



**Learning Exchange: American Natural History Museum's Milstein Science Symposium: Understanding Ecological and Social Resilience in Island Systems: Informing Policy and Sharing Lessons for Management**

**April 9-11, 2013  
New York City, New York**





## **Background**

This exchange was coordinated in cooperation with the American Museum of Natural History, Center for Biodiversity and Conservation. The event focused on understanding resilience – the ability of ecological and social systems to absorb, resist, or recover from stressors and adapt to change while continuing to maintain critical ecosystem functions. The Milstein Science Symposium brought together researchers, resource managers, educators and other leading conservation thinkers and practitioners from a variety of perspectives to discuss the diverse components and implications of resilience with the goal to further the develop and direct the application of resilience science to island resource management and conservation.

The Reef Resilience Program staff collaborated in organizing the Symposium, including the development of the agenda, recruitment and selection of presenters and participants and logistical support. The participation of five coral reef managers was supported through funding from the NOAA Coral Reef Conservation Program and the MacArthur Foundation. In addition, The Nature Conservancy supported the participation of three content experts to present at the event.

More information about the symposium can be found here: <http://www.amnh.org/our-research/center-for-biodiversity-conservation/events-exhibitions/conferences-and-symposia/2013-island-systems>

## **Learning Exchange Objectives**

The objectives of this exchange were the following:

- To support a dialogue between managers and scientists on the implementation of resilience-based management including challenges, successes, lessons learned and future needs.
- To provide managers with opportunities to network and discuss coral reef resilience and management with experts in the field
- To provide managers with the opportunity to share lessons learned from their work in resilience based management with a international audience of their peers
- To provide managers with opportunities to develop presentation and communication skills
- To facilitate interactions and sharing of lessons learned between on the ground managers and AMNH-CBCD staff and to inform future research conducted by the museum

## **Outcomes**

The symposium was an inspiring event with more than 120 local island leaders and managers, policy makers, researchers, students, government and NGO representatives, and other conservation practitioners presenting case studies and discussing some possible next steps for research and action to foster resilience in island systems. An additional 50+ managers and conservation practitioners participated in the symposium remotely through the live webcast.

Other outcomes included:

- Increased networking and discussion between managers and scientists on the topics of coral reef resilience and management
- Development of manager’s presentation and communication skills
- Managers connected and shared challenges and lessons learned

### Workshop participants

See the table below for details on participants and organization including their presentation topic. The participants included one woman from India, and 4 men from the Northern Marianas, Hawaii, Indonesia, and Trinidad and Tobago. The experts were from Australia, Fiji, and the US.

Presentations can be viewed at: <http://www.amnh.org/our-research/center-for-biodiversity-conservation/events-exhibitions/conferences-and-symposia/2013-island-systems/2013-milstein-science-symposium-videos>

Participant	Organization	Symposium Presentation
Jahson Alemu	Institute of Marine Affairs, Trinidad and Tobago	Speyside Marine Area community based management project - a case study for socio-ecological resilience in Tobago (Southern Caribbean)
Vineeta Hoon	Centre for Action Research on Environment Science and Society, India	Ecological and social resilience in island systems: case study of Lakshadweep
Russell Sparks	Division of Aquatic Resources, State of Hawaii	Managing for resilience using directed monitoring efforts and community engagement at the Kahekili Herbivore Fisheries Management Area
Derta Prabuning	Reefcheck, Bali	Climate change adaptation: local solutions for a global problem in a popular tourism destination
Steven Johnson	Division of Environmental Quality, Commonwealth of the Northern Mariana Islands	Coral reef resilience to climate change in Saipan, CNMI; field-based assessments and implications for vulnerability and future management
Jeffrey Maynard	Maynard Marine Consulting	Support provided for: Coral reef resilience to climate change in Saipan, CNMI; field-based assessments and implications for vulnerability and future management

Paul Marshall	Great Barrier Reef Marine Park Authority	Keynote Presentation: Navigating an era of unprecedented change: the rise of resilience and its importance to islands
Nadine Marshall	Commonwealth Scientific and Industrial Research Organization (CSIRO)	Keynote Presentation: Navigating an era of unprecedented change: the rise of resilience and its importance to islands
Sangeeta Mangubhai	Indonesia Marine Program, The Nature Conservancy	Panel: What is the role of science in managing for resilience?  Invited Talk: Making it easier to manage reefs for resilience: a framework for interpretation of resilience assessment scores

**Methodology**

Support for the participation of five coral reef managers and four experts in reef resilience was provided at the three day symposium held at the American Museum of Natural History in New York. Each of the 5 managers each gave a presentation at the symposium and the experts participated in several panels and gave four talks, including the keynote presentation.

Prior to the Symposium an announcement was sent to the Reef Resilience Program email list about the event and the opportunity to receive support for attendance. Reef Resilience Program staff also reached out to specific managers to encourage their submission of abstracts. Presentations were selected through a competitive process coordinated by the AMNH. Once selected each participant completed two rounds of practice presentations with the Reef Resilience team. The first round took place through a webinar online one month prior to the event and the second round of practice was in-person the day before the symposium. The Reef Resilience team gave feedback with comments or suggested edits for the participant to consider.

Following is a brief description of the symposium. For the full agenda see Appendix A.

**DAY 1: Arrival and Group Dinner**

The first evening, before the start of the symposium, participants gathered for a group dinner and for introductions. This allowed them to make initial connections with other managers and experts and facilitated more conversations throughout the week.

**DAYS 2- 4: Milstein Science Symposium and group events**

All participants and experts attended all sessions of the symposium and participated in working groups on the third day. For full details of the Symposium agenda see Appendix B.



Some of the Symposium highlights included:

- A Keynote presentation by Paul and Nadine Marshall on the rise of resilience and its importance to islands.
- A presentation on cultural resilience given by Katerina Teaiwa from the Australian national University.
- TNC's Stephanie Wear participation in a panel discussion on the role of science in managing for resilience.
- On-the-ground case studies in managing for resilience given by participants sponsored through this exchange
- A panel discussion on funding for resilience with perspectives from funders and grantees

Throughout the symposium, the Reef Resilience team worked to connect the participants with other managers and experts of interest for conversation and discussions. On the last night of the symposium, a second group dinner was held with additional experts in the field, including key partners from the AMNH, allowing for more discussion and networking time. In addition to the two previously mentioned group dinners, several smaller group meals and events were organized throughout the week allowing the participants to further discuss challenges and successes in their work.

After the exchange, the Reef Resilience Program staff followed up with each individual to discuss their experiences at the symposium.

### **Lessons Learned and Next Steps**

#### ***Participant Feedback***

After the symposium, the Reef Resilience team asked the 5 participants for feedback about their experience. (Please see Appendix B for the full evaluation and responses.)

The feedback was generally positive. While not everyone felt that participation in the symposium increased their skill set, they all were able to make valuable connections with other managers and experts. Meeting at the symposium facilitated conversations between managers and experts that might not otherwise have met, and the exchange of ideas and lessons learned continues after the symposium. Several participants remarked that they took new concepts about resilience back to their workplace, which has changed the way they communicate with stakeholders and communities. They also appreciated the support prior to presenting and felt that it improved their presentations.

As for the event itself, one participant suggested that future events of this sort actually take place within the environment that is being discussed- in an island environment. Another suggested that the Reef Resilience team should take a stronger role in facilitating discussions *after* the symposium ends, in order to keep the conversations going.



### ***Reef Resilience Program Staff Feedback***

After the symposium, program staff met to evaluate the event and provide recommendations for following similar events. (Please see Appendix C for the full response.)

The location in NYC was both a positive and a challenging part of the experience. While the venue (American Museum of Natural History) was exciting, historic, and interesting, it wasn't (as noted earlier) relevant to the topic at hand. Due to travel constraints, it made sense as a centralized location, but being near a coral reef ecosystem would have enhanced the discussion and understanding of the topic. Due to the high costs of New York City, this made the symposium more expensive for the Reef Resilience program to support. A less-expensive location might have made it feasible to support an additional manager.

The hotel (Hotel Belleclaire) was a great value for quality, safety, location, and customer service and is highly recommended for future NYC-based events. The symposium venue provided breakfast, breaks, and lunches, which was ideal and cut down on Reef Resilience staff time to organize logistics. The two large group dinners took place at mid-range restaurants. Future group dinners should utilize several smaller tables rather than one large table, and Reef Resilience program staff should try to encourage as much mixing between experts and participants as possible.

### **Next Steps**

The Reef Resilience Program will continue to seek to engage with participants on the Reef Resilience Network. The Reef Resilience Program is working with Russell Sparks and Steven Johnson to develop case studies for our Toolkit based on the work they presented.

The Reefs Tomorrow Initiative (RTI) is research project conducted by AMNH staff and funded by the Gordon and Betty Moore Foundation. Staff from RTI are continuing to work with managers who attended the event with the goal of developing a model for managers to increase reef resilience in their sites. Some of our sponsored participants have been contacted by AMNH as they are collecting individual cases spanning a wide range of island ecosystems and socio-economic aspects, in order to better understand the patterns of ecological and social resilience seen at the global and local levels.

### **Testimonials**

"Participation in the Resilience Symposium contributed to my skill set, primarily in the area of presenting and public speaking. Speaking to an audience as diverse and large as the one in New York was great exposure for me in my young career. I was able to connect with other managers who I continue to communicate with, exchanging ideas and lessons learned."

"Attending the workshop and meeting other managers made me feel more confident in addressing reef resilience issues."



“This was the first time that I have received such support before any symposium. I found the support and rehearsal very good in reducing stress and ensuring that I could convey the essential points within the allocated 12 minutes.”

“I took away a conversation that has become imbued in the way I communicate with stakeholders, communities etc. I did make some new valuable connections.”



**Appendices**

Appendix A: Agenda

Appendix B: Participant Feedback

Appendix C: Program Staff Feedback



## Appendix A: Agenda

### AGENDA

#### DAY ONE: TUESDAY, APRIL 9, 2013

*(All keynotes, invited talks, and case study presentations take place in the Kaufmann Theater)*

SESSION I: *Moderated by **Eleanor Sterling**, Center for Biodiversity and Conservation, American Museum of Natural History*

#### 9:00 INTRODUCTION TO PROGRAM

**Ellen V. Futter**, American Museum of Natural History

**Howard P. Milstein**, Paul & Irma Milstein Foundation

**Eleanor Sterling**, Center for Biodiversity and Conservation, American Museum of Natural History

**Jenny Newell**, Pacific Ethnology, Division of Anthropology, American Museum of Natural History

#### 9:15 KEYNOTE PRESENTATION

Navigating an era of unprecedented change: the rise of resilience and its importance to islands

**Paul Marshall**, Great Barrier Reef Marine Park Authority (GBRMPA)

**Nadine Marshall**, Commonwealth Scientific and Industrial Research Organization (CSIRO)

#### 10:00 INVITED TALKS

Socio-ecological resilience in Pacific Island traditional and contemporary contexts

**Stacy Jupiter**, Wildlife Conservation Society

Environmental displacement and cultural resilience: the Banabans of Ocean Island and Rabi

**Katerina Teaiwa**, Australian National University

SESSION II: *Moderated by **Petra MacGowan**, Global Marine Program, The Nature Conservancy*

#### 11:15 CASE STUDY PRESENTATIONS

Supporting resilient systems in the Bay Islands, Honduras

**Jenny Myton**, Coral Reef Alliance

An integrated framework for assessing and managing data-limited fish stocks

**Kendra Karr**, Environmental Defense Fund

Managing for resilience using directed monitoring efforts and community engagement at the Kahekili Herbivore Fisheries Management Area (KHFMA)

**Russell Sparks**, Division of Aquatic Resources, State of Hawaii

Managing identity in the midst of globalization

**Mae Adams**, Micronesia Program, The Nature Conservancy



## 12:10 LUNCH AND WORKING GROUPS

SESSION III: *Moderated by **Jenny Newell**, Pacific Ethnology, Division of Anthropology, American Museum of Natural History*

### 2:00 PANEL: What is the role of science in managing for resilience?

**Eleanor Sterling** (Moderator), Center for Biodiversity and Conservation, American Museum of Natural History

**Mae Adams**, The Nature Conservancy

**Tadzio Bervoets**, St. Maarten Nature Foundation

**Sangeeta Mangubhai**, Indonesia Marine Program, The Nature Conservancy

**Hinano Teavai Murphy**, Gump Research Station, University of California Berkeley

**Hugh Possingham**, University of Queensland, Australia and the School of Forestry and Environmental Studies, Yale University

**Stuart Sandin**, University of California, San Diego

**Stephanie Wear**, Global Marine Initiative, The Nature Conservancy

### 3:05 INVITED TALKS

Making it easier to manage reefs for resilience - a framework for interpretation of resilience assessment scores

**Sangeeta Mangubhai**, The Nature Conservancy

Building reef resilience capacity at a local scale

**Naneng Setiasih**, Coral Reef Alliance

### 4:05 CASE STUDY PRESENTATIONS

Ecological and social resilience in island systems: case study of Lakshadweep

**Vineeta Hoon**, Centre for Action Research on Environment Science and Society, India

Integrated indigenous management of Land and Marine Protected Areas in Tairapu, Tahiti

**Tokainiua Devatine**, Centre de Recherches Insulaires et Observatoire de l'Environnement (CRIOBE)

### 4:30 PANEL: Resilience in the Solomon Islands: Common threads, trade-offs, and unanticipated outcomes.

**Christopher Filardi** (moderator), Center for Biodiversity and Conservation, American Museum of Natural History

**Simon Albert**, University of Queensland, Australia

**Matthew Lauer**, San Diego State University

**Senoveva Mauli**, The Nature Conservancy, Solomon Islands

**Patrick Pikacha**, University of Queensland and Solomon Islands Community Conservation Partnership

### 5:30 RECEPTION AND POSTER SESSION, Milstein Hall of Ocean Life



## DAY TWO: WEDNESDAY, APRIL 10, 2013

*(All keynotes, invited talks, and case study presentations take place in the Kaufmann Theater)*

SESSION IV: *Moderated by **Christopher Filardi**, Center for Biodiversity and Conservation, American Museum of Natural History*

9:00 DAY ONE RECAP AND INTRODUCTION TO DAY TWO

**Eleanor Sterling**, Director, Center for Biodiversity and Conservation, American Museum of Natural History

**Jenny Newell** (Event Co-Chair), Assistant Curator, Pacific Ethnology, Division of Anthropology, American Museum of Natural History

9:15 INVITED TALKS

Evolutionary processes fostering resilience on islands  
**Scott V. Edwards**, Harvard University

Prioritizing conservation actions for island marine ecosystems  
**Hugh Possingham**, University of Queensland, Australia and School of Forestry and Environmental Studies, Yale University

SESSION V: *Moderated by **Susan Perkins**, Division of Invertebrate Zoology, American Museum of Natural History*

10:00 CASE STUDY PRESENTATIONS

Speyside Marine Area community based management project - a case study for socio-ecological resilience in Tobago (Southern Caribbean)

**Jahson Alemu**, Institute of Marine Affairs, Trinidad and Tobago

Climate change adaptation: local solutions for a global problem in a popular tourism destination

**Derta Prabuning**, Reefcheck, Bali

Coral reef resilience to climate change in Saipan, CNMI; field-based assessments and implications for vulnerability and future management

**Steven Johnson**, Division of Environmental Quality, Commonwealth of the Northern Mariana Islands

Notes from a floating island

**Carlos Mondragon**, Center for African and Asian Studies, El Colegio de Mexico

SESSION VI: *Moderated by **Katherine Holmes**, Center for Biodiversity and Conservation, American Museum of Natural History and Wildlife Conservation Society*

Community-based adaptation in the Pacific Islands

**Meghan Gombos**, Sea Change Consulting, LLC



Community-based planning and mobilization in urbanized atolls: the Rita Reimaanlok case study

**Tina Stege**, Marshall Islands

Fostering resilience in coral reef and agricultural systems in Guanica, PR

**Paul Sturm**, Ridge to Reefs

The effects of natural disturbances, reef state, and herbivorous fish densities on ciguatera poisoning in Rarotonga, southern Cook Islands

**Teina Rongo**, Climate Change-Cook Islands Division, Office of the Prime Minister

Incorporating local wisdom sasi into marine zoning to increase the resilience of a Marine Protected Area network in Raja Ampat, West Papua, Indonesia

**Purwanto**, Coral Triangle/Indonesia, The Nature Conservancy

12:30 LUNCH

SESSION VII: *Moderated by **Dan Brumbaugh**, Center for Biodiversity and Conservation, American Museum of Natural History*

2:00 INVITED TALK

Fostering manager voices to inform global policy

**Peter Kenilorea**, UN Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States

2:15 PANEL: Funding for resilience: perspectives from funders and grantees

**Jeffrey Campbell** (moderator), The Christensen Fund

**Kate Barnes**, MacArthur Foundation

**Bernd Cordes**, Paul G. Allen Family Foundation

**Nayari Perez Diaz**, Protected Areas Conservation Trust (PACT), Belize

**Hyacinth Douglas**, GEF Small Grants Program, United Nations Development Program

**Sangeeta Mangubhai**, The Nature Conservancy

**Jenny Myton**, Coral Reef Alliance

3:45 WORKING GROUPS

5:30 PLENARY AND CLOSING REMARKS

**Christopher Filardi**, Director, Pacific Program, Center for Biodiversity and Conservation, American Museum of Natural History

**DAY THREE: THURSDAY, APRIL 11**

Invitation-Only Working Groups

## Appendix B: Participant Feedback

*How did you hear about the opportunity to receive support to present at the symposium?*

- Personal email of encouragement from the TNC R2 team. Once accepted, I received support from the R2 Team.
- personal email from TNC
- I heard about the support from the reef resilience newsletter. I had sent in an abstract in december 2012 soon after I learnt about the symposium.
- I heard about the opportunity through Reef Resilience Newsletter and ask directly to Petra

*Did you feel that your participation in the workshop contributed to building your skills? (Yes/no) Your connection to other managers? (yes/no) If yes, how did participation help you in your work? If not, what could have been done to improve your experience?*

- Yes, participation in the Resilience Symposium contributed to my skill set, primarily in the area of presenting and public speaking. Speaking to an audience as diverse and large as the one in New York was great exposure for me in my young career. Yes, I was able to connect with other managers who I continue to communicate with, exchanging ideas and lessons learned.
- The conference did raise a discussion about communication amongst ourselves and communicating what is important to others. While I don't think I gained any skills, I took away a conversation that has become imbued in the way I communicate with stakeholder, communities etc.
- skill-not sure. I did learn more about the concepts of reef resiliency and regarding social resiliency, but I am not sure these ideas and concepts will make a lot of difference in how we manage our resources locally.
- Connections- Yes. I did make some new valuable connections.
- Yes. The NYC symposium was very interesting and my participation contributed in many ways. I manage the coral reef program from my organization most of the time by myself and as a social scientist I have always been a little diffident about articulating on the ecological aspects of reef resilience. Attending the workshop and meeting other managers made me feel more confident in addressing reef resilience issues. I new ideas and concepts to use in my work and share the same with our socmon SA network and environment wardens and educators in the islands. This will breathe new life into our teachers orientation programs and i can share global experiences on what other managers are doing on reef resilience with our islanders.
- Sure, Building my skills, especially my confidence as we are in Indonesia very rare to have opportunity like that. To be honest, my connection with other managers, its very helpful and important in case to improve my knowledge about resilience, even the topic that they presented are not really related to Coral Reef as my concern. It's very important, as in Indonesia we conserve the coral reef with integrated management, no focus on reef ecosystem alone.

*Did you receive the support that you needed to develop your presentation? What, if anything, could be improved?*

- Yes. My collaborators and I worked together to put together the presentation. Although we didn't use the support provided by TNC and the Museum, we were offered the assistance, which was reassuring, especially with the different cultural backgrounds of all the speakers.
- No support was necessary to build the presentation, but the dry run pre-symposium and the feedback was most helpful in clarifying ideas.

- I did not need much assistance, but the technical support was great and I had no problems with my presentation.
- Yes: This was the first time that I have received such support before any symposium. I found the support and rehearsal very good in reducing stress and ensuring that I could convey the essential points within the allocated 12 minutes.
- Absolutely, As you know I am not really good enough yet to “build” and communicate what I’ve work and achieved. But, through discussion through webinar and rehearsal, Its very improve my presentation. Pre-workshop is very important, it’s possible to have time to discuss and improve the presentation and presenting strategy as at the previous workshop was attended by various manager (not just coral reef managers)

*Did you receive adequate logistical support before, during, and after the event? What, if anything, could be improved?*

- All logistical support was adequate. Nothing needed improvement.
- Yes, there was more than adequate logistical support for my entire experience.
- You guys did great. The travel bookings, hotel, and reimbursements of costs was handled very well. Thanks.
- Yes - everything was very thorough and adequate.
- More than enough

*Do you have any other feedback or suggestions for us to improve your experience attending this type of event (a symposium with networking opportunities)?*

- If it was possible for some of the discussion to continue post symposium. While we all share contact info, we are all quite busy, and so get wrapped up in work life. A driver (person) may be required to carry on those few important/revealing conversations (even for a short period) possible on the R2 ning page
- Not your fault, but the locations was not ideal when discussing reef ecosystems. would have been better to have held this conference in an island community where reef ecosystems are found. In that type of setting, we could have gotten the managers out in the field to really experience the situations we were discussing.
- I would suggest simplifying your accounting procedures. For instance you had offered to reimburse food and transport provided we had bills. Sometimes we could not do this if we used the subway/bus or just bought a sandwich at a convenience store or cafeteria. You could offer a modest DSA allowance US\$ 15-20 to cover and misc expenses and return taxi fare. or accept a breakdown of small expenses provided by the participant. It would simplify your accounting procedure and the participant would not be out of pocket.
- 1. Keep inform and guide the reef manager with the opportunities.  
2. For me personally, it would be great if any “deed” or certificate.  
3. Documentation

*What other skill-building opportunities do you or your colleagues need to better build resilience in the reefs you manage or work in?*

- In the past, I've found that small, hands-on learning exchanges are highly valuable. Having two or three people from one region/jurisdiction/agency swap places with counterparts in another region/jurisdiction/agency greatly expands knowledge and really helps new ideas stick.
- Communicating reef resilience principles and case studies (finding opportunities for the work to be less academic and more applied)



- Real life success stories (preferably simple) and lessons learned from the Caribbean that don't require millions. Once it's too expensive to achieve and with no noticeable socio-economic incentive, it just won't happen.
- I think it is valuable to get managers together in the field at locations where the government/communities are tackling reef management challenges and have some successes to share. Organize more sharing/learning types of exchanges. The kind of stuff you guys have done in Palau, etc. I think we can learn a great deal and bring those ideas back to our areas, but to truly learn from others and get a feel for the complexities of their marine ecosystems, we need to get out in the field and see what is going on and talk with the people, etc.
- My colleagues in the islands would benefit from a study tour to see a well run conservation project.

## Appendix C: Program Staff Feedback

If the program funded participation of managers in an international conference in the future;

1. Select a relevant location would be better (island ecosystem)
2. Work with managers to keep their presentation within the time limits.
3. 5-7 managers is probably a good number- more would be difficult to keep track of and support both before and during the event. A group larger than 10 would be very challenging, unless the support given was scaled back.
4. Discuss which managers (location, stage in career) may be the best suited to get something out of the symposium.
5. Remember to take a group photo and immediately save it to the Dropbox folder.
6. Reef Resilience Program staff should arrive a day in advance to be certain venue and food logistics are taken care of.
7. In advance of the symposium/workshop, be prepared to re-engage managers afterwards using the Reef Resilience Network.
8. Livestream was nice to have- would have been too much to do ourselves but was nice to take advantage of. In the future, we should look for opportunities to “host” live chats during conferences and symposia to bring the event to the managers. Have a pre-arranged connection with the moderator to assure that questions that come in via Livestream are answered by the panel.
9. We recommend utilizing a Travel Agent for any flights from remote/expensive locations. This provides a certain level of insurance/security for very costly flights. We received a 90%+ refund for one missed flight from Indonesia which was fully worth the cost of hiring the Agent to book those particular flights.