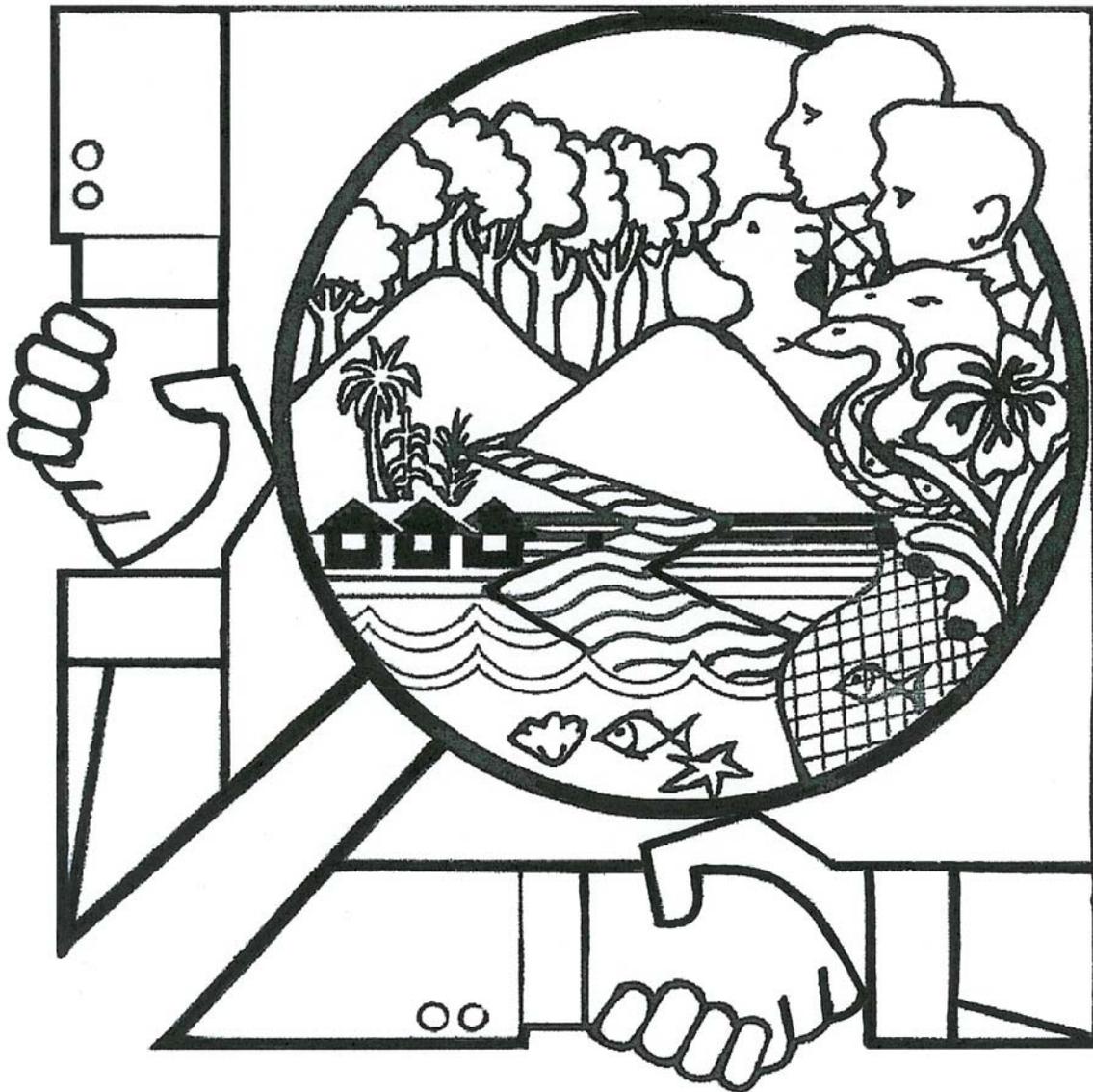


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under the

Biodiversity Research Programme (BRP) for Development in Mindanao:  
Focus on Mt. Malindang and Environs

The Biodiversity Research Programme (BRP) for Development in Mindanao is a collaborative research programme on biodiversity management and conservation jointly undertaken by Filipino and Dutch researchers in Mt. Malindang and its environs, Misamis Occidental, Philippines. It is committed to undertake and promote participatory and interdisciplinary research that will promote sustainable use of biological resources, and effective decision-making on biodiversity conservation to improve livelihood and cultural opportunities.

BRP aims to make biodiversity research more responsive to real-life problems and development needs of the local communities, by introducing a new mode of knowledge generation for biodiversity management and conservation, and to strengthen capacity for biodiversity research and decision-making by empowering the local research partners and other local stakeholders.

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*With the assistance of:*  
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## Acronyms

<b>ABC</b>	Association of Barangay Captains
<b>BRP</b>	Biodiversity Research Programme
<b>BHW</b>	Barangay Health Worker
<b>CBFM</b>	Community-Based Forest Management
<b>CIDSS</b>	Comprehensive and Integrated Delivery of Social Services
<b>CML</b>	Centre of Environmental Science
<b>CMU</b>	Central Mindanao University
<b>DA</b>	Department of Agriculture
<b>DECS</b>	Department of Education, Culture and Sports
<b>DENR</b>	Department of Environment and Natural Resources
<b>DSWD</b>	Department of Social Welfare and Development
<b>DOSCST</b>	Davao Oriental State College of Science and Technology
<b>EIA</b>	Environmental Impact Assessment
<b>ENR-SECAL</b>	Environment and Natural Resources - Sectoral Adjustment Loan
<b>GO</b>	Government Organization
<b>IEC</b>	Information, Education and Communication
<b>IP</b>	Indigenous People
<b>LGU</b>	Local Government Unit
<b>MATCO</b>	Mt. Ampiro Timber Company
<b>MHO</b>	Municipal Health Officer
<b>MSU</b>	Mindanao State University
<b>MSU-IIT</b>	Mindanao State University-Iligan Institute of Technology
<b>NAMRIA</b>	National Mapping and Resource Information Authority
<b>NGO</b>	Nongovernment Organization
<b>NIA</b>	National Irrigation Authority
<b>NIPAP</b>	National Integrated Protected Areas Programme
<b>NIPAS</b>	National Integrated Protected Areas System
<b>PAMB</b>	Protected Area Management Board
<b>PASA</b>	Protected Area Suitability Assessment
<b>PRA</b>	Participatory Rural Appraisal
<b>PRE</b>	Population-Resource-Environment
<b>PTCA</b>	Parent-Teacher-Community Association
<b>RA</b>	Republic Act
<b>RIC</b>	Rural Improvement Club
<b>RRMP</b>	Regional Resource Management Program
<b>SALT</b>	Sloping Agricultural Land Technology
<b>SEARCA</b>	Southeast Asian Regional Center for Graduate Study and Research in Agriculture
<b>SK</b>	Sangguniang Kabataan
<b>SKPSC</b>	Sultan Kudarat Polytechnic State College
<b>SPAMAST</b>	Southern Philippines Agribusiness, Marine and Aquatic School of Technology
<b>SWOT</b>	Strengths, Weaknesses, Opportunities and Threats
<b>TACDRUP</b>	Technical Assistance Center for the Development of Rural and Urban Poor
<b>TRICAP</b>	Tribal Communities Association of the Philippines

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## Executive Summary

The participatory rural appraisal (PRA) of the upland ecosystem during the pre-implementation phase of the Philippines-Netherlands Biodiversity Research Programme in Mindanao: Focus on Mt. Malindang was done in April to May 1999. This activity aimed to:

1. describe the biophysical, sociocultural and economic conditions and status of the upland ecosystem;
2. assess the biodiversity conditions of Mt. Malindang Range;
3. identify the stakeholders and their needs;
4. determine the strengths, weaknesses, opportunities, and threats to the communities in relation to biodiversity conservation; and
5. identify researchable areas in the upland ecosystems of Mt. Malindang Range.

The Upland Ecosystem Team consisted of eight members with multidisciplinary background such as forestry, ecology, zoology, wildlife biology, entomology, and socio-anthropology. They come from the different institutions of higher learning and agencies based in Mindanao. Two members (Dr. Jose B. Arances and Prof. Lucy B. Ledres) are from Central Mindanao University (CMU), Musuan, Bukidnon, two (Dr. Olga M. Nuñez and Dr. Ermelinda G. Tobias) are from the Mindanao State University-Iligan Institute of Technology (MSU-IIT), three (Dr. Caharodin A. Cali, Dr. Emma M. Sabado, and Dr. Apolinario A. Alicante) are from MSU, Marawi City, and Mr. Domingo Ramirez from the Department of Environment and Natural Resources (DENR)-National Integrated Protected Areas Program (NIPAP)-Protected Area Management Board (PAMB). The team was led by Dr. Caharodin A. Cali as key person and Dr. Jose B. Arances as PRA team leader.

The PRA sites for the Upland Ecosystem Team were the municipalities of Concepcion and Don Victoriano. Both are located in the Malindang mountain range which is within the core of the Province of Misamis Occidental. Only six barangays of Don Victoriano and five barangays of Concepcion were included. To establish

interconnectivity with the lowland ecosystem, one barangay of Sapang Dalaga, Sixto Velez, was included.

Preparatory activities for the PRA were done. All PRA participants attended trainings and workshops conducted by SEARCA. The Philippine Working Group, Dutch experts, and resource persons of various disciplines were also present. The first training and workshop was held in Dapitan in August 1998, where all the participants were introduced to participatory, multidisciplinary, and multisectoral approaches to biodiversity research. Major activities of the pre-implementation phase were determined and key persons and members for each activity were identified to: (1) gather secondary data about Mt. Malindang and its environs, (2) identify stakeholders, (3) identify problem areas, (4) form a research team, and (5) identify research areas.

During the training, ocular visits to the research site were undertaken to encourage the enthusiasm of the participants. Further training and workshop were undertaken at CMU, Musuan, Bukidnon where additional participants were invited to join. Team building, interdisciplinarity, and commitment were emphasized by the trainers. Different methods of PRA were introduced, including transect walks, semistructured interview, and focus group discussions. The landscape approach to biodiversity assessment was fine-tuned. Hence, three ecosystems were named: upland, lowland, and coastal ecosystems. Three ecosystem teams were formed. Likewise, the teams for stakeholders analysis and biodiversity research programme were also formed. Each training participant was identified for a particular ecosystem.

Entry protocols and requirements to the PRA sites followed. These were facilitated by the Stakeholders Analysis Team and enhanced by the different ecosystem teams themselves. Permits to enter and conduct fieldwork in the designated barangays were secured from the respective municipal mayors.

The Upland Ecosystem Team conducted the reconnaissance survey in the two towns of Don Victoriano and Concepcion in early April 1999.

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Courtesy calls and consultative meetings with local government officials followed and the Philippines-Netherlands Biodiversity Research Programme in Mindanao: Focus on Mt. Malindang was presented and discussed. In addition, multisectoral meetings were conducted to further enhance the community's understanding of the biodiversity research programme. Key informants, stakeholders, and participants were identified and orientation of prospective participants followed in preparation for the fieldwork.

Fieldwork of the PRA commenced in early May 1999 at Barangay Mansawan, Don Victoriano. Transect walks were done toward various directions within the barangay taking note of its biophysical, economic, and cultural features. Documentation of observations and activities was done. Spot mapping and resource mapping of the main thoroughfare of the barangay were accomplished. To enhance the gathering of information about biophysical, sociocultural and economic conditions, interviews using a semi-structured questionnaire were conducted among residents encountered along the transect walks and those in their homes. Small group discussions ensued whenever people flocked with the team members due to curiosity. In effect, further verification and validation of information/data gathered was accomplished. At the end of the day, the team members shared, discussed, and analyzed the data/information gathered.

The team continued the transect walk toward the next barangay, taking note of the biophysical features along the way. Identification and counting of number of specific species were done to determine biodiversity status. The next barangay is Gandawan. Similar methods of gathering information about flora and fauna that were prevalent a long time ago and about sociocultural and economic conditions of the people were employed in all barangays of the two municipalities of Don Victoriano and Concepcion where the team conducted the PRA. Barangays include Mansawan, Gandawan, Lake Duminagat, Lampasan, Tuno and Lalud of Don Victoriano, and Upper Salimpuno, Upper Potongan, Small Potongan, Poblacion, and Virayan of Concepcion, and Sixto Velez of Sapang Dalaga.

Data/information gathered from each barangay were organized and analyzed in terms of the relationship among the population, resources, and the environment (PRE analysis). Strengths

and weaknesses of the local people were identified and opportunities for courses of actions to be taken were determined. Activities that were threats to environmental security and biodiversity conservation and sustainable development were identified and analyzed. From these, researchable and development areas were generated.

Validation of the PRA results and their analyses were conducted in the communities of Don Victoriano and Concepcion toward the end of June 1999. Government officials and local and indigenous people from various barangays attended the community validation meetings. Their excellent participation in the validation of the results was noted and appreciated.

## **A. Biophysical features**

The Upland Ecosystem PRA sites in Don Victoriano and Concepcion are located within the elevation that ranges from 600 to 1500 meters above sea level and with a slope ranging from 0 to 90 degrees. The ambient temperature ranges from 15 to 22 degrees Celsius. The sites are located in the Mt. Malindang Range. The area consists of rugged mountains, which are volcanic in origin. Boulders, cobblestones, and solidified magma are commonly found in mountain flanks and slopes and along creeks and rivers. Basically, the soil type includes clay to clay loam with highly eroded topsoil. Thus, it has insufficient nutrients, and therefore is infertile.

Various forms of life in the PRA sites were noted and documented. Direct observations and ethnobiological interviews were employed to assess the biodiversity status of the different barangays. Both floral and faunal species were identified on site with the naked eye or with the aid of binoculars.

The total number of species of floral resources covered within the entire transects is 507, involving 369 genera and 129 families. According to conservation status, those classified as common consisted of 194 genera and 256 species. Those classified as rare consisted of 28 genera and 35 species. Those classified as scarce consists of 158 genera and 203 species.

Several faunal species were also observed and documented. These were vertebrates and

invertebrates. Sixty-seven species of avian fauna were recorded through observation and from key informants. Likewise, 11 species of reptiles, 2 species of amphibians, 12 species of mammals and 8 species of ichthyofauna were also documented.

Among the invertebrates, arthropods were the most prevalent. Insects are the most dominant in terms of number of species and number of individuals per species. Insects have significant roles in maintaining biotic communities. They act as pollinators, food for birds, fish and other animals, as predators, as scavengers, and as parasites of harmful insects. Sixty-three families belonging to 10 insect orders were recorded. Many families (13) belong to Order Lepidoptera. This is followed by Diptera with 11 families, Coleoptera with 9 families, and Hemiptera and

The following data on number of genera and species were obtained according to use and habit:

Use	Genera (no.)	Species (no.)
Timber source	28	34
Construction materials	8	9
Cottage industry	13	18
Ornamental plants	84	97
Ecological function	70	100
Edible parts	42	59
Landscape plants	28	31
Medicinal plants	15	16
Hedge plants	12	13
Fiber source	14	16
Soil erosion control	9	15
Vegetables	10	13
Forage/pasture	5	8
Weeds	27	111
Fuelwood source	5	6
Other uses	29	34
Habit	Genera (no.)	Species (no.)
Herbs	81	117
Shrubs	54	82
Large trees	28	35
Small trees	53	67
Grasses	28	33
Ferns	23	30
Medium-sized trees	34	40
Vines	26	31
Tree-like	17	26
Woody vines	14	31
Lichens	5	7
Epiphytes	5	7
Bryophyte	1	1
Total	369	507

Homoptera with four families each. Dermaptera and Thysanoptera have only one family each.

The following are the relevant observations and findings on biophysical resources:

1. Severe pest infestation on cabbage: Upon examination, the pest was identified as diamondback moth, *Plutella xylostella*. This is the major pest of cabbage in Mansawan, Gandawan, and Lake Duminagat such that farmers are forced to apply insecticides to minimize their impacts.
2. A practical mechanical control of pests on cabbage seedlings was installed and observed in Barangay Lake Duminagat. The farmers used nylon net mesh to enclose their nursery beds.
3. The presence of parasitic cocoons on dead larvae of diamondback moth in Gandawan clearly indicates the presence of natural enemies that suppress the population growth of insect pests.
4. Dead larvae observed on the way to Lake Duminagat were believed to have been attacked by pathogenic organisms such as bacteria and viruses.
5. Cotton stainer, *Dysdercus cingulatus*, was observed as a pest of okra in Lampasan.
6. Water striders and ripple bugs are abundant in the waters of Lake Duminagat, Guiban River, and Virayan River. These are bioindicators of water quality. Their presence indicates the absence of pollutants in the bodies of water.
7. Most of the avian, reptilian, mammalian, amphibian, and ichthyofauna species observed had ecological value as pollinators, seed dispersal agents, and insect pest control agents. Their social value lies in their being used as pets and experimental or research materials. Economically, they are used as food and trading items.
8. The municipalities of Don Victoriano and Concepcion are all situated within a protected area where the status of bioresources remains unresolved.

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## B. Socioeconomic and cultural profiles

From direct observations and interviews of key informants, participants, and stakeholders in the PRA sites, information and data on the following were gathered. In addition, these information were validated in focus group discussions and multisectoral meetings.

1. The number of households in all barangays range from 53 to 362. Population figures based on estimates and latest reports range from 210 to 1,829. The average household size is six.
2. About 3-5% of the population in each barangay is composed of old (65 years and above) folks. The young (0-14 years old) accounted for about 45% of the total population. The middle age group (15-64 years old) comprises about 50%.
3. There are more females than males.
4. In Barangays Mansawan, Gandawan, Lake Duminagat, Small Potongan, Upper Potongan, and Virayan, more Subanons were observed than any other ethno-linguistic group. In these barangays, Subanons probably account for 85% to 100% of the population. In Lalud and Tuno, the Subanons make up 70% of the total population.
5. The barangays have barangay health workers (BHW) but no municipal health officer (MHO). Medicines are very much lacking.
6. Only five barangays have electricity. The most common mass media facility is the transistor radio. Barangay captains in Don Victoriano have ICOM radios.
7. Houses are mostly made of galvanized iron sheets and wood/wood shingles. Very few houses use cogon as roofing material.
8. Two barangays have high schools. Upper Potongan does not have any elementary school. Five barangays have Grades I-II, three barangays have Grades I-IV while three barangays have complete elementary schools.
9. Farming is the main source of livelihood. Secondary sources of income include "manungha" (hired help in the farm), "karyada" (hauling), hand-sawing, and selling firewood.
10. Cash crops from Mansawan, Gandawan, and Lake Duminagat are mainly onions, cabbage, and chayote. For Lalud, Tuno, and Lampasan, cash crops are corn and root crops similar with Barangay Poblacion of Concepcion.
11. The average area cultivated is only  $\frac{1}{4}$  of a hectare. People occupy forest lands. They cannot get titles for the land they till since they live within the protected areas. Some possess certificates of stewardship over the piece of land they occupy.
12. There is no definite cropping pattern for root crops, onion, cabbage, and other vegetables. Corn is planted from April to May. The second cropping starts in September.
13. Rainy months are the lean months in Small Potongan and Upper Potongan, while for Virayan, every month is a lean month.
14. Poultry is seldom raised due to problems of pests and diseases.
15. Soil fertility is a big problem.
16. Women often help in the farm in addition to doing household chores. They plant, do weeding, and desucker onion plants. They also engaged in "karyada" to augment family income.

## C. Issues and concerns

The data and information gathered through direct observations, interviews, and meetings with the local residents and their local government units point to important issues and concerns. In the following list, the first two are the local residents' main concerns. The others are concerns raised by the team and residents. The team agrees with residents in believing that these issues and concerns are linked with each other in an intertwining manner.

1. Socioeconomics
  - a. Food security among upland communities
  - b. Social stability/peace and order situation
  - c. Alleviating family income above the poverty line
  - d. Availment of credit facilities at low or no interest at all
  - e. Availment of social amenities and services
  - f. Improvement of literacy
  - g. Increased productivity
2. Policy formulation needs
  - a. Resolving the status of the towns of Don Victoriano and Concepcion which are within the protected area
  - b. Tenurial rights of residents in the municipalities
  - c. Integrated approach to project implementation
  - d. Advocacy and information campaigns
3. People's empowerment through trainings and workshops
  - a. Agroforestry technology
  - b. Soil rehabilitation and amelioration
  - c. Enterprise development and cottage industry
4. Infrastructural needs
  - a. Rural electrification
  - b. Farm-to-market roads
  - c. Improved health services
  - d. Improved water system
5. Habitat destruction
  - a. Shifting cultivation within grasslands and brushlands
  - b. Unfavorable weather conditions and edaphic factors
  - c. Soil erosion/landslides
6. Chemical pollution
  - a. Application of pesticides
  - b. Application of inorganic fertilizers
7. Biological pollution
  - a. Indiscriminate introduction of alien species
  - b. Species extinction

## **D. Interconnectedness**

The landscape approach to environmental assessment for biodiversity status is quite timely and appropriate. The upland ecosystem of the Mt. Malindang Range highly affects the activities of the lowland and coastal ecosystems. Likewise, the reverse is true. Many aspects of daily life are interconnected. The PRA site, located in the mountain flanks, is endowed with a rich riverine system. Headwaters drain from the mountain range and together the water runs down with silt, flora, and fauna. In exchange, products for household use are purchased from the lowland and brought to the upland.

## **E. Areas for research with impact on biodiversity resources**

The issues and concerns discussed earlier form the basis for identifying research areas:

1. Human resource studies: demographic profile, cultural practices, local governance, and economic profile
2. Inventory of flora and pathological survey of fauna: ecological and socioeconomic values
3. Studies on appropriate and sustainable farming systems consistent with biodiversity conservation: soil fertility, water analysis, farming systems applicable to the locality
4. Biological studies and management: survey and identification of pests and diseases of common crops, their life history, population dynamics and control measures, and IPM
5. Environmental impact assessment of developmental projects: road construction, irrigation construction, ecotourism and agrotourism studies, and hydroelectric power construction
6. Forest management and rehabilitation studies
7. Ex situ breeding of rare and endangered species with a possibility of their reintroduction into the natural habitat
8. Genetic diversity studies of flora and fauna
9. Biotechnology studies

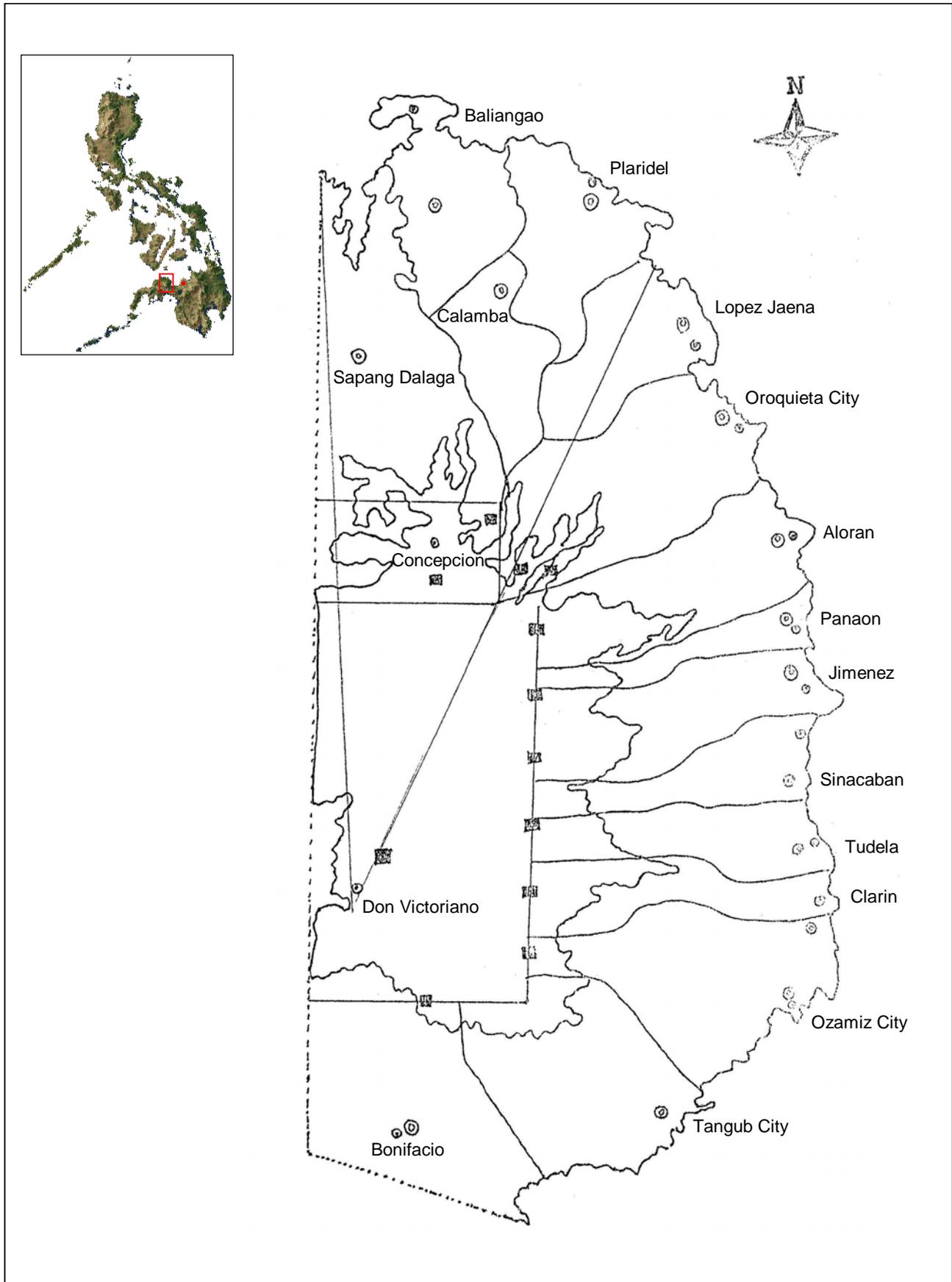


Fig. 1. Location map of the research sites.

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# Introduction

The participatory rural appraisal (PRA) in the upland ecosystem of the municipalities of Don Victoriano and Concepcion was undertaken as a pre-implementation phase activity of the Philippines-Netherlands Biodiversity Research Programme in Mindanao: Focus on Mt. Malindang. It is a process of getting a better understanding of the biophysical, sociocultural, economic and political conditions of the locality to analyze the problems and issues impinging on the community and their impacts on biodiversity. Identification and approximation of flora and fauna encountered during the transect walks indicate the biodiversity status of the area. Knowledge of these conditions and analyses of their interplay indicate strengths, weaknesses, opportunities, and threats to biodiversity. Strengths and opportunities within the locality can be maximized. The same way that weaknesses and threats can be reduced and transformed into positive features. From these, areas for different biodiversity researches are defined and delineated as developmental, action, and support programs.

## Geographical location and topography

The municipalities of Don Victoriano and Concepcion are located within the Malindang mountain range which are within the core of the province of Misamis Occidental (Fig. 1). This province is situated within the northwestern part of Mindanao Islands or at the northeasternmost part of the Zamboanga Peninsula. This is within the coordinates 123°31'45" to 125°55'30" East longitudes and 8°30'30" to 8°45'55" North latitudes. The province is bounded on the north to east-northwest by Mindanao Sea, on east-southeast by Iligan Bay, on the south by Panguil Bay and on the west by Zamboanga provinces (PASA Report 1993).

The towns of Don Victoriano and Concepcion are located within the proclaimed protected area boundary (RA 6266, June 19, 1971) of Mt. Malindang National Park which is declared as an Integrated Protected Area under the new NIPAS

Law as RA 7567 (June 1, 1992) (Bukagan Report 1994).

The PRA sites for the Upland Team include six barangays of Don Victoriano (Mansawan, Gandawan, Lake Duminagat, Lampasan, Lalud, and Tuno); five barangays of Concepcion (Small Potongan, Upper Potongan, Upper Salimpuno, Poblacion, and Virayan). To establish the interconnectivity with the lowland ecosystem, one barangay in Sapang Dalaga, Sixto Velez, was included. These barangays are located within the elevations that range from 600 to 1500 meters above sea level (masl) and with a slope ranging from 0 to 90 degrees. The ambient temperature ranges from 15 to 22° Celsius. Within the Malindang Mountain Range, the sites' terrain consists of rugged mountains which are volcanic in origin. Four major physiographic features (PASA Report 1993) were observed: volcanic mountains, volcanic flanks, isolated hillocks, and volcanic footslopes.

The volcanic mountains occur in a linear cluster generally oriented in a north-south direction. The prominent peaks and their respective elevations are: Mt. Balabag (1,484 masl), Mt. Ampiro (1,532 masl), North Peak (2,183 masl), Mt. Malindang (2,404 masl), South Peak (1,850 masl), and Mt. Moralong (1,417 masl).

Most of the barangay settlements are located within intervening sites between mountain peaks. These barangays are steep to very steep with a slope of more than 75°, and moderately to severely dissected by ravines, gullies and gorges (PASA Report 1993). Craters or caldera formations are evidences of the presence of volcanic mountains. These are shaped like circular sunken places or areas bounded by high rocky walls. These are distinct and highly pronounced in the barangays of Gandawan and Lake Duminagat. The focal point in the area is a crater lake.

Volcanic flanks lie on the mid-slopes of the mountains with altitude that ranges from 600 to 1000 m and slopes of 18-45°. These occupy the perimeter of the protected area of Concepcion to Don Victoriano. These are moderately to deeply

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dissected by ravines and deep to very deep nearly vertical prominent gullies (PASA Report 1993). The Dimorog Valley resembles an amphitheater while the poblacion area of Don Victoriano forms a hinterland valley.

The mounds of Gandawan and Mansawan represent the isolated hillocks. These are generally dome-shaped, moderately steep to steep to very steep, and slightly to moderately dissected by gullies.

Footslopes of the mountain range comprise the areas with 10 to 600 meter elevations and slightly to moderately dissected by stable gullies and streams. These are common in the barangays of Bagong Clarin and Lampasan, where the cliff-like areas become steeper as the slope rises from 3 to 8° from gently to moderately rolling topography (PASA Report 1993).

The municipality of Concepcion, which has a land area of 61.6 km<sup>2</sup>, consists of 18 barangays which are rugged and mountainous. These are Bagong Nayon, Capule, Guiban, Laya-an, Lingatongan, Maligubaan, Mantukoy, Marugang, New Casul, Poblacion, Pogan, Sosoon, Small Potongan, Upper Dapitan, Upper Salimpuno, Upper Potongan, Upper Dioyo, and Virayan. The municipality is located within the coordinates 123°31'45" to 123°55'30" East longitudes and 8°30'30" to 8°45'55" Northwest latitudes.

The municipality of Don Victoriano has a total land area of 284.55 km<sup>2</sup> with 11 barangays. These are Bagong Clarin, Lampasan, Lalud, Tuno, Mara-mara, Petianan, Napangan, Mansawan, Gandawan, Lake Duminagat, and Liboron. The municipality is located within the coordinates 123°33' to 123°40' longitude and 8°9.6' to 8°19' latitude (PASA Report 1993).

Among the prominent mountains in Concepcion are Mt. Balabag and Mt. Ampiro. In Don Victoriano are four prominent peaks: Mt. Malindang, South Peak, North Peak, and Mt. Moralong on its western side.

## **Historical Information**

### **I. Concepcion**

Concepcion, during the early 1950s was known as Sitio Balabag under the municipality of Baliangao. Its name was derived from the Feast of Immaculate Concepcion which is celebrated on December 8. When Concepcion became a barangay in 1954, it was under the political administration and jurisdiction of Aloran, Misamis Occidental. Concepcion became a municipality by RA 1515, signed by the late President Ramon Magsaysay in 1956.

Concepcion's population of 3,989 in 1960 decreased to 3,046 in 1970. By 1984, the population decreased further to 2,332 due to deteriorating peace and order conditions. In 1998, the population was 5,973 with more females (64%) than males (36%).

The first municipal mayor, Hon. Cornelio E. Baluyos was a political appointee. In the first local election held in 1980, Hon. Roldan A. Chong, Sr. was elected mayor. He served from 1980 to 1986 and from 1988 to 1998. Since he was no longer qualified for a fourth term under the law, his wife Reparada L. Chong, ran for mayor and won the mayoralty race in 1998. Her vice-mayor is Hon. Juanidy Viña who is permanently residing in Barangay Poblacion.

### **II. Don Victoriano**

The municipality of Don Victoriano was originally called "Egos" according to the Subanons. It means a meeting place of tribesmen when they gather rattan from the nearby forest. They stay under the shady trees to clean the rattan for use in tying the cogon roofings and weaving them into baskets. "Egos" is "bagus" in Cebuano which means "cleaning the rattan".

During the Marcos regime, the place was renamed Don Mariano Marcos and was decreed as a municipality on February 6, 1982 by virtue of Batas Pambansa Blg. 11.

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The municipality is composed of 11 barangays which were formerly part of different municipalities in the lowland areas. Barangays Bagong Clarin, Lampasan, Lalud, Tuno, and Mararama were formerly under the jurisdiction of the municipality of Tudela. Mansawan, Gandawan, Napangan, and Liboron were formerly under the municipality of Sinacaban, Petianan was under the municipality of Bonifacio, and Barangay Lake Duminagat was under the jurisdiction of municipality of Jimenez. Hon. Quinticiano J. Ninang was appointed as the first municipal mayor.

On January 20, 1990, Republic Act no. 6845 changed the name of Don Mariano Marcos into Don Victoriano, in honor of Don Victoriano

Chiongbian, the richest and the most influential figure in the municipality.

Succeeding mayors were Hon. Warlito S. Olarte, Hon. Jenaro S. Paredes, Hon. Catalino Maloloyon, and the present Municipal Mayor Hon. Rodolfo D. Luna.

The seat of local government of Don Victoriano is in Barangay Tuno, the centralmost part of the entire municipality. Both commercial and institutional centers expanded up to Barangay Lalud where the central school, high school, health center, basketball court, tennis court, and the public market are located.

## Objectives

The PRA of the upland ecosystem during the pre-implementation phase of the Philippines-Netherlands Biodiversity Research Programme in Mindanao: Focus on Mt. Malindang was conducted in April to May 1999.

It aimed to:

1. describe the biophysical, sociocultural and economic conditions and status of the upland ecosystem;
2. assess the biodiversity conditions of Mt. Malindang Range;
3. identify the stakeholders and their needs;
4. determine the strengths, weaknesses, opportunities, and threats to the communities in relation to biodiversity conservation; and
5. identify research areas in the upland ecosystems of Mt. Malindang Range.

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# Methodology

## Capability building

Participants from various academic institutions in Mindanao and government and non-government agencies were given an orientation on the framework of the research programme:

1. Central Mindanao University (CMU), Musuan, Bukidnon
2. Mindanao State University (MSU), Marawi City
3. Mindanao State University-Iligan Institute of Technology (MSU-IIT), Iligan City
4. Mindanao Polytechnic State College (MPSC), Cagayan de Oro City
5. Sultan Kudarat Polytechnic State College (SKPSC), Tacurong City, Sultan Kudarat
6. Southern Philippines Agribusiness, Marine and Aquatic School of Technology (SPAMAST), Malita, Davao del Sur
7. Davao Oriental State College of Science and Technology (DOSCST), Mati, Davao Oriental
8. Department of Agriculture (DA)
9. Department of Environment and Natural Resources (DENR)
10. Technical Assistance Center for the Development of Rural and Urban Poor (TACDRUP)

The first training and workshop was held in Dapitan in August 1998. All participants were introduced to participatory, multidisciplinary, and multisectoral approaches to biodiversity research. Major activities were determined and key persons and members for each activity were identified to: (1) gather secondary data about Mt. Malindang and its environs; (2) identify stakeholders; (3) identify problem areas; (4) form research team; and (5) identify research areas.

Ocular visits to the research site were also done to encourage enthusiasm among participants. Further training and workshops were conducted at CMU on February 11-18, 1999. More participants were invited to join.

Team building, interdisciplinarity, and commitment were emphasized by the trainers. Different methods of PRA were introduced such as transect walks, semi-structured interviews, and focus group discussions. Participants were trained to develop their skill in conducting PRA. Actual exposure in Lake Apo in Musuan enhanced their knowledge and skills gained during the training.

The landscape approach to biodiversity assessment was determined. Hence, three ecosystems were named: upland, lowland, and coastal ecosystems; three ecosystem teams were also formed. Likewise, the teams for stakeholders analysis and biodiversity research programme were also formed. Each training participant was identified for a particular ecosystem.

## Gathering of secondary data

Secondary data such as aerial maps, vicinity maps, road maps, river systems, blueprints, published articles, and write-ups about Mt. Malindang and its environs were obtained from various agencies (National Mapping and Resource Information Authority (NAMRIA), DENR-NIPAP-PAMB, PIPULI, Provincial Planning and Development Office, local government offices, and nongovernment organizations). These data helped the team in understanding the research site. These gave them insights on the conditions prevailing in the area. A short bibliographical survey was conducted by the Centre of Environmental Science (CML) in Leiden, the Netherlands, to add to the available secondary data collected by the Filipino researchers.

## Entry protocols and permits

Entry protocols and requirements to the PRA sites were done. These were facilitated by the Stakeholders Analysis Team and improved by the different ecosystem teams themselves. Permits to enter and conduct fieldwork in the designated barangays were secured from local government officials including the respective municipal mayors, vice-mayors, the Executive Committee of Protected Area Management Board

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(PAMB), cluster PAMB, and military officials who maintain peace and order in Mt. Malindang and its environs.

### **Reconnaissance survey and site validation**

The team conducted reconnaissance survey and site validation to finalize the areas to be included in the PRA. The ocular visits to the research sites enabled the team to assess the actual condition to prepare for the fieldwork.

The Upland Ecosystem Team conducted the reconnaissance survey in the two towns of Don Victoriano and Concepcion in early April 1999. Multisectoral meetings were conducted to further enhance the community's understanding of the biodiversity research programme.

### **Identifying stakeholders**

Stakeholders were identified primarily to know groups or individuals who play vital roles in the biodiversity conservation of Mt. Malindang and its environs. This was facilitated by a series of long listings and short listings of names.

### **Identifying key informants**

Key informants, residents who provided vital information on biodiversity status in their respective barangays were likewise selected. They also guided the team in going to the next barangay.

### **Orientation of key informants/ participants/stakeholders**

Various stakeholders, participants, and informants were given an orientation and were made to understand the relevance of biodiversity research programme in Concepcion and Don Victoriano. The team requested their assistance in identifying resources currently available, and compared to those that were once available or present. Through multisectoral meetings and group discussions, they identified problems and needs in relation to biodiversity conservation, sustainable use, and equitability.

### **Fieldwork/PRA**

The PRA was conducted on May 3-17, 1999 covering six barangays of Don Victoriano (Mansawan, Gandawan, Lake Duminagat, Lampasan, Tuno, and Lalud) and five barangays of Concepcion (Upper Salimpuno, Upper Potongan, Small Potongan, Poblacion, and Virayan). Barangay Sapang Dalaga was included to interconnect the upland to the lowland ecosystems.

Barangay Mansawan can be reached by following the Barcelona-Pinan route, both in Zamboanga del Norte. From Mansawan, the team hiked through the muddy, newly bulldozed, but old logging road to Gandawan, then proceeded to Lake Duminagat through the foot trail.

The other three barangays were reached through the Molave-Mahayag-Josefina route in the province of Zamboanga del Sur and onwards to Lampasan passing through the so-called "all-weather road" (Municipal Profile 1999). The seat of the local government is in Tuno and the commercial and institutional centers are located in Lalud.

The five barangays of Concepcion were reached by passing through Calamba-Sapang Dalaga route, a very rugged road.

Transect walks going to the north, south, east, and west directions were done in each barangay to obtain and document representative sampling data on biophysical, economic, cultural features, and other relevant information. To enhance data gathering, semi-structured interviews were conducted among the local residents along the transect walks and those in their homes.

Identifying and counting the number of specific species in the areas were done to determine biodiversity status. Interviews regarding the flora and fauna that were prevalent in the past and compared to the present were conducted to further analyze the biodiversity status of the area.

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The rapid appraisal of faunal species was done through observations or sightings and ethnobiological interviews. The species were identified with the aid of a 7X50 pair of binoculars or through avian vocalization (songs and calls). To facilitate the identification of each bird species, an illustrated book on Philippine Birds by Gonzales et al. 1988 and Philippine Birds by J.E. duPont 1971, were brought to the field site during each trip.

An ethnobiological survey on birds, mammals, reptiles, amphibians, and other life forms present in the area including their local names, frequency of observations, and their economic importance was conducted.

Spot and resource mappings were done with the help of local key informants (KI) and rural folks. Prepared checklists were used by each team member in obtaining vital information from the local indigenous people.

Further verification and validation of information/data gathered were accomplished through small group discussions with local residents. Focus group discussions proved to be very useful in obtaining vital information, i.e., tracing the history of the municipality and identifying existing resources, problems, and needs.

After each day's activities, the team members shared, discussed, and analyzed the data/information gathered.

## **Data organization and analysis**

The data obtained were organized and analyzed in relation to the population, resources, and environment (PRE analysis). The team met several times in Cagayan de Oro, Musuan, and Iligan City for this activity. Strengths and weaknesses were identified, including threats in

relation to environmental security, biodiversity conservation, and sustainable development in Mt. Malindang. Opportunities, likewise, were obtained after analyzing vital information leading to the formulation of researchable areas.

## **Community validation meetings**

Validation meetings were conducted in Don Victoriano and Concepcion on June 29-30, 1999. The upland ecosystem team presented the results of the PRA and their analyses. These meetings allowed the team to verify or clarify certain information and issues, in addition to obtaining additional information which the team missed during the conduct of PRA. Local government officials and the indigenous people from various barangays attended and participated in these validation meetings.

## **Report writing**

Workshops and writeshops were scheduled following the validation meetings. Intensive analyses of validated PRA results were reported. Results were analyzed using SWOT (strengths, weaknesses, opportunities and threats) and discussed in relation to the current status of biodiversity conservation in the study areas. Other issues and concerns regarding the environment affected by human intervention or vice versa were also discussed. Interconnectedness among ecosystems was emphasized, especially in identifying research areas.

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# Results and Discussion

## I. Biophysical characteristics

The Malindang Mountain Range is characterized by a series of mountainous peaks, rugged mountain ranges, and crater valleys. The Upland Ecosystem PRA sites in Don Victoriano and Concepcion are located in elevations ranging from 600 to 1500 masl and with a slope ranging from 0 to 90°. The ambient temperature ranges from 15 to 22°C. These areas consist of rugged mountains which are volcanic in origin. Boulders, cobblestones, and solidified magma are common in mountain flanks and slopes and along creeks and rivers. Basically, the soil type includes clay to clay loam with highly eroded topsoil indicating insufficient nutrients, and therefore infertility.

### A. East-west transect of Don Victoriano

This transect covers barangays Mansawan, Gandawan, and Lake Duminagat.

#### 1. Mansawan

The biological resources of Mansawan are composed of flora and fauna. Floral resources identified during the transect walk consisted of 244 species. The flora are dominated by grasses, herbs, and shrubs and only very few trees. No more natural forests are found in this barangay. The domesticated/cultivated plants are onions, cabbage, sweet potato (camote), lutia, taro (gabi), and chayote. The perennial plants are bananas, avocados, and jackfruit (nangka). The complete listing of the flora is shown in Appendix Tables 1-5.

The faunal resources are dominated by birds and arthropods consisting of about 39 species. Most of the birds are grass warblers and Philippine bulbuls which are considered insectivores. The complete list of birds are shown in Appendix Table 6. The arthropods consisted of arachnids, diplopods, and insects. The insects are dominated by beetles, moths, butterflies, syrphid flies, wasps, and bees (Appendix Table 12). The larval stage of moths and butterflies are potential pests, while the

bees are pollinators and wasps are parasitic to some insects. The syrphid flies are predators of aphids. Parasitic wasps are more diverse and about three of them are considered rare. In terms of biodiversity status, Mansawan is classified as moderate.

Barangay Mansawan is located on top of the ridge. The terrain is broken and the side slopes range from 12 to 35° (Fig. 2). The elevation range is 1,250-1,300 masl. Land use is basically vegetable and rootcrops gardening on one side and grassland/brushland on the other. Drainage channels are in the form of gullies and intermittent creeks, draining toward the Kalilangan River at the northwest side of Mansawan and Dipolog River at the southwest side. Its main source of potable water comes from the big spring on the side of the North Peak Range near Gandawan through water pipes.

Mansawan has a brown to red clay soil. The topsoil is very thin. The "B" horizon is composed of hardened volcanic materials that inhibit the penetration of roots of monocots. The barangay is accessible by road from Pinan, Zamboanga del Norte.

#### 2. Gandawan

The floral species identified along the transect consisted of 300 species. Most of these are trees which are predominantly *Agathis* and dipterocarps, considering the presence of natural forests in the high rising steep mountains around the barangay. Ornamental plants within the open grasslands are also diverse and rich in species.

The domesticated/cultivated plants are cabbage, onions, sweet potato, gabi, chayote, and lutia. Some farmers plant abaca for fiber production as another source of income. The complete listing of floral resources is shown in Appendix Tables 1-5.

The faunal resources are dominated by birds and arthropods involving about 39 species (Appendix Tables 6 and 12). Among the birds, the dominant ones are grass warblers and Philippine bulbuls which are considered beneficial.

Being insectivores, they eat insects harmful to farm crops. Arthropods are composed of three classes: Arachnida, Diplopoda, and Insecta. Class Insecta was found to be dominated by beetles, moths, butterflies, syrphid flies, wasps, and bees (Appendix Table 12). In terms of biodiversity status, Barangay Gandawan is rated high.

Barangay Gandawan and Mansawan contrast in terms of physical characteristics. Barangay Gandawan is situated in the crater valley with an approximate area of about 30-40 ha up to the foot of the surrounding mountains, while Mansawan is situated on top of the ridge. The surrounding mountains in Gandawan abruptly rise in a steep slope from the base. Most farms are located at the base of the mountain, while some are located within the valley. Houses are mostly located in the valley; some are dispersed at the base of the mountains (Fig. 3). The side slope and base of the mountains where farms are mostly located ranges from 22 to 26°. The elevation ranges from 1,100 to 1,280 masl from the barangay site to the highest farm site. Land

use is similar to Mansawan and the surrounding mountains are still thickly forested. There is only one drainage channel that continued to Kalilangan River and joins the Dapitan River.

Gandawan is blessed with abundant water supply. Potable water supply comes from the water source tapped by Barangay Mansawan. Several springs are found at the base of the mountains.

The top soil is characterized by black silty loam. It is thick and the "B" horizon is composed of solidified volcanic materials.

Gandawan is accessible by foot trail from Mansawan, which is about an hour's hike.

The valley can be used for rice production since the irrigation system can work well in this area. An irrigation system can ensure food supply in the community. Residential areas can be relocated to higher grounds.

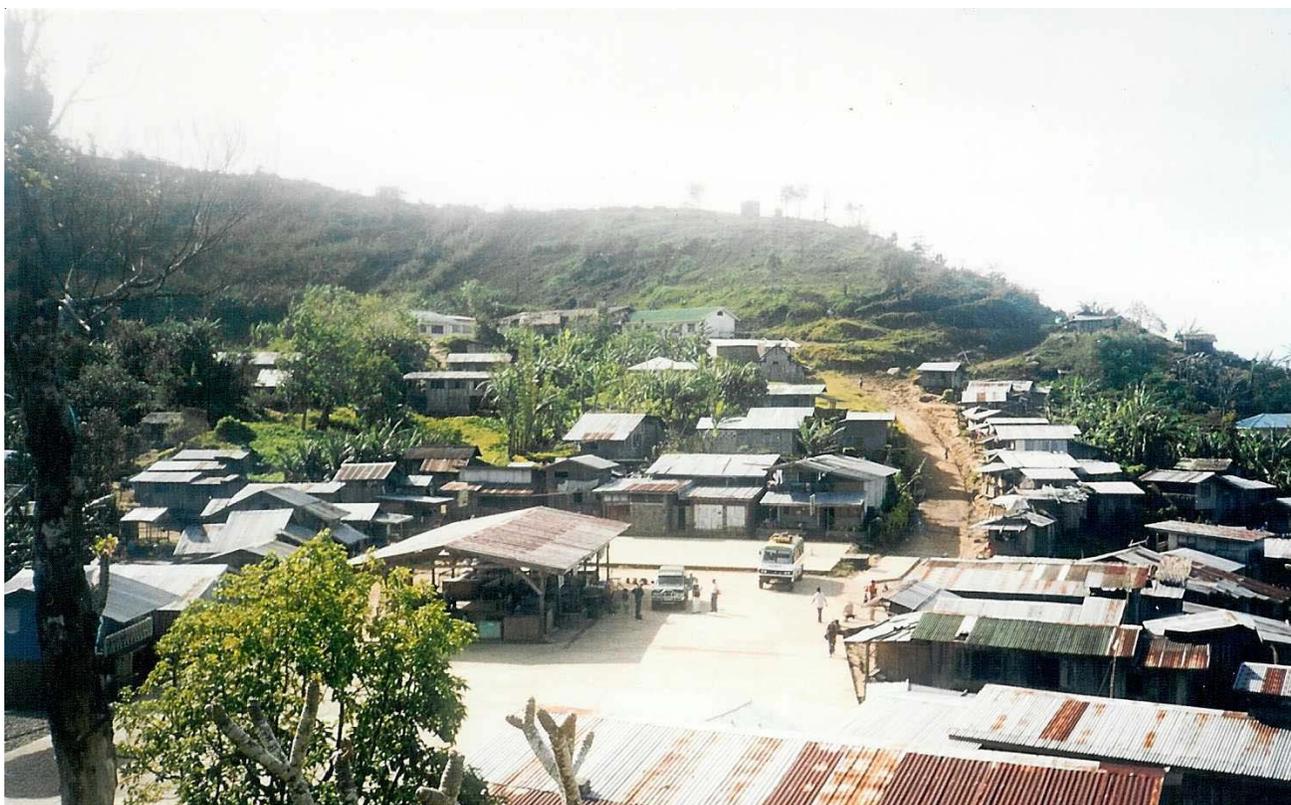


Fig. 2. Panoramic view of Barangay Mansawan.

### 3. Lake Duminagat

The biophysical resources are composed of flora, fauna, and land. The floral resources along the transect consisted of 274 species. Most of these are tree species belonging to *Syzygium* and *Podocarpus* genera, considering the presence of natural forests in the high steep mountains surrounding the barangay. Ornamental species within the open grasslands and inside the natural forests are also abundant and diverse. The domesticated/cultivated crops are similar to Gandawan. These are cabbage, onions, sweet potato, gabi, chayote, and lutia for food and cash needs. Floral resources are listed in Appendix Tables 1-5.

The faunal resources are dominated by birds and arthropods involving about 49 species. These are shown in Appendix Tables 6 and 12. Grass warblers and Philippine bulbuls are regarded as beneficial birds, eating harmful insects. Biodiversity status is moderate and similar with that of Mansawan and Gandawan.

Barangay Lake Duminagat is a crater valley similar to that of Gandawan. The barangay site and the residential houses including the primary school are located within the valley (Fig. 4). The farms and gardens are at the base of the mountain ranges around the barangay, predominantly in the North Peak mountain range rising at an elevation of 2,199 masl.

The lake itself is located across the ridge on the western part, about 1 km away or about 1-hour hike. The lake elevation is 1,400 masl. The crater valley is about 20-30 ha and the lake is estimated at 5-10 ha. The side slopes of the farms/gardens at the base of the mountains range from 19 to 33°. Land use is similar to that of Barangays Gandawan and Mansawan. A shallow stream on the eastern side drains the surface water toward Kalilangan River, ultimately joining the Dapitan River.

Barangay Lake Duminagat is also blessed with abundant water supply. Potable water supply comes from different springs through water pipes. The topsoil is thick black clay loam. The "B" horizon is solidified volcanic materials.

The barangay is accessible by foot along a rugged trail, about one and a half-hour hike from Gandawan passing through thickly forested mountains.

With the abundant water supply, the valley can easily be converted into a rice-producing area and houses can be relocated to the sides of the mountains together with other government infrastructures. Presently, the community depends on root crops as their staple food.

Ecotourism can be another source of income for the barangay. However, there should be an environmental impact assessment (EIA) before this project can be implemented.



**Fig. 3.** Panoramic view of Barangay Gandawan with residential houses predominantly at the valley.



**Fig. 4. Panoramic view of the crater in Barangay Lake Duminagat at the southwestern side.**

## **B. Southeastern transect of Don Victoriano**

The southeast transect of Don Victoriano includes Barangays Lampasan, Tuno, and Lalud. Since these barangays are of the same conditions, their biophysical characteristics are discussed together.

The biophysical resources identified through the PRA are composed of flora, fauna, and land. The floral resources recorded through the transect walks consisted of 190 species in Lampasan, 172 species in Tuno, and 207 species in Lalud. Most of these species come from patches of brushlands along the creeks and planted species because of the absence of natural forests in these barangays. The domesticated plants are corn, bananas, fruit trees, sweet potato, lutia, gabi, lowland rice, other fruit trees, and onions (Appendix Tables 1-5).

In faunal resources, the dominant ones are birds, domesticated animals, fowls, and arthropods (Appendix Tables 6 and 12).

Insects are still dominant among the arthropods. The three barangays have low biodiversity status.

Its topography can be described as rolling to broken steep side slopes; the side slopes range from 8 to 20° in Lampasan and 15 to 30° in Tuno and Lalud. In general, the three barangays are situated along the sides of the mountainous terrain. Elevations range from 600 to 815 masl.

Land is used for corn and rice with trees planted along the sides and patches of brushlands and grasslands. The soil is red clay loam.

Creeks, streams, and river systems drain the surface water toward Clarin River on the eastern side and Zamboanga del Sur on the western side. Most prominent of these creeks are Muradje, Dimoroc, and Lampasan. These creeks drain the surface water toward Zamboanga del Sur.

These barangays are accessible by road from Molave, Zamboanga del Sur, ending at Lalud.

Potable water supply comes from the springs through water pipes. Some residents get their water from open springs.

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## C. Northwestern transect of Concepcion

This transect includes Barangays Small Potongan, Upper Potongan, Upper Salimpuno, down to Sixto Velez of Sapang Dalaga, an overlapping area with a lowland ecosystem.

The floral resources recorded along the transect are shown in Appendix Table 1. Most of these species come from brushland areas. In barangays Upper Salimpuno and Sixto Velez, planted trees grow with naturally-growing plant species in coconut plantations. Except in Small Potongan, there are no natural forests in these barangays.

The faunal resources may be classified into birds, domesticated fauna, and arthropods (Appendix Table 6 and 12). Biodiversity status in Sixto Velez is low.

The topography is level to rolling in barangays Sixto Velez and Upper Salimpuno. For Upper Potongan and Small Potongan, the topography is rolling to broken and steep slopes. The side slopes range from 10 to 35° in Small Potongan, 10 to 20° in Upper Potongan, 0 to 6° in Upper Salimpuno, and 0 to 5° in Sixto Velez. Elevation ranges from 840 to 1,400 masl in these barangays.

Land use involves small gardens and brushlands in Small Potongan; brushlands and residential lands in Upper Potongan; tree plantation, corn fields, and coconut plantation in Upper Salimpuno; and coconut plantation, fruit trees, and corn fields under coconut canopies in Sixto Velez.

The soil is red and white clay in Small Potongan and brown clay loam in all other barangays of Concepcion.

Surface water in these barangays drains toward Dioyo and Langaran Rivers. Potable water comes from spring reservoir on the side of Mt. Balabag Range.

These barangays are accessible by road from the municipality of Sapang Dalaga.

## D. Northeastern transect of Concepcion

This transect covers Barangay Virayan to Poblacion Concepcion from Small Potongan.

Floral resources consist of 249 species in Virayan and 272 in Poblacion Concepcion (Appendix Table 1). Most of these species are from vast areas of brushlands and patches of secondary growth forest. Old forests are absent in these barangays.

Thirty species of fauna were observed in Virayan and 10 species in Poblacion Concepcion. The biodiversity status is moderate in these areas.

The topography is from level to rough terrain. The side slopes range from 15 to 32° in Virayan and 8 to 20° in Concepcion. The elevation ranges from 1,000 to 1,250 masl.

Land is used for coconut, fruit trees, and corn; also as brushland and residential lands in Virayan and Poblacion Concepcion. No farms could be seen around Barangay Poblacion. The soil is reddish brown clay in these two barangays.

Potable water comes from a spring. Each barangay has a separate water source. Surface water drains toward Dapitan River on the northwest side of Concepcion proper.

### 1. Upland subecosystems

The upland ecosystems in all barangays under PRA in both municipalities of Concepcion and Don Victoriano were subdivided into subecosystems. Each barangay is subdivided into agrosubecosystem, grassland/brushland subecosystem, and forest subecosystem. Biological resources were analyzed in relation to stakeholders and their impact on the environment (PRE). The following criteria were used in this analysis: (a) identified bio-resources, (b) resource quantity, (c) equitability and sustainability of use by different stakeholders, (d) resource use pattern, (e) impact on environmental security, and (f) impact on biodiversity conservation.

Appendix Tables 13-25 show the stakeholders and subecosystems in the different barangays and stakeholders' roles in relation to biodiversity conservation. Needs relative to biodiversity were also identified.

## 2. Stakeholders identified

The indigenous people (IP) in the barangays who are also members of the different organizations are the primary stakeholders (Appendix Table 13). Groups or organizations that have impacts on biodiversity were Piniling Nasud, Farmers' Association, BANWA, Tribal Communities Association of the Philippines (TRICAP), local government units, government organizations, and other NGOs. The stakeholders' role and perceptions relative to the various resources within each subecosystem are described in matrix form.

## 3. Biological resources and their uses

Various forms of life in the PRA sites were noted and documented. Direct observations, sightings, and ethnobiological interviews were employed to assess the biodiversity status of the different barangays.

### a. Botanicals

The floral resources (Fig. 5) covered within the entire transects number 507, involving 369 genera and 129 families (Appendix Tables 1-5). In terms of conservation status, these are classified as common (194 genera and 256 species), rare (28 genera and 35 species), and scarce (158 genera and 203 species).

Their uses can be classified into two: economic and ecological. Basically, all these resources have ecological roles not only in the specific habitat where they abound but also in nature. Any of these resources which help alleviate economic conditions have economic use.

Economically important species are those used for timber, construction, cottage industry, food, medicine, fiber, feed (forage/pasture), and fuel.



Fig. 5. Botanical/floral resources commonly observed in Mt. Malindang and its environs.

Ecologically important species are those ornamentals, landscape plants, hedges, and other plant resources used for soil erosion and weed control.

## b. Avifauna

Appendix Table 6 shows the avian species found in all barangays.

Thirteen avian species were found in Barangay Mansawan, 21 species in Barangay Gandawan, 28 species in Barangay Lake Duminagat, 14 species in Barangay Lampasan, 13 species in Barangay Tuno, 8 species in Barangay Lalud, 48 species in Barangay Small Potongan, 14 species in Barangay Virayan, 10 species in Barangay Poblacion Concepcion, 11 species in Barangay Upper Potongan, 8 species in Barangay Upper Salimpuno, and 11 species in Barangay Sixto Velez.

Barangay Small Potongan has the highest number of avian species followed by Barangays Lake Duminagat and Gandawan.

The common avian species observed in almost all barangays are *Pycnonotus goiavier*, *Lanius schach*, *Centropus sinensis*, *Artamus leucorhynchus*, and *Megalurus palustris*. These species are practically lowland dwellers and are fruit and insect-eaters.

Forest birds were seen in Barangays Lake Duminagat and Small Potongan. More importantly, a big eagle believed to be *Pitheophaga jifferyi* was seen southwest of Sitio Palale of Barangay Small Potongan at 10:24 a.m. on May 13, 1999.

## C. Other Vertebrates

Species listing of Class Reptilia, Class Amphibia, Class Mammalia, Class Pisces, and Class Crustacea are shown in Appendix Tables 7-11. These data were furnished by informants of every barangay, except in the cases of *Gehyra mutilata*, *Sphenomorphus*; *Calamaria*, a grass snake under Class Reptilia; *Rana magna* and *Bufo marinus*, Class Amphibia; *Callosciurus* sp. and *Ptenochirus* sp., Class Mammalia; the crablet locally called as "kalong" and scientifically known as *Portunus* sp. "Pait-pait" or "paitan", is a freshwater herring very common in streams and riverine systems. Scientifically known as

*Harengula tawilis*, it is endemic to Taal Lake in Taal, Batangas (Conlu 1986). "Kasili" or eels were also present in most of the rivers during the years when forest destruction was unknown to settlers.

Information gathered during interviews with old settlers suggest the presence of several wildlife fauna in the 1970s such as the rufous or tarictic hornbills which they use as time indicators. The Philippine deer, monkey, flying lemur, eagles, palm civet, civet cat, squirrel, insects and fruit bats were abundant. According to the Bukagan Report (1994), these still thrive in the north peak.

Still present in the Malindang Mountain Range are reptilian species such as monitor lizard, python, Oligodon snake, and flying lizards (Mt. Malindang: A Rapid Appraisal 1994). Giant flying fox, tree and mountain ground shrews, common field rats and mice, Philippine cobra, skunk, sailfin lizard, freshwater turtle, river frogs and tree frogs, horned toad, and flying lizard were present but in a threatened state (PASA Report 1993). The local residents hunt these vertebrates for food and for medicine.

Fish like freshwater eel, goby, carp, tilapia, mudfish, gorami, archerfish, and the freshwater catfish were also reported but in a threatened state (PASA Report 1993).

## D. Arthropods

Three important classes of arthropods were observed in seven barangays of Don Victoriano and Concepcion. These included *Arachnida*, *Diplopoda*, and *Insecta*. Among these arthropods, insects (Appendix Table 12) were the most prevalent in terms of number and kind.

Insects are valuable to man and other animals. They play a significant role in maintaining biotic communities of different habitats. As pollinators, they make possible the production of many agricultural crops including vegetables and legumes. They serve as food to many birds, fish, and other useful animals and also as scavengers. As predators and parasites, they contribute to ecological balance through the regulation of population of prey species. Also, their usefulness in medicine and scientific research has been recognized for a long time.

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Sixty-three families belonging to 10 insect orders were identified (Appendix Table 12). Order Lepidoptera has the highest number of families (13) represented, followed by Diptera (11), Coleoptera (9), Hymenoptera (8), Orthoptera (5), Odonata, Hemiptera and Homoptera (4), and Dermaptera and Thysanoptera (1).

Lepidopterans are economically important species. The larvae of most species are phytophagous and many of them are serious pests of cultivated plants. The diamondback moth, *Plutella xylostella* is the major pest of cabbage in Barangays Mansawan, Gandawan, and Lake Duminagat. Infestation is quite severe, hence, farmers have to spray insecticides. A few farmers in Barangay Lake Duminagat practice mechanical control. They usually enclose cabbage seedlings in nylon mesh cloth before transplanting them in the field. Other Lepidopterous pests identified include the common cutworm, *Spodoptera litura* and the potato tuber moth, *Phthorimaea operculella*.

A very significant finding during the PRA in Gandawan was the recovery of parasitic cocoons on dead larvae of diamondback moth. This is a clear indication that natural enemies are suppressing their population under field conditions. Dead larvae suspected to be attacked by pathogenic organisms such as bacteria and viruses were also found along the way to Lake Duminagat.

Many species of Coleoptera are also pests including the squash bug, *Aulacophora similis* and the green tortoise beetle, *Casida* sp. which attack sweet potato. Click beetles and snout beetles are likewise abundant in grasses and shrubs of Mansawan, Gandawan, and Lake Duminagat. Beetles which are predaceous include the tiger, ladybird, and carabid and even larvae of fireflies.

Some Diptera such as houseflies and bowflies are important vectors of diseases. However, many of them are useful scavengers and predators too, like the syrphid flies which feed on aphids. The Hymenoptera is the most beneficial in the entire class of insects. Many of these insects are valuable as parasites and

predators of various insect pests and the most important in the pollination of plants such as bees and wasps.

The Hemiptera consists of both terrestrial and aquatic booms. Cotton stainer, *Dysdercus cingulatus*, a pest of okra was observed in Lampasan. Aquatic and predaceous ones such as the water striders and ripple bugs are quite abundant in Lake Duminagat and in the Virayan and Guiban Rivers. These insects are bioindicators of the rivers' water quality.

All the Homoptera are plant feeders, while the Odonata are all predaceous. Cicadas for example, damage and feed on roots of perennial plants. Aphids and leafhoppers are well-known vectors of economically important viruses.

The Orthoptera and Thysanoptera are plant feeders, some of which are very destructive to crops, while the Dermaptera are mostly scavengers.

## **E. Other invertebrates**

Spiders, which are generally predators are present in all barangays, while the millipede, a scavenger, was observed in Mansawan and Lake Duminagat. Leeches with black, brown, and yellow with orange or green body coloration were also prevalent.

The PASA Report (1993) indicated that most of the insects and other invertebrates found in the Malindang Mountain Range are threatened as typified by the freshwater shrimp, land and forest snail, and the red mountain crab.

## **II. Sociocultural and economic characteristics**

From observations and interviews with key informants, participants, and stakeholders in the different barangays, information on the social, cultural, and economic profile of the population were gathered (Appendix Table 25). These information were confirmed and validated by residents through validation meetings.

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## A. Municipality of Concepcion

### 1. Barangay Poblacion

#### a. Social profile

The barangay has 62 households and an estimated population of 240. The average household size is four. There are more females than males. Residents aged 15-64 years make up about 60% of the population; below 15 years old, 38%; and the elderly, 65 years old and above, accounts for only 2%. About 80% of the residents are non-Subanon (Cebuanos, Boholanos, Siquijodnons).

Barangay Poblacion is the only site which has complete elementary and high schools in the municipality. The high school was established in 1974 through the initiative of the municipal government and was placed under national funding in 1980. These two schools have Parent-Teacher-Community Associations (PTCAs).

Aside from these two schools with 14 teachers, a health center staffed by a nurse and a midwife is located in the Poblacion. However, there is no municipal health officer and medicines are often lacking or unavailable.

Barangay residents have access to electricity. Some own transistor radios and others have tape recorders. Houses are made of wood and galvanized iron sheets. Residents have to fetch water and in instances where water is available for home use, big jars made of rubber are used for storage.

The Poblacion is accessible by motorcycle and other vehicles. The graveled road, however, is rough, especially during rainy days. The 30 peso (P)/person fare for a one-way trip (17 km) by motorcycle, locally known as "habal-habal", or P20 by jeep is quite expensive for local residents.

The barangay is very peaceful according to the barangay captain.

#### b. Economic profile

The main source of income for most residents is farming, although some work as government employees. Farming is a family activity. Children (9 years old and above) and women help in the

farm. Plowing, however, is considered a man's job because farms are located in steep slopes or hills and farmers do not have draft animals.

The main products are root crops. These are grown for cash and consumption. Corn is grown primarily for consumption. Rainy months are lean months because farmers cannot plant corn and root crops to produce small tubers. To cope, some residents work for daily wages in local government projects.

There are no regular traders or middlemen who go to Barangay Poblacion. Products are brought to Sapang Dalaga and sold to wholesalers or to consumers directly. There is no public market in Concepcion so barangay residents have to buy provisions for their daily needs and other items in Sapang Dalaga. Information about prices of commodities come from drivers of public utility vehicles, from neighbors, and friends who frequent Sapang Dalaga.

There are no known private financiers in the barangay. The Comprehensive and Integrated Delivery of Social Services (CIDSS) Project of the Department of Social Welfare and Development (DSWD) extended a loan to a women's group for a cutflower project. There is a ready market for anthurium flowers every 2 weeks. However, the women need more technical know-how and proper team building for the project to succeed.

Soil erosion is a problem for farmers because the farms are located in slopes and no measures to conserve soil and water are in place. Tenurial status is also a concern. Barangay residents are occupants of forest lands in protected areas with an average size of 2 ha. Farmers cannot get land titles and have not yet applied for ancestral domain rights and privileges. If they succeed in getting stewardship of the lands, they will be encouraged to conserve existing resources and plant additional trees because they can be sure that the fruits of their labor can be inherited by their children.

#### c. Cultural profile

Food is inadequate and families aspire to improve their livelihood to have enough food for the family. They also aspire to send their children to school. To be able to provide for the family, husbands and wives work together in the farm and share in the decision-making.

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## 2. Barangay Small Potongan

The name “Potongan” was derived from the Potongan River which dissects the barangay.

### a. Social profile

In 1998, there were 66 households with a total population of 394, and an average household size of six. There are more females than males. Fifty percent of residents are aged 15 to 64 years old, 45% are below 15 years old, and only 5% are 65 years old and above. About 90% of the residents are Subanons.

Small Potongan has a classroom with only one teacher handling Grades I and II. Children hike to Barangay Poblacion for an hour to attend Grades III-VI. There is no health center but there are two barangay health workers. The National Irrigation Administration (NIA) completed its construction of a farmers’ hall and it has plans to put up an irrigation project.

Houses are made of wood and GI sheets. Barangay proper residents received 14 GI sheets and 4 kg of nails from the DSWD to build their houses. Water from Mt. Balabag reaches the barangay through pipes. Barangay residents have no access to electricity.

The barangay is accessible by motorcycles locally known as “habal-habal” from Sapang Dalaga. The P40 fare is quite expensive for residents. Jeepney fare is cheaper but few jeeps seldom go to “Small”, the name often used for the barangay by local residents.

### b. Economic profile

The main source of income is farming. Farms are located in Sitio Migubay, a 2-hour walk from the barangay proper. The route is not even accessible by horse or carabao. Farming is a family activity. Women and children help in planting, weeding, harvesting, and cutting grasses. Plowing is done only by men.

The main products are rice, corn, and root crops. Rice is primarily for consumption. Part of the harvest is reserved for seeds. A ganta of seeds, if it grows well, means a sack of rice during harvest. Corn is also grown for consumption and the extra supply is for cash. Corn is usually planted in April to May and is harvested after

four months. Fertilizers are bought from stores in Sapang Dalaga. Root crops are for cash and consumption when rice or corn is no longer available. Wild pigs and rats pose a big threat to the crops.

There are no regular traders who go to Small Potongan. Products are brought and sold to Sapang Dalaga by the farmers themselves.

Residents of Small Potongan are occupants of small forest lands. They can only manage to cultivate one-fourth of a hectare of forest land.

Another source of income is “manungha” or hired help (P50/day).

### c. Cultural profile

Residents of Barangay Small Potongan believe that they have the right to cultivate and own their farms because they have cultivated the area for many years. They also find the water supply sufficient for the needs of the increasing population. They look at the dam to be built favorable in improving rice production. They aspire to clothe and feed their children well to keep them healthy.

## 3. Barangay Upper Potongan

Some residents refer to the barangay as “bansohan” because it was the site of the sawmill, Mt. Ampiro Timber Company (MATCO), during the 1970s.

### a. Social profile

Upper Potongan has 35 households with 152 residents and an average household size of four. Residents aged 15-64 years old make up 53% of the population, below 15 years old 45%, and 65 years old and above only 2%. Ninety-eight percent of the population are Subanons.

The barangay does not have an elementary school. Children go to Small Potongan or Barangay Poblacion. There is only one barangay health worker (BHW) and no health center. The barangay hall does not have cemented flooring. The water supply comes from Small Potongan. There is no electricity. Houses are clustered along the partly graveled road leading to Barangay Poblacion and Small Potongan.

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Motorcycles and jeepneys coming from Sapang Dalaga pass by Upper Potongan on their way to Barangay Poblacion. Most of the time, though, residents hike to Barangay Poblacion due to the long wait for vehicles. Upper Potongan is the barangay nearest to the town proper of Concepcion.

### **b. Economic profile**

Farming is the main source of income. Some farm within the barangay. Others farm in Sitios Migubay and Palale in Small Potongan and have to walk for 2-3 hours to reach their farms. Children and women help in the farm, making farming a family activity. Another source of income is “manungha” or a person rendering labor for P50/day.

The main farm products are rice, corn, and root crops. Rice and corn are primarily for consumption, while root crops are for cash and consumption especially during rainy or lean months. Products are sold in Sapang Dalaga. Goods for daily use are also bought in Sapang Dalaga.

Residents of Upper Potongan are occupants of forest lands. The average farm size is  $\frac{1}{4}$  ha. They want to get land titles for the farms to ensure that their children will inherit the lands they cultivate.

### **c. Cultural profile**

Key informants could still remember that *kasili*, *kalong*, and *paitan* were found in the Potongan River. They believe these species are becoming extinct.

Residents also think that the wild pigs destroying their crops can be hunted because these are not in the protected area. They are aware of the restrictions implemented by the DENR within the protected area.

## **4. Barangay Virayan**

The name “Virayan” is derived from the Virayan River which cuts across the barangay. No informant could recall the year Virayan became a barangay.

### **a. Social profile**

In 1998, there were 58 households with a total population of 219, and an average household size of four. There are more females than males. More than 50% of the population is 15-64 years old. Forty-five percent of the residents are Subanons.

Virayan has only one classroom made of light materials. A teacher handles Grades I and II. There is no health center but there is one barangay health worker. The barangay hall does not have a cemented floor. There is a basketball court in the barangay proper. There is cockfighting every Sunday, where residents bet small amounts of cash. The women play “spang”, a local version of volleyball, where onlookers can also bet.

Houses are made of wood slots locally called “inak-ak” and cogon roofing. Very few use GI sheets. There are only 14 households in the barangay proper. Houses follow a dispersed pattern. The barangay has no electricity. Drinking water comes from a spring.

Virayan is accessible from Barangays Poblacion and Small Potongan by foot or by horse.

### **b. Economic profile**

The main source of income is farming. The main products are root crops for cash and consumption. Coconuts are primarily for cash. Corn, when grown, is only for consumption. Farming is a family activity. Women and children help in farm activities. Another source of income is “manungha”, where a person is hired to work in another man’s farm for a daily wage of P50.

No traders go to Virayan. Products are brought and sold in Sapang Dalaga. Provisions for daily use are bought in Sapang Dalaga. Sometimes, farmers bring their products to Libertad in Zamboanga del Norte.

Few residents raise chickens because they are easily affected by diseases. Pigs are raised either for sale or for special occasions like the fiesta or “buhat-buhat”. Cattle is raised for cash and horses are for transport purposes.

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Residents of Barangay Virayan are occupants of forest lands with an average farm size of ¼ ha. Some residents from the lowland bought rights to some pieces of land. For Subanons who are not familiar with their rights, these non-IPs who are absentee landowners may become a problem in the future.

### **c. Cultural profile**

Residents of Barangay Virayan are aware that they can be arrested if they are caught cutting trees in the PAMB area. They are also aware that water is sufficient because of the trees and mountains in the PAMB area. They believe that the trees will prevent landslides. They also think that the water for the irrigation project in Small Potongan comes from the Virayan river.

They claim that there are still wild pigs, monkeys, and birds in the PAMB area. They do not hunt for wildlife but insist that once outside the protected areas, these animals can be hunted. Wild orchids should not be taken out from protected areas, according to the son of a barangay official.

Insufficiency of food is a problem especially during the rainy months. They believe that they can improve their livelihood if only they can get water for their fields and plant rice. They also want a better school building for their barangay.

## **5. Barangay Upper Salimpuno**

Upper Salimpuno was still a forest in 1948. The residents from Salimpuno in Sapang Dalaga started to farm the area in the 1950s and named the place Upper Salimpuno.

### **a. Social profile**

The total barangay population is 264 with 53 households and an average household size of five. Almost 60% of the residents are aged 15-64 years old. About 40% are Subanons and 60% are Cebuanos and Boholanos.

The barangay has an elementary school with Grades I-IV. It has no health center but there are two BHWs. The barangay hall does not have walls or even a cemented floor. The barangay has access to electricity since 1994 but few houses have electric lights. Residents have to

fetch water from the springs, which serve as a primary source of drinking water. Most houses are made of wood and GI sheets. Residents own transistor radios. Among the 55 children below seven years old, 14 are mildly malnourished and 10 are moderately malnourished.

The road from the national highway to Barangay Upper Salimpuno is partly graveled making the barangay accessible to motorcycles and other vehicles. The fare (P25) for a one-way 12-km trip by motorcycle is expensive for residents.

### **b. Economic profile**

Farming is the main source of income. It is a family activity because women and children help in farming activities. Secondary sources of income include selling firewood and hand-sawing of tree species such as falcata and Gmelina. Another source of income is "pasuhol" or hired help for a daily wage of P70.

The main products are corn, root crops, and coconut. Corn is planted for consumption. Root crops which are grown for cash and consumption do not grow well like corn, during continuous rainy season. Coconut is grown primarily for cash. Copra commands a good price (P16.80/kg) but the coconut trees are not bearing fruit well. In the past, the meat from three coconuts weighed a kilo, but now, a farmer needs seven coconuts to get a kilo of coconut meat.

Some traders go to Upper Salimpuno for copra. In most instances, however, products for sale (i.e., firewood) are loaded in public utility vehicles for Sapang Dalaga where these are sold to wholesalers or to consumers directly by the producers themselves.

Residents have an average farm size of 2 ha. Some residents do not like to cultivate their lands and plant trees and other species because they only have Integrated Social Forestry (ISF) from DENR. Although they have land declarations, they need land titles for security and the assurance that their children will inherit the land.

### **c. Cultural profile**

Residents of Barangay Upper Salimpuno are aware that when there are no more trees, landslide, locally called "unas", will take place. One key informant remembered that she saw a trunk of an apitong, a tree species with a

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diameter of about 170 cm, loaded in a truck for export. At present, a pitong that big can no longer be found in the vicinity of Upper Salimpuno. During the 1970s, logging was at its height and there were about 10,000 residents in the barangay. The roads were good but when the logging companies left in 1980, the barangay became a haunted and deserted place.

Barangay residents aspire to improve their livelihood. They want to be able to fertilize their corn fields to improve production. They want to maintain the peace and order that their barangay enjoys.

## **B. Municipality of Sapang Dalaga**

### **1. Barangay Sixto Velez**

Its old name is Medallo Alto. When the petition was passed to convert Sitio Medallo Alto to a barangay in 1966, the name Sixto Velez was adopted so that the high-ranking government official named P. Velez would not turn down the petition.

#### **a. Social profile**

There are 74 households with a total population of 311. The average household size is four. Sixty-one percent of the population are aged 15-64 years old. There are more females than males and there are no Subanons in Sitio Velez.

The barangay has one day care teacher and one elementary school teacher who teaches Grades I and II. For Grade III, pupils go to Barangay Salimpuno or Barangay Sipac in Sapang Dalaga. There are two barangay health workers. The barangay has access to electricity and water is an abundant resource.

Houses are generally made of wood and GI sheets. A few have nipa roofs. Houses are found along the road from Sapang Dalaga to Concepcion. One-way fare from Sapang Dalaga to the barangay is P10 by jeep and P20 by motorcycle.

#### **b. Economic profile**

Farming is the main source of income and coconut is the main cash crop. Coconut trees have no footholds so coconuts are harvested through the use of long poles. For every 100 mature coconuts harvested, the farmer is paid P10. Women and children of school age help in gathering the coconut. Coconut meat is extracted from the shell and dried using dryers. The entire family is involved from harvesting to processing of the coconut. Cassava is grown primarily for consumption while extra supplies are sold. Planting and harvesting of cassava are done by both men and women. Land preparation, however, is a man's activity. Corn is grown for consumption. However, it needs fertilizers, which some residents cannot afford to buy.

Farm products are sold in Sapang Dalaga. Although there are "sari-sari" stores in the barangay, residents still prefer to buy goods for daily use from stores in Sapang Dalaga.

From September to October, mangosteen are in season. This is another source of income for some barangay residents. Others become hired help in other farms at P50/day.

Pigs are raised for cash and special occasions, such as fiestas. Cattle is primarily for cash while chickens are raised for consumption. There are residents, however, who do not like to raise animals because they easily get sick during the rainy season.

About 70% of the barangay residents are tenants of land owners from other areas of Misamis Occidental. Tenants get one-third of the income from coconut production. Most landlords do not go to Sixto Velez to get their share. Instead, their share is brought to them by the tenant.

The main problem faced by residents is the lack of money to buy food. They wish to improve their livelihood to overcome this difficulty and also be able to send their children to school.

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## C. Municipality of Don Victoriano

### 1. Barangay Tuno

Barangay Tuno was under the jurisdiction of the municipality of Tudela before the municipality of Don Victoriano was created. The barangay was named after the color of the water from springs flowing in the creeks. The water is white, similar to coconut milk which is known locally as "tuno". It is located on the southeastern part of Don Victoriano, with a total land area of 300 ha based on the parcellary survey (ENR-SECAL Report 1999).

#### a. Social profile

The most recent population data from the municipal social welfare and development office indicate the presence of 166 households with an average of five individuals per family and a total population of 861. Fifty-five percent is between the ages 15 to 64 years old; 43% is below 15 years, and only 2% is 65 years old and above. There are more females than males.

Seventy percent are Subanons; the rest are Cebuanos, Boholanos, and other groups.

Residential settlements are clustered along the graveled road leading to the next barangay which can be reached either by jeep or motorcycle. Houses are made of GI roofings and wooden walls. Some have cemented houses.

Residents have access to electricity. Some have transistor radios, tape recorders, television; ICOM radios are commonly used by barangay officials.

A primary school (Grades I-IV) is operated by the Department of Education, Culture and Sports (DECS) with four teachers and four classrooms. School children hike to Barangay Lalud to finish elementary education.

There is no barangay health worker. The residents need to go to the next barangay for health concerns. Patients are brought to Mahayag or Molave hospitals for treatment or confinement. There is no available data on the health and nutrition status of residents. However, no one was observed to be malnourished during the PRA.

The residents have access to a free-flowing water system provided by the local government. There is a basketball court and cockpit. The municipal hall of Don Victoriano is located in this barangay.

#### b. Economic profile

Farming is a family activity and is the main source of income for most residents. When not in school, children help their parents in the farm. The main farm products are corn, rice, root crops, and vegetables. Corn and rice are mainly for consumption, while root crops and vegetables are for cash. During lean months (rainy season), root crops are their main staple.

Some residents engage in trading or buy-and-sell of vegetables and root crops which they directly sell to consumers in Molave. Many housewives have small stalls in Molave on weekends. Their daily needs are also purchased mostly from Molave or Ozamiz.

Residents domesticate animals for cash or consumption. Chicken is raised mainly for consumption and cattle is mainly for cash. Pigs are raised both for cash and consumption, for special occasions like fiestas or "buhat-buhat". The carabao is mainly used for plowing the field.

Credit is extended to farmers by "compradors" or traders who also buy their farm products. Trading is done in Lalud.

Labor is provided by the whole family. The husband plows the field, while the wife and children help plant and harvest the crops. Hired labor is at P60-70/day.

Another source of income for residents during lean months is employment in construction, which they usually find in Dipolog.

Soil infertility is a problem resulting in high costs of farm inputs for farmers. This problem also causes extensive soil erosion because their farms are situated in hills and steep slopes.

#### c. Cultural profile

Husbands and wives share in the decision-making. Women do housekeeping and also help in the farm. Some are members of the Rural Improvement Club (RIC) and Farmers' Association.

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Parents aspire to send their children to school. Residents hope for a better and peaceful barangay.

“Tabo” or market day is done every Friday where folks exchange news, play basketball, and play *masiao*.

Looting of crops is common and a concern of the barangay council. The “Timuay” or “gukon” is the traditional leader who settles conflicts among residents.

## 2. Barangay Lalud

In the local dialect, “lalud” means wavy land terrain. In earlier years, Lalud was under the jurisdiction of the municipality of Tudela.

### a. Social profile

A DSWD survey shows 360 households with an average size of five and a total population of 1,829. Forty-three percent of the population is below 15 years old, 55% is between 15-64 years old, and only 2% is 65 years old and above. There are more females than males. Seventy percent are Subanons and 30% are Cebuanos, Boholanos, and other groups.

Residential houses are clustered in the barangay proper and along graveled and cemented roads. Houses are made of GI sheets, wood, and concrete.

Four preschool, eight elementary, and four secondary school teachers are helping to mold the character and values of school-age children (15%) in the barangay. The health center of the municipality of Don Victoriano is in Barangay Lalud and this is run by a medical doctor and a nurse. The center also has an ambulance.

Jeepneys and motorcycles are the means of transport from Tuno and the neighboring towns of Josefina and Molave to the commercial center at Lalud. Communication facilities include ICOM radios, transistors, television, and tape recorders.

Electricity and free-flowing water supply are provided in the barangay. In addition, there is a basketball court, a tennis court, and videoke.

### b. Economic profile

Farming is the main source of income. The secondary means of livelihood are trading, restaurant services, and gardening. The main farm products are corn, rice, vegetables, root crops, and bananas. On the average, farmers plant on a 1 ha farm. Cultivation rights are based on stewardship certificates given to farmers as occupants of forest lands.

Rice and corn are planted mainly for consumption, while vegetables are mainly for cash. Root crops are both for cash and consumption. These farm products are sold to compradors/financiers. Other farmers bring their products to Molave or Ozamiz City.

Horses are domesticated mainly for transport of farm products to the market. Cattles are raised for cash, while chickens are for consumption only. Pigs are raised both for cash and consumption especially during fiestas and other special occasions.

Similar to Barangay Tuno, soil infertility and soil erosion are the major concerns of residents.

### c. Cultural profile

Residents go to Dipolog City during lean months to work in the construction business. Husbands are assisted by their wives in farming and in making decisions particularly on their savings. Despite their low income, parents still aspire to send their children to school and improve their livelihood.

## 3. Barangay Lampasan

“Lampas” means a way of cutting grasses. The barangay was officially created in 1953 and schools opened in 1980. In the mid-1980s, residents outmigrated due to the poor peace and order situation. After 10 years, there was a high rate of in-migration and residents started to farm in the area.

### a. Social profile

Barangay Lampasan has a total population of 1,065 with 206 households, and an average household size of five. Forty-five percent of the population is below 15 years old, 50% is 15-64

years old, and 5% is 65 years old and above. There are more females than males; 40% are Subanons and 60% are Cebuanos and Boholanos.

The school has five classrooms, one room for preschoolers and four for the elementary grades. There are two teachers for elementary and one for the preschool. Communication facilities such as ICOM radios, television, transistors, and tape recorders are available in the barangay. Houses are made of GI sheets, wood, and concrete.

The residents have "tabo" every Friday. They have basketball courts and a cockpit for recreation activities.

### **b. Economic profile**

The main source of livelihood is farming. Other sources of income are gardening, operating a "sari-sari" store, and "manungha" at P70/day. The main farm products are corn, onions, chayote, cabbage, root crops, and tomatoes. These are transported to Tudela by means of horses, jeeps, and motorcycles. According to residents, they are able to sell 50 to 100% of their products to Lalud even during lean months.

Planting, harvesting, and desuckering are done by the whole family. The average farm size is 1 ha. Soil infertility is also the main problem in farming.

### **c. Cultural profile**

There is still food inadequacy and low income even though husbands and wives are into farming. Some residents earn extra income through basket weaving and most of them are members of BANWA and LEAF.

## **4. Barangay Lake Duminagat**

Lake Duminagat was named after the lake which cuts across the barangay.

### **a. Social profile**

There are 58 households with a total population of 391; 100% are Subanons. Age composition is similar to that of Barangay Lampasan. Residents are distributed in clusters due to the area's cauldron-like terrain.

The barangay has a preschool and elementary school with two teachers and three classrooms.

The health center (6 km away) has one health worker. The barangay can only be reached by a trail, which makes it inaccessible to any vehicle. Residents have to walk or use horses to transport goods to nearby barangays. The barangay has uncemented basketball court.

### **b. Economic profile**

Farming is the main source of livelihood. Residents also earn income by "karyada" or hauling and as hired help in other farms. Their main products are onions, cabbage, chayote, root crops, and corn which are bought by compradors from Mansawan. Transportation, soil infertility, pests, and rats are their main concerns.

The residents of Lake Duminagat are occupants of forest lands. They can only manage to cultivate small farms and raise few chickens due to pests.

### **c. Cultural profile**

Most residents are Catholics. Husbands and wives do the farming. Despite the problem of food inadequacy, farmers aspire to improve their living conditions and send their children to school.

## **5. Barangay Gandawan**

"Gandawan" means wild flowers. It was officially created in 1980. In the 1970s, there was a high rate of outmigration because of the poor peace and order situation.

### **a. Social profile**

The residents are 95% Subanons and only 5% are Cebuanos. There are 61 households with a total population of 363 distributed in clusters. There are more females than males. Fifty percent is between 15-64 years old.

The health center is 3 km away from the barangay proper. There is a preschool, an elementary school, and a high school.

The road going to Barangay Gandawan is a trail and can be reached only by foot and by horse. Residents have ICOM and transistor radios for communication. Their houses are made of wood shingles, wood, and GI roofs. They have free-flowing water, a barangay hall, and an

uncemented basketball court. The barangay celebrates its fiesta on August 28.

### **b. Economic profile**

The main source of livelihood is farming and the main products are onion, cabbage, chayote, root crops, abaca, and sugarcane. Most of their products are sold in Mansawan. The residents raise horses mainly for transport, and cattles, pigs, chickens for food, and carabaos as draft animals.

Their main problems are pests and soil infertility. To earn extra income, some work in other farms as hired help.

### **c. Cultural profile**

Husbands and wives farm and share in the decision-making. Food is inadequate, and problems of soil infertility and pests exist. Residents still believe that soon they will overcome these problems; they continue to aspire in improving their level of livelihood.

## **6. Barangay Mansawan**

“Mansawan” is derived from the Subanon word “mansaw” which means wild sugarcane. This plant was abundant in the area when the first settlers who were all Subanons belonging to the Piniling Nasud, a religious sect, arrived in 1964.

### **a. Social profile**

The population is estimated to be 1,686 with 362 households and an average household size of five as of 1998. There are more females than males. Sixty-five percent of residents are aged 15-64 years. About 85% are Subanons and 15% are Cebuanos and Boholanos. Children of mixed parentage ( $\frac{3}{4}$  Subanon) are called “libog”. Although majority of the residents are Subanon, the main spoken dialect is Cebuano.

Barangay Mansawan has a day care center with one teacher. It has a complete elementary school with eight teachers and there is a plan to have a high school soon.

Mansawan has eight barangay health workers. A midwife lives in the barangay and also serves three other barangays. The barangay has a

health center, a public market, a basketball court, artesian wells, and communal faucets.

Barangay residents have no access to electricity. Some own transistor radios and others have tape recorders. Houses are made of wood and GI sheets. There was a time though when roofs were made of “gulayan”, a pine tree. Water is fetched either from the artesian wells locally called “bumba” or communal faucets where the water is piped from a spring in Barangay Gandawan.

Residents go to the Don Victoriano town proper by hiking or riding on a horse. During dry months, they ride on public utility motorcycles called “habal-habal”. To reach Don Victoriano, one has to cross seven streams and a river. The barangay is also accessible by jeepney and motorcycle on graveled roads from Mutia, a town in Zamboanga del Norte.

There are four religious groups in Mansawan: Piniling Nasud, the Roman Catholics, Born-again Christians, and the Seventh Day Adventists. The Sangguniang Kabataan (SK) is composed of young people (18 years and below). At the time the PRA was conducted, the SK held a benefit dance to raise funds to finance their various activities (i.e., cleaning of water source, market, and other public places).

### **b. Economic profile**

The main source of income is farming. The main products are vegetables (onion, cabbage, chayote), root crops, and corn.

Onions are planted anytime of the year primarily for cash. These can be desuckered after four months and desuckering thereafter is done once a month. After every desuckering, inorganic fertilizer is applied. Insecticides or pesticides are sprayed once a week. If maintained properly, onions can last for as long as five years. Maintenance includes keeping the land clean and free of weeds.

Farmers can grow onions on a 100 m<sup>2</sup> piece of land which can yield 1,500 bundles a month. Each bundle weighs approximately 750 g and can be sold at P7/bundle. Onions are sold to traders or compradors in the barangay proper. Deliveries are done preferably on a Monday, which is the “tabo”, a special market day. Traders sell the onions as far as Dipolog City.

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Cabbage is another cash crop planted anytime of the year. It requires fertilizer and insecticides and can be harvested after three months. It is also sold to traders in the barangay proper.

Chayote is planted anytime primarily for cash. It does not have to be fertilized or sprayed with pesticides. Farmers sell it weekly and the income from selling is used to buy fish, meat, and other food.

Root crops are planted anytime of the year for cash and consumption. During months when there is no money to buy food, barangay residents eat root crops. Corn is planted within March to April. It can be harvested after five months.

Few residents raise pigs because they do not have enough cash to buy corn or rice bran for feeds. They also find pig raising time-consuming. Chickens are raised for consumption, horses are for transport purposes and goats are for sale. Farmers do not plow their fields because these are in steep slopes. To till the land, they use a "sakol". Farmers do not practice contour farming or sloping agricultural land technology (SALT).

The compradors or local traders set the price for onion, cabbage, chayote, and other crops. Some of them extend loans to farmers or provide seeds and other farm inputs. In return, farmers sell their products to traders which make it easy for them to dictate the price.

All residents have yet to own their farms which is why they are not secure as far as tenurial states are concerned.

Other sources of income are "manungha", hired help on the farm for a daily wage of P50 and "karyada", a hired help for hauling vegetables and other crops using a horse and is paid per trip.

### **c. Cultural profile**

Residents aspire for better and adequate food, good health, and education for their children. BANWA, TRICAP, and Piniling Nasud are organizations present in the barangay. Most residents are members of these organizations.

## **III. Interconnectedness**

The landscape approach to environmental assessment for biodiversity status is quite timely and appropriate. The upland ecosystem of the Mt. Malindang Range highly affects the activities of the lowland and coastal ecosystems. Likewise, the reverse is true. Many aspects of daily life are interconnected. Politics and trading are examples. The PRA site, being located in the mountain flanks, is endowed with a rich riverine system. Headwaters drain from the mountain range and together the water runs down with silt, and flora and fauna. In exchange, products for household use are purchased from the lowland and brought to the upland.

### **a. Resource use and flow patterns**

Most of the farm products, like onions, cabbage, chayote, and root crops, like sweet potato, kanaka, gabi or lutia are the cash crops grown in the municipalities of Concepcion and Don Victoriano.

In Concepcion, farmers sell farm products directly to consumers. From as far as Virayan, Small Potongan, Upper Potongan, and Upper Salimpuno they sell their produce during the "tabo" of their respective barangays. But most bring their produce to Sapang Dalaga where they sell these directly to consumers. From their sale, they buy salt, vinegar, dried fish, salted fish, cooking oil, rice or corn, sometimes clothing materials, and fertilizers and insecticides.

In Don Victoriano, two barangays are considered as trading centers - Barangays Mansawan and Lalud. In these centers, many compradors come to buy farm products in wholesale. From Lalud, these are delivered and sold to stall owners in Josefina, Mahayag, and Molave then to Pagadian City. Others go to Bonifacio, Tangub City, then to Ozamiz City. Household needs such as salt, salted fish, dried fish, vinegar, cooking oil, clothes, and farm needs specifically farm implements, fertilizers, and pesticides are obtained from these places. Farm products such as vegetables and root crops from as far as Liboron, Sibucal, Lake Duminagat, and Gandawan are brought to Mansawan during "tabo" where compradors buy them. Farmers rarely bring their farm produce outside of Mansawan because the transportation

cost is so prohibitive. Added to high transportation cost is the time it takes them away from their farms if they sell their goods in places beyond Mansawan. Compradors bring the farm products to Mutia, Pinan, Polanco, Dipolog City, all in Zamboanga del Norte. Another route in selling farm products is from Pinan, to Barcelona to Dapitan City, then to Dipolog City, or from Barcelona to Sapang Dalaga then to Calamba then Plaridel of Misamis Occidental. Traders bring farm and household needs to Mansawan for farmers to buy.

Not only are farm products and farming needs exchanged, but siltation, faunal and floral components of the environment too. The surface water, which drains from the hills and mountain slopes carry sediment and cause high siltation both in the lowland and coastal environments. Together with the surface water run-off, nutrients drain from the upland soil resulting in soil infertility. In addition, seeds of plants flowed with the run-off resulting in dispersal of the plants in the lowland and coastal areas. In the riverine system, which is prevalent in the upland ecosystem, aquatic fauna can go downstream and upstream. For example, the eel goes downstream to spawn and upstream to grow and mature, and back again downstream to lay eggs. Both seed-eating birds and fruit bats also function as seed dispersal agents resulting in the migration of plants. All winged organisms go from place to place and in so doing, serve also as dispersal agents.

#### **b. Political flow**

In both municipalities, the mayors are not permanent residents of the town they head. In Concepcion, the mayor is a resident of Lopez-Jaena. In Don Victoriano, the municipal mayor resides in Ozamiz City with the parent, although his wife is from Dipolog City. His younger brother is also the mayor of Josefina, the town next to Don Victoriano that is a part of Zamboanga del Sur. The dump trucks of the Don Victoriano mayor also serve Josefina. Somehow, the influence of the Don Victoriano mayor is glaring also in Josefina although the Josefina mayor is not similarly influential in Don Victoriano.

## **IV. Common observations and findings**

### **a. Biophysical resources**

1. Severe pest infestation on cabbage: Upon examination, the pest was identified as diamondback moth, *Plutella xylostella*. This is the major pest of cabbage in Mansawan, Gandawan and Lake Duminagat such that farmers are forced to apply insecticides to minimize their impacts.
2. A practical mechanical control of pests on cabbage seedlings was installed and observed in Barangay Lake Duminagat. The farmers used nylon net mesh to enclose their nursery beds.
3. The presence of parasitic cocoons on dead larvae of diamondback moth in Gandawan clearly indicates the presence of natural enemies that suppress the population growth of insect pests.
4. Dead larvae observed on the way to Lake Duminagat were believed to have been attacked by pathogenic organisms such as bacteria and viruses.
5. Cotton stainer, *Dysdercus cingulatus*, was observed as a pest of okra in Lampasan.
6. Water striders and ripple bugs are abundant in the waters of Lake Duminagat, Guiban River, and Virayan River. These are bioindicators of water quality. Their presence indicates the absence of pollutants in the bodies of water.
7. Most of the avian, reptilian, mammalian, amphibian, and ichthyofauna species observed had ecological value as pollinators, seed dispersal agents, and insect pest control agents. Their social value lies in their being used as pets and experimental or research materials. Economically, they are used as food and trading items.
8. The municipalities of Don Victoriano and Concepcion are all situated within a protected area where the status of bioresources remains unresolved.

## **b. Sociocultural and economic findings**

From direct observations and interviews of key informants, participants, and stakeholders in the PRA sites, information and data on the following were gathered. In addition, these information were validated in focus group discussions and multisectoral meetings.

1. The number of households in all barangays ranged from 53 to 362. Population figures based on estimates and latest reports range from 210 to 1,829. The average household size is six.
2. About 3-5% of the population in each barangay is composed of old (65 years and above) folks. The young (0-14 years old) accounted for about 45% of the total population. The middle age group (15-64 years old) comprises about 50%.
3. There are more females than males.
4. In Barangays Mansawan, Gandawan, Lake Duminagat, Small Potongan, Upper Potongan, and Virayan, more Subanons were observed than any other ethno-linguistic group. In these barangays, Subanons probably account for 85% to 100% of the population. In Lalud and Tuno, the Subanons make up 70% of the total population.
5. The barangays have barangay health workers (BHW) but no municipal health officer (MHO). Medicines are very much lacking.
6. Only five barangays have electricity. The most common mass media facility is the transistor radio. Barangay captains in Don Victoriano have ICOM radios.
7. Houses are mostly made of galvanized iron sheets and wood/wood shingles. Very few houses use cogon as roofing material.
8. Two barangays have high schools. Upper Potongan does not have any elementary school. Five barangays have Grades I-II, three barangays have Grades I-IV while three barangays have complete elementary schools.
9. Farming is the main source of livelihood. Secondary sources of income include "manungha" (hired help in the farm), "karyada" (hauling), hand-sawing, and selling firewood.
10. Cash crops from Mansawan, Gandawan and Lake Duminagat are mainly onions, cabbage, and chayote. For Lalud, Tuno, and Lampasan, cash crops are corn and root crops similar with Barangay Poblacion of Concepcion.
11. The average area cultivated is only  $\frac{1}{4}$  of a hectare. People occupy forest lands. They cannot get titles for the land they till since they live within the protected areas. Some possess certificates of stewardship over the piece of land they occupy.
12. There is no definite cropping pattern for root crops, onion, cabbage, and other vegetables. Corn is planted from April to May. The second cropping starts in September.
13. Rainy months are the lean months in Small Potongan and Upper Potongan, while for Virayan, every month is a lean month.
14. Poultry is seldom raised due to problems of pests and diseases.
15. Soil fertility is a big problem.
16. Women often help in the farm in addition to doing household chores. They plant, do weeding, and desucker onion plants. They also engaged in "karyada" to augment family income.

## **c. Issues and concerns**

The data and information gathered through direct observations, interviews, and meetings with the local residents and their local government units point to important issues and concerns. In the following list, the first two are the local residents' main concerns. The others are concerns raised by the team and residents. The team agrees with residents in believing that these issues and concerns are linked with each other in an intertwining manner.

1. Socioeconomics
  - a. Food security among upland communities
  - b. Social stability/peace and order situation
  - c. Alleviating family income above the poverty line
  - d. Availment of credit facilities at low or no interest at all
  - e. Availment of social amenities and services
  - f. Improvement of literacy
  - g. Increased productivity
2. Policy formulation needs
  - a. Resolving the status of the towns of Don Victoriano and Concepcion which are within the protected area
  - b. Tenurial rights of residents in the municipalities
  - c. Integrated approach to project implementation
  - d. Advocacy and information campaigns
3. People's empowerment through trainings and workshops
  - a. Agroforestry technology
  - b. Soil rehabilitation and amelioration
  - c. Enterprise development and cottage industry
4. Infrastructural needs
  - a. Rural electrification
  - b. Farm-to-market roads
  - c. Improved health services
  - d. Improved water system
5. Habitat destruction
  - a. Shifting cultivation within grasslands and brushlands
  - b. Unfavorable weather conditions and edaphic factors
  - c. Soil erosion/landslides
6. Chemical pollution
  - a. Application of pesticides
  - b. Application of inorganic fertilizers
7. Biological pollution
  - a. Indiscriminate introduction of alien species
  - b. Species extinction

#### **d. Strengths, weaknesses, opportunities and threats (SWOT)**

From these data, the strengths, weaknesses, opportunities, and threats (SWOT) were derived. These are presented in Appendix Table 26.

#### **V. Interaction analysis**

All the natural resources in the upland ecosystem are vulnerable to human interference or disturbance, thus threatening both the environmental security and biodiversity. With the shifting cultivation practices of farmers, more areas are cleared of plant materials that prevent soil erosion. In turn, the loss of plants correspondingly lead to the loss of animals that depend on them for habitat or for food. As a consequence, animals are driven away from the area. Human beings continue to hunt either for meat or objects of trading.

##### **a. Biophysical situations**

1. Soil erosion appears less in Mansawan, Gandawan, and Lake Duminagat in Don Victoriano, and in Concepcion based on the average cultivated area per household of less than ¼ ha. However, since farmers do not practice soil conservation measures, cultivation is done on steep slopes and frequency of rainfall is high, soil erosion is relatively high per unit area. In addition, vegetable production has resulted in the depletion of soil nutrients. Without sufficient replenishment, this has led to low soil fertility and increased incidence of soil-borne diseases (Bunders et al. 1990). Reversing this situation needs thorough and meticulous studies to come up with appropriate intervention strategies.
2. Abundant sources of water remain untapped. These are not taken advantaged of to boost staple crop production in Gandawan and Lake Duminagat environs and in the barangays of Concepcion. This necessitated the conversion of cultivated areas and grasslands into rice fields in terraces using suitable varieties and farming practices. Such conversion of land use may have also created negative impacts on the microorganisms in the soil, altering the ecological balance. Another aspect to consider is the sociocultural condition. Such

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intervention may not be acceptable or the community may not be socially prepared for such a shift in the manner of land use. Thus, an intensive participatory action research along this line is a must.

3. About 30% of the total floral species in Don Victoriano and Concepcion was not recorded and about 2% is believed to be new species. Their characteristics, habitat, distribution, and uses have to be known and understood for appropriate biodiversity conservation measures to be undertaken.
4. Several ornamental plant species have been observed growing wildly in the grasslands (e.g., *Medinilla*, *Begonia*, bamboo orchids, ground orchids, etc.) that have potential for commercial growing. Conservation of these species and using them for economic ventures to uplift the lives of residents is imperative. These plants may become extinct due to frequent shifting cultivation practices.
5. Species diversity appears relatively rich in Lake Duminagat and its environs. Yet, their habitat dynamics, degree of species association, and ecological functions are less known. Understanding these factors is needed to formulate effective forest management decisions and effect sustainable development.
6. Don Victoriano and Concepcion are within the protected area of the Mt. Malindang National Park and their status is still unresolved. Resolution of this issue is vital to the conservation efforts of Mt. Malindang and formulation of biodiversity conservation measures for sustainable development.
7. Insect pests are the major constraint to vegetable production. Among these are the diamondback moth (*Plutella xylostella*), green tortoise beetle (*Cassida* sp.), potato tuber moth (*Phthorimaea operculata*), cutworm (*Spodoptera litura*), squash beetle (*Aulacophora similis*), cotton stainer (*Dysdercus cingulatus*), and unidentified lepidopterous pest which attacks onion. Anthracnose is the major disease of Baguio beans. Controlling pests and diseases of vegetables necessitates immediate attention to formulate integrated pest management practices.

8. Insecticides are commonly applied to control insect pests. It is the ultimate recourse of farmers to get high harvests. This practice threatens biodiversity. Alternative means of controlling pests that are environment-friendly and cost effective must be used.
9. Water striders and ripple bugs are quite abundant in the waters of Lake Duminagat, Guiban River, and Virayan River. These are bioindicators of water quality since their presence and abundance indicate the absence of water pollutants.
10. Most of the avian, reptilian, mammalian, amphibian, and ichthyofauna species are observed to have ecological value as pollinators, seed dispersal agents, and insect pest control agents. Their social value lies in their use as pets and experimental research materials. Their economic value focuses more on their use as food and trading items.

## **b. Sociocultural and economic situations**

1. Vegetable production is the main source of livelihood in Mansawan, Gandawan, and Lake Duminagat. Vegetables grown include cabbage, onions, Baguio beans, chayote and squash. Root crops are likewise grown which sustain residents particularly during lean months. The common root crops cultivated are sweet potato and lutia. The decision to plant them is governed by both socioeconomic and cultural values and environmental constraints.
2. The number of households in all barangays of Don Victoriano and Concepcion ranges from 53 to 362. Latest population figures are estimated to range from 210 to 1,829. The average household size is six. The average income per month per household of P700-1,000 is very low compared with the P3,000 per month poverty level indicator. Yet residents manage to survive because of coping mechanisms such as "karyada" (hauling) and "manungha" (hired labor) to augment their meager income.
3. At least 70% of the population in Don Victoriano is indigenous people. Their level of education is low. Thus, any development

intervention to be introduced would require much effort for social preparation and value formation.

4. Fifty percent of the population belong to the 15-64 years age range and 45% to 0-14 years range implying available labor force at household level. The average area of cultivation per household in Lake Duminagat is less than ¼ ha. Due to lack or absence of farm implements and farm animals, manual labor is used so only small farm size are maintained per household. Farmers with small farms and who do not practice intensive small-scale farming get less harvests and meager income.
  5. Women often tend vegetable gardens in addition to doing household chores. There are more females than males. Moreover, men attend most of the time to social and political functions.
5. Assessment of the biological resources in Lake Duminagat and its environs (Don Victoriano) and inventory as input and guide to appropriate conservation and management
  6. Analyses and determination of the physicochemical parameters of the soil in relation to biodiversity and management strategies
  7. Hydrobiology of the freshwater ecosystems which include the physicochemical properties of the water and the dynamics
  8. Study on the rate of soil erosion, water yield, and water-holding capacity, water quality and water regimen of some waterways in Lake Duminagat environs
  9. Documentation and comparative studies on cultural practices of the indigenous people in different ecozones in relation to biodiversity indices and status

## VI. Recommendations

In view of these issues, problems, and interaction analysis, the following first and second generation researchable areas and specific research topics and development needs are recommended. These were analyzed using the following criteria: relationship to biodiversity conservation, needs, urgency, linkages, and policy relevance (Appendix Table 27).

### a. First generation researchable areas

1. Tenurial arrangement with settlers and users of Mt. Malindang resources, redelineation of the protected area, and empowerment of the people as effective forest managers
2. Land use pattern in the municipalities of Don Victoriano and Concepcion to determine the suitability of plants to different ecozones
3. Patterns of forest/biodiversity resources use by Subanons and other users to provide inputs to appropriate resource management strategies
4. Marketing strategies, resource use pattern, income and market structures

10. Studies on impacts of resource use and income-generating activities on the biodiversity status in different ecozones
11. Studies on impacts of local governance on biodiversity conservation status

### b. Second generation and specific researchable areas

1. Identification of appropriate and sustainable agroforestry systems that enhance biodiversity conservation and sustainable development
2. Studies on using biological resources for pest control and soil amelioration
3. Propagation and mass production of locally available ornamental plants
4. Identification, propagation, and performance evaluation of forage species in Lake Duminagat environs
5. Environmental impact evaluation studies on using the waterfalls in Don Victoriano as a source of hydroelectric power

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6. Macropropagation and use of local dipterocarps in rehabilitating natural secondary forests and grasslands
  7. Environmental impact evaluation studies on the proposed ecotourism project in Lake Duminagat and its environs
  8. Ex situ breeding (captive breeding or tissue culture) of rare, endangered, threatened species and establishment of biodiversity conservation and rehabilitation center for academic purposes and for reintroduction of lab-produced species in the natural habitat whose performance will be monitored and evaluated
  9. In situ breeding of rare and endangered species in protected areas under well-coordinated implementation rules and regulations by different agencies and LGUs concerned.
  10. Forest species composition, habitat dynamics, degree of species association, their ecological functions, and policy implications
  11. Survey and biological studies of major insect pests and diseases of vegetables in Don Victoriano and their natural enemies, and the implications for integrated pest management strategies
  12. Biodiversity assessment of hymenopterous and lepidopterous insects in Lake Duminagat and its environs
  13. On-farm profiling and residue analysis of pesticides commonly used by farmers with implications on policy formulations
  14. Inventory, bioassay, and field applications of botanicals as alternative control measures for pests in vegetables in Don Victoriano
  15. Inventory of pests and diseases of livestock and poultry in Concepcion and Don Victoriano and management planning for control or eradication
  16. Survey of ecto and endoparasites of avifaunal species in Lake Duminagat and Small Potongan environs
  17. Incidence of *Plasmodium gallinarum* in jungle fowls of Lake Duminagat and its environs
  18. Biodiversity assessment of timber-producing species in Lake Duminagat and Small Potongan environs
- c. Development needs for possible interventions by relevant GOs and NGOs**
1. Development of farm-to-market roads
  2. Lighting facilities
  3. Provision of expert services for agricultural vegetable production
  4. Provision of assistance for agroforestry technologies
  5. DENR assistance for placing the towns of Don Victoriano and Concepcion under the Community-Based Forest Management (CBFM) program providing tenurial rights to the people with corresponding empowerment as effective forest managers
  6. Development of commercial ornamental plant nurseries as alternative livelihood for the people including empowerment
  7. Development of a cooperative for cutflower business as an alternative source of income among households
  8. Backyard livestock and poultry raising as a small cottage industry

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#### **d. Support programs**

1. More team building activities, especially among researchers of different disciplines
2. Training of local partners on biodiversity assessment: identification and inventory of all on-site and off-site resources so they will become future parataxonomists
3. More training for researchers, locally and internationally, to enhance their expertise
4. Fellowship grants for researchers who want to update their knowledge
5. More research grants for theses students, both Filipinos and Dutch; more financial support for students from Mindanao
6. Intensive information dissemination on environmental awareness
7. Funded curricular development on biodiversity conservation at all levels: elementary, high school, collegiate and post baccalaureate degrees
8. Financially-supported biodiversity research institute or centers in Mindanao

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**Appendix Table 1. List of plant and lichen species present in each of 12 barangays included in the survey at Mt. Malindang Range, Upland Ecosystem PRA.**

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Abelmoschus esculentus</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Acacia mangium</i>	0	0	0	1	0	0	0	0	0	0	1	1
<i>Acalypha ameniacea</i>	1	1	1	0	1	1	1	1	1	1	0	0
<i>Acorus calamus</i>	0	1	0	0	0	0	0	0	0	0	0	0
<i>Adenanthera intermedia</i>	0	0	0	0	0	0	0	1	1	0	0	0
<i>Adiantum philippense</i>	1	1	1	0	1	1	1	0	0	1	1	1
<i>Aeschynanthus philippinensis</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Aeschynomene sensitiva</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Agathis philippinensis</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Agave americana</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Ageratina adenophora</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Ageratum conyzoides</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Aglaonema commutatum</i>	0	0	0	0	1	1	0	0	0	1	0	0
<i>Allum cepa</i>	1	1	1	1	1	1	0	0	0	0	1	1
<i>Alocasia bicolor</i>	1	0	0	0	1	1	0	0	0	1	1	1
<i>Alocasia macrorrhizos</i>	1	0	0	1	1	1	0	0	0	1	1	0
<i>Alocasia zebrina</i>	0	0	1	0	0	1	0	0	0	0	0	0
<i>Alstonia macrophylla</i>	1	1	1	0	1	1	1	1	1	1	1	1
<i>Alstonia scholaris</i>	1	1	1	0	0	0	0	1	1	1	1	0
<i>Alternanthera ficoides</i>	1	1	0	0	0	1	0	0	0	1	1	0
<i>Alysicarpus vaginalis</i>	0	0	0	0	0	0	0	0	1	1	0	0
<i>Amaranthus spinosus</i>	1	1	0	1	1	1	0	0	0	1	1	1
<i>Amomum philippinense</i>	0	1	0	0	0	0	1	1	1	1	0	0
<i>Anacardium occidentale</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Ananas comosus</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Andropogon citratus</i>	1	1	0	0	0	0	0	0	0	1	1	1
<i>Angiopteris palmiformis</i>	0	1	1	0	1	1	1	1	1	1	0	0
<i>Anisoptera thurifera</i>	0	0	1	0	0	0	1	1	1	0	0	0
<i>Annona muricata</i>	0	0	0	1	1	1	0	0	0	0	1	1
<i>Annona squamosa</i>	0	0	0	1	1	1	0	0	0	0	1	1
<i>Anthurium andreaeanum</i>	0	0	0	1	1	1	0	0	0	1	1	1
<i>Apium graveolens</i>	1	1	0	0	0	0	0	0	0	0	0	0
<i>Arachis hypogea</i>	1	0	0	0	0	0	0	0	0	1	1	0
<i>Aralia spinosa</i>	1	1	1	0	0	0	1	1	1	1	1	0
<i>Ardista pyramidalis</i>	0	1	0	0	0	0	1	1	1	0	0	0
<i>Arenga tramula</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Artemisia vulgaris</i>	0	1	0	1	1	1	0	0	0	1	1	1
<i>Artocarpus altilis</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Artocarpus blancoi</i>	0	0	0	1	1	1	1	0	0	1	1	1
<i>Artocarpus communis</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Artocarpus heterophylikus</i>	1	0	0	1	1	1	0	0	1	1	1	1
<i>Artocarpus odoratissimus</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Artocarpus sericarpus</i>	0	0	0	1	1	1	1	1	1	1	1	1
<i>Aschyranthes aspera</i>	1	1	1	0	0	1	1	1	1	1	1	1
<i>Asclepiua curassavica</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Asparagus sprengeri</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Asplenium cymbifolium</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Aglaia diffusa</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Aglaia langlassei</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Aglaia luzoniensis</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Aphananthe philippinensis</i>	1	1	1	0	0	0	1	0	0	1	0	0
<i>Azaderacta indice</i>	0	0	0	0	0	0	0	0	0	0	1	0
<i>Arisoptera aurea</i>	1	0	0	0	0	0	1	0	0	0	0	0
<i>Asplenium nidus</i>	0	1	1	0	0	1	1	0	1	0	0	1
<i>Asplenium polyodon</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Aster linifolius</i>	0	1	1	0	0	0	0	0	0	0	0	0

Appendix Table 1. Continued...

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Astronia cumingiana</i>	1	0	0	0	0	0	1	1	1	0	0	0
<i>Asystacia gangetica</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Atuna racemosa</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Axonopus compressus</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Bambusa blumeana</i>	1	1	1	0	0	1	0	0	0	1	1	1
<i>Bambusa glaucescens</i>	1	0	0	0	0	0	0	0	0	0	1	1
<i>Bambusa vulgaris</i>	1	1	1	1	1	1	0	0	1	1	1	1
<i>Bambusa vulgaris</i> var. <i>striata</i>	0	0	0	1	0	0	0	0	0	1	1	0
<i>Barleria cristata</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Barringtonia racemosa</i>	0	1	1	0	0	0	1	0	1	0	0	0
<i>Basella alba</i>	1	1	1	0	0	1	1	0	1	1	0	0
<i>Basella rubra</i>	0	0	0	1	0	0	0	1	0	1	1	1
<i>Begonia hernandioides</i>	0	0	1	0	0	0	1	1	1	1	0	0
<i>Begonia nigritarum</i>	0	1	0	0	0	0	1	1	1	0	0	0
<i>Belamcanda chinensis</i>	1	1	1	0	0	1	0	0	0	1	0	0
<i>Bidens pilosa</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Biophytum sensitivum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Bischofia javanica</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Bixa orellana</i>	0	0	0	1	1	1	0	0	0	1	1	1
<i>Blechnum orientale</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Blumea balsamifera</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Boerlagiodendron diversifolium</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Borreria laevis</i>	1	1	1	0	0	0	0	0	0	1	1	1
<i>Bougainvillea spectabilis</i>	1	0	0	1	1	1	0	0	0	1	1	1
<i>Brachiaria mutica</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Brassica oleracea</i>	1	1	1	0	0	0	0	0	0	0	0	0
<i>Breynia cernua</i>	1	1	1	0	0	1	1	1	1	1	1	1
<i>Bridelia stipularis</i>	0	0	1	0	1	1	1	1	1	1	0	0
<i>Buchanania arborescens</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Bulbophyllum auratum</i>	0	0	0	1	1	0	0	0	0	1	0	0
<i>Bulbophyllum dearei</i>	0	1	0	0	1	0	0	0	0	1	0	0
<i>Caladium bicolor</i>	1	0	0	1	1	1	0	0	0	1	1	1
<i>Calamus dimorphocanthus</i>	0	1	1	0	0	0	1	1	0	1	0	0
<i>Calamus merrillii</i>	0	1	1	0	0	0	1	1	0	1	0	0
<i>Calamus ornatus</i> var. <i>phillippinens</i>	0	1	1	0	0	0	1	1	0	1	0	0
<i>Calliandra haematocephala</i>	0	0	0	1	0	0	0	0	0	0	1	1
<i>Callicarpa candicans</i>	0	1	0	0	0	0	1	1	1	0	0	0
<i>Callicarpa formosana</i>	0	0	1	0	0	0	0	1	1	1	0	0
<i>Calophyllum kuenstleri</i>	0	0	1	0	0	0	1	1	0	0	0	0
<i>Calopogonium mucunoides</i>	1	1	1	0	1	1	0	0	0	1	1	1
<i>Canarium hirsutum</i> forma <i>multipinnata</i>	1	1	1	1	1	1	0	0	0	1	1	1
<i>Canna indica</i>	1	1	1	1	1	1	0	0	0	1	1	1
<i>Canthium monstrosum</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Capsicum frutescens</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Carallia branchiata</i>	0	0	0	0	0	0	0	0	0	1	0	0
<i>Carica papaya</i>	1	1	1	1	1	1	0	0	1	1	1	1
<i>Carphalea kirondron</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Bambusa spinosa</i>	0	0	0	1	1	0	0	0	0	0	0	0
<i>Brossaia actinophylla</i>	0	0	0	0	0	0	1	1	0	0	0	0
<i>Bridelia minutilora</i>	0	0	1	0	0	0	1	1	1	0	0	0
<i>Buchanania arborascens</i>	0	0	0	1	1	0	0	0	0	0	0	0
<i>Calophyllum blancoi</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Caesalpinia pulcherrima</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Caryota rumphiana</i> ssp. <i>phillippinensis</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Casearia grewiaefolia</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Cassia alata</i>	0	0	0	1	1	1	0	0	1	1	1	1
<i>Cassia javanica</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Cassia nodosa</i>	1	0	0	1	1	1	0	0	0	0	0	0
<i>Cassia occidentalis</i>	1	0	0	1	1	1	1	0	1	1	1	1

Appendix Table 1. Continued...

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Cassia tora</i>	1	0	0	1	1	1	1	0	1	1	1	1
<i>Catharanthus roseus</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Cayratia trifolia</i> var. <i>cinerea</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Celba pentandra</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Celtis luzonica</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Celtis philippinensis</i>	0	1	1	0	0	0	1	1	0	0	0	0
<i>Centella asiatica</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Centotheca lappacea</i>	1	1	1	0	0	1	1	1	1	1	1	1
<i>Centrosema pubescens</i>	0	0	0	1	1	1	1	1	1	1	1	1
<i>Cestrum nocturnum</i>	0	0	0	0	1	1	1	0	0	0	0	0
<i>Chingia ferox</i>	1	1	1	0	1	1	1	1	0	0	0	0
<i>Chloris barbata</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Chromolaena odorata</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Chrysalidocarpus lutescens</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Chrysanthemum indicum</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Chrysophyllum cainito</i>	1	0	0	1	1	1	0	0	1	1	1	1
<i>Chrysopogon aciculatus</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Citrofortunella microcarpa</i>	0	1	0	0	0	0	0	0	0	1	1	1
<i>Citrus limon</i>	0	1	0	0	0	0	0	0	0	0	0	0
<i>Citrus maxima</i>	1	0	0	1	1	1	0	0	1	1	1	1
<i>Cladonia</i> sp.	1	1	1	0	0	0	0	0	0	0	0	0
<i>Cladonia vulcanicum</i>	1	1	1	0	0	0	0	0	0	0	0	0
<i>Clerodendron macrostachyum</i>	0	0	0	0	0	0	1	1	1	1	0	0
<i>Clerodendron quadriloculare</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Clethra lancifolia</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Clitorea ternatea</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Cocos mucifera</i> cv. "Green Tall"	1	1	1	1	1	1	0	0	1	1	1	1
<i>Codiaeum variegatum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Coffea robusta</i>	1	0	0	1	1	1	0	0	0	1	1	1
<i>Coix lachryma-jobi</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Coleus blumei</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Coleus igolotorum</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Colocasia esculenta</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Colona serratifolia</i>	0	1	0	0	1	1	0	0	1	1	1	1
<i>Commelina benghalensis</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Commelina diffusa</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Commelina bartramia</i>	0	0	0	1	0	0	0	1	1	1	0	0
<i>Cordia dichotoma</i>	1	0	0	0	0	0	0	0	0	0	0	0
<i>Cordyline fruticosa</i>	1	0	0	1	1	1	0	0	0	0	0	0
<i>Corypha utan</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Cosmos caudatus</i>	1	1	1	0	0	0	0	0	0	0	1	0
<i>Costus speciosus</i>	0	0	0	0	0	0	1	1	1	1	1	1
<i>Crassocephalum crepidioides</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Cratoxylon celebicum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Cratoxylon formosanum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Chisocheton pentandrum</i>	0	1	1	0	0	0	1	1	0	0	0	0
<i>Caryota cuminqi</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Chisocheton cymingianus</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Combretodendron quadrialatum</i>	1	1	1	0	0	0	1	0	1	1	0	0
<i>Crinum asiaticum</i>	0	0	0	0	0	0	0	0	0	1	0	0
<i>Crotalaria linifolia</i>	0	1	0	0	0	0	1	1	1	1	1	1
<i>Crotalaria saltiana</i>	0	0	0	0	0	1	1	1	1	1	1	1
<i>Crypsinus</i> sp.	0	1	0	0	0	0	0	0	0	0	0	0
<i>Crypsinus glaucus</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Cucurbita maxima</i>	0	1	0	1	1	1	1	1	1	1	1	1
<i>Cuphea hyssopifolia</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Curcuma domestica</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Cyanotis axillaris</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Cyathea callosa</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Cyathea contaminans</i>	1	1	1	1	1	1	1	1	1	1	1	0

Appendix Table 1. Continued...

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Cyathea loheri</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Cycas revoluta</i>	0	0	0	0	0	0	0	0	0	0	0	1
<i>Cynodon dactylon</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Cyperus alternifolius</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyperus flabelliformis</i>	1	1	1	0	0	0	0	0	0	0	0	0
<i>Cyperus compactus</i>	1	1	0	0	1	1	0	1	0	1	0	0
<i>Cyperus iria</i>	1	1	1	0	1	1	1	1	1	1	0	1
<i>Cyperus kyllingia</i>	1	1	1	1	1	1	1	1	1	1	0	0
<i>Cyperus rotundus</i>	1	1	1	0	0	1	1	1	0	1	0	0
<i>Cyrtandra cumingii</i>	0	1	1	0	0	0	1	0	1	0	0	0
<i>Cyrtococcum patens</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Cyrtosperma merkusii</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Dacrycarpus imbricatus</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Dactyloctenium aegypticum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Dalbergia</i> sp.	0	0	0	0	0	0	1	1	1	0	0	0
<i>Datura metel</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Daucus carotoa</i>	1	1	0	0	0	1	0	0	0	0	0	0
<i>Davallia solida</i>	0	1	1	0	0	0	1	1	0	1	0	0
<i>Dendrocalamus asper</i>	1	0	0	0	0	0	0	0	0	0	0	0
<i>Desmodium heterocarpon</i>	1	1	1	0	0	0	0	0	0	0	0	0
<i>Desmodium suffruticosum</i>	1	1	0	0	1	1	1	1	1	1	0	0
<i>Dieffenbachia picta</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Dillenia philippinensis</i>	0	1	0	0	0	0	0	0	0	0	0	0
<i>Dillenia reifferschidia</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Derris philippinensis</i>	0	1	0	1	0	1	1	1	1	1	0	0
<i>Desmodium capitatum</i>	1	1	1	1	1	0	1	1	1	1	1	1
<i>Desmodium pulchellum</i>	1	1	0	1	1	1	0	1	1	1	1	0
<i>Desmodium triflorum</i>	1	1	1	0	1	1	0	1	1	1	0	1
<i>Desmodium umbellatum</i>	1	1	0	0	1	0	1	1	1	0	1	1
<i>Desmodium velutinum</i>	1	1	0	0	1	0	1	1	1	0	1	1
<i>Discranopteris linearis</i>	1	1	1	0	0	1	1	1	1	1	1	1
<i>Digitaria ciliaris</i>	1	1	1	0	1	1	1	0	1	1	0	1
<i>Dioscorea alata</i>	1	0	0	0	0	0	0	0	0	1	0	0
<i>Dioscorea esculenta</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Diplazium esculentum</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Dipterocarpus gracilis</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Dracaena fragrans</i>	1	0	0	0	0	0	0	0	0	0	1	1
<i>Drynaria quercifolia</i>	1	0	0	0	0	0	0	1	1	1	1	1
<i>Duranta erecta</i>	1	1	1	1	1	1	1	0	0	1	1	1
<i>Durio zibethinus</i>	0	1	0	0	0	0	0	0	0	0	1	1
<i>Dysoxylum gaudichaudianum</i>	0	0	0	0	0	0	0	0	1	1	0	0
<i>Echinochloa colona</i>	0	0	0	1	1	1	1	1	1	1	1	1
<i>Creten leiophyllus</i>	1	1	0	0	0	0	0	0	0	0	0	0
<i>Cubilia cubili</i>	0	0	0	0	0	0	1	1	1	0	0	0
<i>Daemonorops melis</i>	0	0	0	0	0	0	1	0	0	0	0	1
<i>Dacrydium elatum</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Dendrocalamus merrilliamus</i>	0	0	0	1	1	1	0	0	0	0	0	0
<i>Dendrocoride meyeniana</i>	1	1	1	1	1	0	1	1	0	0	0	0
<i>Diospyros copelandel</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Diospyros pilosanthera</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Demosphocalyx luzoniensis</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Drypetis bordini</i>	0	1	0	0	0	0	1	0	0	0	0	0
<i>Drypetes maquilingensis</i>	0	0	1	0	0	0	1	0	0	0	0	0
<i>Dwatanga moluccana</i>	0	0	0	0	0	0	1	0	1	1	0	0
<i>Echinochloa crus-galli</i>	0	0	0	1	1	1	1	1	1	1	1	1
<i>Eclipta rostrata</i>	1	1	1	0	0	1	0	1	1	1	1	1
<i>Elaeagnus philippinensis</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Elatostema lagunense</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Elatostema pulchellum</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Elephantopus scaber</i>	1	1	1	0	0	1	0	1	0	0	0	0

Appendix Table 1. Continued...

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Elephantopus spicatus</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Elephantopus tomentosus</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Eleusine indica</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Eleutherine palmifolia</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Emilia sonchifolia</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Eucalyptus deglupta</i>	0	1	0	0	0	0	0	0	0	0	0	0
<i>Eurycles amboinensis</i>	1	0	0	0	0	0	0	0	0	0	0	0
<i>Ervatamia pandacaqui</i>	0	0	0	0	0	0	0	1	1	1	0	0
<i>Erythrina orientalis</i>	0	0	0	0	0	0	0	0	1	1	1	1
<i>Euphorbia heterophylla</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Euphorbia hirta</i>	0	0	0	0	0	1	0	0	1	1	1	1
<i>Euphorbia pulcherrima</i>	0	1	0	0	0	0	0	0	0	1	1	1
<i>Ficus angustissima</i>	0	1	0	0	0	0	0	0	1	1	0	0
<i>Ficus baletae</i>	1	0	0	0	0	0	0	0	0	1	0	0
<i>Ficus benjamina</i>	0	0	0	0	0	0	0	0	1	1	1	0
<i>Ficus botryocarpa</i>	1	1	1	0	0	1	0	1	1	0	1	0
<i>Ficus guyeri</i>	1	0	0	0	0	0	0	0	0	1	1	1
<i>Ficus minahassae</i>	1	0	0	0	1	1	1	1	1	1	0	0
<i>Ficus nota</i>	0	0	0	0	0	1	0	0	0	1	1	1
<i>Ficus septica</i>	1	0	0	0	0	0	0	0	0	1	1	0
<i>Ficus ulmifolia</i>	1	1	1	0	0	1	0	1	1	0	1	0
<i>Ficus variegata</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Fimbristylis dichotoma</i>	0	1	1	0	0	0	0	1	0	1	0	0
<i>Fimbristylis monostachya</i>	1	1	1	0	1	0	0	0	0	1	0	0
<i>Flagellaria indica</i>	0	0	0	0	0	0	0	0	1	1	0	0
<i>Fragaria virginiana</i>	0	1	0	0	0	0	0	0	0	0	0	0
<i>Freycinetia cumingiana</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Freycinetia negrosensis</i>	0	1	1	0	0	0	1	1	0	0	0	0
<i>Freycinetia williamsii</i>	0	1	1	0	0	0	1	1	0	0	0	0
<i>Gardenia jasminoides</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Gardenia mangostan</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Gendarussa vulgaris</i>	0	1	0	0	0	0	0	0	0	1	1	1
<i>Gerbera sp.</i>	1	0	0	1	1	1	0	0	0	1	1	1
<i>Gliricidia sepium</i>	1	0	0	0	0	0	0	0	1	0	1	1
<i>Glochidion rubrum</i>	0	1	0	0	0	0	0	0	0	1	1	1
<i>Gmelina arborea</i>	1	0	0	1	1	1	0	1	1	1	1	1
<i>Gossypium barbadense</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Guioa koelreuteria</i>	0	0	0	0	0	0	1	1	1	0	0	0
<i>Gymnostoma rumphianum</i>	1	1	1	0	0	0	1	1	1	1	1	1
<i>Heliconia metallica</i>	1	0	0	0	0	0	0	0	0	0	0	0
<i>Hibiscus cannabinus</i>	0	0	0	1	0	0	0	0	0	0	1	1
<i>Hibiscus rosa-sinensis</i>	1	0	0	0	0	0	0	0	0	1	1	1
<i>Hibiscus tiliaceus</i>	1	0	0	0	0	0	0	0	1	0	1	1
<i>Helixanthera sessillis</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Hippeastrum sp.</i>	1	1	1	1	0	0	0	0	0	0	0	0
<i>Homalanthus alpinus</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Homalanthus populneus</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Gomalomena philippinensis</i>	0	1	1	0	0	0	1	1	1	1	0	0
<i>Eclipta prostrata</i>	0	0	0	1	1	1	0	0	0	0	1	0
<i>Ficus congesta</i>	1	1	1	1	1	1	1	1	1	1	0	0
<i>Ficus ampelos</i>	0	1	1	0	0	1	1	1	1	1	0	0
<i>Ficus heteropleura</i>	1	1	1	0	1	0	1	1	1	0	0	0
<i>Fraxinus griffithii</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Grewia multiflora</i>	1	1	1	1	1	1	1	1	1	0	0	0
<i>Flacourtia rukam</i>	0	0	0	0	0	0	0	1	0	0	0	0
<i>Gigantochloa levis</i>	0	0	0	1	1	1	0	1	1	1	0	0
<i>Homalanthus populneus</i>	1	1	1	1	1	1	1	1	1	1	0	0
<i>Hopea acuminata</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Gardenia pseudopsidium</i>	0	1	1	0	0	0	1	1	0	1	0	0
<i>Homalomena rubescens</i>	0	0	0	0	0	1	0	0	0	1	0	0
<i>Hydrangea lobbii</i>	0	1	0	0	0	0	0	0	0	1	0	0

Appendix Table 1. Continued...

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Hygrophila salicifolia</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Ichnocarpus volubilis</i>	0	0	0	0	0	1	1	1	1	1	0	0
<i>Impatiens balsamina</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Impatiens hutchinsonii</i>	1	1	1	0	0	0	0	1	1	1	0	0
<i>Imperata cylindrica</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Indigofera tinctoria</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Ipomoea quamoclit</i>	1	1	1	0	1	1	1	1	1	0	0	0
<i>Ipomoea triloba</i>	1	1	1	0	0	0	0	0	0	1	1	1
<i>Iresine herbstii</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Ixora philippinensis</i>	1	1	1	1	1	1	0	0	0	1	1	1
<i>Kalanchoe pinnata</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Kolowratia elegans</i>	0	0	0	0	0	0	0	1	1	0	0	0
<i>Lagerstroemia speciosa</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Lansium domesticum</i>	0	0	0	0	0	1	0	0	0	0	1	0
<i>Lantana camara</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Laportea brunnea</i>	0	1	1	0	0	0	0	1	1	1	0	0
<i>Leea philippinensis</i>	0	0	0	0	0	0	0	0	1	1	0	0
<i>Leucaena leucocephala</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Leucosyke capitellata</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Lindernia crustacea</i>	1	1	1	0	1	1	0	0	1	0	1	1
<i>Lithocarpus mindanaensis</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Lithocarpus philippinensis</i>	0	0	0	0	0	0	0	1	1	0	0	0
<i>Lithocarpus sundaica</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Litsea glutinosa</i>	0	0	1	0	0	1	1	1	0	0	0	0
<i>Livistona rotundifolia</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Lobaria meridionalis</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Lobaria robinsonii</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Lycopersicon esculentum</i>	1	1	1	1	1	1	0	0	1	1	1	1
<i>Lycopodium cernuum</i>	1	1	1	0	0	0	1	1	0	0	0	0
<i>Lycopodium squarrosum</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Lygodium circinatum</i>	0	1	1	1	0	0	1	1	1	0	0	0
<i>Lygodium merrillii</i>	0	0	0	1	0	0	0	1	0	0	0	0
<i>Macaranga bicolor</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Macaranga dipterocarpifolia</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Macaranga grandifolia</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Macaranga tanarius</i>	1	1	1	1	0	0	1	1	1	1	1	0
<i>Macrothelypteris polypodioides</i>	0	1	1	0	0	1	0	0	0	0	0	0
<i>Madhuca betis</i>	0	0	1	0	0	0	1	1	1	0	0	0
<i>Mallotus philippensis</i>	0	0	0	0	0	0	0	1	1	0	0	0
<i>Malvaviscus pilosus</i>	1	0	0	0	0	0	0	1	1	0	0	0
<i>Mangifera indica</i>	1	0	0	0	0	0	0	0	0	1	1	1
<i>Manibot esculenta</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Medinilla malindangensis</i>	0	1	1	0	0	0	1	1	0	0	0	0
<i>Medinilla magnifica</i>	0	0	0	0	0	0	1	1	0	0	0	0
<i>Medinilla myrtiformis</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Melanolepis multiglandulosa</i>	0	1	0	0	0	0	0	0	0	1	1	1
<i>Melastoma polyanthum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Melia dubia</i>	0	0	0	0	1	1	0	0	0	1	1	1
<i>Melicope triphylla</i>	0	1	0	0	0	0	1	1	1	0	0	0
<i>Mentha arvensis</i>	1	1	1	0	0	0	0	0	0	0	0	0
<i>Mentha arvensis</i> var. <i>piperata</i>	0	0	0	0	1	1	0	0	0	0	1	0
<i>Horpetica alata</i>	0	0	0	1	1	1	0	0	0	0	0	0
<i>Horsifordia megacarpa</i>	1	1	0	0	0	0	1	0	0	0	0	0
<i>Clachidion canesiensis</i>	1	1	1	1	1	1	1	0	1	1	1	0
<i>Glochidion album</i>	1	1	1	1	1	1	1	1	1	1	1	0
<i>Letsea perrottetii</i>	0	0	1	1	0	0	1	0	0	0	0	0
<i>Melastoma malabatricum</i>	0	1	1	1	0	0	1	1	1	1	0	0
<i>Merremia peltata</i>	0	0	0	1	1	1	0	1	1	1	0	1
<i>Micromelum minutum</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Mikania cordata</i>	1	1	1	1	1	1	1	1	1	1	1	1

Appendix Table 1. Continued...

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Mimosa invisa</i>	1	1	0	1	0	0	1	1	0	0	0	0
<i>Mimosa pudica</i>	1	1	0	1	1	1	1	1	1	1	1	1
<i>Miscanthus floridulus</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Morinda citrifolia</i>	0	0	0	0	0	0	0	1	1	0	1	0
<i>Moringa oleifera</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Muntingia calabura</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Musa x paradisiaca</i> (AAB)	1	1	1	1	1	1	1	1	1	1	1	1
<i>Musa x paradisiaca</i> (BBB)	1	1	1	1	1	1	1	1	1	1	1	1
<i>Musa textilis</i>	0	1	1	0	0	1	1	1	1	1	0	0
<i>Mussaenda anisophylla</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Mussaenda philippica</i>	0	1	1	0	0	0	1	1	0	0	0	0
<i>Nauclea orientalis</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Neonauclea bartingii</i>	1	1	1	0	0	1	1	1	1	0	0	0
<i>Neonauclea media</i>	0	1	1	0	0	0	1	1	1	1	0	0
<i>Nepenthes alata</i>	0	0	0	0	0	0	0	1	0	0	0	0
<i>Nephelium lappaceum</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Nephelium ramboutan-oke</i>	0	0	0	1	0	0	0	1	0	0	0	0
<i>Nephrolepis biserrata</i>	1	1	1	1	1	1	0	0	0	0	1	1
<i>Nopalea cochinellifera</i>	0	0	0	0	0	1	0	0	0	0	1	1
<i>Ocimum sanctum</i>	1	0	0	0	0	1	0	0	0	0	0	0
<i>Octomeles sumatrana</i>	0	0	1	0	0	0	1	0	0	0	0	0
<i>Odontonema strictum</i>	1	0	0	0	0	0	0	0	0	1	1	0
<i>Oleandra maquilingensis</i>	0	1	1	0	0	0	0	1	1	0	0	0
<i>Operculina turpethum</i>	0	0	0	0	0	1	0	0	1	1	1	1
<i>Ophioglossum reticulatum</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Ophiopogon japonicus</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Oplismenus compositus</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Orthosiphon aristatus</i>	1	0	0	0	0	1	0	0	0	0	0	0
<i>Oxalis repens</i>	1	1	0	0	0	1	0	0	1	1	1	1
<i>Pachyrhizus erosus</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Palaquium luzonense</i>	0	0	0	0	0	0	1	1	0	0	0	1
<i>Pandanus camarinensis</i>	0	0	1	0	0	0	1	1	1	0	0	0
<i>Pandanus copelandii</i>	0	0	1	0	0	0	1	1	0	0	0	0
<i>Pandanus exaltatus</i>	0	0	0	0	0	1	1	1	1	0	0	0
<i>Pandanus tectorius</i> var. <i>laevis</i>	0	0	0	0	0	0	0	1	1	1	1	0
<i>Panicum maximum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Parartocarpus venenosus</i>	0	0	0	0	0	0	0	1	1	0	0	0
<i>Paraserianthes falcataria</i>	0	1	1	0	0	0	0	0	0	0	1	0
<i>Parmelia cristifera</i>	1	1	1	0	0	0	0	0	0	0	1	0
<i>Paspalidium flavescens</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Paspalum conjugatum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Paspalum distichum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Paspalum scrobiculatum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Passiflora foetida</i>	0	0	0	0	0	0	0	1	1	1	1	0
<i>Pennisetum polystachyon</i>	1	1	1	0	0	0	0	1	1	1	1	1
<i>Persea americana</i>	1	0	0	0	0	0	0	0	1	1	1	1
<i>Phacelophrynium interruptum</i>	0	0	0	0	0	0	1	1	0	0	0	0
<i>Phalaenopsis amabilis</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Phanera cumingiana</i> ssp. <i>integrifolia</i>	0	0	0	0	0	0	1	1	1	0	0	0
<i>Neonauilea bernades</i>	0	1	1	0	0	0	1	1	0	1	0	0
<i>Neoletea vidallii</i>	0	0	0	0	0	0	1	1	1	0	0	0
<i>Phaeanthus obracteatus</i>	0	0	1	0	0	0	1	0	0	0	0	0
<i>Neonauclea formicaria</i>	0	1	1	0	0	1	1	1	1	1	0	0
<i>Oncosperma tigillaria</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Palaquim toxvortyi</i>	0	1	1	0	0	0	1	1	1	1	0	0
<i>Planehonella nitida</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Premna odorata</i>	0	0	0	1	1	1	0	0	0	0	0	0
<i>Ochroma pyramedale</i>	0	0	0	0	0	0	0	0	1	0	0	0
<i>Osmanga odorata</i>	0	0	0	0	0	0	1	1	0	0	0	0
<i>Phaseolus lathyroides</i>	0	0	0	1	1	1	0	0	0	1	1	1
<i>Phyllanthus amarus</i>	0	0	0	1	1	1	0	0	0	1	1	1

Appendix Table 1. Continued...

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Phyllanthus urinaria</i>	0	0	0	1	1	1	0	0	0	1	1	1
<i>Phyllocladus hypophyllus</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Physalis angulata</i>	0	0	0	1	1	1	0	0	0	0	1	1
<i>Physcia fragiliscens</i>	1	1	0	0	0	0	0	1	1	1	1	1
<i>Pinanga philippinensis</i>	0	1	1	0	0	0	1	1	0	0	0	0
<i>Piper retrofractum</i>	0	1	0	0	0	0	0	1	1	0	0	0
<i>Pipturus arborescens</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Pittosporum pentandrum</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Pityrogramma calomelanos</i>	1	1	1	1	1	1	1	1	1	1	0	0
<i>Plumeria alba</i>	0	0	0	0	0	1	0	0	0	0	1	1
<i>Polyscias halfouriana</i>	1	1	0	0	0	0	0	0	0	1	1	1
<i>Polyscias nodosa</i>	0	1	1	0	0	0	0	0	0	0	1	0
<i>Pometia pinnata</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Pouteria micrantha</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Premna odorata</i>	0	0	0	1	0	0	0	0	1	1	1	1
<i>Pseuderanthemum purpureum</i>	0	0	0	1	1	1	0	0	0	1	1	1
<i>Pseuderanthemum reticulatum</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Psidium guajava</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Pterospermum obliquum</i>	0	0	0	0	0	0	0	1	1	0	0	0
<i>Pteridium aquilinum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Pterocymbium peltatum</i>	0	0	0	0	0	1	0	1	0	0	0	0
<i>Psychotria luconiensis</i>	0	0	0	0	0	0	0	1	1	0	0	0
<i>Pteris vittata</i>	1	0	0	1	1	0	1	1	1	1	1	1
<i>Pterospermum diversifolium</i>	0	0	0	0	0	1	0	1	1	0	0	0
<i>Pueraria phaseoloides</i>	0	1	0	1	1	1	0	1	1	1	1	1
<i>Punica granatum</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Pyrus malus</i>	0	1	0	0	0	0	0	0	0	0	0	0
<i>Radermachera pinnata</i>	1	0	0	0	0	0	1	1	1	1	0	0
<i>Ramalina nervulosa</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Rhaphidophora merrillii</i>	0	0	1	0	0	0	0	1	1	1	1	1
<i>Ricinus communis</i>	1	0	0	0	0	0	0	0	0	1	1	1
<i>Rosa centifolia</i>	1	0	0	0	0	0	0	0	0	1	1	1
<i>Rubus fraxinifolius</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Rubus rosaefolius</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Saccharum officinarum</i>	1	1	1	1	1	1	0	0	0	1	1	1
<i>Saccharum spontaneum</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Samanea saman</i>	0	0	0	0	0	0	0	0	0	1	1	1
<i>Sambucus javanica</i>	1	1	1	0	0	0	0	0	0	0	0	0
<i>Sandoricum koetjape</i>	0	1	0	1	1	1	0	0	0	1	1	1
<i>Sansevieria trifasciata</i>	0	0	0	0	0	0	0	0	0	1	1	1
<i>Saurauria glabrescens</i>	1	0	0	0	0	0	0	0	0	0	0	0
<i>Schefflera insularis</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Schismatoglottis calyptrata</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Schizostachyum diffusum</i>	1	1	1	0	0	0	0	0	0	0	0	0
<i>Schizostachyum lumampao</i>	0	0	0	0	0	0	0	0	0	0	1	1
<i>Scleria scrobiculata</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Sechium edule</i>	1	1	1	0	1	1	0	0	0	1	1	1
<i>Selaginella ciliaris</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Selaginella cupressina</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Sapindus saponaria</i>	0	0	0	0	0	0	1	1	1	0	0	0
<i>Punica granatum</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Selaginella involvens</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Setaria palmifolia</i>	1	1	1	0	0	0	1	1	1	0	0	0
<i>Shorea contorta</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Shorea negrosensis</i>	0	1	1	0	0	0	1	1	1	0	0	0
<i>Sida acuta</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Sida cordifolia</i>	0	1	0	0	0	0	0	0	0	0	0	0
<i>Sida rhombifolia</i>	1	0	0	0	0	0	0	0	0	0	0	0
<i>Smilax chinensis</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Solanum melongena</i>	0	0	0	1	1	1	0	0	0	1	1	1

Appendix Table 1. Continued...

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Solanum nigrum</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Solanum</i> sp. (wild)	0	1	0	0	0	0	0	0	0	0	0	0
<i>Solanum torvum</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Solanum verbascifolium</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Sorghum halepense</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Spathiphyllum</i> sp.	1	0	0	0	1	0	0	0	0	0	0	0
<i>Sphaerostephanos productos</i>	1	1	1	0	0	0	0	0	1	1	1	0
<i>Sphaerostephanos unitus</i>	1	1	1	0	0	0	0	0	1	1	1	0
<i>Sphenoclea zeylanica</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Spenomeris chinensis</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Spiridens reinwardtii</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Stachytarpheta indica</i>	1	1	1	1	0	0	0	1	1	0	0	0
<i>Stachytarpheta jamaicensis</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Stenochlaena milnei</i>	0	1	1	0	0	0	1	1	1	1	0	1
<i>Swietenia macrophylla</i>	1	1	0	1	1	1	0	0	0	1	1	1
<i>Symphytum officinale</i>	1	0	0	0	0	0	0	0	0	0	0	0
<i>Synedrella nodiflora</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Syngonium podophyllum</i>	1	1	0	1	1	1	0	0	0	1	1	1
<i>Syzygium cumini</i>	0	0	0	1	1	0	0	0	0	0	1	1
<i>Syzygium malaccense</i>	1	0	0	1	1	0	0	0	0	1	1	1
<i>Syzygium polycephaloides</i>	0	0	0	0	0	0	0	0	0	0	0	1
<i>Syzygium samarangense</i>	0	0	0	1	1	1	0	0	0	0	1	1
<i>Tagetes erecta</i>	0	0	0	1	1	1	0	0	0	0	1	1
<i>Tamarindus indica</i>	0	0	0	1	1	1	0	0	0	0	1	1
<i>Terminalia catappa</i>	0	0	0	0	1	0	0	0	0	0	1	1
<i>Terminalia nitens</i>	0	0	0	1	0	0	0	0	0	0	0	0
<i>Tetracera scandens</i>	0	0	0	0	0	0	1	1	1	0	0	0
<i>Tetrastigma</i> sp.	0	1	1	0	0	0	1	1	0	0	0	0
<i>Thayeria cornucopia</i>	0	1	1	0	0	0	1	1	0	0	0	0
<i>Themeda gigantea</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Themedia triandra</i>	0	1	0	0	0	0	1	1	1	0	0	0
<i>Theobroma cacao</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Thespesia populnea</i>	0	0	0	0	0	0	0	0	0	1	0	0
<i>Thevetia peruviana</i>	0	0	0	1	0	0	0	0	0	0	1	1
<i>Thuja orientale</i>	0	0	0	0	0	1	0	0	0	0	0	0
<i>Thysanolaena maxima</i>	1	1	1	0	0	0	1	1	1	1	0	0
<i>Tradescantia</i> sp.	1	1	0	0	0	0	0	0	0	0	0	0
<i>Tridas procumbens</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Triumfetta bartramia</i>	1	0	0	1	1	1	0	1	1	1	1	0
<i>Triumfetta semitriloba</i>	0	0	0	1	1	1	0	1	1	1	1	0
<i>Typha angustifolia</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Uncaria philippinensis</i>	1	1	1	0	0	0	0	1	1	1	0	0
<i>Urena lobata</i>	1	1	1	1	1	1	0	0	0	1	1	1
<i>Shorea palosapis</i>	0	0	0	0	0	0	1	1	1	1	0	0
<i>Shorea polysperma</i>	0	0	0	0	0	0	1	1	0	0	0	0
<i>Shorea assamica</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Syzygium calubcob</i>	0	1	1	0	0	0	1	0	0	0	0	0
<i>Syzygium Burdinvi</i>	0	0	1	0	0	0	1	0	0	0	0	0
<i>Toona calantas</i>	0	0	0	0	0	0	1	0	0	0	0	0
<i>Usnea misamisensis</i>	1	1	1	0	0	0	1	1	0	0	0	0
<i>Vanda cumingiana</i>	0	1	1	0	0	0	1	1	1	1	0	0
<i>Vernonia arborea</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Vernonia cinerea</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Vernonia patula</i>	1	1	1	1	1	1	0	0	1	1	1	1
<i>Viburnum luzonicum</i>	0	0	1	0	0	0	0	0	0	0	0	0
<i>Vitex negundo</i>	0	0	0	1	0	0	0	0	0	1	1	1
<i>Vitiviera zizanoides</i>	0	1	1	0	0	0	0	0	0	0	0	0
<i>Voacanga globosa</i>	1	0	0	0	0	0	0	1	0	1	1	0
<i>Wedelia triloba</i>	1	1	1	1	1	1	1	1	1	1	1	1
<i>Wikstroemia indica</i>	0	0	0	0	0	0	0	0	0	1	1	1

**Appendix Table 1. Continued...**

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
<i>Xanthosoma sagittifolium</i>	1	1	0	1	1	1	0	1	1	1	0	0
<i>Zea mays</i>	1	1	1	1	1	1	0	1	1	1	1	1
<i>Zephyranthes atamasco</i>	1	1	1	0	1	1	0	0	0	1	0	0
<i>Zingiber zerumbet</i>	0	0	0	0	1	1	1	1	1	1	0	0
<i>Zoysia matrella</i>	1	1	1	1	1	1	1	1	1	1	1	1

- \* 1-Mansawan, Don Victoriano, Misamis Occidental (DVMO);  
 2-Gandawan (DVMO);  
 3-Lake Duminagat (DVMO);  
 4-Lampasan (DVMO);  
 5-Tuno (DVMO);  
 6-Lalud (DVMO);  
 7-Small Potongan, Concepcion, Misamis Occidental (CMO);  
 8-Upper Potongan (CMO);  
 9-Virayan (CMO);  
 10-Poblacion Concepcion (CMO);  
 11-Upper Salimpuno (CMO);  
 12-Sixto Velez, Sapang Dalaga, Misamis Occidental.

\*\*Lichen species, Kingdom Mycetae/Fungi

#### Summary on the number of species per Barangay

1. Mansawan	231 + 13 = 244
2. Gandawan	274 + 28 = 300
3. Lake Duminagat	243 + 31 = 274
4. Lampasan	172 + 18 = 190
5. Tuno	158 + 14 = 172
6. Lalud	96 + 11 = 207
7. Small Potongan	191 + 49 = 240
8. Upper Potongan	221 + 26 = 247
9. Virayan	227 + 22 = 249
10. Poblacion Concepcion	257 + 15 = 272
11. Upper Salimpuno	229 + 4 = 233
12. Sixto Velez	207 + 1 = 208

**Appendix Table 2. List of plant and lichen species recorded from 12 barangays\*. Taxa arranged according to family with corresponding habit, uses, and conservation status.**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Acanthaceae</b>			
<i>Asystacia gangetica</i>	hb	w	common
<i>Barleria cristata</i>	hb	w	common
<i>Blechum pyramidatum</i>	hb	w	common
<i>Borreria laevis</i>	hb	w	common
<i>Canthium monstrosum</i>	sh	ec	scarce
<i>Odontonema strictum</i>	sh	hed, or	common
<i>Pseuderanthemum purpureum</i>	sh	hed	common
<i>Pseuderanthemum reticulatum</i>	sh	hed	common
<i>Gendarussa vulgaris</i>	sh	hed, or	common
<i>Hygrophila salicifolia</i>	sh	w	common
<b>Agavaceae</b>			
<i>Agave americana</i>	hb	or	scarce
<i>Cordyline fruticosa</i>	sh	or	common
<i>Dracaena fragrans</i>	tl	lan	common
<i>Sansevieria trifasciata</i>	hb	hed	scarce
<b>Amaranthaceae</b>			
<i>Alternanthera ficoides</i>	hb	or	common
<i>Amaranthus spinosus</i>	hb	w	common
<i>Aschyranthes aspera</i>	hb	w	common
<i>Iresine herbstii</i>	hb	or	scarce
<b>Amaryllidaceae</b>			
<i>Crinum asiaticum</i>	hb	or	scarce
<i>Eleutherine palmifolia</i>	hb	or	scarce
<i>Zephyranthes atamasco</i>	hb	or	scarce
<i>Hippeastrum</i> sp.	hb	or	scarce
<b>Anacardiaceae</b>			
<i>Anacardium occidentale</i>	st	ed	common
<i>Buchanania arborescens</i>	mt	lan	scarce
<i>Mangifera indica</i>	lt	ed	common
<b>Annonaceae</b>			
<i>Annona muricata</i>	st	ed	scarce
<i>Annona squamosa</i>	st	ed	scarce
<b>Apiaceae</b>			
<i>Apium graveolens</i>	hb	sp	common
<i>Centella asiatica</i>	hb	veg, sp	common
<b>Apocynaceae</b>			
<i>Alstonia macrophylla</i>	lt	tm	common
<i>Alstonia scholaris</i>	lt	tm	common
<i>Catharanthus roseus</i>	hb	or, med	common
<i>Ervatamia pandacaqui</i>	sh	ec	scarce
<i>Ichnocarpus volubilis</i>	vi	w	scarce
<i>Plumeria alba</i>	st	lan	scarce
<i>Thevetia peruviana</i>	st	lan	scarce
<i>Voacanga globosa</i>	sh	ec	scarce

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Araceae</b>			
<i>Acorus calamus</i>	li	med	rare
<i>Aglaonema</i>	hb	or	common
<i>Commutatum</i>	hb	or	common
<i>Alocasia bicolor</i>	hb	ed	common
<i>Alocasia macrorrhizos</i>	hb	or	common
<i>Alocasia andreaum</i>	hb	or	common
<i>Caladium bicolor</i>	hb	or	common
<i>Colocasia esculenta</i>	hb	ed	common
<i>Cyrtosperma merkusii</i>	hb	ed	scarce
<i>Dieffenbachia picta</i>	hb	or	common
<i>Homalomena philippinensis</i>	hb	or	common
<i>Homalomena rubescens</i>	hb	or	scarce
<i>Rhaphidophora merrillii</i>	vi	or	scarce
<i>Schismatoglottis calyprata</i>	hb	ec	common
<i>Syngonium podophyllum</i>	vi	or	scarce
<i>Xanthosoma sagittifolium</i>	hb	ed	common
<b>Araliaceae</b>			
<i>Aralia spinosa</i>	mt	ec	common
<i>Boerlagiodendron diversifolium</i>	st	lan	scarce
<i>Polyscias balfouriana</i>	sh	hed	common
<i>Polyscias nodosa</i>	mt	ec	scarce
<i>Schefflera insularis</i>	ep	ec	scarce
<b>Araucariaceae</b>			
<i>Agathis philippinensis</i>	lt	tm	scarce
<i>Phyllocladus hypophyllum</i>	mt	tm	rare
<b>Asclepiadaceae</b>			
<i>Asclepia curassavica</i>	hb	w	common
<i>Hoya sp.</i>	ep	or	scarce
<b>Aspleniaceae</b>			
<i>Asplenium cymbifolium</i>	fe	or	scarce
<i>Asplenium nidus</i>	fe	or	common
<i>Asplenium polyodon</i>	fe	or	scarce
<b>Athyriaceae</b>			
<i>Diplazium esculentum</i>	fe	ed	scarce
<b>Balsaminaceae</b>			
<i>Impatiens balsamina</i>	hb	or	common
<i>Impatiens hutchinsonii</i>	hb	or	common
<b>Barringtoniaceae</b>			
<i>Barringtonia racemosa</i>	mt	lan	scarce
<b>Basellaceae</b>			
<i>Basella alba</i>	vi	veg	scarce
<i>Basella rubra</i>	vi	veg	scarce
<b>Begoniaceae</b>			
<i>Begonia hernandioides</i>	hb	or	scarce
<i>Begonia nigritarum</i>	hb	or	scarce
<b>Bignoniaceae</b>			
<i>Radermachera pinnata</i>	st	ec	rare

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Bischofiaceae</b>			
<i>Bischofia javanica</i>	lt	tm	scarce
<b>Bixaceae</b>			
<i>Bixa orellana</i>	st	dye	scarce
<b>Blechnaceae</b>			
<i>Blechnum orientale</i>	fe	or	common
<i>Stenochlaena milnei</i>	fe	ec	scarce
<b>Bombacaceae</b>			
<i>Ceiba pentandra</i>	lt	lan, fi	common
<i>Ochroma lagopus</i>	lt	fi, lcm	rare
<i>Durio zibethinus</i>	mt	ed	common
<b>Boraginaceae</b>			
<i>Cordia dichotoma</i>	st	med	scarce
<b>Brassicaceae/Cruciferae</b>			
<i>Brassica oleracea</i>	hb	veg	common
<b>Bromeliaceae</b>			
<i>Ananas comosus</i>	hb	ed	common
<b>Burseraceae</b>			
<i>Canarium hirsutum</i> f. <i>multipinnatum</i>	lt	tm	scarce
<b>Cactaceae</b>			
<i>Nopalea cochinellifera</i>	hb	or	rare
<b>Caesalpinaceae</b>			
<i>Cassia alata</i>	sh	med	common
<i>Cassia javanica</i>	mt	lan, shad	scarce
<i>Cassia nodosa</i>	sh	or	common
<i>Cassia occidentalis</i>	sh	w	common
<i>Cassia tora</i>	sh	w	common
<i>Crotalaria linifolia</i>	sh	w	common
<i>Crotalaria saltiana</i>	sh	w	common
<i>Gliricidia sepium</i>	st	fu, om, lf	scarce
<i>Phanera cumingiana</i> ssp. <i>integrifolia</i>	li	ec	rare
<i>Tamarindus indica</i>	mt	ed	scarce
<b>Cannaceae</b>			
<i>Canna indica</i>	hb	or	common
<b>Caprifoliaceae</b>			
<i>Sambucus javanica</i>	st	or	scarce
<i>Viburnum luzonicum</i>	sh	ec	rare
<b>Caricaceae</b>			
<i>Carica papaya</i>	tl	ed	common
<b>Casuarinaceae</b>			
<i>Gymnostoma rumphianum</i>	mt	tm	common
<b>Chrysobalanaceae</b>			
<i>Atuna racemosa</i>	mt	ed	scarce

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Cladoniaceae</b>			
<i>Cladonia</i> sp.	lic	ec	scarce
<i>Cladonia vulcanicum</i>	lic	ec	scarce
<b>Clethraceae</b>			
<i>Clethra lancifolia</i>	st	ec	common
<b>Combretaceae</b>			
<i>Terminalia catappa</i>	mt	lan, dye	scarce
<i>Terminalia nitens</i>	mt	lan	scarce
<b>Commelinaceae</b>			
<i>Commelina benghalensis</i>	hb	w	common
<i>Commelina diffusa</i>	hb	w	common
<i>Cyanotis axillaris</i>	hb	w	common
<i>Tradescantia</i> sp.	hb	or	common
<b>Compositae</b>			
<i>Ageratina adenophora</i>	hb	w	common
<i>Ageratum conyzoides</i>	hb	w	common
<i>Artemisia vulgaris</i>	hb	med	common
<i>Aster linifolius</i>	hb	r	scarce
<i>Bidens pilosa</i>	hb	w	common
<i>Blumea balsamifera</i>	sh	med	common
<i>Chromolaena odorata</i>	sh	w	common
<i>Chrysanthemum indicum</i>	hb	or	scarce
<i>Cosmos caudatus</i>	hb	or	common
<i>Crassocephalum crepidioides</i>	hb	w	common
<i>Eclipta rostrata</i>	hb	w	common
<i>Elephantopus scaber</i>	hb	w	common
<i>Elephantopus spicatus</i>	hb	w	common
<i>Elephantopus tomentosus</i>	hb	w	common
<i>Emilia sonchifolia</i>	hb	w	common
<i>Gerbera</i> sp.	hb	or	common
<i>Mikania cordata</i>	vi	w	common
<i>Synedrilla nodiflora</i>	hb	w	common
<i>Tagetes erecta</i>	hb	or	scarce
<i>Tridax procumbens</i>	hb	w	common
<i>Vernonia arborea</i>	sh	ec	scarce
<i>Vernonia cinerea</i>	hb	w	common
<i>Vernonia patula</i>	hb	w	common
<i>Wedelia triloba</i>	hb	w	common
<b>Convolvulaceae</b>			
<i>Ipomoea batatas</i>	vi	ed	common
<i>Ipomoea quamoclit</i>	vi	w	scarce
<i>Ipomoea triloba</i>	vi	w	common
<i>Merremia peltata</i>	vi	w	common
<i>Operculina turpethum</i>	vi	w	common
<b>Crassulaceae</b>			
<i>Kalanchoe pinnata</i>	hb	or	scarce

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Cucurbitaceae</b>			
<i>Cucurbita maxima</i>	vi	veg	common
<i>Sechium edule</i>	hb	veg	common
<b>Cupressaceae</b>			
<i>Thuja orientale</i>	st	lan	scarce
<b>Cyatheaceae</b>			
<i>Cyathea callosa</i>	fe	ec, lan, om	scarce
<i>Cyathea contaminans</i>	fe	ec, lan, om	common
<i>Cyathea loheri</i>	fe	ec, lan, om	scarce
<b>Cycadeceae</b>			
<i>Cycas revoluta</i>	tl	lan	scarce
<b>Cyperaceae</b>			
<i>Cyperus alternifolius</i>	hb	w	common
<i>Cyperus compactus</i>	hb	w	common
<i>Cyperus flabelliformis</i>	hb	w	common
<i>Cyperus iria</i>	hb	w	common
<i>Cyperus kyllingia</i>	hb	w	common
<i>Cyperus rotundus</i>	hb	w	common
<i>Fimbristylis dichotoma</i>	hb	w	common
<i>Fimbristylis monostachya</i>	hb	w	common
<i>Scleria lithosperma</i>	hb	w	common
<i>Scleria scrobiculata</i>	hb	w	common
<b>Datiscaceae</b>			
<i>Octomeles sumatrana</i>	lt	fi, lcm	scarce
<b>Davalliaceae</b>			
<i>Davallia solida</i>	fe	or	common
<i>Nephrolepis biserrata</i>	fe	or	common
<i>Oleandra maquilingensis</i>	fe	ec	rare
<b>Dennstaedtiaceae</b>			
<i>Pteridium aquilinum</i>	fe	w	common
<b>Dilleniaceae</b>			
<i>Dillenia philippinensis</i>	mt	ec	scarce
<i>Dillenia reifferschiedia</i>	lt	ec	scarce
<i>Tetracera scandens</i>	li	ec	scarce
<b>Dioscoreaceae</b>			
<i>Dioscorea alata</i>	vi	ed	scarce
<i>Dioscorea esculenta</i>	vi	ed	scarce
<b>Dipterocarpaceae</b>			
<i>Anisoptera thurifera</i>	lt	tm	scarce
<i>Dipterocarpus gracilis</i>	lt	tm	scarce
<i>Shorea contorta</i>	lt	tm	scarce
<i>Shorea negrosensis</i>	lt	tm	scarce
<b>Ebenaceae</b>			
<i>Diospyros pilosanthera</i>	lt	tm, ed	scarce
<b>Elaeagnaceae</b>			
<i>Elaeagnus philippinensis</i>	li	ed	scarce

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Elaeocarpaceae</b>			
<i>Elaeocarpus calomala</i>	mt	tm, ed, fi	scarce
<b>Euphorbiaceae</b>			
<i>Acalypha amentacea</i>	sh	or	common
<i>Breynia cernua</i>	sh	ec	scarce
<i>Bridelia stipularis</i>	sh	ec	scarce
<i>Codiaeum variegatum</i>	sh	hed, or	common
<i>Euphorbia heterophylla</i>	hb	w	common
<i>Euphorbia hirta</i>	hb	w	common
<i>Euphorbia pulcherrima</i>	sh	or	scarce
<i>Glochidion rubreum</i>	st	ec	scarce
<i>Homalanthus alpinus</i>	st	ec	common
<i>Homalanthus populneus</i>	st	ec	common
<i>Macaranga bicolor</i>	mt	ec	common
<i>Macaranga dipterocarpifolia</i>	st	ec	common
<i>Macaranga grandifolia</i>	mt	ec	common
<i>Macaranga tanarius</i>	st	ec	common
<i>Mallotus philippensis</i>	st	dye	rare
<i>Manihot esculenta</i>	sh	ed	common
<i>Melanolepis multiglandulosa</i>	st	ec	common
<i>Phyllanthus amarus</i>	sh	w	common
<i>Phyllanthus urinaria</i>	sh	w	common
<i>Ricinus communis</i>	st	med	common
<b>Fagaceae</b>			
<i>Lithocarpus mindanaensis</i>	mt	tm	common
<i>Lithocarpus philippinensis</i>	lt	tm	scarce
<i>Lithocarpus sunaica</i>	mt	tm	common
<b>Flagellariaceae</b>			
<i>Flagellaria indica</i>	li	cot	scarce
<b>Gesneriaceae</b>			
<i>Aeschynanthus philippinensis</i>	ep	ec	rare
<i>Cyrtandra cumingii</i>	st	or	scarce
<b>Gleicheniaceae</b>			
<i>Dicranopteris linearis</i>	fe	ec	common
<b>Gramineae</b>			
<i>Andropogon citratus</i>	gr	sp	common
<i>Axonopus compressus</i>	gr	w	common
<i>Bambusa blumeana</i>	tl	cm, sec	common
<i>Bambusa glaucescens</i>	tl	hed, sec	scarce
<i>Bambusa vulgaris</i>	tl	cm, sec	common
<i>Bambusa vulgaris</i> var. <i>striata</i>	tl	lan, sec	scarce
<i>Bracharia mutica</i>	gr	w	common
<i>Centotheca lappacea</i>	gr	w, pas	common
<i>Chloris barbata</i>	gr	w	common
<i>Chrysopogon aciculatus</i>	gr	w	common
<i>Coix lachryma-jobi</i>	gr	ec	scarce
<i>Cynodon dactylon</i>	gr	w	common
<i>Cyrtococcum patens</i>	gr	w	common
<i>Dactyloctenium aegypticum</i>	gr	w	common
<i>Dendrocalamus asper</i>	tl	cm, sec	scarce
<i>Digitaria cilliaris</i>	gr	w	common

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<i>Echinochloa colona</i>	gr	w	common
<i>Echinichloa crus-galli</i>	gr	w	common
<i>Eleusine indica</i>	gr	w	common
<i>Imperata cylindrica</i>	gr	cot, cm	common
<i>Miscanthus floridulus</i>	gr	ec, sec	common
<i>Oplismenus compositus</i>	gr	w	common
<i>Panicum maximum</i>	gr	w, pas, sec	common
<i>Paspalidium flavescens</i>	gr	w, pas, sec	common
<i>Paspalum conjugatum</i>	gr	w, pas, sec	common
<i>Paspalum distichum</i>	gr	w, pas, sec	common
<i>Paspalum scribucykatyn</i>	gr	w, pas, sec	common
<i>Pennisetum polystachyon</i>	gr	w, pas, sec	common
<i>Saccharum officinarum</i>	gr	ed	common
<i>Saccharum spontaneum</i>	gr	cot, cm	common
<i>Schizostachyum diffusum</i>	li	ec	common
<i>Schizostachyum lumampao</i>	tl	cot, cm	scarce
<i>Setaria palmifolia</i>	gr	ec	common
<i>Sorghum halepense</i>	gr	w, pas, sec	common
<i>Themeda gigantea</i>	gr	w, sec	common
<i>Themeda triandra</i>	gr	w, sec	scarce
<i>Phyanolaena maxima</i>	gr	cot	common
<i>Vitiviera zizanoides</i>	gr	cot, sec	rare
<i>Zea mays</i>	gr	ed	common
<i>Zoysia matrella</i>	gr	lan, sec	common
<b>Cuttiferae</b>			
<i>Calophyllum kuenstleri</i>	mt	tm	scarce
<i>Cratoxylon celebicum</i>	st	fu	scarce
<i>Cratoxylon formosanum</i>	st	fu	scarce
<i>Garcinia mangostana</i>	st	ed	scarce
<b>Heliconiaceae</b>			
<i>Heliconia metallica</i>	hb	or	scarce
<b>Hydrangeaceae</b>			
<i>Hydrangea lobbia</i>	sh	or	rare
<b>Habiatae</b>			
<i>Coleus blumei</i>	hb	or	common
<i>Coleus igolotorum</i>	hb	or	scarce
<i>Mentha arvensis</i>	hb	spice	common
<i>Mentha arvensis</i> var. <i>piperata</i>	hb	spice	common
<i>Ocimum sanctum</i>	sh	spice	scarce
<i>Orthosiphon aristatus</i>	sh	or	common
<b>Lauraceae</b>			
<i>Litsea glutinosa</i>	mt	ec	scarce
<i>Persea americana</i>	st	ed	common
<b>Leeaceae</b>			
<i>Leea philippinensis</i>	st	lan	scarce
<b>Liliaceae</b>			
<i>Allium cepa</i>	hb	spice	common
<i>Asparagus sprengeri</i>	vi	or	scarce
<i>Belamcanda chinensis</i>	hb	or	scarce
<i>Eurycles amboinensis</i>	hb	or	rare
<i>Ophiopogon japonicus</i>	hb	or	common

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Lindsaeaceae</b>			
<i>Sphenomeris chinensis</i>	fe	or	common
<b>Lobariaceae</b>			
<i>Lobaria meridionalis</i>	lic	ec, med	scarce
<i>Lobaria robinsonii</i>	lic	ec, med	scarce
<b>Lycopodiaceae</b>			
<i>Lycopodium cernuum</i>	vi	ec, ins	common
<i>Lycopodium squarrosum</i>	vi	ec, ins	scarce
<b>Lythraceae</b>			
<i>Cuphea hyssopifolia</i>	sh	or	common
<i>Lagerstroemia speciosa</i>	st	lan	scarce
<b>Malpighiaceae</b>			
<i>Duranta erecta</i>	sh	hed, or	common
<b>Malvaceae</b>			
<i>Abelmoschus esculentus</i>	sh	veg	common
<i>Abutilon indicum</i>	sh	w	common
<i>Gossypium barbadense</i>	sh	fi	scarce
<i>Hibiscus cannabinus</i>	sh	or, fi	scarce
<i>Hibiscus rosa-sinensis</i>	sh	hed, or	common
<i>Hibiscus tiliaceus</i>	st	an	scarce
<i>Malvaviscus pilosus</i>	sh	or, hed	scarce
<i>Sida acuta</i>	sh	w	common
<i>Sida cordifolia</i>	sh	w	common
<i>Sida rhombifolia</i>	sh	w	common
<i>Thespesia populnea</i>	st	lan	scarce
<i>Urena lobata</i>	sh	w	common
<b>Marantaceae</b>			
<i>Donax cannaeformis</i>	hb	or	scarce
<i>Phacelophrynium interruptum</i>	hb	ec	rare
<b>Marattiaceae</b>			
<i>Angiopteris palmiformis</i>	fe	or	common
<b>Melastomataceae</b>			
<i>Astronia cumingiana</i>	st	lan	common
<i>Medinilla magnifica</i>	ep	or	rare
<i>Medinilla malindangensis</i>	ep	or	scarce
<i>Medinilla myrtiformis</i>	ep	or	scarce
<i>Melastoma polyanthum</i>	sh	ec	common
<b>Meliaceae</b>			
<i>Dysoxylum gaudichaudianum</i>	lt	tm	scarce
<i>Lansium domesticum</i>	mt	ed	scarce
<i>Melia dubia</i>	lt	tm	rare
<i>Sandoricum koetjape</i>	mt	ed	common
<i>Swietenia macrophylla</i>	lt	tm	common

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Mimosaceae</b>			
<i>Acacia mangium</i>	st	tm	common
<i>Acenathera intgermedia</i>	lt	tm	scarce
<i>Aeschynomene sensitiva</i>	hb	w	common
<i>Calliandra haematocephala</i>	sh	or, hed	scarce
<i>Leucaena leucocephala</i>	st	fu, lf	common
<i>Mimosa invisa</i>	hb	w	scarce
<i>Mimosa pudica</i>	hb	w	common
<i>Paraserianthes falcantaria</i>	lt	tm	common
<i>Samanea saman</i>	lt	tm	scarce
<b>Moraceae</b>			
<i>Artocarpus altilis</i>	lt	ed	common
<i>Artocarpus blancoi</i>	lt	ec	common
<i>Artocarpus communis</i>	lt	ed	common
<i>Artocarpus heterophyllus</i>	lt	ed	common
<i>Artocarpus odoratissimus</i>	mt	ed	common
<i>Artocarpus sericicarpus</i>	lt	ec	common
<i>Ficus angustissima</i>	sh	ec	scarce
<i>Ficus balete</i>	ep	ec	scarce
<i>Ficus benjamina</i>	st	lan	common
<i>Ficus botryocarpa</i>	st	ec	common
<i>Ficus guyeri</i>	st	ec	common
<i>Ficus minahassae</i>	mt	ec	common
<i>Ficus nota</i>	st	ec	common
<i>Ficus septica</i>	st	med, ec	common
<i>Ficus ulmifolia</i>	st	ec	common
<i>Ficus variegata</i>	mt	ec	common
<i>Parartocarpus venenosus</i>	mt	ec	rare
<b>Moringaceae</b>			
<i>Moringa oleifera</i>	st	veg	common
<b>Musaceae</b>			
<i>Musa textilis</i>	tl	fi	common
<i>Musa x paradisiaca</i> (AAB)	tl	ed	common
<i>Musa x paradisiaca</i> (BBB)	tl	ed	common
<b>Myrsinaceae</b>			
<i>Ardisia pyramidalis</i>	st	or, lan	scarce
<b>Myrtaceae</b>			
<i>Eucalyptus deglupta</i>	lt	tm	scarce
<i>Psidium guajava</i>	st	ed	common
<i>Syzygium cumini</i>	st	ed	scarce
<i>Syzygium malaccense</i>	st	ed	scarce
<i>Syzygium polycephaloides</i>	st	ed	rare
<i>Syzygium samarangense</i>	st	ed	scarce
<b>Nepenthaceae</b>			
<i>Nepenthes alata</i>	vi	ec	rare
<b>Nyctaginaceae</b>			
<i>Bougainvillea spectabilis</i>	li	or, lan	common
<b>Ophioglossaceae</b>			
<i>Ophioglossum reticulatum</i>	fe	ec	rare

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Orchidaceae</b>			
<i>Bulbophyllum auratum</i>	hb	or	scarce
<i>Bulbophyllum dearei</i>	hb	or	scarce
<i>Phalaenopsis amabilis</i>	hb	or	scarce
<i>Spathiphyllum</i> sp. (bright orange)	hb	or	scarce
<i>Trichoglottis</i> sp.	hb	or	scarce
<b>Oxalidaceae</b>			
<i>Biophytum sensitivum</i>	hb	w	common
<i>Oxalis repens</i>	hb	w	common
<b>Palmae</b>			
<i>Areca catechu</i>	tl	mas	scarce
<i>Arenga tremula</i>	tl	lan	scarce
<i>Calamus dimorphocanthus</i>	li	cot	scarce
<i>Calamus merrillii</i>	li	cot, ed	scarce
<i>Calamus ornatus</i> var. <i>philippinensis</i>	li	cot	scarce
<i>Caryota rumphiana</i> ssp. <i>philippinensis</i>	tl	lan	scarce
<i>Chrysalidocarpus lutescens</i>	tl	lan	scarce
<i>Cocos nucifera</i> cv. 'Green Tall'	tl	ed, cm, cot	common
<i>Corypha utan</i>	tl	cot, ed	scarce
<i>Livistona rotundifolia</i>	tl	lan, cot	rare
<i>Oncosperma horridum</i>	tl	ed, cm	rare
<i>Pinanga insignis</i>	tl	cm, ec	scarce
<i>Pinanga philippinensis</i>	tl	lan, ec	scarce
<b>Pandanaceae</b>			
<i>Freycinetia cumingiana</i>	li	cot, ec	scarce
<i>Freycinetia negrosensis</i>	li	cot, ec	scarce
<i>Freycinetia williamsii</i>	li	cot, ec	scarce
<i>Pandanus camarinensis</i>	tl	ec	scarce
<i>Pandanus scopelandii</i>	tl	ec	rare
<i>Pandanus exaltatus</i>	tl	ec	common
<i>Pandanus tectorius</i> var. <i>laevis</i>	tl	cot	scarce
<b>Papilionaceae</b>			
<i>Abrus precatorius</i>	li	med	rare
<i>Alysicarpus vaginalis</i>	vi	w	common
<i>Arachis hypogea</i>	hb	ed	common
<i>Calopogonium mucunoides</i>	vi	w	common
<i>Centrosema pubescens</i>	vi	w, gm	common
<i>Clitoria ternatea</i>	vi	w	common
<i>Dalbergia</i> sp.	mt	tm	scarce
<i>Derris philippinensis</i>	li	po	scarce
<i>Desmodium capitatum</i>	hb	w	common
<i>Desmodium heterocarpon</i>	hb	w	scarce
<i>Desmodium pulchellum</i>	sh	w	common
<i>Desmodium suffruticosum</i>	hb	gm, hed	common
<i>Desmodium triflorum</i>	sh	w	scarce
<i>Desmodium umbellatum</i>	sh	w	scarce
<i>Desmodium velutinum</i>	sh	w	common
<i>Erythrina orientalis</i>	st	lan	common
<i>Indigofera tinctoria</i>	sh	w	scarce
<i>Pachyrhizus erosus</i>	vi	ed	scarce
<i>Phaseolus lathyroides</i>	vi	w	common
<i>Pueraria phaseoloides</i>	vi	w	common

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Parmeliaceae</b>			
<i>Parmelia cristifera</i>	lic	ec	scarce
<b>Passifloraceae</b>			
<i>Passiflora foetida</i>	vi	w, ed	scarce
<b>Physciaceae</b>			
<i>Physcia fragillescens</i>	lic	ec	scarce
<b>Piperaceae</b>			
<i>Piper retrofractum</i>	vi	ec	scarce
<b>Pittosporaceae</b>			
<i>Pittosporum pentandrum</i>	mt	tm	rare
<b>Podocarpaceae</b>			
<i>Dacrycarpus imbricatus</i>	lt	tm	scarce
<b>Polypodiaceae</b>			
<i>Crypsinus claucus</i>	fe	or	common
<i>Crypsinus</i> sp.	fe	or	common
<i>Drynaria quercifolia</i>	fe	or	common
<i>Thayeria cornucopia</i>	fe	ec	rare
<b>Pteridaceae</b>			
<i>Pteris vittata</i>	fe	or	common
<i>Sphaerostephanos productos</i>	fe	ec	common
<i>Sphaerostephanos unitus</i>	fe	ec	common
<b>Punicaceae</b>			
<i>Punica granatum</i>	sh	or, ec	rare
<b>Rhizophoraceae</b>			
<i>Carallia brachiata</i>	st	ec	scarce
<b>Rosaceae</b>			
<i>Fragaria virginiana</i>	vi	ed	scarce
<i>Pyrus malus</i>	st	ed	rare
<i>Rosa centifolia</i>	sh	or	common
<i>Rubus fraxinifolius</i>	li	ed	common
<i>Rubus rosaefolius</i>	sh	ed	common
<b>Rubiaceae</b>			
<i>Carphalea kirondron</i>	sh	or	scarce
<i>Coffea robusta</i>	st	bev	common
<i>Gardenia jasminoides</i>	sh	or	scarce
<i>Ixora philippinensis</i>	sh	or	common
<i>Morinda ctrifolia</i>	sh	ec	scarce
<i>Mussaenda anisophylla</i>	sh	or	scarce
<i>Mussaenda philippica</i>	sh	or	scarce
<i>Nauclea orientalis</i>	mt	fi	common
<i>Neonauclea bartlingii</i>	mt	fi	common
<i>Neonauclea media</i>	mt	fi	common
<i>Psychotria luconiensis</i>	st	ec	rare
<i>Uncaria philippinensis</i>	li	ec	scarce

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Rutaceae</b>			
<i>Citrofortunella microcarpa</i>	st	ed	common
<i>Citrus limon</i>	st	ed	scarce
<i>Citrus maxima</i>	st	ed	common
<i>Melicope triphylla</i>	sh	ec	scarce
<i>Micromelum minutum</i>	st	ec	scarce
<b>Sapindaceae</b>			
<i>Guioa koelreuteria</i>	st	ec	scarce
<i>Nephelium lappaceum</i>	st	ed	scarce
<i>Nephelium ramboutan-oke</i>	mt	ec, ed	scarce
<i>Pometia pinnata</i>	lt	tm	scarce
<b>Sapotaceae</b>			
<i>Chrysophyllum cainito</i>	mt	ed	common
<i>Madhuca betis</i>	lt	tm	scarce
<i>Palaquium luzonense</i>	lt	tm	scarce
<i>Pouteria campechiana</i>	st	ed	scarce
<b>Saurauiceae/Actinidiaceae</b>			
<i>Saurauia glabrescens</i>	st	ec	scarce
<i>Saurauia latibractea</i>	mt	ec	scarce
<b>Schizaeaceae</b>			
<i>Lygodium circinatum</i>	fe	cot, ins	scarce
<i>Lygodium merrillii</i>	fe	cot, ins	scarce
<b>Scrophulariaceae</b>			
<i>Lindernia crustacea</i>	hb	w	common
<b>Selaginellaceae</b>			
<i>Selaginella ciliaris</i>	hb	ec	common
<i>Selaginella cupressina</i>	hb	ec	common
<i>Selaginella involvens</i>	hb	ec	common
<b>Sinopteridaceae</b>			
<i>Adiantum philippense</i>	fe	or	common
<i>Pityrogramma calomelanos</i>	fe	or	common
<b>Smilacaceae</b>			
<i>Smilax china</i>	li	ec	scarce
<b>Solanaceae</b>			
<i>Capsicum annuum</i> var. <i>annuum</i>	sh	spice	common
<i>Capsicum frutescens</i>	sh	spice	common
<i>Cestrum nocturnum</i>	vi	or	scarce
<i>Datura metel</i>	sh	w, po, med	scarce
<i>Lycopersicon esculentum</i>	hb	ec	common
<i>Physalis angulata</i>	sh	w	rare
<i>Solanum melongena</i>	sh	veg	common
<i>Solanum nigrum</i>	sh	veg	scarce
<i>Solanum</i> sp. (wild)	sh	veg	scarce
<i>Solanum torvum</i>	sh	w	common
<i>Solanum verbascifolium</i>	sh	w	common
<b>Sonneratiaceae</b>			
<i>Duabanga moluccana</i>	lt	fi, lcm	scarce

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Sphenocleaceae</b>			
<i>Sphenoclea zeylanica</i>	sh	w	common
<b>Spiridentaceae</b>			
<i>Spiridens reinwardtii</i>	bry	ec	rare
<b>Sterculiaceae</b>			
<i>Pterocymbium peltatum</i>	mt	fi	rare
<i>Pterocymbium diversifolium</i>	mt	fi	scarce
<i>Pterocymbium obliquum</i>	mt	fi	scarce
<i>Theobroma cacao</i>	st	bev	scarce
<b>Thelypteridaceae</b>			
<i>Chingia ferox</i>	fe	or	common
<i>Macrothelypteris polypodioides</i>	fe	or	common
<b>Thymelaeaceae</b>			
<i>Wikstroemia indica</i>	sh	fi	rare
<b>Tiliaceae</b>			
<i>Casearia grewiaefolia</i>	st	ec	scarce
<i>Colona serratifolia</i>	mt	fi, fu	scarce
<i>Commersonia bartramia</i>	st	w	scarce
<i>Muntingia calabura</i>	st	ed	common
<i>Triumfetta bartramia</i>	sh	w	common
<i>Triumfetta semitriloba</i>	sh	w	common
<b>Typhaceae</b>			
<i>Typha angustifolia</i>	hb	ec	rare
<b>Ulmaceae</b>			
<i>Celtis luzonica</i>	lt	tm	scarce
<i>Celtis philippinensis</i>	lt	tm	scarce
<i>Trema orientalis</i>	mt	ec, fu	common
<b>Umbelliferae</b>			
<i>Daucus carota</i>	hb	veg	scarce
<b>Urticaceae</b>			
<i>Elatostema lagunense</i>	hb	ec	common
<i>Elatostema pulchellum</i>	hb	ed	common
<i>Laportea brunnea</i>	sh	w	common
<i>Leucosyke capitellata</i>	sh	ec	common
<i>Pipturus arborescens</i>	sh	ec	common
<b>Usneaceae</b>			
<i>Usnea misamisensis</i>	lic	med	scarce

**Appendix Table 2. Continued...**

Family/Taxon	Habit**	Uses***	Conservation status
<b>Verbenaceae</b>			
<i>Callicarpa candicans</i>	sh	ec	scarce
<i>Callicarpa formosana</i>	sh	ec	scarce
<i>Clerodendron macrostachyum</i>	st	or	scarce
<i>Clerodendron quadriloculare</i>	st	or	scarce
<i>Gmelina arborea</i>	mt	tm	scarce
<i>Lantana camara</i>	sh	or, w	common
<i>Premna odorata</i>	st	med	scarce
<i>Stachytarpheta indica</i>	sh	w	common
<i>Stachytarpheta jamaicensis</i>	sh	w	common
<i>Symphytum officinale</i>	hb	med	rare
<i>Vitex negundo</i>	sh	med	scarce
<b>Vitaceae</b>			
<i>Cayratia trifolia</i> var. <i>cinerea</i>	vi	ec	scarce
<i>Tetrastima</i> sp.	vi	ec	scarce
<b>Zingiberaceae</b>			
<i>Amomum philippinense</i>	hb	or	scarce
<i>Costus speciosus</i>	hb	or	scarce
<i>Curcuma domestica</i>	hb	sp	scarce
<i>Kolowratia elegans</i>	hb	ec	scarce
<i>Zingiber zerumbet</i>	hb	or	scarce

\*Don Victoriano:

(1) Mansawan, (2) Gandawan, (3) Lake Duminagat, (4) Lampasan, (5) Tuno, and (6) Lalud

Concepcion:

(7) Small Potongan, (8) Upper Potongan, (9) Virayan, (10) Poblacion Concepcion, and (11) Upper Salimpuno,

Sapang Dalaga: (12) Sixto Velez

\*\* bry = bryophyte

fe = fern

gr = grass

hb = herb

li = liana (woody vine)

lic = lichen (Kingdom Fungi/Mycetae)

lt = large tree

mt = medium-sized tree

sh = shrub

st = small tree

tl = tree-like

vi = vine

\*\*\*

bev = beverage

cm = construction material

cot = cottage industry

ec = ecological function

ed = edible part

fi = fiber source

fu = fuelwood

gm = green manure/fertilizer

hed = hedge plant

ins = instructional use

lan = landscape plant

lcm = light construction material

lf = live fence

med = medicinal

om = orchid medium

or = ornamental

pas = pasture

po = poisonous

shad = shade plant

sec = soil erosion control

sp = spice/condiment

tm = timber source

veg = vegetable

w = weed

**Appendix Table 3. List of plant and lichen species recorded from 12 barangays\*. Taxa arranged according to habit with corresponding family, uses, and conservation status.**

Habit/Taxon	Family	Uses**	Conservation status
<b>Bryophyte</b>			
<i>Spiridens reinwardtii</i>	Spiridentaceae	ec	rare
<b>Epiphytes</b>			
<i>Aeschynanthus philippinensis</i>	Gesneriaceae	ec	rare
<i>Ficus balet</i>	Moraceae	ec	scarce
<i>Hoya</i> sp.	Asclepiadaceae	or	scarce
<i>Medinilla magnifica</i>	Melastomataceae	or	rare
<i>Medinilla malindangensis</i>	Melastomataceae	or	scarce
<i>Medinilla myrtiformis</i>	Melastomataceae	or	scarce
<i>Schefflera insularis</i>	Araliaceae	ec	scarce
<b>Ferns</b>			
<i>Adiantum philippense</i>	Sinopteridaceae	or	common
<i>Angiopteris palmiformis</i>	Marattiaceae	or	common
<i>Asplenium cymbifolium</i>	Aspleniaceae	or	scarce
<i>Asplenium nidus</i>	Aspleniaceae	or	common
<i>Asplenium polyodon</i>	Aspleniaceae	or	scarce
<i>Blechnum orientale</i>	Blechnaceae	or	common
<i>Chingia ferox</i>	Thelypteridaceae	or	common
<i>Crypsinus glaucus</i>	Polypodiaceae	or	common
<i>Crypsinus</i> sp.	Polypodiaceae	or	common
<i>Cyathea callosa</i>	Cyatheaceae	ec, lan, om	scarce
<i>Cyathea contaminans</i>	Cyatheaceae	ec, lan, om	common
<i>Cyathea loheri</i>	Cyatheaceae	ec, lan, om	scarce
<i>Davallia solida</i>	Davalliaceae	or	common
<i>Dicranopteris linearis</i>	Gleicheniaceae	ec	common
<i>Diplazium esculentum</i>	Athyriaceae	ed	scarce
<i>Drynaria quercifolia</i>	Polypodiaceae	or	common
<i>Lygodium circinatum</i>	Schizaeaceae	cot, ins	scarce
<i>Lygodium merrillii</i>	Schizaeaceae	cot, ins	scarce
<i>Macrothelypteris polypodioides</i>	Thelypteridaceae	or	common
<i>Nephrolepis biserrata</i>	Davalliaceae	or	common
<i>Oleandra maquilingensis</i>	Davalliaceae	ec	rare
<i>Ophioglossum reticulatum</i>	Ophioglossaceae	ec	rare
<i>Pityrogramma calomelanos</i>	Sinopteridaceae	or	common
<i>Pteridium aquilinum</i>	Dennstaedtiaceae	w	common
<i>Pteris vittata</i>	Pteridaceae	or	common
<i>Sphaerostephanos productos</i>	Pteridaceae	ec	common
<i>Sphaerostephanos unitus</i>	Pteridaceae	ec	common
<i>Sphenomeris chinensis</i>	Lindsaeaceae	or	common
<i>Stenochlaena milnei</i>	Blechnaceae	ec	scarce
<i>Thayeria cornucopia</i>	Polypodiaceae	ec	rare

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<b>Grasses</b>			
<i>Andropogon citratus</i>	Gramineae	sp	common
<i>Axonopus compressus</i>	Gramineae	w	common
<i>Brachiaria mutica</i>	Gramineae	w	common
<i>Centotheca lappacea</i>	Gramineae	w, pas	common
<i>Chloris barbata</i>	Gramineae	w	common
<i>Chrysopogon aciculatus</i>	Gramineae	w	common
<i>Coix lachryma-jobi</i>	Gramineae	ec	scarce
<i>Cynodon dactylon</i>	Gramineae	w	common
<i>Cyrtococcum patens</i>	Gramineae	w	common
<i>Dactyloctenium aegypticum</i>	Gramineae	w	common
<i>Digitaria ciliaris</i>	Gramineae	w	common
<i>Echinochloa colona</i>	Gramineae	w	common
<i>Echinochloa crus-galli</i>	Gramineae	w	common
<i>Eleusine indica</i>	Gramineae	w	common
<i>Imperata cylindrica</i>	Gramineae	cot, cm	common
<i>Miscanthus floridulus</i>	Gramineae	ec	common
<i>Oplismenus compositus</i>	Gramineae	w	common
<i>Panicum maximum</i>	Gramineae	w, pas, sec	common
<i>Paspalidum flavescens</i>	Gramineae	w, pas, sec	common
<i>Paspalum conjugatum</i>	Gramineae	w, pas, sec	common
<i>Paspalum distichum</i>	Gramineae	w, pas, sec	common
<i>Paspalum scrobiculatum</i>	Gramineae	w, pas, sec	common
<i>Pennisetum polystachyon</i>	Gramineae	w, pas, sec	common
<i>Saccharum officinarum</i>	Gramineae	ed	common
<i>Saccharum spontaneum</i>	Gramineae	cot, cm	common
<i>Setaria palmifolia</i>	Gramineae	ec, sec	common
<i>Sorghum halepense</i>	Gramineae	w, pas, sec	common
<i>Themeda gigantea</i>	Gramineae	w, sec	common
<i>Themeda triandra</i>	Gramineae	w, sec	scarce
<i>Thysanolaena maxima</i>	Gramineae	cot	common
<i>Vitiviera zizanoides</i>	Gramineae	cot	rare
<i>Zea mays</i>	Gramineae	ed	common
<i>Zoysia matrella</i>	Gramineae	lan, sec	common
<b>Ferns</b>			
<i>Aeschynomene sensitiva</i>	Mimosaceae	w	common
<i>Agave americana</i>	Agavaceae	or	scarce
<i>Ageratina adenophora</i>	Compositae	w	common
<i>Ageratum conyzoides</i>	Compositae	w	common
<i>Aglaonema commutatum</i>	Araceae	or	common
<i>Allium cepa</i>	Liliaceae	veg	common
<i>Alocasia bicolor</i>	Araceae	or	common
<i>Alocasia macrorrhizos</i>	Araceae	ed	common
<i>Alocasia zebrina</i>	Araceae	or	common
<i>Alternanthera ficoides</i>	Amaranthaceae	or	common
<i>Amaranthus spinosus</i>	Amaranthaceae	w	common
<i>Amomum philippinense</i>	Zingiberaceae	or	scarce
<i>Ananas comosus</i>	Bromeliaceae	ed	common
<i>Anthurium andreaeanum</i>	Araceae	or	common
<i>Apium graveolens</i>	Apiaceae	sp	common

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<i>Arachis hypogea</i>	Papilionaceae	ed	common
<i>Artemisia vulgaris</i>	Compositae	med	common
<i>Aschyranthes aspera</i>	Amaranthaceae	w	common
<i>Asclepia curassavica</i>	Asclepiadaceae	w	common
<i>Aster linifolius</i>	Compositae	or	scarce
<i>Asystacia gangetica</i>	Acanthaceae	w	common
<i>Barleria cristata</i>	Acanthaceae	w	common
<i>Begonia hernandioides</i>	Begoniaceae	or	scarce
<i>Begonia nigritarum</i>	Begoniaceae	or	scarce
<i>Balamcanda chinensis</i>	Liliaceae	or	scarce
<i>Bidens pilosa</i>	Compositae	w	common
<i>Biophytum sensitivum</i>	Oxalidaceae	w	common
<i>Blechnum pyramidatum</i>	Acanthaceae	w	common
<i>Borreria laevis</i>	Acanthaceae	w	common
<i>Brassica oleracea</i>	Brassicaceae/ Cruciferae	veg	common
<i>Bulbophyllum auratum</i>	Orchidaceae	or	scarce
<i>Bulbophyllum dearei</i>	Orchidaceae	or	scarce
<i>Caladium bicolor</i>	Araceae	or	common
<i>Canna indica</i>	Cannaceae	or	common
<i>Catheranthus roseus</i>	Apocynaceae	or, med	common
<i>Centella asiatica</i>	Apiaceae	veg, sp	common
<i>Chrysanthemum indicum</i>	Compositae	or	scarce
<i>Coleus blumei</i>	Labiatae	or	common
<i>Coleus igolotorum</i>	Labiatae	or	scarce
<i>Colocasia esculenta</i>	Araceae	ed	common
<i>Commelina benghalensis</i>	Commelinaceae	w	common
<i>Commelina diffusa</i>	Commelinaceae	w	common
<i>Cosmos caudatus</i>	Compositae	or	common
<i>Costus speciosus</i>	Zingiberaceae	or	scarce
<i>Crassocephalum crepidioides</i>	Compositae	w	common
<i>Crinum asiaticum</i>	Amaryllidaceae	or	scarce
<i>Curcuma domestica</i>	Zingiberaceae	sp	scarce
<i>Cyanotis axillaris</i>	Commelinaceae	w	common
<i>Cyperus alternifolius</i>	Cyperaceae	w	common
<i>Cyperus compactus</i>	Cyperaceae	w	common
<i>Cyperus flabelliformis</i>	Cyperaceae	w	common
<i>Cyperus iria</i>	Cyperaceae	w	common
<i>Cyperus kyllingia</i>	Cyperaceae	w	common
<i>Cyperus rotundus</i>	Cyperaceae	w	common
<i>Cyrtosperma merkusii</i>	Araceae	ed	scarce
<i>Daucus carota</i>	Umbelliferae	veg	scarce
<i>Desmodium capitatum</i>	Papilionaceae	w	common
<i>Desmodium heterocarpon</i>	Papilionaceae	w	scarce
<i>Desmodium suffruticosum</i>	Papilionaceae	gm, hed	common
<i>Dieffenbachia picta</i>	Araceae	or	common
<i>Donas cannaeformis</i>	Marantaceae	or	scarce
<i>Eclipta rostrata</i>	Compositae	w	common
<i>Elatostema lagunense</i>	Urticaceae	ec	common
<i>Elatostema pulchellum</i>	Urticaceae	ed	common
<i>Elephantopus scaber</i>	Compositae	w	common
<i>Elephantopus spicatus</i>	Compositae	w	common

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<i>Elephantopus tomentosus</i>	Compositae	w	common
<i>Eleutherine palmifolia</i>	Amaryllidaceae	or	scarce
<i>Emilia sonchifolia</i>	Compositae	w	common
<i>Euphorbia heterophylla</i>	Euphorbiaceae	w	common
<i>Euphorbia hirta</i>	Euphorbiaceae	w	common
<i>Eurycles amboinensis</i>	Liliaceae	or	rare
<i>Fimbristylis dichotoma</i>	Cyperaceae	w	common
<i>Fimbristylis monostachya</i>	Cyperaceae	w	common
<i>Gerbera</i> sp.	Compositae	or	common
<i>Heliconia metallica</i>	Heliconiaceae	or	scarce
<i>Hippeastrum</i> sp.	Amaryllidaceae	or	scarce
<i>Homalomena philippinensis</i>	Araceae	or	common
<i>Homalomena rubescens</i>	Araceae	or	scarce
<i>Impatiens balsamina</i>	Balsaminaceae	or	common
<i>Impatiens hutchinsonii</i>	Balsaminaceae	or	common
<i>Iresine herbstii</i>	Amaranthaceae	or	scarce
<i>Kalanchoe pinnata</i>	Crassulaceae	or	scarce
<i>Kolowratia elegans</i>	Zingiberaceae	ec	scarce
<i>Lindernia crustacea</i>	Scrophulariaceae	w	common
<i>Lycopersicon esculentum</i>	Solanaceae	ec	common
<i>Mentha arvensis</i>	Labiatae	sp	common
<i>Mentha arvensis</i> var. <i>piperata</i>	Labiatae	sp	common
<i>Mimosa invisa</i>	Mimosaceae	w	scarce
<i>Mimosa pudica</i>	Mimosaceae	w	common
<i>Nopalea cochinellifera</i>	Cactaceae	or	rare
<i>Ophiopogon japonica</i>	Liliaceae	or	common
<i>Oxalis repens</i>	Oxalidaceae	w	common
<i>Phacelophrynum interruptum</i>	Marantaceae	ec	rare
<i>Phalaenopsis amabilis</i>	Orchidaceae	or	scarce
<i>Sansevieria trifasciata</i>	Agavaceae	hed	scarce
<i>Schismatoglottis calyprata</i>	Araceae	ec	common
<i>Scleria lithosperma</i>	Cyperaceae	w	common
<i>Scleria scrobiculata</i>	Cyperaceae	w	common
<i>Sechium edule</i>	Cucurbitaceae	veg	common
<i>Selaginella ciliaris</i>	Selaginellaceae	ec	common
<i>Selaginella cupressina</i>	Selaginellaceae	ec	common
<i>Selaginella involvens</i>	Selaginellaceae	ec	common
<i>Spathiphyllum</i> sp.	Orchidaceae	or	scarce
<i>Symphytum officinale</i>	Verbenaceae	med	rare
<i>Synedrilla nodiflora</i>	Compositae	w	common
<i>Tagetes erecta</i>	Compositae	or	scarce
<i>Tradescantia</i> sp.	Commelinaceae	or	common
<i>Trichoglottis</i> sp.	Orchidaceae	or	scarce
<i>Tridax procumbens</i>	Compositae	w	common
<i>Typha angustifolia</i>	Typhaceae	ec	rare
<i>Vernonia cinerea</i>	Compositae	w	common
<i>Vernonia patula</i>	Compositae	w	common
<i>Wedelia triloba</i>	Compositae	w	common
<i>Xanthosoma sagittifolium</i>	Araceae	ed	common
<i>Zephyranthes atamasco</i>	Amaryllidaceae	or	scarce
<i>Zingiber zerumbet</i>	Zingiberaceae	or	scarce

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<b>Lianas (Woody vines)</b>			
<i>Abrus precatorius</i>	Papilionaceae	med	rare
<i>Acorus calamus</i>	Araceae	med	rare
<i>Bougainvillea spectabilis</i>	Nyctaginaceae	or, lan	common
<i>Calamus dimorphocanthus</i>	Palmae	cot	scarce
<i>Calamus merrillii</i>	Palmae	cot, ed	scarce
<i>Calamus ornatus</i> var. <i>philippinensis</i>	Palmae	cot	scarce
<i>Derris philippinensis</i>	Papilionaceae	po	scarce
<i>Elaeagnus philippinensis</i>	Elaeagnaceae	ed	scarce
<i>Flagellaria indica</i>	Flagellariaceae	cot	scarce
<i>Freycinetia cumingiana</i>	Pandanaceae	cot, ec	scarce
<i>Freycinetianegrosensis</i>	Pandanaceae	cot, ec	scarce
<i>Freycinetia williamsii</i>	Pandanaceae	cot, ec	scarce
<i>Phanera cumingiana</i> ssp. <i>integrifolia</i>	Caesalpiniaceae	ec	rare
<i>Rubus fraxinifolius</i>	Rosaceae	ed	common
<i>Schizostachyum diffusum</i>	Gramineae	ec	common
<i>Smilax china</i>	Smilacaceae	ec	scarce
<i>Tetracera scandens</i>	Dilleniaceae	ec	scarce
<i>Uncaria philippinensis</i>	Rubiaceae	ec	scarce
<b>Lichens</b>			
<i>Cladonia</i> sp.	Cladoniaceae	ec	scarce
<i>Cladonia vulcanicum</i>	Cladoniaceae	ec	scarce
<i>Lobaria meridionalis</i>	Lobariaceae	ec, med	scarce
<i>Lobaria robinsonii</i>	Lobariaceae	ec, med	scarce
<i>Parmelia cristifera</i>	Parmeliaceae	ec	scarce
<i>Physcia fragilescens</i>	Physciaceae	ec	scarce
<i>Usnea misamisensis</i>	Usneaceae	med	scarce
<b>Large Trees</b>			
<i>Adenanthera intermedia</i>	Mimosaceae	rm	scarce
<i>Agathis philippinensis</i>	Araucariaceae	tm	scarce
<i>Alstonia macrophylla</i>	Apocynaceae	tm	common
<i>Alstonia scholaris</i>	Apocynaceae	tm	common
<i>Anisoptera thurifera</i>	Dipterocarpaceae	tm	scarce
<i>Artocarpus altilis</i>	Moraceae	ed	common
<i>Artocarpus blancoi</i>	Moraceae	ec	common
<i>Artocarpus communis</i>	Moraceae	ed	common
<i>Artocarpus heterophyllus</i>	Moraceae	ed	common
<i>Artocarpus sericicarpus</i>	Moraceae	ec	common
<i>Bischofia javanica</i>	Bischofiaceae	tm	scarce
<i>Canarium hirsutum</i> f. <i>multipinnatum</i>	Burseraceae	tm	scarce
<i>Ceiba pentandra</i>	Bombacaceae	lan, fi	common
<i>Celtis luzonica</i>	Ulmaceae	tm	scarce
<i>Celtis philippinensis</i>	Ulmaceae	tm	scarce
<i>Dacrycarpus imbricatus</i>	Podocarpaceae	tm	scarce
<i>Dillenia reifferschidia</i>	Dilleniaceae	ec	scarce
<i>Diospyros pilosanthera</i>	Ebenaceae	tm, ed	scarce
<i>Dipterocarpus gracilis</i>	Dipterocarpaceae	tm	scarce
<i>Duabanga moluccana</i>	Sonneratiaceae	fi, lcm	scarce

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<i>Dysoxylum gaudichaudianum</i>	Meliaceae	tm	scarce
<i>Eucalyptus deglupta</i>	Myrtaceae	tm	scarce
<i>Lithocarpus philippinensis</i>	Fagaceae	tm	scarce
<i>Madhuca betis</i>	Sapotaceae	tm	scarce
<i>Mangifera indica</i>	Anacardiaceae	ed	common
<i>Melia dubia</i>	Meliaceae	tm	rare
<i>Ochroma lagopus</i>	Bombacaceae	fi, lcm	rare
<i>Octomeles sumatrana</i>	Datiaceae	fi, lcm	scarce
<i>Palaquium luzonense</i>	Sapotaceae	tm	scarce
<i>Paraserianthes falcataria</i>	Mimosaceae	tm	common
<i>Pometia pinnata</i>	Sapindaceae	tm	scarce
<i>Samanea saman</i>	Mimosaceae	tm	scarce
<i>Shorea contorta</i>	Dipterocarpaceae	tm	scarce
<i>Shorea negrosensis</i>	Dipterocarpaceae	tm	scarce
<i>Swietenia macrophylla</i>	Meliaceae	tm	common
<b>Medium-sized Trees</b>			
<i>Aralia spinosa</i>	Araliaceae	ec	common
<i>Artocarpus odoratissimus</i>	Moraceae	ed	common
<i>Atuna racemosa</i>	Chrysobalanaceae	ed	scarce
<i>Barringtonia racemosa</i>	Barringtoniaceae	lan	scarce
<i>Buchanania arborescens</i>	Anacardiaceae	lan	scarce
<i>Calophyllum kuenstleri</i>	Guttiferae	tm	scarce
<i>Cassia javanica</i>	Caesalpiniaceae	lan, shad	scarce
<i>Chrysophyllum cainito</i>	Sapotaceae	ed	common
<i>Colona serratifolia</i>	Tiliaceae	fi, fu	scarce
<i>Dalbergia</i> sp.	Papilionaceae	tm	scarce
<i>Dillenia philippinensis</i>	Dilleniaceae	ec	scarce
<i>Durio zibethinus</i>	Bombaceae	ed	common
<i>Elaeocarpus calomala</i>	Elaeocarpaceae	tm, ed, fi	scarce
<i>Ficus minahassae</i>	Moraceae	ec	common
<i>Ficus variegata</i>	Moraceae	ec	common
<i>Gmelina arborea</i>	Verbenaceae	tm	scarce
<i>Gymnostoma rumphianum</i>	Casuarinaceae	tm	common
<i>Lansium domesticum</i>	Meliaceae	ed	scarce
<i>Lithocarpus mindanaensis</i>	Fagaceae	tm	common
<i>Lithocarpus sundaica</i>	Fagaceae	tm	common
<i>Litsea glutinosa</i>	Lauraceae	ec	scarce
<i>Macaranga bicolor</i>	Euphorbiaceae	ec	common
<i>Macaranga grandifolia</i>	Euphorbiaceae	ec	common
<i>Nauclea orientalis</i>	Rubiaceae	fi	common
<i>Neonauclea burtlingii</i>	Rubiaceae	fi	common
<i>Neonauclea media</i>	Rubiaceae	fi	common
<i>Nephelium ramboutan-oke</i>	Sapindaceae	ec, ed	scarce
<i>Partocarpus venenosus</i>	Moraceae	ec	rare
<i>Phyllocladus hypophyllum</i>	Araucariaceae	tm	rare
<i>Pittosporum pentandrum</i>	Pittosporaceae	tm	rare
<i>Polyscias nodosa</i>	Araliaceae	ec	scarce
<i>Pterocymbium peltatum</i>	Sterculiaceae	fi	rare
<i>Pterospermum diversifolium</i>	Sterculiaceae	fi	scarce
<i>Pterospermum obliquum</i>	Sterculiaceae	fi	scarce

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<i>Sandoricum koetjape</i>	Meliaceae	ed	common
<i>Saurauia latibractea</i>	Saurauiaceae/ Actinidiaceae	ec	scarce
<i>Tamarindus indica</i>	Caesalpiniaceae	ed	scarce
<i>Terminalia catappa</i>	Combretaceae	lan, dye	scarce
<i>Terminalia nitens</i>	Combretaceae	lan	scarce
<i>Trema orientalis</i>	Ulmaceae	ec, fu	common
<b>Shrubs</b>			
<i>Abelmoschus esculentus</i>	Malvaceae	veg	common
<i>Abutilon indicum</i>	Malvaceae	w	common
<i>Acalypha amentacea</i>	Euphorbiaceae	or	common
<i>Blumea balsamifera</i>	Compositae	med	common
<i>Breynia cernua</i>	Euphorbiaceae	ec	scarce
<i>Bridelia stipularis</i>	Euphorbiaceae	ec	scarce
<i>Calliandra haematocephala</i>	Mimosaceae	or, hed	scarce
<i>Callicarpa candicans</i>	Verbenaceae	ec	scarce
<i>Callicarpa formosana</i>	Verbenaceae	ec	scarce
<i>Canthium monstrosum</i>	Acanthaceae	ec	scarce
<i>Capsicum annuum</i> var. <i>annuum</i>	Solanaceae	sp	common
<i>Capsicum frutescens</i>	Solanaceae	sp	common
<i>Carphalea kirondron</i>	Rubiaceae	or	scarce
<i>Cassia alata</i>	Caesalpiniaceae	med	common
<i>Cassia nodosa</i>	Caesalpiniaceae	or	common
<i>Cassia occidentalis</i>	Caesalpiniaceae	w	common
<i>Cassia tora</i>	Caesalpiniaceae	w	common
<i>Chromolaena odorata</i>	Compositae	w	common
<i>Codiaeum variegatum</i>	Euphorbiaceae	hed, or	common
<i>Cordyline fruticosa</i>	Agavaceae	or	common
<i>Crotolaria linifolia</i>	Caesalpiniaceae	w	common
<i>Crotolaria saltiana</i>	Caesalpiniaceae	w	common
<i>Cuphea hyssopifolia</i>	Lythraceae	or	common
<i>Datura metel</i>	Solanaceae	w, po, med	scarce
<i>Desmodium pulchellum</i>	Papilionaceae	w	common
<i>Desmodium triflorum</i>	Papilionaceae	w	scarce
<i>Desmodium umbellatum</i>	Papilionaceae	w	scarce
<i>Desmodium velutinum</i>	Papilionaceae	w	common
<i>Duranta erecta</i>	Malpighiaceae	hed, or	common
<i>Ervatamia pandacaqui</i>	Apocynaceae	ec	scarce
<i>Euphorbia pulcherrima</i>	Euphorbiaceae	or	scarce
<i>Ficus angustissima</i>	Moraceae	ec	scarce
<i>Gardenia jasminoides</i>	Rubiaceae	or	scarce
<i>Gendarussa vulgaris</i>	Acanthaceae	hed, or	common
<i>Gossypium barbadense</i>	Malvaceae	fi	scarce
<i>Hibiscus cannabinus</i>	Malvaceae	or, fi	scarce
<i>Hibiscus rosa-sinensis</i>	Malvaceae	hed, or	common
<i>Hydrangea lobanii</i>	Hydrangeaceae	or	rare
<i>Hygrophila salicifolia</i>	Acanthaceae	w	common
<i>Indigofera tinctoria</i>	Papilionaceae	w	scarce
<i>Ixora philippinensis</i>	Rubiaceae	or	common
<i>Lantana camara</i>	Verbenaceae	or, w	common
<i>Laportea brunnea</i>	Urticaceae	w	common

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<i>Leucosyke capitellata</i>	Urticaceae	ec	common
<i>Malvaiscus pilosus</i>	Malvaceae	or, hed	scarce
<i>Manihot esculenta</i>	Euphorbiaceae	ed	common
<i>Melastoma polyanthum</i>	Melastomataceae	ec	common
<i>Melicope triphylla</i>	Rutaceae	ec	scarce
<i>Morinda citrifolia</i>	Rutaceae	ec	scarce
<i>Mussaenda anisophylla</i>	Rutaceae	or	scarce
<i>Mussaenda phiklippica</i>	Rutaceae	or	scarce
<i>Ocimum sanctum</i>	Labiatae	sp	scarce
<i>Odontonema strictum</i>	Acanthaceae	hed, or	common
<i>Orthosiphon aristatus</i>	Labiatae	or	common
<i>Phyllanthus amarus</i>	Euphorbiaceae	w	common
<i>Phyllanthus urinaria</i>	Euphorbiaceae	w	common
<i>Physalis angulata</i>	Solanaceae	w	rare
<i>Pipturus arborescens</i>	Urticaceae	ec	common
<i>Polyscias balfouriana</i>	Araliaceae	hed	common
<i>Pseuderanthemum purpureum</i>	Acanthaceae	hed	common
<i>Pseuderanthemum reticulatum</i>	Acanthaceae	hed	common
<i>Rosa centifolia</i>	Rosaceae	or	common
<i>Rubus rosaefolius</i>	Rosaceae	ed	common
<i>Sida acuta</i>	Malvaceae	w	common
<i>Sida cordifolia</i>	Malvaceae	w	common
<i>Sida rhombifolia</i>	Malvaceae	w	common
<i>Solanum melongena</i>	Solanaceae	veg	common
<i>Solanum nigrum</i>	Solanaceae	veg	scarce
<i>Solanum</i> sp. (wild)	Solanaceae	veg	scarce
<i>Solanum torvum</i>	Solanaceae	w	common
<i>Solanum verbascifolium</i>	Solanaceae	w	common
<i>Sphenoclea zeylanica</i>	Sphenocleaceae	w	common
<i>Stachytarpheta indica</i>	Verbenaceae	w	common
<i>Stachytarpheta jamaicensis</i>	Verbenaceae	w	common
<i>Triumfetta bartramia</i>	Tiliaceae	w	common
<i>Triumfetta semitriloba</i>	Tiliaceae	w	common
<i>Urena lobata</i>	Malvaceae	w	common
<i>Vernonia arborea</i>	Compositae	ec	scarce
<i>Viburnum luzonicum</i>	Caprifoliaceae	ec	rare
<i>Vitex negundo</i>	Verbenaceae	med	scarce
<i>Voacanga globosa</i>	Apocynaceae	ec	scarce
<i>Wikstroemia indica</i>	Thymelaeaceae	fi	rare
<b>Small Trees</b>			
<i>Acacia mangium</i>	Mimosaceae	tm	common
<i>Anacardium occidentale</i>	Anacardiaceae	ed	common
<i>Annona muricata</i>	Annonaceae	ed	scarce
<i>Annona squamosa</i>	Annonaceae	ed	scarce
<i>Ardisia pyramidalis</i>	Myrsinaceae	or, lan	scarce
<i>Astronia cumingiana</i>	Melastomataceae	lan	common
<i>Bixa orellana</i>	Bixaceae	dye	scarce
<i>Boerlalgiodendron diversifolium</i>	Araliaceae	lan	scarce
<i>Carallia brachiata</i>	Rhizophoraceae	ec	scarce
<i>Casearia grewinifolia</i>	Tiliaceae	ec	scarce

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<i>Citrofortunella microcarpa</i>	Rutaceae	ed	common
<i>Citrus limon</i>	Rutaceae	ed	scarce
<i>Citrus maxima</i>	Rutaceae	ed	common
<i>Clerodendron macrostachyum</i>	Verbenaceae	or	scarce
<i>Clerodendron quadriloculare</i>	Verbenaceae	or	scarce
<i>Clethra lancifolia</i>	Clethraceae	ec	common
<i>Coffea robusta</i>	Rubiaceae	bev	common
<i>Commersonia bartramia</i>	Tiliaceae	w	scarce
<i>Cordia dichotoma</i>	Boraginaceae	med	scarce
<i>Cratoxylon celebicum</i>	Guttiferae	fu	scarce
<i>Cratoxylon formosanum</i>	Guttiferae	fu	scarce
<i>Cyrtandra cumingii</i>	Gesneriaceae	or	scarce
<i>Erythrina orientalis</i>	Papilionaceae	lan	common
<i>Ficus benjamina</i>	Moraceae	lan	common
<i>Ficus botryocarpa</i>	Moraceae	ec	common
<i>Ficus guyeri</i>	Moraceae	ec	common
<i>Ficus nota</i>	Moraceae	ec	common
<i>Ficus septica</i>	Moraceae	med, ec	common
<i>Ficus ulmifolia</i>	Moraceae	ec	common
<i>Garcinia mangostana</i>	Guttiferae	ed	scarce
<i>Gliricidia sepium</i>	Caesalpiniaceae	fu, om	scarce
<i>Glochidion rubrum</i>	Euphorbiaceae	ec	scarce
<i>Guioa koelreuteria</i>	Sapindaceae	ec	scarce
<i>Hibiscus tiliaceus</i>	Malvaceae	lan	scarce
<i>Homalanthus alpinus</i>	Euphorbiaceae	ec	common
<i>Homalanthus populneus</i>	Euphorbiaceae	ec	common
<i>Lagerstroemia speciosa</i>	Lythraceae	lan	scarce
<i>Leea philippinensis</i>	Leeaceae	lan	scarce
<i>Leucaena leucocephala</i>	Mimosaceae	fu, lf	common
<i>Macaranga dipterocarpifolia</i>	Euphorbiaceae	ec	common
<i>Macaranga tanarius</i>	Euphorbiaceae	ec	common
<i>Mallotus philippensis</i>	Euphorbiaceae	dye	rare
<i>Melanolepis multiglandulosa</i>	Euphorbiaceae	ec	common
<i>Micromelum minutum</i>	Rutaceae	ec	scarce
<i>Moringa oleifera</i>	Moringaceae	veg	common
<i>Muntingia calabura</i>	Tiliaceae	ed	common
<i>Nephellium lappaceum</i>	Sapindaceae	ed	scarce
<i>Persea americana</i>	Lauraceae	ed	common
<i>Plumeria alba</i>	Apocynaceae	lan	scarce
<i>Pouteria campechiana</i>	Sapotaceae	ed	scarce
<i>Premna odorata</i>	Verbenaceae	med	scarce
<i>Psidium guajava</i>	Myrtaceae	ed	common
<i>Psychotria luconiensis</i>	Rubiaceae	ec	rare
<i>Punica granatum</i>	Punicaceae	or, ed	rare
<i>Pyrus malus</i>	Rosaceae	ed	rare
<i>Rodermachera pinnata</i>	Bignoniaceae	ec	rare
<i>Ricinus communis</i>	Euphorbiaceae	med	common
<i>Sambucus javanica</i>	Caprifoliaceae	or	scarce
<i>Saurauia glabrescens</i>	Saurauiaceae/ Actinidiaceae	ec	scarce
<i>Syzygium cumini</i>	Myrtaceae	ed	scarce
<i>Syzygium malaccense</i>	Myrtaceae	ed	scarce

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<i>Syzygium polycephaloides</i>	Myrtaceae	ed	rare
<i>Syzygium samarangense</i>	Myrtaceae	ed	scarce
<i>Theobroma cacao</i>	Sterculiaceae	bev	scarce
<i>Thespesia populnea</i>	Malvaceae	lan	scarce
<i>Thevetia peruviana</i>	Apocynaceae	lan	scarce
<i>Thuja orientale</i>	Cupressaceae	lan	scarce
<b>Tree-like</b>			
<i>Areca catechu</i>	Palmae	mas	scarce
<i>Arenga tremula</i>	Palmae	lan	scarce
<i>Bambusa blumeana</i>	Gramineae	cm	common
<i>Bambusa glaucescens</i>	Gramineae	hed	scarce
<i>Bambusa vulgaris</i>	Gramineae	cm	common
<i>Bambusa vulgaris</i> var. <i>striata</i>	Gramineae	lan	scarce
<i>Carica papaya</i>	Caricaceae	ed	common
<i>Caryota rumphiana</i> ssp. <i>philippinensis</i>	Palmae	lan	scarce
<i>Chrysalidocarpus lutescens</i>	Palmae	lan	scarce
<i>Cocos nucifera</i> cv. 'Green Tall'	Palmae	ed, cm, cot	common
<i>Corypha utan</i>	Palmae	cot, ed	scarce
<i>Cycas revoluta</i>	Cycadaceae	lan	scarce
<i>Dendrocalamus asper</i>	Gramineae	cm	scarce
<i>Dracaena fragrans</i>	Agavaceae	lan	common
<i>Levistona rotundifolia</i>	Palmae	lan, cot	rare
<i>Musa textilis</i>	Musaceae	fi	common
<i>Musa x paradisiaca</i> (AAB)	Musaceae	ed	common
<i>Musa x paradisiaca</i> (BBB)	Musaceae	ed	common
<i>Oncosperma horridum</i>	Palmae	ed, cm	rare
<i>Pandanus camarinensis</i>	Pandanaceae	ec	scarce
<i>Pandanus copelandii</i>	Pandanaceae	ec	rare
<i>Pandanus exaltatus</i>	Pandanaceae	ec	common
<i>Pandanus tectorius</i> var. <i>laevis</i>	Pandanaceae	cot	scarce
<i>Pinanga insignis</i>	Palmae	cm, ec	scarce
<i>Pinanga philippinensis</i>	Palmae	lan, ec	scarce
<i>Schizostachyum lumampao</i>	Gramineae	cot, cm	scarce
<b>Vines</b>			
<i>Alysicarpus vaginalis</i>	Papilionaceae	w	common
<i>Asparagus sprengeri</i>	Liliaceae	or	scarce
<i>Basella alba</i>	Basellaceae	veg	scarce
<i>Basella rubra</i>	Basellaceae	veg	scarce
<i>Calopogonium mucunoides</i>	Papilionaceae	w	common
<i>Cayratia trifolia</i> var. <i>cinerea</i>	Vitaceae	ec	scarce
<i>Centrosema pubescens</i>	Papilionaceae	w, gm	common
<i>Cestrum nocturnum</i>	Solanaceae	or	scarce
<i>Clitorea ternatea</i>	Papilionaceae	w	common
<i>Cucurbita maxima</i>	Cucurbitaceae	veg	common
<i>Dioscorea alata</i>	Dioscoreaceae	ed	scarce
<i>Dioscorea esculenta</i>	Dioscoreaceae	ed	scarce
<i>Fragaria virginiana</i>	Rosaceae	ed	scarce
<i>Ichnocarpus volubilis</i>	Apocynaceae	w	scarce
<i>Ipomoea batatas</i>	Convolvulaceae	ed	common

**Appendix Table 3. Continued...**

Habit/Taxon	Family	Uses**	Conservation status
<i>Ipomoea quamocli</i>	Convolvulaceae	w	scarce
<i>Ipomoea triloba</i>	Convolvulaceae	w	common
<i>Lycopodium cernuum</i>	Lycopodiaceae	ec, ins	common
<i>Lycopodium squarrosum</i>	Lycopodiaceae	ec, ins	scarce
<i>Merremia peltata</i>	Convolvulaceae	w	common
<i>Mikania cordata</i>	Compositae	w	common
<i>Nepenthes alata</i>	Nepenthaceae	ec	rare
<i>Operculina turpethum</i>	Convolvulaceae	w	common
<i>Pachyrhizus erosus</i>	Papilionaceae	ed	scarce
<i>Passiflora foetida</i>	Passifloraceae	w, ed	scarce
<i>Phaseolus lathyroides</i>	Papilionaceae	w	common
<i>Piper retrofractum</i>	Piperaceae	ec	scarce
<i>Pueraria phaseoloides</i>	Papilionaceae	w	common
<i>Rhapidophora merrillii</i>	Araceae	or	scarce
<i>Syngonium podophyllum</i>	Araceae	or	scarce
<i>Tetrastigma</i> sp.	Vitaceae	ec	scarce

\*Don Victoriano:

(1) Mansawan, (2) Gandawan, (3) Lake Duminagat, (4) Lampasan, (5) Tuno, and (6) Lalud Concepcion:

(7) Small Potongan, (8) Upper Potongan, (9) Virayan, (10) Poblacion Concepcion, and (11) Upper Salimpuno Sapang Dalaga: (12) Sixto Velez

\*\*  
 bev = beverage  
 cm = construction material  
 cot = cottage industry  
 ec = ecological function  
 ed = edible part  
 fi = fiber source  
 fu = fuelwood  
 gm = green manure/fertilizer  
 hed = hedge plant  
 ins = instructional use  
 lan = landscape plant  
 lcm = light construction material  
 lf = live fence  
 med = medicinal  
 om = orchid medium  
 or = ornamental  
 pas = pasture  
 po = poisonous  
 shad = shade plant  
 sec = soil erosion control  
 sp = spice/condiment  
 tm = timber source  
 veg = vegetable  
 w = weed

**Appendix Table 4. List of plant and lichen species recorded from 12 barangays\*. Taxa arranged according to uses with corresponding family, habit, and conservation status.**

Taxon	Family	Habit**	Conservation status
<b>Beverage</b>			
<i>Coffee robusta</i>	Rubiaceae	st	common
<i>Theobroma cacao</i>	Sterculiaceae	st	scarce
<b>Construction Material</b>			
<i>Bambusa blumeana</i>	Gramineae	tl	common
<i>Bambusa vulgaris</i>	Gramineae	tl	common
<i>Cocos nucifera</i> cv. 'Green Tall'	Palmae	tl	common
<i>Dendrocalamus asper</i>	Gramineae	tl	scarce
<i>Imperata cylindrica</i>	Gramineae	gr	common
<i>Oncosperma horridum</i>	Palmae	tl	rare
<i>Pinanga insignis</i>	Palmae	tl	scarce
<i>Saccharum spontaneum</i>	Gramineae	gr	common
<i>Schizostachyum lumampao</i>	Gramineae	tl	scarce
<b>Cottage Industry</b>			
<i>Calamus dimorphocanthus</i>	Palmae	li	scarce
<i>Calamus merrillii</i>	Palmae	li	scarce
<i>Calamus ornatus</i> var. <i>philippinensis</i>	Palmae	li	scarce
<i>Cocos nucifera</i> cv. 'Green Tall'	Palmae	tl	common
<i>Corypha utan</i>	Palmae	tl	scarce
<i>Flagellaria indica</i>	Flagellariaceae	li	scarce
<i>Freycinetia cumingiana</i>	Pandanaceae	li	scarce
<i>Freycinetia negrosensis</i>	Pandanaceae	li	scarce
<i>Freycinetia williamsii</i>	Pandanaceae	li	scarce
<i>Imperata cylindrica</i>	Gramineae	gr	common
<i>Livistona rotundifolia</i>	Palmae	tl	rare
<i>Lygodium circinatum</i>	Schizaeaceae	fe	scarce
<i>Lygodium merrillii</i>	Schizaeaceae	fe	scarce
<i>Pandanus tectorius</i> var. <i>laevis</i>	Pandanaceae	tl	scarce
<i>Saccharum spontaneum</i>	Gramineae	gr	common
<i>Schizostachyum lumampao</i>	Gramineae	tl	scarce
<i>Thysanolaena maxima</i>	Gramineae	gr	common
<i>Vitiviera zizanoides</i>	Gramineae	gr	rare
<b>Dye</b>			
<i>Bixa orellana</i>	Bixaceae	st	scarce
<i>Mallotus philippensis</i>	Euphorbiaceae	st	rare
<i>Terminalia catappa</i>	Combretaceae	mt	scarce
<b>Ecological function</b>			
<i>Aeschynanthus philippinensis</i>	Gesneriaceae	ep	rare
<i>Aralia spinosa</i>	Araliaceae	mt	common
<i>Artocarpus blancoi</i>	Moraceae	lt	common
<i>Artocarpus sericicarpus</i>	Moraceae	lt	common

Appendix Table 4. Continued...

Taxon	Family	Habit**	Conservation status
<i>Breynia cernua</i>	Euphorbiaceae	sh	scarce
<i>Bridelia stipularis</i>	Euphorbiaceae	sh	scarce
<i>Callicarpa candicans</i>	Verbenaceae	sh	scarce
<i>Callicarpa formosana</i>	Verbenaceae	sh	scarce
<i>Canthium monstrosum</i>	Acanthaceae	sh	scarce
<i>Carallia brachiata</i>	Rhizophoraceae	st	scarce
<i>Casearia grewidifolia</i>	Tiliaceae	st	scarce
<i>Cayratia trifolia</i> var. <i>cinerea</i>	Vitaceae	vi	scarce
<i>Cladonia</i> sp.	Cladoniaceae	lic	scarce
<i>Cladonia vulcanicum</i>	Cladoniaceae	lic	scarce
<i>Clethra lancifolia</i>	Clethraceae	st	common
<i>Coix lachryma-jobi</i>	Gramineae	gr	scarce
<i>Cyathea callosa</i>	Cyatheaceae	fe	scarce
<i>Cyathea contaminans</i>	Cyatheaceae	fe	common
<i>Cyathea loheri</i>	Cyatheaceae	fe	scarce
<i>Dicranopteris linearis</i>	Gleicheniaceae	fe	common
<i>Dillenia philippinensis</i>	Dilleniaceae	mt	scarce
<i>Dillenia reifferschiedia</i>	Dilleniaceae	lt	scarce
<i>Elatostema lagunense</i>	Urticaceae	hb	common
<i>Ervatamia pandacaqui</i>	Apocynaceae	sh	scarce
<i>Ficus angustissima</i>	Moraceae	sh	scarce
<i>Ficus baletae</i>	Moraceae	sp	scarce
<i>Ficus botryocarpa</i>	Moraceae	st	common
<i>Ficus guyeri</i>	Moraceae	st	common
<i>Ficus minahassae</i>	Moraceae	mt	common
<i>Ficus nota</i>	Moraceae	st	common
<i>Ficus septica</i>	Moraceae	st	common
<i>Ficus ulmifolia</i>	Moraceae	st	common
<i>Ficus variegata</i>	Moraceae	mt	common
<i>Freycinetia cumingiana</i>	Pandanaceae	li	scarce
<i>Freycinetia negrosensis</i>	Pandanaceae	li	scarce
<i>Freycinetia williamsii</i>	Pandanaceae	li	scarce
<i>Glochidion rubrum</i>	Euphorbiaceae	st	scarce
<i>Guioa koelreuteria</i>	Sapindaceae	st	scarce
<i>Homalanthus alpinus</i>	Euphorbiaceae	st	common
<i>Homalanthus populneus</i>	Euphorbiaceae	st	common
<i>Kolowratia elegans</i>	Zingiberaceae	hb	scarce
<i>Leucosyke capitellata</i>	Urticaceae	sh	common
<i>Litsea glutinosa</i>	Lauraceae	mt	scarce
<i>Lobaria meridionalis</i>	Lobariaceae	lic	scarce
<i>Lobaria robiinsonii</i>	Lobariaceae	lic	scarce
<i>Lycopersicon esculentum</i>	Solanaceae	hb	common
<i>Lycopodium cernuum</i>	Lycopodiaceae	vi	common
<i>Lycopodium squarrosum</i>	Lyopodiaceae	vi	scarce
<i>Macaranga bicolor</i>	Euphorbiaceae	mt	common
<i>Macaranga dipterocarpifolia</i>	Euphorbiaceae	st	common
<i>Macaranga grandifolia</i>	Euphorbiaceae	mt	common
<i>Macaranga tanarius</i>	Euphorbiaceae	st	common
<i>Melanolepis multiglandulosa</i>	Euphorbiaceae	st	common
<i>Melastoma polyanthum</i>	Melastomataceae	sh	common
<i>Melicope triphylla</i>	Rutaceae	sh	scarce

**Appendix Table 4. Continued...**

Taxon	Family	Habit* *	Conservation status
<i>Micromelum minutum</i>	Rutaceae	st	scarce
<i>Miscanthus floridulus</i>	Gramineae	gr	common
<i>Morinda citrifolia</i>	Rubiaceae	sh	scarce
<i>Nepenthes alata</i>	Nepenthaceae	li	rare
<i>Nephelium ramboutan-oke</i>	Sapindaceae	mt	scarce
<i>Oleandra maquilingsensis</i>	Davalliaceae	fe	rare
<i>Ophioglossum reticulatum</i>	Ophioglossaceae	fe	rare
<i>Pandanus camarinensis</i>	Pandanaceae	tl	scarce
<i>Pandanus copelandii</i>	Pandanaceae	tl	rare
<i>Pandanus exaltatus</i>	Pandanaceae	tl	common
<i>Parartocarpus venenosus</i>	Moraceae	mt	rare
<i>Parmella cristifera</i>	Parmeliaceae	lic	scarce
<i>Phacelophrynium interruptum</i>	Marantaceae	hb	rare
<i>Phanera cumingiana</i> ssp. <i>integrifolia</i>	Caesalpiniaceae	li	rare
<i>Physcia fragileszens</i>	Physiaceae	lic	scarce
<i>Pinanga insignis</i>	Palmae	tl	scarce
<i>Pinanga philippinensis</i>	Palmae	tl	scarce
<i>Piper retrofractum</i>	Piperaceae	vi	scarce
<i>Pipturus arborescens</i>	Urticaceae	sh	common
<i>Polyscias nodosa</i>	Araliaceae	mt	scarce
<i>Psychotria luconiensis</i>	Rubiaceae	st	rare
<i>Radermachera pinnata</i>	Bignoniaceae	st	rare
<i>Saurauia glabrescens</i>	Saurauiaceae/Actinidiaceae	st	scarce
<i>Saurauia latibractea</i>	Saurauiaceae/Actinidiaceae	mt	scarce
<i>Schefflera insularis</i>	Araliaceae	ep	scarce
<i>Schismatoglottis calyptrata</i>	Araceae	hb	common
<i>Schizostachyum diffusum</i>	Gramineae	li	common
<i>Selaginella ciliaris</i>	Selaginellaceae	hb	common
<i>Selaginella cupredssina</i>	Selaginellaceae	hb	common
<i>Selaginella involvens</i>	Selaginellaceae	hb	common
<i>Setaria palmifolia</i>	Gramineae	gr	common
<i>Smilax china</i>	Smilacaceae	li	scarce
<i>Sphaerostephanos productos</i>	Pteridaceae	fe	common
<i>Sphaerostephanos unitus</i>	Pteridaceae	fe	common
<i>Spiridens reinwardtii</i>	Spiridentaceae	bry	rare
<i>Stenochlaena milnei</i>	Blechnaceae	fe	scarce
<i>Tetracera scandens</i>	Dilleniaceae	li	scarce
<i>Tetrastigma</i> sp.	Vitaceae	vi	scarce
<i>Thayeria cornucopia</i>	Polypodiaceae	fe	rare
<i>Trema orientalis</i>	Ulmaceae	mt	common
<i>Typha angustifolia</i>	Typhaceae	hb	rare
<i>Uncaria philippinensis</i>	Rubiaceae	li	scarce
<i>Vernonia arborea</i>	Compositae	sh	scarce
<i>Viburnum luzonicum</i>	Caprifoliaceae	sh	rare
<i>Voacanga globosa</i>	Apocynaceae	sh	scarce
<b>Edible parts</b>			
<i>Alocasia macrorrhizos</i>	Araceae	hb	common
<i>Anacardium occidentale</i>	Anacardiaceae	st	common
<i>Ananas comosus</i>	Bromeliaceae	hb	common
<i>Annona muricata</i>	Annonaceae	st	scarce

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<i>Annona squamosa</i>	Annonaceae	st	scarce
<i>Arachis hypogea</i>	Papilionaceae	h	common
<i>Artocarpus altilis</i>	Moraceae	l	common
<i>Artocarpus communis</i>	Moraceae	l	common
<i>Artocarpus heterophyllus</i>	Moraceae	lt	common
<i>Artocarpus odoratissimus</i>	Moraceae	mt	common
<i>Atuna racemosa</i>	Chrysobalanaceae	m	scarce
<i>Calamus merrillii</i>	Palmae	li	scarce
<i>Carica papaya</i>	Caricaceae	tl	common
<i>Chrysophyllum cainito</i>	Sapotaceae	mt	common
<i>Citrofortunella microcarpa</i>	Rutaceae	st	common
<i>Citrus limon</i>	Rutaceae	st	scarce
<i>Citrus maxima</i>	Rutaceae	st	common
<i>Cocos nucifera</i> cv. 'Green Tall'	Palmae	tl	common
<i>Colocasia esculenta</i>	Araceae	hb	common
<i>Corypha utan</i>	Palmae	tl	scarce
<i>Cyrtosperma merkusii</i>	Araceae	hb	scarce
<i>Dioscorea alata</i>	Dioscoreaceae	vi	scarce
<i>Dioscorea esculenta</i>	Dioscoreaceae	vi	scarce
<i>Diospyros pilosanthera</i>	Ebenaceae	lt	scarce
<i>Diplazium esculentum</i>	Athyriaceae	fe	scarce
<i>Durio zibethinus</i>	Bombaceae	mt	common
<i>Elaeagnus philippinensis</i>	Elaeagnaceae	li	scarce
<i>Elaeocarpus calomala</i>	Elaeocarpaceae	mt	scarce
<i>Elatostema pulchellum</i>	Urticaceae	hb	common
<i>Fragaria virginiana</i>	Rosaceae	vi	scarce
<i>Garcinia mangostana</i>	Guttiferae	st	scarce
<i>Ipomoea batatas</i>	Convolvulaceae	vi	common
<i>Lansium domesticum</i>	Meliaceae	mt	scarce
<i>Mangifera indica</i>	Anacardiaceae	lt	common
<i>Manihot esculenta</i>	Euphorbiaceae	sh	common
<i>Muntingia calabura</i>	Tiliaceae	st	common
<i>Muxa x paradisiaca</i> (AAB)	Musaceae	tl	common
<i>Musa x paradisiaca</i> (BBB)	Musaceae	tl	common
<i>Nephelium lappaceum</i>	Sapindaceae	st	scarce
<i>Nephelium ramboutan-oke</i>	Sapindaceae	mt	scarce
<i>Oncosperma horridum</i>	Palmae	tl	rare
<i>Pachyrhizus erosus</i>	Papilionaceae	vi	scarce
<i>Passiflora foetida</i>	Passifloraceae	vi	scarce
<i>Persea americana</i>	Lauraceae	st	common
<i>Pouteria campechiana</i>	Sapotaceae	st	scarce
<i>Psidium guajava</i>	Myrtaceae	st	common
<i>Punica granatum</i>	Punicaceae	st	rare
<i>Pyrus malus</i>	Rosaceae	st	rare
<i>Rubus fraxinifolius</i>	Rosaceae	li	common
<i>Rubus rosaefolius</i>	Rosaceae	sh	common
<i>Saccharum officinarum</i>	Gramineae	gr	common
<i>Sandoricum koetjape</i>	Meliaceae	mt	common
<i>Syzygium cumini</i>	Myrtaceae	st	scarce
<i>Syzygium malaccense</i>	Myrtaceae	st	scarce
<i>Syzygium olycephaloides</i>	Myrtaceae	st	rare

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<i>Syzygium samarangense</i>	Myrtaceae	st	scarce
<i>Tamarindus indica</i>	Caesalpiniaceae	mt	scarce
<i>Xanthosoma sagittifolium</i>	Araceae	hb	common
<i>Zea mays</i>	Gramineae	gr	common
<b>Fiber source</b>			
<i>Ceiba pentandra</i>	Bombacaceae	lt	common
<i>Colona serratifolia</i>	Tiliaceae	mt	scarce
<i>Duabanga moluccana</i>	Sonneratiaceae	lt	scarce
<i>Elaeocarpus calomala</i>	Elaeocarpaceae	mt	scarce
<i>Gossypium barbadense</i>	Malvaceae	sh	scarce
<i>Hibiscus cannabinus</i>	Malvaceae	sh	scarce
<i>Musa textilis</i>	Musaceae	tl	common
<i>Nauclea orientalis</i>	Rubiaceae	mt	common
<i>Neonauclea bartlingii</i>	Rubiaceae	mt	common
<i>Neonauclea media</i>	Rubiaceae	mt	common
<i>Ochroma lagopus</i>	Bombacaceae	lt	rare
<i>Octomeles sumatrana</i>	Datisceae	lt	scarce
<i>Pterochymbium peltatum</i>	Sterculiaceae	mt	rare
<i>Pterospermum diversifolium</i>	Sterculiaceae	mt	scarce
<i>Pterospermum obliquum</i>	Sterculiaceae	mt	scarce
<i>Wikstroemia indica</i>	Thymelaeaceae	sh	rare
<b>Fuelwood source</b>			
<i>Colona serratifolia</i>	Tiliaceae Guttiferae	mt	scarce
<i>Cartoxylon celebicum</i>	Guttiferae	st	scarce
<i>Cartoxylon formosanum</i>	Guttiferae	st	scarce
<i>Gliricidia sepium</i>	Caesalpiniaceae	st	scarce
<i>Leucaena leucocephala</i>	Mimosaceae	st	common
<i>Trema orientalis</i>	Ulmaceae	mt	common
<b>Green manure/fertilizer</b>			
<i>Centrosema pubescens</i>	Papilionaceae	vi	common
<i>Calopogonium mucunoides</i>	Papilionaceae	vi	common
<i>Desmodium suffruticosum</i>	Papilionaceae	hb	common
<i>Pueraria phaseoloides</i>	Papilionaceae	vi	common
<b>Hedge plants</b>			
<i>Bambusa glaucescens</i>	Gramineae	tl	scarce
<i>Calliandra haematocephala</i>	Mimosaceae	sh	scarce
<i>Codiaeum variegatum</i>	Euphorbiaceae	sh	common
<i>Desmodium suffruticosum</i>	Papilionaceae	hb	common
<i>Duranta erecta</i>	Malpighiaceae	sh	common
<i>Gendarussa vulgaris</i>	Acanthaceae	sh	common
<i>Hibiscus rosa-sinensis</i>	Malvaceae	sh	common
<i>Malvaviscus pilosus</i>	Malvaceae	sh	scarce
<i>Odontonema strictum</i>	Acanthaceae	sh	common
<i>Polyscias balfouriana</i>	Araliaceae	sh	common
<i>Pseuderanthemum purpureum</i>	Acanthaceae	sh	common
<i>Pseuderanthemum reticulatum</i>	Acanthaceae	sh	common
<i>Sansevieria trifasciata</i>	Agavaceae	hb	scarce

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<b>Instructional material</b>			
<i>Lycopodium cernuum</i>	Lycopodiaceae	vi	common
<i>Lycopodium squarrosum</i>	Lycopodiaceae	vi	scarce
<i>Lygodium circinatum</i>	Schizaeaceae	fe	scarce
<i>Lygodium merrillii</i>	Schizaeaceae	fe	scarce
<b>Landscape plants</b>			
<i>Ardisia pyramidalis</i>	Myrsinaceae	st	scarce
<i>Arenga tremula</i>	Palmae	tl	scarce
<i>Astronia cumingiana</i>	Melastomataceae	st	common
<i>Bambusa vulgaris</i> var. <i>striata</i>	Gramineae	tl	scarce
<i>Barringtonia racemosa</i>	Barringtoniaceae	mt	scarce
<i>Boerlagiodendron diversifolium</i>	Araliaceae	st	scarce
<i>Bougainvillea spectabilis</i>	Nyctaginaceae	li	common
<i>Buchanania arborescens</i>	Anacardiaceae	mt	scarce
<i>Caryota rumphiana</i> ssp. <i>philippinensis</i>	Palmae	tl	scarce
<i>Cassia javanica</i>	Caesalpiniaceae	mt	scarce
<i>Ceiba pentandra</i>	Bombacaceae	lt	common
<i>Chrysalidocarpus lutescens</i>	Palmae	tl	scarce
<i>Cyathea callosa</i>	Cyatheaceae	fe	scarce
<i>Cyathea contaminans</i>	Cyatheaceae	fe	common
<i>Cyathea loheri</i>	Cyatheaceae	fe	scarce
<i>Cycas revoluta</i>	Cycadaceae	tl	scarce
<i>Dracaena fragrans</i>	Agavaceae	tl	common
<i>Erythrina orientalis</i>	Papilionaceae	st	common
<i>Ficus benjamina</i>	Moraceae	st	common
<i>Hibiscus tilliaceous</i>	Malvaceae	st	scarce
<i>Lagestroemia speciosa</i>	Lythraceae	st	scarce
<i>Leea philippinensis</i>	Leeaceae	st	scarce
<i>Livistona rotundifolia</i>	Palmae	tl	rare
<i>Pinanga philippinensis</i>	Palmae	tl	scarce
<i>Plumeria alba</i>	Apocynaceae	st	scarce
<i>Terminalia catappa</i>	Combretaceae	mt	scarce
<i>Terminalia nitens</i>	Combretaceae	mt	scarce
<i>Thespesia populnea</i>	Malvaceae	st	scarce
<i>Theveria peruviana</i>	Apocynaceae	st	scarce
<i>Thuja orientale</i>	Cupressaceae	st	scarce
<i>Zoysia matrella</i>	Gramineae	gr	common
<b>Light construction material</b>			
<i>Duabanga moluccana</i>	Sonneratiaceae	lt	scarce
<i>Ochroma lagopus</i>	Bombaceae	lt	rare
<i>Octomeles sumatrana</i>	Datisceae	lt	scarce
<b>Live fence</b>			
<i>Gliricidia sepium</i>	Caesalpiniaceae	st	common
<i>Leucaena leucocephala</i>	Mimosaceae	st	common
<b>Masticatory</b>			
<i>Areca catechu</i>	Palmae	tl	scarce

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<b>Medicinal plants</b>			
<i>Abrus precatorius</i>	Papilionaceae	li	rare
<i>Acorus calamus</i>	Araceae	li	rare
<i>Artemisia vulgaris</i>	Compositae	hb	common
<i>Blumea balsamifera</i>	Compositae	sh	common
<i>Cassia alata</i>	Caesalpiniaceae	sh	common
<i>Catharanthus roseus</i>	Apocynaceae	hb	common
<i>Cordia dichotoma</i>	Boraginaceae	st	scarce
<i>Datura metel</i>	Solanaceae	sh	scarce
<i>Ficus septica</i>	Moraceae	st	common
<i>Lobaria meridionalis</i>	Lobariaceae	lic	scarce
<i>Lobaria robinsonii</i>	Lobariaceae	lic	scarce
<i>Premna odorata</i>	Verbenaceae	st	scarce
<i>Ricinus communis</i>	Euphorbiaceae	st	common
<i>Symphytum officinale</i>	Verbenaceae	hb	rare
<i>Usnea misamisensis</i>	Usneaceae	lic	scarce
<i>Vitex negundo</i>	Verbenaceae	sh	scarce
<b>Orchid medium</b>			
<i>Cyathea callosa</i>	Cyatheaceae	fe	scarce
<i>Cyathea contaminans</i>	Cyatheaceae	fe	common
<i>Cyathea loheri</i>	Cyatheaceae	fe	scarce
<i>Gliricidia sepium</i>	Caesalpiniaceae	st	scarce
<b>Ornamental plants</b>			
<i>Acalypha amentacea</i>	Euphorbiaceae	sh	common
<i>Adiantum philippense</i>	Sinopteridaceae	fe	common
<i>Agave americana</i>	Agavaceae	hb	scarce
<i>Aglaonema commutatum</i>	Araceae	hb	common
<i>Alocasia bicolor</i>	Araceae	hb	common
<i>Alocasia zebrina</i>	Araceae	hb	common
<i>Alternanthera ficoidea</i>	Amaranthaceae	hb	common
<i>Amomum philippinense</i>	Zingiberaceae	hb	scarce
<i>Angiopteris palmiformis</i>	Marattiaceae	fe	common
<i>Anthurium andreaeanum</i>	Araceae	hb	common
<i>Ardisia pyramidalis</i>	Myrsinaceae	st	scarce
<i>Asparagus sprengeri</i>	Liliaceae	vi	scarce
<i>Asplenium cymbifolium</i>	Aspleniaceae	fe	scarce
<i>Asplenium nidus</i>	Aspleniaceae	fe	common
<i>Asplenium polyodon</i>	Aspleniaceae	fe	scarce
<i>Aster linifolius</i>	Compositae	hb	scarce
<i>Begonia hernandioides</i>	Begoniaceae	hb	scarce
<i>Begonia nigritarum</i>	Begoniaceae	hb	scarce
<i>Belamcanda chinensis</i>	Liliaceae	hb	scarce
<i>Blechnum orientale</i>	Blechnaceae	fe	common
<i>Bougainvillea spectabilis</i>	Nyctaginaceae	li	common
<i>Bulbophyllum auratum</i>	Orchidaceae	hb	scarce
<i>Bulbophyllum dearei</i>	Orchidaceae	hb	scarce
<i>Caladium bicolor</i>	Araceae	hb	common
<i>Calliandra haematocephala</i>	Mimosaceae	sh	scarce

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<i>Canna indica</i>	Cannaceae	hb	common
<i>Carphalea kirondron</i>	Rubiaceae	sh	scarce
<i>Cassia nodosa</i>	Caesalpiniaceae	sh	common
<i>Cathranthus roseus</i>	Apocynaceae	hb	common
<i>Cestrum nocturnum</i>	Solanaceae	vi	scarce
<i>Chingia ferox</i>	Thelypteridaceae	fe	common
<i>Chrysanthemum indicum</i>	Compositae	hb	scarce
<i>Clerodendron macrostachyum</i>	Verbenaceae	st	scarce
<i>Clerodendron quadriloculare</i>	Verbenaceae	st	scarce
<i>Codiaeum variegatum</i>	Euphorbiaceae	sh	common
<i>Coleus blumei</i>	Labiatae	hb	common
<i>Coleus igolotorum</i>	Labiatae	hb	scarce
<i>Cordyline fruticosa</i>	Agavaceae	sh	common
<i>Cosmos caudatus</i>	Compositae	hb	common
<i>Costus speciosus</i>	Zingiberaceae	hb	scarce
<i>Crinum asiaticum</i>	Amaryllidaceae	hb	scarce
<i>Crypsinus glaucus</i>	Polypodiaceae	fe	common
<i>Crypsinus</i> sp.	Polypodiaceae	fe	common
<i>Cuphea hyssopifolia</i>	Lythraceae	sh	common
<i>Cyriandra cumingii</i>	Gesneriaceae	st	scarce
<i>Davallia solida</i>	Davalliaceae	fe	common
<i>Dieffenbachia picta</i>	Araceae	hb	common
<i>Donax cannaeformis</i>	Marantaceae	hb	scarce
<i>Drynaria quercifolia</i>	Polypodiaceae	fe	common
<i>Duranta erecta</i>	Malpighiaceae	sh	common
<i>Eleutherine palmifolia</i>	Amaryllidaceae	hb	scarce
<i>Euphorbia pulcherrima</i>	Euphorbiaceae	sh	scarce
<i>Eurycles amboinensis</i>	Liliaceae	hb	rare
<i>Gardenia jasminoides</i>	Rubiaceae	sh	scarce
<i>Gendarussa vulgaris</i>	Acanthaceae	sh	common
<i>Gerbera</i> sp.	Compositae	hb	common
<i>Heliconia metallica</i>	Heliconiaceae	hb	scarce
<i>Hibiscus cannabinus</i>	Malvaceae	sh	scarce
<i>Hibiscus rosa-sinensis</i>	Malvaceae	sh	common
<i>Hippeastrum</i> sp.	Amaryllidaceae	hb	scarce
<i>Homalomena philippinensis</i>	Araceae	hb	common
<i>Homalomena rubescens</i>	Araceae	hb	scarce
<i>Hoya</i> sp.	Asclepiadaceae	ep	scarce
<i>Hydrangea lobbii</i>	Hydrangeaceae	sh	rare
<i>Impatiens balsamina</i>	Balsaminaceae	hb	common
<i>Impatiens hutchinsonii</i>	Balsaminaceae	hb	common
<i>Iresine herbstii</i>	Amaranthaceae	hb	scarce
<i>Ixora philippinensis</i>	Rubiaceae	sh	common
<i>Kalanchoe pinnata</i>	Crassulaceae	hb	scarce
<i>Lantana camara</i>	Verbenaceae	sh	common
<i>Macrothelypteris polypodioides</i>	Thelypteridaceae	fe	common
<i>Malvaviscus pilosus</i>	Malvaceae	sh	scarce
<i>Medinilla magnifica</i>	Melastomataceae	ep	rare
<i>Medinilla malindangensis</i>	Melastomataceae	ep	scarce
<i>Medinilla myrtiformis</i>	Melastomataceae	ep	scarce
<i>Mussaenda anisophylla</i>	Rubiaceae	sh	scarce

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<i>Mussaenda philippica</i>	Rubiaceae	sh	scarce
<i>Nephrolepis biserrata</i>	Davalliaceae	fe	common
<i>Nopalea cochinellifera</i>	Cactaceae	hb	rare
<i>Odontonema strictum</i>	Acanthaceae	sh	common
<i>Ophiopogon japonicus</i>	Liliaceae	hb	common
<i>Orthosiphon aristatus</i>	Labiatae	sh	common
<i>Phalaenopsis amabilis</i>	Orchidaceae	hb	scarce
<i>Pityrogramma calomelanos</i>	Sinopteridaceae	fe	common
<i>Pteris vittata</i>	Pteridaceae	fe	common
<i>Punica granatum</i>	Punicaceae	st	rare
<i>Rhaphidophora merrillii</i>	Araceae	vi	scarce
<i>Rosa centifolia</i>	Rosaceae	sh	common
<i>Sambucus javanica</i>	Caprifoliaceae	st	scarce
<i>Spathiphyllum</i> sp.	Orchidaceae	hb	scarce
<i>Sphenomeris chinensis</i>	Lindsaeaceae	fe	common
<i>Syngonium podophyllum</i>	Araceae	vi	scarce
<i>Tagetes erecta</i>	Compositae	hb	scarce
<i>Tradescantia</i> sp.	Commelinaceae	hb	common
<i>Trichoglottis</i> sp.	Orchidaceae	hb	scarce
<i>Zephyranthes atamasco</i>	Amaryllidaceae	hb	scarce
<i>Zingiber zerumbet</i>	Zingiberaceae	hb	scarce
<b>Pasture/forage plants</b>			
<i>Centotheca lappacea</i>	Gramineae	gr	common
<i>Panicum maximum</i>	Gramineae	gr	common
<i>Paspalidium flavescens</i>	Gramineae	gr	common
<i>Paspalum conjugatum</i>	Gramineae	gr	common
<i>Paspalum distichum</i>	Gramineae	gr	common
<i>Paspalum scrobiculatum</i>	Gramineae	gr	common
<i>Pennisetum polystachyon</i>	Gramineae	gr	common
<i>Sorghum halepense</i>	Gramineae	gr	common
<b>Poisonous plants</b>			
<i>Datura metel</i>	Solanaceae	sh	scarce
<i>Derris philippinensis</i>	Papilionaceae	li	scarce
<b>Soil erosion control</b>			
<i>Bambusa blumeana</i>	Gramineae	tl	common
<i>Bambusa glaucescens</i>	Gramineae	tl	scarce
<i>Bambusa vulgaris</i> var. <i>striata</i>	Gramineae	tl	scarce
<i>Bambusa vulgaris</i>	Gramineae	tl	common
<i>Panicum maximum</i>	Gramineae	gr	common
<i>Paspalidium flavescens</i>	Gramineae	gr	common
<i>Paspalum conjugatum</i>	Gramineae	gr	common
<i>Paspalum distichum</i>	Gramineae	gr	common
<i>Paspalum scrobiculatum</i>	Gramineae	gr	common
<i>Pennisetum polystachyon</i>	Gramineae	gr	common
<i>Setaria palmifolia</i>	Gramineae	gr	common
<i>Sorghum halepense</i>	Gramineae	gr	common

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<i>Themeda gigantea</i>	Gramineae	gr	common
<i>Themeda triandra</i>	Gramineae	gr	scarce
<i>Zoysia matrella</i>	Gramineae	gr	common
<b>Shade plants</b>			
<i>Acacia mangium</i>	Mimosaceae	st	common
<i>Cassia javanica</i>	Caesalpiniaceae	mt	scarce
<i>Samanea saman</i>	Mimosaceae	lt	scarce
<i>Terminalia catappa</i>	Combretaceae	mt	scarce
<b>Spice/condiments</b>			
<i>Andropogon citratus</i>	Gramineae	gr	common
<i>Apium graveolens</i>	Apiaceae	hb	common
<i>Capsicum annuum</i> var. <i>annuum</i>	Solanaceae	sh	common
<i>Capsicum frutescens</i>	Solanaceae	sh	common
<i>Centella asiatica</i>	Apaceae	hb	common
<i>Curcuma domestica</i>	Zingiberaceae	hb	scarce
<i>Mentha arvensis</i>	Labiatae	hb	common
<i>Mentha arvensis</i> var. <i>piperata</i>	Labiatae	hb	common
<i>Ocimum sanctum</i>	Labiatae	sh	scarce
<b>Timber source</b>			
<i>Acacia mangium</i>	Mimosaceae	st	common
<i>Adenantha intermedia</i>	Mimosaceae	lt	scarce
<i>Agathis philippinensis</i>	Araucariaceae	lt	scarce
<i>Alstonia macrophylla</i>	Apocynaceae	lt	common
<i>Alstonia scholaris</i>	Apocynaceae	lt	common
<i>Anisoptera thurifera</i>	Dipterocarpaceae	lt	scarce
<i>Bischofia javanica</i>	Bischofiaceae	lt	scarce
<i>Calophyllum kuenstleri</i>	Guttiferae	mt	scarce
<i>Canarium hirsutum</i> f. <i>multipinnatum</i>	Burseraceae	lt	scarce
<i>Celtis luzonica</i>	Ulmaceae	lt	scarce
<i>Celtis philippinensis</i>	Ulmaceae	lt	scarce
<i>Dacrycarpus imbricatus</i>	Podocarpaceae	lt	scarce
<i>Dalbergia</i> sp.	Papilionaceae	mt	scarce
<i>Diospyros pilosanthera</i>	Ebenaceae	lt	scarce
<i>Dipterocarpus gracilis</i>	Dipterocarpaceae	lt	scarce
<i>Dysoxylum gaudichaudianum</i>	Meliaceae	lt	scarce
<i>Elaeocarpus calomala</i>	Elaeocarpaceae	mt	scarce
<i>Eucalyptus deglupta</i>	Myrtaceae	lt	scarce
<i>Gmelina arborea</i>	Verbenaceae	mt	scarce
<i>Gymnostoma rumphianum</i>	Casuarinaceae	mt	common
<i>Lithocarpus mindanaensis</i>	Fagaceae	mt	common
<i>Lithocarpus philippinensis</i>	Fagaceae	lt	scarce
<i>Lithocarpus sundaica</i>	Fagaceae	mt	common
<i>Madhuca betis</i>	Sapotaceae	lt	scarce
<i>Melia dubia</i>	Mimosaceae	lt	rare
<i>Palaquium luzonense</i>	Sapotaceae	lt	scarce
<i>Paraserianthes falcataria</i>	Meliaceae	lt	common
<i>Phyllocladus hypophyllus</i>	Araucariaceae	mt	rare
<i>Pittosporum pentandrum</i>	Pittosporaceae	mt	rare

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<i>Pometia pinnata</i>	Sapindaceae	lt	scarce
<i>Samanea saman</i>	Mimosaceae	lt	scarce
<i>Shorea contorta</i>	Dipterocarpaceae	lt	scarce
<i>Shorea negrosensis</i>	Dipterocarpaceae	lt	scarce
<i>Swietenia macrophylla</i>	Meliaceae	lt	common
<b>Vegetables</b>			
<i>Abelmoschus esculentus</i>	Malvaceae	sh	common
<i>Allium cepa</i>	Liliaceae	hb	common
<i>Basella alba</i>	Basellaceae	vi	scarce
<i>Basella rubra</i>	Basellaceae	vi	scarce
<i>Brassica oleracea</i>	Brassicaceae/Cruciferae	hb	common
<i>Centella asiatica</i>	Apiaceae	hb	common
<i>Cucurbita maxima</i>	Cucurbitaceae	vi	common
<i>Daucus carota</i>	Umbelliferae	hb	scarce
<i>Moringa oleifera</i>	Moringaceae	st	common
<i>Sechium edule</i>	Cucurbitaceae	hb	common
<i>Solanum melongena</i>	Solanaceae	sh	common
<i>Solanum nigrum</i>	Solanaceae	sh	scarce
<i>Solanum</i> sp. (wild)	Solanaceae	sh	scarce
<b>Weeds</b>			
<i>Abutilon indicum</i>	Malvaceae	sh	common
<i>Aeschynomene sensitiva</i>	Mimosaceae	hb	common
<i>Ageratina adenophora</i>	Compositae	hb	common
<i>Ageratum conyzoides</i>	Compositae	hb	common
<i>Alysicarpus vaginalis</i>	Papilionaceae	vi	common
<i>Amaranthus spinosus</i>	Amaranthaceae	hb	common
<i>Aschyranthes aspera</i>	Amaranthaceae	hb	common
<i>Asclepia curassavica</i>	Asclepiadaceae	hb	common
<i>Asystacia gangetica</i>	Acanthaceae	hb	common
<i>Axonopus compressus</i>	Gramineae	gr	common
<i>Barleria cristata</i>	Acanthaceae	hb	common
<i>Bidens pilosa</i>	Compositae	hb	common
<i>Biophytum sensitivum</i>	Oxalidaceae	hb	common
<i>Blechnum pyramidatum</i>	Acanthaceae	hb	common
<i>Borreria laevis</i>	Acanthaceae	hb	common
<i>Brachiaria mutica</i>	Gramineae	gr	common
<i>Calopogonium mucunoides</i>	Papilionaceae	vi	common
<i>Cassia occidentalis</i>	Caesalpiniaceae	sh	common
<i>Cassia tora</i>	Caesalpiniaceae	sh	common
<i>Centotheca lappacea</i>	Gramineae	gr	common
<i>Centrosema pubescens</i>	Papilionaceae	vi	common
<i>Chloris barbata</i>	Gramineae	gr	common
<i>Chromolaena odorata</i>	Compositae	sh	common
<i>Chrysopogon aciculatus</i>	Gramineae	gr	common
<i>Clitoria ternatea</i>	Papilionaceae	vi	common
<i>Commelina benghalensis</i>	Commelinaceae	hb	common
<i>Commelina diffusa</i>	Commelinaceae	hb	common
<i>Commersonia bartramia</i>	Tiliaceae	st	scarce
<i>Crassocephalum crepidioides</i>	Compositae	hb	common

Appendix Table 4. Continued...

Taxon	Family	Habit**	Conservation status
<i>Crotalaria linifolia</i>	Caesalpinaceae	sh	common
<i>Crotalaria saltiana</i>	Caesalpinaceae	sh	common
<i>Cyanotis axillaris</i>	Commelinaceae	hb	common
<i>Cynodon dactylon</i>	Gramineae	gr	common
<i>Cyperus alternifolius</i>	Cyperaceae	hb	common
<i>Cyperus compactus</i>	Cyperaceae	hb	common
<i>Cyperus flabelliformis</i>	Cyperaceae	hb	common
<i>Cyperus iria</i>	Cyperaceae	hb	common
<i>Cyperus kyllingia</i>	Cyperaceae	hb	common
<i>Cyperus rotundus</i>	Cyperaceae	hb	common
<i>Cyrtococcum patens</i>	Gramineae	gr	common
<i>Dactyloctenium aegypticum</i>	Gramineae	gr	common
<i>Datura metel</i>	Solanaceae	sh	scarce
<i>Desmodium capitatum</i>	Papilionaceae	hb	common
<i>Desmodium heterocarpon</i>	Papilionaceae	hb	scarce
<i>Desmodium pulchellum</i>	Papilionaceae	sh	common
<i>Desmodium triflorum</i>	Papilionaceae	sh	scarce
<i>Desmodium umbellatum</i>	Papilionaceae	sh	scarce
<i>Desmodium velutinum</i>	Papilionaceae	sh	common
<i>Digitaria ciliaris</i>	Gramineae	gr	common
<i>Echinochloa colona</i>	Gramineae	gr	common
<i>Echinochloa crus-galli</i>	Gramineae	gr	common
<i>Eclipta rostrata</i>	Compositae	hb	common
<i>Elephantopus scaber</i>	Compositae	hb	common
<i>Elephantopus spicatus</i>	Compositae	hb	common
<i>Elephantopus tomentosus</i>	Compositae	hb	common
<i>Eleusine indica</i>	Gramineae	gr	common
<i>Emilia sonchifolia</i>	Compositae	hb	common
<i>Euphorbia heterophylla</i>	Euphorbiaceae	hb	common
<i>Euphorbia hirta</i>	Euphorbiaceae	hb	common
<i>Fimbristylis dichotoma</i>	Cyperaceae	hb	common
<i>Fimbristylis monostachya</i>	Cyperaceae	hb	common
<i>Hygrophila salicifolia</i>	Acanthaceae	sh	common
<i>Ichnocarpus volubilis</i>	Apocynaceae	vi	scarce
<i>Indigofera tinctoria</i>	Papilionaceae	sh	scarce
<i>Ipomoea quamoclit</i>	Convolvulaceae	vi	scarce
<i>Ipomoea triloba</i>	Convolvulaceae	vi	common
<i>Lantana camara</i>	Verbenaceae	sh	common
<i>Laportea brunnea</i>	Urticaceae	sh	common
<i>Lindernia crustacea</i>	Scrophulariaceae	hb	common
<i>Merremia peltata</i>	Convolvulaceae	vi	common
<i>Mikania cordata</i>	Compositae	vi	common
<i>Mimosa invisa</i>	Mimosaceae	hb	scarce
<i>Mimosa pudica</i>	Mimosaceae	hb	common
<i>Operculina turpethum</i>	Convolvulaceae	vi	common
<i>Oplismenus compositus</i>	Gramineae	gr	common
<i>Oxalis repens</i>	Oxalidaceae	hb	common
<i>Panicum maximum</i>	Gramineae	gr	common
<i>Paspalidium flavescens</i>	Convolvulaceae	gr	common
<i>Paspalum conjugatum</i>	Convolvulaceae	gr	common
<i>Paspalum distichum</i>	Convolvulaceae	gr	common

**Appendix Table 4. Continued...**

Taxon	Family	Habit**	Conservation status
<i>Paspalum scrobiculatum</i>	Gramineae	gr	common
<i>Passiflora foetida</i>	Passifloraceae	vi	scarce
<i>Pennisetum polystachyon</i>	Gramineae	gr	common
<i>Phaseolus lathyroides</i>	Papilionaceae	vi	common
<i>Phyllanthus amarus</i>	Euphorbiaceae	sh	common
<i>Phyllanthus urinaria</i>	Euphorbiaceae	sh	common
<i>Physalis angulata</i>	Solanaceae	sh	rare
<i>Pteridium aquilinum</i>	Dennstaedtiaceae	fe	common
<i>Pueraria phaseoloides</i>	Papilionaceae	vi	common
<i>Scleria lithosperma</i>	Cyperaceae	hb	common
<i>Scleria scrobiculata</i>	Cyperaceae	hb	common
<i>Sida acuta</i>	Malvaceae	sh	common
<i>Sida cordifolia</i>	Malvaceae	sh	common
<i>Sida rhombifolia</i>	Malvaceae	sh	common
<i>Solanum torvum</i>	Solanaceae	sh	common
<i>Solanum verbascifolium</i>	Solanaceae	sh	common
<i>Sorghum halepense</i>	Gramineae	gr	common
<i>Sphenoclea zeylanica</i>	Sphenocleaceae	sh	common
<i>Stachytarpheta indica</i>	Verbenaceae	sh	common
<i>Stachytarpheta jamaicensis</i>	Verbenaceae	sh	common
<i>Synedrella nodiflora</i>	Compositae	hb	common
<i>Themeda gigantea</i>	Gramineae	gr	common
<i>Themeda triandra</i>	Gramineae	gr	scarce
<i>Tridax procumbens</i>	Compositae	hb	common
<i>Triumfetta bartramia</i>	Tiliaceae	sh	common
<i>Triumfetta semitriloba</i>	Tiliaceae	sh	common
<i>Urena lobata</i>	Malvaceae	sh	common
<i>Vernonia cinerea</i>	Compositae	hb	common
<i>Vernonia patula</i>	Compositae	hb	common
<i>Wedelia triloba</i>	Compositae	hb	common
<i>Zoysia matrella</i>	Gramineae	gr	common

\*Don Victoriano:

(1) Mansawan, (2) Gandawan, (3) Lake Duminagat, (4) Lampasan, (5) Tuno, and (6) Lalud

Concepcion:

(7) Small Potongan, (8) Upper Potongan, (9) Virayan, (10) Poblacion Concepcion, and (11) Upper Salimpuno, Sapang Dalaga: (12) Sixto Velez

\*\* bry = bryophyte

fe = fern

gr = grass

hb = herb

li = liana (woody vine)

lic = lichen (Kingdom Fungi/Mycetae)

lt = large tree

mt = medium-sized tree

sh = shrub

st = small tree

tl = tree-like

vi = vine

**Appendix Table 5. List of plant and lichen species recorded from 12 barangays\*. Taxa arranged according to conservation status with corresponding family, habit, and uses.**

Status/Taxon	Family	Habit**	Uses
<b>Common</b>			
<i>Abelmoschus esculentus</i>	Malvaceae	sh	veg
<i>Abutilon indicum</i>	Malvaceae	sh	w
<i>Acacia mangium</i>	Mimosaceae	st	tm
<i>Acalypha amentacea</i>	Euphorbiaceae	sh	or
<i>Adiantum philippense</i>	Sinopteridaceae	fe	or
<i>Aeschynomene sensitiva</i>	Mimosaceae	hb	w
<i>Ageratina adenophora</i>	Compositae	hb	w
<i>Ageratum conyzoides</i>	Compositae	hb	w
<i>Aglaonema commutatum</i>	Araceae	hb	or
<i>Allium cepa</i>	Liliaceae	hb	veg
<i>Alocasia bicolor</i>	Araceae	hb	or
<i>Alocasia macrorrhizos</i>	Araceae	hb	ed
<i>Alocasia zebrina</i>	Araceae	hb	or
<i>Alstonia macrophylla</i>	Apocynaceae	lt	tm
<i>Alstonia scholaris</i>	Apocynaceae	lt	tm
<i>Alternanthera ficoides</i>	Amaranthaceae	hb	or
<i>Alysicarpus vaginalis</i>	Papilionaceae	vi	w
<i>Amaranthus spinosus</i>	Amaranthaceae	hb	w
<i>Anacardium occidentale</i>	Anacardiaceae	st	ed
<i>Ananas comosus</i>	Bromeliaceae	hb	ed
<i>Andropogon citratus</i>	Gramineae	gr	sp
<i>Angiopteris palmiformis</i>	Marattiaceae	fe	or
<i>Anthurium andreaeanum</i>	Araceae	hb	or
<i>Apium graveolens</i>	Apiaceae	hb	sp
<i>Arachis hypogea</i>	Papilionaceae	hb	ed
<i>Aralia spinosa</i>	Araliaceae	mt	ec
<i>Artemisia vulgaris</i>	Compositae	hb	med
<i>Artocarpus altilis</i>	Moraceae	lt	ed
<i>Artocarpus blancoi</i>	Moraceae	lt	ec
<i>Artocarpus communis</i>	Moraceae	lt	ed
<i>Artocarpus heterophyllus</i>	Moraceae	lt	ed
<i>Artocarpus odoratissimus</i>	Moraceae	mt	ed
<i>Artocarpus sericicarpus</i>	Moraceae	lt	ec
<i>Aschyranthes aspera</i>	Amaranthaceae	hb	w
<i>Asclepia curassavica</i>	Asclepiadaceae	hb	w
<i>Asplenium nidus</i>	Aspleniaceae	fe	or
<i>Astronia cumingiana</i>	Melastomataceae	st	lan
<i>Asystacia gangetica</i>	Acanthaceae	hb	w
<i>Axonopus compressus</i>	Gramineae	gr	w
<i>Bambusa blumeana</i>	Gramineae	tl	cm, sec
<i>Bambusa vulgaris</i>	Gramineae	tl	cm, sec
<i>Barleria cristata</i>	Acanthaceae	hb	w

Appendix Table 5. Continued...

Status/Taxon	Family	Habit**	Uses
<i>Bidens pilosa</i>	Compositae	hb	w
<i>Biophytum sensitivum</i>	Oxalidaceae	hb	w
<i>Blechnum orientgale</i>	Blechnaceae	fe	or
<i>Blechnum pyramidatum</i>	Acanthaceae	hb	w
<i>Blumea balsamifera</i>	Compositae	sh	med
<i>Borreria laevis</i>	Acanthaceae	hb	w
<i>Bougainvillea spectabilis</i>	Nyctaginaceae	li	or, lan
<i>Brachiaria mutica</i>	Gramineae	gr	w
<i>Brassica oleracea</i>	Brassicaceae/Cruciferae	hb	veg
<i>Caladium bicolor</i>	Araceae	hb	or
<i>Calopogonium mucunoides</i>	Papilionaceae	vi	w
<i>Canna indica</i>	Cannaceae	hb	or
<i>Capsicum annuum</i> var. <i>annuum</i>	Solanaceae	sh	sp
<i>Capsicum frutescens</i>	Solanaceae	sh	sp
<i>Carica papaya</i>	Caricaceae	tl	ed
<i>Cassia alata</i>	Caesalpiniaceae	sh	med
<i>Cassia nodosa</i>	Caesalpiniaceae	sh	or
<i>Cassia occidentalis</i>	Caesalpiniaceae	sh	w
<i>Cassia tora</i>	Caesalpiniaceae	sh	w
<i>Catharanthus roseus</i>	Apocynaceae	hb	or, med
<i>Ceiba pentandra</i>	Bombacaceae	lt	lan, fi
<i>Centella asiatica</i>	Apiaceae	hb	veg, sp
<i>Centotheca lappacea</i>	Gramineae	gr	w, pas
<i>Centrosema pubescens</i>	Papilionaceae	vi	w, gm
<i>Chingia ferox</i>	Thelypteridaceae	fe	or
<i>Chloris barbata</i>	Gramineae	gr	w
<i>Chromolaena odorata</i>	Compositae	sh	w
<i>Chrysophyllum cainito</i>	Sapotaceae	mt	ed
<i>Chrysopogon aciculatus</i>	Gramineae	gr	w
<i>Citrafortunella microcarpa</i>	Rutaceae	st	ed
<i>Citrus maxima</i>	Rutaceae	st	ed
<i>Clethra lancifolia</i>	Clethraceae	st	ec
<i>Clitorea ternatea</i>	Papilionaceae	vi	w
<i>Cocos nucifera</i> cv. 'Green Tall'	Palmae	tl	ed, cm, cot
<i>Codiaeum variegatum</i>	Euphorbiaceae	sh	hed, or
<i>Coffea robusta</i>	Rubiaceae	st	bev
<i>Coleus blumei</i>	Labiatae	hb	or
<i>Colocasia esculenta</i>	Araceae	hb	ed
<i>Commelina benghalensis</i>	Commelinaceae	hb	w
<i>Commelina diffusa</i>	Commelinaceae	hb	w
<i>Cordyline fruticosa</i>	Agavaceae	sh	or
<i>Cosmos caudatus</i>	Compositae	hb	or
<i>Crassocephalum crepidioides</i>	Compositae	hb	w
<i>Crotalaria linifolia</i>	Caesalpiniaceae	sh	w
<i>Crotalaria saltiana</i>	Caesalpiniaceae	sh	w
<i>Crypsinus glaucus</i>	Polypodiaceae	fe	or
<i>Crypsinus</i> sp.	Polypodiaceae	fe	or
<i>Cucurbita maxima</i>	Cucurbitaceae	vi	veg
<i>Cuphea hyssopifolia</i>	Lythraceae	sh	or
<i>Cyanotis axillaris</i>	Commelinaceae	hb	w
<i>Cyathea contaminans</i>	Cyatheraceae	fe	ec, lan, om

Appendix Table 5. Continued...

Status/Taxon	Family	Habit**	Uses
<i>Cynodon dactylon</i>	Gramineae	gr	w
<i>Cyperus alternifolius</i>	Cyperaceae	hb	ww
<i>Cyperus compactus</i>	Cyperaceae	hb	w
<i>Cyperus flabelliformis</i>	Cyperaceae	hb	w
<i>Cyperus iria</i>	Cyperaceae	hb	w
<i>Cyperus kyllingia</i>	Cyperaceae	hb	w
<i>Cyperus rotundus</i>	Cyperaceae	hb	w
<i>Cyrtococcum patens</i>	Gramineae	gr	w
<i>Dactyloctenium aegypticum</i>	Gramineae	gr	or
<i>Davallia solida</i>	Davalliaceae	fe	w
<i>Desmodium capitatum</i>	Papilionaceae	hb	w
<i>Desmodium pulchellum</i>	Papilionaceae	sh	gm, hed
<i>Desmodium suffruticosum</i>	Papilionaceae	hb	w
<i>Desmodium velutinum</i>	Papilionaceae	sh	ec
<i>Dicranopteris linearis</i>	Gleicheniaceae	fe	or
<i>Dieffenbachia picta</i>	Araceae	hb	w
<i>Digitaria ciliaris</i>	Gramineae	gr	lan
<i>Dracaena fragrans</i>	Agavaceae	tl	or
<i>Drynaria quercifolia</i>	Polypodiaceae	fe	hed, or
<i>Duranta erecta</i>	Malpighiaceae	sh	ed
<i>Durio zibethinus</i>	Bombaceae	mt	w
<i>Echinochloa colona</i>	Gramineae	gr	w
<i>Echinochloa crus-galli</i>	Gramineae	gr	w
<i>Eclipta rostrata</i>	Compositae	hb	ec
<i>Elatostema lagunense</i>	Urticaceae	hb	ed
<i>Elatostema pulchellum</i>	Urticaceae	hb	w
<i>Elephantopus scaber</i>	Compositae	hb	w
<i>Elephantopus spicatus</i>	Compositae	hb	w
<i>Elephantopus tomentosus</i>	Compositae	hb	w
<i>Eleusine indica</i>	Gramineae	gr	w
<i>Emilia sonchifolia</i>	Compositae	hb	lan
<i>Erythrina orientalis</i>	Papilionaceae	st	w
<i>Euphorbia heterophylla</i>	Euphorbiaceae	hb	w
<i>Euphorbia hirta</i>	Euphorbiaceae	hb	lan
<i>Ficus benjamina</i>	Moraceae	st	ec
<i>Ficus botryocarpa</i>	Moraceae	st	ec
<i>Ficus guyeri</i>	Moraceae	st	ec
<i>Ficus minahassae</i>	Moraceae	mt	ec
<i>Ficus nota</i>	Moraceae	st	med, ec
<i>Ficus septica</i>	Moraceae	st	ec
<i>Ficus ulmifolia</i>	Moraceae	st	ec
<i>Ficus variegata</i>	Moraceae	mt	w
<i>Fimbristylis dichotoma</i>	Cyperaceae	hb	w
<i>Fimbristylis monostachya</i>	Cyperaceae	hb	hed, or
<i>Gendarussa vulgaris</i>	Acanthaceae	sh	or
<i>Gerbera</i> sp.	Compositae	hb	tm
<i>Gymnostoma rumphianum</i>	Casuarinaceae	mt	hed, or
<i>Hibiscus rosa-sinensis</i>	Malvaceae	sh	ec
<i>Homalanthus alpinus</i>	Euphorbiaceae	st	ec
<i>Homalanthus populneus</i>	Euphorbiaceae	st	or
<i>Homalomena philippinensis</i>	Araceae	hb	

Appendix Table 5. Continued...

Status/Taxon	Family	Habit**	Uses
<i>Hygrophila salicifolia</i>	Acanthaceae	sh	w
<i>Impatiens balsamina</i>	Balsaminaceae	hb	or
<i>Impatiens hutchinsonii</i>	Balsaminaceae	hb	or
<i>Imperata cylindrica</i>	Gramineae	gr	cot, cm
<i>Ipomoea batatas</i>	Convolvulaceae	vi	ed
<i>Ipomoea triloba</i>	Convolvulaceae	vi	w
<i>Ixora philippinensis</i>	Rubiaceae	sh	or
<i>Lantana camara</i>	Verbenaceae	sh	or, w
<i>Laportea brunnea</i>	Urticaceae	sh	w
<i>Leucaena leucocephala</i>	Mimosaceae	st	fu, lf
<i>Leucosyke capitellata</i>	Urticaceae	sh	ec
<i>Lindernia crustacea</i>	Scrophulariaceae	hb	w
<i>Lithocarpus mindanaensis</i>	Fagaceae	mt	tm
<i>Lithocarpus sundaica</i>	Fagaceae	mt	tm
<i>Lycopersicon esculentum</i>	Solanaceae	hb	ec
<i>Lycopodium cernuum</i>	Lycopodiaceae	vi	ec, ins
<i>Macaranga bicolor</i>	Euphorbiaceae	mt	ec
<i>Macaranga dipterocarpifolia</i>	Euphorbiaceae	st	ec
<i>Macaranga grandifolia</i>	Euphorbiaceae	mt	ec
<i>Macaranga tanarius</i>	Euphorbiaceae	st	ec
<i>Macrothelypteris polypodioides</i>	Thelypteridaceae	fe	or
<i>Mangifera indica</i>	Anacardiaceae	lt	ed
<i>Manihot esculenta</i>	Euphorbiaceae	sh	ed
<i>Melanolepis multiglandulosa</i>	Euphorbiaceae	st	ec
<i>Melastoma polyanthum</i>	Melastomataceae	sh	ec
<i>Mentha arvensis</i>	Labiatae	hb	sp
<i>Mentha arvensis</i> var. <i>piperata</i>	Labiatae	hb	sp
<i>Merremia peltata</i>	Convolvulaceae	vi	w
<i>Mikania cordata</i>	Compositae	vi	w
<i>Mimosa pudica</i>	Mimosaceae	hb	w
<i>Miscanthus floridulus</i>	Gramineae	gr	ec
<i>Moringa oleifera</i>	Moringaceae	st	veg
<i>Muntingia calabura</i>	Tiliaceae	st	ed
<i>Musa textilis</i>	Musaceae	tl	fi
<i>Musa x paradisiaca</i> (AAB)	Musaceae	tl	ed
<i>Musa x paradisiaca</i> (BBB)	Musaceae	tl	ed
<i>Nauclea orientalis</i>	Rubiaceae	mt	fi
<i>Neonauclea barilingii</i>	Rubiaceae	mt	fi
<i>Neonauclea media</i>	Rubiaceae	mt	fi
<i>Nephrolepis biserrata</i>	Davalliaceae	fe	or
<i>Odontonema strictum</i>	Acanthaceae	sh	hed, or
<i>Operculina turpethum</i>	Convolvulaceae	vi	w
<i>Ophiopogon japonicus</i>	Liliaceae	hb	or
<i>Oplismenus compositus</i>	Gramineae	gr	w
<i>Orthosiphon aristatus</i>	Labiatae	sh	or
<i>Oxalis repens</i>	Oxalidaceae	hb	w
<i>Pandanus exaltatus</i>	Pandanaceae	tl	ec
<i>Panicum maximum</i>	Gramineae	gr	w, pas, sec
<i>Paraserianthes falcataria</i>	Mimosaceae	lt	tm
<i>Paspalidium flavescens</i>	Gramineae	gr	w, pas, sec
<i>Paspalum conjugatum</i>	Gramineae	gr	w, pas, sec

**Appendix Table 5. Continued...**

Status/Taxon	Family	Habit**	Uses
<i>Paspalum distichum</i>	Gramineae	gr	w, pas, sec
<i>Paspalum scrobiculatum</i>	Gramineae	gr	w, pas, sec
<i>Pennisetum polystachyon</i>	Gramineae	gr	w, pas, sec
<i>Persea americana</i>	Lauraceae	st	ed
<i>Phaseolus lathyroides</i>	Papilionaceae	vi	w
<i>Phyllanthus amarus</i>	Euphorbiaceae	sh	w
<i>Phyllanthus urinaria</i>	Euphorbiaceae	sh	w
<i>Pipturus arborescens</i>	Urticaceae	sh	ec
<i>Pityrogramma calomelanos</i>	Sinopteridaceae	fe	or
<i>Polyscias balfouriana</i>	Araliaceae	sh	hed
<i>Pseuderanthemum purpureum</i>	Acanthaceae	sh	hed
<i>Pseuderanthemum reticulatum</i>	Acanthaceae	sh	hed
<i>Psidium guajava</i>	Myrtaceae	st	ed
<i>Pteridium aquilinum</i>	Dennstaedtiaceae	fe	w
<i>Pteris vittata</i>	Pteridaceae	fe	or
<i>Pueraria phaseoloides</i>	Papilionaceae	vi	w
<i>Ricinus communis</i>	Euphorbiaceae	st	med
<i>Rosa centifolia</i>	Rosaceae	sh	or
<i>Rubus fraxinifolius</i>	Rosaceae	li	ed
<i>Rubus rosaefolius</i>	Rosaceae	sh	ed
<i>Saccharum officinarum</i>	Gramineae	gr	ed
<i>Saccharum spontaneum</i>	Gramineae	gr	cot, cm
<i>Sandoricum koetjape</i>	Meliaceae	mt	ed
<i>Schismatoglottis calyptrata</i>	Araceae	hb	ec
<i>Schizostachyum diffusum</i>	Gramineae	li	ec
<i>Scleria lithosperma</i>	Cyperaceae	hb	w
<i>Scleria scrobiculata</i>	Cyperaceae	hb	w
<i>Sechium edule</i>	Cucurbitaceae	hb	veg
<i>Selaginella ciliaris</i>	Selaginellaceae	hb	ec
<i>Selaginella cupressina</i>	Selaginellaceae	hb	ec
<i>Selaginella involvens</i>	Selaginellaceae	hb	ec
<i>Setaria palmifolia</i>	Gramineae	gr	ec, sec
<i>Sida acuta</i>	Malvaceae	sh	w
<i>Sida cordifolia</i>	Malvaceae	sh	w
<i>Sida rhombifolia</i>	Malvaceae	sh	w
<i>Solanum melongena</i>	Solanaceae	sh	veg
<i>Solanum torvum</i>	Solanaceae	sh	w
<i>Solanum verbascifolium</i>	Solanaceae	sh	w
<i>Sorghum halepense</i>	Gramineae	gr	w, pas, sec
<i>Sphaerostephanos productos</i>	Pteridaceae	fe	ec
<i>Sphaerostephanos unitus</i>	Pteridaceae	fe	ec
<i>Sphenoclea zeylanica</i>	Sphenocleaceae	sh	w
<i>Sphenomeris chinensis</i>	Lindsaeaceae	fe	or
<i>Stachytarpheta indica</i>	Verbenaceae	sh	w
<i>Stachytarpheta jamaicensis</i>	Verbenaceae	sh	w
<i>Swietenia macrophylla</i>	Meliaceae	lt	tm
<i>Synedrilla nodiflora</i>	Compositae	hb	w
<i>Themeda gigantea</i>	Gramineae	gr	w, sec
<i>Thysanolaena maxima</i>	Gramineae	gr	cot, sec
<i>Tradescantia sp.</i>	Commelinaceae	hb	or
<i>Trema orientalis</i>	Ulmaceae	mt	ec, fu

**Appendix Table 5. Continued...**

Status/Taxon	Family	Habit**	Uses
<i>Tridax procumbens</i>	Compositae		w
<i>Triumfetta bartramia</i>	Tiliaceae		w
<i>Triumfetta semitriloba</i>	Tiliaceae		w
<i>Urena lobata</i>	Malvaceae		w
<i>Vernonia cinerea</i>	Compositae		w
<i>Vernonia patula</i>	Compositae		w
<i>Wedelia triloba</i>	Compositae		w
<i>Xanthosoma sagittifolium</i>	Araceae		ed
<i>Zea mays</i>	Gramineae		ed
<i>Zoysia matrella</i>	Gramineae		lan, sec
<b>Rare</b>			
<i>Abrus precatorius</i>	Papilionaceae		med
<i>Acorus calamus</i>	Araceae		med
<i>Aeschynanthus philippinensis</i>	Gesneriaceae		ec
<i>Euryclides amboinensis</i>	Liliaceae		or
<i>Hydrangea lobbii</i>	Hydrangeaceae		or
<i>Livistona rotundifolia</i>	Palmae		lan, cot
<i>Mallotus philippensis</i>	Euphorbiaceae		dye
<i>Medinilla magnifica</i>	Melastomataceae		or
<i>Melia dubia</i>	Meliaceae		un
<i>Nepenthes alata</i>	Nepenthaceae		ec
<i>Nopalea cochinellifera</i>	Cactaceae		or
<i>Ochroma lagopus</i>	Bombacaceae		fi, lcm
<i>Oleandra maquilangensis</i>	Davalliaceae		ec
<i>Oncosperma horridum</i>	Palmae		ed, cm
<i>Ophioglossum reticulatum</i>	Ophioglossaceae		ec
<i>Pandanus copelandii</i>	Pandanaceae		ec
<i>Parartocarpus venenosus</i>	Moraceae		ec
<i>Phacelophrynium interruptum</i>	Marantaceae		ec
<i>Phanera cumingiana</i> ssp. <i>integrifolia</i>	Caesalpiniaceae		ec
<i>Phyllocladus hypophyllus</i>	Araucariaceae		tm
<i>Physalis angulata</i>	Solanaceae		w
<i>Pittosporum pentandrum</i>	Pittosporaceae		tm
<i>Psychotria luconiensis</i>	Rubiaceae		ec
<i>Pterocymbium peltatum</i>	Sterculiaceae		fi
<i>Punica granatum</i>	Punicaceae		or, ed
<i>Pyrus malus</i>	Rosaceae		ed
<i>Radermachera pinnata</i>	Bignoniaceae		ec
<i>Spiridens reinwardtii</i>	Spiridentaceae		ec
<i>Symphytum officinale</i>	Verbenaceae		med
<i>Syzygium polycephaloides</i>	Myrtaceae		ed
<i>Thayeria cornucopia</i>	Polypodiaceae		ec
<i>Typha angustifolia</i>	Typhaceae		ec
<i>Viburnum luzonicum</i>	Caprifoliaceae		ec
<i>Vitiviera zizanoides</i>	Graminear		cot
<i>Wikstroemia indica</i>	Thymelaeaceae		fi

**Appendix Table 5. Continued...**

Status/Taxon	Family	Habit**	Uses
<b>Scarce</b>			
<i>Adenanthera intermedia</i>	Mimosaceae	lt	tm
<i>Agathis philippinensis</i>	Araucariaceae	lt	tm
<i>Agave americana</i>	Agavaceae	hb	or
<i>Amomum philippinense</i>	Zingiberaceae	hb	or
<i>Anisoptera thurifera</i>	Dipterocarpaceae	lt	tm
<i>Annona muricata</i>	Annonaceae	st	ed
<i>Annona squamosa</i>	Annonaceae	st	ed
<i>Ardisia pyramidalis</i>	Myrsinaceae	st	or, lan
<i>Areca catechu</i>	Palmae	tl	mas
<i>Arenga tremula</i>	Palmae	tl	lan
<i>Asparagus sprengeri</i>	Liliaceae	vi	or
<i>Asplenium cymbifolium</i>	Aspleniaceae	fe	or
<i>Asplenium plyodon</i>	Aspleniaceae	fe	or
<i>Aster linifolius</i>	Compositae	hb	or
<i>Atuna racemosa</i>	Chrysobalanaceae	mt	ed
<i>Bambusa glaucescens</i>	Gramineae	tl	hed, sec
<i>Bambusa vulgaris</i> var. <i>striata</i>	Graminear	tl	lan, sec
<i>Barringtonia racemosa</i>	Barringtoniaceae	mt	lan
<i>Basella alba</i>	Basellaceae	vi	veg
<i>Basella rubra</i>	Basellaceae	vi	veg
<i>Begonia hernandioides</i>	Begoniaceae	hb	or
<i>Begonia nigritarum</i>	Begoniaceae	hb	or
<i>Belamcanda chinensis</i>	Liliaceae	hb	or
<i>Bischofia javanica</i>	Bischofiaceae	lt	tm
<i>Bixa orellana</i>	Bixaceae	st	dye
<i>Boerlagiodendron diversifolium</i>	Araliaceae	st	lan
<i>Breynia cernua</i>	Euphorbiaceae	sh	ec
<i>Bridelia stipularis</i>	Euphorbiaceae	sh	ec
<i>Buchanania arborescens</i>	Anacardiaceae	mt	lan
<i>Bulbophyllum dearei</i>	Orchidaceae	hb	or
<i>Calamus dimorhocanthus</i>	Orchidaceae	hb	or
<i>Calamus merrillii</i>	Palmae	li	cot
<i>Calamus ornatus</i> var. <i>philippinensis</i>	Palmae	li	cot, ed
<i>Calliandra haematocephala</i>	Palmae	li	cot
<i>Callicarpa candicans</i>	Mimosaceae	sh	or, hed
<i>Callicarpa formosona</i>	Verbenaceae	sh	ec
<i>Calophyllum kuenstleri</i>	Verbenaceae	sh	ec
<i>Canarium hirsutum</i> f. <i>multipinnatum</i>	Tuffiferae	mt	tm
<i>Canthium monstrosum</i>	Burseraceae	lt	tm
<i>Carallia brachiata</i>	Acanthaceae	sh	ec
<i>Carphalea kirondron</i>	Rhizophoraceae	st	ec
<i>Caryota rumphiona</i> ssp. <i>philippinensis</i>	Rubiaceae	sh	or
<i>Casearia grewiaefolia</i>	Palmae	tl	lan
<i>Cassia javanica</i>	Tiliaceae	st	ec
<i>Cassia javanica</i>	Caesalpiniaceae	mt	lan, shad
<i>Cayratia trifolia</i> var. <i>cinerea</i>	Vitaceae	vi	ec

**Appendix Table 5. Continued...**

Status/Taxon	Family	Habit**	Uses
<i>Celtis luzonica</i>	Ulmaceae	lt	tm
<i>Celtis philippinensis</i>	Ulmaceae	lt	tm
<i>Cestrum nocturnum</i>	Solanaceae	vi	or
<i>Chrysalidocarpus lutescens</i>	Palmae	tl	lan
<i>Chrysanthemum indicum</i>	Compositae	hb	or
<i>Citrus limon</i>	Rutaceae	st	ed
<i>Cladonia</i> sp.	Cladoniaceae	lic	ec
<i>Cladonia vulcanicum</i>	Cladoniaceae	lic	ec
<i>Clerodendron macrostachyum</i>	Verbenaceae	st	or
<i>Clerodendron quadriloculare</i>	Verbenaceae	st	or
<i>Coix lachryma-jobi</i>	Gramineae	gr	ec
<i>Coleus igolotorm</i>	Labiatae	hb	or
<i>Colona serratifolia</i>	Tiliaceae	mt	fi, fu
<i>Commersonia bartramia</i>	Tiliaceae	st	w
<i>Cordia dichotoma</i>	Boraginaceae	st	med
<i>Corypha utan</i>	Palmae	tl	cot, ed
<i>Costus speciosus</i>	Zingiberaceae	hb	or
<i>Cratoxylon celebicum</i>	Guttiferae	st	fu
<i>Cratoxylon formosanum</i>	Guttiferae	st	fu
<i>Crinum asiaticum</i>	Amaryllidaceae	hb	or
<i>Curcuma domestica</i>	Zingiberaceae	hb	sp
<i>Cyathea callosa</i>	Cyatheaceae	fe	ec, lan, om
<i>Cyathea loheri</i>	Cyatheaceae	fe	ec, lan, om
<i>Cycas revoluta</i>	Cycadeceae	tl	lan
<i>Cyrtandra cumingii</i>	Gesneriaceae	st	or
<i>Cyrtosperma merkusii</i>	Araceae	hb	ed
<i>Dacrycarpus imbricatus</i>	Podocarpaceae	lt	tm
<i>Dalbergia</i> sp.	Papilionaceae	mt	tm
<i>Datura metel</i>	Solanaceae	sh	w, po, med
<i>Daucus carota</i>	Umbelliferae	hb	veg
<i>Dendrocalamus asper</i>	Graminear	tl	cm
<i>Derris philippinensis</i>	Papilionaceae	li	po
<i>Desmodium heterocarpon</i>	Papilionaceae	hb	w
<i>Desmodium triflorum</i>	Papilionaceae	sh	w
<i>Desmodium umbellatum</i>	Papilionaceae	sh	w
<i>Dillenia philippinensis</i>	Dilleniaceae	mt	ec
<i>Dillenia reifferschidia</i>	Dilleniaceae	lt	ec
<i>Dioscorea alata</i>	Dioscoreaceae	vi	ed
<i>Dioscorea esculenta</i>	Dioscoreaceae	vi	ed
<i>Diospyros pilosanthera</i>	Ebenaceae	lt	tm, ed
<i>Diplazium esculentum</i>	Athyriaceae	fe	ed
<i>Dipterocarpus gracilis</i>	Dipterocarpaceae	lt	tm
<i>Donax cannaeformis</i>	Marantaceae	hb	or
<i>Duabanga moluccana</i>	Sonneratiaceae	lt	fi, lcm
<i>Dysoxylum gaudichaudianum</i>	Meliaceae	lt	tm
<i>Elaeagnus philippinensis</i>	Elaeagnaceae	ti	ed
<i>Elaeocarpus calomala</i>	Elaeocarpaceae	mt	tm, ed, fi
<i>Eleutherine palmifolia</i>	Amaryllidaceae	hb	or
<i>Ervatamia pandacaqui</i>	Apocynaceae	sh	ec
<i>Eucalyptus deglupta</i>	Myrtaceae	lt	tm
<i>Euphorbia pulcherrima</i>	Euphorbiaceae	sh	or

Appendix Table 5. Continued...

Status/Taxon	Family	Habit**	Uses
<i>Ficus angustissima</i>	Moraceae	sh	ec
<i>Ficus baletae</i>	Moraceae	ep	ec
<i>Flagellaria indica</i>	Flagellariaceae	li	cot
<i>Fragaria virginiana</i>	Rosaceae	vi	ed
<i>Freycinetia cumingiana</i>	Pandanaceae	li	cot, ec
<i>Freycinetia negrosensis</i>	Pandanaceae	li	cot, ec
<i>Freycinetia williamsii</i>	Pandanaceae	li	cot, ec
<i>Garcinia mangostana</i>	Guttiferae	st	ed
<i>Gardenia jasminoides</i>	Rubaceae	sh	or
<i>Gliricidia sepium</i>	Caesalpiniaceae	st	fu, om
<i>Glochidiuon rubrum</i>	Euphorbiaceae	st	ec
<i>Gmelina arborea</i>	Verbenaceae	mt	tm
<i>Gossypium barbadense</i>	Malvaceae	sh	fi
<i>Guioa koelreuteria</i>	Sapindaceae	st	ec
<i>Heliconia metallica</i>	Heliconiaceae	hb	or
<i>Hibiscus cannabinus</i>	Malvaceae	sh	or, fi
<i>Hibiscus tiliaceus</i>	Malvaceae	st	lan
<i>Hippeastrum</i> sp.	Amaryllidaceae	hb	or
<i>Homalomena rubescens</i>	Araceae	hb	or
<i>Hoya</i> sp.	Asclepiadaceae	ep	or
<i>Ichnocarpus volubilis</i>	Apocynaceae	vi	w
<i>Indigofera tinctoria</i>	Papilionaceae	sh	w
<i>Ipomoea quamoclit</i>	Convolvulaceae	vi	w
<i>Iresine herbstii</i>	Amaranthaceae	hb	or
<i>Kalanchoe pinnata</i>	Crassulaceae	hb	or
<i>Kolowratia elegans</i>	Zingiberaceae	hb	ec
<i>Lagerstroemia speciosa</i>	Lythraceae	st	lan
<i>Lansium domesticum</i>	Meliaceae	mt	ed
<i>Leea philippinensis</i>	Leeaceae	st	lan
<i>Lithocarpus philippinensis</i>	Fagaceae	lt	tm
<i>Litsea glutinosa</i>	Lauraceae	mit	ec
<i>Lobaria meridionalis</i>	Lobariaceae	lic	ec, med
<i>Lobaria robinsonii</i>	Lobariaceae	lic	ec, med
<i>Lycopodium squarrosum</i>	Lycopodiaceae	vi	ec, ins
<i>Lygodium circinatum</i>	Schizaeaceae	fe	cot, ins
<i>Lygodium merrillii</i>	Schizaeaceae	fe	cot, ins
<i>Madhuca betis</i>	Sapotaceae	lt	tm
<i>Malvaviscus pilosus</i>	Malvaceae	sh	or, hed
<i>Medinilla malindangensis</i>	Melastomataceae	ep	or
<i>Medinilla myrtiformis</i>	Melastomataceae	sp	or
<i>Melicope triphylla</i>	Rutaceae	eh	ec
<i>Micromelum minutum</i>	Rutaceae	st	ec
<i>Mimosa invisa</i>	Mimosaceae	hb	w
<i>Morinda citrifolia</i>	Rubiaceae	sb	ec
<i>Mussaenda anisophylla</i>	Rubiaceae	sh	or
<i>Mussaenda philippica</i>	Rubiaceae	sh	or
<i>Nephelium lappaceum</i>	Sapindaceae	st	ed
<i>Nephelium ramboutan-oke</i>	Sapindaceae	mt	ec, ed
<i>Ocimum sanctum</i>	Labiatae	sh	sp
<i>Octomeles sumatrana</i>	Datisceae	lt	fi, lcm
<i>Pachyrhizus erosus</i>	Papilionaceae	vi	ed

Appendix Table 5. Continued...

Status/Taxon	Family	Habit**	Uses
<i>Palaquium luzonense</i>	Sapotaceae	lt	tm
<i>Pandanus camarinensis</i>	Pandanaceae	tl	ec
<i>Pandanus tectorius</i> var. <i>laevis</i>	Pandanaceae	tl	cot
<i>Parmelia cristifera</i>	Parmeliaceae	lic	ec
<i>Passiflora foetida</i>	Passifloraceae	vi	w, ed
<i>Phalaenopsis amabilis</i>	Orchidaceae	hb	or
<i>Physcia fragilesceus</i>	Physciaceae	lic	ec
<i>Pinanga insignis</i>	Palmae	tl	cm, ec
<i>Pinanga philippinensis</i>	Palmae	tl	lan, ec
<i>Piper retrofractum</i>	Piperaceae	vi	ec
<i>Plumeria alba</i>	Apocynaceae	st	lan
<i>Polyscias nodosa</i>	Araliaceae	mt	ec
<i>Pometia pinnata</i>	Sapindaceae	lt	tm
<i>Pouteria campechiana</i>	Sapotaceae	st	ed
<i>Premna odorata</i>	Verbenaceae	st	med
<i>Pterospermum diversifolium</i>	Sterculiaceae	mt	fi
<i>Pterospermum obliquum</i>	Sterculiaceae	mt	fi
<i>Rhaphidophora merrillii</i>	Araceae	vi	or
<i>Samanea saman</i>	Mimosaceae	lt	tm
<i>Sambucus javanica</i>	Caprifoliaceae	st	or
<i>Sansevieria trifasciata</i>	Agavaceae	hb	hed
<i>Saurauia glabrescens</i>	Saurauiaceae/Actinidiaceae	st	ec
<i>Saurauia latibractea</i>	Saurauiaceae/Actinidiaceae	mt	ec
<i>Schefflera insularis</i>	Araliaceae	ep	ec
<i>Schizostachyum lumampao</i>	Gramineae	tl	cot, cm
<i>Shorea contorta</i>	Dipterocarpaceae	lt	tm
<i>Shorea negrosensis</i>	Dipterocarpaceae	lt	tm
<i>Smilax china</i>	Smilacaceae	li	ec
<i>Solanum nigrum</i>	Solanaceae	sh	veg
<i>Solanum</i> sp. (wild)	Solanaceae	sh	veg
<i>Spathiphyllum</i> sp.	Orchidaceae	hb	or
<i>Stenochlaena milnei</i>	Blechnaceae	fe	ec
<i>Syngonium podophyllum</i>	Araceae	vi	or
<i>Syzygium cumini</i>	Myrtaceae	st	ed
<i>Syzygium malaccense</i>	Myrtaceae	st	ed
<i>Syzygium samarangense</i>	Myrtaceae	st	ed
<i>Tagetes erecta</i>	Compositae	hb	or
<i>Tamarindus indica</i>	Caesalpiniaceae	mt	ed
<i>Terminalia catappa</i>	Combretaceae	mt	lan, dye, shad
<i>Terminalia nitens</i>	Combretaceae	mt	lan
<i>Tetracera scandens</i>	Dilleniaceae	li	ec
<i>Tetrastigma</i> sp.	Vitaceae	vi	ec
<i>Themeda triandra</i>	Gramineae	gr	w, sec
<i>Theobroma cacao</i>	Sterculiaceae	st	bev
<i>Thespesia populnea</i>	Malvaceae	st	lan
<i>Thevetia peruviana</i>	Apocynaceae	st	lan
<i>Thuja orientale</i>	Cupressaceae	st	lan
<i>Trichoglottis</i> sp.	Orchidaceae	hb	or
<i>Uncaria philippinensis</i>	Rubiaceae	li	ec
<i>Usnea misamisensis</i>	Usneaceae	lic	med
<i>Vernonia arborea</i>	Compositae	sh	ec

**Appendix Table 5. Continued...**

Status/Taxon	Family	Habit**	Uses
<i>Vitex negundo</i>	Verbanaceae	sh	med
<i>Voacanga globosa</i>	Apocynaceae	sh	ec
<i>Zephyranthes atamasco</i>	Amaryllidaceae	hb	or
<i>Zingiber Zerumbet</i>	Zingiberaceae	hb	or

\*Don Victoriano:

(1) Mansawan, (2) Gandawan, (3) Lake Duminagat, (4) Lampasan, (5) Tuno, and (6) Lalud Concepcion:

(7) Small Potongan, (8) Upper Potongan, (9) Virayan, (10) Poblacion Concepcion, and (11) Upper Salimpuno, Sapang Dalaga: (12) Sixto Velez

\*\* bry = bryophyte  
 fe = fern  
 gr = grass  
 hb = herb  
 li = liana (woody vine)  
 lic = lichen (Kingdom Fungi/Mycetae)  
 lt = large tree  
 mt = medium-sized tree  
 sh = shrub  
 st = small tree  
 tl = tree-like  
 vi = vine

\*\*\* bev = beverage  
 cm = construction material  
 cot = cottage industry  
 ec = ecological function  
 ed = edible part  
 fi = fiber source  
 fu = fuelwood  
 gm = green manure/fertilizer  
 hed = hedge plant  
 ins = instructional use  
 lan = landscape plant  
 lcm = light construction material

Appendix Table 6. Avian species listing (summary) of Mt. Malindang.

Ref. No.	Species and author	Local name	Barangays												Ecological value
			1	2	3	4	5	6	7	8	9	10	11	12	
1	<i>Accipeter trivirgatus</i>	Phil. Sparrow Hawk	0	0	1	0	0	0	1	0	0	0	0	0	
2	<i>Arthopyge shelleyi</i>	Lovely Sun Bird	0	0	1	0	0	0	1	0	0	0	0	0	Pollinator
3	<i>Amauromis phoenicuros</i>	White-breasted Swamphen	0	0	1	0	0	0	0	0	0	0	0	0	Seed dispersal
4	<i>Aplonis panayensis panayensis</i> D.S. Rabor (1977)	Phil. Glossy Starling; Galanciang (Bis.)	0	0	0	1	0	0	0	0	0	0	0	0	Control pests, seed dispersal
5	<i>Arachnothera elarae</i> Gonzales (1988)	Naked-faced Spider Hunter; Siwi	0	0	1	0	0	1	1	0	0	0	0	1	Control pests, seed dispersal
6	<i>Artamus leucorhynchus</i>	White-breasted Wood Swallow	1	1	1	1	1	0	1	1	1	1	1	1	Control insect population
7	<i>Bubulcus ibis coromandus</i> Rabor (1977)	Cattle Egret; Talawong	0	0	0	1	0	0	0	0	0	0	0	0	Insect eater; control insect population
8	<i>Buceros hydrocorax</i>	Hornbill; Kalaw (Bis.)	0	0	0	0	0	0	1	0	0	0	0	0	Seed dispersal
9	<i>Caprimulgus macrurus manillensis</i>	Long-tailed Night Jar	0	0	1	0	0	0	1	0	0	0	0	0	Control insect population
10	<i>Centropus bengalensis</i>	Lesser Coucal; Saguksok (Bis.)	1	1	1	1	0	0	1	1	0	0	0	0	Control insect population
11	<i>Centropus sinensis</i> J.E. duPont	Common Coucal; Cocok (Bis.)	1	1	1	0	1	1	1	1	1	1	1	1	Control insect population
12	<i>Cesticola juncidis tinnabulane</i>	Common Fantail Warbler; Pirot (Bis.)	1	1	0	0	0	0	1	0	0	1	0	0	Control insect population
13	<i>Chelcophaps indica indica</i> Rabor (1977)	Green-winged Ground Dove; Manatod (Bis.)	0	1	1	0	0	0	1	0	0	0	0	0	Seed dispersal

## Legend:

1-Mansawan

5-Tuno

9-Poblacion Concepcion

1 - present/sighted

2-Gandawan

6-Lalud

10-Upper Potongan

0 - absent

3-Lake Duminagat

7-Small Potongan

11-Upper Salimpao

X - as informed by the residents

4-Lampasan

8-Virayan

12-Sixto Velez

Note: Economic value of avian species as food; social value as pet

Appendix Table 6. Continued...

Ref. No.	Species and author	Local name	Barangays												Ecological value	
			1	2	3	4	5	6	7	8	9	10	11	12		
14	<i>Collocalia brevirostris</i> Rabor (1977)	Himalayan Swiftlet	0	0	0	0	0	0	0	0	1	0	0	0	0	Control insects
15	<i>Collocalie troglodytes</i> Rabor (1977)	Pygmy Swiftlet; Kalogay	1	0	1	1	1	1	1	1	1	1	1	0	0	Seed dispersal, control insects
16	<i>Corvus macrorynchus</i> Rabor (1977)	Large Billed Crow; Kakwak (Mar.)	0	0	0	1	1	1	1	0	0	0	1	1	Kills harmful insects	
17	<i>Dendrocopos maculatus</i>	Pygmy woodpecker	0	0	0	0	0	0	1	0	0	0	0	0	Seed dispersal, control insects	
18	<i>Dendrocygna arcuata arcuata</i>	Whistling duck Pato thalas (Bis.)	0	0	x	0	0	0	0	0	0	0	0	0	Seed dispersal	
19	<i>Dicaeum australe</i>	Phil. Flower Picker	1	1	1	1	1	0	1	1	0	1	1	1	Pollinator	
20	<i>Dicaeum pygmaeum</i> <i>pygmaeum</i>	Pygmy Flower Picker	0	0	1	0	0	0	1	0	0	0	0	0	Pollinator	
21	<i>Eudynamys scolopaceae</i> <i>mindanensis</i> Rabor (1977)	Philippine Koel; Kwahoe (Bis.)	0	0	1	0	0	0	0	1	0	0	0	0	Seed dispersal, control insects	
22	<i>Eurystamus orientalis</i>	Dollar Bird	0	0	0	0	0	0	1	0	0	0	0	0	Control insects	
23	<i>Gallus gallus gallus</i>	Wild chicken; Manok thalas (Bis.)	0	0	0	0	0	0	x	0	0	0	0	0	Seed dispersal	
24	<i>Geopelia striata</i> Gonzales, et al. (1988)	Zebra bird Pagapak (Mar.)	0	1	0	0	0	0	1	1	0	0	1	1	Control insects, seed dispersal	
25	<i>Halcyon chloris collaris</i> Rabor (1977)	White-collared Kingfisher; Laasan (Mar.)	0	0	0	0	1	0	1	0	0	0	0	1	Insect eater, control insects	
26	<i>Halcyon lindsayi</i>	Spotted Wood Kingfisher	0	0	0	0	0	0	1	0	0	0	0	0	Control insects	
27	<i>Halcyon smymensis</i>	White-throated Kingfisher	0	1	1	0	0	0	1	0	0	1	0	0	Control insects	
28	<i>Haliastur indus intermedius</i>	Brahminy Kite; Banog (Bis.)	1	1	0	1	0	0	1	0	0	0	0	0	Control insects	
29	<i>Harpactes ardens ardens</i> Rabor (1977)	Phil. Trogon; Mag-apoy (Mar.)	0	0	0	0	0	0	x	0	0	0	0	0	Insect eater, control insects	
30	<i>Hemiprocne comata</i> J.E. duPont	Lesser Tree Swift; Sayaw (Bis.)	0	0	0	0	0	0	1	0	1	0	0	0	Insect eater, control insects	
31	<i>Hirundo rustica gutturalis</i>	Barn Swallow; Sayaw (Bis.)	0	0	0	0	0	0	1	0	0	0	0	0	Insect eater, control insects	

Appendix Table 6. Continued...

Ref. No.	Species and author	Local name	Barangays												Ecological value	
			1	2	3	4	5	6	7	8	9	10	11	12		
32	<i>Hypothymis helenae helenae</i>	Short Crested Monarch; Balilang	0	0	1	0	0	0	0	0	0	0	0	0	0	Insect eater, control insect population
33	<i>Hysipetes philippinus</i>	Philippine Bulbul	0	0	0	0	0	0	1	1	0	1	0	0	Seed dispersal	
34	<i>Ixobrychus cinnamomeus</i>	Cinnamon Least; Bittem	0	1	0	0	0	0	0	0	0	0	0	0	Seed dispersal	
35	<i>Lalage nigra nigra</i>	Pied Triller; Ak Ak (Bis.)	0	0	0	0	1	0	0	1	1	0	0	1	Seed dispersal	
36	<i>Lanius cristatus lucioensis</i>	Brown Shrike	1	0	0	0	0	0	1	0	0	0	1	1	Control insect pests	
37	<i>Lanius schach nastus</i>	Schach Shrike	1	1	1	1	1	1	1	1	1	1	1	0	Control insect pests	
38	<i>Lonchura malacca jagorii</i>	Chestnut Mannikin; Maya (Bis.)	1	0	0	1	0	0	1	0	1	1	0	0	Seed dispersal	
39	<i>Lonchura punctulata</i>	Nutmeg Mannikin; Maya (Bis.)	0	0	1	0	0	0	1	0	0	0	0	0	Seed dispersal	
40	<i>Loriculus philippinensis</i>	Phil. Hanging Parakeet; Kosi (Bis.)	0	1	1	0	0	0	1	0	0	0	0	0	Seed dispersal	
41	<i>Macropygia phasianella</i> J.E. duPont	Slender-billed Cuckoo Dove; Tukwoo (Bis.)	0	1	1	0	0	0	1	0	0	0	0	0	Seed dispersal	
42	<i>Megalaima haemacephala</i> duPont (1971)	Crimson-Breasted Barbet	0	1	0	0	0	0	1	0	0	0	0	0	Control insect pests	
43	<i>Megalurus palustris forbesi</i>	Striated Canegrass Warbler	1	1	1	1	1	0	1	0	1	1	0	1	Control insect pests	
44	<i>Merops philippinus philippinus</i>	Green-headed Bee-eater; Pisutin (Sub.)	0	1	1	1	0	0	1	0	0	0	0	0	Control insect pests	
45	<i>Merops viridis americanus</i>	Chestnut-headed Bee-eater; Pisutin (Sub.)	1	1	1	0	0	0	1	0	1	0	0	0	Control insect pests	
46	<i>Microhierax erythrogonyx</i>	Philippine Falconet	0	0	0	0	0	0	1	0	0	0	0	0	Control insect pests	
47	<i>Motacilla cinerea</i> Rabor (1977)	Gray Wagtail	0	1	0	0	0	0	0	1	0	0	0	0	Control insect pests	
48	<i>Nectarinia sperata</i>	Purple-throated Sun Bird	0	0	0	0	0	0	1	0	0	0	0	0	Pollination	
49	<i>Nycticorax caledonicus</i>	Rufous Night Heron; Buso	0	0	1	0	0	0	0	0	0	0	0	0	Seed dispersal, control insect population	

Appendix Table 6. Continued...

Ref. No.	Species and author	Local name	Barangays												Ecological value	
			1	2	3	4	5	6	7	8	9	10	11	12		
50	<i>Oriolis chinensis</i> Rabor (1977)	Black-naped Oriole; Antilaw	0	0	0	0	0	0	0	0	0	0	0	0	0	Control insect pests
51	<i>Orthotomus nigreiceps</i> nigreiceps		0	0	0	0	0	0	1	0	0	0	0	0		
52	<i>Otus bokkamoena nigrorum</i>	Screech Owl; Bukoo (Bis.)	0	0	0	0	0	0	1	0	0	0	0	0	Control insect population	
53	<i>Parus elegans</i> J.E. duPont	Elegant Tilmous	0	0	0	0	0	0	1	0	0	0	0	0	Seed dispersal	
54	<i>Passer Montanus</i>	Tree Sparrow	0	0	0	0	1	1	0	0	0	0	0	0	Seed dispersal	
55	<i>Penelopides panini</i> Gonzales, et al (1988)	Tarctic Hornbill; Tagip-tip (Sub.)	0	0	0	0	0	0	1	0	0	0	0	0	Seed dispersal	
56	<i>Pericrocotus flammeus</i> J.E. duPont	Flame Minivet	0	0	1	0	0	0	0	0	0	0	0	0	Seed dispersal	
57	<i>Pithecophaga jefferyi</i>	Monkey-eating Eagle	0	0	0	0	0	0	1	0	0	0	0	0		
58	<i>Pycnonotus goiavier</i> Rabor (1977)	Yellow Vented Bulbul; Lokilok (Sub.)	1	1	1	1	1	1	1	1	1	1	1	1	Seed dispersal, control insects	
59	<i>Rallus striatus striatus</i> Rabor (1977)	Slaly Breasted Rail; Tikling (Bis.)	0	1	1	0	0	0	0	x	0	0	0	0	Seed dispersal	
60	<i>Rallus torquatus</i>	Barred Rail	0	1	0	0	0	0	0	1	0	0	0	0	Seed dispersal control insect pest	
61	<i>Rhipidura javanica</i>	Black & White Fantail	0	0	0	1	1	1	1	0	0	0	0	0		
62	<i>Sarcopa calvus melanonater</i>	Maria Kapra Coleto	0	0	0	0	0	0	0	0	0	0	0	1	Seed dispersal	
63	<i>Streptopelia bitorquata dusumieri</i>	Phil. Turtle Dove	0	0	0	0	0	0	1	0	0	0	0	0		
64	<i>Terpsiphone cinnamomea</i> J.E. duPont	Rufous Paradise Flycatcher	0	0	1	0	0	0	1	0	0	0	0	0	Control insect population	
65	<i>Treron pompadora</i> , duPont	Pompadour Green Pigeon; Punay (Bis.)	0	0	0	0	1	0	1	0	0	0	0	0	Seed dispersal	

**Appendix Table 7. Listing of reptilian species of Mt. Malindang.**

Ref. No.	Species and author	Local name	Barangays												Ecological value
			1	2	3	4	5	6	7	8	9	10	11	12	
1	<i>Draco volans</i>	Flying lizard	0	0	X	0	0	0	X	X	0	0	0	0	
2	<i>Gehyra mutilata</i>	Laluto (Bis.)	1	1	1	1	1	1	1	1	1	1	1	1	
3	<i>Gecko gecko</i>		0	0	0	X	X	X	0	0	0	X	X	X	
4	<i>Hydrosaurus pustulotus</i> A. Alcala (1976)	Water lizard	0	0	X	0	0	0	X	X	0	0	0	0	Control insect population
5	<i>Naja naja philippinensis</i>	Philippine cobra	X	X	X	X	X	X	X	X	X	X	X	X	
6	<i>Python reticulatus</i>	Sawa (Bis.)	X	X	X	X	X	X	X	X	X	X	X	X	
7	<i>Sphenomorphus</i> sp.	Skink	X	X	X	X	X	X	X	X	X	X	X	X	
8	<i>Trimeresurus</i> sp. A. Alcala (1976)	Pit Viper	0	X	X	0	0	0	X	X	0	0	0	0	
9	<i>Tortoises</i> sp.	Land Turtle, Bao (Bis.)	0	X	X	0	0	0	0	0	0	0	X	X	
10	<i>Varanus salvator</i>	Monitor lizard, Halo (Bis.)	X	X	X	X	X	X	X	X	X	X	X	X	
11	<i>Calotes</i> sp.	Agamid lizard	0	0	0	0	0	0	1	0	0	0	0	0	

**Appendix Table 8. Listing of amphibian species of Mt. Malindang.**

Ref. No.	Species and author	Local name	Barangays												Ecological value
			1	2	3	4	5	6	7	8	9	10	11	12	
1	<i>Bufo marinus</i>	Frog/toad	1	X	1	X	X	X	X	X	X	X	X	X	
2	<i>Rana magna</i>	Frog	1	X	1	X	X	X	1	X	X	X	X	X	

**Appendix Table 9. Listing of mammalian species of Mt. Malindang.**

Ref. No.	Species and author	Local name	Barangays												Ecological value
			1	2	3	4	5	6	7	8	9	10	11	12	
1	<i>Acerodon</i> sp.	Kabog (Bis.)	X	X	X	X	X	X	X	X	X	X	X	X	
2	<i>Callosciurus</i> sp.	Tree squirrels; Laksoy (Bis.)	0	X	1	0	0	0	X	X	0	0	0	0	
3	<i>Cervus</i> sp.	Philippine Deer; Lagsoo (Bis.)	0	X	X	0	0	0	X	X	0	0	0	0	
4	<i>Cynocyphalus volans</i>	Flying lemur; Kaguang (Bis.)	0	X	X	0	X	0	X	X	0	0	0	0	
5	<i>Macaca</i> sp. Rabor (1986)	Philippine monkey; Amo (Bis.)	X	X	X	X	X	X	X	X	X	X	X	X	Seed dispersal
6	<i>Paradoxurus philippinensis</i>	Palm civet; Milo (Bis.)	X	X	X	X	X	X	X	X	X	X	X	X	
7	<i>Ptenochirus</i> sp.	Fruit bat; Kulaknit (Bis.)	1	X	1	X	X	X	1	X	X	X	X	X	
8	<i>Rattus</i> sp.	Rats; Ilaga, Bagtok (Bis.)	X	X	X	X	X	X	X	X	X	X	X	X	
9	<i>Suncus occulidens</i>	House shrew; Miniak (Bis.)	X	X	X	X	X	X	X	X	X	X	X	X	
10	<i>Sus celebensis philippinensis</i> Rabor (1986)	Wild pig; Baboy sulop	X	X	X	0	0	0	X	X	0	0	0	0	Dispersal of forest tree-bearing fruits
11	<i>Tarius philippinensis</i>	Tarsier; Malmag (Bis.)	0	0	X	0	0	0	X	0	0	0	0	0	
12	<i>Viverra tungalunga</i> Rabor (1986)	Malay civet; Tingalong	X	X	X	X	X	X	X	X	X	X	X	X	Control pests population

**Appendix Table 10. Listing of class pisces species of Mt. Malindang.**

Ref. No.	Species and author	Local name	Barangays												Economic value
			1	2	3	4	5	6	7	8	9	10	11	12	
1	<i>Anabas testulineus</i>	Pupuyo	X	X	X	X	X	X	X	X	X	0	0	X	as food
2	<i>Clarias batrachus</i>	Catfish, Pantat	X	X	X	0	X	X	X	X	X	0	0	X	as food
3	<i>Genus anguilla</i>	Eel, Kasili	X	X	X	X	X	X	X	X	X	0	0	X	as food
4	<i>Gobbie</i> sp.	Anga	0	0	X	0	X	X	X	X	X	0	0	X	as food
5	<i>Ophichphalus striatus</i>	Mudfish, Haloan	0	0	0	X	X	X	0	0	0	0	X	X	as food
6	<i>Tilapia</i> sp.	Tilapia	0	0	0	0	0	0	0	0	0	0	0	X	as food

**Appendix Table 11. Crustacean species of Mt. Malindang.**

Ref. No.	Species and author	Local name	Barangays												Economic value	
			1	2	3	4	5	6	7	8	9	10	11	12		
1	Potamonidae family	Crablet Calong	X	X	X	X	X	X	X	X	X	X	X	X	X	as food

**Appendix Table 12. List of insect orders and families present in 7 barangays of Don Victoriano and Concepcion, Misamis Occidental.**

Ref. No.	Order/ Family	Common Name	Economic value	Barangays						
				1	2	3	4	5	6	7
<b>1</b>	<b>Coleoptera</b>									
	Chrysomelidae	Squash beetle/ Leaf beetle/ Green tortoise beetle	Pest	1	0	1	1	1	0	1
	Curculionidae	Snout beetle	Pest	1	0	1	0	0	1	0
	Scarabidae	Scarab beetle	Pest	1	0	0	0	0	0	0
	Coccinellidae	Ladybird beetle	Pest	1	1	0	0	0	0	0
	Elateridae	Click beetle	Pest	1	0	1	0	1	0	0
	Lampyridae	Firefly	Predator	0	0	0	0	1	0	0
	Cicindelidae	Tiger beetle	Predator	0	0	0	0	0	1	1
	Carabidae	Carabid beetle	Predator	1	0	0	0	0	0	0
	Cerambycidae	Long-horned beetle	Predator	0	0	0	0	0	1	0
<b>2</b>	<b>Hymenoptera</b>									
	Ichneumonidae	Ichneumons	Parasite	1	1	1	1	1	1	1
	Apidae	Bumble bees	Pollinator	1	1	1	0	1	0	0
	Braconidae	Braconids	Parasite	0	1	1	0	0	1	0
	Anthoporidae	Carpenter bee	Pollinator/pest	0	0	1	0	0	0	0
	Evanidae	Ensign wasp	Parasite	0	0	1	0	0	0	0
	Vespididae	Vespid wasp	Nectar feeder	0	0	0	0	1	0	0
	Sphecidae	Sphecid wasp	Nectar feeder	0	0	0	0	1	0	0
	Formicidae	Black/red ants	Predator/pest	0	0	1	1	1	1	0
<b>3</b>	<b>Lepidoptera</b>									
	Noctuidae	Cutworm	Pest	1	0	0	0	0	0	0
	Plutellidae	Diamondback moth	Pest	1	1	1	0	0	0	0
	Pieridae	Pierids	Pest	0	1	0	0	1	0	1
	Hesperiidae	Skippers	Pest	0	0	1	0	1	0	0
	Papilionidae	Swallowtails	Pest	0	0	1	1	1	1	1
	Satyridae	Satyrs	Pest	1	0	0	0	0	0	0
	Nymphalidae	Brush-footed butterflies	Pest	0	0	1	0	0	0	0
	Danaidae	Milkweed butterflies	Pest	0	0	1	0	0	0	0
	Sphingidae	Hornworm	Pest	0	0	0	0	0	1	0
	Liparidae	Tussock moth	Pest	0	0	1	0	0	1	0
	Geometridae	Measuring worm	Pest	0	0	1	0	0	0	0
	Pyralidae	Leaffolders	Pest	0	0	1	0	0	0	0
	Psychidae	Bagworm	Pest	0	0	1	0	0	0	0
	Gelechiidae	Potato tuber moth	Pest	1	0	0	0	0	0	0
<b>4</b>	<b>Diptera</b>									
	Syrphidae	Syrphid flies	Predator	1	0	1	0	0	0	0
	Sarcophagidae	Flesh flies	Nectar feeder	1	0	0	0	0	0	0
	Muscidae	House flies	Scavenger	1	1	0	0	0	0	0

**Appendix Table 12. Continued...**

Ref. No.	Order/ Family	Common Name	Economic value	Barangays						
				1	2	3	4	5	6	7
	Callipharidae	Blowflies	Scavenger	0	1	1	0	0	0	0
	Micrpezidae	Still-legged flies	Dung feeder	1	1	0	0	0	0	0
	Stratiomyidae	Soldier flies	Flower feeder	0	0	1	0	0	0	0
	Asilidae	Robber flies	Predator	0	0	0	0	0	0	1
	Dolichopodidae	Long-legged flies	Predator	0	0	1	0	0	0	0
	Otitidae	Picture-winged flies	Saprophagous	0	0	0	0	0	0	1
	Bibionidae	Marchflies/Lovebugs	Flower feeder	0	0	0	0	0	1	1
	Tipulidae	Craneflies	Saprophagous	0	0	0	0	0	0	1
<b>5</b>	<b>Orthoptera</b>									
	Acrididae	Short-horned grasshopper	Pest	1	1	0	0	0	0	0
	Gryllidae	Crickets	Phytophagous	1	0	0	0	0	0	0
	Gryllotapidae	Mole cricket	Phytophagous	1	0	0	0	0	0	0
	Grylloacridae	Wingless long-horned	Pest	1	0	0	0	0	0	0
	Tetrigidae	Pygmy grasshopper	Pest	0	0	1	0	0	0	1
	Netrigidae	Long-horned grasshopper	Phytophagous	1	0	0	0	1	0	0
	Becanthinae	Cricket	None	1	0	0	0	0	0	0
<b>6</b>	<b>Odonata</b>									
	Aesnidae	Dragonfly	Predator	0	1	1	0	0	1	1
	Ribellulidae	Dragonfly	Predator	0	1	1	0	0	1	1
	Calopterygidae	Damselfly	Predator	0	0	1	0	0	1	1
	Coenagrionidae	Damselfly	Predator	0	0	1	0	0	1	1
<b>7</b>	<b>Hemiptera</b>									
	Sedunidae	Assassin bug	Predator	1	0	0	0	0	0	0
	Gerridae	Water striders	Predator	0	0	1	0	0	0	1
	Veliidae	Ripple bugs	Predator	0	0	1	0	0	0	1
	Pyvihocoridae	Cotton stainer	Pest	0	0	0	1	0	0	0
<b>8</b>	<b>Homoptera</b>									
	Membracidae	Treehopper	Phytophagous	1	0	0	0	0	1	0
	Cicadidae	Cicada	Pest	0	1	1	0	0	0	0
	Aphididae	Aphids	Pest	0	1	0	0	0	0	0
	Cicadellidae	Leafhoppers	Pest	0	1	0	0	0	1	0
<b>9</b>	Dermaptera	Earwig	Scavenger	0	1	0	0	0	0	0
<b>10</b>	Thysanoptera	Thrips	Pest	0	0	1	0	0	0	0
<b>11</b>	<b>Other arthropods</b>									
	Arachnids	Spider	Predator	1	1	1	1	1	1	1
	Diplopoda	Millipede	Scavenger	0	0	1	0	0	0	0

Barangays: \*\*

- 1 = Mansawan
- 2 = Gandawan
- 3 = Lake Duminagat
- 4 = Lalud
- 5 = Lampasan
- 6 = Small Potongan
- 7 = Virayan

1=present      0=absent

**Appendix Table 13. Stakeholders in the upland ecosystem.**

Stakeholders	Man-sawan	Ganda-wan	Lake Dumina-gat	Lampa-san	Lalud	Tuno	Small Poto-ngan	Upper Poto-ngan	Vira-yan	Pobla-cion	Upper Salim-puno	Sixto Velez	Needs in relation to BRP
Piniling Nasud	1	1	1										Sustainable farming system which is consistent with biodiversity conservation
LGUs													IEC materials on biodiversity
Brgy. Council Sang. Bayan	1	1	1	1	1	1	1	1	1	1	1	1	Formulation and implementation of policies on biodiversity conservation and management
ABC	1	1	1	1	1	1	1	1	1	1	1	1	IEC materials on biodiversity
SK	1	1	1	1	1	1	1	1	1	1	1	1	
GOs													Proper monitoring and evaluation of existing projects which are not dependent on forest resources
RIC					1								
DSWD	1									1			
RRMP-SECAL				1									
PAMB				1	1	1	1	1	1	1	1	1	
Cluster PAMB	1	1	1	1									IEC materials on biodiversity
NGOs													Capability building on biodiversity conservation
BANWA	1	1	1	1	1	1	1	1	1	1	1	1	
TRICAP	1	1	1										
LEAF				1									
Local FAs							1	1	1	1	1		

Legend: 1-present

Appendix Table 14. Upland Ecosystem-Resources in agrosubecosystem of Barangay Small Potongan.

Stakeholders	Vegetables	Cereal Crops	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Fauna	Bamboos	Others
Local IPs	Plant cabbage, onion, chayote, squash	Grow rice and corn	Plant cassava, gabi, sweet potatoes	No attention given	Raise pigs and chickens	Conserve biodiversity due to existing laws;	No attention given	
	Share resources	Limited cultivated areas, oftentimes in the form of kaingin	Limited cultivated areas, oftentimes in the form of kaingin		Economically unsustainable	clear or well-defined demarcation/ boundaries of protected areas		
	Sustainability not assured due to poor soil condition	Harvest is insufficient for the family	Harvest is insufficient for the family		Increases biodiversity	Economically unsustainable		
	Environmental security not assured due to clear and well-defined boundaries of the protected area	Sustainability is not assured	Sustainability is poor			Biodiversity is favored		
	Biodiversity is threatened by use of chemicals	Environmental security and biodiversity are threatened by monoculture cropping						
LGUs SB Council ABC	Not their priority	Grow rice and corn	Mass production not promoted	No campaign and support for their growth	No policies and support in raising them	Assist in the implementation of policies re: conservation of wildlife	No attention given	
		Limited cultivated areas, oftentimes in the form of kaingin						
		Harvest insufficient for the family						
		Environmental security and biodiversity are threatened by monoculture cropping						
GOs DA DSWD NIA	No support given	No support given	No support for mass production	No attention given	No attention given	No attention given	No attention given	Assiste Womer through loans to product due to technic  NIA ass in the e of irrig but is r functio

**Appendix Table 14. Upland Ecosystem–Resources in agrosubecosystem of Barangay Small Potongan.**

Stakeholders	Vegetables	Cereal Crops	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Fauna	Bamboos	Others
NGOs	Plant cabbage, onion, chayote, and squash	No attention given	No attention given	Prioritize planting of fruit trees to reforest Mt. Malindang and environs	No attention given	No attention given	No attention given	
BANWA	Share resources			Provide seedlings to members				
	Sustainability not assured due to poor soil conditions							
	Environmental security assured due to clear and well-defined boundaries of protected areas							

**Appendix Table 14. Upland Ecosystem—Resources in grassland/brushland subecosystem of Barangay Small Potongan.**

Stake-holders	Forage spp	Forest Patches Shrubs/Herbs	Fern and Mosses	Bamboos	Livestock Fauna	Wildlife Fauna
Local IPs	Left unused due to absence of cows, carabaos, and horses	Allowed to cut trees for house construction	No attention given	No attention given	Participate in livestock, swine, and poultry raising	Conserve biodiversity due to existing laws; well-defined demarcation of protected areas
LGUs	Equity is undefined	Equitable use			Free choice	Economically unsustainable
	No sustainable use	Not sustainable			Sustainability is yet to be determined	Biodiversity is favored
	Absence of policies	No complete policies of their uses			Environmental security is threatened because of absence of technical knowledge	Biodiversity is enhanced
	Environmental security is strengthened	Environmental security is strengthened				
	Biodiversity is favored	Favorable to biodiversity conservation			Biodiversity is enhanced with their domestication	

**Appendix Table 14. Upland-Ecosystem Resources in forest subecosystem of Barangay Small Potongan.**

Stakeholder	Trees	Palm/Rattan	Vines/Creepers	Wildlife Fauna	Shrubs/Herbs	Ornamentals	Ferns
Local IPs	Observe the policy of "no cutting of trees and kaingin" inside protected forest areas	Some exploit those that are growing in their farms	Undefined use	Very few and limited to birds of lowland types, snakes, insects, and arachnids	Only those with medicinal value were given attention for cultivation	No attention given	No attention given
	No access	Not sustainable	Environmental security assured	Economically unsustainable	Others have no definite use		
	No sustainable use	Environmental security and biodiversity are threatened	Biodiversity is favored	Environmental security and biodiversity are threatened due to human encroachment	Economically unsustainable		
	Environmental security strengthened				Environmental security assured		
LGUs	Observe the policy of "no cutting of trees"	Not their priority	No attention given	Assist in the implementation of conservation	Not their priority	No attention given	No attention given
	No access			Economically unsustainable	Economically unsustainable	Economically unsustainable	
	Undetermined sustainable use			Environmental security and biodiversity enhanced	Environmental security assured	Environmental security is threatened because of kaingin practices	
	Empowered to implement policies				Biodiversity favored		
	Environmental security is strengthened						

Appendix Table 15. Upland Ecosystem—Resources in agrosubecosystem of Barangay Virayan.

Stakeholders	Vegetables	Cereal Crops	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Fauna	Bamboos
Local IPs	Not cultivated	Not cultivated due to unfavorable climate	Plant cassava, gabi, sweet potatoes, and lutia for cash and consumption  Hardly enough for basic needs  Economically unsustainable  Environmental security is threatened  Monoculture is a threat to biodiversity	Limited around residential areas  Most people plant coconut trees  Economically unsustainable  Environmental security is assured  Increased biodiversity	Raise poultry, horses, and carabaos  Economically unsustainable  Environmental security is threatened because no veterinarian is available  Biodiversity is increased with their domestication	Protect wildlife due to awareness of PAMB policies/regulations  Limited to avifauna of lowland type  Economically unsustainable  Environmental security is threatened  Biodiversity is threatened	These are naturally-grown  No attempt to use them for reforestation  Economically unsustainable  Environmental security is threatened  Biodiversity is threatened
LGUs SB members ABC SK	No attention given	Not adoptable to the place	Plant cassava, gabi, sweet potatoes, and lutia for cash and consumption  Hardly enough for basic needs  Economically unsustainable  Environmental security is threatened  Monoculture is a threat to biodiversity	Limited around residential areas  Most people plant coconut trees  Economically unsustainable  Environmental security is assured  Increased biodiversity	Raise poultry, horses, and carabaos  Economically unsustainable  Environmental security is threatened because no veterinarian is available  Biodiversity is increased with their domestication	Promote biodiversity  Conservation program because of existing laws	Not their concern
GOs	None in this barangay	Not a priority	No support given	No support given	No support given	Promote biodiversity conservation program because of existing laws by PAMB/DENR	Not their concern
NGOs	None in this barangay						

**Appendix Table 15. Upland Ecosystem-Resources in grassland/brushland subecosystem of Barangay Virayan.**

Stakeholders	Forage spp	Small Forest Patches and Shrubs/Herbs	Ornamentals	Fern and Mosses	Bamboos	Livestock Fauna	Wildlif
Local IPs	Natural pasture areas or naturally-grown	Allowed to cut trees around brushland areas for house construction	Abundant but not cultivated	No definite use	Naturally-growing along creeks and rivers	Only few have carabaos, horses, chickens, and swine	Only f lowlan were c
LGUs			Economically unsustainable	Economically unsustainable	Economically unsustainable	Economically unsustainable	Conse due to laws/p by DEI
ABC	Equal access		Environmental security is threatened because burning may occur unintentionally	Environmental security and biodiversity are threatened because nobody attempts to lift a finger for their care and conservation	Only few hills were observed	Environmental security is threatened	with sj attent monke eagle
SB Council	Unregulated use  Lack empowerment on sustainable use  Environmental security need to be evaluated  Biodiversity is threatened	Some are used for medicinal purposes  Mostly used for fencing materials  Economically unsustainable  Environmental security is threatened  Biodiversity is threatened	Biodiversity is threatened		Environmental security and biodiversity are threatened	Biodiversity is threatened	Econo unsusi  Enviro securii assure with p impler  Biodiv be ent later

**Appendix Table 15. Upland Ecosystem–Resources in forest subecosystem of Barangay Virayan.**

Stakeholders	Trees	Palm/Rattan	Vines/Creepers	Wildlife Fauna	Shrubs/Herbs	Ornamentals	Ferns/Mosses
Local IPs	<p>Most of them support no cutting of naturally-growing trees</p> <p>No equitable use of resources</p> <p>Sustainable use of resources not yet determined</p> <p>Each household is allowed to cut one tree from the brushland for house construction</p>	<p>Use only those found in their farm because of policy awareness</p> <p>Economically unsustainable</p> <p>Environmental security is threatened</p> <p>Biodiversity may be enhanced later</p>	<p>No definite use</p> <p>Economically unsustainable</p> <p>Environmental security and biodiversity may be threatened because of shifting cultivation practices</p>	<p>Observations were limited to birds</p> <p>No other vertebrate wildlife was observed</p> <p>Insects and arachnids were observed</p> <p>Economically unsustainable</p> <p>Environmental security and biodiversity are threatened</p>	<p>Only medicinal plants are cultivated</p> <p>Economically unsustainable</p> <p>Environmental security and biodiversity may be threatened because of shifting cultivation practices</p> <p>Biodiversity is threatened</p>	<p>No attention given, they just grow naturally anywhere</p> <p>Economically unsustainable</p> <p>Environmentally secure if no kaingin is done</p> <p>Biodiversity is threatened</p>	<p>No attention given because of unknown definite use</p> <p>Economically unsustainable</p> <p>Environmentally secure if no kaingin is done</p> <p>Environmental security is still assured if no kaingin is done</p> <p>Biodiversity may be threatened with shifting cultivation practices</p>
LGUs	Promote/advocate no cutting of trees from protected areas	Conservation is facilitated by policies formulated	Not their concern	Policies have been formulated by DENR/PAMB for implementation	Not their concern	Not their concern	Not their concern

**Appendix Table 16. Upland Ecosystem–Resources in agrosubecosystem of Barangay Poblacion, Concepcion.**

Stakeholders	Vegetables	Other Crops/ Corn	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Fauna	Bamboos
Local IPs	Grow squash, chayote and onion for cash and consumption	A number plant corn mainly for consumption	Many people grow sweet potatoes, gabi, cassava, and lutia for cash and consumption	Few are planted in their backyards	Some domesticate pigs and poultry	Only few lowland birds were observed	Naturally-growing along riverine areas
	Location of farms are very far from residences	The size of their cornfield is very limited	Economically unsustainable	Economically unsustainable	Some have horses and carabaos	Some still hunt for food and possible additional income	Economically unsustainable
	Low sustainability due to poor soil conditions	Non-use of chemical pesticides favors biodiversity	Economically unsustainable	Environmental security is assured	Economically unsustainable	Very economically unsustainable	Due to kaingin practices, environmental security is never assured
	Prevalence of kaingin system/ shifting cultivation	Very few engage in production of coconut and small scale rubber plantation	Environmental security is threatened because of shifting cultivation practices	Biodiversity is favored	Environmental security is threatened because of some diseases the animals encounter and no veterinarian is available	Environmental security is in danger	Biodiversity is threatened
	Economically unsustainable	Increases biodiversity	Biodiversity is threatened with kaingin practices		Biodiversity is enhanced	Biodiversity is threatened	
	Environmental security is questionable						
	Monoculture cropping threatens biodiversity						

**Appendix Table 16. Upland Ecosystem–Resources in grassland/brushland subecosystem of Barangay Poblacion, Concepcion.**

Stakeholders	Forage spp	Shrubs/Herbs	Fern/Mosses	Bamboos	Livestock Fauna	Wildlife Fauna
Local IPs	Untended and naturally-growing	Only those with medicinal value are cultivated	No definite use	Naturally-growing in the riverine areas	Few domesticated poultry and swine, horse, goat, and carabao	Very limited to birds of lowland type
	Shared by residents	Gathered as firewood	Economically unsustainable	Only few were observed	Economically unsustainable	Some insects, arachnids, millipede, and snails were observed
	Not managed properly	Economically unsustainable	Environmental security is threatened due to kaingin practices	Economically unsustainable	Environmental security is threatened	No policies in this regard
	Economically unsustainable	Economically unsustainable	Biodiversity is threatened	Environmental security is threatened	Biodiversity is threatened by diseases	Biodiversity is very much threatened
	Environmental security is threatened	Environmental security is threatened because of kaingin practices		Biodiversity is threatened		
	Biodiversity is threatened with the people's dependence on naturally-growing forage	Biodiversity is threatened				
LGUs GOs LGUs BANWA TRICAP	Untended and naturally-growing	Only those with medicinal value are cultivated	No definite use	Naturally-growing in the riverine areas	Few domesticated poultry, swine, horse, goat, and carabao	Very limited to birds of lowland type
	Shared by residents	Gathered as firewood	Economically unsustainable	Only few were observed	Economically unsustainable	Some insects, arachnids, millipede, and snails were observed
	Not managed properly	Economically unsustainable	Environmental security is threatened due to kaingin practices	Economically unsustainable	Environmental security is threatened	No policies in this regard
	Economically unsustainable	Economically unsustainable	Biodiversity is threatened	Environmental security is threatened	Biodiversity is threatened by diseases	Biodiversity is very much threatened
	Environmental security is threatened	Environmental security is threatened because of kaingin practices		Biodiversity is threatened		
	Biodiversity is threatened with the people's dependence on naturally-growing forage	Biodiversity is threatened				

**Appendix Table 17. Upland Ecosystem—Resources in agrosubecosystem of Upper Potongan, Concepcion.**

Stakeholders	Vegetables	Cereal Crops	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Fauna	Bamboos
Local IPs	Unattended Equity undefined	Grow corn and rice but farmlots are situated far from residences  Economically unsustainable	Grow root crops that can hardly support the needs of the family  Economically unsustainable	Seldom seen on residences and even in farmlots	Few raise chicken and swine  Others tend horses  Economically unsustainable  Environmental security is threatened	Presence of lowland birds  Diversity is very low since Upper Potongan has clustered houses – a remnant of logging concession area which operated in 1950s to 1970s	Not observed
LGUs	98% Subanon stewardship-land tenure  Some plant squash, chayote, gabi, and camote for cash and consumption  Sustainability is low since the area is almost barren because of poor soil condition  No environmental security	Few plant upland rice and corn for consumption only  Economically unsustainable  Biodiversity is decreased with monoculture cropping practices  No environmental security	More plant root crops for cash and consumption  Hardly enough for subsistence, therefore, it is economically unsustainable  Environmental security and biodiversity are threatened	Not attending to the need for varied fruits  Economically unsustainable  Biodiversity is threatened	Only few tend poultry, swine, horses, and goats  Economically unsustainable  Adds to biodiversity	Some still hunt for food and additional income  Economically unsustainable  Biodiversity is threatened	Not their priority resource  Economically unsustainable  Biodiversity is threatened

**Appendix Table 17. Upland Ecosystem—Resources in grassland/brushland subecosystem of Upper Potongan, Concepcion.**

Stakeholders	Forage spp	Shrubs/Herbs	Fern/Mosses	Bamboos	Livestock Fauna	Wildlife Fauna
Local IPs	Unattended	Unattended	Unattended	Not observed	Few raise ruminants like horses, goats, etc.	Very few were observed except lowland birds which were frequently sighted in the area
LGUs					Economically unsustainable Adds to biodiversity Environmental security is threatened	Economically unsustainable Biodiversity is highly threatened by human settlements

**Appendix Table 17. Upland Ecosystem—Resources in forest subecosystem of Upper Potongan, Concepcion.**

Stakeholders	Planted Trees	Palm/Rattan	Vines	Wildlife Fauna	Shrubs/Herbs	Ornamentals	Ferns/Mosses
Local IPs	They are not concerned	They are not concerned	They are not concerned	Some still hunt for food and additional income	Undefined use aside from some which have medicinal value	Unattended	Undefined use
LGUs				Economically unsustainable Biodiversity is highly threatened Environmental security is impossible	Economically unsustainable Shifting cultivation endangers environmental security and biodiversity	Economically unsustainable Environmental security and biodiversity are uncertain	Economically unsustainable Environmental security and biodiversity are somehow certain if no kaingin is done

**Appendix Table 18. Upland Ecosystem–Resources in agrosystem of Barangay Upper Salimpuno, Concepcion.**

Stakeholders	Vegetables	Cereal Crops	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Fauna	Bamboos
Local IPs	Not cultivated because of unfavorable soil	Plant corn as staple food	Plant root crops such as camote, gabi, cassava, and lulia for cash and consumption  Economically unsustainable  Monoculture practice is a threat to biodiversity	Coconut palms are plenty but bear limited fruits  Jackfruit, lanzones, and mangosteen are planted around residents' backyard and along the provincial/ barangay road	Raise pigs, chickens, and goats  Economically unsustainable  Increases biodiversity  Environmental security is threatened because proper protection from infestation is nil	Less due to closer human settlements and are limited to avifauna which is characteristic of the lowland  Biodiversity is highly threatened due to human habitation in the area	Few hills are observed along the riverine areas  Economically unsustainable  Contributes to biodiversity increase  Environmental security is threatened because no management is apparent
LGUs	Not cultivated	Equally distributed among the local people  Empowerment rests on the fathers but decisions are likewise influenced by the mothers  Sustainability assured due to presence of permanent crops like coconuts		Sustainability assured due to presence of permanent crops like coconuts  More environmental security due to presence of permanent crops	Not given emphasis	Lesser biodiversity due to nearby human settlements  Less emphasis on policies/laws governing protected areas	Not given attention  Not their concern

**Appendix Table 18. Upland Ecosystem–Resources in grassland/brushland subecosystem of Barangay Upper Salimpuno.**

Stakeholders	Forage spp	Shrubs/Herbs	Ferns/Mosses	Bamboos	Livestock Fauna	Wildlife Fauna
Local IPs	Utilized as pasture lands for domesticated animals	Patches are cut and sold as firewood	Unattended because people do not find them useful	Some are planted near the creeks to minimize soil erosion	Horses, cattles, carabaos, and poultry	Less biodiversity Not given attention
LGUs	Economically unsustainable because people depend on naturally-growing species	Some are used for herbal medication	Economically unsustainable	Only few hills are found	Economically unsustainable Increases biodiversity	Economically unsustainable
	Environmental security is very uncertain	Economically unsustainable	Biodiversity is high	Economically unsustainable		Diversity is limited to avifauna of lowland type
	Biodiversity is threatened	Biodiversity is threatened if no replenishment will be done		Adds to biodiversity		

**Appendix Table 18. Upland Ecosystem–Resources in forest subecosystem of Barangay Upper Salimpuno, Concepcion.**

Stakeholders	Planted Trees	Palm/Rattan	Vines/Creepers	Wildlife Fauna	Shrubs/Herbs	Ornamentals	Ferns/Mosses
Local IPs	Some participate in tree planting along cultivated land boundaries	NA	NA	NA	NA	NA	NA
	Economic sustainability needs to be evaluated			No pronounced insect pests complaint by farmers			
	Lack empowerment in planting trees						
	Environmental security is uncertain						
LGUs	Promote DENR policies on planting	NA	NA	NA	NA	No attention given	No attention given
	No established policies on equitable use of lands						Undefined use
	Lack empowerment in tree planting						Highly diverse
	Environmental security is uncertain						

**Appendix Table 19. Upland Ecosystem–Resources in agrosubecosystem of Barangay Lampasan, Don Victoriano.**

Stakeholders	Vegetables	Corn	Root Crops	Fruit Trees	Livestock Farm	Wildlife Fauna/ Flora	Bamboos
Sangguniang Bayan	Some participate in the growing of tomatoes, onion, and cabbage	Some participate in the growing of tomatoes, onion, and cabbage	Some participate in the growing of tomatoes, onion, and cabbage	Some participate in the growing of tomatoes, onion, and cabbage	Some participate in the growing of tomatoes, onion, and cabbage	Not collected because of awareness on wildlife conservation and management	Very few plant bamboos
Barangay Council							
ABC	Everybody's option to plant vegetables	Everybody's option to plant vegetables	Economically unsustainable	Minimize soil erosion			
SK	Respect the decision of farmers	Respect the decision of farmers	Advocates of environmental security	Contribute to biodiversity increase			
	Enough to sustain poor way of life	Enough to sustain poor way of life	Economically unsustainable	Biodiversity conservation and management			
	Economically unsustainable	Enough to sustain poor way of life	Economically unsustainable	Economically unsustainable	Economically unsustainable	Economically unsustainable	
		Economically unsustainable					
RRMP-ENR-SECAL	NA	NA	NA	Participate in the promotion of agroforest technology by distributing seedlings to farmers as loan to members of Cooperative	NA	NA	NA
PAMB Cluster PAMB BANWA LEAF DSWD-SEAK	NA	NA	NA	Promoters of agroforest conservation and management	NA	Contribute to wildlife conservation and management	NA

**Appendix Table 19. Upland Ecosystem—Resources in grassland/brushland subecosystem of Barangay Lampasan.**

Stakeholders	Forage spp	Shrubs/Herbs	Fern/Mosses	Bamboos	Livestock Fauna	Wildlife Fauna	Wildlife Flora
Sangguniang Bayan	Naturally-grown and used for livestock grazing and pasture	Naturally-grown and some are used for herbal medicine	Use is not known to many	Naturally-grown	Some are involved in poultry and swine raising	Protect wildlife by formulating policies	Protect wildlife by formulating policies
Barangay Council	Not properly managed	No effort for management and conservation was observed	Naturally-grown	No attempt to manage this resource	Not properly managed	NA	Economically unsustainable
ABC	Not economically sustainable	Not economically sustainable	Some were cultivated	Not economically sustainable	Economically unsustainable	Economically unsustainable	Biodiversity is enhanced
SK	Everybody has the freedom to utilize them	Biodiversity is endangered because of land use	Economically unsustainable	Increase biodiversity in the area	Contribute to increase in biodiversity	Enhanced biodiversity conservation and management	
	Biodiversity is threatened	No assurance of ecological security	Highly contribute to biodiversity				

**Appendix Table 19. Upland Ecosystem—Resources in forest subecosystem of Barangay Lampasan.**

Stakeholders	Trees	Palm/Rattan	Vines/Creepers	Wildlife Fauna	Wildlife Flora	Shrubs/Herbs	Ferns/Mosses
Sangguniang Bayan	Initiated tree planting activity	Not concerned	Unknown economic use	Protect wildlife by policies formulated	Not their concern	Some are used in herbal medicine	Undefined use
Barangay Council	They have a common choice of tree to be planted	Economically unsustainable	Economically unsustainable	Economically unsustainable	Some species are highly recommended for ex situ cultivation	Economically unsustainable	Economically unsustainable
ABC		Environmental security and biodiversity are threatened of their non-concern	Highly diverse	Ecological security and biodiversity are uncertain	Economically unsustainable	Highly diverse	
SK	Economically unsustainable						
	Environmental security is enhanced				Environmental security and biodiversity is uncertain		
	Contribute to biodiversity enhancement						
RRMP-ENR-SECAL	Initiates tree planting	Not their concern	NA	NA	NA	NA	NA
LEAF	Implements tree planting through the guidance and help from RRMP-ENR-SECAL	Not their priority	NA	NA	Not their priority species	Not their priority species	NA
		Species for planting					

**Appendix Table 20. Upland Ecosystem—Resources in agrosubecosystem of Barangay Tuno, Don Victoriano.**

Stakeholders	Vegetables	Cereal Crops	Root Crops	Fruit Trees	Livestock Farm	Wildlife Fauna	Bamboos
LGUs	Some participate in the production of cabbage, onion and tomatoes	Few participate in planting rice and corn mainly for consumption (note the presence of corn mill here)	Most of the members participate in planting camote, cassava, gabi, and lutia both for cash and consumption	Some participate in planting fruit trees like jackfruit, and mango, in the backyards	Many members raise swine, poultry, carabaos, horses, and goats	All residents participate in the conservation of wildlife fauna	Most are naturally-growing along the riverbanks which minimizes soil erosion
Sangguniang Bayan							
Barangay Council	Sale of produce may not be enough to meet the needs of the family especially when they are cheap	Produce cannot sustain them until the next harvest period	Sale of produce are not enough to meet the needs of the family	Offer incentive in planting high value fruit trees (i.e., durian) by providing people with necessary seedlings	Livestock such as goat is issued to members of the RIC as a way of letting women augment the income of the family	Economically unsustainable	Very few plant bamboos
ABC							
SK							
DA		Economically unsustainable					Increases biodiversity
DSWD	Economically unsustainable	The use of chemicals for pests, mildews, rusts, and inorganic fertilizers threaten their environmental security and biodiversity	Economically unsustainable	Economically unsustainable	Economically unsustainable		NA
Piniling Nasud	Monoculture, non-application of soil and water conservation measures, and application of chemicals threaten their environmental security and biodiversity		Monoculture enhances soil infertility	Environmental security is still to be scrutinized	Environmental security is yet to be determined		
RRMP-ENR-SECAL			Environmental security is not assured	Biodiversity is enhanced with the planting of different varieties of fruit trees	Biodiversity is enhanced		
NGOs	NA	NA	NA	Encourage fruit tree planting to reforest some areas	NA	Promote wildlife conservation by providing niches of these animals through tree reforestation activities	
BANWA				Free seedlings are given to participating members		Economically unsustainable	
				Economic sustainability still to be determined		Environmental security and biodiversity can be enhanced	
				Environmental security and biodiversity will be enhanced			

**Appendix Table 20. Upland Ecosystem—Resources in grassland/brushland subecosystem of Barangay Tuno, Don Victoriano.**

Stakeholders	Forage spp	Shrubs/Herbs	Ferns/Mosses	Bamboos	Wildlife Fauna
LGUs Sangguniang Bayan Barangay Council ABC SK	Naturally-grown for domesticated grazers  Economically unsustainable  Environmental security and biodiversity are not favorable	Only those with medicinal value are cultivated, others are taken for granted  Environmental security and biodiversity are assured and favored because of non-exploitation	Undefined economic use  Economically unsustainable  Environmental security and biodiversity are assured and favored because of non-exploitation	Few may be located near the riverbanks  Economically unsustainable  Environmental security and biodiversity are threatened because no attention is given for its conservation and cultivation	Very few and limited to avifauna  Human habitation and over-exploitation of the habitat reduce their population  Policies formulated and implemented by LGUs promote their biodiversity and environmental security
GOs DA DSWD	Not their concern	NA	NA	NA	Prioritize livestock breeding and distribution to women to augment the income of the family  Environmental security and biodiversity are assured

**Appendix Table 20. Upland Ecosystem—Resources in forest subecosystem of Barangay Tuno, Don Victoriano.**

Stakeholders	Trees	Palm/Rattan	Shrubs/Herbs	Ferns/Mosses	Ornamentals	Wildlife Fauna
LGUs	Formulated policies regarding non-cutting of trees and no kaingin in protected areas	Not their priority  Only few are present in their respective habitat	Only those with medicinal values are cultivated; others have no definite use	No definite use is indicated  Economically unsustainable	Many cultivate some anthuriums and orchids  Economically unstable	Recent policy formulations favor wildlife conservation  Only few and are limited to avifauna
	Encourage planting of fruit trees by providing a nursery in the municipality	Economic sustainability is questionable	Economically unsustainable  Environmental security and biodiversity can be assured	Biological diversity is enhanced  Environmental security cannot be assured	Environmental security and biodiversity are enhanced	Economically unsustainable  Biodiversity and environmental security are assured
	Economic sustainability is questionable	Environmental security and biodiversity are threatened				
	Environmental security and biodiversity are facilitated					
PAMB	Strict implementation of policies, rules and regulations in terms of cutting trees is always monitored	As applied among trees  Economically unsustainable	NA	NA	NA	Implements wildlife conservation policies  Favors biodiversity and environmental security
	Economically unsustainable	Environmental security and biodiversity are enhanced				
	Environmental security need to be assessed especially for introduced species					
	Biodiversity is favored					
NGOs BANWA	Encourage tree planting by giving out seedlings	Not their major concern to use in the reforestation activities	NA	NA	NA	Wildlife conservation is facilitated  Biodiversity is enhanced
	Economically unsustainable					
	Environmental security is threatened with the alien species					
	Biodiversity is favored					

**Appendix Table 21. Upland Ecosystem—Resources in agrosubecosystem of Barangay Lalud, Don Victoriano.**

Stakeholders	Vegetables	Cereal Crops	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Flora/ Fauna	Ornamentals
Piniling Nasud Local indigenous people	Some people grow onions, tomatoes, and cabbage	Few members grow rice and corn for consumption only	Many members grow sweet potato, gabi, lutia, and kanaka for cash and consumption	Some members plant fruit trees in their backyards	Many members raise chickens, pigs, goats, horses, and carabaos	Some collect and sell birds to augment their income, which is a big threat to biodiversity	Some members grow ornamental plants like anthuriums and orchids as a hobby
	They have farms with an average size of 1 ha	Only small area is suitable to rice and corn	Farmer's choice	Farmer's choice	Economically unsustainable	Discreetly done thus no equity	No proper management is being observed because they are mainly for home use
	Not sustainable due to poor soil condition	Usually harvested in 4 to 5 months after sowing	Sale of produce can hardly meet the needs of the family, hence, people do "manungha" for additional income	No promotion of this resource contributes to biodiversity conservation and environmental security	Free choice	Economically unsustainable	Economically unsustainable
	Lack technical knowledge on crop growing	Terrain and soil are unfavorable for their sustainability	Lack knowledge on SALT	Monoculture and non-application of soil and water conservation measures deplete soil nutrients and facilitate soil erosion	Lack support mechanism for livestock raising	Some undermine the law	Contribute to biodiversity
	Monoculture practices, non-application of soil and water conservation measures and application of chemical	Biodiversity and environmental security are threatened by use of inorganic fertilizers and chemical pesticides	Environmental security and biodiversity are threatened		Contribute less to biodiversity, thus environmental security is uncertain	No assurance of environmental security	Gardening can be a good opportunity for alternative source of income which is not forest-based
Environmental security and biodiversity are threatened							
LGUs Sanguniang Bayan Barangay Council	Almost all members grow onions, tomatoes, and cabbage	Almost all members grow onions, tomatoes, and cabbage	Almost all members grow onions, tomatoes, and cabbage	Provide incentive by supplying seedlings from the nursery established	Many members raise chickens, pigs, goats, horses, and carabaos	Protect wildlife by policy formulations	Not their concern
ABC SK GOs DA DSWD-SEAK	Not sustainable due to poor soil condition	Not sustainable due to poor soil condition	Not sustainable due to poor soil condition	Financial assistance and guidance are provided by the cooperative established	Economically unsustainable	Everybody is covered by the policy	Not their concern
	There is no environmental security	There is no environmental security	There is no environmental security		Contribute less to biodiversity, thus environmental security is uncertain		

**Appendix Table 21. Upland Ecosystem—Resources in agrosubecosystem of Barangay Lalud, Don Victoriano continued...**

Stakeholders	Vegetables	Cereal Crops	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Flora/ Fauna	Ornamentals
LGUs Sanguniang Bayan Barangay Council ABC SK GOs DA DSWD-SEAK NGOs (BANWA) TRICAP	Monoculture practices, non-application of soil and water conservation measures, and application of chemicals threaten environmental security and biodiversity	Monoculture practices, non-application of soil and water conservation measures, and application of chemicals threaten environmental security and biodiversity	Monoculture practices, non-application of soil and water conservation measures, and application of chemicals threaten environmental security and biodiversity	Equitable distribution of planting stock  Sustainable use is expected		Not their concern	No attention given

**Appendix Table 21. Upland Ecosystem—Resources in grassland/brushland subecosystem of Barangay Lalud, Don Victoriano.**

Stakeholders	Forage spp	Shrubs/Herbs	Ferns/Mosses	Bamboos	Livestock Fauna	Wildlife Fauna	Wildlife Flora
Local indigenous people	Dependence on naturally-growing forage for their animals	Some naturally-grown are used in herbal medicine	No definite use  Equity undefined	Few participate in planting  No equity	Few tend swine, goat, and chicken  Free choice	Limited to avifauna which is a characteristic of the lowland	Very few due to human habitation  Equity undefined
Piniling Nasud	No equity  Unsustainable use  Unaware of proper forage management  No assurance of environmental security	Free choice  Economically unsustainable  Lack support and incentives  Clean cultivation endangers environmental security	Economically unsustainable  Due to shifting cultivation practices, these resources are environmentally threatened	Few hills help minimize soil erosion  Lack promotional effort  Unsustainable  No environmental security	Lack technical knowledge on livestock raising  Unsustainable  No environmental security	Some IPs collect for trading  Equity is not defined  Economically unsustainable  No proper implementation of laws  No environmental security	No sustainability  No environmental security  Lack awareness campaign  No environmental security
LGUs GOs NGOs	Not their area of concern	Not their area of concern	Not given attention				

Appendix Table 21. Upland Ecosystem—Resources in forest subecosystem of Barangay Lalud, Don Victoriano.

Stakeholders	Trees	Vines/Creepers	Wildlife Fauna	Shrubs/Herbs	Ornamentals	Ferns/Mosses
Piniling Nasud	Some participate in planting	Undefined use	Promote conservation by refraining from hunting activities	Not their concern except for some with medicinal values	No attention given	Not given attention because their use is undiscovered
Local indigenous people	Introduce species	Economically unsustainable	Very few left and limited to avifauna of lowland species	Equity issue not addressed	Equity issue not addressed	Equity issue not addressed
	Equity is not clearly defined	Shifting cultivation endangers environmental security and biodiversity	More insects of pest potential were observed	Economically unsustainable	Economically unsustainable	Economically unsustainable
	Sustainability of few planted trees needs to be assessed	Biodiversity is enhanced because of no defined use	Fully empowered to protect them	Shifting cultivation endangers environmental security and biodiversity	Shifting cultivation endangers environmental security and biodiversity	Shifting cultivation endangers environmental security and biodiversity
	Not empowered to reforest some areas	Not their concern	Biodiversity may be restored in shorter period	Some members use them for medicinal purposes	Few are cultivated in backyards for aesthetic value only	No defined use
	Environmental security is uncertain	Economically unsustainable	Some collect for trading to augment their income but are encouraged by the LGUs to protect them	Economically unsustainable	Economically unsustainable	Equity issue is not addressed
		Uninformed of its uses	Lack observation of laws			Economically unsustainable
		Shifting cultivation endangers environmental security and biodiversity	Economically unsustainable	Biodiversity and environmental security are threatened	Biodiversity and environmental security are threatened	Biodiversity and environmental security are threatened
LGUs GOs	Encourage local people to reforest their areas		Encourage locals to protect wildlife by giving financial incentives/awards for being able to point the location of their nests	No attention given	No attention given	No attention given
	Policies formulated for implementation involve non-cutting of trees		Some areas are closed to hunting	Economically unsustainable	Economically unsustainable	Economically unsustainable
	DA provides seedlings for reforestation		Economic sustainability is not possible	Enhanced biodiversity	Enhanced biodiversity	Enhanced biodiversity
	DA provides technical support					
NGOs	Their main concern is to reforest many areas		Partially empowered to protect wildlife	No attention given	No attention given	No attention given
	Give incentives by giving out seedlings for planting		Spearheaded the conservation of wildlife			
			Inequitable use			
			Economically unsustainable			

**Appendix Table 22. Upland Ecosystem—Resources in agrosubecosystem of Barangay Mansawan, Don Victoriano.**

Stakeholders	Vegetables	Corn	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Fauna	Bamboos
Piniling Nasud	All members participate in growing onions, cabbage, chayote, and pechay	Few members plant corn as it is not adoptable to the climatic condition	All members grow gabi, camote, lutia, and cassava	Only few members grow fruit trees	Very few tend pigs, poultry, and horses	All members do not kill any wildlife	Few are involved in planting bamboos
LGUs				The number of trees are few	The number is not sufficient	Mandated to protect wildlife	The number of hills are very limited and not sufficient
Barangay Council	The size of the farm is limited to the family's capacity. Each household has equal access to the land/grassland	The size of the farm is limited	The size of the farm is limited depending on the capacity of the household	Both husband and wife share in decision-making but lack the capability to grow and manage fruit trees	Both husband and wife share in decision-making but lack the technology in raising livestock	Highly sustainable to practice wildlife conservation	Unaware of their importance
Sangguniang Bayan		Both husband and wife share in decision-making but lack technical know-how	Both husband and wife share in decision-making	Insufficient for cash and consumption needs	Their number is not enough for economic sustainability	Such practice ensures environmental security	Hardly enough for their use; unsustainable
SK	Both husband and wife have equal role in decision-making as to what vegetable to plant	Not enough for consumption	They lack the technical know-how on SALT	Lack impetus to plant fruit trees; this is not contributing to biodiversity conservation	Less efforts for livestock raising does not contribute to biodiversity conservation	Some members hunt for wildlife and participate in conservation	Less emphasis on bamboo planting threatens environmental security
GOs		Reliance on inorganic fertilizers is a threat to biodiversity conservation	Just enough for cash and consumption needs			"No use" policy not equitable	Some participate in planting giant bamboos
Rural Improvement Club (RIC)			Absence of soil and water conservation measures threaten biodiversity conservation and environmental security			Mandated to protect wildlife	No equitable use of bamboos
DSWD/SEAK	Hardly enough to sustain them economically						Urged to campaign for planting bamboos
RRMP-SECAL	Monoculture practices, non-application of soil and water conservation measures endanger biodiversity						Sustainability is the target
PAMB	Reliance on inorganic fertilizers and chemicals are threats to biodiversity conservation						Promote the attainment of environmental security
NGOs							
BANWA							
TRICAP							
LEAF							
Local Farmers' Association							

**Appendix Table 22. Upland Ecosystem—Resources in grassland/brushland subecosystem of Barangay Mansawan, Don Victoriano.**

Stakeholders	Forage spp	Shrubs/Herbs	Fern and Mosses	Bamboos	Livestock Fauna	Wildlife Fauna	Ornamental Plants
Piniling Nasud	Dependent on naturally-growing forage spp for their livestock consumption	Dependent on naturally-growing forage spp for their livestock consumption	No attention given	Few plant bamboos	Most of them raise horses	No concern in birds and insect conservation	Remain unused by everybody
LGUs	First-come-first-use basis	First-come-first-use basis	No equity of use	No equity in the use of species	Individuals' choice	Undefined equity of use	Open access for bioprospecting
	No control mechanism	No control mechanism	Shifting cultivation is tolerated, resulting to destruction of species	Sustainability is uncertain	No regulatory measures	No established policies/schemes	No regulatory policies
	No scheme of sustainability of use	No scheme of sustainability of use	No control mechanism	No regulatory mechanism	Lack know-how in horse management	Sustainability is uncertain	Not economically sustainable
	Environmental security is threatened	Environmental security is threatened	Environmental security is threatened, biodiversity resources are low	Environmental security is threatened but their presence along creeks minimizes soil erosion	Environmental security is at stake	Environmental security is under question	Environmental security is strengthened

**Appendix Table 22. Upland Ecosystem–Resources in forest subecosystem of Barangay Mansawan, Don Victoriano.**

Stakeholders	Trees	Palm/Rattan	Vines/Creepers	Shrubs/Herbs	Ornamentals	Wildlife Fauna	Ferns/Mosses
Piniling Nasud	All members observe non-cutting of trees	All members observe non-cutting of trees thereby	Members do not use these resources	Members participate in growing medicinal herbs	Members do not use them	Members do not kill animals because of religious beliefs	Members do not use them
PAMB	No utilization of tree and equity is sacrificed	conserving palms and rattans for the future generations	Equity undefined	Equal access to resources	Equity is undefined	Equity is undefined	Equity of use is undefined
LGUs	Not economically sustainable because they are not being used	Equity of use is sacrificed	Empowered to implement the “no use” policy	Economically sustainable, many members rely on herbal plants for medication	Not economically sustainable because members do not use them	Economically unsustainable	Not economically sustainable
GOs			Environmentally secure, thereby contributing to increase in biodiversity of resources	Encourage planting of medicinal plants	Environmental security is assured and therefore contributing to biodiversity conservation	Members prohibit collection of wildlife	Members contribute to environmental security thereby increasing biodiversity in the ecosystem
NGOs						Members contribute to environmental security thereby increasing biodiversity conservation	
RIC							
DSWD	Each household is empowered to prohibit members from cutting trees	Not economically sustainable because they are not being used					
RRMP-SECAL							
PAMB	Environmental security assured	Environmentally secure, thereby contributing to increase in biodiversity of resources					

**Appendix Table 23. Upland Ecosystem—Resources in agrosubecosystem of Barangay Gandawan, Don Victoriano.**

Stakeholders	Vegetables	Corn	Root Crops	Fruit Trees	Livestock Fauna	Wildlife Fauna	Bamboos
Piniling Nasud	Members engage in vegetable production (onions, cabbage, chayote, and pechay)	Very few members plant corn due to climatic condition and environmental limitations	Most members plant sweet potatoes, cassava, and other root crops	Several members grow fruit trees around their backyards	Most members domesticate poultry and swine	Conserve fauna including <i>Aphis cerana</i> in their own houses	Few members have bamboos in their areas
Local indigenous people							
LGUs	The size of the farm is limited to the family's capacity; there is equal sharing	The size of the farm is small, depending on one's capability	The size of the farm is dependent on one's capability	The number of trees are few	The number is not sufficient	The numbers are limited to avifauna, insects, arachnids, leeches, frogs, and toads	The number of hills are very limited; not an equitable size
Barangay members							
ABC							
SK	Both husband and wife have equal participation in decision-making - as what vegetable to plant; lack know-how on IPM	Both husband and wife share in decision-making but lack technology in land preparation	Both husband and wife share in decision-making but need some technology in food processing and post harvest	Hardly enough for cash and consumption needs	Both husband and wife share in decision-making but lack knowledge in raising livestock	Covered by law prohibiting its uses	Hardly enough for their use
GOs							
PAMB cluster							
NGOs							
BANWA	Hardly enough to sustain them economically	Not enough for consumption	Just enough for cash and consumption needs	Planting some fruit trees increases floral diversity	Their number is not enough to sustain them economically	Economically unstable	Promotion of bamboo growing increases biodiversity conservation
TRICAP	Monoculture practices, non-application of soil and water conservation measures, and reliance on inorganic fertilizers and chemicals are threats to biodiversity	Reliance on inorganic fertilizers is a threat to biodiversity conservation	Monoculture is a threat to environmental security		Tending domesticated animals increases faunal diversity	Environmental security is ascertained	

**Appendix Table 23. Upland Ecosystem—Resources in grassland/brushland subecosystem of Barangay Gandawan.**

Stakeholders	Forage spp	Shrubs/Herbs and Abaca	Fern and Mosses	Bamboos	Livestock Fauna	Wildlife Fauna	Ornamentals
Piniling Nasud LGUs	Utilize uncultivated forage spp for animals	Some shrubs and herbs are used as medicines for curing various ailments	Non-utilization of ferns and mosses	Few plant bamboos; wild or climbing bamboos are still present but unattended	Most members own horses, chickens, and pigs	Do not disturb wildlife based on religious beliefs	Not attended
GOs	First-come-first-use basis		Equity does not apply		"Free choice" based on instinct	Equity does not apply	No equity
Local indigenous people	No specific policy	"Free for all"	Unaware of their uses	Equity of use not defined	Lack know-how in raising livestock	Knowledgeable about conservation	No knowledge
	No sustainable use	Sustainability of use is uncertain	Sustainability of the resource is undefined	Environmental security/conservation is uncertain	Sustainability is uncertain	Economically unsustainable	Sustainability is uncertain
	Environmental security is uncertain	Environmental security is uncertain	Environmental security/conservation is uncertain	Sustainability not assured	Environmental security is not assured	Environmental security is assured	Environmental security is not assured
	Do not exert effort in managing overgrazed lands	Sustainability of use is uncertain					
	No equitable use	Environmental security is uncertain					
		Some plant abaca and produce fiber for sale and use shrubs and herbs as curing ailments					

**Appendix Table 23. Upland Ecosystem—Resources in forest subecosystem of Barangay Gandawan, Don Victoriano.**

Stakeholder	Trees	Palm/Rattan	Vines/Creepers	Wildlife Fauna	Shrubs/Herbs	Ornamentals	Ferns/Mosses
Piniling Nasud	All members observe non-cutting of trees	Some use them for medicinal purposes	Remain unutilized	Remain unused			
LGUs						Not taken advantaged of	No equitable use
GOs	All members share the view that trees should be preserved for future generations being the gift from God	All members share the view that trees should be preserved for future generations being the gift from God	All members share the view that trees should be preserved for future generations being the gift from God	All members share the view that trees should be preserved for future generations being the gift from God	Free access		No policy on the use of these resources
PAMB					Equity is uncertain	Equity is undefined	Economically unsustainable
Local indigenous people	Each household head is empowered to restrict the members of his household from cutting trees	Each household head is empowered to restrict the members of his household from cutting trees	Each household head is empowered to restrict the members of his household from cutting trees	Each household head is empowered to restrict the members of his household from cutting trees	Lack know-how in conserving them	Unaware of the potential of these resources	Environmental security is assured
	May not be economically sustainable	Sustainability is undefined	No economic sustainability				
	Environmental security is strengthened	Environmental security is uncertain	Environmental security is assured				

**Appendix Table 24. Upland Ecosystem–Resources in agrosubecosystem of Barangay Lake Duminagat, Don Victoriano.**

Stakeholder	Vegetables	Corn	Root Crops	Fruit Tress	Livestock Fauna	Wildlife Fauna	Bamboos
Piniling Nasud LGUs Local indigenous people	Engage in vegetable production which include cabbage, onion, and chayote  Free choice  Sale of produce is insufficient in meeting the basic needs of the family  Insufficient technical know-how  Use of insecticides threatens environmental security	Not cultivated due to long rainy months	Grow sweet potato together with gabi and cassava  No other choice  Barely enough to sustain food needs  Indigenous knowledge is maintained  Continuous growing of the same crops depletes soil nutrient	Not cultivated	Raise ducks, chickens, and pigs  Free choice  Sustainability is uncertain  Lack technical knowledge on livestock raising  Promote faunal diversity	Promote wildlife fauna conservation  No economic equity  Sustainable biodiversity  Religious mandate	Few plant giant bamboos  Free choice  Not sustainable  Lack promotion on this resource  Contribution to environmental security is nil

**Appendix Table 24. Upland Ecosystem–Resources in grassland/brushland subecosystem of Barangay Lake Duminagat.**

Stakeholder	Forage spp	Shrubs/Herbs	Fern/Mosses/ Ornamentals	Bamboos	Livestock Fauna	Wildlife Fauna/Flora
Piniling Nasud LGUs	Utilize forage for pasture; others plant forage for horses	Some are used for medicinal purposes	Unutilized for not knowing their potentials	Naturally-growing in the forest; unattended	Raise chickens, pigs, and horses for hired "karyada", home consumption, and selling	All members do not use these wildlife fauna
Local indigenous people	First-come-first-use basis	Presence of abaca which is a source of fiber (as an additional source of income)	Abundance of ferns, mosses, and other ornamental plants	Not gainfully used	Depend on one's decision to raise livestock	Local IPs collect birds and native orchids for house decors and for additional income
GOs	No policy for its use	Resources shared by all	Equity is undefined	No policy for sustainable use	Lack technical knowledge on livestock raising	Economically unsustainable
NGOs	Assurance of sustainability and environmental security may be true for a short time but many years after, without replenishment, it can endanger sustainability and environmental security. This will lead to threatened biodiversity	No policy for proper use	Economically unsustainable; unutilized	People do not maximize their use due to lack of innovativeness	Environmental security is assured	Environmental security is threatened
		Environmental security is assured	Environmental security is assured	Environmental security is assured	Unsustainable way of raising livestock	Biodiversity is highly threatened
					Income earned from "karyada" is hardly enough to maintain economic sustainability	Piniling Nasud members are advocates of assured biodiversity because of their beliefs
					Environmental security is assured	

Appendix Table 24. Upland Ecosystem—Resources in forest subecosystem of Barangay Lake Duminagat.

Stakeholder	Trees	Palm/Rattan	Vines/Creepers	Wildlife Fauna	Shrubs/Herbs	Ornamentals	Ferns/Mosses
Piniling Nasud	All members observe non-cutting of trees	All members do not cut them to conserve for future generations because these are gifts from God and must not be abused	Their economic uses are not widely known	All members observe non-cutting of trees	Some use them for medicinal purposes	Remain unutilized	Remain unused
Local IPs	All members share the view that trees should be preserved for future generations being the gift from God	Economically unsustainable	Ecologically important to minimize soil erosion	All members share the view that trees should be preserved for future generations being the gift from God	Free access and equity is uncertain	Not taken advantaged of	No equitable use
	Each household head is empowered to restrict the members of his household from cutting trees	Environmental security is assured	Contribute to high biodiversity in the area	Each household head is empowered to restrict the members of his household from cutting trees	Lack know-how in conserving them	Equity is undefined	No policy on the use of these resources
	Not economically sustainable	Favorable to biodiversity conservation	Environmental security is assured	May not be economically sustainable	Sustainability is undefined	Unaware of the potential of these resources	Economically unsustainable
	Environmental security is strengthened		Biodiversity is conserved	Environmental security is strengthened	Environmental security is uncertain	No economic sustainability	Environmental security is assured
				Some collect for trading to earn additional income		Environmental security is assured	Biodiversity is high
LGUs	Policies formulated for implementation by PAMB are necessary for biodiversity conservation and management	Policies formulated for implementation can secure its contribution to biodiversity conservation	Mainly left to grow for ecological reasons	Conservation with emphasis on the monkey-eating eagle	No attention given	No attention given	Undefined use
			Biodiversity and environmental security are assured	Biodiversity is endangered			Economically unsustainable

**Appendix Table 25. Socioeconomic and cultural profile of the 12 barangays.**

Checklist	Barangays*											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>A. Population characteristics</b>												
No. of households	362	61	58	206	360	166	66	35	58	62	53	74
Ave. size/ household	5	6	7	5	5	5	6	4	4	4	5	
Size of population	1686	363	391	1065	1829	861	394	152	219	240	264	311
Age composition												
below 15 yrs old		45%	45%	45%	43%	43%	45%	45%	45%	38%	38%	38%
15-64 yrs old	65%	50%	50%	50%	55%	55%	50%	53%	53%	60%	58%	61%
65+ years old		5%	5%	5%	2%	2%	5%	2%	2%	2%	4%	3%
Sex ratio (More females than males in all barangays)												
Distribution by linguistic background												
% Subanon	85%	95%	100%	40%	70%	70%	90%	98%	95%	10%	40%	0
% Cebuano, Boholano, others	15%	5%		60%	30%	30%	10%	2%	5%	90%	60%	100%
Size of school age population	10%	10%	10%	10%	10%	10%	10%	10%	10%		10%	10%
Settlement pattern	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered	Clustered	Dispersed	Clustered	Clustered	Houses are found along the road
Why?		Terrain is like a cauldron	Terrain is like a cauldron	Defined barangay proper site		in brgy. proper	in brgy. proper					
<b>B. Infrastructure/ Social Services</b>												
Education												
Pre-school												
No. of teachers	1	1	1	1	1	1	1	1	1	1	1	1
No. of classrooms	1	1	1	1	1	1	1	1	1	1	1	1
No. of grades	1	1	1	1	1	1	1	1	1	1	1	1

\*1-Mansawan, 2-Gandawan, 3-Lake Duminagat, 4-Lampasan, 5-Lalud, 6-Tuno, 7-Small Potongan, 8-Upper Potongan, 9-Virayan, 10-Poblacion, 11-Upper Salimpuno, 12-Sixto Velez

Appendix Table 25. Continued...

Checklist	Barangays												
	1	2	3	4	5	6	7	8	9	10	11	12	
Elementary													
No. of teachers	8	1	1	2	8	4	1	0	1	7	4	1	
No. of classrooms	6	2	2	4	8	4	1	0	4	6	4	2	
No. of grades	6	2	2	4	6	4	2	0	2	6	4	2	
High school													
No. of teachers	0	0	0	0	4	0	0	0	0	6	0	0	
No. of classrooms	0	0	0	0	4	0	0	0	0	6	0	0	
No. of grades	0	0	0	0	4	0	0	0	0	4	0	0	
Health													
No. of BHWs	8	1	1			Has doctor, nurse, ambulance	2	2	1	Has nurse and midwife	2	2	
No. of visits by midwife	Midwife lives in Mansawan	once a month	once a month										
Distance to nearest health center	Health center is in brgy. proper	3 kms	6 kms	Health center is in brgy. proper	Health center is in brgy. proper		3 kms	2 kms	7 kms	Health center is in brgy. proper			
Prevalence of malnutrition	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data	14 - 1st degree 10 - 2nd degree	No data	
Transportation													
Type of road to poblacion	Trail	Trail	Trail	Gravelled	Gravelled	Gravelled	Partly gravelled	Partly gravelled	Partly gravelled	Gravelled	Partly gravelled	Gravelled	
Means of transport to poblacion	Foot, horse	Foot, horse	Foot, horse	Jeep, horse, motorcycle	Jeep, motorcycle	Jeep, motorcycle	Foot, motorcycle	Foot, motorcycle	Foot, horse	Jeep, motorcycle	Jeep, motorcycle	Jeep, motorcycle	
Communication	ICOM	ICOM	ICOM	ICOM radio, TV, tape recorders	ICOM radio, TV, tape recorders	ICOM radio, TV, tape recorders	Transistor radio	Transistor radio	Transistor radio	ICOM radio, TV, tape recorders	Radio, tape recorders	Radio, tape recorders	

**Appendix Table 25. Continued...**

Checklist	Barangays												
	1	2	3	4	5	6	7	8	9	10	11	12	
Type of houses	GI roof, wood, shingles	GI roof, wood, shingles	GI roof, wood, shingles	GI roof, wood, cement	GI roof, wood, cement	GI roof, wood, cement	GI roof, wood	GI roof, wood, cogon	Cogon roof, wood, shingles	GI roof, wood, cement	GI roof, wood	GI roof, wood	
Utilities/other facilities	Deep well, basketball court, market	"Free flowing" water, brgy. hall, basketball court	Basketball court,	Water system, corn mill, basketball court, cockpit	Electricity, water system, basketball/tennis courts, videoke	Electricity, water system, basketball court, cockpit, municipal hall	Water system, basketball court, farmers' hall	Water system, basketball court	Water system, basketball court	Brgy. hall but uncemented floor	Electricity, gym, waiting shed	Electricity, brgy. hall but uncemented floor	Electricity, brgy. hall
C. History													
1. Creation of the barangay	1964	1980		1953					1980	1954		1966	
2. How the barangay got its name	"Mansaw" is the Subanon term for wild sugar cane abundant in the area	Had many wild flowers		"Lampas" means to cut grasses						Named after a patron saint			
3. First school was opened	1964			1980s						1972			
4. First barangay elections	1967												
5. High rate of out-migration	1980s	mid 1970s		mid 1980s									
Reason	Poor peace and order	Poor peace and order		Poor peace and order									
6. Year of high rate of in-migration	1960s	Late 1970s		1990s									
Reason	Encouraged to come by religious leaders			To farm									

Appendix Table 25. Continued...

Checklist	Barangays												
	1	2	3	4	5	6	7	8	9	10	11	12	
D. Economic profile													
Main source of livelihood	Farming	Farming	Farming	Farming	Farming	Farming	Farming	Farming	Farming	Farming	Farming	Farming	Farming
Secondary sources of livelihood	"Karyada" or hauling hired help on farm	"Karyada" or hauling hired help on farm	"Karyada" or hauling hired help on farm	Gardening, "sari-sari" store, "manungha"	Trading, restaurant, gardening	Gardening, trading, buy and sell	Gathering rattan, "manungha"	"Manungha"	"Manungha"	Government employment	Selling firewood, "manungha", hand sawing, falcata	"Manungha"	
Crops planted/harvested	Onions, cabbage, chayote, pepper, root crops	Onions, cabbage, chayote, abaca, sugar cane, root crops, corn	Onions, cabbage, chayote, corn, root crops	Onions, corn, cabbage, chayote, tomatoes, root crops	Corn, rice, vegetables, root crops, bananas	Corn, rice, vegetables, root crops	Corn, rice, root crops	Corn, rice, root crops	Coconut, root crops	Root crops, bananas, corn	Corn, root crops, coconut	Coconut, corn, cassava	
Lean months	Rainy months	Rainy months	Rainy months	Rainy months	Rainy months	Rainy months	Every month	Every month	Rainy months	Rainy months	July	Rainy months	
Busy months	Summer	Summer	Summer	Summer	Summer	Summer	Summer	Summer	Summer	Summer	Summer	Summer	Summer
Tenurial status	Occupants of forest land	Occupants of forest land	Occupants of forest land	Steward certificate, occupants of forest land	Steward certificate, occupants of forest land	Steward certificate, occupants of forest land	Occupants of forest land	Occupants of forest land	Occupants of forest land	Occupants of forest land	Occupants of forest land	Have PLTP from DENR, ISF	Mostly tenants
Average size of cultivated land	¼ ha	¼ ha	¼ ha	1 ha	1 ha	1 ha	¼ ha	¼ ha	¼ ha	2 ha	¼ ha		

Appendix Table 25. Continued...

Checklist	Barangays												
	1	2	3	4	5	6	7	8	9	10	11	12	
Disposal of crops													
Corn													
% sold	None	None	None	20%	None								
% consumed	None	100%	100%	80%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Why produce?		For consumption, very few plant corn	For consumption, very few plant corn	For consumption, very few plant corn	For consumption								
Onion													
% sold	95%	95%	95%	95%	95%	95%	0	0	0	0	0	0	0
% consumed	5%	5%	5%	5%	5%	5%	0	0	0	0	0	0	0
Why produce?	Cash crop easily sold	Cash crop easily sold	Cash crop easily sold	For cash	For cash	For cash							
Cabbage													
% sold	95%	95%	95%	95%	95%	95%	0	0	0	0	0	0	0
% consumed	5%	5%	5%	5%	5%	5%	0	0	0	0	0	0	0
Why produce?	Cash crop easily sold	Cash crop easily sold	Cash crop easily sold	For cash	For cash	For cash							
Root crops													
% sold	10%	10%	10%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
% consumed	90%	90%	90%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Why produce?	For consumption	For consumption	For consumption	For consumption, cash	For consumption, cash	For consumption, cash	For consumption, cash	For consumption, cash	For consumption, cash	For consumption, cash	For consumption, cash	For consumption, cash	For consumption, cash
Copra													
% sold	0	0	0	0	0	0	0	0	0	0	100%	100%	
Animals raised													
Horses													
% sold	0	0	0	0	0	0	0	0	0	0	0	0	0
% consumed	100%	100%	100%	100%	100%	0	0	0	100%	0	0	0	0
Why raise?	For transport	For transport	For transport	For transport	For transport				For transport				
Cattle													
% sold	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
% consumed	0	0	0	0	0	0	0	0	0	0	0	0	0
Why raise?	For cash	For cash	For cash	For cash	For cash	For cash	For cash	For cash	For cash	For cash	For cash	For cash	For cash

Appendix Table 25. Continued...

Checklist	Barangays											
	1	2	3	4	5	6	7	8	9	10	11	12
Animals raised												
Pigs												
% sold	10%	10%	10%	50%	50%	50%	50%	50%	50%	50%	50%	50%
% consumed	90%	90%	90%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Why raise?	For special occasion	For special occasion	For special occasion	For cash and special occasion	For cash and special occasion	For cash and special occasion	For cash and special occasion	For cash and special occasion	For cash and special occasion	For cash and special occasion	For cash and special occasion	For cash and special occasion
Chickens												
% sold	0	0	0	0	0	0	0	0	0	0	0	0
% consumed	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Why raise?	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests	For consumption, few raise chicken due to pests
Carabaos												
% sold		0		0	0	0	0	0		0	0	0
% consumed/used		100%		100%	100%	100%	100%	100%		100%	100%	100%
Why raise?		Draft animal		Draft animal		Draft animal	Draft animal	Draft animal				
Source of credit	Com-prador	None	None	COOP/Farmers org.	Com-prador/financiers	Com-prador/financiers	None	None	None	None	None	None
Source of labor												
Plowing				Hired labor, husband	Hired labor, husband	Hired labor, husband	Husband	Husband		Husband		Husband
Planting	Family											
Weeding	Family	Family	Family	Hired labor	Hired labor	Hired labor	Family	Family	Family	Family	Family	Family
Harvesting				Family								
Desuckering	Skilled family member	Skilled family member	Skilled family member	Family								

Appendix Table 25. Continued...

Checklist	Barangays											
	1	2	3	4	5	6	7	8	9	10	11	12
To whom are products sold to?												
Onion	Com-prador	Com-prador in Man-sawan	Com-prador in Man-sawan	Com-prador in Lalud	Com-prador	Com-prador in Lalud	None	None	None	None	None	None
Cabbage	Com-prador	Com-prador in Man-sawan	Com-prador in Man-sawan	Com-prador in Lalud	Com-prador	Com-prador in Lalud	None	None	None	None	None	None
Root crops	Com-prador	Com-prador in Mansawan	Comprador in Mansawan	Com-prador in Lalud	Com-prador	Com-prador in Lalud	Sell in Sapang Dalaga	Sell in Sapang Dalaga	Sell in Libertad	Sell in Sapang Dalaga	Sell in Sapang Dalaga	Sell in Sapang Dalaga
Copra	None	None	None	None	None	None	None	None	None	None	Com-prador in Sapang Dalaga	Com-prador in Sapang Dalaga
Problems in farming	High cost of transport, soil fertility	Pests, soil fertility	High cost of transport, pests and rats, soil fertility	Soil fertility	Soil fertility, soil erosion	Soil fertility, soil erosion	Rats and wild pigs	Rats and wild pigs	No fertilizers, always raining	Cannot plant corn due to continuous rain, soil erosion	Lack of capital for farm inputs, low yield of coconut, climate is not good	Animals get sick during rainy season
Coping mechanics	Eat root crops 2x a day, move to relatives in other areas as hired help, "manung-ha" or work in farms at P50 or P60/day	Work in other farms as hired help	Eat root crops 2x a day, "manung-ha", migrant labor	Hired labor for P70/day	Go to Dipolog for work in construction	Go to Dipolog for work in construction	Eat root crops 2x a day, "manung-ha"	"Manung-ha"	"Manung-ha"	"Manung-ha"	Sell firewood, "manung-ha"	"Manung-ha"

Appendix Table 25. Continued...

Checklist	Barangays											
	1	2	3	4	5	6	7	8	9	10	11	12
E. Domestic concerns												
Decision-making												
Farming	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife
Savings	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife	Husband/ wife
Membership in orgs.	BANWA, Piniling Nasud, TRICAP	Catholic church, Born Again	BANWA	LEAF		RIC	Farmers' association	Farmers' association	Farmers' association			
Family problems	Inadequate food, health	Insufficient food	Insufficient food	Health	Low income	Low income	Inadequate food, low production, health	Inadequate food, low production	Inadequate food	Inadequate food, low production	Lack of money for food	
Family aspirations	Adequate and better food, good health, education for children	Improve level of living, education for children	Improve level of living	Improve level of living	Improve level of living, education for children	Education for children	Adequate food, Improve level of living	Adequate food, education for children	Adequate food, education for children	Adequate food, livelihood, education for children		Education for children
Women's activities	House- keeping, help in farm	House- keeping, help in farm	House- keeping, help in farm, "karyada" or hauling	House- keeping, help in farm	House- keeping, help in farm	House- keeping, help in farm	House- keeping, help in farm	House- keeping, help in farm	House- keeping, help in farm	House- keeping, help in farm		House- keeping, help in farm
Leisure/ Community activities												
Sports/ games	Basketball, billiard, "baile"	Basket- ball	Basket- ball	Basket- ball, Masiao	Basket- ball, Masiao	Basket- ball, Masiao	Basket- ball, Masiao	Basket- ball, Masiao, card games	Basket- ball, "Hantak", "spang"	Basket- ball	Basket- ball	Basket- ball
Special events	"Tabo" every Monday, Fiesta on Sept. 25	Fiesta on Aug. 28		"Tabo" every Friday	"Tabo" every Thursday	"Tabo" every Friday	"Tabo" every 2nd and last Thursday of the month		Fiesta on May 15	Fiesta	Fiesta	Fiesta

Appendix Table 25. Continued...

Checklist	Barangays												
	1	2	3	4	5	6	7	8	9	10	11	12	
Social organizations Barangay council Problems		Soil fertility, pests	No road to brgy.	Lack of cooperation among residents, lack of health facilities	Looting of crops	Looting of crops				Lack of water, poor roads		Lack of cash for food	
Aspirations	Road to Don Victoriano	Improve livelihood			Peace and order, prevent soil erosion	Peace and order			Better school building	Better water system	Improve livelihood, maintain peace and order, fertilizer for corn	Improve level of living	
Farmers' organization	None	None	None	LEAF	Inactive farmers' assoc.	Tuno farmers' assoc.	NIA resettlement proj. None			Farmers' assoc.	Farmers' assoc.		
Women's organization	None	None	None	Inactive RIC	None	RIC for men and women	SK	None	None	Loan from DSWD		None	
Other organizations	BANWA, Piniling Nasud, TRICAP	BANWA	BANWA		SK	SK	SK	SK	SK	SK	SK	SK	
Traditional leaders	Timuay leader of Piniling Nasud	Timuay	Timuay	Timuay	Timuay gukom	Timuay gukom	Timuay gukom	Timuay gukom	Brgy. captain				
Government programs	Road to Gandawan, Road to Osmeña, A high-school	Road from Mansawan	Road to the lake	Farming techniques from DENR and LGU	Farming techniques from DENR and LGU	Farming techniques from DENR and LGU	Reforestation, dam construction for irrigation	Reforestation, spring development by DPWH	Given GI sheets for roofing	Loans from CIDDs for cutflowers, pineapple, rambutan seedlings from DA			
Resource use Land use pattern	Multiple cropping or spatial mono-cropping	Multiple cropping or spatial mono-cropping	Multiple cropping or spatial mono-cropping	Multiple cropping	Multiple cropping	Multiple cropping	Multiple cropping	Multiple cropping	Multiple cropping	Multiple cropping	Residential	Multiple cropping	Multiple cropping

**Appendix Table 26. SWOT analysis of the upland ecosystem.**

Strengths	Weaknesses	Opportunities	Threats
<p>1. The people respect the laws.</p> <p>2. The people understand and practice biodiversity conservation.</p> <p>3. The people are resilient and have survival instincts.</p> <p>4. The people are willing to participate in development programs.</p> <p>5. There are springs which are sources of potable water.</p> <p>6. Root crops (sweet potato, cassava, lutia, and gabi) are the primary staple food of majority of the IPs.</p> <p>7. One of the religious groups encourages biodiversity conservation and engages only in small farm cultivation.</p> <p>8. Biodiversity increases as the forest is located farther from human settlements.</p> <p>9. "Kaingin" is done only on previously fallowed areas where there are no more trees.</p> <p>10. There are more vegetable farmers in the highland barangays of Don Victoriano.</p> <p>11. School facilities for primary education are present in most barangays.</p> <p>12. There are vegetable farmers in Lake Duminagat who use mechanical methods to control insect pests.</p>	<p>1. People lack access to improved farming system technologies and capital.</p> <p>2. Rice and corn are not suited for Barangay Mansawan, Lake Duminagat, and Gandawan and in some barangays of Concepcion.</p> <p>3. Electricity is not available in most barangays.</p> <p>4. The entire municipalities of Don Victoriano and Concepcion are within the protected areas.</p> <p>5. Farm lots are small (less than ¼ ha), limited for manual cultivation due to steep slopes.</p> <p>6. Soil erosion is a problem because farmers do not practice soil and water conservation measures.</p> <p>7. Low income discourages the youth to pursue higher education.</p> <p>8. The crater valleys of Gandawan and Lake Duminagat are utilized for residential areas while farm lots are located on the hillsides with steep slopes.</p> <p>9. Farm-to-market roads are wanting especially from Mansawan to Liboron and all barangays of Concepcion.</p> <p>10. Open springs utilized for potable water are prone to contamination which can be hazardous to health.</p> <p>11. Sanitation system is lacking in some barangays.</p> <p>12. Most barangays have health centers but are wanting in medicines.</p> <p>13. Top soil is shallow with hardened volcanic materials at the subsurface.</p> <p>14. People hesitate to give information, there is a need for total immersion in their locality to get information.</p>	<p>1. There are wide open uncultivated lands that can be developed for sustainable farming systems consistent with biodiversity conservation.</p> <p>2. Great deposits of white and red clay are suited for bricks and ceramics industry which can be alternative sources of income.</p> <p>3. Floral and faunal species are diverse.</p> <p>4. A waterfall located in Kalilangan River at Barangay Mansawan can be developed for hydroelectricity.</p> <p>5. Abundant water supply in the crater valleys of Gandawan and Lake Duminagat can be tapped for irrigation.</p> <p>6. Ornamental plants growing abundantly under forest canopies can be developed for ex situ breeding and mass production.</p> <p>7. The climate in Don Victoriano and Concepcion are suited for cutflower production.</p> <p>8. Fungi, bacteria, and actinomycetes found in the area are possible sources of biofertilizers for soil rehabilitation.</p> <p>9. The abundance of parasitic insects and pathogens can be utilized as biocon agents to control pests.</p> <p>10. An average family size of six is important economically as members can provide labor in the farm.</p> <p>11. More women (IPs, inmigrants) are working in the fields (feminization of agriculture).</p>	<p>1. Hunting of wildlife species is still prevalent in Small Potongan, Upper Potongan, and Lake Duminagat.</p> <p>2. Collection and trading of avifauna is still ongoing in Don Victoriano.</p> <p>3. Continuous utilization of palm species like anibong, pugahan, and black palm for food and rattan shingles for basket and tying materials.</p> <p>4. The use of pesticides and inorganic fertilizers.</p> <p>5. Low monthly income of families (P700 to P1000) encourage people to depend on forest resources.</p> <p>6. Emigration of non-IPs to buy rights over land leads to monoculture land use pattern and these non-IPs become absentee landlords.</p> <p>7. Monoculture cropping.</p>

**Appendix Table 27. Prioritized researchable areas.**

Sites	Prioritized Researchable Areas	Criteria	S	W	O	T
Mansawan Gandawan Lake Duminagat	Identification of appropriate and sustainable agroforestry systems that enhance biodiversity conservation	BC N U L PR	2 3 4	1 6 7	1 5 10 11	1 2 3 5 7
Mansawan Gandawan Lake Duminagat Small Potongan Lampasan Tuno Lalud Upper Potongan Upper Salimpuno	Studies on the utilization of biological resources for pest control and soil amelioration	BC N U L PR	4 6 10 12	1 7 3	8 9	4
Mansawan Gandawan Lake Duminagat Lalud Tuno Poblacion Concepcion	Propagation and mass production of locally-available ornamental plants	BC N U	8	7	5 6	1 2 3 5 7
Mansawan Gandawan Lake Duminagat Small Potongan Upper Salimpuno Poblacion Concepcion Virayan	Documentation of ethnobiological practices of indigenous people of Mt. Malindang and its environs	BC N U PR	4 6 8 10	1 7	3	5 7
Concepcion Mansawan Gandawan Lake Duminagat Lampasan	Identification, propagation and performance evaluation of forage spp.	BC N U PR	2 3 4 9	7 6 13	1 2 10 11	1 2 3 5
Lake Duminagat	Environmental impact assessment studies on the proposed ecotourism project on Lake Duminagat	BC N VU PR	4	4	5	1 2 3
Lampasan Lalud Tuno Small Potongan Virayan Mansawan	Utilization of macropropagated local dipterocarps in the rehabilitation of natural secondary forests and grasslands	BC N U PR	4 7 8	6	1	7
Don Victoriano	Feasibility study on the utilization of waterfalls in Don Victoriano as source of hydroelectric power, EIA study	N U PR	4	3	4	

BC - Relationship to biodiversity conservation; N - Needs; U - Urgency; L - Linkages; PR - Policy relevance





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