

Negros Rainforest Conservation Project



Project Overview

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Project Summary

The Negros Rainforest Conservation Project (NRCP) is located in the North Negros Forest Reserve (NNFR), where Coral Cay Conservation (CCC) supports the work of the Negros Forests and Ecological Foundation Inc (NFEFI) in a collaborative program of research, restoration, training and education, on Negros Island, Philippines.

The project utilises trained volunteers to collect baseline biodiversity data in order to increase the understanding of the ecological dynamics and community composition of the different habitat types within the tropical montane cloud forest of the NNFR. This data will quantitatively underpin the development of integrated community-driven management recommendations for the conservation and sustainable use of the biodiversity of the region.

In collaboration with NFEFI, the project has trained many international and Filipino volunteers in biodiversity assessment techniques, and has also generated training and employment opportunities for local communities and counterparts. These opportunities and the resulting increased environmental awareness, will in combination with the scientific outputs, sustain the initiative and promote the conservation, sustainable use, and equitable sharing of the benefits of the local biodiversity.



Staff and volunteers at the NRCP

NEGROS FORESTS & ECOLOGICAL FOUNDATION, INC. (NFEFI)

Ensuring the long-term conservation of the terrestrial environment in the Philippines, including the preservation of some of the most endangered endemic Philippine mammals and birds.

CORAL CAY CONSERVATION LTD (CCC)

Providing resources to help sustain livelihoods and alleviate poverty through the protection, restoration and management of coral reefs and tropical forests.

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1. The Negros Rainforest Conservation Project

1.1 Introduction

The Negros Rainforest Conservation Project (NRCP) is a joint programme of co-operative research, education and training between the Negros Forests and Ecological Foundation Inc. (NFEFI) and Coral Cay Conservation (CCC). The NRCP is based in the Tropical Montane Cloud Forests (TMCFs) of the North Negros Forest Reserve (NNFR), in Negros Occidental, Negros, Philippines (Figure 1.1).

1.2 Background

The moist forests of the Philippines, including the NNFR, are the eighth most vulnerable forest ecoregion in the world (WWF 2001). The NNFR is the largest remaining area of wet evergreen rain forest on Negros and the second largest in Negros-Panay Faunal region. It is of clear importance to the survival of many critically endangered species found only within the Negros-Panay Faunal region, the most threatened of the Philippines' 5 faunal regions (Heaney & Regalado 1998).

The Philippines is a mega-biodiversity hotspot and has higher percentages of endemism than any other biogeographic province in the whole of the Indo-Malayan Realm. Over 57% of species in the major faunal and floral groups occur nowhere else in the world (Oliver & Heaney 1996). Birdlife International currently identifies Negros Island as an Endemic Bird Area (EBA) and the NNFR as an Important Bird Area (IBA) (Stattersfield *et al.*, 1998).

However, the Philippines also has one of the highest rates of tropical forest loss, declining from 70% to 18% cover in the last 100 years (Figure 1.3) and Negros Island only has 4% of its original forest cover (Figure 1.4). Approximately 60% of the endemic Philippine flora are now extinct. This also poses a great threat to many endemic vertebrate species such as threatened hornbills (*Penelopides panini* and *Aceros waldeni*), and the endangered (WCSP 1997) Philippine spotted deer (*Cervus alfredi*), and Philippine warty pig (*Sus cebifrons*). Both species have been extirpated from 95% of their former range (Cox 1987). They are extinct on the islands of Cebu, Guimaras and Masbate having once been common through the West Visayas. Their status and distribution on Negros is very poorly known and information is urgently needed for effective conservation and management.

In addition to harbouring immense biological diversity, the NNFR is also a source of vital ecosystem goods and services. For example, it provides many non-timber forest products (NTFPs) such as Rattan and Bamboo, and also protects six vital watersheds for the north Negros area, providing a clean and controlled supply of water to the provincial capital and other areas. Large scale flooding as a result of deforestation is becoming more common, and consequently has huge social and economic costs. The case to preserve the remaining forested watersheds for environmental and socio-economic reasons is clear. The Foundation for the Philippine Environment (FPE) has therefore stressed the need to develop strategies to preserve and sustain the NNFR and its stakeholder communities.

The integrated importance of the social, economic and ecological values of the NNFR are now beginning to be recognised at international, national and local scales. The Department of the Environment and Natural Resources (DENR), and the Philippine National Biodiversity Strategy and Action Plan (NBSAP) have identified the need to conserve the forest resources via use of the collective efforts of empowered, self-reliant Filipinos (DENR/UNEP 1997). However, they lack the resources for effective implementation. NFEFI has assumed this role for Negros and is dedicated to protecting, conserving and restoring the Negros environment in order to safeguard the sustainable use of its resources for future generations. In 1998 NFEFI

asked CCC to assist in the provision of resources for the production of a sustainable management plan for the NNFR and this resulted in the establishment of the NRCP (Figure 1.2).

Negros Rainforest Conservation Project Location

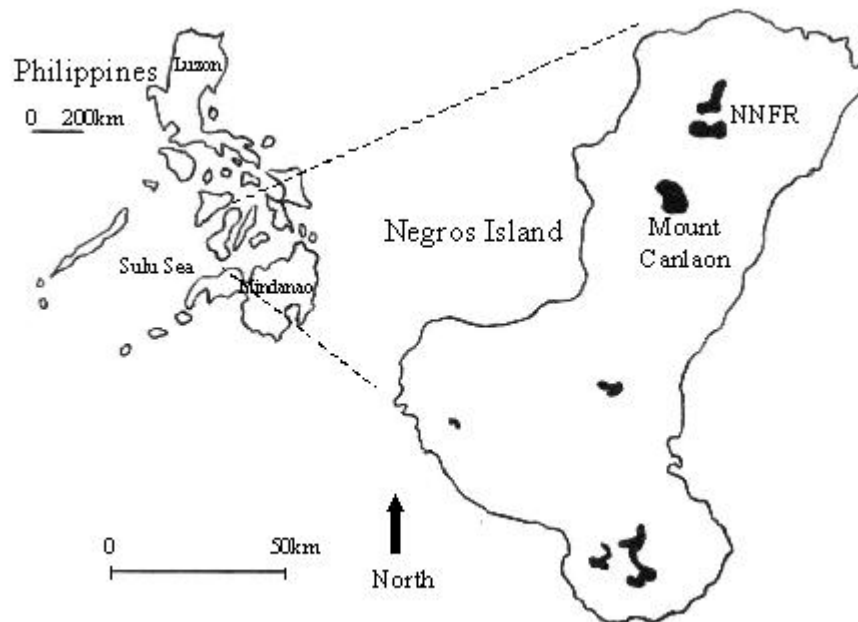


Figure 1.1. The remaining forest patches of Negros Island and the location of the North Negros Forest Reserve (NNFR) within Negros, Philippines.



(A)



(B)



(C)

Figure 1.2. (A) CCC volunteers undertaking field surveys; (B) The NRCP Field Station; (C) Filipino scientists assisting with mist-netting surveys.

Deforestation in the Philippines

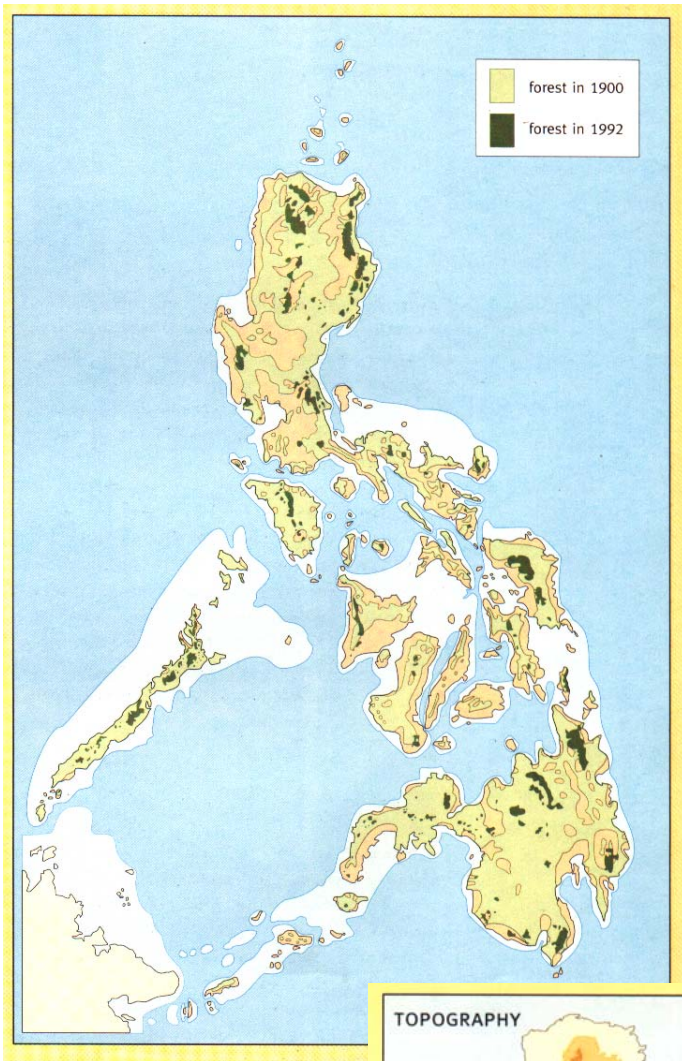
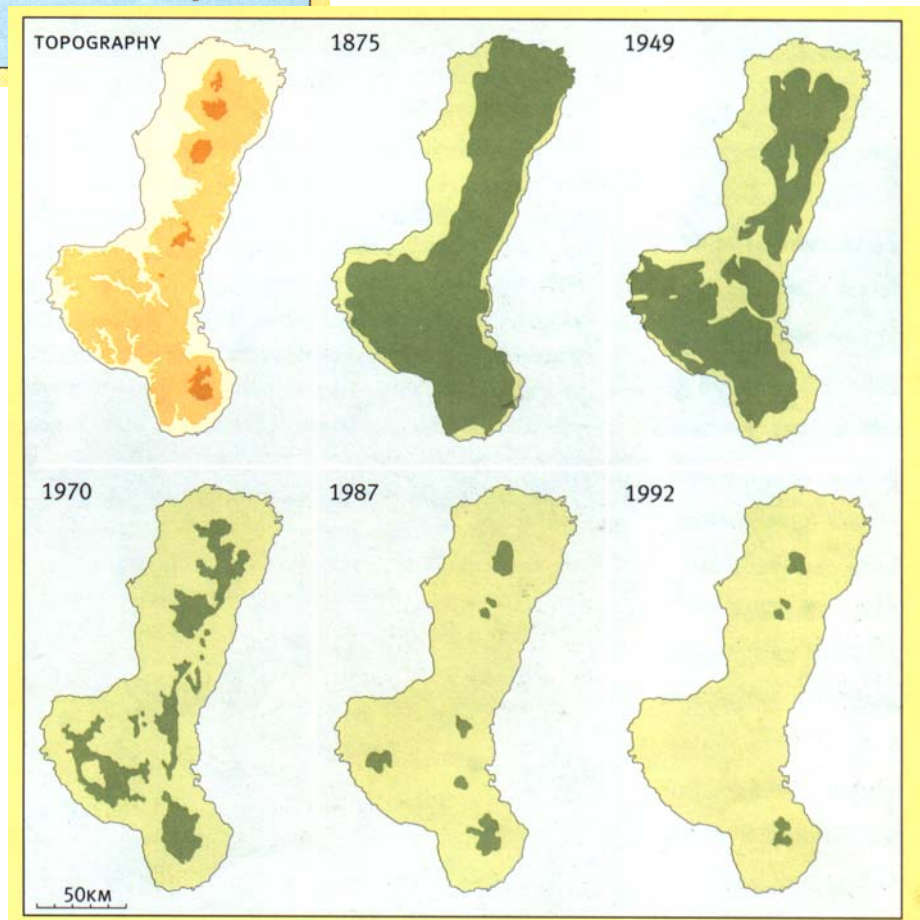


Figure 1.3 (left). Distribution of old growth rain forest in the Philippines, in 1900 and 1992 (Heaney & Regalado 1998).

Figure 1.4 (below). Historical forest coverage (dark green) of Negros Island, Philippines (Heaney & Regalado 1998).



The NRCP conducts its conservation work from a field centre located in the village of Campuestohan, on the southwest the perimeter of the NNFR. A program of biodiversity surveys and monitoring work has been established within the Municipalities of Talisay and Murcia (Figure 5.1), Province of Negros Occidental. This will provide ecological data, in order to make recommendations towards the sustainable management of the NNFR, and provide information for the co-operative development of environmental awareness and education initiatives.

1.3 Aims and objectives of the NRCP

The current aims and objectives of the NRCP are outlined as follows:

- To obtain base-line quantitative data on the biodiversity of the fauna and flora of the North Negros Forest Reserve, to create resource maps and an environmental database for the region.
- To conduct complimentary field based research into the habitat requirements and ecology of the species currently included in the NFEFI species recovery programme, the objective of which is to produce guidelines for effective forest management to aid in-situ conservation of specific species.
- To provide suitable education materials and programmes to improve environmental awareness amongst local communities, to offer training opportunities to host country counterparts in biodiversity assessment & management and to provide non-destructive alternative livelihood opportunities through the development of eco-tourism and sustainable forestry practices.
- To produce integrated community-driven management plans for the conservation, restoration and sustainable use of biodiversity in the region.

The results of the baseline survey work will contribute vital information to the development of a sustainable management recommendations for this area of the NNFR, with the potential to combine the work of the NRCP with other data sources and develop a management plan for the whole NNFR. All results and reports produced by the NRCP will be submitted to NFEFI who will facilitate their dissemination and outputs therein to the local municipalities and will include the findings in its community education projects.

1.4 Collection Permit

The NRCP operates under the Wildlife Gratuitous Permit (GP) No. 90 as issued by the DENR to NFEFI authorising the same to collect certain biological specimens for research/scientific purposes. All collection activities undertaken by the NRCP adhere strictly to the terms and conditions of the above mentioned GP, and the NRCP only collects specimens for preservation when strictly necessary for taxonomic identification and conservation purposes.

The current permit allows the NRCP to make collections from the major faunal and floral groups (as detailed below):

Most major faunal groups include: Avians, Mammals, Reptiles, Amphibians, & Invertebrates.
Most major floral groups include: Angiosperms, Gymnosperms, Filicinophyta & Bryophyta.

1.5 Staffing

A CCC appointed Project Scientist (postgraduate biologist) co-ordinates and manages the research programme, supported by a Scientific Officer (with relevant graduate training and experience). The surveys utilise Filipino and international volunteers to collect the field data under the guidance and training of NRCP staff and research collaborators. Faunal and floral surveys are completed throughout the year and the ecological survey work has been designed to enable the collection of reliable quantitative and qualitative data by non-expert volunteers.

2. Research Activities

2.1 Overview

The NRCP has been fully operational with research volunteers since February 2000, and has begun the process of researching the effects of ecological disturbance and differing management regimes upon the biodiversity and productivity of the tropical sub-montane forest within the NNFR. Six Permanent Sample Plots (PSPs), each of one hectare, have been established within the NNFR to enable spatio-temporal comparisons of community composition and ecological dynamics of different forest areas.

2.2 Surveys & Methods

- *Transect Establishment*

A total of six PSPs, each enclosing an area of one hectare (500m x 20m transect lines), have been permanently established in parallel pairs, in three different forested areas: (1) *Old-growth forest* - selectively legally logged for dipterocarps 35 years ago. (2) *Secondary (intermediately disturbed)* - forest, legally logged for dipterocarps, and illegally logged for other species with commercial value 11 years ago. (3) *Secondary re-growth forest* - legally logged for dipterocarps, illegally logged for other species with commercial value, and cut for charcoal production, resulting in complete exploitation. Extraction stopped and regrowth began 11 years ago.

- *Botanical Inventories*

The NRCP is undertaking a species inventory within each PSP, in order to assess community composition and diversity using standard survey protocols (Hamann *et al*, 1999; Alder & Synnott 1992). The detailed survey protocol will also enable growth, phenology and productivity patterns to be monitored within each PSP.

- *Invertebrate surveys*

The invertebrate fauna of each PSP and associated habitat type are being surveyed using standard techniques to assess species diversity and distribution.

- *Vertebrate Surveys*

The vertebrate fauna of each PSP and associated habitat type are being surveyed using standard live trapping and observation techniques to assess species diversity and distribution.

- *Abiotic Surveys*

Replicated soil samples are collected from all of the PSPs and analysed to determine a range of physical and chemical parameters. Meteorological variables are also recorded on a daily basis.

2.3 Depository Institutions

All specimen collections will be deposited in collaborating institution(s) for reference and contribution to other taxonomic projects. The institutions include the Philippine National Museum, the University of the Philippines and the Royal Botanic Gardens. A reference collection will also be held at the NRCP base to assist with ongoing research and training.

2.4 Resource Mapping

The NCRP is currently investigating potential collaborations and protocols for community involvement in NTFP resource assessments. An aerial photographic survey of the NNFR is currently being negotiated to assist with habitat and resource mapping initiatives.

3. Research Outputs

3.1 Baseline Data

Ecologically sound forest management, whether for conservation alone or in conjunction with sustainable resource use, will only be successful if the dynamic behaviour of the systems can be adequately characterised and predicted. PSP studies (as designed for the NRCP) provide us with an opportunity to assess ecological changes over time, and therefore have a central role in many aspects of tropical forest research, conservation and management.

As a contribution to facilitating the development of the scientific elements of the sustainable management plan for the NNFR, the NRCP will:

- Provide ecological data for comparisons between our own monitoring sites on Negros.
- Provide information for comparison with scientific surveys in other rainforest environments.
- Provide records for Philippine and International biodiversity databases.
- Provide baseline data on which future management guidelines can be developed.

3.2 Data Analysis

The data generated by the NRCP will permit various univariate and multivariate analyses to be undertaken by CCC (and others) to better understand the relationships and interplay between the complex biotic and abiotic factors within the NNFR. This will not only permit analysis of the relative diversity and distributions of all major faunal and floral species groups but such data will also be integrated into larger analysis databases such as TREMA – Tree Management and Mapping Software for sustainable forest management. Outputs from these will contribute directly to management recommendations.

Ultimately, the empirical data generated by the NRCP will be integrated with other (environmental, social and economic) data sets using a Geographic Information System (GIS) in order to produce spatially referenced end user natural resource management tools.

4. Training & Livelihood Opportunities

4.1 Volunteer Training

The NRCP conducts a comprehensive training programme of tropical habitat and wildlife assessment for both international and local Filipino volunteers. This training programme is conducted once every month and is open to local community members. The project also offers training opportunities in biodiversity monitoring and resource assessment to host country students and counterparts.

4.2 Education and Awareness

The NRCP is currently working with NFEFI to generate suitable education materials and initiatives to increase and sustain environmental awareness amongst local communities, schools and business groups. CCC/NFEFI are working to increase the awareness of Philippine natural resource management issues on local, regional, national and international scales, via a range of information and media outlets.

4.3 Alternative Livelihoods

The NRCP directly contributes to the development of alternative livelihood opportunities through the involvement (employment) of local community members in all aspects of the NRCP work. The staff and volunteers of the NRCP also contribute the ecological restoration and NTFP work of NFEFI who work to develop sustainable alternatives to natural resource use and generate alternative livelihoods.

The NRCP contribution to the integrated sustainable management of the NNFR

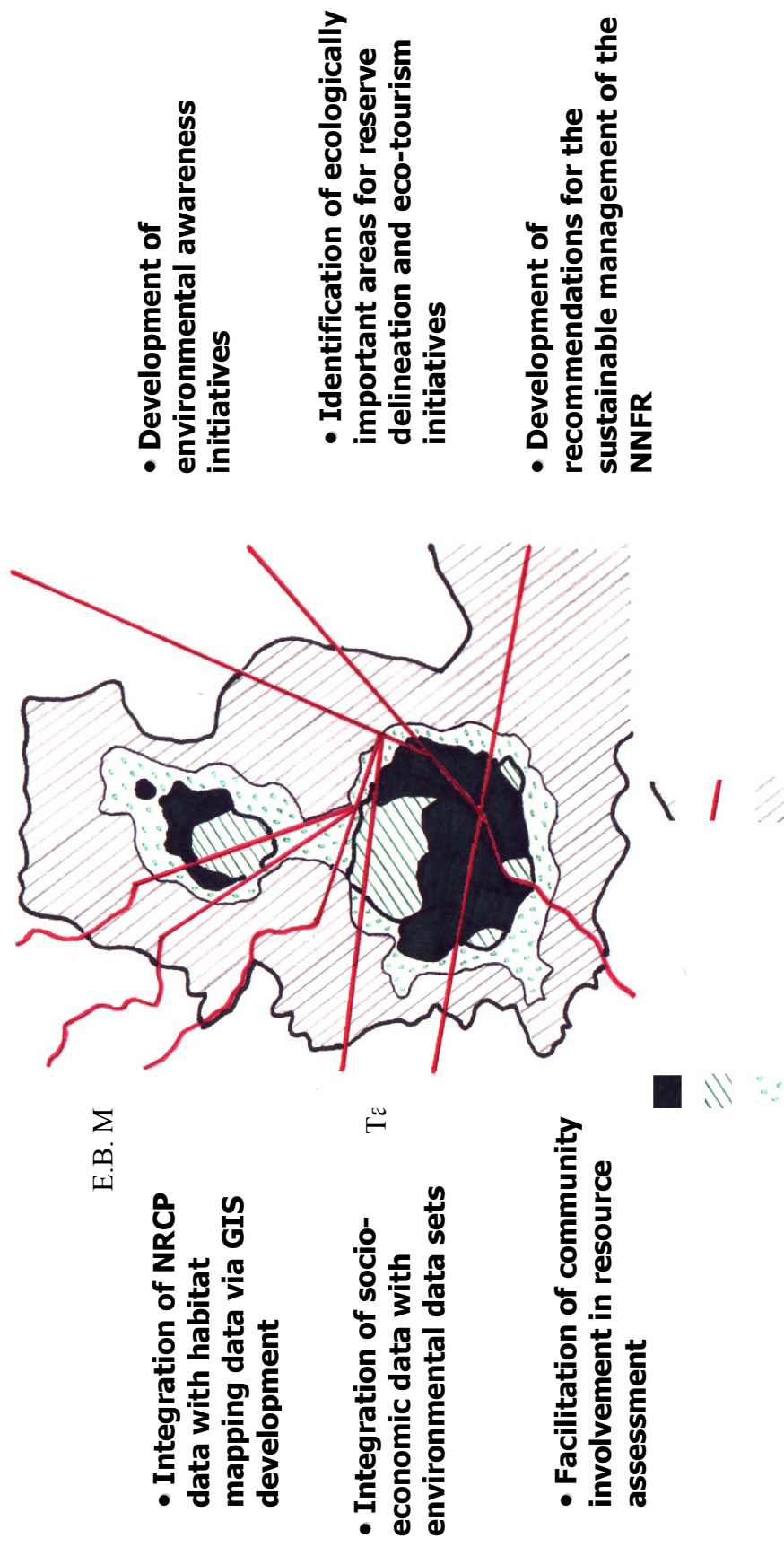


Figure 5.1. Summary of the NRCP contributions to the sustainable management of the NNFR.

The NNFR is 80 500 ha, of which only 20% (approx) is forested, yet it is the second largest fragment of evergreen forest left in the Negros-Panay Faunal Region and is split between eleven stakeholder municipalities.

5. Future

5.1 Future Objectives

The NRCP will ultimately integrate the empirical field data with spatially referenced land cover data using aerial photographs and satellite images of the main forest habitats. This will be digitised into a GIS to create a base resource map for the NNFR. Biodiversity distribution data gathered by NRCP volunteers will then be overlaid onto this base map to classify the digitised features and produce detailed habitat and species distribution maps. The faunal and floral community composition data can then be extrapolated for other similar habitat areas (determined by remote sensing) within the NNFR.

Resource management recommendations will be derived using the resulting maps, and temporal data, provided by the ongoing surveys of the NRCP. Habitat maps and survey reports containing management recommendations will be provided to NFEFI to facilitate their conservation objectives related to their species recovery programme. NFEFI will liaise with local and regional governments and other counterparts to action outputs of the NRCP and officially establish reserves and/or management procedures through the NNFR Management Council.

The NRCP will continue to collect baseline ecological data from PSPs and contribute to the development of spatially referenced natural resource management tools in order to facilitate stakeholders (NFEFI, DENR, local councils, & local communities) in the development and implementation of a sustainable management plan for the NNFR (Figure 5.1).

6. Opportunities

6.1 Research Collaboration

Coral Cay Conservation and NFEFI are keen to collaborate with researchers and research teams (ecological, social, & economic) whose research interests in the NNFR will ultimately contribute in some way to the overall goals of the project. CCC does not offer funding but can provide support in terms of scientific advice, logistical support, permits, in-country assistance, and access to archived data. CCC is always receptive to research proposals and willing to work with potential collaborators to develop effective and achievable research projects.

6.2 Research Assistance

Coral Cay Conservation and the NRCP provides opportunities for students to pursue their under-graduate and post-graduate research for theses and dissertations on tropical ecosystems. CCC does not offer funding but can provide support in terms of scientific advice, logistical support, permits, in-country assistance, and access to archived data.

6.3 Volunteers

Coral Cay Conservation continually seeks self-supporting volunteer fieldwork assistants to contribute to the ongoing programme of biodiversity surveys and community conservation work in the tropical montane cloud forests of the Philippines.

Volunteers assist with a range of faunal and floral biodiversity surveys and no previous experience is required, as full training will be given by qualified wildlife biologists.

Volunteers can undertake a variety of tasks, including:

- Rapid biodiversity surveys of critical forest ecosystems and endangered species from most major faunal and floral groups.
- Assisting with the development of local environmental education initiatives.
- Assisting local communities with reforestation and ecological restoration work.

7. Acknowledgements

The NRCP is indebted to the hard work of many individuals who are too numerous to detail here. The NRCP also wishes to acknowledge the assistance of the following groups and organisations:

- Department of Environment & Natural Resources
- Wildlife Conservation Society of the Philippines
- Fauna and Flora International, Philippines
- National Museum of the Philippines
- University of the Philippines
- Royal Botanic Gardens, Edinburgh
- Natural History Museum
- University of Durham
- University of London
- People of Campuestohan
- Field Staff & Volunteers of CCC

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