

Capturing Coral Reef & Related Ecosystem Services  
(CCRES)

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Different disciplines, multiple perspectives came together when the UQ Global Change Institute hosted meetings between the CCRES team and Indonesian Government officials in September.  
(photo: S Power)

## How do you? The question of integration

Hello everyone

How do you ensure groups of multidisciplinary researchers, practitioners, policy-makers and behavioural change experts – operating in different regions – work together as a team?

There is no simple answer, however this question is top-of-mind when we design and implement the collaborative and participatory activities within the **Coral Reef and Related Ecosystem Services (CCRES) Project**.

Integration across disciplines, institutions, geographies and cultures is fundamental to how CCRES research will respond to some of the 'wicked' problems facing coastal communities in the East Asia-Pacific region.

**We're convinced the complexity of the challenge for people in the region, including climate change, food insecurity, coastal development and population growth - requires a wisdom borne of multiple perspectives.**

So, CCRES is integrating technical knowledge and expertise to address the problems. This starts with setting questions which cut across the themes of ecosystem services, business, system dynamics and behaviour change.

Once these questions are agreed, the task of exploring potential solutions involves collaborative research, consultation with on-ground

practitioners, and cooperation with technical projects in the region.

It's the approach we're taking with investigating the problem of coral reef fisheries which often reach only a fraction of their potential productivity (and profitability) due to over-harvesting. What makes this problem wicked is that rebuilding more profitable fisheries requires a reduction in fishing effort.

Now that CCRES has started in two pilot sites - El Nido (Philippines) and Selayar (Indonesia), we look forward to sending you updates on the progress made by our team of researchers, practitioners and partners.

Best wishes

**Melanie King**

Senior Advisor

A handwritten signature in black ink that reads "Melanie King". The signature is written in a cursive style with a large, sweeping flourish at the end of the last name.

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Aquaculture pens fattening wild-caught fish for export, off Gusung Island, Selayar (photo: M Paterson)

## Selayar: our pilot site in Indonesia

Selayar, an archipelago of 130 islands (26 of which are inhabited) in South Sulawesi, has been chosen as the pilot site for the **Coral Reef and Related Ecosystem Services (CCRES) Project** in Indonesia.

Selayar has two small tourist resorts, 60 village-level marine protected areas (MPAs), covering 52 villages, a national marine park (Takabonerate), and two district-level Marine Conservation Areas (MCAs).

Key industries include fisheries and agriculture including coconut, clove, orange, rice and nutmeg.

Covering a total area of 10,503.69 km<sup>2</sup>, including of 9,146.66 km<sup>2</sup> of sea and 1,357.03 km<sup>2</sup> land, the Regency of Selayar encompasses a

wide expanse of coral, including the third-largest coral atoll in the world.

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(L to R) Dr Russell Richards and Dr Carl Smith from The University of Queensland turn over an iPad and LCD pico projector to Dr Patrick Regional of Palawan State University (photo: MC Quibilan)

## Connecting with communities through technology

The Capturing Coral Reef and Related Ecosystem Services (CCRES) Project is using new technologies to engage with communities in El Nido to investigate socio-ecological problems such as food insecurity,

fish catch decline, mangrove loss and water pollution.

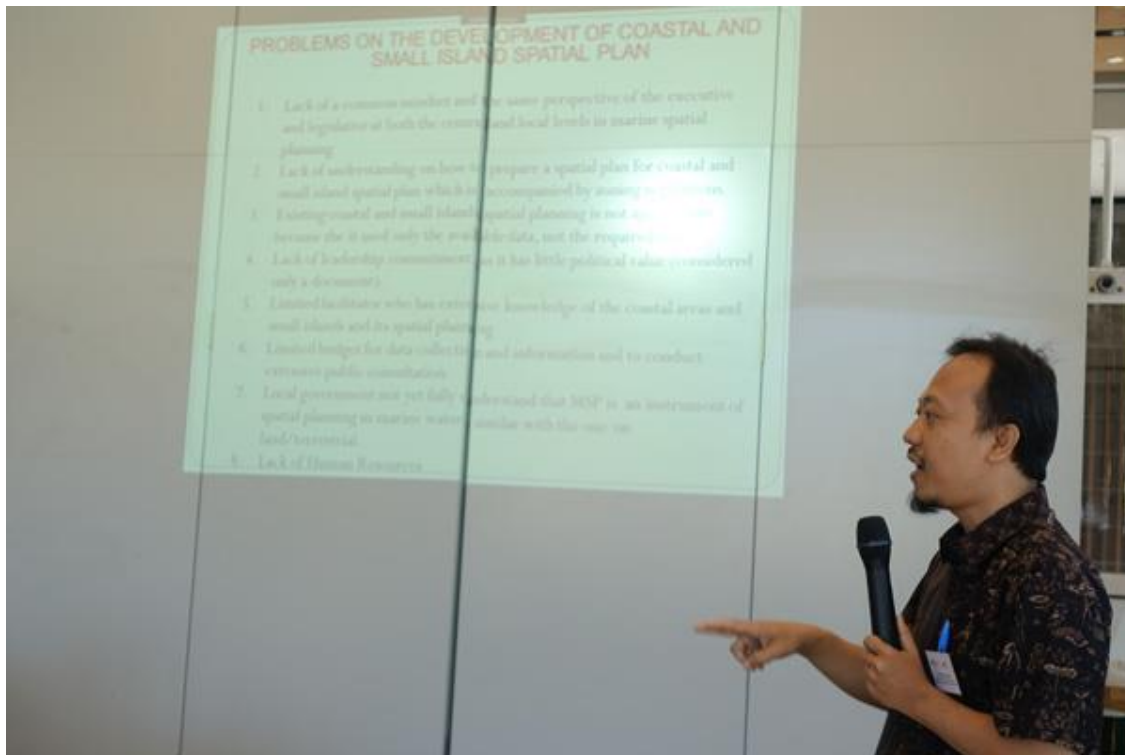
The CCRES project is set to provide information on the real value of coastal ecosystems (coral reefs, mangroves, fisheries and seagrass) and the role they play in coastal communities in the Philippines. Tools and models will be produced by the project to support planning and decision making.

CCRES project partners from the Palawan State University (PSU), Palawan Council for Sustainable Development (PCSD), El Nido Foundation (ENF), UP Marine Science Institute (UP MSI), and El Nido local government attended a training workshop at Palawan State University, Puerto Princesa City, on 10-14 November 2014 to prepare for the work.

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*Want to know more? Contact [Dr Carl Smith](#)*

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Dr Firdaus Agung, MMAF, outlines Indonesia's approach to integrated coastal management (photo: M King)

## Making sense of marine planning in Indonesia

Marine spatial planning in Indonesia is complex. Planners grapple with a variety of inter-connecting economic, social and ecological issues across different spatial and time scales.

The issues include income growth, fisheries sector sustainability, habitat destruction, erosion, tidal flooding, sanitation, community access to marine resources and strengthening local institutions.

The response by local government in Indonesia for addressing this web of inter-connectivity, says Dr Firdaus Agung, Deputy Director for Conservation Use at the Ministry of Marine Affairs and Fisheries (MMAF), is the development of an integrated coastal management

(ICM) document, comprising four hierarchical plans:

- Strategic plan (20-year timescale);
- Zonation plan (20-year timescale);
- Management plan (coordination and how they will achieve objectives and engage with stakeholders - the timescale is five years); and an
- Action plan (two-year timescale).

Dr Agung, who has been an integral part of planning CCRES activities in Indonesia, led a delegation of marine conservation and planning officials from the Indonesian Government (MMAF and Bappenas) who visited the Global Change Institute at The University of Queensland for meetings with the CCRES team.



Leilani Solera sets up a wave gauge in Tres Marias, Bacuit Bay to record changes in wave height for a three-month period (photo: C Benjamin)

## Monitoring ecosystems in El Nido

by Leilani Solera

Identifying priority sites for ecosystem conservation requires knowledge on connectivity and habitat quality. One stream of activity within CCRES involves the development of a larval dispersal model that can provide information on the strength of connectivity between reefs in Bacuit Bay, El Nido.

“Understanding connectivity will help determine linkages between reef systems which may have an impact on overall ecosystem health and resilience,” explained Dr Cesar Villanoy, a professor of the University of the Philippines Marine Science Institute (UPMSI) and a CCRES project leader.

The team from UPMSI has conducted three boat surveys in Bacuit Bay over the last year to obtain profiles of ocean currents. The most recent survey was completed in November.

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## Did you know?

On average, coral reefs can reduce wave energy by 97 percent, according to a recent study published in [Nature Communications](#).

[Read more](#) |

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## Meet our team



Haryunani Kumoloraras (centre) is our Indonesian Country Coordinator (photo: M Milstein)

### Haryunani (“Yuni”) Kumoloraras

Ibu Haryunani (“Yuni”) Kumoloraras has a spirit for learning.

Our Jakarta-based Indonesian Country Coordinator - an advisor to the World Bank Indonesia and a specialist in community micro-finance, project leadership and group facilitation – craves knowledge.

Yuni brings that yearning to CCRES, following stints at COREMAP II and COREMAP CTI, working on Community Development and Access to Micro Finance, with the Directorate General of Coastal and Small Islands at the Ministry of Marine Affairs and Fisheries, and the

Environment Unit at the World Bank Indonesia.

“I’m excited about joining CCRES because it gives me the chance to work with the best professors from several international universities and to learn about global best-practice,” says Ibu Yuni.

“I get the opportunity to learn new, challenging things, especially how to value coastal ecosystem services, why they are so important to communities, and how to develop marine spatial plans.”

For Ibu Yuni, Selayar is an ideal location for the CCRES pilot site in Indonesia.

“The island of Selayar is not too small and it’s not too big, it’s clean and the weather is nice. The food (especially spicy food) and hospitality of the people make it welcoming, too,” says Ibu Yuni.

No achievement makes Ibu Yuni prouder than completing a challenging task on-time. Through her faith and prayer, she finds the stamina and persistence to work hard to solve complex problems.

“I feel most happy when I’m able to help poor, honest people change their lives for the better.”



Russ (left) having fun with the locals at Taytay, Palawan (Photo: G Sheehan)

## **Russell (“Russ”) Richards, The University of Queensland**

Dr Russell (Russ) Richards walks the talk when it comes to sustainability. In their Brisbane garden, he and his wife have four chickens, a large vegetable patch and their own aquaponics set-up [a combination of aquaponics and aquaculture] which they use to both harvest fish and fertilise the garden.

“It’s a fully integrated system,” says Russ, which seems very appropriate given his contribution to the CCRES project is primarily

around systems thinking.

Russ brings significant modelling expertise to CCRES, as well as experience in near-shore coastal processes, climate change adaptation and adaptive capacity in coastal areas, and water quality dynamics. His current focus is contributing to the development of a systems-thinking dynamic model which will form the basis of decision-making tools to be delivered through the project.

Joining CCRES in September 2014, his first project has been the development of an iPad app called SESAMME (Socio-Ecological Systems App for Mental Model Elicitation). The app will support gathering of information from stakeholders in the field. It will identify elements within a system, how they interrelate and where the pressures are. ([see above Connecting with communities through technology](#))

According to Russ, the app works because it helps people to visualise systems. They also understand the technology and are immediately engaged with it.

“The app helps them to see connections they have not seen before.”

With Dr Carl Smith, Russ co-facilitated a workshop in the Philippines in November to introduce the app to CCRES partners.

“Development is an iterative process and testing the app with partners has been very insightful,” says Russ.

“We’ve had great feedback to help refine it - for example, we need to change the cow icon to a caribou in the Philippines context.”

[Hear what Russ has to say about his role in CCRES](#)

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Charcoal kiln within the mangroves of New Ibajay barangay, El Nido (photo: G Sheehan)

## Fish nurseries – or a cash crop?

Mangroves provide critical ecosystem services – primarily coastal protection, water filtration and habitat for young fish. They also represent a significant resource for coastal villages in the Philippines as they can be a source of cash income.

When cut and fired in kilns, mangrove wood is transformed into a slow burning charcoal which can be sold as a low cost fuel. Clearing mangroves is illegal, however even the very small revenue stream created by selling charcoal is hard to ignore especially in remote locations where options are limited and poverty is rife.

CCRES visited a 394-hectare mangrove forest in El Nido province where charcoal production has been a problem. The mathematics are

alarming. Around 400 square metres of mangrove are cleared to fill the kiln which happens approximately once per week. This produces around 14 sacks of charcoal which earns about AUS\$3.25 per sack for the charcoal makers. At one time, up to 28 illegal kilns were operating in the area with the potential to clear over 50 hectares per year. At this rate the 394 hectare mangrove would be cleared in around seven years with devastating consequences for the local fishing community.

Once cut, mangroves take 12 to 15 years to regrow.

This particular community values their mangroves highly and understands the connection to their livelihoods as fisherfolk. With the support of the local government, they have put significant effort into stopping the illegal practice but with large areas and limited resources, it's an uphill battle.

Protect the young fish for tomorrow or have cash in hand (and food on the table) today? The tradeoffs between different livelihoods, and protecting the natural environment, are highly complex. One thing is certain however. To maintain the benefits provided by mangroves to coastal communities, a solution must be found.

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## **Who we've been talking to**



*Community insights: Jun, a carpenter in Villa Paz, El Nido, currently building a boat for use in enforcement activities (photo: G Sheehan)*

What are the key socio-ecological problems faced by the El Nido municipality? Local government representatives, barangay and village leaders, business owners, tourism operators, the women's cooperative, fisherfolk and reef guardsmen all gave their perspectives in a series of meetings with CCRES partner representatives coordinated by the El Nido Foundation in November 2014.

Carl Smith and Russell Richards (The University of Queensland), Ted Gilliland (UC Davis), Mark Milstein (Cornell) and Gabrielle Sheehan (Currie Communications) met with people and organisations across the municipality to discuss problems such as mangrove loss, fish catch decline, water pollution and food insecurity. We also explored business and resource use activities. The information gleaned helped to refine activity focus and will inform several aspects of the CCRES project. We thank all involved for the generous contribution of their time.

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*Garbage litters a beach in Batangas Province, Philippines (photo: G Sheehan)*

## What we don't like

A [new study](#) in published PLoS One journal has estimated that there are more than five trillion pieces of plastic weighing over 250,000 tons afloat in the world's oceans

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*The food market in Benteng, Selayar (photo: M Milstein)*

## Where we'll be

Members of the CCRES team will be gathering in Makassar and Selayar, South Sulawesi, Indonesia from February 7 to 14, 2015 to scope out project activities for the next four years. Representatives from our partner organisations in Indonesia and the Philippines will be

visiting The University of Queensland in January to attend a marine spatial planning workshop under the auspices of the Marine Spatial Ecology Lab, led by Professor Peter Mumby.



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