Pacific INVASIVES INITIATIVE

PII NEWS

MARCH 2013

This summary of invasive species management activities undertaken by people and agencies that the Pacific Invasives Initiative (PII) works with is collated and circulated by the PII Team. Contributions are welcome. Thanks to all those who contributed to this one! Feedback is also welcomed - contact either the PII Team (pii@auckland.ac.nz) or the people directly involved in projects. The views expressed by authors are not necessarily those of PII. Visit our website or find us on Facebook for more information.

WHAT'S INSIDE

NEW INCURSIONS

Kiribati: Invasive ants discovered on Kiritimati Island

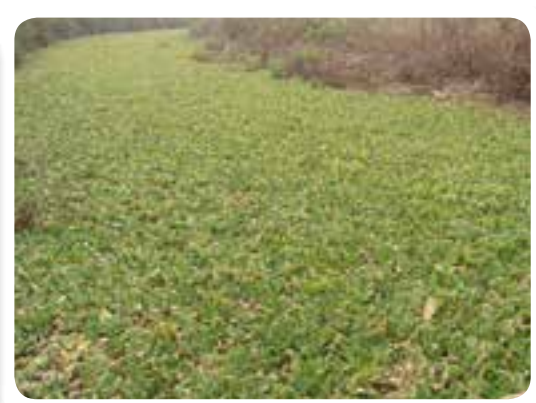
Nests of the Yellow Crazy Ant (*Anoplolepis gracilipes*) were found during the Island Biosecurity Training Course held on Kiritimati Island, Republic of Kiribati (see below in PII Activities). The ants were identified by Monica Gruber, an ecologist from Victoria University (New Zealand) who was leading an ant survey of the island with Agriculture and WCU staff of the Ministry of Environment, Land, Agriculture and Development. Because of the threat to Kiritimati biodiversity (several species are on the IUCN Red List) and the potential problems the ants could cause for the people who live on the island, an emergency response was initiated with Ag and WCU staff. Yellow Crazy Ants are in the IUCN 100 of the World's Worst Invasive Species list.

(R) Yellow Crazy Ants (Anoplolepis gracilipes) on a sugar-water lure on Kiritimati Island, Kiribati. (Photo: Ray Pierce)

(L) Head of YCA (Anoplolepis gracilipes) showing antennal scape length greater than 1.5 times head length (From: Pacific Invasive Ant Key < http://itp.lucidcentral.org/id/ant/pia/index.html>)

Samoa: Aquatic invasive plant

A plant of water lettuce (Pistia stratiotes) was identified at a hotel in Apia, Samoa in November, 2012. Water lettuce is recognized as one of the worst aquatic weeds and can completely choke waterways. The ISSG and PIER websites did not list it as present in Samoa, so a response was initiated and steps are under way to investigate the possibility of eradicating the plant (see below in Samoa article).



Water lettuce (Pistia stratiotes) creates a dense mat over a water body then switches to sexual reproduction and starts to produce seeds. The seeds sink and later germinate, develop roots, detached themselves from their roots and float on the water surface. It is essential to remove all individual plants before they start to create seeds. (Information and photos: Jean-Marc Dufour-Dror)

PII ACTIVITIES

Update on the Capacity Development Stratefy for Invasive Species Management in the Pacific

From James Atherton, Environment & GIS Consultant, Samoa

Since November 2012, I have been working with PII, PILN and other members of the Pacific Invasives Partnership (PIP) to develop a Capacity Development Strategy for Invasive Species Management (ISM) in the Pacific. The purpose of the strategy is to "guide investment efforts by relevant agencies working on strengthening the capacity of Pacific Island Countries and Territories (PICTs) to manage invasive species for the benefit of the Pacific islands biodiversity, ecosystems and people".

The strategy involved an assessment of CD efforts measured against the objectives in the "Guidelines for Invasive Species Management in the Pacific" (SPREP, 2009). In particular, the strategy identifies regional priority capacity needs of Pacific invasive species practitioners, and major capacity gaps relating to the Guidelines that are not being addressed.

The development of the strategy included the following activities: a desk review of relevant documents; a questionnaire survey of capacity development (CD) "recipient" and CD "provider" organisations; interviews with provider and recipient organisations in Samoa, Fiji and New Zealand; preparation of a comprehensive matrix of CD capacity development activities and the identification of constraints, lessons learned, and recommendations for future improvements in CD delivery.

The key findings of the review and strategy include:

- There have been a large number of CD events and activities in the Pacific since 2006 that have improved the capacity of invasive species management practitioners in a wide range of themes and skillsets.
- The most common method of CD delivery for ISM in the region has been short training events such as workshops and training courses. More than 70 separate workshops and training courses targeting ISM have been conducted in the region since 2006 and they have focused mostly on biosecurity and the management of established invasive species.
- There are still a number of gaps in CD effort in ISM in the Pacific. These gaps can be classified in numerous ways such as: themes from the Guidelines that are under-represented in CD effort; taxonomic groups that few, or any, CD activities have targeted and countries were few CD events have been conducted.
- Six main themes from the Guidelines are currently under-represented in CD effort: A1. Generating Support; A3. Legislation, Policy and Protocols; B1. Baselines and Monitoring Change; B2. Prioritisation: B3. Research on Priorities and C3. Restoration.
- Many constraints to the uptake and effectiveness of capacity development efforts were identified including: courses not customised to the real needs of trainees, nor the conditions in which they work; CD delivery at the wrong time, eg when there are no funds to implement training; wrong staff selected for CD activity; high staff turnover; lack of funds for staff to apply or implement CD; lack of relevant equipment and materials to apply CD; no (or inadequate) operational plan for achieving institutional goals; too many competing institutional priorities so that staff often get moved to other tasks.
- Priority skills gaps identified by questionnaire respondents (ie skillsets that need to be improved) were: communicating IS impacts effectively to the public and decision makers; project planning and design skills; fund-raising for sustainable project implementation; leadership skills; ISM policy development skills; technical aspects of invasive species management; data management skills and skills in effective biosecurity.
- A large number of lessons learned in the delivery of CD for ISM were identified. One of the most fundamental lessons learned is that CD recipient organisations must take greater ownership of the CD process. CD should start with an analysis of missing skills and organisational needs and priorities in the recipient organisation via sound organisational self-analysis. This will ensure that the organisation and or individuals are ready and willing to have their capacity built and that the CD activities are designed around actual need, not perceived need.

The strategy identified a number of recommendations to be implemented by CD recipient and CD provider organisations. These recommendations will be presented and discussed at the forthcoming PIP meeting in Fiji in April.

Inter-regional collaboration between the Pacific and the Caribbean

PII contributed to an 'Economic Analysis of Invasive Species in the Caribbean' training course in Trinidad led by Landcare Research NZ and hosted by CABI for 21 participants from the Bahamas, Dominican Republic, Jamaica, Trinidad and Tobago, Saint Lucia and Mexico. All these countries, except Mexico, are involved in the GEF-funded project 'Mitigating the Threats of Invasive Alien Species in the Insular Caribbean' which is managed by CABI in Trinidad. The course took participants through an overview of invasive species management, the steps involved in conducting a Cost-Benefit Analysis (CBA), and an introduction to the CBA tool developed by Landcare Research. The training course was initially developed for the Pacific with funding from CEPF and was delivered in Fiji in May 2012 (see The PII News, June 2012). The course was well received and had a high level of participation. Participants will complete their own CBA case studies by the end of this year and those will be the basis for a publication highlighting the costs of selected invasive species in the Caribbean.

Island Biosecurity Training Course, Kiritimati

Participants at the Island Biosecurity Training Course in Kiritimati Island, working on a group exercise (above) and observing ant behaviour (below) (Photos: Bill Nagle)

Two island biosecurity training sessions were held on Kiritimati Island, Kiribati in late February/early March. The first one was an Awareness Session for government agencies and businesses based on Kiritimati and the second was a Technical Session for Agriculture and Wildlife Conservation Unit staff of the Ministry of Environment, Lands, Agriculture and Development working on Kiritimati.

Because of its importance as a bird area, Kiritimati Island was gazetted as a bird sanctuary under the British colonial authority in 1938 and declared a Wildlife Sanctuary in 1975 when access to Motu Cook, Motu Tabu and Motu Upua was restricted. Kiritimati is home to globally important populations of many bird species including three Endangered (IUCN Red List) species that have their stronghold there: Phoenix petrel (*Pterodroma alba* - A3bce+4bce), White-throated storm petrel (*Nesofregatta fuliginosa* - C2a(i)), the endemic Kiritimati reed-warbler (*Acrocephalus aequinoctia*lis - B1ab(i,iii,v)). All three of these birds have their largest world populations on Kiritimati Island.

The training was designed to:

1. raise awareness amongst key agencies and importers at Kiritimati on the conservation values of Kiritimati, the need for effective biosecurity, and how they could contribute to that;
2. enable relevant government agencies to implement the Kiribati Biosecurity Act and supporting documents (including the Phoenix Islands Protected Area (PIPA) Management Plan and the Biosecurity Guidelines for the PIPA) and prevent invasive species arriving at PIPA, Kiritimati and elsewhere in Kiribati;
3. survey for ants and other invasive species at key invasion points on Kiritimati;
4. introduce issues relating to invasive plants.

The training sessions, facilitated by PII with specialist input from Ray Pierce, a conservation biologist from Eco-Oceania (Australia) and Monica Gruber, an ecologist from Victoria University (New Zealand), included presentations, discussions, classroom and outdoor exercises (ant survey, invasive plant investigation) and visits to the Kiribati Port Authority, Motu Tabu, Motu Cook and a number of motu in the Central Lagoons area. An examination of existing legislation was also undertaken.

The discovery of an infestation of Yellow Crazy Ants (YCA – *Anoplolepis gracilipies*) in buildings near the inter-island port area during the survey on the penultimate day of the training resulted in a focus on identifying and treating YCA nests. This work will be ongoing until it is certain that all nests have been destroyed.

The invasion pathway for the ants has yet to be identified and this work is critical as the pathway needs to be closed. If the ants are on board an inter-island ship, they could be being dropped off at any island the vessel visits, including the Phoenix Islands – a World Heritage Site. If they are on a vessel from another country, there is a likelihood of reinvasion.

A meeting was held with the Secretary of the Ministry of the Line and Phoenix Islands (LINNIX) to advise him of the seriousness of the YCA infestation and the need for support for Agriculture and Wildlife Conservation Unit staff as they respond to the infestation. Also discussed were: ways of maintaining effective biosecurity; consolidating gains made through eradication of rodents on Central Lagoon motu; the issue of poaching which is resulting in the killing of particular bird species (red-tailed tropic birds (Te take, *Phaethon rubricauda*), masked, brown and red-footed boobies (Te mouakena, *Sula dactylatra*; Te kibwi, *Sula leucogaster*; Te koota, *Sula sula*) and the taking of sooty-tern (Te keeu, *Sterna fuscata*) eggs.

The sessions were successful in raising awareness of the values of, and threats to, the Line and Phoenix Islands and strengthened participant's knowledge and skills. The effort required to manage the YCA infestation meant that a formal evaluation of the training course could not be completed. However, verbal feedback indicated that participants found the training helpful. Recommendations were made on a number of issues, including resourcing and further training.

Thanks to Ata Binoka and the Agriculture team and Ratita Bebe and the WCU team for their efforts in organising and participating in the training, to Ray Pierce and Monica Gruber for their dedication, commitment and professionalism and Secretary Tebwe and Assistant-secretary Mraj of LINNIX for their engagement with matters raised during the training.

Update on the PII Resource Kit for Invasive Plant Management

I am sure that those people who are involved in invasive plant management will be pleased to know that the PII has developed a Resource Kit for Invasive Plant Management to help the planning and implementation of invasive plant projects. The resource was developed in response to requests from Pacific practitioners working in biodiversity conservation and is aimed at maximising the resources available to the often small and under-funded agencies in Pacific countries. The Resource Kit is based on the PII Project Process (developed by the PII in 2006) and used to produce the PII Resource Kit for Rodent and Cat Eradication< http://www.pacificinvasivesinitiative.org/rk/ >. The latter is being used by many agencies in the Pacific and elsewhere.

The PII Resource Kit for Invasive Plant Management is being prepared as an online tool and will be available later this year.

PII SUPPORTED AGENCIES

Kiribati: Technical support and capacity building for Kiritimati

From Ray Pierce, Eco Oceania Pty Ltd

During 28 November to 12 December 2012, I visited Kiritimati Island, Kiribati to provide support to the Wildlife Conservation Unit (WCU) and Quarantine Unit of the Agriculture and Livestock Sub Division (Quarantine) of Kiribati. This was the sixth visit funded by the New Zealand Ministry of Foreign Affairs and Trade (NZMFAT) and builds on previous baseline biodiversity work initiated by PII, SPREP and the British High Commission in 2007 and on-going capacity development to WCU and Quarantine provided by PII, the New Zealand Department of Conservation (NZDOC), SPREP and individual consultants, such as Derek Brown, Eric Vander Werf and myself.

Objectives for the visit were to:

1. Train WCU staff in bird and invasive species monitoring and surveillance;
2. Further the biosecurity guidelines for Kiritimati.

1. Training WCU staff in bird and invasive species monitoring and surveillance

Monitoring

Before the visit a draft monitoring plan for birds and invasive species was provided to WCU. The objective was to apply details of the plan and revise with WCU accordingly. See table below for examples of monitoring trials implemented.

Training in bird monitoring and invasive species detection on islands was undertaken with WCU staff. Simple monitoring techniques were trialled for detecting changes in both birds and invasives which the WCU will be able to repeat annually or as prescribed. Also addressed was data handling, analysing and reporting procedures as well as established templates to help with monthly and annual reporting.

Table1: Examples of some of the monitoring and surveillance trials carried out

Species	Monitoring trials implemented and results
Phoenix petrel (*Pterodroma alba*)	Count circling birds over the island from a convenient vantage point, usually on the mainland after 1700h. Results were consistent with those of 2011 in that there were no significant changes in any of the index counts. Several additional islands for Phoenix petrel counts were then selected; the 13 islets supporting the most birds will be used for annual counts.
White-throated storm petrel (*Nesofregetta fuliginosa*)	Evenings during which Phoenix petrels were counted as above were followed by surveying many islets for white-throated storm petrels. This involved observing as many islets after 1800h as possible to determine if storm-petrels were still using known nesting islets. All islets being used in December 2011 were still being used in December 2012 and more islets were added to the monitoring database of islands for annual baseline checking.
Wedge-tailed shearwater (*Puffinus pacificus*)	The perimeter of the colonies were checked and dead wedge-tailed shearwaters were collected and examined for cat predation. Nearly all deaths were caused by cat predation, or cats had scavenged on dead or dying shearwaters, which included adults and old chicks-fledglings. This approach will allow an index of predation to be established annually. WCU are preparing to control cat numbers in and around key wedge-tail colonies.

Table1: Continued

Species	Monitoring trials implemented and results
Masked booby (*Sula dactylatra*)	Kiritimati possibly has one of the largest concentrations of this species. It is proposed to fly a microlite aircraft over the large scattered colonies to video and photograph the masked boobies to test how noticeable the birds are. If this fails, an alternative ground sampling method is proposed.
Sooty tern (*Sterna fuscata*)	Sooty tern colony sizes are being monitored by calculating areas using the GPS Tracks mode and calculation of area. There are no issues with this apart from the often difficult terrain. A solution to this would be to walk the "average" boundary and add or subtract colony indents and projections respectively.

Surveillance
The guidelines for islet visits, where invasive species and poaching are of concern, were trialled on three islets. There were no complications in field methodology in these surveys, but there were potential action and reporting issues which were resolved

2. Furthering biosecurity for Kiritimati
The risk of additional invasive species arriving in Kiritimati, as well as existing invasive species in Kiribati reaching the Phoenix Islands Protected Area (PIPA), is the driving force for the focus on biosecurity.

Fish cannery
There is major concern over the proposed fish cannery at Kiritimati. The cannery will potentially receive 70-90 Chinese fishing vessels annually. This has the potential for an ecological disaster for the birdlife of Kiritimati and the PIPA. Allowing this cannery to proceed without appropriate precautions could undermine all of the Kiritimati and PIPA invasive species work completed by multiple agencies since 2007. The fishing vessels could bring new species of rodents, snakes, ants, mongoose, etc. that would prove impossible to intercept at Kiritimati or the PIPA borders. Once their impacts were detected on any of the islands, it would, in most cases be too late to achieve eradications, noting that for some of these species (particularly ants and snakes) there are no proven techniques to achieve eradication.

Internal biosecurity
For internal biosecurity the WCU has maintained an excellent record in keeping Motu Tabu and Cook Island rat-free. There have been cat incursions at Cook Island periodically but cats have died out or been removed. One potential weak point involves the visits by foreign and local parties to Motu Tabu and Cook Island under the permits and supervision of WCU. There is reluctance by staff of WCU to search the gear and clothing of visitors, so it may be best to formalize this important task through the permitting process, e.g. hand the visitors a briefing sheet with their permit.

Island Biosecurity Training
During the visit, discussions were also held regarding a training planned for February 2013 that will cater for staff from Agriculture and WCU, and also an awareness-raising day for other government divisions and importers. [See Island Biosecurity Training above for more information on this training]

3. **Other issues**
Sea-bird poaching and law enforcement: In June 2012, Ross Atkinson, a NZDOC law enforcement officer, visited Kiritimati to train WUC staff in law enforcement. Some of the observations 6 months later were very encouraging, including the WCU staff not hesitating to stop vehicles for searches and visit camps in the wilderness areas. Poaching is still a key issue and there is plenty of evidence on the Nimroona island that poachers have been active since June 2012. The main areas being poached are near the squatters' camps in and near the central lagoons.

The approach to this problem needs to be multi-faceted and include direct intervention by the WCU, e.g. through the use of a faster patrol boat. Other more generic approaches are essential including education, relocation of the squatters and the provision of an alternative source of protein for the squatters.

Big Peninsula management: Cat management is planned to begin in early 2013 when Derek Brown returns in March for training.

Illegal landings and other activities by kite surfers: illegal landings continue to occur on "Closed Areas" with clearly marked "No Landing" signage. Landing is prohibited unless a landing permit is obtained and the WCU are present.
Capacity building in the following five areas: biota monitoring, islet surveillance/response, biosecurity (international, domestic and between islets), translocation, community education and law enforcement are all required.

4. Conclusion

As in the previous visit, many positive outcomes were noted such as: the increased numbers of seabirds and the Christmas Island warbler (*Acrocephalus aequinoctialis*) on de-ratted islet in 2009 as well as the continued absence of black rats on sensitive islets.

Like the June 2012 visit, two key issues remain unresolved: squatters and a proposed fish cannery for Kiritimati. This visit also confirmed that WCU continue to need further support in the areas of biosecurity, monitoring and surveillance, translocation, education and law enforcement.

5. Acknowledgement

We thank the Deputy Secretary for MLPID/LINNIX for meeting to discuss issues during this visit; Ratita and her WCU team and Ata for their support and hospitality throughout; Keith Broome (NZDOC), John Brydon (JMB), Bereti Bureimoa, Mike Walsh (NZAID/MFAT), Bill Nagle and Souad Boudjelas (PII), Gianluca Serra (SPREP), and Andrew MacDonald for project support. This visit was funded by NZODA/MFAT and supported by NZDOC and PII throughout; SPREP funded preparatory work on the monitoring guidelines.

Phoenix petrel (Pterodroma alba - A3bce+4bce) (L) and the endemic Kiritimati reed-warbler (Acrocephalus aequinoctialis - B1ab(i,iii,v)) (R) in the Central Lagoons area of Kiritimati Island.
Both of these birds have their largest world populations on Kiritimati. (Photos: Bill Nagle)

Samoa: Invasive species issues

From Ministry of Natural Resources & Environment (collated by Czarina Iese)

Invasive species are considered to be one of the biggest threats to Samoa's biodiversity. Managing invasive species in Samoa is one of the priorities undertaken by the Ministry of Natural Resources and Environment through the Division of Environment and Conservation (DEC).

Mongoose:

On 14 March, 2012, DEC received a report of a mongoose (Herpestes javanicus) sighted at Satitoa, Aleipata District. This is the same district where a mongoose was first sighted in December 2009 and caught in January 2010 [See The PII News, February 2010].

Nine DOC 250 traps [http://www.predatortraps.com/], placed 4m apart were put in transects along the Main South Coast Road at Satitoa and baited with eggs. Six traps were placed on the seawall and three on the landward side of the road. Surveillance was carried out for seven months with the traps being checked twice a week with no evidence indicating the presence of mongoose. A number of problems were encountered during the surveillance work with the traps being interfered with by people, either by setting them off or moving them to a different location.

Mongooses are listed in the "100 of the World's Worst Invasive Species" and should it be present in Samoa we need to act quickly to eradicate it, however, after seven months (October 2012), with no evidence of a mongoose detected, surveillance work was stopped.

Invasives species management requires the involvement of all stakeholders such as: local communities reporting any sightings of a species they are not familiar with, and also working with the DEC to support invasive species management

projects, along with biosecurity agencies thoroughly checking all aircraft, ships and passengers' personal belongings, to prevent the introduction of new invasive species reaching Samoa or between our islands.

Water lettuce

Water lettuce (*Pistia stratiotes*) is a free floating aquatic invasive plant thought to be native to South America with a PIER Risk Assessment score of 18 < http://www.hear.org/pier/wra/australia/pistr-wra.htm >, a "Class A' noxious rating in New Zealand (where it has been eradicated from all known sites) and is classed as "Invasive" in Hawai`i, Vanuatu, New Caledonia, Philipines and many other countries.

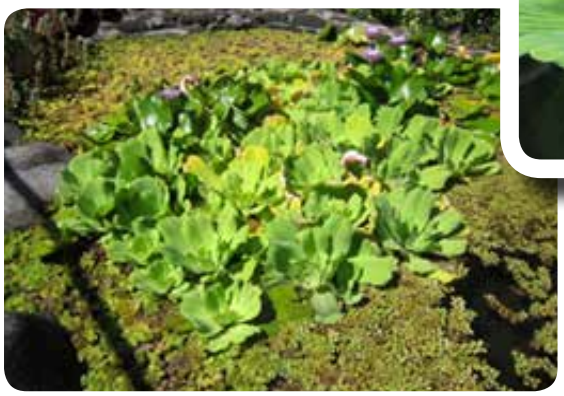
Water lettuce forms dense thick mats which can cause environmental and economic impacts. The mats can block sunlight from reaching underlying water and lower oxygen concentration in the water resulting in a loss of biodiversity in the invaded habitat. The mats can also block waterways, affecting navigation and hindering flood control efforts.

On 10 November, 2012, DEC received a report from Bill Nagle (PII) of water lettuce spotted in a bouquet at a tourist hotel in Motootua. An interview with the owner of the hotel revealed that she had bought the plant from a florist at Vaivase uta. On the 24 November, a site inspection was carried out at the Vaivase uta property where the water lettuce was seen growing in a fish pond.

An interview with one of the family members revealed who else in the public had the plant. Other properties were then visited at Vaigaga and Vailoa. Information provided by the public indicates that they are only using the plant as food source for fish kept in ponds. However, there is a danger that heavy rain or floods could cause the ponds to overflow and spread the invasive plant into waterways.

From the surveys it appears that the water lettuce is already established in the country, however, more surveys will need to be done to confirm this. Samoa's National Invasive Task Team is developing a management strategy including appropriate actions to control and or eradicate water lettuce from the country.

Deliberately damaged DOC 250 traps at Satitoa, Aleipata District, Samoa. The traps were set after reports of a mongoose incursion. (Photos: DEC-MNRE)



Fish ponds containing water lettuce (Pistia stratiotes) were found at properties in Samoa. (Photos:DEC-MNRE)

French Polynesia: Small projects, big expectations - conservation matters from a small Tahitian NGO point of view

From Ravahere Taputuarai, Te rau ati ati

Te rau ati ati a tau a hiti noa tu (also referred as Te rau ati ati) is a Tahitian local non-government organisation (NGO) dedicated to the protection of the environment of French Polynesia. Created in 1987 by a small group of friends to protect Tahiti's biggest watershed - the Papenoo valley - from disastrous management plans, the local NGO now regroups, 26 years later, with more than a hundred members, involved in projects as various as nature conservancy, waste management or raising awareness toward environmental matters.

For the past fifteen years, Te rau ati ati provided technical support to numerous scientific surveys conducted in the different archipelagoes of French Polynesia, in collaboration with local, French or international scientists coming from different fields of expertise - namely archeology, botany, entomology, malacology or ornithology. The aim of those missions was to complete the knowledge of French Polynesia's biodiversity but also to assess the wellbeing of the ecosystems, to identify the threats and to define accordingly the priorities for its protection. Results and recommendations were submitted to managers (townships, government agencies, community).

Nature conservancy is a major issue in French Polynesia, and things move slowly. During the last ten years, there was a renewal of interest and a greater awareness from both local authorities and the general public regarding sustainable management of scarce natural resources in general, and biodiversity conservation in particular. With its small scale projects, Te rau ati ati wishes to contribute to the protection of this natural heritage.

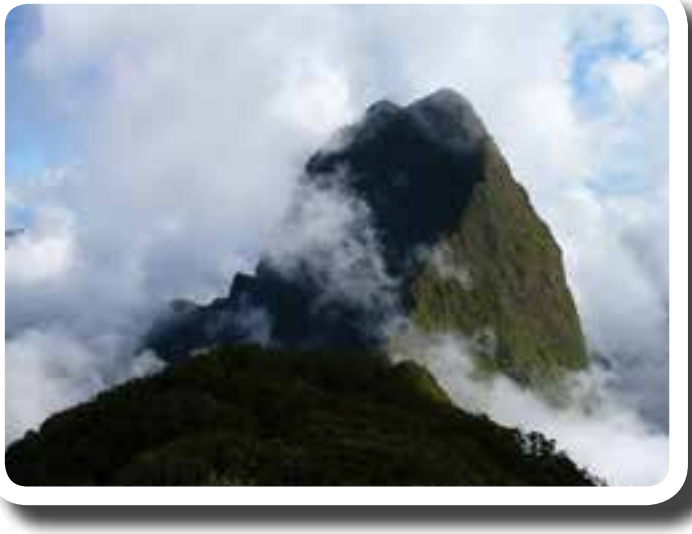
A good example would be the "Management of Tahiti's highest summits" project, co-funded by the Ministry of Environment of French Polynesia and working in collaboration with the Department of Research of French Polynesia and the University of California at Berkeley. The goals of the project were for an ecological and archeological assessment of three of the highest summits of Tahiti and their ridgelines: Mount Pihaiateta (1742 m), Mount Pito Hiti (2110 m) and Mount Orohena (2240 m), and to monitor the conditions of the access trails, in order to provide management recommendations.

The three summits are also included in a list of 115 sites of conservation importance that was selected by a local committee of experts, as they are ideal habitats for a vegetation unique to French Polynesia and tropical subalpine vegetation. Two heliported fieldtrips took place in June 2006 and August 2007 that included botanists, entomologists and archeologists.

The sites have proven to be exceptional, with 80 unique native plant species recorded out of 91, of which 35 endemic species, 5 locally protected species and 9 species are only found above 1800 m; 12 new species of insect and 2 new species of spider were collected, probably endemic to the massif (a compact group of mountains); 2 archeological structures were recorded and described on the very summit of Tahiti, Mount Orohena.

In regard to the natural and cultural significance of the sites, it was recommended: to set up a new trail to prevent damage to endemic plants found along the existing trail; to restrict access to the sensitive parts, therefore, the ridgeline between Pito Hiti and Orohena where the subalpine vegetation is found; to legally protect the whole massif and to set up a management committee chaired by the township, and finally to clean and rehabilitate the sites of waste (such as antennas and solar panels).
These recommendations were received favorably by the township and the different government agencies. Several

Botanist Marie Fourdrigniez setting up a transect on the ridgeline between Pito Hiti and Orohena (Photo: Ravahere Taputuarai)



Mount Orohena, highest summit of Tahiti (Photo: Ravahere Taputuarai)

meetings were organized to present and discuss the results of the project. We are currently in the middle of the implementation process. It takes time to achieve the goals of a project, but we are steadily working toward it.

Te rau ati ati is currently involved in several projects regarding particular areas in French Polynesia, thought to be a site of interest for conservation. These are not big scale projects, but they will take to achieve, but slowly, step by step, we hope with these little projects to help with the protection of this unique heritage, and by doing so, to live up to our name: Te rau ati ati a tau a hiti noa tu - "*May nature be for all eternity".*

Members of Te rau ati ati (Photo: Theophile Guilloux)

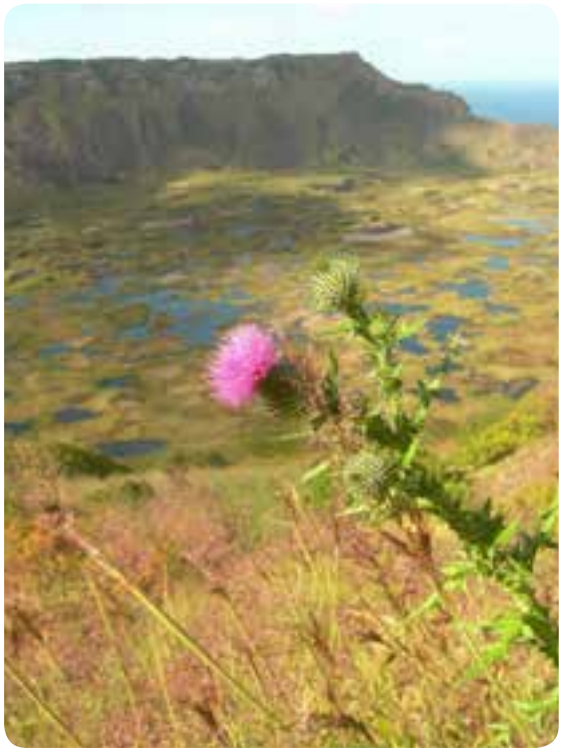
Rapa Nui: A project to control invasive plants and restore native vegetation

From Jean Yves Myer, Délégation à la Recherche de la Polynésie française.

Rapa Nui (or Easter Island/ Isla de Pascua) is a small and isolated subtropical island, with a land area of 166 km², a height of 511 masl, and a mean annual temperature and rainfall of 20°C and 1,200 mm respectively. Located in the South Pacific, more than 4,000 km east of Tahiti and 3,700 km west of Chile, the island was settled by Polynesians about 800 years ago, and became a Chilean territory in 1888. Its current population is about 6,000 inhabitants, living in the small city of Hanga Roa. Rapa Nui National Park was created in 1935 to protect the famous giant statues called "moai" built by the Polynesians, and declared a UNESCO World Heritage Cultural Site in 1995. It covers about 7,000 ha and is managed by the National Forest Corporation of Chile (CONAF).

The native vascular flora currently comprises only 30 native flowering plants (including 4 endemics) and 16 ferns (4 endemics). Famous plant extinctions (such as the "toromiro" *Sophora toromiro* and the giant palm *Paschalococcos disperta)* during Polynesian occupation have been documented (called "ecocide"), but more cryptic extinctions (mainly ferns) have occurred during the modern period. Most of the remaining native and endemic species are threatened by people pressures such as fires, grazing and browsing by introduced ungulates (horses, cattle, goats) and invasive plants.

An invasive plant survey was conducted in 2008 and a strategic action plan was proposed. This expertise was part of a larger collaborative program initiated in 2003 between ONF-International (France), CONAF (Chile) and Rapa Nui local authorities, whose main goal is sustainable development and resource management in the island. Field observations indicate that more than 180 introduced species are currently naturalized on the island, including 36 invasive species, and 38 potentially invasive plants. Among the most widespread are molasses grass (*Melinis minutiflora*), common guava (*Psidium guajava*), the thistle (*Cirsium vulgare*) and the legume (*Crotalaria grahamiana*).



Thistle (Cirsium vulgare) – an invasive plant that is widespread through Rapa Nui (Photo: Jean-Yves Myer)

A collaborative restoration project was designed in 2009, and received funding support in December 2011 from the Critical Ecosystem Partnership Fund (CEPF) for the Polynesia-Micronesia Hotspot. Three pilot sites were selected because they still harbour remnant native vegetation which is directly threatened by invasive plants: the inner crater forest of Rano Kau, with a dense patch of the invasive tree *Robinia pseudoacacia*, the coastal vegetation of Ovahe, and the Rano Raraku wetland, both invaded by many herbaceous weeds.

The restoration goals were to control (by hand removal of herbaceous species and cut-stump chemical treatment for woody species) the invasive plants in several permanent plots (small areas ranging from 100 to 400 m²) in order to promote native plant recruitment and to ultimately reintroduce native or endemic species which are now extremely rare on the island. Post-treatment monitoring after the first operations conducted between June to October 2012 by local employees of the "Umanga mo te Natura" project show promising results, with coastal native plant recruitment in Ovahe. However, ex situ propagation of some rare species in the plant nursery built at the CONAF station appears difficult due to seedling mortality. The complete success of this restoration project will require long-term monitoring, adequate funding, dedicated personnel, as well as strong local community support. An illustrated guide of the native and alien flora of Rapa Nui was recently published for education and training purposes.

References

Diamond, J. 2005. *Collapse. How Societies Choose to Fail or Succeed*. Viking Press.

Dubois et al 2013. *Plantas de Rapa Nui. Guía Ilustrada de la Flora de Interés Ecológico y Patrimonial.* Umanga Mo te Natura, CONAF, ONF-International.

Meyer, J.-Y. 2008. *Rapport de mission d'expertise à Rapa Nui du 02 au 11 juin 2008 : plan d'action stratégique pour lutter contre les plantes envahissantes sur Rapa Nui (Île de Pâques). Strategic action plan to control invasive alien plants on Rapa Nui (Easter Island).* Délégation à la Recherche, Papeete, 65 pages + Annexes (http://www.li-an.fr/jyves/Meyer_2008_Rapport_Expertise_Rapa_Nui.pdf)

Meyer, J.-Y. 2009. Perpetuating the "ecocide": the invasion of Rapa Nui (Easter island, South Pacific) by re cently introduced species. 1*1th Pacific Science Inter-Congress, Papeete, Tahiti, French Polynesia, 2-6 March* (Abstract).

Meyer, J.-Y., Taputuarai, R., Dubois, A. & Nahoe Zamora, E. 2012. *Rapport de mission d'expertise à Rapa Nui du 21 au 26 novembre 2012 : suivi du projet de restauration écologique dans les sites pilotes sur Rapa Nui (île de Pâques) et analyse des premiers résultats.* Délégation à la Recherche, Papeete, 22 pages + Annexes. (http://www.li-an.fr/jyves/Meyer_et_al_2012_Rapport_mission_restauration_Rapa_Nui.pdf)

Meyer, J.-Y. submitted. *A note on the taxonomy, ecology, distribution and conservation status of the ferns (Pteridophytes) of Rapa Nui (Easter island)*. Rapa Nui Journal.

Zizka, G. 1991. *Flowering Plants of Easter Island.* Palmarum Hortus Francofurtensis, Palmengarten 3, Franc furt am Main.

<<<Robinia pseudoacacia an invasive plant which threatens remnant native vegetation (Photo: Jean-Yves Myer)

SPREP: GEF-PAS IAS project update From Gianluca Serra, SPREP

The Global Environment Facility Pacific Alliance for Sustainability (GEF-PAS) "Prevention, control and management of invasive alien species (IAS) in the Pacific Islands" project is aimed at building capacity by enabling approximately 100 activities based on the "Guidelines for Invasive Species Management in the Pacific" to be implemented in 10 countries: Cook Islands, Federated States of Micronesia (FSM), Kiribati, Marshall Islands, Niue, Palau, Papua New Guinea (PNG), Samoa, Tonga and Vanuatu. These projects are to be completed by September 2015.

A decision was made by UNEP to set the official start at September 2011, however, the last inception workshop was August 2012 (Kiribati). Therefore, all projects are currently behind in their implementation and projects have been required to be re-phased to allow for the shorter duration.

Projects have started in five countries (Cook Islands, Marshal Islands, Niue, Palau, Tonga), National Coordinators have been appointed in a further two countries (Vanuatu, Kiribati), and Samoa is currently finalizing the position for its coordinator. FSM is close to signing the agreement and work has already been done on organizing implementation. Papua New Guinea (PNG) is also yet to sign the agreement and communication is aimed at rectifying this issue.

The start-up of the project (Project Management Agreement signing, first payment and appointment of a national coordinator) is by its nature a very slow process - and it is not allowed for in any timeframe outlined in any official project document. The reason for this inertia is that National Focal Points (NFP) are responsible for these

initial three steps but NFP are typically a very busy senior Government staff.

In countries that have established National Coordinator positions, activities have stepped up the pace. This is evident in Tonga, Niue, Cook Islands, Marshall Islands and Palau. It is great to see some of these countries organizing the creation of their first ever National Invasive Species Action Plans (NISAP's). Many of the Project Coordinators are young nationals embarking on possibly their largest challenge yet, we wish them well.

SPREP: Mission to Micronesia

From David Moverley, SPREP

The Secretariat of the Pacific Regional Environment Programme (SPREP) invasive species team had a busy end to the 2012 year with a substantial trip through Micronesia. Unfortunately, with limited time the State of Yap of the Federated State of Micronesia (FSM) and the Northern Mariana Islands were not visited, but otherwise comprehensive coverage was completed.

The visit had three purposes;

1) Participate in, and support, the Regional Invasive Species Council (RISC) meeting and presentation to the Micronesian Chiefs Executive Summit (MCES) in Majuro, Republic of the Marshall Islands.
2) Support the countries and states involved in the GEFPAS invasive species project to initiate and plan their activities.
3) Face to face meetings, technical advice and support to Micronesian countries and states.

The Micronesian RISC team had a very busy week drafting up recommendations for the MCES. The 18th resolution recommended each country or state have a full-time invasive species coordinator. During the RISC meeting SPREP highlighted and reinforced the importance of the "Guidelines for Invasive Species Management in the Pacific" and the benefits of aligning National Invasive Strategies and Action Plans (NISAPs) to the document. The next RISC meeting is scheduled for March 2013 in Guam.

The GEF-PAS IAS Project within Micronesia has activities taking place in the FSM, Palau and the Marshall Islands and is focused on: introducing bio-control; eradication of isolated invasive species; outreach; attendance at RISC meetings.

The SPREP invasives team enjoyed catching up with old and new colleagues. It was great to see so much happening in Micronesia. An iSTOP meeting was attended in Pohnpei. Discussions on Giant African snails in Kosrae and invasive stakeholder meetings in Chuuk were some of the highlights.

Left to right: Posa Skelton (SPREP), Tamdad Sulog (Yap State), Alex Wegmann (Island Conservation), Roland Quitugua (Guam), Eric Waguk (Kosrae), Leonard Sigra (Kosrae), Diane Vice (Guam), Henry Capelle (Marshall Islands), David Moverley (SPREP), Phil Andreozzi (USA), Yalap Yalap (Palau), Ned Lobwij (Marshall Islands). (Photo: SPREP)

Contractual negotiations to initiate the project at the FSM National Office. Left to right: Posa Skelton (SPREP), David Moverley (SPREP), Steve George (D.o Justice), Joseph Scalin (D.o Justice) Alissa Takesy (FSM Acting Secretary) and P. Pedrus(FSM Sustainable Development Planner) (Photo: J. Wichep)

<<<Promoting participation in regional invasive activities is something the SPREP team is always encouraging. Left to right: Julian (Chuuk Forester), Vanessa Konno-Anisin (FSM Food Security), Kantito Kanas (Chuuk Director Agriculture), David Moverley (SPREP). (Photo: Posa Skelton)

EXPERT OPINION

Best Practise for Euthanising Common Myna (*Acridotheres tristis*)

From School of Biological Science, University of Auckland

This is a best practise guide of how to euthanise myna, based on humane standards set under the NZ.

Animal Welfare Act (as advised by a veterinarian). The following method is recommended as the most humane method of euthanasia of birds, as there is continuing uncertainty about the time taken for loss of consciousness following neck dislocation

1. Pick up myna and hold with one hand around the myna's body, cupping the bird so it's dorsal (back of bird) side sits in the palm of your hand and your index finger and thumb wrap around the body, making sure that legs and wings are contained within the hand (the legs flattened down toward the tail).

Position in which to hold myna for stunning (Photo: Natasha Doherty)

<u>Stunning: the most humane way to kill an animal is to render it unconscious prior to killing it</u>

2. To stun the bird, stand in front of a hard flat surface that has an edge (a bench/table is ideal). Raise the bird and bring it down fast and hard onto the solid edge so that the head of the bird hits the edge of the bench or table hard enough to make it unconscious. It is critical to use enough force to stun the bird the first time – a lot of force must be used. However, if absolutely necessary you can repeat this step – the bird must be fully unconscious before cervical dislocation.

<u>Euthanising unconscious myna via cervical dislocation</u>

3. Hold the bird in your hand so the ventral (stomach side is facing down) side is down, use secateurs so that the large, blunt blade sits across the bird's throat with the other blade sitting across the back of the neck. Once in position, firmly squeeze secateurs' handles together until you feel the spine break (the aim is to separate the vertebrae – however this should not decapitate the bird). With your fingers check that you can only feel skin between the break (i.e. the vertebrae are completely separated). Repeat if necessary, it is important that this is done properly to ensure the bird is dead.

Field situation:
Where no bench or table is available (i.e. in a field situation), a large flat rock, or tree trunk/stump would be appropriate substitutes with which to stun a bird.

Reference for NZ emergency euthanasia welfare code (ostriches & emus): http://www.biosecurity.govt.nz/animal-welfare/codes/ostriches-emus/index.htm

Wishing you all a Happy and Blessed Easter!

Pacific INVASIVES INITIATIVE

Pacific Invasives Initiative,
University Of Auckland,
Tamaki Innovation Campus,
Private Bag 92019,
Auckland 1142,
New Zealand

Phone: (+649) 923-6805.
Fax: (+649) 373-7042.
E-mail: pii@auckland.ac.nz
URL: http://www.pacificinvasivesinitiative.org/pii/index.html

Find us on Facebook