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ETHNOBOTANY OF FERNS AND FERN ALLIES IN MOUNT MACABOL, MARILOG DISTRICT, DAVAO CITY, PHILIPPINES

Adorico M. Aya-ay[1]

Abstract: *Ethnobotany of ferns and fern allies was conducted in an indigenous community at Mt. Macabol, Barangay Salaysay, Marilog District, Davao City, Philippines for five inclusive month. The objective of the study was to document the tribal uses of the different species of pteridophytes in the area. The gathering of data was done through interview with the chosen members of the community and through the collection of herbarium specimens. Seventy-one species of ferns and fern allies were collected. Thirty-seven species (52%) have uses in the tribe. These useful species serve either as food, medicine, ornament, ceremonial materials, or in other forms of uses for the community. The data obtained showed that despite human encroachment, Mt. Macabol remained a home to a good number of ferns and fern allies useful to the residents.*

Key words: *Ethnobotany, ferns, fern allies, Mount Macabol, pteridophytes*

INTRODUCTION

A discussion of human life would not be complete without a look on the role of plants (Veilleux and King, 1996). For many centuries, humans have relied on plants for survival and pleasure. Asian civilizations were based on rice, Middle Eastern civilizations were based on wheat and barley, and American civilizations were based on corn (Moore et al, 1999). Despite their importance, most of the forest plants are still not well documented and studied. Among the poorly studied group of plants are the ferns and fern allies particularly in terms of their uses to different tribal groups. The Pteridophytes, or the ferns and fern allies, are thought by most people to be quite useless members of the Plant Kingdom, or at best they are considered to be of limited horticultural importance. However, in agricultural societies, especially those using the forests directly, the value of ferns is more keenly appreciated. Ferns are found to provide food, medicine, fiber, craft and building material, abrasives and decoration (Wee, 1997).

1. University of the Immaculate Conception, Father Selga Street, Davao City, Philippines. *Email: ado_magus@yahoo.com*

In Mindanao forests, ferns affect the lives of many traditional societies in different ways. These traditional societies possess a knowledge which has accumulated during prolonged interaction with the natural world. Unfortunately, the progressive decline of Philippine forests is deemed to result in bleak loss of the distinct identities of different tribal communities (Magpayo, 1994). The loss then of forest resources may have a dual effect – loss of wildlife and loss of the identities of the indigenous people. It is therefore a pressing concern for everybody to look at the status of pteridophytes in the Philippine forests. By doing so, we are bringing to our attention the need to conserve both these unique group of plants and the distinct identities of tribal communities.

The study was conducted to identify the uses of ferns and fern allies in a Bagobo tribe at Mt. Macabol, Brgy. Salaysay, Marilog District, Davao City. Specifically, the study answered the following questions: a.) What are the ferns and fern allies found in Mt. Macabol, So. Cantimon. Brgy. Salaysay, Marilog District, Davao City; b.) Which ferns and fern allies are useful to the Bagobo tribe; and c.) What are the specific uses of these fern and fern allies?

MATERIALS AND METHODS

Research Design

This is a descriptive research utilizing the following data collection techniques: collecting fern and fern ally specimens, gathering of data about the plants, describing the study area and the people, recording and discussing the uses of plants, analyzing, and interpreting the data obtained.

Description of the Study Area

The study was conducted in a secluded indigenous community located in Mt. Macabol, Brgy. Salaysay, Marilog District, Davao City, Mindanao Island, Philippines. This community, which is just recently called Sitio Taupan, is a 6-hour hike and approximately 19 km away from Sitio Lomondao, the sitio along the highway connecting Davao and Bukidnon. Sitio Taupan is situated at the southern part of Mt. Macabol, Barangay Salaysay, Marilog District, Davao City. Mount Macabol consists of several forest fragments that are remnants of a vast tropical forest that cover Mindanao Island during the turn of the 20th century (RSA-PEF, 1996). The forest within Salaysay lies at the eastern slopes of the Mount Apo Range (Barangay Profile, 2002). Forest cover is a combination of lowland and montane forest type with virgin stands present only within higher elevations (PEF field reports, 2000).

Demographic and Socioeconomic Profiles of the Area

The sitio has a total of 24 households with a population of 138 individuals, 75 females (54%) and 63 males (46%). Majority of the tribe members are children, with ages 0-12 years old, comprising 44% or 61 individuals. All residents are Bagobos or have Bagobo ancestry. Some residents are progenies of intermarrying Bagobo Diangan and Bagobo Tagabawa or of a Bagobo and a member of other tribal group. All households are farmers. The predominant crops of the sitio are corn, cereals, vegetables, coconut, banana, cacao, and coffee (Barangay Profile, 2002). Farming is the main source of income of all the families. Some residents sell ferns and other forest plants to augment their income while others work as caretakers and paid farmers of agricultural lands owned by lowlanders. Bagobo is the dialect spoken by the people but some can also speak Visayan.

Field Study and Data Gathering

The following field methods were used in this study: collection of herbarium materials, structured and unstructured interviews, ocular survey and immersion with the tribe.

Collection of Herbarium Materials

Ferns and fern allies were collected in Mt. Macabol, Barangay Salaysay, Marilog District, Davao City on August 1-4, 12-13, 19-21 and 29-31, 2003.

In the field, each collected specimen was wrapped with large leaves and placed securely in sack (Magpayo, 1994). At the end of the collection day, the collected plants were cleaned and dried using cloth. Pressing of the specimens followed. The plants were pressed by individually placing them between layers of newspapers and cardboards and held tight between a pair of a wooden presser. Drying was continued upon return to Davao City Proper. The wooden pressers containing the specimens wre exposed to sunlight for the whole day for a period of 16-35 days (Magpayo, 1994). A label, with data about the locality and the possible preliminary classification of the fern, was attached (Slavik, 1994).

When completely dried, the pressed plants were taken out from the drying sheets and pasted on an illustration paper and covered with a plastic cover. Each specimen has a label mounted on the lower side of the sheet. The label contained the following information:

a. The scientific name of the plant
b. The family of the plant
c. The common name and/or local name of the species

d. Habit of the plant
e. The locality it was collected
f. The date of collection
g. The name of the collector
h. The name of the person who identified or validated the identification of the plant

Interview

Information on the uses of ferns and fern allies was obtained from the following sources: tribal chieftain, tribal healer, elders, herbarium collectors and other tribesmen and women. Separate interviews were conducted in the community on August 1-4, 12-13, 19-21 and 29-31, 2003.

Plant Identification and Classification

The pressed specimens were brought to the Central Mindanao University (CMU) in Musuan, Bukidnon, Philippines for identification using the herbarium collection of the CMU-Natural History Museum. Dr. Victor Amoroso, a botanist who has several studies about pteridophytes based at CMU, helped in classifying and identifying the specimens. Literatures on pteridophytes written by Amoroso, et al (1996) and Amoroso (2000) were used in the classification of the plant specimens.

RESULTS AND DISCUSSION

Seventy-one species of ferns and fern allies were collected after four separate field trips. Out of 71 ferns and fern allies, thirty-seven species (52%) have different uses in the community. These ferns are used either as medicine, food, source of income, utility or as ceremonial materials.

Twenty-eight species of ferns and fern allies have medicinal uses in the community. Whereas, three species of ferns and fern allies were recorded to be edible and are used as food in the community. Fifteen species of ferns and fern allies were recorded to have economic values in the community. Their economic uses include: sold as ornamental plants, raw material for making hats, cushions, pots, garden ornaments, etc. Three species of ferns and fern allies were recorded to have other utility uses, e.g., indicators of the presence of earthworms used as baits. Three species of ferns and fern allies were recorded to be used in the community for rituals and protections against demons and other evil spirits.

Majority of the plants collected are used in the community as medicines for different ailments. These plants are used by rubbing them on the affected area

or prepared as decoction or as a poultice. This dependence on herbal plants is attributed to the fact that the study area is very far from health centers, clinics or hospitals. People have learned to rely on the resources around them for the remedy of various illnesses.

Using a specific fern for a specific type of disease is a practice handed down from their ancestors. Several years of experience have convinced the Bagobos that these plants are effective medicines. The continued utilization of ferns to cure illnesses up to the recent times is the proof of their usefulness to the tribe. These plants are also recommended and used by their sole tribal healer who has been treating all forms of health disorders for several decades. And although with the advent of synthetic drugs and sophisticated health care services, the people of Sitio Taupan still hold on to herbal medicines because advances in medicine and primary health care, for them, remain inaccessible.

Tables 1 to 5 summarized the uses of the ferns and fern allies collected and identified in the study site.

Table 1
Ferns and Fern Allies With Medicinal Uses

Species	*Common/ Local Name*	*Ailment*	*Part Used*	*Preparation*	*Application*
Adiantum capillus-veneris	Kulantrillo de Alambre	Cough	Rhizome	Decoction	Taken internally
—	—	Dandruff	rhizome and leaves	Pounded	Applied on hair and scalp
Aglaomorpha splendens	Balay-kuwaho	Muscle pain	Leaves	Singed	Cataplasm
Blechnum orientale	Pakong-Alagdan	Minor burns	Rhizomes	Pounded	Poultice over affected area
Cyathea contaminans	Anotong	Headache	Leaves	Pounded	Rubbed on forehead
Davallia denticulate	Esmunda	Cough	Roots	Decoction	Taken internally
Dicranopteris linearis	Agsam	Measles	Bark	Moistened with water	Rubbed all over the body
Diplazium altum	Pako-pako	Hemoptysis	Rhizome	Decoction	Taken internally
Diplazium esculentum	Pako	Cough, fever and stomachache	Rhizome	Decoction	Taken internally
Diplazium sp.		Any disease with unexplainable cause	leaves and stems	Pounded and added w/ little water	Poultice over forehead and rubbed on the body
Drynaria quercifolia	Sayokong	Cough	Leaves	Decoction	Taken internally

Gleichenia dicarpa	Agsam-kilat	Headache	Roots	Decoction	Taken internally
Gleichenia truncate	Agsam	Headache	Roots	Decoction	Taken internally
Lecanopteris carnosa	Ant Fern	Goiter	Rhizome	Charred	Rubbed on the neck
Lycopodium cernuum	Bulak-lumot	Beri-beri	whole plant	Decoction	Taken internally
-	-	Fever	Rhizome	Decoction	Taken internally
Lycopodium squarrosum	Ikog sa Unggoy	Mental disorders	Shoot	Pounded	Rubbed on the head
Lygodium japonicum	Nito	Cough	Rhizomes	Decoction	Taken internally
Microsorium heterocarpum	-	Diarrhea	Leaves	Decoction	Taken internally
Microsorium punctatum	Bulak	Purgative	Fronds	Decoction	Taken internally
Nephrolepis biserrata	Bulak	Wound/ Bleeding	Leaves and rhizomes	Pounded	Rubbed on affected area
Nephrolepis cordifolia	Bukibok	Cough	Leaves	Decoction	Taken internally
—	—	Skin diseases of dogs	Leaves	Decoction	Taken internally
Oleandra sp.	—	Snake bite	Rhizome	Pounded	Rubbed to the affected area
Onychium siliculosum	Pakong anuang	Falling hairs	Leaves	Pounded	Rubbed on scalp
—	—	Dandruff	Leaves	Pounded	Applied on hair and scalp
Ophioglossum pendulum	Ribbon Fern	Cough	Young leaves and rhizomes	Decoction	Taken internally
Pitygramma calomelanos	Pakong-kalabao	Difficulty in urinating	Leaves	Decoction	Taken internally
Pteridium aquilinium	Manaba	Toothache	Leaves	Decoction	Gargled
—	—	Muscle pains	Roots and young branches	charcoaled	Rubbed on affected area
—	—	Scorpion bite	Roots	Pounded	Rubbed on affected area
Pyrossia adnascens	Tupi sa manok	Snake bite	Rhizome	Pounded	Applied to the part bitter
Selaginella usterii	Lumot-lumot	Hemoptysis	Leaves	Decoction	Taken internally
Sphinomeris chinensis	Chinese Lace Fern	Dysmenorrhea	Whole plant	Decoction	Taken internally

Table 2
Economic Ferns and Fern Allies

Species	*Common/ Local Name*	*Parts Used*	*Economic Uses*
Asplenium decorum		Whole plant	Sold as ornamental
Asplenium nidus	Bangaway	Whole plant	Sold as ornamental
Cyathea contaminans	Anotong	Stem	Pot for plants
-	-	Whole stem	Garden ornament
Davallia denticulate	Anotong	Roots	Cushions
Dipteris conjugate		Whole plant	Sold as ornamental
Lycopodium cernuum	Bulak-lumot	Whole plant	Sold as ornamental
Lycopodium proliferum	Bulak-lumot	Whole plant	Sold as ornamental
Lycopodium salvinoides	Bulak-lumot	Whole plant	Sold as ornamental
Lycopodium squarrosum	Ikog sa Unggoy	Whole plant	Sold as ornamental
Lygodium japonicum	Nito	Stem	Raw material for hat-making
Nephrolepis acutifolia		Whole plant	Sold as ornamental
Nephrolepis biserrata	Bulak	Whole plant	Sold as ornamental
Nephrolepis cordifolia	Bukibok	Whole plant	Sold as ornamental
Nephrolepis hirsutula		Whole plant	Sold as ornamental
Platycerium holtimii		Whole plant	Sold as ornamental

Table 3
Edible Ferns and Fern Allies

Species	*Common/ Local Name*	*Part Used*	*Preparation*
Blechnum orientale		Young fronds	Eaten raw or cooked as leafy vegetables
Cyathea contaminans	Anotong	Young leaves	Eaten raw or cooked as leafy vegetables
Diplazium esculentum	Pako		Eaten raw or cooked as leafy vegetables

Table 4
Ferns and Fern Allies Used as Ceremonial Materials

Species	*Common/ Local Name*	*Parts Used*	*Practice*	*Purpose*
Cyathea contaminans	Anotong	Stem	Charred stem is rubbed on the forehead of the afflicted child	Protection against evils.
Lygodium japonicum	Nito	Leaves	Rub the leaves on the body of the person	Treatment of individual believed to be possessed by evil spirits
Oleandra pistillaris		Rhizome	Rub the ashes on the face and body	Treatment of individual believed to be possessed by evil spirits

Table 5
Utility and Other Uses of Ferns and Fern Allies

Species	*Common/ Local Name*	*Part Used*	*Preparation/Uses*
Asplenium nidus	Bangaway	Whole plant	Earthworms used as fish baits are abundant near this species
Cyathea contaminans	Anotong	Hollow portion of stem	Bird's nest
Drynaria quercifolia	Sayokong	Whole plant	Earthworms used as fish baits are abundant near this species

In general, a good number (52%) of ferns and fern allies in Mt. Macabol are useful in the community. Some species help augment the income of some families while others serve as food, grooming materials and especially as medicines to a number of health maladies. These uses of ferns and fern allies are also observed in other tribal communities. Indigenous upland dwellers look up to the forest as the source of almost all their basic needs. The impact of ferns to their lives may only be a fraction of their total dependence to forest resources, but this is enough for the residents to claim that these plants affect the economic, spiritual, social, and physical aspects of their lives.

The vegetation of Mt. Macabol is a promising abode to wildlife. This is validated by vegetational analysis and rapid site assessment conducted by the Philippine Eagle Foundation (Vegetational Analysis, 2002 and RSA, 1996). However, rapid deforestation and conversion of forest to agricultural lands clearly affect the wildlife including the pteridophyte population in Mt. Macabol. Clearing of forested areas destroyed several different species of wildlife including the pteridophytes. Clearings were made both by the natives and the city dwellers who have purchased the lands. The natives in the area do not see the possible long-term effects of selling their lands because they are more concerned on meeting their basic daily needs. They were blinded by the financial reward they gain from such trade. The seemingly huge and abundant forest for them will forever subsist.

The residents' dubious concern on the importance of these forest biological resources may lead to more complex environmental hazards. Hence, the task at hand for every concerned individual or group to conserve ferns and fern allies and to safeguard traditional societies, is imperative. Concrete measures must be done to solve problems brought about by slash and burn farming and the conversion of some parts of the forest to agricultural lands by both the natives and the city dwellers. While the former has been proven by other research works to cause minimal unfavorable impact to forest resources, the intrusion of lowlanders may pose a greater danger to the survival of the ferns and fern allies.

While the usefulness of the ferns and fern allies in Mt. Macabol is still enjoyed by the residents, and while these plants still affect their daily activities, reeducation among indigenous people is vital to emphasize the need for every member of the community to participate in safeguarding this nature's bounty.

CONCLUSIONS

Ferns and fern allies are relatively abundant in Mount Macabol. Seventy-one species under 21 families are represented in the collection. Fifty-two percent (52%) of these plants are useful to the community as food, medicine, source of income, material for different ceremonial activities or in other miscellaneous uses. Majority of the plants collected are medicinally important for the tribe. Although limited, the Bagobos still use some species of ferns and fern allies as protection against evil spirits. Several species have also helped augment the income of some families while others serve as food, grooming materials and other utilitarian uses.

RECOMMENDATIONS

The researcher would like to make the following recommendations:

1. To conduct ethnobotanical studies on ferns and fern allies in other indigenous communities in Mindanao.
2. To conduct phytochemical screenings on ferns and fern allies that have folkloric medicinal importance.
3. To promote conservation awareness and to have tangible conservation programs for the preservation of the study area.

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