

# Workshop on management of invasive species in Marine Protected Areas

Matuatu, Samoa 12 – 15 March 2007

## Meeting report



Regional Office for Oceania and Global Marine Programme



## Acknowledgement:

This workshop has been made possible thanks to funding of the project “Marine Invasives and Marine Protected Areas in Pacific Islands Countries” by the Italian Directorate General for Development Co-operation (DGCS) and the Project “Keep them out of Paradise— Empowering MPA managers to tackle Alien Invasive Species in the Pacific Region” by the TOTAL Foundation for Biodiversity and the Sea.



## Background

The intentional and unintentional transfer of species from one water body to another around the world has boomed in recent decades. Many seas and regions have been invaded by a high number of non-native species. Some of these species thrive in their new habitats, out-competing native species and changing ecosystems, sometimes dramatically. Alien Invasive Species (AIS) are currently perceived to be one of the primary threats to biological diversity. Throughout the world, marine resource managers are in the process of setting up marine protected areas (MPAs), sanctuaries, estuarine reserves and fishing closures as a means to preserve our marine biodiversity and living resources. Given the high ecological value of these areas, the efforts undertaken and the funds disbursed to conserve it, biodiversity loss in such places is even more dramatic than in others.

Invasive species do not recognise frontiers or MPA boundaries, yet very little is done to address the invasive species problem in marine protected area planning and management. In the case of a marine protected area, invasions can pose serious threats, particularly when management is unprepared for them. Marine protected areas are not isolated or immune from the threats to the marine environment in general as they have no barriers or distinct boundaries to invasion. Harbours and shipping are widespread and not limited by MPA boundaries, and even if it is hard to find a big commercial port within a national park or the MPA itself, it is very often easy to find it nearby. MPAs, especially those with multi-purposes, offer a set of socio-economic activities such as fisheries and tourism. The small craft that visit MPAs are often vectors of secondary introductions of alien species which were first introduced by larger (often ocean-going) vessels in the vicinity. Paradoxically, setting up a marine protected area may lead to an increase in risk of invasion. Indeed, setting an MPA generates a significant attraction to the area for marine tourism, including recreational boating, yachting, the diving and snorkeling industry, and where allowed, fishing. These activities are likely to lead to increased risks of introducing non-indigenous marine species associated with hull fouling, ballast water (of some cruising yachts), the accidental transfer of species via anchor wells and chains, on wetsuits as spores or microscopic phases, and as bait material from recreational fishing. More importantly, the designation of protected areas often lacks the requirements to establish baseline biodiversity information and to monitor the performance of protection over time. Similarly, the regulations in these areas are established to protect biodiversity and hence the ability to remove species, as in the case of an incursion response, is limited or not available.

Addressing invasive alien species in the borderless marine environment is a very challenging issue. Eradication may be possible when an introduced species is identified at an early stage of colonization and has limited spatial distribution. For this reason alone it is essential to have effective surveys, monitoring and early warning systems linked to any management plan for the marine environment, such systems are critical to develop within the MPA in order to protect the high value biodiversity it hosts.

A 4-day workshop was held from 12 to 15 March 2007, hosted by the Ministry of Natural Resources and Environment in partnership with the Pacific Invasives Learning Network (PILN) and the World Conservation Union (IUCN). The general programme was as follows:

- General introduction to Marine Invasive Species and Invasion Biology
- Marine Invasive Species Impacts: environmental, economic, social and cultural values
- International and regional regulation and management
- Priority setting in MPA management
- Existing capacity within MPA systems for MPA management of Marine Invasive Species
- Case study from Samoa
- Application of lessons learned to Samoa MPAs

## Purpose

To empower MPA managers to tackle invasive species in the Pacific region by raising awareness on marine invasive species (including their biology, their potential impacts and regulations developed to limit these impacts), building capacity on survey methodology and options for the control and management of invasive species in the marine environment.

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## Results

A total of 20 participants from 9 countries participated; see Annex 1 for the participants list. The opening ceremony was filmed and broadcast on Tuesday 13 March by the Samoan Broadcasting Corporation. The full meeting agenda is shown in Annex 2.

### Monday 12 March.

Participants' expectations were canvassed at the beginning of the meeting:

- Share expertise
- Get the big picture in view, and also the local picture, see them in context
- Learn about marine invasive species
  - General
  - Key ones
  - In Samoa
- Build capacity
- Get examples of what can be done to address impacts
- Learn about pathways and vectors
- Get guidelines for where to go next, in the short-term and long-term
- Advise on preventive measures for the South Pacific Games
- Share challenges and opportunities
- Learn about management strategies
- Discuss funding sources
- Provide support on how to apply examples to own situation
- Get an understanding of country perspectives
- Make partnerships
- Build on advances
- Learn about methodology
- Create a regional marine invasive species group
- Learn about legal aspects
- Raise awareness
- Identify actions to minimize invasive species risk
- Learn how to enforce legislation
- Learn about monitoring and surveying
- Learn about the marine invasive species in Samoa
- Learn about how, where and when to strengthen quarantine
- Translate scientific information to politicians
- Identify what needs to be done and who is to do it
- Survive!
- Meet other Pacific Island workers- who is doing what
- Make contacts
- Hear about the challenges of each country / worker

The broad scope of expectations also indicates the different backgrounds of the participants. The final programme was slightly adjusted in an attempt to incorporate participants' expectations and requested priorities.

On day 1, following the formal opening ceremony, activity was mainly focused on a series of presentations by Chad Hewitt on the biology and other technical aspects of marine invasive species, including invasion success theory, history of marine species invasions, human mediated vectors, species of particular concern, environmental, economic and socio-cultural impacts. The day was concluded with a round table discussion for participants to clarify issues and share impressions from the day.

## Tuesday 13 March

Day 2 was devoted to regulation and management. At the request of the participants, priority was given to exploring regional regulations, with less focus on national regulation and least on international. The SRIM-PAC Marine Invasive Species Strategy, endorsed at the 17<sup>th</sup> SPREP meeting by SPREP members, was presented.

A communication exercise was carried out after lunch on Tuesday 13 March, from which participants developed guidelines for clear communication, applicable for communicating a message to the community, managers or politicians:

- Give the overall view first
- Give directions – locations, scale, etc. (“the size of a 10-cent piece”)
- Avoid abstract ideas or images, they are hard
- Break it down and go step by step
- Speak slowly, don't lose people by going too fast
- Use familiar shapes and images (“like your 2-year old child”)
- Use non-technical language
- Use and encourage clarifying questions
- Look and see what others are doing (but risky – have they got it right?)
- Repeat instructions and messages
- Summarise at the end

Examples of MPA legislation and how it relates to invasive species management were presented by Imene Meliane (Galapagos Islands, Ecuador) and Tony Montgomery (Hawaiian Islands), and a presentation was given by Gilianne Brodie on the Pacific Island Partnership (Network) for Taxonomy BioNET-PACINET.

Break-out groups were formed to discuss the following set of questions:

*Q1 Do you have any marine introduced species at present?*

Most participants indicate that in general, it's not known which the MIS species in their countries are. In most cases (with a few exceptions, such as Hawaii and the Samoas) no survey were carried out to identify MIS. There's also little knowledge on species that are likely to be introduced and become invasive in the country. On the other hand, in most if not all countries, several marine and aquatic species have been introduced for aquaculture purposes, and very little management effort is dedicated to these from a bio-security perspective.

*Q2 Is the issue (Marine Invasive Species - MIS) recognised as a problem: by Ministers/Ministries / Communities*

Not currently. Awareness about marine invasive species is very low at all levels. Some participants noted that in their cases, it's the communities who have to highlight the problems and ultimately set the priorities. Working at the community level is particularly important and imperative in the Pacific, however raising awareness about MIS would also raise expectation for response, and hence a framework to manage the threats posed by MIS needs to be established.



*Q3 Who will be responsible for management of MIS? Who will be responsible for MIS prevention?*

Fisheries or Environment are identified by most participants as the logical authorities who should manage MIS. Although participants noted that there can be conflicts between agencies as to responsibility and that there is also a general lack of awareness. Very few participants mentioned Quarantine or the Ports Authority as having a role in MIS management.

*Q4 Do you have (M)IS legislation?*

Some participants mentioned that in their countries Quarantine (primarily terrestrial) and Fisheries legislation have some mention to MIS, but that in most cases MIS related legislation is still inadequate. Marine Park legislation often lacks regulatory power.

*Q5 Does your MPA legislation incorporate MIS?*

What legislation? Mostly absent. In the Pacific region, most MPAs are community managed and based on customary law.

*Q6 Has your nation considered Ballast Water / Hull Fouling issues?*

Most participants were unclear about this question.

*Q7 MPAs – are they adjacent to:*

- *Ports / marinas*
- *Aquaculture facilities*
- *Fishing areas*
- *Are they multiple-use?*
- *Do they have moorings established (rates of recreational visitation)*

Hard to answer, as the definition of an MPA is very variable depending to countries. Some protect pristine areas while others exist for resource management purposes.

Meeting participants were invited to the formal closure of the Year of the Sea Turtle, held at SPREP from 600pm.

Wednesday 14 March

Day 3 activities were focused on monitoring and surveying, priority setting and defining the next steps. Chad Hewitt gave an introduction to the session and Posa Skelton then presented initial findings from his recent marine invasive species surveys in Samoa (Apia harbour) and American Samoa.

Invited guest speakers Captain Tauilili Ierome Mulumulu, Senior Marine Captain of Samoa Ports Authority and Asuao Kirifi Pouono, ACEO Samoa Quarantine System contributed important information for the Samoan post boarder management and inspection measures and generated a lot of interest and discussion. Tony Montgomery presented a case study on his project on the early detection, monitoring and invasive algae management in the Hawaiian Islands.

Break-out groups were formed to discuss the following questions:

*Q1 What are the priority areas in MPA related work plans?*

*Q2 Are marine invasive species incorporated in those? If yes, where? If not, where would you prioritise?*

*Q3 Is there the capacity to undertake the invasive species work?*



Steps forward:

Hypothetically, a plan of work in MPAs would be:

- Know your threats:
  - Hazard analysis (species, vectors and pathways)
  - Appropriate linkages with statutory or regulatory agencies
  - Identify potential targeted species
- Identify values for protection (how is this supported by legislation)
- Determine if existing activities in MPAs meet monitoring or survey needs
  - Need to implement a formal survey?
- Community awareness

The main points which came out of the discussion:

- MPAs in most Pacific islands are locally owned and managed and communities are involved in all MPA related work. Hence it is critical to involve local people in AIS aspects. Local people often have a good historical knowledge of their sites and are able to readily spot the apparition of new introduced species.
- There is a general lack of data and baseline information in the region and hence there's a need for increased research, surveys, biological inventories as well as identification of species, including their biological invasiveness and spread. Such information should be the basis for management options.
- Student research can help fill important gaps in our knowledge of invasive species. Student researchers should be encouraged to undertake AIS related research topics at the post-grad level and literature reviews of potential/key marine AIS. There are a number of research institutions regionally that could contribute to this kind of activities.
- Traditional MPA use is important – use a bottom up approach
- Protect the natural resources – don't lose sight of this objective
- There is a lack of funding, and of staff. But, note that there are low-tech solutions to problems, everyone to go back and start doing something. Simple is often better.
- In general, AIS are not incorporated into MPA work plans. There is a need to do surveys, and public outreach in order to involve the community.
- National invasive species task teams are needed but currently non-existent or ineffective. Such task teams should include marine experts and reach out to marine stakeholders and port authorities.

Imene distributed an IUCN questionnaire on alien invasive species in Marine Protected Areas to participants for response; see Annex 3.

IUCN is currently developing two MIS related tools that could be useful to the meeting participants. The first is a simple marine oriented booklet that would explain in plain language the known introduction pathways, the impact of marine species on human wellbeing and the management options. The second tool is a publication oriented to MPA managers that would present simple guidelines for management of MIS in MPA, from hazard identification and risk analysis to management options (prevention, monitoring, eradication and control) to public awareness. Both tools should be completed within the next 12 months.



As an added benefit of the workshop, participants then indicated what their personal immediate next steps would be, for follow-up as part of the Pacific Invasives Learning Network activities.



Who	What	When	With help from
Tony	Introduce PILN to Western regional panel of Aquatic Nuisance species task team	September 2007	Jill
Manu	Report at province and national level, awareness, make a plan	March / April	Chad and Posa
Monifa	Produce and translate a bulletin for community messaging network	April	
Philippe	Sign SPREP MOU (including Marine invasive species as one area of focus) Raise awareness Use PILN to identify national needs and support further activities Engage with the governments and the private sector		SPREP Jill IUCN marine programme
Lucille / Sa	Questionnaire survey of introduced fish, check level of community understanding and awareness, plus species list	End of April	Posa
Mark	Strengthen linkages between agencies, call a SNITT meeting, invite fisheries and PTA. Fisheries to give emails		Lucille, Sa, Jill
Robert, Melba, Ratita	Ensure marine AIS are included in SAP workshops March / April	March, April	Jill
Gilianne, Monifa	Make linkages in Fiji for PILN		Jill
Gilianne	Develop list of marine spp in region, translate info to regional languages, id how best to get it out Ask USP students if they are interested in reviewing GISD for marine AIS info		Posa
Risa	Learn what has been done in American Samoa, talk to others.	April	
Posa	Melanesian Geo, do issue on marine AIS Put marine AIS on next CRISP meeting agenda Identify potential leaders	By end of year	Philippe

MNRE and the IUCN hosted an evening reception for participants and local dignitaries at 6pm.

#### Thursday 15 March

A field trip was held to visit some Samoan MPAs and fishing reserves, to allow on-the-round discussions on how to apply the lessons learned in the field. All participants were invited to join the Samoan hosts on this trip.

Visits were made to the Mulifanua wharf to observe the inter-island quarantine and transport system, the village fishing reserves along the west coast, Lefaga Bay community fishing reserves and the Sa'anapu community mangrove conservation area. The new sports complex being built for the South Pacific Games was toured on the return to Apia.

Participants were all given CDs of the main meeting documents; see Annex 4 for CD contents.

## Meeting Evaluation

Nine meeting evaluation forms were collected from participants at the end of Wednesday 14<sup>th</sup>. Of these, 3 were "very satisfied", 5 "satisfied" and 1 between "satisfied" and "not satisfied" with the meeting overall. Participants felt that their expectations had been met, on the whole. Full details from the evaluation forms are given in Annex 5, and lessons learned are summarized as follows:

On achieving the workshop objectives:

- Participants felt that they were better equipped to address the issue of marine invasive species than before.
- Participants realized that there is a lot more going on in the region in the field of marine invasive species;
- Valuable knowledge was gained, and the input from the different resource people (Chad, Posa, Tony, Gilianne, the Samoan Ports Authority and Samoan Quarantine Service) was appreciated;
- Awareness has been raised at the level of the participants;
- The expectations raised here inform the opportunities for PILN and the IUCN in the implementation of next steps.

For future similar workshops:

- It would be preferable that workshop organizers explored participants expectations beforehand and incorporated those in meeting objectives;
- Workshops in the Pacific need to emphasise group discussions rather than formal presentations, and give ample opportunities for sharing information ideas and expertise;
- The practical side, where possible and appropriate, should be included.

## Next steps

So what are the next steps for the region in terms of marine invasive species?

At a follow-up meeting with the IUCN Oceania Division in Fiji, it was agreed that the appropriate next step is to carry out a regional consultation exercise to determine national priorities, firstly to put marine invasive species in context by identifying the main threats and issues in the marine environment, and secondly to identify and prioritise the marine invasive species issues. This can be done with existing resources to a limited level in two ways: by email via the PILN distribution list, and via a discussion session for participants at the PILN 2007 annual meeting. Consultation will be limited to people in the countries, states and territories involved in PILN. Results obtained will be seen as preliminary. Ideally, funds are obtained for a short-term consultancy to carry out a more representative series of national consultations.

## Conclusions

The wide diversity of interests and variety of backgrounds presented by the participants enhanced the discussion but also made it harder to satisfy everyone. This diversity and variety reflects the lack of awareness of the issue at national level in the Pacific, as it was difficult to identify the appropriate person to attend the meeting.

The definition of a Marine Protected Area was very variable, ranging from very small village level fishing reserves, set-up to protect local species (including introduced aquaculture interests), to large relatively pristine areas established to protect biodiversity.

Workshops such as this show the importance of bringing people together, to learn what is going on in the region and be inspired by others, either by examples of achievements or by enthusiasm and recognition of shared interests. Group discussions are highly valued as fora for discovering these shared interests and opportunities to share and learn from each others.

There is a big need to carry out basic inventories and get more knowledge on marine invasive species in the region, and raise awareness at both the community and governmental level.

We are still in time to prevent marine invasive species becoming a major issue in the Pacific.

This workshop is the first step in a bigger regional initiative to address issues associated with marine invasive species. The next step will be regional consultations to determine the priority issues.



## Annex 1. Participants list

Name	Country	Organisation
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## Annex 2. Agenda

### Day 1. Monday 12 March 2007.

#### 09h00 Workshop Opening

Welcoming Remarks: Tu'u'u Dr. Ieti Taulealo, Chief Executive Officer, Ministry of Natural Resources and Environment of the Government of Samoa;

Prayer: Reverend Lotu Uele, CCCS, Vaiala

Opening speech by the Hon. Faumuina Tiatia Liuga, Minister of Natural Resources and Environment, Government of Samoa.

Remarks from P Gerbeaux of The World Conservation Union, Prof. Chad Hewitt of the Marine Biosecurity Education Consortium and Dr Jill Key, Coordinator of the Pacific Invasives Learning Network (PILN)

#### 09h30 Introduction of the participants

#### 10h00 Coffee Break

#### 10h30 Participants expectations

#### 11h00 General introduction to marine invasive species and invasion Biology

Concepts of invasion and invasion success

History of marine invasions

Human mediated vectors of invasions

Species of particular concern

#### 12h00 Lunch

#### 13h00 The importance of collaboration

#### 13h30 Impacts of marine invasive species

Environmental impacts

Economic impacts

Social and cultural impacts

#### 15h30 Coffee Break

#### 16h00 Round table discussion of the issues raised over the day

### Day 2 Tuesday 13 March 2007

#### 09h00 Regulation and management—International

AIS related treaties including Codes of Conduct and Codes of Practice, WTO, OIE, IMO

MPA obligations that relate to AIS

#### 10h30 Coffee Break

#### 11h00 Situation in Pacific

Examples of regional initiatives for AIS management

Example of Hawaiian Islands

Participants present a short statement of national activities to address marine invasive species

#### 12h30 Lunch

#### 13h30 Communication and raising awareness

#### 14h30 Regulation and management—National

Examples of marine invasive species legislation at national level (Australia, New Zealand, Hawaii)

Examples of MPA legislation and how it relates to invasive species management (Ecuador Galapagos Nat Park, Great Barrier Reef Nat Park, Hawaii)

#### 15h30 Coffee Break

#### 16h00 Break-out group discussions

#### 17h00 Closure

#### 18h00 Invitation to workshop participants to the formal ceremony to close the SPREP Year of the Sea Turtle, SPREP.

### Day 3 Wednesday 14 March 2007

#### 09h00 Overview Survey and surveillance activities

#### 10h30 Coffee Break

#### 11h00 Samoa MPA case study

#### 12h30 Lunch

#### 13h30 Priority setting in MPA

Does priority setting within MPA address marine invasive species or vectors? –whiteboard session

Existing capacity within MPA systems for management of marine invasive species –whiteboard session

#### 15h30 Coffee Break

#### 16h00 What have we learned and where do we go next?

#### 16h30 Closing statements

18h00 Reception for participants and local dignitaries, Pacifika Inn. Hosted by the MNRE and IUCN.

### Day 4 Thursday 15 March 2007

09h00 – whole day. Applying the lessons learned in the field. Field trip to visit MPAs and fishing reserves on Upolu island, Samoa

### Annex 3. Questionnaire on alien invasive species in Marine Protected Areas

IUCN Global Marine Programme and the IUCN/SSC Invasive Species Specialist Group are undertaking a brief survey to start evaluating the risk of species introductions in MPAs. Please contribute to this effort by filling in this questionnaire. An auto-fill form of this questionnaire is available at [www.iucn.org/themes/marine/Word/Questionnaire%20AIS%20in%20Marine%20Protected%20Areas-FINAL.doc](http://www.iucn.org/themes/marine/Word/Questionnaire%20AIS%20in%20Marine%20Protected%20Areas-FINAL.doc)

			Comments
1	Does the MPA have a management plan?	Yes No	
2	Do you have a management structure and a staff team in your MPA?	Yes No	
3	How many visitors come to your MPA every year?		
4	Please estimate the number of snorklers and divers		
5	Are you aware of the threats that invasive species could pose to the integrity of the MPA?	Yes No	
6	Number of recreational vessels that come to your MPA per year		
7	Are there mooring structures around the MPA?	Yes No	
8	Is anchoring allowed within the MPA?	Yes No	
9	Distance between the MPA and the nearest port (please indicate 0 if port within MPA boundaries)	Km	
10	Distance between MPA and nearest boat ramp (please indicate 0 if boat ramp within MPA boundaries)	Km	
11	Distance between MPA and nearest aquaculture facility (please indicate 0 if aquaculture within MPA boundaries)	Km	
	<i>If less than 100km please describe the type of aquaculture</i>		
	<i>Please tick the correspondent box</i>	Native species On land facility	Exotic species Open water system
14	Distance between MPA and the closest fisheries fleet (please indicate 0 if fisheries are allowed within MPA boundaries)	Km	
15	Was a baseline biodiversity survey undertaken in the MPA?	Yes No	
17	Does the MPA regulation require a monitoring programme?	Yes No	
18	Do you have a monitoring programme for the MPA?	Yes No	
	<i>If Yes, does it include a component targeting invasive species?</i>	Yes No	
19	Does your MPA regulation allow eradication of invasive species in case of an incursion?	Yes No	
	<i>If not, what could you do in case of an incursion?</i>		
20	Do you provide information or any awareness material or brochures in your MPA?	Yes No	
	<i>If yes, do you address marine invasive species?</i>	Yes No	
21	Are there any recognized alien invasive species in the MPA?	Yes No <b>If No, please go to Question 25</b>	
	<i>If yes, Please cite them</i>		
22	Are there any recognized impacts from the invasive species? _____	Yes No	
	<i>If yes, Please cite them</i>		
23	Do you know the vector or pathway by which they have arrived?		
24	Would you find useful an IUCN document on management of alien invasive species in MPAs?	Yes No	
25	Do you have recommendations for additional approaches to this issue that IUCN should consider?		





## **Annex 4. Documents included on the meeting CD**

### **Meeting documents:**

- Marine workshop agenda
- Participants list
- PILN leaflet (MSPublisher)
- Summary of PILN
- Welcome to Samoa
- Official invitation

### **Background documents:**

- SRIMPAC Marine Invasive Species Strategy (SPREP)
- Regional Invasive Species Strategy (MSWord and ppt summary)
- Centre for research on introduced marine pests, technical report No. 22. Revised protocols for baseline port surveys for introduced marine species: survey design, sampling protocols and specimen handling. Chad Hewitt and Richard Martin. (pdf)
- Several other document relevant to management of marine invasive species including from IUCN, FAO, APEC and ICES

### **Bishops Museum information:**

- A collection of pdf documents on Hawaiian and Micronesian marine invasive species, plus an inventory (Excel).

### **Presentations:**

From Chad, Imene, Tony, Posa, Gilianne and Asuao Kirifi Pouno

### **Photographs:**

Jpg images from the workshop: the sessions, the reception and the fieldtrip.

## Annex 5. Meeting evaluation

Positive benefits received were:

- Learned about marine invasive species, an understanding of marine invasive species in PICTs
- Know how serious the issue is, and how it would help if we all work together to get the message across
- Opportunities to get involved in other related capacity building workshops
- Understand the steps on how to act at national level
- Hawaiian case study, Asua and Posa's presentation
- Meeting Chad and other PICs participants, knowledge from Chad
- Team work, communication, networking
- There is still time to prevent my country from invasive species by using the skills learned from this workshop
- A better knowledge of regional people potentially involved
- More focused understanding of the potential invasive species
- There is more being done than realized
- Now know how to implement a marine invasive species management plan
- Ideas on funding sources

Things which failed to reach expectations were:

- Presentations were too formal
- More participation from PIC participants
- More opportunities for group discussions
- Clear objectives for the workshop
- Explore participants expectations before the workshop
- Regional and National frameworks poorly covered
- Need more representation from relevant national authorities and regional institutions

Factors for improvements:

- More time for sharing and discussions
- Simplify the slides
- More relevance to the Pacific
- More Pacific friendly – more group discussions among participants and facilitators
- Help participants understand the overall message of the meeting
- Better accommodation, better food and better meeting room
- More practical work, fieldwork
- More needs to happen to give the MPA managers the information necessary to make future decisions about marine invasive programmes
- More workshops like this