TETIAROA SOCIETY FP 2021 IMPACT REPORT

We are very pleased to share with you Tetiaroa Society's 2021 Impact Report.

July 2022

The Covid pandemic made 2021 a challenging year. Travel to French Polynesia was severely limited for most of the year, The Brando resort was closed for almost half the year, and most international scientific projects had to be postponed or cancelled. This required us to make major program and staffing changes, but by redirecting our staff, using government Covid-related financial support, and relying on the comradery, hard work and creativity of our outstanding team, we ended up with a very productive year.

On the Research & Conservation front, we took advantage of the forced delay of our rat eradication program to conduct more detailed studies and monitoring work for our Tetiaroa Atoll Restoration Program (TARP). This included more thorough work on coral, plant, bird, algae, and invertebrate studies which will help determine the impact of rat eradication on atoll wildlife. Our partners also advanced work on habitat mapping, mosquito monitoring and abatement, shark research, no-fishing zone research, submarine groundwater discharge, and turtle research.

Covid severely impacted local schools, which in turn caused us to curtail our local and international education programs. But we were able to squeeze in a few school programs, including work with the University of French Polynesia. And we were delighted to host representatives of Arue on Tetiaroa, which provided an opportunity to discuss the impact of fishing on marine life in the lagoon and opportunities for improved fisheries management.

We believe collaboration is essential for the creation of broadly impactful projects, and have continued to focus on collaborations as a key component of our operations. Collaborations include 4Site Pacific Collaborative (with The Nature Conservancy, the University of Hawaii, the University of California, and CNRS – EPHE CRIOBE), the FAIR Island Project, and Mission Blue.

On a global scale, we are working on the Blue Climate Initiative which is focused on ocean-related solutions to climate change. This UN-endorsed project is seeking to maximize our impact on the biggest environmental challenge humankind has faced. For more information, see blueclimateinitiative.org.

In conclusion, we would like to thank The Brando for its critical funding of our core operations, S.A. Frangipani for its confidence in us to serve as the steward of the atoll, the generous donors who are supporting our TARP program, and all of our other donors whose generosity and vision have helped us advance research and programs to achieve a global impact.

Stan Rowland
President

&

Frank Murphy
Executive Director

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RESEARCH & CONSERVATION

Tetiaroa Society's Research and Conservation Programs were of course impacted by the Covid pandemic. This was mainly because travel restrictions stopped international researchers from being able to come to Tetiaroa to conduct fieldwork. We were however able to carry out a lot of work with local researchers. Programs run by local research institutions like the Institute Louis Malarde and local NGOs like Te Mana o te Moana continued as usual. Tetiaroa Society was also able to hire local field scientists and engage volunteers to help us carry out some of the field work that our international colleagues had planned. In the end it was a productive year for research and conservation given the circumstances.

Tetiaroa Atoll Restoration Program

The Tetiaroa Atoll Restoration Program (TARP) aims to restore seabird populations and to establish Tetiaroa as a sanctuary for seabirds, green sea turtles, coconut crabs, and translocated endangered endemic birds.

In addition to the TARP program helping to restore seabird populations and establishing Tetiaroa as an important wildlife sanctuary, we are leveraging the unique capacity of the site and our partners to scientifically establish the value of atoll restoration for coral reef conservation. The conservation science we propose will extend studies that suggest seabird colonies might increase the resilience of coral reefs through the fertilizing effect of nutrients from the bird's guano. Testing this hypothesis on Tetiaroa, and demonstrating the underlying ecological mechanisms, will complement traditional Polynesian knowledge and help raise awareness of the importance of restoring natural land-sea connections for biodiversity conservation and sustainable human development.

The following six projects were key components of the our 2021 TARP program.

TARP: Coral Reef

Principal Investigators: Rebecca Vega Thurber, Deron Burkepile
Affiliations: Oregon State University, University of California Santa Barbara
Project Dates: January 2021 – long term

The objective of this research is to assess the impacts of rat eradication and the subsequent return of healthy seabird populations on the health of the adjacent reefs on Tetiaroa.

To find causal links across the land-sea interface, we are tracking how benthic (e.g., sediment, coral and algae) and pelagic (e.g., fish) assemblages and their ecology, biogeochemical cycling and microbial communities change throughout the rat eradication that is currently in progress on Tetiaroa under the guidance of Island Conservation and the Tetiaroa Society. This holistic sampling approach allows us to characterise the environment in which reef organisms are living and assess both shifts in and impacts of nutrient cycling as a result of rat eradication.

Baseline fish collection and surveillance was undertaken after the receipt of our DRM fishing permit in October 2021. We sampled representative fish species from different trophic levels and functional roles (e.g., herbivore, predator) and visually surveyed fish and benthic communities along 51 transects (30 meters each) spread across 13 lagoonal sites while simultaneously conducting video and photo surveys of the benthos. This allows them to serve as permanent transects to monitor changes in fish and benthic community structure as rats are eradicated.

With our ongoing research, we aim to increase our understanding of what drives coral health, allowing us to better assess the current and future resilience of Tetiaroa, and other coral reef island ecosystems across the tropics.

TARP: Plants

Principal Investigator: Jean-Yves Meyer
Affiliation: Université de la Polynésie Française
Project Dates: January 2021 – long term

Monitoring conducted along 10 transects located on Motu Reiono to study forest dynamics (seedling recruitment of native woody plant species) after rat eradication in 2018 revealed an increase of the native tree Pisonia grandis, but also Pandanus tectorius and Guettarda speciosa. However, the total number of Pisonia seedlings has dramatically decreased in the past two years, and found below its original level of 2018. In July 2021, we have set up 10 new transects on Motu Auroa, and added to our seedling recruitment protocol a visual assessment of herbaceous plant cover in order to monitor the potential changes in abundance of the creeping herb Boerhavia tetrandra, the succulent Portulaca cf. oleracea, and the terrestrial fern Microsorum grossum which might be also eaten by rats.These 20 transects will be monitored again in 2022.

TARP: Bird Survey

Principal Investigators: Simon Ducatez, Jayna DeVore
Affiliations: Institut de Recherche pour le Développement, Tetiaroa Society
Project Dates: September 2021 – long term

One major benefit of the upcoming rat eradication is that seabird abundances are expected to increase, restoring both seabird populations and the nutrient inputs they provide. Understanding how seabirds respond to rat eradication is therefore an important step in understanding the effects of rat eradication on the entire ecosystem.

Since tropical seabird species tend to breed most of the months of the year, it is necessary to monitor them multiple times in a year. We have therefore implemented a long-term, atoll-wide, spatially explicit monitoring program. In July 2021, we established 100m long transects along the entire outer perimeter of every motu which we then monitored every month to determine relative bird abundance. We will continue to monitor these transects on a monthly basis until July 2022, at which point we will use the data to construct detailed breeding shcedules for each of the seabird species breeding on Tetiaroa. After this point monitoring will occur every 3 months. Ultimately, this monitoring program will provide essential pre-eradication information on seabird abundances and phenology that can serve as baseline data for long-term monitoring programs or research projects that aim to establish how changes in seabird-derived nutrients affect atoll functions or communities.

TARP: University of Washington Bird Study

Principal Investigators: Beth Gardner, Sarah Converse
Affiliation: University of Washington
Project Dates: January 2021 – long term

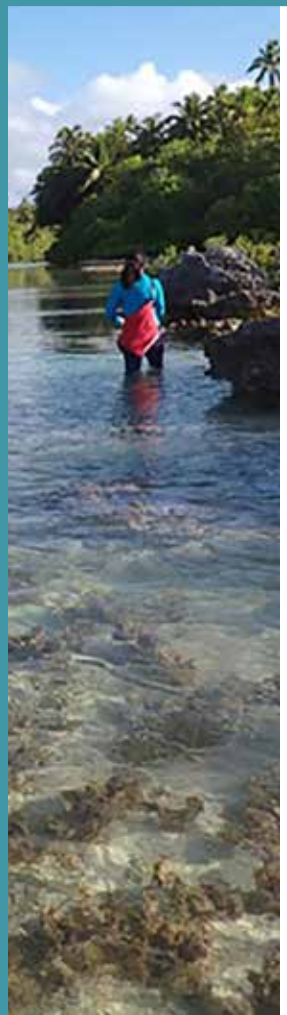
Our major activities have included determining activity and abundance of seabirds across the atoll in order to evaluate changes after rat eradication, monitoring nesting success because nesting success is likely most sensitive to the presence of rats, and banding birds so we can estimate survival and movement over the long term.

In 2021, we made two trips to Tetiaroa, one in June/July and one in December. To establish the relative activity of seabird species, we deployed 40 acoustic recorders during each visit to record sounds for 10 minutes each hour across the atoll. We also conducted point counts at 70 locations across Honuea, Iti, Rahi, Aie, and Reiono. To determine the potential effects of rats on nesting success of seabirds, we established 3 Brown Booby nest monitoring transects, one each on Tahuna Iti, Tiaraunu, and Hiraanae and recorded the density of nests at each transect. We set cameras at 12 Brown Booby nests in July 2021 and 8 nests in December 2021 to determine nest success and causes of nest failure. We are continuing to monitor nest success on these transects, and currently have 20 cameras deployed on Brown Booby nests on the transects. We began monitoring Red-footed Booby nests at approximately 30 randomly selected plots on Iti, Tiaraunu, and Hiraanae in July 2021. We also initiated nest monitoring for Brown Noddies on Aie, Iti, and Rimatuu to evaluate the potential impacts not only of rats but also of yellow crazy ants. Finally, over the course of the year, we banded 15 Brown Noddies, 22 Brown Boobies, and 33 Red-footed Boobies. Resighting data on these birds around the atoll can be used to estimate survival and movement rates.

TARP: Algae

Marine flora diversity of Tetiaroa atoll

Principal Investigator: Mayalen Zubia
Affiliation: Université de la Polynésie Française
Project Dates: January 2021 – long term



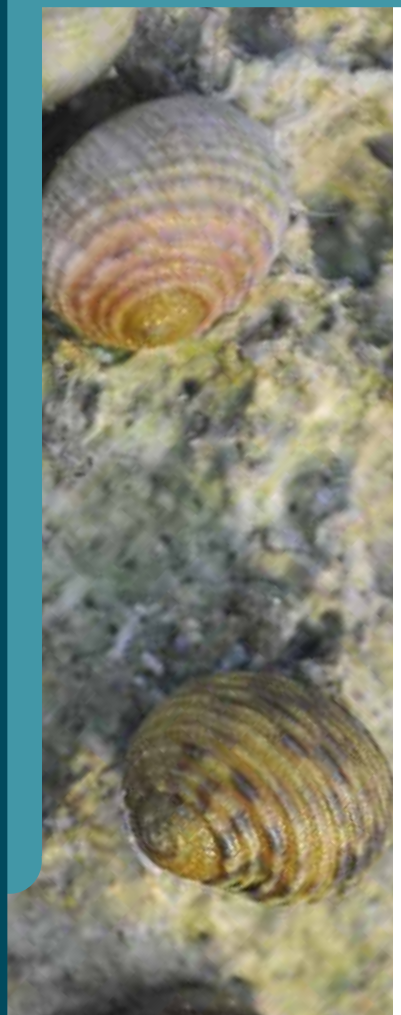
The objective of the 2021 field mission is to launch a preliminary marine flora inventory of Tetiaroa. To date some specimens have been collected but no studies have described the algal community of this atoll.

To do so, we will implement primary sampling in the lagoon of Tetiaroa in terms of the habitat typology. This preliminary inventory would help us achieve a former assessment of the macrophytes (macroalgae and seagrasses) and benthic cyanobacteria specific diversity dwelling on this island. The species identification will be performed through morphological and molecular analysis (for certain groups only).

We also took advantage of this mission to work on the metabolome and microbiome of the Caulerpa genus. Our objective is to develop an identity card of the Caulerpa taxa using three complementary approaches: (1) molecular taxonomy and phylogeography to identify the clades (Caulerpa genus comprises a species complex), (2) chemotaxonomy with a metabolomic approach to determine the chemical signature of each clade, and (3) next-generation sequencing to assess the composition of microbial communities associated with the seaweed. It is therefore important to integrate microbiome components to studies on macroalgal proliferations in the Indo-Pacific reefs.

TARP: Invertebrates

Principal Investigators: George Roderick, James Russell, Sebastian Steibl
Affiliations: University of California Berkeley, University of Auckland
Project Dates: January 2021 – long-term



Invertebrates (insects, spiders, crabs, etc.) fulfil many ecological functions that are crucial for the stability of ecosystems, e.g., pollination, nutrient recycling, or removal of dead material.

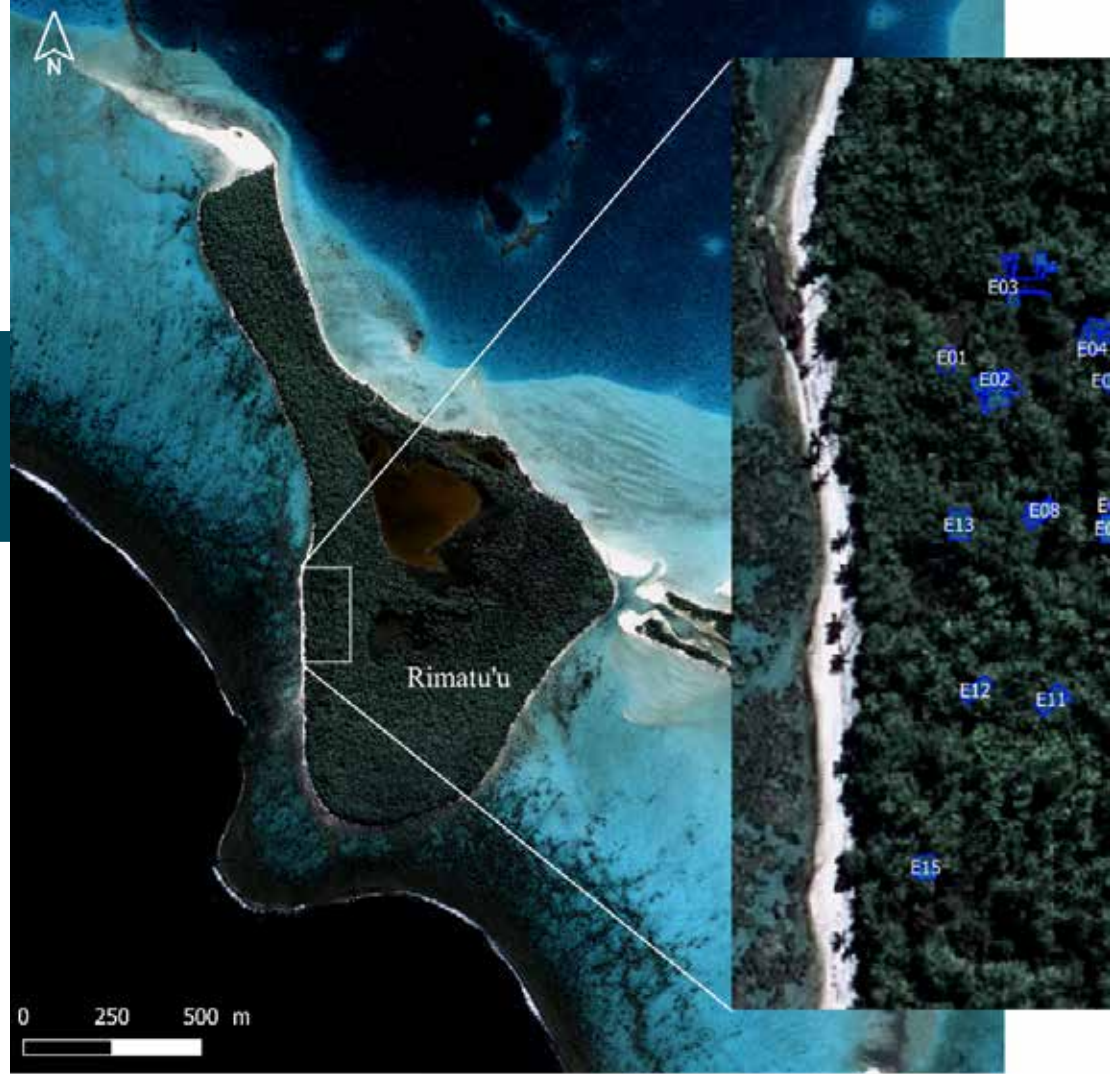
The goal of this research is to understand how terrestrial invertebrates, and thus ecological functions, change following invasive species management.

For this, we use a standardized monitoring on all twelve motus that allows us to study invertebrate biodiversity before and after ecosystem restoration measures. Compared to vertebrates, we know only little about the invertebrate diversity on Tetiaroa, so part of the work was to inventory the invertebrate community. We have catalogued more than 200 invertebrate species already, a number being documented for the first time in French Polynesia, and some might even be new, undescribed species! In addition, we established a monitoring system for the reptile populations, as they are a relevant link in the food web between insects and invasive rats.

Mapping Tetiaroa

Geographic Information System

Principal Investigator: Benoit Stoll
Affiliation: Université de la Polynésie Française
Project Dates: Ongoing



The Tetiaroa Geographic Information System project is involved in developing maps and analyzing GPS, Satellite, and LiDAR data on Tetiaroa.

This has involved detailed mapping of Onetahi in collaboration with Institute Louis Malardé, the analysis and processing of historical aerial photos, mapping of turtle nesting sites for Te Mana o te Moana, mapping cultural sites in collaboration with Australian National University, and creating a vegetation map.

In 2021 the GIS team worked on mapping and ground truthing a Habitat Map that will allow researchers to predict and test future changes to the terrestrial system after rat eradication.

Mosquito Abatement

Innovative Mosquito Surveillance

Principal Investigator: Herve Bossin
Affiliations: L'Institut Louis Malardé, The Brando, Tetiaroa Society
Project Dates: Ongoing

In 2021 the COVID crisis continued to impact the resort's activity as well as ILM's mosquito pilot operations in Tetiaroa. Mosquito monitoring continued for the first half of the year.

However, previous years of successful mosquito suppression on Tetiaroa has paved the way for the development of INNOVENTOMO, ILM's new mosquito research facility. This facility is funded jointly by the French Polynesian and French National governments includes the first male mosquito mass production facility in France and the Pacific. In 2022 the further field validation of innovative mosquito tools and protocols in Tetiaroa will directly benefit Pacific island communities through upcoming larger-scale island interventions. The inclusion of mosquito elimination as part of the Tetiaroa Atoll Restoration Programme (TARP) will provide an unprecedented opportunity for operational and environmental research.

Shark Research Program

Principal Investigators: Aaron Wirsig, James Killfoil
Affiliation: University of Washington
Project Dates: October 2021 – long-term

This past October, in partnership with the Tetiaroa Society, scientists from the University of Washington, Florida International University, and the Centre de Recherches Insulaires et Observatoire de l'Environnement (CRIOBE) began the first long-term study on the spatial of ecology of sicklefin lemon (Negaprion acutidens) and blacktip reef sharks (Carcharhinus melanopterus) inside Tetiaroa.

The collaborative research team was able to deploy a network of 10 underwater acoustic receivers throughout Tetiaroa's lagoon, each capable of tracking the movements of tagged sharks for years to come. Using minimally invasive fishing methods, the researchers also tagged 23 blacktip reef and 7 sicklefin lemon sharks, ranging from juveniles to mature adults. This long-term study will provide much needed data that can be used to assess the potential impacts of climate change, coastal development, and differing conservation management decisions on sharks. Furthermore, researchers will use these data to explore critical ecological questions, including how juveniles and adults use the lagoon differently, how long juveniles stay in Tetiaroa before migrating to other systems, if sharks that leave the lagoon come back in subsequent years, and identifying areas of the lagoon that are more frequently used (and thus of potential importance for sharks).

Survey of ZPR

CréOcéan

Principal Investigators: Team Créocéan Pacifique
Affiliation: Polynesia Marine Resources Development
Project Dates: 2021

2021 mission to monitor fish and benthic populations in the regulated fishing areas (ZPR) of Tetiaroa for the Polynesia Marine Resources Department.

For a week, the Créocéan Pacifique team carried out counts of fish and benthic invertebrates, accompanied by assessments of the nature of the substrate, in the lagoon and on the outer slopes. 10 lagoon stations distributed in the different habitats and 6 outdoor stations were sampled using the semi-circular fixed-point method for fish, the corridor transect for invertebrates and the Point Intersept Transect (PIT) for the substrate. The plan is to do this annually to monitor changes in the lagoon and outer reef slope.

Ocean Acidification

Principal Investigators: Julian Sachs, Alex Gagnon
Affiliation: University of Washington
Project Dates: January 2021 – December January 2022

We made significant progress during the past year reaching our primary technical goal. We demonstrated that we can extract sufficiently large quantities of CO2 from SWAC water to acidify a 4 cubic meter patch of reef to year-2100 levels.

This progress was made possible by a 6-day field campaign on Tetiaroa in Jan. 2021 and extensive laboratory testing and experimentation at UW.

The key developments and innovations making a 4-cubic-meter yr-2100 acidification experiment possible, many of which were achieved during the past year, include:

- Heating of the SWAC water prior to CO2 extraction using a high capacity stainless steel heat exchanger through which warm lagoon water is cycled.
- Applying a vacuum downstream of the gas contactor membrane (through which the CO2 passes from SWAC water to a gas stream) operating two gas transfer membranes in parallel and combining their output.
- Maximizing the flow of SWAC water.
- Designing a mixing line to dissolve the harvested CO2 into lagoon water.
- Designing a gas-water separator for liberating gas bubbles from the CO2-enriched lagoon water before it is sent to the reef. c\
- Conducting numerical modeling studies to characterize the chemistry and physics associated with key steps in the above listed processes.

These innovations and methods are now described in a manuscript ready for submission to a peer-reviewed journal of oceanography and climate.

Submarine Groundwater Discharge

on Moorea and Tetiaroa

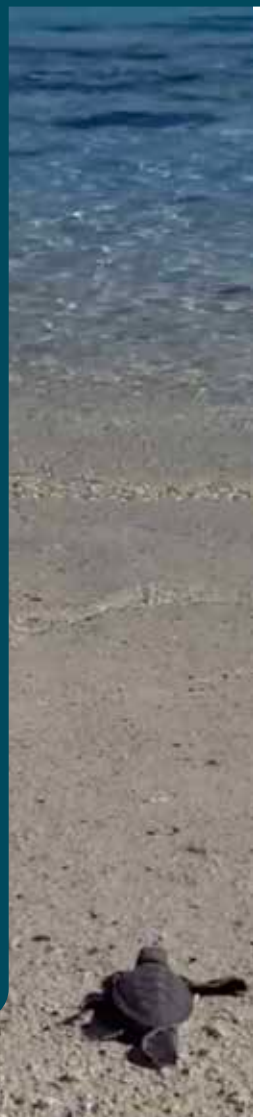
Principal Investigators: Matt Becker, Klaus Hagedorn
Affiliation: California State University Long Beach
Project Dates: January 2021 – December January 2021

Submarine groundwater discharge (SGD) is known to have a significant impact on near-shore chemistry in many tropical islands.

In some studies, alkalinity has been increased due to SGD and in other studies it has decreased. Understanding this process is important for understanding and predicting ocean acidification (OA) in reef systems because SGD may act to buffer or accelerate OA. Ultimately, we hope to compare SGD alkalinity impacts on a fringing reef (Moorea) and atoll reef (Tetiaroa) to see how these end members influence the biogeochemistry. We approach this problem from the terrestrial side, however, focusing on the fluxes of geochemistry from groundwater. The primary purpose of these initial surveys is to support a NSF proposal to carry out the full research. We are collaborating with CSU Northridge on this project.

Green Sea Turtle Research

Principal Investigators: Cecile Gaspar, Margaux Touron
Affiliation: Te Mana o te Moana
Project Dates: Ongoing



Tetiaroa Atoll represents a unique place for Green Sea Turtles in French Polynesia, as one of the last remaining nesting sites in the Society Islands.

Field work in 2021 included:

A. Research on nesting females: Identification of nesting females using photo identification, genetic samples and flipper tagging are carried out to better understand inter-annual nesting frequency and their genetic structure. In addition, post-nesting females are tagged and tracked by satellite during their migration route in order to map feeding areas.

B. Research on eggs and hatchling survival rate: Protection of hatchlings is the second key component of this program. It involves nest excavation to gain insight on natural hatching success. Teams in the field also record incubation temperature using thermo-loggers inside the nests to get an estimate of newborns sex ratio.

C. Research on climate change impact: To lead this project, high tech monitoring tools have been deployed : a tide gauge and three aquatic loggers is set up to establish sea water level and sea surface temperature baseline and to evaluate long-term evolutionary trends. A GPS (RTK-GNSS) base station operates as a high spatial accuracy geo-referencing system. In addition, in January 2021, drone surveys were carried out to obtain a 3D profile of the main nesting beaches providing insight on the erosion and sedimentation levels taking place during a specific period of time.

Finally, temperature loggers are installed in the nests to record incubation conditions and obtain an estimate of hatchling sex ratios.

D. Research on predation impact: To better understand the impact of predation by Ship rats (Rattus rattus) and Polynesian rats (Rattus exulans), motion-triggered cameras are set up on turtle nests. Observed behaviors indicate that Green Sea Turtle hatchlings are a familiar food source for these invasive species.

Drone surveys were also lead during hatching moment, in order to evaluate the lagoon predation. The organization discovers interesting predators, like octopus.

EDUCATION

Covid complications and weather made things difficult again this year for our Education Program but we were able to host a few schools early in the year.

UPF Students & the TS Cultural Comittee - April 2021

In April, for the first time, TS was able to host a group of students from the University of French Polynesia. These students were seniors in the Tahitian language program and were coming to Tetiaroa to learn about the cultural history and the work that Tetiaroa Society does. They were accompanied by a professors from UPF and members of our Cultural Committee. Their stay was highlighted by excellent lectures, workshops, and excursions, and their excitement and lively spirits were infectious for all of those on the island.

MFR Tahuruu build a traditional *maite* - May 2021

In May we hosted MFR Tahuruu, a trade school which specializes in agriculture. They came with a project to build a maite or traditional atoll pit for growing taro. There are in fact ancient maite on some of the motu, but with the permission of Tahiti Beachcomber, this one was built on Onetahi so that it can be used by staff and student groups into the future.

Samuel Raapoto & Ecole Viennot - June 2021

Two other local schools, Samuel Raapoto and Ecole Viennot came in June and followed our standard curriculum learning about the natural and culrual heritage of the island and island sustainability.

Cape Henry Collegiate in Virginia - June 2021

We also hosted one US high-school group from Cape Henry Collegiate in Virginia. They spent three days on the island and learned about our programs, how to do marine transects, and some Polynesian cultural history.

COMMUNITY

Meeting with Arue Mayor and Fishermen in April

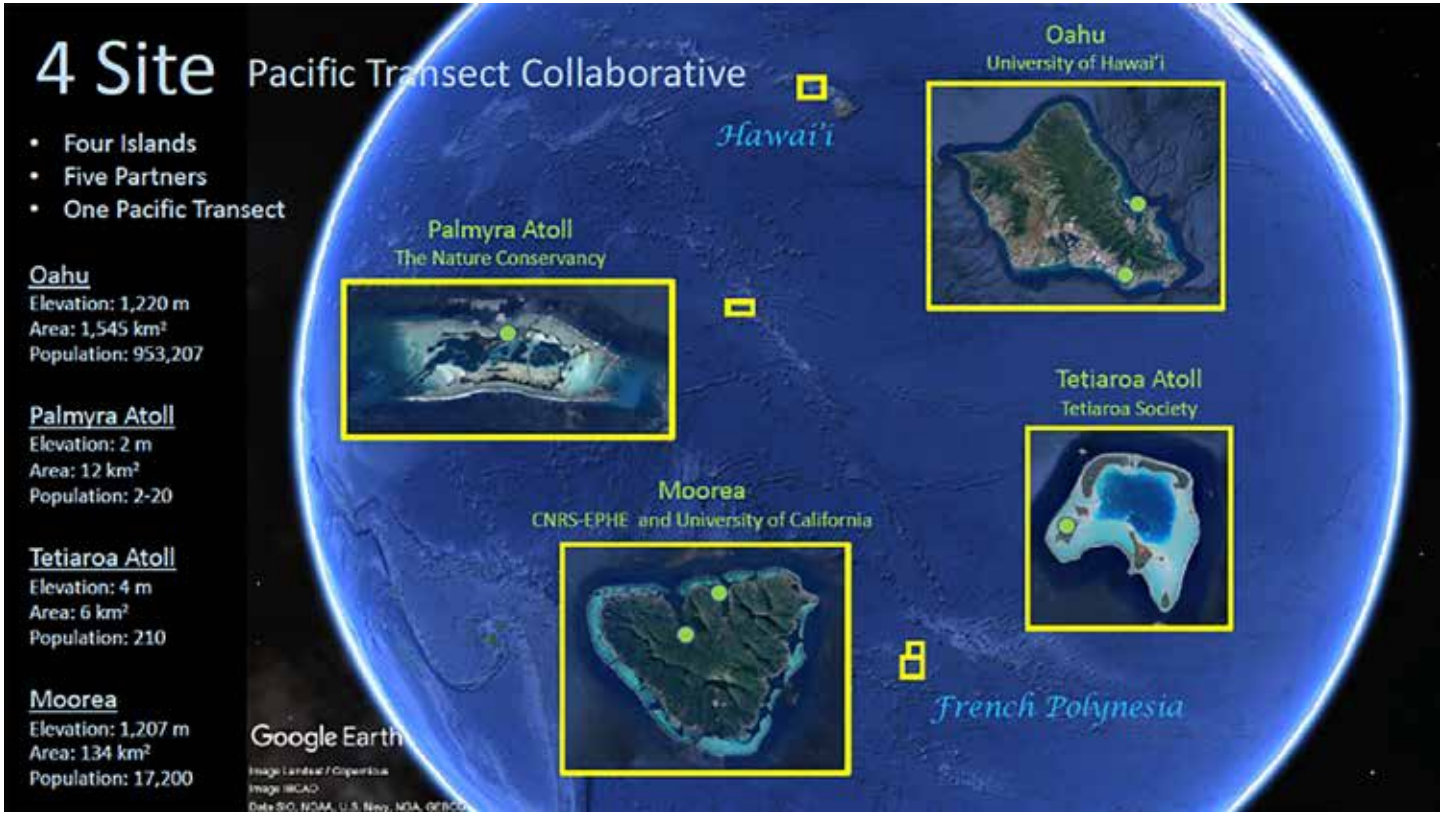
In April Tetiaroa Society hosted a group from the commune of Arue that included the mayor and advisors, members of two fishing cooperatives, and a representative of a local environmental NGO. This is part of a larger committee that manages the protected half of the Tetiaroa lagoon which is designated as a no-take zone. The discussion centered around fishing pressure on the island as a whole, both inside and outside the barrier reef. TS introduced the group to our Conservation and Sustainable Use Plan and our research and conservation programs. We also presented data on fishing that had been collected through 2020 by Head Ranger Teva Beguet and his team. This pressure showed minimal fishing in the lagoon but intense pressure on a few species of fish on the outer reef. By the end of the weekend there was general agreement that the no-take zone should be extended to the whole of the lagoon in the form of a rahui (traditional managed area) and that further discussions were needed to develop a plan to manage the outer reef fishery.

Project Tau Matarii in May

In May a group of young workers came to Tetiaroa to gather Pandanus leaves to be used for roofing on a traditional Fare Potee at the Town Hall in Arue. The group was led by Deputy Mayor Jacky Bryant and they spent three days gathering and preparing the leaves and then wrapped them up and got them on the barge back to Tahiti. This was a great learning experience for these young people, a nice collaboration with the community, and an interesting confirmation that Tetiaroa is a reasonable source for Pandanus material if we were ever interested in making use of that.

SCIENTIFIC COLLABORATIONS

4Site Pacific Collaborative



The 4Site Pacific Collaborative has been set up along transect from Hawai'i to French Polynesia and is anchored at research hubs on Oahu (University of Hawai'i), Palmyra (The Nature Conservancy), Moorea (University of California Gump Station and CNRS-EPHE CRIOBE), and Tetiaroa (Tetiaroa Society). The sites offer a spatial, sociocultural, and biogeographical gradient and representation of both high islands and atolls. The partnership between these institutions will leverage already existing data on each site and create new research and monitoring programs across sites to help promote a sustainable future for Oceania.

Fair Island Project

The FAIR Island Project is working with Tetiaroa Society to coordinate research on the island with an optimal data policy for open access, mandatory registration requirements, and data management plans containing controlled vocabularies and identifiers implementing global standards. All researchers working on Tetiaroa, resident or visiting, are required to create data management plans (DMPs) for their proposed projects to study the island and said DMPs are updated as data collection advances. The goal is to translate the broader FAIR principles into a set of specific requirements and implementable activities that demonstrate how good data management practices and policies accelerate research for the benefit of all stakeholders.

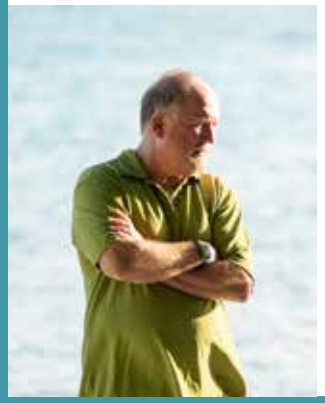
Mission Blue Hope Spot

In November of 2021 Frank Murphy from Tetiaroa Society and Cecile Gaspar from Te Mana o Te Moana presented the Tetiaroa Hope Spot at the annual Hope Spot Summit. Dr Sylvia Earle presided over the virtual Summit. Topics ranged from introduction of new Hope Spots to ways in which Hope Spots could potentially collaborate.

OPERATIONS

Personnel

With the continuing pandemic and reductions in tourism and income, all Tetiaroa staff worked most of the year under pay reductions. Once again a shared sense of mission, good humor, and teamwork got everyone through this hard time.



Executive Director

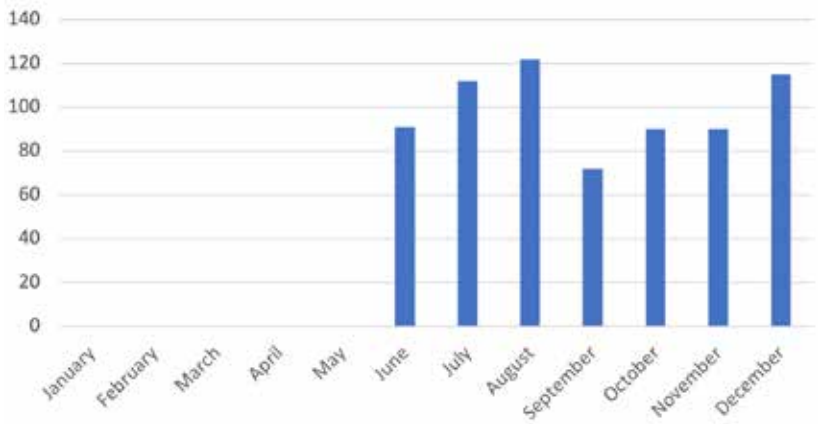
	Total	Av/Mo
Days worked	269	22
On Tetiaroa	144	12
Off island	125	10

Frank Murphy continued to serve as Executive Director of Tetiaroa Society French Polynesia. His duties include: overseeing the Guide Program, the Ranger Program, all administrative issues, human resources, accounting, communications, and developing and managing CASUP programs. He also interfaces with guests of The Brando, does lectures, and occasionally guides tours. He works on the island and also out of a home office on Moorea.

Guide Program

Actions and Tour Numbers

Tours per month	
January	0
February	0
March	0
April	0
May	0
June	91
July	112
August	122
September	72
October	90
November	90
December	115



The Guide Program started out the year with the resort closed, so once again the Guides became field scientists. They worked on an arthropod survey across all motu as part of the TARP and took advantage of other times to work on the Tetiaroa knowledge base. Normal guide work started again in June and hotel occupancy quickly rose to levels last seen in 2019. The team of (from left to right) Tihoni Maire as Head Guide and the Guides Virginie Poly, Vanille Thullier, Herehia Sanford, Mareva Barbeau, and Kealoha Wilkes, did a great job picking things back up.

Ranger Program

The team and the work

Tetiaroa Society was still under government contract until November which did not allow us to hire a third Ranger until then. Head Ranger Teva Beguet and Ranger Luciano Kolikalangi continued to actively patrol Tetiaroa and kept the atoll under close surveillance throughout 2021. Tetiaroa Society Guides, who had a much-reduced workload in early 2021 due to the closure of The Brando and low occupancy rates, were able to fill in helping the Rangers with their work.

While not out patrolling Tetiaroa, the Rangers also managed and maintained the Ecostation, hosted Ecostation guests, assisted scientists in the lab and in the field, drove Tetiaroa Society boats, maintained the boats, did trail maintenance, and did a lot of administrative work that allowed Tetiaroa Society to function efficiently.

In November Tetiaroa Society hired Antonin Fioretti who had spent time as a volunteer on Tetiaroa a few years ago. He fitted in seamlessly with our team.

Activities	Hours
Lagoon Surveillance	679
Research/User Assistance	1,007
Administrative	1,073
Facilities Maintenance	238
Boat Maintenance	155
Motu Work	78
Education Program	45
Other	25

The log and chart represent the hours spent on different jobs by the two Rangers from January through October and then three Rangers during the last two months of the year.

Ranger Program : Charter Boat Monitoring

Private charter boats routinely visit Tetiaroa. These charter boats typically anchor outside of Rimatu'u, and then send their guests across the reef. Once the guests arrive on Rimatu'u, they can legally walk on the beach or, with the permissioion of Tetiaroa Society, they can walk the trail across the motu. Tetiaroa Society had created a partnership with three of the companies that initially agreed to pay a nominal sum for access to the trail. However, payments were not regular, there were arguments about the amount, and then in 2020 payments stopped completely.

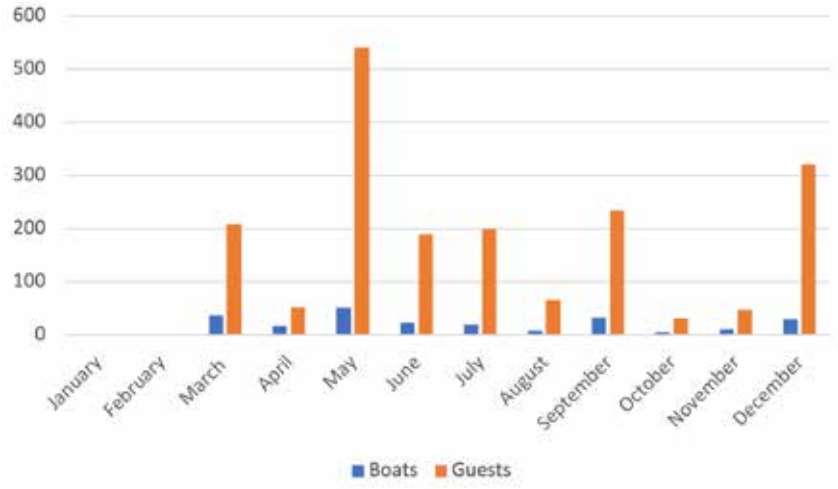
In 2021 Tetiaroa Society developed a contract agreement that was sent to all charterboat companies in Tahiti in which we described what we wanted in a partnership. This included a nominal fee (200cfp or about $2.00) for access to the trail, a commitment that all groups had a guide that stayed with them the entire time, no food on the island, no walking on Bird Island beaches, and a respect for plants and animals. The response was underwhelming and finally a letter from the union for maritime activities rejected virtually all of our requests. At that time we regretfully terminated all partnership agreements with charter companies and have effectively stopped working with them.

Charter Boat Visits

	Boats	Guests
January	0	0
February	0	0
March	37	208
April	17	53
May	52	541
June	23	190
July	20	200
August	9	66
September	33	235
October	6	32
November	10	48
December	30	321

Tetiaroa Society Rangers carry out daily observations of the charter boat activities. Since termination of the partnerships the Rangers have stopped all charter guests from accessing the trail across the motu. They have also kept track of the number of private charters coming to Tetiaroa and the number of guests each charter brought to the atoll.

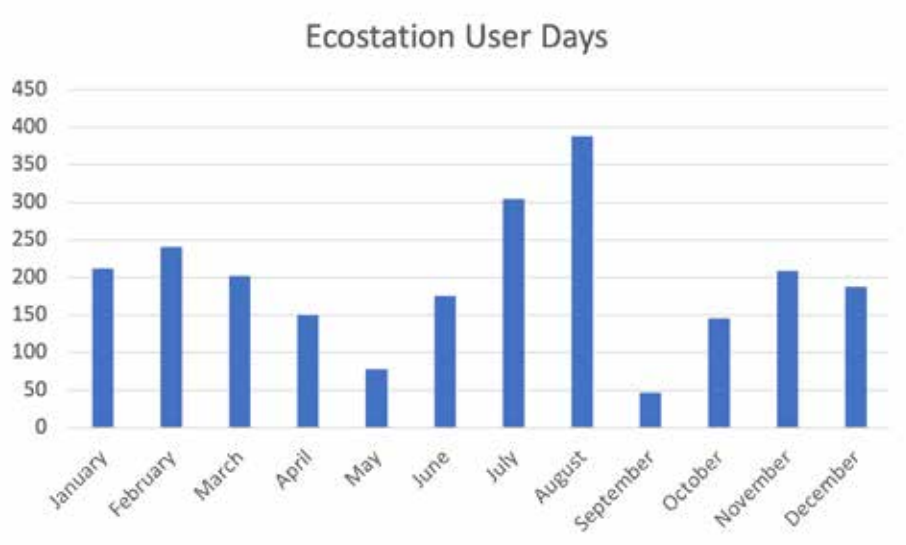
The results of this survey are set forth in the chart and graph. As you can see, the number of private charters visiting Tetiaroa was zero in January and February due to covid restrictions. Then they came back very slowly compared to past normal years.



Ecostation Use

Ecostation use was lower this year because of Covid related travel restrictions. We hosted a lot of volunteers working on the eradication program and other field work. Our Tetiaroa Atoll Restoration Program also brought in a lot of local researchers working on various monitoring programs.

User Groups	User Days
U. Auckland/Island Conservation	305
Te Mana o te Moana	246
Tetiaroa Society	232
U. Washington	190
Inst. Louis Malarde	172
Universite Polynesie Francaise	159
Island Conservation	134
U. Auckland	129
Oregon State University	109
Inst. Recherche Developement	86
Cal State Long Beach	78
U. Redlandsw	40
DRMM	10
CRIOBE	8
U Georgia	8
UCSC	3
UCSD	3
TOTAL	1607

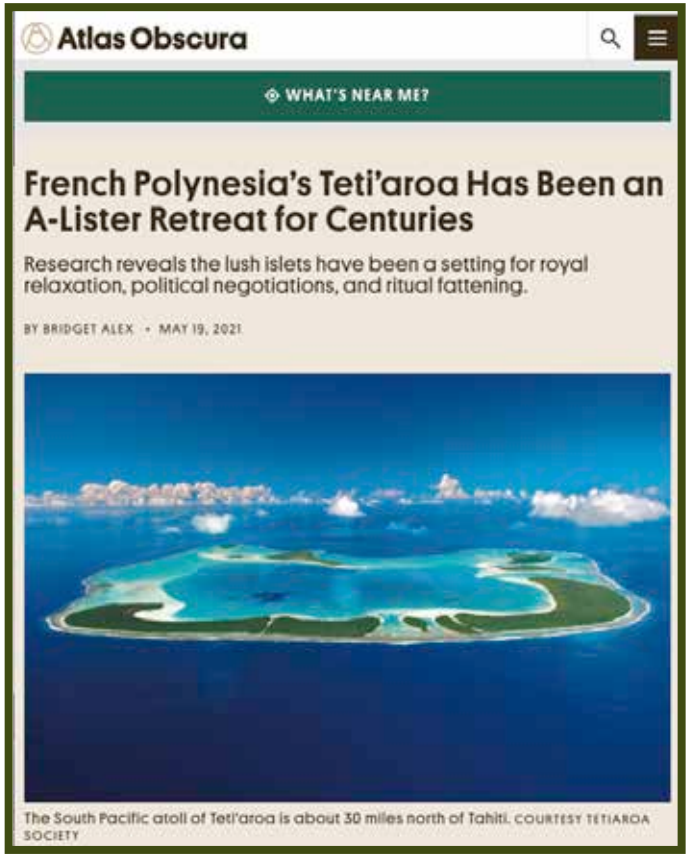


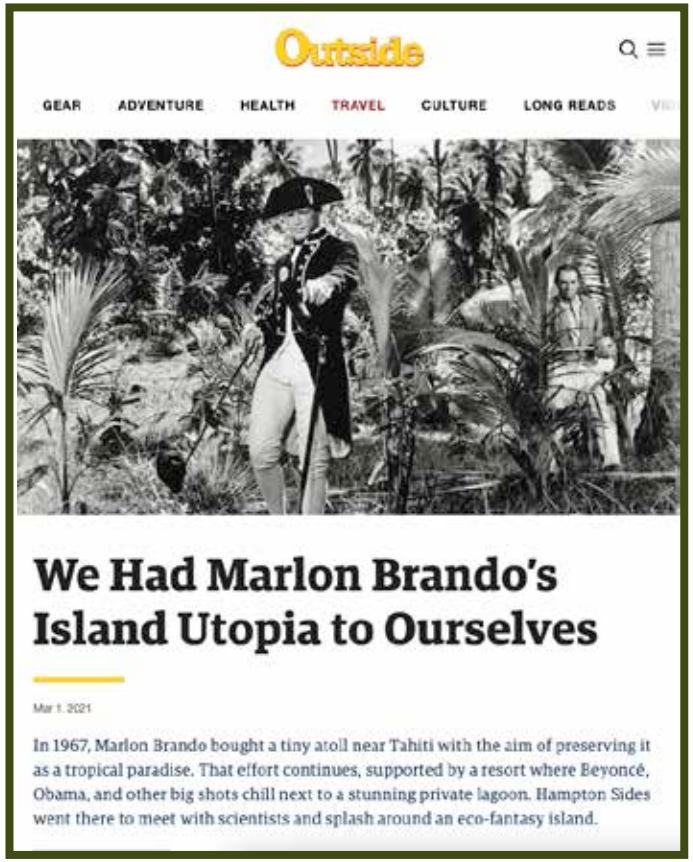
Month	User Days
January	179
February	136
March	152
April	215
May	161
June	151
July	324
August	203
September	51
October	146
November	153
December	65

RAISING AWARENESS

Communications

Tetiaroa Society Communications rolled along this year with regular newsletters and website updates. Tetiaroa also appeared in the global press in magazine articles.





Monthly Newsletters "News from the Atoll"

Issue	Open Rate
April	45%
Impact Report	41.6%
June	43%
September	42%
Giving Tuesday	48%

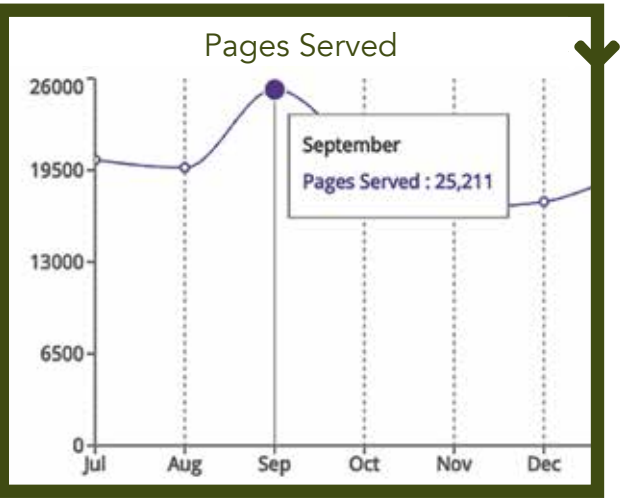
USA	1,443	49.5%
France	286	9.8%
United Kingdom	211	7.2%
Germany	120	4.1%
Canada	110	3.8%

Tetiaroa Society's newsletter, "News from the Atoll" has 4304 subscribers. Our open rate is consistently well above average for a non-profit. Our subscribers are scattered all over the world, as is illustrated by the map on the right. The darker the shade on a country, the more subscribers there are. It can be estimated that 10% of our subscribers are reading the French version of the newsletter. TS gained 162 new subscribers in 2021, 82 from the website popup form, 80 imports from TS sources, and 10 from hosted signup forms.

Communications via Website & Social Media

Site Traffic

July to December 2021



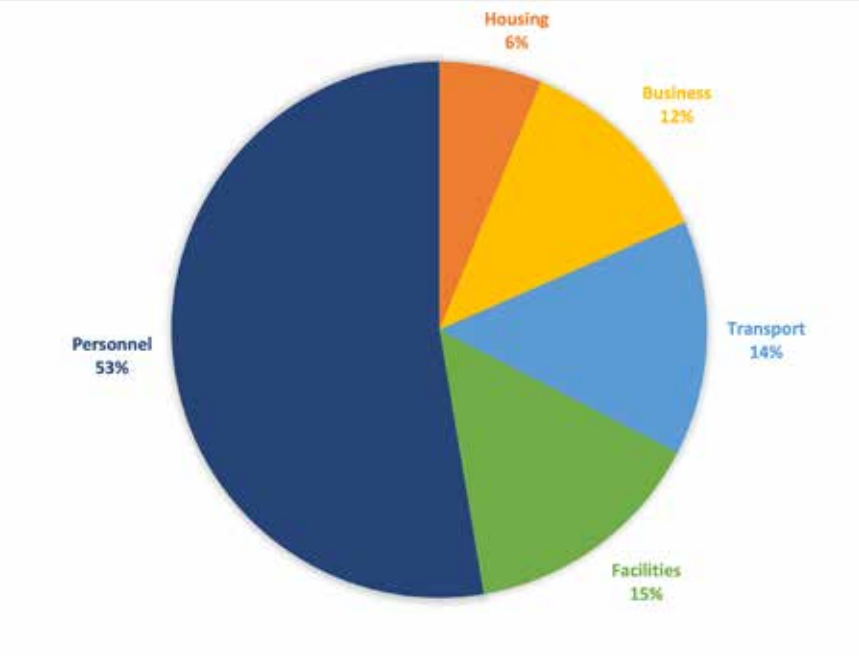
Tetiaroa Society has 5,343 followers and a 5 star rating on facebook. We also have 3,024 instagram followers and 315 Twitter followers. With posts in English and French, our message is reaching a diverse audience.

Expenses & Income

Expense category	Amount XPF	Amount USD
Personnel	33 466 241	$331,316
Facilities	9 386 071	$92,922
Transport	8 999 564	$89,096
Business	7 776 638	$76,989
Housing	3 937 064	$38,977
TOTAL	**63 565 578**	**$629,299**

Expenses:

These are the major Expense categories for Tetiaroa Society for 2021. As with other years the bulk of the costs go to personnel, with facilities costs, transportation, and basic business costs rounding out the rest.



Income source	Amount XPF	Amount USD
TB Donation	30 644 486	$303,380
TS Grants & Donations	11 563 635	$114,480
Government Assistance	6 613 153	$65,470
Ecostation Fees	7 919 593	$78,404
Retail	565 279	$5,596
TOTAL	**56 740 867**	**$567,331**

Income:

Income in 2021 was largely the same as in recent years. Donations from The Brando resort supported our operational costs along with Ecostation Fees and Grants and Donations. Government assistance was significant this year because as part of a national Covid-related suport program it helped cover the costs of employees for 11 months.