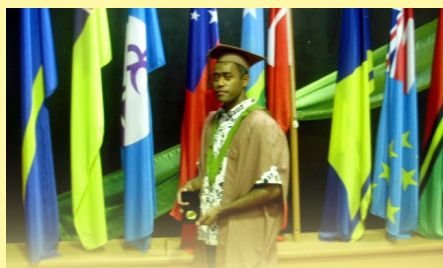


A Brief Look At Some Highlights of the IAS's Activities In 2013

In this Issue



Joape is 2013 USP Gold Medalist for Best Masters of Science Thesis



New Plant Discovered In Fiji



IAS Scientists produced First Field Guide to the Mangrove and Seagrass species for Fiji

Layout and Design

Assistant Graphic Artist, Institute of Applied Sciences

CONTACT US

Tel: (+679) 323 2965
Fax: (+679) 323 1534

Postal Address:

Institute of Applied Sciences
Faculty of Science, Technology and Environment
Private Bag, Laucala Campus,
Suva, Fiji

Find Us on Facebook:

Institute of Applied Sciences



H.E. Mr Eiichi Oshima and Professor William Aalbersberg sign the contract

IAS - USP and Japanese Embassy Signs Agreement to support Sanitation Improvement Project in Ucuivanua Tailevu

The Institute of Applied Science of the University of the South Pacific signed a grant contract agreement with Embassy of Japan in the Republic of Fiji on the 22nd of March 2013 for the improvement of sanitation environment in Ucuivanua Village, Tailevu. The Director IAS, Professor William Aalbersberg and the Japanese Ambassador to Fiji, His Excellency Mr. Eiichi Oshima signed on the agreement available under the Japan's Grant Assistance for Grassroots and Human Security Project scheme.

The sanitation project is for capital infrastructure improvement in the Ucuivanua water supply and increasing the communities' awareness of waste management and to construct effective management demonstrations to address liquid waste issues to the coastal marine systems. The demonstrations include the construction of compost piggery and grey water treatment. Solid waste will also be addressed via the 4R concept – Reduce, Refuse, Reuse and Recycle. The project is set to be accomplished within a year.

Attending to and witnessing the signing, was the traditional chief of Ucuivanua Ratu Timoci Vesikula; his village headman Mr Manoa Tikomaimaleya; the technical expert for the project Mr Viliame Jeke and the project manager Mr Semisi Meo.

Newly Accredited Microbiological Tests

The IAS Microbiology Laboratory successfully renewed its international accreditation status in March 2013 and also expanded its lists of accredited tests. International accreditation assure customers and the general public of the accuracy, reliability and validity of test results which are recognized worldwide. Having obtained its initial accreditation in July 2010, the Laboratory has played an active role in the monitoring of food safety in the country and the region and also in the exporting of commodities requiring microbiological clearance.



The newly accredited tests include food-poisoning (food-borne illness) causing bacteria such as *Campylobacter jejuni*, *Salmonella species*, *Bacillus cereus*, Yeasts and Moulds and *Enterobacteriaceae*. It is anticipated that the newly accredited tests will strengthen the monitoring of food safety as these bacteria are widely regarded as some of the main causes of bacterial foodborne diseases in many developed countries.



For more information on the newly accredited tests, please contact the IAS Laboratory on (679) 323 2965/323 2973 or email Ms Arun Pande, Senior Technician, IAS; pande_a@usp.ac.fj.



The Church steward blessed the compost piggery building before the Roko Baleni officially opens it.

Navakavu Waste Management Demonstration Project Launching

The Navakavu community celebrated the launching of their Waste Management demonstration Projects on the 15th of February 2013. The launching took place at the Vueti Navakavu with the opening of the Compost Piggery and the Compost Toilet demonstration. These demonstrations are a major component of the Navakavu Waste Project funded by the UNDP Global Environment Facility Small Grant Program (GEF SGP). The whole communities of Navakavu gathered at Nabaka Village for the launching in which USP representative Mr Semisi Meo reminded and emphasized the importance of the waste demonstrations to the overall waste project and its value to the natural ecosystem and the raising of the communities health hygiene levels.

Apart from Institute of Applied Science representative, the presence of the Provincial Office, the "Turaga na Roko Baleni" and the "Turaga ni mataqali" made the event more characteristic in terms of traditional respect towards the UNDP funded project. Although some key stakeholders did not attend, the communities were not deterred in gathering to witness the launching of their effort. Navakavu was chosen to trial out the community-based waste management strategy because of their effort & commitment towards marine conservation initiatives over the past decade and continue still doing so. The implementation of the waste project will extend the conservation focus of the people in a holistic approach to managing and conserving the environment from the mountain to the reef.

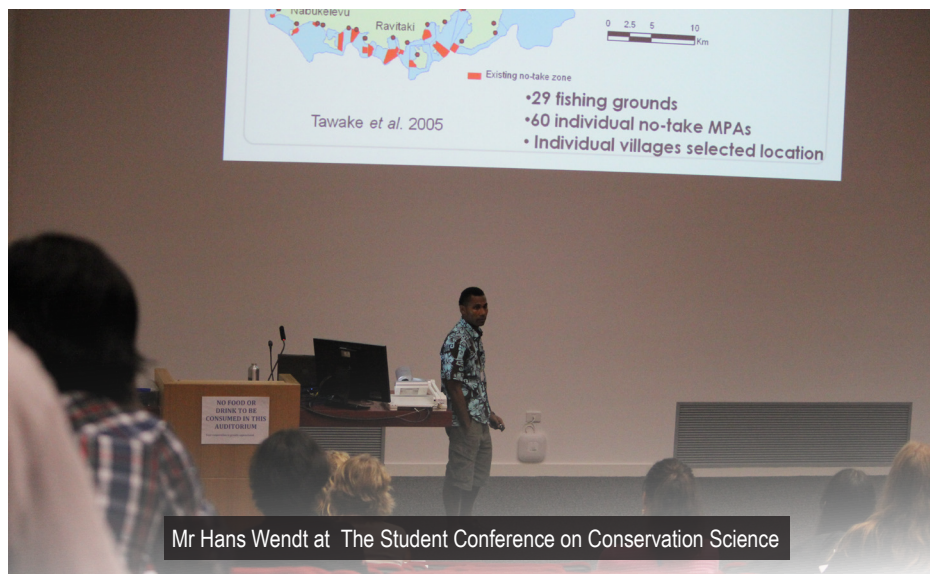
The GEF SGP funded project activities started way back in 2011. The project components included community awareness and education, community planning and orientation and implementation of the 4 R's strategy in reduce, reusing, recycling and refusing. The 5 villages involved had been given clean up equipment, installment of organic compost, installment of bottle recycling bags; recycle empty can repositories and its basic monitoring and evaluation plans.



Turaga na Roko Baleni officially opens the UNDP funded project at Nabaka Village - The Compost Toilet

The UNDP funded project work will also support a Recycle and Arts Training targeting women and youths of Navakavu with the expectation to expand their capacities in making art from waste material and to contribute to their livelihood.

The IAS of University of the South Pacific, UNDP GEF Program, Ministry of Health and the Rewa Provincial Office are the major stakeholders in the project.



Mr Hans Wendt at The Student Conference on Conservation Science

USP Student Awarded 3rd Best Talk At International Conference

The Student Conference on Conservation Science (SCCS) held in Brisbane, Australia, 21 – 31 January 2013 awarded the prize for the 3rd best talk to USP's Institute of Applied Science Masters student, Mr. Hans Wendt. This was out of 36 international postgraduate presenters. Mr. Wendt presented

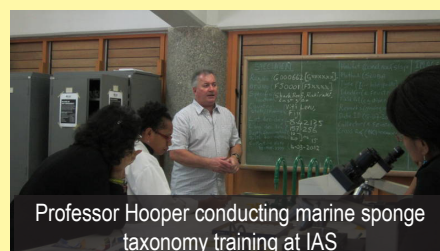


his masters research titled “Applying spatial planning tools to strengthen the design of a community-based network of no-take Marine Protected Areas in Kadavu, Fiji”. The research was supervised by Mr James Comley. The conference was attended by over 125 postgraduate students from more than 20 different countries around

the world. The SCCS Australia is one of the programs aimed at strengthening the careers of young conservation scientists around the world through events in Brisbane, Bangalore, Cambridge and New York. It was designed for students pursuing postgraduate studies within the field of conservation science. The program is designed to help launch their careers in conservation science through a combined 3 days conference, 3 days of field trips and sightseeing around Brisbane, and 4 days of training and workshops. According to Mr. Hans Wendt, the conference has provided him with the opportunity to present his research, share ideas, make new friends and at the same time learn from the different studies conducted by other students from the south-east and east Asia, Australasia and the Pacific, which is the most biologically diverse region in the world. In congratulating Mr Wendt, the Director, IAS Professor Bill Aalbersberg stated that the award was a reflection of the quality of scientific research and the caliber of graduate researchers that the IAS, USP and the region is producing which directly contributes to the USP's pursue of research excellence.

World Leading Marine Sponges Taxonomist Held Training at IAS

The Institute of Applied Science (IAS) of the University of the South Pacific in its quest to be the regional leader in applying quality sciences engaged the services of a world renowned marine sponge taxonomist, Professor John Hooper, to provide training and guidance on the correct identification of marine sponges collected for drug discovery purposes. Professor Hooper is the Head of a Natural Environments Program, Queensland Museum and Science Center.



Professor Hooper conducting marine sponge taxonomy training at IAS

The training which was held at IAS from the 15 – 17 July was attended by both IAS and the School of Biological & Chemical Science scientists. During the training, sponges collected by Dr. Katy Soapi and Mr. Klaus Feussner from the Western Province of the Solomon Islands waters in 2012 were identified to genus and many to species level. There were challenges in the identification of these sponges, given the complexity of their morphological characteristics. Professor Hooper however stressed the importance of DNA fingerprinting to assist in the identification process, an area that IAS is continuing to explore. The outcome of this workshop will also aid in the setting up of a bioinventory for the Solomon Islands.

From 1981 – 2010, 49% of all new approved drugs for cancer treatment directly derived from marine natural products, with sponges being the source of 20% of these.



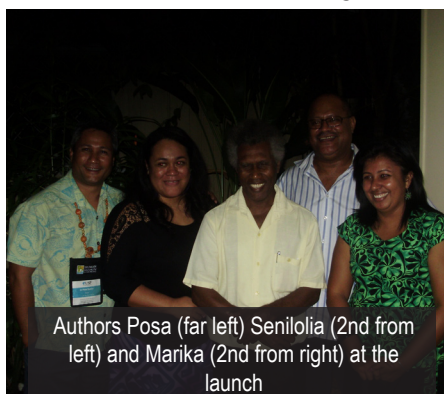
IAS Scientists produced First Field Guide to the Mangrove and Seagrass species for Fiji

With pedagogy, student support, and research being priority areas for the University of the South Pacific, as outlined in the Strategic Plan 2013-2018, scientists at the Institute of Applied Sciences (IAS) have contributed to the positive development of the University in these areas, by producing the first guide to identifying mangrove and seagrass species in Fiji.

The guidebook, *A Field Guide to the Mangrove and Seagrass Species of Fiji*, was launched by the Permanent Secretary for the Ministry of Lands, Mr Tevita Boseiwaqa and the Director of Environment, Mr Jope Davetanivalu, at the International Union for Conservation of Nature (IUCN) Oceania Office in Suva, on Tuesday, 9 July, 2013.

The book is an important contribution, not only to the University, but also to the members of the public seeking information on mangrove and sea grass issues both in Fiji and the rest of the Pacific region.

The IUCN-Oceania was pleased to launch the book as it was a demonstration of a successful collaboration of several



Authors Posa (far left) Senilolia (2nd from left) and Marika (2nd from right) at the launch

of the local environment organisations including the Fiji Department of Environment and the Institute of Applied Sciences.

Written by Ms Senilolia Tuiwawa based at IAS, Network Coordinator at South Pacific Regional Environment Programme (SPREP) and former staff of IAS, Mr Posa Skelton and the South Pacific Herbarium curator, Mr Marika Tuiwawa, the field guide is a contribution to research and conservation, specifically designed for the non-technical sectors in Fiji.

These sectors include organisations that may not have the technical support to identify mangrove and seagrass species found throughout

Fiji's archipelago.

The guide will also serve as an important reference guide for neighbouring countries, to help identify the different species of mangroves and seagrasses that may be similar to Fiji's.

Mr Tuiwawa said, "The field guide will be an important tool for the laymen raising awareness and enhancing the conservation of mangrove and seagrass species within Fiji and the region".

With the significance of mangroves and sea grass as a habitat for many marine species and a safe nursery for many more species often underappreciated, the book aims to draw attention to the key conservational aspects of the natural marine ecosystem.

Written in language that is comprehensive to members of the public, the 75 page guide features photographs and information such as the local names, uses and distribution, of the 12 mangrove and six seagrass species in Fiji.



Joape is 2013 USP Gold Medalist for Best Masters of Science Thesis

Joape Ginigini, an IAS Masters of Science graduate was awarded the gold medal for his Masters of Science research thesis, "Analysis of antibiotic activities of *Salinispora* strains from the marine environment as a guide to new phylogenetic and chemical diversity". Joape's research involved the isolation of 100 strains of the marine obligate bacteria belonging to the *Actinomycetale* family and the genus *Salinispora* from 80 marine sediments. The sediments were collected from 16 locations in 9 provinces that have been sampled by IAS and the Scripps Institute of Oceanography, USA dive crews throughout a span of 4 years. The provinces were Tailevu, Ovalau/ Lomaiviti, Nadroga, Lau, Kadavu, Macuata, Cakaudrove, Rewa and Yasawa. The main objective of the project was to find out if chemical compounds produced and which of these are unique to the three known species in the *Salinispora* genus, and data obtained used to investigate if there were new species level diversity of *Salinispora* in the Fijian ocean sediments. Confirmation of results studies were done using DNA analysis. Results reflected the current species diversity patterns of the *Salinispora* bacteria and revealed an underestimated presence of intra-species diversity in the most recently

discovered species of "Pacifica" within the *Salinispora* genus. Supervised by the Director, IAS Professor Bill Aalbersberg with Dr Paul Jensen of Scripps Institute of Oceanography, USA, as the Co-supervisor, Joape also worked closely with Professor Peter Lockhart (Massey University, NZ) for phylogenetic reconstruction and DNA analyses, Ms Kelle Free for DNA data analysis, Dr. Ramesh Subramani (IAS) for data analysis and Mrs Kavita Latchman (IAS) who assisted during the early stages of the project.

The award has greatly encouraged researchers at IAS to continue to produce outstanding research findings that enhance existing science knowledge and improve livelihoods. Currently employed as a Research Consultant at the IAS Centre of Drug Discovery & Conservation, Joape will continue to delve more into this exciting area of research and is optimistic of future novel/new research findings.



Meet a Staff Member

1. Explain your role at IAS?

As a natural products chemist at the CDDC, I conduct research on natural products from marine actinomycete bacteria, marine invertebrates and terrestrial plants with medicinal value. The research is focused on the isolation and purification of bioactive compounds which have the potential to be used as medicinal drugs in the future.

2. What do you enjoy best about your work?

I find research work at CDDC very interesting. In trying to find something new, I am able to grasp new research techniques and work with collaborators from whom I am able to enhance my knowledge and skills. I also enjoy working with the knowledgeable people in our small working group.



Kavita Ragni

Centre of Drug Discovery & Conservation, IAS

Congratulations and Welcome to the IAS Family!

Analytical Unit

Kirti Kavita (Technician)

Environment Unit

Jale Kotobalavu
Makelesi Raciri (Field Assistant)

Herbarium Unit

Sarah Pene



- Mere Naisilisili (Asst. Graphic / Media Officer) on her marriage to James Brown
- Tokasaya Cakacaka (Technical Assistant) who welcomed a new addition to his family.

The Fiji Times ONLINE

A vo's trip to the sea

Selilosil Batiretu
Friday, April 05, 2013

WHO has ever heard of a gudgeon? Most of us, especially those from the upper reaches of our river systems, have, but not by that name. They would instead recognise its iTaukei name, vo.

At a lecture organised by Seaweb, the international non-profit organisation dedicated to the culture of ocean conservation, the 16 of us present yesterday heard gudgeons, while freshwater creatures travel down to the sea to spawn. This journey of life, or more precisely its return leg, is interrupted if the river has been heavily sedimented.

University of the South Pacific's Institute of Applied Science marine biologist, Ron Vave, in his presentation on community based management of marine resources had used the gudgeon or vo to show us the interconnectivity between ecosystems.

Vave also told us a marine predator, the bull shark, is the opposite of the gudgeon in matters of reproduction. Where the vo heads to sea, the bull shark goes upstream to birth.

At the outset, Vave told us the environment is fragile. As such, it is of the utmost importance that threats to this fragile state of existence are well managed. Put another way, mankind's activities or the impacts of these activities on the environment, as it is our activities which have put the world at peril, need to be better understood if we are to leave a better world for those coming after us.

But as he said towards the end of the presentation concerns for the environment were sometimes the secondary target of some communities. While this may be shocking news to some, Vave said was what more important to people who they had worked with in communities was the sustainability of their food source or food security.

Vave said they from the USP's IAP worked with various communities but at times did not have the answers to the questions posed by villagers or resource owners. Especially when these have to do with areas somehow connected to conservation efforts but outside their specialty, the science of conservation. Or as was illustrated yesterday when there was a question on whether it would be better if seawalls were perpendicular to the sea or built with a gradient.

He said this was why USP was part of the LMMA (locally-managed marine area) Network.



*Fellows of a past sea series on a snorkelling trip at Beqa Island to check out their marine protected area (MPA).
Picture: SUPPLIED*

The LMMA is a grouping found in seven countries in the Asia/Pacific region comprising government departments, non-governmental organisations, academic institutions, the private sector, and arguably the most important component, the local communities. Important because Vave said the network adopts a bottom-up instead of a top-down approach.

Vave made it clear yesterday they only work with communities which have requested their help. He said they do not want to be in a situation, and there have been such instances, where they reach a village and then find out the community as a whole does not know why they are there. Such a request, he said could have been at the behest of an individual without any consensus among community members.

He said there were in Fiji 410 qoliqoli or fishing grounds of which 143 had been declared MPAs (marine protected areas) or tabu areas. Vave said MPAs or tabu areas could be either of two kinds. One was where the villagers or qoliqoli owners decide on the size of and administer the said area. The other kind is where the villagers decide on the extent of their tabu area, and after making the decision ask that it be gazetted.

The advantage with community-managed and administered MPAs are their inherent flexibility. Vave gave the example of a coastal community falling upon hard times and needing the resources with the MPA decide to set aside the tabu to allow the community to get back on to its feet before re-enforcing the tabu area. Villagers trying this in a MPA which has been gazetted might be breaking the law.

Vave said it was the community to take ownership of any initiative because after all it is said and done, it will be them who are the ones to ensure the continued success of the project.



New plant discovered in Fiji

A new plant belonging to the non-vascular group of bryophyte plants was recently discovered in the lowlands of Viti Levu - Fiji's largest island.

The genus called *Cephaloziella* has never been previously recorded in Fiji. A plant in this genus was found growing on the lower trunk of a tree fern in the Vago Reserve near Colo-i-Suva in the Naitasiri Province.

Cephaloziella belongs to the family Cephaloziellaceae which is a group of very small, thread-like liverwort plants.

The discovery of the *Cephaloziella* liverwort was made by the Institute of Applied Science (IAS) at the University of the South Pacific by the Institute's graduate student researcher Mereia Katafono, and field assistants Manoa Maiwaqa and Saula Mule.

The plant was found while conducting field work for Mereia's Masters of Science research project on tree trunk-inhabiting bryophytes, a study which is a first of its kind in Fiji and in the region. The plant specimen was then identified by bryologists and external collaborators of the project, Dr. Matt Renner of the National Herbarium of New South Wales, Sydney, Australia and Dr. Matt von Konrat of the Field Museum of Natural History, Chicago, USA.

Liverworts are one of the three groups of bryophytes which are said to be the earliest green plants to move to land. Very little is known of

this group of plants despite their great biological, ecological and evolutionary significance. They play an important role in ecosystem processes such as prevention of soil erosion, nutrient cycling, and forest hydrology. They may also contribute, as much as vascular plants, to species richness in many forests and can form a significant proportion of the total biomass of some plant communities.

Liverworts are also very sensitive to ecological and environmental changes, including anthropogenic disturbances. This has led to increased research in using bryophytes as indicators of long-term climate change and forest health hence supporting their usefulness in the field of conservation science.

This new record adds to the 48 new liverwort (species) records recently published by Pócs et al in 2011.

The finding of this new genus record potentially means more new species records for Fiji, said Mr Marika Tuiwawa, Curator of the South Pacific Regional Herbarium at IAS.

However, he added, that researchers are still determining if the plant represents a new species to science or if it is similar to a species known from New Zealand.

This new finding, according to Mr Tuiwawa, is another step forward in an effort to fill information gaps relating to Pacific bryophyte flora and in developing and strengthening bryophyte research in Fiji.



Workshop participants with Dr Hodge

Why Publish?

A workshop held at Institute of Applied Sciences (IAS), USP on the 30- 31 January, 2013 was conducted to ensure that findings from scientific research at IAS are written up for publications. The training was conducted by Dr. Simon Hodge, a senior lecturer in Statistics and Biometrics from Lincoln University, New Zealand and targeted post graduate students of IAS and Biology Division (FSTE, USP) who are currently in the final stages of their thesis writing. IAS staff members who are also involved in research work attended the workshop which focused on:

- The types of biological research
- How to write an Abstract and Introduction
- How to present Results (tables, graphs, figures etc.)
- Writing a paper
- Choosing an appropriate journal
- Processes in submitting your manuscript.

IAS continuously encourages its staff members to publish and previous recipients or the USP Research Office Publication Awards include the Director, Mr Klaus Feussner, Mr Rohitesh Kumar and Mr Pritesh Prasad. As an outcome of this workshop, the Director of the Institute, Prof. Bill Aalbersberg has urged participants to publish results of their research work as this allow researchers to communicate their findings to interested local and international audiences. All participants have made a commitment to submit a journal article within the next three months.