



# PLANT COLLECTING TECHNIQUES AND IDENTIFICATION

Edwin R. Tadiosa, Ph.D.  
Associate Professor IV  
Bulacan State University



## Overview of Module 1

This Module shows the basic plant collecting protocol and plant identification procedure. The peatland managers and workers will be guided in these basic yet important preliminary activities to assess the vegetation and determine the plants that are existing and growing for they to know what to protect and conserve in this fragile ecosystem.

### Specific Learning Objectives

Upon completion of this module, the learners/participants will be able to:

1. know how to collect and process plant specimens in the project site;
2. increase the scientific knowledge and contribute to plant diversity conservation;
3. promote the value of plant diversity to the visitors, and
4. develop techniques for collecting plants.



## Overview of Module 1

This Module shows the basic plant collecting protocol and plant identification procedure. The peatland managers and workers will be guided in these basic yet important preliminary activities to assess the vegetation and determine the plants that are existing and growing for they to know what to protect and conserve in this fragile ecosystem.

### Plant Species Identification

### Specific Learning Objectives

At the end of Lesson 2, the participants will be able to:

1. know plant identification and classification.
2. become familiar with basic plant physical features.
3. begin to identify plants using morphological characteristics.



## Introduction

Collecting botanical/plant specimens is one of the most important activities in

botanical assessment, particularly in peatland ecosystems. It is thought to be unnecessary, yet it is an essential component, especially if you do not know the identity of a plant you have come across in your sampling area. More so if the plant species is incidentally suspected to be new to science! Hence, you have to know certain things and specific procedures normally introduced to forest managers, peatland personnel, plant enthusiasts, and students, among others.

Most plant collections are for preservation in the herbarium. A *herbarium* is an institution for the collection of dried plant specimens as contrasted to *hortorium*, which is a collection of living plant specimens. In its more than four centuries of history, the herbarium has grown up into an institution. And one may associate the term today not only with collections of dried plant specimens but with instruction, research, and extension- that is, the source of public information (Buot, 2019).



Each specimen contains valuable information such as the use of the plant, the habit, the ecology and distribution, and the taxon to where the plant belongs.

A herbarium can then be viewed as a biological data bank with numerous quantities of raw information that could be interpreted, evaluated, experimented with, synthesized and used by the students, researchers, extension workers and the public laymen as well.

In view of the significant role played by a herbarium both in a college and in a community, it is important that we should learn its techniques.



# PLANT COLLECTION, PREPARATION & IDENTIFICATION

1. Collection
2. Pressing
3. Preservation
4. Packaging
5. Drying
6. Identification/Classification
7. Mounting
8. Labeling
9. Filing
10. Accessioning/Data-basing



**Before:**

## ***a. Know where and what to collect***

Field work consists of collecting plant specimens in places where plants grow. These may be in gardens, cultivated areas, forests, abandoned fields, grasslands, rivers, seashores, lakes and seas.





Peatland Areas and vicinities where the indigenous people reside.





Before:

***b. Have a permit  
to collect &  
contact persons  
notified***



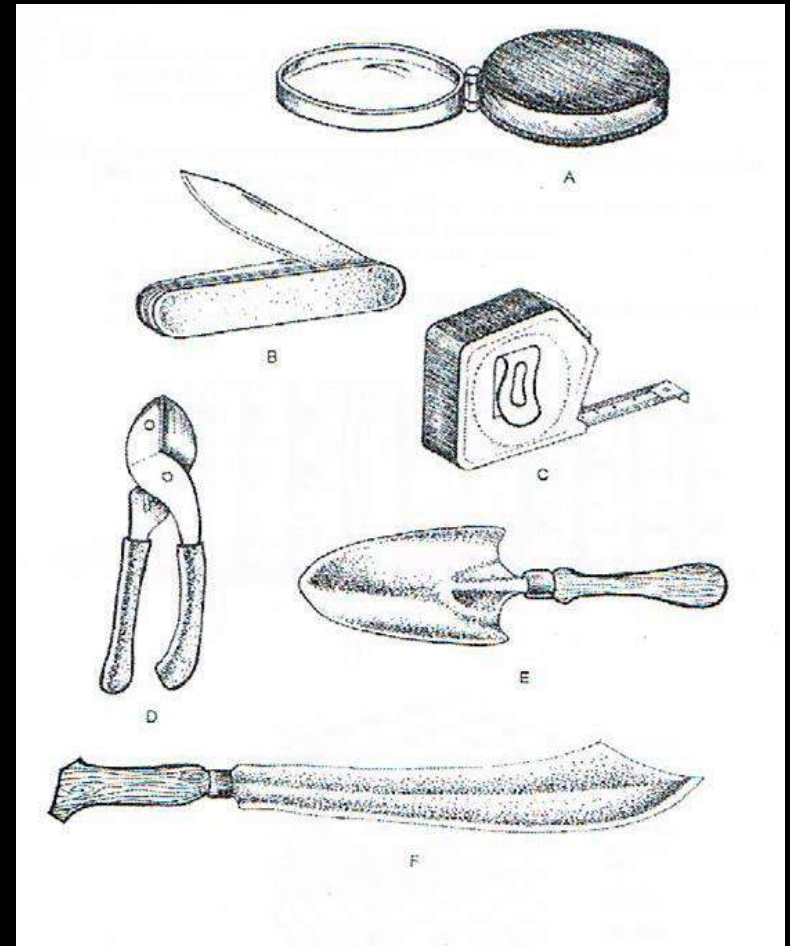


**Courtesy call to DENR Regional, Provincial, and CENRO Office; Local Government Units and the community where the research study is conducted.**

**Before:**

***c. Make a checklist of field equipment & supplies needed***

A collector, before going on a botanical collection, should be provided with supplies and equipment



Ample provisions for food, clothing, and medicine should be prepared.

**Before:**

***d. Have consider weather forecast***





Crossing the river and transporting supplies and materials

While in the field:

## 1. Collection

A good guide and climber should be hired in the locality as aide.





RISK

**“CLIMB AT YOUR OWN RISK”**



# What specimens to collect?

There are various plant groups involved such as flowering and non-flowering plants, mosses, ferns, and their allies.





# SPECIES OF NEPENTHES



# SPECIES OF HOYA



The three largest flowering plant families containing the greatest number of species are:

The sunflower family (Asteraceae) with about 24,000 species,

The orchid family (Orchidaceae) with about 20,000 species.

The legume or pea family (Fabaceae) with 18,000 species.



*The general principle to guide a collector is that a specimen to be collected should include*

**reproductive**

**structures**, spores, or fruiting bodies for cryptogamic plants and flowers or fruits or both in the case of seed-bearing plants.



Cryptogamic plants: Musci (bryophytes), Filices (ferns)

# COLLECTING AND PROCESSING PLANTS FOR DISPLAY AND HERBARIUM PURPOSES

## *While in the field*

A botanical specimen is worthless without any accompanying information.



**Field Notebook**

### **Data should include the following :**

1. Name of collector \_\_\_\_\_ Field No. \_\_\_\_\_
2. Locality \_\_\_\_\_  
(Barrio, municipality, province)
3. Local name \_\_\_\_\_ Dialect \_\_\_\_\_
4. Habitat \_\_\_\_\_ Altitude \_\_\_\_\_
5. Description \_\_\_\_\_  
(Tree, shrub, bush, vine, herb; flower, kind, odor, colors; fruit, taste, kind, odor, color; diameter and height for big trees; and other characteristics)
6. Special notes \_\_\_\_\_  
(Introduced, cultivated, etc.)
7. Economic uses \_\_\_\_\_  
(Food, fiber, oil, timber, ritual, etc.)
8. Date collected \_\_\_\_\_  
(Month, day, and year.)

# Specimens Collection for **Spermatophytes**

(flowering plants and gymnosperm).

Big flowering plants and gymnosperm, the twigs containing leaves, flowers or fruits of about 30 centimeters long would be sufficient.



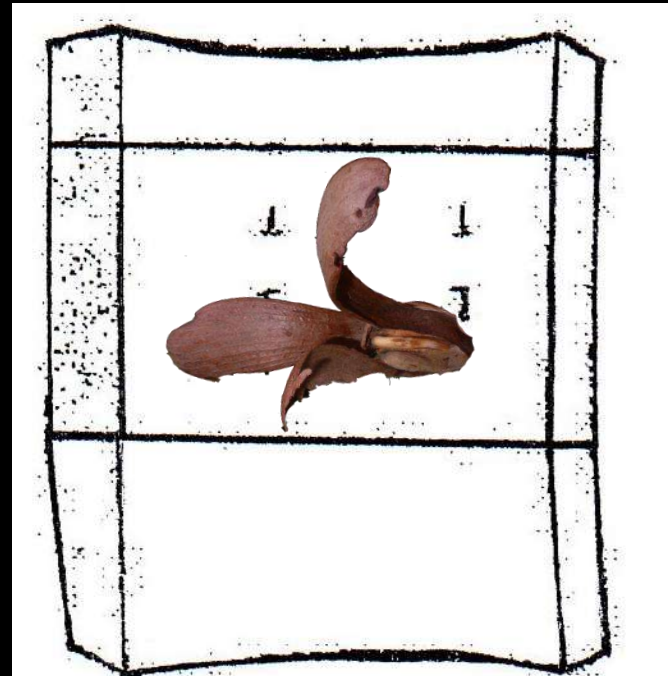
There must be duplicates, if possible, selected from the best of the available materials.



Care must be taken to avoid mixing specimens with other numbered collections. The specimens should be properly tagged with their respective numbers.

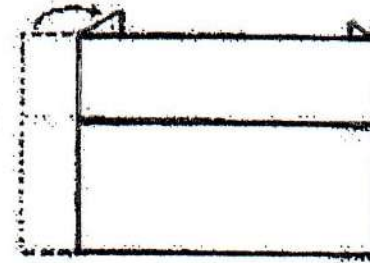
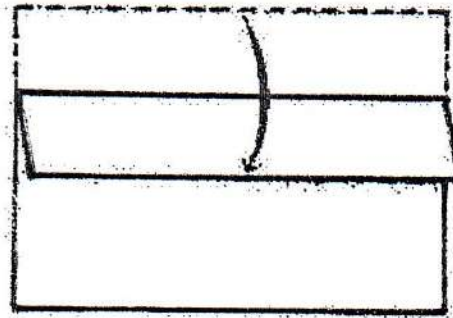
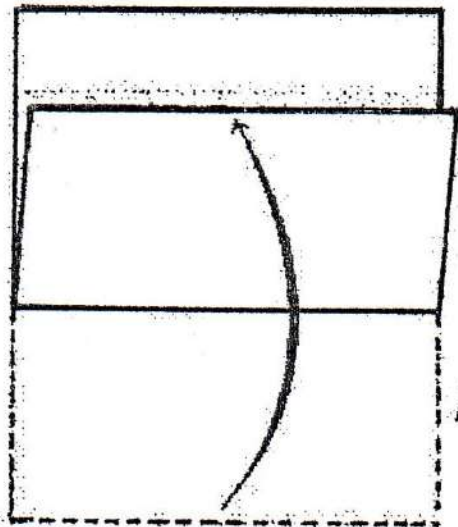


Some parts of the specimen particularly fruit or flower can be collected from the ground



Every specimen should be provided with notes/labels.

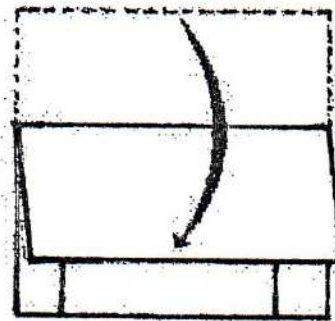
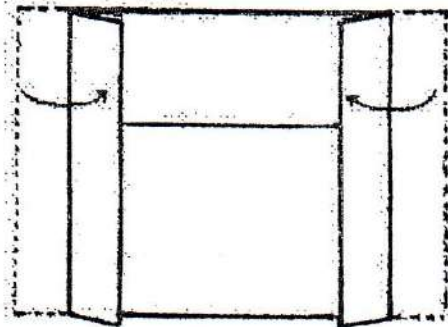
# Envelope Storage Technique



A

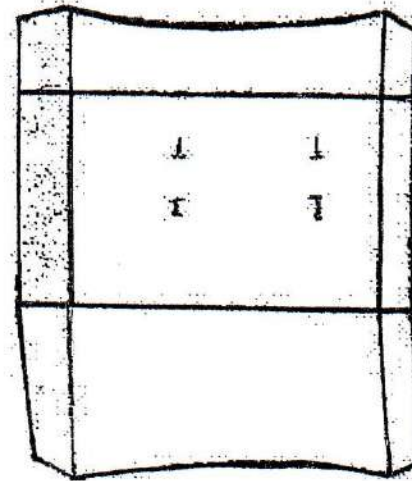
B

C



D

E



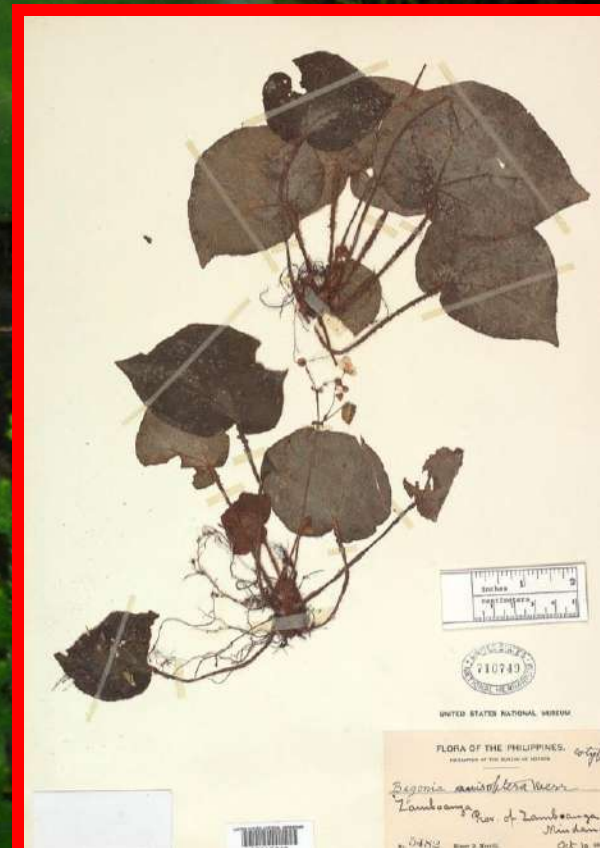


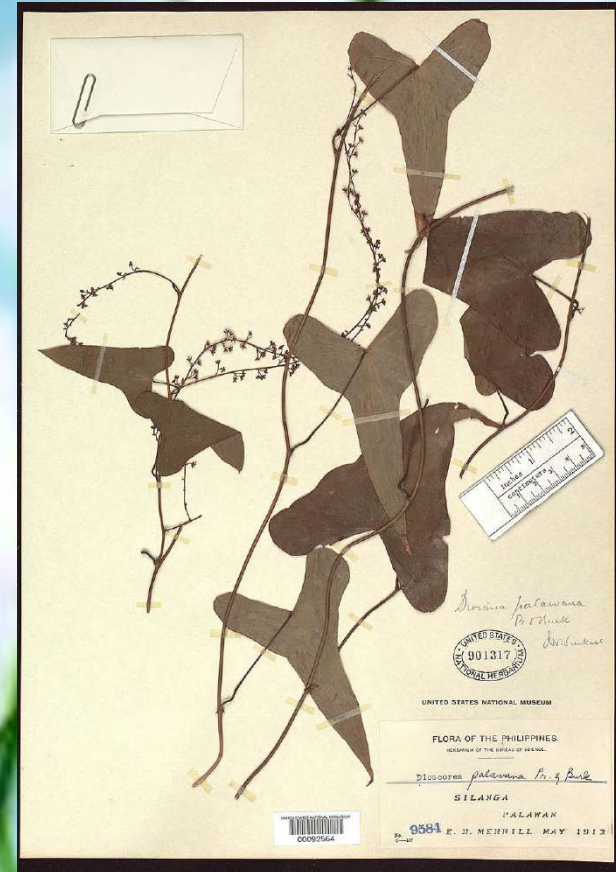
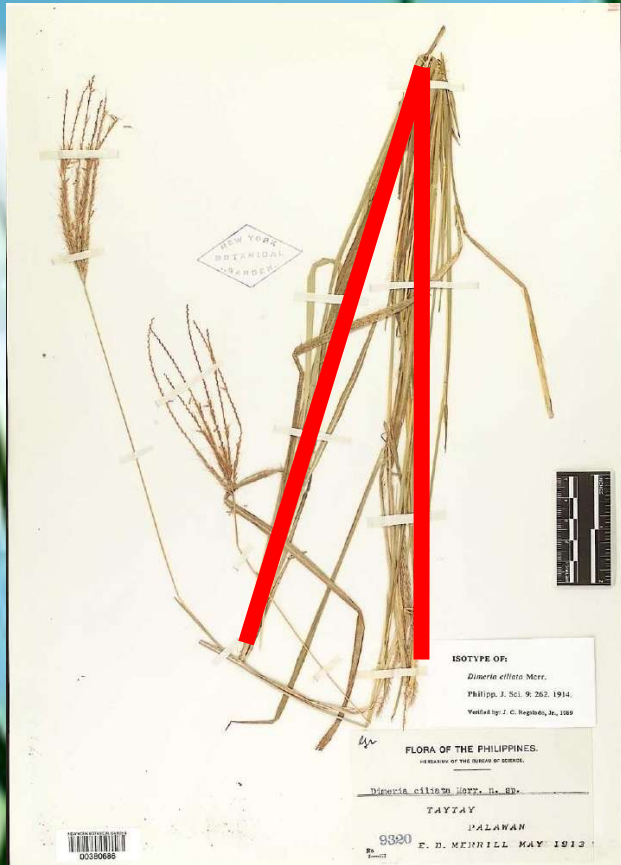
**Small**

**plants,**

complete  
specimens

should be  
collected, that  
is, to include  
roots, stems,  
leaves, flowers,  
and fruits.





Long specimens of vines and grasses should be bent either V – or N- shape.

Some particular groups of flowering plants such as:

***Giant Ferns, Pandan, Palms, Bamboo, Bananas, and Aroids***

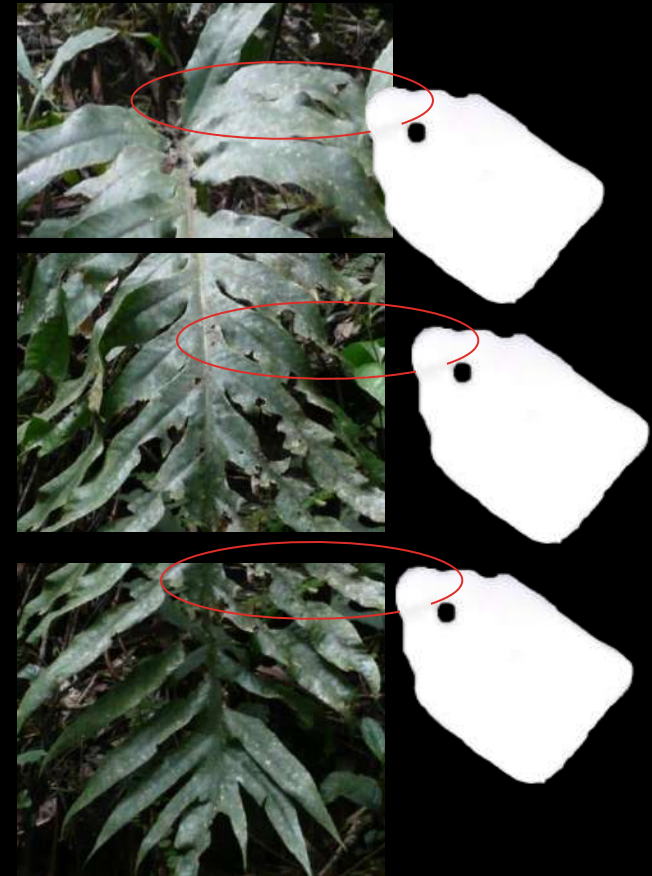
**present some difficulties in processing and preparing herbarium specimens.**



If there are several fragments representing one species of plant, they must be numbered or labeled successively to its relative position and marked with the same collector's number.



The specimens include essential features of fertile frond with the rhizome.



# Collecting specimens of Pandan

## Pandan

species may be erect shrub or trees usually with prop-roots or sometimes climbing on trees by means of aerial roots.



For small plants, including the flowering branch with a complete set of leaves. The leaves can be folded to fit in the plant press.

# Collecting specimens of Banana

**Banana** is a giant herb with modified stem or trunk known as pseudostem and with large fleshy fruits and leaves.



Important parts of the leaf to be collected are from the leaf apex, from the middle portion, and at the basal segment. Collect fingers from the mature bunch.

# Collecting specimens of Palms



Collect fruits of full size that are not quite mature including seeds.

For palmate leaves collect the whole leaf blade including the petiole. Leaves can be folded to fit in the plant press.

Pinnate leaves collect portion of the rachis: one from the leaf apex, from the middle portion and at the basal segment. One-half of the blade should be cut except for their attachment.



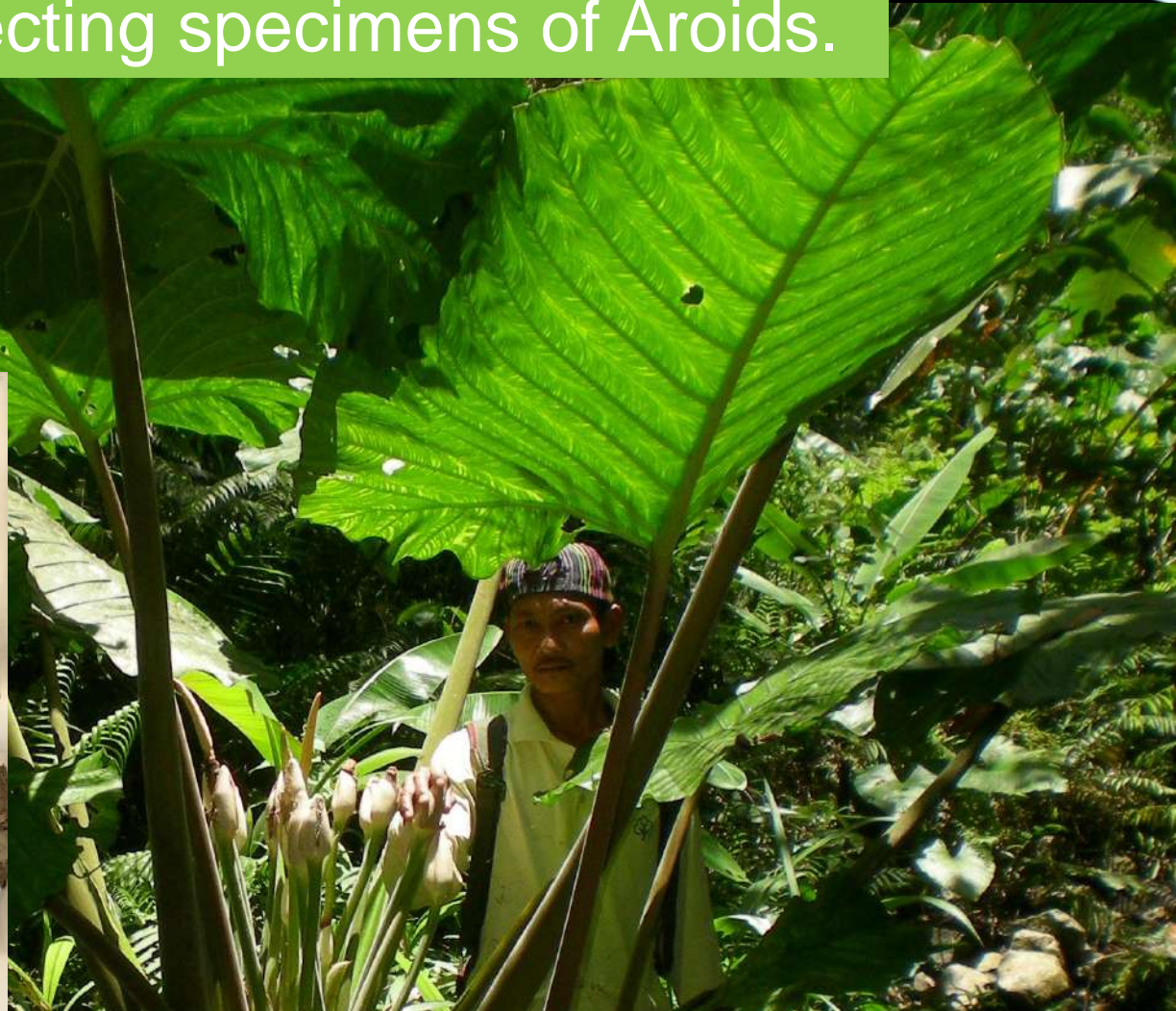
# Collecting specimens of Aroids.

**Aroids** are plants with fleshy and large underground parts, leaves and stem. This group is known for their distinctive inflorescence known as **spadix** which is subtended by a solitary spathe.





# Collecting specimens of Aroids.



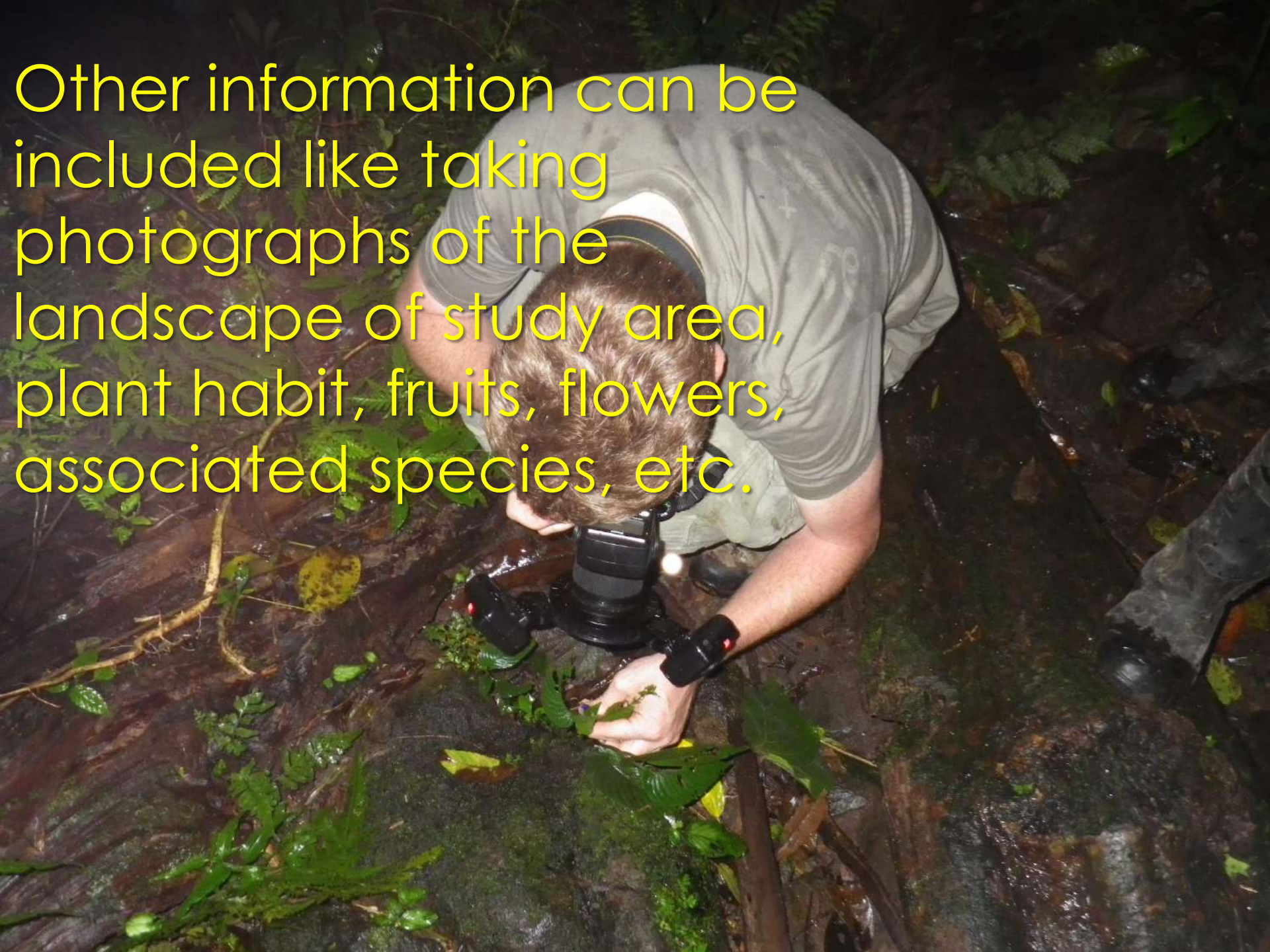
For large aroids, collect the following parts of the leaf blade: the apex of the leaf, a portion of middle leaf, and the posterior lobe including the attachment of the petiole.

# Collecting specimens of Aroids.



For small aroids, collect the complete plant with stem, with two or more attached leaves and inflorescence.

Other information can be included like taking photographs of the landscape of study area, plant habit, fruits, flowers, associated species, etc.





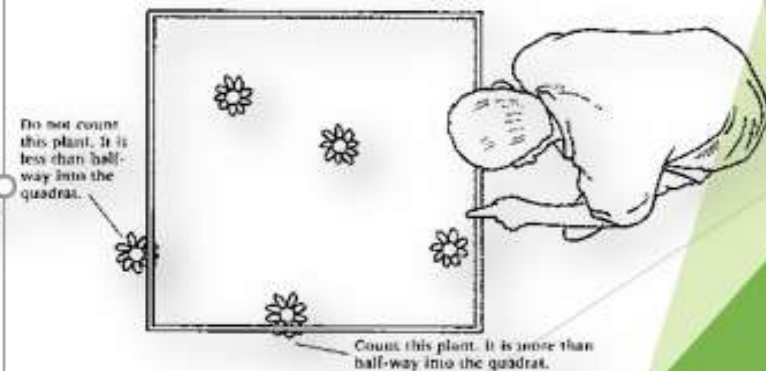
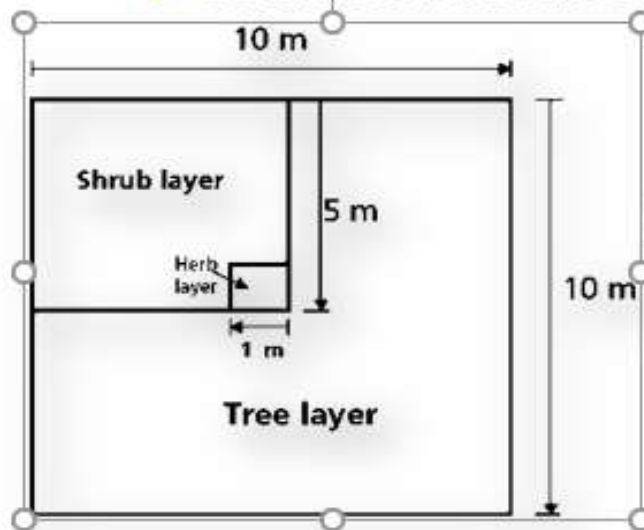
Agusan Marsh and Wildlife Sanctuary, Agusan del Sur



# PLANTS

## ▶ Nested plots

- ▶ 10x10 m (trees)
- ▶ 5x5 m (vines and shrubs)
- ▶ 1x1 m (weeds)
- ▶ 50 m interval between plots along 500 m line



[www.fao.org](http://www.fao.org)  
[www.sciwebhop.net](http://www.sciwebhop.net)

# Diagnostic characteristics of ferns

a. A fern is not a flowering plant

b. The mode of sexual reproduction is by spores which are found on the underside of the mature leaves

c. Ferns usually grow in moist shady areas



Global Environment  
Centre



Investing in rural people



# Philippine Plants



There are **1,029** species of **pteridophytes**, distributed in **156** genera and **33** families.



(Source: Pelsner, P.B., J.F. Barcelona & D.L. Nickrent (eds.). 2011 onwards. Co's Digital Flora of the Philippines. [www.philippineplants.org](http://www.philippineplants.org))

# Spore Collection



The spores will be gathered in a paper and will appear as black, brown, or yellow “powder.” The sample collected is a mixture of spores and fragments of the **spore cases (sporangia)**.



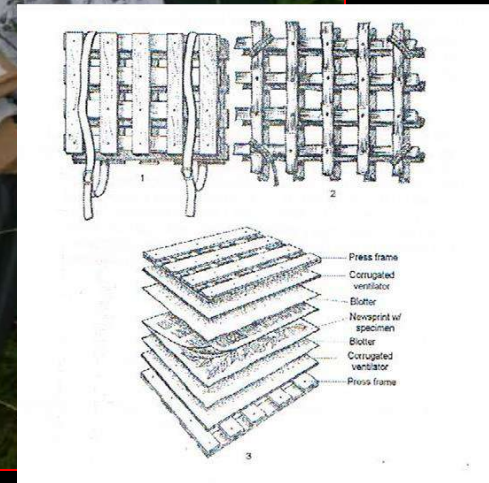
# Spore Collection



Tube with spores

## 2. Pressing

Upon reaching the camp the specimens should be neatly arranged in newspaper folders placed one on top of the other with sufficient blotters in between.



## 2. Pressing

Bulky fleshy stems, tubers and fruits should be sliced.



### 3. *Preservation*

In order to maintain the good quality of all collected specimens while on the field, plants samples can be preserved using ethanol/denatured alcohol.



This solution will prevent immediate deterioration, or the falling off of leaves, flowers, and fruits.

# Some of the activities done inside the peatland



## 4. Packaging

### Preparing for transport



Global Environment Centre



Investing in rural people



## 5. Drying

Wet newspaper must be changed with new ones before drying.

## 5. Drying



There are two methods of drying the specimens:

- (1). Drying under the sun known as natural drying,
- (2). Drying under artificial heat or artificial drying.



## 5. Drying

Dried specimens may be removed from heat.



Specimens should be inspected every four hours or as often as necessary.

## 6. Identification

Ways to identify newly collected specimens:

- a. *Use of taxonomic keys*
- b. Comparing with herbarium materials
- c. Comparing with colored photographs in books and journals
- d. Consulting with the expert



## LOCAL NAME

1. Alibutbut  
Salibutbut  
Pantogsa-usa
2. Alibutbut-nga-  
bai  
Talanisog  
Lasob-usa
3. Itlog-usa  
Parip-usa
4. Bayag-kambing  
**Bayag-usa**



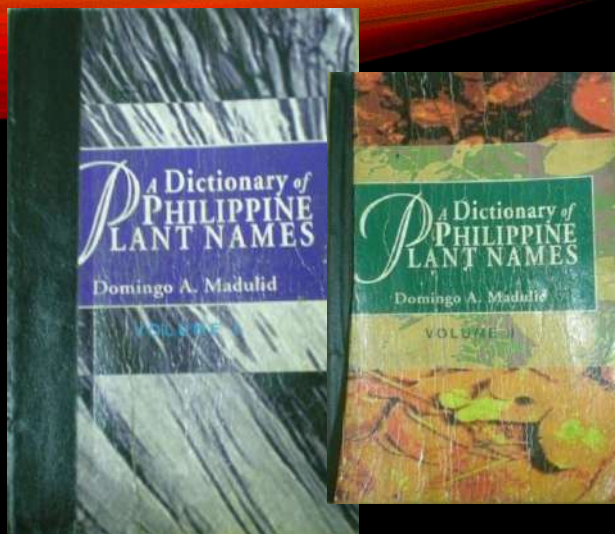
## DIALECT

Bisaya

BisPanay

Bikol

Tagalog



bayag-toro

(Elm.) Markgr.; *Tabernaemontana plumeriae-folia* (Elm.) Merr.; *T. subglobosa* Merr.; *Voacanga globosa* (Blco.) Merr. Apocynaceae

bayag-toro (Tag) - *Dioscorea bulbifera* L. Dioscoreaceae

bayag-usa (Bik) - *Cerbera manghas* L. Apocynaceae

bayag-usa (Bik, Dgt, Tag) - *Voacanga globosa* (Blco.) Merr. Apocynaceae

bayag-usa (Tag) - *Gardenia curranii* Merr.; *G. pseudopsidium* (Blco.) E.-Vill. Rubiaceae

bayakan (Tag) - *Shorea negrosensis* Foxw. Dipterocarpaceae

bayakaw (Bon) - *Dysoxylum* sp. Meliaceae

bayakaw (Png) - *Entada parvifolia* Merr. Fabaceae

bayakbak (Ibg) - *Syzygium subrotundifolium* (C.B. Rob.) Merr. Myrtaceae

bayakbak (Kpm) - *Senna timoriensis* (DC.) Irwin & Barneby Fabaceae

bayakbak (Png) - *Cleistanthus myrianthus* (Hassk.) Kurz subsp. *myrianthus* Euphorbiaceae; *Syzygium bordenii* (Merr.) Merr.; *S. costulatum* (C.B. Rob.) Merr. Myrtaceae

bayakbak (Tag) - *Cleistanthus myrianthus* (Hassk.) Kurz subsp. *cupreus* (Vid.) Jabl. Euphorbiaceae

bayakbak-bukit (Kpm) - *Sesbania cannabina* (Retz.) Pers. Fabaceae

bayakew (Png) - *Entada parvifolia* Merr. Fabaceae

bayakibog (Tag) - *Vernonia patula* (DC.) Euphorbiaceae

bayanti

bayakkot an panumyo (Ifg) - *Macaranga caudatifolia* Elm. Euphorbiaceae

bayako (BisPn) - *Artocarpus cumingianus* Trec. Moraceae

bayakto (Bik) - *Microchites schrieckii* (v. Huerck & Muell.-Arg.) Rolfe Apocynaceae

bayakutol (Sbl) - *Clerodendrum* sp. Verbenaceae

bayalgan gadudukke (Ifg) - *Murdannia nudiflora* (L.) Brenan Commelinaceae

bayalgan mumbolah (Ifg) - *Murdannia nudiflora* (L.) Brenan Commelinaceae

bayambang (Tag) - *Amaranthus spinosus* L.; *Deeringia polysperma* (Roxb.) Moq. Amaranthaceae

bayami (Tag) - *Pothos philippinensis* Engl. Araceae

bayan (Mbo) - *Lithocarpus solerianus* (Vid.) Rehd. Fagaceae

bayan (Pal) - *Mussaenda palawanensis* Merr. Rubiaceae

bayan (Sbl) - *Memecylon lanceolatum* Blco. Melastomataceae

bayanag (Tag) - *Amyema acuta* (v. Tiegh.) Danser Loranthaceae

bayang (Bgb, Bng) - *Endospermum pelatum* Merr. Euphorbiaceae

bayang (Msk) - *Mallotus mollissimus* (Geisel.) Airy Shaw Euphorbiaceae

bayang (Sub) - *Erubite* sp. Convolvulaceae

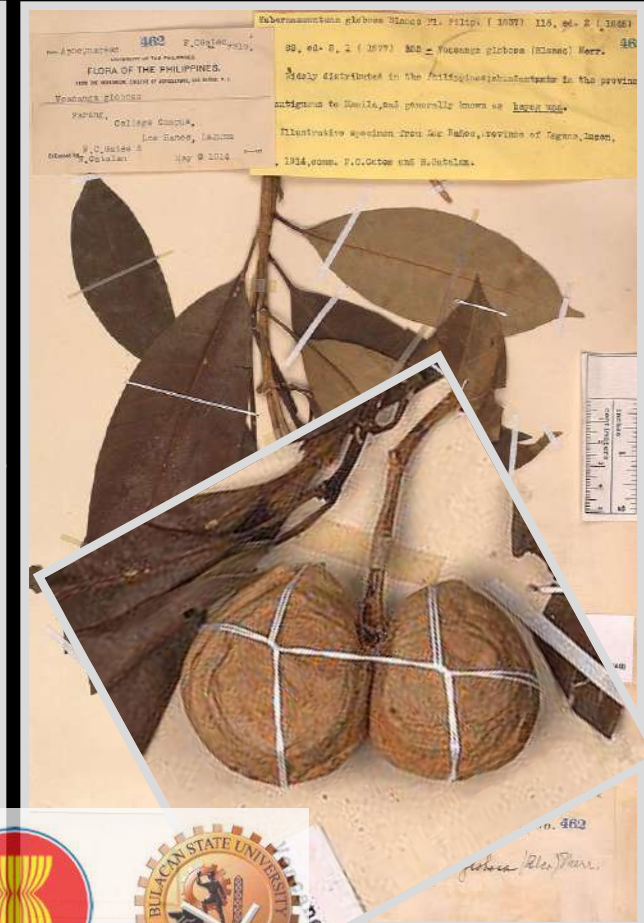
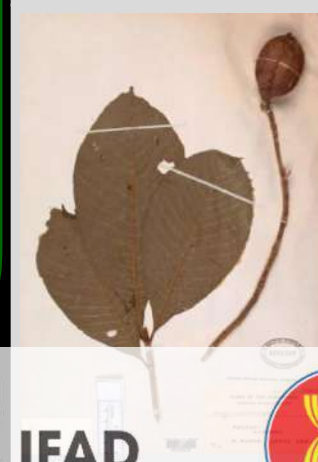
bayang (Sub) - *Erubite* sp. Convolvulaceae



# Comparing with herbarium specimens



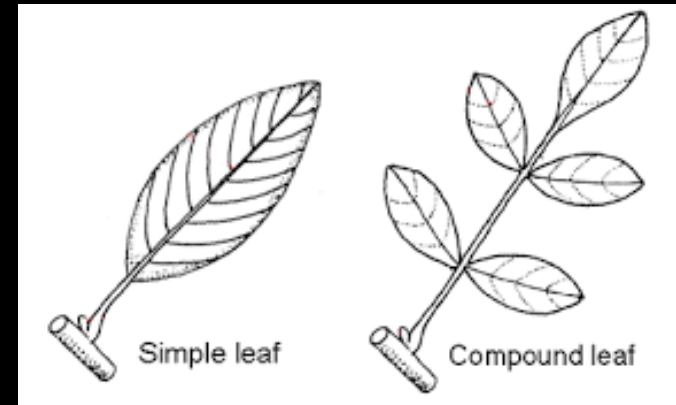
**bayag-usa** (Bik) – *Cerbera manghas* L. Apocynaceae  
**bayag-usa** (Bik, Dgt, Tag) – *Voacanga globosa* (Blco.) Merr. Apocynaceae  
**bayag-usa** (Tag) – *Gardenia curranii* Merr.;  
*G. pseudopsidium* (Blco.) F.-Vill. Rubiaceae



John R. ...

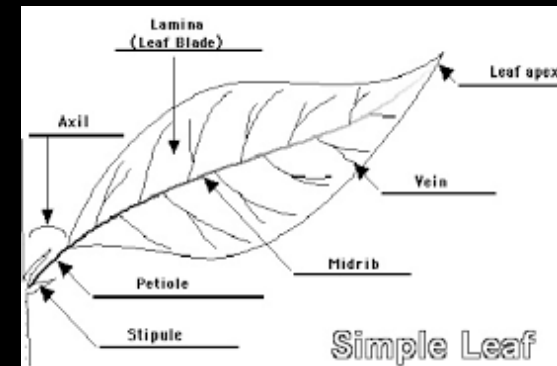
# LEAF CHARACTERISTICS

- a. Simple leaf – leaf blade is undivided and maybe entire, lobed, or cleft. Common examples are santol and gabi).
- b. Compound leaf – leaf blade divides into several parts called leaflets. Common examples are mahogany and rain tree.



To have a complete overview of the external morphology of the typical leaf.

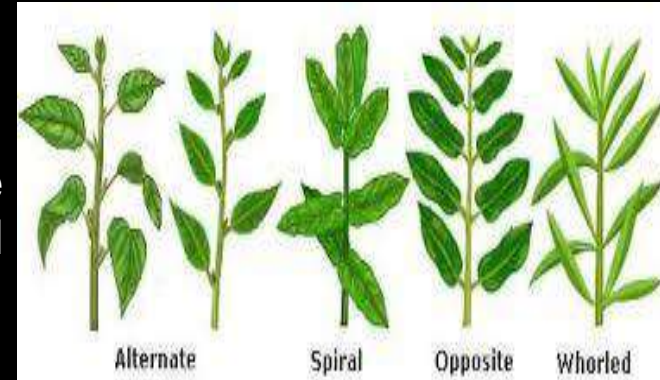
1. The leaf consists of a leaf base, leaf blade, petiole, and stipules with its unique function.
  - a. Leaf base – is part of a leaf close to the petiole. In many dicotyledonous plants, the leaf base supports two lateral outgrowths known as stipules. However, in monocotyledonous plants, the leaf base is expanded into a structure called the leaf sheath. These sheaths partially or entirely cover the stem such as in sugarcane.
  - b. Leaf-blade/Lamina – is the green flattened portion of the leaf that performs photosynthesis in the plant. A noticeable thick vein, known as the midrib, is located from the leaf base to the leaf apex. This midrib branches into thinner lateral veins and veinlets.
  - c. Petiole – is the stalk of the leaf, which is attached to the leaf base on one side and the stem on the other side. When the petiole is present, it calls petiolate while it calls sessile when the petiole is absent.
  - d. Stipules –an outgrowth found paired at the base of some dicot leaves. The leaves with stipules calls stipulate while those without stipules call exstipulate.



# Phyllotaxy

Phyllotaxy – is the leaf arrangement on the stem or its branches in such a way they receive maximum sunlight. The following is the arrangement of leaves: alternate, opposite, spiral, and whorled.

- a. Alternate – a single leaf attached at each node. This considers the most common arrangement. Typical examples are santol and mango.
- b. Opposite – two leaves develop from nodes opposite each other. Common examples are guava and makopa.
- c. Spiral – involve alternately arranged leaves in which each succeeding stem node and attached leaf is rotated slightly from the nodes below and above it. A common example is ivy.
- d. Whorled – there are more than two leaves developed in a node in a circle or rounded position. Common examples are the yellow bell and dita.



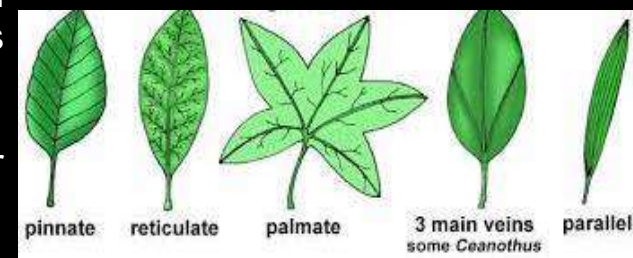


**Leaf venation** – the arrangement or patterns of veins and veinlets in the blade of a leaf. These veins are composed of vascular tissues that are used for food and water transport. There are two types of venation: netted and parallel.

a. **Netted** – sometimes called reticulate is a type where there are one or more big veins from which smaller veins branch out and interconnect. This branch and interconnection form a network pattern. This type of venation categorizes into three, and it is characteristic of most dicotyledonous plants.

1. **Pinnately reticulate** – has one main vein present from which smaller veins spread out in different directions in the leaf blade.
2. **Palmately reticulate** – have two or more big veins radiating from the tip of the petiole.
3. **Radiate reticulate** – have two or more large veins radiating from around the tip of the petiole and branching up into smaller veins to form a network throughout the leaf blade.

b. **Parallel venation** – a form in leaves when all the veins run parallel to each other. Typically, this type of venation is characteristically found in most monocot leaves.





**BioGuide**  
The field guide to life on Earth.

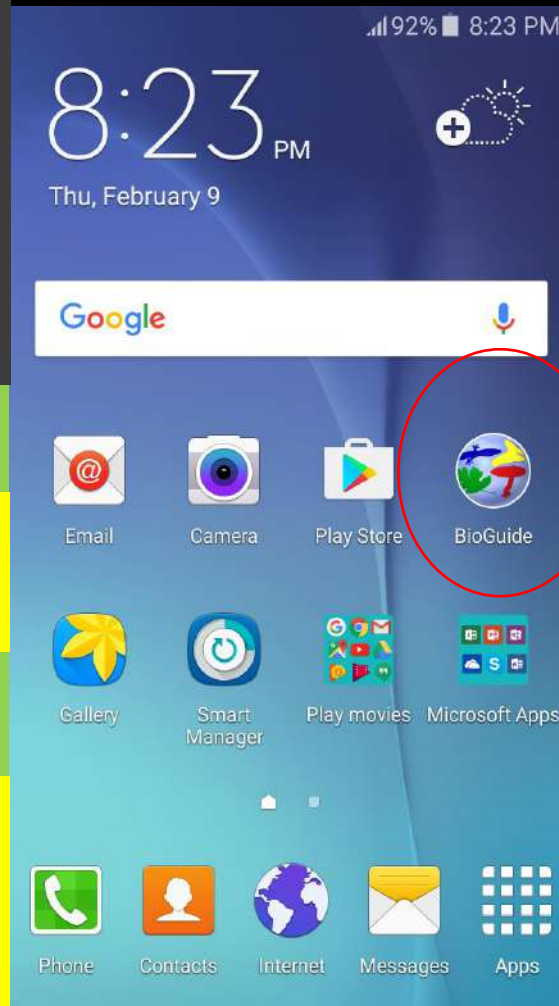
A new mobile software application designed to help the user identify, learn, and enjoy

BioGuide has extensive global coverage

Jan Vršovský **2016** Czech republic

**Can be used offline.**

It's only for  
**Android phones and tablets**



# Philippine Plants



## Updated Online Flora

*Co's Digital Flora  
of the Philippines*

Pteridophyte Families	Gymnosperm Families	Angiosperm Families Alphabetical List	Angiosperm Families APG List
-----------------------	---------------------	---------------------------------------	------------------------------

*This illustrated checklist is a continuation of the works of Elmer D. Merrill (1876-1956) and Leonardo L. Co (1953-2010), authorities on the Philippine vascular Flora.*

What is CDFP?

It is the most comprehensive digital checklist of Philippine vascular plants.

Includes all native and naturalized species of vascular plants with diagnostic photographs for each taxon.



# HOYAS



*Hoya pentaplebia*



*Hoya imbricata*



*Hoya camphorifolia*



*Hoya siariae*



*Hoya merrillii*



*Hoya crassicaulis*



*Hoya bilobata*

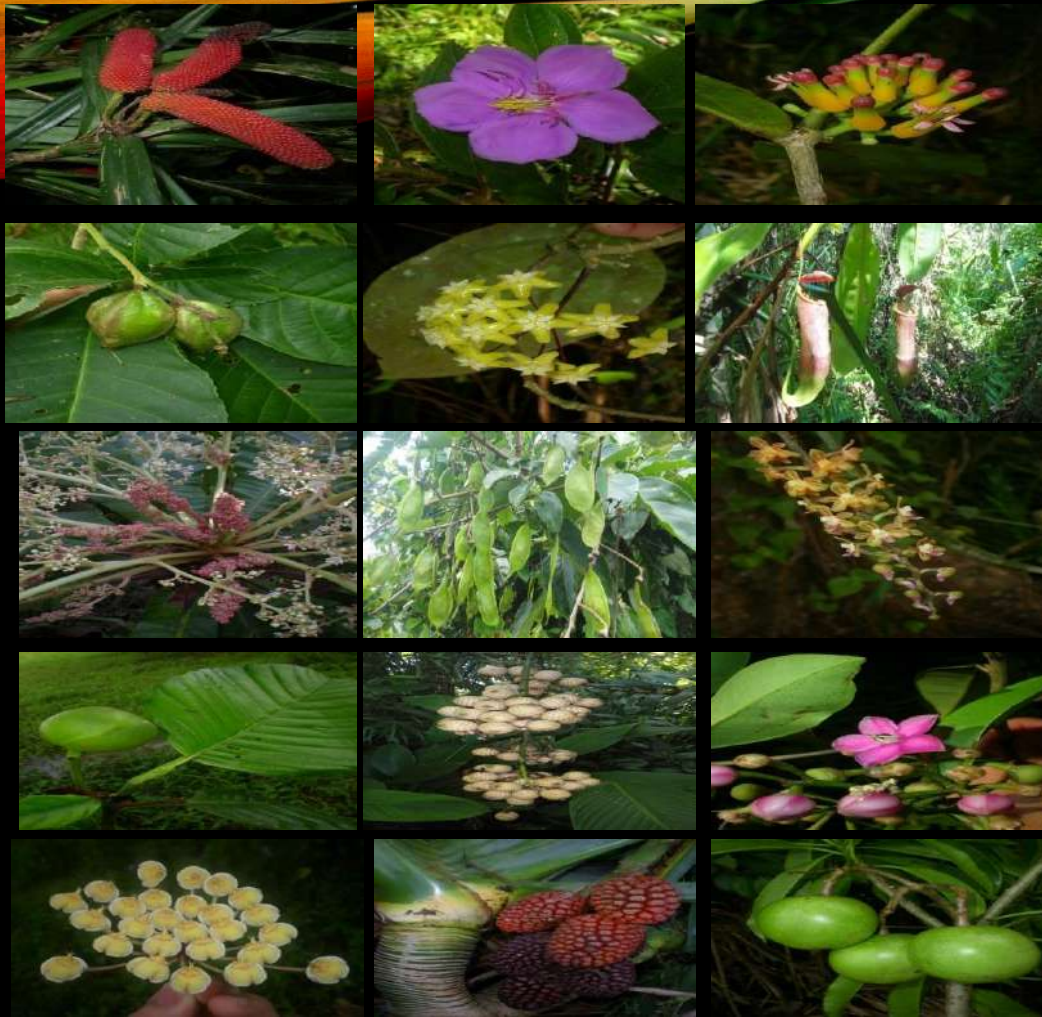


Global Environment Centre



Investing in rural people





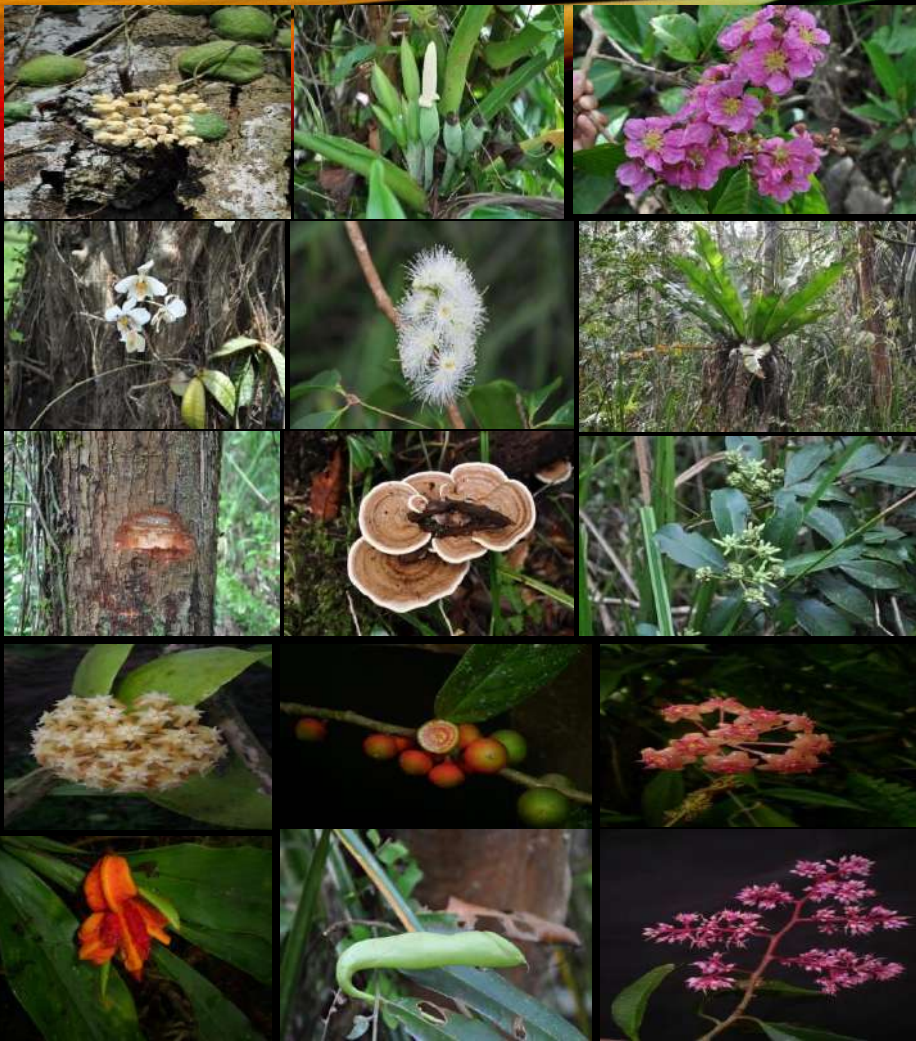
First row: (1) *Freycinetia multiflora*, (2) *Melastoma malabathricum*, and (3) *Amyema celebica*

Second row: (1) *Barringtonia acutangula*, (2) *Hoya pentaphlebia*, and (3) *Nepenthes mirabilis*

Third row: (1) *Buchanania arborescens*, (2) *Milletia pinnata*, and (3) *Robiquetia* sp.

Fourth row: (1) *Dillenia philippinensis*, (2) *Calamus multinervis*, and (3) *Ardisia squamulosa*

Fifth row: (1) *Hoya imbricata*, (2) *Pandanus* sp., and (3) *Cerbera manghas*



First row: (1) *Hoya sp.*, (2) aroids, and (3) *Lagerstroemia speciosa*

Second row: (1) *Phaleonopsis sp.*, (2) *Syzygium sp.*, and (3) *Asplenium nidum*

Third row: (1) trunk of *Calophyllum sp.*, (2) *Polyporus* fungi, and (3) *Morinda sp.*

Fourth row: (1) *Hoya sp.*, (2) *Ficus sp.*, and (3) *Hoya sp.*

Fifth row: (1) *Hedychium sp.*, (2) *Nepenthes sp.*, and (3) *Ardisia sp.*



First row: (1) *Amischotolype griffithii*, (2) *Dillenia philippinensis*, and (3) *Lepironia articulata*

Second row: (1) *Hedychium philippinense*, (2) *Colona serratifolia*, and (3) *Cerbera manghas*

Third row: (1) *Freycenetia* sp., (2) *Myrmecodia tuberosa*, and (3) *Medenilla teysmanii*

Fourth row: (1) *Garcinia* sp., (2) *Nauclea orientalis*, and (3) *Fagraea philippinensis*

## APOCYNACEAE



**Scientific Name:** *Cerbera manghas* L.

**Local Name:** sea mango

**Brief Description:** A small evergreen coastal tree growing up to 12 m tall. The shiny dark-green leaves are alternate, ovoid in shape. The flowers are fragrant, possessing a white tubular 5-lobed corolla about 3 to 5 cm in diameter, with a pink to red throat. The fruits are egg-shaped, 5 to 10 cm long, and turn bright red at maturity.

**Uses:** medicinal

**Distribution:** Tropical Asia through Malesia to tropical Australia and Polynesia.

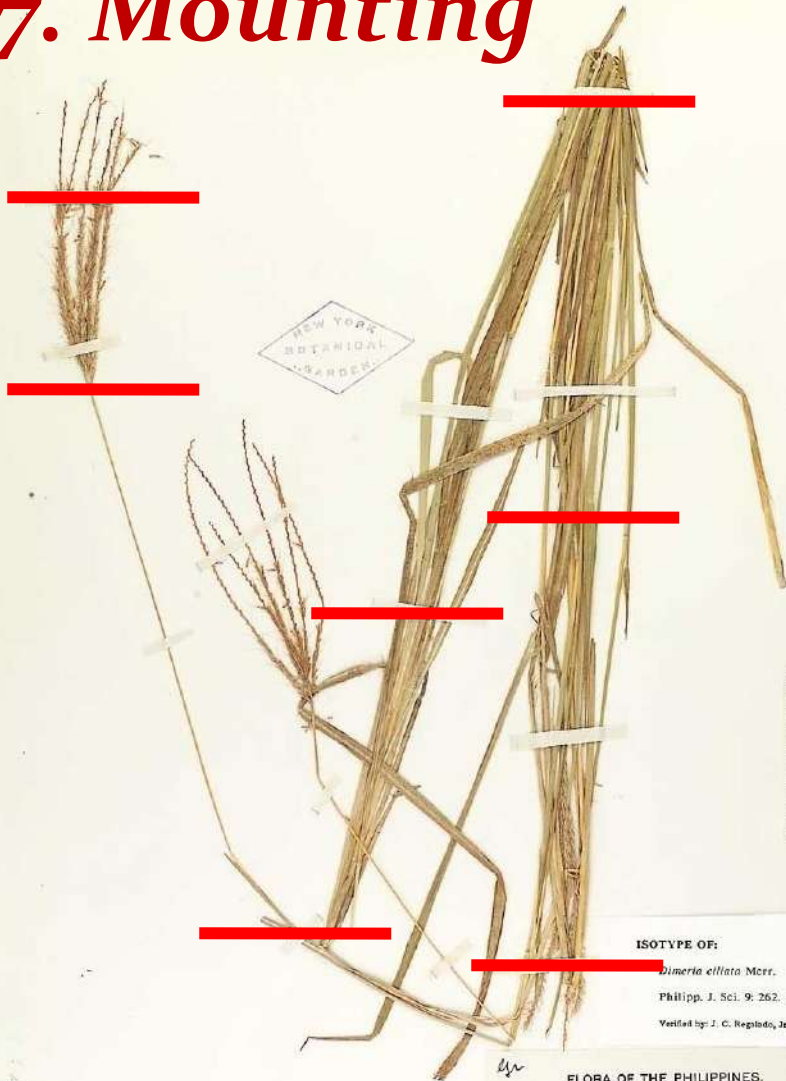
**Ecology:** Common along the seashore throughout the Philippines.



# 7. Mounting



# 7. Mounting



ISOTYPE OF:

*Dimeria ciliata* Merr.

Philipp. J. Sci. 9: 262. 1914.

Verified by: J. C. Replido, Jr., 1989

FLORA OF THE PHILIPPINES.  
HERBARIUM OF THE BUREAU OF SCIENCE.

*Dimeria ciliata* HORT. & ED.

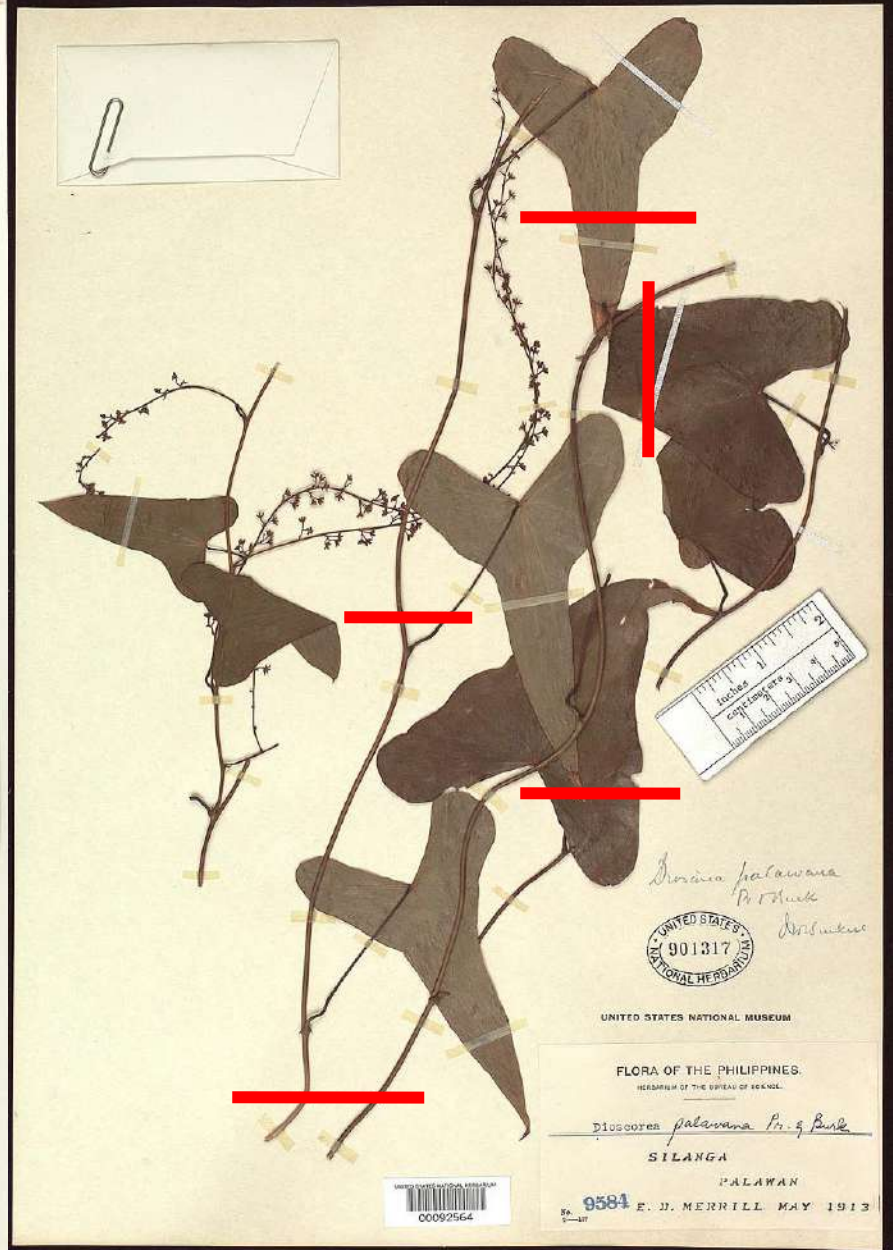
TAYTAY

PALAWAN

9320 E. D. MERRILL MAY 1913



00380686



*Dioscorea palawana*  
P. & B. & B.  
Dioscoreaceae



UNITED STATES NATIONAL MUSEUM

FLORA OF THE PHILIPPINES.  
HERBARIUM OF THE BUREAU OF SCIENCE.

*Dioscorea palawana* P. & B.

SILANGA

PALAWAN

9584 E. D. MERRILL MAY 1913



00092564

# 7. Labelling

FLORA OF THE PHILIPPINES  
PHILIPPINE NATIONAL HERBARIUM

Common Name.....**kamagong**.*Dialect*...**Tag**.....

Field No. ....**121**... Herbarium No....**2012**

Collector .....**D.N. Tandang et al**.....

Island or Province .....**Butuan**.....

Locality...**Brgy. Tungao**.....

Habitat...**planted in backyard**.....

Altitude above the sea ..... meters.

Tree; shrub; bush; vine; herb ..... **Tree** ....

Height of plant ..... **12 meter**.....

Diameter, breast high ..... **45 cm**.....

Flower .....  
(Odor, color, etc.)

Fruit ..... **reddish**.....  
(Kind, odor, color, etc.)

Special notes ..... **fruit is edible**.....

Economic uses. ... **The wood is used for furniture**.....

Date **Feb, 29, 2012**

Field label



Phil. Nat. Herb. **2012**

FLORA OF THE PHILIPPINES  
Philippine National Herbarium

**Diospyros discolor Willd.**

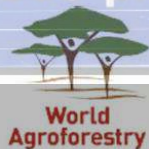
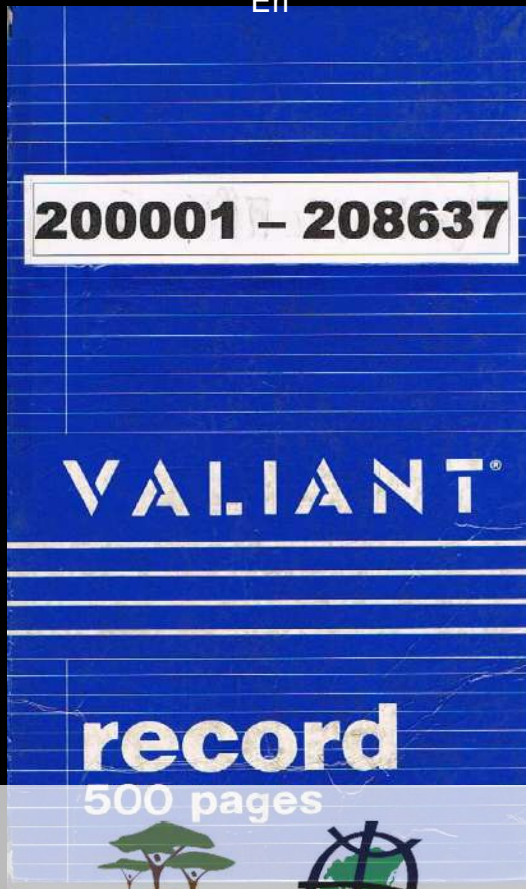
Brgy. Tungao, Butuan Province, Mindanao

Coll. **Danilo.N. Tandang** **Feb, 29, 2012**

Herbarium label

# 8. Accessioning/ Data-basing

Eri



Global Environment  
Centre



	SCIENTIFIC NAME	FAMILY	COLLECTOR	LOCALITY	FIELD NO.
7	<i>Artocarpus edulis</i>	ANACARDIACEAE	Barbon, Alvarez	Burdeos, Kinabuwanan	2007
8	-	Apocynaceae	Barbon, Alvarez Garcia	Burdeos, Kinabuwanan	2008
9					
0					
1	<i>Ficus nota</i>	MORACEAE	Barbon Alvarez	Burdeos, Kinabuwanan	2011
2	<i>Astragalus</i>	MELASTOMACEAE	Barbon, Alvarez	Burdeos, Kinabuwanan Quezon	2012
3	<i>Cananga odorata</i>	ANNONACEAE	-do-	Burdeos, Kinabuwanan Quezon	2013
4		Rubiaceae	Barbon / Alvarez	Burdeos, Kinabuwanan	2014
5	<i>Ficus</i>	MORACEAE	Barbon Alvarez	Burdeos Kinabuwanan	2015
6	<i>Dillenia philippinensis</i>	DILLENIACEAE	Barbon Alvarez	Burdeos, Kinabuwanan Quezon	2016
7	<i>Lenorm</i>	Leguminosae	Barbon, Alvarez	Burdeos, Kinabuwanan	2017
8					
9	<i>Voacanga</i>	APOCYNACEAE	Barbon, Alvarez	Burdeos, Kinabuwanan Quezon	2019
0	<i>Mussaenda</i>	Rubiaceae	Barbon / Alvarez	Burdeos, Kinabuwanan	2020
1					
2	<i>Phallosia nainoides</i>	EUPHORBACEAE	Barbon / Alvarez	Burdeos, Kinabuwanan	2022
3	<i>Artocarpus</i>	MORACEAE	Barbon, Alvarez Garcia	Burdeos, Kinabuwanan Quezon	2023
4	<i>FICUS</i>	MORACEAE	Barbon, Alvarez Garcia	Burdeos, Kinabuwanan Quezon	2024
5	<i>Tournefortia</i>	Apocynaceae	-do-	-do-	2024
6	<i>Casuarina ovalum</i>	BURSERACEAE	Barbon, Alvarez	Burdeos, Kinabuwanan	2026
7	<i>Cyperus</i>	Cyperaceae	Barbon / Alvarez	Burdeos, Kinabuwanan	2027
8					
9	<i>Clerodendrum macrostigma</i>	Verbenaceae	Barbon, Alvarez	Burdeos, Kinabuwanan	2029
0	<i>Melastoma</i>	MELASTOMACEAE	Barbon, Alvarez	Burdeos, Kinabuwanan	2030
1					2031



Global Environment Centre



Investing in rural people



## 9. Filing

In filing the specimens in the herbarium cases, there are various systems involved as follows:



**Phylogenetic arrangement** – This order according to evolutionary trend is in accordance with concepts of plant taxonomists such as the systems of Engler and Prantl.

**Alphabetical arrangement** – All generic names may be alphabetically arranged, while the species follows suit under each genus, regardless of families.

# Compactor System



Peatland ecotourism theme:



# It's more fun in the Peatlands



R.P Cereno (2012)

