

A Brief Look At Some Highlights of the IAS's Activities In 2014

In this Issue



IAS staff participates in Ecosystem Approach to Fisheries Management training



IAS's Role Central to Local Marine Management Efforts in the Indo-Pacific Region



'Institute of Applied Sciences Staff member contributes to a UN Manual for Small Island Developing States'

Layout and Design

Graphic Artist, Institute of Applied Sciences

CONTACT US

Tel: (+679) 323 2965
Fax: (+679) 323 1534
www.usp.ac.fj/ias

Postal Address:

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

Find Us on Facebook:

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IAS, USP engaged in 4 Pacific Island Countries Water Sanitation and Hygiene Project

The University of the South Pacific (USP) under the Institute of Applied Sciences (IAS) is engaged in a regional multidisciplinary WaSH (Water Sanitation and Hygiene) project in collaboration with researchers from the Monash University (MU) in Melbourne, the International Water Centre (IWC) in Brisbane Australia and the University of North Carolina (UNC) in USA. USP Graduate students, Ms Zamira Rua and IAS Senior Scientific Officer, Mr Semisi Meo are engaged in the project whilst pursuing studies in this area.

Funded by the Australian Aid Civil Society Agency, the research-based project intends to elucidate lessons learned and experiences within existing and interested "actors" in good implementation of WaSH programs in community level. The research is focused on communities in four Pacific island countries namely Solomon Islands, Fiji, Vanuatu and Papua New Guinea. The team expedited their research with two peri-urban informal settlements of Honiara (Burns Creek and Gilbert Camp) Solomon Islands from the 10 to 21 of March 2014.

Participatory Action Research is the approach adopted across WaSH stakeholders at the national and community level to assess the status and opportunities of improving WaSH. A range of areas that relate directly or indirectly to improving the conduct and sustainability of any WASH intervention is considered in the research including social marketing, community entrepreneurship, community capabilities and relevant opportunities.

In the Solomon Islands, the NGO Live and Learn Environment Education (LLEE) is identified as the primary local partner to host the facilitation of the project. They would facilitate the conduct of the actual work with the external WaSH expertise and researchers from the MU, IWC, UNC and USP. At the community level, the project is about empowering them as researchers to change their WaSH situations as appropriate and as well as provide information that may assist LLEE and other NGOs in doing WaSH projects.



IAS staff participates in Ecosystem Approach to Fisheries Management training: Tagbilaran City, Bohol Province, Philippines

A staff member of the Institute of Applied Science, Mr Apisai Bogiva, recently returned from a one week basic training on Ecosystem Approach to Fisheries Management that was held in the province of Bohol in the Philippines from the 28th April to 2nd May, 2014. Mr Bogiva was among a group of eight individuals from Fiji who were invited to participate, share experiences and also learn a management tool that could be implemented locally to enhance current practices to improve fisheries management. Other members of the team included five government representatives, one community representative and one NGO representative including the Provincial Administrators, Ra. IAS is leading a government / NGO integrated coastal management project in Ra province under the Coral Triangle Pacific initiative.

Participants from Timor Leste, PNG, Vanuatu and Solomons were also part of the training. ADB through its Coral Triangle Initiative project in the five countries is hoping that each country will adopt this management tool but more importantly to build capacity within each country project. According to Mr Bogiva, apart from sharing the technical skills acquired with his colleagues, it will also boost and extend his work within the Institute. Many of the tools discussed were similar to what he had learned at IAS. The training is an eye opener for him, 'I was able to connect my practical, on the ground experience with the big picture and theories of a holistic fisheries management'.

Three major lessons learnt from this training were.

- i) The strong legislation that the Philippines has with regards to fisheries resource management. Laws were enforceable at Municipal level where the Coast Guard, Fisheries Bureau and Maritime Police have powers to apprehend and prosecute offenders. It went as far as protecting concerned officers in the event of causing injuries during arrests. This is a far cry from the Fijian situation where environmental misdemeanour seems not worthy of the court's time.
- ii) The availability of resource centres at each municipality that have a central database that store all reports, data, maps, management plans and any other relevant information. This information is freely accessible to stakeholders and enhances coordinated activities in fisheries issues. This is contrary to the Fijian situation where, NGOs, government departments and institutions keep their own information and is seldom shared. This can always result in a fractured approach to issues.
- iii) During spawning seasons of marine organism, local communities have collectively agreed not to harvest until the spawning season is over. This, according to Mr. Bogiva a must lesson for Fiji where fishery spawning season seems to equate with harvesting time.

He will continue to work through his managers at Institute of Applied Science (IAS) on how he can assist the Ra Integrated Coastal Yaubula Management Committee adapt the EAFM tool.

The training was funded by the Asian Development Bank (ADB) and jointly facilitated by the World Wide Fund for Nature (WWF), Bureau of Fisheries and Aquatic Resources of the Philippines and ECO-FISH, a local NGO in the Philippines.

To conclude, this training is in line with the USP Strategic Plan 2013-2018, Priority Area 6 (Our People), Objective 24 stating to 'Ensure the development of regional talent and the development of staff' with the purpose of integrated and holistic management of fisheries.



Some of the participants of the 2014 Locally Managed Marine Area Meeting

IAS's Role Central to Local Marine Management Efforts in the Indo-Pacific Region

Coastal fisheries are inextricably linked to the livelihoods of the people of the Indo-Pacific region. While the impact of the dwindling near-shore fisheries stock continues to be felt by dependent coastal people, there are also progressive, innovative and people-centered approaches to addressing coastal threats that are showing promising signs of improving local fisheries and sustaining community livelihoods. The Institute of Applied Science has been leading this growing movement, globally recognized and award winning local management efforts over the last 15 years.

Between the 23rd April to the 8th of May, 2014, the Institute of Applied Science (IAS) of USP on behalf of the Fiji Locally Managed Marine Area Network hosted, facilitated and chaired meetings of the Indo-Pacific Locally Managed Marine Area (LMMA) Network. In attendance were representatives of the seven LMMA countries that make up the network including Country Coordinators, the governing body of the network which is comprised of LMMA Councilors (one from each country) and technical support team.

The purposes of the meetings were three fold:

- 1) design a robust, credible, salient and legitimate study to determine the impacts of the various local manage-

ment efforts, their effectiveness in achieving sustainable livelihoods for coastal communities and conditions they work well in,

- 2) share lessons learned amongst Country Coordinators

- 3) Develop and endorse policies and 2020 strategic direction for the Indo-Pacific LMMA network by the LMMA Council-governing body.

An independent evaluator, Professor Andy Rowe of ARCEconomics in Canada, assisted the regional planning team of six including five IAS staff, in the design phase of the study. This included consultations with representatives of various organizations in Fiji to get their input into the study. The purpose of the consultations was to ensure that the process and ultimately the study, would be credible, salient (responsive to needs) and legitimate; building on existing studies and datasets. The study which will be trialed first in Fiji is expected to say with some degree of confidence

- (a) what makes a difference to communities and sustainable livelihood,

- (b) what are the most adaptable interventions and their costs and

- (c) under what conditions the above interventions will work.

"Studying these three questions has

been a core aim of the LMMA Network since its inception", said Prof. Bill Aalbersberg, one of it's founders.

Background:

The regional network was established in 2000 and currently works with seven countries in the Indo-Pacific region including Fiji, Solomon Islands, Papua New Guinea, Palau, Pohnpei, Indonesia and Philippines. The University of the South Pacific (through the Institute of Applied Science) is a member of the Fiji Locally Managed Marine Area (FLMMA) network since its establishment in 2000 and registration as a non-charitable organization. IAS plays a key role in facilitating research through its graduate students and staff, lessons sharing, facilitating awareness and management planning workshops in communities, and assists with developing innovative approaches/solutions.



'Institute of Applied Sciences Staff Member Contributes to a UN Manual for Small Island Developing States'

An Institute of Applied Sciences Senior Scientific Officer, Mr Patrick Fong, received the honour of an invitation from the UN Environment Programme to attend a technical workshop on Valuation and Accounting of Ecosystem Services of Small Island Developing States (SIDS) at the UN headquarter, New York, United States of America on 27 - 28 February 2014. With experience in social and economic aspects of natural resources and conservation, Mr Fong participated in the discussions and sharing of ideas relevant to the various sessions organized and was selected to be the moderator in one of the sessions.

Workshop participants included academia, government representatives, environmental practitioners and private consultants with expertise in the areas of natural and environmental science, ecology, climate change and sustainable development, macro and resource economics of SIDS and SIDS political systems and structure.

Participants reviewed and worked towards finalizing a guidance manual developed by UNEP titled Valuation and Accounting of Ecosystem Ser-

vices of SIDS. Once finalized the guidance manual will be launched in 3rd International Conference on Small Island Developing States in Apia, Samoa in September, 2014. The manual focuses on the development of a scientifically robust document on valuation of ecosystem services and accounting natural capital for SIDS, particularly on how to apply valuation and accounting tool in their own context where island and associated ecosystems contribute to their economic development and livelihood. It is anticipated that with the manual, SIDS can formulate development policies that incorporates the values of ecosystem services which can enable policy makers resolve trade-offs through the capturing of some of the unaccounted benefits of ecosystems.

IAS Director, Professor Bill Aalbersberg commented that Mr Fong's involvement in the workshop is in accordance with its role in providing scientific services to the region and also in line with the USP Strategic Plan Objectives for Research & Internationalization & Regional and Community Engagement. Mr Fong is a leading regional expert on socio-economic resource assessment.

IAS Partners to Develop Commercial Kava Drink

The Manager of Laboratory Services at the Institute of Applied Science (IAS) Mr. Usaia Dolodolotawake attended a Kava Stakeholders Meeting on the 14th of April, 2014 in Levuka, Ovalau. The meeting was organized by Pacific Elixirs Ltd., producers of Taki Mai, a bottled kava drink co-developed by IAS. The meeting was attended by Ovalau kava farmers, provincial administrators and Ministry of Agriculture Officials including the Hon Minister, Mr. Seruiratu.

During the meeting, Mr. Dolodolotawake gave an overview of IAS's activities and its role in Taki Mai development with Pacific Elixirs. He shared with those present the link between cultivar and the variation in the amount of each of the six major kava lactones present. This is referred to as chemotype. Since Pacific elixirs will only buy a certain chemotype (variety), it is important that farmers were aware of this and ensure that they propagate the desired variety should they intend to supply Pacific Elixirs.

Another contentious issue clarified was the price of a kilo gram of green kava currently being offered at farm gate by Pacific Elixirs (\$7.00 per kg versus \$25.00 per kg dry kava sold to other buyers). Mr. Dolodolotawake explained that based on work done at IAS and by others the average moisture content of 3 years kava roots is around 80%. This meant that if a farmer took 10kg of green kava and dried it, he will have around 2kg of dried kava which equates to more than \$30.00 per kg.

During the "talonoa" session, Mr Dolodolotawake had talks with the Minister who was quite aware of the activities of IAS and was appreciative of our role in helping value add an agricultural commodity. The farmers were also happy with the scientific based discourse that was delivered.



Experiments on Fijian reefs found that chemical ecology is the key to understanding the structure, function and resilience of coral reefs

Coral reefs are in precipitous global decline. In the last 3-4 decades, coral cover has declined by 80% throughout the Caribbean and 50% throughout the tropical Pacific, with seaweeds commonly replacing corals. Much of the decline and lack of recovery can be attributed to alterations in fundamental biotic interactions that are mediated via bioactive secondary metabolites. This was highlighted by Professor Mark Hay at a seminar organized by the Institute of Applied Sciences (IAS) on 6 June 2014. Professor Hay and his PhD students hold seminars at IAS annually and have been working very closely with the IAS Centre for Drug Discovery and Conservation (CDDC) staff for the past 10 years in the areas of chemical ecology and drug discovery.

Professor Hay, a marine ecologist known for his work on community ecology and chemical ecology is the Teasley Professor of Environmental Biology, founder and co-director of the Center for Aquatic Chemical Ecology at Georgia Tech. USA. A recipient of the Cody Award (recognizes outstanding scientific achievement in Oceanography, Marine Biology and Earth Science) and a Fellow of the American Association for the Advancement of Sciences, he has been conducting research in Fiji since 2004. His research has transformed and deepened our understanding of the structure and function of marine communities and ecosystems, and he helped found the modern field of marine chemical ecology. He explained that experiments on Fijian

reefs demonstrate that herbivory by specific mixes of herbivorous fishes (those resistant to different seaweed defenses) is critical for suppressing chemically-rich seaweeds that damage corals on contact via allelo-pathic lipids. Interactions are dynamic, with seaweeds inducing greater allelopathy when contacted by corals and coral chemically cuing fish to consume the seaweeds. Of equal importance is how coral and fish larvae respond to chemical cues from overfished areas dominated by seaweeds versus no-take marine protected areas (MPAs) dominated by corals. Recruiting fishes and corals chemically sense and are attracted to coral dominated areas protected from fishing while being chemically repulsed by seaweed dominated areas that are overfished. Attraction and repulsion are cued by odors from specific corals and seaweeds that best predict reef quality. Both recruiting fishes and coral larvae refused to settle in overfished, seaweed dominated areas, but recruited readily to immediately adjacent reefs where fishing was banned and corals dominated. These chemically-cued behaviors can close the open nature of marine populations, suppress larval export from coral dominated marine protected areas to degraded reefs, and prevent recovery of coral and fish populations once reefs degrade and become dominated by seaweeds. The importance of these findings are reflected in the fact that this research has recently been published in the prestigious Science magazine.

Multi-element machine that will greatly reduce analysis time and costs: Inductive Coupled Plasma Spectroscopy (ICP-OES) Instrument Overview



The IAS Laboratory is in the process of validating water samples for multi-elements analysis which includes determination for Sodium, Potassium, Iron, Calcium, Magnesium, Manganese, Zinc, Arsenic, Chromium, Lead and Cadmium levels in water. The ICP-OES works by converting a sample solution into an aerosol which is pushed into a spray chamber. From here, only very fine droplets get transported by the nebulizer gas into the plasma. The ICP can generate temperatures of up to 10,000°C resulting in vaporization and atomization of samples. A process of excitation and ionization also takes place in the plasma. The process of excitation and emission of an element requires a certain amount of energy and this energy is dependent on the emission/excitation wavelength. Each element has a unique emission and excitation wavelengths. By using atomic spectrometry techniques quantitative and qualitative information about a sample can be obtained. In the ICP-OES, concentration of elements in a sample is related to the amount of electromagnetic radiation that is emitted. The Laboratory anticipates that it will start offering these analyses in the near future.

LABORATORY SERVICES

Water Analysis for Legionella

Colitag presence / absence water test for Total Coliform & E.coli

For More information
 Contact: Mr Usaia Dolodolotawa, Manager Laboratory Services
 Phone: 3232967 / 3232971
 Email: dolodolotawa@usp.ac.fj

Meet A Staff Member



Aisha Khan

- 1. Explain your role at IAS?**
 I have worked as a Secretary at the institute for the past thirty years during which IAS has grown from a 3 staff member department to the thriving institute that it is now.
- 2. What do you enjoy best about your work?**
 I enjoy working with the IAS family in a friendly environment. This is my second home.

Staff Movements

IAS Wishes to Acknowledge the Contributions of the Following:

- | | | |
|---|--|--------------------------------------|
| Dr Bale Tamata
Fellow (Environment Unit) | Laitia Tamata
Graduate Assistant | Rohitesh Kumar
Scientific Officer |
| Ron Vave
Senior Scientific Officer | Hans Karl Wendt
Graduate Assistant | Kavita Ragini
Scientific Officer |
| Fulori Waqairagata
Scientific Officer | Vincent Lal
Project Assistant | Pritesh Prasad
Scientific Officer |
| Rusiate Ratuniata
Graduate Assistant | Luke Mani
Post Doctoral Fellow | Hilda Waqa Sakiti
Consultant |
| Ron Simpson
Consultant | Ramesh Subramani
Post Doctoral Fellow | |

Our New Staff

IAS Welcomes the Following:

- | | | |
|---|---|--------------------------------------|
| Alivereti Tawake
Assistant Project Manger | James Sinclair
Project Assistant | Indar Singh
Laboratory Technician |
| Dikesh Prasad
Graduate Programmer | Mere Vukialau
Assistant Technician | Rosie Kumar
Laboratory Technician |
| Eparama Uluviti
Records and Assets Assistant | Rahul Tikaram
Marine Project Officer | Kirti Naidu
Laboratory Technician |
| Seruwaia Rokotaro
Laboratory Technician | Rosemary Dautei
Marine Project Officer | |
| Emi Vunisaravi
Laboratory Technician | Ferlisa Valentine
GIS Technician | |
| Kula Radininoco
Laboratory Technician | Dhirendra Prasad
Laboratory Technician | |

USP Beat

USP STAFF CONTRIBUTES TO UN ENVIRONMENT DISCUSSIONS



USP's Institute of Applied Sciences (IAS) Senior Scientific Officer, Patrick Fong (circled) was part of the Valuation and Accounting of Ecosystem Services of Small Island Developing States (SIDS) Workshop at the UN Headquarters in New York.

Staff of The University of the South Pacific was recently involved in discussions with the UN Environment Programme on the Valuation and Accounting of Ecosystem Services of Small Island Developing States.

Institute of Applied Sciences (IAS) Senior Scientific Officer, Patrick Fong attended the technical workshop at the UN headquarters in New York on 27 - 28 February 2014.

With experience in social and economic aspects of natural resources and conservation, Mr Fong participated in the discussions relevant to the various sessions organised and was selected to be the moderator in one of the sessions.

Workshop participants included academia, government representatives, environmental practitioners and private consultants with expertise in the areas of natural and

environmental science, ecology, climate change and sustainable development, macro and resource economics of Small Islands Developing States (SIDS) and their political systems and structure.

Participants reviewed and worked towards finalising a guidance manual developed by UNEP titled, Valuation and Accounting of Ecosystem Services of SIDS.

Once finalised the guidance manual will be launched during the 3rd International Conference on Small Island Developing States in Apia, Samoa in September, 2014.

The manual focuses on the development of a scientifically robust document on valuation of ecosystem services and accounting natural capital for SIDS, particularly on how to apply valuation and accounting tools in their own context where

island and associated eco-systems contribute to their economic development and livelihood.

It is anticipated that with the manual, SIDS can formulate development policies that incorporates the values of ecosystem services which can enable policy makers resolve trade-offs through the capturing of some of the unaccounted benefits of ecosystems.

IAS Director, Professor Bill Aallersberg said Mr Fong's involvement in the workshop is in accordance with its role in providing scientific services to the region and also in line with USP's Strategic Plan Objectives for Priority Areas in Research & Internationalisation & Regional and Community Engagement.

Mr Fong is a leading regional expert on socioeconomic resource assessment.

11 | Volume 13 | Issue 5 | MAY 2014

USP ENGAGES IN WASH PROJECT



Semisi Meo and Zamira Rua of The University of the South Pacific facilitating the project in the Solomon Islands.

The University of the South Pacific's Institute of Applied Sciences (IAS) was recently engaged in a regional multi-disciplinary WASH (Water Sanitation and Hygiene) project in four Pacific Island countries.

This was done in collaboration with researchers from the Monash University (MU) in Melbourne, the International Water Centre (IWC) in Brisbane and the University of North Carolina (UNC) in USA.

IAS Technical Assistant Zamira Rua and IAS Senior Scientific Officer Semisi Meo were engaged in the project whilst pursuing studies in this area.

The research-based project intended to clarify lessons learnt and experiences within existing and interested "actors" in the implementation of the WASH programme at the community level.

The research focused on communities in the Solomon Islands, Fiji, Vanuatu and Papua New Guinea. The team expedited their research with two peri-urban informal settlements of Honiara (Burns Creek and Gilbert Camp) Solomon Islands from 10- 21 March.

Participatory Action Research was the approach adopted across WASH stakeholders at both national and community level to assess the status and opportunities of improving the programme.

A range of areas that related directly or indirectly to improving the conduct and sustainability of any WASH intervention was considered in the research including social marketing, community entrepreneurship, community capabilities and relevant opportunities.

A Non-Government Organisation (NGO) in the Solomon Islands, Live and Learn Environment Education (LLEE) was identified as the primary local partner to host the facilitation of the project.

They facilitated the conduct of the actual work with the external WASH experts and researchers from the MU, IWC, UNC and USP.

At the community level, the project was about empowering them as researchers to change their WASH situations as well as provide information that may assist LLEE and other NGOs in doing WASH projects.

The project was funded by the Australian Aid Civil Society Agency.