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Fiji Government Assistant Minister for Environment Agriculture, Rural Development, Waterways and Environment launches IAS implemented Ridge to Reef Mangrove Restoration Programme

The Assistant Minister for Agriculture, Rural Development, Waterways and Environment, Honorable Mr Viam Pillay launched the Institute of Applied Sciences implemented project Ridge to Reef Mangrove Restoration Programme at Nukui village, Rewa on 13 September 2019. It was held in collaboration with the Ministry of Waterways and Environment, the initiative is part of the Ridge to Reef’s (R2R) target to plant ten hectares of mangrove annually, with an estimated 2.7 hectares envisaged to be planted in Nukui village alone. Guests present at the launch included the members of Nukui Village, church ministers, Department of Environment Director Ms Sandeep Singh and United Nations Development Programme (UNDP) representative Mr Rusiate Ratuniyata.
The Ridge to Reef Project with the support of the Fiji government ministries and UNDP aims to increase climate resilience and improve livelihoods of communities at the national level. This initiative is multi-faceted in that the reforestation of mangrove plants along the village coastline will help to reduce coastal erosion, protect the fish nurseries hosted by mangrove ecosystem, aid in the filtration of flood waters from inland ridges which would ultimately safeguard the fisheries and other sources of livelihood that the Nukui community so heavily relies on.

UNDP Representative Mr Rusiate Ratuniyata added the important role that the youths and children play in climate change resilience “The children are the future leaders and it is important to note that in everything, we need them as they will take these lessons and carry forward to the future generations. Projects will come and go but they must understand the gravity and benefits of the actions that we carry out today in planting these mangroves – not only for Fiji, for the region but for the world”.

To launch the Programme, guests and villagers were invited to the beach where 20 mangrove seedlings were prepared for planting. Honorable Assistant Minister, after planting the first seedling invited all the villagers and children present to step up and plant a mangrove. The IAS Acting Director, Dr Korovulavula stressed that, “it is critical everyone is involved; the children especially need to be allowed to partake in this initiative”.

Dr Isoa Korovulavula greets Honorable Viam Pillay while Mr Rusiate Ratuniyata greets the Talatala of Nukui Village

Honorabe Viam Pillay plants a mangrove seedling at Nukui village, Rewa

Women of Nukui Village at the launch programme

Mr Ratuniyata and Dr Korovulavula walk to the Mangrove Restoration Site
One of the Institute of Applied Sciences (IAS)'s Fiji Global Environment Facility (GEF) 5 STAR Ridge to Reef (R2R) Project won a regional competition for Most Significant Change stories obtained from the communities where the project is implemented. The competition, organized by the GEF involved the gathering of testimonies and feedback of the district representatives of Namara, Tailevu in Fiji by the IAS Scientific and Technical Officers.

Mr Sekaia Muaduaduakibau, the District Representative for the six villages in the Namara district said that one of the key changes involved the changing of mindsets:

“Before the activity started, community members in the pilot sites were more concentrated on natural resources utilisation. All the villages in my district depend on marine resources for daily consumption and livelihood opportunities. They lack knowledge of natural resource conservation as no awareness is done at village level. There was so much emphasis on economic opportunities that we tend to forget about how we can sustain our natural resources for the benefit of our future generation.” He added that when IAS conducted the awareness programme, there was keen interest from youth and women’s groups. Through the participatory approach by the facilitators, members of the village were able to establish a mangrove nursery for the first time as a practical action from their learnings.
The implementation and the completion of the mangrove nursery in the two pilot sites had an enormous positive impact on the communities’ perspective towards their natural resources. With the depletion of coconut trees due to some of their past unsustainable practices they were keen to replant coconut trees and manage it sustainably. IAS facilitated the logistics in delivery of these coconut seedlings and they did the rest.

The Fiji R2R GEF UNDP Project primary aim is to preserve biodiversity, ecosystem services, sequester carbon, improve climate resilience and sustain livelihoods through a ridge-to-reef management of six priority water catchments on the two main islands of Fiji. The catchments are Waidina-Rewa, Tuva and Ba on Viti Levu and Labasa, Vunivia and Tunuloa on Vanua Levu.

IAS’s contribution is the applied research component for Fiji’s R2R project. Among these are freshwater baseline surveys in the Ba catchment, shark and ray nursery assessments in Ba and Labasa, carbon sequestration measurements in Waidina and Tuva and biodiversity rapid assessments in Tunuloa and Tuva. Results of the baseline assessments that IAS is undertaking will help inform catchment management plans in all six catchments of the Fiji R2R Project. IAS collaborates with key Government and Non-Government stakeholders in all its activities.

The Acting Director, IAS, Dr Isoa Korovulavula acknowledged the enthusiasm and support of the communities involved in the R2R project in working with USP, IAS, “The interest and actions taken by the members of these communities is a reflection of their resolve to ensure that their natural resources are sustained.” He added that the strategic partnership with UNDP and Ministry of Waterways and Environment has been crucial in achieving the project deliverables and outcomes.

For more information on the Fiji R2R project, contact Project Manager, Mr Teddy Fong, Environment Unit, IAS, USP. Email: teddy.fong@usp.ac.fj
IAS PNPRC Manager and Research Fellow attends International experts meeting on Ocean Acidification Research

The Institute of Applied Sciences (IAS) Pacific Natural Products and Research Centre (PNPRC) Manager, Dr Katy Soapi attended the annual expert group meeting of the Ocean Acidification International Coordination Centre (OA-ICC) at the International Atomic Energy Agency (IAEA) Environment Laboratories, at Monaco on 28 May 2019. The meeting held in cooperation with The Ocean Foundation and Global Ocean Acidification Observation Network (GOA-ON) brought together 15 participants from seven Member States and the IAEA to assess needs and issues faced when undertaking ocean acidification monitoring and research in different regions. The participants had all been involved in previous ocean acidification capacity building efforts.

Dr Katy has been leading the Ocean Acidification (OA) and Blue Carbon Restoration Project implemented in Fiji since 2018. The funding for this important project is from The Ocean Foundation following the acquiring of a GOA-ON box kit for ocean acidification monitoring and research in Fiji by USP. She and other participants focused on developing practical guidelines for ocean acidification measurements and their associated uncertainties at the meeting. The full list of products, including manuals for the GOA-ON in a box kit, and a decision tree for chemical and biological ocean acidification studies depending on the intended use of the data, are open for community input.

The Acting Director, Dr Isoa Korovulavula said that Dr Katy's attendance at the experts meeting is a reflection of the importance of developing ocean acidification monitoring and research capabilities in the region. He added that the IAS OA project involves staff members from different units at IAS to increase its capacity building in OA activities.

The PNPRC has well equipped natural product and analytical laboratories and can perform natural product extraction services, bioassay-guided purification of active metabolites and the isolation of gram quantities of metabolites required for more in-depth biological testing or to support semi-synthetic programs.

For more information on Bioprospecting, Ocean Acidification and Blue Carbon Restoration Projects, contact Dr Katy Soapi: katy.soapi@usp.ac.fj
The Institute of Applied Sciences hosted a three day regional workshop on the review of the Pacific Islands Food Composition Tables (PIFCT) at the USP Lower Campus, Suva on 20 – 22 May. Funded by the Food and Agriculture Organisation (FAO), the workshop focused on the feasibility of revising the 2nd edition of the Pacific Islands Food Composition Tables that was published in 2004 to produce and publish an updated 3rd edition. The second edition has been an important resource of nutritional information of regularly consumed foods in the South Pacific.

The workshop was facilitated by FAO Consultant Ms Ann Hayman and IAS Laboratory Manager Dr Vincent Lal. The participants comprised of country representatives from the Ministries of Health, Food and Agriculture in Samoa, Tonga, Vanuatu, Solomon Islands, Fiji and the Republic of Marshall Islands who provided valuable input on lessons learnt, benefits from and applications of the PIFCT in their own countries. Representatives from the World Health Organisation, Secretariat of the Pacific Community, FAO, USP, IAS, New Zealand Plant and Food Research and Nutrition Consultants were also present and provided further insights on food composition information and uses.
Ms Ateca Kama, the Manager National Food and Nutrition Centre for Fiji’s Ministry of Health and Medical Services said that the PIFCT is a useful tool for use in drafting policies and as a guideline in the areas focusing on public health and nutrition intervention programmes. Ms Analosa Manuele-Magele, Senior Nutritionist at the Samoa’s Ministry of Health stated that “The PIFCT is being used in Samoa by nutritionists and dieticians particularly in the preparation of special diets for hospital patients, the production of health awareness programme materials and for research purpose”. She also added that in the past 15 years, there has been a change in eating habits and the number of fast food outlets have increased in Samoa.

Ms Philmar Mendoza, the Director of Health Promotion and Diseases Prevention Programme in the Republic of the Marshall Islands highlighted that revising the PIFCT is timely as there has been a reduction in the consumption of traditional local foods and an increase in the consumption of imported convenience foods in the Marshall Islands.

During the workshop, participants deliberated on the new food that could be included in the updated PIFCT, including traditional foods from local agricultural biodiversity farms, imported food and takeaway fast food. They also discussed whether the twenty-two nutrient components which include many vitamins and minerals, protein, fat, carbohydrate and energy in each of the approximately nine hundred foods in the current PIFCT are sufficient or whether new nutrients should be added. Participants considered the benefits of including the food composition information in a publicly available e-database in addition to hard copy format.

The next phase of the project would then be to determine the nutritional components of the lists of new foods before their inclusion in the 3rd edition of the PIFCT.

Ms Ann Hayman commended the participants for their feedback and their interest in ensuring that the revised PIFCT is reflective of the new food currently consumed in the Pacific.

Dr Isoa Korovulavula, the IAS Acting Director thanked the FAO representative for supporting the workshop and added that IAS is glad to be involved in this project.
IAS PNRPC Manager, Dr Katy Soapi presents at Marine genetic resources workshop in Brussels

The Manager of the Institute of Applied Sciences (IAS) Pacific Natural Products Research Centre (PNPRC), Dr Katy Soapi was invited to present at the European Commission convened workshop on Marine Genetic Resources (MGR) in areas beyond national jurisdiction: bridging policy, law, science and research and development held at Brussels from 21 – 22 May. Dr Katy presented on experiences in conducting research on MGR at the University of the South Pacific including approaches to organising research expeditions, sampling of marine samples and their preservation, sharing of data, and laboratory techniques used for research at the USP.

Approximately 90 experts from the fields of science, policy and law, and industry gathered in Brussels to present their experiences related to research and development with MGR, and join in discussions with delegates from the UN negotiations on issues and strategies related to Biodiversity Beyond National Jurisdiction (BBNJ). The focus on MGR was in the context of ongoing negotiations for a new legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

The workshop facilitated the sharing of knowledge and experiences between participants from both developing and developed countries to help bridge the gaps between policy, law, science and research and development (R&D).

The IAS PNPRC Centre has been at the forefront of MGR work through its bioprospecting work. Dr Katy stated that participating in the workshop provided an opportunity for USP and the region to share its experiences and views in the development of possible options for marine genetic resources in the future treaty.
The Institute of Applied Sciences (IAS) Quality Control (QC) Technician Ms Vasenai Lewanikoro recently attended equipment calibration training at the New Zealand’s Measurement Standards Laboratory, Auckland from 13 – 15 August to fulfil the IAS Laboratory’s international accreditation requirements for technical staff development.

Held over two days, the training focused on proper balances and weighing calibrations, temperature measurements and calibration. Vasenai then visited accredited calibration laboratories Teltterm Instruments, Penrose, Auckland and Trading Standards Laboratory, Avondale, Auckland on the third day to learn more of the calibration procedures and proper set up of equipment calibration laboratories.

Vasenai acknowledged the endorsement and the support of the USP Staff Development Program and the IAS Management Team for the training. “The contents of the training were very relevant to my role at IAS as the QC Technician responsible for calibrating balances and temperature measuring instruments used at the IAS Laboratory and by the region’s processing and manufacturing industries,” she said. “These equipment are used for monitoring the processes and quality of products and it’s important that the equipment readings given are accurate and reliable,” she added.

Equipment calibration is the comparison of a Reference Equipment of known accuracy against the test equipment. IAS is an ISO 17025 accredited laboratory that requires that the Technician responsible for balances’ full calibration be trained at a national measurement standards laboratory that is accredited to the same standard. IAS has been offering equipment calibration services and is exploring setting up a fully equipped calibration laboratory to cater for industries’ compliance requirements to the local and regional Food Safety Regulations and for Trade purposes.

The IAS Acting Director, Dr Isoa Korovulavula commented that equipment calibration is a service that IAS customers continue to request USP to provide and the training was crucial in developing this service further. “IAS is committed to investing and improving its staff knowledge and skills in terms of training, capacity building, research and offering of scientific services to fulfil the Institute’s purpose and better meet the needs of the region,” he further stated.
The Institute of Applied Sciences holds Western Roadshow to increase its visibility and engagement with its customers

The Institute of Applied Sciences (IAS) held a Roadshow for its Western Customers from 24-25 April 2019 to raise awareness of its services and increase engagement with its customers. Held at the Shalini Apartments Conference Room in Sigatoka and at the Bulacinno Restaurant in Nadi, the roadshow allowed customers to hear and learn directly from IAS activities with a particular focus on the Laboratory Services.

The roadshow programme included the following:

• Viewing of the IAS video on IAS services, projects and future directions.
• Presentations on Laboratory Testing Services for physical, chemical and microbiological analysis of food, water and environment samples.
• The new IAS Online Samples Results platform that would allow instant access to analytical reports by customers.
• Equipment Calibration Services and Biofuel Testing.
• Distribution of IAS services information packs to customers.

The above was followed by enlightening Q&A sessions where the former IAS Director, Dr Johann Poinapen was delighted with both the turnout and interest to learn more about the Institute. Participants at the roadshow reacted positively to the roadshow and some expressed their commendations on the information provided and meeting with IAS staff who they have liased with over the years.

“The Institute of Applied Sciences will explore holding annual Western Roadshows to continuously engage with its growing list of customers and receive valuable input and feedback from them on how it can better serve them. We have found through these visits and by actively listening to our customers and other key stakeholders we are able to assist them and their business more effectively. Not only is this a win-win situation for both IAS and its customers, but in the broader sense we are both assisting in Fiji’s and the region’s sustainable development,” said Dr Poinapen.
The Institute of Applied Sciences (IAS) staff were treated to two informative presentations on the prolific anti-infectives’ producer Myxobacteria, by Dr Ronald Garcia and Rolf Müller from the Helmholtz Institute Pharmaceutical Research Saarland (HIPS) of Germany on Friday, 17 May at the IAS Conference Room, USP Lower Campus. HIPS is Germany’s first ever public research institute and is committed to the field of pharmaceutical sciences research. The main focus of the institute is the search for new anti-infectives mainly from the Myxobacteria. In order to realise the diversity of this well-established group of bacteria, the HIPS is working with IAS’s Pacific Natural Products Research Centre (PNPRC) on the search for Myxobacteria from the Marine and Terrestrial environments of Fiji in the aim of uncovering new genera and species which may potentially produce new anti-infectives. As IAS is a member of Fiji’s National Antibiotic Resistance Committee (NARC), this research also seeks to address the rising issue of microbial resistance to antibiotics which is a national and global problem.

Dr Ronal Garcia of HIPS described the biology and ecology of Myxobacteria and how species and genera of Myxobacteria can be identified through their shape and colour of fruiting bodies as observed under a phase contrast microscope at 1000x magnification. He stated that though the majority of the Myxobacteria described species was known from soil samples, metagenomic studies have shown that Myxobacteria also widely exist in the Marine environment.

Professor Rolf Müller of HIPS spoke on the basic microbiology, chemistry and genetic engineering of Myxobacterial strains to produce new or novel antibiotics from microbes. In particular, he described how Myxobacteria, though not studied as much as actinomycetes and bacilli, continues to show promising bioactive properties. He also highlighted examples of novel synthetically produced and genetically engineered natural products in preclinical development at HIPS as potential broad spectrum antibiotics.

The IAS PNPRC Manager, Dr Katy Soapi, said that the presentations was an eye-opener for IAS researchers as it revealed an entire biochemistry research field that IAS could access through the collaboration with HIPS. IAS’s partnerships with leading international researchers supports the Institute’s endeavours to contribute effectively to the region’s public health issues and also to the body of science.
The Institute of Applied Sciences held a farewell function for its Director, Dr Johann Poinapen on Wednesday, 26 June at the USP Lower Campus. Dr Johann was appointed Director in 2016 having joined IAS at the Deputy Director in October 2014.

A number of tributes were made during the farewell. The Acting Dean, FSTE, Associate Professor Bibhya Sharma said that Dr Johann was an invaluable member of the FSTE Management Team who contributed greatly to the leadership and strategic direction of the Institute.

Mr Robin Yarrow, the Chairman of the IAS Advisory Committee said that Dr Johann had demonstrated business acumen in ensuring that IAS sustains its operations. He added that Dr Johann had developed business and project opportunities with partners, donors, clients and other stakeholders and worked on increasing the visibility of IAS's services.

Staff representatives of the 5 IAS units also thanked Dr Johann for his leadership, mentorship and for his participatory management style.

Dr Johann thanked the Acting Dean, the IAS Management Committee and the IAS Advisory Board members for their advice and guidance provided towards his leadership. He also thanked all the IAS staff members and students for their support and contributions during his tenure as the IAS Director.

In light of Dr Johann's departure, the Vice-Chancellor and President, USP has appointed Dr Isoa Korovulavula as the Acting Director. Dr Isoa is the current Manager of the IAS Environment Unit. He holds a PhD
Dr Bibya Sharma, Acting Dean of FSTE delivers a speech to farewell Dr Johann. (Environmental Management) from the University of Queensland, Australia. His areas of expertise include environmental management, resource economics and community based integrated resource management.
The Institute of Applied Sciences (IAS) held a Carbon Sequestration Training from 5 - 8 August 2019 at the IAS Conference Room, The University of the South Pacific (USP) Lower Campus for its staff and project partners who are involved in the IAS implemented Ridge to Reef and the Blue Carbon and Ocean Acidification projects. Dr Clint Cameron of Wildland Consultants facilitated the training with support from Dr Katy Soapi, Manager of the IAS Pacific Natural Products Research Centre, and Mr Teddy Fong, Manager of the Ridge to Reef project.

The participants underwent training on basic and detailed sampling methodologies for carbon stock assessments on terrestrial and mangrove systems. The training is a follow-up to the first that was held in March this year where raw data were collected from Waidina, Tuva and Ra. The parameters assessed and carbon contents calculated were:
- Above ground living biomass of trees and shrubs (AGB) calculations
- Below ground biomass of tree roots (BGB) calculations.
- Dead and downed woody debris (DDWD) calculations.
- Soil carbon calculations.
- Leaf litter calculations.

The USP team and REDD+ Unit and Forestry Research shared methodologies, deliberated on and finalised the concept note of the research objectives and the way forward for Carbon Sequestration in the Ridge to Reef Project.

IAS Senior Scientific Officer, Mr Tuverea Tuamoto spoke highly of the training and that it improved their understanding of the appropriate method to be applied for carbon stock data assessments in terrestrial and mangrove forests. “We have gained invaluable knowledge that allows us to further develop our capacities in carbon sequestration work and contribute effectively to the Ridge to Reef and the Blue Carbon project activities,” he said.

Blue carbon refers to the ability of coastal marine ecosystems, such as mangrove forests, sea grass meadows, and saltwater marshlands, to capture carbon dioxide and store quantities of carbon in both the plants and the sediment below. This leads to less dissolved carbon dioxide available in the water column to form acidic compounds. The restoration of coastal ecosystems can help mitigate the effects of Ocean Acidification (OA) on coastal communities. The IAS Ocean Acidification and Blue Carbon Project in Ra Province, Fiji is led by Dr Katy. “The training is a first of its kind here in Fiji. In the past, most of the analysis were done externally or samples were sent overseas for analysis. We have tried to change that by building the capacity of our staff to be able to do the analysis in house for above ground carbon stock assessment. We are pleased with the training and we hope to work with Dr Clint in these projects’ activities,” she said.

The IAS Fiji Ridge to Reef Project carbon sequestration component will be undertaking pilot reforestation activities on Viti Levu at two locations, Tuva and Waidina. The activities includes the accurate measurement, monitoring and reporting of species composition, structure and carbon stocks for the two reforestation sites and to be incorporated into Fiji’s REDD+ program.
The Institute of Applied Sciences recently organised a two-day Essential First Aid and Cardiopulmonary resuscitation (CPR) Training for its staff in two separate sessions (4-5 July and 11-12 July). The course was administered and conducted by the Fiji Red Cross Society using New Zealand Red Cross accredited course material. The group comprising of IAS field, laboratory and administration staff completed training under the guidance of Safety Instructor Mr Taufa Cocker.

A total of 29 IAS staff members had undergone the training. Mr Teddy Fong, the Environment Unit Project Manager said that, “First Aid is a life skill that is very important to these IAS staff as their jobs often require travelling, collecting samples or visiting remote communities. Staff must ensure their own safety and the safety of others in cases of emergency or disaster thus the training was very beneficial to IAS.”
Meet Our Staff

Rosie Kumar

Position: Laboratory Technician, IAS Laboratory Services.

Rosie joined IAS in 2013 and conducts food related tests for customers and projects. She is from Nausori and she holds a Diploma in Lab Technology (FNU) and is currently completing her Bachelor of Science (Food) with FNU.

What drew you to this field of work?
My own interest in working in a laboratory. My parents always wanted me and my siblings to pursue science related studies as it always interesting to discover new things and its never boring.

What do you enjoy about your work with the IAS Laboratory?
People. I work with and the working environment. I love the professionalism and team work.

Albert Whippy

Position: Scientific Officer, IAS Environment Unit.

Albert joined as a Graduate Research Student in 2012. He is from Galoa, Kadavu and holds a Master of Science and a Bachelor of Arts, Geography and Marine Affairs from USP.

What drew you to this field of work /area of study?
The thought of changing profession and getting into something different. It is quite interesting and the passion of involvement in the conservation work. Working in different villages, meeting different people and learning new things every day.

What do you enjoy about your work?
I get to visit some new places and am able to compare and contrast the different environment, the different sources of income, their livelihood and how people are using their resources. It is a learning experience to know more about the setup of the community and how and why some communities are different from others. I also learned of the uniqueness of a community with its tradition and diverse cultures. Sometimes we take for granted the things we have especially if they are in abundance, and are not aware that there are people or communities out there who are struggling in terms of water supply, good housing, trying to make ends meet and struggling for survival.
Increasing Awareness of Applied Sciences Capabilities and Research at the USP Open Day 2019
Science, The Beginning of a New Tomorrow
IAS Staff and Students Morning Tea

IAS held a morning tea for its staff members and students on Friday, 6 September. The IAS Acting Director Dr Isoa Korovulavula acknowledged the services of the following staff members who had completed their employment tenures at IAS:
- Dr Sarah Pene, Fellow, South Pacific Regional Herbarium (SPRH)
- Dr Samson Viulu, Pacific Natural Products Centre

Alifereti Naikatini, Senior Technician for SPRH who recently commenced with his PhD study leave was also acknowledged for his services to the Institute. Participants of the Essential First Aid and CPR Training organised by the Red Cross were also awarded their First Aid/ CPR Certificates.
Farewell Dr Johann Poinapen

IAS Activities
Fiji Ridge to Reef (R2R) Project

GEF UNDP R2R Project Technical Advisor site visit to Nukui

Planting of mangrove seedlings

Fenced mangrove nursery at Nakalawaca village in Tailevu

Planting of mangrove seedlings

Talanoa Session with the USP Vice Chancellor and President

A PerkinElmer Engineer (front left) held a new equipment installation training with IAS Laboratory staff

The Acting Director IAS, Dr Isoa Korovulavula plants a mangrove plant at the R2R project Mangrove Restoration Launch in Nukui, Rewa

The USP Vice-Chancellor & President Professor Pal Ahluwalia visits the IAS Display Booth during the USP 2019 Open Day