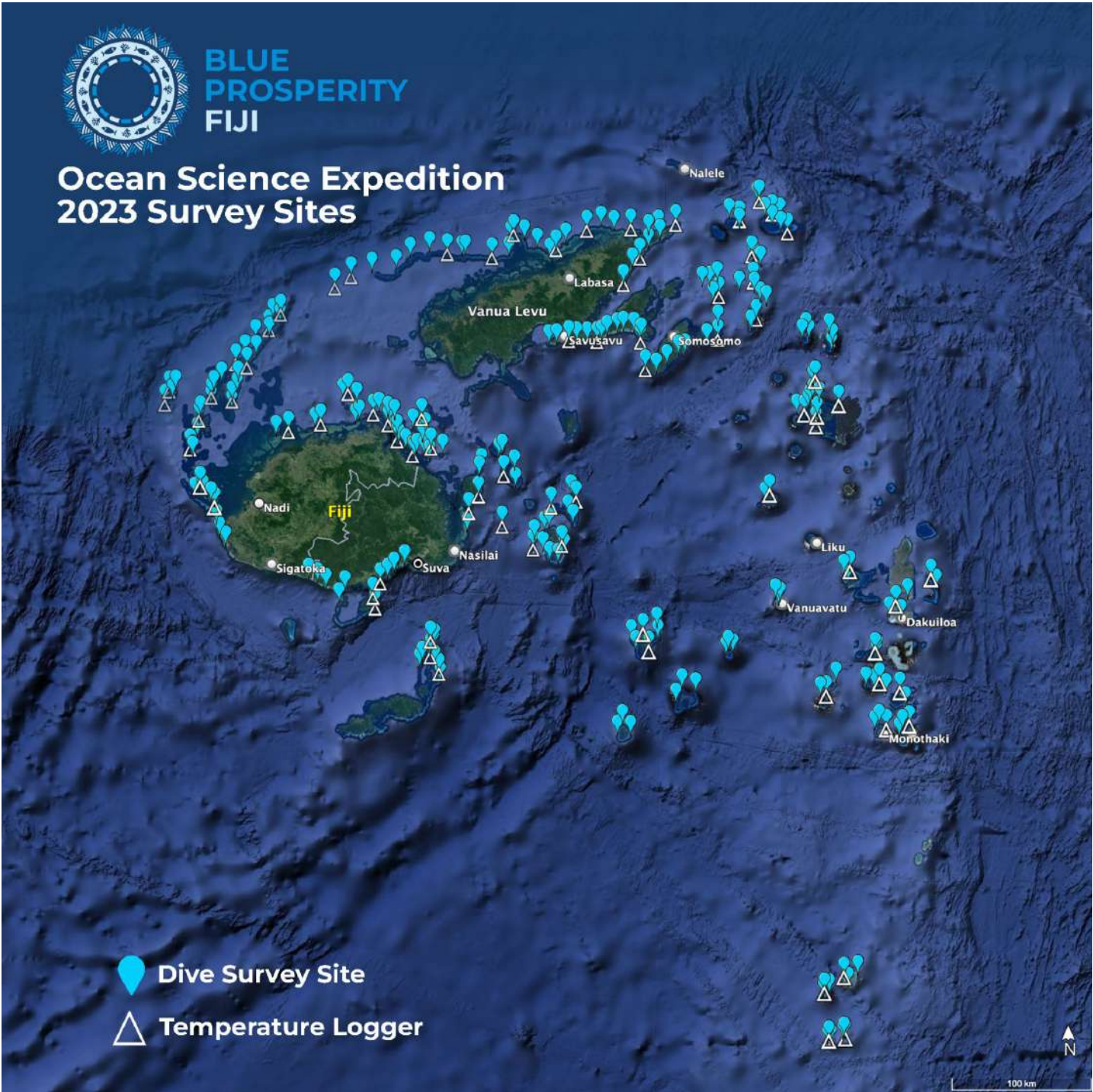


FIGURE 1:
Map of survey sites

COMMUNITY CONSULTATIONS AND PERMISSIONS

Before the expedition began, the Blue Prosperity Fiji team collaborated with relevant government agencies to conduct community consultations and obtain permission from the traditional custodians of the traditional fishing grounds, or qoliqoli. Following the endorsement of the expedition’s objectives, a support letter was drafted from the Ministry of Fisheries to the Ministry of iTaukei Affairs seeking permission to proceed with consultations in accordance with the principles of free, prior, and informed consent (FPIC).

Once permission was secured, meetings were held with the senior management of the Ministry of iTaukei Affairs, leading to collaboration with Provincial Council Officers to approach the respective qoliqoli custodians. Co-Primary Investigator Dr. Joeli Veitayaki led the deployment of multiple teams across the provinces, where more than 100 traditional communities were consulted, including at district and provincial meetings such as those of the Lau and Lomaiviti Provincial Councils. Once a sevusevu was undertaken, community members were informed about the upcoming expedition and its goals and outcomes, and signed a FPIC form to provide permission for the expedition team to enter their waters.



Data Sharing Agreements

Data is co-owned by the Government of Fiji and the Blue Prosperity Coalition, as stated in the Memorandum of Understanding signed in 2023. As a member of the Blue Prosperity Coalition, data is jointly-owned and stored by the Waitt Institute with Scripps Institution of Oceanography as technical partners responsible for expedition data collection and analysis. Raw and summarized data will be shared with other government ministries and can be available upon request by non-governmental organizations and stakeholders through the Ministry of Fisheries.

Data Storage and Quality Assurance

All raw data collected during the expedition was securely copied onto triplicate hard drives at the end of each survey leg. Copies have been distributed to the co-owners: the Ministry of Fisheries and the Waitt Institute. Additionally, the Waitt Institute’s data is backed up on duplicate servers in the Sandin Lab at Scripps Institution of Oceanography in La Jolla, CA, USA. The metadata for each survey site has undergone a thorough quality control/quality assurance (QA/QC) process and is similarly backed up on the Sandin Lab servers.



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EXPEDITION PARTICIPANTS

This effort was led by the Government of Fiji, with guidance from the Office of the Prime Minister through the Department of Environment and the Climate Change Division, Ministry of Fisheries, and the Ministry of iTaukei Affairs, working in close collaboration with universities and non-governmental organizations including the University of the South Pacific (USP), World Wild Fund for Nature (WWF), Conservation International (CI), Wildlife Conservation Society (WCS), Uto Ni Yalo (UNY), Pacific Blue Foundation (PBF), CRIOBE, Scripps Institution of Oceanography, and the Waitt Institute.

Participants from local and international institutions who contributed to data collection are listed below, along with their affiliations. The initials following each participant's name correspond to the initials found in Table 1.

Expedition Dive Team

Patilalai Baleivalenilotu (PB)
Apolosi Cokanasiga (AC)
Aporosa Ledua (AL)
Aporosa Nalasi (AN)
Semisi Seru (SS)
Jone Tamanitoakula (JT)
Aseri Tubuna (AT)
Salome Tuimaloku (ST)
Peni Tuivaga (PT)

Government of Fiji,
Ministry of Fisheries

Apolosa Robaigau (AR)
Metui Tokece (MT)

World Wide Fund (WWF)

Waisea Naisilisili (WN)

Wildlife Conservation
Society (WCS)

Semisi Meo (SM)
Kristian Milles (KM)

Conservation
International (CI)

Apete Dabea (AD)
Rosemary Dautei (RS)

University of the
South Pacific (USP)

Leone Vokai (LV)

Nukubati Island Resort

Ulamila Matairakula (UM)

Pacific Blue Foundation

Andrew Paris (AP)
Arthur Sokimi (AS)

Blue Prosperity Fiji (BPF)

Gilles Siu (GS)

Centre de Recherches Insulaires
et Observatoire de
l'Environnement (CRIOBE)

Milli Craighill (MC)
Joe Lepore (JLE)
Elena Oussacheva (EO)
Amy Lee Walton (AW)

Plan B - Expedition Vessel

Andy Estep (AE)
Jenny Lemmons (JL)

Waitt Institute (WI)

Anela Akiona (AKA)
Beverly French (BJF)
Nathaniel Hanna Holloway (NHH)
Katie Lubarsky (KAL)
Stuart Sandin (SAS)
Chris Sullivan (CJS)
Gabe Turner (GT)

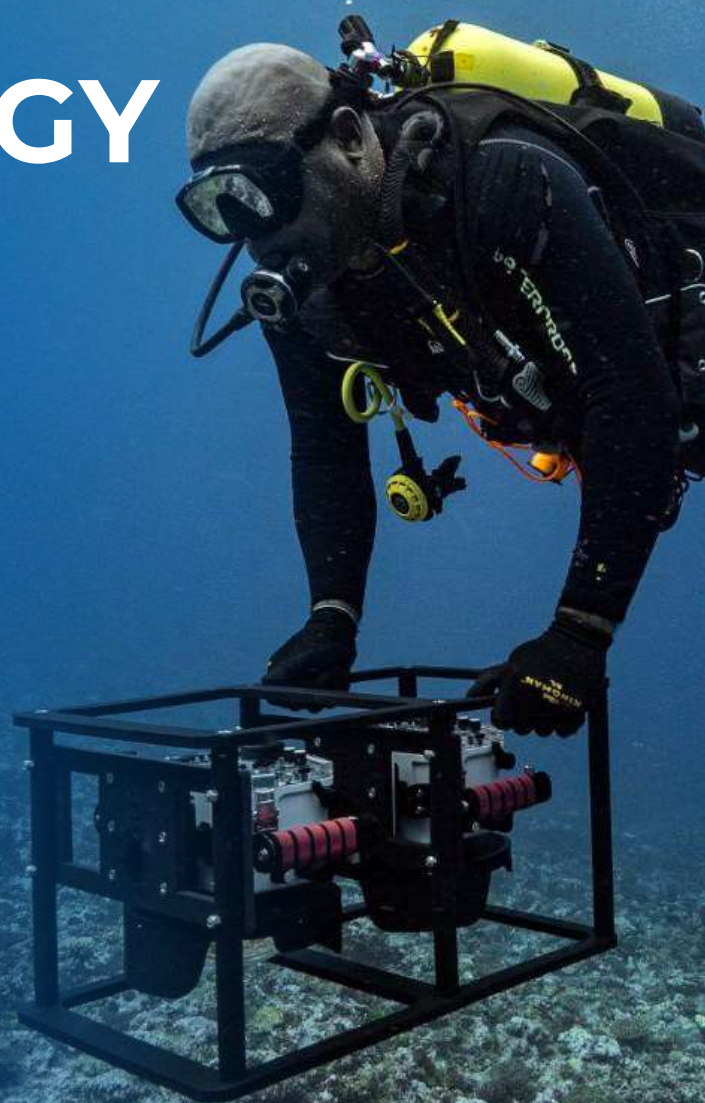
Scripps Institution of
Oceanography (SIO)

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SURVEY METHODOLOGY

The Fiji Ocean Science Expedition divers employed a variety of survey methods to obtain a **comprehensive snapshot** of the status of the coral reefs, fish populations and macroinvertebrates (such as giant clams and sea cucumbers), and water quality at each site.

This survey methodology is aligned with previous survey techniques used throughout Fiji so that data can be compared to surveys from previous years. The survey methodology followed an approved science plan developed in collaboration with the government and NGO partners.



Teams of six divers, split into three pairs, worked to collect data. **At each site, five surveys were conducted:**

- Large-area imagery surveys;
- Fish belt transects;
- Macroinvertebrate belt transects;
- Benthic photo quadrats; and
- Algae sample collection for stable isotope analysis.

Additionally, temperature loggers (n = 91) were deployed to collect high resolution temperature data on reefs across the country.

Dive safety protocols were carefully followed to ensure the highest level of safety for all participants. A dive safety officer was present, overseeing all procedures and monitoring conditions. This included thorough pre-dive briefings, adherence to buddy systems, regular equipment checks, and close observation of dive conditions. Emergency response plans were in place, and dive teams were trained in first aid and rescue procedures, ensuring preparedness for any unforeseen situations.



Photo Credit: Joe Lepore

SUMMARY OF METHODS

Large-area imagery surveys

Large area imagery surveys provide high-resolution images of coral reefs, offering detailed insights into coral reef health and the species present in the area.

To collect this data, imagery was taken over a 100m² area to document coral cover, coral species, and overall reef health. These images, known as benthic (or bottom) photomosaics, create a permanent visual record of the reef habitat.

The benthic photomosaic system involves a diver equipped with two cameras to capture comprehensive images of the reef area. One camera takes "zoomed-out" images to cover a larger area with high overlap, while the other camera is "zoomed-in" for close-up, detailed shots that aid in ecological analysis. The diver follows a grid pattern over a 10x10 meter area, taking photos every second, which are then stitched together into one large image. This combined image can be transformed into both 2D and 3D models of the reef, enabling scientists to study reef structure (such as its "bumpiness") and coral growth over time.

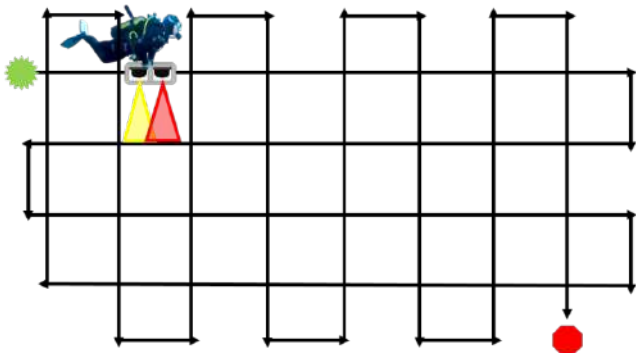


FIGURE 2:
Photomosaic data collection method. Each photomosaic is stitched together from ~2000 photos acquired by swimming back and forth over the reef in the pattern on the left.



Fish belt transect surveys

Fish belt transect surveys help provide a snapshot of fish life through abundance and diversity of fish observed at each dive site.

A two-diver team conducted surveys of the fish present at each dive site using standard belt transect methods (BLT). The BLT surveys involved the dive team conducting three 25 m transects by laying out a transect line along the 10-meter depth contour to estimate abundance. Individual fishes were identified to species and total length (TL), estimated to the nearest 5 cm size class. Fish abundance estimates were made by conducting two passes for each 25 m transect. The pair of divers surveyed an 8 m width (200 m² area) for individuals >20 cm TL on an outward swim, and a 4 m width (100 m² area) for species ≤20 cm TL on a return swim.

Benthic photoquadrat surveys

Benthic photoquadrat surveys are used to understand the composition of the sea floor, including how much of it is coral, algae, sand, etc.

Benthic (seafloor) cover was estimated using photoquadrats, which are photographs of specific sections of the seafloor used to analyze benthic organisms. Following the completion of each fish belt transect survey, divers collected photoquadrat images along the same transect line, taking photos every 2 m, for a total of 13-15 photos per transect. A monopod was attached to each camera to ensure that photos were taken from a fixed distance and covered the same area of the benthos (approximately 0.72m² per photo).

Macroinvertebrate belt transect surveys

Macroinvertebrate belt transect surveys provide an understanding of the large invertebrates present at a dive site, such as starfish, sea cucumbers, and urchins. Estimates of key macroinvertebrate species were made using belt transect methodologies as outlined by the Global Coral Reef Monitoring Network (GCRMN). To summarize: at each site, a diver estimated the number of macroinvertebrates found along the three 25 m transects used for fish and photoquadrat surveys. For each survey, a 4 m wide swath was inspected for invertebrates, yielding a 100 m² survey area for each transect.

Image: *Benthic photoquadrat method.*

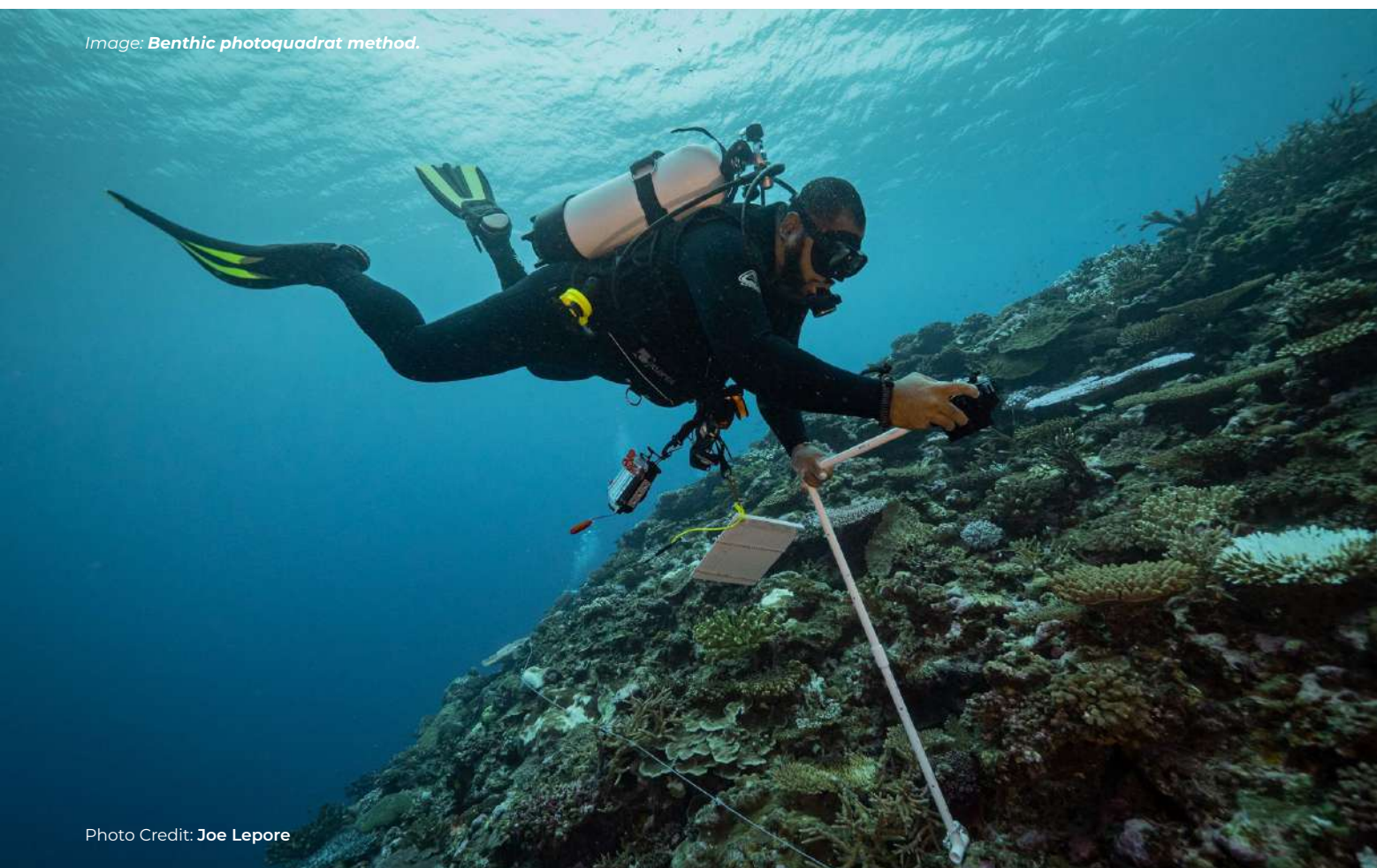


Photo Credit: Joe Lepore

SUMMARY OF METHODS (continued)

Water quality measurements

Algae samples were collected at each site to provide insights into the local water quality. These samples undergo stable isotope analysis, which compares the ratios of nitrogen isotopes in the algae tissue to reveal the nutrient sources at each location. This information helps determine whether land-based pollution is impacting each survey site.

Water quality assessments were conducted by collecting five samples of the calcified macroalgae *Halimeda* spp. along the three transects at each site. In some cases, where algal cover was low or if *Halimeda* was not present at a site, a different alga (*Tydemania* spp.) was collected. Previous studies have shown that the two different algae species show similar results. For each site, three replicate samples (where available) were randomly selected for stable isotope analysis.

Temperature logger deployments

Temperature loggers were placed on the reef to gather long-term data on water temperature over time. These loggers will eventually be retrieved from each site to process the data. However, they will not be collected prior to the final report.

Ninety-one temperature sensors were deployed across the survey area to collect sea temperature data. Temperature recorders were secured to the reef using heavy-duty cable ties and stainless-steel rods hammered into the substrate. These instruments were placed near or within the mosaic plots to facilitate both the marking of the plots and the recovery of the sensors. The loggers are programmed to collect discrete samples every 45 minutes. They must be collected to access the recorded data.

FIRST IMPRESSIONS

Photos by: Joe Lepore

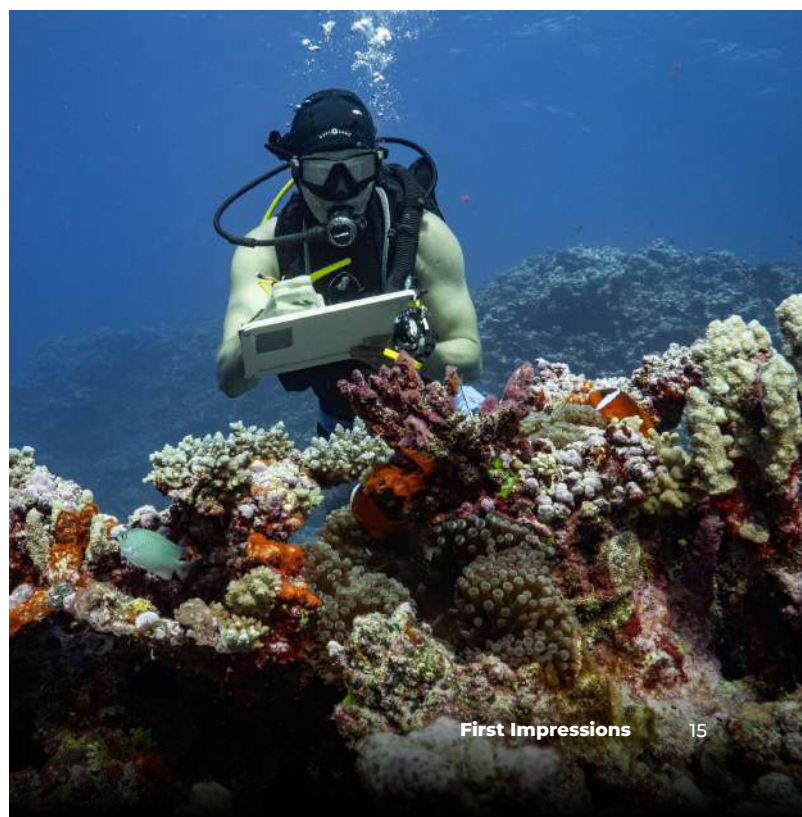
The data collected during the Fiji expedition is still being analyzed, and the final results will be presented in a comprehensive Final Science Report. As analysis continues, these initial insights offer an early glimpse into Fiji's coastal ecosystems, providing valuable observations on the condition and complexity of the region. Below are some preliminary impressions from the team based on the fieldwork.

DIVERSITY AND SCALE OF FIJI'S ECOSYSTEMS

Fiji's marine environment is large, complex, and ecologically diverse. As such, a more diverse approach to management would benefit resource management planning in Fiji's diverse seascapes. As evidenced by the surveys, each area has distinct ecological characteristics and stressors, suggesting that tailored management strategies are essential. Understanding how these diverse ecosystems function and interact is a primary focus, especially in terms of their connectivity through currents, larval sources and sinks, and local resilience and impacts will enable more effective resource management strategies.

SIGNS OF BOTH RESILIENCE AND IMPACT

The team observed evidence of both ecological resilience and degradation throughout the region. Signs of overfishing, coral bleaching, and disease were apparent at many sites, yet some areas showed more resilience than others. A focus on understanding the factors driving these contrasting outcomes is vital for shaping future conservation strategies.



PRELIMINARY OBSERVATIONS

CORALS & SUBSTRATES

- Widespread signs of coral bleaching and disease following a recent warm water event
- Coral communities observed with low impacts of bleaching, disease
- Strong influence of environmental factors such as landmass proximity and oceanographic conditions
- Thriving coral reefs in areas despite global and/or local impacts
- Importance of continued monitoring to track coral health and ecosystem responses

Fiji's coral reefs are vast, diverse, and hold significant cultural, ecological, and economic value. Like many places, signs of impact and resilience were observed throughout the seascapes.

Photo Credit: Joe Lepore



FISH COMMUNITIES

- High fish species diversity observed across many sites
- While not abundantly observed on fish survey transects, sharks were commonly observed at dive sites
- Clear signs of overfishing apparent in some localities
- Areas of abundant fish and spawning aggregations observed

Fiji has diverse fish communities in a range of conditions. Continuing to collect nationwide fisheries independent data will help improve management interventions over time.

MACROINVERTEBRATES

- Macroinvertebrate surveys were variable and pertained only to targeted species for commercial consumption or ecological indicator species
- Giant clams and trochus commonly observed at most survey sites
- This assessment is not suitable for a sea cucumber stock assessment, but they were counted as a target species
- No Crown of Thorns Starfish (COTS) outbreaks observed

Fiji's coastal ecosystems are home to diverse macroinvertebrate communities. The data from this assessment will provide some insight into national-scale spatial patterns of distribution and abundance of ecologically and

commercially important macroinvertebrate species on Fiji's coral reefs.

WATER QUALITY

- Visual assessments of water quality revealed highly variable water quality throughout Fiji
- High sedimentation in areas of runoff and one area of dredging observed
- Establishment of in-situ temperature loggers will help better understand the role of temperature on coral communities across Fiji's seascapes
- No macroalgal blooms observed

Fiji has diverse fish communities in a range of conditions. Continuing to collect nationwide fisheries independent data will help improve management interventions over time.



Photo Credit: Joe Lepore

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PROCESSING AND ANALYSIS

The data collected during the Blue Prosperity Fiji (BPF) expedition encompasses several data types, each with a distinct analysis process. This section outlines the current status and next steps toward completion.

1. Benthic Photoquadrat Analysis

Benthic cover is being analyzed using photoquadrat images processed through ReefCloud software. The software projects 25 random points onto each image, and analysts identify the taxa present under each point.

A team of analysts from the Institute of Applied Sciences at the University of the South Pacific (USP), in partnership with Blue Prosperity Fiji, began benthic taxonomy analysis in April 2024. As of October 2024, 61.5% of the total points have been annotated, with the aim of completing all annotations by the end of the year.

2. Fish Survey Data

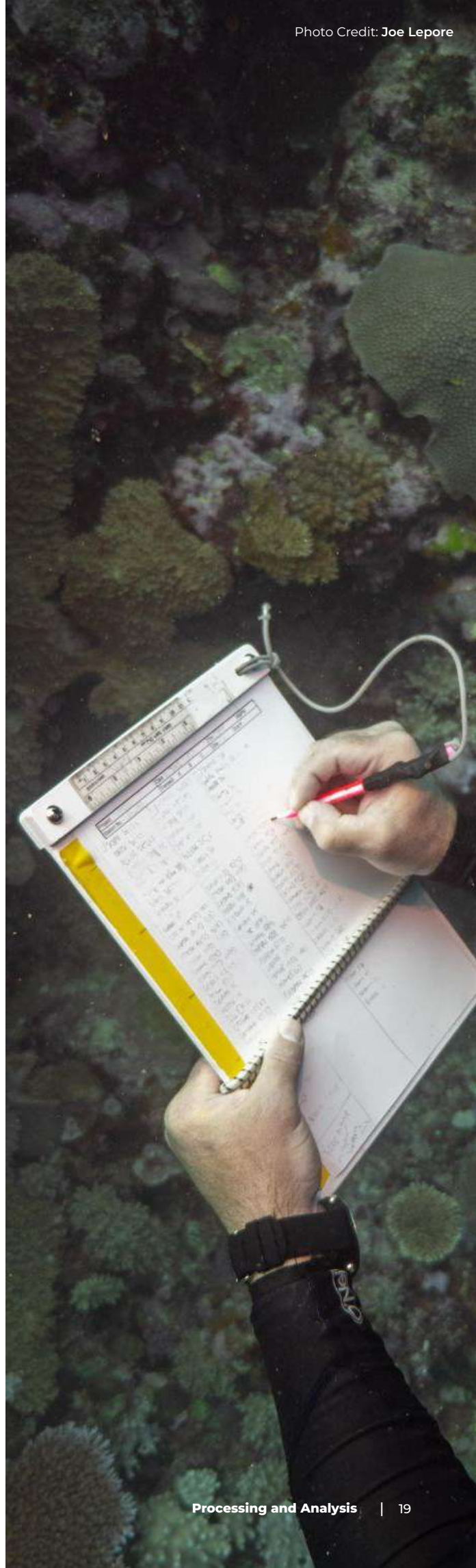
Fish data collected in the field has undergone an extensive quality control/quality assurance (QA/QC) process to ensure accuracy. Length-weight parameters for all observed species have been collated to calculate fish biomass. The SIO team will generate final data summaries that include species diversity, biomass, and abundance data by species, site, and province.

3. Large-Area Imagery Surveys

High-resolution 3D and 2D photomosaics have been generated for all survey sites. The raw imagery and model files are backed up on the Sandin Lab servers.

Two key data streams are derived from the imagery:

- Rugosity (structural complexity of coral habitats):** Rugosity data, which quantifies reef structural complexity, has been extracted using a simulated point gauge approach. In the Viscore analytics engine, a 10m x 10m area is sampled with 100 parallel transects, spaced 1cm apart. The depth along each transect is recorded and compared to the linear distance, resulting in a rugosity ratio. All sites have been analyzed, and the data is ready to be summarized following reporting team discussions.
- Coral Recruitment (number of new, young corals on the reef):** Juvenile coral analysis focuses on corals less than 5 cm in diameter. A 10m x 10m area is divided into 100 1m² quadrats, and five are randomly selected for sampling. Coral juveniles are tagged and identified to the lowest taxonomic level possible. As of November 1, 2024, recruitment analysis of all 267 mosaic data sites has been completed.



4. Macroinvertebrate Survey Data

Macroinvertebrate data collected also underwent a rigorous quality control process. Preliminary results, including species counts by province, have been shared with the BPF team, and the SIO team is now compiling the final data summaries for the report.

5. Water Quality Surveys

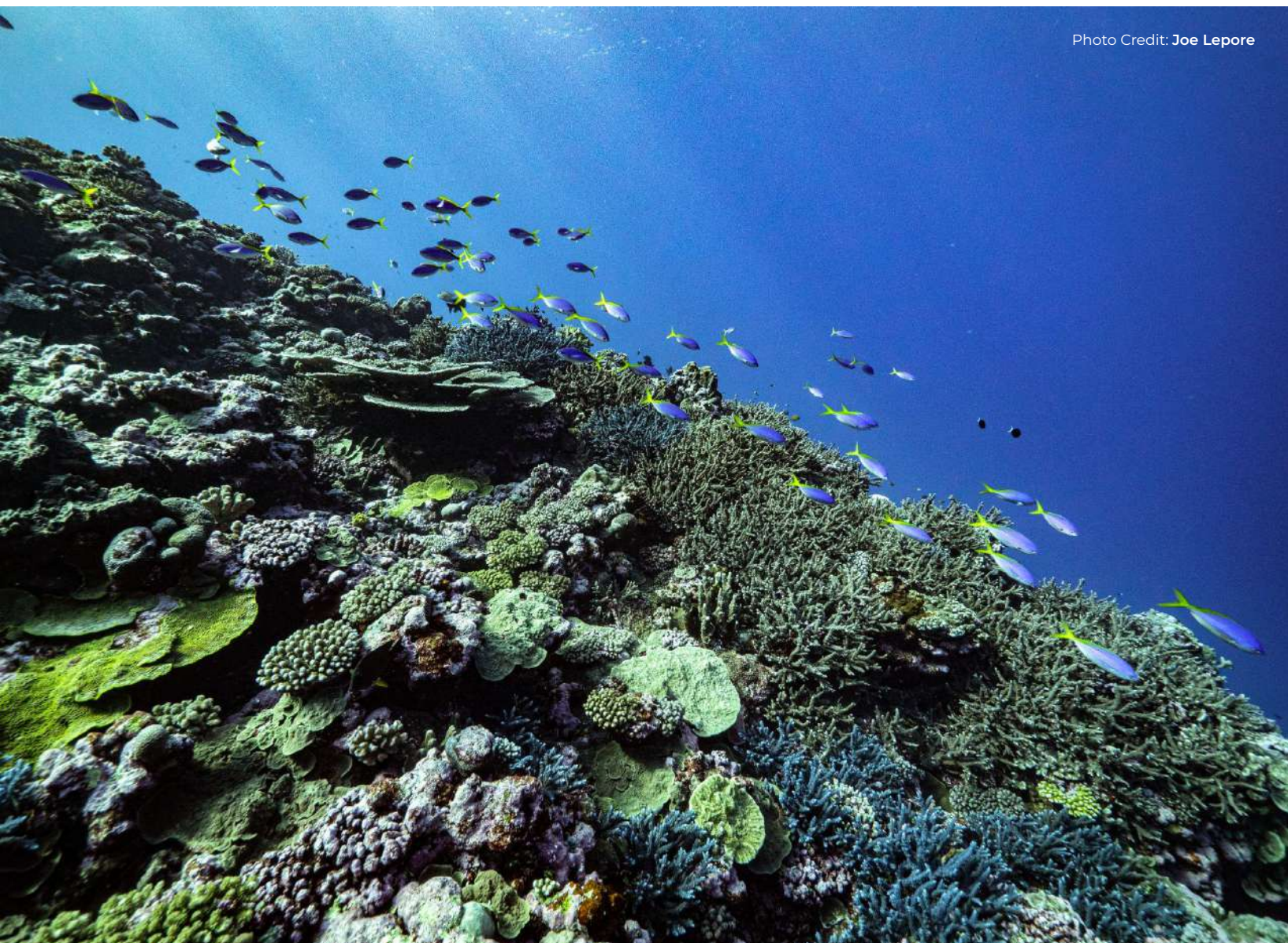
Following field collection, algae samples (*Halimeda* spp. and *Tydemania* spp.) were processed and packed for stable isotope analysis. The process includes rinsing samples with deionized water, decalcifying in a 5% HCl solution, and drying in a food dehydrator. The dried samples are then ground into a fine powder and sent to the Stable Isotope Facility at UC Davis. By analyzing nitrogen isotope ratios, the origin of nutrients, whether from land-based pollution, agricultural runoff, or oceanic sources, can be identified, providing insight into the impact of runoff on the site.

To date:

- **Leg 1** samples have been processed and analyzed, with data delivered to SIO.
- **Leg 2** samples have been processed and shipped, with data delivery pending.
- **Leg 3** sample processing has begun.

There is a 12-week turnaround time for stable isotope data delivery after shipping.

Photo Credit: Joe Lepore



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EXPEDITION PRODUCTS & OUTREACH

Three main products will be delivered as a result of the BPF Ocean Science Expedition:

- Preliminary Science Report
- Provincial-Level Reports
- Final Science Report

PRELIMINARY SCIENCE REPORT

This report provides an overview of the expedition, detailing the activities conducted, the data collected, the methods used for data collection, and the process for analyzing the data. It also outlines the next steps toward completing the Final Science Report.

PROVINCIAL-LEVEL REPORTS

Provincial-Level Reports are being developed to provide a snapshot of information from the BPF Ocean Science expedition to local communities at a provincial level. This will give communities more relevant information about what was found from the expedition in their Province, and will give them access to additional data such as 2D maps of the reefs and photos and videos taken in their areas. These reports will be translated into iTaukei.

The Provincial-Level Reports will include:

- Foreword by Dr. Joeli Veitayaki
- Expedition overview
- Community consultation details
- Expedition dates by province
- Data collected, including:
 - Number of survey sites by province
 - Number of species of invertebrates counted by province
 - Number of fish species counted by province
 - Number & type of threatened species counted by province
 - A list of the threatened species observed
 - Map of dive sites by province
 - Photos from dive sites
- Link to digital copy of the Provincial-Level Reports
- Information about how expedition data will be used for Marine Spatial Planning
- Information about how communities can use data
- Information about Fiji’s commitment to sustainably managing 100% of its ocean and fully protecting 30% of its ocean
- Information about the benefits of Marine Protected Areas
- Information about Marine Spatial Planning
- Information about Blue Prosperity Fiji and expedition partners

FINAL SCIENCE REPORT

The Final Science Report will offer a detailed, nationwide summary of the expedition’s findings, including insights into the health of Fiji’s coral reefs, marine biodiversity, and ecosystems. It will incorporate the analyzed data, highlight significant trends, and provide recommendations for sustainable management. This report can serve as a science-based resource for decision-makers, stakeholders, and future conservation efforts, supporting Fiji’s Marine Spatial Planning process and long-term ocean protection goals.



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REVIEW PROCESS

The Preliminary Report was reviewed by the government ministries directly involved in the expedition, the Blue Prosperity Fiji (BPF) team, relevant scientists at Scripps Institution of Oceanography and the Waitt Institute.

The Provincial-level Reports and the Final Report will undergo a thorough review process that will include the government ministries directly involved in the expedition, partner NGOs involved in the expedition, the BPF team, relevant scientists from the University of the South Pacific and Scripps Institution of Oceanography, and the Waitt Institute.

There will be formal review periods of two weeks during which partners will have the opportunity to review and comment on the content of these documents.

09

TIMELINE AND NEXT STEPS

The Blue Prosperity Fiji team will continue to work with partners to develop each of the expedition products. Data analysis teams will continue to analyze data and draft the Final Science Report. BPF and the Waitt team will continue to develop and disseminate the Provincial-level Reports.

The information collected from the expedition will provide data to the Government of Fiji, stakeholders, and local communities, to provide a deeper understanding of the state of Fiji's ocean.

This knowledge will inform management decisions to improve ocean health, support food security, and boost livelihoods for local communities.

PROVINCIAL-LEVEL REPORTS

A template to share information back at the Provincial-level has been developed. The next step is for the government to approve this template. Upon approval of the Provincial-level Report template developed for the Macuata Province, the Blue Prosperity Fiji and Waitt Institute team will develop a Provincial-level Report for each of the Provinces where the expedition took place. All of these will then be sent to the Government for approval. Once finalized these reports will be shared back to the communities via the Provincial Conservation Officers so that everyone has access to the data at a local level.



Photo Credit: Joe Lepore



Photo Credit: Joe Lepore

MILESTONES & DELIVERABLES

2023 MILESTONES

- **August**
 - Expedition completed
 - Raw data handed over to the Government
- **September**
 - Data processing initiated

2024 MILESTONES

- **April**
 - Photoquadrat Analysis Training and launch
- **September**
 - Data processing completed (excluding photoquadrat and algae samples)

TENTATIVE TIMELINE

2024

- **November**
 - Preliminary Science Report delivered
- **December**
 - Completion of photoquadrat analysis and algae sample processing

2025

- **Final Report circulation**
 - Report circulated to Government Ministries for review and approved
 - Then report circulated to NGOs for review
- Completed expedition data sharing agreement
- Provincial-level reports
- Final Report delivery
 - Including data package and work products (e.g., maps, summarized processed data), as well as underwater and drone imagery

PRELIMINARY REPORT DATA PACKAGES

1. **[Metadata](#)**
Description: Provides contextual information about data collected, divers, and location.
Data Downloadable: Yes
Access Point: See next section or link below
<https://www.dropbox.com/scl/fi/4yydd10ffnvx526re4er5/Blue-Prosperity-Fiji-Expedition-2023-Dive-Site-Metadata.xlsx>

2. **[Daily Ship Logs](#)**
Description: Daily records of ship activities, locations, and conditions.
Data Downloadable: Yes
Access Point: Appendix or link below
<https://www.dropbox.com/scl/fi/2nahpybih2po1mygo3tlb/Blue-Prosperity-Fiji-Expedition-2023-Daily-Ship-Logs.pdf>

3. **[ESRI Online Access Point](#)**
Description: Online GIS platform for viewing spatial data.
Data Downloadable: On request
Access Point: Link below
<https://www.arcgis.com/home/item.html?id=9234f77126fc40ed8382afe51091d339>

4. **[Photomosaic Fly-Throughs - 100 Island Challenge](#)**
Description: High-resolution visualizations of coral reef habitats
Data downloadable: On request
Access point: Project website
<https://www.youtube.com/@100islandchallenge6>

Note: *Fiji reef data has not been added to the online page due to data sharing restrictions*

5. **[Underwater Photos](#)**
Description: Online GIS platform for viewing spatial data.
Downloadable: Yes
Access Point: Link below
https://drive.google.com/drive/folders/1VCeF6tnsYaL72pj8baOa2J-OW_dW2YIR

6. **[Aerial Photos and Videos](#)**
Description: Online GIS platform for viewing spatial data.
Data downloadable: Yes
Access Point: Link below
https://www.dropbox.com/scl/fo/gctw4v4h9yht9zbgp1ewr/AM7VMFqITMnFCE-RO_scLEO?rlkey=md1fslbrig9rvzd0bt2hdb6qk&e=1&st=xyzjieruo&dl=0

METADATA

TABLE 1: Survey sites and associated metadata. Diver initials correspond to the initials listed in the Expedition Team section of this report. See full metadata [here](#).

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-05-16	Great Sea Reef	GSR_02	NA	NA	NA	FR	AW, UM, AT	AJE, AC	AT	F	NA
2023-05-16	Coral Coast	COC_04	-17.98194	177.21280	100	FR	AW, UM, AT	AJE, AC	AT	B, F, M, I	NA
2023-05-16	Coral Coast	COC_06	NA	NA	NA	FR	AW, UM, AT	AJE, AC	AT	B, F, I	NA
2023-05-16	Great Sea Reef	GSR_01	-17.74676	177.06113	100	BR	EO, AS, AD	KAL, AKA	AL	B, F, M, I	NA
2023-05-16	Coral Coast	COC_03	-17.90865	177.19412	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-16	Coral Coast	COC_05	-18.03719	177.25012	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-18	Great Sea Reef	GSR_08	-17.68272	177.09383	100	FR	AW, UM, AT	AJE, AC	AT	B, F, M, I	NA
2023-05-18	Great Sea Reef	GSR_10	-17.77493	177.16142	100	FR	AW, UM, AT	AJE, AC	AT	B, F, M, I, A	NA
2023-05-18	Great Sea Reef	GSR_07	-17.72912	177.10896	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-18	Great Sea Reef	GSR_09	-17.80406	177.18332	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-20	Coral Coast	COC_12	-18.25880	177.82565	100	FR	AW, UM, AT	AJE, AC	AT	B, F, M, I, A	NA
2023-05-20	Coral Coast	COC_14	-18.30724	177.99712	100	FR	AW, UM, AT	AJE, AC	AT	B, F, M, I, A	NA
2023-05-20	Coral Coast	COC_11	-18.23294	177.77020	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-20	Coral Coast	COC_13	-18.29281	177.87900	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-21	Beqa and Yanuca	BAY_16	-18.37878	177.95943	100	FR	AW, UM, AT	AJE, AC	AT	B, F, M, I, A	NA
2023-05-21	Beqa and Yanuca	BAY_18	-18.41065	178.18687	100	FR	AW, UM, AT	AJE, AC	AT	B, F, M, I, A, T	21735960
2023-05-21	Beqa and Yanuca	BAY_15	-18.34633	178.17274	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A, T	21465610
2023-05-21	Navakavu	NAV_17	-18.19803	178.30472	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-21	Navakavu	NAV_19	-18.15312	178.37222	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-05-22	Navakavu	NAV_21	-18.23274	178.26421	100	FR	EO, AS, AD	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-23	Great Astrolabe Reef	GAR_22	-18.72757	178.48286	100	FR	AW, AC, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-23	Great Astrolabe Reef	GAR_24	-18.70082	178.53249	100	FR	AW, AC, JL	AJE, MT	AC	B, F, M, I, A, T	21465829
2023-05-23	Great Astrolabe Reef	GAR_26	-18.74880	178.55838	100	FR	AW, AC, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-23	Great Astrolabe Reef	GAR_23	-18.76539	178.46597	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-23	Great Astrolabe Reef	GAR_25	-18.84851	178.59460	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-23	Great Astrolabe Reef	GAR_27	-18.79938	178.58839	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21465837
2023-05-24	North Astrolabe Reef	NAR_28	-18.67747	178.53458	100	FR	AW, AC, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-24	North Astrolabe Reef	NAR_30	-18.62082	178.55821	100	FR	AW, AC, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-24	North Astrolabe Reef	NAR_29	-18.64927	178.55496	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-24	North Astrolabe Reef	NAR_31	-18.61768	178.55096	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-24	North Astrolabe Reef	NAR_33	-18.60782	178.53481	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21483097
2023-05-25	Kubuna	KUB_37	-17.95580	178.76302	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-26	Kubuna	KUB_40	-17.74263	178.83377	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21465835
2023-05-26	Kubuna	KUB_42	-17.57892	178.85187	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-26	Kubuna	KUB_44	-17.49460	178.60928	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-26	Kubuna	KUB_39	-17.84116	178.77304	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21465834
2023-05-26	Kubuna	KUB_41	-17.62410	178.83762	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-27	Dawasamu	DAW_46	-17.49963	178.49188	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-27	Dawasamu	DAW_48	-17.49005	178.44644	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-27	Dawasamu	DAW_50	-17.50212	178.42033	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21465612

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-05-27	Dawasamu	DAW_45	-17.52651	178.52589	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-27	Dawasamu	DAW_47	-17.45817	178.53557	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21465613
2023-05-27	Dawasamu	DAW_49	-17.51110	178.43085	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-28	Dawasamu	DAW_54	-17.28048	178.47775	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21465839
2023-05-28	Dawasamu	DAW_52	-17.36570	178.49976	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-28	Dawasamu	DAW_56	-17.34346	178.42241	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-28	Dawasamu	DAW_51	-17.41963	178.48300	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-28	Dawasamu	DAW_55	-17.42693	178.33485	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-29	Ba	BAP_60	-17.34544	178.27980	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-29	Ba	BAP_61	-17.31913	178.26773	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21465830
2023-05-29	Ba	BAP_62	-17.28830	178.30811	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-29	Dawasamu	DAW_57	-17.46278	178.37740	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-29	Dawasamu	DAW_58	-17.41434	178.32373	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21465831
2023-05-29	Dawasamu	DAW_59	-17.37686	178.32320	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-30	Ba	BAP_63	-17.26968	178.26826	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-30	Ba	BAP_65	-17.25533	178.17567	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21735961
2023-05-30	Ba	BAP_67	-17.30992	178.06381	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-30	Ba	BAP_64	-17.24423	178.21094	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-30	Ba	BAP_66	-17.29084	178.08858	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-30	Ba	BAP_68	-17.31434	177.84770	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21465842 or 21465847
2023-05-31	Ba	BAP_69	-17.33373	177.81165	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I	NA
2023-05-31	Ba	BAP_71	-17.35831	177.64646	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21735962

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-05-31	Ba	BAP_73	-17.38201	177.56910	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-05-31	Ba	BAP_70	-17.18612	178.07278	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-05-31	Ba	BAP_72	-17.13317	178.01855	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21735959
2023-05-31	Ba	BAP_74	-17.15899	177.98559	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-06-01	Yasawa	YAS_76	-17.05722	177.33369	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-06-01	Yasawa	YAS_78	-16.97422	177.38927	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21735958
2023-06-01	Yasawa	YAS_80	-16.90305	177.44698	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-06-01	Yasawa	YAS_75	-16.65821	177.60089	100	FR	EO, AS, MC	KAL, AKA	AR	B, F, M, I, A, T	21735957
2023-06-01	Yasawa	YAS_77	-16.70928	177.59589	100	FR	EO, AS, MC	KAL, AKA	AR	B, F, M, I, A	NA
2023-06-01	Yasawa	YAS_79	-16.79335	177.52917	100	FR	EO, AS, MC	KAL, AKA	AR	B, F, M, I, A	NA
2023-06-02	Yasawa	YAS_82	-16.68346	177.55212	100	FR	AW, JL	AJE, AC	AC	B, F, M, I, A	NA
2023-06-02	Yasawa	YAS_84	-16.75018	177.52666	100	FR	AW, JL	AJE, AC	AC	B, F, M, I, A, T	21465845
2023-06-02	Yasawa	YAS_86	-16.80830	177.44353	100	FR	AW, JL	AJE, AC	AC	B, F, M, I, A	NA
2023-06-02	Yasawa	YAS_81	-16.89881	177.37878	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-06-02	Yasawa	YAS_83	-16.95350	177.31967	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21735954
2023-06-02	Yasawa	YAS_85	-17.06114	177.23137	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-06-03	Yasawa	YAS_88	-17.12195	177.32721	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-06-03	Yasawa	YAS_90	-17.17556	177.29575	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21735955
2023-06-03	Yasawa	YAS_92	-17.22440	177.29222	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-06-03	Yasawa	YAS_87	-17.11257	177.18245	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-06-03	Yasawa	YAS_89	-17.15139	177.16711	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21735963
2023-06-03	Yasawa	YAS_91	-17.19638	177.16371	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-06-04	Yasawa	YAS_93	-17.26271	177.09869	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-06-04	Yasawa	YAS_95	-17.28877	177.08846	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21483095
2023-06-04	Yasawa	YAS_97	-17.30348	177.08894	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-06-04	Yasawa	YAS_96	-17.46018	177.03302	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21735956
2023-06-04	Yasawa	YAS_98	-17.50155	177.04837	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-06-04	Yasawa	YAS_94	-17.38953	177.07867	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-06-05	Yasawa	YAS_100	-17.15662	176.92543	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A	NA
2023-06-05	Yasawa	YAS_102	-17.11282	176.90356	100	FR	AW, JL	AJE, MT	AC	B, F, M, I, A, T	21483096
2023-06-05	Yasawa	YAS_99	-17.10743	176.94452	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A	NA
2023-06-05	Yasawa	YAS_101	-17.19202	176.87627	100	FR	EO, AS, AR	KAL, AKA	AL	B, F, M, I, A, T	21465847
2023-06-20	Gau	GAU_01	-18.001618	179.185126	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-20	Gau	GAU_02	-17.950579	179.24813	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-20	Gau	GAU_03	-17.931016	179.277588	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I	NA
2023-06-21	Gau	GAU_04	-18.072022	179.239116	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-21	Gau	GAU_05	-18.056321	179.177503	100	FR	EO, PT, AD	CJS, BJF	NA	B, F, M, A, T	21723368
2023-06-21	Gau	GAU_06	-18.140407	179.33595	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-21	Gau	GAU_07	-18.131588	179.281802	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-21	Gau	GAU_08	-18.035325	179.35918	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A, T	21723351
2023-06-21	Gau	GAU_09	-18.080611	179.372724	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-22	Nairai	NAI_10	-17.732437	179.414191	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-22	Nairai	NAI_11	-17.769751	179.44692	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A, T	21723376
2023-06-22	Nairai	NAI_12	-17.806596	179.290593	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A, T	21723365
2023-06-22	Nairai	NAI_13	-17.908285	179.428127	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-22	Nairai	NAI_15	-17.853063	179.396488	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-06-23	Makogai	MAK_18	-17.493261	178.981329	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-23	Makogai	MAK_20	-17.427437	178.982427	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A, T	21723347
2023-06-23	Makogai	MAK_21	-17.508316	178.961414	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-23	Wakaya	WAA_16	-17.586518	179.058345	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-23	Wakaya	WAA_17	-17.691077	179.06498	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-23	Wakaya	WAA_19	-17.619769	178.991171	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A, T	21723357
2023-06-24	Caukadrove East	CKE_22	-16.829642	179.321164	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-24	Caukadrove East	CKE_23	-16.835856	179.272514	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-24	Caukadrove East	CKE_24	-16.817357	179.446588	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-24	Caukadrove East	CKE_25	-16.810965	179.397342	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A, T	21723379
2023-06-24	Caukadrove East	CKE_26	-16.814845	179.574348	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A, T	21723355
2023-06-24	Caukadrove East	CKE_27	-16.817606	179.512912	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-26	Caukadrove East	CKE_28	-16.776637	179.637786	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-26	Caukadrove East	CKE_29	-16.803779	179.603568	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-26	Caukadrove East	CKE_30	-16.750964	179.740481	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-26	Caukadrove East	CKE_31	-16.758166	179.701979	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A, T	21723352
2023-06-26	Caukadrove East	CKE_32	-16.789316	179.852249	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A, T	21723362
2023-06-26	Caukadrove East	CKE_33	-16.755506	179.807429	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-27	Taveuni	TAV_34	-16.998985	179.948554	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-27	Taveuni	TAV_35	-16.979929	179.879409	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A, T	21723352
2023-06-27	Taveuni	TAV_36	-16.887912	-179.911655	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A	NA
2023-06-27	Taveuni	TAV_37	-16.948155	-179.985438	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-27	Taveuni	TAV_38	-16.816029	-179.848559	100	FR	AW, AR, JLE	AJE, WN	AN	B, F, M, I, A, T	21723360

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-06-27	Taveuni	TAV_39	-16.881609	-179.870401	100	FR	EO, PT, AD	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-28	Laucala	LAU_41	-16.81701	-179.73163	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-28	Laucala	LAU_43	-16.788882	-179.662656	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723366
2023-06-28	Laucala	LAU_45	-16.704114	-179.661956	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-28	Nuku	NUK_40	-16.731256	-179.452154	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-06-28	Nuku	NUK_42	-16.666224	-179.418741	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723378
2023-06-28	Nuku	NUK_44	-16.579915	-179.354032	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-06-29	Nuku	NUK_46	-16.559645	-179.3933	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-06-29	Nuku	NUK_47	-16.343345	-179.391169	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-29	Nuku	NUK_48	-16.501065	-179.43146	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-06-29	Nuku	NUK_49	-16.314997	-179.439123	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-29	Nuku	NUK_50	-16.441741	-179.437914	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723363
2023-06-29	Nuku	NUK_51	-16.28247	-179.447999	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723354
2023-06-30	Qelelevu	QEL_52	-16.138567	-179.21995	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723370
2023-06-30	Qelelevu	QEL_53	-16.129823	-179.263181	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-30	Qelelevu	QEL_54	-16.048651	-179.268243	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-06-30	Qelelevu	QEL_55	-16.093449	-179.152735	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-06-30	Qelelevu	QEL_56	-16.046457	-179.364735	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-06-30	Qelelevu	QEL_57	-16.026919	-179.318529	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723372
2023-07-01	Cakau Vucovuco	CVU_59	-16.116644	-179.52756	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-01	Cakau Vucovuco	CVU_61	-16.071946	-179.525743	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723356
2023-07-01	Cakau Vucovuco	CVU_63	-16.059484	-179.591335	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-01	Vetaua	VET_58	-15.953522	-179.40046	100	FR	AW, LV, JLE	AJE, MT	AN	F, M, I, A, T	21723374

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-07-01	Vetaua	VET_60	-15.9417	-179.399675	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-01	Vetaua	VET_62	-15.949944	-179.416153	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-03	Yanuca	YAN_64	-16.442213	-179.666916	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-03	Yanuca	YAN_65	-16.562977	-179.69424	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-03	Yanuca	YAN_66	-16.47066	-179.71598	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-03	Yanuca	YAN_67	-16.53332	-179.65669	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723381
2023-07-03	Yanuca	YAN_68	-16.4736	-179.762484	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723358
2023-07-03	Yanuca	YAN_69	-16.497727	-179.64087	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-04	Great Sea Reef	GSR_74	-16.102689	-179.930135	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723353
2023-07-04	Natewa	NAT_70	-16.369429	179.796118	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-04	Natewa	NAT_71	-16.469923	179.740174	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723361
2023-07-04	Natewa	NAT_72	-16.247141	179.898201	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-04	Natewa	NAT_73	-16.309679	179.844063	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723375
2023-07-04	Natewa	NAT_75	-16.194051	179.969765	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-05	Great Sea Reef	GSR_76	-16.137334	179.96006	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-05	Great Sea Reef	GSR_77	-16.145437	179.680747	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-05	Great Sea Reef	GSR_78	-16.166111	179.898238	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-05	Great Sea Reef	GSR_79	-16.120056	179.60004	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-05	Great Sea Reef	GSR_80	-16.134882	179.78665	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723371
2023-07-05	Great Sea Reef	GSR_81	-16.146581	179.509774	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723349
2023-07-06	Great Sea Reef	GSR_82	-16.257198	179.199468	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-06	Great Sea Reef	GSR_83	-16.223817	179.396946	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-06	Great Sea Reef	GSR_84	-16.207882	179.119454	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-07-06	Great Sea Reef	GSR_85	-16.26569	179.317148	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723416
2023-07-06	Great Sea Reef	GSR_86	-16.176644	179.051599	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723369
2023-07-06	Great Sea Reef	GSR_87	-16.315463	179.278827	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-07	Great Sea Reef	GSR_88	-16.21224	179.03454	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-07	Great Sea Reef	GSR_89	-16.30743	179.021851	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-07	Great Sea Reef	GSR_90	-16.317282	178.919623	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723410
2023-07-07	Great Sea Reef	GSR_91	-16.301777	178.750353	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-07	Great Sea Reef	GSR_92	-16.304397	178.728345	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-07	Great Sea Reef	GSR_93	-16.294574	178.637896	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723396
2023-07-08	Great Sea Reef	GSR_94	-16.282893	178.527207	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-08	Great Sea Reef	GSR_95	-16.317888	178.40739	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-08	Great Sea Reef	GSR_96	-16.391033	178.318863	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A	NA
2023-07-08	Great Sea Reef	GSR_97	-16.406587	178.168648	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A	NA
2023-07-08	Great Sea Reef	GSR_98	-16.434217	178.0384	100	FR	AW, LV, JLE	AJE, MT	AN	B, F, M, I, A, T	21723346
2023-07-08	Great Sea Reef	GSR_99	-16.501884	177.93797	100	FR	EO, PT, AP	CJS, BJF	JT	B, F, M, I, A, T	21723377
2023-07-22	Great Sea Reef	GSR_08	-17.68272	177.09383	NA	FR	AJE, GT, GS, SM, JLE, AN	NA	NA	T	21722865
2023-07-22	Great Sea Reef	GSR_09	-17.80406	177.18332	NA	FR	SAS, NHH, AP, PB, SS	NA	NA	T	21722860
2023-07-24	Moala	MOA_02	-18.66235	179.91568	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A, T	21722872
2023-07-24	Moala	MOA_04	-18.59266	179.97221	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-24	Moala	MOA_06	-18.52027	179.96497	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-24	Moala	MOA_05	-18.55868	179.87791	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, T	21722864
2023-07-24	Moala	MOA_01	-18.65985	179.83273	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-24	Moala	MOA_03	-18.59506	179.80341	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-07-25	Tuvana-i-ra	TUR_09	-21.02690	-178.84984	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A, T	21723391
2023-07-25	Tuvana-i-ra	TUR_11	-21.04546	-178.83702	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-25	Tuvana-i-ra	TUR_07	-21.04823	-178.85774	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-25	Tuvana-i-colo	TUC_08	-21.01705	-178.75786	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-25	Tuvana-i-colo	TUC_12	-21.01384	-178.74026	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A, T	21723415
2023-07-25	Tuvana-i-colo	TUC_10	-21.00386	-178.75027	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-26	Vuata Ono	VUO_17	-20.73647	-178.85881	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-26	Vuata Ono	VUO_13	-20.75620	-178.89870	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-26	Vuata Ono	VUO_15	-20.73169	-178.89171	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A, T	21723364
2023-07-26	Ono	ONO_14	-20.69574	-178.73648	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-26	Ono	ONO_18	-20.62341	-178.67453	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-26	Ono	ONO_16	-20.63442	-178.76616	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A, T	21723359
2023-07-27	Kubara	KBA_20	-18.92854	-178.97575	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-27	Vuaqava	VUQ_24	-18.83876	-178.87619	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-27	Namuka	NAM_23	-18.84313	-178.59174	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A, T	21723345
2023-07-27	Kubara	KBA_22	-18.92210	-178.93759	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A, T	21723373
2023-07-27	Namuka	NAM_19	-18.86733	-178.67957	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-27	Namuka	NAM_21	-18.87884	-178.62573	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-28	Ogea	OGA_30	-19.09775	-178.38841	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A, T	21723380
2023-07-28	Ogea	OGA_26	-19.16849	-178.45219	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-28	Ogea	OGA_28	-19.12393	-178.43291	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-28	Fulaga	FUL_27	-19.09193	-178.58725	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-28	Fulaga	FUL_25	-19.12782	-178.61662	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-07-28	Fulaga	FUL_29	-19.12187	-178.53857	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A, T	21723405
2023-07-29	Yagasa	YAG_31	-18.90576	-178.54660	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-29	Yagasa	YAG_35	-18.98407	-178.41852	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-29	Yagasa	YAG_33	-18.89607	-178.45621	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A, T	21722902
2023-07-29	Komo	KOM_36	-18.65747	-178.62415	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A, T	21722949
2023-07-29	Komo	KOM_34	-18.69527	-178.61658	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-29	Komo	KOM_32	-18.66477	-178.61336	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-31	Bukatatanoa	BUK_38	-18.21069	-178.26907	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A, T	21722955
2023-07-31	Bukatatanoa	BUK_40	-18.26997	-178.23314	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-31	Bukatatanoa	BUK_42	-18.33026	-178.41978	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-07-31	Oneata	ONE_41	-18.37384	-178.49632	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A, T	21722887
2023-07-31	Oneata	ONE_39	-18.44229	-178.53677	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-07-31	Oneata	ONE_37	-18.45631	-178.46077	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-01	Cicia	CIC_47	-17.71689	-179.32396	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A, T	21722952
2023-08-01	Cicia	CIC_45	-17.76227	-179.35187	100	FR	AP, EO, SS	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-02	Lakeba	LAK_51	-18.16923	-178.79906	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A, T	21722888
2023-08-02	Lakeba	LAK_53	-18.25069	-178.81454	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-08-02	Lakeba	LAK_49	-18.18896	-178.83879	100	FR	GT, SM, JLE, AN	AJE, GS	AN	B, F, M, I, A	NA
2023-08-03	Vanau Balavu	VBA_59	-17.13386	-179.05450	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-03	Vanau Balavu	VBA_55	-17.17147	-178.88589	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A, T	21722893
2023-08-03	Vanau Balavu	VBA_57	-17.15333	-179.01309	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-03	Vanau Balavu	VBA_56	-17.30148	-179.03108	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A, T	21722886
2023-08-03	Vanau Balavu	VBA_58	-17.24355	-179.02422	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-08-03	Vanau Balavu	VBA_60	-17.16555	-179.07025	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA
2023-08-04	Vanau Balavu	VBA_62	-17.24331	-179.02538	100	FR	GT, NHH, GS, EO, AJE, JLE		RD	B, F, M, I, A	NA
2023-08-04	Kibobo Islets	KIB_61	-17.02892	-179.03851	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A, T	21722891
2023-08-04	Kibobo Islets	KIB_63	-17.05246	-179.05493	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-05	Kanecea	KNC_65	-17.23257	-179.10614	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A, T	21722904
2023-08-05	Vanau Balavu	VBA_62	-17.24278	-179.02554	NA	FR	SAS, EO	NA	RD	T	21722900, 21722889, 21722896
2023-08-05	Kanacea	KNC_64	-17.23260	-179.15691	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA
2023-08-05	Kanacea	KNC_66	-17.19551	-179.08298	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA
2023-08-07	Cakau Gula	CAK_67	-16.74098	-178.95139	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A, T	21722895
2023-08-07	Cakau Gula	CAK_69	-16.80128	-178.92949	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-07	Cakau Gula	CAK_71	-16.84729	-178.93518	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-07	Wailagilala	WAI_68	-16.73730	-179.10005	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A, T	21722894
2023-08-07	Wailagilala	WAI_72	-16.77930	-179.12480	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA
2023-08-07	Wailagilala	WAI_70	-16.77972	-179.08115	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA
2023-08-08	Vanua Vatu	VVA_73	-18.35976	-179.24855	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-08	Navatu	NTU_75	-18.65585	-179.57674	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A, T	21722954
2023-08-08	Navatu	NTU_77	-18.68587	-179.58904	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-08	Vanua Vatu	VVA_74	-18.34336	-179.27802	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A, T	21722953
2023-08-08	Vanua Vatu	VVA_76	-18.37707	-179.25700	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA
2023-08-08	Navatu	NTU_78	-18.67229	-179.54669	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA
2023-08-09	Totoya	TOT_79	-18.97314	-179.90686	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed

METADATA (continued)

DATE	ISLAND	Station_ID	Latitude	Longitude	Mosaic Area (m2)	Reef Type	Mosaic Divers	Fish Divers	Invert Diver	Data Collected	Temp Logger Serial #
2023-08-09	Matuku	MAT_83	-19.10372	179.75352	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A, T	21722892
2023-08-09	Matuku	MAT_81	-19.16961	179.80682	100	FR	JL, EO, KM	NHH, SAS	PB	B, F, M, I, A	NA
2023-08-09	Totoya	TOT_80	-18.88754	-179.86909	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A, T	21722907
2023-08-09	Totoya	TOT_82	-18.90983	-179.78131	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA
2023-08-09	Matuku	MAT_84	-19.16765	179.72250	100	FR	GT, RD, JLE, ST	AJE, GS	RD	B, F, M, I, A	NA

Reef Type: FR- Forereef, BR- Back reef

Data Collected: B- Benthic photoquadrats, F- Fish survey, M- Mosaic, I-Invertebrate survey, A-Algae collected, T-Temperature logger installed