

Preliminary list of bryophytes in Tagbaobo, Kaputian, Island Garden City of Samal, Philippines

Hazel G. Carreon^{1*}, Normeliza E. Morales^{1*}, Analyn A. Cabras², and Milton Norman D. Medina²

^{1,2}Math and Science Department, College of Arts and Sciences, University of Mindanao, Davao City Philippines.

Email: normelizamorales@yahoo.com; hcgc_1025@yahoo.com

ABSTRACT

The present paper is the first account of Bryophytes in Tagbaobo, Island Garden City of Samal Philippines. Opportunistic sampling using standard collection protocols for bryophytes was conducted to three sampling sites: Sto. Nino Falls, Magongawong Falls, and vegetations across the shoreline. Results revealed twenty three (23) species consisting of 12 mosses under 6 families with 1 endemic *Ectropothecium ferrugineum* (C.Mull.) Jaeg. and 11 liverworts under 4 families with 3 rare species *Cheilolejeuneav inertexta nigricans* (Lindenb.) Schiffn, *Marchantia acaulis*, and *Lopholejeunea nigricans* (Lindenb.) schiffn. The present list could be enhanced when more collections to other areas in the island will be conducted.

Keywords. *Island, Samal, Moss, Lichens, Survey.*

INTRODUCTION

In the framework of the on-going biodiversity research program of the University of Mindanao in Samal Island entitled *From Ridge to Reef: Biodiversity Assessment and Conservation of Terrestrial, Freshwater, and Marine Ecosystems of Barangay Tagbaobo, Island Garden City of Samal (IGACOS), Mindanao* a preliminary assessment of bryophytes was conducted. Bryophytes is one of the important components of the program since they are excellent indicators of air quality and environmental disturbance hence a preliminary survey of this flora group would give us a preliminary assessment on the air quality and dwindling population of biodiversity in Tagbaobo, a very important marine reserve in IGACOS. According to Shevock (2013), bryophytes play a major role in the environment. They are often used as indicators of the habitat condition. Any change in water, soil and/or air quality, due to pollution

or other factors, will have an impact on bryophytes growth. Despite of the broad biodiversity researches, this group of plants is always neglected.

METHODOLOGY

A five-kilometer transect walk was established in three sampling sites: Magongawong, Santo Nino Falls, and near the shoreline using opportunistic sampling during the months of April and October 2014. Species were collected, identified and classified at the Math and Science Department, University of Mindanao, Matina, Davao City. Barangay Tagbaobo, IGACOS is located latitude $6^{\circ} 54'00''$ N latitude; $7^{\circ} 11'28''$ E longitude characterized by mountain ranges with an estimated elevation of 532 meters above sea level. Identified survey sites includes Sto. Niño Falls, Magongawong Falls, and shoreline of Barangay Tagbaobo.

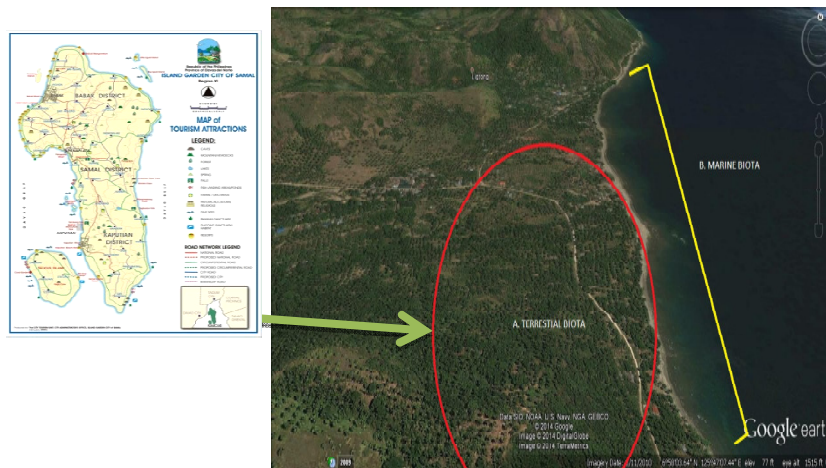


Figure. 1 Map of Samal Island showing Tagbaobo (in circled) and LandSat view of Barangay Tagbaobo showing the study sites.

RESULTS AND DISCUSSION

Twenty three (23) species of bryophytes consisting of 12 mosses under 6 families with 1 endemic *Ectropothecium ferrugineum* (C.Mull.) Jaeg. and 11 liverworts under 4 families with 3 rare species *Cheilolejeuneav inertexta*

nigricans (Lindenb.) Schiffn, *Marchantia acaulis*, and *Lopholejeunea nigricans* (Lindenb.) schiffn were recorded.

Table 1. List of Mosses in Barangay Tagbaobo, IGACOS

Family	Genera	Species	Conservation Status
Calymperaceae	<i>Calymperes</i>	<i>sp.</i>	NAA
Hypnaceae	<i>Vesicularia</i>	<i>montagnei</i> (Bel.) Broth.	Widespread
Leucobryaceae	<i>Leucophanes</i>	<i>glaucum</i> (Schwaegr.) Mitt.	Widespread
Fissidentaceae	<i>Fissidens</i>	<i>sp.</i>	NAA
Hypnaceae	<i>Ectropothecium</i>	<i>ferrugineum</i> (C.Mull.) Jaeg.	Endemic
Leucobryaceae	<i>Leucophanes</i> <i>Octoblepharum</i>	<i>glaucum</i> (Schwaegr.) Mitt. <i>albidum</i> Hedw.	Widespread Widespread
Thuidiaceae	<i>Thuidium</i>	<i>cymbifoilium</i> (Dozy & Molk.) Dozy & Molk	Widespread
Hypnaceae	<i>Ectropothecium</i>	<i>sp.</i>	NAA
Sematophyllaceae	<i>Acroporium</i>	<i>sp.</i>	NAA
Lepidoziaceae	<i>Bazzania</i>	<i>densa</i> (Sande Lac.) Schiffn.	NAA

Legend: NAA-No Available Assessment.

Of the 12 species of moss found in Barangay Tagbaobo only *Ectropothecium ferrugineum* (C.Mull.) Jaeg. is endemic in the Philippines and can be found in Luzon, Mindoro, Palawan and Western Mindanao (Linis, 2011). Recent bryophyte survey revealed that it is also found in Eastern Mindanao particularly in Compostela Valley Province (Domingo et al., 2015). However it is interesting to note that the comprehensive survey of Linis (2010) did not reveal the presence of this species in Visayas and Camiguin Island (Linis, 2010).

The low species richness of Barangay Tagbaobo reveals the habitat modifications and disturbances that the once forested barangay experiences.

Mosses have a high preference to high moisture and undisturbed habitats especially for the sensitive species (Lubos, 2007). Illegal logging and conversion of the forested areas into agricultural lands and human settlements have an impact on mosses revealing low species richness in Barangay Tagbaobo which has remaining patches of secondary forest but is mostly dominated by agricultural crops such as coconut and lanzones. Highest species richness is observed in mountainous areas especially in the elevation with high moisture content and no disturbances at all while low species richness is observed in disturbed areas making these species good bio indicators (Linis, 2010; Lubos, 2007).

Table 2. List of Liverworts in Barangay Tagbaobo, IGACOS

Family	Genera	Species	Conservation Status
Frullaniaceae	<i>Frullania</i>	sp.	NAA
Lejeuneaceae	<i>Cololejeunea</i>	<i>siamensis</i>	NAA
Lejeuneaceae	<i>Cheilolejeunea</i> <i>Lopholejeunea</i>	<i>inertexta</i> <i>nigricans</i> (Lindenb.) Schiffn.	Rare
Lepidoziaceae	<i>Bazzania</i>	<i>tridens</i> (Reinw. et.al)	Widespread
Marchantiaceae	<i>Marchantia</i> <i>Marchantia</i>	<i>acaulis</i> sp.	Rare
Lejeuneaceae	<i>Lopholejeunea</i> <i>Lejeunea</i>	<i>nigricans</i> (Lindenb.) Schiffn. sp.	Rare Rare

Lichens which are good bio indicator of air quality and acid deposition is highly affected by anthropogenic disturbances (Lubos, 2007). The low species richness of lichen in Barangay Tagbaobo reveals the negative impact of various disturbances in the sampling sites. However, the presence of rare species *Lopholejeunea nigricans* (Lindenb.) Schiffn., *Marchantia acaulis*, *Lopholejeunea nigricans* (Lindenb.) and *Lejeune asp.* points that despite anthropogenic disturbances some areas in Barangay Tagbaobo still host to rare lichen species. The thriving of these rare lichen species in Barangay Tagbaobo calls for conservation efforts. The dwindling species richness of moss and lichen

in Barangay Tagbaobo calls for attention and conservation of the remaining forested patches of the area.

RECOMMENDATION

This present list especially the discovery of rare species can be used by the City and Local Tourism Office in promoting sustainable eco-tourism in the area leading to preservation and protection of Tagbaobo biodiversity. The data presented was just a portion of the number of existing nonvascular plants in the area. This was just a preliminary listing of bryophytes, only twenty-three species of mosses and liverworts were found. A comprehensive survey will further increase this baseline list of mosses and liverworts for Tagbaobo , IGACOS.

REFERENCES

Bartram , E.B. 1939. Mosses of the Philippines. *Philippine Journal of Science* 68: 1-423

Heaney, L.R. & Regalado, J.C., 1998. Vanishing Treasures of the Philippine Rain Forest. Field Museum, Chicago, Illinois, USA.

International Union for Conservation of Nature (IUCN) Red Lists of Threatened Species Retrieved December 2, 2011, from www.iucnredlists.org. LGU Samal Revised Comprehensive

Land Use plan, 2008. Island Garden City of Samal, Davao del Norte, Philippines

Linis, V.C. 2010. The Moss Flora of Camiguin Island, Philippines and their floristic relations to adjacent islands in the archipelago. *Teloepa* 12 (4)525-542.

Linis, V.C. 2011. Biogeographical Notes on the Moss Floras of Bicol Peninsula in Luzon and Catanduanes Islands, The Philippines. *Philippine Journal of Science* 142: 119-133, Special Issue. ISSN 0031- 7683

Lubos, L.C. 2007. New Records of Philippine Mosses from Mindanao Island. *Liceo J. High. Edu. Res.* 5 (1). Retrieved November 5, 2015 from <http://ejournals.ph/index.php.options=com> [HER &page=article&op=view&path[]=565

Shevock J.R., I.A.F Lambio & B.C. Tan (2014) .Collection and Preparation Techniques of Bryophyte Specimens in Biodiversity Inventories.