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President Signs Partnership Agreement with EU

On June 10, 2002, President Tommy E. Remengesau, Jr. and the head of the European Commission delegation to Palau signed the 'Country Strategy Paper and National Indicative Programme' setting the framework for projects and programs to be funded by the European Union. This initial funding opportunity will commence once the final program documentation is complete. Programs and activities for this phase must be developed with a projected 2007 completion date.

The European Commission was represented by Mr. Enrico Strampelli, First Secretary, Delegation of the European Commission for the Pacific, based in Fiji and Ms. Tine Schmale, Desk Officer, European Commission, Development Directorate-General, whose office is located in Brussels.

A base amount of \$2 million Euros is available to the Republic under the Indicative Programme. An additional \$0.6 million Euros is also available for unforeseen needs, such as emergency assistance.

Both funding opportunities are available under the 9th European Development Fund (EDF). The Republic, in agreement with the European Commission, has identified renewable energy as the focal area in which the funding will be expanded over this first funding period.

The Indicative Programme was developed as a result of the signing of the Cotonou

Agreement by the member countries of the African, Caribbean, and Pacific Group of States (ACP) and the European Union (EU).

This agreement extended political and financial relations between Europe and island nations throughout the world. From the Western Pacific, the Marshall Islands and the Federated



President Tommy E. Remengesau, Jr. and Mr. Enrico Strampelli, First Secretary, Delegation of the European Commission for the Pacific, signing the 'Country Strategy Paper and National Indicative Programme' setting the partnership agreement for technical and financial support from the European Union.

States of Micronesia are included in the Cotonou Agreement along with Palau. Representatives of the European Commission and representatives of the National Government are working to finalize a 'Financing Agreement' that establishes the procedures for accessing funds under the 9th EDF.

After affirmation of this agreement by the EU, implementation of the first funding program under the Indicative Programme can begin. Approval of the financing agreement is anticipated in December 2003.

No More Shark Finning!

On May 7, 2003, the Division of Marine Law Enforcement burned a large pile of thawed shark fins.

Hundreds of caudal, pectoral, dorsal, and even small anal fins were evident amongst the heap. Most of the fins were fairly small, over 90% coming from young Silky sharks (*Carcharhinus falciformis*), though a few Oceanic thresher fins were obvious, and at least one species of Carcharhinid was also amongst the carnage. The fins were confiscated from a foreign fishing vessel that had been illegally fishing in Palau waters within site of Angaur, the southern most island within the main archipelago.

The ship's cargo consisted of thousands of pounds of yellowfin tuna, billfish, and sharks. Illegal fishing is a significant problem for the Republic due to the immense size of its' exclusive economic zone (EEZ) and limited enforcement capabilities.

Although the vessel's cargo was seized and the owners fined because they were unlicensed, it is not illegal for licensed ships to fin sharks in Palau's waters. However, President Remengesau submitted a bill to the Olbiil Era Kelulau (National Senate) in December 2001 to make the practice of shark finning in Palau waters and to be in possession of shark fins illegal. The legislation is currently pending in the Olbiil Era Kelulau.

Due to prime market prices for



Members of Palau's Police Academy viewing the carnage. E. Daniels

shark fins in Asia, more and more fishermen are targeting sharks, rather than tuna or billfish. Shark fins are now amongst the world's most expensive fishery products. Unfortunately, the trade in shark fins,

cartilage, liver oil, and skin has only grown stronger over the past decade as demand has risen and sharks have become scarce. Absolutely no benefits, culturally or otherwise, are derived by Palauan communities from this inhumane practice.

The full implications of continuous abuse of apex predator populations in Palauan waters are unknown, though the ecological outlook is not good. First, sharks play a vital ecological role in the sea.

They are an apex predator, much like the lion, tiger, or wolf that groom their prey's populations of genetically inferior and/or diseased individuals. Sharks actually help commercial fisheries in keeping the tuna and billfish populations fit and healthy. Overfishing sharks may cause serious long-term consequences to the world's

pelagic fisheries. Sharks are slow growing to maturity, have long gestation periods and bear few young. Therefore, overfishing of a particular population can happen quickly. Palau's economy is based on its eco-tourism industry which heavily markets sharks as a major attraction. About 60,000 divers come to Palau on an annual basis to enjoy some of the best diving in the world. One of the major thrills for divers is to be close to reef sharks, which occurs on just about every dive. If Palau's shark populations significantly diminish, divers are likely to spend their hard-earned dollars in other eco-destinations.

President Tommy E. Remengesau, Jr. and Minister of Justice Michael Rosenthal were present as over a hundred people from various government agencies, NGOs, and the media milled around the confiscated fins. The crowd gathered around the fins as President Remengesau dipped a lit torch into the stack and



Confiscated shark fins being burnt. E. Daniels

hundreds of shark fins went ablaze as smoke billowed towards the blue sky. This was a solemn event, as hundreds of major marine predators were cremated in the hopes that greater public awareness over the plight of sharks would come of the episode.

Through the proposed legislation and support for the confiscation of the shark fins, President Remengesau is sending a clear message to the nation and the world that Palau will not stand for such waste of its natural resources.

Shark fins may sell in Hong Kong, the world's main importer, for anywhere from US\$40 to \$564 per kilogram depending on the type of fin sold and a bowl of shark fin soup may cost upwards of US\$120.

The absurdity of the trade is due to the fact that shark fins contain no nutritional value whatsoever. They consist of ceratotruchia, soft collagen and elastin fibers. Once boiled, they resemble limp rice noodles and have virtually no taste.

President Pushes for Integrated Solid Waste Management

According to the June 1999 Golder's & Associates interim report, 'Integrated Solid Waste Management Plan,' "The total mass of Solid Waste generated in Palau is estimated to be 17.8 tones (40,800 lbs) per day which equates to an annual total of 6, 500 tones. By 2025, it is estimated that the annual waste generation will be 12,250 tones annually.

To address Palau's growing solid waste concerns, President Tommy E. Remengesau Jr., on May 06, 2003 signed Presidential Directive no. 03 – 003 that established a National Taskforce to facilitate an integrated approach to Solid Waste Management in Palau.

The Taskforce's duties are to: 1) review the status of efforts made to initiate a comprehensive Solid Waste Management Program, including a listing of all grants related to such efforts; 2) in partnership with appropriate stakeholders from Guam, the

Commonwealth of Northern Mariana Islands, and the State of Yap within the Federated States of Micronesia, review solid waste concerns from a regional perspective and develop recommendations regarding potential synergies for regional actions to minimize solid waste within the respective countries; and 3) review and provide recommendations on proposed solid waste management proposals and coordinate the development of a Request of Proposals for management and other services, as appropriate.

In light of Palau's activities in this area, the Chief Executives of Western Micronesia elected Palau as the "Focal State" for Solid Waste Issues and Development for the region during the First Western Micronesia Chief Executive Summit in Palau.



National Landfill in need of more effective management controls. E. Daniels

National Task Force Committee members include Tiger Gillham, EQPB Executive Officer, Rick Mangham, Manager, MRD-CIP, Masingage Arurang, Director, Bureau of Public Works, Casmir Remengesau, Chairman, NEPC, Joe Aitaro, OERC/IWP National Coordinator, Kione Ischeal, Special Assistant, Palau Compact Road, and Larry Goddard, Senior Legal Counsel to the Office of the President. Tiger Gillham was unanimously elected as the chairman of the National Task Force.

International Waters Programme Update

Palau's International Waters Programme (IWP) is entering its second phase: Community Selection and Profiling. This phase will review potential locations for two community-based pilot projects dealing with solid waste management.

An Expression of Interest was announced for interested States and communities to submit proposed projects that may be supported by the IWP.

As a result of the announcement, five community groups in the States of Ngarchelong and Airai, as well as the hamlets of Madalaii, Meketii, and Iyebukl in Koror State submitted potential solid waste project proposals. The

selection of the potential IWP supported sites is tentatively scheduled for the end of July 2003.

Once the two project sites are selected, the members of the National Taskforce and Joe Aitaro, IWP Coordinator, will work with the respective community stakeholders to collect data for the Community Profile portion of Phase II.

In preparation to conduct the Community Profiling work, Mr. Joe Aitaro, IWP Coordinator, Ms. Rose Mary Keip, Sanitarian III, Division of Environmental Health and the IWP National Taskforce, and Mr. Joe Chilton, Palau Community College Instructor, are

participating in a capacity building workshop in Yap State, Federated States of Micronesia. The two week workshop, called "Train the Trainer," is sponsored by SPREP-IWP and is intended to provide focused training on the data collection and management requirements of the IWP.

Upon their return from Yap, the participants will assist in the collection and analysis of baseline socioeconomic information within the respective project sites, assist the selected communities develop strategic actions plans that provide solutions to identified issues of concern, and train community members in facilitating this process further.

Decomposition is when things break down into their most basic pieces. If these items were thrown by the side of the road, this is the order in which they would break down.

~ a banana peel - 2-5 weeks

~ a newspaper - less than 1 year

~ an aluminum can - 200-500 years

~ a glass jar - 1,000,000 years

~ a common petroleum (oil) based plastic bottle - never

In today's modern landfills, many materials do not have enough water or sunlight to decompose properly, if at all.

NEPC Economic Valuation & EPPA Update

The National Environmental Protection Council (NEPC) continues to meet on a monthly basis to ensure a more coordinated approach to environmental management. Of recent note, the NEPC, in partnership with the World Bank, is spearheading an economic valuation exercise in an effort to place dollar values on Palau's natural resources.



Ms. Bettencourt, WB Sr. Natural Resource Economist, and Dr. Ceasar, WB Economic Consultant, developing Palau's economic valuation process with various stakeholders.

Thanks to the dedicated efforts of the Palau International Coral Reef Center (PICRC) and the Bureau of Budget and Planning, the data collection phase of the valuation process is near completion and will culminate in a two-day workshop where the findings are compiled and analyzed.

The economic valuation is designed using internationally accepted standards as a useful

took for policy makers when making resource management decisions. It is impossible to put an accurate dollar value on cultural or aesthetic values so the outcomes of this exercise will focus only on the various food and economic use values of the particular resource.

The council is also continuing to refine its' Environmental

Priorities Plan of Action (EPPA), which addresses high priority environmental issues that the Republic is facing, both short and long term. The EPPA has been incorporated into President Remengesau's Management Action Plan (MAP). The MAP focuses on streamlining national government programs through more effective management of programs and by strengthening the

private sector through incorporating sustainable development activities into national development planning, among others.

The NEPC and the EPPA has already been cited by regional and international donors and agencies as an effective and progressive approach to sustainable development planning.

What are Mother Nature's life-support services worth?

In on sense, their value is infinite.

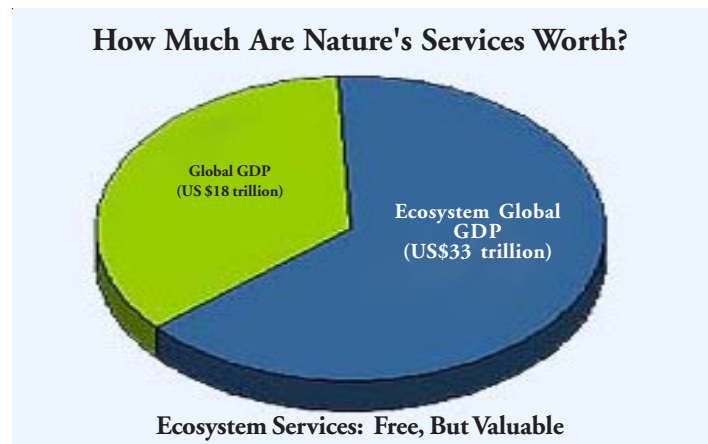
The Earth's economies would soon collapse without fertile soil, fresh water, breathable air, and an amenable climate.

But 'infinite' too often translates to 'zero' in the equation that guide land use and policy decisions.

Valuing Ecosystem Services

Ecological economists believe more concrete numbers are required to help nations avoid unsustainable economic choices that degrade both their natural resources and the vital services that healthy natural ecosystems generate. In one of the first efforts to calculate a global number, a multi-country team of researchers has put an average price tag of US\$33 trillion a year on these fundamental ecosystem services, which are largely taken for granted because they are free. That is nearly twice the value of the global gross national product (GNP) of US\$18 trillion.

Even those involved in the study admit their number is a first approximation, but they consider it an essential starting point for further analysis and debate that will help nations overhaul their economic and



environmental decisionmaking. However, not everyone agrees with this approach. Some critics believe that assigning prices to ecosystem services is fundamentally flawed since these services can never be traded in open commerce, which is how prices of conventional goods and services are determined. Others believe that, even if such prices

can be reasonably calculated, they cannot reflect the full importance to the world economy. In fact, the study team readily acknowledged that their are moral, ethical, and aesthetic reasons to value and protect nature apart from its benefits to humanity. But the reality is that human societies put price tags on nature every

day. Every land use decision involves implicit assumptions about value, even when no dollar figure is assigned.

The problem is that the value of services provided by the Earth's ecological infrastructure does not fit into current economic equations, partly because most of the benefits fall outside the marketplace. Such services are public goods that contribute immeasurably to human welfare without ever being drawn into the money economy. For example, the cycling of essential nutrients like nitrogen and phosphorus, which is not reflected in any nation's GNP, accounts for US\$17 trillion of the US\$33 trillion in annual ecosystem services, according to the study team's estimate.

Indeed, economic indicators such as GNP are increasingly recognized as flawed measures of both economic progress and sustainability, because they do not explicitly account for the degradation in ecological services that industry and commerce cause. For example, valuing forests only for the marketable timber they produce, ignores the many indirect costs that society bears when forests are logged: soil erosion, nutrient loss, increased flooding, declines in fisheries and water quality, reduced carbon storage capacity, changes in regional temperature and rainfall, and diminished wildlife habitat and recreational opportunities.

There have been many attempts in the past few decades to estimate the value of various separate ecological services. The US\$33 trillion calculation is a synthesis of results from more

than 100 published studies using a variety of different valuation methods. In synthesizing these results, the research team looked at the value of 17 categories of services such as waste treatment, pollination, climate regulation, food production, and recreation in each of 16 types of ecosystems, from coastal estuaries to tropical forests, rangelands, lakes, and deserts. They calculated an average dollar value per hectare for each type of service in each ecosystem, then multiplied that dollar value by the total area each ecosystem type occupies on the globe.

ECOSYSTEM SERVICES	VALUE (trillion US\$)
Soil formation	17.1
Recreation	3
Nutrient cycling	2.3
Water regulation and supply	2.3
Climate regulation (temperature & precipitation)	1.8
Habitat	1.4
Flood and storm protection	1.1
Food and raw materials production	0.8
Genetic resources	0.8
Atmospheric gas balance	0.7
Pollination	0.4
All other services	1.6
TOTAL Value of Ecosystem Services	33.3
Source: Adapted from R. Constanza <i>et al.</i> , "The Value of the World's Ecosystem Services and Natural Capital," <i>Nature</i> , Vol. 387 (1997), p. 256, Table 2.	

This exercise has clearly highlighted areas where much more work is needed. For some types of ecosystems, such as deserts, tundra, and cropland, so little is known that the valuation columns under nearly every ecological service remains blank. That is one reason the study team considers the US\$33 trillion a minimum value; it will likely increase as more ecological services are studied and the complex interactions among ecological processes are better understood. Values are also

likely to increase as these services become more degraded and scarce in the future.

Whatever the eventual number, ecological economists consider the global dollar figure itself less important to policy than to the potential application of this valuation concept to local and regional land use decisions. In fact, in a growing number of cases around the world, the benefits of proposed projects are being weighed against the social costs of lost ecosystems services.

In some parts of the US, attention is now focused on the benefits of protecting natural watersheds to assure safe and plentiful drinking water supplies, rather than on building expensive filtration plants to purify water from degraded watersheds. New York City found it could avoid spending US\$6-8 billion in constructing new water treatment plants by protecting the upstate watershed that has traditionally accomplished these purification services for free. Based on the economic assessment, the city invested US\$1.5

billion in buying land around its reservoirs and instituting other protective measures, actions that will not only keep its water pure at a bargain price, but also enhance recreation, wildlife habitat, and other ecological benefits.

Although ecological valuations are still rare, further development of the concept promises to provide a powerful tool for protection and sustainable use of natural ecosystems and the vital services they provide.

The industrial revolution, rapid economic development, and population growth, have brought about transformations of ecosystems and biodiversity loss on an unprecedented scale.

There is an increasing concern for maintenance of the richness of biodiversity and reducing the risks many species face so that the goods and services they deliver will be maintained as well.

Palau - 50th Country to Ratify the Biosafety Protocol

The growing use of biotechnology and its potential impacts on Palau's people and natural habitats spurred President Tommy E.

Remengesau, Jr. initiated the Republic's ratification of the Cartagena Protocol on Biosafety in May of 2001. Although the Cartagena Protocol was successfully negotiated, it required fifty member countries of the Convention on Biological Diversity to ratify the Protocol for the Protocol to enter into force.

Official notification to the United Nations of Palau's ratification on June 13, 2003 triggered the countdown to the entry into force of the Cartagena Protocol on Biosafety, the first legally binding international agreement governing the movement of

living modified organisms across national borders. It will take effect on 11 September 2003, ninety days from today.

The Protocol, adopted by the members of government of the Convention on Biological Diversity (CBD) on 29 January 2000 after more than five years of negotiation, aims at ensuring adequate safety in the transboundary movement and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on the biological diversity and human health.

Welcoming the imminent entry into force of the Protocol, CBD Executive Secretary Hamdallah Zedan said that it is a vital tool for sustainable development and

the safeguarding of biodiversity. "This treaty will enable countries to derive maximum benefit from biotechnology while ensuring adequate safety measures for the environment, also taking into account human health", he said. The Cartagena Protocol will ensure that the development and use of biotechnology are subject to adequate and transparent safety measures, known collectively as biosafety.

To date, Palau has ratified the Biosafety Protocol triggering entry into force and has received US\$180K from UNEP/GEF to develop its National Biosafety Framework that will provide Palau with an institutional framework for addressing environmental impacts of bio-engineered products that cross our borders.

Around the world today, something like 35 million hectares - an area roughly one and a half times the size of Britain - is producing commercial crops of genetically modified (GM) plants.

The crops range across soya, maize, oilseed rape, potatoes, cotton and tobacco, and are mostly growing in the USA, Canada, and China.

Genetic Engineering: The Secret Ingredient

Chances are you have already eaten genetically modified organisms (GMOs). Without warning or notice, you have been included in a potentially dangerous experiment on our food. Thousands of products on the shelves of your local supermarket contain GMOs - foods from crops that have not evolved in any natural environment but are coming from the laboratories of high-tech industries, from crops that have never been part of the human diet.

Look at the ingredient list on any packaged food in your kitchen. You are certain to find ingredients made from corn, soy, canola, or cottonseed. These ingredients commonly come from plants that have been genetically altered and are being grown on millions of acres in the U.S. Soy derivatives like lecithin alone are found in 60 to 70 percent of all



processed food. Yet you won't find "genetically modified" on the label of any products containing genetically altered ingredients. The food industry doesn't want you to know that it has embarked on an experiment unique in human history - an experiment that doctors and scientists around the world are warning may not be safe. Consumers have a right to know whether the food they eat has been genetically modified. We should all have the ability to avoid eating genetically modified food.

In 1992, the U.S. Food and Drug Administration decided that genetically modified foods could be marketed with no requirement for long-term safety testing or labeling, and with no formal pre-marketing approval required as is standard for any food additive. But documents from a 1998 lawsuit against the FDA

show that even within the FDA, scientists warned that genetically modified foods could have adverse health effects. Unlike traditional crop or animal breeding, genetic engineering enables scientists to cross genes from bacteria, viruses, and even humans into plants and animals. Strawberries and flounder could never breed, but with genetic modification, genes from fish have been inserted into strawberries and other common foods. While there has been no long-term study of the impacts these crops might have in the environment and human health, scientists are already finding signs of trouble: 1) biological pollution, 2) increased chemical use, 3) superweeds, 4) transference of allergens, and 4) antibiotic resistance.

In short, genetically modified foods offer no benefits to consumers. But it is consumers - including children and families - who bear the risks.

National Biosafety Framework Update

In its effort to fulfill Palau's obligations as a Party to the Cartagena Protocol on Biosafety under the Convention on Biological Diversity, the Office of Environmental Response and Coordination (OERC) will be

starting a nationwide program to increase public awareness and education regarding the potential environment and health impacts of biosafety and living modified (genetically) organisms (LMOs).

Stakeholder meetings will be held to initiate the development of the Biosafety Framework and to develop awareness-raising activities taking into account currently active programs dealing with environmental health and impacts of certain imported goods.

An informative booklet on LMOs is currently being developed and will be disseminated at the various stakeholder meetings.

The meetings will also facilitate an exchange of ideas and concerns that the general public may have regarding the importation and safe use of any living modified organisms (LMOs) into the Republic of Palau.

Plants, animals or organisms which have had the sequence of their genes changed are called



"Is your food contaminated with LMOs?"

genetically modified plants or animals (GMO's) or living modified organisms (LMO's).

LMOs are organisms whose genetic material has been altered through modern biotechnology, that possesses a novel combination of genetic material and which are **capable of propagation**.

They may include a wide range of plants such as corn, tomatoes, papayas, cassava, soybean, squash, rice, potato, animals such as fish. Non-living products derived from LMOs such as timber, processed food products and food additives, are not considered LMOs as they cannot replicate.

Biosafety is a term used to describe efforts to reduce and eliminate the potential risks resulting from biotechnology.

The Protocol was developed because the Convention and its Parties recognized that biological diversity must be protected

and respected as the global heritage of humankind and LMOs may have an adverse affects to the environment and

human health. Understand the ever increasing use of LMO's, the Convention developed its first Protocol, the Biosafety Protocol to address the transboundary movements of this relatively unregulated technology.

The Republic of Palau is addressing the risks of genetic engineering with the development of national regulations that support the Cartagena Biosafety Protocol. It is essential that the general public be sufficiently informed in regard to LMOs as consumers



Papaya (*Carica papaya* L.) is grown commercially in over 48 countries. Papaya lines 55-1 and 63-1 were developed using recombinant DNA to resist infection by papaya ringspot potyvirus.

and environmental organizations are concerned about the serious implications such transfers could have on their health, safety and physical environment.

For further information regarding the stakeholder meetings or public awareness materials, please contact Dr. Debbie Marks at the OERC, 488-6950 ext. 240 or 250.



Scientists conducting research on LMOs and their potential applications.

Within the past ten years, geneticists have discovered that the genetic material—DNA or RNA—not only persists long after the organism is killed, but is capable of being taken up and incorporated into unrelated organisms. This possibility of horizontal gene transfer puts a whole new complexion on risk assessment and risk management.

Releases of LMOs to the environment consist of all uses that occur outside a physical facility.

Released LMOs and transgenic DNA cannot be controlled nor recalled, which is why great care must be taken in advance of LMO release.

Fish account for roughly one fifth of all animal protein in the human diet, and around 1 billion people rely on fish as their primary protein source.

Production of fish products is far greater than global production of poultry, beef, or pork.

35% of the most important commercial fish stocks show a pattern of declining yields and require immediate action to halt overharvesting.

Another 25% show steady yields but are being fished at their biological limit and are vulnerable to declines if fishing levels increase.

The harvest of overexploited fish stocks has dropped 40% in only nine years, from 14 million metric tons in 1985 to 8 million metric tons in 1994.

World Fisheries Under Pressure

World fisheries face a grim forecast. Forty-five years of increasing fishing pressure have left many major fish stocks depleted or in decline.

Despite the increasing attention of policymakers and industry representatives, progress toward better management of fish harvests have been slow, and the government policies and market forces behind the trend toward global overfishing remain largely in place.

Overfishing was recognized as an international problem as far back as the early 1900's. However, prior to the 1950's, the problem was confined to relatively few regions such as the North Atlantic, the North Pacific, and the Mediterranean Sea. The exploitation of global fish stocks has progressed across the oceans as each region in turn reaches its maximum productivity and then begins to decline.

60% of the world's important fish stocks are "in urgent need of management" to rehabilitate them or keep them from being overfished, according to the Food and Agriculture Organization of the United Nations (FAO).

Fish are an important element of the human food supply, and fishing is an important factor in global employment. Current harvest trends and fishery conditions put both of these at risk. Currently some 80 million metric tons of fish are available each year for direct human consumption. FAO expects demand to increase to 110 to 120 million metric tons in 2010 as world population grows. By

FAO's estimate, such demand could be satisfied only under the most optimistic scenario, with aquaculture production doubling and overfishing brought under control so that ocean fish stocks can recover.



60% of the world's important fish stocks are in urgent need of management to rehabilitate them or keep them from being overfished.

However, it is more likely that aquaculture growth will be moderate and that the ocean catch will plateau at current levels or decline, leaving a substantial gap between supply and demand and also raising fish prices.

Any shortfall in fish supplies is likely to affect developing nations more than developed nations. As demand and fish prices rise, exports of fish products from developing nations will tend to rise as well, leaving fewer fish for local consumption and putting fish protein increasingly out of reach for low-income families.

Employment within the fisheries sector is also likely to change profoundly, especially for small-scale fishers who fish for the local market or for subsistence. Already, these fishers, who number some 10 million worldwide, have been losing ground over the past two decades as competition from commercial vessels has grown.

Substantial potential exists for increasing the ocean fish harvest

with better management of fish stocks, although sound management is neither easy nor obvious.

FAO estimates that marine catches could rise some 9 million metric tons if fishing pressure were reduced overall and juvenile fish were allowed to live longer before being caught. Experience in Cyprus and the Philippines shows that substantial increases in catch from better management can sometimes appear in as little as 18 months in tropical waters. Such quick improvements are unlikely in colder waters, however.

The urgency of the current fisheries decline has begun to galvanize both governments and the private sector, at least in the developed world. Such nations as the United States, Canada, and the members of the European Union have recently adopted tougher fishing controls and have started to shrink the size of their fishing fleets. Also, Unilever, a major fish processor and marketer in Europe and North America, has pledged to purchase fish only from sustainably managed fish stocks by 2005.

To develop criteria for what "sustainably managed" means, Unilever has joined with the World Wide Fund for Nature to form the Marine Stewardship Council, which will establish industry-wide principles for sustainable fishing and also set standards for individual fish stocks. Fish harvested according to the Council's standards will be eligible for certification, or eco-labeling, which may increase its consumer appeal and provide a market incentive for producers to adopt the Council's recommended fishing practices.

PCC-CRE Attends Expert Meeting on Biological Diversity

The Executive Secretary of the Convention on Biological Diversity convened an Expert Meeting on Indicators of Biological Diversity to begin developing a framework for biodiversity monitoring in Party countries. The meeting of experts focused on furthering the development of principles for national-level biodiversity monitoring, finalizing standard questions to be included in national-level biodiversity indicators, and the development of a list of available and potential indicators based on the conceptual framework.

Ms. Portia Franz from the Palau Community College -

Cooperative Research and Extension (PCC-CRE) attended the three-day meeting which took place in Canada from February 10-12, 2003.

Several participants shared their experiences in utilizing available approaches, processes, tools, and policies to develop indicators and monitoring programs in their respective countries.

A major outcome of the meeting was the decision to distinguish principles relating to biological indicators separately from those of monitoring. Additionally, the group acknowledged the diversity of political and ecological environments that

make it impractical to develop universal indicators that are applicable to all countries.

In accordance, the group decided to develop a template to categorize the indicator list of inland water biological diversity and a schematic procedure for the Biodiversity Assessment Implementation that can be adopted for use in other ecosystem types.

Further work and peer reviews must be accomplished prior to the outcomes being presented at the Conference of the Parties to the Convention on Biological Diversity to take place in March 2004.

Inland water systems can be fresh or saline within continental and island boundaries. They include lakes, rivers, ponds, streams, ground-water, springs, cave waters, floodplains, as well as bogs, marshes and swamps, which are traditionally grouped as inland wetlands.

Biodiversity of inland waters is a source of food, income and livelihood. Other values of these ecosystems include: water supply, energy production, transport, recreation and tourism, maintenance of the hydrological balance, retention of sediments and nutrients, and provision of habitats for various fauna and flora.

OERC Team Attends Capacity Building Workshops

Ms. Tarita Holm, former National Biodiversity Coordinator, along with Mrs. Emeraech Sadang-Asanuma, Administrative Coordinator, attended two back-to-back capacity building workshops in Apia, Samoa in April 2003.

The first workshop, "Strengthen the Capacity of Pacific Island Countries to Negotiate and Implement the International Biodiversity, Biosafety and Climate Change Instruments," dealt with the political dynamics of negotiating under the respective international agreements.

The exercises were conducted in a 'real' international setting. All participating delegations were assigned countries, not their own, to represent during the mock negotiations. The topics of the mock negotiations were issues relevant to the respective international agreements.

The second workshop, "Climate Change Adaptation Logical Framework Analysis"

was hosted by SPREP/UNDP-GEF from 1-3 May 2003.

The workshop reviewed the Pacific Islands Climate Change Adaptation Programme (PICCAP) and the potential for a PICCAP phase II.

During the terminal review of the meeting of the PICCAP several years ago, the participating countries, of which Palau was not one, requested SPREP and UNDP-GEF to conduct a Log Frame Analysis Workshop that would enable the participating countries to generate a collective plan for designing a Pacific-wide climate change adaptation program as a



Participants of the 'Strengthen the Capacity of Pacific Island Countries to Negotiate and Implement MEAs' workshop.

second phase for PICCAP.

The workshop was designed in response to the PICCAP review request. The delegates of this workshop developed a sample framework for a potential UNDP/GEF Pacific project proposal.

The sample proposal was to be presented by the UNDP during the Second High Level Meeting in Nadi, Fiji that took place from May 8 to 9 2003.

Leptospirosis is a bacterial disease that affects humans and animals. It is caused by bacteria of the genus Leptospira. In humans it causes a wide range of symptoms, and some infected person may have no symptoms at all.

Symptoms of leptospirosis include high fever, severe headaches, chills, muscle aches, and vomiting, and may include jaundice (yellow skin and eyes), red eyes, abdominal pain, diarrhea, or a rash.

Outbreaks of leptospirosis are usually caused by exposure to water contaminated with the urine of infected animals.

Leptospira organisms have been found in cattle, pigs, horses, dogs, rodents, and wild animals.

Leptospirosis - A Worldwide Zoonotic Infection

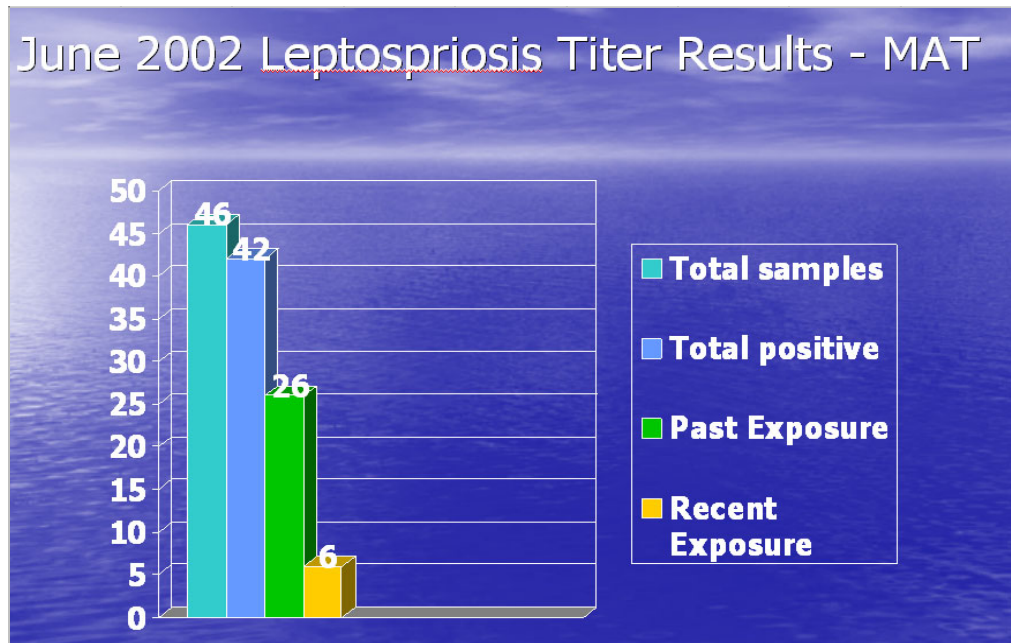
Leptospirosis has now been identified as one of the emerging infectious diseases based on large outbreaks in Nicaragua, Brazil, India, Fiji, Thailand, and the Pacific Region. The Paster Institute in New Caledonia states, "leptospirosis is the most important zoonosis in the Pacific Region and is estimated to infect about 5,000 people annually. It can prove fatal in up to 10% of cases". It is particularly prevalent on islands with high rainfall, standing water and periodic floods. Both humans and animals are infected by either direct or indirect contact with infected urine. Man and reservoir

seen. Presentation may include: fever, headache, rash, muscle pain, diarrhea, small hemorrhages on the skin and jaundice. The other form which is less severe and has made up approximately 90% of the cases usually presents as a flu-like illness, but this can be followed by a second phase of intense headaches, severe muscle and abdominal pain and nausea. Occasionally, aseptic meningitis is seen with this form.

In June 2002 46 blood samples were drawn from dogs at a spay and neuter clinic to begin to determine the presence of leptospirosis in the dog

leptospirosis as well as to evaluate the relative importance of the different species of rats and mice as reservoirs and potential vectors of leptospirosis.

This study will also evaluate the level of exposure of the human population in the Republic of Palau to leptospirosis and to identify the prevalent serovars in the Republic of Palau. Greater knowledge of the epidemiology of the disease will allow the development of suitable interventions, to reduce the impact of leptospirosis on both animal health and community health.



hosts (such as dogs, rats, mice, pigs, cattle, etc.) are susceptible to infection. The Centers for Disease Control and Prevention statistics indicate that of the people who are infected with leptospirosis, one third come from contact with infected dogs and one third come from contact with rats.

There are several forms of leptospirosis in humans. One is the classic icteric form known as "Weil's disease". This comprises only 10% of the human cases

population in Palau. 70% of the dogs indicated exposure to leptospirosis.

Based on this preliminary data, a cross sectional study is proposed in the Republic of Palau and will combine epidemiological information on leptospirosis in both the human and animal populations. The aims and objectives of this study are to evaluate the importance of the different species of domestic animal including dogs as potential reservoirs for

Prevention and control would include developing vaccinations for all prominent strains of leptospirosis, rodent proofing houses, protection of water supply from contamination with rat or domestic animal urine, proper garbage disposal to decrease the likelihood of rodents, avoid swimming in freshwater which may be contaminated, as well as control of leptospirosis in domestic animals.

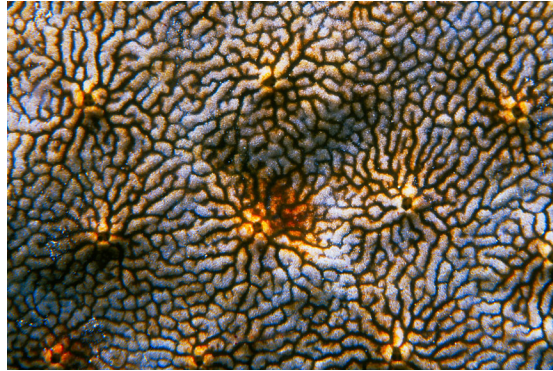
Sponges and Their Symbionts

A group of three scientists from the University of Alabama (UoA) recently spent several weeks in Palau performing experiments on several species of marine sponges.

Dr. Bob Thacker, formally of the University of Guam Marine Laboratory, and now an associate professor at the UoA, has been working on sponges and their chemical ecology for the past six years. Specifically, Dr. Thacker and his colleagues have recently been investigating the relationship between *Dysidea* sponges and their symbionts.

Several species of *Dysidea* exist in Palau, including *Dysidea herbacea* and *D. granulosa*. These sponges are fairly common throughout Palau's reefs and can have various growth forms, making them difficult to identify in the

field. Many sponges have symbiotic cyanobacteria and/or bacteria symbionts within their tissues.



The *Dysidea* sp. of sponge harbors symbiotic cyanobacteria. E. Daniels

It is still unclear as to whether or not these symbionts actually provide benefits to their host. It has been hypothesized that cyanobacterial symbionts may benefit their host sponge by providing fixed carbon or nitrogen, or by producing secondary metabolites that allow their hosts to deter predators or

better compete for space on the reef. Scientists are also uncertain if sponges can actively regulate their symbiont populations.

Previous experiments on *Dysidea* species in Guam indicated that each species of sponge hosts a distinct strain of cyanobacteria.

The group's most recent research, carried out in both Guam and Palau, focused on shading experiments. The experiments were designed to determine whether or

not the cyanobacterial symbionts were benefiting their hosts through fixing carbon, via photosynthesis. Initial analysis of the results indicate, for at least one species of *Dysidea*, that the cyanobacteria do provide a significant amount of carbohydrates to the sponge, thereby spurring growth.

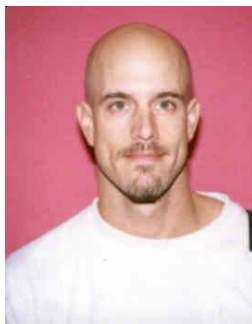
The classification of sponges presents a problem for taxonomists. Sponges share few characteristics with other animals. They are multicellular but so are seaweed, marine algae, which are placed in the kingdom Protista.

Sponges are a grouping of cells which are imbedded in a gelatinous matrix. They are usually supported by tiny spicules of calcium carbonate or silica and a protein matrix. They are not organized beyond the cellular level, i.e. they have no tissues or organs.

Some zoologists consider them to be outside the line of evolution which led to other animals, the metazoans.

OERC Says Goodbye to Two Staff Members

Mr. Ethan Daniels, National Science Coordinator, and Ms. Tarita Holm, National Biodiversity Coordinator, completed their employment with the OERC on July 1, 2001.



Mr. Ethan Daniels



Ms. Tarita Holm

Mr. Ethan Daniels departed both the OERC and Palau to join his wife, Ila, and newborn daughter, Jasmine, in San Francisco, California. Mr. Daniels will be primarily working with a monitoring team conducting climate research in Antarctica, as well as other research programs.

Ms. Tarita Holm's employment contract also ended on July 1, 2003. Ms. Holm departed the OERC to pursue other employment opportunities.

The OERC staff wishes both Ethan and Tarita the very best in

both their personal and professional futures.

We also take this opportunity to announce that Mr. Andrew Bauman will be taking over the duties of Mr. Ethan Daniels. Mr. Bauman holds a Masters of Science in Marine Biology from James Cook University and has over nine years of field experience. Mr. Bauman is scheduled to start with the OERC on August 10, 2003.

For information on current and projected OERC programs, please contact the office at 488-6950 ext. 241, 243, or 249.



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Office of Environmental Response and Coordination Office of the President of the Republic of 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 Convention's respective protocol(s).

Calendar of Events (July - September 2003)

NATIONAL		
2nd NBSAP State Workshops	Babeldaob	July 21-24
REGIONAL		
University of the South Pacific - Climate Change Training Program	Fiji	July 14-Oct 25
2nd Regional Thematic Meeting on Implementation of the Montreal Protocol in PICs	Fiji	Aug 5-7
SPREP Midterm Evaluation & 2nd Multi-Party Review	Tonga	June 23-27
Strategic Action Program for the IWP - Train the Trainer Workshop	Yap State	July 7-18
UNU the Role of Customary Law & The Practice in Regulating Access to Genetic Resources, Traditional Knowledge, and Benefit Sharing	Palau	Sept 24-26
INTERNATIONAL		
UNCBD Expert Meeting on Ecosystem Approach	Canada	July 7-11
23rd Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol	Canada	July 7-11
7th Session of the INC to the Stockholm Convention	Geneva	July 14-18
6th Session of the CoP to the Convention to Combat Desertification	Cuba	Aug 25-Sept 5
Meeting of the Bureau of the ICCP	Canada	Sept 4-5
Advisory Group on Anthologies of Terms on Invasive Alien Species	TBA	Sept 8-10
Liaison Group Meeting on Protected Areas	Bulgaria	Sept 22-24