PN-ADD-176

NATIONAL BIODIVERSITY CONSERVATION PRIORITY - SETTING WORKSHOP

Mindanao Regional Consultation

Malagos Garden Resort, Davao City
August 30 - September 1,2000

"Saving the Hottest of the Hotspots"

USAID
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

PROTECTED AREAS AND WILDLIFE BUREAU-DENR

UNIVERSITY OF THE PHILIPPINES BCP-CIDS

CONSERVATION INTERNATIONAL PHILIPPINES

TABLE OF CONTENTS

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Wildlife Conservation Society of the Philippines (WCSP); Fauna and Flora International (FFI); Environmental Science for Social Change (ESSC); University of the Philippines Diliman; University of the Philippines Los Baños; UP College of Baguio; Laguna Lake Development Authority; Philippine Eagle Foundation, Inc.; Central Mindanao University; Mindanao State University; UP Mindanao; University of Southern Philippines; Xavier University; Ateneo de Davao University; Makiling Center for Mountain Ecosystems; BFAR Region 11; Pipoli Foundation; Kabang Kalikasan ng Pilipinas; Green Mindanao; Manobo Organization; DENR Project Agencies (NIPAP, CPPAP, NORDECO)

LIST OF ACRONYMS

ADB	Asian Development Bank
ADDU	Ateneo de Davao University
ARCBC	Asean Regional Council for Biodiversity Conservation
BCP	Biodiversity Conservation Program
BFAR	Bureau of Fisheries and Aquatic Resources
CI Phil	Conservation International - Philippines
CMU	Central Mindanao University
CPPAP	Conservation of Priority Protected Areas Project
CPSC	Camiguin Polytechnic State College
DENR	Department of Environment and Natural Resources
DLSU	De La Salle University
ERDB	Ecosystems Research and Development Bureau
ESSC	Environmental Science for Social Change
FFI	Flora and Fauna International
FPCI	First Philippine Conservation Inc.
FPE	Foundation for the Philippine Environment
GIS	Geographical Information System
GTZ	German Technical Assistance
Haribon	Haribon Foundation for the Conservation of Nature and Natural Resources
ICLARM	International Center for Living Aquatic Resources Management
IP	Indigenous People
IPAS	Integrated Protected Areas System
KKP	Kabang Kalikasan ng Pilipinas
LDCU	Liceo de Cagayan University
LGU	Local Government Units
LLDA	Laguna Lake Development Authority
MCME	Makiling Center for Mountain Ecosystems
MSU	Mindanao State University
NAST	National Academy of Science and Technology
NBCPSW	National Biodiversity Conservation Priority-Setting Workshop
NBSAP	National Biodiversity Strategic Action Plan
NEDA	National Economic Development Authority
NGO	Non-Government Organization
NIPAP	National Integrated Protected Areas Project
NIPAS Law	National Integrated Protected Areas System Act of 1992
NSO	National Statistics Office
PA	Protected Area
PAMB	Protected Area Management Board
PAWB	Protected Areas and Wildlife Bureau
PAWD	Protected Areas and Wilidlife Division
PCAMRD	Philippine Council for Aquatic and Marine Resources Research and Development
PCARRD	Philippine Council for Agriculture, Forestry and Natural Resources Research and Development
PEFI	Philippine Eagle Foundation Inc.
PNM	Philippine National Museum
RDC	Regional Development Council
REECs	Resource, Environment and Economic Consultants, Inc.
UNDP	United Nations Development Programme
UP	University of the Philippines
UP CIDS	University of the Philippines Center for Integrative and Development Studies
UP Min	University of the Philippines Mindanao
UPCB	University of the Philippines - College of Baguio
UPLB	University of the Philippines Los Baños
UP-MSI	University of the Philippines - Marine Sceince Institute
USAID	United States Agency for International Development
USP	University of Southern Philippines
WGL	Working Group Leader

EXECUTIVE SUMMARY

Amid lush *Rhododendrons, Vandas, Medenillas*, palms and ornamental sedges, interspersed with the artistry of Nicanor Abueva's sculptures, the Mindanao Regional Consultation, was held last August 30 – September 1, 2000 at the Malagos Garden Resort, Davao City. This was the second of the series of regional consultations in preparation for the National Biodiversity Conservation Priority Setting Workshop (NBCPSW). A joint effort of the Protected Areas and Wildlife Bureau, Department of Environment and Natural Resources (PAWB-DENR), Conservation International - Philippines (CI-Phil), and the Biodiversity Conservation Program of the University of the Philippines Center for Integrative and Development Studies (BCP UP-CIDS), the Regional Consultations' purpose was geared towards optimizing data gathering and consolidation for the region, strengthening participation among experts and stakeholders, and facilitating network initiatives for future actions on Biodiversity Conservation. With funding support from the United States Agency for International Development (USAID), Foundation for Philippine Environment (FPE), Asian Development Bank (ADB) and Haribon Foundation, the workshop had specific objectives, similar to what it had for Visayas, namely:

- To convene a small group of scientists, representatives from the NGOs and the government (PAWB, BFAR, LGUs, etc.), and academic institutions to make a preliminary assessment on the status of biodiversity conservation work in the region; and

- To agree on a work plan and responsibilities for the work ahead up to the national workshop.

A total of sixty-five (65) persons, including local experts, staff, facilitators and guests attended the Mindanao Regional Consultation. Thirty active experts and representatives of 24 institutions from different cities (Bukidnon, Iligan, General Santos, Ozamis, S. Cotabato, Cagayan de Oro, Davao, Zamboanga, Tagum, Tawi-tawi, Camiguin, Marawi, and Butuan) provided, consolidated and validated information enthusiastically, making the Mindanao Consultation a successful endeavour. Although the expected outputs were similar in form with the Visayas consultation, such as updated information and data sources, results of the Mindanao consultation was far more extensive due to the availability of more working maps and a more comprehensive biodiversity situationer given by the Regional Coordinator, Dr. Victor Amoroso. The output consisted of a) corrected and/or additional map information, b) additional data sources, c) additional bibliography d) directory of experts in the Mindanao region, e) commitment to submit data and positive response from the participants and f) nominations of Mindanao representatives for the national workshop.

This three-day workshop went through an updating of available data presented by the working group leaders, worked on through the maps by the different thematic groups who also added on and refined the criteria to be used for prioritization. The initial list of criteria, which was done in the Visayas consultation, was improved upon by the Mindanao group and will hopefully be refined by the Luzon group. The refinement and usability of this is essential for the National workshop. On a scale of 1 to 5 (five being the highest, a relatively high rating of 4.3 resulted from limited evaluation returns with suggestions that include advance invitations, absence of some recognized but unmentioned experts, specified data request and better food combinations. Verbal commendations that was not explicit in the evaluation form was however common, clearly indicating that the Consultation was a success.

MINDANAO REGIONAL CONSULTATION REPORT
Malagos Garden Resort, Davao City
August 30 – September 1, 2000

PROCESS DOCUMENTATION

Two weeks before the Mindanao Regional Consultation, invitations were sent out to participants, partner agencies and guests. Earlier invitations could not be done due to continuous review of the list and recommendations from the working groups. The working staff advanced a day prior to the workshop to make the site preparations.

a) DAY 1 (August 30, 2000)

Twenty-four participants from 17 institutions welcomed the first day activity, which started at 9:00 am. Dr. Oliver Coroza was called to lead the invocation followed by Joy Navarro's national anthem. Prof. Letty Afuang, the overall facilitator, introduced Dr. Hector C. Miranda, Science Director of the Philippine Eagle Foundation, Inc. in Mindanao for the opening remarks. In his speech, Dr. Miranda had two major points: one, on the meaning of biodiversity and the second, on the role of science to biodiversity. He emphasized the changing perspectives on the way biodiversity is defined in relation to the demand on the species according to its usability to policy makers. He also reiterated that engagement of scientists and academicians to environmental advocacy and dialogue should be an ultimate purpose because it is the policymakers who define the use of biodiversity and it is the scientist who should make them understand their ethical and scientific importance to biodiversity (Annex 1).

Mr. Clarence Baguilat, Regional Executive Director of DENR Region XI gave a heartwarming welcome and wishes for the consultation's success and for fond memories of the participants' stay in the beautiful city of Davao (Annex 2). He proudly noted that Davao was acclaimed to be the cleanest, greenest and most child-friendly city not only in the Philippines but in Asia as well. Although he expressed regret that the activity had not been in time with their Kadayawan festival that was held earlier, he assured the group that what is to be enjoyed in the city is there all year round.

The new Chief of the Office of Environmental Management of USAID, Mr. Jerry Bisson, gave an inspirational talk, initially surprising the audience by speaking in Cebuano (Annex 3). He has been in the Philippines for several years and has adapted to many aspects of the Filipino culture. He spoke primarily on the importance of actively participating in the workshop and applying the results of the group's analysis and recommendations. He also posed encouragement and challenging questions on how the group could promote a greater understanding of the socio-economic and environmental importance of biological diversity.

Mr. Leonilo Rivera, PAWD Chief of Region II, was asked to introduce the Keynote Speaker. In the absence of Undersecretary Mario Roño, RED Baguilat was again called for the task. Although a bit surprised for the call, he did his part well and did set the mood by reminding the participants to bring along and share their data to ensure success of the workshop. Right after, Dr. Theresa Mundita Lim, Convenor and Assistant Director of PAWB-DENR, did the honor of reading the Keynote Address prepared by USEC Roño, ending with a statement that the DENR counts on these scientists for a guided framework as basis for major decisions on Biodiversity Conservation in this country (Annex 4).

As an introductory for the project, Dr. Lim then presented a backgrounder of the National Biodiversity Conservation Priority Setting (Annex 5). Using a PowerPoint presentation projected on a multimedia, she described the project in terms of its objectives, outputs, general funding support, and cooperating agencies. She further highlighted the expected "returns": that in addition to the proper acknowledgement of contributors, they will have their own copy of the final report, prioritization map and CD, which will be an important reference for other future conservation projects.

Dr. Perry Ong, Co-convenor and Country Director of CI-Philippines illumined the participants on the NBCPSW process (Annex 6). He emphasized that this project is an opportunity for people, experts and stakeholders who felt left out in the process of action planning for biodiversity conservation in the country – to contribute and participate in this effort. He underscored the importance of the process' participatory nature and the acknowledgement it gives to all contributors to the undertaking. Finally, he introduced the plan for establishing a Network-for-Nature program, emerging from the national workshop and potentially serving as the pool of active participants for future conservation strategies. The proposed Experts' Network, which is a part of this plan, is expected to be an instrument for the local experts to have international recognition through the IUCN Species Survival Commission. Meanwhile, Mr. Ernie Wijanco of USAID, in response to the presentation, clarified the connection of an already existing donors' network in the action planning part of the process.

The last speaker was Dr. Victor Amoroso, another Regional Coordinator for Mindanao, who gave the Mindanao Situationer accentuating on four biogeographic zones of Mindanao and its richness in biological diversity. He also stressed the importance of Mindanao as home to a number of endangered and endemic species (Annex 7). Moreover, he reiterated Mindanao as the site of several undescribed, unidentified and unnamed species of flora and fauna. There were reports, however, that some species have been lost long before they were recorded, studied and conserved due to destructive practices.

The fruitful opening program was followed by Prof. Afuang's brief orientation and leveling-off of expectations (Annex 8). She pointed out that the CPW process has been done in other countries around the world, but it has evolved and is now locally customized for the Philippines and for the Filipino people. Other CPW of other countries did not have Regional Consultations and they had only a single National Workshop to work on. In this CPW, greater participation is expected from the regional consultations, giving more local experts the opportunity to share their opinion, thereby allowing the possibility of better conclusions. She also emphasized the important outputs expected from the small-group workshops and later discussed the flow of the afternoon session.

The afternoon session started with informative and excellent presentations by the working group leaders to discuss and share existing data they have on Mindanao. The first presentor was Mr. Neil Aldrin Mallari (Birds), followed by Prof. Blas Tabaranza, Jr. (Mammals), Mr. Arvin Diesmos (Herps), Dr. Victor Gapud (Arthropods), Dr. Daniel Lagunzad (Plants), Dr. Porfirio Aliño (Marine), Ms. Adelina Borja (Freshwater) and Dr. Rowena Boquiren (Socio-economic). The 4-hour presentation was a revelation of Mindanao's rich resources that is both inspiring and challenging. Inspiring because of its variety, challenging because of the threatened situation which it faces for the future (Annexes 9.A.1 – 9.F). There were suggestions, inquiries, and clarifications after every presentation, each answered by the Working Group Leaders with confidence. The leaders also thanked the participants for the pledges of support they showed.

In the late afternoon, Dr. Oliver Coroza's presentation of PRISMA gave an inspiring move for the participants to experience the use of software for the conservation priority setting (Annex 10). Each person, knowing that the materials can easily be printed, was interested to have a copy of the CD. Limited copies were then distributed to each agency.

Then, a meeting with Fr. Peter Walpole of ESSC was called to discuss the needed information for the improvement of the data maps. He likewise emphasized that early submission could facilitate the validation of the references. Letty Afuang ensured that ESSC should receive the data even before the workshop ends (Annex 11). After the meeting, a very smooth and relieving night of socials started. Others stayed on till some wee hours of the new day but others preferred to sleep to cover up the early and stressful flight they took to come over on time for the whole day's work.

b) DAY 2 (August 31, 2000)

Prof. Letty Afuang started the day with guidelines for the day's activities all listed in the day's program. The morning session started with the small working groups in their respective themes to discuss, validate and plot existing data on the map. Although having different approaches, each working group leader competently directed each one's contribution. The plant group was evidently the most active because of the presence of several energetic experts in the person of Vic Amoroso, Edwino Fernando and Dan Lagunzad; ten members worked together to make a very rich map update and species distribution for the plants.

In comparison to the Visayas Consultation, the Arthropods group had a better work condition in Mindanao because Dr. Gapud finally found company to work with, in the person of Gloria Camarao (UPMin), Myrna Ballentes (CMU) and Alma Mohagan (CMU). Also, these participants carried information that they can tinker with and put into the map. The group agreed upon on which are the most important families of arthropods that could practically be used for the priority setting.

Similarly, Ms. Lenie Borja was happy for having members to the freshwater group. What more will she ask for, after having the list of all the significant rivers, swamps, marshes and lakes of Mindanao. Their target now is to validate the presence of these freshwater systems in the maps and find the reasons why they will be considered for prioritization.

In the Socio-econ group, Dr. Rowie Boquiren outlined the working group process, how each regional consultation shall be used for the national priority setting, and how each participant's effort contributes to the final results of the process. Having understood these, the members of her group were able to identify additional participants and contributors of information. In fact, she extended her stay until Saturday to conduct a meeting with socio-econ groups in Davao City for this information sharing. All hats to her dedicated and highly motivated leadership for the socio-econ aspect of priority setting; a tough job because this theme is the only cross-cutter that interweaves biodiversity directly with human interventions in a multidimensional manner. They have to be able to simplify their approaches for evaluating human impacts to conditions of biodiversity.

Dr. Perry Aliño led the discussions of the marine group, focusing on data sources and other projects in relation to marine biogeographic zones. They also identified threats and scoring systems in relation to threat types, as they affected Marine Protected Areas.

The united efforts of the Herps, Birds and Mammals made work productive and easy for the Vertebrates group. As pointed out by Blas Tabaranza Jr., these three groups are generally separated by the taxa that they cover but field works do not necessarily work that way. In the field, the vertebrate wildlife specialists work together as one, or even one working on the three groups, and gathering standard sets of information for a given undertaking and effective analysis. Only when one works on the systematics of the species that they get into specialized

fields. Using the IBA of Haribon as map guide, it became easier to accept and confirm new information as well as identify existing gaps. Thanks to their group for moving far ahead. They have also further refined their criteria in this workshop.

Evidently, the availability of working maps was one major motivating factor that heightened the enthusiasm of the participants. Local experts found it easier to validate information on the maps. They agreed on an organized data collection and sharing as a follow-up for this activity. Also, importantly, each group came up with their selective criteria for prioritization, a detailed refinement into +/- scores or 1-5 rankings (Annexes 12.A. – 12.F.). The nominations for the National workshop was also requested and collected later in the day. Some participants had to transfer to other working groups from time to time to address concerns that were covered in their working experiences. The working groups however, failed to make a good return of the workshop's evaluation. From a total of 30 participants, only 14 sheets were returned to the staff.

Over a sumptuous lunch, the Convenors met with the Working Group Leaders to decide upon the Palawan consultation and evaluate the flow of the second regional consultation and how it can further be improved for Luzon (Annex 13). The WGLs voiced out their request for additional funds, particularly for large groups such as the Plants, Socio-Econ, Arthropods, and Marine groups. Their discussions also covered the plan to hold a pre-consultation workshop for the Luzon Consultation and the National Workshop. The group also arrived at a consensus not to push through with proposed Palawan Regional Consultation due to logistical and financial reasons. There was also a suggestion to move the Luzon Consultation to a later date in order to give enough time for preparations. Map requests and comments on the available maps were then made to the ESSC.

The afternoon session continued with Ms. Norma Molinyawe's presentation of Protected Areas (Annex 14). She invoked the participants to share comments and additional information on the presented data inasmuch as these were not done by "experts". She explained that the PAWB needs the help of those in presence to do corrections on the available data. Active participants raised different clarifications on the names and specific locations of protected areas in her presentation. This time, locator maps supported the presentation. Some questions to her material were given support by Carlo Custodio. For one, there were participants who inquired about the "exclusion" of the Autonomous Region of Muslim Mindanao in the report. PAWB insisted, however, that this was unintentional and was mainly due to the absence of data on these areas. Some areas under question, like the Liguasan Marsh as a sanctuary and the greater portion of the Agusan Marsh, were also found to be undergoing assessment and were already proposed for protection.

Finally, at 7:00 p.m., right after dinnertime, and because of insistent public consensus, everyone, was ready to present the output of each working group (results and criteria resolution by the working group). There has been a lot of additional information incorporated from the existing data gathered. Even during the presentations some participants added information to the data presented (Annex 12.A – 12.F).

Despite the whole day's hectic schedule, the participants found time to extend the night to mingle with the group during the informal and spontaneous socials. Many of them participated in a night of dancing, playing and talking to each other that lasted until early morning.

c) DAY 3 (September 1, 2000)

The last day was graduation time and the rushing up of draft report of the outputs of the whole workshop. This was followed by a two-hour morning trip to the Philippine Eagle Center, hosted

by Dr. Hector Miranda and the PEFI staff who have generously assisted as documentors and did the note-taking for some of the working groups and producing immediate reports. However, many participants from Mindanao had gone home to catch up limited flight or sailing schedules. There were two batches of Manila participants, one leaving at 11:00 a.m. and the other at 2:00 p.m. At the end of the day, everything has gone quiet at the Malagos Garden Resort, except for the fine arts students of UP Mindanao who do their regular visual arts practice in the inspiring ambience of the place. The minds of the travelling participants, can only be imagined to be thinking about the additional data that they are going to send to CI, pondering if they have been nominated for the National Workshop or simply enjoying the quiet satisfaction that they have had another good day's work, having contributed well for the concerns of biodiversity and to mother earth as a whole.

PRESENTATIONS / MESSAGES FOR THE PROGRAM

Annex 1	:	Message of Dr. Hector Miranda
Annex 2	:	Welcome Remarks of RED Clarence Baguilat
Annex 3	:	Message of Dr. Jerry Bisson
Annex 4	:	Keynote Address of USEC Mario Roño
Annex 5	:	Backgrounder on NBCPSW by Dr. Theresa Mundita Lim
Annex 6	:	NBCPSW Process by Dr. Perry Ong
Annex 7	:	Mindanao Situationer by Dr. Victor Amoroso
Annex 8	:	Orientation and Leveling of Expectations by Prof. Leticia Afuang

ANNEX 1

MESSAGE OF DR. HECTOR C. MIRANDA

Welcome to the most exciting region of this country. For those with apprehensions of getting kidnapped, we assure you of your safety.

I would like to thank the organizing committee in giving me the opportunity to say something about biodiversity. We live at a time of rapid environmental change, resulting largely from our own activities, and a consequent rate of habitat loss and species extinction.

As I understand, this workshop is one of the regional meetings we shall have prior to the national meeting to be held this December.

There are two major points I would like to make. One is on the meaning of biodiversity and the second, on the role of science to biodiversity conservation.

Biodiversity as traditionally defined is the sum total of all biotic variation from the level of genes to ecosystems. The challenge comes in measuring such a broad concept in ways that are useful for conservation.

The measure of biodiversity relies on the definition of evolutionary units called species. Because species are constantly evolving entities, biodiversity should also be viewed under the light of evolution. If this is the case, then biodiversity cannot be reduced to a single number, such as species richness. This is the challenge that the participants of this workshop will face, because species accounting is what policy makers want.

There are new perspectives emerging. Phylogenetic and temporal analyses are shedding light on the ecological and evolutionary processes that have shaped current biodiversity, a vital question now being tackled is how badly this loss affects ecosystem functioning. It is said that based on the rate of the discovery of new species, the roughly 1.75 million described species of organism may be only around 10% of the total.

This number may multiply, not only due to discoveries of new life forms, but the emerging popularity of other species concepts- like phylogenetic species concepts (PSC)- can drastically stretch established taxonomic settings.

For example, there are roughly 500 species of Philippine birds. But a widespread recognition of the PSC can increase the total number of species to almost double.

The other emerging tool is the use of genomic characters, which offers new insights to biodiversity at the most fundamental level. This discipline is yet to reveal that what we are losing from irreversible extinction is far more precious than we presently realize.

Coupled with the explosion of phylogenetic studies, these tools will not only provide a clear picture of biodiversity today, but also allow us to make inferences about how the diversity has come about.
Third, the application of computer databases and the internet in database. This technology is providing a decentralized and 'democratic' way of sharing information, a system of coordination similar to genomic systems in many ways.

With the evolution of new thinking about the role of biodiversity to human survival, we shall see new definitions and new dimensions of biodiversity beyond species listing in the near future.

The second point I would like to make is the role of science to conservation biology. Conservation is a human-centered pursuit that must be underpinned by science. Science has an important contribution to dialogues on policy and ethics. But contributions to peer-review journals as the primary pursuit of academic institutions is admittedly short sighted. The ultimate reason for the society's investment in science is to benefit society. Therefore, engagement of scientists and academicians to environmental advocacy and dialogue should be an ultimate purpose.

Biodiversity conservation, without the underpinnings of solid science, would be vulnerable to wasteful political discourse. Science must contribute, in an open, unbiased manner, to relevant issues. It is time for politics to listen to science, not the other way around.

The world that will exist in 100 to 1,000 years will, unavoidably, be of human design, whether deliberate or haphazard. The principles that should guide this design must be based on science, and on ethics.

Ethics should, among other things, apportion cost and benefits between individuals and society as a whole, and between current generation and all future generations.

A sustainable world will require an ethic that is ultimately as incorporated into culture and as long lasting and pervasive as religious commandments.

The earth will retain its most striking feature, its biodiversity, only if humans have the prescience to do so. This will occur, it seems, only if we realize the extent to which we use biodiversity.

So I would like to conclude this opening remark by quoting Purvis and Hector "Conserving one population of every species is rather like having one of each note in the Mozart concerto." In the case of the Philippines, small pieces and fragments are all we have left, and we might just have to live with it and make sense of it.

I do hope that this bold initiative by Conservation International, the PAWB and others would be guided by the basic tenet of science and galvanize the efforts to save what is left in this country.

In behalf of conservationists from Mindanao, we welcome everyone to this promised land, the home of the brave and the land of the free.

ANNEX 2

WELCOME REMARKS OF RED CLARENCE BAGUILAT

To our distinguished participants to this Biodiversity Conservation Priority Setting Workshop, good morning to all of you.

We most welcome you to the beautiful city of Davao, said to be the cleanest, greenest, child-friendly, not only in the Philippines but in Asia as well. We could have wished that you had come earlier to enjoy the festivities during the Kadayawan. Nevertheless, as you are here now, it doesn't need to say that much of what is to be enjoyed and seen here in Davao is not there, or rather, it is not only during the festivities, but it is all year round. In fact, you are situated in one of the beautiful places that we have biodiversity-wise, and environment friendly wise. So without needing to say much, we are happy and grateful that you had made it here with the blessings of our Almighty. To add to it that we miss this workshop not wished but let it be that this workshop be a success as it depends to all of us. Not just for our physical presence here but our active involvement and participation and we wish you also at the end of the workshop, happy memories for your stay here, and safety in your journey back from where you're coming. Good day to all of you!

ANNEX 3

MESSAGE OF DR. JERRY BISSON

I'd like to acknowledge this great opportunity to escape benevolence (the depth of organizing this workshop), so I am forever in gratitude.

Dir. Baguilat, Dr. Lim, Dr. Ong and distinguished colleagues, *Maayong buntag sa imong tanan.* I am very pleased to be with you here this morning, in probably a landmark event, the Mindanao Regional Consultation for the National Biodiversity Conservation Priority Setting Workshop.

Your efforts and the approach you are taking are extremely important. Promoting it, broad participation and consultation to help achieve a scientifically sound analysis and recommendations, you're also building consensus and a critical will to apply results of your analysis. In this workshop, I encourage you to focus on how your recommendations for conservation priorities can best be applied. There is an urgent need for greater public awareness and support. Why should the general public and decision-makers care about conserving biological diversity? In the United States of America, most people don't even know what biological diversity is. Most people in the United States think that when you have a zoo, you have a National Park, then you conserve biological diversity. But as you know, most of the biological diversity in the Philippines and in the world lies outside the protected areas, and is severely threatened by conversion, over-use and destructive practices.

We face many challenges. First, how to promote a greater understanding of the social-economic and environmental importance of biological diversity. Can we document economic benefits and costs of the environmental services generated by maintaining this biological diversity. Can we make this cost-benefit analysis useful to decision makers, national agencies, local government units, private sectors? Can we work with the media, with the private sectors and others as active development partners? And finally, how can we build the local capacity to identify and address critical threats to the sustainable use of these important natural resources and the maintenance of environmental services. We all share a goal to maintain a healthy environment for continued economic growth and for the benefit of generations to come. Actively participating in this workshop and applying the results of your analysis and recommendations are of the utmost importance.

In behalf of the United States Agency for International Development, I wish you success. *Daghan salamat sa imong tanan!*

ANNEX 4

KEYNOTE ADDRESS OF USEC MARIO ROÑO

I came to note that the Philippines has been identified as one of the 25 countries worldwide considered as priority hotspots, globally important biodiversity areas that are under severe threat. Data available on birds alone, showed that half of our country's endemic birds are threatened to extinction. Thus in 1995, the National Biodiversity Strategy and Action Plan (NBSAP) was formulated and then published two years later. This action plan presented a general overview and background of biodiversity in the Philippines. However, it did not provide substantial information on geographically specific recommendations or priorities for the investment of limited conservation resources. There is a sense of urgency to further strengthen and advance the operationalization of NBSAP. Lessons have been learned since the preparation and implementation of the action plan. Also, lessons can be gathered from various biodiversity conservation initiatives including two country-based programs that are almost in their final phases of implementation, the Conservation of Priority Protected Areas Program (CPPAP) and the National Integrated Protected Areas Program (NIPAP). Biodiversity conservation goes beyond scientific methodologies and strict legal prohibitions to preserve our biological resources. It should also include strengthening opportunities for our local communities particularly the rural poor, to benefit from the national biodiversity conservation efforts. Based on the preliminary assessment made, the variety of wildlife species have different geographic priorities, thus a more careful planned forum for integration and consensus building is necessary, hence this workshop.

In behalf of DENR, may I express our sincere appreciation for the participation of various sectors in this workshop. More importantly, I commend the efforts of the convenors and organizers in calling together such a large group of experts with such varied interests and professional disciplines and attempting to gather them in a discussion expectedly to arrive at a consensus on specific biodiversity conservation priorities.

I understand this process maybe too difficult for you initially because of the wide range of expertise and even conflicting concepts or priority. But it would make it easier probably if we don't lose focus on what we want to achieve - to provide a firmer and stronger support to maintain the balance between biodiversity conservation, rural development and poverty alleviation. This too is a commitment of the government for the Filipino people. This is a challenge for all of us. We may not have the luxury of time, the Philippines has been ranked first in the global hotspot category, ranked first in the threatened birds category, can't we rank first this time for doing something about it and doing it successfully? For the sake of our country and the generations to come, I hope we can.

The output of this workshop shall be a very valuable guiding principle for decision makers and policy implementers in leading our people out from the bondage of poverty and improving the quality of life in the Visayas without compromising biodiversity conservation, sacrificing the integrity of the protected areas and driving the remaining endangered flora and fauna to extinction. We recognize this priority setting workshop as one of the means to provide us the tools to give the earth. I'm counting on you.

Ladies and Gentlemen, thank you very much.

BACKGROUNDER ON NBCPSW
by Dr. Theresa Mundita Lim

National Biodiversity Conservation Priority Setting

Regional Consultation Workshop for Mindanao

August 30 - September 1, 2000
Malagos Garden Resort
Davao City

Background

- National Biodiversity Strategy and Action Plan
  - Began in 1995
  - Published in 1997
- Approved by the Philippine Council for Sustainable Development
- President F. V. Ramos issued a memorandum order instructing all government agencies to incorporate the NBSAP into their work plans

Background

- In 1998, CI identified the Philippines as one of 17 megadiversity countries
- In 1999, CI further identified the Philippines as one of 25 global hotspots
- on a per unit area basis, the Philippines is the top megadiversity country and hottest of the hotspots
- There was a need to localize this information

Background

- 1999 meeting of the Wildlife Conservation Society of the Philippines last April, discussions arose wherein priorities for different taxa need to be reconciled and the Priority Setting Workshop Process was suggested as a tool to resolve the debate
- Discussions with the PAWB and the ARCBC were undertaken and the proposal was endorsed

Objectives

- 1. Identify, assess, and prioritize specific geographic areas for biodiversity conservation in the Philippines through an established process, which supplements published information with a consensus of the latest expert knowledge.
- 2. Make available an information base, which will assist policymakers, planners, and donors to incorporate biodiversity conservation objectives into their implementation plans.

Objectives

- 3. Strengthen local capacity for conservation planning and management based on the development of an integrated conservation information system and related skills training, based on the latest available information using experts' knowledge.
- 4. Propose a program for training regional planning agencies in how to integrate the workshop results into their planning and implementation processes.

Outputs

- 1. A preliminary planning report outlining the current context and lessons learned from previous biodiversity planning activities (NBSAP, CBD, CPPAP, NIPA).
- 2. A final report, map, and CD-ROM with digital files presenting the latest scientific consensus on priority areas for conservation and including all major data gathered during the CPW process.

Regional Consultation Objectives

- 1. To convene a small group of scientists, representatives from the NGO's and the government (PAWB, LGUs, etc.) to make a preliminary assessment of the status of biodiversity conservation work in the region
- 2. To agree on a work plan and responsibilities for the work ahead up to the National workshop.
- 3. To select representatives to the national workshop.

General Funding Support

- United States Agency for International Development (USAID)
- Asian Development Bank (ADB)
- Conservation International (CI)
- United Nations Development Programme (UNDP) and the Environment and Natural Resources Accounting II-National Statistical Coordination Board (ENRAII-NSCB)
- First Philippine Conservation Inc. (FPCI)
- Foundation for the Philippine Environment (FPE)
- Biodiversity Conservation Program, UP Center for Integrative and Development Studies and the National Academy of Science and Technology (BCP, UP CIDS-NAST)

In cooperation with

- **Wildlife Conservation Society of the Philippines (WCSP)**
- **Haribon Foundation for the Conservation of Nature and Natural Resources (Haribon)**
- **Fauna and Flora International (FFI)**
- **Environmental Science for Social Change (ESSC)**
- **Resource Economics and Environment Center for Studies (REECs)**
- **University of the Philippines Diliman**
- **University of the Philippines Los Baños**
- **UP College of Baguio**
- **Laguna Lake Development Authority**
- **Philippine Eagle Foundation, Inc.**
- **Central Mindanao University**

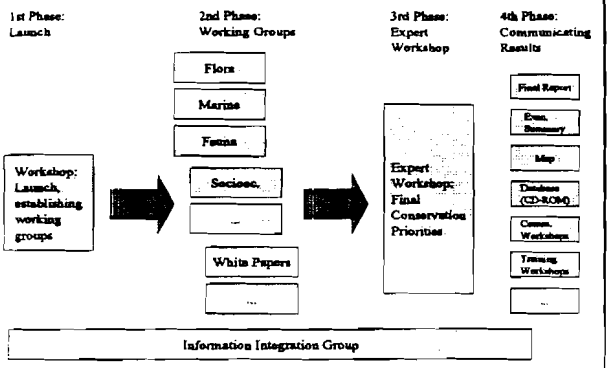
In cooperation with

- **Mindanao State University**
- **UP Mindanao**
- **University of Southern Philippines**
- **Xavier University**
- **CARE - Philippines**
- **Ateneo de Davao University**
- **Makiling Center for Mountain Ecosystems**
- **BFAR Region 11**
- **Pipoli Foundation**
- **Kabang Kalikasan ng Pilipinas**
- **Green Mindanao**
- **Manobo Organization**
- **DENR Project Agencies (NIPAP, CPPAP, NORDECO)**

NNEX 6

NBCPSW PROCESS
by Dr. Perry S. Ong

Philippines Conservation Priorities



1st Phase: Workshop Objectives

- Agree on approach, methods, rules
- Setting up working groups
  - what groups, themes
  - do we need white papers in addition?
- Agreeing on terms of reference for working groups
- Agreeing on timeline
- Presenting tools for phase 2

Working Groups: approach

- Select one coordinator per group, a top scientist in each theme.
- Ask him/her to propose a number of colleagues to involve in his group, both from Philippines and abroad
- provide resources to gather information and communicate with other experts

Terms of Reference for Group Coordinators -1

- Produce a paper on the state of knowledge of his/her theme, including priority areas for research and conservation.
  - This paper should receive the input and be reviewed by the working group as a whole but it is the coordinators' responsibility
  - include list of priority areas for conservation / research
  - include assessment of value of existing protected areas for this taxa

Terms of Reference for Group Coordinators -2

- He/She must also supply information about his/her theme for populating the database:
  - List of known species in Philippines
  - Detailed bibliography
  - List of experts, addresses, institutions
  - List of biological collections including description, quality, access, institutions, References
  - If possible, information on collected specimens with location and date

Working Group Products

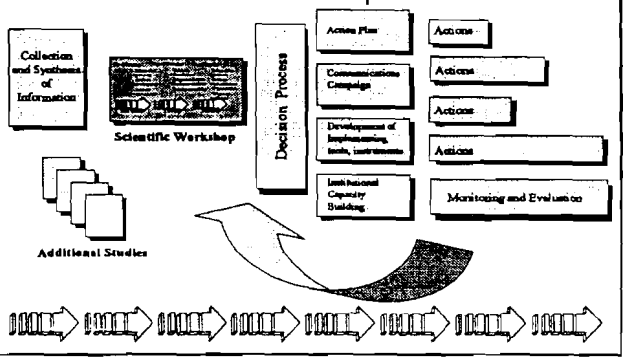
- Report
- Preliminary maps of priority areas
- Database with bibliography,...

The maps and database would be integrated with the tools provided by and the help of the information group

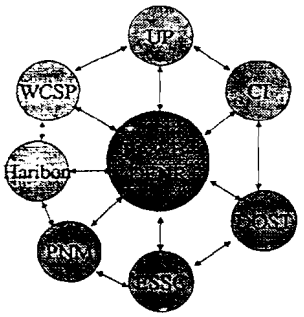
Conservation Priorities Process

Pre-Workshop	Workshop	Post-Workshop
• Data Collection and Synthesis • Developing the Regional Information System • Thematic Assessments / White Papers	•Thematic Priorities • Integrated Recommendations (regional groups) • Final Conservation Priorities Map and Database	• Reports and Publications • Consolidation, Publication and Distribution of the Information • Follow-up Activities
6-10 months	1 week	3-6 months

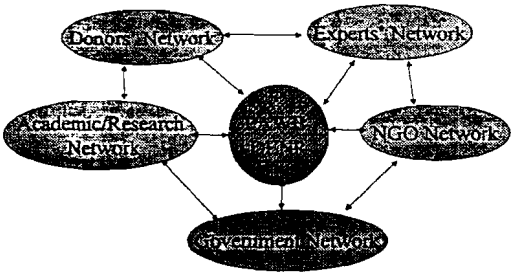
Priorities Process and Follow-up Activities



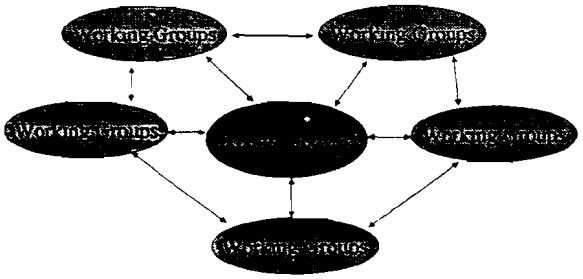
Current Partners at the National Level



Proposed Network for Nature



Experts' Network for Nature



ANNEX 7

STATUS, SPECIES RICHNESS AND ECOSYSTEM DIVERSITY IN MINDANAO ISLANDS

Victor B. Amoroso
Central Mindanao University
Musuan, Bukidnon

STATUS OF BIODIVERSITY IN MINDANAO

- High level of biodiversity (Heaney, 1993)
- Site of the greatest diversity of mammals & birds in the Philippines; 45 species globally threatened (Heaney, 1993)
- Richest known vertebrate fauna in the country (Kennedy et al., 1995)
- Highest tree density among tropical forests (Pipoly & Madulid, 1995)
- Habitat of many endemic flora and fauna that include the following:
  - Endangered *Isoetes* (Zamora , 2000 ; Amoroso, 1997)
  - 6 species of *Lycopodium* (Amoroso *et al.*, 2000)
  - 183 species of ferns, 59 of which are Mindanao Endemics (Zamora and Amoroso, 1997)
  - 327 species of Trees (Rojo, 1999; Madulid, 1995)
  - 24 species of Amphibians (Alcala & Brown, 1998)
  - 219 species of Butterflies, 7 of which are very rare and endangered (de Jong & Treadaway, 1993).
  - 21 threatened species of Birds (Collar et al., 1999)
  - 12 vulnerable to endangered species of mammals (Heaney *et al.*, 1998).

- Home of the endangered
  - *Pithecophaga jefferyi* (Philippine Eagle) & many bird species
  - Primitive *Psilotum* and *Tmesipteris* (whiskfern)
  - *Dawsonia superba* (Giant Moss)
  - *Acerodon jubatus* (Golden Crowned Flying Fox)
  - *Euanthe sanderiana* (Waling- Waling)
  - *Podogymnura truei* (Mindanao Gymnure)
  - *Rafflesia manilla* (Highly endangered)
  - *Papilio demoleus*
  - *R. schadenbergiana*
  - *Graphium sandawanum*

- Site of several undescribed and unnamed species of flora and fauna.
- Threatened due to logging, *kaingin*, land conversion, over-harvesting, hunting, pesticide use, etc. Resulted to decline of biodiversity.
- Some species are lost before they are recorded, studied and conserved.

Table 1. SUMMARY OF SPECIES RICHNESS AND ECOSYSTEM DIVERSITY IN MINDANAO

• **Species Richness**	• **Ecosystem Diversity**
• 58 species of Fern allies • 574 species of Ferns • 33 species of Gymnosperms • ? species of Mammals • ? species of Bird • 34 species of Amphibians • 528 species of Butterflies	Mountain Ecosystem • Upper Montane • Lower Montane Lowland • Dipterocarp Forest • Grassland • Forest over ultrabasic Freshwater Ecosystem • Lakes • Rivers Marine / Coastal Ecosystem

Table 2. LAND AREA OF MINDANAO ISLANDS & THEIR FOREST COVER**

Mindanao Islands	Land Area (ha.)	Rank	1900 Forest Cover	Rank	1987 Forest Cover
Samal	25, 815	1	100.00%	8	0.00%
Mindanao Mainland	9, 847,461	2	82.55%	2	28.96%
Basilan	123, 950	3	82.14%	3	9.60%
Siargao	44, 356	4	74.53%	5	0.49%
Tawi-tawi	51, 620	5	70.75%	6	*1.00%
Dinagat	82, 581	6	53.85%	1	34.07%
Jolo	87, 341	7	16.80%	7	*1.00%
Camiguin*	24, 538			4	6.65%
Total	**9, 927, 662**		**81.48%**		**28.10%**

* not included in 1900 and 1987 Swedish Space Corporation Study
** Environmental Science for Social Change, Inc. (1999)

Table 3. PRINCIPAL MOUNTAINS IN MINDANAO

Mountains	Location	Elevation (ht. in meter)	Size (ha.)
Apo	Cotabato, Davao del Sur	2,954	64,368
Kitanglad	Bukidnon	2,938	31,297
Kalatungan	Bukidnon	2,824	21,301
Piapyungan	Lanao del Sur	2,815	
Apo Segunda	Davao	2,713	
Tagubud	Lanao del Norte	2,652	
Dapiak	Misamis Occidental, Zamboanga del Sur	2,617	10,000
Malindang	Misamis Occidental	2,409	53,262
Tagubud	Davao del Norte, Davao Oriental	2,321	
Matutum	South Cotabato	2,295	14,000
Kampalili	Davao del Norte, Davao Oriental	2,257	

Table 4. SUMMARY OF THE VARIOUS PLANT GROUPS IN THE PHILIPPINES*

PLANT GROUP	NO. OF SPECIES	ENDEMIC SPECIES	
		No.	%
Flowering Plants	8,000	3,200	68%
Gymnosperms	33	6	18%
Pteridophytes	1,059	351	37%
Mosses	625	116	23 %
Lichens	790		
Fungi	3,000		
Algae	1,145		
Total No. of Species	**14,652**		

*Madulid (1994); Amoroso (1997);Tan and Iwatsuki (1991); Zamora (1998)

Table 5. NUMBER OF ENDEMIC TREE SPECIES IN MINDANAO*

PROVINCE	NO. OF ENDEMIC SPECIES**
Mainland Mindanao	90 (28%)
Davao	73 (24%)
Zamboanga	59 (18%)
Agusan	56 (17%)
Surigao	45 (14%)
Bukidnon	35 (11%)
Lanao	34
Basilan	24

Misamis	18
Dinagat	13
Camiguin	13
Siargao	12
Sulu	8
Cotabato	8
Tawi-Tawi	4
Bucas Grande	3
Lake Lanao	1
Jolo	1

* Rojo (1999)
**Based on 327 Mindanao endemic species

Table 6. ENDEMIC GYMNOSPERMS

Cycas chamberlainaii	Mt. Arayat, Pampanga
C. wadei	Culion, Cogonal Grande, Palawan
Podocarpus lophatus	Mt. Tapulao, Zambales
P. macrocarpus	Several localities in Luzon
Gnetum arboreum	Mt. Binuang, Infanta, Tayabas, Quezon
Falcatifolium sp.	Mt. Halcon, Mindoro

Table 7. SUMMARY OF PTERIDOPHYTES FOUND IN MINDANAO*

Pterydophytes/genera	Total # of taxa		
	Philippines	**Mindanao**	**Endemic**
Fern Allies			
• Psilotum (v.hisk fern)	2	2	0
• Tmesipteris	1	1	0
• Lycopodium (clubmoss)	46	29	5
• Selaginella(spikemoss)	49	23	?
• Isoetes (quillworts)	1	1	1
• Equisetum (horsetails)	2	2	0
Subtotal	**101**	**58**	
Ferns	958	574	183
Total	**1,059**	**632**	**183**

* Zamora (1996) ; Amoroso (1997); Amoroso, Zamora & Rufila (2000)

Table 8. ENDEMIC FERN SPECIES FOUND ONLY IN MINDANAO

	Provinces/Mountains	NO. OF SPECIES*	
		Mountain	**Province**
1.	Zamboanga		
	• San Ramon	18	21
	• Sta. Maria	1	
	• Mt. Balabag	1	
	• Sax River	1	
2.	Davao		
	• Mt. Apo	12	17
	• Mt. McKinley	1	
	• Raguan River	1	
	• Davao Penal Colony	1	
	• Todaya	1	
	• Mt. Kampilili	1	
3.	Cotabato		
	• Mt. Matutum	12	12
4.	Agusan del Norte		
	• Mt. Urdaneta	7	11

	• Duros and Kawilanan Peaks • Mt. Hilong-hilong	2 2	
5.	Bukidnon • Mt. Kitanglad • Mt. Lipa	3 1	4
6.	Camiguin		3
7.	Lanao • Camp Keithley • Balut	1 1	2
8.	Surigao		1
9.	Basilan		1
10.	Misamis Oriental • Cagayan de Oro	1	1
11.	Tawi-tawi		1

* Based on 59 Mindanao Endemic Species

Table 9. LOCATIONS OF MINDANAO ENDEMIC FERNS

	Species	Location
1	*Belvisia glauca* (Polypodiaceae)	Mt. Apo, Davao, Mt. Urdaneta, Agusan del Norte
2	*Microsorium mindanaense* (Polypodiaceae)	Mt. Kitanglad, Bukidnon San Ramon, Zamboanga Mt. Matutum, Cotabato
3	*M. phanerophlebius* (Polypodiaceae)	Mt. McKinley, Davao Mt. Apo, Davao
4	*Pleocnemia macrodonta* (Aspidiaceae)	Mt. Kitanglad, Bukidnon
5	*Athyrium ramosii* (Athyriaceae)	Camiguin
6	*Cornopteris gymnocarpium* (Athyriaceae)	Camiguin Mt. Matutum
7	*Diplazium bolsteri* (Athyriaceae)	Surigao & Agusan
8	*D. propinguum* (Athyriaceae)	Mt. Urdaneta, Agusan
9	*D. tenuifolium* (Athyriaceae)	San Ramon, Zamboanga
10	*D. williamsii* (Athyriaceae)	Mt. Matutum, South Cotabato San Ramon
11	*Polystichum elmeri* (Dryopteridaceae)	Mt. Apo, Davao
12	*P. nudum* (Dryopteridaceae)	San Ramon, Zamboanga
13	*Bolbitis enormes* (Lomariopsidaceae)	Mt. Matutum, Cotabato
14	*B. edanyoi* (Lomariopsidaceae)	Raguan River, Davao
15	*B. hydrophylla* (Lomariopsidaceae)	San Ramon, Zamboanga
16	*B. membranaceae* (Lomariopsidaceae)	Mt. Matutum, Cotabato
17	*B. pseudoscalpturata* (Lomariopsidaceae)	Cagayan de Oro, Misamis
18	*Elaphoglossum apoense* (Lomariopsidaceae)	Mt. Apo, Davao
19	*E. basilanicum* (Lomariopsidaceae)	Basilan, Single collection
20	*Lomagramma merrilli* (Lomariopsidaceae)	San Ramon, Zamboanga
21	*Lomariopsis papyracea* (Lomariopsidaceae)	Davao Penal Colony
22	*Blechnum vulcanicum* (Blechnaceae)	Mt. Kitanglad
23	*Cyathea christii* (Cyatheaceae)	Between Duros and Kawilanan Peaks, Agusan Norte
24	*C. cinera* (Cyatheaceae)	Between Duros and Kawilanan
25	*C. rufopannosa* (Cyatheaceae)	San Ramon, Zamboanga; 1,200 m
26	*C. zamboangana* (Cyatheaceae)	San Ramon, Zamboanga; 500 m Mt. Urdaneta; 800 m
27	*C. argyrolepis* (Cyatheaceae)	Camiguin Island
28	*Gymnosphaera squamulata* (Cyatheaceae)	Tawi-tawi
29	*Davallia brevipes* (Davalliaceae)	San Ramon Mt. Matutum
30	*D. robinsonii* (Davalliaceae)	Cotabato
31	*Humata microsora* (Davalliaceae)	Mt. Hilong-hilong, Agusan Norte

32	*Davallodes grammatosorum* (Davalliaceae)	San Ramon, Zamboanga Mt. Matutum, Cotabato Mt. Urdaneta, Agusan del Norte
33	*Ctenopteris matutumensis* (Grammitidaceae)	Mt. Matutum
34	*C. spongiosa* (Grammitidaceae)	San Ramon, Zamboanga
35	*Grammitis microticha* (Grammitidaceae)	Mt. Apo
36	*Xiphopteris apoensis* (Grammitidaceae)	Mt. Apo
37	*Hymenophyllum pulchrum* (Hymenophyllaceae)	Mt. Apo
38	*H. ramosii* (Hymenophyllaceae)	Mt. Lipa, Bukidnon
39	*H. bartlettii* (Hymenophyllaceae)	Camp Keithley, Lanao
40	*Trichomanes zamboanganum* (Hymenophyllaceae)	San Ramon, Zamboanga
41	*Nephrolepis acutangula* (Oleandraceae)	Cotabato
42	*Oleandra nitida* (Oleandraceae)	Mt. Apo, Davao San Ramon, Zamboanga
43	*Marattia pellucida* (Marattiaceae)	Mt. Matutum, Cotabato
44	*Angiopteris elmeriana* (Marattiaceae)	Mt. Urdaneta, Agusan
45	*A. uncinata* (Marattiaceae)	San Ramon, Zamoboanga; 1,300 m
46	*Hicriopteris elmeri* (Gleicheniaceae)	Mt. Apo, Davao
47	*Dennstaedtia dennstaedtioides* (Dennstaedtiaceae)	Mt. Apo, Davao; 1,800 m
48	*D. glabrata* (Dennstaedtiaceae)	San Ramon, Zamboanga; 1,300 m
49	*D. hooveri* (Dennstaedtiaceae)	Mt. Urdaneta, Agusan Mt. Matutum, Cotabato San Ramon, Zamboanga
50	*D. williamsii* (Dennstaedtiaceae)	San Ramon, Zamboanga; 250 m
51	*Microlepia protracta* (Dennstaedtiaceae)	Balut Island, Lanao
52	*M. todayensis* (Dennstaedtiaceae)	Todaya, Davao; 1,200m
53	*Paesia elmeri* (Dennstaedtiaceae)	Mt. Apo, Davao
54	*Lindsaea haurcei* (Lindsaeaceae)	Mt. Balobac, Zamboanga; 800 m
55	*L. repens* (Lindsaeaceae)	Mt. Kampalili, Davao Province
56	*Pteris calocarpa* (Pteridaceae)	Sax River, Zamboanga; 800 m
57	*Pteris taenitis* (Pteridaceae)	Mt. Hilong-hilong, Agusan; 115 m
58	*Adiantgum mindanaoenses* (Sinopteridaceae)	San Ramon, Zamboanga; 1,250 m
59	*Dryopteris cuspidata* (Polypodiaceae)	Sta. Maria, Zamboanga

Table 10. MINDANAO FERNS* KNOWN ONLY FROM A SINGLE/FEW COLLECTIONS

	Provinces/Mountains	No. of Species	
		Mountain	Province
1	Zamboanga		
	• Mt. San Ramon	11	11
2	Davao		
	• Mt. Apo	20	22
	• Mt. McKinley	1	
	• Mt. Mago	1	
3	Cotabato		
	• Mt. Matutum	13	13
4	Agusan Norte		
	• Mt. Urdaneta	3	
	• Duros and Kawilanan Peaks	1	
	• Mt. Hilong-hilong	5	
5	Bukidnon		
	• Mt. Kitanglad		
	• Mt. Lipa		
6	Camiguin		7
7	Lanao		
	• Camp Keithley	3	3
8	Surigao		2
9	Basilan		1

* Based on 64 species

Table 11. MINDANAO FERN SPECIES KNOWN ONLY FROM A SINGLE/FEW COLLECTIONS

	Species	Distribution
1	*Ophioglossum ramosii*	Camiguin; type destroyed; throughout Mindanao, near sea level on dump ground
2	*Herlminthostachys zeylanica*	San Ramon, Zamboanga, Alt. 600 meters
3	*Angiopteris uncinata*	Mt. Matutum, Cotabato ; Mt. Apo, Davao
4	*Osmunda herbacea*	Mt. Hilong-hilong, Agusan
5	*Lygodium versteegii*	Mt. Apo
6	*Hymenophyllum kalabatense*	Mt. Hilong-hilong, Agusan
7	*Culcita straminea*	Mt. Mayo, Davao
8	*Dennstaedtia rufidula*	Mt. Apo, Davao; 1,800 meters
9	*D. dennstaedtiatoides*	Mt. Kitanglad, Bukidnon; 2,000 meters
10	*Lindsaea cultipinna*	Mt. Hilong-hilong, Agusan; 115 meters
11	*Pteris taenitis*	Mt. Hilong-hilong, Agusan
12	*P. mucrunulata*	Agusan
13	*P. squamipes*	Mt. Lipa, Bukidnon
14	*P. purpureorachis*	Cotabato
15	*Davallia robinsoni*	Mt. Hilong-hilong, Agusan; 180 meters
16	*Humata microsora*	Mt. Apo, Alt. 1,500 meters San Ramon, Zamboanga
17	*Oleandra nitida*	Camp Keithley
18	*Nephrolepis clementis*	San Ramon, Zamboanga
19	*Cyathea zamboangana*	Basilan, Endemic
20	*C. sessilipinnsula*	Mt. Urdaneta, Agusan; 800 meters
21	*C. urdanetensis*	Mt. Lipa, Bukidnon, Endemic
22	*Cyathea dura*	Camiguin
23	*C. leucostegia*	Mt. Malindang; 2,800 meters
24	*C. mirata*	Camiguin
25	*C. indusiosa*	Camiguin
26	*C. camiguinensis*	Camiguin
27	*C. argyrolepis*	San Ramon, Zamboanga; 1,200 meters
28	*Polystichum nudum*	San Ramon, Zamboanga
29	*Bolbitis hydrophylla*	Baguan River, Davao; 1,525 meters
30	*B. edanyoi*	Mt. Matutum
31	*B. membranaceae*	Mt. Matutum
32	*B. enormis*	Mt. Matutum; Endemic
33	*Lomariopsis smithii*	Mt. Matutum
34	*Teratophyllum arthropteroides*	San Ramon, Zamboanga; Endemic
35	*Lomagramma pteroides*	Mt. Matutum; Endemic
36	*Dryopteris rizalensis*	San Ramon, Zamboanga; Endemic
37	*Ctenitis dubia*	Camiguin; Endemic
38	*Heterogonium proferoides*	Mt. Apo; 800-1,200 meters; Endemic
39	*Tectaria sulitii*	Mt. Kitanglad, Bukidnon; 1,700 meters
40	*Lastrea calva*	Mt. Apo
41	*L. williamsii*	San Ramon, Zamboanga
42	*L. dura*	Mt. Calelan, near Mt. Apo; 2,600 meters
43	*L. nervosa*	Surigao; Endemic
44	*L. squamipes*	Mt. Lipa, Bukidnon
45	*L. gymnocarpa*	Mt. Apo, Davao, Endemic; 1,750 meters
46	*Cyclosorus merorum*	San Ramon, Zamboanga; 1,000 meters
47	*C. matutumensis*	Mt. Matutum, Cotabato; 2,000 meters
48	*C. aoristisorus*	Cansuran, Surigao along stream; 80 meters
49	*C. mindanaensis*	Mt. Urdaneta, Agusan; Endemic; Davao
50	*Asplenium longissimum*	Camp Keithley
51	*A. crinicaule*	Davao
52	*A. militare*	Mt. Apo, Davao; 1,800 meters; Endemic
53	*Belvisia glauca*	Mt. Apo, Endemic
54	*Microsorium decurrens*	Mt. Urdaneta, Zamboanga along roads Camiguin;

		Endemic
55	*Lecanopteris pumila*	Lanao, Alt. 800-1,000 meters Mt. Apo
56	*Grammitis microtricha*	Mt. Apo, Davao; 1,000 meters
57	*Xiphopteris apoensis*	Mt. Apo, Davao; 2,000 meters; Endemic
58	*Ctenopteris spongiosa*	Mt. Apo, Davao; 2,000 meters; Endemic
59	*C. pachycaula*	Mt. Apo, Mt. Matutum; Endemic
60	*C. macia*	Mt. Apo, 1,650-2,100 meters, Mt. Matutum San Ramon, Zamboanga; Endemic
61	*Prosaptia ancestralis*	Mt. Calelan
62	*Antrophyum ledermanii*	Mt. Matutum, Cotabato; 1,500 meters
63	*Vittaria hecistophylla*	Guinatilan, Cotabato Mt. Apo
64	*V. pachystema*	San Ramon, Zamboanga; 500 meters

Table 12. SUMMARY OF PHILIPPINE TERRESTRIAL VERTEBRATE FAUNA*

Animal Group	**Total Species**	**Endemic Species**	**Endemic %**
Land Mammals	174	111	64%
Breeding Land Birds	395	172	44%
Reptiles (2 crocodiles, 8 turtles, 110 lizards, 130 snakes)	244 (252)	163 (159)	68% (63)
Amphibians (frogs, toads, caecilians)	85	66	78%
Total	**898**	**512**	**57%**

Table 13. LIST OF AMPHIBIANS IN MINDANAO & THEIR DISTRIBUTION

	SCIENTIFIC NAME	**DISTRIBUTION**	**STATUS**
1	*Ichthyophis glandulosus* Taylor	Primary lowland rain forest Basilan	Endemic Rare
2	*Ichthyophis mindanaoensis* Taylor	Primary lowland rain forest Mt.Apo 1,000 m asl (at Mt. Malindang)	Endemic Rare
3	*Leptobrachium hasselti* Müller	Forest 40-1,340 m asl Mindanao	Non-endemic Uncommon
4	*Megophrys montana* Kuhl and van Hasselt	Forest 400-1,825 m asl Mindanao	Non-endemic Uncommon
5	*Ansonia mcgregori* Taylor	Forest Western Mindanao Island	Endemic Rare
6	*Ansonia muelleri* Boulenger	Forest 1,000-2,166 m asl Mindanao Island	Endemic Rare
7	*Pelophryne brevipes* Peters	Primary forest 333-1,800 m asl Mindanao	Non-endemic Uncommon
8	*Pelophryne lighti* Taylor	Primary forest 1,166-2,200 m asl Mindanao Island	Endemic Rare
9	*Micrixalus diminutiva* Taylor	Primary forest 100 m asl Mindanao, Basilan, & Sulu Archipelago	Endemic Uncommon
10	*Platymantis guentheri* Boulenger	Primary forest Mindanao	Endemic
11	*Platymantis rabori* Brown, Alcala, Diesmos and Alcala	Mindanao Islands	Endemic Uncommon

12	*Rana diuata* Brown and Alcala	Primary forest 1,000 masl Diuata mountains in northeastern Mindanao Island	Endemic Rare
13	*Rana magna* Stejneger	Primary forest 2,000 m asl Basilan	Endemic Common
14	*Rana melanomenta* Taylor	Forest Papahag, Sulu Archipelago	Endemic
15	*Rana microdisca* Boettger	Forest 2,000 m asl Mindanao Islands	Non-endemic Common
16	*Rana nicobariensis* Stoliczka	Forest and open areas Tawi-tawi, Jolo	Non-endemic Common
17	*Rana parva* Taylor	Forest 760-1,300 m asl Agusan province & Davao province	Endemic Rare
18	*Rana signata* Günther	Forest 330 m asl Mindanao	Maybe endemic Common
19	*Staurois natator* Günther	Forest 1,300 m asl Mindanao	Non-endemic Common
20	*Nyctixalus spinosus* Taylor	Primary forest 500-1,100 m asl Mindanao	Endemic Rare
21	*Philautus acutirostris* Peters	Primary forest 400-2,000 m asl Mindanao Islands	Endemic Common
22	*Philautus alticola* Ahl	Forest 700 m asl Bongao Island, Sulu Archipelago	Endemic
23	*Philautus poecilus Brown* and Alcala	Primary forest 1,600-1,900 m asl (Mt. Hilong-hilong, Agusan del Norte)	Endemic Rare
24	*Philautus surdus* Peters	Primary forest 500-2,000 m asl Mindanao	Endemic Common
25	*Philautus surrufus* Brown and Alcala	Primary forest 800-2,300 m asl Mt. Malindang and in Dapitan peak in northwestern Mindanao Island	Endemic Rare
26	*Philautus worcesteri* Stejneger	Primary forest 800-2,100 m asl Provinces of Agusan del Norte, Davao, Misamis Occidental & Zamboanga del Norte)	Endemic Rare
27	*Polypedates macrotis* Boulenger	Forest and cultivated areas Low elevations (at or near sea level) Jolo	Non-endemic Common
28	*Rhacophorus bimaculatus* Peters	Primary lowland forest Dipterocarp forests at 400-800 m Mindanao	Non-endemic Uncommon
29	*Oreophryne annulata* Stejneger	Primary forest 1,830-2,040 m asl Mindanao Islands	Endemic Rare
30	*Oreophryne nana* Brown and Alcala	Primary forest 600-1,000 m asl	Endemic Rare

		Camiguin Island	
31	*Chaperina fusca* Mocquard	Primary forest 1,220 m asl Jolo	Non-endemic Common
32	*Kalophrynus pleurostigma* Tschudi	Primary forest 1,000 m asl Camiguin Islands	Non-endemic Common
33	*Kaloula conjuncta* Peters *ssp. Meridionalis*	Lowland forest and open areas 770 m asl Mindanao	Endemic Common
34	*Kaloula picta* Duméril and Bibron	Open areas near human habitations 100-200 m asl Mindanao	Endemic Common

Table 14. EVALUATION OF BUTTERFLY ENDEMICITY PER ISLAND IN MINDANAO*

Island	Total by Island			Total # of Species for Philippines	% by island of Philippine species total	Total # of endemic species for Philippines	% by island of Philippine endemic total
	# of species	# of endemic	% endemic				
Cebu	172	45	26.2	895	19.2	352	12.8
Leyte	347	130	37.5	895	38.8	352	36.9
Luzon	439	157	35.8	895	49.1	352	44.6
Masbate	160	44	27.5	895	17.9	352	12.5
Mindanao	528	219	41.5	895	59	352	62.2
Mindoro	343	121	35.3	895	38.3	352	34.4
Negros	285	103	36.1	895	31.8	352	29.3
Palawan	466	66	14.2	895	52.1	352	18.8
Panay	225	75	33.3	895	25.1	352	21.3
Samar	299	111	37.1	895	33.4	352	31.5
Sibutu	156	13	8.3	895	17.4	352	3.7

* R. de Jong & C.G. Treadaway (1993)

Table 15. SPECIES RICHNESS & CONSERVATION STATUS OF FAUNA IN MT. KITANGLAD RANGE NATURAL PARK*

ANIMAL GROUP	SPECIES	ENDEMIC		THREATENED	
	No.	No.	%	No.	%
Mammals	50	32	64	12	38
Birds	160	58	36	18	31
Reptiles	24	13	54	2	15
Amphibians	26	10	38	2	20
Butterflies	130	114	88	5	04

* Heaney *et al.* (1997); IUCN (1996); Kennedy (1995); NORDECO (1998)

Table 16. Endemic & Threatened Mammals of Mt. Kitanglad Range Natural Park and adjacent areas on the Kitanglad Mountain Range, with notes on their habitat and conservation status (based on Heaney et al., 1997; Heaney & Peterson, 1992; IUCN, 1996; Kennedy, 1995; Rickart et al., in press; Sanborn, 1953; NORDECO, 1998).

SCIENTIFIC NAME	COMMON NAME / LOCAL NAME	CONSERVATION STATUS	HABITAT
1. *Acerodon jubatus*[3]	Golden-crowned flying fox/ Kabog, Amerkano	Endangered CITES: APPENDIX II	Primary and secondary lowland forest up to 1100 m
2. *Alionycteris paucidentata*	Mindanao pygmy fruit bat	Vulnerable	Primary forest above 1600 m
3. *Crocidura beatus*	Common Mindanao Shrew/ Kalahuring	Vulnerable[1]	Primary forest at high elevations
4. *Cynocephalus volans*	Philippine flying lemur/ Kaguang, Kabal	Vulnerable[1]	Primary and secondary lowland forest
5. *Haplonycteris fischeri*	Philippine pygmy fruit bat	Vulnerable	Primary and secondary forest up to 2250 m
6. *Hipposideros obscurus*	Philippine forest roundleaf bat	Near-threatened	Primary and disturbed forest up to 850 m
7. *Podogymnura truei*	Mindanao gymnure/ Talumbaboy	Endangered[1]	Primary forest above 1300 m
8. *Rhinolophus subrufus*	Small rufous horse-shoe bat	Vulnerable[2]	Caves, forest
9. *Rhinolophus virgo*	Yellow-faced horse-shoe bat	Near-threatened	Primary forest up to 1100 m
10. *Sus philippensis*	Philippine warty pig/ Baboy - ihalas	Near-threatened	Primary and secondary forest up to 2800 m
11. *Tarsius syrichta*+	Philippine tarsier/Tinokak	Conservation-dependent CITES: APPENDIX II	Second growth, primary and secondary forest up to 700 m
12. *Urogale everetti*	Mindanao tree shrew	Vulnerable; CITES: APPENDIX II	Primary forest up to 2250 m

+ recorded outside the current boundaries of the park

[2] available data insufficient to support this threat category (Heaney *et al.*, 1998)

Table 17. Endemic & Threatened Birds of Mt. Kitanglad Range Natural Park and surrounding areas in the Kitanglad Range, with notes on their conservation status (based on Collar *et al.*, 1994; Dickinson *et al.*, 1991; Heaney & Peterson, 1992; Heaney *et al.*,1993; Heegard, unpubl.; IUCN, 1996; Kennedy, 1995; WCSP (PRDB), 1997; wwf-upsrf-fsdi, 1992; and NORDECO, 1998). Conservation status is based on Collar et al., 1994; IUCN, 1996 and WCSP (PRDB), 1997.

SCIENTIFIC NAME	COMMON NAME / LOCAL NAME	CONSERVATION STATUS	HABITAT
1. *Pithecophaga jefferyi*	Philippine Eagle/ Agila	Threatened (PRDB: Critical)	Primary forest, residual gallery forest.
2. *Gallicolumba criniger*	Mindanao Bleeding-heart	Threatened (PRDB: Vulnerable)	Primary & secondary forest. Present according to park staff.
3. *Trichoglossus johnstoniae*	Mindanao Lorikeet/ Laging	Threatened (PRDB: Vulnerable)	Montane forest and forest edge (above 1000 m).
4. *Mimizuku gurneyi*	Lesser Eagle-Owl/ Ngiw-ngiw	Threatened (PRDB: Vulnerable)	Forest.
5. *Actenoides hombroni*	Blue-capped Wood-Kingfisher	Threatened (PRDB: Vulnerable)	Montane forest.
6. *Buceros hydrocorax*	Rufous Hornbill/ Kalaw, Tungkago	Near-threatened	Forest (up to 1500 m).
7. *Coracina mcgregori*	McGregor's Cuckoo-shrike	Threatened (PRDB: Vulnerable)	Canopy forest, forest edge.
8. *Leonardina woodi*	Bagobo Babbler	Threatened (PRDB: Vulnerable)	Montane forest (above 1000 m).
9. *Stachyris plateni* +	Pygmy Babbler	Near-threatened	Forest, forest edge, second growth (<1000 m).
10. *Bradypterus caudatus*	Long-tailed Bush-Warbler	Near-threatened	Montane forest, forest edge, dense second growth.
11. *Rhinomyias goodfellowi*	Slaty-backed Jungle-Flycatcher	Threatened (PRDB: Vulnerable)	Forest understorey (>1000 m).
12. *Lanius validirostris*	Mountain Shrike	Near-threatened	Forests, open second growth, forest edge, grasslands.
13. *Basilornis miranda*	Apo Myna/Balukagan	Near-threatened	Forest, forest edge.
14. *Aethopyga boltoni*	Apo Sunbird/ Manup-supay	Near-threatened	Forests, above 1500 m.
15. *Arachnothera clarae*	Naked-faced Spiderhunter	Near-threatened	Forest, forest edge, clearings with bananas.
16. *Dicaeum anthonyi*	Flame-crowned Flowerpecker/Taligtig	Near threatened	Fruiting and flowering trees in mossy forest, forest edge.
17. *Erythrura coloria*	Red-eared Parrotfinch/ Green Maya	Threatened (PRDB: Vulnerable)	Understorey of forest, forest edge, second growth
18. *Pyrrhula leucogenis*	White-cheeked Bullfinch	Near-threatened	Mossy forest, forest edge.

Table 18. Endemic Reptiles and Amphibians of Mt. Kitanglad Range Natural Park, with notes on their conservation status and habitat preference.

SCIENTIFIC NAME	COMMON NAME / LOCAL NAME	CONSERVATION STATUS	HABITAT
A. REPTILES			
1. *Calamaria gervaisi*	Gervais' Worm Snake	Not threatened	Tropical forests, second growth; soft humus soil.
2. *Cyclocorus lineatus*	Northern Triangle-spotted Snake	Not threatened	Tropical rainforest floor to second growth.
3. *Cyclocorus nuchalis*	Southern Triangle-spotted Snake	Not threatened	Tropical rainforest floor to second growth.
4. *Gonydactylus annulatus*	Small Bent-toed Gecko/Tiki	Not known	Tropical rainforests, crevices in rocks/trees.
5. *Oxyrhabdium modestum*	Non-banded Phil. Burrowing Snake	Not known	Tropical rainforest; soft humus soil.
6. *Ptychozoon intermedium*	Philippine Flying Gecko	Not known - but possible rare	Tropical rainforests, trunks of trees.
7. *Rhabdophis auriculata*	White-lined Water Snake	Not threatened	Near mountain streams around forest.
8. *Sphenomorphus coxi*	Cox's Sphenomorphus/ Tabili	Not threatened	Tropical forest floor, rock crevices.
9. *Sphenomorphus decipiens*	Black-sided Sphenomorphus/ Tabili	Not threatened	Tropical forest floor, rock crevices.
10. *Sphenomorphus kitangladensis*	Mt. Kitanglad Sphenomorphus/Tabili	Not known	Tropical forest floor.
11. *Sphenomorphus mindanensis*	Mindanao Sphenomorphus/ Tabili	Not known	Tropical forest floor.
12. *Tropidophorus misaminius*	Misamis Waterside Skink	Not known	Tropical forest floor near streams.
13. *Tropidophorus partelloi*	Partello's Waterside Skink	Not known	Aquatic habitats in tropical forests.
B. AMPHIBIANS			
1. *Ansonia mcgregori*	McGregor's Toad/ Kaluya-luya	Not known-but possible rare	Forest floor, near fast-flowing mountain streams.
2. *Ansonia muelleri*	Mueller's Toad/ Antig, Kaluya-luya	Not known-but possible rare	Forest floor, near fast-flowing mountain streams.
3. *Kaloula picta*	Slender-digit Narrow-Mouth Frog	Not threatened	Tropical forest to second growth, farms.
4. *Philautus acutirostris*	Acute-snouted tree Frog	Not threatened	Forest; foliage 0.5 to 3.0 m above ground.
5. *Philautus emembranatus*	Mindanao tree Frog	Not threatened	Forest; foliage 1 to 2 m above ground.
6. *Philautus surdus*	Smooth-skinned Tree Frog	Not threatened	Forest; foliage, leaves.
7. *Platymantis corrugatus*	Corrugated Ground Frog	Not threatened	Forest floor, vegetation.
8. *Platymantis dorsalis*	Common Forest Ground Frog	Not threatened	Forest floor, vegetation.
9. *Rana everetti*	Everett's frog/Palaka	Not threatened	Riparian habitats within forest, streams.
10. *Rana magna*	Mindanao Woodland Frog/ Bak-bak, Bigwak	Not threatened	Vegetation close to streams.

Table 19. VULNERABLE ENDEMIC AND RARE BUTTERFLIES OF MINDANAO*

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
Atrophaneura semperi apthonia	Birdwing	Rare
Chilasa carolenensis		Very rare
Delias levicki mandaya	Jezebel sp.	Rare
Graphium euphrates	Jay sp.	Very rare
G. idaeoides	Jay sp.	Vulnerable
G. sandawanum joreli	Jay sp.	Endangered
Papilio daedalus daedalus	Banded Peacock	Vulnerable
P. demoleus libanius	Lime sp.	Endangered
Parantica dannati	Dannatt'stiger	Vulnerable

* Baltazar (1991); de Jong & Treadaway (1993); IUCN (1996). Based on 114 endemic species

Table 20. SPECIES RICHNESS IN MT. APO NATURAL PARK

GROUP	NO. OF SPECIES
Flora	629
Ferns	572
Bryophytes	57
Vertebrates	227

Table 21. ALTITUDINAL DISTRIBUTION OF DOMINANT PLANTS IN MT. APO

Altitude	Dominant Plants
300-500 masl (Baratacab & Sibulan)	*Ficus* *Leucosyke* *Nauclea* *Macaranga* *Homalanthus* *Dillenia*
650 - 1000 (Tibulo & Todaya)	*Dipterocarpus* *Shorea* *Pentacme*
1400 - 1600 (Mainit-kulan)	*Dipterocarp* *Lithocarpus* *Laportea* *Areca*
800 - 1000 (Meran Baclayan)	*Lithocarpus* *Cinnamomum* *Gymnosperms* *(Agathis spp.)*
Crater Lake (Cirribal)	*Rhododendron* *Vaccinium* *Gleichenia* *Polypodiaceae*

High Value & Threatened Plants

- *Agathis sp.*
- *Shorea polita*
- *Vatica mangachapoi*
- *Vanda sanderiana*
- *Plectocomia elmeri*

Conservation Issues:

- ✦ intense pressure from *Kaingin* Agriculture
- ✦ illegal logging
- ✦ influx of settlers
- ✦ loss of lowland taxa

Table 22. ENDEMIC FLORA & FAUNA IN MT. APO NATURAL PARK

Endemic Plants in Mt. Apo	Mindanao Endemic Mammals in Mt. Apo
• *Alseodaphne philippinensis* (Lauraceae) • *Cypholophus microphyllus* (Urticaceae) 1800 masl • *Lithocarpus submonticulus* (Fagaceae) 1700 masl • *Nephenthes copelandii* (Nepenthaceae) 2400 masl • *Piperomia elmeri* (Piperaceae) 800-1200 masl • *Piperomia apoanum* (Piperaceae) 800-1200 masl	• *Apomys insignis* • *Urogale everetti* • *Sundasciurus philippinensis* • *Podogymnura truei* (Phil. Gymnure) • *Cervus mariannus apoensis* (Threatened Mammal)
Mindanao Endemic Birds in Mt. Apo	**Endemic Butterflies in Mt. Apo**
• *Basilornes miranda* (Mt. Apo Myna) • *Tricoglossus johnstoniae* (Apo Lorikeet) • *Hypocryptodus cinnamoneus* (Cinnamon Bird) • *Leonardina woodi* (Bagobo Babbler) • Black & Cinnamon fantail * 12 threatened species (including *Cacatua haematuropygia, Pithecophaga jefferyi, Collocalia whiteheadi*)	• *Parantica schoenigi* • *Delias lecicki* • *D. schoenigi** • *D. apoensis** • *D. woodi* * have wider vertical distribution range (800-2400 masl)

Table 23. SIARGAO ISLAND WILDLIFE SANCTUARY (SIWS)

3 Major Types of Ecosystems:
- Terrestrial
- Wetland
- Marine

Issues:
- ✳ Dynamite Fishing
- ✳ Deforestation
- ✳ Unregulated clearance of mangroves

FLORA

10 Endemic Species of Flowering Plants (includes the Phil. Iron Wood, *Xanthostemum verdugonianus*)

59 Species of Seaweeds (37%) of the total no. of benthic seaweeds in the Phil.)

8 Species of Seagrasses (50% of all species in the Phil.)

FAUNA

11 Species of Terrestrial Mammals
4 Threatened Species of Birds (including *Cacatua haematuropygia*)
9 Species of Reptiles
3 Species of Amphibians
105 Species of Butterflies

MARINE & WETLAND AREAS

Single reef
- Mollusks - 137
- Fishes - 106

Endangered & Rare Species
- *Crocodylus porosus* (Estuarine Crocodile)
- *Chelonia mydas* (Green Turtle)
- *Eretmochelys imbricata* (Hawksbill)
- *Dugong dugon* (Dugongs)
- *Rhincodon typus* (Whalesharks)

Table 24. AGUSAN MARSH WILDLIFE SANCTUARY (AMWS)

Facts:	**Conservation Issues:**
• 19,196 ha in size (of which 9, 313 ha swamp forest) • 28 Species of Flowering Plants • 3 Species of Ferns • 102 Species of Birds (3 threatened species)	• Agricultural Expansion • Collection of Forest Products • Mercury Pollution • Hunting & Fishing • Influx of Migrants
Rare Endemic Birds 1. *Anhinga melanogaster* (Oriental Darter) 2. *Ardea purpurea* (Purple Heron) 3. High Population Level of Water Birds • 10 Species of Freshwater Fish • 2 Crocodile Species • 7 Species of Snakes (Phyton & Phil. Cobra, etc.) • 65 Species of Butterflies (Including rare species, viz., *Papilio antonio, Graphium cordus* and *G. idaeoides*)	

Table 25. MT. MATUTUM AND MT. MALINDANG

MT. MATUTUM (South Cotabato)	**MT. MALINDANG (South Cotabato)**
➢ ***Size :*** 14,000 ha (of which 3,000 ha is primary forest) ➢ ***Conservation Importance:*** Thirteen threatened bird species (7 of which are endemic to Mindanao). A nesting pair of *Pithecophaga jefferyi* is being monitored. ➢ ***Conservation Issues:*** ▯ Clearance of forest for Agriculture ▯ Collection of timber & other forest products ▯ Hunting	➢ ***Size :*** 53,262 ha (of which 24,500 ha is forest ➢ ***Conservation Importance:*** 7 threatened bird species (including *Pithecophaga jefferyi*) ➢ ***Conservation Issues:*** ▯Human encroachment ▯Illegal logging & *kaingin* farming ▯Hunting ▯ Tourist climbers

Table 26. MT. DAPIAK AND MT. PIAPAYUNGAN

MT. DAPIAK (Misamis Occidental, Zamboanga del Sur)	**MT. PIAPAYUNGAN**
➢ ***Size :*** c. 10,000 ha. ➢ ***Conservation Importance:*** • Largely denuded of natural vegetation • 7 threatened bird species (including *Pithecophaga jefferyi*) ➢ ***Conservation Issues:*** • Habitat threatened by timber poaching	➢ ***Size :*** Unknown, but with considerable areas of forest ➢ ***Conservation Importance:*** • With population of *Pithecophaga jefferyi* • 3 threatened bird species ➢ ***Conservation Issues:*** • No conservation initiatives are known • Very little fieldwork has been conducted

References:

Alcala, A.C. and W.C. Brown. 1998. The Philippine Amphibians. An Illustrated Field Guide. Bookmark, Inc. Makati City, Philippines.

Amoroso, V.B. 1997. Flora Profile Mt. Kitanglad Range Natural Park. NORDECO. Unpublished.

Amoroso, V.B. 1997. Ferns of the Philippines. Central Mindanao University, Musuan, Bukidnon.

Baltazar, C.R. 1991. An Inventory of Philippine Insects. II. Order Lepidoptera (Rhapalocera). University of the Philippines at Los Baños, Laguna. 398 pp.

Cayabyab, B.F. 1997. The Butterflies of Mt. Kitanglad Range Natural Park. NORDECO. Unpublished.

Collar, N.J., B.R. Tabaranza, N.A.D. Mallari and J.M. Villasper, in press. Threatened Birds of the Philippines. The Haribon/Birdlife International Red Data Book. Bookmark, Inc. Manila, Philippines.

Decipulo, M. 1997. Butterflies of Mt. Kitanglad Range and Nature Park. NORDECO. Unpublished.

duPont, J.E. 1971. Philippine Birds. Delaware, U.S.A.: Delaware Museum of Natural History. 480 pp.

Heaney, L.R. 1993. Survey of Vertebrate Diversity in Mt. Kitanglad Nature Park, Mindanao. Field report for 1992 and 1993. Unpublished.

Heaney, L.R. and A.T. Peterson. 1992. Inventory of the Vertebrates of Mt. Kitanglad Nature Park. Field Museum of Natural History, Chicago. 18 pp. Unpublished.

Heaney, L.R. and J.C. Regalado Jr. 1998. Vanishing Treasures of the Philippine Rain Forest. The Field Museum, Chicago.

Heaney, L.R., J. Sedlock, N.R. Ingle, B.R. Tabaranza Jr, and L. Espiritu-Afuang, in prep. An identification guide to the non-flying mammals of Mindanao island.

IUCN. 1996. 1996 IUCN Red List of Threatened Animals. Gland, Switzerland.

de Jong and G.C. Treadaway. 1993. The Hesperiidae of the Philippines Zoologische Verhandelingen. Netherlands: Ridderprint. 125 pp.

Lee, B.H., J.C. Choe and H.Y. Han. 1997. Taxonomy and Biodiversity Conservation in East Asia. Kibio Series 2. Seoul, Korea.

Madulid, D.A. 1995. A Pictorial Cyclopedia of Philippine Ornamental Plants. Bookmark, Inc. Makati, Metro Manila.

Rojo, J.P. 1999. Revised Lexicon of Philippine Trees. College, Laguna, Philippines.

Tan, J.M.L.P. 1992. Philippine Wildlife. Bookmark, Inc. Makati, Metro Manila.

Zamora, P.M. and L. Co. 1986. Guide to Philippine Flora and Fauna. vol. II. Natural Resources Management Center, Ministry of Natural Resources and University of the Philippines. Quezon City, Philippines.

INEX 8

ORIENTATION AND LEVELING OF EXPECTATIONS
by Prof. Leticia E. Afuang

Approach

- Combine an extensive compilation and synthesis of information with the best expert knowledge to identify conservation priority areas through a highly participatory process
- Develop an information system to facilitate integration of the information
- Define a decision framework for priority setting
- Develop information products to distribute and socialize this framework
- Identify follow-up activities

Objectives of the Regional Consultations

I. To convene a small group of scientists, representatives from the NGOs and the government (PAWB, LGUs, etc.) to make a preliminary assessment on the status of biodiversity conservation work in the region.

II. To agree on a work plan and responsibilities for the work ahead up to the National Workshop

As agreed upon in the Planning Meeting the role of the Regional Consultations is to:

- introduce the process (NBCPSW) and its expected outputs to the local experts
- facilitate review of existing information and data validation
- enhance local data collection
- establish network in the Region

Accomplishments in preparation for the Conservation Priority Workshop:

- Planning meeting: Jan 25-26, 2000; Definition of specific objectives and outlining of strategies;
- Identification of working groups (themes), Working Group Leaders (WGL), and experts;
- Distribution of the "Highlights of the Planning Meeting" and invitation to identified experts;
- WGL meeting April 12, June 14; signing of TORs;

Accomplishments...

- Endorsement from DENR; full support from and regular meetings with PAWB;
- MOU with ESSC, PCARRD, PCMARD; positive response of PNM;
- Data gathering and encoding for Regional Consultations; systematic monitoring of data reports;
- Meetings of the technical working groups by WGL;

Accomplishments...

- Development of a systematic database format together with CI Washington staff (PRISMA and access);
- Identification of workshop venues; designing of program activities;
- Additional funding support from FPE, Haribon and ARCBC;
- Long list and short list of workshop participants; and
- Visayas Regional Consultation: July 18-20

What do we do in this workshop ?

We capture the right mindset: that we do this for our Regions and the future generations of its people; and then focus.

We make the necessary corrections and validation on the data and maps so far produced for Mindanao

We contribute our own data and indicate our research sites or areas of concern for biodiversity

We discuss among our thematic group and agree on our criteria for prioritization.

We nominate and/or vote for our representatives to the National workshop using the specified ranking tool.

What do we expect to produce out of this workshop?

Additional relevant data sets/information on the Region

An updated and relatively comprehensive database for the Mindanao Region and other small islands in the vicinity

Validated information and corrected and/or additional species site distributions in the maps

Important criteria to guide the scientific community for delineating priority or important areas for biodiversity conservation.

List of Mindanao representatives to the National Workshop

Map themes

Baseline theme : coastlines and provincial boundaries

Theme 1: roads, contours, forest cover, coral reef, mangrove

Theme 2: watersheds, ancestral domain, alienable and disposable land, culture

Additional maps: Bathymetry, Protected areas, Ecoregions, Biogeographic regions/subregions

Our House Rules

Please take note that we come here to work for our Region; your presence throughout the workshop is imperative.

Please be sure to be on time to facilitate forum and discussions.

Meal tickets will be distributed upon registration. With due respect, the service crew will request this from you every meal time. Please don't leave them in you rooms

For the lodging and board: you are entitled to one soft drink for meals; all excess food and drink will be your personal responsibility.

PRESENTATIONS AND HIGHLIGHTS OF WORKSHOPS

Annex 9.A	:	Status Report of Vertebrates Working Group
Annex 9.A.1	:	Status Report of Birds Working Group by Mr. Aldrin Mallari
Annex 9.A.2	:	Status Report of Mammals Working Group by Prof. Blas Tabaranza, Jr.
Annex 9.A.3	:	Status Report of Herps Working Group by Mr. Arvin Diesmos
Annex 9.B	:	Status Report of Arthropods Working Group by Dr. Victor Gapud
Annex 9.C	:	Status Report of Plants Working Group by Dr. Daniel Lagunzad
Annex 9.D	:	Status Report of Marine Working Group by Dr. Porfirio Aliño
Annex 9.E	:	Status Report of Freshwater Working Group by Ms. Adelina Borja
Annex 9.F	:	Status Report of Socio-Economic Working Group by Dr. Rowena Boquiren
Annex 10	:	PRISMA Presentation by Dr. Oliver Coroza
Annex 11	:	Letter to Father Peter Walpole re: transmission of data to ESSC
Annex 12.A	:	Highlights of the Workshop Output of the Vertebrates Working Group
Annex 12.B	:	Highlights of the Workshop Output of the Arthropods Working Group
Annex 12.C	:	Highlights of the Workshop Output of the Plants Working Group
Annex 12.D	:	Highlights of the Workshop Output of the Marine Working Group
Annex 12.E	:	Highlights of the Workshop Output of the Freshwater Working Group
Annex 12.F	:	Highlights of the Workshop Output of the Socio-Economic Working Group
Annex 13	:	Minutes of the Convenors' Meeting
Annex 14	:	Presentation of the Local Protected Areas by Ms. Norma Molinyawe
Annex 15	:	Evaluation of the Mindanao Consultation
Annex 16	:	Directory of Participants

ANNEX 9.A

STATUS REPORT OF VERTEBRATES WORKING GROUP
by Mr. Neil Aldrin Mallari and Prof. Blas Tabaranza

- The Philippines is considered as one of the hottest spots in the world in terms of biological meltdown. In a global perspective the country ranked number six for the total number of threatened bird species but on top of the list if land area will be considered. Logging and subsistence farming are the top conservation issues that cause habitat loss in the whole world. These anthropogenic factors have led to massive loss of suitable habitats to bird species that are considered dependent to different types of forest ecosystem.

- In the Philippines habitat loss and hunting are the major conservation issues that needs attention to deter massive species loss or dwindling of local population of birds. In 1995, Haribon–Birdlife International started the identification of Important Bird Areas (IBAs). There are several criteria on the selection process of IBAs, namely: 1) number of bird species dependent on that particular habitat/area 2) number of endemic 3) number of threatened species 4) present status of the habitat/area. This project was initiated to help wildlife managers, policy makers and others stake holders in identifying areas that need immediate conservation action.

- Currently, there are 200 IBA sites in the whole Philippine archipelago. However, only 171 of these are considered well documented while the remaining, need further exploration to determine their present status. Although the Philippine birds are considered the most well documented vertebrate group, in terms of distributional information, there are still some areas that need further survey. These IBAs are mainly confined on in the mountainous areas in Sulu.

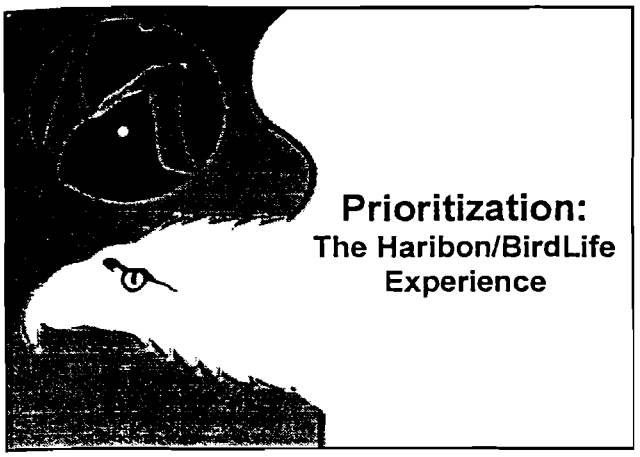
- The IBAs in Mindanao are the following: PH081 – Mt. Kambinlio and Mt. Redondo; PH082 – Siargao Island; PH083 – Mt. Hilong-hilong; PH084 – Mt. Diwata range; PH085 – Agusan Marsh; PH086 – Bislig; PH 087 – Mt. Agtuuganon and Mt. Pasian; PH088 – Mt. Puting Bato-Kampalili-Mayo complex; PH089 Tumadgo Peak; PH090 – Camiguin Island; PH091 – Mt. Balatukan Range; PH092 – Mt. Kaluayan-Mt. Kinabalian complex; PH093 – Mt. Tago Range; PH094 – Mt. Kitanglad; PH095 – Kalatungan Mountains; PH096 – Mt. Munai / Tambo; PH097 Lake Lanao; PH098 – Mt. Piagayungan; PH099 – Butig mountains; PH100 – Mt. Sinaka; PH101 – Mt. Apo; PH102 – Coronadal, Liguasan Marsh; PH013 – Mt. Daguma; PH104 – Mt. Matutum; PH105 – Mt Busa-Kiamba; PH106 – Mt. Latian Complex; PH107 – Mt. Malindang; PH108 – Mt. Dapiak-Mt. Paraya; PH109 – Mt. Sugarloaf; PH110 – Mt. Timolan; PH 111-Siocon, Mt. Lituban-Quipit Watershed; PH112 – Pasonanca Watershed; PH113 – Basilan National Park; PH114 – Mt. Dajo National Park; PH115 – Tawi-tawi Island; PH116 – Simunul and Manuk Manka Islands; PH117 – Sibutu and Tumindao Islands.

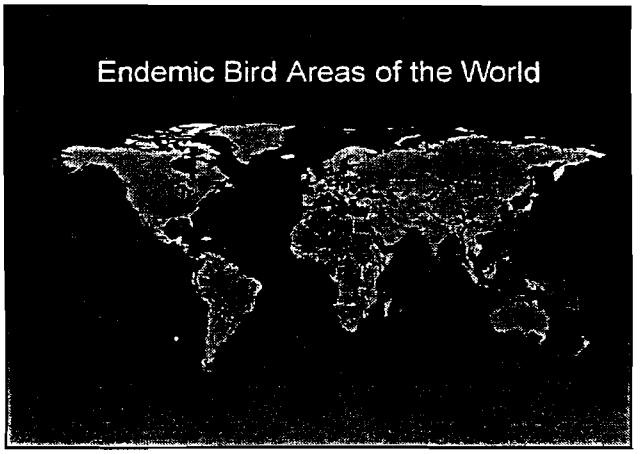
- Most of the IBA's in Mindanao are currently experiencing different levels of habitat disturbances, namely: logging, mining and subsistence farming. All of these practices have unknown but predictable long-term effect on highly specialized bird species and their habitat. Hunting is the greatest single threat in the short term to most bird species found on the IBAs.

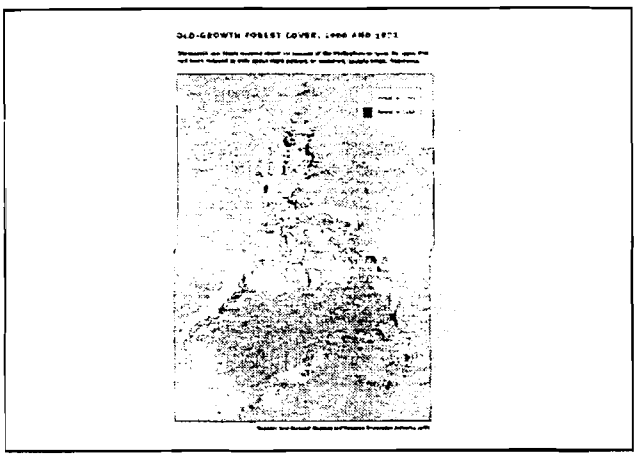
- The current condition of the forest distribution of Negros Island is one good example of how human population has influenced a given landscape. Human populations increase the demand on wood products and other forest materials and cause the massive loss of suitable habitat to many wildlife species. Increased clearing of forestland for agriculture and human settlement further compounds this.

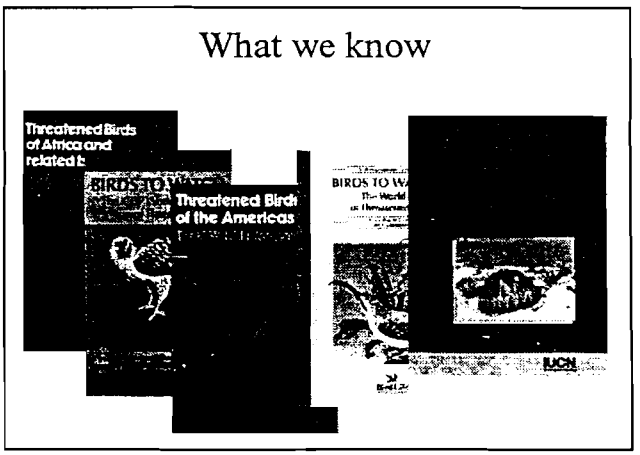
ANNEX 9.A.1

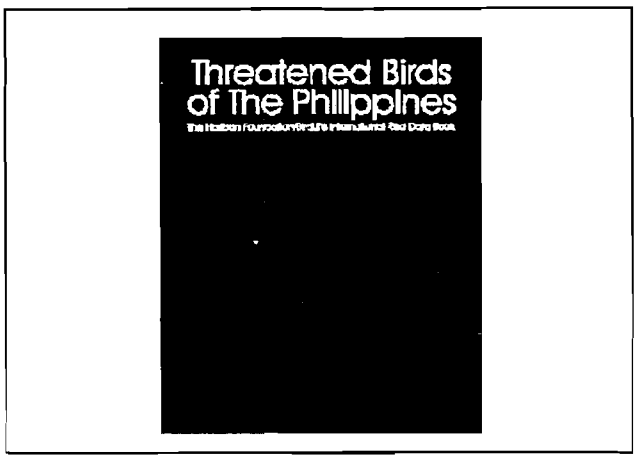
STATUS REPORT OF BIRDS WORKING GROUP
by Mr. Neil Aldrin Mallari

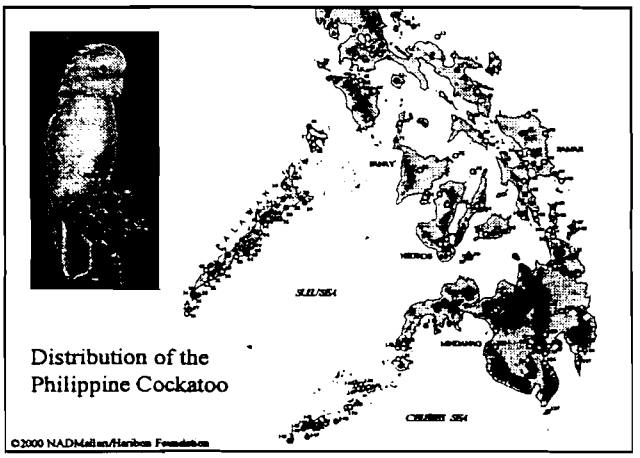


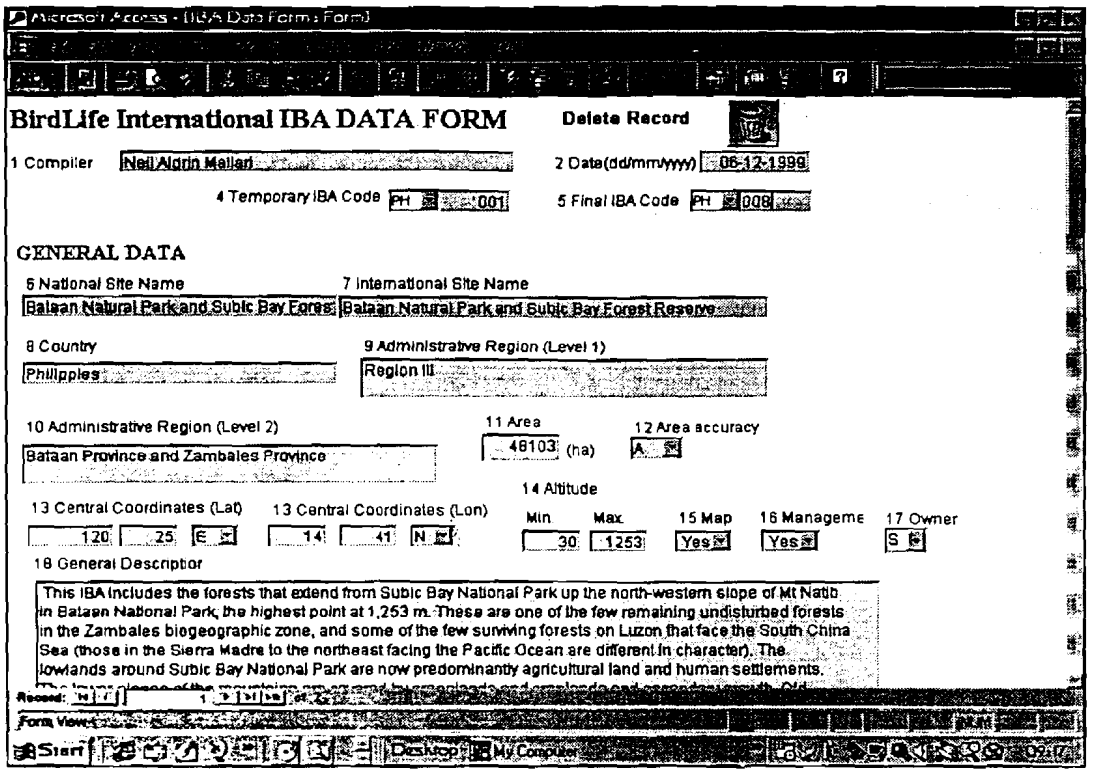








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BirdLife International IBA DATA FORM
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Neil Aldrin Mallari
2 Date(dd/mm/yyyy)
06-12-1999
4 Temporary IBA Code
PH 001
5 Final IBA Code
PH 008
GENERAL DATA
6 National Site Name
Bataan Natural Park and Subic Bay Fores
7 International Site Name
Bataan Natural Park and Subic Bay Forest Reserve
8 Country
Philippines
9 Administrative Region (Level 1)
Region III
10 Administrative Region (Level 2)
Bataan Province and Zambales Province
11 Area
48103 (ha)
12 Area accuracy
A
13 Central Coordinates (Lat)
120 25 E
13 Central Coordinates (Lon)
14 41 N
14 Altitude
Min
Max
30
1253
15 Map
Yes
16 Manageme
Yes
17 Owner
S
18 General Description
This IBA includes the forests that extend from Subic Bay National Park up the north-western slope of Mt Natib in Bataan National Park, the highest point at 1,253 m. These are one of the few remaining undisturbed forests in the Zambales biogeographic zone, and some of the few surviving forests on Luzon that face the South China Sea (those in the Sierra Madre to the northeast facing the Pacific Ocean are different in character). The lowlands around Subic Bay National Park are now predominantly agricultural land and human settlements.
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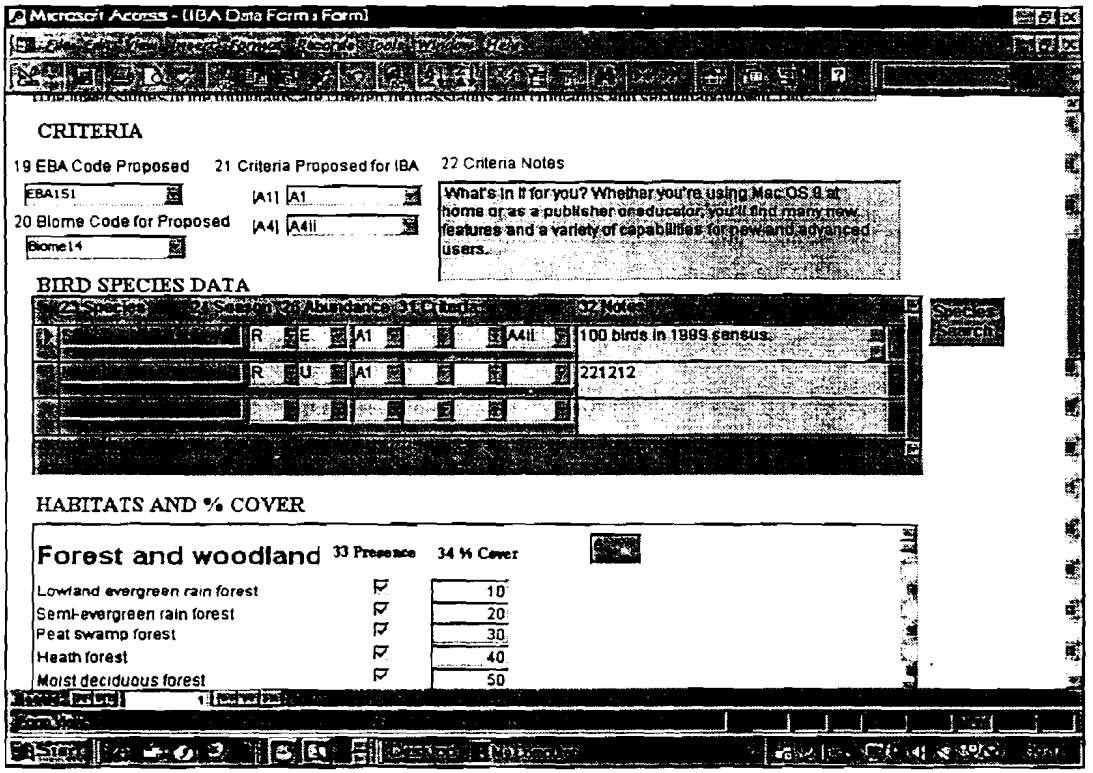
Form View
Start
Desktop
My Computer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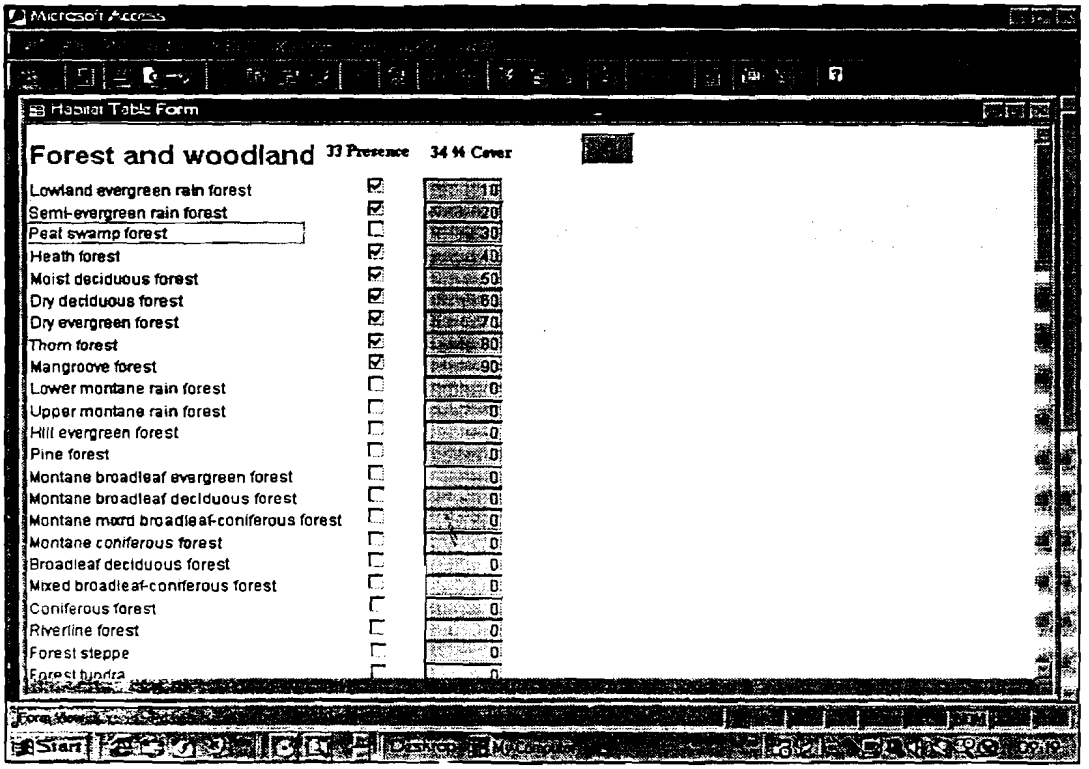
CRITERIA
19 EBA Code Proposed
EBA151
21 Criteria Proposed for IBA
A1] A1
A4] A4ii
22 Criteria Notes
What's in it for you? Whether you're using Mac OS 8 at home or as a publisher or educator, you'll find many new features and a variety of capabilities for new and advanced users.
20 Biome Code for Proposed
Biome14
BIRD SPECIES DATA
Species
Season
Abundance
Criteria
Qualifier
Notes
R E A1 A4ii 100 birds in 1999 census.
R U A1 221212
Species Search
HABITATS AND % COVER
Forest and woodland
33 Presence
34 % Cover
Lowland evergreen rain forest 10
Semi-evergreen rain forest 20
Peat swamp forest 30
Heath forest 40
Moist deciduous forest 50
Start
Desktop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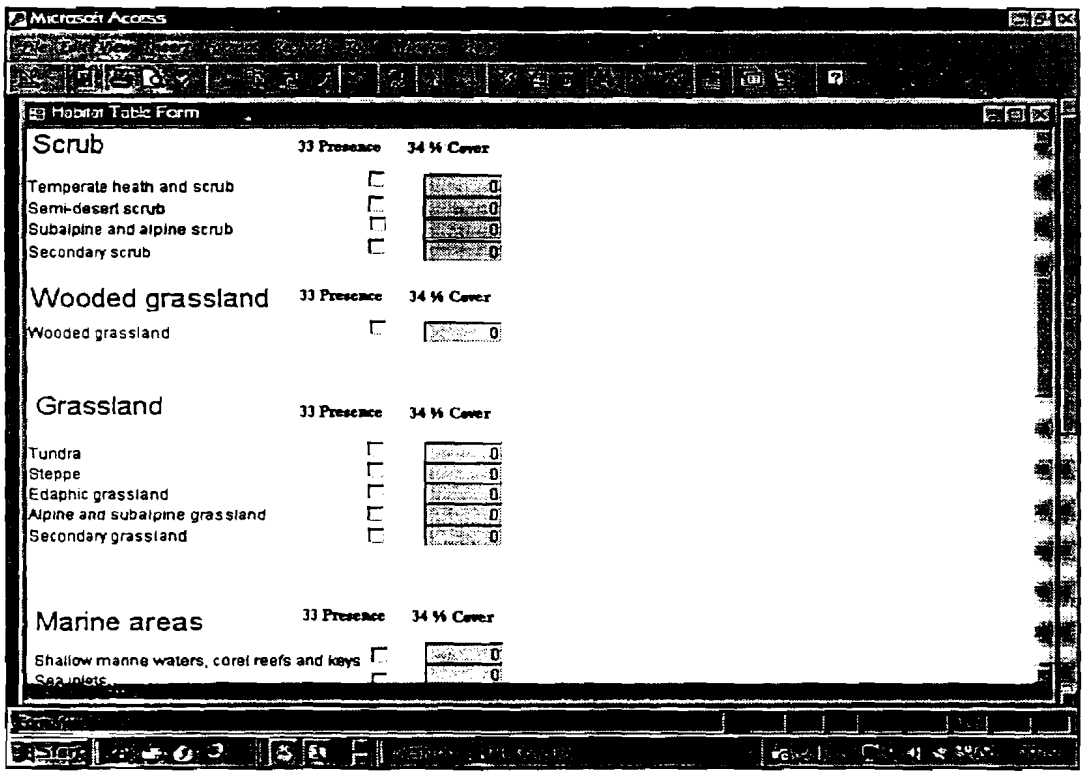
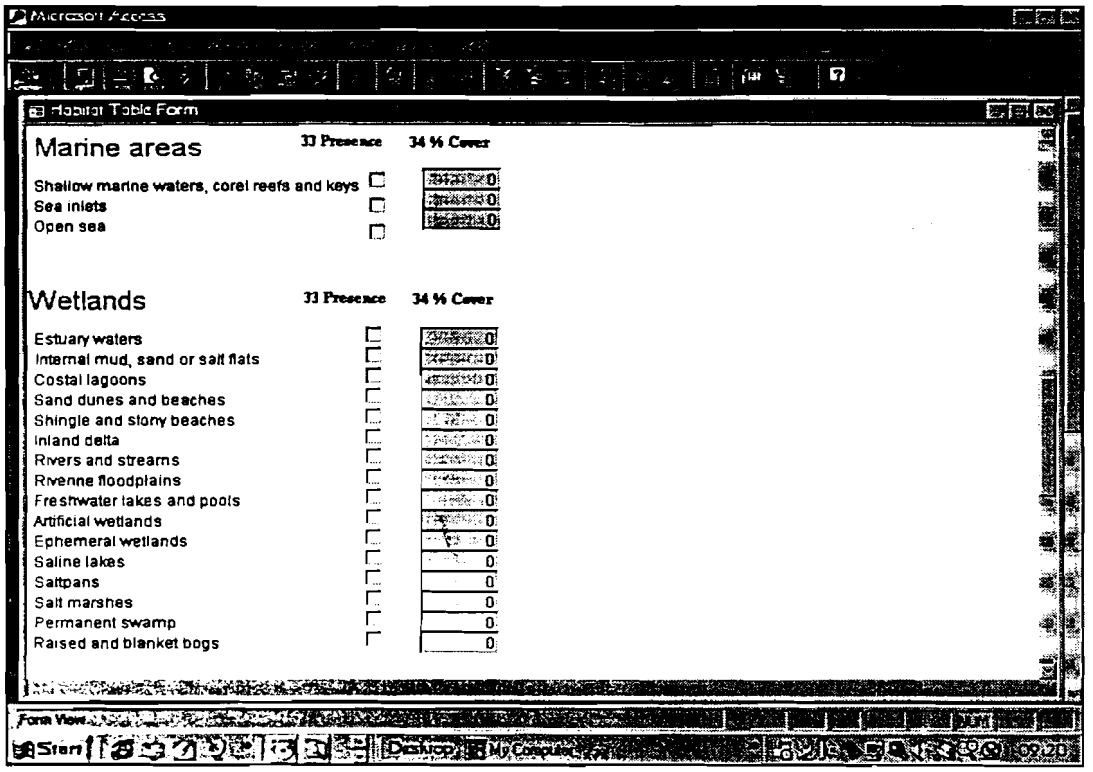
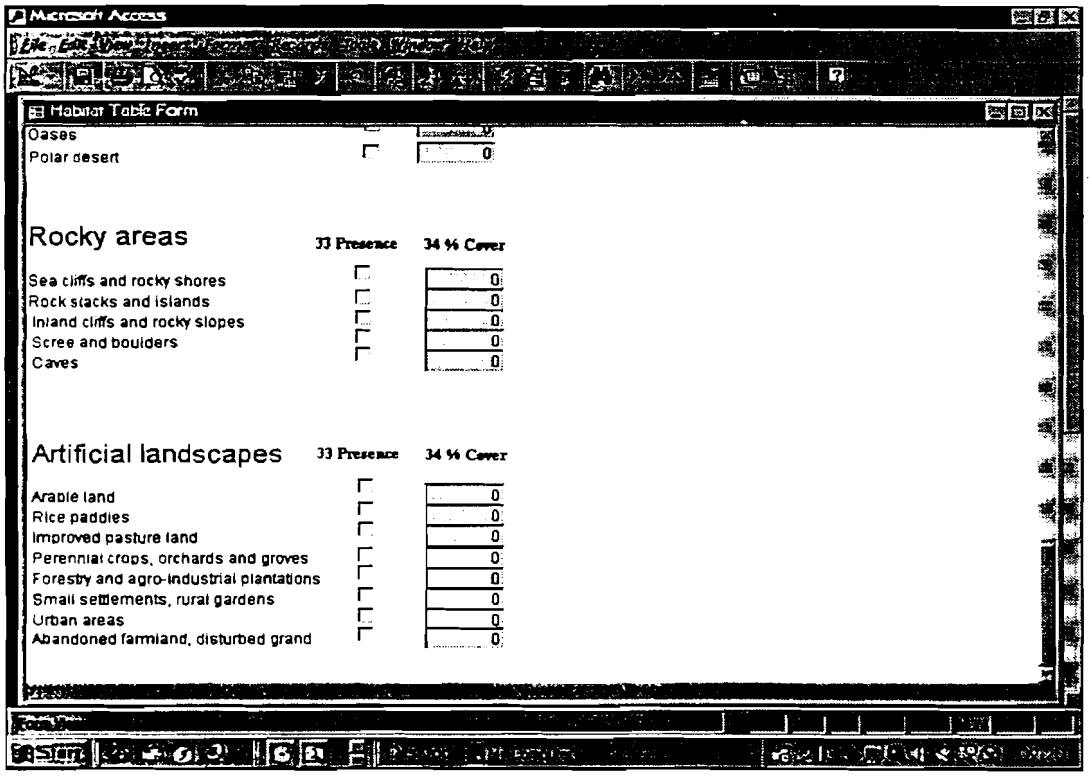
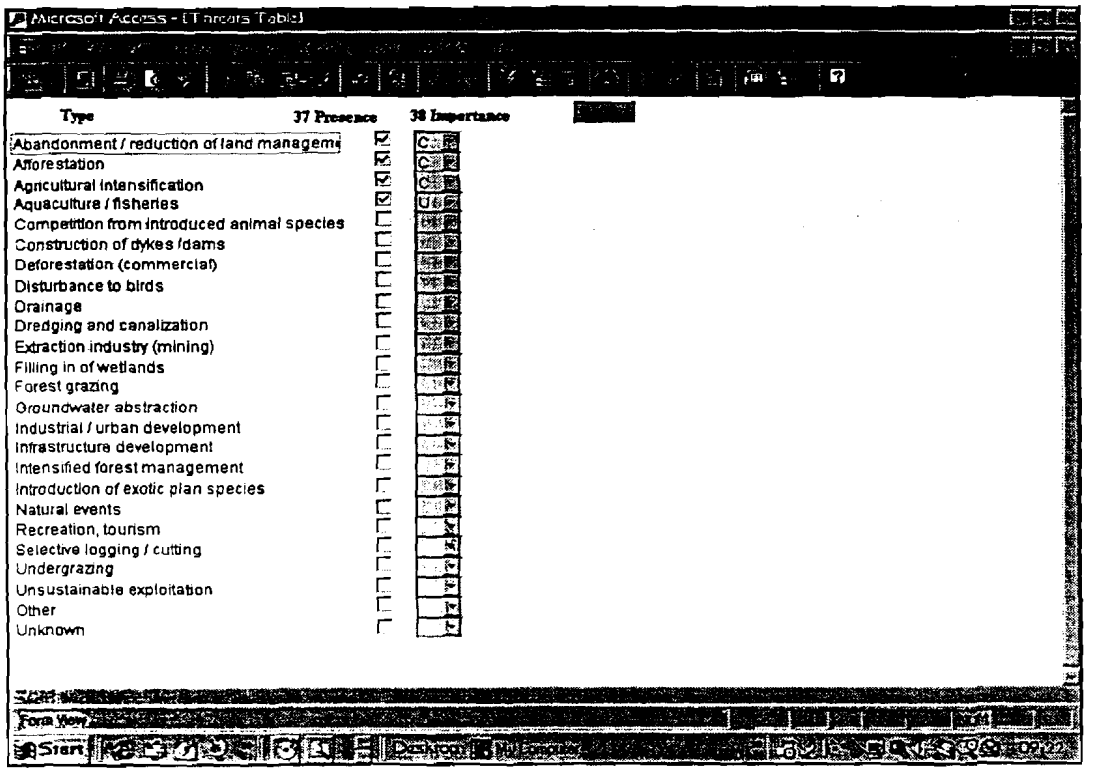
Habitat Table Form
Forest and woodland
33 Presence
34 % Cover
Lowland evergreen rain forest
Semi-evergreen rain forest
Peat swamp forest
Heath forest
Moist deciduous forest
Dry deciduous forest
Dry evergreen forest
Thorn forest
Mangroove forest
Lower montane rain forest
Upper montane rain forest
Hill evergreen forest
Pine forest
Montane broadleaf evergreen forest
Montane broadleaf deciduous forest
Montane mixed broadleaf-coniferous forest
Montane coniferous forest
Broadleaf deciduous forest
Mixed broadleaf-coniferous forest
Coniferous forest
Riverline forest
Forest steppe
Forest tundra
Start


Microsoft Access
Habitat Table Form
Scrub
33 Presence
34 % Cover
Temperate heath and scrub
Semi-desert scrub
Subalpine and alpine scrub
Secondary scrub
Wooded grassland
33 Presence
34 % Cover
Wooded grassland
Grassland
33 Presence
34 % Cover
Tundra
Steppe
Edaphic grassland
Alpine and subalpine grassland
Secondary grassland
Marine areas
33 Presence
34 % Cover
Shallow marine waters, coral reefs and keys
Sea inlets


Microsoft Access
Habitat Table Form
Marine areas
33 Presence
34 % Cover
Shallow marine waters, corel reefs and keys
Sea inlets
Open sea
Wetlands
33 Presence
34 % Cover
Estuary waters
Internal mud, sand or salt flats
Costal lagoons
Sand dunes and beaches
Shingle and stony beaches
Inland delta
Rivers and streams
Riverine floodplains
Freshwater lakes and pools
Artificial wetlands
Ephemeral wetlands
Saline lakes
Saltpans
Salt marshes
Permanent swamp
Raised and blanket bogs
Form View
Start
Desktop
My Computer


Microsoft Access
Habitat Table Form
Oases
Polar desert
Rocky areas
33 Presence
34 % Cover
Sea cliffs and rocky shores
Rock stacks and islands
Inland cliffs and rocky slopes
Scree and boulders
Caves
Artificial landscapes
33 Presence
34 % Cover
Arable land
Rice paddies
Improved pasture land
Perennial crops, orchards and groves
Forestry and agro-industrial plantations
Small settlements, rural gardens
Urban areas
Abandoned farmland, disturbed grand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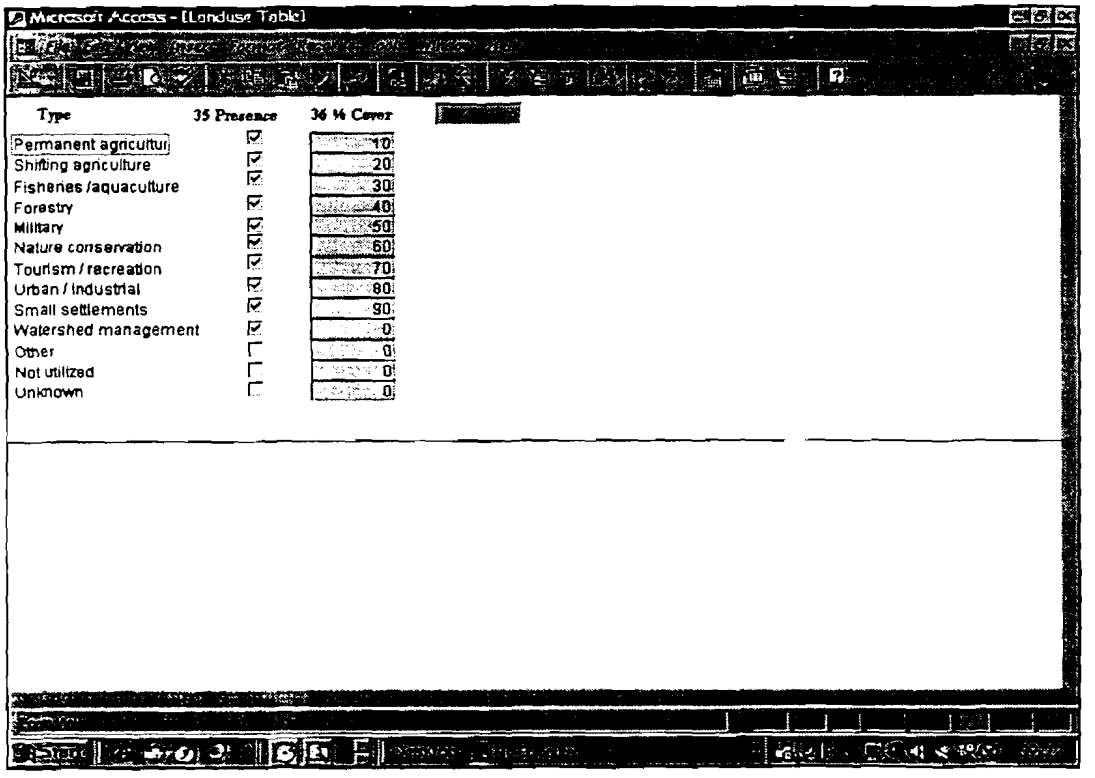
Type
37 Presence
38 Importance
Abandonment / reduction of land manageme
Afforestation
Agricultural intensification
Aquaculture / fisheries
Competition from introduced animal species
Construction of dykes /dams
Deforestation (commercial)
Disturbance to birds
Drainage
Dredging and canalization
Extraction industry (mining)
Filling in of wetlands
Forest grazing
Groundwater abstraction
Industrial / urban development
Infrastructure development
Intensified forest management
Introduction of exotic plan species
Natural events
Recreation, tourism
Selective logging / cutting
Undergrazing
Unsustainable exploitation
Other
Unknown
Form View
Start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Type
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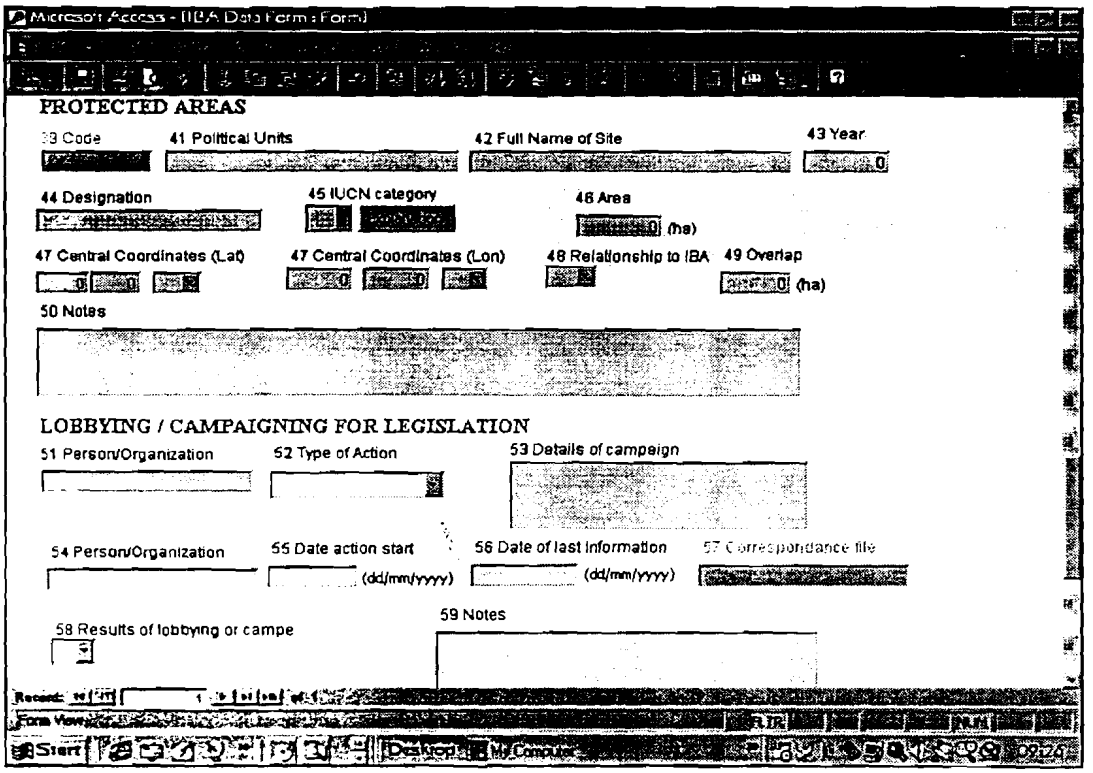
36 % Cover
Permanent agricultur
Shifting agriculture
Fisheries /aquaculture
Forestry
Military
Nature conservation
Tourism / recreation
Urban / industrial
Small settlements
Watershed management
Other
Not utilized
Unknown
10
20
30
40
50
60
70
80
90
0
0
0
0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PROTECTED AREAS
38 Code
41 Political Units
42 Full Name of Site
43 Year
44 Designation
45 IUCN category
46 Area
(ha)
47 Central Coordinates (Lat)
47 Central Coordinates (Lon)
48 Relationship to IBA
49 Overlap
(ha)
50 Notes
LOBBYING / CAMPAIGNING FOR LEGISLATION
51 Person/Organization
52 Type of Action
53 Details of campaign
54 Person/Organization
55 Date action start
(dd/mm/yyyy)
56 Date of last information
(dd/mm/yyyy)
57 Correspondance file
58 Results of lobbying or campe
59 Notes
Record:
Form View
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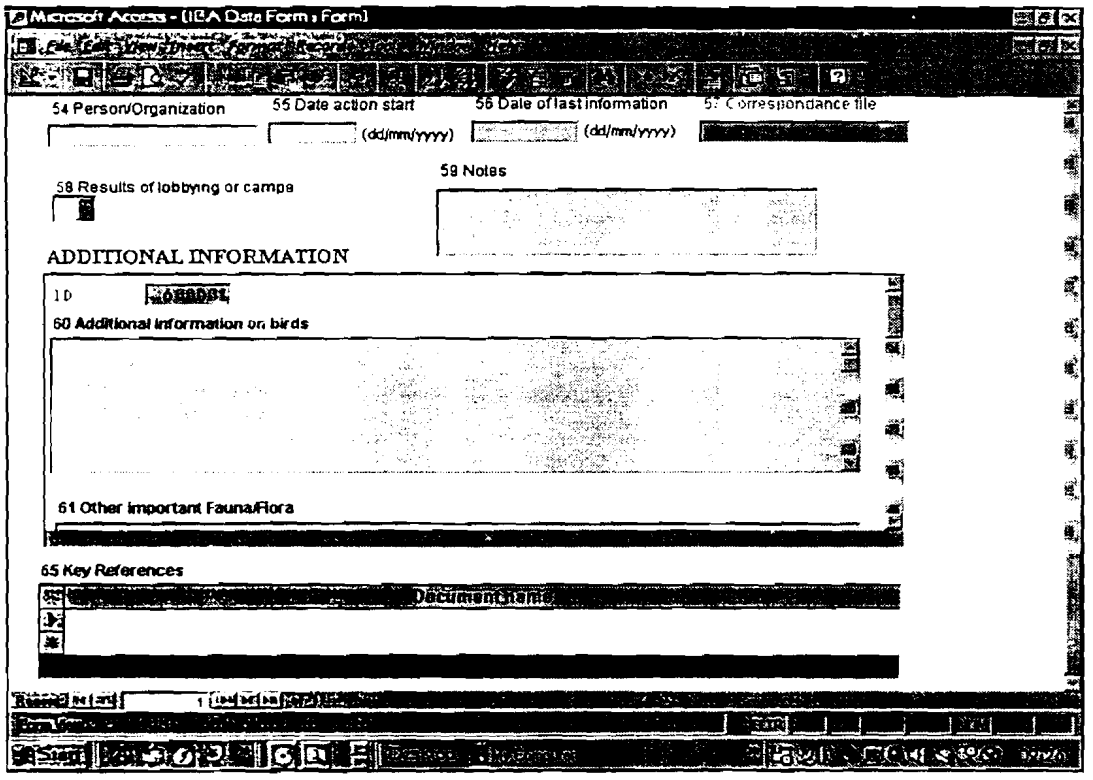
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57 Correspondance file
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59 Notes
ADDITIONAL INFORMATION
ID
60 Additional information on birds
61 Other important Fauna/Flora
65 Key References
Document name
Record:
Form View
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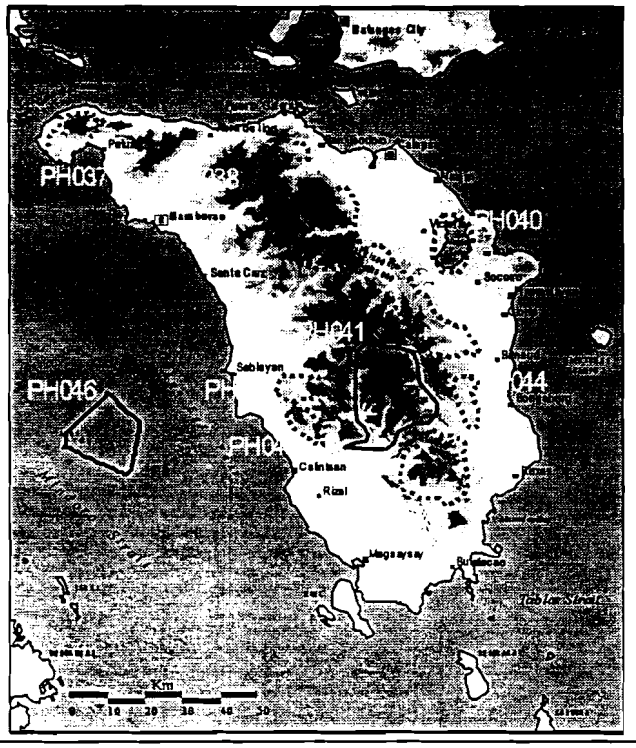
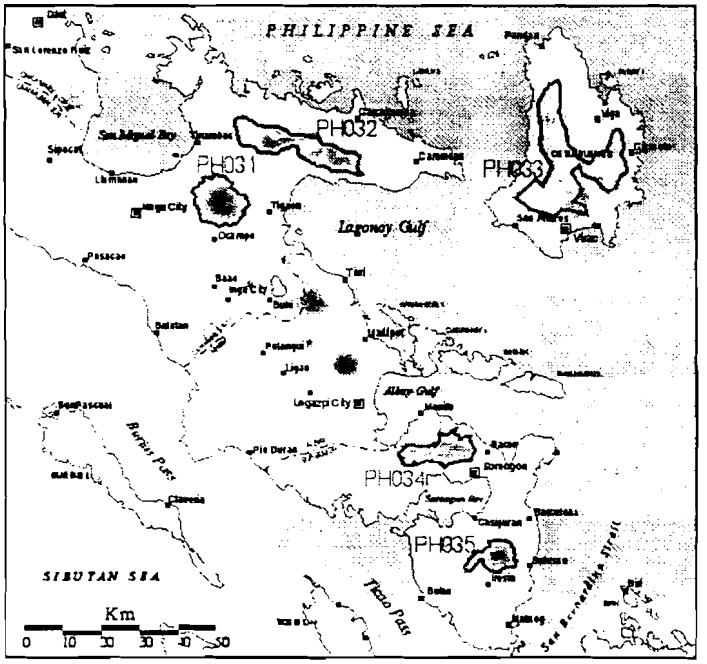
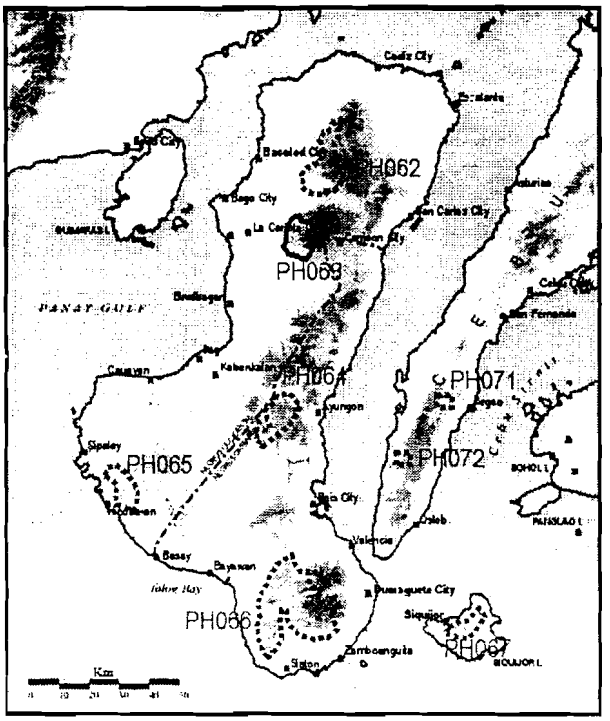


Important Bird Areas

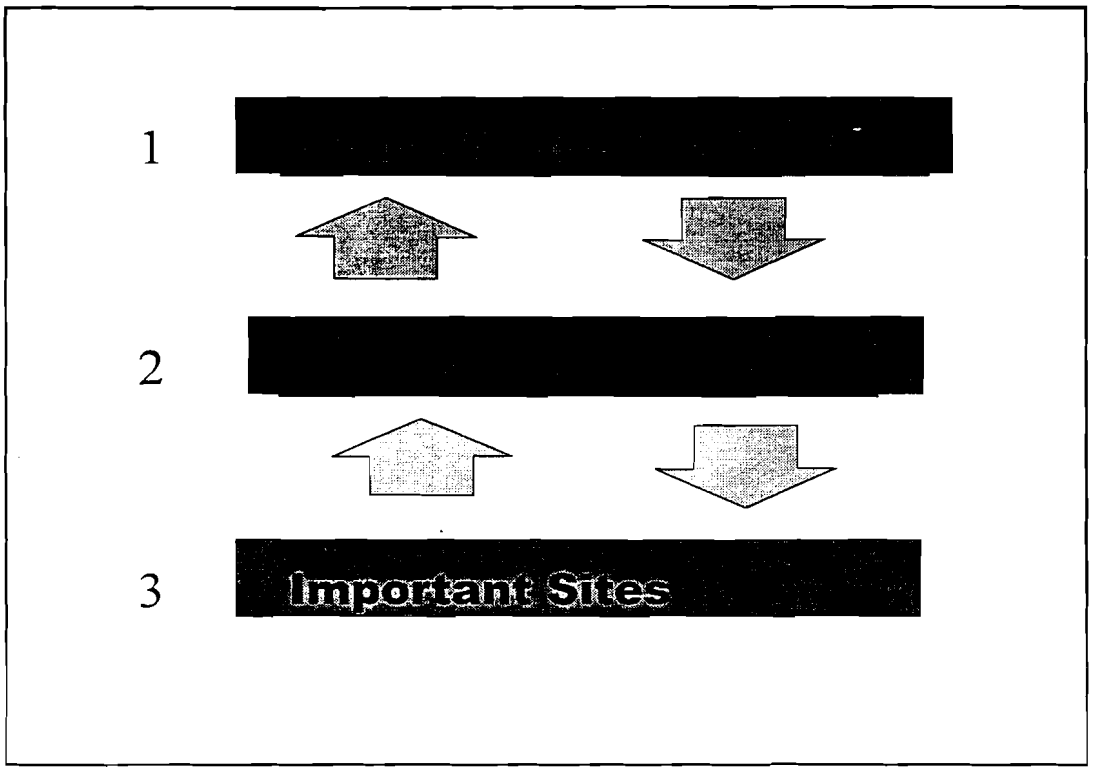




1

2

3 Important Bird Areas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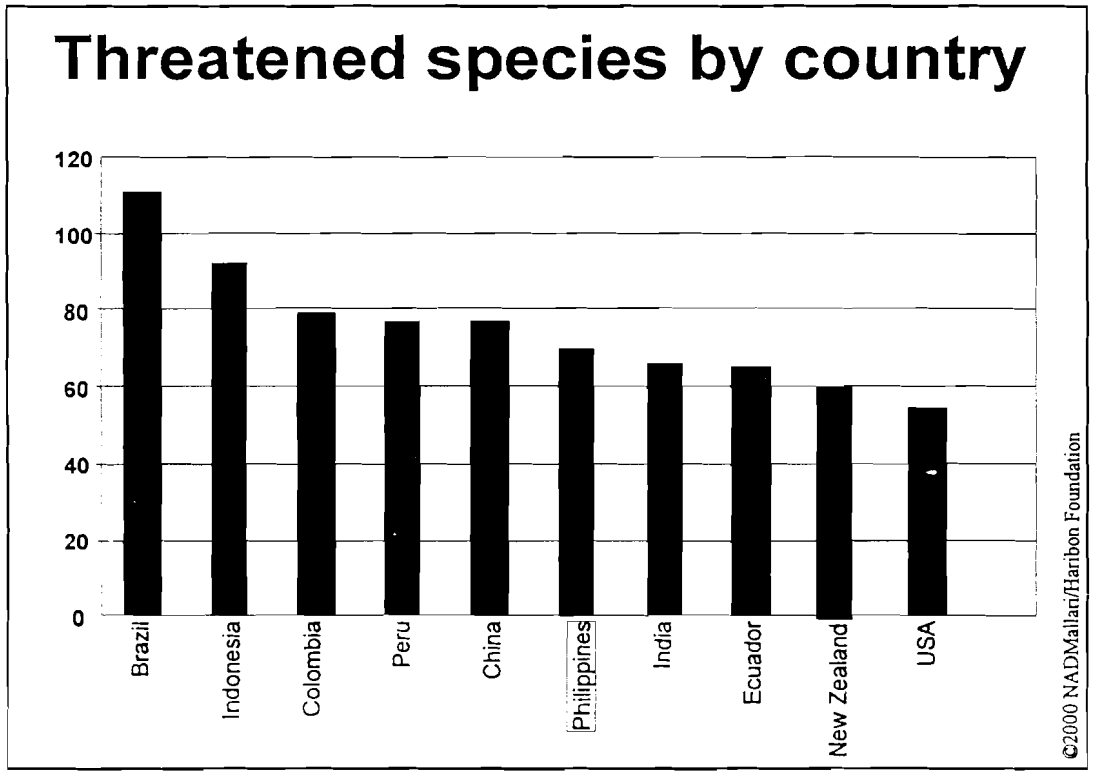
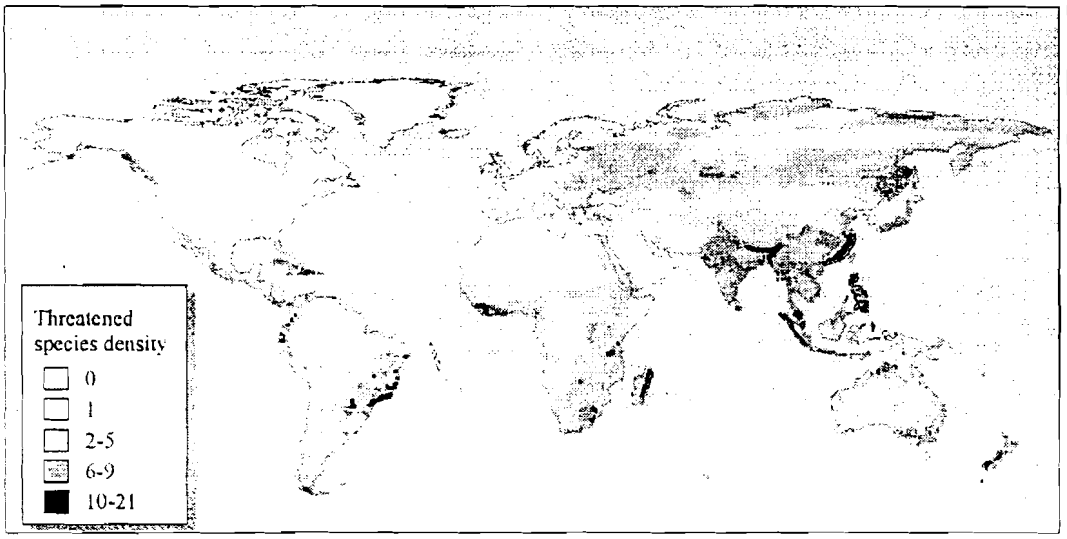
2
3
Important Sites


Threatened species by country
120
100
80
60
40
20
0
Brazil
Indonesia
Colombia
Peru
China
Philippines
India
Ecuador
New Zealand
USA
©2000 NADMallari/Haribon Foundation

Density map of threatened species



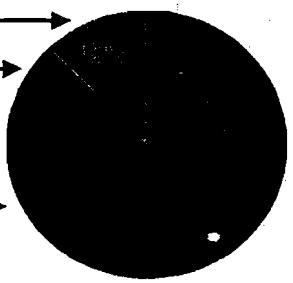
Key Results

Total Globally Threatened species = 70

9 species vagrant, extirpated, introduced

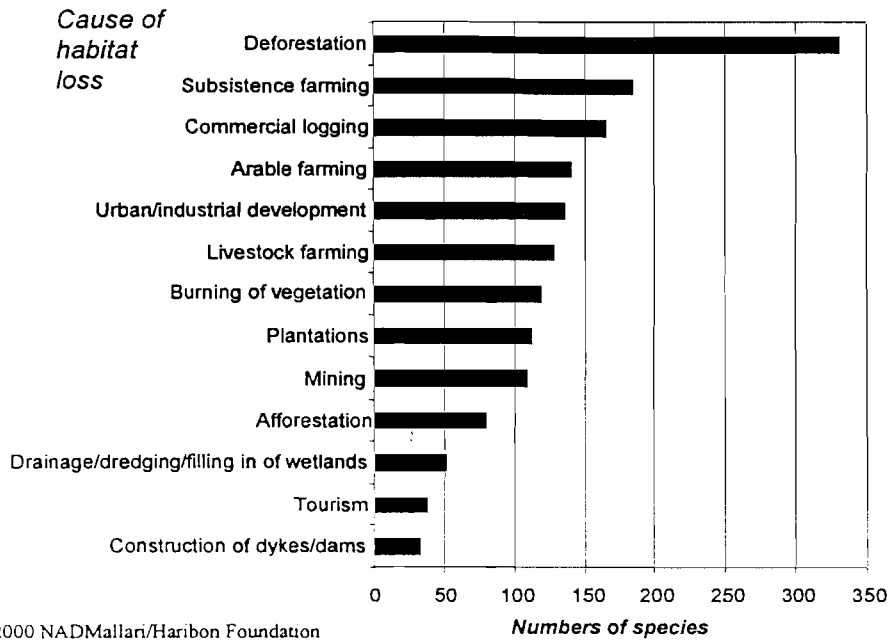
6 species winter visitors

59 species endemic

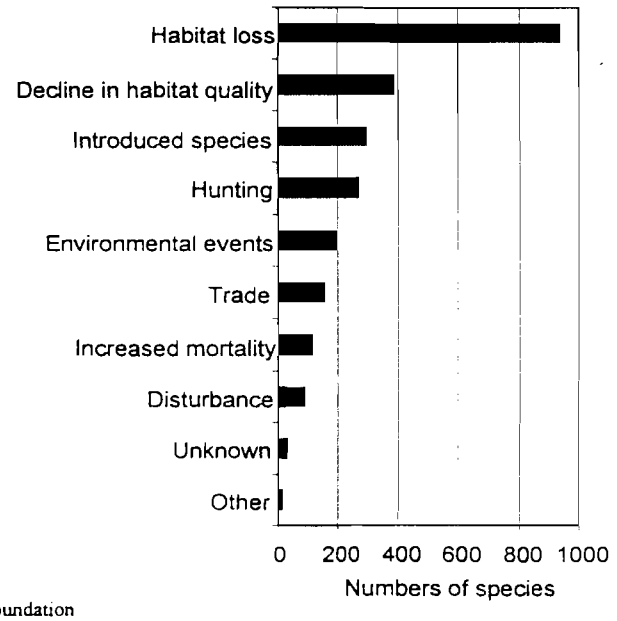


13 species Critical (2 are vagrants)
13 species Endangered (2 vagrants)
44 species Vulnerable
4 species Data Deficient

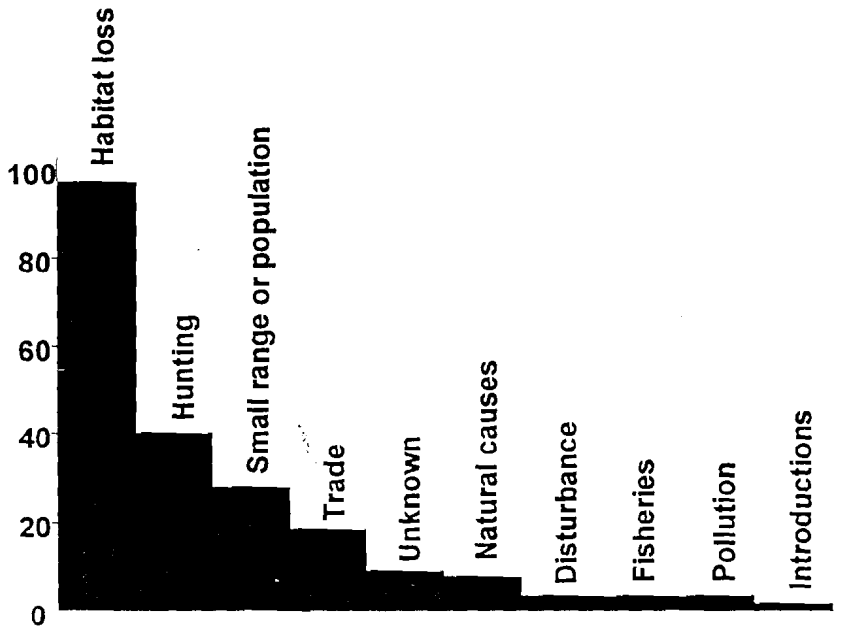
Global conservation issues [1]



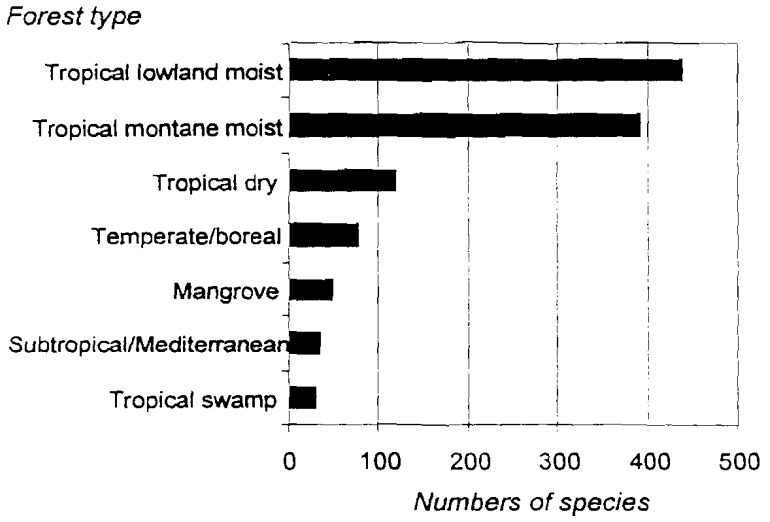
Global conservation issues [1]



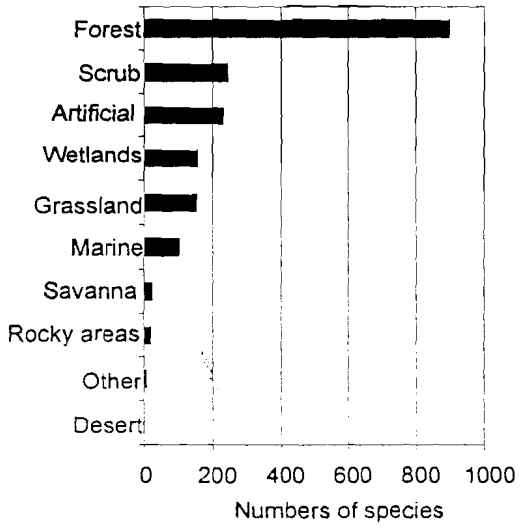
Philippine conservation issues

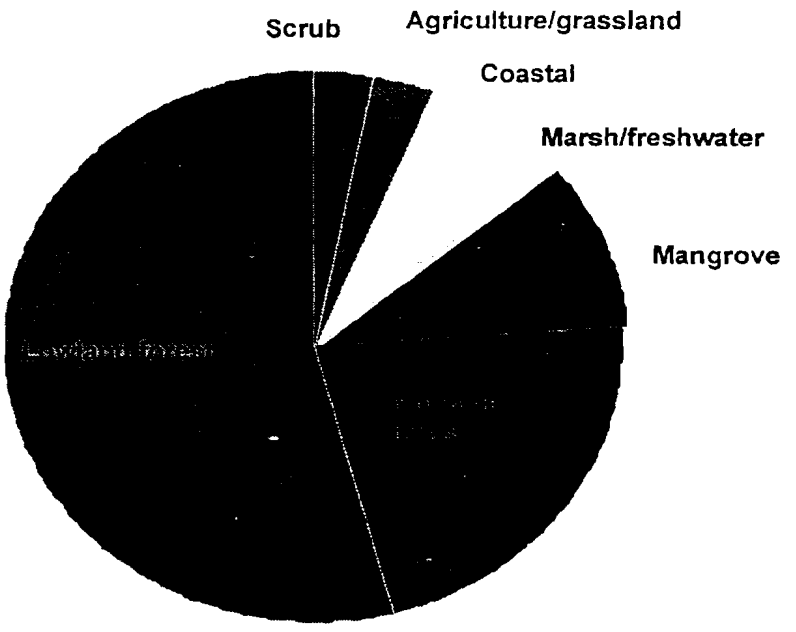


Importance of habitats



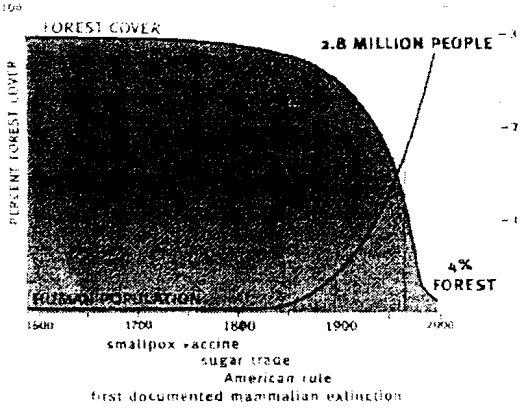
Importance of habitats

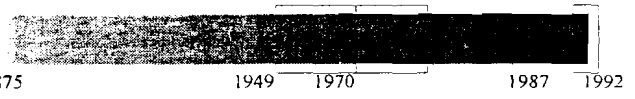




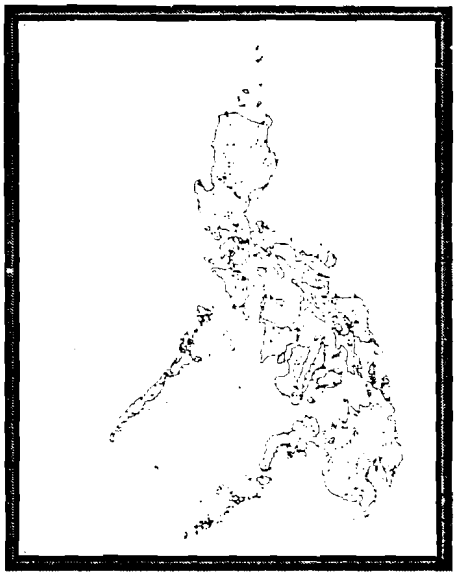
Philippine threatened habitats

Forest loss on Negros





Vegetation Map



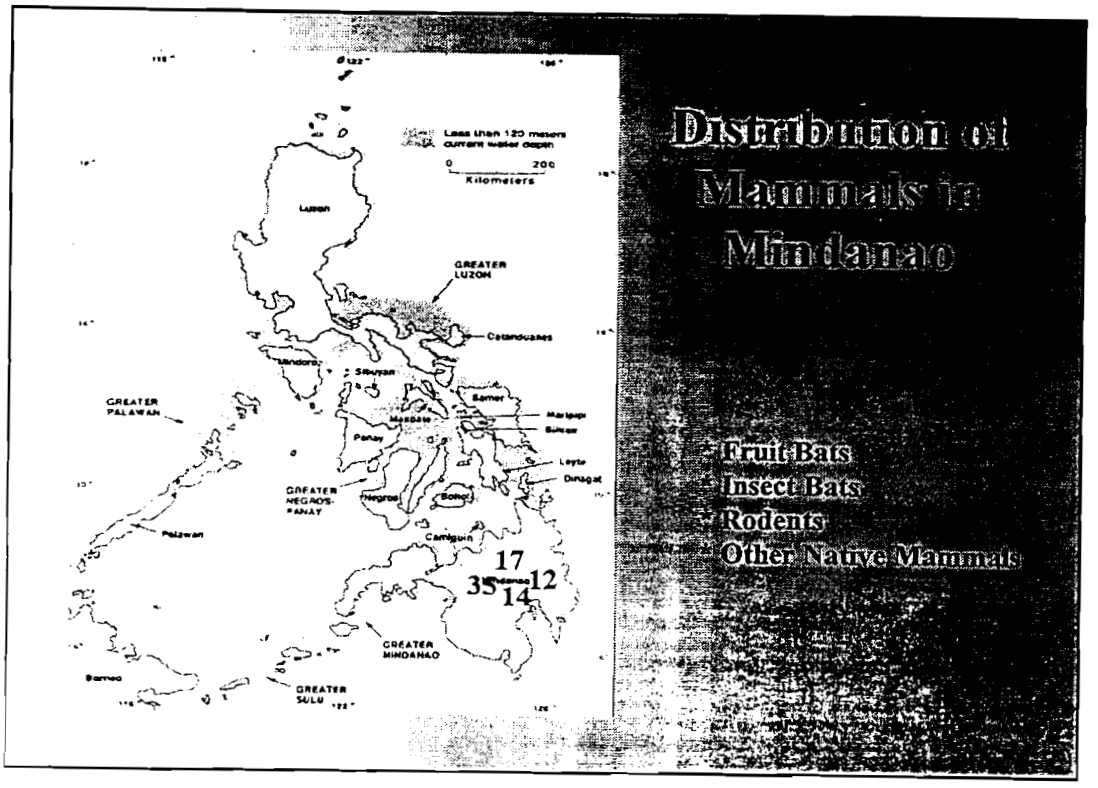
Threatened Bird Localities

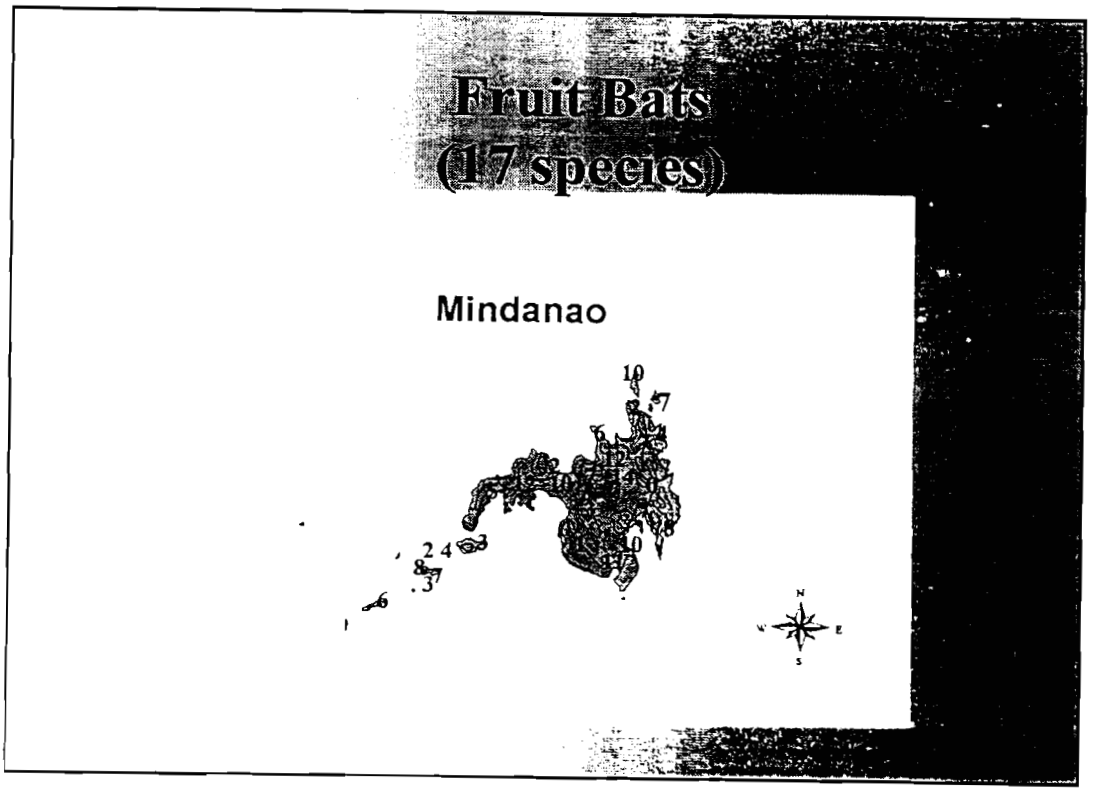
Mining Applications

Protected Areas

ANNEX 9.A.2

STATUS REPORT OF MAMMALS WORKING GROUP
by Prof. Blas Tabaranza





Murid Rodents (12 species)

Mindanao

Native Mammals (78 species)

Mindanao

ANNEX 9.A.3

STATUS REPORT OF HERPS WORKING GROUP

AMPHIBIANS AND REPTILES

Mindanao Faunal Region
(Arvin C. Diesmos)

Species Diversity and Endemicity

	SPECIES	ENDEMICS	MINDANAO ONLY
Amphibians	about 55	70%	15
Reptiles	about 135	72%	50

Taxonomy

- **Undescribed species (species new to science)**

Amphibians	at least 5
Reptiles	about 10

- **Possibly Valid Species (=additional species)**

Amphibians	6
Reptiles	7

Faunal Sub-Regions

- Zamboanga Peninsula, possibly including Basilan
- Northeastern Mindanao, possibly including Dinagat and Siargao Islands
- Central Mindanao montane region
- Sulu-Tawi-tawi archipelagoes
- Souteastern Mindanao (Mt. Mayo complex)?
- Camiguin Sur?
- Leyte-Samar Islands

Fairly (Relatively) Well-Documented Areas

Siargao	Mt. Apo	Mt. Malindang
Dinagat	Mt. Matutum	Basilan (1920s)
Mt. Hilong-hilong	Mt. Kitanglad	
Diuata Mts.	Mt. Busa	
Bunawan, Agusan	Lake Sebu, Mt. Parker	
Camiguin Sur	Pasonanca, Zamboanga (1920s)	
Kinangkil-Lumot	Tawi-tawi	

Urgent Work Needed

Basilan
Sulus
SE Mindanao, Mt. Mayo Complex
Kalatungan Mts.
Southcentral Mindanao

A Few Interesting Herp Information on Mindanao

Heosemys spinosa
Pelochelys bibroni Asian Giant Softshell Turtle
Microhyla annectans
Rana catesbeiana American Bullfrog -- introduced in Nabunturan, Davao and Liguasan Marsh

NEX 9.B

STATUS REPORT OF ARTHROPODS WORKING GROUP
by Dr. Victor P. Gapud

Status Report on Insects and Allied Arthropods of Mindanao

by

Dr. Victor P. Gapud

List of identified local specialist

Agency	Specialist	Field of Specialization
UPLB	Mario Navasero	Jumping plantlice (Hemiptera: Psylloidea)
UPLB	Adelina A. Barrion	Spiders (Araneida)
UPLB	Grace F. Barroga	Leaf beetles (Coleoptera: Chrysomelidae)
UPLB	Venus J. Calilung	Aphids (Hemiptera: Aphidoidea)
UPLB	Leonila A. Corpus-Raros	Mites (Acarina)
UPLB	Stephen G. Reyes	Bees and Wasps (Hymenoptera)
UPLB	Victor P. Gapud [illegible]	Aquatic insects esp. Odonata & Hemiptera; Collembola & Blattoid-Orthopteroid grp.
UPLB	Irineo Lit, Jr.	Mealybugs and scale insects (Hemiptera: Coccoidea)
EAC	Cecilia P. Reyes	Thrips (Thysanoptera)
NAST	Clare R. Baltazar	Parasitic Wasps (Hymenoptera); Butterflies & Moths (Lepidoptera)
IRRI	Alberto T. Barrion	Spiders (Araneida)
USC	Julian Jumalon	Butterflies and Skippers (Lepidoptera: Rhopalocera)
USC	Sumaydа Jumalon	Butterflies
CLSU	Leah Ruiz-Figelan	Vinegar Flies (Diptera: Drosophilida)
VISCA	Juliet C. Ceniza	Ladybird beetles (Coleoptera: Coccinelidae)
CMU	Myrna Ballentes	Leaf beetles (Coleoptera: Chrysomelidae)
ADU	F.R. Magpayo	Dipterans

Current Inventory of Philippine Insects

Number of Families — 494
Genera — 6122
Species — 20462
Endemics — 14211
Overall % Endemism — 69.45

Order	Family Contribution	Generic Contribution	Species Contribution	Endemic Species Contribution
Coleoptera	87 (17.6%)	1567 (25.6%)	7375 (36.0%)	5840 (41.1%)
Hymenoptera	58 (11.7%)	871 (14.23%)	2989 (14.6%)	2237 (15.7%)
Lepidoptera	52 (10.5%)	1185 (19.36%)	2901 (14.2%)	1808 (12.7%)
Diptera	78 (15.8%)	747 (12.2%)	2884 (14.1%)	1639 (11.5%)
Hemiptera	77 (15.6%)	1000 (16.53%)	2516 (12.3%)	1507 (10.6%)
Total	352 (71.26%)	5370 (87.72)	18665 (91.2%)	13031 (91.7%)

Insects and Allied Arthropod Groups Covered

PHYLUM ARTHROPODA
- Class ARACHNIDA (spiders) - A.T. Barrion
- Class ACARINA - L.C. Raros
- Class INSECTA
  - Order Hemiptera
    - Suborder Psylloidea - M. Navasero
    - Suborder Aphidoidea - V.J. Calilung
    - Suborder Coccoidea - J. Lit
      - Family Veliidae
      - Family Naucoridae
      - Family Ochteridae
      - Family Leptopodidae
      - Family Gerridae
      - Family Aphelocheiridae
      - Family Acadellidae

(Families Veliidae to Acadellidae) - V.P. Gapud

Cont.

Insects and Allied Arthropod Groups Covered

Order Hymenoptera - S. G. Reyes
Order Odonata (Family Platycnemididae) - V. P. Gapud
Order Coleoptera
- Family Curculionidae (weevils) - V. P. Gapud
- Family Coccinellidae - J. R. Adorada

Insects and Allied Arthropod Groups Covered on Database

Class ACARINA
- Order - 2
- Suborder - 5
- Family - 63
- Species (as of 1992) - 2115/651
- Suborder Aphidoidea
  - Family - 1
  - Subfamily - 6
  - Species - 101
- Suborder Coccoidea
  - Family - 8
  - Species - 64

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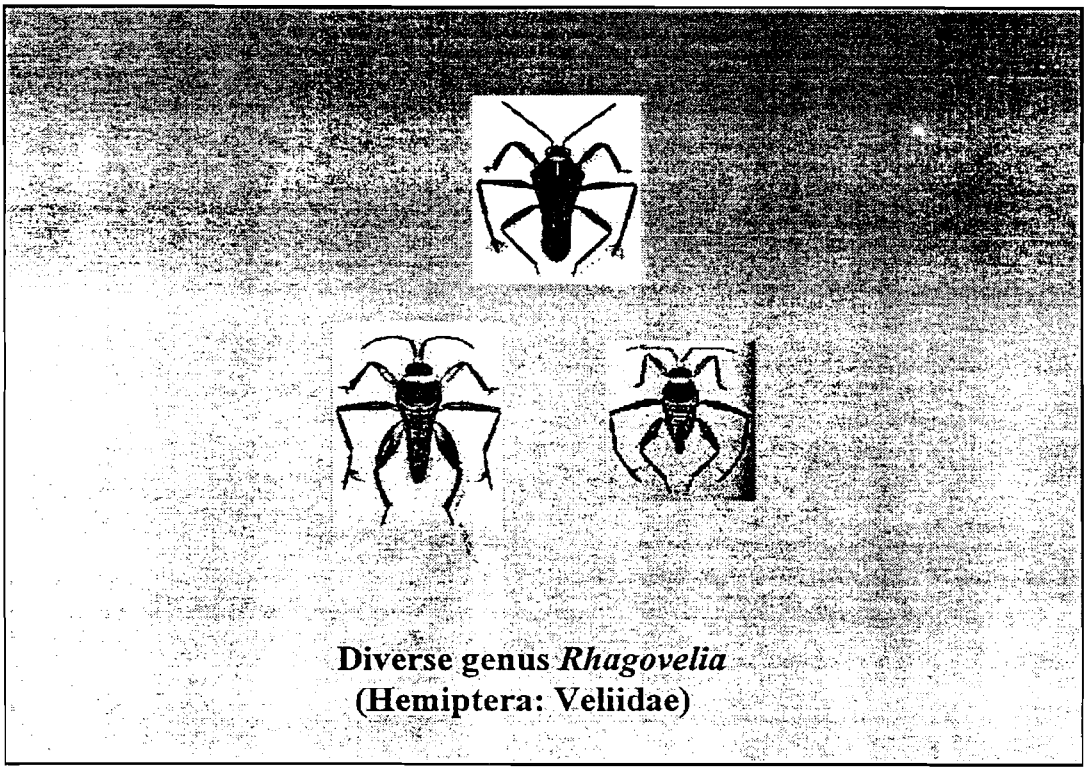
Insects and Allied Arthropod Groups Covered in Database

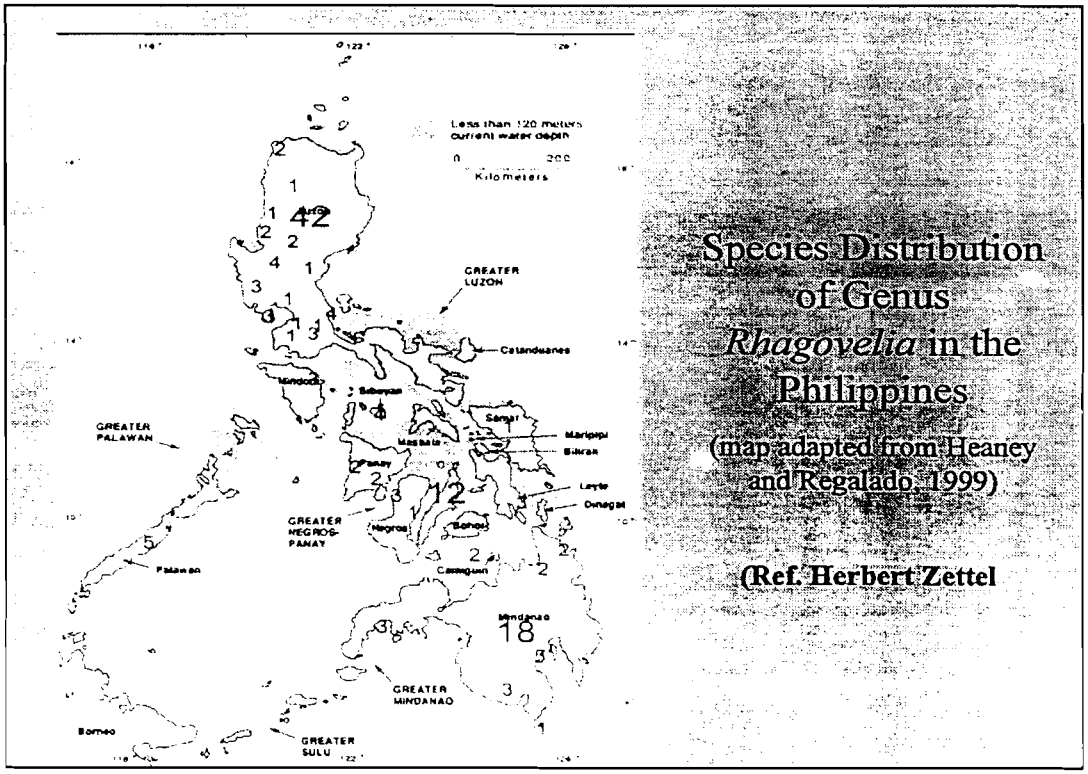
Order Hymenoptera	
Family	- 1
Species	- 16
Order Hemiptera	
Family	- 6
Species	- 110
Order Odonata	
Family	- 1
Order Coleoptera	
Family	- 1

Example Groups for the Philippines and Mindanao

1. *Rhagovelia* (Hemiptera: Veliidae)
2. *Risiocnemis* (Odonata: Platycnemididae)
3. Family Naucoridae (Hemiptera)
4. Pachyrrhynchine weevils
5. Pygmy locust, *Misythus*



Diverse genus *Rhagovelia*
(Hemiptera: Veliidae)



Species Distribution of Genus *Rhagovelia* in the Philippines

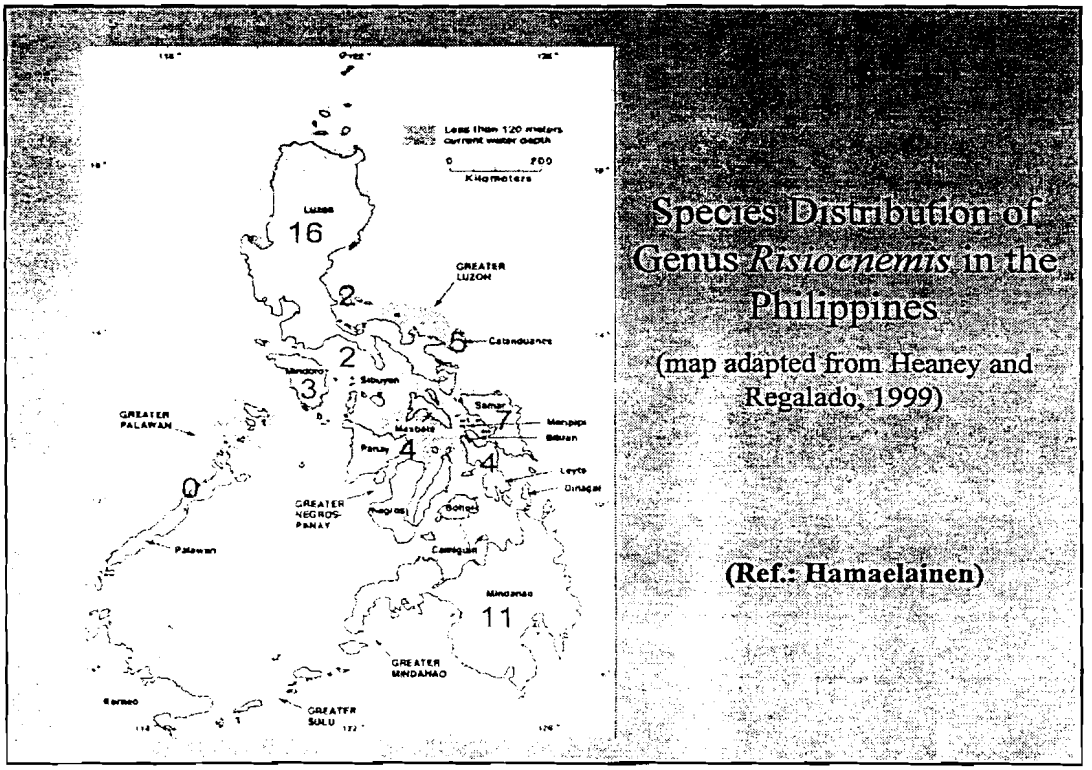
(map adapted from Heaney and Regalado, 1999)

(Ref. Herbert Zettel

Distribution by province of genus *Rhagovelia*

SPECIES	DISTRIBUTION PROVINCE
1. *Rhagovelia aberrans*	Zamboanga del Sur
2. *Rhagovelia camiguinana*	Camiguin Island
3. *Rhagovelia hoogstraali*	Davao
4. *Rhagovelia mindanaoensis*	Cotabato
	Davao del Sur
	South Cotabato
	Surigao del Norte
5. *Rhagovelia nieseri*	Agusan del Norte
6. *Rhagovelia orientalis*	Lanao del Norte
	Zamboanga del Sur
7. *Rhagovelia orientaloides*	Camiguin Island
8. *Rhagovelia ridicula*	Sarangani Island
	South Cotabato
	Davao del Sur
9. *Rhagovelia usingeri*	South Cotabato
	Davao
	Surigao del Norte
	Zamboanga del Sur
10. *Rhagovelia wemeri*	Davao del Sur

Endemic Genus *Risiocnemis*
(Odonata: Platycnemididae)



Species Distribution of Genus *Risiocnemis* in the Philippines

(map adapted from Heaney and Regalado, 1999)

(Ref.: Hamaelainen)

Distribution of *Risiocnemis* in the Greater Luzon and Mindoro Regions

Taxon	Island				
	Luzon	Polillo	Catanduanes	Marinduque	Mindoro
R. arator	x				
R. asahinai	x				x
R. confusa	x		x		
R. elegans	x				
R. gracilis	x				
R. laguna	x				
R. pulchra	x				
R. serrata	x	x	x	x	
R. vanans	x				
R. sp. (1)	x				
R. atropurpurea	x			x	
R. haematopus	x		x		
R. ignea	x				
R. incisa	x				x
R. odobeni	x		x		x
R. polilloensis		x	x		
R. sp. (2)	x				

Distribution of *Risiocnemis* in the Greater Negros-Panay Region, Siquijor Island and Sibuyan Island

Taxon	Island					
	Panay	Negros	Cebu	Masbate	Siquijor Island	Sibuyan Island
R. kiauti						x
R. plebeja	x					
R. rolandmullen	x	x		x	x	
R. sp. (1)			x			

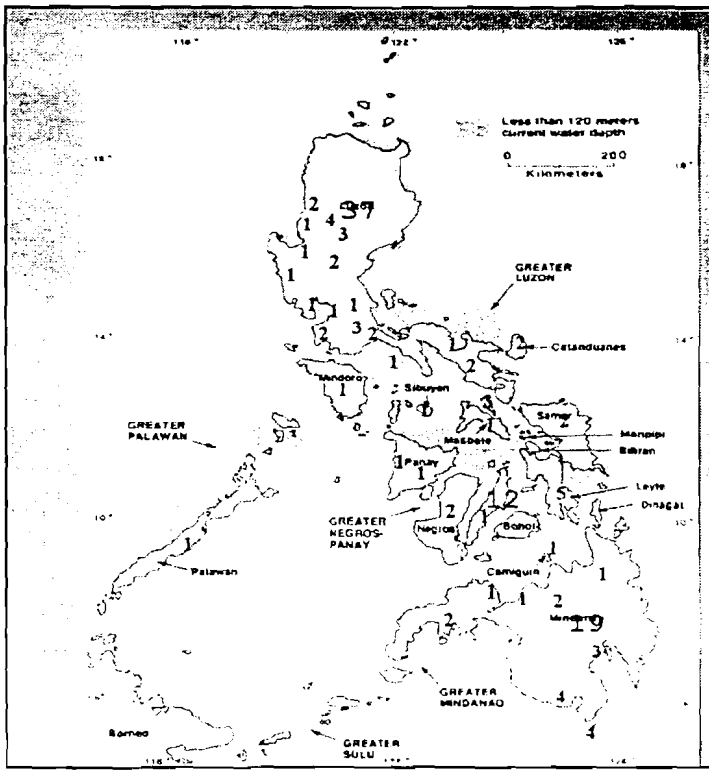
Distribution of *Risiocnemis* in the Greater Mindanao Region

Taxon	Island										
	Mindanao	Basilan	Dinagat	Siargao	Camiguin	Homonhon	Panaon	Biliran	Leyte	Samar	Bohol
R. appendiculata	x				x	x	x	x	x	x	x
R. atripes	x										
R. calceata							x				
R. erythrura	x			x							
R. flammea	x		x			x	x	x	x	x	
R. fulgifrons	x	x	x				x				
R. moroensis	x										
R. praeusta			x				x	x	x	x	
R. rubripes	x		x								
R. tendipes	x										
R. sinlas								x	x	x	
R. haematopus										x	
R. melanops										x	
R. sp. (1)	x										
R. sp. (2)	x										
R. sp. (3)	x										
R. sp. (4)										x	

Distribution of genus *Risiocnemis* in Mindanao

R. appendiculata
R. atripes ?
R. calceata
R. erythrura
R. flammea
R. fuligifrons
R. moroensis
R. praeusta
R. rubripes
R. tendipes ?

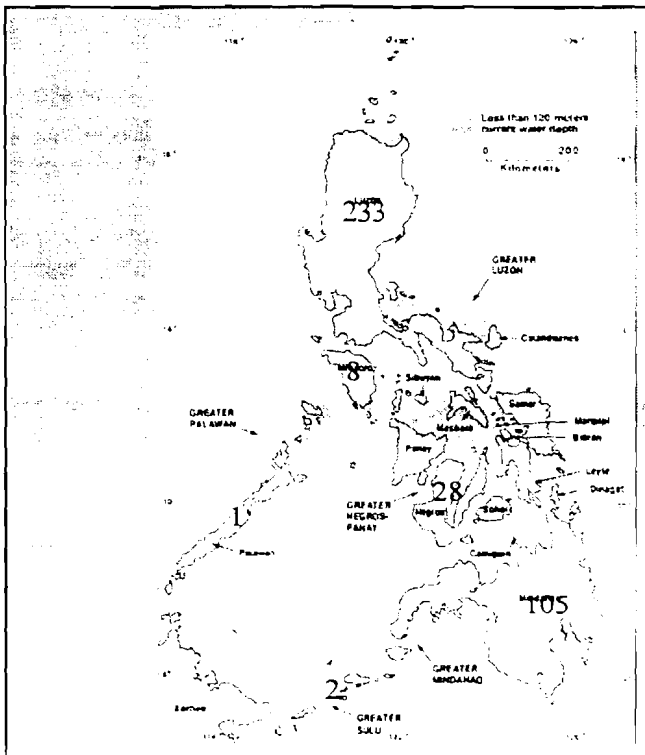
Some Philippine Naucoridae



Distribution of Family Naucoridae in the Philippines

(map adapted from Heaney et al., 1998)

(Ref. H. Zettel)



Philippine Weevils of Tribe Pachyrrhynchini (Curculionidae: Brachyderinae)

(map adapted from Heaney and Regalado, 1999)

ANNEX 9.C

STATUS REPORT OF PLANTS WORKING GROUP

Data Updates for the Plants Working Group
(Dr. Dan Lagunzad [Working Group Leader])

- Due to the voluminous data that have to be encoded for the plants group, participants of the Plants Working Group Meeting held in Laguna last August 4, 2000, came into a consensus of narrowing down plant species into relevant families. There was a debate on the approach as whether to use taxon or area-based criteria for prioritization.

- For taxon or species-based criteria, there was a listing of all possible literature to come up with endemicity values. Since this endeavor shall require all available information, and would involve intensive literature search, the priority-setting process shall not pursue it due to very limited time and resources.

- Using species-based criteria, some families suggested include Dipterocarpaceae, Meliaceae, Mimosaceae, Caesalpiniaceae, Fagaceae, Sapindaceae, Moraceae, Palmae, Araceae, Elaeocarpaceae, Ericaceae, Coniferae, and Bamboos.

- Ericaceae are good representatives of high-altitude species while Dipterocarps are valuable but highly threatened lowland species. Meliaceae, Sapindaceae, Moraceae, Mimosaceae, and Caesalpiniaceae are relatively large families with high level of systematic consistency. Elaeocarpaceae have wide range of distribution. Fagaceae have high endemism. Coniferae have quite limited species. Meanwhile, palms and bamboos are the most-studied plant families. If there is a pattern of distribution for Philippine plants, the palm group might show it.

- There were also suggestions on using site-based analysis. Unexplored and partly explored areas should be given consideration. There are areas that may have been explored but most data are not published and stored in herbaria as well as in inventories made by collectors.

- At the August 4 meeting, the group agreed to use both taxa- and site-based criteria. Species-based criteria could be used in refining the priorities. So that the data could be based on experts' opinion, the August 4 meeting has gone through a whole Philippine map discussing each area for both of these considerations.

- For the Mindanao region, the group mostly discussed the eastern seaboard. This included Mt. Kitanglad, Mt. Matutum, and Mt. Kalatongan where extensive data are available. Most of this information is focused on ferns and mosses. Siargao and Dinagat areas were also noted.

- Data generated so far is quite limited. These are mostly based on Merrill's (1923) "Enumeration of Philippine Plants". Recent revisions of families are being worked out as exemplified in the Flora Malesiana and Blumea series. However, Mindanao data have not been extracted from the encoded data. Nevertheless, it is possible to arrive at a listing that will represent Mindanao flora.

Mindanaoensis: a Symposium-Workshop on the Flora of Mindanao
(Dr. Edwino Fernando)

- Organized by THE PHILIPPINE PLANT SPECIALISTS GROUP (composed by Dr. Vic Amoroso, Dr. Edwino Fernando, Dr. Dan Lagunzad and Dr. Domingo Madulid), a symposium-workshop on the flora of Mindanao will be held tentatively dated on November in Cagayan de Oro City. This aims to develop initiatives for research, documentation, and conservation of the plant biodiversity of Mindanao.

- Why Mindanao?
  - Second largest island in the Philippine archipelago.
  - 1/4 of Biogeographic Zones recognized by DENR for the Philippines.
  - 31% in terms of protected areas and highest percentage (35.5%) of biodiversity-rich ecosystems in the country.

- Mindanao is not a single landmass but is made up of different rocks masses, composed of different rock types of different ages. Biodiversity richness in Mindanao is in part due to geologic history. There are evidences that Mindanao is included in the migration tracts of species from Borneo, Sulawesi, New Guinea and Moluccas.

- Examples:
  Daemonorops polita -- endemic to Zamboanga Peninsula
  Calamus and other varieties of palms have the same pattern;
  Eucalyptus deglupta – the only rainforest species of Genus Eucalyptus – found only in Eastern Mindanao; only one found in the Philippine; so many other species all in Australia;
  Nepenthes truncata – endemic to Eastern Mindanao;

- Specifically, the symposium-workshop aims to 1) highlight diversity of the flora of Mindanao; 2) promote awareness, appreciation, and conservation of the indigenous and endemic species of plants of Mindanao and 3) recommend research and conservation strategies for the flora of Mindanao.

Slide Presentation on some Flora and Fauna of Mindanao
(Dr. Victor Amoroso)

Dr. Vic Amoroso presented representative ecosystems and species found in Mindanao. The following mountains/areas were given special consideration:

Mt. Dulang-dulang;
Mt. Apulang;
Mt. Matutum – 1988;
Marilug district of Davao;
Mountain ecosystems in Mindanao

Species that were considered of botanical importance include the following among others:

Dawsonia superba (giant mosses) – many in Mt. Kitanglad,
Sarcanda glabra – processed by local IPs because of many uses;
Marsilea pinnata – endangered because of heavy pesticides and fertilizers

This was the Status Report presentation also used during the Plants Working Group Meeting on August 4, 2000 in Calamba, Laguna:

Working Group Meeting (Plants)
August 4, 2000

Objectives:

- To determine the most effective and efficient approach in generating the data required.
- To organize the group into task force.
- To clarify issues pertaining to Intellectual Property Rights and overlap of research programs.
- To update the group on what has been accomplished.
- To set up a monitoring system by which the objectives are achieved.

Hidden agenda: To organize the plant working group into an organization.

Updates

Criteria used.

- Distribution "representativeness"
- Systematic consistency
- Spread and ecological importance
- Economic importance and threat

Taxa suggested to be covered by the priority setting exercise

Taxon	# Species	# endemics	% endemism
Dipterocarpaceae	46	21	45.65
Meliaceae	75	7	9.33
Mimosaceae	51	10	19.61
Caesalpiniaceae	70	14	20.00
Fagaceae	25	14	56.00
Sapindaceae	63	19	30.16

Moraceae (Ficus)
Palmae
Araceae
Elaeocarpaceae (Elaeocarpus)
Ericaceae
Coniferae
Bamboos

- List of experts, addresses, institutions
- List of known species in the country
- Detailed bibliography
- List of biological collections including description, quality, access, institutions
- Information on collected specimens
- Available distribution maps

Criteria for selection of Priority Sites

1. Biological Values
   1.1 Species
      High endemism
      High diversity
      Unexplored
      Economic values
      Endangered species
      Degree of rarity
      Keystone species

1.2 Habitat/Ecological Diversity

High diversity (presence of habitat types per area)

Unexplored/partially explored

Uniqueness (limestone;ultrabasic soil;presence of ecological (human) communities

Economic values (direct values; indirect values-watershed,soil stabilization etc)

2. Threats

Agricultural development/land use changes

Mining/harvesting

Monoculture

Introduction of species

3. Capacity(needs)

Policy support and political will

Qualified personnel; (education, training and skills)

Fund availability

Networking/linkages opportunities and realities

ANNEX 9.D

STATUS REPORT OF MARINE WORKING GROUP
by Dr. Porfirio Aliño

Groups of marine organisms and their information:

A. Corals
- with relatively extensive literature; with status report,distribution and coral cover,associated life forms
- about 50 sites for Visayas have listings and the corals were described.

B. Mollusks,seaweeds,seagrasses,marine mammals, crustaceans, echinodems
- compilatian of various museum records for mollusks
- herbarium specimens / collectionsin USC,Silliman,VISCA,SEAPDEC

Concerns:

- Prioritizing areas and selecting important group of marine organisms
- Data largely based on museum collections
- Species list from available literatures need to have appropriate quality control
- A review process have to be done for other possible new records
- Question on magnitude of work
  - lot of encoding had to be done and there's a question of funding
  - priotizing on groups of corals,seagrasses and mangroves which are in electronic form
  - networking

Strengths:

- Goodwill and commitment of institutions and certain organizations
- Putting information on the web for people to partake in the exercise
- Incentives for making or contributing to the inputs

Division of Marine Working Group (R.Aliano)

1. Corals - 400 species
2. Fish - 770 species
3. Mollusks
4. Seaweeds
5. Seagrass
6. Florine Mammals
7. Coustacelens
8. Echino
9. Worm / Poly
10. Sponge Hunicates
11. Marine micro Organisms

Available Information:

Philreefs. Com
- w/ status report: what the coral cover; associated life forms 770
- w/ site locations & biomass estimates for 50 sites

ANNEX 9.E

STATUS REPORT OF FRESHWATER WORKING GROUP
by Ms. Adelina C. Santos-Borja

Freshwater Working Group
Status Report for Mindanao

Ms. Lennie C. Santos-Borja
Working Group Leader

Freshwater bodies in the Philippines

- Lakes (71)
- Rivers (18)
- Marshes/swamps (8)
- Reservoirs (6)

Lakes in Mindanao

- out of 71 lakes in the Philippines, there are 33 lakes (46%) that are found in Mindanao
- two of the largest lakes, Lakes Lanao and Mainit are also found in this region
- 21% (7 lakes) only of the Mindanao lakes are with study/research

Lake Lanao

Location: 07°53'N; 124°15'E in Lanao del Sur Province, west central Mindanao

Area: 34, 700 has.

Altitude: 710 masl

Threat Status:

- introduction of exotic fish species have resulted to extinction of some of the cyprinid fishes
- Over-exploitation of fish resource
- logging in the catchment area is causing siltation

Lake Lanao

Principal vegetation:

- Macrophytes: *Eichornia crassipes; Typha sp.; Nymphaea nouchaii and Vallisneria sp.*
- Phytoplankton: *Botryococcus; Pediastrum; Melosira granulata; Ceratium*

Fauna:

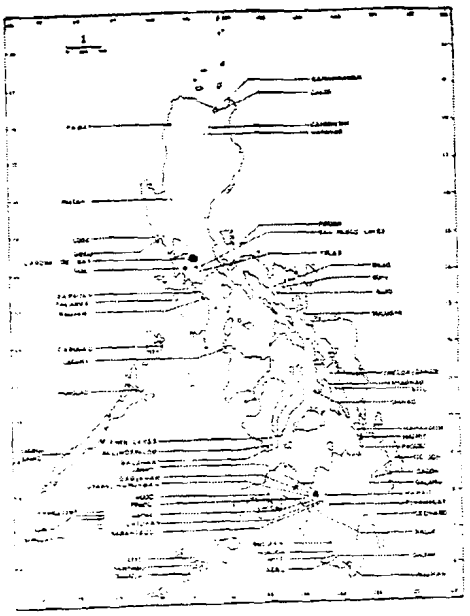
- Zooplankton: calanoid copepods are dominant, but also common are cyclopoid copepods. There are at least two endemic zooplankters; *Tropodiaptomus gigantoniger* and the *Thermocyclops wolterecki*
- Fish: the lake contains an endemic cyprinid species flock of about 18 species, with four endemic genera, it is the only known fish species flock in the oriental region

Fish Fauna of Lake Lanao

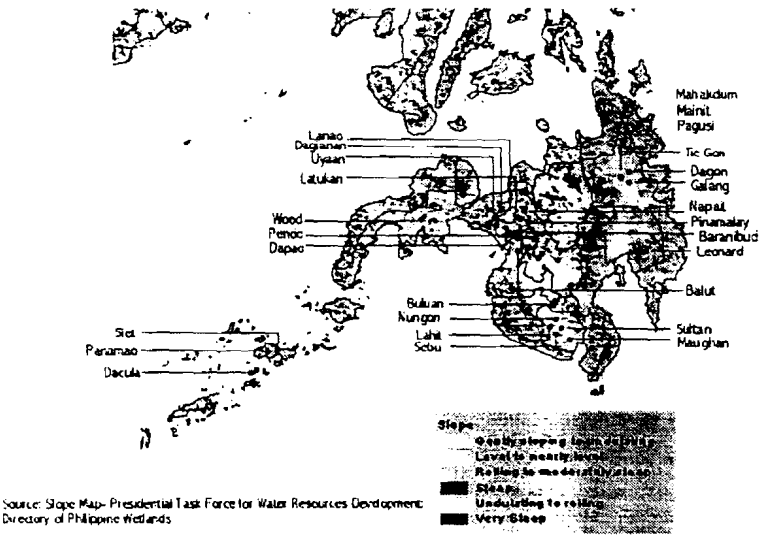
Scientific Name/Local Name

- *Puntius katalo* katalo
- *P. baolan* baolan
- *P. manalak* manalak
- *P. lindog* lindog
- *P. clemensi* bagangan
- *P. disa* disa
- *P. tamarus* palt
- *P. tumba* tumba
- *P. flavifuscus* katapa-tapa
- *P. lanaoensis* kandar
- *P. binotatus*
- *P. oras* tras
- 13. *P. sirang* tumaginting
- 14. *Ospatulus truncatulus* bitungu
- 15. *O. palaemophagus* bitungu
- 16. *Spratelloicypris palata* manobud
- 17. *Mandibularca resinus* bagangan
- 18. *Cephalokompsus pachycheilus* bitungu

*The present status of these 18 species is unknown and many are thought to be extinct.



LOCATION MAP OF LAKES IN THE PHILIPPINES



Source: Slope Map- Presidential Task Force for Water Resources Development
Directory of Philippine Wetlands

LOCATION MAP OF LAKES IN MINDANAO

•Aside from the cyprinid flock, there are four indigenous fishes that occur in the area:

Ophicephalus striatus	mudfish
Clarias batrachus	catfish
Anabas testudines	climbing perch
Anguilla mauritiana	eel

•There are also 7 introduced species in lake Lanao, it is believed that these introduced species are the greatest threat to the unique cyprinid flock in the area.

Lake Mainit

Location: between 9°21' and 9°32' N; 125°28' and 125°34' E Surigao del Norte, Mindanao

Area: 17, 340 has.

Altitude: 27 masl

Threat Status:

- erosion from the denuded mountainsides where timber and mining companies operate threatens the watershed as well as the lake
- mining waste, domestic sewage, fertilizers and pesticides are serious pollutants of the lake

Lake Mainit

Principal vegetation:

- Macrophytes: *Pistia stratiotes* and *Eichornia crassipes*
- Phytoplankton: The dominant genera of phytoplankton are *Anabaena, Lyngbya, Synedra, Cyrptomonas, Peridinium, Gymnodium, Melosira, Navicula, Nitzschia* and *Spirogyra*

Fauna:

Fish Fauna

The fish fauna is mostly composed of euryhaline species. It can be divided into three components:

- Resident, Non-migratory Fish: 7 species
- Migratory fish: 9 species
- Introduced species: 5 species

Others:

- freshwater shrimps of the family Atyidae are found here
- as well as gastropods like *Ampullaria luzonica* and *Vivipara angularis*

Lake Buluan

Location: between 6 °36' & 6 °42'N; 124 °47' & 124 °52'E; central part of the southern half of Mindanao in the boundary between Maguindanao province in the north and Sultan Kudarat in the south

Area: 6,500 has.

Altitude: c. 35 masl

Threat Status:

- agricultural and logging activities may result to increased siltation
- over-exploitation of fish resource

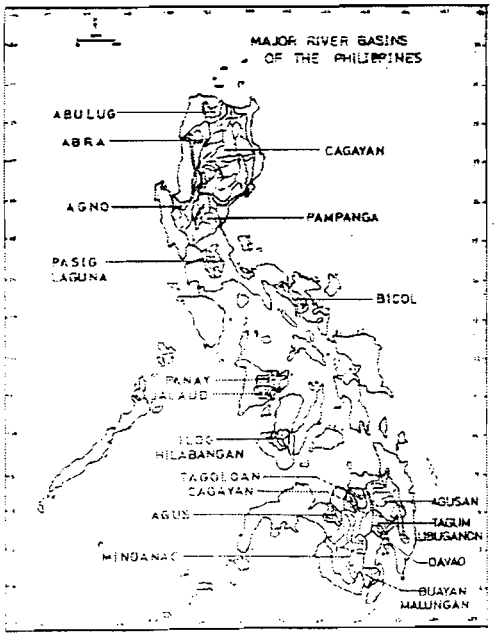
Lake Buluan

Principal Vegetation:

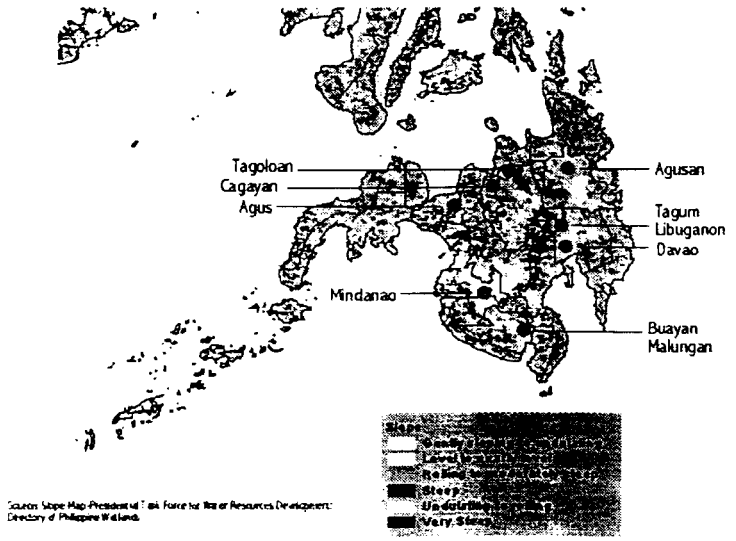
- *Eichornia crassipes; Ipomoea reptans; Nymphaea nouchalii and Pistia stratiotes*

Fauna:

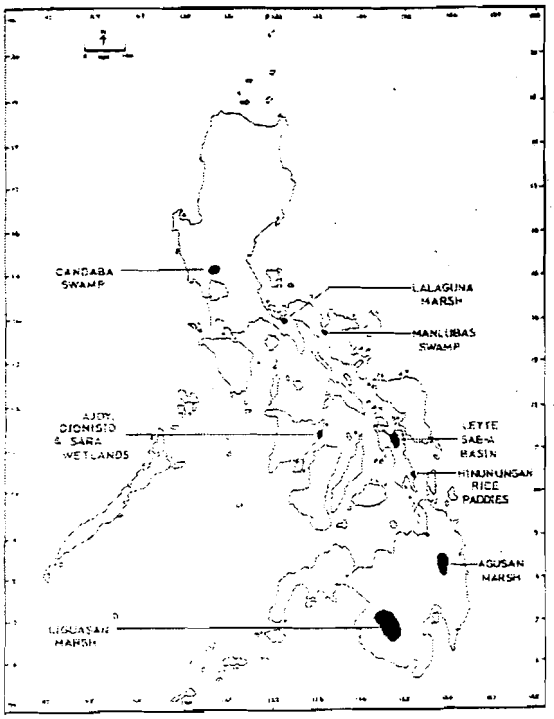
- Introduced species: 5 species
- Indigenous species: 4 species



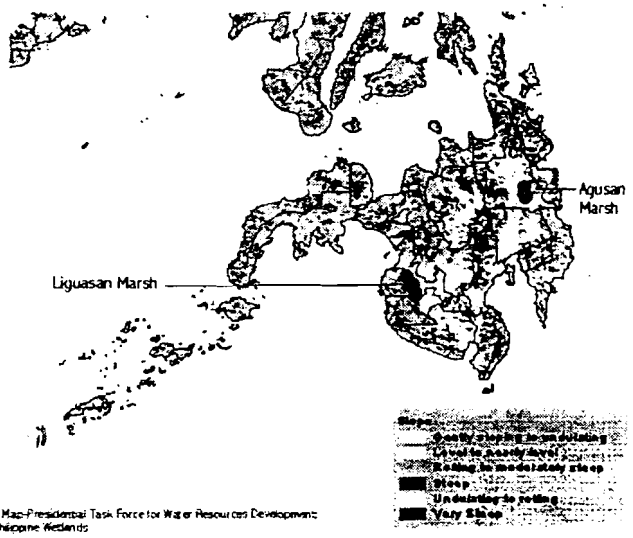
LOCATION MAP OF MAJOR RIVER BASINS IN THE PHILIPPINES



LOCATION MAP OF RIVER BASINS IN MINDANAO



LOCATION MAP OF SWAMPS/MARSHES IN THE PHILIPPINES



Source: Slope Map-Presidential Task Force for Water Resources Development
Directory of Philippine Wetlands

LOCATION MAP OF FRESHWATER SWAMPS/MARSHES IN MINDANAO

Rivers in Mindanao

- there are eight river basins in Mindanao; 3 in Region 10, 3 in Region 11 and 2 in Region 12
- little to no information are available for the aquatic flora and fauna in all these river basins

Agusan Marsh

Location: Agusan del Sur Province

Area: 90,000 has.

Altitude: 55 masl

Flora and Fauna: No information available on aquatic vegetation and fauna. The marsh support the largest population of the estuarine crocodile, *Crocodylus porosus,* it is believed that the endangered Phil. Crocodile may also be present, *C. mindorensis*

Threat Status: Crocodiles are heavily hunted; part of the marsh have already been converted to agricultural land; logging in the catchment area has resulted to increased flooding and siltation in the wetland

Liguasan Marsh

Location: South-Central Mindanao, North and South Cotabato Provinces

Area: 220, 000 has.

Altitude: 10-30 masl

Flora & Fauna: Abundant growth of *Eichornia crassipes.* The marsh supports a great variety of wildlife, including 20 species of fishes, 3 species of reptiles and over 20 species of waterfowls. The marsh is one of the last strongholds for the endangered Phil. Crocodile, *Crocodylus mindorensis.*

The freshwater group is divided into the following taxonomic groups:

> Zooplankton
> Phytoplankton
> Molluscs
> Fish and Fish Parasites

Each taxonomic group will be headed by one or two expert on that field, they are the following:

> Zooplankton	-	A.C. Mammaril
> Phytoplankton	-	M. Zafaralla & T.R.Perez
> Molluscs	-	R.C. Pagulayan and A. de Lara
> Fish and Fish Parasites	-	A. Palma, Mercene and Nellie Lopez

CRITERIA BY TAXONOMIC GROUP:

* for the zooplankters & phytoplankters, it should be by habitat approach, look into the status of the area;
* for the fishes, the focus is on endemic fishes, thus the species approach;listing must be up to the species level

GUIDELINES FOR SETTING PRIORITIES:

* Ecological
  * endemicity
  * threat
  * habitat destruction
  * information gaps

ANNEX 9.F

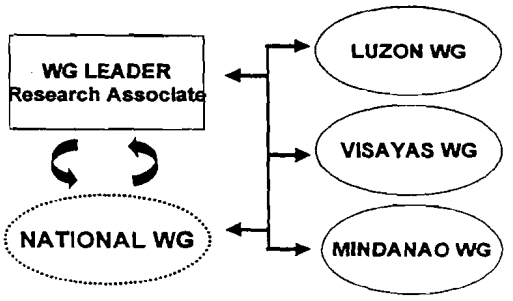
STATUS REPORT OF SOCIO-ECONOMIC AND CULTURAL WORKING GROUP
by Dr. Rowena R. Boquiren

SOCIO-ECONOMIC AND CULTURAL WORKING GROUP

Status Report : Mindanao Consultation

- **Working Group Structure and Process**
- **Accomplishments**
- **Next Tasks**

WG Structure and Process



Experts and data providers

SOCIAL SCIENTISTS

PLANNERS

ADMINISTRATORS

- *Academe*
- *Government*
- *Non-governmental organization*
- *Peoples Organizations*
- *Church groups*
- *Business sector*
- *Etc.*

Accomplishments

- **Selection and refinement of data attributes through workshops and review of available agency data**
- **Identification of experts and data providers**
- **Consultations and meetings**
- **Data collection and encoding : *bibliographies, maps, and socio-economic and cultural data***

DATA ATTRIBUTES FOR SOCIO-ECONOMIC AND CULTURAL ASPECTS

Objective : to identify biodiversity threats as a result of human impacts on the environment, as well as opportunities for conservation.

- REFERENCE

Cluster or Region
Province
Name of Protected Area/ project site

PHYSICAL DATA

Land Classification
Land/ Water Use Area

- SOCIO-DEMOGRAPHIC DATA

Density and settlement pattern
Migration pattern (direction)
Tenurial status of population
Presence of cultural communities
(name of group, population)
Presence of res. mgmt. plan

- LOCAL ECONOMY
- *Sectoral share in GRDP*
- *Average annual per capita Y*
- *Poverty incidence*
- *Sources of environmental degradation*
- *Tourism trends*

- POLITICAL STABILITY
- *Presence of pol. instability*
- *Source of instability*

- ERM ISSUES (for forest, agriculture, mining, marine/freshwater resources)
- *% of population dependent on resource utilization*
- *Source of environmental degradation*
- *Level of technology/ introduction of exotic species*
- *Conservation practices*
- *Issues*

Next Tasks

Through workshops, data sharing and consultations :

- ***Validation, enrichment and analysis of consolidated data***
- ***Mapping of socio-economic and cultural attributes***

PRISMA PRESENTATION
by Dr. Oliver G. Coroza

PRISMA: A Multi-media Database Publisher

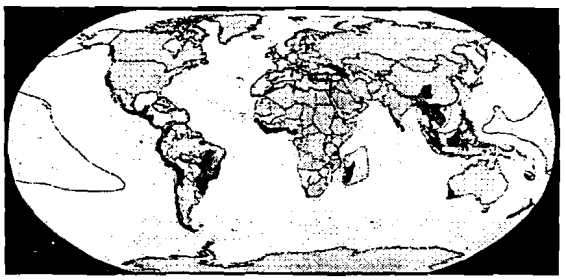
A Tool for Sharing Information

The Earth's natural heritage must be maintained if future generations are to thrive spiritually, culturally, and economically.

We should strive...

... to conserve the Earth's living heritage, our global biodiversity, and to demonstrate that human societies are able to live harmoniously with nature

Biodiversity Hotspots



- Exceptional plant & vertebrate endemism
- High degree of threat

*We should be able to conserve **biodiversity** through...*

- Science & Research
- Policy & Economics
- Healthy Communities
- Alliance Building
- Awareness

Expert Workshop Approach to Setting Conservation Priorities

Bring together the best local and regional experts to set priorities rapidly

- Data: scarce, suspect, or non-existent
- Common resources managed independently with little coordination between countries
- Need for a quick biodiversity assessment to support national planning processes

Conservation Priority-Setting Workshops

Workshop Process

Pre-Workshop

- Planning Meetings
- Data collection & synthesis
- Developing database system
- Thematic assessments
- Regional consultations

Workshop

- Thematic priorities
- Integrated recommendations (regional groups)
- Final conservation priorities, map and database

Post-Workshop

- Reports and publications
- Consolidation, publication and distribution of the information
- Follow-up activities

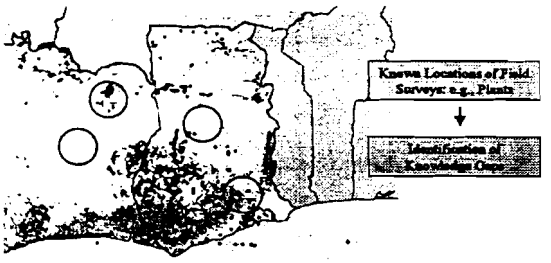
8\15 months → 1 week → 6 months

Data Gathering

Database development (Irian Jaya) ▶

◀ *Validating aerial survey data with local people (Madagascar)*

Mapping the Information



Expert Meeting

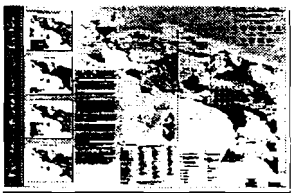
- Transparent
- Participatory

▲ *CPW participants at work (Papua)*

▲ *Panelists leading the Plenary Session portion of the CPW (Papua)*

Mapping the Results

Madagascar ▶

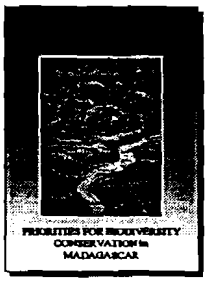


▲ *Papua*

Information Dissemination

Cover of the Primate Report, a publication used to disseminate information from the Madagascar CPW

Cover of the PRISMA CD-ROM database for Madagascar



The Need

- A tool for efficiently organizing all information on a region or project and for making this information available for decision processes

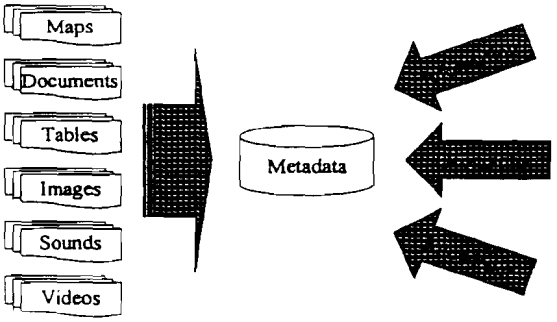
Approach

- PRISMA organizes all documents, maps, images, tables, slides and videos on a project or region in one central database
- Helps document all information objects using a central metadata model

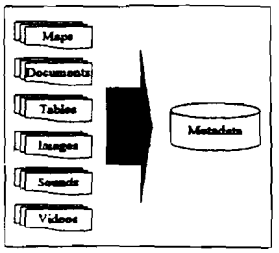
Why?

- Cost: CD-ROMs are inexpensive for publishing large amounts of information (65 pesos per CD)
- Convenience:
  - Easy to use, no special equipment, easily sent by mail
  - Useable in the field, internet connection not required
- Dynamic: Incorporates variety of multi-media to reach a broad audience

PRISMA Architecture



Metadata



By using the metadata concept, each and every data object in PRISMA can be documented accordingly:

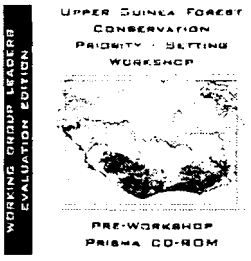
- Description of the data
- Formats
- Quality, state, timeliness
- Origin, method, history
- Ownership, use limits, reference
- Contact person & address

PRISMA's Three Interfaces

- Knowledge
  - HTML driven; supports a variety of audio and video files
- Geographic
  - MapObjects based; user specific projects
- Information
  - Metadata; data gateway

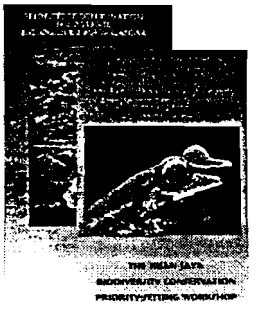
Inside PRISMA...

Facilitates Data Review

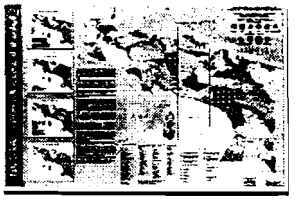


- Facilitates documenting and organizing the process of compiling information
- Use of information by working groups as the process develops

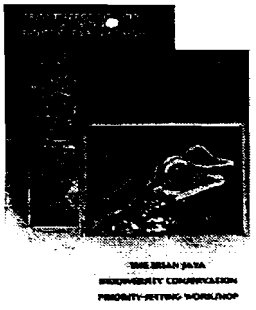
Products of Conservation Priorities



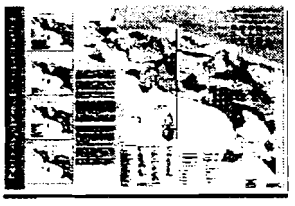
- Make information accessible to the conservation community



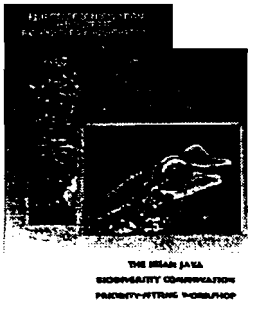
Products of Conservation Priorities



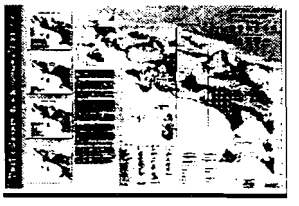
- Facilitate integration of conservation priorities into decision processes



Products of Conservation Priorities



- Encourage a minimum standard for information use / management / quality



Databases and Reports

- Enables exchange information among scientists, institutions and other key government or private sectors
- Allows publication of scientific reports so that users can further analyze the information

Next Steps

- Development of a new version of PRISMA
  - potential integration with web-based applications
  - develop a more user-friendly version
  - improve HTML capability
- Facilitate use of PRISMA by third parties
- Improve integration of PRISMA with other tools

Contact Information

PROTECTED AREAS & WILDLIFE BUREAU
(DENR)
FMB Bldg., Visayas Avenue, Quezon City 1101
(02) 928-2096

CONSERVATION INTERNATIONAL PHILIPPINES
7 Cabanatuan Road, Quezon City 1101
(02) 412-8194
ciphil@csi.com.ph

CENTER FOR DEVELOPMENT STUDIES (UP)
UP Campus, Diliman, Quezon City 1101
(02) 929-3540

ANNEX 11

LETTER TO FR. PETER WALPOLE RE: TRANSMISSION OF DATA TO ESSC

Conservation International Philippines

01 September 2000

Fr. Peter Walpole
Executive Director
Environmental Science for Social Change
Manila Observatory
Ateneo de Manila University

ATTN: LEO URRUTIA

Dear Fr. Peter:

As promised in our special meeting last night I am submitting the pile of data sets so far accumulated by our Priority Setting Worshop staff and working group leaders(see following list) . Please take note that these data come in varying formats, particularly in excel, word documents and arcview maps. The Haribon folder contains maps and pictures that can be opened with an Acrobat software but are generally not in GIS form. Also, our MSI data that I mentioned then, which is not available presently will be submitted to your office once we get it written into CD.

We hope this will give you sufficient materials to be able to cipher the best handling methodology for the data sets. We hope you will have a good and productive time while we will continuously supply you with growing datasets.

Please keep in touch for any problem or question that you may have for us regarding the materials.

Thank you and best regards.

Sincerely yours,

LETICIA E. AFUANG
Program Manager - NBCPSW

received:
1 SEPT 2000

hard copy of letter
delivered 12 Sept 2000

copy of 8 Sept 2000 letter by Cecil Custodio to Peter

NIPAP Materials

Agmbnd: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Cnt, Cnx, Lab,Log, Nrf, Pal, Pat.dbf, Pax,Prf, Prj, Tic.dbf, Tol

Apobnd: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Bnd.inf, Cnt, Cnx, Lab, Log, Nrf, Pal, Pat.dbf, Pax, Prf, Prj, Tic.dbf, Tic.inf, Tol

Aporeef: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Bnd.inf, Cnt, Cnx, Lab, Log, Nrf, Pal, Pat.dbf, Pax, Prf, Prj, Tic.dbf, Tic.inf, Tol

AuroralDP: plants_aiad.xls

Bataanbnd: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Bnd.inf, Cnt, Cnx, Lab, Log, Nrf, Pal, Pat.dbf, Pax, Prf, Prj, Tic.dbf, Tic.inf, Tol

Batanesbnd: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Bnd.inf, Cnt, Cnx, Lab, Msk, Nrf, Nrf, Nrf, Pat.inf, Pat.dbf, Pff, Pfx, Prf, Prj, Tic.dbf, Tic.inf, Tol

Kanlaon Bnd: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Cnt, Cnx, Lab, Log, Nrf, Pal, Pat.dbf, Pax, Prf, Prj, Tic.dbf, Tol

Katis Bnd: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Cnt, Cnx, Lab, Log, Nrf, Pal, Pat.dbf, Pax, Prf, Prj, Tic.dbf, Tol

Mt. Kitanglad Mammals 1999: Mammals of Mt Kitanglad.doc, Mt Kitanglad graphs.xls, Mt Kitanglad paper.doc

Siar Buffer: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Cnt, Cnx, Lab, Log, Nrf, Pal, Pat.dbf, Pax, Prf, Prj, Tic.dbf, Tol

Sierra: Aat.dbf, Arc, Arf, Arx, Bnd.dbf, Cnt, Cnx, Lab, Log, Nrf, Pal, Pat.dbf, Pax, Prf, Prj, Tic.dbf, Tol

CI Encoded

Birdextns Cebu.xls, Blue_Green Algae (Martinez).xls, Casiguran, Dilasag Aurora.xls, endemic mosses.xls, fish.xls, Marine (Campos).xls, marinebiodive Vis_Mind.xls, Phil insectsII.xls, Philippine Orchids.xls, seaweeds (Tronor).xls, vol.13-97FLMAAL.xls

Dipterocarps (Rojo): Diptero.doc, Legumes.doc, Table1.doc, Table10. doc Table 2.doc, Table3.doc, Table4.doc, Table5.doc, Table6.doc, Table7.doc, Table8.doc
Table9.doc

El Nido (LEA): bakawan-Honda Bay.xls, El Nido Wildlife Inventory.doc, PALAWAN FROG.doc, palawan.pfa, SITE-transect.doc, TABLE 1a-Buena Suerte.doc, TABLE 1b-Econ-BSuerte.doc, TABLE 2a-Bulalacao.doc, TABLE 2b-EconBulalacao.doc, TABLE 3a-Manlag-Aberawan.doc, TABLE 3b-EconManlAberawan.doc, TABLE 4-Aberawan.doc, TRANS.DATA ABERAWAN.doc, TRANSECT DATA SHEET.doc, TRANSECT FORM.doc

Enumeration-Merrill: EnumVol2.xls, EnumVol3.xls

Ferns (Amoroso): Aspedia.doc, Cyathea.doc, Dryopte.doc, Lindsae.doc, Polypo.doc, Salvini.doc, Text.doc

Flora_Malesiana: Dipterocarps.xls, FlMalVol 2part1.xls, , FlMalVol 2part2.xls, FlMalVol08(3)Revisions.xls, FlMalVol11(3)1994.xls, FlMalVol12(2)1996.xls, Meliaceae(FloraMalesiana).xls

Haribon: Acrobat, Reader, Index, Rdb, Autorun.inf, Readme.wri

Insects (VCG): calilung, Acarina.xlsv, bees and wasps.doc, Cerambycidae.xls, Coccinellidae.xls, coccoidea.mdb, Curculionidae.xls, db1.mdb, Hemiptera - Odonata.xls, risiocnemis excel.xls, sgr-db.mdb, Trichoptera.xls, uropodids.mdb

ANNEX 12.A

HIGHLIGHTS OF THE WORKSHOP: VERTEBRATES WORKING GROUP

Leaders:	Blas Tabaranza, Jr. (Mammals WGL)
	Neil Aldrin Mallari (Birds WGL)
	Arvin Diesmos (Herps WGL)
Members:	Paciana Acampado
	Zosimo Galecio
	Leonilo Rivera
	Edgar Cañete
	Myrissa Tabao
	Genevieve Gee
	Hector Miranda
Documentor:	Glen Bueser

The accomplishment of the group includes validating additional data on some important IBAs in Mindanao and listing down of the criteria to be used for validation. This list has been picked up from the output in the Visayas, has been defined in a more detailed manner and has been given a system of scoring from low to extremely high (see the presentation).

Issues and Points Raised:

- That funding is included in the criteria on site selection because some agencies are hesitant to take the first risk in sites that have peace and order problems (i.e. there were some cases of rebels and or bandits in Sierra Madre and Mt. Malindang where some equipments were stolen from research teams). When proven to be manageable, some agencies tend to be convinced in pouring additional funds.
- The stability of the population of a target species should be considered so that appropriate intervention measures are implemented in a particular area.
- Small islands with fruit bats and other wildlife forms also deserve attention and shall be raised during the National Workshop.

HIGHLIGHTS OF THE WORKSHOP OUTPUT OF THE VERTEBRATES GROUP
by Prof. Blas A. Tabaranza, Jr.

Herps, Birds and Mammals Working Group
Methodology

- **Map**
- **Agreed to pinpoint localities from where we/members have data to cotribute**
- **Agreed to list a few important species per site**
- **Agreed to submit the relevant reports, publications, or other sources (DENR, PEFI)**
- **Our sites are a combination of IBA sites and new sites**
- 45 + 7 = 52 sites

Area and description	Species found	Disturbance	Reference
1) Dinagat Island • Certain watershed with a small forest fragments	*Crateromys australis*		**DENR – Caraga Pecarries William Oliver**
2) Balatukan mountains • Forested land	*Pithecophaga jefferyi Mimizuku gurneyi, Sus philippensis, Cyanocephalus volans*		**RBI- DENR Reg. 10, E. Cañete per. Comm 2000**
3) Mt. Tago Range • Bukidnon and Agusan Province • Dipterocarp forest	Phil. Eagle, Phil. Hawk Eagle , *Aceros leucocephalus, Buceros hydrocorax, Penelopides affinis, L. goodfellowi, E. coloria, A. bottoni, O. cinerieceps , D. nigrolore, P. discrurus, T. johnstoniae,, Bullimus bagobus, Batomys salamonseni, H. fisheri,*	Upland farming, Hunting, Logging	E. Cañete per. Comm 2000 DENR reg. 10, PEFI June 2000
4) Mt.Sugarloaf • Zamboanga del sur& del norte	IBA PH 109		Haribon – Birdlfe International
5)Sibutu and Tumindao islands • Tawi-tawi	IBA PH 117		Haribon – birdlfe international
6) Mt Apo • Davao City, Davao del Sur and North Cotabato	see info from CPPAP-CPU, PAWB, Haribon-Birdlife (IBA) PEFI		

Criteria definition

Criteria	definition	values
	Lowland montane 1&2	Extremely high
Habitat	Mangrove	Extremely high
	Wetlands	Extremely high
	Mossy	Very high
	Montane	Very high
	Caves	Very high
Endangerment	Critical	Extremely high
	Endangered	Very high
	Vulnerable	High
	Near-threatened	Medium
Endemism	Site restricted	Extremely high
	Is. Endemic	Very high
	Faunal region endemic	High
	National endemic	Medium
	Widespread	Low
Threats	Logging	Extremely high
	Mining	Extremely high
	Land-use conversion	Extremely high
	Kaingin	Very high
	Introduction of alien sp.	Very high
	Hunting & poaching	Very high

Species richness	No. of species	Extremely high
	Population	Very high
	Distribution (elevation/spatial)	High
Intervention	Funding	
	PA status	
	NGO's, PO'S,Agencies	
	Peace &order	
	Political support	
State of information (Gaps knowledge)	• Per taxa	Extremely high
	• Historical,recent,non recent	Very high
	• Fauna,flora,etc.	High
	Poorly known	
	Moderately known	
	Well known	

Working group leaders :

Birds : Aldrin Mallari

Herps : Arvin Diesmos

Mammals : Blas Tabaranza

Working group members :

Paciana Acampado, Zosimo Galecio, Nilo Rivera, Edgar Cañete, My-my Tabao, Genevieve Gee, Glen Bueser, Hector Miranda

ANNEX 12.B

HIGHLIGHTS OF THE WORKSHOP: ARTHROPODS WORKING GROUP

Leader : Dr. Victor Gapud (UPLB)
Members : Gloria Camarao (UPMin)
Myrna Ballentes (CMU)
Alma Mohagan (CMU)
Documentor : Kharina Gatil (PEFI)

With the competent facilitation of Dr. Vic Gapud, the following activities were accomplished:

- Understand that the purpose of the consultation was to identify the areas with high endemicity and develop a set of criteria for evaluating the areas of great importance;

- Review the criteria that have been agreed upon in the Visayas consultation, namely: habitat diversity, degree of threat, species richness, and endemism. It was also pointed out that in insects generally, endemic forms are dependent on habitat. In particular areas, the more diverse the habitat, the highly endemic are the species. Based on this, the main criterion agreed upon is on the level of endemicity.

- Validation of the scientific names of the species and their origin, (i.e. Municipality, barangay, rivers, etc.), starting with Naucoridae followed by Veliidae. The availability of a database facilitated the activity;

- Underscore Mindanao's own set of endemic species (that can never be found in other parts of the world), and also recognizing biotic regions, the six big ones, particularly Luzon, Mindoro, Palawan, Mindanao, Sulu and Negros-Panay.

- Criteria setting for mapping and prioritization for conservation purposes. As agreed upon the criteria are as follows:

    1. Habitat diversity – generally refers to the number of varying habitat types that are included in an area or the possible niches that can be established due to unique environmental conditions

    2. Endemism – in insects, certain groups have relatively high endemism while others, like butterflies have low endemism because they are widespread. However, some subspecies may be confined to one area but the species is distributed all over the Philippines. Dr. Gapud pointed out the Pleistocene concept of Larry Heaney where the lower water level of 120m might have allowed greater land mass expanse and connections thereby facilitating these movements of insects. He therefore advised that widespread groups are hard to manage, but the subspecies can exhibit a certain pattern.

    3. Species diversity – an area that contains a group having several species or has high diversity, is a potential for consideration as a Protected Area. This means that Protected Areas should also be evaluated in their validity as such.

    4. Threats - Relation of threats to insects such as the presence of logging operation, human operation, pesticide used, human settlement, land-use policies, kaingin, and mining operation.

5. State of Information – this refers to species accounting or inventory and information on species locality, and description. For Arthropods, there is scattered information and access to literature. Qualification of information is necessary and historical information should also be fully known.

Questions and points raised during the workshop:

- Gloria Camarao asked about the difference between habitat and diversity as criteria. She contended that these two are the same. Dr. Gapud explained that using forest as an example, in terms of presence of habitat or forest cover, forest would give you very high habitat diversity.

- Similarly, G. Camarao questioned on what uniqueness is. In the ensuing discussions, uniqueness referred to the distribution range of certain species in the habitat. A species is unique if it is confined to one particular area.

HIGHLIGHTS OF THE WORKSHOP OUTPUT OF THE ARTHROPODS WORKING GROUP
by Dr. Victor P. Gapud

ARTHROPOD WORKING GROUP

Mindanao Consultation Participants

Victor P. Gapud, UPLB
Gloria Camarao, UP Mindanao
Myrna Ballentes, CMU
Alma Mohagan, CMU

Documentor: Kharina Gatil, PEFI

SUMMARY REPORT OF ARTHROPOD WORKING GROUP

- Validation of selected database sets for Arthropods
  - Naucoridae (Hemiptera)
  - *Risiocnemis* (Odonata: Platycnemididae)
  - *Rhagovelia* (Hemiptera: Veliidae)
  - Spiders (Arachnida: Araneida)
  - Butterflies (Lepidoptera: Rhopalocera)
  - Hispinae (Coleoptera: Chrysomelidae)
- Criteria for Selection of Groups for Priority Setting
- Assigned tasks:
  - Database for Butterflies - Alma Mohagan
  - Database for Hispinae - Myrna Ballentes
- Distribution Map of Philippine Hispinae (Coleoptera:Chrysomelidae)

CRITERIA FOR SELECTION OF GROUPS FOR PRIORITY SETTING

CRITERIA	DEFINITION	VALUE
1. Habitat Diversity	• Vegetation (rainforest, mangrove, agricultural)	• Extremely high
	• Spatial (lowland, upland)	• Extremely high
	• Resource base (aquatic, terrestrial, aerial)	• Extremely high
2. Endemism	• Site restricted	• Extremely high
	• Island endemic	• Very high
	• Regional	• High
	• National	• Medium

CRITERIA FOR SELECTION OF GROUPS FOR PRIORITY SETTING

3. Species Diversity	• No. of Species	• Extremely high
4. Threats	• Pesticide use	• Extremely high
	• Monoculture	• Extremely high
	• Habitat loss (kaingin, mining, human settlement)	• Extremely high
	• Introduction of Exotic species	• Low
5. State of Information	• Scattered/incomplete information	• Extremely high
	• Access to literature	• Extremely high
	• Lack of research on Arthropod diversity	• Extremely high

PHILIPPINE HISPINAE (COLEOPTERA: CHRYSOMELIDAE)

No. of Genera	25
No. of Species	143
Endemics	123 (86%)
Species Distribution:	
Greater Luzon	64
Mindoro	14
Palawan	11
Negros-Panay	26
Greater Mindanao	91 (31% endemism)
Sulu	3

ANNEX 12.C

HIGHLIGHTS OF THE WORKSHOP: PLANTS WORKING GROUP

Leader : Daniel Lagunzad (UP Diliman)
Members : Edwino Fernando (Makiling Center for Mountain Ecosystems)
Victor Amoroso (CMU, Musuan, Bukidnon)
Anang Gonzales (MSU, General Santos City)
Alice Tabaranza (MSU-IIT, Iligan)
Danilo Botin (USP, Tagum City)
Lilibeth Rufila (CMU, Musuan, Bukidnon)
Lesley Lubos (Liceo de Cagayan University)
Pedro Ylagan (CMU, Musuan, Bukidnon)
Vicente Curtiz (PAWD, DENR Regn XII)
Zosimo Gelacio, Jr. (DENR-CARAGA Regn.)
Documentor : Joy Navarro (RA-Plants, CI Philippines)

The small-group workshop was focused on the following:

- definition of criteria for priority-setting using the recommended criteria form (see Sample Criteria Form.) and the criteria formed from the Visayas Regional Consultation; Results, as tabulated on attachment 1, showed that most of the criteria were given extremely high priorities by the group while Species Richness, Intervention, and Endemism were considered with low priority by some;
- reiteration of the results of the Plants Working Group Meeting on August 4, 2000 at Calamba, Laguna presented by Dr. Edwino Fernando; With the guidelines presented, discussion of the criteria applicable in the study sites of Mindanao was initiated ;
- identification and validation of sites and information sources for the whole Mindanao group of islands; Results were tabulated in attachment 2 and was presented on a map.

ATTACHMENT 1.

Criteria Definition

CRITERIA	DEFINITION	VALUES
Habitat		Extremely high
		Very high
	Mossy	Extremely high
	Montane	Extremely high
	Mangrove	Extremely high
Unexploredness	Area not botanized	Extremely high
	No biological/dendrological studies	Extremely high
	Data wanting	
	Unpublished data	Extremely high
Species Richness		Low
		Extremely high
	No. of species	Extremely high
	Presence of diverse species	Extremely high
Intervention/ Existing Measure of Protection		Low
	Laxity in law enforcement	Extremely high

State of Information	Flora and Fauna poorly known	High Extremely high
Threats	Destruction of habitats/ ecosystem Logging Population pressure Land use conversion Intro. of exotic species Mining Kaingin	Medium Extremely high Extremely high Extremely high Extremely high Extremely high Extremely high Extremely high
Presence of endemics and endangered species	Threatened Localized habitat	Extremely high Extremely high
Endemism		Extremely high High Low
Endangerment	Existence of logging and mining	Very high High Extremely high

ATTACHMENT 2.

Map Results

A. Unbotanized/Unexplored Areas

AREA	**LOCATION**
Lake Lanao Region Mt. Bumbaran	Lanao del Sur Lanao del Norte North Cotabato
Mt. Balatukan Range Mt. Sumagay Mt. Lumot	Misamis Oriental Bukidnon
Saranggani Peninsula Mountain Region Allah Valley Watershed	Sarangani Davao del Sur
Mindanao River Basins	Maguindanao Sultan Kudarat South Cotabato

B. Areas with Some Initial Projects/Studies
- only very limited information available

Mt. Matutum	Sultan Kudarat South Cotabato
Mt. Parker	South Cotabato
Maputi Montane Forest Mt. Hamiguitan	Davao Oriental
Mt. Malambo	Davao Oriental Davao del Norte

Kalatungan Range	Bukidnon
Mt. Hilong-hilong	Surigao del Sur

C. Focus Areas
- area with studies

Mt. Apo	Davao Davao del Sur North Cotabato
Kitanglad Natural Park	Bukidnon
Mt. Malindang	Misamis Occidental

D. Former TLAs
- unbotanized, unexplored; former concession areas

Mt. Pantading Range	Agusan del Sur
Mt. Pintatagan	Davao del Sur

Identification of Mindanao Botanical Study Sites

AREA	**CHARACTERIZATION**
Cabadbaran	– Proclaimed watershed and protected area; DENR Co.; OGDF Surveys, IEP-NFDO; Mt. Hilong-hilong – *Lycopodium* species
Suhotan Cove Natural Park	– Bucas Grande Island; unexplored
Siplas	– Approved PA; *Sararangga*
Mt. Diwata Range	– Proposed PA; DENR-PAWD; CARAGA Region; unexplored - Surigao del Sur – ITTO, SUDECOR; Dr. Fernando, *Nepenthes merrilli, N. truncata, Heterospathe califrons sp.nov.*
Andanan, Wawa	– Proposed PA; DENR NFDO; Dipterocarps
Mt. Magdiwata Watershed Reservation	– approved; 1192 has; DENR Co., PAWD; Watershed; Dipterocarp forest; *Psilotum, Tmesipteris*, Trees
Agusan Marsh	– proclaimed PA
Bislig, Lingig	– proposed PA; PICOP
Mt. Malambo (Salumay)	– 1278 masl; mosses, pteridophytes (with *Tmesipteris*), fungi, trees
Marilog Forest	– lowland dipterocarp; pteridophytes
Pujada Bay	– Protected Seascape and Landscape
Maputi Montane Forest	- USP (University of Southern Philippines) data
Mt. Pintatagan	- Montane Forest; USP; trees
Mt. Matutum	– 2286 masl; pteridophytes, mosses, orchids, palms, trees and fern allies (A. Gonzales)

Sarangani Peninsula	– unexplored; - Allah Valley Watershed – proposed PA
Mt. Apo	– PNOC data; fern allies, lycopodium; 3 endemic species; trees – Buot data
Sarangani	– protected seascape; DENR, MSU (Gonzales)
Mt. Busa/Mt. Parker	
Mindanao River Basin	– unexplored/unbotanized areas - Maguindanao, Sultan Kudarat, South Cotabato
Kabulram Watershed Forest Reserve	
Lake Mainit	– proposed protected area; DENR CARAGA
Mt. Patanding Range	– unexplored site; former TLAs of NALCO, SUDECOR, JCA
Mt. Balatukan Range Mt. Sumagaya Mt. Lumot	- less explored
Kitanglad Natural Park	
Mt. Kinasalapi	– tree inventory; trees and pteridophytes; shrubs, herbs, vines;2,300 masl; V. Amoroso
Mt. Kitanglad	– Pteridophytes (Amoroso); trees (Madulid)
Mt. Apulang	– lichens, trees, mosses, epiphytes (Amoroso); Lycopodium (Amoroso, Rufila)
Inhulos Forest	– trees (Nina Ingle); *Lycopodium* (Amoroso, Rufila)
Mt. Nangkabulos	– near Imbayao; initial data (B. Tabaranza)
Kalatulangan Range	– protected area; mosses,lichen, pteridophytes; 2824 masl
Olangi River	– Baloi, Lanao del Norte; *Isoetes philipinensis* (V. Amoroso)
Mt. Malindang	– in progress (CARE AWESOME, A. Tabaranza), vascular plants; PRA, initial list of trees; *Lycopodium*, endemic (Amoroso, Rufila)
Mt. Bumbaran	– Lanao del Sur; unexplored; unpublished data for *Lycopodium* (Rufila); trees (George Arreza)
Murceilagos Island	– protected landscape and seascape
Mt. Binalabang	– pteridophytes inventory
Siocon Resource Reserve	- protected area
Pasonanca Natural Park	– protected area
Sta. Cruz Island	– protected landscape and seascape; protected area
Basilan Natural Biotic Area	– protected area; unexplored; location data only
Dumaguilas Bay	– protected landscape/seascape
Mt. Kampalili	– data c/o Weidelt and Banaag

HIGHLIGHTS OF THE WORKSHOP OUTPUT OF THE PLANTS WORKING GROUP
by Dr. Daniel A. Lagunzad

Plants Working Group

NBCPSW Mindanao Regional Consultation

(Highlights of the Workshop)

A. Criteria Definition

- Criteria to be used to evaluate which sites should be given priority
- Type of data needed should address the criteria established.
- Are such data available? In what from should these be reported?
- Rating of criteria: individually or using commonality of definitions?

Presentation of discussion on selection of criteria done by Plants Working Group (PWG) during August 4, 2000 meeting

- Dr. Edwino Fernando presented the guidelines agreed upon by the PWG on a national perspective
- Analysis of criteria was based on the concept of **Biogeographic Zones**
- Most researches and inventories in Mindanao undertaken by the participants were on the eastern side of Mindanao.

Definition of Study Areas

Identification of sites:

- protected areas, areas with inventories, unexplored, former TLAs
- data sources, holders
- available data, nature of data
- site characteristics (elevation, area, degree of "unexploredness", presence of threats, etc)

(Map Results presented by Dr. Edwino S. Fernando. See attachment 2.)

Unexploredness as criteria:

Major areas that are unexplored:

1. Mindanao River Basin:
   - Cotabato
   - Maguindanao
   - Sultan Kudarat
2. Lake Lanao Region
3. Saranggani Peninsula Mountain Region

The more information about the area - the greater chance of protecting it

(than highly "threatened" areas)

For CARAGA region, all the criteria can be satisfied

Due to limited resources, sites should be prioritized for conservation

Consideration of areas under the TLA System:

- Lowland Dipterocarp forests are the areas subjected to logging.
- Biodiversity conservation can still be done even in areas outside protected areas
- There are a lot of species that may not be found in proclaimed Protected Areas

Consideration of the success rate of conservation in specific areas; regeneration potential as a criteria for prioritization

For 1900 to 2000, there is remarkable deforestation. Who is the culprit?

- logging concessions
- kaingineros
- timber poaching by individuals

- Stakeholders should sit down with DENR on these matters. Are PAMB measures successful?

B. Validation of Existing Data

Distributed for validation:

- Amoroso, V. and L. Rufila, Endemic Trees Found in Mindanao. Reference: Rojo, 1999. Revised Lexicon of Philippine Trees.
- Ylagan, P., Species Found in Mount Bendum and Pantaron range, Malaybalay, Bukidnon.
- Botin D., Pintatagan Mangrove Flora.
- Amoroso, V., P.M. Zamora and L. Rufila, Status of Lycopodium in the Philippines

Contact Persons for the Submission of Data:

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ciphil@csi.com
Tel.: (02) 412 8194 Tel/Fax: (02) 412 8195

C. Nomination for the National Workshop

Names to be included in the list of nominees:
- Pedro Ylagan, CMU, Musuan, Bukidnon
- Anang Gonzales, MSU, General Santos City

Chosen at most 25 experts rated 1 to 5. Five names for each rate. Plants people are many so we have more advantage of being chosen. Suggestion: Nomination should be collated within the group.

D. Flora of Mindanao Symposium Workshop

The proposed Flora of Mindanao Symposium-Workshop was finalized to be held tentatively on the 24th – 25th of November 2000 in Cagayan De Oro City. Invitation to the group was made for the upcoming gathering that aims to develop initiatives for research, documentation, and conservation of plant biodiversity of Mindanao.

ANNEX 12.D

HIGHLIGHTS OF THE WORKSHOP: MARINE WORKING GROUP

Leader : Dr. Porfirio Aliño
Members: Eduardo Bisquera Jr.,
Mon Romero,
Cleto Nanola,
Gail Olavides,
Reuben Campos
RA/Documentor: Connie Morales

Discussion Highlights:

- Many of the mapping-related information is based on database; ICLARM has a listing of fishbase or fish collections in the Philippines (c/o Emily Capuli) ;
- By taxa: Museum records in the Gregorio T. Velasquez Phycological Herbarium has up to 50,000 and is the largest in Asia; corals – scleratinian corals; Phil. Coral Reef Information Network; sponges and tunicates – to be worked out with National Museum; Anneth Menez – for echinoderms; crustaceans – Jurgenne Primavera ;
- Cleto Nañola will bring a hard disk for the database to be passed on to CI; life form transects; threat maps generated based on modeling done together with WRI; MPA information sets ;
- Celebes sea side – fewer biogeographic zones but are generally large; on the Pacific side – separated in the bifurcation near the Surigao from Eastern Mindanao going down; and the Leyte where Magellan landed ;
- Other biogeographic regions: South China Sea, Sulu Region, Visayas Region cluster, north of Panay area, Sibuyan area; Endemism is relatively low and the trend is consistent in all the taxa; for corals there are 400 spp. ;
- Fish – 2000 spp of fish in the Philippines compared to Guam with only 300. Hawaii has lower. The diversity of fish in the Phil. as associated to other areas in Asia is called the coral triangle; There are isolation mechanisms when headed toward Palawan; Zamboanga is connected to Mindanao ;
- Areas with a lot of endemics are those with few in terms of total species. This is related to endemism to the biogeographical region which is shared with some species of Malaysia, Singapore etc. because of the dispersal ranges of the larvae and the ranges of the moving stocks like tuna; some species are regionally endemic ;
- Fishes found in nooks and crannies were not sampled; fisherfolks were using a lot of destructive techniques ;
- For different affinities, biomass can be estimated at high, medium, and low measurements; There are only some of the listings and some information on the maps; high, medium, and low of measurements; In the Visayas workshop, high score depends on significance of the protected area, the ecological and economic importance of the area, social values, important scientific research area ;

Those who have no claims to land, there is a tendency/potential of resource utilization.

e) Is it wise to invest in areas where there is no political stability?

f) Policy harmonization- conflicts to environmental laws, customary laws, Ips
   - dominant issues is useful for priority setting
   - biodiversity is a local concern so local policy should have primacy

Issues and Points Raised:

- Jurisdiction of LGU & DENR over the management of Pasonanca Wateshed
  - LGU would like full jurisdiction over the management of Pasonanca Watershed
- Granting of ECC,IEAs - for mining, logging etc.
- Effect of political disharmony to biodiversity - rethink policy studies
- Cultural diversity has a positive contribution to biodiversity.

Questions and Comments during the Presentation:

- Aldrin Mallari: When gathering data by each team, do they have standard questionaires? Also, when gathering data, does it include all of Mindanao or in priority areas alone?
- Rowie: A dilemma previously encountered. In fact some of the social scientists as early as January would have preferred the sites to be prioritized first before socio-econ data gathering starts. But we all said this is not how the process works. Priority sites remain unknown. Thus, data gathering is apparently opportunistic (gathering of data that is available). There is a standard data gathering format which includes all the detailed variables for the criteria and this has been disseminated to all WG members. In its infancy, data are obtained from provincial and municipal profiles.

- Aldrin: feared that with this approach, priority areas of other working groups may not be included. Cited their work, where priority sites are identified first prior to data accumulation.
- Rowie: Threats to biodiversity are not going to be defined only by the SE Working Group, but by all the WG Leaders since they are most familiar with the conditions of the ecosystem where their taxa are located. I have respectably said that this kind of discussion must happen with all WG Leaders present. At the moment, with much of data taken from regional and provincial sources according to administrative boundaries, other group's priority sites will in a way be included but estimation procedures may be required to scale down or expand to cover the other thematic group's priority sites. If the site straddles 3 provinces, then the figures applicable to the 3 provinces will be used; if a few municipalities only are going to be covered then we estimate for the scaled down population, but provincial level figures or data will be retained for poverty incidence, per capita income, and the like.

- Aldrin: Sympathizes with their difficulties and hopes for a resolution of this dilemma.
- Blas Tabaranza. Why rename threats to biodiversity as an environmental resource management issue? Environmental resource-implies utility implies resources with utility to man not the biodiversity as a neutral system.
- Rowie. Even population pressure and poverty imply threats to biodiversity. The group used ERM issues only to distinguish these from the other kinds of biodiversity threats. We refer to resource base that can encompass as the habitat or the entire ecosystem, not only the specific resources with utility.

ANNEX 12.D

HIGHLIGHTS OF THE WORKSHOP OUTPUT OF THE MARINE WORKING GROUP
by Mr. Cleto Nañola

MARINE Working Group

Mindanao Area

Facilitator/Leader: Perry Aliño

Members: Eduardo Bisquera Jr.,
Mon Romero,
Cleto Nanola,
Gail Olavides,
Reuben Campos,
Nur Harun,
Edgar Canete

Documentor : Connie Morales

Objectives

- collate all information on marine biodiversity;
- update and validate threats, status of marine biodiversity and management interventions;
- facilitate networking of individuals and institutions working on marine biodiversity

Methodologies

A. Reference Collection/Museum

B. Collation/Validation of existing data

C. Issues/threats Identification

D. Management Interventions

E. Mapping

F. Networking

Methodologies

A. Reference Collection/Museum
- MSU-Tawi-tawi/ General Santos/ Naawan/ IIT/ Sulu
- ZSCMST
- DOSCST
- ADDU
- Xavier University
- National Museum, Fort Pilar

B. Collation/Validation of existing data
- Academic institutions
- NGO's, NGA's, LGU's,
  - = Status on Philippine Reefs (Jan 2000)
  - = Mangrove (Fortes and Primavera)

C. Issues/threats Identification

Threats	Criteria
* blasting	L=1, M=2, H=>3 blast heard/week
* overfishing	H, M, L
* siltation	H, M, L
* pollution	H, M, L
land base - presence of industries	
seabase - shipping lanes, ports	
* poison/cyanide	presence/absence
* coral harvesting	presence/absence
* shore convertion	presence/absence
* agricultural run-off	H, M, L
* tourism	H, M, L
* domestic sewage	H, M, L

C.1. Data on issues/threats identification

Number of municipalities with data collected in this workshop

Region IX
- Zamboanga City (1/1)
- Zamboanga del Norte (2/12)
- Zamboanga del Sur (11/24)
- Basilan (2/7)
- Pagadian City (1/1)

Region X
- CDO
- Gingoog City
- Camiguin (5/5)
- Misamis Occidental (1/14)
- Misamis Oriental (/26)
- Oroquieta City
- Ozamis City
- Tangub City

Region XI
- Davao City (1/1)
- Davao del Norte (0/5)
- Davao Oriental (0/11)
- Davao del Sur (1/_)
- Sarangani (6/6)
- Gen. Santos City (1/1)

C.1 continued

Region XII
- Cotabato City (1/1)
- Iligan City (1/1)
- Lanao del Norte (9/9)
- Sultan Kudarat (3/3)

Region XIII
- Butuan City
- Agusan del Norte (0/10)
- Surigao City
- Surigao del Norte (0/_)
- Surigao del Sur (1/

ARMM
- Lanao del Sur (0/4)
- Maguindanao (4/4)
- Sulu (1/_)
- Tawi-tawi (3/_)

D. Management Interventions

National/Local programs/activities created/organized
- CEP, CB-CRM, FSP, CPPAP, NIPAP
- Bantay Dagat
- Management Board/Council
- Legislation
- CO

MPA's

Significance

Evaluation criteria:
- Monitoring
- Measure of effectiveness
- Restricted activities
- Threats

MPA's Evaluation criteria:

Monitoring
- Human activities
- Fish census/Benthos/Fisheries/Mangroves/Seagrass/Others

Measure of effectiveness
- Impact on env't/socio-economic issues
- Management Plan, Networking
- Degree of stake holder's participation
- Stewardship role of local community
- Evaluation of Management Effort

Restricted activities
- Fishing of any kind/selective fishing gear
- Tourism, Research, Navigation
- Construction/Industrial activity/Agriculture/Logging/Mariculture

Threats
- Overexploitation/Dest. fishing/Mangrove defo/Mariculture
- Coral harvest/Tourism/Agricultural run-off/Domestic Sewage
- Industrial pollution/Oil pollution/Sedimentation/Shore conversion

MPA's recorded for Mindanao in this workshop

(Numbers in parenthesis: existing/proposed)

Region IX
- Basilan (0/1)
- Zamboanga City (1/0)
- Zamboanga del Norte (3/1)
- Zamboanga del Sur (1/3)

Region X
- Gingoog City (1/0)
- Camiguin (1/1)
- Misamis Occidental (3/1)
- Misamis Oriental (5/2)

Region XI
- Sarangani (0/1)

Region XII
- Lanao del Norte (0/1)

Region XIII

ARMM
- Sulu (1/0)
- Tawi-tawi (2/3)

E. Mapping
- By habitat/resources
- taxa
- MPA

F. Networking

Key persons to tap other experts and collate data in Mindanao:
- Region IX - Ed
- Region X - Gail
- Region XI, XIII - Ting
- Region XII - Nur
- ARMM - Mon

Daghang Salamat

(Manuroy na ta sa syudad)

ANNEX 12.E

HIGHLIGHTS OF THE WORKSHOP: FRESHWATER WORKING GROUP

Leader : Ms. Adelina Borja (LLDA)
Members: Ms. Marlynn Mendoza (PAWB)
Mr. Nur Jarun (BFAR Region XII)
Contributors:
Ed Bisguera (DENR Region 9)
Edgar Canete (DENR Region 10)
Zosimo E. Gelacio (CARAGA Region)
Nilo Rivera (DENR Region II)

Documentor: Jayson C. Ibañez (PEFI)

- The workshop started with inquiries addressed to Mr. Jarun of BFAR with regards to the activities of BFAR within the region. Fingerling-dispersal or "seeding"of non-native fishes (e.g. Tilapia, African Hito) in various parts of Mindanao, as a livelihood aid is the major concern of BFAR. Ms. Borja expressed her concern over the effects of such introduction to native species of fishes. Introduced species is known to displace native ones either by feeding upon it or competing for food and other resources. Normally, native species succumb to pressure of introduced species either by becoming rare or extirpated. Ms. Borja reiterated the need for impact assessments prior to "seeding", which apparently is not practiced by BFAR. Mr. Jarun of BFAR accepted the need for such assessments. He also admitted his agency's difficulty in curtailing spread of alien species (African Hito specifically), but also cited economics as a bottomline dilemma. The lucrative business of aquaculture attracted investment by private individuals despite measures to regulate it. Ms. Borja again cautioned that unlike milkfish, tilapia, can propagate quickly on site, thus she suggested that these species must be closely monitored. Later in the discussion, he admitted that his agency is lax concerning release of alien species.

- Mr. Jarun of BFAR told the group of a native species locally named "Pigek"(*Mesopristes cancellatus*) found in Tamuntaka River near Illana Bay of Cotabato City and Maguindanao. This native freshwater fish is considered rare and is known to spawn only at the mouth of Tamuntaka River facing Illana Bay. No fries have been caught during their field works. One threat to this fish is the increasing level of siltation at Tamuntaka River that is alleged to have reached 1.5 meters thick.

- Pangil Bay in Ozamis City is also cited by Mr. Jarun as one important site. He claimed that although marine in character, Pangil Bay is a host to freshwater fishes like sapsap, hito and dalag. He knows 43 species of combined freshwater and marine fishes in the bay. A few of the marine species are Lapu-lapu and snapper.

- Ms. Mendoza of PAWB inquired from Mr. Nur other areas important for BFAR as places of seeding or monitoring of introduced fishes/aquaculture. Agusan Marsh, Liguasan Marsh, and Bulusan Lake are areas regularly visited. BFAR's "seeding" occurs every month with about 10,000 fingerlings (Tilapia, Dalag, etc.) for each seeding. It was learned that monitoring of recovery is seldom, and occurs only when reports of capture (of released fishes) are received. Besides impact assessments, the absence of standardized monitoring scheme is one aspect of the "seeding" project that needs improvement.

- BFAR mandate was also clarified. Apparently, research is not one of its current mandate but the agency wants to incorporate it in their work. Organizational structuring of BFAR was also tackled. As an agency formerly under the Department of Agriculture(DA), BFAR currently enjoys an independent status although plans are underway to place it once more under the umbrella of DA.

- To facilitate data encoding and analysis, a matrix that highlighted what is currently known of freshwater bodies in Mindanao was developed. The goal of this matrix was to identify major river basins, lakes, and swamps in Mindanao, and write presence or absence of data on major taxa associated with the lake (or river, marsh) in question. Being poorly known, any available information, even mere mention of new lakes not previously recorded, are important for the endeavor. Data sources include published and unpublished reports of concerned agencies (Asian Wetland Bureau, DENR, BFAR, NGO's), and personal accounts of field workers or researchers in Mindanao.

- The role of local government units in protecting freshwater habitats and the environment in general was also discussed. A consensus was reached that LGU's, should provide guidelines on the use of municipal freshwaters for aquaculture. Besides maintaining occupancy at levels allowed only by law, specifically RA 8550 (Fisheries Code) - e.g. 10 percent of the total surface area of the lake-designated aquaculture sites should be designed and planned prior to operation and undertaken in a manner that would not jeopardize inherent biological processes.

- The group examined priorities formulated during the Visayas conference and did some clarifications and revisions on a few important points. One aspect clarified is the use of the terms keystone species and indicator species. Ms. Mendoza defined a keystone species as that species whose demise or loss would result to successive loss or demise of other organisms dependent on that keystone species for food or shelter leading eventually to a collapse of a biological system (e.g. Food chain). Indicator species, however, are those that provide a general status of a specific habitat (e.g., disturbed vs. pristine habitats). Keystone species may be indicator species, but indicator species may not necessarily be keystones.

- The question of how rare is "rare" was also addressed. Ms. Mendoza explained that some organisms are naturally rare, that is, they exist in very low population densities that the probability of finding one is low. Other formerly wide ranging and highly dense species, however, became rare primarily as an effect of exploitation. A working definition for rarity specifically for fishes remains wanting.

- The level of threat to the alleged rare Pigek was also assessed. The extent of effects of heavy siltation of Tamontaka River to a bottom feeder species like Pigek is unknown. It was asked whether loss of the Pigek would cause a major disturbance in the Tamontaka river system. Ms. Mendoza hinted that other organisms may adapt. But the participants are unsure. Thus, the need for research was reiterated, especially on the species' biology and ecological significance.

- Difficulties in identifying fish species in the field are one problem faced by workers. General or vernacular names are commonly used, thus not scientifically accurate. The great need for a taxonomic study that would be a basis for a published field guide on fishes is thus emphasized.

- Based on discussions with references to the matrix and experiences shared by the participants, the following criteria for priorities were set:

    - habitat

- ecological diversity
- endemicity
- presence of endangered species/ rare
- Rarity: rare by exploitation, naturally rare.
- Levels of threat:
    - Introduction of exotic species.
        - Siltation
        - Pollution: Industrial, agri., domestic
        - Destructive fishing fine mesh nets, active fishing gear.
- Intervention: funding agency , repsence, political intervention
- information needs
    - bio./ecological importance
    - survey and proper identification of species

Presentation of Workshop Results

- The absence of Lake Venado in Mount Apo was raised. This should be included in the list.
- Carlo Custodio on the working definition of lakes, cautioned that ponds might have been included as lakes. There is still a need for a working definition of lakes.
- Carlo Custodio on Lake Mainit marsh, contended that shallow portions of a lake are not a marsh.
- Zosimo Gelacio: These lake extensions must be considered a marsh because of vegetation differences between the two. The issue was not resolved and must be verified. Mr. Gelacio requested to do the validation.

HIGHLIGHTS OF THE WORKSHOP OUTPUT OF THE FRESHWATER WORKING GROUP
by Ms. Adelina C. Santos-Borja

Freshwater Working Group

- Workshop Participants
  - Lennie - WGL
  - Marlynn - PAWB
  - Nur - BFAR
- Contributors
  - Ed Bisguera, DENR Region 9
  - Edgar Canete, DENR Region 10
  - Zosimo Gelacio Jr., DENR CARAGA Region
  - Nilo Rivera, DENR Region II
- Data Documentor
  - Jayson Ibanez
- Composer/Arranger
  - Oliver Coroza

Criteria for Priority Setting

- Habitat
- Ecological Diversity
- Endemism
- Presence of endangered and rare species
  - Rarity:
    - Rare by exploitation
    - Naturally rare

Criteria for Priority Setting

- Level of Threats
  - Introduction of exotic species
  - Siltation
  - Pollution
    - Industrial
    - Agricultural
    - Domestic
  - Destructive fishing

Criteria for Priority Setting

- **Intervention**
- **State of Information**
  - **Information needs**
    - **Bio./ecological importance**
    - **Survey and proper identification of species**
- **Socio-economic dimensions**

List additional experts

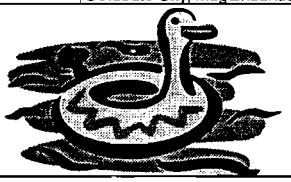
Prof. Pedro Escudero
Dean, College of Fisheries
MSU. Marawi City

Prof. Dante Reazo
MSU, Gen. Santos City

Thank you!

List of River Basins in Mindanao

	Name	Coordinates	Province	AVAILABLE INFORMATION				
				Phyto	Zoo	Mollusc	Crustace	Fish
1	AGUS	07deg.38min.-08deg.13min.N	Lanao del Sur, Lanao del Norte					x
		124deg.03min.-124deg.37min.N						
2	AGUSAN	07deg.10min.-09deg.10minN	Agusan Provinces, Davao Provinces	x		x		x
		125deg.10min-126deg.20minE						
3	BUAYAN-MALUN	06deg.05min-06deg.32min.N	South Cotabato, Davao del Sur					
		125deg.05min.-125deg.33min.E						
4	CAGAYAN	08deg.00min.-08deg.30min.N	Bukidnon, Misamis Oriental					
		124deg.50min.E						
5	DAVAO	07deg.05min.-07deg.45min.N	Davao del Norte, Bukidnon, North Cotabato, Davao City					
		125deg.10min.-125deg.40min.E						
6	MINDANAO	06deg.00min.-08deg.40min.N	Cotabato Province, Bukidnon					x
		124deg.30min.-125deg.50min.E						
7	TAGOLOAN	08deg.05min.-08deg.40min.N	Misamis Oriental, Bukidnon					
		125deg.15min.						
8	TAGUM-LIBOGAN	07deg.20min.-08deg.00min.N	Davao del Norte, Agusan del Sur	x	x			
		126deg.00min.E						
9	BISLIG	no data	Bislig, Surigao del Sur					
10	TAGOLOAN	no data	Bukidnon					
11	CABADBARAN	no data	Agusan del Norte					
12	TAGUIBO	no data	Davao Provinces					
13	TAGO/TANDAG	no data	Tago, Tandag, Surigao del Sur					
14	TAG-UIBO	no data	Agusan del Norte					
15	TAMONTAKA	no data	Cotabato City, Maguindanao					x



List of Marshes/Swamps in Mindanao

	Name	Coordinates	Location	Province
1	AGUSAN	08deg.00min.-08deg.19min.N		Agusan del Sur
		125deg.52min.-126deg.02min.E		
2	BONIFACIO		Baybay, Linconanan, & Migpangi, Bonifacio	Misamis Occidental
3	LIGUASAN	06deg.35min.-07deg.15min.N	Pikit, Pagalungan, Kabacan, Matalam,SK Pandatum	Maguindanao
		124deg.17min.-124deg.52min.E		
4	TIG-ASON		Forchacu 4, Dominorog, Talakag	Bukidnon
5	DONA JOSEFINA	07deg.45min.-07deg.46min.E	Brgy. Dona Josefina, Ipil	Zamboanga del Sur
		122DEG.29MIN.-122deg.30min.E		
6	LAKEMAINIT MARSH	no data		Agusan del Norte
7	TALOOGAN LAKE	no data	Taloogan	Agusan del Sur
8	LAKE DINAGAT	no data	Loreto	Agusan del Sur
9	TAGUGPO	no data		Davao Oriental
10	SUMLOG	no data		Davao Oriental

	Name	AVAILABLE INFORMATION			
		Phyto	Zoo	Molluscs	Fish
1	AGUSAN	x			
2	BONIFACIO				
3	LIGUASAN	x	x		x
4	TIG-ASON	x	x	x	x
5	DONA JOSEFINA	x	x		
6	LAKEMAINIT MARSH				
7	TALOOGAN LAKE				
8	LAKE DINAGAT				
9	TAGUGPO				
10	SUMLOG				

List of Lakes in Mindanao

23	*NAPALIT*	*07deg.52min.N,124deg.47min.E*	*Brgy. Pigtauran/Pangantucan, Bukidnon*	x					
24	PAGUSI	09deg.18min.N,125deg.33min.E	Agusan del Norte						
25	PENDO	08deg.07min.N,120deg.32min.E	Lanao del Norte						
26	PAGUSI	09deg.18min.N,125deg.33min.E							
27	PANIMALOY	7deg. 40min.N, 125degE	Bukidnon	x			x	x	
28	PULANGI		Bukidnon	x			x	x	
29	PUTIAN/PITIAN		Lanao del Sur						
30	SAPA	07deg.00min.N,118deg.29min.E	Sulu						
31	SEBU	6deg. 14min.N, 124deg.42minE	South Cotabato	x	x	x	x	x	
32	SIET	05deg59min.N,121deg.12min.E	Sulu						
33	SINGUAN	06deg.58min.N, 118de+C26g.29mi	Sulu						
34	*SONGGOD*	*07deg.48min.N,123deg.56min.E*	*Nanungan, Lanao del Norte*						
35	SULTAN	06deg.13min.N,124deg.48min.E	South Cotabato						
36	TICGON	08deg.17min.N,125deg.54min.E	Agusan del Sur						
37	BANTAAWAN		Balatucan Range, Misamis Or.						
38	LAKE DUMINAGAT		Misamis Occ.	with reported endemic and introduced					
39	LAKE PONEAS		Poneas Is., Surigao del Norte						
40	LAKE VENADO		Mt. Apo, Davao del Sur						

List of Lakes in Mindanao (cont'd...)

	Name	Coordinates	Province	AVAILABLE INFORMATION				
				Phyto	Zoo	Mollusc	Crustaceans	Fish
19	*MALAIG*	*07deg.47min.N,123deg.56min.E*	*Nanungan, Lanao del Norte*	x	x		x	x
20	*MARAGANG*	*07deg.48min.N,123deg.16min.E*	*Tigbaw, Zamboanga del Sur*	x	x			
21	*NANUNGAN/NANUNGU*	*07deg.48min.N,123deg56min.E*	*Nanungan, Lanao del Norte*	x	x		x	x
22	*NAPALIT*	*07deg.52min.N,124deg.47min.E*	*Brgy. Pigtauran/Pangantucan, Bukidnon*	x				
23	PAGUSI	09deg.18min.N,125deg.33min.E	Agusan del Norte					
24	PENDO	08deg.07min.N,120deg.32min.E	Lanao del Norte					
25	PAGUSI	09deg.18min.N,125deg.33min.E						
25	PANIMALOY	7deg. 40min.N, 125degE	Bukidnon	x			x	x
27	PULANGI		Bukidnon	x			x	x
28	PUTIAN/PITIAN		Lanao del Sur					
29	SAPA	07deg.00min.N,118deg.29min.E	Sulu					
30	SEBU	6deg. 14min.N, 124deg.42minE	South Cotabato	x	x	x	x	x
31	SIET	05deg59min.N,121deg.12min.E	Sulu					
32	SINGUAN	06deg.58min.N, 118de+C26g.29mi	Sulu					
33	*SONGGOD*	*07deg.48min.N,123deg.56min.E*	*Nanungan, Lanao del Norte*					
34	SULTAN	06deg.13min.N,124deg.48min.E	South Cotabato					
35	TICGON	08deg.17min.N,125deg.54min.E	Agusan del Sur					
36	BANTAAWAN		Balatucan Range, Misamis Or.					
37	LAKE DUMINAGAT		Misamis Occ.	with reported endemic and introduced				

ANNEX 12.F

HIGHLIGHTS OF THE WORKSHOP: SOCIO-ECON WORKING GROUP

Leader : Dr. Rowena Boquiren
Members : Dr. Heidi Gloria
Butch Dagondon
Severino Ambag
Jean Caleda
Crisaldo Macias
Documentor : Gliceria Ibañez

Discussion Highlights:

- Focus for prioritizing should not only be on threats. Initiatives of LGUs must be reflected. In the priority setting, highlight should not be only on threatened sites highlighted but also on areas with successful efforts based on local initiatives as biodiversity stronghold areas.

- Include policy environment/harmonization as one of the variables for the criteria of Priority setting.

- In the map:
  - not only threats but also potentials should be shown
  - include trends in industries
  - sites where CADC's has been granted
  - identify locations of manobos, mansakas, etc.
  - percent to population (provincial population)
  - tentative proposed area (get data from the region the list of all proposed & proclaimed PAs) or approved proclaimed area

- Regarding the operationalization of the criteria

  a) There is a need to settle if each variable should have a weight or should standards be set. There are standards depending on the habitat and there are relative values.

  Perception - recommended to be site specific: perceive density, trends of migration; site where info is available (e.g. population)

  The best way to determine the ideal ratio of population to resource base is to explore indices used by environmental resource accounting experts

  b) Consensus – National average is arbitrary and would not reflect potential threats.

  To manage quality of data available, use data according to meaningful parameters in the area like associating migration, and land use etc.

  c) Practices are crucial to mitigate significant threats to biodiversity.

  d) Tenurial issues – CARP, Ancestral Domain etc. How many have no formal claims to land?

- If people know the effective levels of management, like networking, management group, monitoring and evaluation being done, type of regulations being done regulation of particular threats eg. destructive fishing, additional considerations shall be done ;
- In October, to complement with the International Coral Reef Symposium there shall be a more detailed presentation in the Luzon workshop.

Points Raised during the Presentation

- Data on threats and issues is being done by MSI. This however, does not represent all areas but is particular on MPAs.
- Dr. Aliño's project (Reefs at Risk) is already in the evaluation period. Data from this will also be used for CPSW.
- During the workshop the members were able to add data but not well represented; The hope was to include data on municipalities
- Not only MPAs was covered by the evaluation of the WG for CPSW but all areas.
- There was a problem on getting coordinates for the marine areas. Most of the 270,000 hectares of Protected Areas and 15 km municipal water from Siargao-Bucas Is. includes land, so plotting is difficult.
- For community PAs in general and marine sanctuary including the barangay levels, Haribon Foundation may be contacted. This group also works on MPAs in the Philippines
- Reefbase, fishbase and BFAR data are now available references.
- University of Southern Philippines will also be tapped.

HIGHLIGHTS OF THE WORKSHOP OUTPUT OF THE SOCIO-ECONOMIC AND CULTURAL WORKING GROUP
by Dr. Rowena R. Boquiren

WORKSHOP FOR SOCIO-ECONOMIC AND CULTURAL WORKING GROUP

Leader: Dr. Rowena Boquiren

Members: Dr. Heidi Gloria, Butch Dagondon, Severino Ambag, Jean Caleda, and Crisaldo Macias

SUMMARY

1 The group reviewed maps available and gaps were identified.

To address the identified gaps, more data will be collected from Regional DENR and other agencies. Also, it was agreed that proposed/proclaimed PAs, awarded and not awarded CADC areas will be disaggregated. Development trends, planned and unplanned will be added to the base map and then socio-economic data will be overlaid.

2. The group reviewed data attributes.

- Rename "threats to biodiversity" to ERM issues
- add cultural diversity to the criteria for priority setting

- continuing of customary practices, laws,instruction, and customary agreements

- include policy harmonization
- exhaust all possibilities to operationalize the variable under population pressure: not use national average since it will not capture the local situation

3. Identified local data providers

4. Suggested that corrections be made on the list of protected areas

a. Are we limiting ourselves to those proclaimed Protected Areas? Or include municipal initiatives? (Local initiatives are not reflected in the map)

LGUs have the data but data gathering is only being done at the regional and provincial level

We would like to cite that there are important local initiatives but there are limitations in data gathering

bb. If possible areas not yet identified as proposed watersheds for protection be mapped out

5. Suggestions to fast track existing data consolidation

Data to be collected from/followed up with :

- Municipal (marines) Proctected Areas - c/o Perry Aliño
- Profiles of upland communities - Green Mindanao and PIPOLI
- LGSP - FPE
- Community-based projects - DENR
- Proposed PAs, profiles, forest occupants survey: PAWB, all regions,
- GEM - PEFI

Data to be collected from/followed up:

- Louis Berger I.I
- Dr. Heidi Gloria - UP Min
- Dr. Linda Burton -Xavier University
- AFRIM
- Southern Mindanao Development Cooperative

Some data sets came in:study reports & maps, Region IX, Development Plan, Region XIII; study reports, Region XII, SOCSARGEN

Criteria for Priority Setting:

• Population Pressure	Density	1 significantly higher 2 slightly higher 3 close to 4 slightly lower 5 significantly lower
	Migration	1 high net in migration 2 moderate net in-migration 3 stable out-in migration 4 moderate net-out migration 5 high net out-migration
	Settlement pattern	

Cultural diversity
intact culture - alienation of land rights
- tradition, customary laws,practices,agreements, instruction/tradition
- preservation of language

1 assimilated
2 less intact
3 relatively intact

• Poverty	Per capita Y relative to the national average	1 < 2 close to 3 >
	Poverty incidence	1< 2 close to 3>
	Tenurial issues	1 Severe 2 Less severe 3 Negligible

• ERM issues	Impact of population using resource	1 Significant Impact (Historical,sustained) 2 Moderate 3 Negligible
	Economic trend in land use	1 Severe 2 Less severe 3 Negligible
	NRM Practices	1 Severe 2 Less severe 3 Negligible

• Threats to political Stability	Presence of political. instability Source of instability
• Policy environment/ harmonization	Enumerate issues, initiatives

ANNEX 13

Minutes of the WGL and CONVENORS' MEETING
31 August 2000, Malagos Garden Resort, Davao City

Attendance:

1.	Letty Afuang	(CI Phil-UPLB)	PM-NBCPSW
2.	Carlo Custodio	(PAWB)	PM-NBCPSW
3.	Oliver Coroza	(CI-Phil)	Info Manager
4.	Marlynn Mendoza	(PAWB)	Convenor's team
5.	Norma Molinyawe	(PAWB)	Convenor's team
6.	Janet Garcia	(PAWB)	Convenor's team
7.	Rowie Boquiren	(UPCB)	WGL Socio-Econ
8.	Lenie Borja	(LLDA)	WGL Freshwater
9.	Vic Gapud	(UPLB)	WGL Arthropods
10.	Aldrin Mallari	(Haribon)	WGL Birds
11.	Blas Tabaranza	(Birdlife)	WGL Mammals
12.	Arvin Diesmos	(DLSU)	WGL Herps
13.	Perry Alino	(UP-MSI)	WGL Marine
14.	Dan Lagunzad	(UP Diliman)	WGL Plants
15.	Leo Urrutia	(ESSC)	Manager-Mapping
16.	Vic Amoroso	(CMU)	Regional Coordinator
17.	Nancy Ibuna	(CI-Phil)	Recording staff

Discussion:

1. Additional fund support for selected Working Groups (i.e. Plants, Arthropods, Socio-econ, Marine)
   - initial liquidation of expenses incurred from the first release of funds (P 75, 000) is needed before additional support is released

2. Consensus on the Palawan Consultation from NBCPSW
   - Letty: A consensus is needed on the considerations for the Palawan Regional Consultation.
     Status:
     (a) Budget is P100,000;
     (b) scheduled on October;
     (c) there are 20 people in the working team
     (d) the choice is to bring the 20 members of the working team to Palawan or bring the Palawan experts to the Luzon Consultation
   - # of "Palawan experts" is not that high as compared to the other regions
   - Aldrin: not practical/cost-effective but considerations should not be based on the "regional concept" but based on the number of experts in Palawan which is relatively few
   - much practical to incorporate Palawan Consultation in Luzon
   - add extra day to Luzon Consultation if Palawan is to be incorporated
   - Letty: We plan details of the Luzon Consultation and decide if we need additional day for the Workshop

- Vic G.: considering the PR problem in Palawan, it might be advisable to add an extra day in the Luzon Consultation to accommodate Palawan people
- Carlo: PR problem can be solved by some other means. Holding the Palawan Consultation will only propagate the "Imperial Palawan Mentality"

3. Luzon Consultation
   - Original schedule of Sept. 22-24 is too close to the Mindanao Consultation
   - Suggestion to move it one week later – September 27-29, 2000

4. NBCPSW Pre-National Workshop & Pre-Luzon Consultation
   - To be attended by the WGLs, RCs, ESSC and NBCPSW Staff to assess available resources and plan strategies for the National Workshop
   - pre-Luzon Consultation: to strategize given the high probability that this would be the largest and most complicated group
   - Carlo: Pre-Luzon and Pre-National Workshop to be incorporated
   - One day is not enough for both – separate workshops are needed
   - Regional Coordinators to join the WGLs in the Pre-National Workshop
   - Pre-Luzon Workshop: September 20 – MCME c/o Dr. Fernando w/ receipt
   - Luzon Consultation: September 27-29 – Punta Baluarte
   - Pre-National Workshop: October 12
     - Century Imperial Palace Suites
     - Richmond Hotel
     - Galleria Suites
     - Sulu Hotel
- Overnight accommodation for those coming from Visayas, Mindanao and Baguio

5. WGLs to give map requests to ESSC as well as give comments on available maps
- Perry A. : land use
- Rowie: pop'n densities
- Vic G. Municipality (point data)
- Marine grp. 1) Mangrove (a) rehabilitation; (b) stewardship agreements; 2)reforestation – to be searched by Carlo
- Visayas report: WGLs and RCs to give comments and suggestions for review of the proceedings as final report did not give a consolidation of the output of the said RC

6. Luzon Consultation participants
- WGLs to prioritize list and provide necessary additions
- Suggestion to include people working in key areas i.e. Sierra Madre, Banahaw, Mindoro, Palawan, Southern Luzon

PROTECTED AREAS OF THE MINDANAO ISLANDS
by Norma Molinyawe

NATIONAL BIODIVERSITY PRIORITY-SETTING WORKSHOP
Mindanao Consultative Meeting
August 30 - September 1, 2000

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)
Regions 9, 10, 11, 12, 13

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 9

- 11 areas proclaimed under NIPAS; 3 sites still to be proclaimed
- total area of proclaimed PAs: 304,881 has. (includes waters surrounding Turtle Islands totaling to 242,609 has.);

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 9 *(...con't.)*

- Vegetation: Mostly dipterocarp species in watershed areas; *bakauan spp.* in mangrove areas; and seagrasses
- Fauna: hornbill, serpent eagle, brahminy kite, green parrot, oriole, kingfishers, frigate birds; wild pigs, Phil. Monkey, fruit bats, tarsier; marine turtles (hawksbill, green sea, leatherback); monitor lizards and phytons

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NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 9 *(...con't.)*

List of Proclaimed Pas

Jose Rizal Park Memorial PL - Dapitan, Zamboanga City
Basilan PLS - Lamitan, Sumisip, Tipo Tipo and Isabela, Basilan
Sta. Cruz Island PLS - Zamboanga City, Zamboanga del Sur
Pasonanca Natural Park - Pasonanca, Zamboanga City
Buug Natural Biotic Area - Buug, Zamboanga del Sur
Siocon Resource Reserve - Siocon, Zamboanga del Norte
Turtle Islands Wildlife Sanctuary - Turtle Island, Tawi-tawi
Aleguay PLS - Dapitan City, Zamboanga del Norte
Salinog PLS - Dapitan City, Zamboanga del Norte
Murcielagos PLS - Labason, Zamboanga del Norte
Dumanquilas PLS - Malangas, Buug, Kumalarang, Lapuyan, Margosatubig, and V. Sagun, Zamboanga del Sur

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NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 10

- 16 sites proposed as protected areas covering total of approximately 242,504 hectares
- 2 sites proclaimed under NIPAS -
  Mt. Kitangiad NP - 29,716 has
  Mimbilisan PL - 66 has

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 10 *(...con't.)*

- Vegetation: covers old growth forests; dominated dipterocarp spp.
- Fauna: Phil deer, tarsier, civet cat, Phil monkey, wild pigs, flying lemur; Phil eagle, rufous hornbill, grass owl, brahminy kite, serpent eagle, hawk eagle, Phil trogon, Phil falconet; monitor lizard, geikos, phytons; marine turtles;

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 10 *(...cont.)*

Proposed PAs under NIPAS:

Initao-Libertad PL - Initao, Misamis Oriental
Mt. Malindang NP - Misamis Occidental
Mt. Kimangkil NP - Impasug-ong and Manolo Fortich, Bukidnon
Mt. Tago NP - Impasug-ong, Bukidnon
Mt. Balatukan NP - Gingoog City and Balingoan, Misamis Or
Balingoan-Talisayan PLS - Lapinig, Mantagali, Balingoan
Luyong Baybayon, Mintabon, and Talisayon, Misamis Or
Mt. Tipoong Hibok-hibok NM - Camiguin
Mt. Kalatungan NP - Bukidnon
Mt. Lumot NP - Claveria and Gingoog City, Misamis Or
Impakutao NM - Impakutao, Impasug-ong, Bukidnon

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 10 *(...cont.)*

Proposed Protected Areas under NIPAS:

Batinay PL - Tagpangi, Cagayan de Oro
Mantigue PLS - Mahinog, Camiguin
Mahuganao PL - Malasag, Cugman and F. S. Catanico, Cagayan de Oro
Mt. Tangkulang NP - Quezon, Valencia and San Fernando, Bukidnon
Mindulian NP - Mindulian, Bakid-bakid, Gingoog, Misamis Oriental

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 11

- **7 areas proclaimed under NIPAS; totaling to approximately 317,557 hectares**

Mt. Apo Natural Park - Davao City, Bansalan, Digos, Sta. Cruz, Davao del Sur; Makilala, Kidapawan, Magpet, N. Cotabato
Mainit Hotspring PL - Compostela, Davao
Mabini PLS - Mun. of Mabini, Davao del Norte
Baganga PL - Mun. of Baganga, Davao Oriental
Pujada Bay PLS - Mati, Davao Oriental
Saranggani Bay PS - Davao del Sur and Davao City

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 11 *(...cont.)*

- **7 sites proposed as protected areas under NIPAS covering a total of approximately 34,482 has**

Malagos PL - Brgy. Malagos, District of Baguio, Davao City
Mati PL - Sitio Sudion and Ugilan
Samal PLS - Babak, Davao del Norte
Lake Leonard PL - New Leyte, Maco, Davao del Norte
Aliwagwag Falls - Mun. of Compostela Comval Province and Boston and Cateel, Davao Oriental
Mt. Haguimitan Range WS - Mun. of Gov. Generoso, San Isidro and Mati, Davao
San Isidro PLS - Mun. of San Isidro, Davao Oriental

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 11 *(...cont.)*

- **Vegetation: most areas dominated by dipterocarp species; bakauan spp, tongog, langarai, tabigi species in mangrove areas**
- **Fauna: Phil. Eagle, serpent eagle, rufous hornbill, coletos, Phil. Glossy starling, Phil. Falconet, Mindanao lorikeet, black naped oriole; flying lemur, Phil monkey, tarsier, Phil. deer**

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 12

- **Proclaimed PA under NIPAS - Mt. Matutum PL covering an area of 15,600 has.**
- **Total area of proposed PAs: 139,710.37 has.**

Lake Buluan NBA - Lutayan, Sultan Kudarat, Brgy. Malabon, Buluan, Maguindanao
Allah Valley PL - Mun. of Surallah, Lake Sebu and T'boli, So. Cotabato and Bagumbayan, Sultan Kudarat
Libungan-Alamada NBA - Mun. of Libungan and Alamada, Cotabato
Mt. Sinaka Wildlife Sanctuary - Arakan, Cotabato

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 12 *(...con't.)*

- **Vegetation: mostly dominated by dipterocarp species**
- **Fauna: waterfowl species Phil. eagle, rufous hornbills, Phil. Hanging parakeets, bleeding heart pigeon, green imperial pigeon; Phil. Monkeys, wild pigs, Phil deer, pygmy squirrels, flying lemurs; monitor lizards, reticulated pythons**

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 13

- **2 sites proclaimed under NIPAS**
  - **Siargao Island PLS - 67,726 has. (land) and 211,188 has. (water) Proc. 902, 10/96**
  - **Agusan Marsh WS - 14,835 has. (Proc. 913, 10/96)**
- **14 proposed areas totaling approximately 232,807.45 has.**

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 13 *(...con't.)*

- **Vegetation: 45-60% of area is mostly residual and second growth forest with dipterocarp species; remaining areas are grassland/ brushland, cultivated areas, contract refo areas**
- **Fauna: Phil. Eagle, blue-naped parrot, swiftlets, hornbills, grass owl; flying lemur, bats, Phil palm civets; Phil cobra, reticulated pythons; marine turtles**

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 13 *(...con't.)*

Proposed PAs:

- **Andarun River NP - Sibangan and Bayugan, Agusan del Sur**
- **Cabadbaran-Santiago NP - Cabadbaran, Santiago, Agusan del Sur**
- **Mahaba Island PLS - Hinatuan, Surigao del Sur**
- **Lingig PL - Bislig, Lingig, Surigao del Sur**
- **General Island PL**
- **Mangcangi PLS - Tandag, Surigao del Sur**
- **Britanica-Gata PLS - Lianga Bay, San Agustin, Surigao del Sur**
- **Adlay PL - Carascal, Surigao del Sur**
- **Tago River PL - Tago, Surigao del Sur**

NATIONAL INTEGRATED PROTECTED AREAS SYSTEM (NIPAS)

Region 13

- **Proposed PAs:** *(...con't.)*
  - **Libugan-Almada PL - Pigcawayan, Cotabato**
  - **Mt. Magdiwata WR _ San Francisco, Agusan del Sur**
  - **Lumaban-Balibayon Resource Reserve - Lumaban and Balibayon, Rizal, Surigao City, Surigao del Norte**
  - **Lake Mainit Wildlife Sanctuary - Jabonga, Kitcharao, Alegria, Mainit, Agusan del Norte**
  - **Surigao WFR - Parang-parang, Mabini and Matl, Surigao City, Sison, Mailmono, San Francisco, Agusan del Norte**

PROTECTED AREAS AND WILDLIFE BUREAU

Thank You and Good Day!!!

ANNEX 24

EVALUATION RESULTS

NATIONAL BIODIVERSITY CONSERVATION PRIORITY-SETTING WORKSHOP
Regional Consultation for Mindanao
Malagos Garden Resort, Davao City
August 30 - September 1, 2000

E V A L U A TI O N (scale of 1 to 5, 5 being the highest)

1. The NBCPSW process was well explained.	4.5
2. In general, the regional consultation objectives (as indicated in the program) were successfully met.	
Objective #1	4.3
Objective #2	4.3
3. The workshops in my working group	
a. had sufficient time for discussions (relative to the objective and schedule)	4.1
b. were well-facilitated	4.0
c. enriched my insights	4.3
d. provided opportunities for expanding linkages	4.4
4. The provisions were satisfactory for	
a. meals and snacks	3.6
b. lodging	4.5
c. the venue	4.5
d. workshop support materials	4.3
e. communication	4.4
Total	4.30%

5. What are your suggestions to ensure better planning and preparation for the next regional consultations?

5.1 may we suggest that specified data needed for the upcoming workshop be advised to be brought by the participants.
5.2 notices for succeeding consultation will be in one week advance.
5.3 very bad food...fatty and poor combination of menu
5.4 is there yet to come? If there is, I hope that you really invite people/experts in Mindanao
5.5 there were many not included who may have some inputs - those professors in botany, zoology, entomology...etc. in USEP, USM,ADDU

ANNEX 16

Directory of Participants for the Mindanao Regional Consultation

	NAME	AFFILIATION	ADDRESS	CONTACT NOS.	E-MAIL	SPECIALIZATION
	Participants					
1	Alicia C.E. Tabaranza	MSU-Iligan Institute of Technology	Iligan City	(049) 536-0080	blasjr.@haribon.org.ph	Flowering Plants
2	Anang Gonzales	MSU- Gen. Santos	General Santos City	(083) 301-8414	bioann@gslink.com	Plants
3	Severino Ambag	Pipuli Foundation	Giokay Vill. Bernad Subd., Ozamis City	088 521 1992		Mt. Malindang-Mis. Occ.
4	VicenteY. Curtiz	Chief, PAWD, DENR Region XII	Koronadal, South Cotabato City	(083) 228-2418		PA Mgt.
5	Butch Dagondon	Green Mindanao	Door 2 Sabana Apt., Baconga St., Lapasan, Cagayan de Oro City	(0918) 911-7420	greenmin@col.com.ph	Forest conservation
6	Clarence Baguilat	RED, DENR Region XI	Lanang, Davao City	082 234-6414		
7	Cleto Nañola, Jr.	UP Mindanao	Bago Oshiro, Mintal, Davao City	(0919) 361-2686	ting_n@upmin.mozcom.com	Reef fish ecology
8	Crisaldo Macias	RDC, Regn 9	City Agriculturist Office, Zamboanga City	991-3366		Regional Devt Council
9	Daniel Sumera	Mt. Kitanglad National Park	DENR, Malaybalay, Bukidnon			PA Mgt.
10	Danilo Botin	University of Southern Philippines	College of Forestry, Tagum Campus, Tagum City			Dendrology
11	Dennis Salvador	PEFI, Davao City	Garnet cor Diamond St., Marfori Heights, Davao City	(082)224-3021	salvador@dvo.info.com	Raptors
12	Edgar Canete	DENR Region X	Cagayan de Oro City	(088)856-8087		PA Mgt
13	Eduardo Bisquera Jr.	Chief, PAWD, DENR Region IX	Zamboanga City	991-1424	bisquera@eudoramail.com	PAs and Wildlife
14	Edwino S. Fernando	Makiling Center for Mountain Ecosystems	Los Baños, Laguna	(049)536-3572	esf@laguna.net	Palms, Plants
15	Filemon Romero	MSU-Tawi-tawi	Tawi-tawi			Marie Protected Areas
16	Gail Olavides	Camiguin Polytechnic State College	Ballntawak Campus, Mambajao, 9100 Camiguin	(088) 387-0044		Marine Biology
17	Gloria Camarao	UP Mindanao	Bago Oshiro, Mintal, Davao City	(082)293-0303	camarao@mozcom.com	Arthropods
18	Heidi Gloria	UP Mindanao	UP Min-CAS, Bago Oshiro, Mintal, Davao City	(083)293-0084		Socio-Econ
19	Heidi Porquiz	Central Mindanao University	Musuan, Bukidnon			Amphibians and Reptiles
20	Leonilo Rivera	Chief, PAWD, DENR Region XI	Davao City	(082) 234-6414		PA & Biodiv Conservat'n
21	Lesley Casas Lubos	Liceo de Cagayan University	Cagayan de Oro City	0917 718-0474	Dawsonia@yahoo.com	Bryophytes (Mosses)
22	Millete Garcia	MSU-Marawi	Marawi City			Freshwater
23	Myrna Ballentes	Central Mindanao University	Musuan, Bukidnon			Entomology/Taxonomy
24	Paciana Acampado	PAWD-DENR Region 10	DENR, Region 10	(088) 728-322; 856-8780		PA Mgt/ Wildlife Conservation
25	Pedro Ylagan	Central Mindanao University	Musuan, Bukidnon			Forest Trees
26	Mohammad Nur Harun	BFAR, Regn 12	Cotabato City	(064)421 8931/ 9367		Fisheries Management
27	Alma Mohagan	Central Mindanao University	Musuan, Bukidnon			Animal Taxonomy(Butterflies)
28	Lilibeth Rufila	Central Mindanao University	Musuan, Bukidnon	(0918) 4042691	lvrufila@eudoramail.com	Plant Taxonomy (Lycopodium)
29	Zosimo Gelacio, Jr.	PAWD, DENR Region XIII	Ambago, Butuan City	(085) 342-7423; 342-2993		Forestry/Botany
30	Reuben Campos	UP-MSI	UP Diliman, QC	(02) 9205301 loc 7447	rtc@up.edu.ph	corals, sponges
	Working Group Leader					
31	Victor Gapud	UP Los Baños	Dept. of Entomology, IBS, UPLB, College, Laguna	049 536 2541; 1315	vicgap@laguna.net	Arthropods WGL
32	Rowena Boquiren	UP Baguio	Baguio City	074 42 2429	rrb@baguio.upcb.edu.ph	Socio-Econ WGL
33	Daniel Lagunzad	UP Diliman	Institute of Biology, UP Diliman, QC	02 920 5301 local 6536	dalagunzad@macrophil.com	Plants WGL
34	Perry Aliño	UP Marine Science Institute	MSI-UP Diliman	02 920 5301 local 7427	pmalino@nsi01.cs.upd.edu.ph	Marine WGL
35	Adelina Santos-Borja	Laguna Lake Devt. Authority	2/F Rizal Sports Club BLdg., Capitol Cpd., Pasig City	02 638 5330	lmd@llda.gov	Freshwater WGL
36	Blas Tabaranza	Haribon	#9 Malingap St., UP Village, Diliman, QC	02 433 3476	blasjr@haribon.org.ph	Birds WGL
37	Arvin Diesmos	DLSU Dasmariñas	Dasmariñas, Cavite	(02) 8449116 loc 3093	kaloula@i-manila.com.ph	Herps WGL
38	Neil Aldrin Mallari	Haribon	#9 Malingap St., UP Village, Diliman, QC	02 433 3476		Mammals WGL

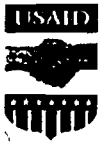
Directory of Participants for the Mindanao Regional Consultation

	NAME	AFFILIATION	ADDRESS	CONTACT NOS.	E-MAIL	SPECIALIZATION
	Regional Coordinator					
39	Hector Miranda	Philippine Eagle Fdn.	Garnet cor. Diamond St., Marfori Heights, Davao City	(082) 224-3021/22	miranda@dvo.info.com.ph	Birds; RC for Mindanao
40	Victor B. Amoroso	Central Mindanao University	Musuan, Bukidnon	(0917)4555003	v. amoroso @eudoramail.com	Botanical Systematics
	Partner Agencies and Guests					
41	Dr. Jerry Bisson	USAID	17/F Magsaysay Center, Roxas Blvd., Manila	02 522441 loc 3940		
42	Ernie Wijangco	USAID	17/F Magsaysay Center, Roxas Blvd., Manila	02 522441 loc 3940		Environment-Proj. Mgr.
43	Julio G. Tan	FPE	#7 Matahimik St., Teacher's Village, Q.C.	969-9629	jgtan@fpe.ph	Environment-Director
44	Peter Walpole	ESSC	Manila Observatory Bldg., Ateneo de Manila University	426-5921/ 426-5922/23		Sociology - Director
45	Leo Urrutia	ESSC	Manila Observatory Bldg., Ateneo de Manila University	02 42 65 921	la_urrutia@edsamail.com.ph	GIS/IT
46	Orlando Abelgas	ESSC	Manila Observatory Bldg., Ateneo de Manila University	(02) 426-5959		
47	Genevive Gee	Haribon	#9 Malingap St., UP Village, Diliman, QC	02 9253332	gvagee@haribon.org.ph	Herpetology
48	Myrissa Lepiten-Tabao	Haribon	#9 Malingap St., UP Village, Diliman, QC	02 433 3476	mlepiten@haribon.org.ph	mammals
49	Jean Caleda	ARCBC	College, Laguna	049 536 3173	mjac@pacific.net.ph	
	PAWB, CI, UP and Support Staff					
50	Theresa Mundita Lim	PAWB-DENR	Visayas Avenue, Diliman, QC	(02) 9282096	munlim@skyinet.net	PAs and Wildlife
51	Carlo Custodio	PAWB-DENR	Visayas Avenue, Diliman, QC	(02) 9282096	pawbwild@psdn.org.ph	PAs and Wildlife
52	Norma Molinyawe	PAWB-DENR	Visayas Avenue, Diliman, QC	(02) 9282096		PAs and Wildlife
53	Marlynn Mendoza	PAWB-DENR	Visayas Avenue, Diliman, QC	(02) 925-2123	mendoza@psdn.org.ph	PAs and Wildlife
54	Janet Garcia	PAWB-DENR	Visayas Avenue, Dillman, QC	(02) 9282096		PAs and Wildlife
55	Perry S. Ong	Conservation International Phils.	#7 Cabanatuan Rd., Philam Homes, QC	(02) 4128194 to 95	perryong@csi.com.ph	Wildlife
56	Leticia E. Afuang	Conservation International Phils.	#7 Cabanatuan Rd., Philam Homes, QC	(02) 4128194 to 95	ciphil@csi.com.ph	Wildlife (Herps)
57	Oliver Coroza	Conservation International Phils.	#7 Cabanatuan Rd., Philam Homes, QC	(02) 4128194 to 95	ciphil@csi.com.ph	GIS/IT
58	Nancy Ibuna	Conservation International Phils.	#7 Cabanatuan Rd., Philam Homes, QC	(02) 4128194 to 95	ciphil@csi.com.ph	Wildlife
59	Connie Morales	Conservation International Phils.	#7 Cabanatuan Rd., Philam Homes, QC	(02) 4128194 to 95	ciphil@csi.com.ph	Marine
60	Joy Navarro	Conservation International Phils.	#7 Cabanatuan Rd., Philam Homes, QC	(02) 4128194 to 95	ciphil@csi.com.ph	Plants
61	Alan Espiritu	Conservation International Phils.	#7 Cabanatuan Rd., Philam Homes, QC	(02) 4128194 to 95	ciphil@csi.com.ph	
62	Kharina Gatil	PEFI, Davao City	Garnet cor. Diamond St., Marfori Heights, Davao City	082 224 3021 / 3022		Plants
63	Gliceria Ibanez	PEFI, Davao City	Garnet cor. Diamond St., Marfori Heights, Davao City	082 224 3021 / 3022		Raptor Conservation
64	Jayson Ibañez	PEFI, Davao City	Garnet cor. Diamond St., Marfori Heights, Davao City	082 224 3021 / 3022		Raptor Conservation
65	Glen Bueser	PEFI, Davao City	Garnet cor. Diamond St., Marfori Heights, Davao City	082 224 3021 / 3022		Birds

LIST OF ATTACHMENTS

Attachment 1	:	Program
Attachment 2	:	Sample Criteria Form
Attachment 3	:	Sample Certificate

Funding support provided by:



UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

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Cooperating Agencies:

ESSC, WCSP, UP-MSI, LLDA, PEFI, DLSU-D, CMU, MSU (Iligan, Marawi, Tawi-tawi, Naawan), UP MINDANAO, USP, Xavier University, CARE, Phil. National Museum, MCME, BFAR, CPSC, TLDFI, LDCU, ADDU, Manobo Organization, GREEN MINDANAO, Pipoli Foundation, Mt. Matutum Farmers Assn. Inc., KKP, RDC, and DENR Project Agencies (NIPAP, CPPAP, NORDECO)

PROTECTED AREAS AND WILDLIFE BUREAU
DENR

CONSERVATION INTERNATIONAL PHILIPPINES

UNIVERSITY OF THE PHILIPPINES
BCP-CIDS

NATIONAL BIODIVERSITY CONSERVATION PRIORITY-SETTING

Regional Consultation for Mindanao

Aug 30 – Sept 1, 2000
Malagos Garden Resort
Davao City

"Saving the Hottest of the Hotspots"

This serves as an invitation

WORKING GROUP	WORKING GROUP LEADER	RESEARCH ASSOCIATE
BIRDS	Aldrin Mallari	Connie Morales (CI)
MAMMALS	Blas Tabaranza	
HERPS	Arvin Diesmos	
INSECTS	Vic Gapud	
PLANTS	Dan Lagunzad	Joy Navarro (CI)
MARINE	Perry Aliño	Liza Valenzuela (UP)
FRESHWATER	Adelina Borja	
SOCIO-ECONOMICS	Rowena Boquiren	Rhea Ledesma (CI)

Mae Lowe Leonida : Luzon Regional Coordinator
Paciencia Milan : Visayas Regional Coordinator
Hector Miranda & Victor Amoroso : Mindanao Regional Coordinator

Leticia E. Afuang, NBCPSW Program Manager
Carlo C. Custodio, PAWB Managing Counterpart
Nancy P. Ibuna, Logistics Coordinator

DR. THERESA MUNDITA S. LIM	DR. PERRY S. ONG	DR. PRESCILLANO M. ZAMORA
Convenor, NBCPSW	Co-Convenor, NBCPSW	Scientific Adviser, NBCPSW
Asst. Director, PAWB	Country Director, CI Phil	Director, UP-CIDS

Protected Areas and Wildlife Bureau

Vision:

A perpetual existence of biological and physical diversity in a system of protected areas and such other biologically important component of the environment managed by well-informed empowered citizenry for the sustainable use and enjoyment of present and future generations

Mission:

To conserve the country's biological diversity through:
1) establishment, management and development of the national integrated protected areas system (NIPAS);
2) conservation of wildlife resources;
3) nature conservation, information and education

Conservation International

Mission Statement:

CI believes that the Earth's natural heritage must be maintained if future generations are to thrive spiritually, culturally, and economically. Our mission is to conserve Earth's living heritage, our global biodiversity, and to demonstrate that human societies are able to live harmoniously with nature.

University of the Philippines

Mission Statement:

Within the framework of the University of the Philippines as the national university and a changing global order, to promote a culture of academic excellence which advances the university as a leading educational institution in the Asia-Pacific region and the rest of the world.

Opening Program

Invocation		
National Anthem		
Welcome Remarks	:	*Clarence Bagullat* *Regional Executive Director, DENR* *Region XI*
Message (1)	:	*Dr. Hector Miranda* *Director, Phil. Eagle Foundation Inc.* *NBCPSW Mindanao Regional Coordinator*
Message (2)	:	*Dr. Jerry Bisson* *Head, Office of Environmental Mgt, USAID*
Keynote Address	:	*Hon. Mario Roño* *DENR Undersecretary for International Commitment & Local Gov't Affairs*
NBCPSW Backgrounder	:	*Dr. Theresa Mundita Lim* *Asst. Director, PAWB* *NBCPSW Convenor*
NBCPSW Process	:	*Dr. Perry S. Ong* *Country Director, CI Phil* *NBCPSW Co-Convenor*
Mindanao Situationer	:	*Dr. Victor Amoroso* *NBCPSW Mindanao Regional Coordinator*

Emcee: Prof. Leticia E. Afuang
NBCPSW Program Manager

Schedule of Activities

Facilitators:
Prof. Letty Afuang & Mr. Carlo Custodio

Time	Aug 30 Wednesday	Aug 31 Thursday	Sept 1 Friday
8 am - 9 am	Registration	Workshop: Confirmation of NBCPSW Data Sharing/ Validation	Nomination of Representatives for the National Workshop
9 am - 11am	Opening Program		Presentation of Map Results and Criteria Resolutions by WGL Summary by the Regional Coordinator
11am - 12 nn	Orientation and Levelling of Expectations		Closing Program
Lunch			
1pm - 2 pm	Data Updates from Working Group Leaders	Assessment of Protected Areas in the Region	Special Meeting of Working Group Leaders; Follow-up Consultations; Pack-up & Check out
2 pm - 3 pm	Presentation of Preliminary Species Database and Maps for Mindanao	Process/Data Collation for the Region	
3 pm - 3:30pm	PRISMA Introduction	Paper Mapping	
3:30pm - 6 pm	PRISMA Workshop to allow hands-on experience		
Dinner			
7 pm - ad infinitum	Group Meeting of Working Group Leaders	Paper Mapping	

Closing Program

Presentation of Results	:	Regional Coordinators & Technical Team
Observations from the Working Group Leaders		
Participants' Response		
Awarding of Certificates	:	Dr. Theresa Mundita Lim & Dr. Perry S. Ong
Closing Remarks	:	Mr. Carlo Custodio, NBCPSW Managing Counterpart

"Welcome: local guests and observers"

NBCPSW Objectives

1. *Identify, assess, and prioritize specific geographic areas for biodiversity conservation in the Philippines through an established process, which supplements published information with a consensus of the latest expert knowledge.*

2. *Make available an information base, which will assist policymakers, planners, and donors to incorporate biodiversity conservation objectives into their implementation plans.*

3. *Strengthen local capacity for conservation planning and management based on the development of an integrated conservation information system and related skills training, based on the latest available information using experts' knowledge.*

4. *Propose a program for training regional planning agencies on how to integrate the workshop results into their planning and implementation processes.*

Outputs

1. *A preliminary planning report outlining the current context and lessons learned from previous biodiversity planning activities (NBSAP, CBD, CPPAP, NIPA).*

2. *A final report, map, and CD-ROM with digital files presenting the latest scientific consensus on priority areas for conservation and including all major data gathered during the CPW process.*

Regional Consultation Objectives

1. *To convene a small group of scientists, representatives from the NGO's and the government (PAWB, LGUs, etc.) to make a preliminary assessment of the status of biodiversity conservation work in the region*

2. *To agree on a work plan and responsibilities for the work ahead up to the National workshop.*

ATTACHMENT 2. SAMPLE CRITERIA FORM

Form 1 : Criteria Definition

Thematic Group:

Form Author:

Criteria:

Definition:

Values

Extremely high (1):

Very High (2):

High (3):

Medium (4):

Low (5):