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APEC Marine Resources Conservation Working Group

Report of the 17th Meeting

*Puerto Varas, Chile
6th - 8th May 2004*

APEC Bulletin on Marine Resource Conservation and Fisheries

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Election of Officers

Mr. Phan Hong Dung then facilitated
the election of officers for the meeting.
He proposed names and delegates
agreed with his proposals. The officers
were: Mr. Ricardo Norambuena,
Meeting Overseer (Chile) and Ms.
Donna Petrachenko, Lead Shepherd –
MRCWG (Canada), as meeting
co-chairs; and Mr. Sam Baird,
Delegate (Canada) as rapporteur.

Housekeeping and Adoption of the Agenda

The Lead Shepherd commenced the
meeting by seeking and obtaining
approval of the draft agenda as
presented. She discussed the ISO
standards adopted by APEC and to
ensure the meeting documents
conform to this standard, they (the
documents) must be readied by the
APEC Secretariat Representative prior
to distribution to delegates. She drew
delegates attention to a CD that had
been distributed to them at the
opening of the meeting. The CD had
been prepared by her office and
included a wide-range of historical
MRCWG information such as past
meeting records, past MRCWG/FWG
Bulletins, economy profiles of oceans
governance arrangements, and
historic key-stone APEC documents
related to the MRCWG mandate and
operations. Recognising the
attendance of a representative of the

The 17th APEC Marine Resources
Conservation Working Group meeting
was held on 6th, 7th and 8th May, 2004
in Puerto Varas, Chile. The meeting
was attended by 39 participants from
fifteen economies, namely: Australia;
Canada; Chile; People's Republic of
China; Indonesia; Japan; Republic of
Korea; New Zealand; Papua New
Guinea; Peru; Republic of the
Philippines; Chinese Taipei; Thailand;
United States of America and Viet
Nam. The Lead Shepherd of the
Small and Medium-Sized Enterprises
Working Group, a representative of the
APEC Gender Focal Point Network,
and the APEC Secretariat also
attended. The Partnership for
Environmental Management for the
Seas of East Asia (PEMSEA) and the
Permanent Commission for the South
Pacific (CPPS) were present as
guests.

Opening

The meeting was opened by Mr. Phan
Hong Dung of Viet Nam, the host
economy for the 16th meeting in 2003.
Mr. Ricardo Norambuena, Meeting
Overseer (Chile), welcomed delegates
to Puerto Varas and then Mr. Phan
Hong Dung undertook roundtable
introductions.

CPPS, the Lead Shepherd sought and obtained approval from delegates for the CPPS's participation at the meeting. Prior approval had been obtained for participation by PEMSEA at the meeting.

APEC Secretariat Report

Mr. Julio Bravo, APEC Secretariat, provided an oral presentation on general developments within APEC. His presentation centred around I-SOM and SOM-1 matters particularly related to the eleven priorities of SOM for 2004 and the four related priorities of ECOTECH; he briefed delegates on outcomes of the BMC-1 meeting (March 2004) related to project funding levels for both TILF and operational account projects, and the upcoming project evaluation criteria established by BMC; and, he provided information on the new APEC web site and the new e-newsletter.

Lead Shepherd – Year in Review

The Lead Shepherd noted that it had been only six months since her last report given at MRCWG 16 held in Hanoi in October 2003. She reported that on the operational-side the

MRCWG had facilitated five workshops/events during the period; and the Canada and Australia project to detail the oceans and coastal governance arrangements of all 21 APEC economies was completed. On the business-side she reported that a number of economies had worked intersessionally to develop a proposed strategic framework for the working group, a proposed operational planning framework, and a proposed project management process, each for consideration at this meeting. On a regional-wide scale she was pleased to report that several regional organisation had agreed to participate at the meeting (PEMSEA and CPPS) and provide delegates with presentations on their operations. Three other regional organisations who were unable to attend had provided reports (or had reports prepared on their roles) to be tabled at the meeting. She thanked a number of economies that had helped prepare these reports and assisted in obtaining collaboration with these regional organisations. She also reminded delegates that she was nearing the end of her 1st year of a two-year term and that economies should give consideration to who would succeed her following MRCWG 18 in 2005.

She further noted that her office had spent time during the period meeting/corresponding bilaterally with a few economies to encourage their future participation at MRCWG. These were: Philippines, Malaysia, Singapore, and New Zealand. It was noted that New Zealand and Philippines were in attendance at this meeting.

Lead Shepherd's Expectations for MRCWG 17

The Lead Shepherd provided a commentary of what she expected MRCWG 17 to achieve.

Roundtable Statements by Member Economies

Economies presented verbal and/or written report on their domestic progress on marine resource conservation efforts; their contribution to domestic and international marine-related policy initiatives; and on their efforts to advance the implementation of the Seoul Oceans Declaration.

Australia

Discussion surrounded (1) Activities to combat IUU fishing (2) High Seas Biodiversity Conservation Efforts (3)





Photo: W.Y. Chiau
Chile

marine-related management actions (3) Turtle conservation plans (4) Coral reef and mangrove protection areas.

Philippines

Discussion surrounded (1) The implementation of a new national fisheries code (2) Local governments being delegated greater responsibilities for the management of marine activities and conservation (3) The passage of legislation on the establishment of marine protected areas (4) Promotion of private/public enterprises who contribute to ecosystem conservation.

Peru

Discussion surrounded (1) Action Plan of the Pacific South East (2) Land based sources of marine pollution (3) Critical areas of marine pollution (4) Joint study with Chile on the south east LME (4) Authority for ecological recovery for three main harbours sponsored by UNEP (5) Establishment of Marine and Coastal Integrated Management Authority and Program for 2004-06.

Chinese Taipei

Discussion surrounded (1) Council of Marine Affairs was established in early 2004 to facilitate the creation of a new ocean ministry (2) Oil spills emergency response training of trainers (3) Completion of 'Trawlbase' a study to determine the varieties of marine organisms collected through bottom trawling (4) Advances in the management of 'Oceans Dumping' activities.

Thailand

Discussion surrounded (1) National Marine Policy (2) National Coastal Resources and Environment Profile (3) Guidelines for Coastal and Marine Resources Conservation and Management (4) Mangrove rehabilitation and coral reef management plans (5) Survey and inventory for management of seagrass beds

The South East Regional Marine Plan and the commencement of Australia's 2nd Regional Marine Plan for the Northern Region (4) International activities to advance domestic, regional, and global oceans and coastal marine conservation efforts.

Canada

Discussion surrounded (1) Canada's ratification of UNCLOS (2) The adoption of an Oceans Action Plan (3) Progress on the development and implementation of National Plans of Action particularly the NPOA on IUU Fishing (4) The development of an Action Plan for Aquatic Invasive Species (5) the proclamation of the Species at Risk Act.

Chile

Discussion surrounded (1) Two new MPAs established (2) Two Regions nearing completion of ICZM plans (3) Recreational Fisheries Law currently being considered by Parliament (4) Achieved 42% of sewage treatment nationally.

The Peoples' Republic of China

Discussion surrounded (1) The State Council decided to further the management of marine affairs, including strengthening of co-ordination between government agencies with marine-related responsibilities (2) Management and protection of non-resident islands - promulgation of a regulation for the management on the protection and use of resident islands, and preparing an Islands Protection Law (3) 80% of country-level competent government authorities have established marine

environmental monitoring agencies.

Japan

Discussion surrounded (1) Monitoring the ocean environment (2) Investigation distribution of marine debris and spilled oil (3) Countermeasures against red tides and poisoning of clams (4) Research on discharged ballast water (5) Investigation of techniques for conserving biodiversity.

Republic of Korea

Discussion surrounded (1) Government purchase system of ocean wastes (2) Joint training programs with PEMSEA (3) Government introduction of a financial allotment for improving marine environments (4) Nation wide wetlands research project for the protection of marine ecosystems.

New Zealand

Discussion surrounded (1) Domestic policy reforms taken place over past year (2) Increasing engagement and responsibilities of Regional Councils (3) Oceans Policy development currently on-hold (4) Whole of government biosecurity reform for greater accountability (5) Biodiversity research ongoing including database development for biodiversity within the EEZ, to be expanded later to include Antarctic areas-of-interest.

Papua New Guinea

Discussion surrounded (1) Domestic legislative framework for the management of the marine environment (2) Regional and global initiatives which contribute to PNG

USA

Discussion surrounded (1) Release of the U.S. Commission on Oceans Policy Report (2) Formation of new regional partnerships as a result of the White Water to Blue Water initiative (3) Progress on the Earth Observing System (4) U.S. involvement in the 10-year review of the Barbados Programme of Action for Small Island Developing States.

Viet Nam

Discussion surrounded to the national strategy on the natural resource conservation and other implementing activities (1) Fifteen coastal MPAs – current lack of legal framework for their management (2) Building scientific capacity to better understand and manage marine biodiversity conservation (3) Enhancing co-operation with international, NGO, and regional organisations (4) Sea turtle, dugong, shark research, management and conservation.

Strategic Framework and Operational Planning Framework

Canada presented a draft Strategic Framework (SF) for the MRCWG and the Lead Shepherd's office presented a draft Operational Planning Framework (OPF). Following extensive discussion in both plenary and in small working groups, the SF was adopted as adjusted and the OPF was tabled for further review and adjustment intersessionally.

Seoul Oceans Declaration

Canada presented a matrix of Seoul Oceans Declaration (SOD) activities. Delegates reviewed the matrix and reached agreement on which activities are within the sole realm of MRCWG programming; which activities the MRCWG shares programming with the FWG; and which activities are also within the realm of programming by other APEC Fora. It was suggested that the matrix be expanded to identify

the MRCWG projects that contribute to items in the SOD and this will be completed intersessionally.

Indonesia Proposal to Facilitate the 2nd APEC Ocean-Related Ministerial Meeting

Indonesia tabled their proposal to facilitate the 2nd APEC Ocean-Related Ministerial Meeting. Delegates noted their appreciation for Indonesia's kind offer however, delegates felt that they could not discuss the proposal until after they have consulted with their capitals. The Lead Shepherd's office will contact member economies in the coming weeks towards obtaining their views on this matter. Economies may wish to formulate their response by addressing three principal questions: (1) Do economies generally support the need to hold a 2nd APEC Ocean-Related Ministerial Meeting within the timeframe suggested by Indonesia? (2) What significant matters can be achieved at such a meeting? (3) If a meeting is to be held as suggested in 2005, what date would economies recommend?

Special Edition of the MRCWG Bulletin

Chinese Taipei briefed delegates on the proposed framework for this special edition of the bulletin. Delegates expressed their appreciation to Chinese Taipei for undertaking this project. It was decided that this document should focus on MRCWG activities and not MRCWG/FWG joint activities. The FWG may also wish to have a bulletin prepared which will focus on their activities. An editorial board comprising: USA, Chinese Taipei, Canada, Chile, and Australia will develop a table of contents towards publicising MRCWG achievements since the creation of the working group in 1991. It is expected that the document will be completed by end-October 2004.

Project Management Process

Following directions flowing from MRCWG 16, the Lead Shepherd's office prepared a proposed project management process for consideration by delegates. Following discussion the project management process was adopted on a trial basis. The process will be tested in the coming year and a report presented at MRCWG 18. Chile and Australia volunteered to form the initial Project Team as outlined in the document. The project team will also serve as the evaluation team with the additional membership of Thailand and Canada. The Lead Shepherd's office will work with Chile and Australia to develop a graphic of the work to be undertaken and the timelines involved. The Working Group agreed that self-funded project proposals must follow the standard MRCWG project management process.



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Chile

Regional Alliances/Organizations

- Dr Chua Thia-Eng of the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) presented details of their work to complete the Sustainable Development Strategy for the Seas of East Asia. This work was undertaken between 1999-2003 and includes participation by 12 countries. This work is a continuation of work begun by PEMSEA's predecessor working on the prevention and management of marine pollution for the seas of East Asia during the period 1994-1999.
- Dr. Ulises Munaylla of the Permanent Commission for the South Pacific (CPPS) presented details of their current marine-related activities. The CPPS was created in 1952 with the purpose to co-ordinate marine policies, ensuring the conservation and sustainable management of the natural resources and the protection of the marine environment of the Southeast Pacific.

- The USA prepared and tabled a report on the initiatives of The North American Commission for Environmental Cooperation (CEC).
- The Pacific Islands Regional Oceans Forum (PIROF) provided a statement to be tabled on progress in the implementation of the Pacific Islands Regional Oceans Policy.
- The Association of South East Asian Nations (ASEAN) provided a document to be tabled explaining ASEAN co-operation on coastal and marine environmental matters.

Discussion followed where delegates agreed that updates to the work of these and other regional affiliates/organisations should be a standing item on MRCWG agenda. The Lead Shepherd emphasised the importance these affiliates/organisations contribute to the APEC Action Plan for the Sustainability of the Marine Environment and the Seoul Oceans Declaration goals.

Project Reporting

- The USA provided information and tabled a report on the APEC Oil Spill Response Capability Workshop that they facilitated in collaboration with Singapore during March 2004.
- The USA tabled a document on progress on a workshop to develop an APEC Strategy on Invasive Alien Species that the USA and Peoples' Republic of China are in the process of developing.
- The USA tabled a document announcing a workshop on 'Building Capacity to Combat Invasive Aquatic Alien Species and Associated Trans-Boundary Pathogens in ASEAN Countries' scheduled to take place in Malaysia in July 2004.
- Chinese Taipei tabled reports on progress for the following APEC funded/endorsed projects: (1) Development and Validation of Phycotoxin Analytical Methods ... etc (MRCWG 01/2002T); (2) OMISAR; and, (3) 4th Roundtable Meeting – Business and Private Sector.
- Chile tabled a workshop statement from the recently completed workshop dealing with a Management Framework for Introduced Marine Pests in APEC Economies. Delegates endorsed a Chile/Australia proposal to inform APEC Senior Officials about the findings, outcomes, and further actions flowing from this workshop. Chile/Australia to collaborate with the Lead Shepherd on the best way to accomplish this activity.



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Chile

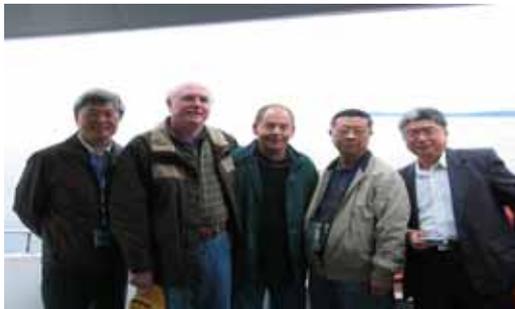


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Chile

- Canada provided delegates with a CD containing the final edition of the Oceans Governance Arrangements for each of the 21 APEC economies. This is the completion of this four-year project jointly sponsored by Canada and Australia.

Project Proposals for 2005 Project Cycle

Following the Lead Shepherd's letters to economies on this matter dated January 20th, 2004, and April 15th, 2004, discussion of project proposals was moved intersessionally to permit additional time at MRCWG 17 to discuss strategic framework related matters. Some time was available at the meeting to discuss proposed projects however, no one requested to have their proposals discussed. Economies were advised that their individual rankings of project proposals need to reach the Lead Shepherd's office before July 9th, 2004.

There are currently four project proposals for consideration for this project cycle from the operational account. These are:

- Assessment of environmental capacity and development of risk assessment methodologies and guidelines for use in sustainable marine aquaculture in the APEC

region (Chinese Taipei). Requested APEC funds: USD\$35k.

- Ocean Models and Information System for APEC Region (Chinese Taipei). Requested APEC funds: USD\$50.42k.
- Workshop on the Institutional Response Towards the Incorporation of the El Nino Southern Oscillation Signal into Fisheries Management within APEC Economies (Chile). Requested APEC funds: USD\$87.26k.
- APEC Marine Environmental Training and Education program (Korea). Requested APEC funds: USD\$39.6k.

There is also a self-funded project requesting MRCWG endorsement. This is for the 6th APEC Roundtable Meeting on the Involvement of Business/Private Sector in the Sustainability of the Marine Environment (Chinese Taipei).

Following a recommendation by the APEC Secretariat, the group decided to implement the trial new quality assessment framework to two proposed projects:

- Assessment of environmental capacity and development of risk assessment methodologies and guidelines for use in sustainable marine aquaculture in the APEC region (Chinese Taipei).

- Workshop on the Institutional Response Towards the Incorporation of the El Nino Southern Oscillation Signal into Fisheries Management within APEC Economies (Chile).

Discussion took place surrounding the APEC Secretariat's notice that year 2005 project cycle proposals should be sponsored by at least three economies. The Lead Shepherd suggested that project proponents should attempt to complete this requirement however it was noted that BMC imposing this new requirement at a time when the MRCWG project cycle is far advanced seemed rather unfair. Newly sponsored proposals need to be in the Lead Shepherd's office before July 9th, 2004.

SOM-1 Update

The Lead Shepherd's office provided a brief summary of activities that took place at the joint fora SOM Sub-Committee on ECOTECH meeting which included participation by working group Lead Shepherds. A copy of the SOM Chair's (Chile) presentation to this meeting was distributed. Flowing from the distributed document a short discussion on the APEC Reform Agenda took place. The APEC Secretariat briefly described the project evaluation criteria developed

by Australia and presented at this joint fora meeting.

Gender Focal Point Network

A representative of the APEC Gender Focal Point Network briefed the meeting on the importance of gender integration across APEC fora and programming. The Working Group welcomed the kind offer of Chile to be the gender focal point for MRCWG.

Involvement of the Business/Private Sector in MRCWG Activities

The Lead Shepherd of the SMEWG (Mr. Francisco Javier Troncoso – Chile) provided a presentation surrounding the activities of the SMEWG and recommended ways that the MRCWG can better engage SMEs in its work.

A presentation was provided by Chinese Taipei on the 4th Roundtable Meeting on the Involvement of the Business/Private Sector in the Sustainability of the Marine

Environment held in December 2003 in Chinese Taipei.

Joint Meeting with the FWG – Preparations

Time was set aside to prepare for the Joint Meeting of the MRCWG and the FWG. The following matters were noted:

- Canada indicated its intention to table a joint MRCWG/FWG strategic framework for discussion.
- Need to clarify the division of responsibility between the two working groups for aquaculture matters and matters related to introduced marine pests.
- Delegates indicated their need for further consultation prior to a full discussion of the Indonesian proposal to facilitate the 2nd AOMM.
- Need to inform FWG about the Special Edition of the Bulletin.

Document Classification

The document classification was made.

Other Matters

- The Lead Shepherd asked economies to consider hosting MRCWG 18 in 2005 and to kindly inform her office of any offer being considered prior to August 2004.
- Given the new project proposal process and the strategic and operational framework development, economies unanimously requested that the Lead Shepherd consider remaining as Lead Shepherd for 2005. The Lead Shepherd undertook to consult with her economy on this issue.

Adoption of the Report of the Meeting

Delegates agreed to the adoption of the Report of the Meeting.

Closing

The Lead Shepherd thanked Chile for their excellent hospitality and exceptional organisational support for the MRCWG 17. Chile thanked Australia for their kind assistance and logistical support before and during the meeting. The Lead Shepherd then closed the meeting.



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Chile

APEC Fisheries Working Group

Report of the 15th Meeting

Puerto Varas, Chile

6-7 May 2004



*Photo: W.Y. Chiau
Chile*

Opening

The 15th APEC Fisheries Working Group meeting was held on 6th and 7th May 2004 in Puerto Varas, Chile and was hosted by Chile. The meeting was attended by 45 participants from 15 Economies, namely Australia, Canada, Chile, Hong Kong China, Indonesia, the Republic of Korea, People's Republic of China, Japan, Mexico, Chinese Taipei, Peru, the Russian Federation, Thailand, United States of America and Vietnam. The APEC Secretariat also attended. The United Nations Food and Agricultural Organization, Permanent Commission for the South Pacific (CPPS), and the Gender Focal Point Network were present as guests.

1. Welcome remarks by the host Economy were presented by the Director of the National Fisheries Service, Sergio Mujica.
2. Introductory remarks from Lead

Shepherd.

APEC FWG Lead Shepherd Stetson Tinkham expressed many thanks to the Chilean organizing committee for the venue and their hard work and arrangements at the meeting.

3. The agenda was adopted without change.

4. Opening statements: Australia, Canada, Chile, Hong Kong China, Indonesia, the Republic of Korea, People's Republic of China, Japan, Mexico, Chinese Taipei, Peru, the Russian Federation, Thailand, United States of America and Vietnam, and CPPS made opening statements. Copies of opening statements provided to the rapporteur are attached as Annex A.

5. APEC Secretariat Representative, Timothy Hsiang, reported on APEC developments to the 15th Fisheries Working Group Meeting. The report is attached as Annex B.

The Secretariat Report highlighted priorities of 2004 and stressed the importance of four ECOTECH priorities set in 2003 for FWG project proposals.

- Integration in global Economies
- Counter terrorism capacity building
- Promoting the development of knowledge based Economies
- Address social dimensions of globalization

The new APEC website was given, www.APEC.org, and a reminder was issued to members to utilize the APEC quarterly e-newsletter and the APEC web site for information dissemination.

The Lead Shepherd has been trying to encourage dialogue between Lead Shepherds and Senior Officials for the past three years particularly with respect to BMC rules. The Lead Shepherd also requested that the delegates convey the importance of communication between Lead Shepherd, and Senior Officials to

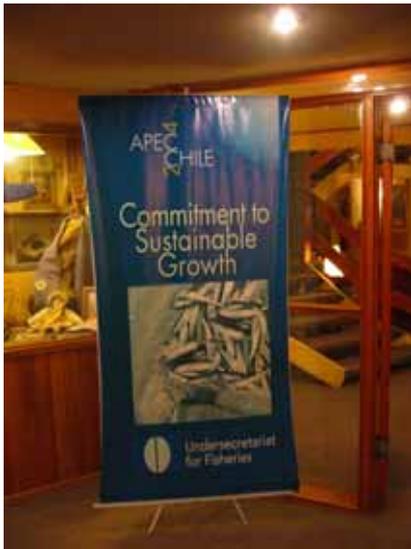


Photo: W.Y. Chiau
Chile

APEC offices in their respective Economies. He noted that FWG should undertake a balanced mix of projects involving trade liberalization, investment facilitation and economic cooperation and technical assistance.

6. Suggestions and other arrangements: LeAnn Southward of the United States was appointed rapporteur.

7. Designation of Lead Shepherd as APEC FWG representative to FAO

The Lead Shepherd suggested that the FWG should decide whether or not the Lead Shepherd should be allowed to report on FWG matters to the meetings of the Food and Agriculture Organization (FAO) of the United Nations Committee on Fisheries (COFI). APEC Secretariat Representative Timothy Hsiang mentioned that guidance is already under discussion at the senior official level. The FWG agreed to request APEC Senior Officials to allow the Lead Shepherd to represent APEC and to report on FWG activities at future COFI meetings.

Strategic Direction Session

1. Canada presented a revised version of the Strategic Framework document first proposed at last year's meeting. The Strategic Framework will enable the FWG to structure its communication throughout APEC on what we are doing and how it is

relevant to APEC priorities. It will help to focus the FWG efforts by providing a framework to develop and prioritize and evaluate projects.

The goal of the meeting was to approve the general outlines of the strategic direction and to start a process to decide what projects FWG needs to fulfill the framework. The final version developed through discussions is attached as Annex C. In addition, an evaluation framework, including performance measures, needs to be developed, as does an analysis of a past and future project list. This framework would be viewed as a living document to assist Economies in organization of strategic thinking and may be expected to change to reflect senior official input and changing committee priorities.

2. Gender Focal network presentation.

Gabriela Valero of the APEC Gender Focal Point Network discussed the importance of gender integration in APEC and called attention to the gender framework document, developed as part of the FWG "Women in Aquaculture" project and attached as Annex D. She encouraged member Economies to use this framework in FWG project proposal preparation and evaluation.

3. Indonesia's Proposal for an APEC Oceans Ministerial Meeting in 2005. Indonesia presented a proposal for an APEC Ocean Ministerial Meeting in 2005. Annex E.

4. FWG Evaluation- Consultant's Report

The Lead Shepherd referred Economies to the report prepared to assess the activities of the FWG and noted that the Senior Officials want the FWG to comment on the Recommendations. These are listed in the report on pages 33-35 (Annex F). The full report is available on the APEC website. The FWG will report

to Senior Officials that it has addressed the recommendations in the report through its strategic direction process.

5. Report from ECOTECH Committee (ESC) Meeting at Senior Officials Meeting (SOM) 1 2004

The Lead Shepherd and the APEC Secretariat reported on the ESC meeting. It was pointed out that the report stressed the need for the emphasis on program evaluation.

Fisheries Management Session:

1. The first theme for discussion among Economies was regional capacity building to reduce and eliminate illegal, unreported and unregulated (IUU) fishing.

Most Economies reported on the status of their National Plan of Action (NPOA) for IUU fishing. Most Economies are currently developing IUU NPOAs. Canada mentioned the results of the recent OECD workshop on IUU fishing and that a report of the workshop could be found at the OECD website at www.oecd.org/dataoecd/55/6/31603545.pdf. Some Economies noted the usefulness of this workshop.

Australia called upon all Economies to take responsibility for the activities of their nationals and vessels in order to minimize IUU fishing. In addition Australia noted that any work on IUU fishing be undertaken in a coordinated fashion and not duplicate the current work being undertaken in other international fora in particular the FAO and OECD.

2. Economies exchanged views on reduction of excess fishing capacity and discussed their experiences with measurement of fishing capacity, identifying fleets with excess capacity, establishing records of fishing vessels and reducing excess capacity in their fleet.

Korea noted that they have drastically reduced the number of fishing vessels. For example, there has been a 34% percent reduction in the number of nearshore and offshore vessels from 6,000 vessels in 1994 to 4,000 vessels in 2002/2003. Additionally the numbers of distant water fishing vessels they have reduced numbers by 60% from 810 in 1990 to 482 currently. Chile described its experience with effort control and the use of quota allocations. These and other measures resulted in a significant reduction in the size of Chile's fishing fleet without subsidies or buyback schemes. Japan noted that excess capacity in the tuna purse seine fishery was a major cause of IUU fishing in the region.

3. Economies described their experiences with flag state controls and referred to coordinating mechanisms such as the international network for Monitoring Control and Surveillance, as well as their participation in regional fishery management organizations.

4. Economies discussed the importance of port state control measures in combating IUU fishing and their use of such measures. Some Economies reported that they did not allow foreign fishing vessels to land fish in their ports. Others had numerous conservation related



Photo: W.Y. Chiau
Chile

restrictions on port access.

5. Economies described use of market measures and suggested that market measures should be WTO consistent and multilaterally derived.

6. Economies described mechanisms such as NPOAs to address bycatch or non-target species catch of sharks, sea turtles and seabirds. Canada and other Economies noted the importance of having data on the significance of these problems and how these problems interact with the fishery as part of decisions on management and conservations schemes. The US delegation provided an outline of the US National Bycatch Strategy pointing out the similarities between its elements and

the requirements set fourth in relevant FAO IPOA's.

The US delegate detailed the results of recent research in the eastern and northwestern Atlantic. These experiments resulted in significant advances in reducing sea turtle bycatch in longline swordfish fisheries through the combined use of circle hooks and specific baits. Japan also informed member Economies of their project on the use of circle hooks in tuna longline fisheries that is planned to be conducted in the north Pacific this year. The US is actively involved in technology transfer and collaborative experimentation in this area within the international community, and the delegate urged relevant APEC Economies to contact the US National Marine Fisheries Service or the US Department of State for more information. The US and Japan further urged Economies to participate in the upcoming FAO consultations on sea turtles.

Australia shared its experience in the development of its NPOA for the conservation and management of sharks and in the ongoing development of its NPOA for reducing the incidental catch of seabirds in longline fisheries. Australia called upon Economies to develop NPOA's for sharks and seabirds if not already doing so.



Photo: W.Y. Chiau
Chile

Aquaculture Session

1. Challenges and opportunities:

Economies described ways they are addressing with aquaculture challenges and opportunities and how difficult it is to get experts together to make progress on aquaculture policy. Chile noted that their National Aquaculture Policy was available at www.subpesca.cl.

2. Aquaculture Food Safety Standards:

The Lead Shepherd referred to the FAO Bangkok Declaration document on aquaculture which is available on the FAO website. Japan stressed the importance of food safety to the consumer and that producers should make safety information available to the consumer. Chile remarked the need to harmonize food safety standards and to design transparent procedures for their establishment and control.

3. Aquatic Animal Health Issues:

Economies described how they were tackling the potential introduction of animal diseases. Chile noted that their manual on Fish Health could also be found at www.subpesca.cl. Chinese Taipei mentioned that disease

issues in Asia Pacific area are more wide spread as a result of the variety of products being cultured, and that farmers are encouraged to use an immuno-stimulant instead of antibiotics to prevent occurrences of disease. Canada noted the importance of policies on animal health to ensure trade access and to reduce business risk. Australia shared its experience in the development of its five-year aquatic animal health plan and articulated the broad themes covered under this plan.

4. Aquaculture Environmental Problems: Economies discussed experiences in aquaculture environmental problems. Chile mentioned three key challenges, including compatibility of aquaculture with other activities carried out in aquatic environments, maintenance of the quality of the environment where aquaculture is carried out, and the prevention of risks related to the cultivation of exotic species.

5. Review of Related APEC Seoul Oceans Declaration Actions: The FWG explored how the Strategic Framework process could be used to measure progress in addressing aquaculture issues for which the FWG was responsible in particular the importance of moving forward with the project proposing an aquaculture network in the Americas was noted.

be held in Rome 19-21 October 2004 were summarized. It was pointed out that the proposed guidelines developed for consideration of the technical consultations were not particularly detailed; therefore much work was left to be done.

The Republic of Korea pointed out, acknowledging the importance of ecolabeling system in food trade, there exist some worries in its industry that Ecolabeling might be used for trade restrictive purposes.

3. Future of Ecolabels: What can APEC do? Chile presented its official position on Ecolabeling and proposed that some Economies get together to formulate an APEC project to exchange information and share experiences in ecolabeling and evaluate their effects on sustainability of fisheries. FWG noted that it is very important that Ecolabeling should be transparent and based on the best scientific evidence and FWG looks forward to the outcomes of the FAO technical consultation to be held in October 2004.

4. Review of Related APEC Seoul Oceans Declaration Actions. The FWG explored how the Strategic Framework could be used to measure progress in addressing trade and investment facilitation issues for which the FWG was responsible.

*Photo: W.Y. Chiau
Chile*



Trade/Investment Liberalization Session

1. Results of FAO Subcommittee on Fish Trade: Outcomes of this meeting considered of importance to the meeting members were reviewed. The complete report of the meeting is available on the FAO website at www.FAO.org.

2. APEC Economy experiences with Ecolabels: The current state of play of the Ecolabel debate, including the expectations for the upcoming FAO technical consultation on the subject to

FWG Projects Current and Proposed

1. FWG Project list: The Lead Shepherd pointed out the list of projects document that has been prepared of all FWG projects since 1991. There is a need for additional work on this project list before it can be used in evaluating progress on the Strategic Framework. The Secretariat Representative referred the FWG to the APEC project database on the APEC website.

More generally the FWG discussed whether or not it was far enough along in implementing the Seoul Oceans Declaration to require a Ministerial

Meeting in 2005. It was stated that it might be better to continue to work on achieving objectives of the SOD than have a Ministerial Meeting. It was suggested that a small ad hoc group be formed to review past APEC FWG projects in light of the Strategic Framework and to analyze gaps. Canada, Chile and the United States agreed to form such a group.

As relates APEC project evaluation rules it was further agreed that the entire FWG would serve as that small group. The Lead Shepherd pointed out that this task would not be taken up until next year.

The Secretariat Representative reminded the Economies that projects need 3 co-sponsors, so that the BMC can accept project proposals.

2. FWG Project Proposals:

- Chile gave a summary of the proposed project entitled: Ecosystem based approach: A comparative assessment of the institutional response in fisheries management within APEC Economies: The case of demersal fisheries (Phase 1). See Annex G.
- The US delegate provided a brief summary of the two components of the US project proposal entitled Improving the Conservation and Management of Sharks to Ensure the Continued Availability of Shark Fisheries for the Benefit of APEC Citizens. He noted that the two components of the project are separate activities; each designed to implement the recommendations of the 2002 APEC shark workshop in Huatulco, Mexico. The US delegate clarified that the first element will compile available data to identify gaps and research needed to address pelagic shark conservation and

management issues in the Pacific Ocean. The second component of the project will focus on NPOA development as it pertains to all shark fisheries in participating Latin American Economies. See Annex H.

Peru gave a summary of the project entitled "Proposal for the establishment of a network for the investigation of Deep Sea Fisheries and Resources." See Annex I. Canada suggested that its relation to existing networks be investigated. The Lead Shepherd pointed out that these project proposals are in draft form and outlined the timeframe for project proposal submittal.

- Project proposals are due to the FWG Lead Shepherd no later than 30 June 2004 so that proposals can be circulated to Economies for ranking and comments.
- Economies need to have project priority rankings and comments back to the Lead Shepherd by 22 July 2004.
- Lead Shepherd will send project proposals, by 30 July 2004, to the APEC Secretariat.

Project progress reports: Economies presented progress reports on the APEC-FWG projects that are currently ongoing. One project deals with the establishment of a network of aquaculture expertise in the Americas. This project will involve participation by FAO and FAO members in the region in addition to APEC economies.

Formal project reports for all ongoing projects need to be sent to the APEC Secretariat as soon as possible.

The APEC Secretariat Representative again pointed out that there is a project database on the APEC website, which includes project proposals and progress reports.



Photo: W.Y. Chiau
Chile

Two completed projects were chosen for evaluation: Derelict Fishing Gear and Related Marine Debris: An educational outreach seminar among APEC partners (FWG 03/2003) and Conservation and Management of Sharks (FWG 03/2001T). The US will circulate draft evaluations to APEC economies within 30 days.

Adjournment of APEC FWG 15

1. Approval of Report of Meeting, The report of the APEC FWG meeting was adopted.

2. Announcement of Venue for FWG 16: Canada notes their support for having an annual joint meeting with FWG and MRCWG at least in the year preceding an Oceans Ministerial meeting.

3. Election of new Lead Shepherd: The current Lead Shepherd is willing to assist in preparing the next Lead Shepherd to take over. Nominations: the Chilean delegation proposed that a representative from Chinese Taipei undertake the role of Lead Shepherd and Chinese Taipei accepted this nomination. Shieh Dah-Wen of Chinese Taipei was elected Lead Shepherd of the FWG. His term will begin at the start of the next meeting of the FWG.

4. Closing remarks from Lead Shepherd and Host
The Lead Shepherd thanked the FWG for its support during the past three years, and thanked Chile for hosting the meeting in such spectacular style. The Vice Chair, Sergio Mujica, thanked the FWG for traveling to Chile and for its hard work during the meeting.

Seoul Oceans Declaration

We, the APEC Ocean-related Ministers, representing 21 economies bordering the world's largest ocean;

- Recognizing the importance of oceans for food security, sustainable economic development, and social and environmental values within the APEC region;
- Recognizing the importance of the APEC region in achieving the conservation and management of living marine resources since APEC economies constitute over 75% of the world's capture fisheries and over 90% of world aquaculture production, and that they consume 70% of the world's global fish products;
- Acknowledging the current efforts of APEC economies to address the challenges of ocean-related issues, and to make use of shared experiences, lessons learned and a range of management tools;

- Determined to add further momentum to the implementation of the Bogor Declaration, the Osaka Action Agenda, the 1997 Action Plan for the Sustainability of the Marine Environment, the 1998 Hawaii Declaration at the APEC Oceans Conference, the 2001 Montreal Declaration, and 2001 leaders declaration on counter-terrorism;
- Welcoming the adoption of the Doha Development Agenda, noting the launch of new negotiations and committed to supporting its successful conclusion;
- Aware of the need for leadership and improved regional coordination and cooperation for the responsible care of the oceans;
- Understanding the value of an ecosystem-based approach to coastal and marine management and the importance of implementing such an approach in an integrated and cross-sectoral manner;
- Recognizing the economic, social and environmental benefits to APEC economies of improved forecasts derived from oceans and atmospheric observations;
- Recognizing the value and guidance provided by existing measures, frameworks and programs, and of ongoing international efforts that may assist regional and domestic efforts to address sustainable oceans management;

- Mindful of the need to ensure that efforts of member economies are in accordance with relevant international instruments;
- Noting the importance of engaging relevant sectoral and stakeholder interests in decision making processes, including NGOs and the private sector; and
- Recalling the APEC Leaders' commitment in Shanghai in 2001 to contribute to the success of the World Summit on Sustainable Development and asserting the value that APEC can contribute from a regional perspective to the oceans theme at the Summit in August 2002;

Domestic Action

- Develop and promote, in an integrated manner, better coastal and oceans management using an ecosystem-based approach, including for sub-regional seas, river basins and watersheds adjacent to coastal areas;
- Improve and strengthen market-based instruments, regulations and enforcement mechanisms for the sustainable management of marine resources;
- Develop and promote, in accordance with applicable international law, the use of a range of tools for sustainable management, including marine protected areas within member economies' jurisdictions, environmental impact



Photo: Y.Y. Lin
Keelung, Taiwan

assessment and oceans and integrated coastal zone management policy and frameworks;

- Facilitate the adoption and implementation of international instruments relating to maritime safety, marine pollution, compensation and liability for environmental damage from ships, and the use of harmful anti-fouling paints;
- Contribute to further international efforts for the control and management of ship's ballast water and sediments;

Domestic and Regional Action

- Improve the conservation and sustainable management of important and critical coastal and marine habitats and related ecosystems;
- Facilitate, through exchange of information, effective regional implementation of global fisheries instruments in achieving responsible fisheries and sustainable aquaculture;
- Eliminate IUU fishing activities from the APEC region;
- Support the development of scientific research in fisheries and aquaculture that will strengthen our knowledge and improve decision-making, and to advance the scientific basis for incorporating ecosystem considerations toward, *inter alia*, developing a shared understanding of the concepts and practice underpinning the ecosystem-based approach to management;
- Accelerate efforts to address the threats posed by introduced marine pests, destructive fishing practices, and sea-based and

land-based sources of marine pollution;

- Increase efforts to sustainably manage tourism activities that affect or potentially affect marine and coastal environments;
- Take further steps to involve all relevant stakeholders, including the private sector, NGOs and academia as partners in pursuit of sustainable development;

Regional Action

- Strengthen cooperation for building capacity, sharing information and expertise, including for marine science and technology, responsible fisheries and sustainable aquaculture, and coastal and marine management in an integrated manner;
- Strengthen cooperation to promote responsible trade in fishery products through, *inter alia*, APEC's TILF initiatives;
- Encourage capacity building for food safety through such measures as the development of equivalent standards for capture fisheries and aquaculture products and on the use of HACCP (Hazard Analysis and Critical Control Points);
- Promote improved regional science collaboration and coordination to develop and facilitate ocean observing, assessment and forecasting systems, rapid response mechanisms for extreme weather and climate events;
- Cooperate with economies and relevant regional institutions to develop marine scientific research capacity with respect to a range of issues including bio-prospecting and non-living marine resources;

- Encourage the development of proposed and existing policies and regional research, education and training initiatives and welcome the establishment of AMETEC by Korea;

APEC Response

- Continue to improve the cooperation and coordination between APEC fora with marine-related activities, such as the Marine Resource Conservation, Fisheries, Transport, Tourism, Industrial Science and Technology, and Energy working groups;
- Instruct the Marine Resources Conservation Working Group, Fisheries Working Group and other relevant APEC fora to develop and implement the policy goals enshrined in this Declaration and to report on progress to APEC Senior Officials;
- Accelerate ocean outreach programs accommodating relevant stakeholders in APEC fora;
- Welcome the kind offer by Indonesia to host a second AOMM.

APEC Contribution to World Summit on Sustainable Development and its Follow up

- Take into account this Declaration in their preparations for the World Summit on Sustainable Development; and
- Build on the importance of the contribution APEC is making to food security, sustainable development and poverty alleviation, which reflects APEC's regional approach to the broad global agenda of the WSSD.

A Management Framework for Introduced Marine Pests in APEC Economics – Phase 2 Workshop Statement



*Photo: W.Y. Chiau
Chile*

APEC member economies are united by the Pacific Ocean. Its marine resources are vital to trade, economic development and the health and well being of APEC member economies and their people. These resources are, however, under increasing pressure from human induced spread of marine pests. Introduced Marine Pests (IMPs) are estimated by some member economies to have cost them billions of dollars in lost economic activity, increased pressure on food safety, and costs for control measures, as well as trade and socio-economic implications. As marine based activity grows in the region, the economic, environmental and health costs to APEC member Economies will grow unless action is taken to limit the spread of these pest and pathogen species.

A workshop to develop options for regional action to address this growing threat was co-hosted by Australia and Chile in Puerto Varas, Chile from 3-5 May 2004. The workshop was

attended by representatives from 17 Economies, the Lead Shepherds of the Marine Resource Conservation Working Group and the Fisheries Working Group, the International Maritime Organisation, the World Conservation Union, the Permanent Commission for the South Pacific, the workshop consultants, and scientific experts.

The workshop builds on previous APEC work and responds to the APEC Oceans Ministers call in the Seoul Oceans Declaration to “Contribute to further international effort for the control and management of ship’s ballast water and sediments” and to “Accelerate efforts to address the threats posed by introduced marine pests, destructive fishing practices, and sea-based and land based sources of pollution”.

A shared awareness and understanding of the risks that IMPs pose to regional growth and sustainability is urgently needed, given the cross-sectoral nature and complexity of the problem. Due to the way marine pests are transferred,

co-ordinated regional action is essential and can help reduce the costs of addressing pest problems to individual economies. Some key areas for further work include: coordination of management of IMPs within and between economies; capacity building; information sharing; targeted research; and education and training.

Further integration of the work of the MRCWG with other APEC working groups, regional and international organisations, will demonstrate APEC’s commitment to integrated oceans management and regional action based on agreed principles and practices.

Given the direction that Chile, the APEC host for 2004, has given to its related activities and particularly its explicit commitment to sustainable growth, the workshop requests that the MRCWG ask Senior Officials to bring this matter to the attention of APEC Leaders. This would help promote a shared understanding of the problems and a shared commitment to the sorts of actions identified at the workshop in Puerto Varas.

Transboundary MPAs for the Spratly Islands: Sustaining the “Supplier” of Regional Fisheries in the South China Sea

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Abstract

The Spratly Islands, containing several hundred coral reefs in the highest marine biota on the Earth, serve as breeding grounds for a wide range of organisms including sea birds, marine mammals, turtles, and marine fishes. Studies of pelagic larval survival times and current patterns a decade ago implies that the Spratly Islands may play an important role of “supplier” for recruiting organisms for marine ecosystems throughout the South China Sea. Recently, molecular genetic approaches using several reef-associated fishes and coral provides the first scientific evidence to confirm the role of Spratly Islands, and subsequently, to support the regional connectivity within the region of the South China Sea. It is a growing consensus that the regional connectivity is crucial in replenishing overharvested stock which provide food and livelihood to coast villagers in the surrounding APEC economies, including, Chinese Taipei, the Philippines, Malaysia, Vietnam, and China. It is also believed that there are large hydrocarbon, oil, and gas reserves in the South China Sea,

resulting in political confrontation and environmental stress. These tensions and impacts are increasing in recent years. A sustainable-use approach would be to immobilize current claims on the islands and establish a transboundary (cross-country) marine protected area (MPA). Such a MPA, encompassing number of reefs and biodiversity, could generate on the order of USD 1 billion annually from tourism. Establishing transboundary MPAs of the Spratly Islands through the cooperation among governmental agencies, private sectors, and NGOs can help to ensure a steady supply of recruits to regional fisheries.

The South China Sea and Spratly Islands

The South China Sea, extending 2800 km north from the Equator to the Tropic of Cancer and averaging 1000 km in width, has an area of 3.3 million km². The sea is a major connection between the Pacific Ocean and the Strait of Malacca and Indian Ocean. Much of the area lies the Sunda shelf with the depth of 100-200 m, and partially divided by a deep central trench over 5000 m in depth. Several islands and reefs, including the Spratly and Paracel islands, arise from the deep abyssal plains. There are

approximately 200 isolated oceanic islands, numerous submerged cays, rocks, and reefs in the South China Sea. These considerably diverse habitats harbor the South China Sea as one of the most high biodiversity ecosystems on the Earth (McManus 1994, McManus and Menez 1997). The sea is bordered by several countries, including, Brunei, China, Indonesia, Malaysia, the Philippines, Singapore, Chinese Taipei, Thailand, and Vietnam. These countries all claim their sovereignties towards the sea, island groups, and natural resources (McManus 1994). Of the island groups, the Spratly Islands is one of the highly politically-sensitive areas in the South China Sea. The Spratly Islands containing more than 600 coral reefs and associated structures scattered across an area north of Sabah and southern Palawan. There are at least 26 island and 7 exposed rocks protruding above the sea surface during the high tide. Troops of Philippines, Chinese Taipei, China, Malaysia, and Vietnam occupy the Spratly islands. At least 40 of the islands and reefs are occupied. Defense constructions include buildings, heavy artillery installation, and two airports. These occupying forces cost several tens of millions dollars to maintain. The worst impact



Photo: Y.Y. Lin
Spratly Island, Taiwan

of these constructions is putting tremendous stresses on the ecosystems of these small, low islands.

Most of the concerns over the Spratly Islands have concentrated on potential resources that can be extracted from the sea, including fossil fuels and biological resources. The biological resources of the Spratly Islands, larvae fishes and invertebrates, are apparently playing a long-term important role of "supplier" to sustain the heavily overfished shore waters and the South China Sea. These microscopy-level larvae represent the simplest solution to the Spratly Island issue, the creation of an international transboundary marine protected areas.

Food demand, declining resources, and conservation effort within the South China Sea

Increasing demand of food sources, coastline development, and declining resources have been overwhelmingly happening through the APEC economies in the South China Sea (Burke et al. 2002). The trends

towards economic development are un-altered in the next few decades. Nevertheless, ensuring the sustainability of marine resources necessitated the development of active management plans. Near 10 years ago the Spratly Islands has been proposed to be a marine park, and to play a role of connecting larvae transportation within the South China Sea (MacManus 1994). Marine protected areas (MPAs) are used to identify the areas that are necessary for active management plan based on numerous reasons, including the maintenance of biodiversity and fisheries management. Identifying biodiversity "hotspot", both ecological or genetic, can set the priorities of particular areas for the MPA design (Robert et al. 2002). In addition, maintaining and restoring degraded reefs in the South China Sea relies on the availability of new juveniles.

Almost reef organisms have a larval phase which can drift through the ocean, often for days or weeks. In the majority of cases, the larvae settle on the reef where they were produced. Yet, complex sea surface currents described above may transport some larvae over considerable distances to new reefs. They may be critical to genetic flow and the repopulation of damaged reefs. Identifying reefs that are "source" reefs lying upstream of others in the main current flow, is part of the emerging study of regional connectivity (Ablan et al. 2002).

Scientific evidences of transboundary units: Genetic structuring for reef fishes and corals in the South China Sea

Two recent genetic studies, one on reef-associated fishes and the other on a stress-tolerant scleractinian coral, have revealed the occurrence of sub-provinces in the South China Sea, and subsequently support McManus's proposal of a marine park for the Spratly Islands (Ablan et al. 1999, Ablan et al. 2002, Chen et al. 2004). Evidence from a large-scale sampling of three species of reef-associated

fishes, *Dascyllis trimaculatus*, *Thalassoma hardwickii*, and *Heniochus acuminatus* in six countries, including, Malaysia, Philippines, Indonesia, Vietnam, Taiwan, and the Solomon Islands, using both polymorphic allozyme and mitochondrial markers, suggested four major groups in the region. The groups identified were: (I) a West Pacific group to the east of the Philippines and southeast of Taiwan; (II) a north-central group encompassing northwestern Taiwan, northern Vietnam, and the northwestern Philippines; (III) a southwestern group comprised of southern Vietnam and the eastern coast of mainland Malaysia; and (VI) a southern group including the southern and central Philippines, eastern Malaysia, and central Indonesia (Ablan et al. 2002, Chen et al. 2004). Although this study is limited by the number of sites surveyed, the patterns observed are highly correlated with the sea surface currents in the South China Sea. The convergence of three groups on the Spratly Islands suggests a high degree of genetic diversity at this location, providing the further support for the potential importance of the Spratly Islands to the reef sources of several countries in the region (McManus 1994, McManus and Menez 1997).

Study of a widely latitudinal-distributed scleractinian coral, *Oulastrea crispata*, also indicated a boundary existing between the populations of tropical South China Sea and those of subtropical and outlying temperate Japan. *Oulastrea crispata* is restricted to the West Pacific with a range from Japan in the north to the Great Barrier Reef in the South (Veron 2000). Several studies have suggested that *O. crispata* is resistant to adverse environmental conditions. Analysis of molecular variances indicates that population subdivision in *O. crispata* occurs among Sichang, Thailand, Weichu, Hainan, China and the rest of subtropical populations (Penghu Is., Taiwan, and Okinawa, Japan), and outlying Japan. This pattern is

Photo: Y.Y. Lin
Spratly Island, Taiwan



concordant to the occurrence of gyres in Gulf of Thailand, Gulf of Tokin, and the northwards South China Sea current(Lin et al. unpubl. data).

Conclusion

Conserving coral reef biodiversity and sustaining fishery management has become a consensus vision through the APEC economies which share the common responsibility towards the future generations in the South China Sea region. However, this vision demands a tremendous effort above national level. Although priorities in evaluating existing coral reef MPAs and identifying reefs for designing new MPAs are urgently recommended (McManus 1994, McManus and Menez 1997, Ablan et al. 1999 2002, Burke et al. 2002), political tension is still high enough to retards trans-national collaboration in conservation effort. As a consequence, many crucial pieces of information are still not available for the coral reefs, specifically the Spratly Islands, in the South China Sea. Ecological and genetic evidences presented in this study, on the other hand, highlights a possible solution to incorporate reef scientists, NGOs, and probably private sectors to the collaborative projects with the multi-country's effort, and impose the usefulness of integrative activities towards the success of marine protected areas for the Spratly Islands.

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Photo: Y.Y. Lin
Spratly Island, Taiwan



Sustainable Fisheries in Taiwan Need Biodiversity Protection



Photo: Y.Y. Lin
Tamsui, Taiwan

Abstract

The degradation of fishery productions in Taiwan not only is undeniable facts but they are also getting more seriously in the past decade. The main causes include (1) overfishing and bycatch, (2) habitat destruction, (3) pollution, (4) introduced species, and (5) Natural perturbation. The first 4 items all relate to fishery activities, especially the first two. According to our recent studies on fish community structures in Taiwan, we found that although the accumulated species number can reach 2,600, their quantities have declined and the species composition have changed drastically in the past 15-30 years. The high economic species of large predator fishes such as groupers, snappers, grunts or morays have all become rare species in our intertidal collections; cutterfish and mullets have also disappeared in our impingement collections; and serious by-catch

problem existed in our bottom-trawler fishing harvest. Therefore, in order to achieve sustainable fisheries and protect marine biodiversity effectively in Taiwan, not only do we need to change our consuming habit of food, we also need to enhance and integrate coastal management, particularly the task of establishing marine protected areas. Enhancing public education, research, and monitoring as well as readjusting fishery policies are other important work that needs to be promoted simultaneously.

Introduction

Taiwan is relatively a small island (36,000 km²) with about 1,600 km shorelines. But its marine biodiversity is very high because Taiwan is situated at the northern border of the world's marine biodiversity center (East Indies). In addition, Taiwan's coastal regions include various kinds of habitats such as coral reefs, shallow sandy/muddy bottom, barrier lagoon, estuaries and mangroves, rocky shoreline as well as open and deep ocean. Thus, the total number of marine species found in Taiwan can exceed one-tenths of that in the oceans world. Using fish as one example, total number of marine species has reached 2500, and 50 species among them were new

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species described based on Taiwanese fish specimens in the past 20 years. However, in the past 30 years, high economic growth and pressure of high population density, accompanying with overfishing, over exploitation of coastal wetland (habitat destruction), heavy pollution and El Nino in 1998, all have led marine ecosystems or fishery resources in Taiwan to decline drastically. The degradation of marine ecosystem will directly destroy species and genetic diversity. Through cascading effect of food chain, the utilization of fishery resource naturally cannot be sustained.

Causes for Destruction of Marine Biodiversity

The main causes for degrading marine biodiversity and decreasing fishery productions include (1) overfishing and bycatches, (2) habitat destruction, (3) pollution, (4) introduced species, and (5) global climate change. All former four causes relate to inappropriate fisheries activities, especially overfishing and habitat destruction. Species cannot survive and resources cannot sustain without the habitats necessary for reproduction, feeding, and sheltering during each phase of their lives.

Overfishing and bycatches

The total fishery productions in 1950 was 20,000 tons only, then reached 1,450,000 tons in 1990, mostly from high sea and aquaculture fisheries. After 1970's, the productions and resources decline especially in coastal fisheries such as mullets, croakers, sharks, sea breams, groupers, snappers, anchovies and fry fisheries. Currently, annual production was 1,300,000 tons. Although we have no long-term, accurate and sufficient scientific catch statistics to prove the overfishing and the body size reduction problem. Some of our recent studies on fish community structure in Taiwan can demonstrate this phenomenon. For examples, through the comparison of 30 years intertidal fish assemblages, many large body size predators of high economic fishes, such as groupers, snappers, grunts, and morays have disappeared; cuttlefish and mullets have also become less in our impingement surveys from nuclear power plant in the past 12 years. Furthermore, a lot of non-target species and premature size of demersal fishes were bycaught and wasted by bottom trawlers everywhere in Taiwan.

Habitat destruction

Fishing can also affect habitats, most notably by destroying and disturbing bottom topography and the associate benthic communities. Too many bottom trawlers in Taiwan have damaged the benthic ecosystem seriously and their damages were not only on soft bottom but also on coral reefs. Large-scale mariculture activities (farming of fish, shrimp, and other marine organisms) -- especially if they are poorly managed--also can affect marine ecosystem through damage to coastal wetlands and nearshore ecosystem, associated with the construction of shore-based or nearshore facilities, such as fishing harbors, industrial or recreational, parks, wave breaks and urbanization purposes. In Taiwan, the natural

coastline has been changed to artificial (concrete) coastline which destroyed all important nursery grounds for many economic or non-economic species of marine organisms.

Pollution

The low ratio of constructions of municipal sewages system in Taiwan is the main cause of water pollution in coastal zones. The water pollution control of river discharges also needs to be improved because some organic and inorganic pollutants, heavy metal, oil and toxic substances coming from industrial, agriculture, and urbanization sewages in land were discharged into the coastal waters. Sedimentation problem occurred frequently near estuaries after heavy rain because of soil run off problem in the mountains and sloped land. Coral bleaching and malformed fishes occurring every summer at the outlet area of Nuclear Power Plant II and III are the two well known cases in Taiwan.

Introduced species

Alien species come from ballast waters have not yet been surveyed in Taiwan. But several introduced mariculture species, such as European eel (*Anguilla anguilla*) and red drum (*Sciaenops ocellatus*) has been discovered recently in the Tamshui estuary and the western coast of Taiwan.

Natural perturbation

Strong typhoons can destroy fragile coral species in the shallow waters, and thus the fish species living in close association with the coral.

Cold water masses, which occasionally enter the coastal region in the winter season, can kill marine fishes. This frequently happened in Penghu (Pescadore Islands), and occasionally in Kenting in southern Taiwan.

Other causes are El Nino,

crown-of-thorns, red tide, etc., but fortunately the latter two cases have not yet been reported in Taiwan.

Conservation Strategies

Natural perturbations are impossible to prevent, but anthropogenic causes are avoidable by enhanced public education, monitoring and assessment, and appropriate conservation policies.

Reducing overfishing

Managing single-species fisheries with an explicitly conservative approach should be a first step toward achieving sustainable marine fisheries. The precautionary approach should apply. A moderate level of exploitation might be a better goal for fisheries than full exploitation. Fishery management should take account of known and probable goods and services of marine ecosystems that are potentially jeopardized by fishing. Recreational fisheries or tourism such as diving or fish watching instead of harvest not only can protect marine ecosystem but also can increase much more income than just eat them.



Photo: Y.Y. Lin
Keelung, Taiwan

Marine protected areas (MPAs)

Establishing more MPAs is the most effective and easiest way to protect and rebuild the ecosystem and resources. They often lead to increases in the number of fish and other species in nearby waters. Importantly, they can provide a better buffer against uncertainty, including management errors. The design and implementation of MPAs should involve fishers to ensure that they believe the resulting system will protect their long-term interests and to improve operational integrity. Recent calls for protecting 20 percent of potential fishing areas before 2020 provide a worthwhile reference point for future consideration, and emphasize the importance of greatly expanding the areas currently protected.

Although, total 48 marine sanctuaries have been established, in Taiwan, they were not managed and controlled appropriately. These 48 sanctuaries include 7 wildlife sanctuaries, 3 natural reserves, 26 resources conservation areas and 12 coastal protected zones. Most of them are focused on mangroves, seabirds, sea turtles or economic species such as seaweeds, lobsters, abalones, or bivalves. They are not real MPA for protecting whole "habitat" and all organisms inhabited. Nevertheless, deposit artificial reefs in the coastal waters around Taiwan to create more shelters for juvenile fishes and prevent illegal fishing of bottom trawler within 3 nautical miles are quite successful in Taiwan.

Enhancing public education

Taiwanese people enjoy the seafood very much. They eat too many different species of marine organisms which will jeopardize many rare and endangered marine species. Thus, we need to raise the public awareness



Photo: Y.Y. Lin
Kaohsiung Harbor, Taiwan

through different media to educate people not to catch, raise and eat those rare or protected species. Fortunately, the number of NGOs which actively promote marine conservation in Taiwan is increasing. Also several large marine aquariums or museums are under construction or just open recently which can let people get acquainted with the marine organisms and begin to love and protect them. Whale watching, snorkeling for fish watching and establishing green sea-turtle sanctuaries etc. are also very useful to call people's attention to change the attitude on marine conservation.

Enhance research

Better understanding of the structure and functioning of marine ecosystems is needed, including the role of habitat and the factors affecting stability and resilience. This includes attempting to understand mechanisms at lower levels of organization (i.e. populations

and communities), long-term research and monitoring programs, development of trophic ecosystem models etc. More research is needed on basic taxonomy, ecology and distribution. These basic information should be integrated using GIS and open to the public via internet. The biological effects of fishing such as the alteration of gene pools and population structures as a consequence of fishing need to be studied as well. More research is needed on the conditions under which MPAs are most effective, and MPAs themselves should be used as research tools as well as for conservation. More information is needed on the effects and effectiveness of various forms of rights-based management approaches and other management regimes.

Legislation and readjusting the marine policies

In Taiwan, we already have four laws or acts including (1) National Park Law

(1972), (2) Cultural Heritage Preservation Law (1982), (3) Wildlife Conservation Law (1989), and (4) Environmental Impact Evaluation Act (1994). Although these laws more or less play some role as MPA to protect marine ecosystem, they were not really enforced. Most previous established sanctuaries or natural reserves were focused on few endangered species or economic important species, not on the habitat or whole ecosystem. So their effectiveness is very doubtful.

It is until these few years, the government and private organizations have recognized the importance of marine conservation and started to change the policy toward environmental protection. For example, the Law of Prevention of Marine Pollution, and the Law of Coast Management and the National Report of Biodiversity are being drafted. Different political bodies are also proposing guidelines of sustainable development policies. All those official documents will take the protection of marine biodiversity into account. Adding more marine species into the red list for banning some aquatic trade should be useful as well.



Photo: Y.Y. Lin
Spratly Island, Taiwan

Current issues

In addition to the strategies mentioned above, the following issues should be stressed here so that we can be aware of some current marine conservation problems in Taiwan.

Environment awareness for the ocean is much less than for the land — In Taiwan, this problem seems to be more serious than in foreign countries. Using one example, in one newly published governmental advertising book “Taiwan’s Story”, no any single picture of marine life was adopted in whole book. All pictures of natural resources in the book are terrestrial.

Economy vs. Environment dilemma — Using recent conflict of Pinnan Industrial complex and saving Chiku lagoon as one example, although there are many uncertainties if the lagoon was reclaimed, such as lagoon ecological function, Black-faced spoonbill, CO2 emission (20.55 million tons per year), accelerated erosion of the coastline, disappearance of sand dune, scarcity of freshwaters, as well as the conflict against rich fishery and tourism resources. These problems also reveal the government’s lack of good land planning, environmental protection and resources management policies over the years, leading to regional conflicts in the allocation of resources.

Lacking well-defined scope of responsibility — Those non-economical or non-endangered marine species, like corals were overlooked because no one agency wants to claim the responsibility. Fisheries Administration of COA only care economic species and emphasized production more than protection; Conservation Section in Division of Forestry, COA mostly concerns endangered species or terrestrial wildlife in the forestry rather



Photo: Y.Y. Lin
Kaohsiung Harbor, Taiwan

than in the ocean; the National Land Planning drafted by MOI, also shows that the conservation on inland area is more stressed rather than in coastal land and the ocean. Even for the research and monitoring projects, all 5 current long-term ecological research sites (LTER) are located in the forest. The marine site of LTER in Taiwan has not been established so far.

Conclusion

Figure 1 demonstrates that both natural and anthropogenic factor will affect on both species and ecosystem level of biodiversity directly. But they will affect genetic biodiversity indirectly because all gene should be carried by individual of organisms of different species. On the other hands, the conservative strategies for restoring marine biodiversity have to be emphasized on the protection of marine ecosystem through establishing MPAs or integrated coastal zone management (ICZM). Those conservation strategies target on species only cannot protect the ecosystem. Consequently, their effectiveness will be limited and useless in a long term. In other words, the sustainable fisheries or marine resources need to protect marine ecosystem basically.

APEC Integrated Oceans Management Forums III

First Announcement



*Photo: W.Y. Chiau
Chile*

Introduction

This is the first announcement to inform a targeted group of participants that the third of three APEC Integrated Oceans Management Forums will take place during October 18 - 20, 2004 on Easter Island, Chile.

This Forum is intended to engage a select group of participants to discuss the challenges and opportunities faced by regional institutions and alliances, regional opinion leaders, and business interests surrounding the integration of oceans and coastal activities across Asia-Pacific.

Background

Canada and Australia are leading a project within the Asia-Pacific Economic Co-operation (APEC) towards the development of a Strategic Approach for APEC Regional

Oceans and Coasts.

The project includes four phases. Phase 1 sought to engage APEC economies to determine the challenges they face in integrating oceans and coastal activities. This work was undertaken in Vancouver in 2000. Phase 2 sought to engage APEC working groups and committees to determine the challenges they face in integrating oceans and coastal activities. This work was undertaken in Canberra in 2002. This current phase 3 seeks to engage regional institutions and alliances, regional opinion leaders, and business interests to determine the challenges they face in integrating oceans and coastal activities. This work will be undertaken with the inclusion of Chile as a new partner on Easter Island (Chile) during October 18 - 20, 2004. The final outcomes will provide for the development of a Strategic Approach for APEC Regional Oceans and Coasts which is anticipated to be undertaken in co-operation with APEC Senior Officials during 2005.

Forum Agenda and Expected Outcomes

The meeting agenda and expected outcomes will be available by the end-July and will be posted on the meeting website [www.apec-oceans.org].

Target Participants

The list of targeted participant groups will be available by the end-June and will be posted on the meeting website [www.apec-oceans.org].

Forum Location

The Forum will take place at the Hotel Hanga Roa in the township of Hanga Roa located on Easter Island.

(Easter Island is also known as: Isla de Pascua in Spanish, and Rapa Nui in local traditional language).

Due to the capacity of the facilities, attendance at the Forum will be limited. Participation will be by invitation only – contact the Meeting Overseers for further information.

Meeting Overseers

The meeting overseers are: Sam Baird (Fisheries and Oceans Canada); Philip Burgess (Australian National Oceans Office); and Alex Brown (Undersecretariat of Fisheries - Chile).

Please direct all meeting invitation and funding enquiries to:

Sam Baird
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Conservation News

Dead Zones Emerging as Big Threat to 21st Century Fish Stocks

There are nearly 150 oxygen starved or “dead zones” in the world’s oceans and seas, a recent report by the United Nations Environment Programme (UNEP) shows.

These ‘dead zones’ are linked to an excess of nutrients, mainly nitrogen, that originate from agricultural fertilizers, vehicle and factory emissions and wastes. Low levels of oxygen in the water make it difficult for fish, oysters and other marine creatures to survive as well as important habitats such as sea grass beds.

Experts claim that the number and size of deoxygenated areas is on the rise with the total number detected rising every decade since the 1970s. They are warning that these areas are fast becoming major threats to fish stocks and thus to the people who depend upon fisheries for food and livelihoods.

The issue is raised in UNEP’s first ever Global Environment Outlook Year Book which was presented at the *8th Special Session of the Governing Council of the United Nations Environment Programme and Global Ministerial Environment Forum from 29 to 31 March 2004* in Jeju, Korea.

The Year Book looks at some of the environment-related milestones of the past year both globally and regionally.

Issues covered include the coming into force of the Cartagena Protocol, an

international treaty covering trade in genetically modified organisms, the costs of mainly weather-related natural disasters and the challenges that remain in improving drinking water supplies for over 1 billion people.

The Year Book also identifies the continued ‘fertilization’ of the planet and growth of oxygen starved areas in the oceans as a key emerging issue that governments need to urgently address.

In some parts of the world, such as large parts of Africa, nitrogen shortages are reducing farmers’ chances of meeting food demands. Such areas desperately need more fertilizers. However, in many other parts of the globe excessive use of fertilizers is contributing to the escalating problem of dead zones.

Klaus Toepfer, UNEP’s Executive Director, said: “Human-kind is engaged in a gigantic, global, experiment as a result of the inefficient and often over-use of fertilizers, the discharge of untreated sewage and the ever rising emissions from vehicles and factories. The nitrogen and phosphorous from these sources are being discharged into rivers and the coastal environment or being deposited from the atmosphere, triggering these alarming and sometimes irreversible effects”.

“Some of these so called dead zones or oxygen starved areas are relatively small, less than one square kilometre in size, whereas others are far larger at up to 70,000 square kilometres.

What is clear is, that unless urgent action is taken to tackle the sources of the problem, it is likely to escalate rapidly “ he said.

“Hundreds of millions of people depend on the marine environment for food, for their livelihoods and for their cultural fulfillment. Reducing the impacts of agriculture, human wastes and air pollution on the oceans and seas will be a key component in helping us to meet the Millennium Development Goals and deliver the World Summit on Sustainable Development’s Plan of Implementation in areas ranging from fisheries and biodiversity loss, to sanitation and poverty,” added Mr Toepfer.

The emergence of areas of artificially low oxygen levels can be closely correlated with the use of synthetic fertilizers in agriculture. Nitrogen is a main ingredient of these fertilizers.

Even when carefully managed, a lot of the fertilizer applied to crops is left in the soil. From there it is easily washed into rivers and subsequently to the sea.

The fertilizers, often in combination with nutrients from sewage, and nitrogen gases from traffic and industrial fumes falling on coastal water from the air, trigger blooms of tiny marine organisms called phytoplankton.

Their rapid growth and decomposition uses up oxygen in the sea-water leading to depleted oxygen levels. Sometimes the effects are mild. But

sometimes they can be dramatic with fish fleeing the 'suffocating waters' and creatures, like clams, lobsters, oysters, snails and other slow moving, bottom living creatures, dying en masse.

The economic costs associated with these oxygen depleted areas is unknown, but predicted to be significant on a global scale.

Some of the earliest recorded dead zones were in places like Chesapeake Bay in the United States, the Baltic Sea, the Kattegat, the Black Sea and the northern Adriatic Sea. Others have been reported in Scandinavian fjords.

The most well known area of depleted oxygen is in the Gulf of Mexico. Its occurrence is directly linked to nutrients or fertilizers brought to the Gulf by the Mississippi River. Others have been appearing off South America, China, Japan, south east Australia and New Zealand. In some parts of the world, actions have been taken to reduce the amounts of fertilizer and sewage running off the land.

An agreement for the River Rhine in Europe, in which countries agreed to reduce by half the levels of nitrogen being discharged, has cut by 37 per cent the quantities of nitrogen entering the North Sea.

However, there is concern that more oxygen starved areas will emerge in coastal waters off parts of Asia, Latin America and Africa as industrialization and more intensive agriculture increase the discharge of nutrients.

Experts believe that global warming, with its likely increase in rainfall and temperatures, may aggravate the problem. Research by a team at the College of William and Mary, Virginia Institute of Marine Science in Gloucester Point, Virginia, whose work has contributed to the GEO Year Book, indicates that there may be large changes in rainfall patterns with a



Photo: Y.Y. Lin
Spratly Isalnd, Taiwan

doubling of levels of carbon dioxide.

In some areas, this in turn could lead to a marked increase in the levels of run-off from rivers into the seas. They calculate that dissolved oxygen levels in the Northern Gulf of Mexico, triggered by an increased discharge from the Mississippi river basin of 20 per cent and a climb in temperature of up to four degrees Centigrade, could fall by 30 to 60 per cent.

Actions to reduce the threats should focus on sources of the nitrogen overload. Numerous options are available to governments, partly as a result of new scientific understanding as to how nitrogen 'cascades' through the environment.

For example, forests and grasslands have a high ability to 'soak up' excess nitrogen and slow down its movement from the land to the rivers and the seas. Planting more forests and encouraging more grasslands in some areas of the globe might help. Improving 'precision agriculture' so that less fertilizer is wasted should be another option. Producing livestock in the regions where most of their feed comes from could also reap benefits.

Large number of farm animals in Europe are fed on soya, produced in North America and Latin America. Raising the animals in the soya growing regions could reduce the exports of nitrogen to regions like the European Union where nitrogen excess is an issue.

Other actions include more widespread use of technologies that remove nitrogen compounds from vehicles fumes alongside the wider uptake of alternative energy sources that are not based on burning fossil fuels.

Better treatment of sewage, both by high tech systems such as water treatment works and low tech systems, such as wetlands and reed bed networks, will not only reduce nutrient discharges to coastal waters, but will help the world meet the water and sanitation aims in the Millennium Development Goals.

The UNEP Global Environment Outlook (GEO) Year Book 2003 is a new accompaniment to the successful Global Environment Outlook (GEO). The third in this series was published in 2002.

The impact of fertilizers and nutrients on the health of the planet was flagged up in GEO-2000 but, as the latest Year Book shows, little action to address the threat has been taken globally.

The Year Book, including the report and graphics on 'Dead Zones', is available at www.unep.org/geo/yearbook/

It can be purchased at <http://www.earthprint.com/go.htm?to=3348> priced \$20

More details on the 8th Special Session of the UNEP Governing Council/Global Ministerial Environment Forum are available at <http://www.unep.org/GC/GCSS-VIII/index.asp> and also at <http://www.2004unepkorea.org/>

US House Passes Landmark Legislation to Save Endangered Sea Turtles

The Ocean Conservancy applauds the House of Representatives for the recent passage of the Marine Turtle Conservation Act (H.R.3378), a victory for endangered sea turtles.

Championed by Maryland Congressman Wayne Gilchrest (R-1st), the bi-partisan bill authorizes \$5 million a year for international conservation projects protecting nesting sea turtles and their habitat, and will help to thwart illegal trade in sea turtle shell, meat and eggs. A similar bill passed the Senate in October of 2003. Small differences between the Senate and House versions need to be resolved before President Bush (news - web sites) can sign the bill into law.

Because sea turtles live a very long time, mature late, and move through the waters of many nations in their lifetimes, they are often victims of overexploitation. The need for international protection is urgent. Six of the world's seven sea turtle species are listed under the U.S. Endangered

Species Act, including the 1,000-plus pound leatherback, one of the world's largest reptiles.

"This bill is a triumph for sea turtles," said Marydele Donnelly, a sea turtle biologist with the Ocean Conservancy who testified before Congress in April in support of the legislation. "From Africa to Asia to Latin America, dedicated biologists and community activists are working under difficult and dangerous conditions to save sea turtles from extinction. Tonight, on beaches around the world, poachers armed with machetes will butcher turtles coming ashore to nest. Some of these animals will be 30-40 year old animals nesting for the very first time. The bill will provide funding to stop this killing," she said.

The Ocean Conservancy lauds Congressman Gilchrest for sponsoring the Marine Turtle Conservation Act, which is key to saving these imperiled and magnificent species.

"H.R.3378 will not itself stop the slaughter of sea turtles or their eggs, but it sends a powerful message to the world community that the United States strongly supports their conservation and will not allow these species to disappear forever," said Congressman Gilchrest.

The Marine Turtle Conservation Act will foster long-term research and protection of nesting populations, promote involvement and education of local communities in conservation, provide alternatives to egg and turtle harvesting, and help enforce existing laws to protect sea turtles.

Continued Donnelly, "Like the other multinational species funds for elephants, great apes, and tigers, this bill will attract private and international support to leverage U.S. monies. Since 1991, Congress has appropriated \$25 million to support anti-poaching activities, implement conservation plans and monitor at-risk populations; these funds have

attracted an additional \$80 million. In order to create such beneficial programs for sea turtles, the House and Senate must expeditiously resolve their small differences so that the bill can be signed into law."

The Marine Turtle Conservation Act authorizes funding for international programs through 2008.

The Ocean Conservancy strives to be the world's foremost advocate for the oceans. Through science-based advocacy, research, and public education, we inform, inspire and empower people to speak and act for the oceans. Headquartered in Washington, DC, with more than half a million members and volunteers The Ocean Conservancy has regional offices in Alaska, California, Florida, and New England and field offices in Santa Barbara and Santa Cruz, CA, Florida Keys, the U.S. Virgin Islands, and the office of Pollution Prevention and Monitoring in Virginia Beach, VA.

Information adapted from <http://www.usnewswire.com/>



Photo: Y.Y. Lin
Spratly Island, Taiwan