

Environmental News

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Special Interest

Palau hosts Pre-Water Forum

New Biosafety Coordinator at OERC

NEPC Identifies Palau's Environmental Priorities

NBSAP National Workshop - November 25-27, 2002

Palau's 1st National Communication to the United Nations Framework Convention on Climate Change Completed

World Summit on Sustainable Development

On September 4th, President Tommy E. Remengesau, Jr. addressed more than 140 world leaders attending the World Summit on Sustainable Development (WSSD) in South Africa. In his address, President Remengesau indicated that words were no longer sufficient in the World's efforts to address the issues of sustainable development. Instead of developing financial ceilings, let us create foundations for unlimited and sustainable financial growth for the developing island nations. Instead of avoiding realistic timelines, let us embrace them. Instead of struggling against the acts that are necessary for our global survival, let us move forward, together, with aggressive responses to the challenges we all face.

The WSSD is a 10 year review of the 1992 Rio Earth Summit, where world leaders recognized, for the first time, that economic development and the environment are intertwined and must be addressed together. The President attended high level meetings to push Palau and small island developing states issues, such as the expansion of renewable energy and enhancing financial commitments to sustainable development programs. In Johannesburg, President Remengesau supported and recognized the need for good governance as a criteria for assistance from developed nations and agreed that, to ensure sustainable development, good governance must be institutionalized

at all levels. The President also successfully negotiated the inclusion of the enhancement of transportation and product diversification in the tourism sector, in the high level Communique to the WSSD Secretariat. The President stressed that, due to climate change



President Tommy E. Remengesau, Jr. addressing the WSSD in Johannesburg, South Africa. R. Silas

trends, countries had to reevaluate their tourism products to ensure continued economic growth in the tourism sector.

The President indicated his satisfaction that the final WSSD Plan of Implementation contains a specific chapter dedicated to issues of Small Island Developing States (SIDS). Despite the failure of the Conference to include specific commitments, at the international level, regarding development, transfer and implementation of renewable energy programs, the island section does provide commitments for renewable energy within SIDS. Also highlighted was island vulnerability to climate change and the need for enhanced adaptation measure within the SIDS chapter.

Land degradation is one of the world's greatest environmental challenges. Climate change, climate variability, and land use changes dramatically effect land degradation. The creation of protected areas are one way to address these challenges.

Regional Invasive Species Meeting

A meeting recently took place in Honolulu to discuss the serious concerns faced by the thousands of invasive alien species found throughout the Pacific.

The meeting facilitated the sharing of information and the formulation of

regional coordination to address existing invasives, and to prevent new incursions. Invasive alien species are now considered the greatest threat to biodiversity in the Pacific. As a result of invasive alien species, over 50% of recent extinctions have occurred on islands.

To address this, President Remengesau created the National Taskforce on Invasive Animals with Executive Order No. 205.

For more information on the Taskforce, contact the Ministry of Resources and Development.

7th Pacific Islands Conference on Nature Conservation and Protected Areas

The 7th Pacific Islands Conference on Nature Conservation and Protected Areas (NCPA) was held July 8-12, 2002 in the Cook Islands. The theme for this year's conference was "Mainstreaming nature conservation".

The main purpose of this conference was to bring together stakeholder groups in the Pacific to share ideas and experiences, and to discuss and review critical issues facing the region.

Palau was well represented with a multi-sectoral delegation of ten individuals - national and state governments, NGOs, and community-based conservation areas. Several meetings were held in conjunction with

the 7th Pacific Island Conference on NCPAs. The Pacific Global Biodiversity Forum (GBF) included three parallel workshops covering



The Ngerekewid Reserve (70 islands) is the oldest nature reserve in Micronesia.

Climate Change, Biodiversity and Livelihoods on Small Islands, Invasive Alien Species in the Pacific, and Traditional Knowledge.

The objectives of the GBF was to develop mechanisms to reduce the vulnerability of PICs to

the adverse impacts of climate change and to promote biodiversity conservation at all levels. The importance of incorporating traditional knowledge into national adaptation strategies was also emphasized during the forum.

The Birds of Oceania workshop goals were to increase the level of cooperation and joint effort between bird conservationists in the region.

The Regional Avifauna Conservation Strategy was endorsed by all 25 members of SPREP. One of the major goals of the workshop was to improve the coordination of bird programs so that the strategy can be implemented effectively.

Asia-Pacific Regional UNCCD Meeting

The objective of the United Nations Convention to Combat Desertification is to combat land degradation and the effects of drought - two environmental issues that greatly effect Palau today.

During the regional meeting in Syria, national reports were presented by

each country. This allowed UNCCD Secretariat to conduct a review and preliminary analysis of progress made within the Asia-Pacific region towards the implementation of the Convention.

Palau and Fiji were the only PICs represented

from the Pacific sub-region. Both delegations pushed land degradation and drought as issues largely affecting the PICs.

The Global Mechanism has committed to assisting with the development of Palau's National Action Plan (NAP) by the end of 2003.

New Biosafety Coordinator at OERC

Dr. Debbie Marks recently joined the OERC as Palau's Biosafety Coordinator. Dr. Marks will work with relevant agencies to ensure that Palau is able to properly handle the importation of living modified organisms (LMOs). LMOs are genetically altered plants or animals that may have adverse impacts on the environment and human health.

develop effective management infrastructures to address the potential impacts of LMOs to Palau's natural environment.

The Biosafety Protocol is the first protocol under the United Nations Convention on Biological Diversity (UNCBD).

The Biosafety Protocol will assist Palau protect human health and the environment from the possible negative effects

of modern biotechnology products. LMOs include such organisms as certain aquacultured fish, soybean, rice, corn, tomatoes, papaya, among others.

Dr. Marks received her doctorate of veterinary medicine from the University of the Philippines. She is Palau's first resident veterinarian. Office hours for veterinary services will be arranged in February 2003.

Dr. Marks will be assisting appropriate agencies to

Smart Water Use in 2003:

1) Try to get all available storage, including rain water catchment, full before 2003.

2) Limit use of freshwater early so that stored water is available in very low rainfall times.

3) Expand guttering and water tank size wherever and whenever possible.

4) Build new water catchment systems now.

5) Be aware of dangers of untreated water. If you are unsure about water treatment, call EQPB at 488-1639/3600.

El Nino Update

Dr. Leroy F. Heitz and Dr. Mark Lander from the Water and Energy Research Institute in Guam were recently in Palau to give an update on the current El Nino event.



Rain in Palau is predicted to become scarce beginning in February 2003. E. Daniels

Palau has not yet begun to feel the affects of El Nino, but the scientists assured that rainfall will

be below average during early 2003.

Their predictions, based on a similar sized El Nino in 91-92, showed reduced precipitation from February to April 2003. If the current

situation is anything like

the 91/92 El Nino, Palau will experience about 25% of its average rainfall during February, 50% of average rainfall in March, and less than 25% of average during April of next year. By May, precipitation should be heading towards normal conditions.

What this means is that there will likely be water shortages between February to April 2003.

National Environmental Protection Council Proposes Environmental Priorities

The NEPC, was created by E.O. no. 205 in January 2002. President Tommy E. Remengesau created the NEPC with a mandate to provide coordinated planning for the Nation's response to environmental issues that effect Palau.

The action matrix identifies and prioritizes Palau's environmental concerns under five priority areas. The action matrix highlights the current status of each concern, funding required, remedial actions, and specifies lead agencies responsible for addressing each issue.



Waste management is highlighted as one of Palau's top environmental issues. E. Daniels

In its effort to fulfill its mandate, over the past eight months the NEPC has focused its efforts on developing an action matrix highlighting Palau's most pressing environmental issues.

Most of the environmental concerns that the NEPC addressed have medium to long term solutions.

The Action Matrix was

officially transmitted to the Office of the President on November 5, 2002 for President Remengesau's review and acceptance.

Palau Hosts Pre-3rd World Water Forum

Palau recently co-hosted the High Level Regional Pre-3rd World Water Forum with Saga University. The objective of the Forum was to create a regional political negotiating platform for the 3rd World Water Forum to be held in Kyoto, Japan in March, 2003.

Heads of State and high-ranking officials from 12 countries in the Asia-Pacific Region convened in Palau to review, discuss, and formulate views on alternative, renewable energy and water sources, suitable for PICs.

During the meeting, several important regional issues were discussed covering renewable

energy and desalination technology.

One of the alternative water desalination options discussed was Ocean Thermal Energy Conversion (OTEC), which is also a renewable energy source. OTEC is a way of converting deep water temperature gradients into clean energy.

The Palau Declaration 'FDE 2002,' will be taken to the 3rd World Water Forum for further negotiations. The



The Pre-3rd World Water Forum was attended by high level delegates from around the Asia-Pacific Region. E. Daniels

Declaration highlights the need for cooperation throughout the region on water management and energy efficiency.

Water and energy are some of the most important issues to the Pacific Island Countries, especially as climate change proceeds.

Invasive alien species are now identified as the greatest threat to biodiversity in the Pacific. Islands are more vulnerable to invasions and more likely to suffer catastrophic loss of biodiversity as a result of invasions, than continents.

CRRF Technical Reports now Available

The Coral Reef Research Foundation (CRRF) has recently begun publishing its research papers in technical reports. The technical Report series of the Coral Reef Research Foundation provides information prior to its publication in the peer-reviewed scientific literature.

Reports will be issued on a variety of reef-related subjects as information becomes available. The reports will also be available on the CRRF website:
www.coralreefresearchfoundation.org

Technical Report No. 1 is "Water Temperatures on the Palauan Reef Tract Year 2000," by Dr. Patrick L. Colin.



Almost 20 million *Mastigias papua* jellyfish inhabit Ongeim'l Tketau Lake. Their population size varies dramatically with periods of extremely low oxygen. Andrea Windsor

Dr. Colin's work in Palau has allowed the accurate measurement of sea surface temperatures (SST) at a number of sites within and outside the lagoon. Many ecological processes are dependent upon SST, I.e. coral spawning, coral bleaching, etc.

Technical Report No. 2 is "Marine Lake Monitoring Project: Biological and

Physical Properties of Three Marine Lakes in Palau 2001," by Laura E. Martin, Michael N. Dawson, and Lori J. B. Colin.

The monitoring of Palau's jellyfish lakes is an ongoing project run by CRRF. Marine lakes are relatively closed ecosystems and are therefore excellent field sites to monitor physical and biological parameters.

The researchers have noticed dramatic variations in the population sizes of *Mastigias papua* within the jellyfish lakes. Population size tends to drop when the lakes experience periods of low oxygen. Other physical parameters may also influence the population sizes of jellyfish in Palau's marines lakes.

NBSAP National Workshop November 25-27

Under the guidance of the United Nations Convention on Biological Diversity, and with the assistance of the United Nations Development Programme and the Global Environment Facility, the Republic is developing its National Biodiversity Strategy and Action Plan (NBSAP).



Palau hosts a wide variety of biological organisms, both marine and terrestrial. E. Daniels

The NBSAP Ad-Hoc Committee under the NEPC began developing Palau's NBSAP in January of this year. Various consultants are gathering information on Palau's biodiversity, resource-use, access and benefit sharing, and institutional, policy and legal frameworks relating to

biodiversity conservation in the country.

The 1st NBSAP National Workshop will be held on November 25-27, 2002. During the workshop, the national consultants will present their findings.

The goal of the workshop is to review and develop the priorities and objectives of the NBSAP.

To ensure stakeholder participation at all levels, the national workshop will be followed by a series of state workshops scheduled for early 2003.

The final NBSAP will be integrated into broader national plans for environment and sustainable development. This initiative is particularly important for sectors such as forestry, agriculture, fisheries, energy, transportation, tourism, and urban planning.

For more information on the workshop or the NBSAP, please contact Ms. Tarita Holm at 488-6950 ext. 250.

Palau's 1st National Communication to the UN Convention on Climate Change

With the assistance of UNDP and the GEF, Palau recently completed its 1st National Communication to the United Nations Framework Convention on Climate Change (UNFCCC).



A significant amount of land area will be lost over the next 100 years as sea level rise and storms continue to effect coastal areas. A. Kitalong

The Communication includes Palau's national greenhouse gas inventory for the years 1994-2000, greenhouse gas (GHG) mitigation options, and vulnerabilities and adaptation options to climate change.

The project was initiated in January 2001 to: 1) create public awareness regarding the causes of climate change and its impacts on Palau; 2) conduct a GHG inventory; and 3) execute a vulnerability and adaptation assessment to determine the effects of climate change on Palau, identify high areas of

vulnerability and develop a mitigation and adaptation framework to address projected climate change trends.

The end result makes it clear that Palau is a minor GHG emitter. However, this will not keep Palau from striving to be a showcase for the rest of the world by reducing impacts on the global

climate and related systems as much as possible.

Palau, along with several other islands in the Pacific Region, is currently looking at using renewable energy sources in the future as a way to mitigate global warming.

For more information, contact the OERC.

Palau's biological diversity is threatened by both changing climate and man's influence. Higher sea surface temperatures expected over the next century may effect marine and terrestrial species composition. Lower precipitation patterns will effect terrestrial ecosystems. Poor land use practices and deforestation will also greatly threaten local biodiversity.

Marine Environment News

Funded in part by the PADI Project AWARE Foundation, this section of the newsletter is dedicated to conservation and research activity in Palau.

Reef Valuation Bill

During the past months several ship groundings have occurred in Palau. There is currently no law that protects each State's coral reefs and other coastal resources from damages resulting from ship groundings, oil spills, or other anthropogenic sources of destruction.

To address this concern,

President Tommy E. Remengesau, Jr. introduced bill 6-170-6 in April 2002 to provide for the protection, restoration, and enhancement of coral reefs and marine resources in Palau.

The proposed bill places a dollar value on recreational reefs, conservation areas, highly valued marine habitat, and shipping channels. In essence, this bill will



Diver surveying a ship grounding near Ngemelis. E. Daniels

allow the National government to assist the States seek monetary damages to their marine resources.

Under the proposed bill, a trust fund from a percent of monetary damages

received will be established and used by the States for marine restoration, conservation, research, and other relevant marine related programs.

High islands such as Babeldaob contain a large number of reef zones and habitats. Palau's high number of habitats creates a large number of niches. Many niches allow high biological diversity. Biodiversity generates Palau's greatest source of income - eco-tourism.

PICRC Coral Spawning Research

Several Palau International Coral Reef Research Center (PICRC) researchers, Lolita Penland, David Idip, and Jim Kloulechad, along with several volunteers, spent seven nights every month since April 2002 documenting Palau's scleractinian (reef-building hard coral) reproductive cycles.

Over 300 species of scleractinian corals live in Palau's waters. However, their reproductive cycles have not proven easy to pin down. Unlike many other locations around the Pacific, such as Guam or Australia, Palau's corals do not all spawn on only one night of the year.

The limited data collected so far seems to indicate that corals in Palau spawn over several evenings, generally after full moons in April and September, coinciding with rising sea surface temperatures.

To date, the largest



Montipora sp. of scleractinian coral releasing egg and sperm bundles on the evening of September 23, 2002, Malakal Harbor. E. Daniels

spawning event witnessed during 2002 was three nights after the full moon in April. Twelve scleractinian species spawned between 7:30-9:00 pm.

Limited amounts of spawning have been observed between May and September 2002, when several species of *Montipora* corals released millions of egg and sperm bundles. Both large spawning events were captured with still pictures by OERC's Science Coordinator, Ethan Daniels. Coral spawning activities at PICRC will resume in February 2003 when

researchers will continue to document the annual cycle of spawning found in Palau.

Coral spawning is important because it allows Palau's reefs to regenerate. This is now especially important as climate change and warmer sea temperatures become more persistent.

Once scleractinian coral eggs have been fertilized they metamorphose into planula larvae. The larvae eventually settle on a particular substrate where the brand new coral begins the process of calcification or building its calcium carbonate skeleton.

Other stresses that may negatively affect coral spawning may include increased nutrient levels, temperature, UV depletion, and the density of predators, like the coral-eating snail, *Drupella*.

PICRC Sediment at ion Study in Air ai Bay

Two PICRC researchers, Yimnang Golbuu and Steven Victor, are collaborating with scientists from the Australian Institute of Marine Science and the University of Guam in a study of sediment in Airai Bay.



Fungia sp. lying in a seagrass bed on the east coast of Babeldaob. Seagrasses, as well as corals, are susceptible to sediment runoff. E. Daniels

Airai Bay is a small, semi-enclosed, mangrove-fringed lagoon that drains the Ngerikiil River catchment area. Most soils of Babeldaob are highly erodible.

This area receives a high amount of rainfall and when it rains, a sediment plume is carried into the Bay. Nearly 98% of the riverine fine sediment settles there. The mud remains trapped in the Bay because it is

protected from ocean swell, strong tidal currents, and wind-generated waves.

The result of the sediment being trapped is the smothering of coral reefs in the Airai area. As of

2002, the nearby reef was covered with an algae mat, unsuited for corals and associated marine life. Local leaders from Airai have stated that the artisinal fisheries in the area have collapsed, and this has generated socio-economic problems.

Soil erosion and the sediment load that is being produced every heavy rainfall seems to be a result of land clearing for development and poor land use/agricultural practices.

If a suitable management plan is developed for Ngerikiil River catchment and Airai Bay, it may be used as a best practices model for the rest of Babeldaob.

Study of Dugong Feeding Grounds

Palau is home to the most isolated population of dugong, *Dugon dugon*, in the world. It is possible that the population is genetically distinct from other populations since Palau is such an isolated archipelago.

Genetic differences between populations within the same species are the result of isolation and lack of mixing genes. If populations of the same species are isolated from one another for long enough allopatric speciation, or the evolution of a new species as the result of geographic isolation, may result.

Tissue from several local dugongs has recently been sent to Australia for genetic comparisons with other populations.

A new bill has just been passed by Palau's national congress that completely protects the existing dugong population, which has been in decline over the past 50 years according to aerial surveys.

Community Centered Conservation (C3), a recently established local NGO, is now beginning to map seagrass beds utilized by dugongs in the Malakal Harbor area.

This study should provide a better understanding of dugong feeding behavior, dietary preferences, and diurnal/nocturnal migrations. The more information gathered about Palau's dugongs the better they and their critical habitats may be conserved. An aerial survey of the dugong

population, sponsored by the Nature Conservancy and funded by the U.S. Fish and Wildlife Service, will occur during the early part of 2003.



Starfish, *Protoreaster nodosus*, lying in seagrass bed at low tide. Areas, such as this, may provide feeding habitat for Dugongs at high tide. E. Daniels

Seagrass beds are most extensive in the protected waters of the lagoon, but they also grow on the shoreward side of fringing reefs and barrier reef flats. The major botanical components of Palau's seagrass beds are Enhalus acoroides, Thalassia hermprichii, and Cymodocea rotundata. Seven other species of seagrass are also found in Palau.



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PADI Coastal Clean-up

Over 9,000 pounds of trash was collected on September 21 by more than 100 local volunteers. Car and marine batteries, tires, fishing nets, rope, metal, plastics, bottles, cans, and even a credit card were gleaned from the water and coasts around Palau.

The cleanup was done in conjunction with the Professional Association

of Diving Instructors (PADI) Project AWARE Foundation and the Center for Marine Conservation's International Cleanup Day.

PADI's Project AWARE is designed to educate the public about the need to protect marine environments.

Since 1986 more than 200 countries have

participated in the international cleanup effort.

Twenty-two agencies, private sector companies, and NGOs came together and provided boats, fuel, dive tanks, trash bags, food, drinks, and manpower for the cleanup.

Many thanks to everyone that came out and helped clean-up Palau.

The Office of Environmental Response and Coordination (OERC) was established in January 2001 by President Tommy E. Remengesau, Jr. through Executive Order 189. The purpose of the OERC is to assist in the coordinated planning for Palau's response to issues regarding climate change, biodiversity, desertification, ozone depletion, and other internationally identified and funded environmental initiatives.

The OERC is mandated to fulfill the Republic's obligations as a Party to the United Nations conventions on climate change, biological diversity, desertification, ozone depletion, and each Conventions respective protocols.

Calendar of Events (September to December 2002)

NATIONAL

Olechotel Belau Fair	Koror	October 23-25
2nd Annual Invasive Weed Clean-up	Koror	November 2 only
Palau Wetlands Management Workshop (RAMSAR)	Koror	November 4-8
National Biodiversity Strategies and Action Plan Workshop	Airai	November 25-27

REGIONAL

Training Workshop for PICs on Global Change Negotiations	Fiji	September 23-27
Palau Pre 3rd World Water Forum	Palau	October 15-17
Austral-Pacific Regional Workshop on Invasive Alien Species	Hawaii	October 15-18
International Waters Programme Coordinators Meeting	W. Samoa	Oct 28-Nov8
Pacific Sub-regional Workshop on the Stockholm Convention (POPS)	Pohnpei	November 18-22
Small Islands Voice Inter-Regional Workshop	Palau	November 18-22
Workshop on Post-Doha Issues on Trade and Environment	Fiji	November 26-29

INTERNATIONAL

The Nature Conservancy Annual Meeting	Minnesota	October 1-3
RIIA Workshop on International Biosafety	England	October 7-8
Global Environment Facility (GEF) Council Meeting	China	October 14-18
UN Framework Convention on Climate Change Annual CoP 8	India	Oct 23-Nov1
12th Meeting of the Conference of the Parties to CITES	Chile	November 3-15
Liason Group Meeting on Capacity Building for Biosafety	Canada	November 4-5
Committee on the Review of Implementation of the UNCCD	Italy	November 11-18
The 8th Conference of the Parties to the RAMSAR Convention	Spain	November 18-26
14th MOP and 6th COP on Substances that Deplete the Ozone Layer	Italy	November 25-29
Workshop on Capacity Building on Access and Benefit-Sharing	Canada	November 26-28
Expert Meeting on Methods and Guidelines for the Rapid Assessment of Biodiversity of Inland Water Ecosystems	Canada	December 2-4
Workshop on Liability and Redress in the Cartagena Protocol (Biosafety)	Italy	December 2-4