



United Nations
Environment Programme



UNEP/GEF South China Sea
Project



Global Environment
Facility

***Reversing Environmental Degradation Trends
in the
South China Sea and Gulf of Thailand***

REPORT

**Fourth Meeting of the Regional Working Group for
the Seagrass Sub-component**

Guangzhou, China, 29th November – 2nd December 2003



First published in Thailand in 2003 by the United Nations Environment Programme.

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For citation purposes this document may be cited as:

UNEP, 2003. Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand. Report of the Fourth Meeting of the Regional Working Group on Seagrass. UNEP/GEF/SCS/RWG-SG.4/3.

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Report of the Meeting

1. OPENING OF THE MEETING

1.1 The Project Director, Dr. John Pernetta formally opened the fourth meeting of the Regional Working Group on Seagrass (RWG-SG). He welcomed participants to the meeting on behalf of Dr. Klaus Töpfer, the Executive Director of the United Nations Environment Programme (UNEP) and Dr. Ahmed Djoghla, Assistant Executive Director, and Director, Division of Global Environment Facility Co-ordination (UNEP/DGEF). Dr. Pernetta informed the meeting, that the fourth RWG-CR meeting was being held in another conference room on the same floor of the hotel.

1.2 The Project Director noted that the project had reached a critical point in implementation, and that substantial work was before the participants for consideration and decision during the meeting. He noted that, as the operational phase of the project will start in 2004, it is imperative that outputs of the first phase were finalized, published and distributed prior to the commencement of the operational phase. During this meeting, current MoUs, expiring on 31 December 2003, would need to be amended to extend their duration to June 30th 2004 to take account of initial delays in fund transfer and start-up activities at the national level. Members should work out their individual work plans in order to ensure that the anticipated outputs would be produced on time, and budgets should be revised based on the revised work plan with realistic estimates of anticipated cash advances. Dr. Pernetta informed the meeting that the newly appointed fund management officer, Ms. Nita Tangsujaritvichit would be available to assist each focal point in revising their budgets based on the revised work plan and realistic estimates of requirements.

1.3 The Project Director further indicated that, an item requiring substantial discussion and input during the meeting was the finalisation of the demonstration site proposals. He indicated that Mr. Boon Tiong Tay, would join the meeting to assist focal points in finalising the financial sections of the proposals. He wished the participants, on behalf of the Executive Director, a very productive and enjoyable meeting.

1.4 The meeting noted that Dr. Miguel Fortes had left the University of the Philippines, which was the Special Executing Agency for the seagrass sub-component in the Philippines, and taken a position with the Intergovernmental Oceanographic Commission of UNESCO. He had been replaced as the Philippines focal point by, Dr. Marco Nemesio E. Montaña, also of the University of the Philippines. Dr. Fortes had been invited to join the RWG-SG as an expert member of international standing. The list of participants is contained in Annex 1 of this report.

2. ORGANISATION OF THE MEETING

2.1 Members recalled that Dr. Fortes was previously elected as Chairperson of the RWG-SG. Since he was no longer the Philippines Focal Point, he could no longer serve as Chairperson. Consequently, under the rules of procedure, the Vice-Chairperson of the RWG-SG, Mr. Tri Edi Kuriandewa would assume responsibility as Acting Chairperson for the remainder of Dr. Fortes' term. Mr. Kuriandewa expressed his appreciation for the opportunity to act as Chairperson for this important meeting, and welcomed Dr. Montaña as the newly appointed Philippines focal point.

2.2 The Chairperson invited Mr. Kelvin Passfield, Project Co-ordinating Unit (PCU) member, to introduce the documentation available to the meeting in both hard copy and on CD-ROM. Referring to document UNEP/GEF/SCS/RWG-SG.4/Inf.2, Mr. Passfield briefly introduced each of the documents listed. He informed the participants that the documents were included on the CD-ROM. In addition, the Philippines had brought hard copies of their national reports, and Indonesia had brought the latest revision of their demonstration site proposal. The list of documents available to the meeting is attached as Annex 2 to this report.

2.3 Mr. Passfield briefed participants on the administrative arrangements for the conduct of the meeting, and the proposed organisation of work (UNEP/GEF/SCS/RWG-SG.3/Inf.3). Formal sessions of the meeting would be conducted in English and in plenary although it is envisaged that, breakout sessions and night sessions, might be required in order to complete the various reviews and analyses of the substantive reports and demonstration site proposals.

3. ADOPTION OF THE MEETING AGENDA

3.1 The Chairperson introduced the provisional agenda prepared by the Project Co-ordinating Unit as document UNEP/GEF/SCS/RWG-SG.3/1, and invited members to consider proposals for any amendments or additional items for consideration prior to the adoption of the agenda.

3.2 The Project Director proposed an additional item for consideration under Agenda Item 8, Any Other Business. He suggested that, under this agenda item, the PCU brief members on the draft programme for the Regional Scientific Conference (RSC) to be held 11-13, February 2003, in Bangkok, Thailand. He asked if members could provide inputs and suggestions regarding the draft programme and planning arrangements. A hard copy of the draft programme for the Conference would be distributed during a later stage of the meeting. The RWG-SG agreed to include this additional item under Agenda Item 8.

3.3 A query was raised as to whether it would be possible to visit a seagrass site close to Guangzhou. The meeting recognised collectively that the tight schedule of the meeting might not allow for a site visit. The Project Director, however, informed the meeting that Professor Xiaoping Huang, on behalf of the South China Sea Institute of Oceanology, had kindly offered to host an excursion on the Pearl River on the night of 30 November 2003.

3.4 With the addition of the item regarding the draft programme of the RSC, the revised agenda, as contained in Annex 3 of this report, was adopted by the meeting.

4. REPORTS FROM THE PROJECT CO-ORDINATING UNIT REGARDING OVERALL PROGRESS TO DATE

4.1 Status of mid-year progress reports, expenditure reports, and budgets

4.1.1 The Chairperson invited Mr. Passfield to introduce this agenda item and document UNEP/GEF/SCS/RWG-SG.4/4, *“Current status of budgets and reports from the Specialised Executing Agencies in the participating countries”*, that contained a summary of the current status of budgets and administrative reports, including audit reports, received by the Project Co-ordinating Unit from the Specialised Executing Agencies (SEAs) in the participating countries.

4.1.2 Mr. Passfield highlighted the difficulties of the PCU in respect of the implementation of the individual MoUs. One particular problem was the inadequate costing of activities at the national level, resulting in under-expenditure and carry-forward of unspent monies from the cash advances. Members were requested to note that under-expenditures could not be carried beyond the 31st December 2003 without extension of the existing MoUs. Such an extension can only be justified in terms of initial start-up delays including *inter alia* delays in receipt of the first tranche of funds in 2002, and subsequent documented delays at the national level. Any such extension must be signed before the expiry of the current MoU.

4.1.3 It was noted that, the existing MoU's with termination dates of 31st December 2003 should be extended to at least June 30th 2004 to permit finalisation and publication of the substantive reports and continuation of national committee and sub-committee activities whilst the second memoranda to March 2007 are negotiated and signed.

4.1.4 Attention was drawn to Table 1 of the document and the problems and issues involving the status of each country's progress reports, expenditure statements, cash advance requests and audit reports. No audit reports have been received from Cambodia and Philippines. Members should take note of the fact that, an audit report is a necessity before any further transfers of money are authorised.

4.1.5 Malaysia outlined the problems encountered in transferring money from the Ministry of Agriculture to the SEA since money was transferred from UNEP to the bank account of the Ministry of Agriculture, and the SEA did not have direct access to the money. Arrangements have now been made to transfer money from the bank account of the Ministry to the SEA account. He expected that money would be transferred in the next few weeks, after which the SEA would expedite its implementation of project activities. Mr. Passfield requested an expenditure report from Malaysia even

though no money was spent. It was suggested that money should be transferred to the SEA directly in order to expedite the process of the implementation of project activities at national level.

4.1.6 Mr. Passfield noted that unspent cash balances are a serious problem both for the SEAs and for UNEP. Attention was drawn to the provisions of the MoUs regarding unspent cash balances upon completion of MoUs. He further noted that a letter from the Project Director was facsimiled and mailed on 15 August 2003, pointing out the existence of the problem and potential solutions. In paragraph 8 of the MoUs, it was stipulated that *"the Designated Institutions will refund to UNEP in US dollars any unspent balance of the funds provided by UNEP within 30 days after completion of the final task."*

4.1.7 It was noted that large unspent cash balances, to some extent, indicated that SEAs were not planning their activities well, or not actually undertaking the planned activities, causing delayed activities and unspent monies. No further money would be transferred until justification of further expenditures is considered adequate, and persuasive that the requested money would be really spent. It is therefore imperative that, during this meeting, each SEA works out its individual work plan, and cash advance requirements to complete the assigned tasks. The RWG agreed that each SEA would make individual appointments with Ms. Tangsujaritvichit to finalise the budgets based on individual work plans and planned activities.

4.1.8 Following the presentation, the situation regarding the financial and administrative matters was discussed and considered. The RWG-SG collectively agreed that MoUs should be extended to June 30th, 2004. The RWG-SG further agreed that each SEA would plan realistic activities, with matching work plan and budget planning. Mr. Passfield noted that the work plan should be well planned and activities, implemented immediately after the meeting, in order to avoid trying to rush to implement all activities and spend all unspent cash balances during the last months of the MoUs.

4.1.9 The RWG took note of issues and decisions as follows:

- Publication of national reports in English and national languages. It was agreed that the SEAs should include the cost of publishing national reports in their budgets. The PCU would bear the cost of publishing or printing English versions of the reports for regional distribution.
- Audit costs were not included in the previous budget estimates. For the next budget revision, the cost of auditing should be taken into account and be included in the revised budget. It was further noted that audits were an annual requirement hence the present revisions should include allocations for the costs of the audit of 2003 expenditures.
- Large, unspent sums of money deposited in the bank account of the SEA, would yield interest on the savings. The SEAs should report any interest earned and this could then be applied to legitimate project related costs. The Philippines focal point informed the meeting that the money was deposited in a foundation, and therefore did not earn any interest.

4.1.10 Taking note of the existing financial and administrative problems, the meeting collectively agreed that, the following tasks would be completed during the fourth RWG-SG meeting:

- Amendments to the MoUs to extend their duration to June 30th 2004;
- A realistic and feasible work plan for national level activities;
- A matching revised budget consistent with activities under this work plan.

4.2 Status of planned substantive outputs from the national level activities

4.2.1 The Chairperson invited the PCU member to introduce this agenda item and document UNEP/GEF/SCS/RWG-SG.4/5, *"Current status of substantive reports on Seagrass from the Specialised Executing Agencies in the Participating Countries"* containing a summary of the current status of the substantive reports received to date, by the PCU.

4.2.2 Documentation received by the Secretariat from the Focal Points up to the end of October, 2003 had been circulated by e-mail and electronic copies of all reports and documents received from the national level were provided to the meeting on CD-ROM, together with hard copies of the demonstration site proposals, for the reference of each member during discussion under agenda item 5.

4.2.3 In introducing document UNEP/GEF/SCS/RWG-SG.4/5, Mr. Passfield pointed out that the MoUs obligated the SEAs to produce outputs as follows:

- Reviews of national data and information;
- National meta-database;
- Reviews of past and ongoing projects;
- Summary of existing national legislation;
- A review of existing national criteria and preparation of objective criteria; and,
- National seagrass action plan.

4.2.4 It was noted that deadlines to finalise these reports had been modified twice during the past three RWG-SG meetings, and that the latest agreed deadlines had already passed. The RWG-SG has now reached a critical time when the group as a whole should decide when the end results would be published, how they would be published, and in what form.

4.2.5 The RWG-SG recalled that the Project Steering Committee, at its second meeting, in December 2002, Hanoi, Vietnam, decided to introduce the process of independent review to ensure the international quality of the final publications. Mr. Passfield noted that, not all reports had been received in draft; hence the process of external independent review had been delayed. Draft reviews from independent reviewers, together with the review of the PCU, have been consolidated in document UNEP/GEF/SCS/RWG-SG.4/6.

4.2.6 Members of the RWG-SG accepted that the comments of the independent reviewers and the PCU are valid and helpful, and would be taken fully into consideration in the finalisation of the reports.

4.2.7 Regarding the reports on legislation and economic valuation, the first meetings of the Regional Task Force on Legal Matters (RTF-L) and the Regional Task Force on Economic Valuation (RTF-E) had reviewed the reports and provided advice and recommendations for their finalisation. Comments of the Task Forces on the national reports were sent to each individual SEA upon the completion of the RTF meetings. It was agreed that the minimum content for legislation reports and the regional framework for economic valuation should be followed by the SEAs in revising and finalising their reports. Some countries informed the meeting, that they had contacted and discussed the comments with their national legal experts, and had revised their legislation reports following the recommendations made by the Regional Task Force on Legal Matters.

4.2.8 In deciding what reports should be published, and in what format, some countries noted that the minimum content of the legislation report and regional framework for economic valuation, worked out by the RTF-L and RTF-E, provided very useful guidelines for the SEAs in revising and finalising the reports. The RWG-SG therefore agreed that it would work out a minimum content for the final publication of the seagrass national reports that synthesised the data and information collected by the SEAs.

4.2.9 Following this decision a lengthy discussion ensued during which the meeting agreed that two separate reports should be published by June 2004:

- 1) National Seagrass Report, combining review of past and ongoing activities, review of data and information, national legislation and economic valuation;
- 2) National Action Plan.

4.2.10 In considering the format and content of the National Seagrass Report, Annex 7 of the first meeting report, UNEP/GEF/SCS/RWG-SG.1/3, was reconsidered, based on which, a minimum content of the final National Seagrass Report was agreed by the RWG-SG. This minimum content is contained as Annex 4 to this report. It was agreed that the report will be compiled according to the format, and submitted to the PCU by the end of March for Malaysia, and the end January 2004 for other countries. It was also agreed that the references of the reports would be numbered, and appended to each chapter.

4.2.11 In the case of Cambodia, there is a serious lack of data and information on seagrass. Suggestions were solicited from members to assist in addressing this lack of information from Cambodia. Mr. Seriath noted that most of the surveys conducted in Cambodia are socio-economic surveys, rather than ecological ones. Dr. Fortes and Dr. Chittima agreed that they would provide

some information to Cambodia and Dr. Chittima also agreed to provide some sources of information for Malaysia.

4.2.12 With regard to the status of the national seagrass action plans, it was noted that different countries are at different stages of development of the national seagrass action plans. Mr. Passfield noted that, national action plans are very important anticipated outputs that will provide inputs to the Strategic Action Programme.

4.2.13 Indonesia informed the RWG-SG that the national action plan was completed and had been adopted by the government. Each country considered carefully their individual work plans and the status of their national action plan, and proposed their timetables to submit the draft national action plans, as follows: Cambodia, China, Thailand, Vietnam, March 31st 2004; Malaysia, April 30th 2004; Philippines, 31st January 2004.

4.2.14 In response to a query from the floor on the National Action Plans (NAPs), the Project Director requested permission of the Chairperson to provide some clarification. He informed the meeting that drafts of these plans were a required output by the end of the first phase of the project. He emphasized the importance of finalising these during the second phase of the UNEP/GEF South China Sea Project, and they would be included in the MoUs, which would need to be negotiated by March 2004 for the second phase. He recalled that during the PDF-B phase of the UNEP/GEF South China Sea Project, a draft Strategic Action Programme (SAP) had been prepared and adopted by the seven participating countries. He emphasized that NAPs should be operational and implementable with defined, realistic and specific goals and actions.

4.2.15 An important element to be included in the revised SAP will be a regional economic valuation, such that the costs of intervention or non-intervention with regard to environmental degradation could be determined at regional rather than national or local scales. He noted that NAPs were a fundamental element contributing to the finalisation of the SAP. NAPs should provide justification for government intervention by evaluating the cost of the intervention and the cost of non-intervention.

4.2.16 The Project Director indicated that the draft NAPs developed during the preparatory phase should serve as a starting point for the development of the final NAP to be adopted formally by governments before December 2007. He indicated that one of the main goals during the second phase of the project is to provide inputs from the national level to the elaboration of the SAP. He noted that this process might take a considerable time, as it was necessary to involve various stakeholders and to go through a sometimes, lengthy process of government approval and adoption. He encouraged the focal points to consult with various levels of government and other stakeholders in the near future to determine the most appropriate way in which to develop and secure approval for the National Action Plans.

4.2.17 The Project Director reminded members of the RWG-SG that the MoUs must be amended to permit extension to June 2004. Accordingly, he requested the SEAs to work on their work plans overnight, and to submit individual work plans to the PCU to consolidate on the following morning.

4.3 Status of planned substantive outputs from the regional level

4.3.1 The Chairperson invited the PCU member to introduce this item. Members recalled their agreement that a regional over-view of the status of Seagrass in the South China Sea was to have been produced by the PCU and officers of the committee prior to this meeting, for review during the meeting. Regrettably delays in submission of national inputs including submission of GIS based data and metadata, combined with the staffing situation in the PCU during the first half of 2003, have delayed the preparation of this overview, which must be printed in time for the Regional Scientific Conference in February 2004.

4.3.2 Mr. Passfield presented document UNEP/GEF/SCS/RWG-SG.4/7, *"Proposed timetable, contents and responsibilities for the production of the regional overview of Seagrass bordering the South China Sea,"* which suggested a format and framework for the content of the regional overview, that was consistent with those for the other components and sub-components. The main content of the regional overview should include: foreword; introduction; seagrass distribution & diversity in SCS; state of seagrass beds & present threats; use & value of seagrass systems bordering the South China Sea;

purpose of the demonstration sites; process of selection of sites; and end page. An example of text formatting and cover for the regional review were also presented to the meeting.

4.3.3 The participants were reminded that an email was circulated to the group by Mr. Passfield, seeking inputs and volunteers to assist in the publication of this regional overview. He informed the meeting that some information had been received from individual countries: Vietnam has provided information on the use of and threats to seagrass, Cambodia information on threats, Thailand information on threats and Professor Huang on threats and uses of seagrass in China. Dr. Fortes accepted the suggestion of the PCU to write the "Foreword," which had been electronically circulated to the group.

4.3.4 The following members agreed to take responsibility for portions of the booklet as follows:

- Dr. Fortes - "Introduction". He indicated that it would be difficult to write text on "rates of loss in area over the 20th Century, globally and regionally," so he sought some inputs and information for this part. It was suggested that the information on the rates of loss could be possibly deduced from some national reports.
- Dr. Chittima - co-ordinate the production of the part on "seagrass distribution & diversity in SCS," with inputs of national focal points.
- Dr. Hutomo - "the state of seagrass beds and present threats."
- Dr. Suvaluck Satumanatpan "the use & value of seagrass systems bordering the South China Sea."

4.3.5 Mr. Passfield indicated that he had received some inputs from focal points that would enable him to assist Mr. Hutomo and Dr. Suvaluck on those parts for which they had assumed responsibility.

4.3.6 It was further suggested that the purpose of the demonstration sites and process of selecting sites would be similar across sub-components. Therefore this section would be coordinated by the PCU. It was agreed that a draft of the regional overview should be completed during this meeting. A case study of dugongs around Phu Quoc in Vietnam will be included and another case study on cookies made from seagrass seeds in the Philippines.

4.3.7 The meeting noted the extreme urgency to develop the regional overview of seagrass, and discussed the information needs for certain parts of the review. In order to assist the PCU in the writing of the part "purposes of proposed demonstration sites proposals," the meeting decided that countries should identify the main purpose of each proposed demonstration site. This was duly completed, and is presented in the table below.

Table 1 Focus of interventions at the proposed demonstration sites.

Cambodia	Community Based Management
China-Hepu	Community Based Management
China-Lian	Integrated Coastal Zone Management
China-Liusha	Community Based Management
Malaysia	Rehabilitating degraded seagrass ecosystem
Indonesia	Community Based Management of a seagrass sanctuary
Philippines-Bolinao	Benefits of research institute involvement in seagrass management
Philippines-Puerto Galera	Benefits of Govt/private/academic input into seagrass conservation and management
Phi-Ulugan Bay	Linkage between seagrass, mangrove, and coral reef habitats -developing partnerships among stakeholders
Thailand-Pattani	Co-management Government/community
Surat Thani	Creation of public awareness to improve conservation of seagrass beds.
Vietnam Bai Bon	Maintaining seagrass beds for biodiversity, particularly endangered species
Vietnam-Thuy Trieu	Community Based Management

5. REVIEW OF THE SITE RELATED DOCUMENTS

5.1 Site characterisation; cluster analysis; environmental and socio-economic ranking; and available supporting documentation

5.1.1 The Chairperson invited Mr. Passfield to present the document, UNEP/GEF/SCS/RWG-SG.4/8, *“Cluster analysis and environmental and socio-economic ranking, of potential seagrass demonstration sites bordering the South China Sea”*. He noted that a cluster analysis had been conducted based on data and information submitted after the third RWG-SG meeting. A revised version of the clustering was dispatched on 1 August 2003.

5.1.2 Members were invited to note that, the clustering and ranking of sites is based on the agreed environmental criteria and in particular criteria and indicators relating to biological diversity. In order to ensure international acceptability of this process, the indicators must be substantiated by the lists of species known to occur at each site.

5.1.3 In discussing the cluster analysis and data on which it was based the attention of members was drawn to some anomalous values highlighted by the regional expert members. It was further noted that missing data skew the results of the clustering. The RWG-SG decided that those sites, which have 5, or more than 5 parameters, without data, would be deleted from the data set for cluster analysis. Based on this agreed principle, 13 sites were eliminated from the data set, and 26 sites remained for cluster analysis.

5.1.4 Some anomalous data values were questioned during the checking of the final dataset. One of these was the coverage of seagrass in the site of Trikora Beach of Indonesia (99% coverage). It was suggested by Dr. Fortes, that the highest coverage of seagrass may not exceed 95%, according to the Global Seagrass Research Methods (Short, F. T. and R.G. Coles, eds. 2001)¹. The regional working group noted that the area of Cambodia KAMPSG1 site of 25,240 ha was enormous, making it an outlier from all clusters. Mr. Suy Serywath clarified that the area was measured using remote sensing and GIS.

5.1.5 Dr. Tien requested that the site of Con Dao should be eliminated from the data set, because Con Dao is already being financed by the GEF and UNEP under another project. In order to avoid duplicating activities and efforts, Vietnam will not propose this site as a demonstration site. Mr. Passfield suggested that a demonstration site may not necessarily require financing from the UNEP/GEF South China Sea Project. Visits could, however, be financed to ensure parallel learning from the Con Dao site. Mr. Passfield suggested that, further discussion should be conducted between Dr. Tien, Dr. Vo Si Tuan, as the Chairman of the Vietnam National Technical Working Group, and Dr. Pernetta, with regard to this site.

5.1.6 It was also noted that some data used in the ranking process were unsupported by detailed lists of species or references to original sources. It should be noted that the information included in the regional cluster analysis should be substantiated by such listings where these had not been already presented. Data and information were added, checked, revised, and verified for the raw data set of the cluster analysis.

5.1.7 Following a very lengthy discussion about the difference between the two parameters, “endangered and threatened species” and “migratory species” and recalling their previous decision that turtles would be included as migratory and dugongs as endangered species only, the RWG-SG agreed to reconsider this issue since countries have treated these parameters differently. For species that are both endangered and migratory, Indonesia, Philippines and Vietnam had counted the species in both parameters, but China and Thailand counted the species only in one parameter. In order to make the data consistent between countries, it was decided that species, which are endangered and migratory, should be counted in both parameters. Data were therefore revised by countries to make the methodology consistent.

¹ Short, F. T., and Coles, R.G. eds. 2001, *the Global Seagrass Research Methods*, Elsevier.

5.1.8 There followed a discussion on whether the parameter “range of depth” should be included in the cluster analysis since the importance of this parameter was questioned. Since the RWG-SG was unable to resolve these differences of opinion, it was decided that two sets of cluster analyses should be conducted, one with, and one without the parameter included.

5.1.9 The results of the two sets of analyses were presented to the RWG-SG and members were requested to consider which cluster analysis best represented the overall relationships between sites in their professional opinion. It was noted that, the results of the two sets of analysis were very similar to one another. The cluster analysis including the depth range, resulted in clusters that were more tightly aligned than those where the depth range was excluded, since in the former case there was apparently greater similarity among sites within clusters. After some discussion it was agreed that the most appropriate cluster analysis to use was the one, which included the depth range.

5.1.10 The issue of outliers was discussed in the meeting and a question was raised regarding how these individual cases should be dealt with. It was suggested that the two outliers in the cluster analysis (Con Dau, Viet Nam, and KAMPSG1, Cambodia) resulted from the data divergence between the data provided, and the median condition or status of the majority of seagrass beds in the region. The results of the cluster analysis suggest that the two outlying sites do not fit well within the clusters based on the agreed parameters. From the perspective of selecting demonstration sites these locations could only be considered as falling outside the normal range and therefore they would be unlikely to be selected as representative demonstration sites. The cluster analyses results are presented as Annex 5 of this report.

5.1.11 Based on the most recently updated data set, the meeting considered, discussed and revised the environmental indicators and weight for the ranking of sites (Table 1 of Annex 6). Rank scores were modified for the area, and for the number of seagrass, gastropod, penaeid shrimp, and siganids, based on the most up-to-date information available to the meeting. The revised, and finally agreed table of rank scores for environmental indicators is attached as Table 2 of Annex 6 to this report.

5.1.12 Following the assignment of rank scores for the environmental indicators, there ensued a lengthy discussion on the indicators to be used for the ranking of the socio-economic aspects of the sites. The meeting reconsidered the relevance of each of the indicators and revised them as follows:

- Potential for reversibility of threats. The original scale contains only three classes “low,” “medium,” and “high.” It was considered that this was too simple to reflect the real complexity, since some sites will fall between “low” and “medium” or between “medium” and “high”. The meeting agreed that “low/medium” and “medium/high” be added to the scale.
- Financial considerations/co-financing. It was noted that the “Project Cost GEF” was the annual cost of the proposed project in the original table. Since most countries had planned their budget with total project cost, the meeting agreed that the scaling of the “Project Cost GEF” be revised to reflect the total project cost.
- Co-financing. It was noted by the meeting that co-financing includes both cash and in-kind co-financing. It was further noted that different countries may have different methods or standards for calculating in-kind co-financing, making it a less objective measurement than the cash co-financing. The meeting decided that these two types of co-financing should be separated and weighted differently. Therefore, the meeting decided that from the total 12 points assigned to financial considerations/co-financing, 8 points were to be assigned to cash co-financing, and 4 points to in-kind co-financing.
- Management potential. It was noted by the meeting that “management potential” is a general indicator, which to some extent has been covered by the previous indicators. The term “Other management considerations” was therefore suggested to replace “management potential”. Indicators under this category, however, were not changed.

5.1.13 The table of revised socio-economic indicators is presented as Table 3 of Annex 6 of this report. Having agreed upon the indicators and weight assigned to each of the socio-economic indicators, each country was provided with a hard copy of the revised socio-economic indicators, and requested to score their sites.

5.1.14 The Project Director noted that total project costs proposed by countries vary greatly among sites. Some countries have proposed exceedingly high total costs for the proposed activities. He pointed out that experience in the preparatory phase shows that there is limited capacity in countries to manage large amounts of money. Considering the realistic absorptive capacity for external funding of the countries in the region, he suggested that countries should make more realistic financial plans based on actual costs. He further reminded members that, the greater the value of the co-financing the more likely the proposal will be selected for GEF funding.

5.1.15 Malaysia informed the meeting that no proposal has been completed, however, Mr. Kamarruddin bin Ibrahim stated that Malaysia is planning to propose Tanjung Adang Laut Shoal as a demonstration site. He noted two reasons for this proposal. Firstly, this area is an example of a threatened ecosystem due to intensive land reclamation and dredging activities being conducted in the area associated with rapid coastal development. Second, the site is considered as the highest priority by the government, which expects to reverse the impacts of degradation. Furthermore, it was noted that a RAMSAR site is close to the proposed seagrass site, which provides an opportunity for integrated management of wetland and seagrass.

5.1.16 The rank scores for the socio-economic indicators were collected and compiled by the PCU, the result of which is presented in Table 4 of Annex 6 of this report. It was noted that the scores for the socio-economic indicators were considerable greater than those for the environmental indicators, hence simple addition of these two would result in the final rank being dominated by the social and economic parameters. It was noted that each site has a higher socio-economic than environmental score, and that the average socio-economic score (65.3) is about one and half times the average of the environmental score (43.6).

5.1.17 The meeting noted that the Philippines sites and the Chinese Hepu site had high rank scores for private sector involvement. In the Philippines case the meeting was informed that a foundation has committed some co-financing to the proposed sites. China briefed the meeting that small fishing businessmen have learnt the importance of seagrass for increasing fishery productivity during the preparatory phase of the project, and had made commitments in changing their current fishing practices.

5.1.18 The meeting took note of the fact that, socio-economic indicators are, to some extent, subject to personal judgement and evaluation, which may inevitably result in less comparability of data among countries. The meeting further noted that, socio-economic rank scores largely depended upon personal evaluation and expectation, resulting in unavoidable subjectivity.

5.1.19 Whilst recognizing the importance of socio-economic indicators, the meeting considered that environmental indicators and socio-economic indicators, should not be scored equally in determining final rank score, since the environmental scores were based on more objective measures that were comparable across all sites than the socio-economic scores. The meeting collectively acknowledged that the environmental indicators should therefore be more heavily weighted. After a lengthy discussion, the meeting agreed that the environmental indicators should be weighted at 60%, and the socio-economic indicators at forty percent (40%). The final weighted rank scores arranged by cluster are provided in Table 5 of Annex 6.

5.2 Critical review of proposals for demonstration sites

5.2.1 The Chairperson invited Mr. Boon Tiong Tay to brief the meeting on the examples provided relating to Sections 12-15 of the demonstration sites proposals. Mr. Tay noted that budgets and expenditures should be carefully planned to cover specific activities, and therefore the budgets and expenditures for each proposed demonstration site must be different from one another to reflect different activities among sites. He noted that some countries had submitted exactly the same budgets and expenditures for completely different demonstration sites, which suggests that some countries have not carefully considered their budgets and expenditures.

5.2.2 He noted that sections 12-15 are very important parts of the proposals, and they are closely related to one another. Section 12 presents the outcome of the activities at each proposed demonstration site, which must be in line with the objectives and goals of the proposed site. Section 13 has to be well-planned activities, with the aim of achieving the outcomes specified in section 12.

In Section 15, budget and expenditure should be carefully planned to cover the activities in Section 13, while section 14 should discuss risks associated with the proposed activities specified in section 13, together with a discussion of how to sustain the benefits of the proposed project.

5.2.3 It was noted that the ratio of government co-financing to GEF funding should be at least 1:1 for a proposed project to be eligible for GEF grant funds. Mr. Tay emphasized that co-financing in-kind should be very carefully calculated, and be included in the total cost of the proposed project cost. Mr. Tay offered to assist each of the members during the meeting, or through emails, in revising and finalising the financial parts of proposals.

5.2.4 Taking the opportunity of his presence in the meeting, Mr. Tay informed participants that the first meeting of the RTF-E was convened in September 2003, and an economic framework for economic valuation of seagrass, resulting from the meeting, had been produced and was distributed to the RWG-SG. Comments were solicited from the members of the RWG-SG regarding this economic framework.

5.2.5 The Chairperson invited Mr. Passfield to introduce document UNEP/GEF/SCS/RWG-SG.4/9, *"Reviews of the seagrass demonstration site proposals for sites bordering the South China Sea"*. It was noted that the document contains critical comments on demonstration site proposals. Mr. Passfield noted that the comments of the PCU were sent to each of the countries prior to the meeting, and informed the RWG-SG that revised proposals from Indonesia and Philippines had been brought to the meeting. Copies of the revised proposals were provided to the members.

5.2.6 Attention was drawn to the general, editorial and substantive comments, contained in document UNEP/GEF/SCS/RWG-SG.4/9, which should be considered by all SEAs in revising their proposals. The meeting took note of the following common problems existing in the proposals:

- Proposals should follow the format agreed in the third meeting of the RWG-SG, provided in document UNEP/GEF/SCS/RWG-SG.3/6.
- Linkages between the parts of proposals should be laid out and illustrated. Goals of the proposed projects should be tangible, realistic and measurable, and should be achieved by a series of well-planned activities with expected outputs and outcomes. Budgets and expenditures should be categorized under planned activities.
- Indicators of success should be included to monitor and evaluate proposed project activities.
- Infrastructure such as office buildings, or major equipment items such as cars or boats will not be financed by the GEF.

5.2.7 The RWG-SG considered, discussed and exchanged ideas on some important concepts such as indicators, and the distinction between outputs and outcomes. Outputs are defined as tangible products created by the project activities, such as meeting reports, posters, booklets, guidelines or other publications. Outcomes are less tangible results achieved by project activities. An example was given to illustrate the differences between the two concepts. During the fourth RWG-CR meeting, several countries had decided to prepare joint demonstration site proposals, which is one of the outcomes achieved by the meeting. The meeting report is considered as an output.

5.2.8 It was noted that indicators should be measurable and tangible. For example, an acceptable indicator for "reduction of pressure from over fishing" could be the number of fishermen who left fishing for alternative livelihoods. The indicator of the success of establishing a management committee could be the government decree, which announced the establishment of the committee.

5.2.9 Due to time constraints, the RWG-SG decided not to review each of the 12 proposals submitted to the PCU, but to critically review one proposal, considered as the highest priority, from each country. The RWG-SG noted that the Philippines and Indonesian proposals are helpful for other countries in revising their proposals, since they have already been revised based on the PCU comments. Specific comments from the RWG-SG are as follows:

- **CAMBODIA.** It was suggested that specific site related goals and objectives should be defined in section 10, rather than copy those of the overall project. The area of the proposed demonstration site is too big to be managed; therefore Cambodia should narrow down its geographic coverage.

- **CHINA HEPU.** Outcomes in section 12 should be categorized and numbered so that they could be easily identified by readers. Goals and purposes in section 10 should also be itemized. Indicators to measure the success of the project should be included, such as the numbers of pamphlets published and distributed, as well as the results of, for example, comparative questionnaire surveys before or after the proposed interventions.
- **INDONESIA TRIKORA BEACH.** Mr. Kuriandewa accepted that the budget is high for the project, but the expense is expected to be reduced. It was noted that the four proposed activities should be clearly linked to the five outcomes in the proposal. It was pointed out that the implementation plan under section 16 looks the same as the goals and purposes of section 10. Supporting information for local community participation should be included. Linkages and relationships with other components of the project or other existing projects in the proposed site should be explored and included in the proposal. In section 8, stakeholder's names should be spelled out. Financial commitments from various stakeholders, if any, should be included to make the proposal more attractive to potential donors. It was clarified by Indonesia that two organizations had made commitments to financially support the activities. In section 14, it was pointed out that the GEF funding cannot buy a car or a boat. Indonesia clarified that this is a proposal for the government. It was suggested that the establishment of the database should be put under planned activities, section 13, rather than elsewhere.
- **PHILIPPINES CAPE BOLINAO.** It was noted that a stakeholder involvement plan should be included in the proposal. Rationale and objectives (section 11) should be expanded, and the last sentence of the second paragraph should be rewritten. This section should convince potential donors that the site is suitable as a demonstration site, and how it will be related to the objectives of the GEF. If there is another GEF project existing in the site, this section should explain why additional money is needed, and how the proposed project is related to the existing GEF funded project. It was noted that outcomes are too normative and general, and should be made more tangible and specific. It was suggested that the budget should be revised. Section 17 should include the project's linkage with other components or other GEF projects, and explain how the proposed activities are complementary to the existing activities. The implementation plan under section 16 is exactly the same as Annex 4. It is suggested that another table should be made for the purpose of monitoring and evaluation, as in Annex 4. Under section 13, no management intervention, such as patrolling, was included. Under section 14, risks were analysed and included, but no proposed interventions were suggested to minimize the risks. Similarly, a causal chain analysis was included in the proposal, but no proposed actions were included to address the root causes.
- **THAILAND, PATTANI BAY.** Under section 13, the activity of establishing a Pattani Bay Committee should include an indicator of success, such as a government decree. It was noted that there are six proposed interventions for this bay. Components 1-4 are the priorities. Component 5 and 6 will be future activities, not during the project phase. It was suggested that it is not necessary to delete component 5 and 6 from the proposal, since the two components show some future direction for the proposed site. It was noted that the proposed project has ambitious goals, with sixty activities proposed within a period of three-years. The meeting noted that the more activities proposed, the higher the risks will be involved. It was suggested that activities should be developed and planned, which can be reasonably achieved during a three-year period, and that some activities should be cut down, or be put under section 14 as future activities in the discussion on sustainability. Under section 10, a defined goal is "reduction of sedimentation in seagrass bed". Activities should be clearly designed to achieve this goal. Under section 13, the "establishment of a master plan for 2007-2012" was included as an activity. It was further noted, that it is good to have long-term vision of the proposed site. Under financial sustainability and risk assessment, discussion should be included on how to achieve the outcome and sustain the benefits. It was pointed out that benefits for local people or alternative livelihood such as ecotourism should be included in discussing financial sustainability. Strategy or plans for sustaining the benefits should be included.
- **VIETNAM, BAI BON.** Under section 12, it was noted that a 20% increase in fish catch would be very difficult to achieve even in ten years. Therefore it was considered too risky to put this as an outcome. It was suggested the goals and purposes should be simple, risk-controllable and feasible. Participatory management should be included as part of the activities in section 13.

Mr. Passfield informed the meeting that the list of endangered species may need to be checked to ensure that it included only internationally recognized endangered species. Dr. Tien promised to check the species list.

6. REVISION OF THE WORK PLAN AND ACTIVITIES FOR THE REGIONAL WORKING GROUP ON SEAGRASS WITH EMPHASIS ON THE PERIOD OCTOBER 2003 TO JUNE 2004

6.1 During the first and second meetings of the Regional Working Group a flow chart of activities and work plan and timetable were developed and agreed. It is clear from the sequential delays in production of national level outputs that insufficient attention has been given in past meetings to the time required to produce substantive outputs at the national level. The attention of members was respectfully drawn to the need for full understanding of what outputs are required, by when, and for what purpose prior to their agreeing on the work plan and timetable for the group.

6.2 In the light of the discussion and agreements reached under prior agenda items, the meeting was invited to review and discuss the contents of document UNEP/GEF/SCS/RWG-SG.4/10 *"Proposals for a revised work plan and timetable for the RWG-SG with details of outputs and milestones between October 2003 and June 2004"*.

6.3 In revising the work plan for the Regional Working Group on Seagrass, the meeting took into consideration the deadlines for national outputs, as agreed under agenda item 4.2, as well as a number of important milestones with respect to requirements for the Regional Scientific Conference in February, 2004. The final agreed work plan and timetable is contained as Annex 7 of this report.

7. DATE AND PLACE OF THE FIFTH MEETING OF THE REGIONAL WORKING GROUP ON SEAGRASS

7.1 Members were invited to consider and agree upon the proposed time and place for the fifth meeting of the RWG-SG. It was noted that the PSC decided at its last meeting that future RWG meetings could only be convened at demonstration sites. The overall schedule of meetings as approved by the third meeting of the Regional Scientific and Technical Committee (UNEP/GEF/SCS/RSTC.3/3) currently has the fourth meeting scheduled for October 11th to 14th, 2004. No member expressed conflict of schedule during those dates.

7.2 While considering the fact that final demonstration sites would only be decided at the next PSC, and would be based on the recommendation of the RSTC meeting in February, the meeting proposed that, Trikora Beach in Indonesia will be the first priority venue for the fifth meeting of the RWG-SG, and Pattani Bay, Thailand was proposed as an alternative venue. Hepu and Cape Bolinao were both not considered suitable, as the respective focal points indicated that the weather conditions in October may cause difficulty in convening the meeting at these sites. In the event that neither of these sites was selected for a demonstration site, it was agreed that the venue could then be decided through email discussion.

8. ANY OTHER BUSINESS

8.1 Consideration of the draft programme for the Regional Scientific Conference, Bangkok, February 2004

8.1.1 A draft programme for the Regional Scientific Conference (RSC) was distributed to the meeting for consideration and discussion. The meeting agreed that Dr. Fortes should present the regional overview of seagrass, based on his international reputation as a seagrass expert.

8.1.2 Mr. Passfield noted that there are two main goals of the RSC. Firstly, it was an opportunity to convene a meeting with members of the regional working groups from all components and subcomponents of the South China Sea Project, which would allow for a review of progress and achievements made by the project to date, particularly in regard to the data available regionally for the important marine habitats. Secondly, this will be an important event for the whole project community in engaging potential partners, and seeking external funding for 15 additional demonstration site proposals.

8.1.3 It was noted by the Project Director, that a wide of variety of potential partners, including government development agencies, foundations and private sector organisations, would be invited to the Conference. He informed the meeting that numerous communications had already been sent to a variety of potential partners by the PCU. It is estimated that 30 agencies will be represented at the Conference and he noted that concrete demonstration site proposals should be finalized and made available well in advance of the conference if co-financing from external partners was to be realised. The Project Director requested that the focal points work diligently to ensure final proposals were received by the PCU by the deadline of 15th December. Otherwise it would be impossible for the PCU to prepare the compilation of proposals that needed to be presented at the RSC.

8.1.4 Dr. Fortes suggested that related projects and programmes should be also invited to the RSC in order to ensure regional exchange of information and sharing of knowledge. Dr. Pernetta informed members that a series of agencies would be invited for the Conference. It was also noted by Mr. Kuriandewa that this event could provide opportunity for regional networking that may benefit countries beyond the life of the project. It was noted that countries could consider bringing in additional publications produced under the project for information during the Conference. It was noted with regret that Dr. Tien still could not confirm his availability to attend the meeting. All other members confirmed their participation.

8.2 Consideration of the status of *Ruppia maritima*

8.2.1 Dr. Fortes reminded the meeting of the email distributed to all members prior to the meeting, on the discussion of whether *Ruppia maritima* should be considered a seagrass species, as there was some dispute among international experts on its taxonomic status. Members advised that they had considered the information contained in that email, and decided that the RWG-SG would consider the species as a seagrass. The email on the subject is attached as Annex 8.

8.2.2 Dr. Fortes briefed the RWG-SG about a joint workshop to be held in Puerto Galera Biosphere Reserve, Philippines. In the context of the UNEP/GEF project, the joint workshop is collaboratively funded by IOC WESTPAC, UNESCO, and the Census of Marine Life. National outputs with regard to seagrass management would be the focus of the support provided under the Philippines seagrass sub-component of South China Sea Project. He briefed the meeting about the objectives of the workshop, and noted its relevance to the goals of the UNEP/GEF South China Sea Project. He invited members to attend the joint workshop at their own cost, and informed the meeting that the proposed dates for the workshop will be in either March or May 2004.

8.2.3 Prof. Huang noted with regret that there was no time for a site visit during this fourth meeting of the RWG. As compensation, he showed a video of seagrass beds in Hepu and Lian, for which the RWG-SG expressed their appreciation.

9. ADOPTION OF THE REPORT OF THE MEETING

9.1 The Rapporteur presented the draft report of the meeting for consideration and adoption by the members. The meeting report was considered, amended and adopted as it appears in this document.

10. CLOSURE OF THE MEETING

10.1 The Project Director expressed his appreciation for the hard work of members during the four-day meeting. The Chairperson thanked the members for their kindness and diligence, Professor Huang for his hospitality as the host and PCU members for their work on behalf of all members of the RWG-SG. The being no further business the Chairperson closed the meeting at 1630 on 2nd December 2003.

ANNEX 1

List of Participants

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ANNEX 2

List of Documents

Discussion documents

UNEP/GEF/SCS/RWG-SG.4/1	Provisional agenda
UNEP/GEF/SCS/RWG-SG.4/2	Provisional annotated agenda
UNEP/GEF/SCS/RWG-SG.4/3	Report of the meeting
UNEP/GEF/SCS/RWG-SG.4/4	Current status of budgets and reports from the Specialised Executing Agencies in the participating countries.
UNEP/GEF/SCS/RWG-SG.4/5	Current status of substantive reports on seagrass from the Specialised Executing Agencies in the Participating Countries.
UNEP/GEF/SCS/RWG-SG.4/6	Reviews of the drafts of the substantive reports produced by the Specialised Executing Agencies in the participating countries. <i>[Individual reports for each country have been produced with the same document number together with the first letters of the country name appended.]</i>
UNEP/GEF/SCS/RWG-SG.4/7	Proposed timetable, contents and responsibilities for the production of the regional overview of seagrass bordering the South China Sea.
UNEP/GEF/SCS/RWG-SG.4/8	Cluster analysis; and environmental and socio-economic ranking; of potential seagrass demonstration sites conducted following the third Regional Scientific and Technical Committee meeting.
UNEP/GEF/SCS/RWG-SG.4/9	Critical reviews of the proposed seagrass demonstration sites bordering the South China Sea.
UNEP/GEF/SCS/RWG-SG.4/10	Proposals for a revised, work plan and timetable for the RWG-SG with details of outputs and milestones between October 2003 and June 2004.
UNEP/GEF/SCS/RWG-SG.4/11	Demonstration site proposals from the participating countries. <i>[These twelve documents are not individually numbered, rather they are printed as received with minimal formatting. They have been distributed by e-mail and are contained on the CD-ROM together with all other meeting documents.] Revisions of the proposals from Indonesia and the Philippines were tabled at the meeting.</i>

Information documents

UNEP/GEF/SCS/RWG-SG.4/Inf.1	Provisional list of participants
UNEP/GEF/SCS/RWG-SG.4/Inf.2	Provisional list of documents
UNEP/GEF/SCS/RWG-SG.4/Inf.3	Draft programme
UNEP/GEF/SCS/RSC.1	Regional Scientific Conference, Draft Programme No. 1
UNEP/GEF/SCS/RWG-SG.3/6	Guidelines for the preparation of demonstration site proposals and format for use in their presentation.

The following documents are supplied on CD-ROM and in published form.

UNEP/GEF/SCS/RWG-M.3/3	Third Meeting of the Regional Working Group on the Mangroves Sub-component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Bali, Indonesia, 3 rd – 6 th March 2003 UNEP/GEF/SCS/RWG-M.3/3.
UNEP/GEF/SCS/RWG-W.3/3	Third Meeting of the Regional Working Group on the Wetlands Sub-component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Bali, Indonesia, 4 th – 7 th March 2003 UNEP/GEF/SCS/RWG-W.3/3.
UNEP/GEF/SCS/RWG-LbP.3/3	Third Meeting of the Regional Working Group on the Land-based Pollution Component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Phuket, Thailand, 7 th - 10 th July 2003 UNEP/GEF/SCS/RWG-LbP.3/3.
UNEP/GEF/SCS/RWG-F.3/3	Third Meeting of the Regional Working Group on the Fisheries Component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Siem Reap, Cambodia, 29 th April – 2 nd May 2003 UNEP/GEF/SCS/RWG-F.3/3.
UNEP/GEF/SCS/RWG-CR.3/3	Third Meeting of the Regional Working Group on the Coral Reefs Sub-component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Kota Kinabalu, Malaysia, 24 th – 27 th March 2003 UNEP/GEF/SCS/RWG-CR.3/3.
UNEP/GEF/SCS/RWG-SG.3/3	Third Meeting of the Regional Working Group on the Seagrass Sub-component for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Kota Kinabalu, Malaysia, 25 th – 28 th March 2003 UNEP/GEF/SCS/RWG-SG.3/3.
UNEP/GEF/SCS/RSTC.3/3	Third Meeting of the Regional Scientific and Technical Committee for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Phuket, Thailand, 16 th – 18 th June 2003 UNEP/GEF/SCS/RSTC.3/3.
UNEP/GEF/SCS/RTF-E.1/3	First Meeting of the Regional Task Force on Economic Valuation for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Phuket, Thailand, 11 th – 13 th September 2003 UNEP/GEF/SCS/RTF-E.1/3.
UNEP/GEF/SCS/RTF-L.1/3	First Meeting of the Regional Task Force on Legal Matters for the UNEP/GEF Project <i>"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"</i> . Report of the meeting. Phuket, Thailand, 15 th – 17 th September 2003 UNEP/GEF/SCS/RTF-L.1/3.

ANNEX 3

Agenda

- 1. OPENING OF THE MEETING**
- 2. ORGANISATION OF THE MEETING**
- 3. ADOPTION OF THE MEETING AGENDA**
- 4. REPORTS FROM THE PROJECT CO-ORDINATING UNIT REGARDING OVERALL PROGRESS TO DATE**
 - 4.1 Status of mid-year progress reports, expenditure reports, and budgets**
 - 4.2 Status of planned substantive outputs from the national level activities**
 - 4.3 Status of planned substantive outputs from the regional level**
- 5. REVIEW OF THE SITE RELATED DOCUMENTS**
 - 5.1 Site characterisation; cluster analysis; environmental and socio-economic ranking; and available supporting documentation**
 - 5.2 Critical review of proposals for demonstration sites**
- 6. REVISION OF THE WORK PLAN AND ACTIVITIES FOR THE REGIONAL WORKING GROUP ON SEAGRASS WITH EMPHASIS ON THE PERIOD OCTOBER 2003 TO JUNE 2004**
- 7. DATE AND PLACE OF THE FIFTH MEETING OF THE REGIONAL WORKING GROUP ON SEAGRASS**
- 8. ANY OTHER BUSINESS**
 - 8.1 Consideration of the draft programme for the Regional Scientific Conference, Bangkok, February 2004**
 - 8.2 Consideration of the status of *Ruppia maritima***
- 9. ADOPTION OF THE REPORT OF THE MEETING**
- 10. CLOSURE OF THE MEETING**

ANNEX 4

Minimum Content for the National Seagrass Reports

- I. INTRODUCTION**
- II. REVIEW OF PAST AND ONGOING ACTIVITIES**
- III. REVIEW OF NATIONAL DATA AND INFORMATION**
 - 1. GEOGRAPHIC DISTRIBUTION OF SEAGRASS**
 - 2. BIOLOGICAL ASPECTS**
 - SEAGRASS**
 - ASSOCIATED MARINE BIOTA**
 - MARINE ENDANGERED SPECIES**
 - 3. PHYSICAL/CHEMICAL CHARACTERISTICS**
 - 4. THREATS TO SEAGRASS**
 - 4.1 NATURE OF THREATS**
 - 4.2 CAUSAL CHAIN ANALYSIS, including constraints in addressing the threats**
- IV. ECONOMIC VALUATION**
- V. INSTITUTIONAL ARRANGEMENTS AND NATIONAL LEGISLATION**
- VI. MANAGEMENT PERSPECTIVES - THE DEVELOPMENT OF NATIONAL SEAGRASS ACTION PLAN**

REFERENCES WILL BE NUMBERED

ANNEX 5

Final Cluster Analysis of Potential Seagrass Demonstration Sites

Background

Following the initial clustering conducted by the Regional Working Group on Seagrass the Regional Scientific and Technical Committee reviewed the outputs and made specific recommendations to the Regional Working Group regarding their finalisation. On August 1st, 2003, the PCU dispatched a revised version of the clustering based on up-dated information provided by the focal points. The results of this cluster analysis were discussed during the 4th meeting of the Regional Working Group on Seagrass, and participants were asked to provide any final changes to the data, as well as to substantiate the numbers of species quoted for the demonstration sites, through provision of species lists and/or published references.

Available data and results

During the fourth meeting of the Regional Working Group on Seagrass, the members therefore reviewed more carefully the data used in the cluster analysis. Table 1 lists the complete data set initially agreed for the cluster analysis of seagrass. In accordance with the discussions and agreements during the meeting, as recorded in the main body of this report, cluster analyses were performed on (i) the complete data set of eleven parameters, and (ii) the same data set minus the depth range indicator.

Based on a review and discussion of these results, the meeting agreed to include the depth range in the data set used for the final cluster analysis of seagrass potential demonstration sites (Table 1).

The data set was then transformed into z scores (Table 2) and a cluster analysis performed using the Clustan Graphic6 software programme. The resulting dendrogram is presented in Figure 1, and the proximity matrix based on which this figure is presented in Table 3.

Figure 1 clearly shows three distinct clusters with two outlying sites, Con Dau in Viet Nam and KAMPSG1 in Cambodia. The latter site has an anomalously large area in excess of 25,000 hectares, which even following transformation isolates this site from the remainder in the set. In the case of Con Dau the high number of migratory aquatic species (4) is twice that of the next highest sites and may contribute to the isolation of this site from the remainder of the set.

Figure 1 Cluster diagram for seagrass sites, based on Euclidean distance and mean proximity.

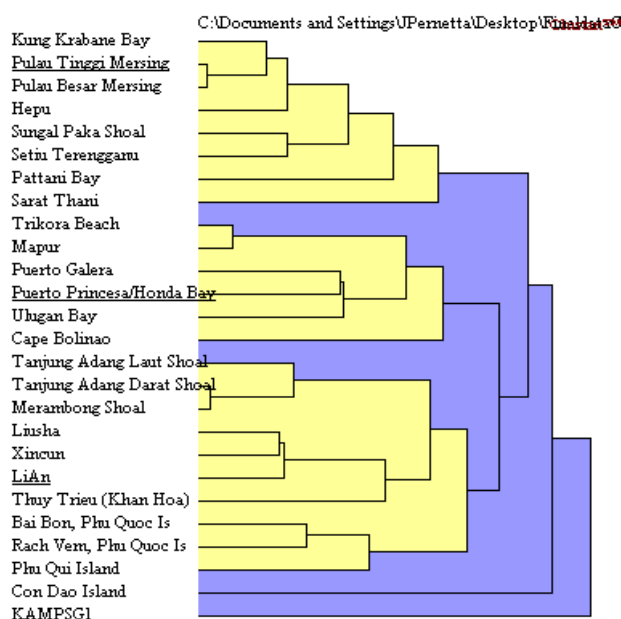


Table 1 Final agreed data set for cluster analysis of seagrass potential demonstration sites.

Site Name	Area (ha)	% cover	Depth range	No. of Seagrass spp.	No. of Penaeid spp.	No. of gastropod spp.	No. of Siganid spp.	No. of Urchin spp.	No. of threatened spp.	No. of other ecosystems	No. of migratory species
Thailand											
Kung Krabane Bay	700	80	4	5	4	5	2	M	2	1	1
Surat Thani	500	65	3	6	2	73	3	1	2	1	2
Pattani Bay	273	80	3	4	8	35	5	M	2	1	2
Indonesia											
Trikora Beach	280	95	2	9	3	16	3	4	6	2	3
Mapur	275	85	3	9	3	11	3	4	5	2	3
Malaysia											
Tanjung Adang Laut Shoal	40	80	1.2	9	2	2	1	1	2	2	2
Tanjung Adang Darat Shoal	42	80	0.7	9	2	2	1	1	2	1	2
Merambong Shoal	30	80	0.7	10	2	2	2	M	2	1	2
Sungai Paka Shoal	43	M	4	2	M	2	M	2	1	1	1
Pulau Tinggi Mersing	3	70	3	6	M	M	2	2	2	1	2
Setiu Terengganu	3	70	6	3	M	3	2	M	1	1	1
Pulau Besar Mersing	3	70	4	5	M	1	2	M	2	1	2
Philippines											
Cape Bolinao	2,500	75	1.7	9	7	23	6	4	3	2	1
Puerto Galera	114	95	4.5	9	3	11	2	3	3	2	1
Ulugan Bay	11	90	2.5	8	3	10	2	5	4	2	0
Puerto Princesa/Honda Bay	670	90	4	8	4	18	4	5	3	2	1
China											
Hepu	540	85	4	5	5	10	1	3	3	1	2
Liusha	900	90	3	2	5	11	1	1	2	2	2
LiAn	320	82	3.2	5	4	17	1	1	3	2	2
Xincun	200	87	2	4	4	6	1	1	2	2	1
Vietnam											
Bai Bon, Phu Quoc Is	2,000	70	6	7	3	46	1	3	5	2	2
Rach Vem, Phu Quoc Is	900	65	6	6	3	30	1	3	3	2	2
Con Dao Island	200	25	9.6	10	8	45	1	3	4	2	4
Phu Qui Island	300	50	2.5	6	2	35	3	3	3	2	2
Thuy Trieu (Khan Hoa)	800	60	1	7	4	10	3	2	4	2	0
Cambodia											
KAMPSG1	25,240	45	2	6	M	M	M	M	2	2	2

Table 2 Data transformed to z scores for cluster analysis.

Case	Area (ha)	% cover	Depth range	No. of Seagrass spp.	No. of Penaeid spp.	No. of gastropod spp.	No. of Siganid spp.	No. of Urchin spp.	No. of threatened spp.	No. of other ecosystems	No. of migratory spp.
Kung Krabane Bay	-0.15	0.33	0.338	-0.63	0.077	-0.7	-0.15	Missing	-0.66	-1.24	-0.84
Surat Thani	-0.19	-0.58	-0.17	-0.21	-1	3.069	0.586	-1.18	-0.66	-1.24	0.308
Pattani Bay	-0.23	0.33	-0.17	-1.05	2.237	0.961	2.067	Missing	-0.66	-1.24	0.308
Trikora Beach	-0.23	1.238	-0.67	1.047	-0.46	-0.09	0.586	1.034	2.588	0.775	1.452
Mapur	-0.23	0.633	-0.17	1.047	-0.46	-0.37	0.586	1.034	1.777	0.775	1.452
Tanjung Adang Laut Shoal	-0.28	0.33	-1.08	1.047	-1	-0.87	-0.9	-1.18	-0.66	0.775	0.308
Tanjung Adang Darat Shoal	-0.28	0.33	-1.33	1.047	-1	-0.87	-0.9	-1.18	-0.66	-1.24	0.308
Merambong Shoal	-0.28	0.33	-1.33	1.466	-1	-0.87	-0.15	Missing	-0.66	-1.24	0.308
Sungai Paka Shoal	-0.28	Missing	0.338	-1.89	Missing	-0.87	Missing	-0.44	-1.47	-1.24	-0.84
Pulau Tinggi Mersing	-0.29	-0.28	-0.17	-0.21	Missing	Missing	-0.15	-0.44	-0.66	-1.24	0.308
Setiu Terengganu	-0.29	-0.28	1.348	-1.47	Missing	-0.81	-0.15	Missing	-1.47	-1.24	-0.84
Pulau Besar Mersing	-0.29	-0.28	0.338	-0.63	Missing	-0.92	-0.15	Missing	-0.66	-1.24	0.308
Cape Bolinao	0.221	0.027	-0.82	1.047	1.697	0.296	2.807	1.034	0.156	0.775	-0.84
Puerto Galera	-0.27	1.238	0.591	1.047	-0.46	-0.37	-0.15	0.296	0.156	0.775	-0.84
Ulugan Bay	-0.29	0.935	-0.42	0.628	-0.46	-0.43	-0.15	1.773	0.967	0.775	-1.98
Puerto Princesa/Honda Bay	-0.15	0.935	0.338	0.628	0.077	0.018	1.327	1.773	0.156	0.775	-0.84
Hepu	-0.18	0.633	0.338	-0.63	0.617	-0.43	-0.9	0.296	0.156	-1.24	0.308
Liusha	-0.11	0.935	-0.17	-1.89	0.617	-0.37	-0.9	-1.18	-0.66	0.775	0.308
LiAn	-0.22	0.451	-0.07	-0.63	0.077	-0.04	-0.9	-1.18	0.156	0.775	0.308
Xincun	-0.25	0.754	-0.67	-1.05	0.077	-0.65	-0.9	-1.18	-0.66	0.775	-0.84
Bai Bon, Phu Quoc Is	0.119	-0.28	1.348	0.209	-0.46	1.571	-0.9	0.296	1.777	0.775	0.308
Rach Vem, Phu Quoc Is	-0.11	-0.58	1.348	-0.21	-0.46	0.684	-0.9	0.296	0.156	0.775	0.308
Con Dao Island	-0.25	-3	3.166	1.466	2.237	1.516	-0.9	0.296	0.967	0.775	2.595
Phu Qui Island	-0.23	-1.49	-0.42	-0.21	-1	0.961	0.586	0.296	0.156	0.775	0.308
Thuy Trieu (Khan Hoa)	-0.13	-0.88	-1.18	0.209	0.077	-0.43	0.586	-0.44	0.967	0.775	-1.98
KAMPSG1	4.866	-1.79	-0.67	-0.21	Missing	Missing	Missing	Missing	-0.66	0.775	0.308

Table 3 Proximity matrix for sites included in the final cluster analysis presented in Figure 1.

	Kung Krabane Bay	Surat Thani	Pattani Bay	Trikora Beach	Mapur	Tanjung Adang Laut Shoal	Tanjung Adang Darat Shoal	Merambong Shoal	Sungai Paka Shoal	Pulau Tinggi Mersing	Setiu Terengganu	Pulau Besar Mersing	Cape Bolinao	Puerto Galera	Ulugan Bay	Puerto Princesa/Honda Bay	Hepu	Liusha	LiAn	Xincun	Bai Bon, Phu Quoc Is	Rach Vem, Phu Quoc Is	Con Dao Island	Phu Qui Island	Thuy Trieu (Khan Hoa)	KampSG1
Kung Krabane Bay	0																									
Surat Thani	0.43	0																								
Pattani Bay	0.376	0.432	0																							
Trikora Beach	0.507	0.547	0.565	0																						
Mapur	0.44	0.509	0.52	0.106	0																					
Tanjung Adang Laut Shoal	0.346	0.455	0.565	0.415	0.361	0																				
Tanjung Adang Darat Shoal	0.294	0.421	0.533	0.456	0.41	0.185	0																			
Merambong Shoal	0.311	0.459	0.514	0.433	0.374	0.22	0.085	0																		
Sungai Paka Shoal	0.216	0.574	0.358	0.772	0.697	0.518	0.466	0.571	0																	
Pulau Tinggi Mersing	0.182	0.122	0.306	0.53	0.45	0.313	0.233	0.266	0.32	0																
Setiu Terengganu	0.185	0.516	0.399	0.698	0.609	0.486	0.45	0.473	0.156	0.302	0															
Pulau Besar Mersing	0.147	0.459	0.339	0.536	0.445	0.348	0.283	0.305	0.269	0.082	0.214	0														
Cape Bolinao	0.464	0.525	0.353	0.432	0.395	0.495	0.529	0.492	0.565	0.489	0.589	0.507	0													
Puerto Galera	0.297	0.467	0.508	0.339	0.286	0.27	0.338	0.336	0.502	0.369	0.446	0.377	0.387	0												
Ulugan Bay	0.33	0.551	0.541	0.363	0.338	0.392	0.437	0.378	0.603	0.485	0.502	0.442	0.385	0.212	0											
Puerto Princesa/Honda Bay	0.306	0.49	0.395	0.338	0.286	0.408	0.454	0.375	0.541	0.439	0.451	0.388	0.256	0.207	0.208	0										
Hepu	0.173	0.424	0.381	0.401	0.352	0.348	0.306	0.336	0.313	0.193	0.298	0.168	0.464	0.292	0.365	0.348	0									
Liusha	0.292	0.462	0.428	0.491	0.447	0.324	0.378	0.452	0.333	0.342	0.364	0.319	0.516	0.354	0.452	0.433	0.27	0								
LiAn	0.268	0.396	0.44	0.39	0.344	0.229	0.302	0.362	0.414	0.284	0.391	0.289	0.467	0.262	0.381	0.374	0.239	0.155	0							
Xincun	0.245	0.457	0.467	0.482	0.439	0.245	0.309	0.375	0.332	0.324	0.362	0.319	0.481	0.287	0.369	0.393	0.284	0.149	0.157	0						
Bai Bon, Phu Quoc Is	0.441	0.402	0.555	0.348	0.312	0.421	0.471	0.51	0.661	0.411	0.557	0.48	0.498	0.315	0.381	0.369	0.346	0.419	0.302	0.421	0					
Rach Vem, Phu Quoc Is	0.329	0.379	0.497	0.402	0.33	0.338	0.398	0.434	0.481	0.319	0.393	0.337	0.474	0.264	0.364	0.33	0.275	0.322	0.227	0.325	0.176	0				
Con Dao Island	0.722	0.636	0.704	0.639	0.575	0.677	0.715	0.774	0.859	0.651	0.762	0.687	0.668	0.634	0.726	0.647	0.589	0.669	0.589	0.711	0.46	0.463	0			
Phu Qui Island	0.382	0.318	0.464	0.388	0.324	0.337	0.387	0.394	0.489	0.301	0.47	0.369	0.394	0.34	0.379	0.331	0.364	0.388	0.296	0.362	0.293	0.232	0.552	0		
Thuy Trieu (Khan Hoa)	0.362	0.474	0.498	0.431	0.396	0.342	0.388	0.412	0.533	0.417	0.516	0.446	0.34	0.311	0.285	0.333	0.389	0.403	0.321	0.305	0.404	0.373	0.687	0.297	0	
KampSG1	0.859	0.8	0.851	0.996	0.914	0.817	0.87	0.884	1.005	0.823	0.91	0.835	0.762	0.911	0.933	0.861	0.872	0.848	0.81	0.841	0.845	0.794	1.04	0.739	0.833	

ANNEX 6

Final Ranking of Potential Seagrass Demonstration Sites Based on Environmental and Socio-Economic Indicators

Background

During the third meeting of the Regional Working Group on Seagrass (RWG-S), the ranking criteria and the weights for environmental and socio economic indicators were discussed and agreed by the Regional Working Group (Annex 7, UNEP/GEF/SCS/RWG-S.3/3). A preliminary ranking of sites using both environmental and socio-economic indicators was undertaken to determine the priority of potential seagrass demonstration sites bordering the South China Sea.

Finalisation of Ranking Scores and Indicators

Based on the discussions and agreements during the fourth RWG-S meeting, the indicators and weights for the environmental characteristics were revised and are presented in Table 1. At the same meeting, the social and economic indicators and scores were also reviewed and discussed, and the agreed revised indicators and scores are provided in the Table 2. The ranking results for the 26 proposed seagrass demonstration sites, based on the agreed revised scores for environmental criteria and indicators, are presented in Table 3. The rank scores with respect to the socio-economic indicators, for those sites for which focal points had prepared proposals (and hence had the relevant data) are presented in Table 4.

Table 1 Environmental criteria (biological diversity, transboundary, regional and global significance), indicators and associated scores as revised by the 4th meeting of the Regional Working Group on Seagrass.

Class of Indicator	Indicator scale				
	Score				
1. Area maximum 25 points					
1.1 Total area (ha) maximum 15 points	<20	21-200	201-500	501-1,000	>1,000
Score	3	6	9	12	15
1.2 Percent coverage maximum 10 points	<20	21-40	41-60	61-80	>80
Score	2	4	6	8	10
2. Biological diversity 60 points					
2.1 Species diversity Score maximum 52 points					
2.1.1 Seagrass species	<4	4-5	6-8	9	>9
Score Maximum 15 points	3	6	9	12	15
2.1.2 Gastropods	<3	3-10	11-20	21-40	>40
Score Maximum 5 points	1	2	3	4	5
2.1.3 Penaeid shrimps	0	1-3	4-5	6-7	>7
Score Maximum 8 points	0	2	4	6	8
2.1.4 Sea Urchins	0	1-2	>2		
Score Maximum 4 points	0	2	4		
2.1.5 Siganids	0	1	2	3-4	>4
Score Maximum 8 points	0	2	4	6	8
2.1.6 Holothurians	0	1-5	>5		
Score Maximum 8 points	0	4	8		
2.1.7 Starfish	0	1-3	>3		
Score Maximum 4 points	0	2	4		
2.2 Community diversity Score maximum 8 points					
2.2.1 Number of other aquatic ecosystems	1	2	>2		
Score Maximum 8 points	3	5	8		
3. Transboundary significance 5 points					
3.1 Number of migratory aquatic species					
Score Maximum 5 points	score 1 point per species				
4. Regional/Global significance 10 points					
4.1 Number of endangered & critically endangered aquatic species					
Score Maximum 10 points	score 1 point per species				

Whilst recognizing the importance of socio-economic indicators, the meeting considered that environmental indicators and socio-economic indicators, should not be scored equally in determining final rank score, since the environmental scores were based on more objective measures that were comparable across all sites than were the socio-economic scores. The meeting collectively acknowledged that the environmental indicators should therefore be more heavily weighted. After a lengthy discussion, the meeting agreed that the environmental indicators should be weighted at 60%, and the socio-economic indicators at forty percent (40%). The final ranking of the sites within the three clusters, using the final total scores, and the environmental and socio economic indicators weighted at 60:40, is given in Table 5.

Table 2 Socio-economic criteria, indicators and associated scores, as revised at the 4th meeting of the Regional Working Group on Seagrass.

Class of Indicator	Indicator scale				
	Score				
1. Potential for reversibility of threats maximum 10 points					
	Low	Low/Med	Medium	Med/High	High
1.1 From destructive fishing					
Score – max 5	1	2	3	4	5
1.2 From pollution					
Score – max 5	1	2	3	4	5
2. National significance/priority-Government support maximum 16 points					
2.1 National priority	Low		Medium		High
Score – max 16	5		10		16
3. Financial considerations /co-financing maximum 22 points					
3.1 Project cost GEF (\$US)	>400,000	300,000-400,000	200,000-300,000	150,000-200,000	<150,000
Score – max 10	2	4	6	8	10
3.2 Co-financing commitment (ratio CoFin:GEF)	0	<1:1	1:1	>1/1	
Score – max 8	0	2	4	8	
3.3 Co financing in kind	Low		Medium		High
Score – max 4	1		2		4
4. Stakeholders involvement maximum 22 points					
4.1 Local government (in cash/in-kind/commitment)	Low		Medium		High
Score – max 6	2		4		6
4.2 Central government (in cash/in-kind commitment)	Low		Medium		High
Score – max 4	1		2		4
4.3 NGOs/Civil Society (in cash/in-kind/commitment)	Low		Medium		High
Score – max 6	2		4		6
4.4 Private Sector (in cash/in-kind/commitment)	Low		Medium		High
Score – max 6	2		4		6
5. Other management considerations maximum 30 points					
5.1 Accessibility for management	Low		Medium		High
Score – max 10	3		6		10
5.2 Existing institutional framework	Low		Medium		High
Score – max 10	3		6		10
5.3 Existing information	Low		Medium		High
Score – max 10	3		6		10

Table 3 Ranking scores for agreed environmental indicators applied to proposed seagrass demonstration sites.

Site Name	Area (ha)		% cover		Depth range		No. of Seagrass spp.		No. of Penaeid spp.		No. of gastropod spp.		Siganid spp.		Urchin spp.		No. of endangered and threatened spp.		No. of other ecosystems		No. of migratory species		Total
	data	score	data	score	data	score	data	score	data	score	data	score	data	score	data	score	data	score	data	score	data	score	
First Cluster																							
Pattani Bay	273	9	80	8	3		4	6	8	8	35	4	5	8	M		2	2	1	3	2	2	50
Hepu	540	12	85	10	4		5	6	5	4	12	3	1	2	3	4	3	3	1	3	2	2	49
Surat Thani	500	9	65	8	3		6	9	2	2	73	5	3	6	1	2	2	2	1	3	2	2	48
Kung Krabane Bay	700	12	80	8	4		5	6	4	4	5	2	2	4	M		2	2	1	3	1	1	42
Pulau Tinggi Mersing	3	3	70	8	3		6	9	M		M		2	4	2	2	2	2	1	3	2	2	33
Pulau Besar Mersing	3	3	70	8	4		5	6	M		1	1	2	4	M		2	2	1	3	2	2	29
Setiu Terengganu	3	3	70	8	6		3	3	M		3	2	2	4	M		1	1	1	3	1	1	25
Sungal Paka Shoal	43	6	M		4		2	3	M		2	1	M		2	2	1	1	1	3	1	1	17
Second Cluster																							
Cape Bolinao	2,500	15	75	8	1.7		9	12	7	6	23	4	6	8	4	4	3	3	2	5	1	1	66
Trikora Beach	280	9	95	10	2		9	12	3	2	16	3	3	6	4	4	6	6	2	5	3	3	60
Mapur	275	9	85	10	3		9	12	3	2	11	3	3	6	4	4	5	5	2	5	3	3	59
Puerto Princesa Honda Bay	670	12	90	10	4		8	9	4	4	18	3	4	6	5	4	3	3	2	5	1	1	57
Puerto Galera	114	6	95	10	4.5		9	12	3	2	11	3	2	4	3	4	3	3	2	5	1	1	50
Ulugan Bay	11	3	90	10	2.5		8	9	3	2	10	2	2	4	5	4	4	4	2	5	0		43
Third Cluster																							
Bai Bon, Phu Quoc Is	2,000	15	70	8	6		7	9	3	2	46	5	1	2	3	4	5	5	2	5	2	2	57
Rach Vem, Phu Quoc Is	900	12	65	8	6		6	9	3	2	30	4	1	2	3	4	3	3	2	5	2	2	51
Thuy Trieu (Khan Hoa)	800	12	60	6	1		7	9	4	4	10	2	3	6	2	2	4	4	2	5	0		50
Phu Qui Island	300	9	50	6	2.5		6	9	2	2	35	4	3	6	3	4	3	3	2	5	2	2	50
LiAn	320	9	82	10	3.2		5	6	4	4	17	3	1	2	1	2	3	3	2	5	2	2	46
Liusha	900	12	90	10	3		2	3	5	4	11	3	1	2	1	2	2	2	2	5	2	2	45
Merambong Shoal	30	6	80	8	0.7		10	15	2	2	2	1	2	4	M		2	2	1	3	2	2	43
Tanjung Adang Laut Shoal	40	6	80	8	1.2		9	12	2	2	2	1	1	2	1	2	2	2	2	5	2	2	42
Tanjung Adang Darat Shoal	42	6	80	8	0.7		9	12	2	2	2	1	1	2	1	2	2	2	1	3	2	2	40
Xincun	200	6	87	10	2		4	6	4	4	6	2	1	2	1	2	2	2	2	5	1	1	40
Outliers																							
Con Dao Island	200	6	25	4	9.6		10	15	8	8	45	5	1	2	3	4	4	4	2	5	4	4	57
KAMPSG1	25,240	15	45	6	2		6	9	M		M		M		M		2	2	2	5	2	2	39

Table 4 Final ranking scores for social economic indicators, for potential seagrass demonstration site proposals received, or where focal points could provide data.

	Destruct fishing		Pollution		Nat Priority		Project cost (GEF)		Co-finance		Local Govt		Central Govt		NGO/civil Society		Private sector		Accessibility		Existing Institutional Framework		Existing information		Co-finance in-kind		Total
	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	
Cluster 1																											
Kung Krabane Bay	M/H	4	M/H	4	M	10																					
Pulau Tinggi Mersing	L/M	2		2		10		8	M	2	L	2	H	4	L	2	L	2		6		6		6			52
Pulau Besar Mersing	L/M	2		2		10		8	M	2	L	2	H	4	L	2	L	2		6		6		6			52
Hepu	H	5	H	5	H	16	4k	4	5k	8	H	6	H	4	H	6	H	6	H	10	H	10	H	10	H	4	94
Sungal Paka Shoal	M	3	L/M	2	L	5	<150	10	M	2	L	2	M	2	L	2	L	2									30
Setiu Terengganu	L/M	2	M/H	3	L	5	<150	10	M	2	L	2	M	2	L	2	L	2									30
Pattani Bay	M/H	4	M/H	3	H	16		2	>1:1	8	H	6	H	4	H	6	M	4	H	10	H	10	M	6	M	2	81
Surat Thani	M/H	4	M/H	3	H	16		4	>1:1	8	L	2	L	1	L	2	M	4	M	6	H	10	M	6	L	1	67
Cluster 2																											
0																											
Trikora Beach	H	5	M/H	4	H	16	3.5K	4	4K	8	H	6	M	3	M	4	L	2	H	10	M	6	M	6	M	2	76
Mapur																										0	
Puerto Galera	M/H	4	M/H	3	M	10	<1.5K	10	<1:1	2	H	6	M	2	H	6	H	6	H	10	M	6	M	6	M	2	73
Puerto Princesa/Honda Bay																										0	
Ulugan Bay	M/H	4	H	5	H	16	<1.5	10	<1:1	2	H	6	M	2	H	6	L	2	H	10	H	10	H	10	M	2	85
Cape Bolinao	M	3	H	5	H	16	<1.5	10	<1:1	2	M	4	H	4	M	4	M	4	H	10	H	10	H	10			82
Cluster 3																											
0																											
Tanjung Adang Laut Shoal	L/M	2	M/H	4	H	10	1.5-2K	8	H	4	L	2	H	4	L	2	L	2	H	10	M	6	M	6			60
Tanjung Adang Darat Shoal		2		4		10		8		4		2		4		2		2		10		6		6			60
Merambong Shoal		2		4		10		8		4		2		4		2		2		10		6		6			60
Liusha	M/H	4	M/H	4	M	10	3.8k	4	4K	8	M	6	M	2	M	4	M	4	M	4	M	6	M	6	H	4	66
Xincun	M/H	4	M/H	3	L	5	3K	4	3K	8	M	4	M	2	M	4	M	4	H	10	M	6	M	6	H	4	64
LiAn	H	5	H	5	M	10	3.8K	4	4K	8	H	6	H	4	M	4	H	6	H	10	M	6	M	6	H	4	78
Thuy Trieu (Khan Hoa)	H	5	H	5	M	10		4		2	M	4	M	2	L	2	L	2	H	10	H	10	H	10	H	4	70
Bai Bon, Phu Quoc Is	M/H	5	M/H	4	H	16		4		2	M	4	H	4	H	6	M	4	H	10	H	10	H	10	H	4	83
Rach Vem, Phu Quoc Is																										0	
Phu Qui Island																										0	
Outliers																											
0																											
Con Dao Island																										0	
KAMPSG1	H	5	M/H	3	H	16	H	2	0	0	L	2	L	1	L	2	L	2	L	3	L	3	L	3	L	1	43

Table 5 Final ranking score for potential seagrass demonstration sites. Combined scores of environmental indicators (60%) and social economic indicators (40%).

Site Name	Environment score	Socio-economic score	Total score	Total weighted 60% env 40% soc	Rank within cluster	Overall rank
First Cluster						
Hepu	49	94	143	86.6	1	4
Pattani Bay	50	81	131	82.4	2	5
Surat Thani	48	67	115	74.8	3	10
Pulau Tinggi Mersing	33	52	85	53.8	4	17
Pulau Besar Mersing	29	52	81	49.8	5	18
Setiu Terengganu	25	30	55	37	6	19
Sungai Paka Shoal	17	30	47	29	7	20
Second Cluster						
Cape Bolinao	66	82	148	98.8	1	1
Trikora Beach	60	76	136	90.4	2	2
Puerto Galera	50	73	123	79.2	3	6
Ulugan Bay	43	85	128	77	4	9
Third Cluster						
Bai Bon, Phu Quoc Is	57	83	140	90.2	1	3
Thuy Trieu (Khan Hoa)	50	70	120	78	2	7
LiAn	46	78	124	77.2	3	8
Liusha	45	66	111	71.4	4	11
Merambong Shoal	43	60	103	67	5	12
Tanjung Adang Laut Shoal	42	60	102	66	6	13
Xincun	40	64	104	65.6	7	14
Tanjung Adang Darat Shoal	40	60	100	64	8	15
Outliers						
KAMPSG1	39	43	82	56.2		16

ANNEX 7

Work Plan and Timetable for the Regional Working Group on Seagrass, as Revised at the 4th Meeting in Guangzhou

Table 1 Work plan and timetable to June 2004 indicating agreed deadlines.

Year	2003												2004																							
Month	October			November				December					January				February				March				April				May					June		
Week starting	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16	23	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14
Nt'l Com. Mtgs				x				x				x				x				x				x												
NTWG Mtg												x								x				x												
IMC mtg																																				
RWG mtgs																																				
RSTC Mtg																																				
PSC mtg																																				
National Action Plan																																				
Cambodia																																				
China																																				
Indonesia								x																												
Malaysia																																				
Philippines																	x																			
Thailand																																				
Vietnam																																				
National Reports																																				
Cambodia																	x																			
China																	x																			
Indonesia																	x																			
Malaysia																																				
Philippines																	x																			
Thailand																	x																			
Vietnam																	x																			
Regional Overview																																				
Inputs from SEA																																				
PCU compile & dispatch																																				
SEA review																																				
PCU camera ready												x																								
Publication															x																					

MoU revision must be signed by 30/11/2003

Regional Scientific Conference

Table 2 Schedule of meetings for 2004 (RWG = Regional Working Group; -M = Mangroves; -C = Coral reefs; -S = Seagrass; -W = Wetlands; -F = Fisheries; LbP = Land-based Pollution; RTF-E = Regional Task Force on Economic Valuation; RTF-L = Regional Task Force on Legal Matters.)

	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M							
January					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
					H																				Chinese NY												
February							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		
								H									Regional Science Conference			RSTC-4											PSC-3						
March		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
						H											Ad hoc													RWG-LbP-4							
April					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
					LbP-4				RWG-F-4						Thai NY																						
May							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
									RTF-L-2															ExComm													
June		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
		RTF-E-2																																			
July					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
August	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
												H												RWG- S-5													
September				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
																RWG-C-5													RWG-M-5								
October					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
									RWG-W-5					RWG- F-5						Ramadan																	
November		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
									Ramadan						H									RWG-LbP-5													
December				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
								H			RSTC-5				PSC-4														Xmas	H							

ANNEX 8

Email from Dr. M.D. Fortes circulated to the Regional Working Group on Seagrass on 26th November 2003, concerning the classification of *Ruppia maritima*

Dear Kelvin and friends:

As before, I am a little concerned by the question you raised, i.e. is *Ruppia maritima* a seagrass or not? But let me give you some background which, way back, helped me to decide that, indeed, *Ruppia maritima* L. 'is' a seagrass. I take this from three perspectives, taxonomic/evolutionary, ecological and practical. Let me briefly explain. I hope this will help clear up the matter and finally allow the project to 'officially' decide.

The taxonomic/evolutionary aspect concerns the following facts:

1. Hutchinson (1959) placed the genus *Ruppia* in the family Ruppiaceae (THIS IS FRESHWATER). Kartesz and Kartesz (1980) place the genus in the family Zosteraceae (THIS IS MARINE). They recognize three North American (including Greenland) species of *Ruppia*, (*R. anomala*, *R. cirrhosa* and *R. maritima*) and list nine varieties of *R. maritima*. Older North American floras, phytogeographical studies, and waterfowl food habit studies often differentiated *R. occidentalis* ("western wigeongrass") from *R. maritima*. Many taxonomists now consider the plant a variety of *R. maritima*. Morphological variations of the plant caused by the environment may impose taxonomic problems in interior North America (Hammer and Heseltine 1988). In Europe, the genus is considered a member of the family Potamogetonaceae and two species (*R. cirrhosa* and *R. maritima*) are recognized (Verhoeven 1975, 1979). These species are separated by morphology and chromosome number (Reese 1962) and the salinity, depth, and water permanence of the wetlands they inhabit (Verhoeven 1975, Verhoeven and Van Vierssen 1978b). Australia has four species (*R. maritima*, *R. megacarpa*, *R. polycarpa* and *R. tuberosa*) that are also placed in the Potamogetonaceae (Bayly and Williams 1973; Brock 1982a; Jacobs and Brock 1982). Other species, varieties and forms of this taxonomically and nomenclaturally confused genus are recognized from similar habitats in other parts of the world (Verhoeven 1979). Van Vierssen et al. (1981) urges taxonomic study of the genus on a global scale.
2. Worldwide distributional records for *Ruppia* taxa show that representatives of the genus occur on all continents of the world and on many islands. The northern limit is about 69 degrees N, the southern limit is at least 55 degrees S, and the altitudinal limit is as at least 3800 m above sea level (Verhoeven 1979).

The ecological aspect concerns some facts, which are common in the literature. Hence, I mention the following:

1. Although often found with the seagrasses, wigeongrass is not a true marine plant, but considered a freshwater species with a pronounced salinity tolerance (Zieman 1982). Verhoeven (1979) considers *Ruppia* to have little competitive strength outside its rather well defined ecological niche and states that its survival is inhibited by competition in certain freshwater and marine habitats that would otherwise be physically suitable. Even in suitable habitats, frequency and biomass of wigeongrass varies greatly, both temporally and areally (Davis et al. 1985).
2. *Ruppia maritima* s.l. occurs mostly in coastal bays (temporarily to permanently flooded and mesohaline to hypersaline); estuaries, fjords, lagoons, ponds, pannes, and sounds; and in bayous, creeks, ditches, flats, and rivers subject to tidal influence (Olsen 1945; Millard and Scott 1953; Thorne 1954; Ferguson Wood 1959; Kornas et al. 1960; Phillips 1960b; Hyer 1963; Joanen 1964; Joanen and Glasgow 1965; Verhoeven 1979, 1980a; Richardson 1980; Thorne-Miller et al. 1983; Ferren 1985). Verhoeven (1979) defined temporary water bodies for wigeongrass as those where physical conditions do not allow survival of vegetative plant parts during certain periods of the year.

3. The species also mixes with true seagrasses up to at least 1.5 km offshore in large oceanic bays. (e.g., the Gulf of Mexico; Zimmerman and Livingston 1979) (ALSO IN THE PHILIPPINES, THAILAND)
4. *R. maritima* s.l., despite its otherwise rather narrow ecological niche, occupies wetlands having a greater range of salinity than is tolerated by any other submersed angiosperm. Optimum salinity for wigeongrass growth in Cl-dominated wetlands is about 5-20 g/L, but somewhat lower salinities earlier in the growing season may enhance rapid germination and drupelet production. Salinities for best growth in inland, SO₄-dominated waters are about twice as high as in Cl-dominated waters. The effects of salinity fluctuations on wigeongrass are unclear. Wigeongrass does poorly in fresh, soft, or even slightly acidic waters. Nutrients are readily absorbed from the water column and can stimulate growth, but in eutrophic waters growth is often severely limited by phytoplankton and epiphytes.

The academic/practical is, for me, the deciding factor. I look at this aspect not primarily from the point of view of a **scientist**, but that of a **scientist from a developing region**. The question I pose is: WHICH IS BETTER FOR OUR PURPOSE, INCLUDING AN OTHERWISE NEGLECTED AND UNKNOWN SPECIES OR NOT, IN OUR INVESTIGATIONS OF THE HABITATS WHERE THIS THRIVES?

In Southeast Asia and the world, seagrass science is in a sad state and in general lagging behind the other 'component' sciences. In the region, scientific research is 'led by the nose' by international funding agencies and their thrusts, so that many fascinating species are neglected and set aside, in favor of those which are, of course, of more economic importance, or simply important from their own points of view, or they are merely relegated in the background of more popular highly funded projects on biotechnology, management, IT. *Ruppia maritima* is an example of a species that has been suffering this fate for decades. Practically nobody is studying the species, despite the fact that in some countries in the US and Europe, it has received so much scientific attention due to the fact that it has been a very useful species –economically and ecologically.

As is being recommended globally, we should spend more effort in understanding this virtually unknown species. And the way to do is first and foremost, include it in our investigations of the habitats where our primary concerns are likewise focused. But in so doing, let us be reminded that the question is far from being answered satisfactorily and our efforts are contributing to our own search for the answer. There is no harm including it in our collections and ecological assessments. In fact we benefit because we know more, and understand how, in relation to the other components, they function in our coastal and marine environment. .

For the above reasons, *Ruppia maritima* is very much a seagrass!

Miguel D. Fortes