



Researchers' integration workshop



Researchers of the Terrestrial Ecosystem Master Project (TEMP) identify data gaps and issues affecting biodiversity in the terrestrial ecosystem of Mt. Malindang.

Ong, "societal response" can be reflected at two levels: (1) past and current interventions, and (2) proposed interventions based on analysis of the gaps of past interventions.

Dr. Ong reminded everyone that the framework is a guide to action and is used to assist in making links between the different aspects of the BRP.

Participants of the meeting were researchers and research staff, support staff from the National Support Secretariat (NSS) and Site Coordinating Office (SCO), and members of the PWG who served as facilitators and subject matter specialists.

February 20-21, 2004 mark the 5th Quarterly Researchers' Planning Meeting held in Cagayan de Oro City. This is the first time that such meeting focused on the integration of the different projects of the BRP, which Dr. Perry S. Ong, Chair of the Joint Programme Committee (JPC) and the Philippine Working Group (PWG) described as "one of the biggest challenges that the BRP currently faces".

Dr. Rowena R. Boquiren, PWG member provided the overview of the two-day activity. She stressed that there should be a holistic approach in the analysis of the research results, and that researchers must be able to show the interconnection among the different projects. Dr. Ong presented the biodiversity conservation framework and discussed its application to BRP.

The framework was then used in presenting the accomplishments of the different studies, to date. After the presentation of accomplishments,

researchers were divided into three groups for a workshop on identification of data gaps and issues affecting biodiversity in the terrestrial and aquatic ecosystems of Mt. Malindang. Among the data gaps and issues identified were: soil erosion, farming system and practices, blast fishing, commercial fishing in municipal waters, and the implementation of fisheries policies and ordinances. The major output of the meeting was the integrated work plan for the on-going projects of the BRP.

The integration of the different projects was done by identifying the factors that affect the ecosystems as reflected in the framework. Four major factors were identified, namely: (a) the state of biodiversity loss, (b) the direct factors of biodiversity loss, (c) the socioeconomic and political drivers, and (d) the society's response in terms of research, conservation action, policy and legislation, capacity building, advocacy, restoration, protected areas system, and funding. According to Dr.

The next quarterly meeting is scheduled on 28-30 May 2004 in Cagayan de Oro City. ■

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RAWOO and BRP join in participatory monitoring efforts

“The means is as important as the end.” This is what the Participatory Programme Monitoring System (PPMS) is all about: monitoring the effectiveness of the processes used in attaining the Programme’s objectives with the direct participation of all partners involved.

The designing of a Participatory Programme Monitoring System started in November 2003. It is part of the Joint Monitoring and Evaluation of Research Partnerships (JM&E) Project initiated by The Netherlands Development Assistance Research Council (RAWOO). For the PPMS, RAWOO has commissioned Dr. Levita A. Duhaylungsod, an anthropologist from the Agricultural Systems Cluster at the University of the Philippines Los Baños (UPLB), to develop the framework of the PPMS.

Since the beginning of the project, several activities facilitated by Dr. Duhaylungsod and participated in by BRP researchers and research staff have already been concluded. These were: (a) the orientation on the PPMS which has given the participants an overview of the nature and objectives of the PPMS; and (b) the roundtable discussions which has helped obtain from the participants the parameters and indicators to be used on the PPMS.

The orientation has not only introduced the PPMS but has also elicited a general idea of the level of appreciation of the participants regarding process documentation as a tool in monitoring the programme. It has also included a discussion on the framework and approach of the JM&E Project.

On the other hand, the roundtable discussion served as a venue to the

further development of the PPMS framework. The ideas gathered, in turn, became the basis for the development of the PPMS instrument.

On 21 February 2004, the *Orientation-Training on the PPMS Instrument* was conducted in Cagayan de Oro City. It was participated in by researchers and research staff from the different study teams under the Master and Open Research Projects. Members of the Philippine Working Group (PWG) headed by Dr. Perry S. Ong were also present.

The focus of the activity was instrumentation. Dr. Duhaylungsod presented the PPMS Instrument derived from the parameters and indicators suggested during the roundtable

discussions. Exchanging of ideas dominated the activity as participants voiced out their questions, comments and suggestions on each of the items presented.

These undertakings have led to the final PPMS Instrument, which will be used in monitoring the progress of the Programme in relation to its goals and objectives.

To date, the final PPMS forms have been distributed to researchers and almost half of the accomplished forms have been sent back to the National Support Secretariat (NSS). Before long, the programme will be able to see the results of the monitoring process and hope that everyone’s efforts have not been in vain. ■



Dr. Levita A. Duhaylungsod presents the Participatory Programme Monitoring Scheme (PPMS) framework to BRP researchers during a roundtable discussion on the Joint Monitoring and Evaluation of Research Partnerships Project.

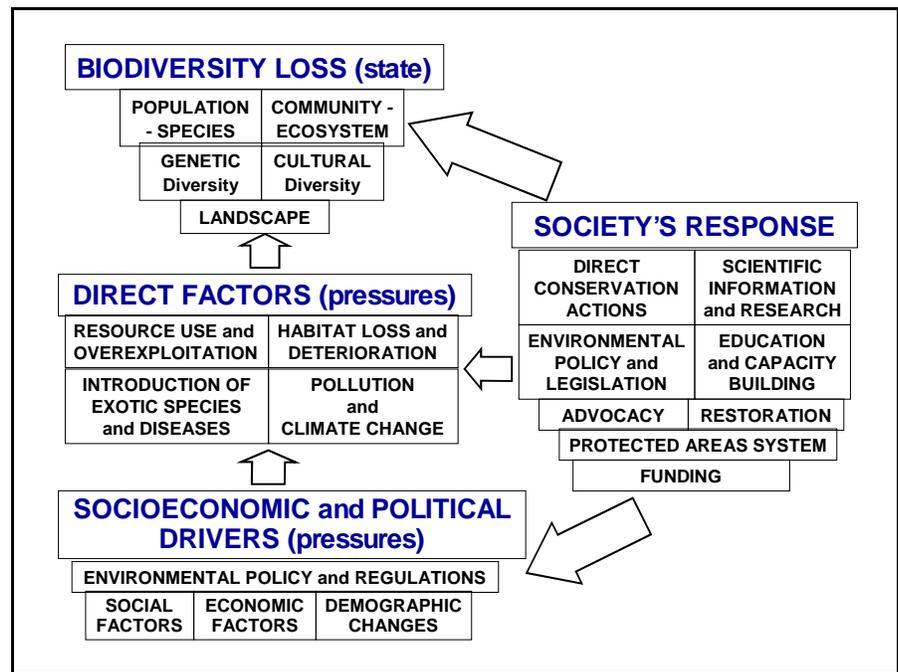
PWG tackles integration of research studies

The Philippine Working Group (PWG) of the BRP had its first meeting for the year on 30 January 2004 in Diliman, Quezon City.

Dr. Perry Ong, JPC and PWG Chair presided over the meeting. After giving a brief background of the BRP, he discussed the role of the PWG, which is to serve as advisory body to the JPC, especially on strengthening the national perspective and the larger role of BRP in biodiversity conservation programmes in the region. The PWG members can also serve as resource persons providing technical assistance to BRP researchers. They may also be invited as facilitators in BRP workshops and other activities.

Dr. Ong also identified some issues and concerns confronting BRP researchers with regard to the analysis of their research results. Foremost is the integration of research results of on-going projects using the landscape approach. To address this concern, Dr. Ong proposed to adopt the pressure-response model for a biodiversity conservation framework, which is to be presented to the group of BRP researchers for discussion during the 5th Quarterly Researchers' Planning Meeting in February 2004.

After the thorough discussion on the issue of integration of research results, the Coordinator of the BRP National Support Secretariat (NSS) gave an update of the status of on-going research projects. Ensuing discussions focused on additional researchable areas and other support activities deemed necessary to strengthen current research activities.



The biodiversity conservation framework.

LAG holds its 2nd meeting

The BRP Local Advisory Group (LAG) held its second meeting on 24 March 2004 at the Protected Area Office (PAO), Oroquieta City. Mr. Iver T. Alabanzas, BRP Site Coordinator, presented the biodiversity conservation framework to update the LAG members of on-going BRP activities.

The primary concern of the LAG was the rate at which the research results are disseminated to the participating communities and other stakeholders. The LAG members worry that the time it takes to translate research results into tangible actions for biodiversity conservation might be too long resulting to the loss of interest of local community members to pursue further conservation efforts.

Accordingly, local communities immediately look for concrete results in any undertaking on how they can directly benefit from it. Thus, to sustain their interest and support, a mechanism to inform the local communities of the status and significance of on-going activities should be developed.

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Twenty-four participants consisting of researchers, research staff and local researchers of the Terrestrial Ecosystem Master Project (TEMP) and Aquatic Ecosystem Master Project (AMP), staff of the Central Mindanao University (CMU) herbarium, and curator of the Mindanao State University-Iligan Institute of Technology (MSU-IIT) museum completed a nine-day training-workshop on *Plant Taxonomy, Taxonomic Research Methods, Herbarium Processing and Management* on 8-16 March 2004 at CMU, Bukidnon and project sites in Mt. Malindang.

The activity aimed to: (1) provide the participants an update regarding the Terrestrial Ecosystem Master Project (TEMP) and Aquatic Riparian study; (2) update the participants on the principles/concepts on taxonomy and taxonomic research methods; (3) equip the participants skills on actual identification, classification, nomenclature and data basing of plant

Local community members trained on taxonomic research methods



Participants of the training.

collections; (4) train the participants on proper collection, processing and cataloguing of specimens from fieldwork; and (5) assist the participants in analyzing the data to come up with an integrated floral taxonomic research report and action plan.

Dr. Paul J.A. Kessler of the National Herbarium of the Netherlands (NHN), a research collaborator of the TEMP flora study, was the resource person. He lectured on (a) Plant Systematics at the NHN; (b) Principles of Identification of Plant Samples; (c) Proper Collection of Plant Samples; and (d) Data Basing Label Information of Herbarium Specimens Using Botanical Research and Label Information of Herbarium Management Systems (BRAHMS) developed by Denis Filer, Oxford University.

The participants went to CMU Natural Herbarium Museum, Brgy. Lake Duminagat and its environs, North Peak and surrounding forest mountains, and Brgy. Sebukal trail to headwater stream of Layawan River for practical demonstration and hands-on training.

Demonstrations on proper collection, processing and cataloguing of floral specimen, and plot establishment highlighted the workshop activities.

Finalization of action plan and exchange of impressions and learnings from the participants and facilitators were done during the closing program held at Tatong's Beach Resort, Oroquieta City on 16 March 2004. ■



Participants establish a demonstration plot for plant inventory.

Community-Based Inventory and Assessment of Riverine and Riparian Ecosystems in the Northeastern Part of Mt. Malindang

by Proserpina Gomez-Roxas, Project Leader
Mindanao State University-Naawan

The project was carried out to assess the aquatic and riparian communities in the Langaran River located in the northeastern part of Mt. Malindang and to study the status of the habitat in terms of some biophysical parameters in order to have enough basis for policy setting and recommendations for management as well as to bring about environmental awareness among the community.

Langaran River was chosen as the study site because of its unique combination of political, cultural, economic, and biological environment. The stretch of the river is under the jurisdiction of four political entities or municipalities, namely; Concepcion, Calamba, Lopez Jaena and Plaridel. The barangays upstream are inhabited predominantly by the indigenous peoples group called Subanons while those in the downstream are inhabited by a mix of migrants from all over the Philippines and those who have lived in the area since birth.

The river plays a vital role in the economy of the surrounding municipalities. Aside from being the domestic abode of many communities, vast farmers are dependent on the irrigation waters from the three dams built along it. Two of these dams are managed by the Municipal Agricultural Office while the third and biggest dam is managed by the farmers' association

in the area. The importance of the dams is highlighted by the fact that the municipality of Plaridel has been chosen as the demonstration area for a number of farming technologies, including organic farming and integrated pest management (IPM), that require synchronized release of irrigation waters. Such is achieved by a close coordination between the local agricultural office and the farmers' groups.

The upstream part of the river is also known for its rich biodiversity and is in fact the object of attempts to search for unrecorded species.

Five barangays are included in the study, namely Singalat, Mamalad, Bonifacio, Tipolo and Catarman.

The inventory and assessment of the biological communities revealed a pattern: the upstream barangays (Singalat, Mamalad and Bonifacio) are still rich in biodiversity. For the floral component, the riparians in Singalat harbor a total of 125 plant species, 12 of which are endemic to the Philippines. Many of these species are also unique to this part of the river. The species in the upper barangays are trees and tree-like while those in the downstream (Tipolo and Catarman) are short-growing and mostly exotic species.

The survey of animals also indicated a healthier river upstream than downstream. There were more endemic and resident bird species in the three upstream barangays. Some species were found unique for each barangay. Overall, the almost equal bird diversity indices in the upper three barangays are higher than those in the downstream barangays.

Only a few species of amphibians and reptiles are represented in the specimens collected. Six common species of frogs were recorded in the five barangays along the river. *Rana magna* is endemic and common that inhabits forest streams throughout the Philippines. This species was not found in Catarman because water becomes brackish when high tide occurs. The Rock frog *Staurois natator* that was reported to inhabit clean and clear mountain streams at sea level up to elevations of 1,300 m was recorded only in the upper barangays.

Only 11 reptilian species, most of which are common, were either collected or observed in the five barangays along the river. Seven of these were lizards and three were snakes. Only one turtle species was found in two of the five barangays. *Hydrosaurus pustulatus*, commonly called ibid in many parts of the Philippines, is recorded as vulnerable

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From Research to Policy: The Case of the Philippines-Netherlands Biodiversity Research Programme for Development in Mindanao

(Last of two parts)

by Gil C. Saguiguit, Jr., Paul Smits, Ed Maan, Mariliza V. Ticsay

Component Activities of the Programme. Figure 3 shows the two types of activities supported through the programme, i.e., research projects and support activities. Research activities and projects to be proposed and undertaken by proponent institutions and researchers in Mindanao must fall within the umbrella programme framework and research agenda developed through the series of consultations and programme formulation workshops involving both the Philippine and Dutch sides over the two-year Pre-Implementation Phase. These proposals are submitted to the JPC for evaluation on how well they satisfy BRP goals and objectives and how well they contribute to the overall research framework of the programme. Priority is given to researches that involve collaboration of scientists from different Mindanao partner institutions and those that include the participation of Dutch scientists to fill up an acknowledged expertise gap in the study. In general, component research activities in the BRP are envisaged to

focus on methodology development, knowledge expansion/improvement and policy-oriented research on biodiversity conservation.

The support component of the BRP is seen as necessary to boost the relevance of the programme to development problems in the research area. This would show that the research activities of the BRP are not for the generation of knowledge alone but do in fact have a development orientation. Included, as key support activities are human capability building and institutional strengthening for biodiversity research, information, education and communication (IEC), and networking and alliance building for biodiversity conservation. One of the more important activities is to develop databases and information and knowledge management network that allows access to BRP research findings and other relevant biodiversity information to a range of users both local and international, as well as for easier translation of said research

results to something more tangible and relevant to the needs of the local stakeholders.

How is BRP linked to Policy?

BRP's link to policy is most evident in its processes and its expected outputs and impacts. The programme's participatory and consultative nature provide both an anchor and an open door for policies and ordinances of local government, programs, and practices affecting biodiversity conservation. Easy and ready access to research results by local officials and decision-makers will allow informed legislation on resource conservation. For example, through research, the spawning season of certain fish that people depend on for subsistence and livelihood may be determined. Local government, in an effort to counteract the effects of overfishing and to conserve this resource, could then pass a municipal ordinance prohibiting fishing during the critical spawning months. Research results therefore, provide scientific and empirical basis for the formulation of local ordinances.

In general there are two categories of BRP stakeholders:

1. Stakeholders in the research area who are dependent on or utilize biodiversity resources for their livelihood and subsistence (small farmers, fisherfolk, indigenous people, community organizations, entrepreneurs, etc.); and
2. Stakeholders in the research area who intervene for biodiversity conservation (NGOs, government agencies and local government units).

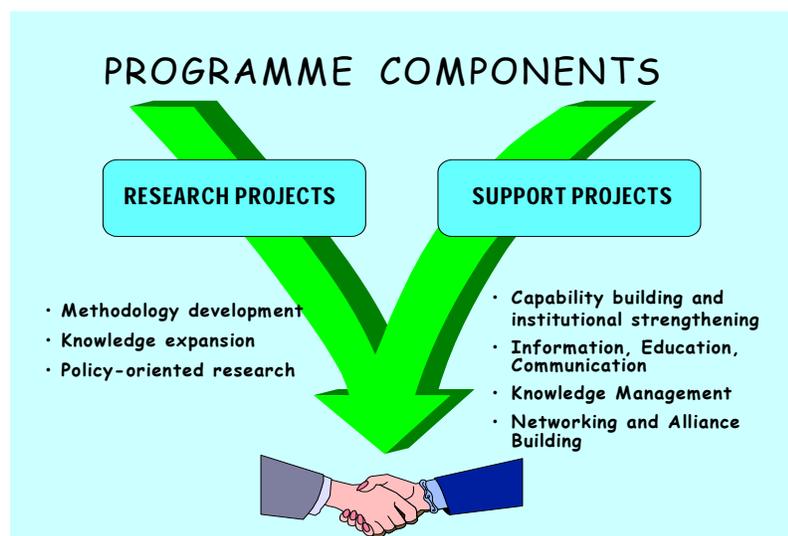


Figure 3. Major components of the BRP.

Clearly, it is the second category of stakeholders who are concerned with formulation and implementation of conservation policies while it is the first category that will conform and will be affected by the policies. The BRP, as explained, tries to strike a balance between conservation and livelihood/subsistence goals through its participatory research programme.

The value and uniqueness of the programme lies in the way research activities are being integrated in other capacity building activities at the local level. An underlying objective of research in Mt. Malindang is to identify and support livelihood alternatives that will minimize dependence on forest resources. Research therefore is seen to have potentials for enhancing the development of alternative environment-friendly livelihood programs. The expected result is conservation and protection of the natural resource base resulting in an increase in biodiversity. In turn, this could ultimately improve the socio-economic status of inhabitants of the mountain. This is one of the more important long-term goals of the programme. The other is to find means to preserve the integrity of major mountain ecosystems from the continuing and ever-increasing threat of human activity. Thus, the BRP is supportive of strict compliance to the National Integrated Protected Areas System (NIPAS) Law including the importance of maintaining buffer zones to minimize human encroachment in highly threatened parts of Mt. Malindang.

The connection of the Programme to actual needs and perspectives of locals as regards the conservation of threatened resources in Mt. Malindang are through various entities, which by law have a say in the operations and conduct of the BRP and any other development initiatives in the area.

The first entity is the Local Government Units (LGUs) which include the nine municipalities and the Provincial Government of Misamis

Occidental, under whose geographic jurisdiction the BRP site belongs. LGUs and their attached communities are considered the first line of decision and policy makers who scrutinize the programme, its objectives and the projected benefits it would bring. Because the function and authority of the national government has been passed on to the LGUs through a process of devolution some years ago, LGUs are one of the major proverbial keys for the implementation of BRP in the area. Owing to this imperative link, it also provides a natural opening for the BRP to influence local policies and laws as has been mentioned in the preceding discussions.

The Protected Areas Management Board (PAMB), a legal entity created by the Department of Environment and Natural Resources (DENR), is considered as the “guardian” of the section of Mt. Malindang defined as a Protected Area under the NIPAS Law. As it relates to the BRP, this is the higher elevation section of the mountain where there is still a semblance of an old growth forest inhabited by the Subanon indigenous people. However as is normal in the Philippine context, the protected area is endangered by human encroachment that hastens degeneration of the natural resources. These activities include deforestation, farming, and human settlements. The findings of BRP researches may therefore be used by the PAMB to formulate action, through BRP-influenced guidelines, promulgations, and others that would protect and deter harmful human activities in the Protected Area. Research findings that could be fed into feasibility studies could significantly provide policy directions for protecting the threatened parts of the mountain and its biodiversity. On the operational level, the BRP at the very start, had a connection with the PAMB because the programme’s plan of operations affecting or relevant to the protected area had to be reviewed, approved and endorsed before it could be submitted for funding and subsequently implemented. Within the organizational

structure of the BRP itself, a mechanism that ensures that the programme’s focus and outputs are well connected to local policy and decision makers is the formation of a Local Advisory Group (LAG) that would advise the JPC. This clearly signals that the BRP has a downstream orientation and goes beyond the generation of information and knowledge from research. The input of the members of the Local Advisory Group is intended to align the programme’s research targets with actual needs of the area. In turn, research outcomes are immediately known by the local stakeholders and can be considered and incorporated in the LGU’s development plans and activities.

The programme is expected to contribute to appropriate and equitable strategies for the conservation, management and sustainable use of biological and genetic resources of plants and animals in Mt. Malindang and its environs. To bring about this long-term result would necessitate a host of intermediate short and middle term outputs from the programme. The generation of databases on the mountain’s remaining wealth of flora and fauna made accessible to researchers, conservationists and local people will hopefully influence actions and practices towards conservation.

Finally, the capacity building component of the BRP is seen as yet another possible link to policy. In an effort to train researchers and development practitioners, the BRP includes the acquisition of special skills to undertake policy research related to biodiversity conservation and/or skills to process and translate research results to policy recommendations, improved management practices and development action.

Conclusion

While only four years of implementation, the BRP shows potentials of being true to its design of
(continued on page 12)

7th Joint Programme Committee (JPC) meeting held



The Joint Programme Committee (JPC) are given updates on programme- and project-level activities.

The 7th Joint Programme Committee (JPC) Meeting was held on 29 March - 2 April 2004 in Amsterdam, The Netherlands, and was attended by JPC members, and staff of the National Support Secretariat (NSS), Site Coordinating Office (SCO) and Support and Liaison Office (SLO).

The major points discussed during the business meeting were: (1) the status of programme implementation; (2) the mid-term programme evaluation; (3) a special JPC meeting in June 2004 back-to-back with the 7th International Conference on Philippine Studies (ICOPHIL) in Leiden, the Netherlands; and (4) the expansion/extension of BRP to Phase 2 including fund sourcing.

As BRP is going on its fifth year of programme implementation, the JPC also met with representatives of the Netherlands Ministry for Development Cooperation (DGIS) to discuss BRP's status, and key persons from the National Reference Center of the Netherlands Ministry of Agriculture to discuss current research thrusts in biodiversity conservation for possible opportunities for a second phase for the programme.

The JPC members also took the opportunity to meet with Dutch research collaborators from ALTERRA Green World Research, National Museum of Natural History (Naturalis), National Herbarium of the Netherlands (NHN), Wageningen University and Research Centre (WUR), and Centre of Environmental Science (CML) to discuss issues and concerns regarding collaboration with Mindanao researchers to undertake research activities in Mt. Malindang. Foremost of which is timing and scheduling of activities. During this meeting, researchers from ALTERRA, Naturalis, and the Department of Soil Biology, WUR who have just come back from research sites in Mt. Malindang presented highlights of their collaborative activities as well as some insights and recommendations.

The JPC is composed of Filipino and Dutch members. It meets at least twice a year to discuss the progress of the programme and to plan for its future activities. It is the highest policy making body of the BRP, which formulates and approves general policies and guidelines for the programme, and reviews and approves research proposals for funding. ■

Two student thesis grants awarded

The JPC approved the thesis grant applications of the following students from Mindanao State University-Iligan Institute of Technology (MSU-IIT), during its 7th business meeting in March 2004:

- Araña, Ray Vincent E. (MSc Environmental Science) - "Phytoplankton Biodiversity in the Coastal Waters of Mt. Malindang"; BRP Adviser: Dr. Dorothy G. Lacuna, Aquatic Ecosystem Master Project (AMP) Coastal Study
- Requieron, Elani A. (MSc Environmental Science) - "Composition and Abundance of Zooplankton in the Coastal Waters of Misamis Occidental" BRP Adviser: Dr. Dorothy G. Lacuna, Aquatic Ecosystem Master Project (AMP) Coastal Study. ■

Ever wondered how we get information on the condition of streams – whether it is safe enough to fish from, to be used for drinking water or for irrigation purposes? Monitoring provides the answer.

There are many ways to monitor water conditions. Traditionally, water quality is determined through chemical analysis, which are often costly and tedious. As a consequence, changes in water quality are detected only when they have reached a very critical level. Another way is by using macroinvertebrates as indicators.

Macroinvertebrates are larger than microscopic invertebrate animals, which are sensitive to different chemical and physical conditions. Macroinvertebrates are easy to handle and identification of the different kinds is relatively easy. Thus, there is ease in transferring the knowledge to the local people for community-based studies.

Realizing the importance of water quality monitoring, the riverine study of the Aquatic Ecosystem Master Project (AMP) set forth the wheels for its first support activity, the *Training on Water Quality Using Macroinvertebrates as Bioindicators* conducted on 16-18 March 2004. Participants were researchers of the AMP and Terrestrial Ecosystem Master Project (TEMP), Dr. Emma Sabado, Project Leader of the open research project on integrated pest management (IPM), and the local researchers for the macroinvertebrates component of the study.

Dr. Jan van Tol and Mr. Vincent Kalkman, both from the Netherlands National Museum of Natural History (Naturalis) facilitated the training. Topics covered were Ecosystem Dynamics, Aquatic Ecology, Theory on Biomonitoring, and Sampling Methodologies for Macroinvertebrates collection. Participants also went to the field for hands-on application of theoretical inputs. Each participant had his hands and mind busy in search of Empheroptera, Coleoptera, Plecoptera

Researchers undergo training on water quality monitoring



Participants of the training identify collected macroinvertebrates in Layawan River.

and other macroinvertebrates found in Layawan River. After the collection, macroinvertebrates were identified, sorted, preserved and labeled. Data analysis and interpretation followed.

The local researchers are expected to use the knowledge and skills acquired from the training for monitoring the water quality of Layawan and Langaran rivers. ■

LAG...from page 3

Hon. Mequiades D. Azcuna, Jr., Municipal Mayor of Lopez Jaena and Chair of the LAG, stressed that BRP activities must be responsive to the needs of the local communities.

Mr. Alabanzas explained that since BRP is a research undertaking, it has to follow “scientific protocol” which requires review and validation of research results before it is published and/or disseminated.

Mr. Andy O. Pestaño, Director of CARE-AWESOME then posed a question, “Should we wait for the results to be published before we act upon the recommendations? Mt. Malindang would be gone by then!”

On the other hand, Protected Area Superintendent Rolando S. Dingal

reiterated his request for BRP researchers to inform the PAO and the Protected Area Management Board (PAMB) of any activities to be undertaken within the scope of the protected area prior to its actual implementation, suggesting that this should be part of the research protocol. Researchers should also take the initiative to pay courtesy calls with the municipal/barangay officials before proceeding to the research sites.

On the issue of obtaining the Free and Prior Informed Consent (FPIC) certificate, Matadong Arsenio Samson, Jr., the National Commission on Indigenous People (NCIP) representative said that the long process cannot be avoided. It was therefore suggested that NCIP should assist BRP on this matter. ■

Community-based...from page 5

and is reported to favor unpolluted mountain streams including freshwater swamps making it a valuable indicator of the state of the environment. This species is found in the three upper barangays suggesting that the riparian habitat in these parts of the river is still unpolluted. *Tropidophorus misaminus* recorded as endemic and rare was also found in the three upper barangays.

A total of 11 mammalian species were recorded. Nine of these are endemic, namely; *Sundasciurus philippenensis*, *Rattus everetti*, *Apomys insignis*, *Paradoxurus hermaphroditus*, *Tarsius syrichta*, *Macaca fascicularis*, *Bullimus bagobus*, *Cynophelus volans*, and *Urogale everetti*. All these endemic species are considered common except for *U. everetti*. All the 11 species were found in Brgy. Singalat, while eight species were recorded in both Mamalad and Bonifacio. Only three of the 11 species were recorded in Tipolo and Catarman, namely; *Rattus exulans*, *Paradoxurus hermaphroditus* and *Viverra zangalunga*.

Catarman has the highest number of fish species (16), followed by Tipolo that has 13 species. As one moved upstream, only fewer species were

collected. Bonifacio, Singalat and Mamalad has 11, eight, and seven species of freshwater fish, respectively.

In all the barangays where collection of samples was done, the local researchers claimed that fish catch is already smaller compared to what they got few years ago. There are two main factors allegedly causing the decline in catch: the presence of dams that impede migration of species, and the occurrence of lahar flow in the mid 1990s. In Brgy. Tipolo, local researchers believe that the decline in fish catch is due to quarrying activities.

Abundance and diversity of macroinvertebrates varied from upstream to downstream. Macroinvertebrates that are indicators of good water quality were found in Singalat, Mamalad and Bonifacio. Barangay Tipolo has very few macroinvertebrates that are all indicators of poor water quality. The coliform load analysis also showed that water in Tipolo is heavily contaminated.

A total of 18 species of cryptozoans were collected in the five barangays along the river. Of these, only two species were common to the five

barangays: earthworm of the genus *Lumbricus*, and red and black ants of genus *Formica*. Species composition varied from upstream to downstream but there is no trend in the number of species along the river landscape.

The soils in the riparian zones fall between moderately to very slightly acid. Singalat soil has an average pH of 5.7 while Catarman has 6.5. Most plants grow best in soils with a slightly acid reaction. Organic matter of 11% was about the average content of all the soils. This was not significantly different among the five barangays. That no trend can be established can be attributed to the fact that riparian soils are inherently heterogeneous in mineral or organic character by virtue of the influence of water or flooding in these zones. The bulk densities of the representative soils show that Catarman soils have the highest bulk density values and are consistent with the fact that it is the barangay closest to the coastal area. The soil upstream is more porous, a soil physical condition much more desirable for plant growth and other soil living organisms.

The upstream communities are predominantly Subanons while downstream communities are generally a mix of long-time residents and migrants from all over the country. Farming is the main occupation. The river is the center of the family's domestic activities. Fishing is a major activity from upstream to downstream but is not considered a source of income. The use of illegal fishing methods such as use of "tubli" (*Derris* root extract), "kuryente" or mild current, and pesticides in the guise of tank and hand washing was confirmed by the participants in the focus group discussion (FGD).

The communities in the five barangays were consistent in saying that the river in their area was then narrow and deep, and that fishery resources were very abundant. The river was a good place for relaxation. But it has changed.

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Local researchers are trained on field methods and

Another one on his cap

The Hugh Greenwood Environmental Science Award is given in recognition of outstanding scientific and technological research works that contribute to environmental protection and conservation. The National Academy of Science and Technology (NAST) of the Philippines initiated this award four years ago in celebration of Earth Day.

This year's winner is Dr. Perry S. Ong, cited for his significant contributions in Philippine biodiversity conservation, particularly in the implementation of the Philippine Biodiversity Conservation Priority-Setting program, which identifies a total of 206 integrated priority conservation areas and five strategic actions to help ensure the conservation of Philippine biodiversity. His internationally recognized publications have led to a better understanding of the diversity of

Philippine wildlife and drawn the active participation of the academe, private sector, and the NGOs towards the improved management and conservation of Philippine protected areas.

Dr. Ong is also the recipient of several awards, being the Hiyas Environmentalist of the Year (2000), The Outstanding Young Scientist (2000), and one of The Outstanding Young Men (2000). He also received the Jose Rizal Award for Excellence in Science and Technology (2002), and the International Publication Award (2000) given by the University of the Philippines (UP) System.



Dr. Perry S. Ong with Dr. Perla Santos-Ocampo, NAST President giving the award. Also in picture are Dr. Filemon Uriarte (far left), Chair of the Board of Judges, and Mr. Lorenzo Agaloos (far right), Asst. Director of PAWB-DENR.

Dr. Perry S. Ong is an Associate Professor of Behavioral Ecology and Evolutionary Biology at the Institute of Biology, College of Science, University of the Philippines Diliman. He is also the current Chair of the Joint Programme Committee (JPC) of the Biodiversity Research Programme (BRP) for Development in Mindanao: Focus on Mt. Malindang and Environs.

Community-based... from page 10

Today, the river is already wide and shallow, the water is already turbid and trees are already very few. The banks are already eroded and denuded. The kinds of fish and the number of fish individuals have also declined.

The participants mentioned a number of factors that would affect the status of the river and its riparians. These were (1) illegal fishing activities (e.g., tubli and use of the pesticide *Decis*, "kuryete" or electric fishing); (2) absence of trees in the riverbank; (3) illegal logging activities in the uplands; (4) unregulated quarrying; (5) damming and irrigation; (6) dumping of domestic and municipal wastes into the river; (7) unregulated extraction of water by the National Waterworks and Sewerage Authority (NAWASA); and (8) natural phenomena like landslides and floods. The people are aware of the activities that are beneficial and destructive to the river and its riparian areas. Despite this knowledge, many

are still engaged in destructive and illegal activities. The riparian areas near the headwaters are still rich in biodiversity and are a refuge for many endemic plant and animal species. The water is still clean as indicated by the survey on macroinvertebrates and the analysis of coliform load. But the pressure from increasing agricultural activities continues to threaten the state of biodiversity and water quality along the riverine and riparian ecosystems of the Langaran River.

Government agencies and nongovernment organizations need to continue to work together in organizing the communities along the river (i.e., the Bantay Suba) in preserving the environment and conserving the natural resources that are still present as well as in restoring the degraded riparians downstream. Upstream, farmers should be taught sustainable farming technologies parallel to intense efforts of planting "bungahoy" (fruit trees)

along the riparians. Downstream, anti-erosive infrastructures are necessary in areas where efforts to plant trees proved futile. All these activities should go hand in hand with economic livelihood programs that would reduce pressure on the biological and water resources on the river and its riparians. ■



Sundasciurus philippinensis, an endemic mammalian species found along the Langaran River.

From research...from page 6

connecting research to policy. Herein lies the “innovative” character of the programme in that it does not generate knowledge on biodiversity for its sake alone but on the long term, is intended to also catalyze continued community-led biodiversity conservation efforts leading to sustainable development. That the programme empowers local stakeholders to promulgate and support conservation goals, and at the same time promotes development through alternative livelihood opportunities, is why it is unique. Research formulated from community needs pre-supposes that the results will contribute to resultant action intended to address such needs. Said action is articulated through local policies and ordinances that are formulated from, or influenced by empirical and scientific research data generated by the programme.

The host of users of this data and information generated by the BRP includes LGUs with jurisdictional authority over various parts of Mt. Malindang within their respective municipal boundaries, the PAMB of Mt. Malindang Natural Park (MMNP) with authority over the protected areas of the mountain, government line agencies including the DENR, the Department of Agriculture (DA), the academe, and nongovernment organizations. With so many entities involved, biodiversity conservation initiatives are seen as largely fragmented and uncoordinated. It is in

this respect that the programme looms as a possible consolidation point. The BRP’s research framework set on a landscape continuum makes it imperative that subsequent conservation efforts are based on an accurate composite picture of the site as provided by the various researches. This would then lead to organized, well planned, and complementary policies and regulations directed to a common end --- biodiversity conservation in Mt. Malindang.

Finally, since the BRP is on a pilot scale, the lessons learned are to be documented and replicated in other parts of the country. The programme is a pioneering example of how biodiversity research can be used to promote biodiversity conservation. Clearly what makes this possible is the all-important link between research and policy. The BRP is supposed to be a shining example of this and indications show that from day one, it has been moving towards this direction.

At the donor level, the paradigm shift from the traditional North-South collaborative research model to a more “South-led” model demonstrated by the BRP is also ground breaking. If proven successful, this could lead to a shift in policy within donor institutions and countries on how development aid should be effectively provided to recipient countries. ■

BRP research paper awarded

The Second Best Research Paper Award was given to the “*Community-based Inventory and Assessment of Riverine and Riparian Ecosystems in the Northeastern Part of Mt. Malindang*” by the National Aquatic Resources Research and Development System (NARRDS). The award was given on 30 January 2004 during the 16th anniversary of the Philippine Council for Aquatic and Marine Research and Development (PCAMRD) in Los Baños, Laguna. The BRP research project on the riverine ecosystems is headed by Dr. Proserpina Gomez-Roxas. The other members of the research team are Ms. Annabella M. Gorospe, Dr. Renato D. Boniao, Dr. Linda M. Burton and Mr. Sherwin S. Nacua. ■

The United Nations declared May 22 the “International Day for Biological Diversity” to increase understanding and awareness of biodiversity issues. This year’s theme is Biodiversity: Food, Water and Health for All.

SAMU’T-SARI is the official publication of the BRP. Its name was derived from the Pilipino term for biodiversity which is “*samu’t-saring uri ng buhay*.” *Samu’t-sari* means variety.

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