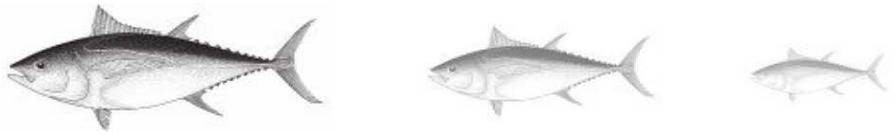


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## *Editorial*



Season's Greetings!

This year has been a tough one for many but we adapted, made progress and learned from the experiences. While we celebrate achievements, we also pay tribute to all who sadly could not complete the journey with us.

Last month, the much awaited 26<sup>th</sup> United Nations Climate Change conference (COP26) in Glasgow, Scotland ended in disappointment but with some progress. While COP26 secured near-global net zero commitments, made progress towards delivering the \$100 billion climate finance goal and others, not all expectations were met. Although more commitments and promises were made, we hope these are translated into action to make the Paris Agreement a reality.

In our region, the health pandemic forced many to adapt to the 'new normal'. The education system of online learning may not be new for some, but to many, it was strange. In Fiji, the digital divide and access to relevant technology were issues but these were addressed through laptop loans, printed study and course material deliveries as well as internet top-up support. Kudos to all involved. As businesses close and many lost jobs, urban residents turned to home gardens and relief supplies for food but rural communities were sustained through normal subsistence agriculture and fishery activities.

In this final issue of the year, we share news on the combined innovation to save coral reefs, efforts and projects relating to marine invasive species, the annual regional surveillance operation, Phoenix Islands Protected Area and others.

Fa'afetai lava and vinaka for your partnership and support this year. Happy holidays, Stay well & see you in 2022!

Susana Macanawai, *PIMRIS Coordinator*

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**Access PIMRIS website via Library – Special Collections**

*---Opinions expressed in articles included in the PIMRIS Newsletter do not necessarily represent those of any participants. --*

## Directory

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## New Faces, New Places

### Farewell & Thank You!

**Daniel Brown**, Librarian E-Resources at the USP Laucala Campus library bid farewell in December to return to the United States. Daniel joined USP Laucala Library in March 2019. Vinaka and best wishes for the future.



Daniel Brown

**Natasha Skeen** Librarian Reader Services at the USP Laucala Campus library departed in October. She joined the library in January 2019 and contributed immensely to its Information Research Skills programme and new Library website. All the best Natasha!



Natasha Skeen

**Varomue Fesaitu** or 'Varo' to her colleagues at USP Suva, was the Laucala Campus library's IT Technician for six (6) years. Varo resigned in October. She will be missed for her regular IT updates and tips as well as fundraising initiatives



Varo Fesaitu

for Pinktober and others. We wish her all the best in her future endeavours.

**Sala** has been the part-time staff at PIMRIS Lower Campus library since October 2020. We thank Sala for her dedication to work and contributions and wish her well on the completion of her current studies (DLIS) and future.



Salanieta Cocker

## Nobel-winning stock market theory used to save coral reefs

A Nobel prize-winning economic theory used by investors is showing early signs of helping save threatened coral reefs, scientists say.

Researchers at Australia's University of Queensland used Modern Portfolio Theory (MPT), a mathematical framework developed by the economist Harry Markowitz in the 1950s (to help risk-averse investors maximise returns), to identify the 50 reefs or coral sanctuaries around the world that are most likely to survive the climate crisis and be able to repopulate other reefs, if other threats are absent.



Australia's Great Barrier Reef corals.  
(Photo: [thetimes.co.uk](http://thetimes.co.uk))

The study recommends targeting investment in conservation projects that have the "strongest potential to succeed" in protecting priority reefs. The gains go beyond positive ecological outcomes and include crucial social, economic, health and nutritional benefits for communities, according to partners, organisations and funders interviewed by Blue Earth Consultants.

Prof Ove Hoegh-Guldberg, a climate scientist at the University of Queensland, who helped lead the "50 reefs" project, said: "It's essentially a strategy to help us make decisions about what to protect, if we are to have corals at the end of the century."

"It is our best shot at having a long-term future for coral reefs," he said.

Coral reefs face a dire future. Even if drastic emission reductions ensured global heating was limited to 1.5°C above pre-industrial levels – which would require almost halving global CO<sub>2</sub> emissions by 2030 from 2010 levels – 70% to 90% of today's corals would vanish.

In October, a study of coral reef health found 14% has been lost globally in less than a decade, with bleaching events caused by raised sea-surface temperatures the biggest culprit.

"Modern portfolio theory is a framework that aims to reduce risk while maximising returns," said Hoegh-Guldberg. "It's treating conservation sort of as an investment opportunity."

The strategy, which came out of a meeting of scientists at the Hawai'i Institute of Marine Biology in 2017, tapped into the theory to help scientists choose a "balanced" portfolio of coral reefs.

"You've got hundreds of these reefs across the planet," said Hoegh-Guldberg. "Which one do you pick, so that you concentrate your efforts on it?"

Researchers hope to breed Great Barrier Reef corals more resilient to extreme heat events

Dr Hawthorne Beyer, a fellow at the University of Queensland researching the use of quantitative modelling in managing environmental systems, said: "Talk to people in the business world and they get it immediately. It's a very logical idea and makes a lot of sense. Ours was the first to apply it on a global scale."

The scientists divided the world's coral reefs into "bioclimatic units" (BCU) of 500 sq km (190 sq miles). They used 174 metrics, in five categories, including temperature history and projections, ocean acidification, invasive species, cyclone activity and connectivity to other reefs, for each one. Then, using a process called "scalarisation", they produced estimates for each BCU. This captured the widest range of possibilities for the future.

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“We don’t know which metrics are the best metrics at predicting risk,” explained Beyer.

The team then used MPT to quantify threats and identify the reefs offering the best options for conservation, while allowing for the uncertainty over future risks from climate change.

“You don’t want to put all your eggs in one basket, or bet on one measure of risk, when we have massive uncertainty about what the risks will be,” he said.

The project identified reefs across the Middle East, northern and eastern Africa, Australia, the Caribbean, Pacific islands, South America, south-east and south Asia. They include parts of the Great Barrier Reef in Australia, the Egyptian and southern Red Sea, and parts of the “coral triangle” around Indonesia, Malaysia, Papua New Guinea and the Philippines. But, based on the criteria for climate and connectivity, the model excluded several ecologically significant areas, such as Hawaii and Central America’s Barrier Reef.

Nearly \$93m (£70m) has been invested in the project, funded by Bloomberg Philanthropies’ Vibrant Oceans initiative and others. The report found the 50 reefs-inspired approach had helped at least 26 organisations, and eight funders have now prioritised 60 coral reef ecosystems across more than 40 countries.

Coral reefs cover just 0.2% of the ocean floor but are home to at least a quarter of all marine species and support hundreds of millions of people. Conservation efforts inspired by the study have focused on five threats to coral: fishing; “non-point source pollution”, such as from fertilisers, runoff from roads, or sediment; wastewater pollution; coastal development; and stress to reefs from climatic extremes.

Emily Darling, director of coral reef conservation at the Wildlife Conservation Society (WCS), said part of the benefit was having a clear blueprint of where best to focus their efforts.

“One of the biggest benefits of the 50 reef approach has been this compelling message that climate change is the critical threat to coral reefs and this is an approach that can give reefs a fighting chance.”

The WCS has \$18m in funding for work in 11 countries, including Fiji, Indonesia, Kenya and Tanzania, on 21 of the 50 reefs, to help communities reduce pressure on the precious ecosystems.

“We are looking at non-climate threats such as overexploitation, destructive fishing, unsustainable tourism, coastal development, water pollution.



A coral reef in Mafia Island - Tanzania.  
(Photo: Simon Pierce via The Guardian).

We then ask ‘well, what are the top local pressures?’,” said Darling. “And that’s how we identify which intervention to tailor to those different situations.”

A no-take marine protected area between Kenya and Tanzania – in which no fishing, mining, drilling or similar activities are allowed – has been supported by WCS to protect the corals from these other pressures running alongside global heating.

“By doing that, we will not only safeguard coral reef

biodiversity, but also the whales, spinner dolphins, the dugong, coelacanth fish, that whole ecosystem,” she said.

One of the 50 reefs identified is the “happy coral” sanctuary discovered in Tanzania, reported by the Guardian last year, where coral species have thrived despite warming events that have killed neighbouring reefs.

(Reprinted & More info. from: [www.ecowatch.com](http://www.ecowatch.com))

## PacMAN – Fiji project officially launched

The PacMAN or the Pacific Islands Marine Bioinvasions Alert Network project coordinated by the Institute of Applied Sciences (IAS) of the University of the South Pacific (USP) has been officially launched.

The launch in early December by the Permanent Secretary for the Fiji Ministry of Waterways and Environment, Joshua Wycliffe follows the signing of its operational arrangement agreement with the Biosecurity Authority of Fiji (BAF) which took place on 10 November 2021 at the USP's marine science conference room at the Lower Laucala Campus in Suva.



Officials with Dr Isoa Korovulavula of IAS at the project launch. (Photo: USP News)

According to USP News, the launch was the first milestone in implementing the 13 months of

research work undertaken at the Suva harbour as part of the project's commitment to building a marine invasive species monitoring plan with a decision support tool for managing marine alien invasive species.

The USP-IAS Acting Director, Dr Isoa Korovulavula stated during the launch that this was a significant occasion as they move collaboratively to a new frontier of protecting the local marine environment from invasive species.

"IAS as the implementer of PacMAN in Fiji provides capacity building in the form of technical training deemed necessary, shares analysed data and provides technical support to BAF."

"The PacMAN project is expected to boost local capability for early identification of and warning on maritime alien invasive species. We are using revolutionary technology such as DNA metabarcoding to identify and deal with marine invasive alien species in our local marine environment", Dr Korovulavula explained.

He also mentioned that BAF has established its Post-Entry Quarantine Station Diagnostic Laboratory (PEQSDL) in Koronivia, Nausori and having access to and utilising the high class quantitative real-time Polymerase Chain Reaction (qPCR) facility will significantly enhance the proposed outcomes of the project as qPCR analysis is a critical aspect of scientific methodology.

During the signing of the Operational Agreement between USP-IAS and BAF in November, the BAF's Acting CEO stated that they were collaborating to strengthen this research further through the provision of their specialised facility.

The qPCR machines enables real-time identification of multiple DNA regions or genes to identify an organism in a sample. The application is widely used in pathogen and virus diagnostics., e.g. for COVID-19 screening and gene expression studies to find out disease markers for research into potential therapeutic drugs that inhibit them.

The PacMan Project is a collaboration of USP's – IAS, United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the Intergovernmental Oceanographic Commission (IOC) through its coordination team at the Ocean Biodiversity Information Systems (OBIS).

(More info.: USP News)

## Annual Pacific Regional ‘Operation Kurukuru’ closes

The Pacific Islands annual regional surveillance operation called, ‘Operation Kurukuru’ successfully closed in early November after twelve (12) days of international cooperation targeting Illegal, Unregulated and Unreported (IUU) fishing in the Pacific.

Coordinated by the Pacific Islands Forum Fisheries Agency (FFA), the operation combines intelligence gathering, analysis and surveillance by aircrafts and ships.

According to the FFA’s Director of Fisheries Operations, Mr Allan Rahari, “this operation included fifteen (15) Guardian Class and Pacific



Fiji Naval officers during Operation Kurukuru this year. (Photo: Twitter Fiji Navy)

patrol boats from Pacific nations operating alongside five (5) Australian Navy, French Navy and United States Coastguard vessels”.

Furthermore, “seven (7) aircrafts from the FFA quadrilateral and regional partners provided air surveillance as well as satellite surveillance and use of other emerging technologies”.

It was reported that the area covered by this year’s operation was over 23 million square kilometres and estimated to be over three times the land mass of Australia. This area consisted of the fifteen (15) Pacific Island FFA members’ Exclusive Economic Zones (EEZ) and adjacent high seas.

Mr Rahari highlighted that “the sheer size of the area covered is enormous and underlines the importance and ongoing success of such a large-scale, cooperative initiative”.

Commander Robert Lewis, the FFA’s Surveillance and Operations Officer also shared that to date over 300 vessels have been remotely sensed by satellites or sighted by ships and aircraft and 78 vessels have been boarded either at sea or in port.

He added, “the intelligence and analysis piece is an important part of our technical work. Thanks to the extensive effort on surveillance, inspections and emerging technology, we continue to verify the identity of vessels and assess compliance risks of vessels committing IUU fishing”.

Commander Lewis also mentioned that this operation detected a number of vessels of interest which are still being investigated.

Meanwhile in Vanuatu and Fiji, local reports also highlighted the success and issues relating to this year’s surveillance operation.

Vanuatu’s Daily post newspaper reported that RVS Takuare, the country’s new patrol boat took part in the regional surveillance operation with fourteen (14) other Pacific Island and regional partners such as Australia, France, New Zealand and the United States of America between October and November this year.

RVS Takuare is a Guardian-Class Patrol Boat (GCPB) and was handed over by the Government of Australia to the Republic of Vanuatu on 30 July 2021.

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Vanuatu's new patrol boat RVS Takuare which took part in Operation Kurukuru. (Photo: VPF-FB)

RVS Takuare is the 12<sup>th</sup> GCPB delivered by the Australian Department of Defence (DoD) as part of the DoD's Pacific Maritime Security Programme.

In its first ever major assignment since arrival in Vanuatu this year, RVS Takuare spotted four (4) foreign vessels in Vanuatu's Exclusive Economic Zone (EEZ).

Two of the vessels caught were served with a notice for penalty by the Vanuatu Department of Fisheries for breaching the Fisheries Act.

Both did not have the original or copy of a fishing licence on board.

The Vanuatu Assistant Commissioner of Police and Commander of the Maritime Wing, Colin John stated that one of the vessels paid a penalty of around VT 1 million while the second one has yet to pay its fine to the Fisheries Department.

Laura Hardy from the Australian Defence Cooperation Program highlighted the importance of Operation Kurukuru for Vanuatu waters.

She stressed that Operation Kurukuru is an example of Vanuatu, Pacific and regional partners working together to protect and enhance regional maritime security, sovereignty and prosperity.

However in other results from the regional surveillance operation, it has been alleged that three French fishing vessels were spotted engaging in unlawful fishing near Aneityum as well as the Matthew and Hunter islands.

The unlawful fishing activities between the three islands were confirmed by Vanuatu's national fishing monitoring agencies and the Vanuatu Prime Minister has expressed his utmost disappointment to the French Ambassador in Port Vila in a letter.

The French fishing vessels were said to be flying the New Caledonia flag and are long liner vessels based in Noumea.

From the Fiji side of the operation, the Republic of Fiji Navy (RFN) patrol boat, RFNS Savenaca took part in the 12-day exercise in support of regional and its Ministry of Fisheries efforts which included joint dockside boarding at various ports and more importantly monitoring Fiji's EEZ.

The Fiji Times reported that the resumption of physical boarding of commercial fishing fleet was successful as multiple vessels of interest were flagged and investigated.

The RFNS Savenaca also took part in an earlier operation called, 'Island Chief', one of four surveillance operations conducted annually. This operation covered waters of eleven (11) participating FFA member nations including Fiji and involved more than 500 personnel from the navy, police, air force and national fisheries agencies in the Pacific.

As one of the largest fisheries surveillance operations in the world, the successful Operation Kurukuru 2021 officially closed on November 4<sup>th</sup>.

(Adapted from FFA News, Vanuatu Daily Post & Fiji Times)

## Kiribati to open Phoenix Islands Protected Area to fishing

The Government of Kiribati has released a statement in mid-November that it is lifting the closure of Phoenix Islands Protected Area (PIPA) and replacing it with 'Marine Spatial Planning (MSP) to sustainably use marine resources in the PIPA area.

The Government of Kiribati statement said its decision to lift the closure was based on critical scientific evidence and global finance partnerships.



An independent Advisory Expert Panel

Orona atoll, Phoenix Island. (Photo: wikiwand.com)

consisted of experts from the Pacific Islands Forum Fisheries Agency (FFA), the Pacific Community (SPC) and the Pacific Islands Forum Secretariat (PIFS) was invited to assess the decline in demand for fishing licenses in Kiribati's Exclusive Economic Zone (EEZ).

Their findings revealed a marked decline in demand by 8% since 2015, the year PIPA closed.

"This is equivalent to 720 fishing days' decline in fishing efforts in those years. Such decline has a huge implication on future allocations of Kiribati Vessel Day Scheme share under the Parties to the Nauru Agreement. For purse seine fishing, this translates to approximately USD\$60m to USD\$140 in loss revenue from 2015 to present. For long-line fisheries, approximately USD\$850k is forgone annually or equivalent to USD\$5.9m since 2015", said the government statement.

But not everyone was happy with the decision.

Kiribati's former president, Anote Tong who was a key player in the setting up of the country's huge protected area was disappointed.

"It is a bit disappointing...after all the trouble that we went through to have it listed as a World Heritage site," Mr Tong said.

The government in its statement also argued that the decision to open up PIPA was made in the best interests of the country and its people and rebuked assumptions that it was influenced by external parties.

"PIPA has been more than 10 years since its establishment and it is abundantly clear that the development policy logic at its inception, however innovative and well-intended, will not be sufficient to meet the present need of the people of Kiribati now and the development needs of the country for the future" the government statement said.

The PIPA according to the United Nations Educational, Scientific and Cultural Organisation's (UNESCO) World Heritage website, "is a 408,250 s.km expanse of marine and terrestrial habitats in the Southern Pacific Ocean and is the largest designated Marine Protected Area in the world".

"PIPA conserves one of the world's largest intact oceanic coral archipelago ecosystems, together with 14 known underwater sea mounts, (presumed to be extinct volcanoes) and other deep-sea habitats. The area contains approximately 800 known species of fauna, including about 200 coral species, 500 fish species, 18 marine mammals and 44 bird species," the UNESCO World Heritage site states.

(Adapted from: pina.com.fj; rnz.co.nz; whc.unesco.org)

## News from around the region

### Cook Islands pearl industry in peril

The Cook Islands pearl industry is suffering a shortage of supply which is threatening its future according to a Radio New Zealand report.

Local farmers are being forced to kill off oysters because of a lack of highly-skilled Japanese technicians in country due to travel restrictions brought on by the Covid-19 pandemic.

Jewellers are concerned this is creating a shortage of black pearls from the Cook Islands which they fear will devastate supply chains leaving lasting ramifications.



Cook Islands pearls. (Photo: Kiora Pearls).

Just over 200 people live on Manihiki and 20% of them are pearl farmers.

Black pearls specifically are their main form of income but with the skilled technicians locked out of the country due to covid the situation is dire.

At least 10 farmers who supply pearls to whole-salers for jewelry production face uncertainty.

One of these, Kora Kora, has 40 years' experience in the industry, and said for some it was already too late.

"It is a lot of challenge to be honest. We've lost quite a bit of money when we didn't have the technicians back then we had 15 months with no sales. My Uncle is not farming anymore because all of those challenges. My cousin - about three or four of them actually - have finished, they no longer want to farm again."

The technicians shut out by the pandemic are needed to seed the oysters and harvest the pearls.

Kora said their Japanese technician would normally harvest around 70,000 oysters for three different farmers on the island. Over the last 18 months without him almost double that number has gone to waste.

MIQ delays within managed isolation in New Zealand is making it difficult for foreign technicians needing to transit through the country, Director of Ora Moana, a trader of black pearls Raymond Newnham said.

"That's affected the production levels in the country because these technicians have to come through New Zealand which means two weeks there and they also have to get into managed isolation."

A Kiwi jeweller he supplies to is David Wheeler, manager of The Artist Gold Smith, who is deeply concerned for the future of the industry and planned to highlight the problem in an art exhibition in his home town of Nelson in the South Island next month.

Because they deal in small numbers, his business has enough stock to supply - but he said larger jewellers would find it hard to get their hands on sufficient pearl quantities.

(Reprinted & More info. from: Radio NZ International)

## Vanuatu Fisheries completes fishing vessel inspection and observer programme trainings



Participants of the boarding and inspection training. (Photo: Vanuatu Daily Post)

Eighteen maritime officers from the Vanuatu Fisheries Department and Police Maritime wing completed a one-week training on fishing vessel boarding and inspection in late November.

The training was held via video conferencing and facilitated by two officers from the New Zealand Ministry of Primary Industries, Justine Duder, the Pacific Fisheries Advisor (MCS&E) and Te Ptuitanga Ahumoana a Kiwa of the Pacific Fisheries Capacity Development Programme) as well as Mr Yohni Fepuleai, the Surveillance and Operations Officer for the Forum Fisheries Agency (FFA).

The overseas based facilitators were assisted by the local fisheries compliance officers who were present at the Fisheries Department's conference room with participants.

Some of the participants were grateful to learn more from the training. Ms Lilly Tom from the Vanuatu Police Maritime wing said that she has learnt a lot as she normally sits behind a desk at the Police Maritime Headquarters.

She added, 'whenever the local patrol boat goes out on surveillance, I normally stay back at the office. At times when I am on the patrol boat and whenever we come across a fishing vessel, I only observe from afar. With this training, I now know how to go about conducting myself when it comes to boarding and inspecting a fishing vessel next time around'.

Mr Peter Willie, the Senior Compliance Coastal Data officer of the Fisheries Department stated that aside from his normal coastal data duties, the training has broaden his horizon on what fishing vessel boarding and inspection is about.

The training was part of New Zealand's fisheries capacity development to improve fisheries outcomes for its Pacific partners. The FFA agreed to fund the safety equipment for all participants.

In October 2021, the Vanuatu Fisheries Observer programme successfully completed its two weeks Sea Safety and Security Course at the Vanuatu Maritime College in Santo.

This training was to ensure that Vanuatu's Observer programme continues once the suspension of the programme under the Western and Central Pacific Fisheries Commission (WCPFC) is

lifted as more than fifty certified Vanuatu observers were stranded overseas.

Mr John James, the Vanuatu Observer Programme Coordinator stated, "Observers are the eyes and ears of the Vanuatu Government. All the data collected on board fishing vessels in Vanuatu waters and around the region are reported back to the fisheries departments and then to the Pacific Community (SPC) and FFA and will help with the monitoring of tuna stocks in the region".

The Vanuatu Observer Programme started in 2008.



Vanuatu Fisheries Observers after the training. (Photo: Vanuatu Daily Post)

(Adapted from: Vanuatu Daily Post news)

## My COVID-19 lockdown experience

by Amit Kumar  
PIMRIS Library Attendant

The announcement of the Suva lockdown due to the Covid-19 health pandemic by the Fiji Permanent Secretary for the Ministry of Health and Medical Services in late April was very disheartening. But with the ever-increasing cases of Covid - 19 worldwide, the news did not come as a surprise.

Initially, I thought the lockdown and other precautionary measures imposed were for a short period of time and I was very positive that the situation would normalise sooner.

However, as days then weeks passed, I realised the severity of the Covid-19 pandemic in our community. The infection spread was getting worse day by day with no sign of improvement. Staying at home with strict lockdown measures in place was frustrating for me and my family and it seems never ending. Fortunately, we had access to reliable news updates through local media and timely updates by my employer, the University of the South Pacific (USP). We were also updated regularly by supervisors and encouraged to do other activities at home to keep us busy.

Soon I was making plans on how I would best avoid long boring days during the lockdown and I decided to go for my first vaccination jab in early June which was followed by the second in early August.

As I was a Library Attendant, my daily routine on most days would include; checking my e-mail for updates from Library management and USP and spending time with my daughter and nephew on their puzzles, art and craft. Interestingly, I also did a bit of gardening assisting family members at our front yard where we planted chillies, bele and eggplants.

On the few occasions that I drove past the USP Laucala main campus, it was sad to see the hustle and bustle of normal business days missing but I was happy that there was less traffic.

As days passed with cases of Covid- 19 declining slowly and with the easing of some restrictions, I was glad to return to work but for a special one day a week library service.

Though strict protocols were still in place, I was thankful with the relaxation of certain Covid-safe measures that allowed us back at work. The wearing of mask, showing ID card and vaccination card may seem odd and frustrating at times, but this is the new normal which we all have to abide by moving forward.

Although it was unfortunate to be in such a long and tiresome lockdown away from work, colleagues, sports and other daily activities, the experience has given me an opportunity to spend more time with my family and taught me the value of making best use of time at home.



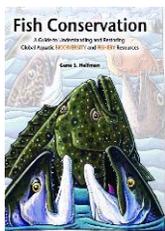
My family home garden. (Photo: Supplied)

I returned to work as usual from early October and have enjoyed time every day with my colleagues and friends. I have also decided to allocate time to assist with maintaining our small garden at home.

From this long COVID-19 lockdown experience in Suva, I have learnt to be more cautious and patient by following all health advice and necessary protocols to keep myself and my loved ones safe from this deadly virus.

[Ends]

## New Books & Useful Online Resources



**Fish conservation : a guide to understanding and restoring global aquatic biodiversity and fishery resources** / Helfman, G. S. Washington: Island Press, ©2007. ISBN: 9781559635967.

A readable reference with a global approach to marine and freshwater fish diversity and fishery resource issues, this book considers the value of preserving aquatic biodiversity and addresses ethical questions surrounding exploitation of fishes.

<https://www.amazon.com/Fish-Conservation-Understanding-Restoring-Biodiversity/dp/1559635967>



**Using local knowledge to guide coconut crab (*Birgus latro*) scientific research in Fiji** / Loganimoce, E. Suva, Fiji: Institute of Marine Resources, USP, ©2021. ISBN: 9789829143150.

This publication is the result of local surveys carried out on Nagelelevu Island in Cakaudrove Province and Vanua Balavu Island in Fiji to compile information on hunters' experiences and perceptions on the local behaviour of coconut crabs.

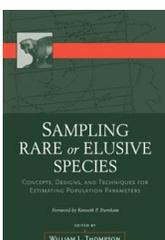
[https://www.spc.int/DigitalLibrary/Doc/FAME/Reports/Loganimoce\\_21\\_Coconut\\_Crab\\_Report\\_Final.html](https://www.spc.int/DigitalLibrary/Doc/FAME/Reports/Loganimoce_21_Coconut_Crab_Report_Final.html)



**Biology of fishes** / Bone, Q & Moore, R. 3<sup>rd</sup> ed. New York.: Taylor & Francis Group, © 2008. ISBN: 9780415375627.

This edition is chiefly about fish as remarkably efficient machines for coping with the many problems that life in water entails, and looks at many such special cases. It focuses on the ingenious ways in which fish have resolved the particular problems that come from living in water, especially body fluid regulation etc.

<https://www.routledge.com/Biology-of-Fishes/Bone-Moore/p/book/9780415375627>



**Sampling rare or elusive species : concepts, design and techniques for estimating population parameters** / edited by William Thompson. Washington: Island Press, ©2004. ISBN: 9781559634519.

This book describes the latest sampling designs and survey methods for reliably estimating occupancy, abundance, and other population parameters of rare, elusive, or otherwise hard-to-detect plants and animals.

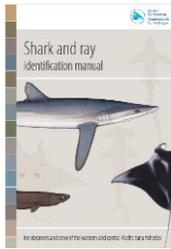
<https://islandpress.org/books/sampling-rare-or-elusive-species>



**Marine species identification manual for horizontal longline fishermen** / Chapman, L, Sharples, P, Brogan, D. et al. Noumea, New Caledonia: Secretariat of the Pacific Community (SPC). ©2006. ISBN: 9820001382.

The overall aim of this manual is to improve and increase the amount and accuracy of catch data provided by domestic tuna longline fishermen in the Pacific region when they complete their catch and effort logsheet.

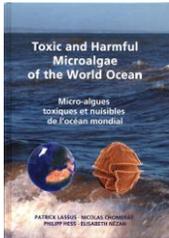
<https://coastfish.spc.int/en/component/content/article/44/341-marine-species-identification-manual-for-horizontal-longline-fishermen>



**Shark and ray identification manual for observers and crew of the Western and Central Pacific tuna fisheries** / Park, T., Marshal, L. et. al. Noumea, New Caledonia: Pacific Community (SPC), c2019.

This manual has been developed to improve the identification of shark and ray species encountered in the tropical and subtropical tuna fisheries of the Western and Central Pacific Ocean, as well as informing on correct methods for their handling and release.

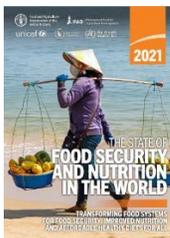
<https://coastfish.spc.int/en/component/content/article/44-handbooks-a-manuals/507-shark-and-ray-identification-manual>



**Toxic and harmful microalgae of the world ocean : Micro-Algues Toxiques et Nuisibles de l'Océan Mondial** / Lassus, P., Chomerat, N. et. al. Paris : IOC. c2016. ISBN: 9788799082766.

This is the first ever global compendium on harmful algal blooms (HAB): microorganisms that deplete fish stocks, destroy fish farms and bring disease and death both to humans and to large sea animals.

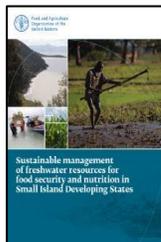
<https://www.nhbs.com/toxic-and-harmful-microalgae-of-the-world-ocean-micro-algues-toxiques-et-nuisibles-de-locean-mondial-book>



**The state of food security and nutrition in the World 2021: Transforming food systems for food security...** / FAO, IFAD et. al. Rome, Italy: FAO, c2021. (pdf online).

This report draws on the analyses of the past four editions, which have produced a vast, evidence-based body of knowledge of the major drivers behind the recent changes in food security and nutrition. These drivers include conflicts, climate variability and extremes, and economic slowdowns and downturns

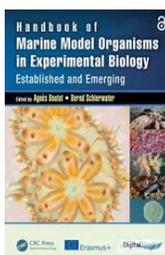
<https://www.fao.org/documents/card/en/c/cb4474en>



**Sustainable management of freshwater resources for food and nutrition security in Small Island Developing States** / Sonneveld, B. et al. Rome, Italy: FAO, c2021. ISBN: 9789251351222. (pdf online).

This study investigates how freshwater management can contribute to food and nutrition security (FNS) in Small Island Developing States (SIDS). It contributes to FAO's Global Action.

<https://www.fao.org/documents/card/en/c/cb7200en>



**Handbook of Marine Model Organisms in Experimental Biology : Established and emerging** / edited by Agnès Boutet & Bernd Schierwater. Boca Raton: CRC Press, ©2021. eBook ISBN: 9781003217503. **Open Access. (full-text online)**

This book offers deep insights into cutting-edge model system science, provides in-depth overviews of all prominent marine model organisms and illustrates challenging experimental approaches to model system research.

<https://www.taylorfrancis.com/books/oa-edit/10.1201/9781003217503/handbook-marine-model-organisms-experimental-biology-agn%C3%A8s-boutet-bernd-schierwater>

## Conferences, Workshops & Events Jan – Jun 2022

- 6 Feb. **Pacific Community (SPC) – 75<sup>th</sup> Anniversary.** Noumea, New Caledonia. Web: <https://www.spc.int/events/spcs-75th-anniversary>
- 11 Feb. **International Day of Women and Girls in Science.** The International Day of Women and Girls in Science, celebrated on 11 February, is implemented by UNESCO and UN-Women in collaboration institutions and civil society partners that aim to promote women and girls in science. Web: <https://en.unesco.org/commemorations/womenandgirlinscienceday>
- 25 – 26 Feb. **International Conference on Oceanography and Fisheries (ICOF),** Buenos Aires, Argentina. Web: <https://waset.org/oceanography-and-fisheries-conference-in-february-2022-in-buenos-aires>
- 08 – 10 Mar. **International Conference on Marine Science & Aquaculture – vICOMSA 2022. Virtual Conference** – Web: <https://www.icomsa2022.com/>
- 29 – 30 Mar. **International Conference on Sustainable Aquaculture and Fisheries (ICSAF),** Sydney, Web: <https://waset.org/sustainable-aquaculture-and-fisheries-conference-in-march-2022-in-sydney>
- 18 – 19 May **World Aquaculture and Fisheries Conference (WAC 2022)** Tokyo, Japan. Web: <https://www.worldaquacultureconference.com/>