IUCN MSG NEWSLETTER

Sharing scientific knowledge and lessons to bridge the science, policy and practice gaps for informed mangrove management & decision making around the world

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Mangrove Specialist Group

@ Abner Barnuevo

Inside this Issue:

In the Spotlight:

Welcome to the First IUCN MSG Newsletter!

@ W. (Japoi) Cequina

Welcome to this maiden issue of the IUCN Mangrove Specialist Group Newsletter! The Group has come a long way from July 2012 when participants of the MMM3 (International **M**eeting on **M**angrove Ecology, Functioning and **M**anagement) in Galle, Sri Lanka debated the pros and cons of forming a Species Specialist Group under IUCN dedicated to mangroves. The consensus was a Yes and shortly after a proposal to establish the MSG (to be co-chaired by Joe Lee and myself, with the Zoological Society of London, ZSL, as host) was prepared and submitted to the IUCN which approved it later the same year. General and Steering Committee members were chosen (based on geography and expertise) in 2013, followed by the 1st IUCN Mangrove Specialist Group (IUCN MSG) meeting at ZSL, London on 5 October 2013, followed by a mini-symposium of papers on various aspects of Mangrove Ecology, Climate Change/Blue Carbon, and Mangrove Rehabilitation.

Last year was more productive with the Red List Authority appointment (Jean Yong with support from Norm Duke) and the well-attended and well-received international symposium "Turning the Tide on Mangrove Loss" with representatives from 16 countries that featured 23 papers on current mangrove questions (How many? Where? Lively or lifeless? Can they drown? How to rebuild?) and their relevance to the work of the IUCN MSG. Subsequently, the 2nd IUCN MSG meeting picked up the Symposium take home messages, consolidating these into a Statement for the Promise of Sydney, read at the 2014 World Parks Congress (http://www.zsl.org/iucn-ssc-mangrove-specialist-group). The remaining action points and initiatives from the 2nd meeting you will read about in the following pages.

But before I wish you Happy reading, may I highlight the vital contribution so far of ZSL in raising funds for the MSG and providing office/meeting/symposium space and staff resources – David Curnick and Louise Baldwin in 2012-2014, and Zebedee Njisuh starting this year.

Jurgenne Primavera
Co-Chair, IUCN MSG

IMSG members t the Mangrove symposium urning the Tides on Mangrove Loss, London, 2014 @ ZSL

ZSL LIVING CONSERVATION

IUCN

SSC Species Survival Commission

International Biodiversity Conventions & Mangrove Conservation: Making them Work?

It is unequivocal that mangrove forests are extensively degraded and depleted globally. As mangroves deteriorate, both in size and quality, important ecosystem goods and services are diminished or lost. This outcome has far-reaching and severe consequences to vulnerable coastal communities, particularly in developing countries that rely heavily on these goods and services for their daily subsistence and livelihoods.

Based on these recognized values, it is now indisputable that mangroves are a treasure worth saving. There are increasing number of initiatives, institutions and international and national policy tools that envisage turning the tide on mangrove loss. In this edition, we examine what motivates some nations to ratify some of these international conventions supporting mangroves and biodiversity conservation in general.

In an effort to save the world from common global issues such as climate change, species losses, depletion of the ozone layer… international conventions and agreements are being developed to address these environmental issues. In most cases, joining and/or ratifying these conventions (as the *Ramsar Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (1971), Kyoto Protocol to the UN Framework Convention on Climate Change (1997), United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (1994)*, amongst others) is a voluntary decision to make by the country of interest. However, pre-conditions have to be met for a country or site to acquire and/or ratify a convention's recognition. In all cases, the country or site manager has to ensure that all the convention's boarding criteria are sufficiently covered in the application package, in order to be endorsed and accepted by the convention's secretariat.

On a practical note, these conventions or policy guidelines are generally excellent pointers for biodiversity management, because most often, they are crafted by some of the most outstanding local to international subject matter experts. Moreover, these conventions are periodically reviewed to consider changing and emerging environmental variables. But how the principles of these conventions are translated into action at the national level is purely a matter of government's political will, economic trends and the state of governance in that country. That a site has gained world heritage status or a country has ratified a Ramsar convention for instance, is not synonymous to denouncing country sovereignty. Experience shows that these international conventions are working across many countries and sites. However, I am of the opinion that in countries where these conventions are working, there is likelihood of a strong government commitment, better economic standards and, an above average state of good governance. This is why reports of issues such as '*mining in World Heritage Site*,' '*building a hotel resort in a Ramsar site*' are prevalent in developing countries. Some of these countries may therefore be willing to conserve and sustain these resources, but in practical terms, are constrained by lack of funding, adequate skills and economic trends to do so! It is therefore tempting to conclude that, the drive by some developing countries to join and/or compete for sites to gain convention status, might be motivated purely by convention benefits rather than the political choices of these countries.

Motivations of this type have far-reaching implications for global biodiversity and mangroves in particular. That is why the MSG's approach to the mangrove problem will make a difference in the coming years. The group will not only lead efforts to study and strategically plan to manage the threats that mangroves face. It will also encourage strategic partnerships and on the ground actions that promote mangrove ecosystem, habitat and species conservation to ensure the long-term survival of mangroves around the world. This approach will ensure that the '**Global Mangrove Conservation Strategy and Action Plan**' that the IUCN MSG is developing does not remain just another global call for action.

Zebedee F. Njisuh
(MSG Programme officer)

IUCN MSG News

MSG Activities: January- May, 2015

Appointment of New IUCN MSG Programme officer: In January, Zebedee Njisuh joined ZSL as the Mangrove Conservation Biologist and Programme Officer for the IUCN MSG. He comes with over ten years of experience in the management and conservation of ecosystems (six of which have been on mangrove and coastal resources management). His work has focused on engaging local and government institutions in community level projects. He has also contributed to drafting national and regional policy documents for the management of mangroves in West-Central Africa. In ZSL, Zebedee is working across programmes and country offices to support ZSL's growing mangrove work. At the same time he is working closely with the Co-chairs and MSG members to promote IUCN MSG activities.

Formation of sub-groups: The Secretariat has almost completed collating ideas in the formation of sub-working groups. The sub-working groups will feed into research and development on actions that will inform long term management of mangroves globally. Within each sub-group, Education/Advocacy/Awareness raising, Events/Activities, Liaisons and Funding (strategies) will be developed by members in collaboration with the Secretariat, with oversight from the Steering Committee and co-Chairs.

IUCN MSG website: The group has a holding webpage http://goo.gl/oynyZg, but the Secretariat is working with IUCN to develop a new website for the group. As the website is being developed, members who can provide website content are invited to contact the Secretariat.

Publication of special edition of Marine Pollution Bulletin: This is underway, with papers from the 2014 symposium, and the Secretariat has compiled all names and titles of contributors. The Secretariat is waiting for submissions from the authors who have expressed interest; the deadline for submission is 30th of June.

Listserv: The Secretariat has tried to revamp the Murdoch managed Mangrove listserv but has not been able to progress this. We therefore plan to establish a new listserv to share mangrove conservation and research information and will review this at the end of the year to see whether it is successful. We will also share details of other existing listservs that may be of interest to members.

Member's News

MSG Co-Chairs along with other IUCN Specialist Chairs have been invited to the 3rd SSC Chairs' Meeting to be held September 2015, in Abu Dhabi .The 3rd SSC Leaders' is a unique and invaluable opportunity for the leadership of the SSC to meet and to network, forge new collaborations and initiatives to address critical conservation issues and build on existing ones, to learn new things and to pass experience and knowledge on, as well as building a new sense of teamwork and vision for the SSC leadership. We look forward to making the most out of this meeting, in light of our global mangrove agenda.

Dr Jurgenne Primavera recognised among women achievers in the Philippines On March the 14th, a resolution was passed by the Philippine Senate in honour of fourteen Filipino women for their economic, political and social achievements. Among the distinguished honourees was the IUCN MSG co-chair Dr Jurgenne Primavera. Dr. Primavera is a globally renowned mangrove scientist and a 2008 Time Magazine Hero of the Environment and the Chief Mangrove Scientific Advisor for the Zoological Society of London (ZSL)-Philippines. She has led initiatives on mangrove conservation through formal education and local governance, mentoring of students, developed instructional mangrove modules for primary and secondary schools, and promoted mangrove ecotourism in the Philippines. In addition, she has led national and global level campaigns promoting science-based mangrove rehabilitation and mangrove-aquaculture integration as an alternative to the pro-aquaculture policy of the Philippine government that led to mangrove clear-cutting in the 1950s-1970s.

Upcoming IUCN MSG Activities

The 3rd IUCN MSG symposium and workshop, 12th-13th November 2015 in Xiamen, Fujian, China, hosted by Xiamen University. This meeting will be used to present and discuss emerging global mangrove issues, with a particular focus on Asian mangroves. Attention will also be directed to the groups' anticipated Global Mangrove Conservation Strategy and Action Plan. Outcomes of this meeting are expected to set an annual agenda of action for the group to address mangrove biodiversity and ecosystem challenges in 2016. For further details contact Zebedee.Njisuh@zsl.org

Global Mangrove Conservation Strategy and Action Plan: The IUCN MSG secretariat and the co-chairs have initiated plans to develop a *Global Mangrove Conservation Strategy and Action Plan*. This initiative is anticipated to give strategic guidance to global and regional management approaches that address contemporary and emerging threats to mangroves in the coming years, around the world. This document will be reviewed periodically, it is hoped that these guidelines are scaled up to the national level by respective countries.

Select Mangrove Conservation & Management News From Around The World

'Seven surprising findings about mangroves that you may find interesting: Lessons from the symposium 'Turning the Tides on Mangrove loss' ZSL London, 2014'.

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1).**Some crabs plug their holes during high tides to keep their hole** oxygenated. This means that the conditions in a mangrove soil are probably not as anaerobic as previously thought, and that decomposition and nutrient cycling can actually continue even when the soil is flooded. (*Presentation by Stefano Cannicci, University of Florence, Italy*)

2). **The carbon footprint of many tropical shrimps is so big that when 5 people** eat a shrimp cocktail together, in terms of emissions one of them could have taken a flight to Bangkok. This is because shrimp aquaculture development involved conversion of mangroves and with it continued carbon emissions from decomposition of organic matter stored in the former mangrove soils. (Presentation by Boone Kaufman, Oregon State University, USA)

3). **Even when mangroves appear to be dead after a typhoon**, chances are that


Dieback from climate change? @ZSL

they just lost their leaves in the wind. With a little patience, leaves can grow back directly from the stem, an investigation after typhoons Haiyan and Yolanda demonstrated. Moreover, natural regeneration often occurs rapidly in the shelter of (seemingly) dead trees, and 'cleaning' devastated sites from 'dead' trees harms this natural regeneration. (*Presentation by Jurgenne Primavera, Zoological Society of London-Philippines*)

4). **The impact of climate change on mangroves is difficult to predict.** Mangroves are on average 0.5– 2.5 degrees cooler than the closest weather station, which makes most climate change predictions less applicable for mangroves. Also, the ability of mangroves to move landward in response to sea level rise is related to local topography and substrate characteristics Lastly, the barks and leaves of mangroves are such **that they are flexible and resilient to change.** (*Presentation by Nico Koedam, Vrije Universiteit Brussel, Belgium*)

5.) **Australia now has a 'streetview' for shorelines, which involved the filming** of thousands of kilometres of mangrove coasts (mangrovewatch.org.au). The intention is to repeat this so that changes can be monitored. Might be interesting for some of our projects? They also developed a mangrove-ID app to identify species in the field. (*Presentation by Norman Duke, James Cook University, Australia*)

6). **People think of mangroves as 'land builders'**. The early belief that mangroves 'walk out into sea', is however not true. **Mangroves build up vertically rather than laterally**, mainly by adding organic matter to the soil. Mangrove productivity (and consequently soil build up) may be seriously nutrient limited and fertilisation may be needed if they are to keep up with sea level rise (Presentation by Karen McKee, US Geological Survey, USA)

7). **People love mangrove replanting to restore degraded areas**, but despite good intentions, planting often fails. Instead, we need to channel this positive energy into **restoration of the hydrology and sediment balance of an area**, and then mangroves will come back by themselves. (*Presentation by Robin Lewis III, Coastal Resources Group*)

Development of mangrove research forest in the Rufiji Delta, Tanzania

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Resources from the mangrove ecosystem constitute an integral component to the socio-economic well- being of coastal communities and ecosystems support in Tanzania. In addition to their provisioning services, mangroves also regulate and support other organisms and systems. Regardless of these benefits mangroves are only marginally considered by most regulations in Tanzania. As a result of this marginal consideration, unsustainable use of mangrove resources by various stakeholders is undermining the integrity of this ecosystem in Tanzania. This poor appreciation is understood to be the result of considerable knowledge gaps and uncertainty at the local level of the importance of mangrove forests and its resources, lack of information on the implications of continued loss of mangrove resources to humans and the environment in general. These gaps make it very difficult to develop context specific management designs to effectively manage this ecosystem in Tanzania.

In an attempt to fill these gaps, an interagency consortium of research and training institutions, (government agencies and conservation NGOs) have been established to develop relevant mangrove research activities with seed funding from the USAID Bureau for Africa. This consortium will be administered within the framework of the government agency, Tanzania Forest Services (TFS). This consortium was primarily supposed to identify special mangrove forest sites, and thereafter gain full user rights to site from government and local communities through a memorandum of agreement.

This site is to be used as a demonstration research facility that will support data collection and education through long-term studies, using interdisciplinary, and participatory monitoring techniques. It will also serve as a field laboratory for experimenting good management practices including mangrove restoration techniques and researching issues associated with climate and environmental change. Local communities who live and depend on the identified area for their livelihoods will be engaged, in a participative manner. It is hoped that the establishment of this facility will generate adequate information and data to appropriately inform policy and the management of mangroves in Tanzania.


Mangrove poles cut from the Rufiji Delta @Mangora

The Rufiji River Delta was identified as the mangrove research forest. This site is host to the largest continuous mangrove forest in east Africa. But only about 9,200 ha of these mangroves will come under this project. Preliminary assessments indicate that eight of the ten mangrove species occurring in Tanzania are found in this Delta. The primary activities of this research will include (i) Quantifying the rates of mangrove aggradation and degradation

Traditional fishing in Rufiji River Rufiji Delta @Mangora

(ii) Monitoring growth, productivity and carbon sequestration (iii) Assessment and valuation of ecosystem services, dependence and utilization patterns, and implications for collaborative management

MSG members are welcome for collaboration in field studies and fund raising to support and sustain studies for this project.

Is the scientific approach to conservation enough? The post-Typhoon Haiyan (aka Yolanda) Experience

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In the aftermath of Typhoon Haiyan (aka Yolanda) the Department of Environment and Natural Resources (DENR) planned to spend PhP1 billion for planting 1,900 ha of mangroves and beach forest along 380 km of coastline in disaster areas. To assess the extent of mangrove damage and potential recovery, ZSL-

Post Typhoon Haiyan destruction of Sonneratia Alba stand in Guiuan, Eastern Samar-Philippines

Philippines organized a joint NGO-academe team to survey 11 towns and 2 cities in Eastern Samar and Leyte provinces in January and March 2014. They found that natural mangrove stands were generally recovering (except in areas of direct landfall), in contrast to the plantations (of monoculture bakhaw *Rhizophora*) which were totally devastated.

Consequently, the team recommended the protection of recovering, natural mangroves, and the rehabilitation (only) of damaged bakhaw plantations. They warned that implementing Cash-for-Work schemes would do more harm than

Post Typhoon Haiyan recovery of Sonneratia Alba stand in Guiuan, Eastern Samar-Philippines

good by encouraging jobless typhoon victims to cut down defoliated and seemingly dead (but recovering) trees and to trample seedlings underfoot. These recommendations were widely disseminated through three national seminar-workshops, print and online media, and shared with high government officials, e.g., of the Budget Department.

The more than one year delay in the release of the PhP1 billion after its announcement in Jan. 2014 was due partly, if not mostly, to these science-based recommendations. The delay provided enough time for bare adult trees to regrow leaves and branches and for seedlings to grow – showing proof of life, which saved them from clearing activities under Cash-for-Work programs. But it was only a partial victory as the recently released rehabilitation budget has a disproportionately high 60% (PhP240 million) for wilding and bakhaw propagule collection vs only 2% for nursery production (of *pagatpat Sonneratia alba and piapi Avicennia marina*). Clearly it is "business as usual" that ignores the scientifically and socially sound recommendations.

"Stop seafront planting of Bakhaw propagules" a call to action !

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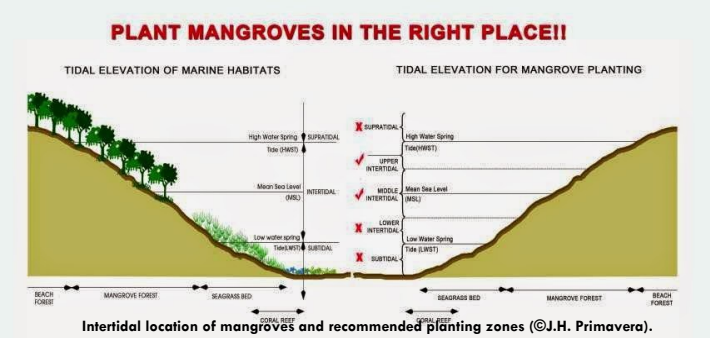
Among others, Typhoon Yolanda in 2013 and the 2004 Indian Ocean tsunami have highlighted the importance of mangroves in coastal protection. Of global storm events, the Philippines has the greatest intensity (maximum score of 5 on the



Intertidal location of mangroves and recommended planting zones (©J.H. Primavera).

Saifir-Simpson Hurricane Intensity Scale) and number (one-third). Mangroves have therefore captured the public imagination – student, NGO, government, religious and business groups plant mangroves themselves or raise money for others to plant. Even the national government planned to allocate PhP1 billion for mangrove rehabilitation in Yolanda sites. Such massive amounts of taxpayers' and private funds beg the question: Are the planting protocols science-based?

Mangroves are uniquely adapted to withstand harsh conditions of salty water and tidal inundation – but not more than 30% of the time. Hence mangroves are not uniformly distributed between high and low tide, but are found in the middle to upper intertidal levels (at or above mean sea level) where they remain mostly exposed. The 35-40 Philippine mangrove species are adapted to different substrates (sand, mud), salinity (full seawater, brackish water), but mainly to water level which determines how much flooding they can tolerate. Therefore most open seafronts are dominated by pagatpat *Sonneratia alba* and piapi Avi-

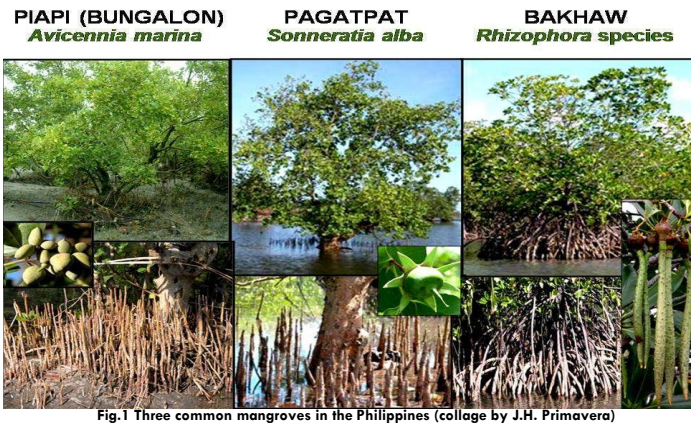


Fig.1 Three common mangroves in the Philippines (collage by J.H. Primavera)

cennia marina (**Fig. 1**) whose extensive lateral/cable roots firmly anchor the tree belowground. Bakhaw Rhizophora, whose aboveground prop/stilt roots cannot withstand strong wave/wind action, either hide behind the pagatpat-piapi zone, or line inner tidal rivers and creeks.

So most bakhaw planted along the seafront are the **WRONG SPECIES IN THE WRONG SITES**, as the scientific community has pointed out since the 1990s. Yet large *Rhizophora* propagules (or Tusok d Tongki, Cebuano for "sticking the propagules") are favored over 'piapi/pagatpat' whose small seeds require a nursery phase – Planting by Convenience, not by Ecology. This misguided preference for 'bakhaw' is seen in logos, posters

bakhaw' prop roots instead of pencil/cone-shaped pneumatophores (arising from lateral roots) of 'piapi/pagatpat'.

Worse, the practice of seagrass planting continues to this day. In 2003, the Philippine Association of Marine Science called on the Department of Environment and Natural Resources (DENR) to stop planting on seagrasses, a call repeated and disseminated to DENR field staff in 2005 and 2007. Yet 10 years later, seagrass beds in Cordova, Cebu were again planted to bakhaw (Fig. 8) financed by Oil Spill funds.

According to National Scientist Edgardo Gomez, (some) foresters argue that 'If grasses can be planted to forests, likewise seagrasses can become mangroves', a well-meaning, but unscientific transformation.

Current mangrove programs also prefer to reforest the ecologically difficult but low- to no-conflict, open access seafront. It should prioritize the biophysically easier but socio-politically challenging reversion of abandoned ponds, where mangroves used to thrive.

A more worrisome practice has emerged – the 'Tongki Protocols', by which money is siphoned off reforestation budgets by unscrupulous parties. To switch from easy-to-source and easy-to-plant 'bakhaw' to nursery-reared 'piapi/pagatpat' will affect the modus operandi (and flow of money). Moreover, many mangrove programs are driven by Guinness record breaking and/or photo ops. In 2012, around 7,000 volunteers planted one million mangrove propagules in El Verde, Camarines Sur, targetting the Guinness Book of Records. Another million mangrove planting event in Quezon province was named 2014 Galing Pook awardee. Nothing wrong with planting in the morning, posting Facebook photos in the evening, and print/TV media coverage the next day so long as planting is science-based. Unfortunately, the focus on initial planting forgets the endproduct – the mature forest! Like graduation ceremonies, tree planting is only the commencement, yet media rarely report, if at all, the massive mortalities of failed plantings.

Moreover, such commonplace mortality has led to the dubious but profitable

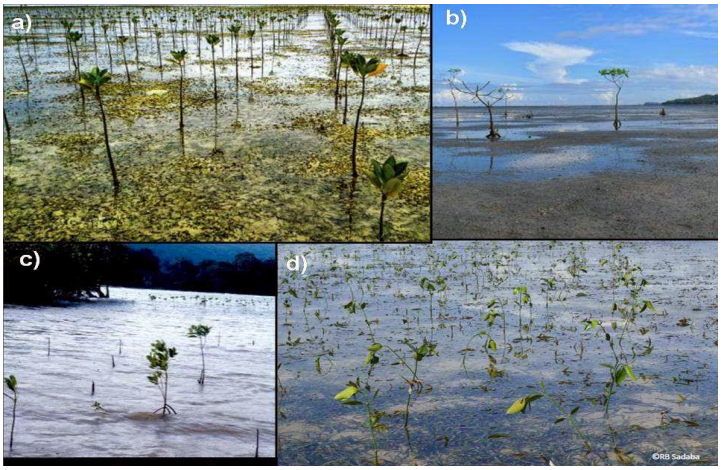


Fig. 2: Common seagrass planting along seafront, e.g., seagrass beds in a) Divilacan, Isabela (Cagayan Valley Environment Update, 2014) and d) Cordova, Cebu (photo by R.B. Sadaba) has mostly high mortality in b) Iloilo and c) Palawan

practice of replacement planting, with payment based on number planted. The more plants that die, the more are replaced and, expectedly, the more money is paid. In contrast, **No Pay Planting is promoted** by the Zoological Society of London (ZSL) Philippines, an Iloilo-based NGO, on the premise that labor contributed by fisherfolk entitles them to mangrove ownership. Instead, the ZSL Community-based Mangrove Rehabilitation Project assists communities in applying for tenure, e.g., the Community-Based Mangrove Forest Management Agreement. As owners and de facto managers, coastal folk are obligated to nurture the mangroves to maturity.

Even when successful, 'bakhaw' plantings on seagrass beds are one ecosystem's gain and another's loss. Conversion to mangrove forests will deprive mudflats and seagrass fauna, e.g., 'danggit' (rabbitfish), dugong, crabs and birds of their habitats. At the least, white sand substrates turn dark muddy-sand.

Interestingly, Philippine mangrove area increased from only ~140,000 ha in 1987 -88 to ~250,000 ha in 2003. How many of over 100,000 hectares of new mangroves are former seagrass beds? The DENR and other agencies must account for such conversions, e.g., in Molacaboc, Negros Occidental and Olango, Cebu.

To all Mangrove Planters/Conservationists: 1) Do not plant 'bakhaw' on seagrass beds and mudflats; 2) Plant 'pagatpat/piapi' in the middle-upper intertidal; and 3) Government agencies should report percent surviving mangroves rather than percent of target seedlings/area planted.

The Katunggan It (mangroves of) Ibajay, Aklan Ecopark, Central Philippines in the Panorama

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The Panorama is an IUCN-led and Global Environmental Facility (GEF)-supported initiative to collate protected area "solutions", as part of the promise of Sydney, launched at the World Parks Congress in November 2014. The "solution" case studies showcase successful approaches in Protected Areas management, governance, and development. In an effort to support this initiative, Dr Jurgenne Primavera singled out one of her long lasting commitments from the Philippines that show how the use of a visionary approach, combined with patience and hard work led to good governance and effective protection of mangroves, in Ibajay, Aklan


School pupil's under the Avatar tree inside the Eco-park @RJA Loma

province in Central Philippines. It has taken about 12 years for Jurgenne and her dedicated team to achieve legal protection through the local government and launch the 44-ha eco-park in 2010 managed by a local cooperative. Many lessons have been learnt that will be useful for upscaling similar activities in other sites. Although reminders of past struggles and obstacles leading to this achievement occasionally come back, the far-reaching impacts cumulatively place these negative memories into a rich set of experiences that will forever inform current and future mangrove practitioners. For further information see click here

Sri Lanka first nation to protect all mangrove forests

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Over half the world's mangroves have been lost over the last century. However, recent assessments indicate that mangroves continue to be seriously degraded and/or depleted at alarming rates of up to 3% per year (Pendleton et al., 2012). Mangroves are thus critically endangered and could be extirpated in the next one hundred years if appropriate management actions are not taken to reverse the current depletion rates (Polidoro et al., 2010). A recent report by the United Nations Environmental Programme (van Bochove et al., 2014) reiterates the socio-economic and ecological importance of mangrove forests to humanity's well-being, and highlights existing and potential calamities that threaten human civilisation if urgent and appropriate actions are not taken to effectively address mangrove forest lost.

On the 12th of May this year, the Government of Sri Lanka officially became the first country in the world to announce a plan to Comprehensively Protect All of Its Mangrove Forests in the country. This $3.5 million project, is expected to run for five years, and it is the result of over two years of negotiations and lobbying by the Sri Lankan, U.S, based NGO Seacology; Sri Lankan-based NGO Sudeesa (formerly known as Small Fishers Federation of Lanka); and the government of Sri Lanka. The government is strongly in support of this project, and has agreed to provide all the legal support required for the protection of all of Sri Lanka's mangroves, in addition to providing rangers to patrol as well.

Only half of the funds required for this project have been raised by Seacology, however, the project is anticipated to effectively protect 8,815 ha of Sri Lanka's existing mangroves and rehabilitate 3,885 ha of mangrove forests that have been cut down for various purposes in Sri Lanka. It is anticipated that the successful delivery of this project will bear far-reaching socio-economic, ecological and political benefits. It is primarily earmarked to provide alternative job training opportunities and microloans to 15,000 impoverished women who live in 1,500 small communities in the mangrove coastal areas of the country. These loans are anticipated to be used by communities to set up business and serve as an incentive for communities to nurture and protect mangrove forest ~ an average of 21 acres per community. This benefits will be complemented by a widely range of infrastructures and educational resources such as mangrove museum that might also boost the tourism industry. For further information please contact mangroves@seacology.org es@seacology.org

Over 800 signatures in first 24 hours of petition against environmental law-breaking in Antigua

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A petition asking Prime Minister Gaston Browne to ensure environmental laws are not to be broken in a massive development on Antigua's protected north shore gained 800 signatures in the first 24 hours.
The petition has been launched by the Antigua Conservation Society in response to US$1billion plans by the Chinese development corporation YIDA to build multiple villas, hotels, marinas, a casino, golf courses and horse racing track.
The 1600 acres of land includes the mangrove-rich, uninhabited Guiana Island.

Spatial view of North East Marine Management Area @ Antigua Conservation Society

The area is in the North East Marine Management Area (NEMMA) which is protected by the Planning Act 2003 and the Fisheries Act 2006. The protest has gained the support of the Mangrove Action Project, which says that it is deeply concerned by the plans. The Antigua Conservation Society says it believes while the majority of Antiguans support economic growth, jobs and development in the country, they don't want it at the expense of the island's precious environment.

President of the Antigua Conservation Society, Eli Fuller, said: "What will happen when tourism is no longer able to provide food for our nation? It is then that we will need to rely more heavily than ever before on the natural resources.
This will be impossible if they continue to destroy them." Read full petition

Publication News

"Stress in mangrove forests: early detection and preemptive rehabilitation are essential for future successful worldwide mangrove forest management"

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As agreed upon at the November 2014 MSG meeting, R. Lewis and D. Macintosh are co-chairing a subcommittee examining the question of "stress and mangroves" with the intent of preparing a cooperative action plan to address the question of how and when to intervene in the mangrove degradation process to prevent final total deforestation (Fig.3). The current effort is not funded and final preparation of an action plan will require outside funding for completion.

Fig 3.A 20 ha mangrove die-off area within the Rookery Bay National Estuarine Research Reserve near Naples, Florida, USA. Photo Date: 2011. @ Cynthia Sapp.

Total deforestation is a difficult process to reverse, and certain ecological processes such as mangrove biomass accumulation and organic sediment accumulation are stopped, and reversed, as organic sediments oxidize, sediment levels decline, and local hydrology is further altered. Sea level rise impacts on such mangrove areas further increase flooding stresses and generally prevent normal mangrove planting efforts from succeeding in restoring such sites (Lewis and Brown 2014). Blue carbon accumulation is likewise stopped and reversed.

A draft white paper, entitled "Stress in Mangrove Forests: Early Detection and Preemptive Rehabilitation Are Essential for Future Successful Worldwide Mangrove Forest Management" has been prepared and is now in its 14th version and available for review from the MSG Secretariat or from R. Lewis. A previous version has already been circulated for comment. The draft white paper is being used to guide early planning for several projects in southwest Florida, USA, aimed at developing early detection methodologies for identifying stressed mangroves and reversing those stresses before complete deforestation and loss of all ecological function occurs.
Comments on the white paper and the proposed process are welcome!

References cited:

Lewis, RR and B Brown. 2014. Ecological mangrove rehabilitation – a field manual for practitioners. Version 3. Mangrove Action Project Indonesia, Blue Forests, Canadian International Development Agency, and OXFAM. 275 p. (Available in English and Spanish at downloads # 80 and #81 at www.mangroverestoration.com)

"IUCN's mangrove species range maps": Progress report

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In 2014, UNEP-WCMC and IUCN worked together to correct and refine 68 IUCN mangrove species ranges (IUCN, 2014). There were two main issues with these: (1) they extended significantly offshore in deep waters (to make them visible on global-scale maps), and (2) they often did not extend sufficiently inland, meaning that some known areas of mangrove occurrence (e.g. as per Giri et al., 2011) were not covered by any of the IUCN mangrove species ranges. The workflow was automated using scripting and can hence be re-run using the other global mangrove distribution dataset (Spalding et al., 2010), or even applied to other biogenic habitats (e.g. seagrass, tropical coral). In 2015, we hope to collaborate with the Mangrove Specialist Group to validate /refine these ranges so that they are included in the supporting Red List documentation for each mangrove species. This will ensure that the improved dataset is used for future spatial analyses, including spatial planning for conservation, and Key Biodiversity Areas delineation.

References cited:

Giri et al. (2011). Status and distribution of mangrove forests of the world using earth observation satellite data. Global Ecology and Biogeography 20: 154-159; http://data.unep-wcmc.org/datasets/4 IUCN (2014). IUCN Red List of Threatened Species. Version 2014.2. URL: www.iucnredlist.org Spalding et al. (2010). World Atlas of Mangroves. London (UK): Earthscan, London. 319 pp. URL: http://data.unep-wcmc.org/datasets/5

Mangrove seedling failure on exposed tidal flats

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Balke et al. recently published an article in the *Journal of Experimental Marine Biology and Ecology*. The study reveals that the mangrove forest at the Firth of Thames in New Zealand has been rapidly expanding in the past decades. However, in most years naturally establishing seedlings on the tidal flat fronting the forest get washed away due to wave action. This is an ideal study site to elucidate the effects of physical disturbance on mangrove seedling establishment. Disturbance for example by waves can form the main bottleneck to mangrove establishment on exposed tidal flats and are an issue many practitioners have to deal with when restoring mangrove forests. Balke and colleagues carried out manipulative experiments to test how *Avicennia* seedlings can outgrow

Pioneer zone of the mangrove forest at the firth of Thames, New Zealand

Experimental erosion around an *Avicennia marina* seedling

can outgrow and survive recurring disturbance by tidal inundation and waves. A model was formulated for this particular site using the "Window of Opportunity" concept where real time series are analysed for disturbance-free periods in which individual seedlings need to grow fast enough to survive the next event or will fail. The model demonstrates the importance of disturbance to lateral mangrove expansion shows how mangroves can suddenly expand on to the tidal flat whenever environmental conditions are favourable.

Launch of the UNEP report: "The importance of mangroves to people"

van Bochove, J., Sullivan, E., Nakamura, T. (Eds) 2014
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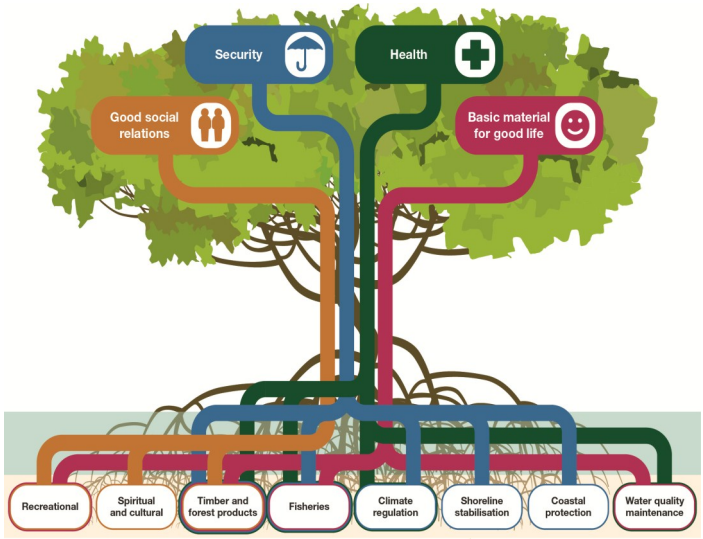
The UNEP Regional Seas Conventions and Action Plans meeting held in Athens in September 2014 saw the launching of a global report on mangrove ecosystem services entitled "The Importance of Mangroves to People." This report serves as a call to action to decision makers at the national and regional levels. It provides a science-based synthesis of the different types of goods and services provided by mangroves and the associated risks in losing these services in the face of ongoing global habitat loss and degradation. The report brings together the most recent findings and data on the global status and valuation of mangroves and presents



these through intuitive diagrams that capture ecosystem service values as well as through a series of maps depicting mangrove losses for different regions around the world. Mangrove scientists from around the world - including several representatives from the Mangrove Specialist Group - contributed their findings and expertise to the report and helped to ensure a wide dissemination to policy makers. The Mangrove Specialist Group's very own co-chair Jurgenne Primavera provided a "call to arms" in her Foreword to the report.

Key messages that underline the link between healthy mangrove ecosystems and poverty eradication and food security are presented in the Executive Summary in all six UN languages. Options to avert future mangrove loss include financial mechanisms and incentives to stimulate mangrove conservation such as REDD+1, private sector investments, and the creation of Nationally Appropriate Mitigation Actions for developing countries to reduce greenhouse gas emissions while increasing national capacity.

The full report, including high-res versions of the key figures and maps are available for downloading through the UNEP World Conservation Monitoring Centre's website here:

The seascape nursery: a novel spatial approach to identify and manage nurseries for coastal marine fauna

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Coastal marine and estuarine ecosystems are highly productive and serve a nursery function for important fisheries species. They also suffer some of the highest rates of degradation from human impacts of any ecosystems. Identifying and valuing nursery habitats is a critical part of their conservation, but current assessment practices typically take a static approach by considering habitats as individual and homogeneous entities. Here, we review current definitions of nursery habitat and propose a novel approach for assigning nursery areas for mobile fauna that incorporates critical ecological habitat linkages. We introduce the term 'seascape nurseries', which conceptualizes a nursery as a spatially explicit seascape consisting of multiple mosaics of habitat patches that are functionally connected. Hotspots of animal abundances/productivity identify the core area of a habitat mosaic, which is spatially constrained by the home ranges of its occupants. Migration pathways connecting such hotspots at larger spatial and temporal scales, through ontogenetic habitat shifts or inshore–offshore migrations, should be identified and incorporated. The proposed approach provides a realistic step forward in the identification and management of critical coastal areas, especially in situations where large habitat units or entire water bodies cannot be protected as a whole due to socio-economic, practical or other considerations

Upcoming Mangrove Related Events

Asia-Pacific Regional Training of Instructors on ecosystem-based disaster risk reduction and adaptation, 18-21 May 2015, Bangkok, Thailand – this is a joint initiative by UNEP and MFF to catalyse regional collaboration among universities and institutions that support policymaking, advocacy, knowledge generation and implementation of ecosystem-based disaster risk reduction and climate change adaptation in coastal ecosystem. See here for further details

ZSL Philippines will be organising a series of **Trainer of courses, 'Mangrove and Beach Forest Rehabilitation and Conservation'.** These courses will run May 25-30, 2015 (NGOs), July 6-10, 2015 (universities and private sector) and July 27-31, 2015 (local and national government agencies). The aim of these courses is to build the capacity of representatives from various institutions on how to train; their staff on mangrove and beach forest work, people's organizations members and promote the use of science-based protocols in mangrove and beach forest conservation and rehabilitation. For further details contact Jurgenne Primavera jurgenne.primavera@zsl.org

5th Postgraduate Certificate Course on Integrated Coastal Management, (8th June to 29th July 2015) Bangkok, Thailand - The course is organised by Mangroves for the Future (MFF) in partnership with the Asian Institute of Technology (AIT) as part of the commitment of MFF and AIT to address the growing need for qualified coastal practitioners. See here for further details

The 6th Asia Regional Conservation Forum (RCF) will be organized this year from10 to 12 August 2015 with the theme "Resilience in Action: Creating solutions for people and nature". The RCF IUCN's meeting of Members in Asia, held every four years to address biodiversity and ecosystem challenges and set the region's conservation agenda. See here for further details

The ZSL Philippines will be organising a National Mangrove Conference (1-3 September 2015) in the Westown Hotel, Iloilo, Philippines. The theme of the conference "Science-based approaches to mangrove and beach forest rehabilitation: sharing experiences and lessons on post-Yolanda mangrove recovery work" will bring together top scientists and practitioners from government, academia, NGOs and community base intuitions to share practical lessons on mangrove and beach forest management. For further details contact Jurgenne Primavera jurgenne.primavera@zsl.org

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