A Field Guide to

Philippine Rattans

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ITTO

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Front Cover
Top, left to right: *Calamus filispadix* (close-up of triangular spines), *C. erinaceus* (habit), *C. marginatus* (knee with spines) and *C. siphonospathus* var. *dransfieldii* (inflorescence).
Bottom, left to right: *Calamus dimorphacanthus* (fruits), *Daemonorops ochrolepis* (leafsheath with spines), *Calamus usitatus* (flowers) and *C. bicolor* (habit).

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PREFACE

.....

The Lord God made all kinds of trees grow out of the ground — trees that were pleasing to the eye and good for food... (Genesis 2:9)

... including the rattans.

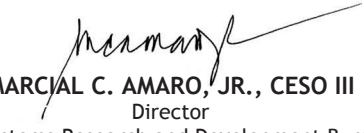
This book is a visual guide to identifying most of the Philippine rattans you may encounter. Also, it is intended to support the improved management of rattans in our country.

Rattans are climbing palms that provide the raw materials for the cane-furniture industry. Most are distinct from other palms in their consequent growth habit-not as trees but vine-like, scrambling through, over and above other vegetation. Enveloping the stem are sheathing leaf bases which are nearly always fiercely spiny. The spines are sometimes arranged in neat rows and interlocking to form galleries providing extra protection to an already well-protected plant.

The rattan remains the most important source of material for making baskets and mats in South-East Asia and other tropical countries. However, as this resource from the wild becomes scarce, other non-timber forest species are being tapped as its replacement. In the Philippines, the export and even domestic use of the canes are not regulated, resulting in severe exploitation and endangering rattan's existence.

A country manufacturing and exporting rattan furniture and handicrafts must be assured of a sustainable supply of raw material. This book hopes to motivate those intending to establish rattan plantations to cultivate the appropriate species and prudently use them for scientific research and technology generation. Usage of this resource must be balanced by proper conservation and management measures. The forestry, agriculture and agroforestry sectors may also benefit from this book, including the long chain of people depending on rattan for their livelihood.

The more we learn about life in our world, the more we recognize God's eternal power and worship Him as Lord of creation. (Romans 1:20)



MARCIAL C. AMARO, JR., CESO III
Director
Ecosystems Research and Development Bureau
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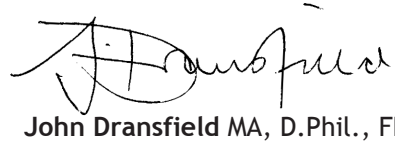
ITTO Philippines ASEAN Project

FOREWORD

Rattans, climbing palms, are extraordinary diverse in the Southeast Asian Region. Here they form the basis of the trade in cane that supplies the furniture industry. Despite many decades of experimentation with cultivating rattans, overwhelmingly the rattan that is incorporated in a piece of furniture has been collected in the wild, and there are many, many species to choose from. The problem is that exploitation from the wild has intensified to the point that many species while not physically extinct, may be completely exhausted from a commercial point of view. The need to inventory, assess and conserve rattan has never been greater, and for this you need a robust taxonomy. This beautiful book provides the reader with the essential information to identify rattan in the Philippines. The copious illustrations give details of the parts of rattans that are most useful in the differentiation of species. The author has accumulated a vast number of photographs taken throughout the Philippines and in herbaria in the Philippines and Europe. Assembled in this attractive way, the information allows the user to use the keys or the pictures, whichever is easier, to arrive at an identification. I congratulate Aida Baja-lapis for completing this very useful guide to what are generally regarded as nasty vicious plants. This book is clearly a labour of love and the author has demonstrated her complete fascination of these wonderful plants. I hope the reader will also learn to appreciate these remarkable products of plant evolution.



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With utmost gratitude to our God, the creator of everything especially the rattans.

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Special thanks are given to ERDB family: Director Marcial C. Amaro, Jr. for his guidance and support; Gregorio Santos, Jr., Dolores Bandian, Gino Laforteza (for his expert photography), Anastacio Magsino, Dante Villarin, Russell Olan and Nelson Levi M. Lantican (for his line drawings of the Philippine map), the Los Baños Experimental Station (LBES) staff and especially Norma Pablo (for her assistance during field collections).

Dr. John Dransfield for his encouragement and guidance in the creation of this book;

Dr. William Baker of the Herbarium Royal Botanic Gardens, Kew, England for his sound advice to make the book simple, complete and light for greater public understanding without sacrificing its taxonomic integrity, and Melinda Trudgen, Soraya Villalba and Lucy Smith, his Palm Room staff who all provided assistance during my 2007 visit;

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Dr. Wilfrido Vendevil and Erwin Escuber of The Philippine National Herbarium, Manila and the Botany Division staff for their assistance when I visited and examined the collection of herbarium specimens.

In our field trips to take photos on site, we were assisted by: Forest Ranger Arnold Balitor of CENRO-Antipolo, Rizal; Engr. Jonas U. Cruz, OIC Mayor of Rodriguez, Rizal Province and Mr. Mauricio Cruz, Dumagat Chieftain of Barangay Puray, Rodriguez, Rizal Province.

Thanks are also due to the Mr. & Mrs. Bert and Myrna Decipulo of Bukidnon; For Jerry Bruzon of Surigao; Bonnie Apura and Romy Basada of Davao; Pastor and Mrs. Guian of Puerto Princesa City, Palawan; PASU Bayani Mendoza and Tinay Umali of Mt. Palay-Palay and Ulysses Ferreras for contributing some photos.

Arnold Salazar for initially collating the descriptions culled from various original and related letters; Josephine E. Garcia and Larry Rueda for their patience and efforts in digitizing the specimens, line drawings and data entries; Ms. Emerita Barile for language editing.

Finally, to my beloved husband Ernie for the inspiration and my children Jerome, Michael, Princess and Jenny for their unending moral support.

Aida B. Lapis

AIDA C. BAJA-LAPIS, Ph.D.

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Table of Contents

Introduction

Rattans are climbing palms belonging to the family Arecaceae/Palmae and considered as very valuable natural resources economically and socio-culturally. They come second to timber as export product and dollar earner in most of South and Southeast Asian countries. Furniture pieces made out of the woody canes are acclaimed as unique and generally regarded as works of art depicting heritage and culture.

The Philippines is at the forefront of manufacturing rattan products and has set industrial standards for the finished products in the global market. The country is endowed with this natural resource that has fuelled the industry for many decades. Geographical location, climate and species diversity offer conducive conditions for renewing and sustaining rattans as sources of raw materials. The rattan species found in the Philippine forests have been known for their workability, durability and finesse.

The diversity of rattan species remains poorly known to the public owing to inadequate reference materials since they are always subsumed as non-timber forest resources. The existence of a number of species may vary from one account to another due to limited botanical studies.

This book has been inspired by the innovative *Field Guide to the Palms of New Guinea* by Baker and Dransfield (2006) and the *Field Guide to the Rattans of Lao* authored by Evans et. al (2001).

Purpose of the book

This book is intended for people in need of a reference guide to identifying Philippine rattans for scientific research and technology generation, conservation and management, establishment of community forestry or for the furniture and handicraft industries. It may prove valuable to forest policy implementers to judiciously apply the rules and regulations for the sustainable development of rattans. Lastly, it is for nature lovers who can appreciate more the beauty of rattans particularly their morphologically unique architecture manifested in intricate spine patterns and arrangements.

Plan of the Book

Explanatory notes and background

This part covers the general information on what rattans are, brief botanical history, distribution and habitat, ecology, flowering and fruiting, uses, local names and situationer. An illustrated glossary contains line drawings that describe the terms used in the book. It also includes the materials, equipment and procedure for rattan collection, specimen preparation and curation for the herbarium.

Species and varieties lists per genus

This section enumerates the composition of *Calamus* (59 species and varieties), *Daemonorops* (14 species), *Korthalsia* (5 species) and *Plectocomia* (2 species and variety).

Field keys to identification

These are guides to identifying the rattan species and varieties by genus. Keys for each genus are provided using characters easily observed in the field. Keys to species belonging to the four genera are also included.

Species and varieties accounts

This section features detailed description of each species and variety. It cites the literature of the taxon where it was originally published. The first three descriptions are main features easily recognized. The **"look for part"** further gives the distinguishing character of the taxon. The species and variety accounts are divided into common name, distribution/habitat, description of stem, leaf, inflorescence, fruit and seed. The uses, notable information and species for comparison are provided.

Additional help

This section provides the cited Literature and recommendations for further reading. A common name index with corresponding scientific name is also provided.

What Are Rattans?

They are climbing palms either in clusters/clumps or solitary, with spiny leafsheath, long clawed whips originating from the sheath, flagellum and extending from the leaf apex, and cirrus that functions to anchor onto trees. The lengthy stems produce the woody canes that are harvested and cut into poles. The leaf has the petiole, on rachis holding the leaflets. The fruits are covered with overlapping scales resembling snake skin. Called "uway" and "yantok" in Filipino, rattans are also known by several vernacular names.

Botanically, rattans are classified under the family Arecaceae/Palmae, tribe Calamoideae, subtribe Calameae (Dransfield *et al* .2005). There are four genera thriving in the Philippines, namely: *Calamus, Daemonorops, Korthalsia* and *Plectocomia*

Rattan Morphology

Vegetative: Knee is a swelling on the leafsheath at the base of the petiole. Ocrea is an extension of the leafsheath beyond the petiole insertion. Leaflet is one part of a compound (having 2 or more leaflets) leaf.

Reproductive: Bracts are modified leaves associated with the inflorescence. Fruits are the ripened ovary with adnate (joined) parts. The seed is the reproductive unit formed from a fertilized ovule.

Distribution

Most species are distributed in the dipterocarp forest, but other may be found in lowland areas, even in mangroves and wet sites. They thrive at sea level up to 1000 m above sea level. With the proximity of the Philippines to Borneo, some species occurring in the latter are also found in the Philippines such as *Calamus caesius, C. scipionum, C. javensis, C. erinaceus, C . malawaliensis, C. subinermis and Daemonorops margaritae*.

Habitat and Ecology

It is very difficult to make a generalization on the ecology of rattans as a group because of their great range and diverse form. But some general annotations and observations can be made. Rattans attain

optimum diversity in the everwet areas of the Sunda Shelf. Generally, as one veers away from the everwet regions to the more seasonal areas, rattan species decrease in number. Species growing in the latter, generally differ from those in the everwet areas.

The complicated history of island formation on the Sunda Shelf and the changing land bridge connections with mainland Southeast Asia have resulted in a high degree of endemism and local distribution discontinuities.

Areas such as valley bottoms and lower hill slopes usually have different rattan flora from the ridge tops and upper hill slopes. The difference is probably due to soil moisture and relative humidity though it might also be due to the differing soil types in these areas.

Any correlation between the type of rattan flora and the soil type is not clear. In some instances when it has been thought possible to generalize about certain species, these species have later been found growing on a different soil type.

Limestone hills normally have very poor rattan flora though a species of *Calamus* near *C. marginatus* in Borneo seems to be confined to limestone. Peat swamp soils carry varying rattan flora depending on the locality.

Intervention is a factor that is readily appreciated. In the forest, it has an often drastic effect on rattans, resulting in colossal development of some species and the extinction of others. Some species are apparently so highly adapted to the uniform climate of the forest undergrowth that when destroyed they disappear. Other species seem to benefit greatly from the disturbance, but it must be stressed that these are plants of primary forest and not secondary forest. In primary forest, rattan seedlings are abundant, and opening the canopy by disturbance or by felling a tree may allow certain species to “escape” and grow in the light. Secondary forest rattans may be those light-demanding species that grow along river banks.

Uses

Rattans are highly valued as sources of raw materials for various end products, foremost of which are the canes, which benefit both the producers and consumers. The production to consumption hierarchy for canes and their finished products starts from gathering or harvesting from the natural forests to utilizing the major products. It involves the tillers of plantation for canes and edible shoots, as well as extractors of secondary elements such as dyes, medicines up to the sophisticated users of fine furniture, ornate basketry work and the like.

They served as reforestation materials in secondary and residual forests basically to improve and add to land productivity. Rattans are also considered suitable for watershed reservations to maximize the land's protective function and enhance productive function in the long run (Baja-Lapis 1999).

The fruits are a delicacy and natural food, pickled and popularly fermented for vinegar and wine. Otherwise, the fleshly sarcotesta is made into condiments and confectionaries. According to records, edible fruits are produced by *Calamus manillensis, C. ornatus* var. *philippinensis, C. trispermus, C. mitis* and *C. vinosus*. Fruits of *C. ornatus* var. *philippinensis* and *C. manillensis* are now sold in local markets from October to November. Rattan fruit wine is an emerging indigenous commodity in Northern Luzon.

The young shoots or cabagge, locally known a "ubod", of almost all rattans can be eaten. The most popular come from *C. merrillii, C. ornatus* var. *philippinensis, C. mindorensis* and *C. reyesianus*. Although not yet commercially found in markets, village and indigenous people savor the young shoots by broiling or as vegetable dish with fish and bush meats.

The Mangyans of Mindoro Islands have a traditional and unique use for the slender canes or splits - as coiled skirt clothing or *yakis*. This is most preferred by the old women because they can bathe, sleep and use them daily without frequent washing with soap.

Common/Local Names

While rattans collected from various areas and localities in the Philippines may have different vernacular, local names, the local names attached to each entry are the most commonly used. In this work, only the common names are attached to the taxa.

As a word of caution, the use of vernacular names to identify the rattans should only give a hint and not to be relied upon for full identification. The vernacular name is valuable for communicating with the local people, but should be verified. It is the initial step to hunting Philippine rattans in the wild. Most ethnic people will have vernacular names for rattans for reference and location purposes. However, as they are used interchangeably on different species, this may create confusion.

Rattan Herbarium Specimen Collections

Philippine rattan collections started during the Spanish era, *circa* 1837. The first collection was named by Father Blanco as *Calamus usitatus*. The *Species Blancoanae* by Merrill included this rattan in his account.

Parts of rattan are collected in fragments because the plant is large, bulky and spiny and can hardly fit in standard herbarium sheets. Thus, the early collections are fragmentary and often composed of mixed parts from different species. Nonetheless, these rattan parts show distinguishing characters useful for identification. With the high plasticity of features at different stages of life, the characters are often combined to establish identity. Rattans also display identifying marks even though collected in sterile state.

The vegetative parts such as leaf and leafsheath are distinguishing characters found in herbarium sheets. When the samples collected are in the reproductive stage, they can either be with flower parts or with fruits thus, the complete set of material may not be always available.

Collecting Method

Materials and equipment are needed for field collections:

- Pruning shears or secateurs
- Bolo or machete
- Field notebook
- Pencil
- Tags for labels
- Plastic or manila rope
- Newspaper
- Plastic bags or jute sack
- Tape measure
- Binocular
- Wooden pressers

Field notes

Field notes record the observations and descriptions as seen in the field, and should include:

- Collector's name, number and date
- Location and GPS data: altitude and direction, habitat or type of forest
- Stem habit: clustering, solitary
- Cane diameter with or without leafsheath
- Internode length
- Climbing organ: cirrus or flagellum
- Knee
- Leafsheath spines and arrangement
- Ocrea: well developed or not
- Leaflet: regular or irregular (in groups or pairs, with gaps)
- Inflorescence or infructescence
- Fruit
- Seed
- Other information such as uses.

Photographs or digital images of rattan must be taken during field works particularly the flowering and fruiting stages. The photographs may be included in the herbarium specimens.

Line drawings highlight the species features for identification and often included as important botanical record.

Illustrated glossary

Philippine rattan **stems** are solitary or clustering (Figs. 1a and b).

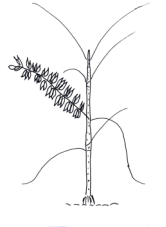


Fig. 1a

Fig. 1b

The stem is enveloped by **leafsheaths** with spines which may be acicular or needle-like (Fig. 2a) as in *Calamus dimorphacanthus* and *Daemonorops loherianus*, triangular (Fig. 2b) as in *C. filispadix* and *C. caesius,* or short nearing nil only sharp to touch (Fig. 2c) as in *C. mindorensis.*

Fig. 2a

Fig. 2b

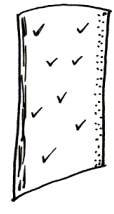


Fig. 2c

Spine arrangements differ from one species to another which provide identifying features in the field. They come in ring around the leafsheath (Fig. 3a) as in *C. symphysipus* and *D. ochrolepis*, whorl (Fig. 3b) as in *C. ornatus*, scattered all over the leafsheath (Fig. 3C) as in *C. subinermis* and *C. marginatus.*

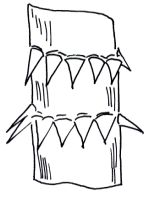


Fig. 3a

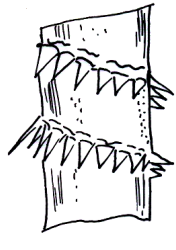


Fig. 3b

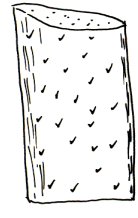


Fig. 3c

Leaf sheaths have protrusions called knees below the petiole and described as bulgy (Fig. 4a), elongate-folded (Fig. 4b), elongate-flat (Fig. 4c), elongate inflated (Fig. 4d) and cylindrical with ant holes (Fig. 4e) as in *Korthalsia scaphigeroides*). Knees are covered with spines just like the leafsheaths.

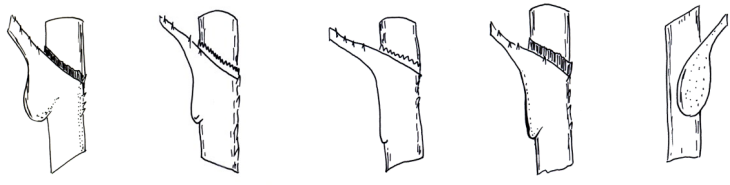


Fig. 4a Fig. 4b Fig. 4c Fig. 4d Fig. 4e

The leafsheath mouth may have an extended part near the petiole and referred to as the **ocrea.** Its presence is an important feature in the identification: minute (Fig. 5a), flat almost around the stem (Fig. 5b), flat long with tattered tip (Fig. 5c), flat long with pointed tip (Fig. 5d), net-like as in *K. laciniosa* (Fig. 5e) or papery long (Fig. 5f) as in *C. discolor, C. bicolor* and *C. aidae*).

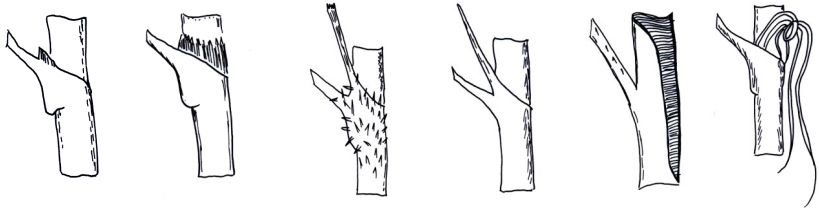


Fig. 5a Fig. 5b Fig. 5c Fig. 5d Fig. 5e Fig. 5f

Climbing organs are visible features of rattans, which allow climbing and serve as anchor to support trees. The two types of climbing organs are **cirrus** (Fig. 6a), which extends from the leaf apex and **flagellum** (Fig. 6b), which arises from the leafsheath and sometimes functions as sterile inflorescence. Cirrus can be found on all four Philippine genera, but flagellum is found only in *Calamus*.

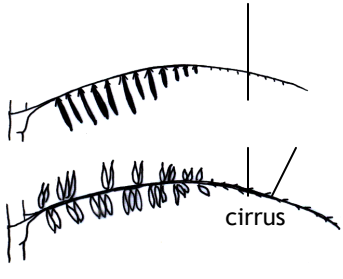


Fig. 6a

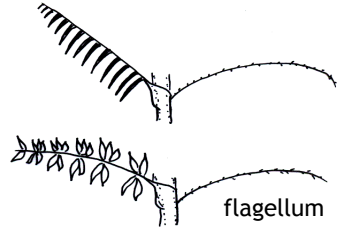


Fig. 6b

Leaf with cirrus is termed as cirrate (Fig. 7a) and without cirrus, ecirrate (Fig. 7b).

Fig. 7a

Fig. 7b

Leaf may be either petiolate or with petiole (Fig. 8a) as in *C. dimorphacanthus* or without a petiole (Fig. 8b) termed as epetiolate as in *C. javensis.*

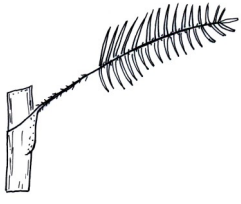


Fig. 8a

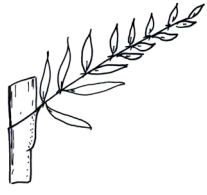


Fig. 8b

Leaflet arrangement is described uninterrupted along the rachis or regular (Fig. 9a), as in *C. merrillii,* irregular with gaps (Fig. 9b) as in *C. microcarpus* or fanned (Fig. 9c) as in *C. microsphaerion*.

Fig. 9a

Fig. 9b

Fig. 9c

Leaflet maybe linear lanceolate-narrow (Fig. 10a), broadly lanceolate sometimes boat-shaped (Fig. 10b) and fish tail-like or diamond-shape (Fig. 10c) as in *Korthalsia* spp.

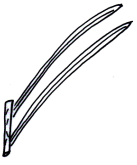


Fig. 10a

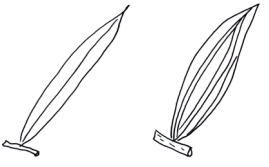


Fig. 10b

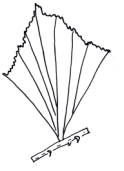


Fig. 10c

Leaflet margin may be entire (Fig. 11a) or praemorse (Fig. 11b).

Fig. 11a

Fig. 11b

The **inflorescence (flowering)** occurs in two ways, namely: hapaxanthic rattan flowers and fruits, then dies as seen in *Plectocomia* and pleonanthic- rattan flowers, fruits and its stem elongates continuously at the same time as shown by most *Calamus, Daemonorops* and *Korthalsia*. The inflorescence and infructescence (fruit bearing) are similar in features with **bracts** that are tubular (Fig. 12a) either sheathing tightly or loosely) as in *C. siphonospathus* and boat-shaped (Fig. 12b) mostly observed in *Daemonorops*.

Fig. 12a-tightly

Fig. 12a-loosely

Fig. 12b

Inflorescence may be long and drooping and called flagelliferous or filiform (Fig. 13a), or in short bunches in crescent curve form (Fig. 13b). Branches are termed as partials and have a distinct flower or fruit-bearing part termed as rachillae. Individual flower is borne on a bracteole.

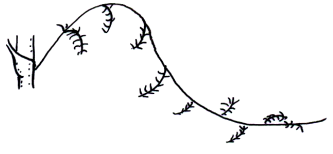


Fig. 13a

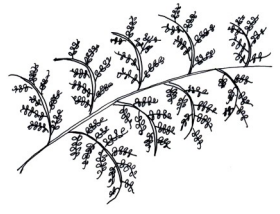


Fig. 13b

Fruits come in shapes of ovoid (Fig. 14a), spherical (Fig. 14b) and ellipsoid (Fig. 14c) with beaked tip as pointed (Fig. 15a) and flattened (Fig. 15b).

Fig. 14a

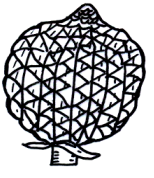


Fig. 14b

Fig. 14c

Fig. 15a

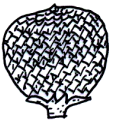


Fig. 15b

Fruits are covered by scales that have vertical grooves or lines, may be distinctly pressed and wide (Fig. 16a), narrow (Fig. 16b) and fine line almost nil (Fig. 16c).

Fig. 16a

Fig. 16b

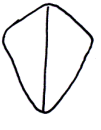


Fig. 16c

Seed is covered by fleshy sarcotesta that are sweet when fully ripe or sour sometimes bitter. Many species have one seed, but two species are 2 to 3- seeded such as *C. manillensis* and *C. trispermus*. Seed may be round or oblong, while the endosperm is pitted or ruminate (Fig. 17a) or smooth (Fig. 17b).

Fig. 17a

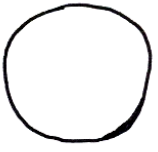


Fig. 17b

Seedling leaf or **eophyll** may be simple entire (Fig. 18a) as in *Plectocomia,* bifid (Fig. 18b) as in *C. ornatus,* partial bifid (Fig. 18c) as in *C. caesius,* palmate (Fig. 18d) as in *C. merrillii* and *D. mollis* and praemorse (Fig. 18e) as in *Korthalsia* spp.

Fig. 18a

Fig. 18b

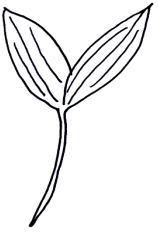


Fig. 18c

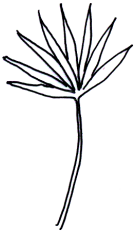


Fig. 18d

Fig. 18e

Field keys

The guide book consists of a Key to the four genera of rattans found in the Philippines, namely: *Calamus*, *Daemonorops*, *Korthalsia* and *Plectocomia*. Each genus has a key to identification of species and taxa, thus the book is composed of four identifying keys. These four keys can be used to differentiate genera species/taxa belonging to the *Calamus*, *Daemonorops* and *Korthalsia* general.

Key to the Four Genera

Leaflets diamond shaped, leaflets jagged			*Korthalsia*
Leaflets not diamond shaped, leaflet entire	Bracts tubular to funnel-shaped climbing organ cirrus or flagellum		*Calamus*
	Bracts not tubular climbing organs only cirrus	Leaflets regular linear concolorous	*Daemonorops*
		Leaflets irregular, fanned	*Plectocomia*

Key to the *Calamus* Species and Varieties

A. Habit slender - cane <2 cm in diameter with sheath stem <3 cm

Stem solitary	Leaflets narrowly linear lanceolate		
	- Ocrea present distinct	Leaflets irregular about 30 cm long x 10-15 mm wide along rachis in groups of 4-6	*C. microcarpus* var. *microcarpus*
		Leaflets irregular about 30 cm long x 0.6-10 mm wide along rachis in groups of 2-8 sometimes fanned	
		cane diameter <5 mm; ocrea<5 cm long	*C. microcarpus* var. *diminitus*

		cane diameter >5 mm; ocrea >5 cm long	*C. microcarpus* var. *longiocrea*
	- Ocrea absent		*C. filispadix*
	Leaflets broadly lanceolate	Petiole distinct long to 16cm	*C. ramulosus*
		Petiole not distinct	*C. mitis*
Stem clustering	Climbing organ cirrus		
	- Sheath spines triangular, sparse	Leaflet underneath with bluish indumentum	*C. caesius*
		Leaflet underneath without indumentum	*C. malawaliensis*
	- Sheath spines acicular, scattered	Leaflets linear lanceolate	*C. vidalianus*
		Leaflets broadly lanceolate	
		- spines present, scattered above leaflet	*C. spinifolius*
		- spines absent on both side of leaflets	*C. elmerianus*
	Climbing organ flagellum		
	- Petiole long up to 15 cm long		*C. usitatus*
	- Petiole short, almost nil	Leaflets discolorous, sheath unarmed	*C. discolor* var. *negrosensis*
		Leaflets not discolorous, sheath armed with acicular/laminar spines 5-7 mm long	
		- leaflets 8 per side of rachis	*C. balerensis*
		- leaflets at apex half cinnate, forming fan-like	*C. javensis*

B. **Habit robust -** cane >2 cm in diameter; sheath stem >3 cm

Leaflets broadly lanceolate, >3cm wide at midpart			
Leaflets irregular set in distinct groupings in 2-3 or alternately 1 with pair or clustered	Sheath unarmed, smooth, dull green	Climbing organ flagellum, clustering	*C. cumingianus*
		Climbing organ cirrus, solitary	*C. megaphyllus*
	Sheath armed with short spines, stout bases	Knee bulgy, leaflet apex acuminate	*C. reyesianus*
		Knee elongate, Leaflet apex acute	*C. viridissimus*
Leaflets set more or less regular in one plane with equidistant gaps	Climbing organ a flagellum		
	- Sheath unarmed, smooth		*C. moselayanus*
	- Sheath armed with triangular spines	Spines no definite arrangement, ringly dispersed	*C. scipionum*
		Spines with definite arrangements in oblique pattern	
		- group of spines in ring pattern around the stem	*C. symphysipus*
		- group of spines in short semi-ring pattern, others in 1s and 2s	*C. ornatus* var. *philippinensis*
	Climbing organ a cirrus or subcirrus		
	- Stem sheath unarmed	Sheath grayish brown, inflorescence in crescent form	*C. ornatus* var. *pulverulentus*
		Sheath dull green, inflorescence flagelliform	*C. multinervis*

	- Stem sheath armed		
	• Sheath spines very short sometimes almost nail sharp to touch like sand paper		
	› seeds 2 to 3, angular, smooth	Knee with spines near leafsheath mouth less dense, sheath sometimes smooth or with sparely distributed spines	*C. manillensis*
		Knee spines near leafsheath mouth more dense, sheath with evenly distributed bulgy base spine	*C. trispermus*
	› seed 1 globose or rounded pitted		*C. mindorensis*
	• Sheath spines long, numerous, slender fine and bristle-like		
	› leaflets about 6 m wide, alternate, 7 cm apart along rachis	Bracts subtending rachillae tubular flattened, spiny on apex and along sides	*C. grandifolius*
	› leaflets about 4 cm wide	Lamina nerves underneath with spinules	*C. subinermis*
		Lamina nerves without spinules	
		* fruit about 25 mm diameter, scale margin distinct brown	*C. jenningsianus*
		* fruit about 14 mm diameter scale margin in distinct	*C. vinosus*

Leaflets narrowly linear lanceolate, <3 cm wide at midpart			
Leaflets regular	Climbing organ a flagellum	Sheath spines triangular, around mouth, 12-15 cm long	*C. marginatus*
		Sheath spines short, triangular, around mouth 5-10 mm long	*C. diepenhorstii* var. *exulans*
	Climbing organ *cirrus*		
	Ocrea distinctly long to >20 cm, rigid erect		
	- Knee elongate, inflated, fruiting perianth cylindrical, fruit scale slightly grooved	Cane diameter less than 1 cm; leaflet about 7-16 x 0.4-0.5	*C. dimorphacanthus* var. *dimorphacanthus*
		Cane diameter more than 17-28 x 1-1.5 cm	
		- fruit scales with brownish margins; bracteoles loosely funnel-shaped; fruits 8-12 per rachilla; areola quite distinct with swollen base	*C. dimorphacanthus* var. *benguetensis*
		- fruit scales without brownish margins; bracteoles slightly funnel-shaped; fruits 7-18 per rachilla, areola not distinct	
		• ocrea elongate, about 16 cm; leafsheath spines of 2 types, needle-like and triangular based, pointed, in short whorls	*C. dimorphacanthus* var. *montalbanicus*

		• ocrea almost flat, about 3 cm; leafsheath spines flat; in whorls, arranged in slightly diagonal pattern	
		› leaflet nerves 7-9, bristly on 3-5 nerves above, naked to bristly only midnerve below, transverse veins few rather indistinct	*C. dimorphacanthus* var. *halconensis*
		› leaflet midnerve very distinct with 4 secondary slight nerves above, spinulous to bristly on midnerve above, transverse veins many	*C. dimorphacanthus* var. *zambalensis*
	• Knee bulbous, sometimes elongate, fruiting perianth campanulate, fruit scales without grooves or very slightly grooved		
	* Bracts and bracteoles armed	Leafsheath spines few, scattered, basal 2-3 bracts empty, subsequent bracts subtending partial inflorescence	*C. siphonspathus* var. *sublaevis*
		Leafsheath spines many, scattered, sometimes in whorls, first bract subtending partial inflorescence	
		- leafsheath spines rigid, (*to be continued*)	

		numerous, tips divided, some pointed, bases shortly elevated	*C. siphonospathus* var. *dransfieldii*
		- leafsheath spines rigid, unequal, slender to triangular, solitary, in groups or in short whorl	
		• Rachillae short, about 1.5-2.5 cm	*C. siphonospathus* var. *siphonospathus*
		• Rachillae long. about 3-4 cm	
		* leaflets with dense brown indumentum along margins and midnerve, apparently hairy, without spinules below	*C. siphonospathus* var. *polylepis*
		* leaflets without dense indumentum along margins and nerves, with spinules on mid-nerve below	*C. siphonospathus* var. *oligolepis*
	* Bracts and bracteoles unarmed		*C. siphonospathus* var. *farinosus*
	Climbing organ a cirrus		
	Ocrea absent, very much reduced or papery long		
	- Sheath spines needle-like, very fine or brushy		
	• leaflet concolorous, without indumentum	Sheath spines in definite pattern of semi-ring	*C. foxworthyi*

		Sheath spines without definite pattern	
		- inflorescence arising from axils of leasheath, drooping	*C. batanensis*
		- inflorescence arising beneath leafsheath mouth opposite knee ascending	*C. samian*
	• leaflet discolorous with indumentum	Climbing organ flagellum	*C. discolor*
		Climbing organ cirrus or subcirrate	
		- inflorescence pendulous, rachillae spreading	*C. erinaceous* var. *erinaceous*
		- inflorescence ascending, rachillae closely set	
		• fruit oblong or ovoid, yellowish green	*C. aidae*
		• fruit globose, pale pink	*C. bicolor*
	- Sheath spines triangular, long	Climbing organ flagellum, inflorescence flagelliform rachillae	*C. melanorhynchus*
		Climbing organ cirrus, inflorescence drooping with rachillae slightly ascending	*C. merrillii* var. *merrillii*, var. *merrittianus* var. *nanga*
Leaflets irregular in 2's - 4's, fanned	Spines triangular, 4-5 mm long, sparsely distributed		*C. microsphaerion*
	Spines bulbous, 5-12 mm long, densely distributed		*C. microsphaerion* var. *spinosior*

Key to the *Daemonorops* species

Stem slender with sheath 1.5-2.5 cm in diameter; cane <2cm	Sheath spines acicular, needle-like, creamy, few on leafsheath mouth, with ring pattern around sheath or ripple-like sheath when fallen		*D. pedicellaris*
	Sheath spines triangular, flat, dark brown, numerous around leafsheath mouth, erect, 4 cm long. No definite Pattern.		*D. gracilis*
Stem robust, with sheath 3-6 cm in diameter, cane >2 cm			
- Leaflets regular, numerous, bases closely set along rachis; bristly above	Sheath with dark brown, reddish indumentum	Knee bulgy, spine needles brushy	*D. margaritae* var. *palawanica*
		Knee elongate folded and spine laminar in groups	*D. polita*
	Sheath without indumentum	Sheath spines in diagonal pattern on semi-ring	
		- spines lamina, flat petiole yellowish	*D. mollis*
		- spines acicular, needle-like, black; petiole not yellowish	*D. loheriana*
		Sheath spines no pattern	
		- leaflet apex no recurved extension, spinules on midvein	*D. urdaneta*

		- leaflet apex with hairlike recurved extension spinulous both sides	*D. pannosa*
- Leaflets Irregular, bases with about 2-5 cm apart along axis; linear lanceolate	Mid leaf leaflets narrowly linear lanceolate. Mid leaflet width <20 mm		
	- knee bulgy, triangular spines on mouth	Leaflets bristly below mid vein	*D. clemensiana*
	- knee not bulgy spines slender elongate laminar, black	Leaflets nerves smooth surface, spinules near apices	*D. affinis*
	Mid leaf leaflets widely linear lanceolate. Mid leaflet width >20 mm	Sheath spines in definite pattern (dovasicate)	*D. ochrolepis*
		Sheath spines without definite pattern	
		- spines 4-8 cm long triangular	*D. longipes*
		- spines slender	*D. oligolepis*

Key to *Korthalsia* species

Ocrea inflated			*K. scaphigeroides*
Ocrea not inflated	Leaflets whitish underneath concolorous	Ocrea no spines, lacerate fibrous; catkin not spiral ≤1 cm thick	*K. laciniosa*
		Ocrea with spines, infolding long catkin spiral and overlapping ≥1 cm thick	*K. robusta*
	Leaflets not whitish underneath, glaucous	Bract tips with extended small leaf sheaths	*K. merrillii*
		Bract tips without extended leafsheaths	*K. rigida*

Account of Species and Varieties

The book covers 80 species and varieties found and known in the Philippines. The basis of the listing is the World Checklist of Palms (Govaerts & Dransfield, 2005). It is composed of *Calamus* (59 species and varieties), *Daemonorops* (14 species), *Korthalsia* (5 species) and *Plectocomia* (1 species and 1 variety). It may be noted that a number of species have been lumped with earlier published taxa. Changes in identification are inevitable in the light of the continuing build-up of specimens, which provide more evidences as to the identity of species. For example, *Calamus blancoi* Kunth (1841) used to stand as a distinct species, but when more materials were made available and further studied its close relatedness and affinity to *C. usitatus* Blanco (1837) became more evident. Since *C. usitatus* is a valid name and following the earliest date of publication, *C. blancoi* became a synonym of *C. usitatus*. This holds true for *C. meyenianus,* which is now also a synonym of *C. usitatus*.

With the most recent collection of herbarium materials, there are species occurring in Borneo that are also found in the Philippines, mostly observed and collected in Palawan Island. They are *Calamus erinaceus*, C. *foxworthyi*, *C. malawaliensis, C. javensis, C. subinermis* (Dransfield 1982). Also new species have been added to the Philippine rattan lists, namely *Calamus aidae, C. balerensis, C. ornatus* var. *pulverulentus, Daemonorops polita* (Fernando 1989) and *Plectocomia elongata* var. *philippinensis* (Madulid 1982). Further study also sorted out complex and closely related species of *Calamus microcarpus, C. dimorphacanthus* and *C. siphonospathus*. The study yielded new varieties as reduced from species and new species combinations (Baja-Lapis 1987). All species and varieties that have been published as to their name change synonymy, new species and varieties and as new records were included.

Aside from the original publication which is the basis of nomenclature, the recent herbarium materials deposited at Ecosystems Research and Development Bureau (ERDB) Botany Laboratory *cum* Herbarium (EBL), Philippine National Herbarium (PNH), UPLB College of Forestry and Natural Resources Herbarium (LBC), Royal Botanic Gardens at Kew (K), Herbario Florenze (FI), Missouri Botanical Garden and Herbarium (MO) were examined. In the course of photography at the location and habitat, herbarium specimens were taken, thus materials were added to the wealth of rattan materials for future study. The photo images of herbarium specimens have collector numbers and are reflected along the left side of every photo plate.

The species or varieties are presented in scientific names. Opposite every scientific names are the common name. When local names by ethnic group is known, then it will follow the common name and the ethnic group enclosed in parenthesis. The succeeding line presents the distinct features when encountered in the field. The following line shows the important features which are special to the taxon The right hand portion of the first species page provides the data and information on the distribution and habitat, stem, leaf, inflorescence or infructescence, fruit, seed/seedling and uses.

The species belonging to the genus is described as to its habitat and distribution. Taxa distribution was based on the attached herbarium labels where the collections were done. To show the relative site where the taxa were found, a map of the Philippines is provided with corresponding dot indicating the provinces where they were found. When the data is available, the altitude, characteristics of the area as to soil type, type of forest are provided.

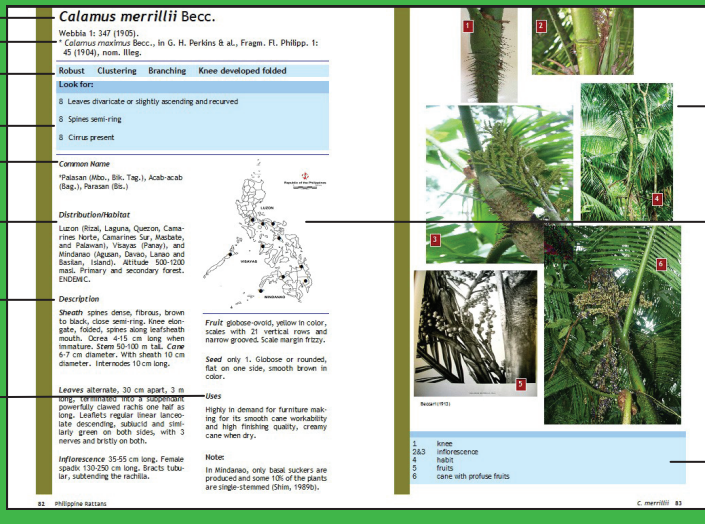
The habit whether clustering or clump forming and solitary and robust or slender are the distinguishing features given more emphasis as they are easily seen in the field. Both the vegetative and reproductive parts and their combination are useful to segregate species. The vegetative characters are cane diameter, stem diameter with leafsheath, the climbing organs: cirrus or flagellum, sheath armatures or spines, leaf, leaflet as regular or irregular, leaflet shape, presence and absence of bristles. The reproductive characters are infructescence, inflorescence-male or female, spathes, number of partials and subpartials, fruit and seed.

Descriptions and measurement data of plant parts are all based on field observations and herbarium specimens.

Also mentioned are the uses of the species and field notes or observation that may contribute to the understanding of the present status of the rattans.

The included species have photographs or illustration that show the most important characters that best describe the species. The habit of each species was taken from the location where they are found, when possible. The code number be it collectors or herbarium number of the specimen for species is included in the photo plate. However, when finding the species in the habitat becomes a limitation, some species are shown in herbarium specimens or portions of the plant parts. The collector's number or the herbarium number where the specimen is deposited is reflected in every plate.

At the bottom right portion second page provides the "note box" which describes or tells additional peculiar features and comparison with similarly looking species or varieties. Also the note box may describe features of young or immature characters and characters



1 **Scientific name**

2 **Synonymy and References**

3 **General features**

4 **Distinguishing features**

5 **Most common names used in the Philippines.**

6 **Distribution/Habitat.** The range of distribution of the species.

7 **Description. This section describes features of habit, flowers, leaves and fruits of the species.**

8 **Uses. The common uses of the species.**

9 **Photographs. Photographs illustrate habit and other plant parts.**

10 **Distribution map**

11 **Captions. Each photograph is captioned with the species features.**

observed when fresh that can no longer be seen in the dried state, such as color.

Taxa accounts (80).

The Philippine

RATTANS

Calamus siphonospathus Mart. var. *dransfieldii* Baja-Lapis.

Calamus

Calamus aidae Fernando

Gard. Bull. Singapore 41: 49 (1988, publ. 1989).

Robust Solitary Dioecious

Look for:

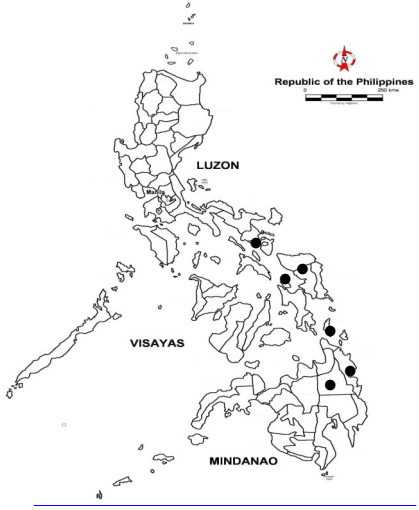
- **Ocrea papery.**
- **Cirrus absent.**
- **Leaflet chalky white indumentum underneath.**

Common/Local Names

Ilhian (Bis.); Ulisi, Ulasi (War.).

Distribution/Habitat

Luzon (Sorsogon), Visayas (Samar, Biliran, Dinagat) and Mindanao (Surigao, Agusan del Sur). In dipterocarp forests at c. 50-500 m altitude. Endemic.



Description

Leafsheaths densely covered with creamish-green indumentum. Spines narrowly laminar and acicular, 6.5 cm long, arranged closely in partial whorls. Knee present although hardly developed. ***Stems*** climbing to 15 m. ***Canes*** 2.5-4 cm diameter, with sheaths to 6 cm diameter, internodes to 18 cm long.

Leaves 3 m long; ocrea papery, 40 cm long, petiole to 30 m long, semi-circular in transverse section, flattened to slightly concave on adaxial side. Leaflets to 130 on each side of rachis, coriaceous, stiff, regularly arranged to 3 cm apart, linear lanceolate, with chalky white indumentum underneath, dense bristles.

Pistillate inflorescence generally ascending to 2 m long with up to 5 partial inflorescences spaced to 50 cm apart, decreasing in size distally. Armed with scattered laminar bulbous-based spines.

Fruits immature, globose c. 7 x 6 mm, beaked. Pericarp with scales arranged to 13 vertical rows, pale yellowish green with midscale groove.

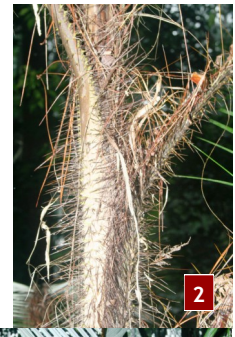
Seeds not known. Seedling leaf (eophyll) pinnate with 5-7 pairs of leaflets, each to 35 x 2 mm with chalky white indumentum and short bristles.

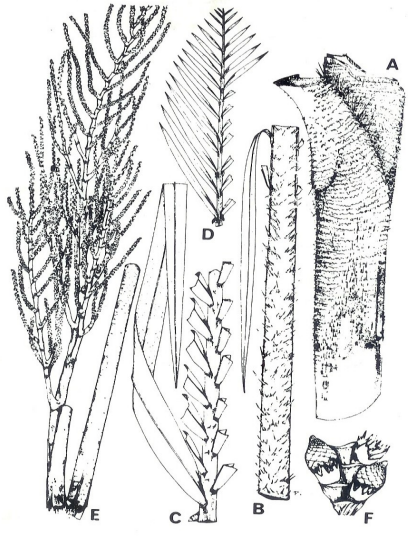
Note

Very distinct species in the absence of either cirrus or flagellum, with long papery ocrea which quickly disintegrates. Rachis armed with claw-like spines usually found in cirrus. Maybe the lengthy rachis functions as climbing organ.

- ***Calamus discolor* Mart. owing to its similarly discolorous leaflets but *C. aidae* has neither flagellum on leafsheath nor cirrus.**
- ***C. bicolor*, *C. aidae* no cirrus.**

Baja-Lapis 123 (K, LBC, ERDB)





Calamus aidae **Fernando. A. leafsheath, x2/5; B. petiole, x2/5; C. midportion of leaf, x2/5; E. portion of pistilate inflorescence, x2/5; F. portion of rachilla with young fruits, x2 1/2. A, E, F from *Baja-Lapis* 123; B, C, D from *Fernando 414*. (After Fernando 1988)**

Calamus aidae Fernando. 1 — leafsheath and inflorescence; 2 — leafsheath and downward pointing spines; 3 & 4 — habit.

Calamus arugda Becc.

Philipp. J. Sci., C4: 622 (1909).

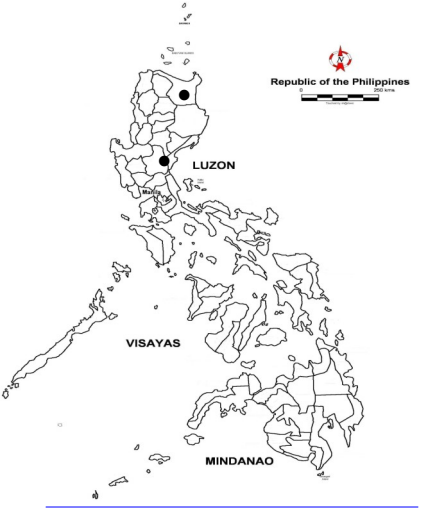
Solitary Knee developed Cirrate

Look for:

- **Rachis concave.**
- **Spines scattered.**
- **Leaflet broadly lanceolate.**

Common/Local Names
Arugda, Lunhoy (Ibng.).

Distribution/Habitat
Luzon (Cagayan Valley, Aguinaldo, Ifugao, Damag) in dense forests, ca. 900 m alt. Altitudes 200-900 masl. Rare.



Description
Sheaths densely spiny in downward direction. ***Canes*** 1.5-3 cm diameter. Sheath 8 cm, bright green.

Leaves alternate, 6-7 cm apart, 45-46 cm long, 5-6 cm wide, elliptic to broadly lanceolate; margins ciliate, 5 per side and bristly above. Cirrus present, 250 cm long. Knee bulgy, 30 cm long. Spines dense, laminar flat spines below.

Inflorescence 90 cm long with 10 partials. Bracts tubular, subtending rachilla, papery lacerate. Bracteoles inconspicuous. Flowers unisexual, 8-10. Male flowers distichously arranged with lobes. Female flowers with 5 petals.

Fruits ellipsoid or spherical, yellow. Scales with 15 vertical rows, grooved.

Uses
Entire canes for handicrafts, furniture, basketry, etc.; for local and export markets.

Calamus arugda Becc. 1 & 2 – male inflorescence; 3 & 4 – knee 5 – female inflorescence; 6 – cane with leaf sheath .

Calamus balerensis Fernando

Gard. Bull. Singapore 41:51 (1988, publ. 1989).

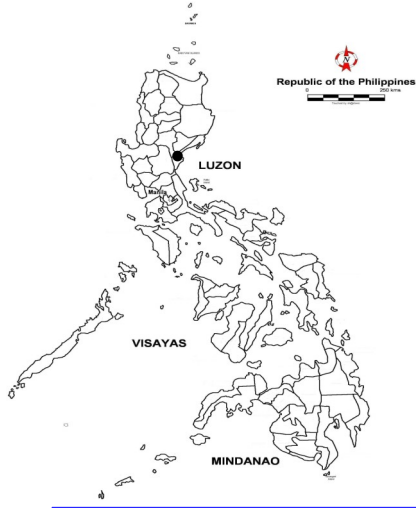
Slender Clustering Flagellum

Look for:

- **Knee conspicuous.**
- **Leaflet irregular.**
- **Leaf petiole very short.**

Common/Local Name
Ritusek (Tag.).

Distribution/Habitat
Luzon (Aurora Province), in forest with large boulders facing the sea, *c.* 50 m altitude. Endemic.



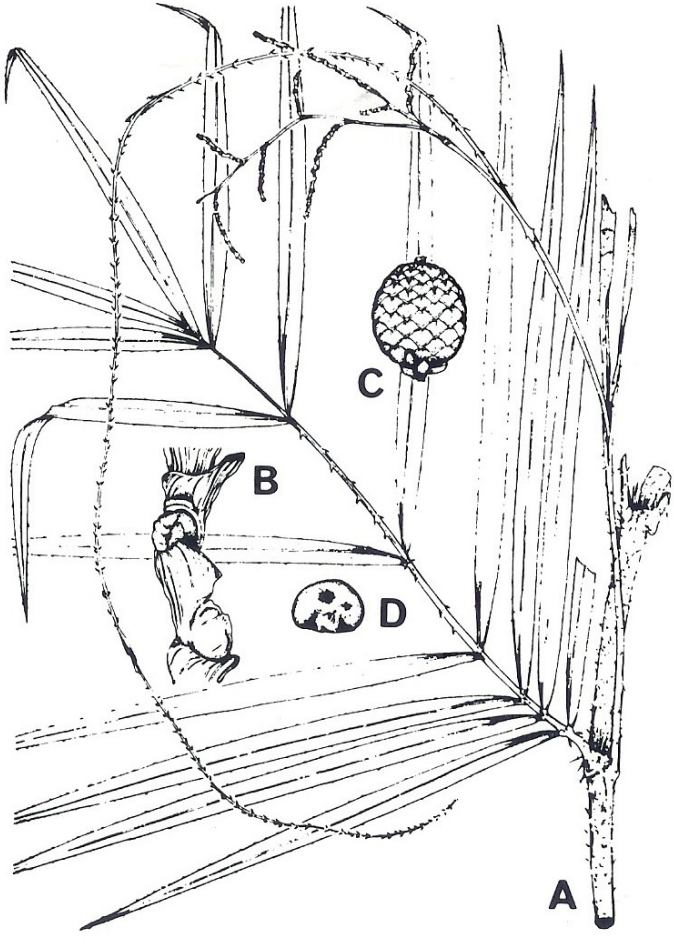
Description
Leafsheaths bright green, armed with scattered, light brown, slender, acicular spines to 7 mm, yellowish and broad at their base. Ocrea inconscpicuous. Leaf without cirrus, 14-18 cm long. Petiole very short to 5 mm sometimes nil. Leaflets irregular, linear lanceolate, up to 8 on each side of rachis.
Stems 3 m long. ***Canes*** 3-4 mm diameter, with sheaths to 6 mm diameter, internodes to 8 mm long. Knee armed with sheath. Flagellum 50 cm long armed with short rigid spines.

Inflorescence staminate not known. Pistillate pendulous to 60 cm long, with up to 3 partial inflorescences and terminating in well-defined flagellum, spaced to 15 cm apart, decreasing in size distally and armed with spines to 2 mm, scattered, short, black, rigid.
Fruits globose-oblong, to 1.5 cm when fresh, dull light green to creamish yellow, with light brown margins and midscale grooved.

Seeds plano-convex, 1 x 1.2 x 0.8 cm when fresh, smooth, brown and glossy on surface. Endosperm homogenous/smooth.

Use
Handicrafts.

- ***C. usitatus*** **has much shorter leaves with very short and often absent petioles. If present, *C. usitatus* petioles are covered with dull greyish brown indumentum, a feature not found in *C. balerensis*.**



Calamus balerensis Fernando. A. sheathed stem with one leaf and old infructescence, x1/2; B. detail of rachilla, x6; C. fruit, x1 1/4; D. seed, x1 1/4. All from *Fernando 478.* (After Fernando 1988)

Calamus batanensis (Becc.) Baja-Lapis

Sylvatrop 12: 73 (1987, publ. 1989). — *Calamus siphonospathus* Mart. var. *batanensis* Becc., Philipp. J. Sc., C3: 342 (1908).

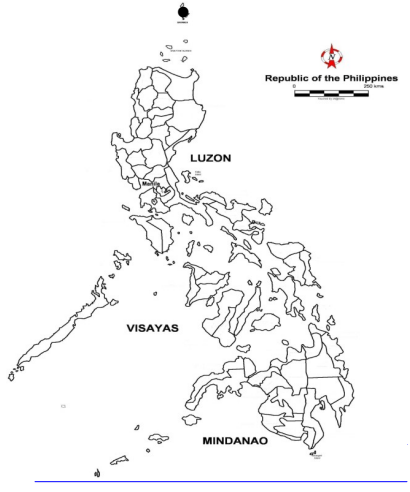
Robust Solitary Cirrus

Look for:

- **Knee elongate, without spines.**
- **Ocrea absent or very much reduced.**
- **Leaflets regular.**

Common/Local Names
Valit (Iv.), Biri (Tag.).

Distribution/Habitat
Luzon (Batanes, Batan Island, Mt. Iraya). Submossy forest, 100-800 masl.



Description
Sheaths armed with slender or needle-like, solitary very light creamy colored spines. ***Canes*** diameter 4.5 cm, with sheath 8 cm. Knee elongate, unarmed.

Leaf petiole spiny above, smooth shiny below; rachis 1.4 cm broad, armed with solitary spines and scattered above. Leaflets regular 80-90 per side, mostly green above, pale brown below, 37 x 2 cm, surfaces with 13-15 nerves, distinct, bristly above 6-8 mm long, smooth or seldom with short bristles on midnerve below.

Infructescence borne on leaf sheath, robust with 10 partial inflorescences, 30 cm long. Bracts funnel-shaped, 4 cm long, unarmed with brown indumentum. Bracteoles short funnel-shaped and unarmed. Rachillae 1-4 cm long.

Fruits perianth campanulate, ellipsoidal, light brown, 10 x 6 mm; scales in 14-15 vertical lines, slightly grooved and tips brown. Edible when ripe.

Seeds ellipsoidal, black, 6 x 4 mm. Endosperm rough.

Use
Handicrafts.

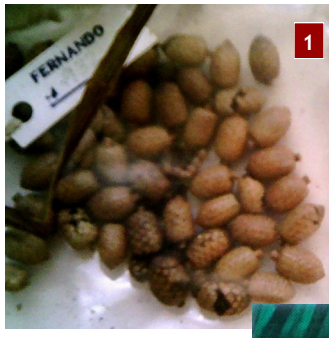


Photo by D.A. Madulid

Calamus batanensis (Becc.) Baja-Lapis. 1 — fruit; 2 — sheath with inflorescence; 3 — habit; 4 & 5 — leaf and stem with infructescence.

Calamus bicolor Becc.

Ann. Roy. Bot. Gard. (Calcutta) 11 (App.): 126 (1913).

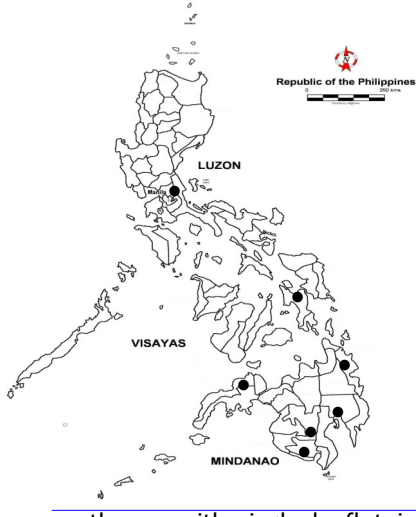
Robust Clustering Cirrus

Look for:

- **Sheath densely spiny.**
- **Bracts funnel-shaped.**
- **Ocrea present.**

Common/Local Names
Obanan, Lassee, Rassee, Sambonotan (Bag.); Morag (Tag.).

Distribution/Habitat
Luzon (Rizal), Visayas (Leyte), and Mindanao (Surigao del Sur, Davao, Zamboanga, South Cotabato; Gen. Santos, Purok 7; Kinilis, Polomolok, Mt. Matutum). Altitudes 800-1000 masl.



Description
Stems 15 m tall, with sheath 5-6 cm diameter. ***Canes*** 2-3 cm diameter, forming large loops toward foliage, 7-13 cm thick; hard, green, clawed beneath; in addition to spines along upper side sharply spinescent. Spines brown, acicular, needle-like. Dense base elevated, brushy along some spines, triangular tattered.

Leaflets in regular, 55 per rachis, 3-4 cm apart with chalky indumentum, reduced toward apex and base; basal 30 cm of stalk leafless, deep green above, ashy gray or glaucescent beneath. Cirrus barbed with crown thorns, with single leaflet in between claws.

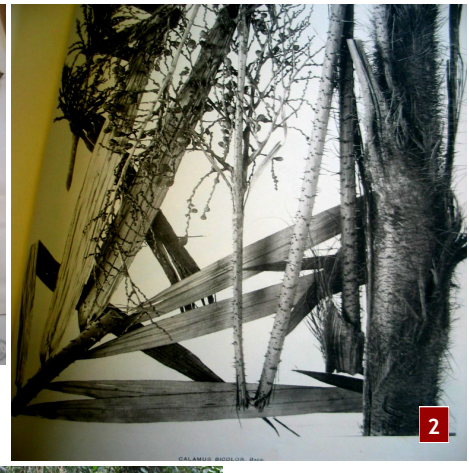
Infructescence 60 cm long, 15 cm thick, upon 0.5-1.5 m long, flattened, sharply spiny green stalks, arising from leaf axils, erect or nearly so from base. Spathes tubular.

Fruits 5 mm thick, 8-10 mm long, oblong or ovoid, pale pink.

Use
Young plants are ornamental.

Note
Exudes milky white sap. Leaves dull green above when dry .

- ***C. aidae*: cirrus present with crown thorns.**
- ***C. discolor*: sheath spines lighter brown with interspersed triangular spines.**



Calamus bicolor Becc. 1 & 2 — cane with leaves and infructescence; 3 & 4 — habit; 5 — leaves and infructescence.

Calamus caesius Blume

Rumphia 3: 57 (1847). — *Palmijuncus caesius* (Blume) Kuntze, Revis. Gen. Pl. 2: 733 (1891). — *Rotang caesius* (Blume) Baill., Hist. Pl. 13: 300 (1895).

Slender Clustering Knee developed

Look for:

- **Spines solitary, triangular.**
- **Bluish-white indumentum on the leaflet undersurface.**
- **Cirrus.**

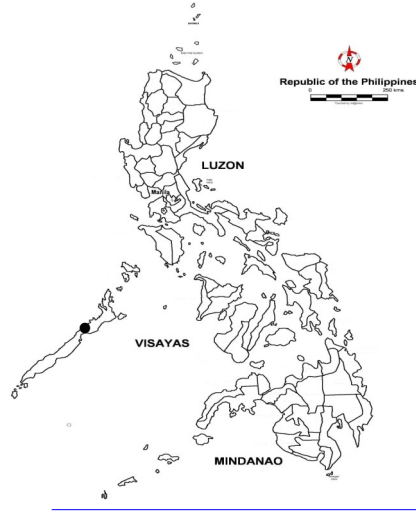
Common/Local Names
Sika, Bugtong (Tag.); Rotang sega (Sabah).

Distribution/Habitat
Malaysia, Borneo, Indonesia, Philippines (Palawan: Puerto Princesa).

Description
Sheaths dull green, gray. Spine solitary, triangular 10 mm long, scattered and horizontal. Knee prominent. ***Stems*** 15-19 m tall. ***Canes*** 0.5-2 cm diameter, highly polished and nearly orange, with sheath 2.5 cm diameter, internodes 50 cm long.

Leaves cirrate, petiole short; leaflets 7-9, irregular, in groups of 2's or 3's, 15-25 cm long, 35 mm wide, elliptic-lanceolate, with ciliate margin, brown. Underneath with bluish white indumentum.

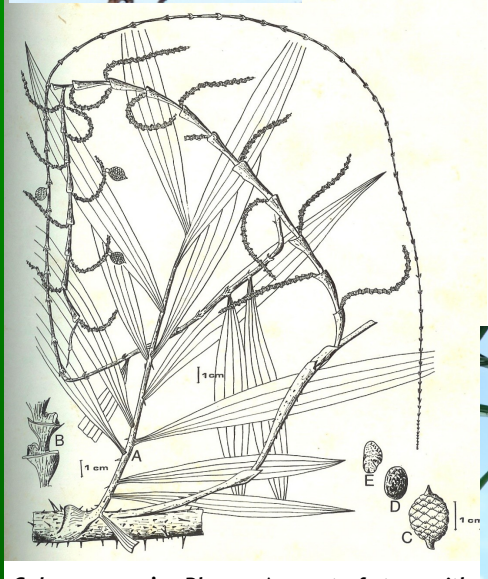
Inflorescence flagelliferous. 2 m long. Bracts tubular, subtending rachilla, not net-like, conspicuous.



Male flowers with 5 lobes. Female flowers with 5 petals. ***Fruits*** ovoid or almost oblong, 15 mm long, 10 mm wide, with beak.

Seed only 1, ovoid, 12 mm long, 7 mm wide, brown. Endosperm ruminated. Raphae distinct. Hilum lateral.

Uses
Handicrafts such as baskets, handbags, planters, attaché cases, hampers and fruit trays.



Calamus caesius Blume. A. part of stem with leaf and infructescence. B. portion of rachilla. C. fruit. D. seed. E. vertical section of seed. (After Dransfield 1979)

Calamus caesius Blume. 1— fruits; 2 — knee sheath; 3 & 4 — habit.

Calamus cumingianus Becc.

Rec. Bot. Surv. India 2: 210 (1902).

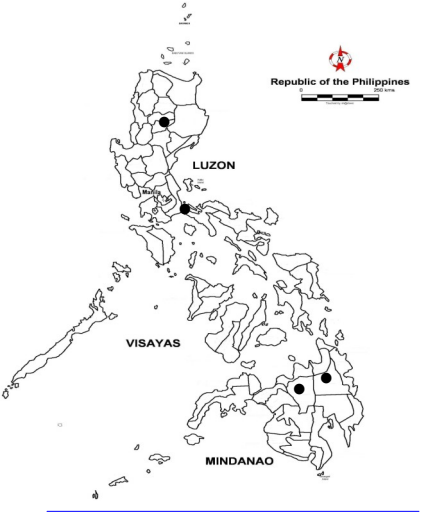
Slender Clustering Flagella

Look for:

- **Leaflets irregular, broadly lanceolate in pairs or in threes.**
- **Inflorescence tubular.**
- **Leaflets with bluish grey indumentum (ESF 341).**

Common/Local Names
Dowung-dowung (Mbo.),
Ubot (Ifg.)

Distribution/Habitat
Luzon (Mayoyao, Ifugao; Mt. Dotak, Quezon) and Mindanao (Agusan, Bukidnon). Altitude 500 masl. Rare.



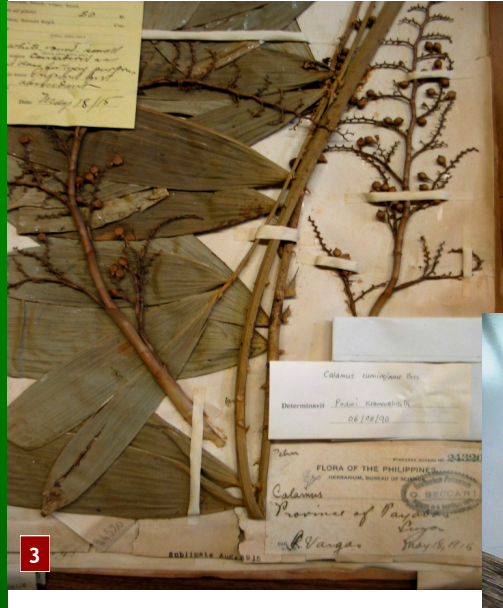
Description
Sheaths dull green and gray. Inerm old stem 1.5 cm thick, hard, green, 9 to 15 m long. ***Stems*** 9-15 m tall, 3 cm diameter, 4 cm diameter, on leafy portion. ***Canes*** 2 cm diameter.

Leaves alternating, scattered every 20 cm, 1-2 m long, gracefully recurved and occasionally a trifle twisted. Petiole short, 4 cm long. Rachis clawed beneath but not extended. Leaflets alternate, 15 cm long, 35-40 mm wide, broadly lanceolate, shiny green on both sides, 5 pairs per side of rachis. Knee short, folded; sheaths short, 3-5 mm, with triangular, elongate spines.

Infructescence leaf opposed, slightly longer that foliage, recurved or subpendant. Flowers unisexual.

Fruits small, globose, pale green, green stalks curved.

Uses
Entire canes made into handicrafts, furniture and baskets.



Calamus cumingianus Becc. 1 & 2 — leafsheath with flagellum; 3 — stem showing leaf pattern and infructescence; 4 — leaf arrangement.

Calamus diepenhorstii Miq. var. *exulans* Becc.

Philipp. J. Sc., C4: 627 (1909).

Robust Clustering Flagella

Look for:

- **Knee bulgy.**
- **Bracts tubular, bracteoles tubular.**
- **Sheath densely spiny, with stout base, tips black in color.**

Common/Local Names

Abuan, Labni (Tag.).

Distribution/Habitat

Luzon (Polillo, Mt. Beaufort in Palawan). Primary forests. Altitudes 200-300 masl. Indeterminate.

Description

Sheaths spines short, broad base, stout tips, black. ***Canes*** 3 cm diameter.

Leaves 1.5 m long. Petiole 20 cm long, spines acicular and pointing at different directions. Leaflets regular, equidistant, alternate, 30-35 cm long, 16-18 mm wide, linear, 3 pairs per side. Bristles underneath black. Knee bulgy naked.

Inflorescence female spadix 6 m long, inflorescence filiform or flagelliferous. Bracts tubular, tightly subtending rachilla. Bracteoles conspicuous. Calyx trilobed or tripartite. Flowers 30-32,15-18 cm long.

Fruits 20 cm long, 15 mm thick, oblong or ovoid, reddish scales with 19-20 vertical rows; maturing sarcostesta yellow.

Seeds globose or rounded, brownish black, endosperm ruminated, hilum depressed and strophiole indistinct.

Uses

Canes for tying, cordage, basketry, fish traps and noose traps.

Baja-Lapis 047

Calamus diepenhorstii Miq. var. ***exulans*** Becc. 1 & 2 — leaves with infructescence.

Calamus dimorphacanthus Becc. var. *dimorphacanthus*

Rec. Bot. Surv. India 2: 214 (1902).

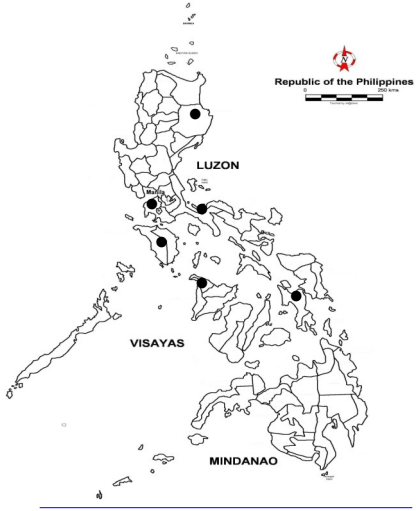
Solitary Knee elongate Cirrus

Look for:

- **Leaflets regular.**
- **Ocrea present.**
- **Spines scattered.**

Common/Local Names
Taguiti, Tandulang gubat (Tag.).

Distribution/Habitat
Luzon (Isabela, Cavite, Quezon; San Teodoro, Mindoro), Visayas (Sibuyan, Mt. Giting-giting; Leyte, Panay). Altitudes 600-2000 masl.



Description
Canes 1 cm diameter, with s***heaths*** about 1.5 cm; spines unequal, triangular, creamy, rarely in groups with white and brown indumentum. Ocrea papery, short.

Leaves petiole 30 cm long, three nerves covered with bristly spinules above and midrib minutely spinulous underneath. Leaflets regular, 7-8 cm long, 0.5 cm wide, elliptic-lanceolate. Knee bulgy, with numerous spines.

Inflorescence campanulate. Bracts tubular, subtending rachilla loosely. Female spikelets infundibular. Involucres cupular.

Fruits oblong or ovoid, 5 mm thick, 8-10 mm long.

Seeds unknown.

Uses
Canes used for baskets, bags, tying, etc. for home industries.

***Calamus dimorphacanthus* Becc. var. *dimorphacanthus*.**
1 & 2 — habit; 3 — cane covered with spines, infructescence;
4 & 5 — stem and leafsheath; 6 — fruits.

Calamus dimorphacanthus Becc. var. *benguetensis* Baja-Lapis

Sylvatrop 12: 72 (1987, publ. 1989).

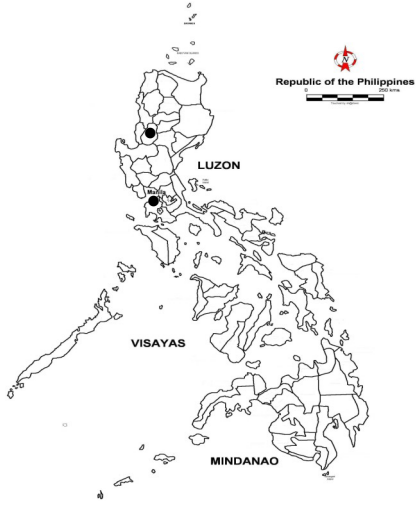
Slender Solitary Cirrus

Look for:

- **Rachis with brown indumentum.**
- **Areola very distinct by its swollen base.**
- **Presence of distinct brownish streaks on the fruit scales, scales line furrowed.**

Common/Local Names
Lambutan (Tag.); Umbanan, Oban-oban (Bag.).

Distribution/Habitat
Luzon (Sto. Tomas, Benguet). Altitudes 200-500 masl. Rare.



Description
Stems 3 cm diameter. ***Canes 2*** cm diameter. Spines acicular to triangular, 20-35 mm long, ring in pattern, horizontal, black.

Leaf 1.2 m long, armed. Rachis with brown indumentum. Leaflets regular, pale greenish on both surfaces, 25 x 0.5 cm; nerves 7, 3 distinct, bristly at midvein above; bristles 10 mm long, naked below.

Infructescence bracts loosely tubular spinulous; bracteoles very wavy, shortly funnel-shaped, with dense, brown indumentum; rachillae 3 cm long, with 12 fruits.

Fruits perianth campanulate; areola quite distinct, slightly elevated, with swollen base. Ovoid to oblong, 7 x 5 mm, reddish brown fruit; scales slightly grooved, margin with distinct brown steaks in 15 vertical lines.

Seeds unknown.

Use
Handicrafts.

Calamus dimorphacanthus Becc. var. ***benguetensis*** Baja-Lapis.
1 — leaves, cirrus and infructescence.

Calamus dimorphacanthus Becc. var. *halconensis* (Becc.) Baja-Lapis

Sylvatrop 12: 73 (1987, publ. 1989). — *Calamus halconensis* Becc., Philipp. J. Sci., C4: 633 (1909).

Robust Solitary Knee bulbous

Look for:

- **Spines in groups row.**
- **Leaflets regular.**
- **Rachis and cirrus with large claws.**

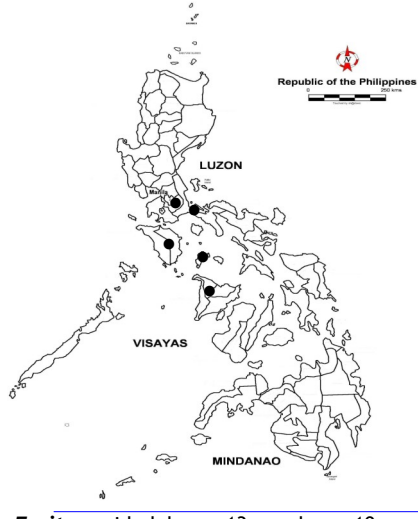
Common/Local Name
Lambutan (Tag.).

Distribution/Habitat
Luzon (Laguna; Atimonan, Quezon; Mindoro; Sibuyan Island, Romblon), Visayas (Panay) and Mindanao. In mossy forests. Altitude 1,000 masl. Rare.

Description
Leafsheaths armed with unequal acicular spines, in groups, bristle elevated in slight diagonal patterns, with brown to white indumentum. Ocrea flat almost subtending leaf sheath, armed, 10-20 mm long. Spines 30-50 mm long. ***Canes*** 2.5 cm diameter, with sheaths 4 cm diameter.

Leaflets regular to somewhat irregular but not in well defined groupings, pale brown above, greenish below, 25-36 x 1-1.5 cm, naked; nerves 7-9, 3 distinct, bristly on 3-5 nerves above, 5-10 mm long, tips bristly or filiform. Knee developed, swollen, armed with solitary spine, black.

Inflorescence flagelliferous. Bracts loosely tubular, inerm; bracteole funnel-shaped, rachillae 1.5-4 cm long, with 7-18 flowers. Male flowers very fine, 1-2 cm long, calyx 1 mm, corolla 2 times longer than calyx.

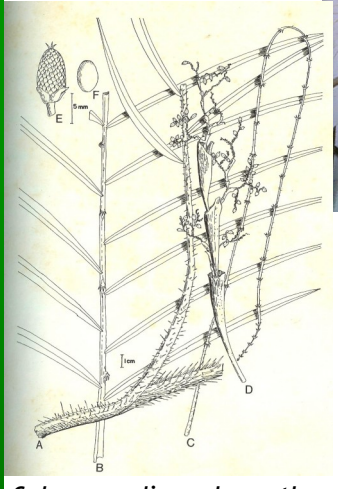


Fruits ovoid-globose, 13 mm long, 10 mm thick, beaked scales with 15 vertical rows. Scales not completely furrowed.

Seeds 6 mm long, 4 mm wide, 4 mm thick, ellipsoid or spherical, black, hilum indistinct and strophiole elongated. Rough.

Uses
Canes for chair frames; cables for ferry boats, hauling logs and as rigging on small sailboats; split canes for mats, basketry, fish traps, chair seats.

Notes
Numerous whitish spines especially on the upper portion near the tip, turning pale brown on the older leafsheath.



Calamus dimorphacanthus **Becc. var. *halconensis* (Becc.) Baja-Lapis. A. leafsheath with ocrea and lowermost portion of rachis and leaflets. B. mid portion of rachis with leaflets. C. portion of cirrus. D. infructescence. E. fruit. F. seed. All based on *Mabesa s.n.*(PNH).(After Fernando 1988)**

Calamus dimorphacanthus **Becc. var. *halconensis* (Becc.) Baja-Lapis.** 1 — cane with prominent knee covered with spines; 2 — leaf pattern; 3 — cane and leafsheath.

Calamus dimorphacanthus Becc. var. *montalbanicus* Becc.

Philipp. J. Sci., C4: 631 (1909).

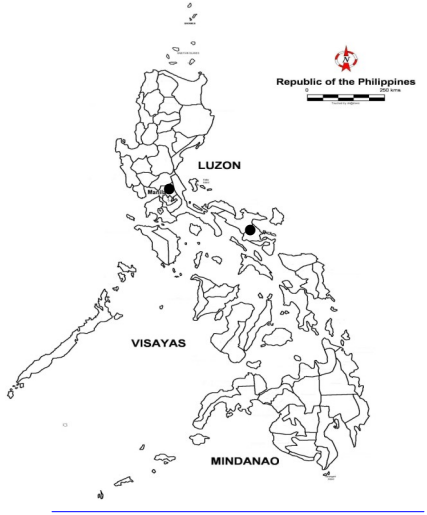
Robust Solitary Ocrea long Cirrus

Look for:

- **Knee elongate.**
- **Leaflets regular.**
- **Spines acicular to triangular spines.**

Common/Local Name
Tandulang Montalban (Tag.).

Distribution/Habitat
Luzon (Rizal; Mt. Mayon in Albay, on hardened lava). In primary forests at medium altitude of 800 m. Endemic.



Description
Leafsheaths armed with acicular to triangular, unequal, brown spines; bases shortly elevated, some in whorls, indumentum present. Ocrea long, armed with long scattered spines, unequal above; small solitary, bulbous spines below.

Leaflets regular, chocolate brown above, greenish below, 17-20 x 1 cm; nerves 7, 3 distinct, midnerve very distinct, bristly on 3 nerves above, short bristles below, margin very closely spinulous. Knee elongated, slightly inflated, armed as sheath.

Inflorescence bracts loosely tubular, half-open, armed. Bracteoles funnel-shaped, conspicuous. Perianth campanulate. Calyx trilobed or tripartite. Corolla as long as calyx.

Fruits spherical, 7 mm long, 5 mm thick, brownish red. Fruit scales shallowly grooved.

Seed only 1, endocarp rough; distinct tip.

Use
Handicrafts.

Calamus dimorphacanthus Becc. var. ***montalbanicus*** Becc.
1 — portion of leaf, shoot with immature inflorescence;
2 — ocrea; 3 — habit.

Calamus dimorphacanthus Becc. var. *zambalensis* Becc.

Philipp. J. Sci., C4: 632 (1909).

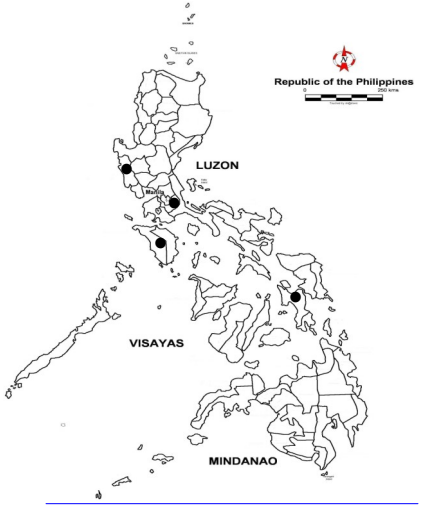
Robust Solitary Knee elongate Cirrus

Look for:

- ∞ **Ocrea very spiny.**
- ∞ **Spines triangular, numerous and arranged in lines.**
- ∞ **Leaflets regular.**

Common/Local Name
Tandulang Zambales (Tag.).

Distribution/Habitat
Luzon (Zambales; Mt. Makiling, Laguna; Mindoro) and Visayas (Leyte). In Zambales, found in mossy forest on exposed ridges, with altitude about 200 masl.



Description
Sheaths armed with numerous, brown to black, unequal spines; long spines 30-50 mm, short spines 3-5 mm. Ocrea long to 10 cm, flat to half enclosing sheath.

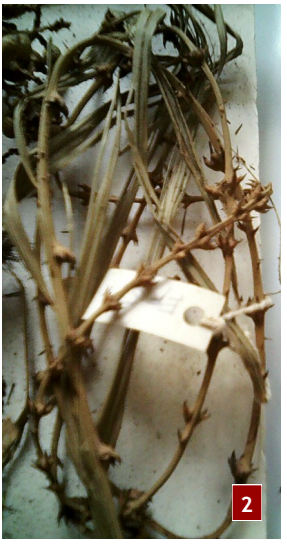
Leaves petiole armed with many spines; rachis armed above, without below. Leaflets regular entire, 28 x 1.5 cm, numerous, closely set, yellowish green on both surfaces; nerves 4, distinct, spinulous to bristly on midnerve above. Knee elongate, flattened, not too prominent due to numerous triangular spines.

Inflorescence borne below leafsheath, with 5 partial inflorescences; bracts tubular, sheathing, spinulous; bracteoles funnel-shaped, with black margins at mouth; rachillae 3 cm long, with 12 fruits.

Fruits cylindrical to oblong, 12 x 11 mm, shiny creamy to brown, scale slightly grooved in 14 vertical lines, some margins and scale tips with blackish line.

Seeds 7 mm long, 6 mm wide, 4 mm thick, ovoid or oblong, brown; raphae distinct, irregularly grooved.

Use
Handicrafts.



Calamus dimorphacanthus Becc. var. ***zambalensis*** Becc.
1 — fruits; 2 — cane with cirrus; 3 — cane with profuse large spines; seeds still attached to the inflorescence, infructescence; 4 — cane with closely set ocrea.

Calamus discolor Mart.

Hist. Nat. Palm. 3: 341 (1853). — *Palmijuncus discolor* (Mart.) Kuntze, Revis. Gen. Pl. 2: 733 (1891). — *Calamus lindenii* Rodigas, Ill. Hort. 30(1): 499 (1883). — *Palmijuncus lindenii* (Rodigas) Kuntze, Revis. Gen. Pl. 2: 732 (1891).

Robust Clustering Flagella

Look for:

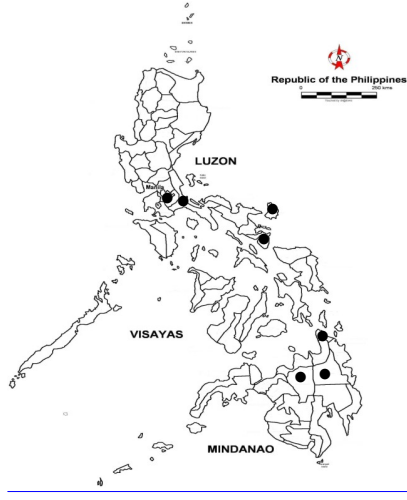
- **Ocrea long papery.**
- **Sheath densely covered in brushy black spines.**
- **Leaflet chalky white underneath.**

Common/Local Names

Kumaboi (Tag.); Hamlis, Ubanon (Ceb.-Bis.).

Distribution/Habitat

Luzon (Laguna; Tayabas, Quezon; Camarines Sur, Sorsogon, Catanduanes) and Mindanao (Surigao del Norte, Agusan, Bukidnon). Altitude 500 masl. Ultrabasic soil.



Description

Canes 1.5 cm diameter; sheaths 3 cm in diameter, densely covered with dark brown, needle-like spines, varying from 1-5 cm in length. Internodes 15 cm long. Ocrea long, papery, light brown.

Leaves alternating compressed, brown on neither side, sharply spiny along upper side toward base. Rachis with brown indumentum. Leaflets regular thinly chartaceous, chalky white beneath, hooked flagellum ascending from base of petiole.

Inflorescence also exceeding leaves, arising from near axils, curvingly pendant, relatively short fruit-bearing branches alternatingly scattered from below middle, widely scattered, dull green sheath spiny.

Fruits ellipsoid or spherical, beaked, 12 x 5 mm, white or cream, scales with distinct brown tips.

Seeds ripe nuts less than 9 mm long, bluntly ellipsoid or narrower at base, creamy white.

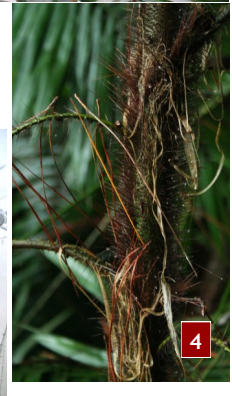
Uses

Seedlings as dish garden elements and as ornamental plants. Also, pressed dried for making greeting cards and as house framing and decoration. Canes for binding or tying.

Note

With milky exudates.

- ***C. aidae*: flagellum very well developed, ocrea lengthy, papery brownish.**
- ***C. bicolor*: brown indumentum almost on entire plant but very dense on rachis and petiole.**



Calamus discolor Mart. 1 & 4 — leafsheath with spines and papery, elongated ocrea; 2 — leaf pattern; 3 — leaf and flagellum; 5 & 6 — habit; 7 — inflorescence.

Calamus discolor Mart. var. *negrosensis* Becc.

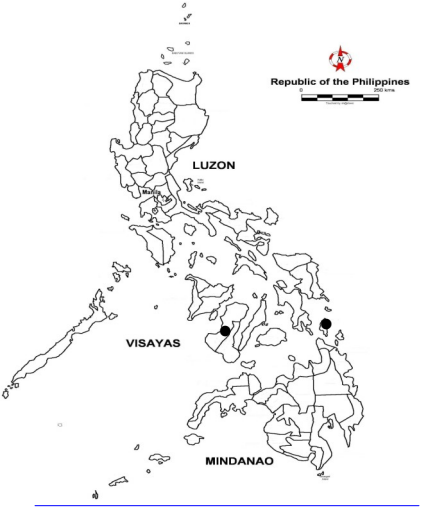
Philipp. J. Sci., C4: 635 (1909).

Slender Clustering Flagellum

Look for:

- **Leaflets white underneath.**
- **Rachis brown.**
- **Leaflets regular, narrowly lanceolate.**

Distribution/Habitat
Visayas (Negros) and Mindanao (Siargao). Altitude 500 masl. Rare.



Description
Sheaths unarmed. ***Stems*** small, slender.

Leaves petiole short; rachis armed, brown. Leaflets equidistant, 20-22 cm long, 9 -10 mm wide, linear lanceolate, ciliate, bristly on both, whitish underneath. Knee bulgy, smooth.

Inflorescence 20-30 cm long; bracts tubular, subtending rachilla. Flowers unisexual, spikelets 8-12, male flowers with 5 lobes, female flowers with 5 petals.

Fruits oblong or ovoid.

Use
Handicrafts.

Calamus discolor Mart. var. ***negrosensis*** Becc. 1 — cane with prominent knee, leaves and flagellum.

Calamus elmerianus Becc.

Leafl. Philipp. Bot. 2: 647 (1909).

Slender Clustering Cirrus

Look for:

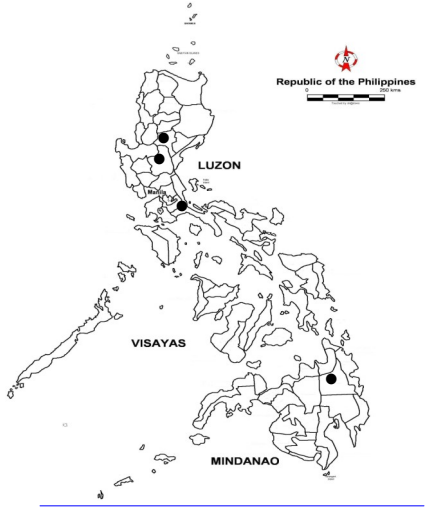
- ∞ **Canes are very flexible.**
- ∞ **Leaves alternatingly scattered every 20 cm.**
- ∞ **Spines yellow in color when fresh.**

Common/Local Names

Sababai (Mbo.), Samanid (Bag.).

Distribution/Habitat

Luzon (Nueva Vizcaya, Nueva Ecija; Tayabas, Quezon) and Mindanao (Agusan, Davao). Confined to humid forests in alpine regions. Between lagoon at 1525 m and the summit of Mt. Urdaneta at 1830 m altitude, quite common.



Description

Stems terete, green, flexible, as thick as an ordinary lead pencil, 10-20 mm thick along leaf-bearing portion, its joints very fine; sheath armed, spine scattered.

Leaves 20 cm apart, armed. Petiole 10 cm long. Leaflets irregular, inequidistant, 7-8 cm apart, 15-25 cm long, 3-6.5 cm wide, elliptic lanceolate, entire, without indumentum, with 5 nerves, not spinulous. Cirrus present. Knee elongate, slightly folded.

Inflorescence 2-2.5 m long; bracts tubular, spiny, subtending rachilla. Bracteoles conspicuous. Calyx trilobed or tripartite. Corolla as long as calyx.

Fruits globose or rounded, 14 mm long, 10 mm thick, beaked; scale margin brownish yellow.

Seeds globose or rounded, 6 mm thick, 7 mm wide, 7 mm long, black, endosperm ruminated, raphae distinct (flat).

Uses

Canes for furniture, handicrafts and home industries.

Note

The smallest rattan known in the island with white sticky sap (ESF 320).

- ∞ ***C. javensis*: leaflets broadly lanceolate.**
- ∞ ***C. mitis*: fruits brown.**
- ∞ ***C. spinifolius*: knee elongate, slightly bulgy.**

Calamus elmerianus Becc. 1 — leafsheath with spines; infructescence; 2 & 3 — leaflet pattern.

Calamus erinaceus (Becc.) J. Dransf. var. *erinaceus*

Kew Bull. 32: 484 (1978). — *Daemonorops erinacea* Becc., Rec. Bot. Surv. India 2: 225 (1902). — *Calamus aquatilis* Ridl., J. Straits Branch Roy. Asiat. Soc. 41: 43 (1903).

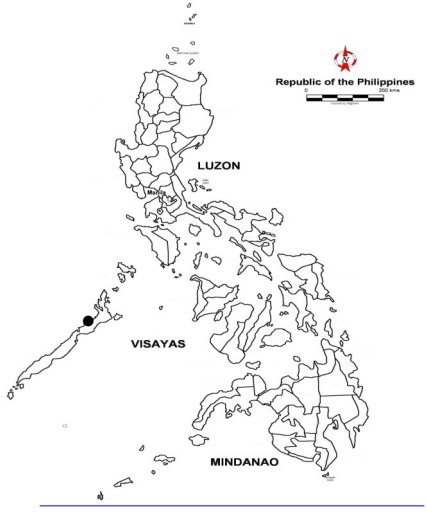
Robust Clustering Cirrus

Look for:

- **Leaflets regular.**
- **Spines comb-like, in semi-ring.**
- **Knee bulgy.**

Distribution/Habitat

Sabah, Borneo, Sumatra, Malaysia, South Thailand, Philippines: Luzon (Palawan), specifically in Aborlan and landward fringes of mangroves in Narra and Puerto Princesa City. Pleonanthic.



Description

Stems 10-20 m tall, with sheath. ***Canes*** 2-3.5 cm diameter; 5 cm diameter, internodes 30 cm long, sheath yellowish green. Spines 2 -5 mm long, horizontal, needle-like, brown, comb-like pattern, semi-ring. Spines at periphery of leafsheath mouth ascending, young short yellowish to orange, knee unarmed.

Leaflets regular. Petiole 70-80 cm long, 70 per side of rachis, entire margin, with brown and white indumentum. Unarmed cirrus 2 m long.

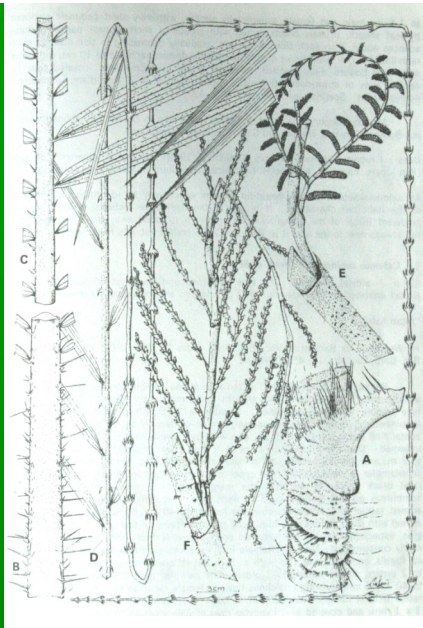
Inflorescence 1.5 m long, primary and secondary spathes tubular, arising on knee bulge. Bracts 15 cm long, tubular, subtending rachilla. Flowers unisexual. Primary and secondary spathes tubular.

Fruits globose or rounded, 10 mm diameter, covered with 12 vertical rows of straw-colored scales.

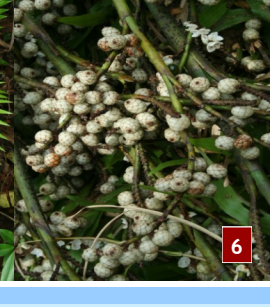
Seed only 1, globose, 7 mm diameter, endosperm homogenous.

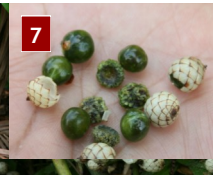
Uses

For core (Dransfield 1979), but this is apparently unusual. Produces a medium to low quality coarse cane in general.



Calamus erinaceus (Becc.) J. Dransfield var. ***erinaceus***. A. leafsheath. B. petiole. C. portion of mid leaf with undersides of leaflets showing scales. D. leaf tip. E. portion of male inflorescence F. portion of female inflorescence. (After Dransfield 1979)





Calamus erinaceus (Becc.) J. Dransf. var. ***erinaceus***. 1 — spines near shoot; 2 — leafsheath and knee; 3 & 4 — habit; 5 — juvenile plant; 6 — infructescence; 7 — seeds with sarcotesta.

Calamus filispadix Becc.

Philipp. J. Sci., C6: 230 (1911).

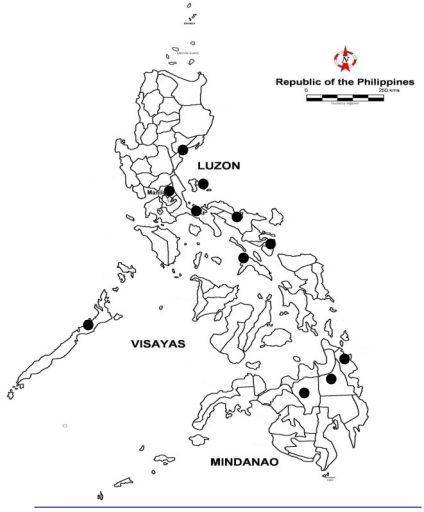
Slender Solitary Flagellum

Look for:

- **Leafsheath reddish brown near shooth.**
- **Leaf bearing portion curved and rigid.**
- **Spines in circular pattern.**

Common/Local Name
Tagiktik (Bik.).

Distribution/Habitat
Luzon (Mt. Sierra Madre, Aurora; Bulacan, Rizal, Quezon, Polillo, Camarines Norte, Camarines Sur, Sorsogon, Masbate, Palawan) and Mindanao (Surigao, Agusan, Lanao, Bukidnon). Low and medium altitudes, ascending to 1200 m. Primary dipterocarp forests. Endemic.



Description
Sheaths reddish brown near apex. Solitary, scattered, triangular spines with brown indumentum. ***Canes*** 2 cm thick, terete, dark green with sheath, 4 cm diameter; internodes 15 cm long.

Leaves alternate, 20 cm apart, 1.5 m long, with brown indumentum. Leaflets 12 mm wide, regular, linear lanceolate, glaucous.

Inflorescence 5-8 m long, with 6 partials, at least 3 times as long as fronds but arising in their axils. Clawed flagellum arising in about same place but much more recurved.

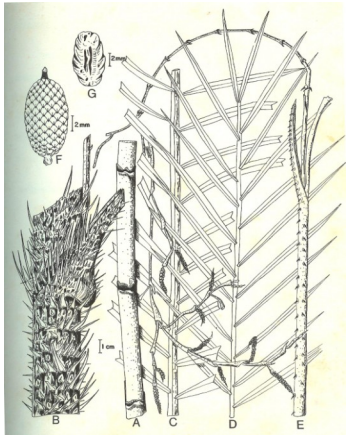
Fruiting and Flowering
August and September.

Fruits oblong or ovoid, 11 mm thick, 15 mm long, 13 mm diameter, beaked, white or cream; scales indistinct, grooved, with 15 vertical rows, margin brown.

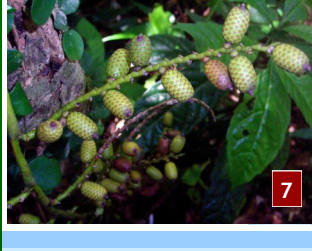
Seeds 9 mm thick, 7 mm wide, 10 mm long, 8 mm diameter, rounded, brownish black, pitted.

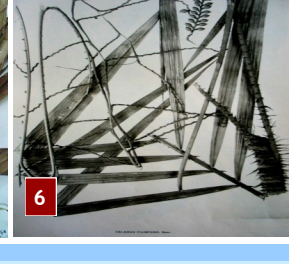
Uses
Canes as raw material for making baskets and other handicrafts.

Note
Lower sheath spines triangular, seldom in groups or when still young mid to near shoot, sheath spines a combination of large, triangular spines in distinct group in between small triangular spines.



Calamus filispadix Becc. A. cane B. leafsheath. C. lower most rachis with leaflets. D. uppermost rachis with leaflets. E. portion of infructescence. F. fruit. G. seed. All based on *Dransfield 5476* (LBC).





Calamus filispadix Becc. 1 — habit; 2 — stem with leafsheath; 3 — close up of triangular spines; 4 — knee; 5 & 6 — stem with leafsheath with spines; 7 — fruits.

Calamus foxworthyi Becc.

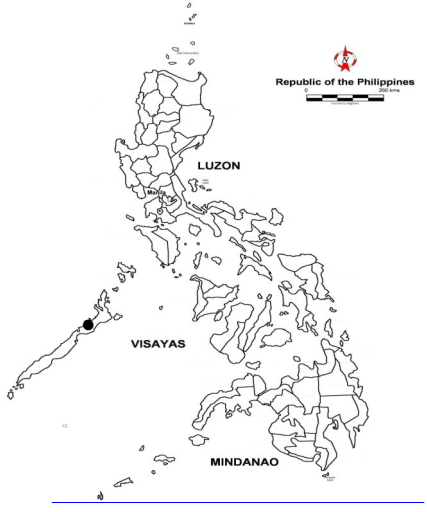
Ann. Roy. Bot. Gard. (Calcutta) 11 (App.): 81 (1913).

Robust Cirrus

Look for:

- **Sheath spines needle-like (brushy appearance), black.**
- **Leaflet regular.**
- **Knee elongate, flat.**

Distribution/Habitat
Luzon (Puerto Princesa, Palawan) ridges between Mt. Beaufort and Thumb Peak, 850 masl. Altitudes 500-1000 masl. Pleonanthic.



Description
Sheaths 10 cm in diameter.
Canes 4 cm in diameter.

Leaves cirrate, petiole 45 cm long; spines half crown, base connate, black; petiole densely armed with rigid spines along sides, rachis densely barbed along length; leaflets regular, 80 per side, linear, 45 x 1.5 cm from base, closely set with gaps nearing apex; cirrus massive claws, black. Knee elongate, flat armed as sheath.

Inflorescence bracts tubular, subtending rachilla, not net-like. Female flowers with 5 petals, male spikelets perfectly bifarous and infundibular as well as female. Subpartials closely set.

Fruits unknown.

Seeds unknown.

Use
Handicrafts.

Calamus foxworthyi Becc. 1 — leaf pattern, stem with leaf-sheath; 2 — leafsheath, petiole, cirrus with spines & young shoot.

Calamus grandifolius Becc.

Philipp. J. Sci., C4: 629 (1909).

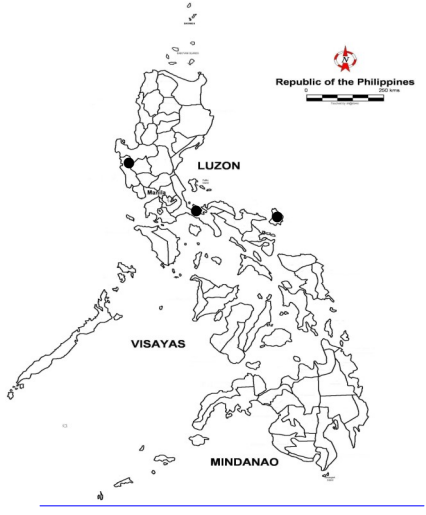
Solitary Robust Cirrus

Look for:

- **Spines laminar, black.**
- **15 pairs of leaflets.**
- **Spines scattered.**

Common/Local Names
Tukong (Ilk.), Saba-ong (Tag.).

Distribution/Habitat
Luzon (Dingin, Masinloc, Zambales; Quezon National Park, Quezon; Catanduanes). Lowland dipterocarp forests, 200-500 masl. Endangered.



Description
Sheaths 4-5 cm diameter, dull green. Spines laminar, 25-30 mm long, scattered, black. Ocrea short, less than 1 cm. ***Canes*** 2 cm diameter.

Leaflets irregular, alternate, 15 pairs per side, 5-7 cm apart, 40-42 cm long, 5-6 cm wide, broadly lanceolate, ciliate, dull green. Knee elongated, spines dense.

Inflorescence bracts tubular flattened, spiny on apex and along sides. Flowers unisexual, 0.5 cm long. Spikelets 6-8, 5 cm long. Male flowers with 5 lobes, female flowers with 5 petals.

Fruits globular or rounded, 2 x 2 cm, with beak; scales margin finely reddish brown, 15 vertical lines, finely grooved.

Seed 1.

Uses
Handicrafts, furniture.

Calamus grandifolius Becc. 1 — leafsheath with spines, leaflet pattern and inflorescence; 2 & 3 — leafsheath covered with dense spines; 4 — leaflet arrangement, cirrus and inflorescence.

Calamus javensis Blume

Rumphia 3: 62 (1847). — *Palmijuncus javensis* (Blume) Kuntze, Revis. Gen. Pl. 2: 733 (1891).

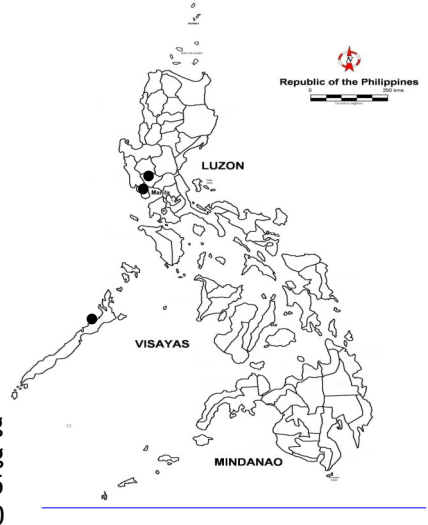
Slender Clustering Flagellum

Look for:

- **Spines laminar scattered.**
- **Petiole short.**
- **Knee bulgy.**

Common/Local Name
Arorog (Tag.).

Distribution/Habitat
South Thailand, Malay Peninsula, Sumatra, West Java, Borneo, Philippines: St. Paul National Park, Palawan; Bataan, Mt. Arayat in Pampanga. Chromite mine site, 450 masl.



Description
Ocrea papery, enclosing sheaths, 1 cm long. Along mouth, long rigid spines 6-15 mm long. Spines laminar, 5-10 mm long, horizontal. ***Canes*** slender, small, 2-6 mm diameter, with sheaths 10 mm diameter. Internodes 30 cm long.

Leaflets irregular, 4-10 cm long, narrowly linearly lanceolate. Petiole short, 1 cm long. Flagella armed. Knee bulgy, unarmed.

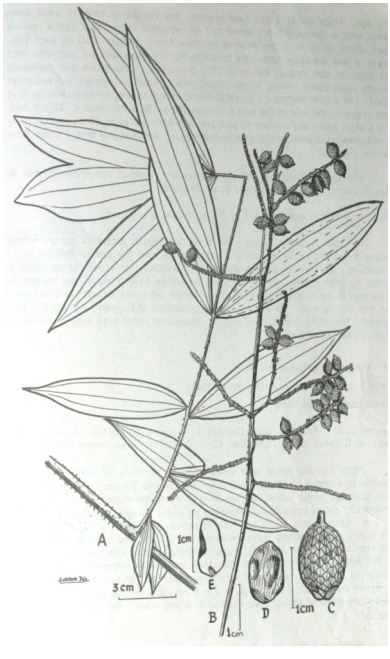
Inflorescence spathes tubular, 2.5 m long, bracts tubular, subtending rachilla, not net-like; calyx trilobed or tripartite. Male spikelets perfectly bifarous.

Fruits oblong or ovoid, 12 mm long, 8 mm thick, green.

Seeds angular.

Uses
Canes for cordage, basketry, noose traps, musical instruments; edible raw cabbage as medicine; spiny leaf sheaths formerly used to make food graters.

∞ ***C. mitis*: climbing organ flagellum and clustering habit.**



Calamus javensis Blume. A. stem with leaf. B. part of infrustescence. C. fruit. D. seed. E. vertical section of seed. (After Dransfield 1992)

Calamus javensis Blume. 1 — cane; 2 & 3 — stem with leaves and flagellum.

Calamus jenningsianus Becc.

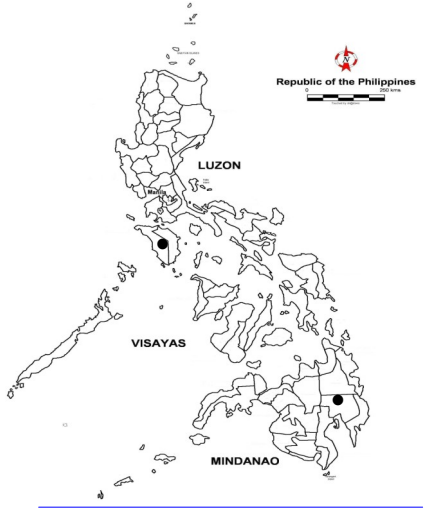
Philipp. J. Sci., C4: 623 (1909).

Robust Ocrea Cirrus

Look for:

- **Leaflets regular.**
- **Leaflets without indumentum.**
- **Mid-leaf portion: leaflet broadly lanceolate, 30 x 3 cm, set with gaps of 4-5 cm apart.**

Distribution/Habitat
Luzon (Mindoro, Mt. Halcon complex above Paitan in Dulangan River, 1350 m). Northeast Mindanao, Pamayan to Mustring; medium. Altitude 1000 masl. Rare.



Description
Stems 2.5 cm diameter. ***Canes*** 2 cm diameter, sheath bright green. Spines 4-5 cm long, horizontal.

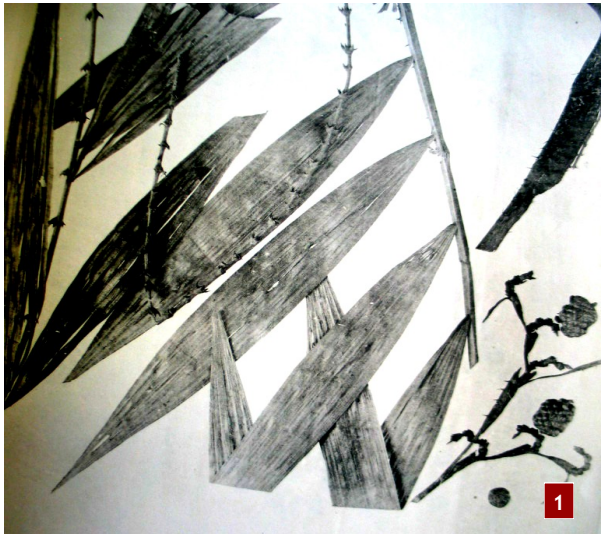
Leaflets 4-5 mm apart, 22-25 cm long, 30-32 mm wide, elliptic-lanceolate, entire, shiny green above, pale green below, with 3 nerves, not bristly, not spinulous.

Inflorescence female spadix elongated. Bracts tubular pointed, subtending rachilla. Bracteoles conspicuous. Calyx trilobed or tripartite. Corolla as long as calyx.

Fruits ovoid, 25 mm diameter, 18 mm thick. Immature, beak pointed, scale margin distinct brown.

Seeds globose or rounded. Endosperm ruminated. Sarcotesta fleshy, translucent.

Use
Handicrafts.



Calamus jenningsianus Becc. 1 — leaflet arrangement with cirrus; fruits; 2 — stem with leafsheath and spines, with fruits.

Calamus malawaliensis J. Dransf.

Kew Bull. 36: 805 (1982).

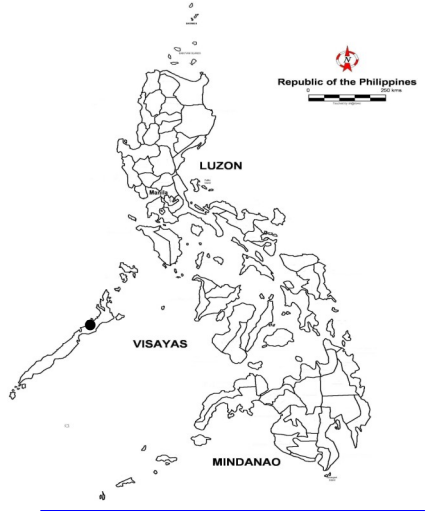
Slender Clustering Cirrus

Look for:

- **Spines black, yellow base.**
- **Leaflets irregular in 2-3 groups and fanned.**
- **Ocrea very reduced.**

Common/Local Name
Balanuk (Tag.).

Distribution/Habitat
Malawali, Palau; Philippines: Palawan, Irawan, Puerto Princesa; Mt. Victoria, Mt. Bulanjao, *Casuarina-Podocarpus* forests on ultra basic rocks; hillslopes. Altitude 470 masl.



Description
Sheaths spines scattered, black, triangular; yellow base expanded. Ocrea very reduced, papery. ***Stems*** 10 m tall. ***Canes*** 8 mm diameter, with sheaths 10 cm.

Leaves petiole 10-40 cm long; leaflets irregular in groups of 2-3, fanned within group, narrowly to broadly lanceolate, with cirrus. Knee slightly bulgy, armed as sheath.

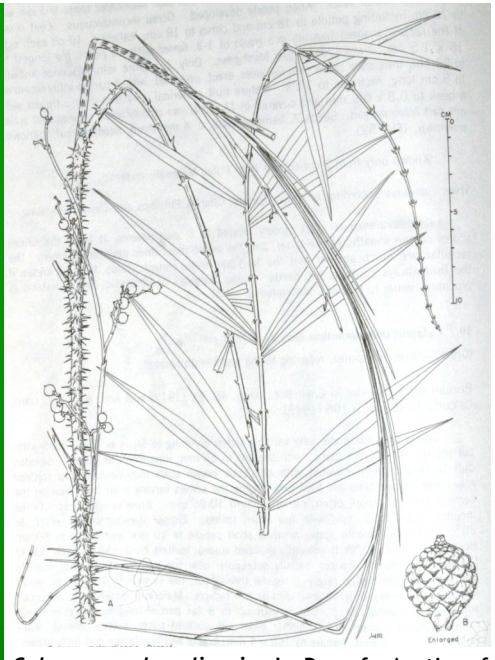
Inflorescence axilliary; flagelliferious bracts tubular, unarmed.

Fruits globose-round, pointed beak, 6-8 x 5-6 mm; beaked scale margin brown, fuzzy.

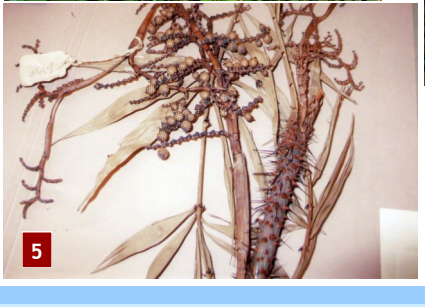
Seeds 2, hemispherical. Tiniest seed of rattans (John Dransfield 2007, *in sched*.).

Uses
Canes “third class”, black when wet.

- ***C. microsphaerion*: closely related in many vegetative features but *C. malawaliensis* lacks brown scales on sheaths.**



Calamus malawaliensis J. Dransf. A. tip of sheathed stem;B.fruit. (After Dransfield 1984).



Calamus malawaliensis J. Dransf. 1 — fruits; 2, 3 & 4 — habit; 5 — leafsheath with spines; infructescence

Calamus manillensis (Mart.) H. Wendl.

O.C.E. de Kerchove de Denterghem, Palmiers: 237 (1878).
— *Daemonorops manillensis* Mart., Hist. Nat. Palm. 3: 330 (1853).
— *Palmijuncus manillensis* (Mart.) Kuntze, Revis. Gen. Pl. 2: 733 (1891).

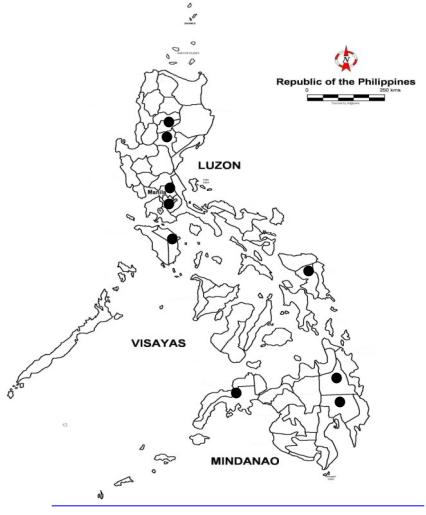
Robust Solitary Knee bulbous

Look for:

- **Cirrus.**
- **Sheath covered with short irregularly scattered dull brown spines.**
- **Leaflets regular.**

Common/Local Names
Bunlac, Bayabong (Mbo.);
Lintokan (Bag.), Litoko (Ifg.).

Distribution/Habitat
Luzon (Banawe, Ifugao; Nueva Vizcaya, Rizal, Laguna, Mindoro, Sorsogon); Visayas (Dinagat) and Mindanao (Agusan, Davao, Zamboanga). Species collected in dense oak forests at 40 m altitude. Indeterminate.



Description
Sheaths dull green, sparsely spiny or unarmed. Plants 25 m tall. ***Stems*** 5 cm diameter. ***Canes*** 2.5 cm diameter. Old stem 2-4 cm thick, hard, smooth.

Leaflets ascending from base, soon recurved or descending, tough, similarly dull green on both sides, rather evenly scattered, 40-45 cm long, 6-8 cm wide, lanceolate. Knee bulbous, unarmed.

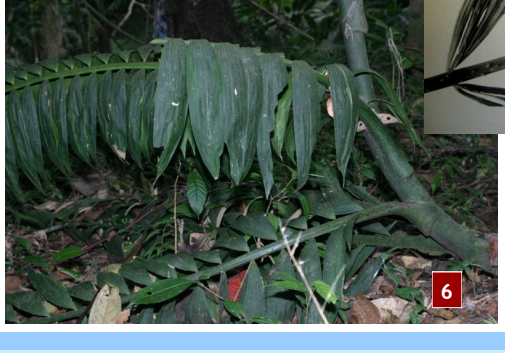
Inflorescence 1-6 m long with 8-11 partials. Infructescence ascending finally recurved, axillary, 1.5 m long, dull deep green and becoming covered in places with a copper brown coating. Branched from below middle.

Fruits nearly globose, 1.5 cm, beak pointed, shining light green except brown margined scales, yellowish. Edible.

Seeds 3 sometimes 2, wedged, 11 mm long, 4 mm wide, 9 mm thick, angular, brown; strophiole oblong, raphae distinct and hilum protruded.

Uses
The only known rattan species cultivated solely for its fruit. Fruits eaten raw or preserved. The 2-seeded fruits fleshier than the 3-seeded ones. Canes of inferior quality for tying.

Beccari (1913)



Calamus manillensis (Mart.) H. Wendl. 1 — germinated seeds; 2 & 3 — knee sheath with sparse spines; 4 — habit; 5 — knee sheath, leaf pattern and fruits; 6 — leaflet arrangement.

Calamus marginatus (Blume) Mart.

Hist. Nat. Palm. 3: 342 (1853). — *Daemonorops marginata* Blume, Rumphia 3: 24 (1847). — *Palmijuncus maginatus* (Blume) Kuntze, Revis. Gen. Pl. 2: 733 (1891). — *Calamus rostratus* Furtado, Gard. Bull. Straits Settlem. 8: 257 (1935). — *Calamus regularis* Burret, Notizbl. Bot. Gart. Berlin-Dahlem 15: 816 (1943).

Robust Clustering Knee bulbous

Look for:

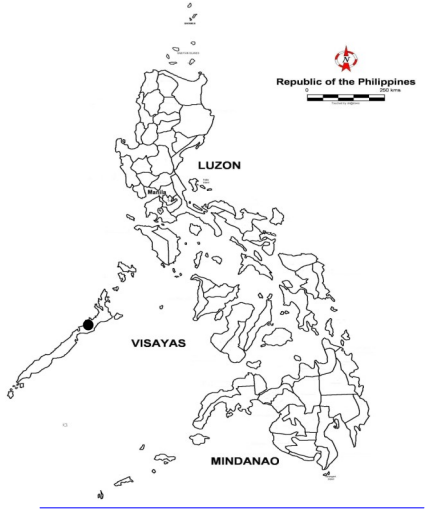
- **Spines triangular.**
- **Leaflets regular, glossy above when fresh.**
- **Flagella 5 m long.**

Common/Local Name

Labsikan (Palw).

Distribution/Habitat

Luzon (Palawan: Puerto Princesa, Irawan; Lake Manguao, Danao). Lowland forests, 50 masl.



Description

Sheaths dull green. Ocrea 0.8 cm long. Spines 3-40 mm long, diagonal, black. Spines near leaf sheath mouth 10-15 cm long. Plants 40 m tall, ***Stems*** 35 cm diameter, internodes 10 cm long.

Leaves petiole 20-35 cm. Leaflets regular, linear, numerous, 65-70 pairs per rachis, 40-60 cm long, with entire margin, bristly above. Knee bulbous armed with shorter spines as leaf sheath.

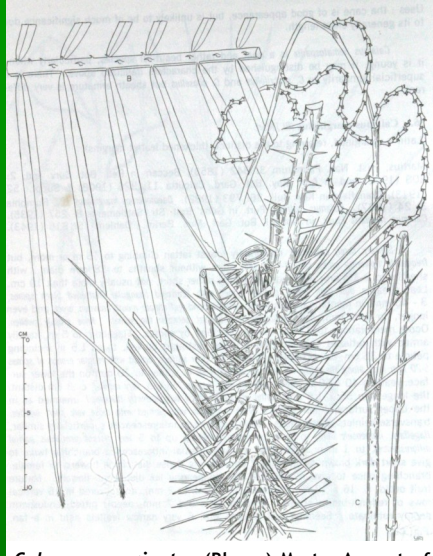
Inflorescence flagelliferous, 5 m long, with 10 partials, 1.5 m long. Bracts slender, tubular. Calyx trilobed or tripartite.

Fruits oblong or ovoid, 16 mm long, brownish red. Scales no grooved margin, distinct brown.

Seeds ovoid or oblong. 12 mm long, 7 mm wide, 8-mm thick.

Uses

Poor quality but durable canes for basket frames and walking sticks.



Calamus marginatus (Blume) Mart. A. part of stem with sheaths. B. midportion of leaf. C. part of male inflorescence. (After Dransfield 1992)

Beccari (1913)

Calamus marginatus (Blume) Mart. 1 —infructescence; 2 — knee and spines; 3 — habit; 4 — leaf pattern and inflorescence.

Calamus megaphyllus Becc.

Ann. Roy. Bot. Gard. (Calcutta) 11 (App.): 66 (1913).

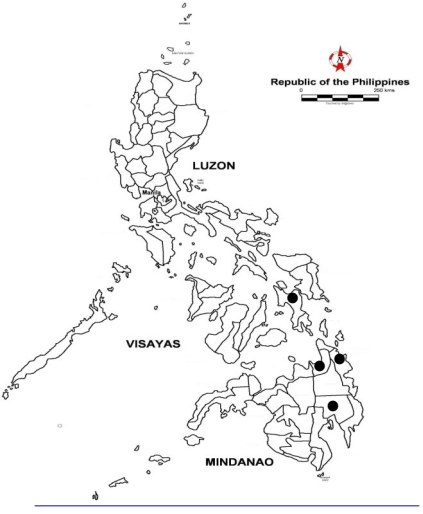
Robust Solitary Cirrus

Look for:

- **Leaflets irregularly clustered, groups of 2-3.**
- **Rachis sharply spiny.**
- **Leaflets without indumentum.**

Common/Local Names
Magbagacay, Banokbo (Mbo.).

Distribution/Habitat
Visayas (Leyte) and Mindanao (Mt. Urdaneta, Cabadbaran, Agusan; Surigao, Davao). Altitudes 500-1000 masl. Rare.



Description
Plants 10 m tall. ***Stems*** 4 cm thick, unarmed at leaf bearing portion, half as thick in smooth cane portion; leaves 30 cm apart, alternate, divaricate or only slightly ascending, recurved toward their tips, 1.5 m long, terminated into a stoutly clawed subpendulous cirrus equaling leaves.

Leaves 1.5 m long. Petiole short, first leaflet smaller. Leaflets irregularly clustered, broadly lanceolate, in groups of 2-3 extending below base, sublucid on both sides, gracefully recurved, similarly pale green on both sides, smooth, tough or not rigid.
Inflorescence 1-1.2 m long, with 20 partials. Infructescence pendulous, arising a few inches above leaf axils, 1.2 m long. Spathe green, provided with a few recurved spines. Branches scattered, 6-10 cm apart, only 15 cm long or shorter toward apex.

Fruits globose, pale green, beaked or a trifle longer, 20 mm long, 13 mm diameter, 18 mm thick, with brown margin.

Seed only 1. Rough.

Uses
Canes for basketry and tying.

Beccari (1913)

Calamus megaphyllus Becc. 1 — leaf arrangement, inflorescence; 2 & 3 — leaf arrangement and knee sheath, infructescence; 4 — knee and fruits.

Calamus melanorhynchus Becc.

Ann. Roy. Bot. Gard. (Calcutta) 11 (App.): 30 (1913).

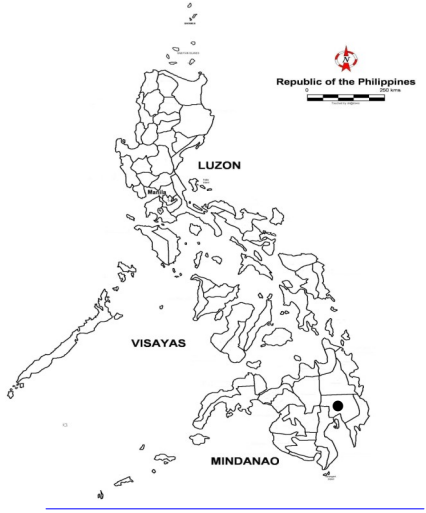
Robust Flagellum Leaflet regular

Look for:

- **Petiole about 30 cm.**
- **Leaflets shining and green on both surfaces.**
- **Midrib alone minutely hairy-spinulous underneath.**

Common/Local Name
Dalimban (Bag.).

Distribution/Habitat
Mindanao (Mt. Apo in Davao). Altitude 1000 masl. Rare.



Description
Sheaths 6.5 cm diameter. Sheath spines in semi-ring. Knee short, unarmed. ***Canes*** 2 cm diameter. Old stem smooth, hard, green, 2 cm thick, sheathed portion 6.5 cm.

Leaves alternate, 1.8 m long. Leaflets narrow, linear or linear-lanceolate, 1 to 3, costulate, sparingly spinulous on three nerves above, midrib alone minutely hairy-spinulous underneath. Leaflets regular, linear lanceolate, 60 x 1.5 cm, with gaps 2 cm apart; rachis black spines, shiny.

Inflorescence female flowers and fruits sessile or nearly so, not furnished with a distinct pedicel derived from lengthened involucrophore. Spadices (male and female) extremely long and flagelliform, considerably longer than leaves.

Fruits nearly spherical (13-14 x 10 mm) with a broad, blunt and black beak. Scale margin dark brown, scale groove wide.

Seed only 1. Pitted-ruminate, 6 x 6 mm.

Uses
Canes for basketry and handicrafts.

Beccari (1913)

Calamus melanorhynchus Becc. 1 — stem, fruits; 2 — infructescence; 3 — fruits.

Calamus merrillii Becc.

Webbia 1: 347 (1905). — *Calamus maximus* Becc., In: G.H. Perkins et al., Fragm. Fl. Philipp. 1: 45 (1904), *nom. illeg.*

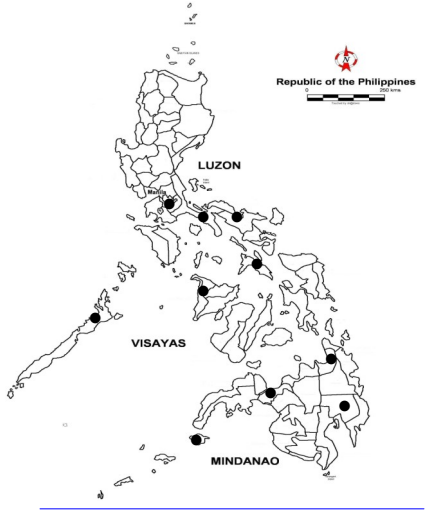
Robust Clustering Branching Knee developed folded

Look for:

- **Leaves divaricate or slightly ascending and recurved.**
- **Spines semi-ring.**
- **Cirrus present.**

Common/Local Names
Palasan (Mbo., Bik. Tag.), Acab-acab (Bag.), Parasan (Bis.).

Distribution/Habitat
Luzon (Rizal, Laguna, Quezon, Camarines Norte, Camarines Sur, Masbate, Palawan), Visayas (Panay) and Mindanao (Agusan, Davao, Lanao, Basilan Island). Altitudes 500-1200 masl. Primary and secondary forests. Endemic.



Description
Sheaths spines dense, fibrous, brown to black, close semi-ring. Knee elongate, folded, spines along leafsheath mouth. Ocrea 4-15 cm long when immature. Plants 50-100 m tall. ***Canes*** 6-8 cm diameter, with ***stems*** 10 cm diameter, internodes 10 cm long.

Leaves alternate, 30 cm apart, 3 m long, terminated into a sub-pendant powerfully clawed rachis one half as long. Leaflets regular linear lanceolate descending, sublucid, similarly green on both sides, with 3 nerves and bristly on both.

Inflorescence 35-55 cm long. Female spadix 1.3-2.5 m long. Bracts tubular, subtending rachilla.

Fruits globose-ovoid, yellow; scales with 21 vertical rows, narrow grooved. Scale margin frizzy.

Seed only 1. Globose or rounded, flat on one side, smooth, brown.

Uses
Highly in demand for furniture making for its smooth cane, workability and high finishing quality; cane creamy when dry.

Note
In Mindanao, only basal suckers are produced and some 10% of the plants are single-stemmed (Shim 1989).

Beccari (1913)

Calamus merrillii Becc. 1 — knee; 2 & 3 — inflorescence; 4 — habit; 5 — fruits; 6 — stem with infructescence.

Calamus merrillii Becc.
var. *merrittianus* (Becc.) Becc.

Philipp. J. Sci., C14: 351 (1919). — *Calamus merrittianus* Becc., Philipp. J. Sci., C2: 233 (1907).

Robust Flagella present

Look for:

- **Bracts funnel shaped.**
- **Rachis claw in 3's black triangular.**

Distribution/Habitat
Luzon (Bongabong, Mindoro). Altitude 200 masl.

Description
Canes 5-10 cm diameter. Spines 5 mm long.

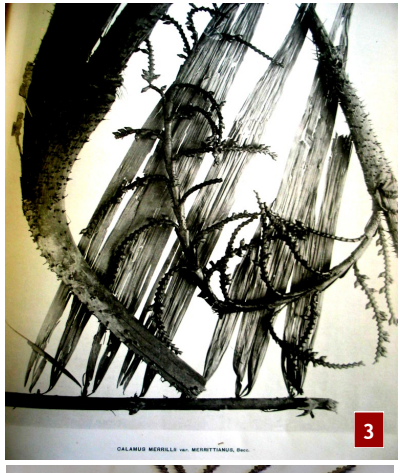
Leaflets spinules 1 cm long underneath midvein, margin ciliates. Knee spines combination of occicular and triangular shape same as sheath.

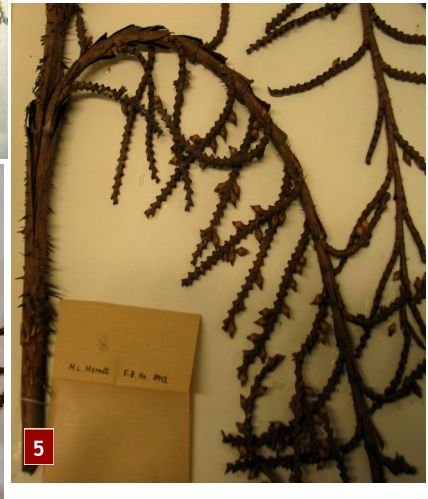
Inflorescence bracts tubular, with spines. Bracteoles 1.5 cm long, conspicuous. Calyx trilobed or tripartite.

Fruits ellipsoid or spherical, 4 mm long, 3-mm thick, 9 x 8 mm, spindle-like. Vertical lines 22, groove fine.

Seeds globose or rounded, 10 mm long, 5 mm wide, 2 mm thick, brown, hilum and strophiole indistinct.

Use
Handicrafts.





Beccari (1913)

Calamus merrillii Becc. var. ***merrittianus*** (Becc.) Becc. 1 & 2 — fruits; 3 — leaflets with infructescence; 4 & 5 — infructescence and immature fruits.

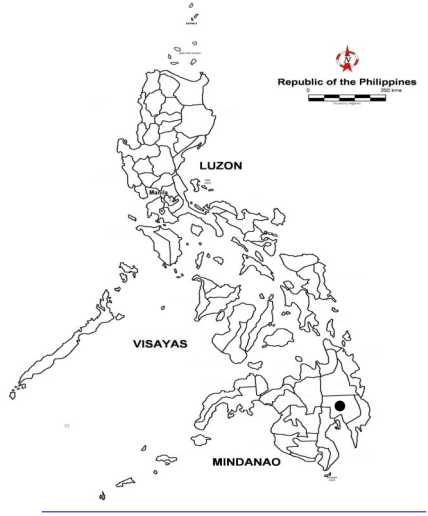
Calamus merrillii Becc. var. *nanga* Becc.

Philipp. J. Sci., C14: 351 (1919).

Coarse high tree climber	Robust	Cirrus
Look for:		
∞ Leaves alternating every 30 cm or more apart. ∞ Petiole 90 cm long.		

Common/Local Name
Nanga (Bag.).

Distribution/Habitat
Davao. In primary forests. Altitudes 600-1000 masl. Narrow endemic.



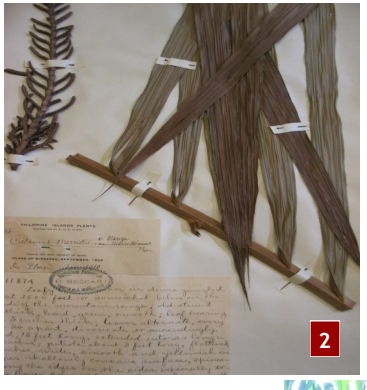
Description
Old ***stems*** 8 cm thick, hard, green, smooth, leaf bearing-portion 13 cm thick.

Leaves Divaricate or ascending below middle, otherwise recurved, 4.5 m long, extended into as long and powerfully clawed sub-pendant rachises. Leaflets regular, gaps 3-4 cm apart, rachis linear lanceolate, 55 x 3 cm.

Fruits Creamy globose, ovoid, 8 x 7 mm, 16 vertical lines.

Seed only 1, flat.

Use
Handicrafts.



Calamus merrillii Becc. var. ***nanga*** Becc. 1 & 2 — leaflet arrangement; 3 — fruits; 4 — habit.

Calamus microcarpus Becc. var. *microcarpus*

Rec. Bot. Surv. India 2: 213 (1902).

Slender Solitary Knee bulgy Cirrus

Look for:

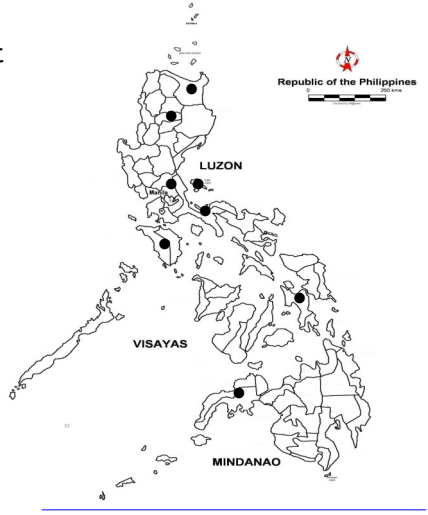
- **Juvenile leaf lacks a cirrus or maybe short (10-15 cm long).**
- **Ocrea short, flat.**
- **Leaflets irregular, set in definite groups (2-8 per group).**

Common/Local Names

Kalapit (Bik.), Tandulang gubat (Tag.).

Distribution/Habitat

Luzon (Cagayan, Mt. Province, Rizal, Quezon, Polillo, Mindoro), Visayas (Leyte) and Mindanao (Zamboanga). Altitudes 200-2000 masl. Rare.



Description

Sheaths bright green, densely spiny; spines around sheath base connate-triangular, brown. ***Stems*** 20 m tall. ***Canes*** 2 cm diameter, internodes 15 cm long. Stems with sheaths 4 cm, 5 cm diameter on leafy portion.

Leaves alternate, 15 cm apart, 1 -1.5 m long. Petiole 30-45 cm long. Ocrea 3 cm. Leaflets irregular, cirrate, 2-8 groups per rachis, sometimes fanned within leaflet group, 25-30 cm long, 10-15 mm wide, with 5-8 nerves, bristly on 3 nerves and spinulous below.

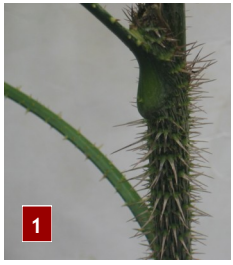
Inflorescence 1 m long, 6-7 in number, borne on leaf sheath; infructescence 1.4 m long. Partial inflorescence bearing 6 branches, spreading, bract loosely tubular, unarmed toward tip (3-4); rachillae 2-5 cm long, with 13-22 flowers.

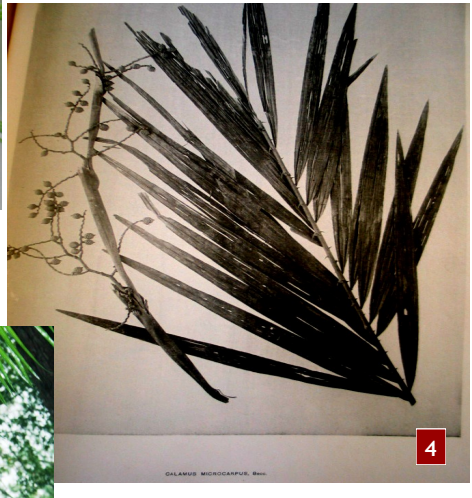
Fruits ovoid-globose, 12 mm long, 5-8 mm thick, brown. Fruit scales with 12-13 vertical rows; scale grooved, margin whitish, nearly distinct.

Seeds ovoid or oblong, 6 mm long, 4.5 mm wide, 5 mm thick, black, endosperm pitted, embryo basal.

Uses

Canes for binding and basketry. A good quality rattan according to local people .





Beccari (1913)

Calamus microcarpus Becc. var. ***microcarpus***. 1 — stem; 2 — inflorescence; 3 & 4 — leaflet arrangement; 5 — habit; 6 — fruits.

Calamus microcarpus Becc. var. *diminutus* Becc.

Philipp. J. Sci., C14: 356 (1919).

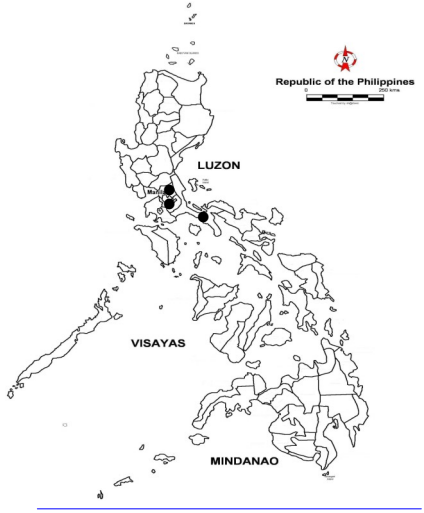
Slender Solitary Knee developed Cirrus

Look for:

- **Leaflets very narrow, irregular in groups of 2-3.**
- **Ocrea very short (1 cm long).**
- **Spadix very short.**

Common/Local Name
Kamlis (Tag.).

Distribution/Habitat
Luzon (Rizal, Laguna,Quezon). Altitude 600 masl.



Description
Sheaths yellowish brown, armed with solitary spines, slender; spines 1 cm. Ocrea long, 5 cm, armed as sheath. ***Stems*** solitary, slender. ***Canes*** 0.3-0.5 cm diameter, 0.8-1 cm diameter, internodes 10 cm long.

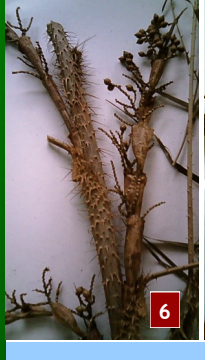
Leaf whole 72 cm long, petiole about and below rachis armed with claws in 2's. Leaflets irregular, linear, acuminate, in distinct groups of 2-3, fanned, 18 x 0.4 cm, pale green below, midnerve distinct, 2 slight secondary nerves, spinulous on 3 nerves above, smooth below; cirrus 18 cm long. Knee elongated, flat with numerous, acicular to triangular spines.

Infructescence borne on leaf sheath, 12 cm long; bracts inflated smooth; bracteoles flat, short; rachillae 1.5 cm long, with 8 fruits.

Fruits cylindrical or globose; fruiting perianth short, reddish brown, 7 x 8 mm; scales in 12 vertical rows, slightly grooved, tips dark reddish brown, margin creamy.

Seeds round, brownish black, 6 x 6 mm, smooth.

Use
Handicrafts.



Calamus microcarpus Becc. var. ***diminutus*** Becc. 1 — leaf pattern; 2 & 3 — habit showing inflorescence; 4, 5 & 6 — stem; 7 — flowers.

Calamus microcarpus Becc.
var. *longiocrea* Baja-Lapis

Sylvatrop 12: 68 (1987, publ. 1989).

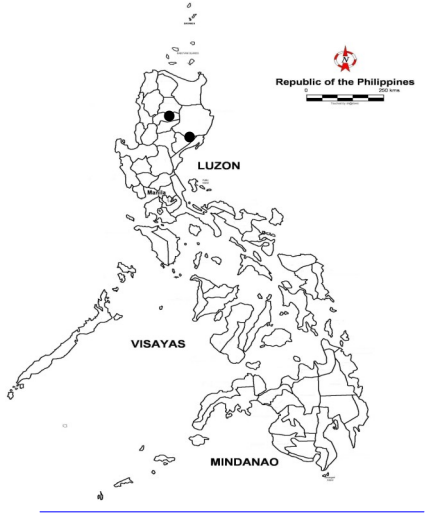
Solitary Knee developed/bulbous Cirrus present

Look for:

- **Long ocrea papery on the edges and tips.**
- **Ocrea with shorter spines than the leaf sheath.**
- **Leaflets closely grouped in 2-5 and spread like a fan.**

Common/Local Name
Cham-mag (Ifg.).

Distribution/Habitat
Luzon (Mountain Province, Sierra Madre Mountain).



Description
Stems slender. ***Canes*** 0.5 cm diameter, with sheaths 1-3 cm diameter; internodes 6.5 cm long, armed with unequal, flat triangular spines in whorls or semi-circle patterns, others scattered, some with wavy edges, tips forked, longest up to 4 cm long, shorter ones 2-5 mm long, with white indumentum. Ocrea long tattered tip, armed as sheath.

Leaf cirrate, petiole 14-25 cm long, armed with short rigid spines above. Leaflets irregular, in groups of 2-5, fanned narrowly linear, both surfaces pale green, 20-32 x 0.5-1.5 cm, with 5-6 nerves; midnerve distinct, spinulous on 3 nerves; cirrus 20-40 cm long.

Inflorescence female inflorescence bracts loosely tubular, no spines. Male inflorescence thin, fine; rachillae 1-2 cm long, with 10 -12 flowers, 4 mm long; calyx partials; bracts tightly tubular, distally inflated, armed with few spinules, with 18-20 fruits.

Fruits ovoid, perianth cylindrical, light brown, scale grooved, margin fuzzy, tips brownish.

Seeds unknown.

Use
Handicrafts.

Calamus microcarpus Becc. var. ***longiocrea*** Baja-Lapis.
1 — ocrea; 2 — stem, leafsheath and infructescence.

Calamus microsphaerion Becc.

In: G.H. Perkins et al., Fragm. Fl. Philipp. 1: 45 (1904).

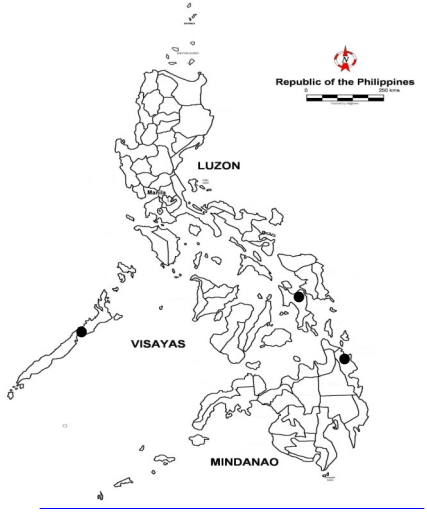
Slender Solitary Cirrus

Look for:

- **Spines scattered, tuberculiform.**
- **Sheath with ashy white indumentum (John Dransfield).**

Common/Local Names
Sika-sika, Kulakling, Labit (Tag.).

Distribution/Habitat
Luzon (Mindoro, Catanduanes; Culion, Palawan); Visayas (Leyte) and Mindanao (Surigao del Sur).



Description
Sheaths armed, triangular, black but sparse. Ocrea papery, short 4 mm, minute. ***Stems*** 2-5 cm diameter. ***Canes*** 1-2.5 cm diameter; sheath dull green, chalky; rachis unarmed; spines triangular, 4-5 mm long, horizontal, yellow.

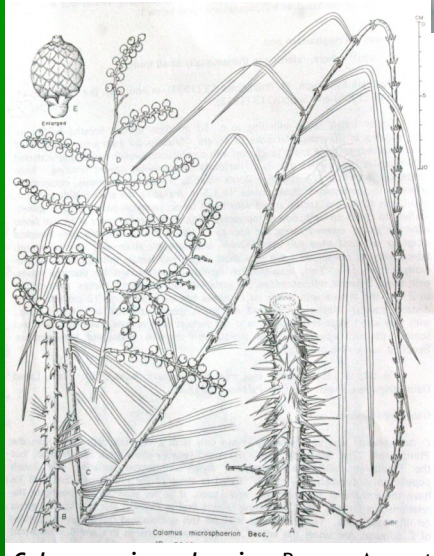
Leaf cirrate. Petiole short. Leaflets in groups of 2-4 per side of rachis, 20-30 cm long, 15-20 mm wide, linear lanceolate, with entire margin, 3-5 nerves, not bristly and not spinulous. Knee elongate, folded, unarmed.

Inflorescence female spadix paniculate, pedicilliform; bracts tubular, subtending rachilla.

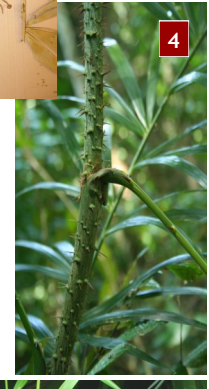
Fruits bracts tightly sheathing, unarmed; rachillae finely spreading, 5 mm diameter, ellipsoid or spherical, with one seed; scale margin distinctly brown, lightly vertical line.

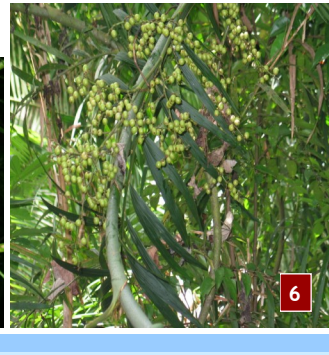
Seed globose or rounded, 4.5 mm long, 3 mm wide, 4 mm thick, brown, strophiole indistinct.

Use
Entire canes for basketry.



Calamus microsphaerion Becc. A. part of sheathed stem. B. leaf base. C. apical portion of leaf. D. part of infructescence. E. fruit. (After Dransfield 1984)





Calamus microsphaerion Becc. 1 & 7 — leaf arrangement; 2 & 3 — stem with infructescence; 4 & 5 — leafsheath and knee; 6 — habit with infructescence.

Calamus microsphaerion Becc. var. *spinosior* Becc.

Philipp. J. Sci., C14: 354 (1919).

Solitary Knee developed Cirrus

Look for:

- **Cirrus 40 cm long.**
- **Leaflets entire, in groups of 2-4.**
- **Spines horizontal.**

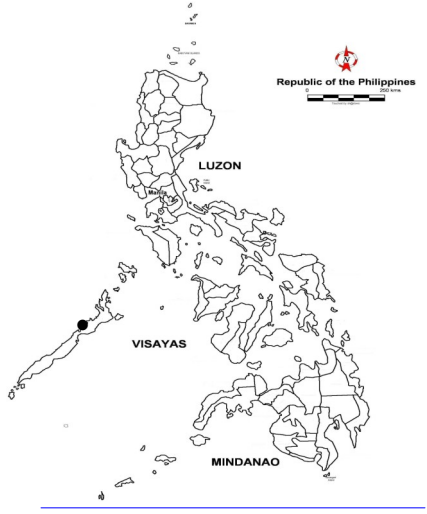
Common/Local Name
Labit (Tag.).

Distribution/Habitat
Luzon (Palawan).

Decription
Sheathed stems 2-3 cm in diameter, densely armed with scattered rather robust spines, 5-12 mm long and having broad sub-bulbous bases.

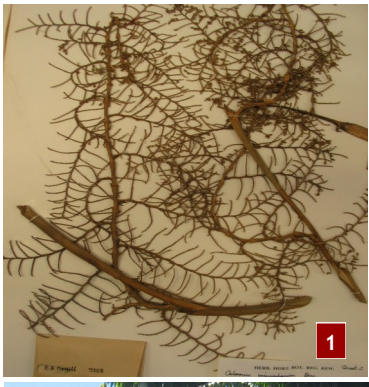
Leaflets cirrate, irregular, bristly-spinulous on 1 to 3 costae above, 2-4 per side of rachis, 20-30 cm long, 15-20 mm wide, linear lanceolate, entire, with 3-5 nerves, bristly above on 1-3 nerves and spinulous above, 15-18 x 2.5-4.5 cm; petiole short, 2 cm long, rachis unarmed. Knee armed as sheath.

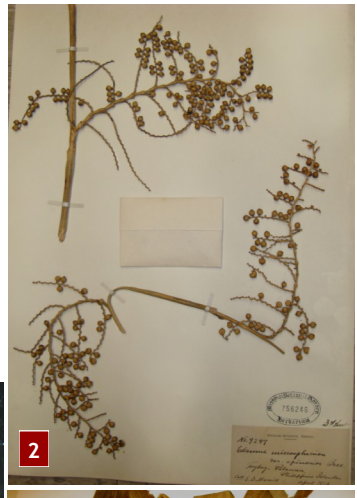
Inflorescence pedicelliform; bracts tubular, subtending rachilla, not net-like; corolla as long as calyx, flowers unisexual and filiform. Bracts tubular, tightly sheathing unarmed, rachillae very finely spreading.

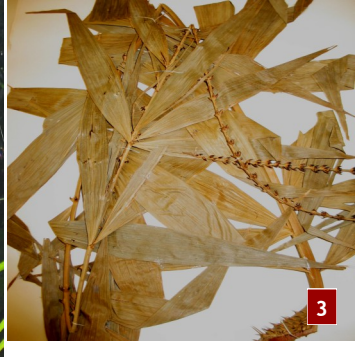


Fruits ellipsoid or spherical, 5 mm diameter.

Use
Handicrafts.







Calamus microsphaerion Becc. var. ***spinosior*** Becc.
1 & 2 — inflorescence and infructescence; 3 — leaf arrangement;
4 & 5 — habit.

Calamus mindorensis Becc.

Philipp. J. Sci., C2: 235 (1907).

Robust Solitary Knee bulbous

Look for:

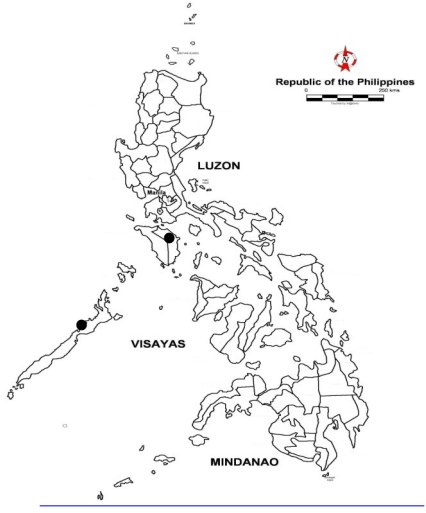
- **Sheath spines scattered, fine to almost nil.**
- **Leaflets sub-opposite, regular.**
- **Cirrus.**

Common/Local Names

Tumalim (Tag.), Bugtong (Tagbn.), Tumaram (Bik.).

Distribution/Habitat

Luzon (Mindoro, Palawan). Altitudes 70-300 masl. Indeterminate.



Description

Sheaths dull green, with few scattered spines, grayish in color. Ocrea small, papery. Spines on leafsheath mouth, dense. ***Canes*** 1.5-2 cm. Stems 2.5-4 cm diameter, internodes 32 cm long.

Leaf cirrate, 1.5-2.5 m long, petiole 27 cm long. Leaflets 30-35 per side of rachis, 6 -7 cm apart, 35-50 cm long, 30-40 mm wide, elliptic-lanceolate, with ciliate margins, shiny green above and pale green underneath. Knee bulbous, unarmed.

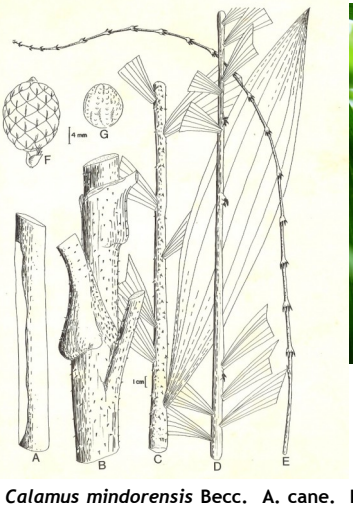
Inflorescence 2 m long, male spadix elongated. Female spadix paniculate; partials 13, bracts tubular and rachilla 10 cm long.

Fruits globose or rounded, 6 mm long, 5 mm thick, yellow; scales with 18-20 vertical rows, without groove.

Seed 1, globose or rounded, pitted, 1.4 x 1.4 cm.

Uses

Popular large-diameter canes for furniture; split canes for basketry and cordage.



Calamus mindorensis Becc. A. cane. B. stem with leafsheath. C. lower most portion of rachis with leaflets. D. midportion of rachis. E. flagellum. F. fruit. G. seed. All based on *Fernando 158* (LBC).

Calamus mindorensis Becc. 1 & 2 — stem with scattered spines; 3 — stem, leaflet and infructescence; 4 & 5 — bulbous knee; 6 & 7 — habit; 8 & 9 — leaf arrangement.

Calamus mitis Becc.

Philipp. J. Sci., C3: 341 (1909).

Slender Solitary Knee developed Cirrus

Look for:

- **Knee unarmed.**
- **Leaflets irregular, broadly lanceolate.**
- **Not spinulous leaflets.**

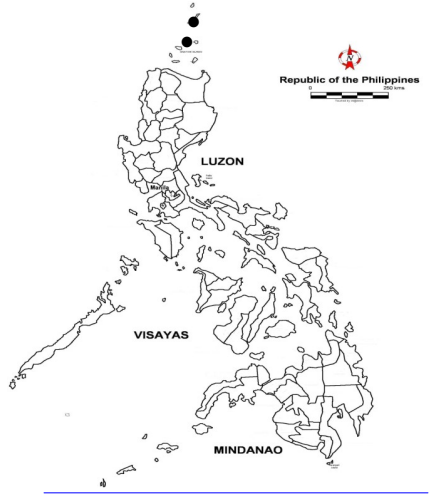
Common/Local Names
Tevdas (Iv.), Matkong (Ilk.).

Distribution/Habitat
Luzon (Batanes Province, Mt. Iraya; Babuyan); 200-500 masl.

Description
Sheaths unarmed, smooth, no ocrea. ***Canes*** 0.8-1 cm diameter, with sheath 1.5-2 cm diameter.

Leaf 1.5 m long, petiole not distinct, unarmed; spines horizontal, inequidistant, subopposite; leaflet regular, broadly lanceolate 4-6 per side of rachis, 20-25 cm long, 5-6.5 mm wide, with 5 nerves and bristly on 3 nerves. Leaflets near knee smaller than succeeding. Apical leaflets broadly lanceolate. Knee elongated, folded.

Infructescence 90 cm long, 2 -4. Bract tubular, subtending rachilla. Male spikelets perfectly bifarous, infundibular.



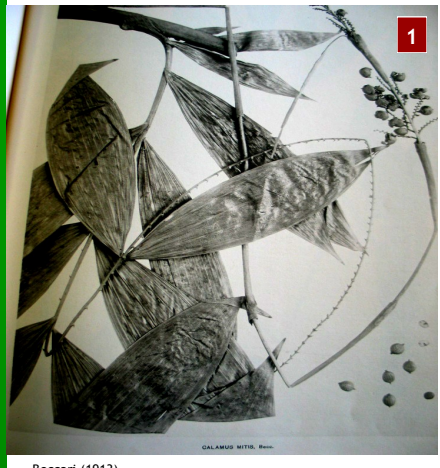
Fruits globose or rounded, 15 mm long, 10-12 mm thick; beak white or cream, with 22 vertical lines.

Seeds 6 mm long, 6 mm thick, brown; endosperm rough.

Uses
Canes with much commercial value. Species used as rope in native sailing boats in the 1900s.

Note
Pulp juicy, edible; Infructescence pendulous (ESF 406).

- ***C. javensis*: leaflets broadly lanceolate, seeds angular.**
- ***C. elmerianus*: petiole short, fruit leaflet smaller than leaflets in rachis.**
- ***C. spinifolius*: leaflets not spiny.**



Beccari (1913)

Calamus mitis Becc. 1 — leaf arrangement and infructescence; 2 — stem with infructescence; 3 & 4 — leaf arrangement with infructescence.

Calamus moseleyanus Becc.

Rec. Bot. Surv. India 2: 211 (1902).

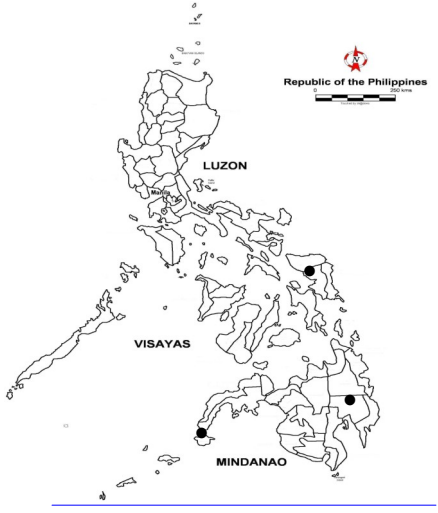
Climber Flagellum

Look for:

- **Petiole shining green.**
- **Leaves alternate.**

Common/Local Name
Sarani (Bag.).

Distribution/Habitat
Visayas (Western Samar) and Mindanao (Davao, Basilan, Malanipa). Medium size. Altitudes 200-2000 masl. Rare.



Description
Stems 5 cm diameter. ***Canes*** 2.5 cm diameter; sheathless stem 2.5 cm thick, green, hard, smooth toward base.

Leaves 30 cm apart and armed. Petiole 15 cm long and armed. Rachis armed. Leaflets inequidistant, linear broadly lanceolate, with ciliate margin, spinulous above; flagella 1.2 m long.

Inflorescence arising several inches below the leaf axils, ascending at the base, finally much recurved, 1.8 m long, widely and alternatingly branched from near base. Branchlets ascending and recurved, its largest spathe with a few spines along edges or keels. Flowers yellowish green.

Use
Canes for furniture.

Calamus moseleyanus Becc. 1 — inflorescence; 2 — leaflet pattern, portion of inflorescence.

Calamus multinervis Becc.

Ann. Roy. Bot. Gard. (Calcutta) 11 (App.): 88 (1913).

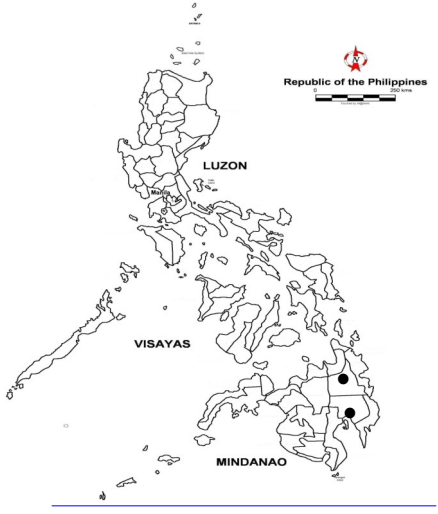
Robust Solitary Cirrus Sheath unarmed

Look for:

- **Leaflets regular, broadly lanceolate.**
- **Cane dark or olive green.**
- **Knee bulgy.**

Common/Local Names
Bugtongan, Balala (Bag.); Ubli (Ilk.).

Distribution/Habitat
Mindanao (Agusan, Davao). Altitudes 1000-1500 masl. Rare.



Description
Sheaths smooth, bright green, with few spines. ***Plant*** 20 m tall, stems 4-6 cm diameter. ***Canes*** 2.5-4 cm diameter, internodes 33 cm long.

Leaf petiole 14 to 15 cm long, rachis unarmed. Leaflets regular, 3 cm apart, 1.8 m long, alternate, 22 per side of rachis, 40-60 cm long, 3-5 cm wide, broadly lanceolate, with entire margin, with 3-5 nerves and spinulous at tip, 60 x 6 cm. Knee bulgy, smooth.

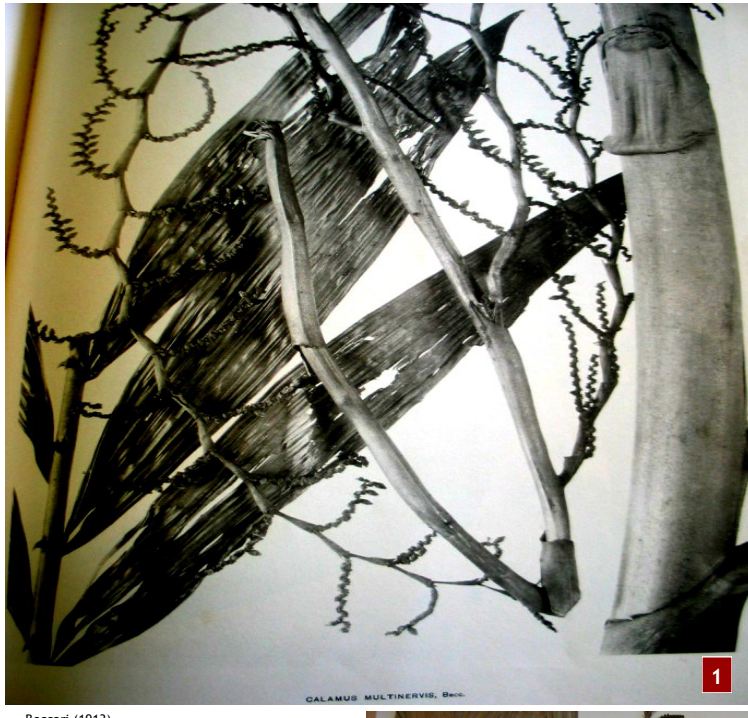
Inflorescence 3.5 cm long, 13 in number; bracts tubular, arising a few inches above leaf axils, 1.5 m long alternatingly rebranched; peduncle proper 50 cm long, basal ones 45 cm long, gradually reduced toward apex. Spikes 2.5-8 cm long, bearing flowers or fruits in 2 alternating rows.

Fruits unknown.

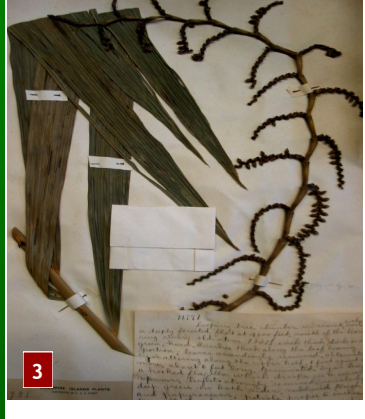
Seeds unknown.

Use
Canes for furniture.

- ***C. mindorensis*: leafsheath smooth.**



Beccari (1913)



Calamus multinervis Becc. 1— leaflet pattern, infructescence and stem; 2 & 3 — leaflets and infructescence.

Calamus ornatus Blume var. *philippinensis* Becc.

Webbia 1: 346 (1905).

Clustering Robust Flagella

Look for:

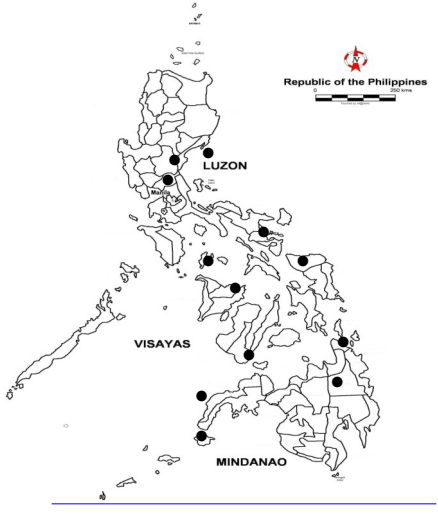
- **Spines triangular semi-ring, diagonally arranged.**
- **Knee bulbous.**
- **Leaflets alternate.**

Common/Local Names

Limuran, Rimoran (Tag.); Borongan (Bis.), Kalapi (Bik., Min.).

Distribution/Habitat

Luzon (Polillo, Cavite, Laguna, Mindoro, Camarines Sur), Visayas (Leyte, Panay, Negros) and Mindanao (Agusan, Surigao, Zamboanga, Basilan). Altitudes 200-500 masl. Indeterminate.



Description

Sheaths dull green, densely spiny, brown. ***Stems*** 4-7 cm diameter, 20 m tall. ***Canes*** 2-4 cm diameter, internodes 30 cm long. Stems few clustered, leafy portion 90-150 cm thick.

Leaves coarse 3 m long, horizontal and recurved, alternatingly scattered every foot, leaflets similarly disposed. Leaves 3 m long; petiole 60 cm long, 50 mm wide. Leaflets 25 per side of rachis, 20-30 cm long, elliptic to broadly lanceolate, pale green on both surfaces. Rachis with distinct black claws. Knee bulbous.

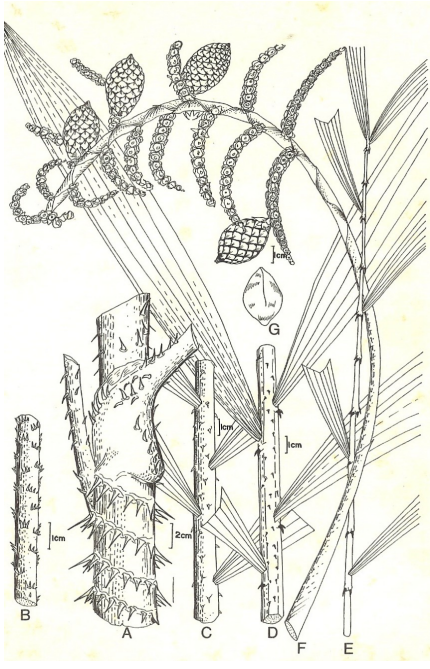
Infructescence at first descending, distinctly crescent, its 2 to 3 fruited cluster 90-150 cm apart; green spathels spinescent below; rachis extended into a slender, much recurved spiny tip.

Fruits ellipsoid, ovoid, 30-35 mm long, 10 mm wide, 20-25 mm thick, with 15 vertical lines, distinct black margins.

Seed only 1, ovoid or oblong, 18 mm long, brownish black, irregular corrugated; strophiole grooved, hilum depressed.

Uses

Major use of canes for furniture; also for walking sticks, handles for implements and flooring; leaves, cabbage and roots as medicine; fruits occasionally eaten.



***Calamus ornatus* Blume *ex* Schult. var. *philippinensis* Becc.** A. stem with leafsheath and base of flagellum. B. portion of petiole. C. lowermost rachis with leaflets. D. portion of rachis. E. uppermost portion of rachis with terminal leaflets. F. partial infructescence with fruits. G. seed. A-E based on *Madulid & Reynoso 5008* (PNH); F-G based on *Baja-Lapis 064* (FORI Herb.).

Calamus ornatus Blume var. ***philippinensis*** Becc. 1 & 2 — spine arrangement; 3 — knee sheath and leaf arrangement; 4 & 5 — leaflets; 6 & 7 — fruits.

Calamus ornatus Blume var. *pulverulentus* Fernando

Gard. Bull. Singapore 41: 53 (1988, publ. 1989).

Clustering **Robust** **Knee bulbous** **Cirrus**

Look for:

- **Powdery indumentum on the leaf sheaths when young.**
- **Leaflets regular, broadly linear-elliptic to lanceolate, 70 cm long.**
- **Fruit spindle-shaped.**

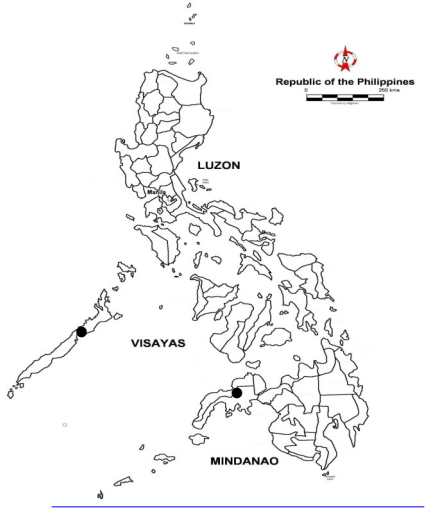
Common/Local Names
Borongan (Bis.), Mananga (Tag.).

Distribution/Habitat
Luzon (Palawan) and Mindanao (Zamboanga Peninsula). In dipterocarp forests at 100-800 m altitude. Endemic.

Description
Sheaths grayish brown, almost unarmed. Petiole 30 cm long. ***Stems*** 5 cm diameter, 20 m tall. ***Canes*** 2.5 cm diameter, internodes 40 cm long.

Leaf subcirrate, rarely ecirrate to 3 m long; petiole to 30 cm long, semi-circular in transverse section, flattened slightly convex on adaxial side, convex on abaxial side to 2.5 cm wide, 1 cm thick near base, armed with solitary, rigid spines to 6 mm only along edges. Leaflets lanceolate, midvein with bristles. Knee bulbous, unarmed.

Inflorescence 3 m long, 3 in numbers. Pistillate inflorescence terminating in a well defined flagellum. Partial inflorescence spaced to 55 cm apart, slightly decreasing in size distally.

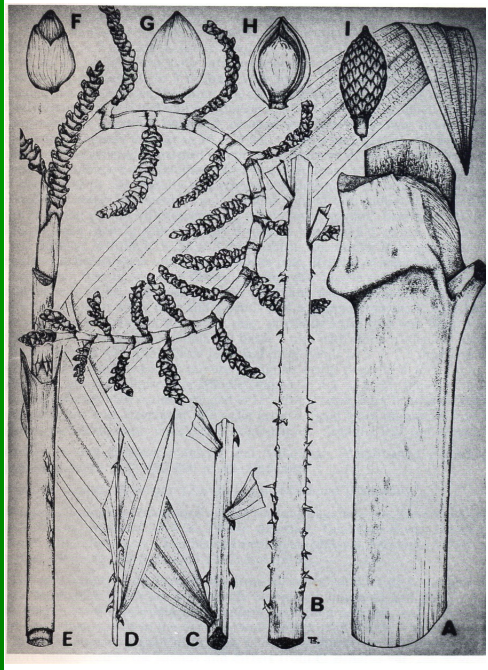


Infructescence flagelliferous, long; bracts tubular; rachillae crescent form but set 30 cm from each other.

Fruits ovoid-ellipsoid or spindle-shaped, 4 cm long, 2 cm thick, brownish black; scales with 15 vertical rows and midscales grooved, with 1 seed.

Seeds 16 mm long, 5 mm wide, 8 mm thick, angular, black; raphae and strophiole distinct. Endosperm homogenous.

Use
Handicrafts.



Calamus ornatus Blume var. ***pulverulentus*** Fernando. A. leafsheath with base of flagellum, x2/5; B. petiole, x 2/5; C. mid-portion of leaf, x2/5; D. leaf apex, x2/5; E. partial pitilate inflorescence, x2/5; F. sterile staminate flower, x3 1/3; G. pistillate flower in bud, x3; H. vertical section of pistillate flower in bud, x3; I. immature fruit, 3/5. All from *Fernando 599*.

Calamus ornatus Blume var. ***pulverulentus*** Fernando.
1 & 2 — infructescence.

Calamus ramulosus Becc.

In: G.H. Perkins et al., Fragm. Fl. Philipp. 1: 46 (1904).

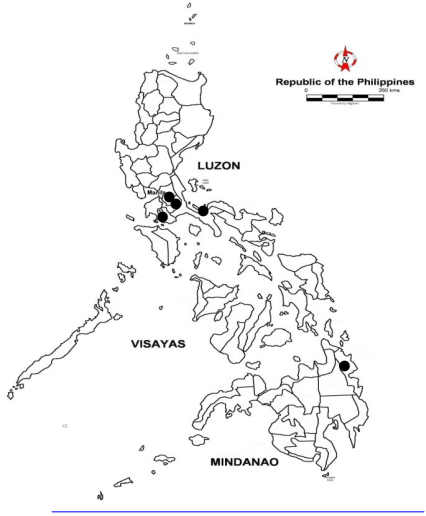
Slender Solitary Cirrus

Look for:

- **Spines scattered.**
- **Leaflets irregular, pairs.**
- **Knee elongate.**

Common/Local Names
Panlis, Lambutan (Tag.).

Distribution/Habitat
Luzon (Rizal, Laguna, Cavite; Banahaw, Quezon) and Mindanao (Surigao del Sur). Endemic.



Description
Canes 1-2 cm diameter, with sheath 1.5-3 cm diameter. ***Sheaths*** bright green, few spines, chalky. Ocrea short, 2 mm.

Leaves 1.2 m long. Petiole 16 cm long, 28 per side of rachis. Leaflets irregular, groups of 2. Knee folded.

Infructescence flagelliferous, 90 cm long, 6 in number.

Fruits mature within 6-8 months. Ripe fruits yellowish, globose 3 x 3 mm; scales with 15-16 vertical rows.

Seeds globose or rounded, 7 mm long, 5 mm wide, 6-8 mm thick, brownish black, raphae and hilum indistinct.

Uses
Canes used for basketry work and woven into furniture parts.

Calamus ramulosus Becc. 1 — leaf arrangement; 2 & 3 — leaf-sheath; 4 & 5 — habit; 6 — knee.

Calamus reyesianus Becc.

Philipp. J. Sci., C2: 237 (1907).

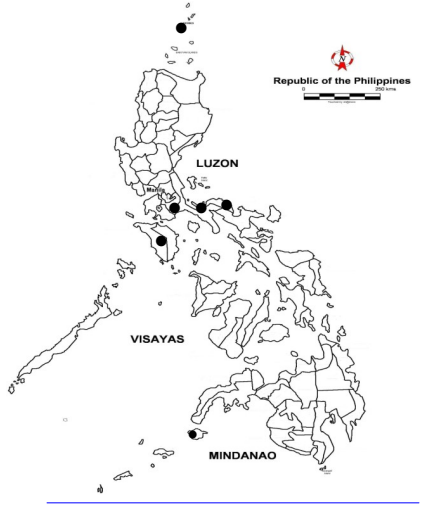
Robust Solitary Knee bulbous

Look for:

- **Spines 10 mm long and scattered.**
- **Leaflets in pairs.**
- **Cirrus.**

Common/Local Names
Lukuan, Apas, Samulid (Tag.).

Distribution/Habitat
Luzon (Batanes, Cavite, Laguna, Mindoro, Quezon, Camarines Norte) and Mindanao (Basilan). Altitudes 200-500 masl. Rare.



Description
Sheaths unarmed to finely armed, dull green; spines grayish brown, few. ***Stems*** 4 -5 cm diameter, 25 m tall. ***Canes*** 2-2.5 cm diameter.

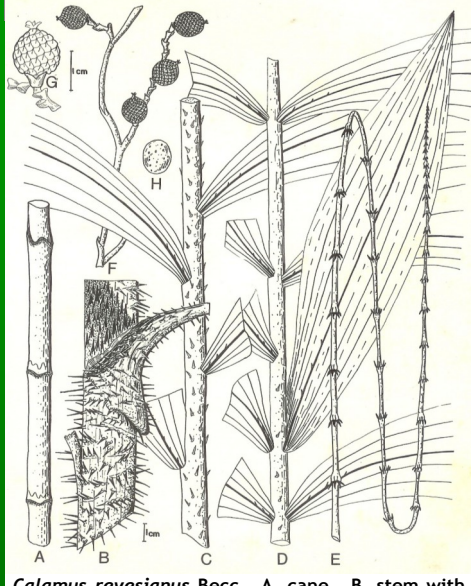
Leaves 2 m long, petiole 7 cm long, ocrea 2 cm long, spines triangular. Leaflets 20 per side of rachis, 25-35 cm long, 50-65 mm wide, elliptic lanceolate, with ciliate margins and spinulous above. Equidistant in 2's.

Inflorescence 1 m long, 8-10 in numbers, 18-20 cm. Bracts tubular.

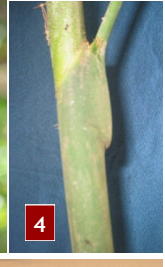
Fruits ellipsoid or spherical, 15-20 mm diameter, beak reddish yellow; scales with 18 vertical rows, lightly grooved or without grooves and with one seed.

Seeds globose or rounded, 10 mm long, 10 mm diameter, brownish black, pitted; chalazal fovea distinct.

Uses
Small diameter canes for furniture and basketry, intended for local and international markets.



Beccari (1913)



Calamus reyesianus Becc. A. cane. B. stem with leaf-sheath. C. portion of petiole and lowermost portion of rachis with leaflets. D. mid portion of rachis with leaflets. E. portion of cirrus. F. portion of infrustescence. G. fruit. H. seed. A-G based on *Baja-Lapis 029* (FORI Herb.)

Calamus reyesianus Becc. 1 & 2 — infructescence;
3, 4 & 5 —knee showing range of variation and spine arrangement;
6 — habit; 7 — leaflet arrangement.

Calamus samian Becc.

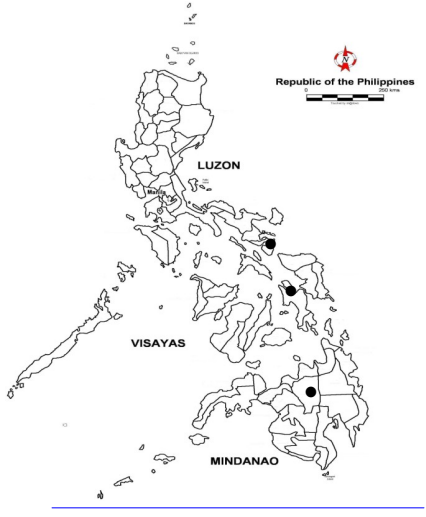
Ann. Roy. Bot. Gard. (Calcutta) 11 (App.): 92 (1913).

Scandent Looping Cirrus

Look for:

- **Leaflets without indumentum.**
- **Spines scattered.**
- **Leaves descendingly curved.**

Distribution/Habitat
Luzon (Sorsogon), Visayas (Leyte) and Mindanao (Davao). Altitudes 1000-1500 masl. Rare.



Description
Sheaths bright green. ***Canes*** 1.3 cm diameter, 1.25 cm thick, smooth, green.

Leaves curved, 15 cm apart, 2 m long. Petiole 15 cm long, 25 mm wide. Leaflets regular, 3 cm apart, 30 cm long, 15 mm wide, linear lanceolate, with 3 nerves, not bristly and not spinulous. Leafsheath spines acicular, numerous around mouth. Knee elongate folded.

Inflorescence ascending, 5 partials, 30 cm long. Bracts tubular. Spiny rachillae 2-3 cm, remnants of areola remain very visible.

Fruits ovoid-globose, 12-13 mm diameter, brown, tips of scale prominently brown.

Seeds 1 x 1 cm, brown, pitted.

Use
Handicrafts.

Beccari (1913)

Calamus samian Becc. 1 & 2 — leaflet, inflorescence, infructescence, leaf sheath and cane with spines.

Calamus scipionum Lour.

Fl. Cochinch. 210 (1790). — *Palmijuncus scipionum* (Lour.) Kuntze, Revis. Gen. Pl. 2: 733 (1891). — *Rotang scipionum* (Lour.) Baill., Hist. Pl. 13: 299 (1895).

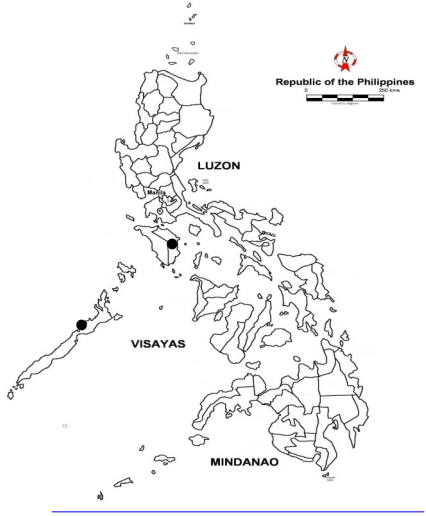
Clustering **Knee bulbous** **Flagellum**

Look for:

- **Leaflets regular, linear lanceolate.**
- **Ocrea present, short.**
- **Spines triangular, 50 mm long, yellow base.**

Common/Local Name
Malacca cane (Engl.).

Distribution/Habitat
Luzon (Mindoro Oriental, Palawan). Altitudes 50-200 masl.



Description
Sheaths dull green. Spines few, triangular, 50 mm long, diagonal downward, brown, gray to black, spine elevated base with mark on leaf-sheath. ***Canes*** 2.5-3.5 cm diameter, 30 m tall. Stems 4 -5 cm diameter, internodes 30 cm long.

Leaves 12 m long. Petiole 10 cm long. Leaflets regular, linear lanceolate, 25 per side of rachis, 25-30 cm long, 20-25 mm wide, with entire margin, pale green on both sides. Knee bulgy, folded.

Inflorescence 6 m long, 5 in number. Bracts tubular, subtending rachilla. Bracteoles conspicuous. Calyx trilobed or tripartite. Flagelliferous.

Fruits oblong, 12-14 mm long, 8-10 mm thick, chocolate brown, shortly beaked.

Seeds ovoid or oblong, 10 mm long, 5 mm thick, endosperm homogenous.

Uses
Canes for making moderate-quality furniture, walking sticks, umbrella handles, etc.

Calamus scipionum Lour. A. portion of stem with sheath. B. upper part of petiole. C. part of rachis from mid leaf. D. leaf tip. E. part of female inflorescence. F. mature fruit. (After Dransfield 1979)

Calamus scipionum Lour. 1, 2 & 3 – infructescence; 4 – knee, leafsheath and knee; 5 – leaflet arrangement.

Calamus siphonospathus Mart. var. *siphonospathus*

Hist. Nat. Palm. 3: 342 (1853). — *Palmijuncus siphonospathus* (Mart.) Kuntze, Revis. Gen. Pl. 2: 734 (1891). — *Calamus inflatus* Warb. In: G.H. Perkins et al., Fragm. Fl. Philipp. 1: 354 (1904).

Robust Solitary Cirrus

Look for:

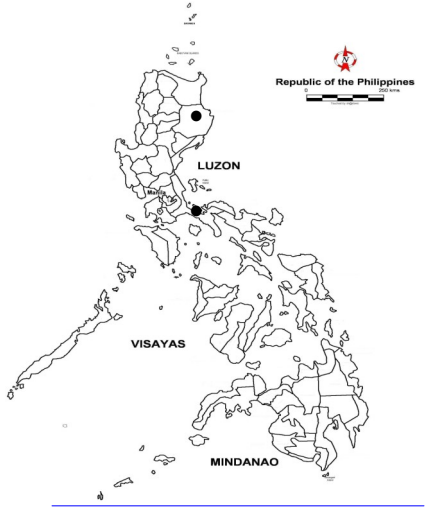
- **Spadices sheathed in gradually diminishing manner.**
- **Spathes loosely tubular, ant-harboring organs.**
- **Knee bulbous.**

Common/Local Name

Jusi (Neg.).

Distribution/Habitat

Luzon (Isabela; Tayabas, Quezon). Altitudes 200-2000 masl. Indeterminate.



Description

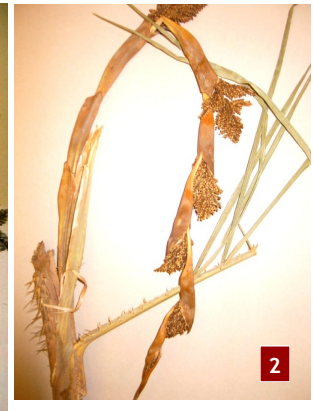
Sheaths armed, with unequal, triangular, brown spines; joined, elevated in whorls, some scattered, with white-brown indumentum. Knee shortly bulgy. ***Canes*** creamy to yellowish, dull with longitudinal lines when dry. Plants 25 m tall; internodes near base 6-8 cm long, in young shoots about 11 cm long.

Leaf 2-3 m long. Petiole armed. Cirrate ocrea 9-18 cm long. Spines acicular to triangular, ring and brown. Leaflets regular, 20-38 cm long, 8-15 mm wide, linear lanceolate, with ciliate margin, presence of white and brown indumentum and spinulous below.

Male inflorescence with thin rachillae, 1-2 cm long, with 11-18 flowers about 3 mm long. Infructescence borne low on leaf sheath, bracts tubular, slightly loose, distally inflated, spinulous and rachillae 1.5-2.5 cm long with 8-17 fruits.

Fruits ovoid, light brown, beak distinct brown, 5-8 mm, scales without grooves, 15-16 vertical lines, margin light-colored.

Seeds dark brown and shallowly pitted.



Calamus siphonospathus* Mart. var. *siphonospathus. 1 — rachis with leaves; inflorescence with fruits; 2 — inflorescence; 3 — habit; 4 — stem with inflorescence; 5 — leaf arrangement.

Calamus siphonospathus Mart. var. *dransfieldii* Baja-Lapis

Sylvatrop 12: 80 (1987, publ. 1989).

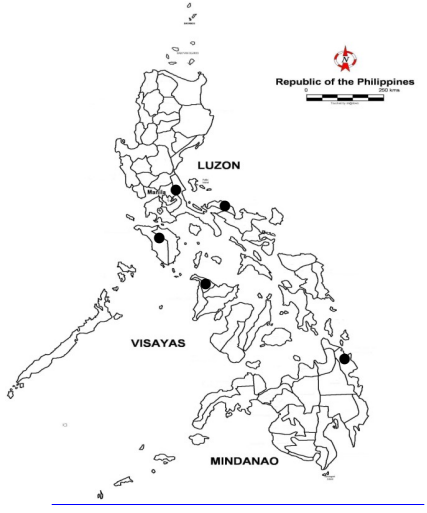
Robust Solitary Cirrus

Look for:

- **Knee slightly elongate and armed.**
- **Leaflets regular.**
- **Sheath spines papery light brown.**

Common/Local Names
Pasan-pasan (Surg.),
Palimanok (Kap.).

Distribution/Habitat
Luzon (Rizal, Mindoro, Camarines Norte); Visayas (Aklan); Mindanao (Surigao).



Description
Sheaths armed, with numerous, unequal, papery brown spines; base shortly elevated in groups, tips sometimes divided, 5-6 x 0.5 cm, with brown indumentum.

Petiole armed with many rigid spines in groups, flat, brown above, armed as sheath below. Leaflets 6 per side of rachis, bristly above, bristly on 3 nerves, spinulous below. Rachis with spines along edges, in groups of 2-6, scattered above and unarmed below.

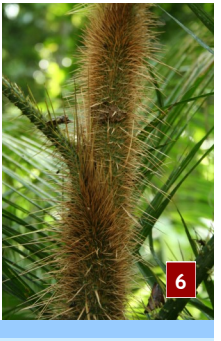
Infructescence bracts very loosely tubular, spinulous. Bracteoles funnel form, unarmed. Rachillae 4-5 cm long, with 14-18 fruits.

Fruits ovoid, pale brown, 8 x 7 mm, scales in 15 vertical lines, 9 every distinct groove.

Seeds ovoid or oblong, 6 mm long, 4 mm thick, black.

Uses
Canes for basketry and tying.

Note
Very prolific seeder, produce dense wildlings on forest floor.



Calamus siphonospathus Mart. var. ***dransfieldii*** Baja-Lapis.
1 — habit; flowering; 2 & 3 — inflorescence with flowers;
4 — habit; 5 — portions of stem and cane; 6 — stem and knee covered with spines.

Calamus siphonospathus Mart. var. *farinosus* Becc.

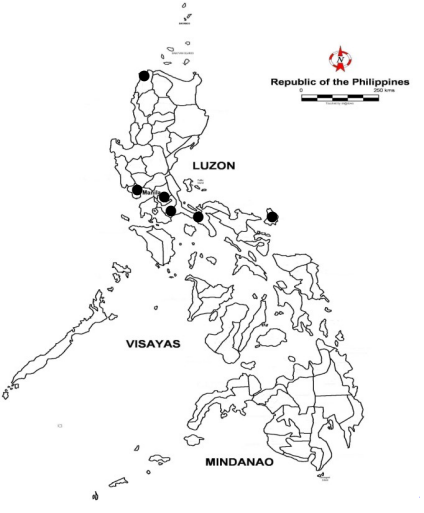
Ann. Roy. Bot. Gard. (Calcutta) 11: 474 (1908).

Robust Solitary Knee developed Cirrus

Look for:

- **Ocrea long, papery, without brown spines; stem densely spiny and chalk white.**
- **Knee armed with numerous, needle-like, slender spines.**

Distribution/Habitat
Luzon (Ilocos Norte, Bataan, Rizal, Laguna, Quezon, Catanduanes). Altitudes 200-500 masl. Pleonanthic.



Description
Sheaths densely spiny, chalky.

Leaves 3 m long. Petiole 33 cm long, armed, solitary rigid spines with white indumentum on both surfaces. Leaflets regular, apex acuminate to filiform, pale brown on both surfaces, 25-35 x 1-1.5 cm, nerves 6 -7, 3 distinct, bristly above and on midnerve below.

Infructescence with 6-7 partial inflorescence. Bracts tubular, loosely sheathing, unarmed. Bracteoles loosely funnel-shaped, unarmed; rachillae 1-1.5 cm long with 10-14 flowers. Male flowers 4 mm long.

Fruits perianth campanulate, immature pale brown; margin distinct, creamy, apparently not grooved.

Seed only 1.

Uses
Canes for basketry and tying.

Calamus siphonospathus Mart. var. ***farinosus*** Becc. 1 — ocrea and petiole with leaflet pattern.

Calamus siphonospathus Mart. var. *oligolepis* Becc.

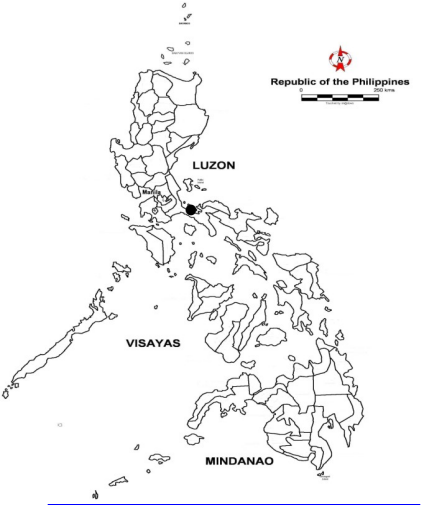
Webbia 1: 353 (1905).

Solitary Cirrus

Look for:

- **Leaflets regular.**
- **Petiole long.**
- **Bracts unarmed.**

Distribution/Habitat
Luzon (Tayabas, Quezon). Altitudes 100-500 masl.



Description
Leaves armed. Leaflets regular, 30 x 1.2 cm, both surfaces pale green, nerves 6, bristly on 3-5 distinct nerves above, smooth to closely spinulous on midnerve below, margins spinulous.

Infructescence immature. Bracts loosely tubular, spinulous, with brown indumentum, portion of partial inflorescence 6 cm long.

Fruits immature brown, margin brownish-creamy, 3.5-4 mm thick, 6 mm long, oblong or ovoid; scales with 12 vertical rows

Uses
Canes for basketry and tying.

Beccari (1913)

Calamus siphonospathus Mart. var. ***oligolepis*** Becc. 1— leaves showing the arrangement of leaflets; end portion of the rachis, with cirrus and inflorescence.

Calamus siphonospathus Mart. var. *polylepis* Becc.

Webbia 1: 354 (1905).

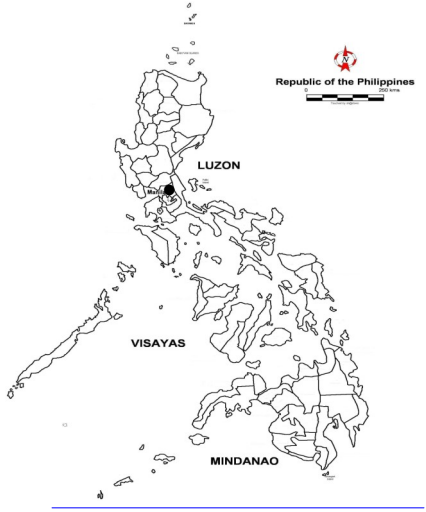
Cirrus

Look for:

- **Rachis armed with claws below, with brownish indumentum along edges.**
- **Leaflets regular.**
- **Brown indumentum on leaflets and primary bracts.**

Common/Local Name
Sukol (Tag.).

Distribution/Habitat
Luzon (Rizal). Altitudes 100-500 masl.



Description
Sheaths brown, spines scattered.

Leaflets yellowish green; nerves 7, 3 nerves distinct, spinulous on 3 nerves above, without spinules below; brownish petiole present at leaflet base and along margin.

Immature infructescence 60 cm long, with 5 partial inflorescence; bracts loosely inflated with spinules, subtending numerous branches, with brownish indumentum. Rachillae 3 cm long, slightly spreading with 19 fruits.

Fruits perianth campanulate, immature pale brown; scales not tightly pressed, in 18 longitudinal series.

Seeds unknown.

Uses
Canes for basketry and tying.

Calamus siphonospathus Mart. var. ***polylepis*** Becc.
1 — inflorescence.

Calamus siphonospathus Mart. var. *sublaevis* Becc.

Webbia 1: 354 (1905).

Solitary Knee elongate Cirrus

Look for:

- **Ocrea 7-30 cm long, tips pointed, edges papery and armed with solitary spines.**
- **Knee elongated, inflated, unarmed.**
- **Fresh canes exude white sap (latex) when cut.**

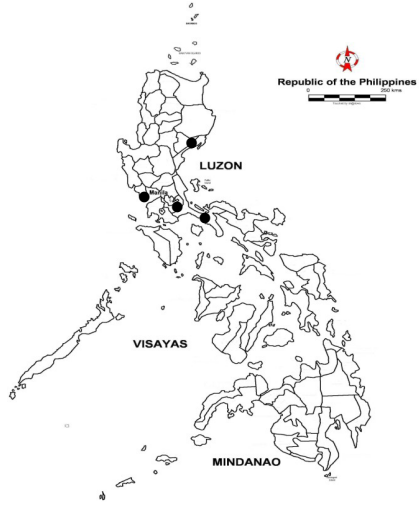
Common/Local Names
Guru-guru (Idg.),
Husi (Neg.), Biri (Tag.).

Distribution/Habitat
Luzon (Bataan, Sierra Madre; Mt. Makiling, Laguna; Quezon) and Mindanao. Altitudes 200-500 masl. Steep slopes.

Description
Sheaths armed, with unequal flat spines, triangular sometimes slender, light brown; short whorl bases jointed, elevated, in diagonal pattern or semi-circles; spines 0.5-4 cm long, with white and brown indumentum. ***Stems*** 15 m tall.

Leaves cirrate, 1 m long. Leaflets regular, linear lanceolate, closely set along rachis, apex bristly filiform, both surfaces pale green, 15 -38 x 0.5-1.3 cm; nerves 6-8, 3 nerves distinct, spinulous to bristly on 3 nerves above, spinulous on midnerve below.

Male inflorescence with rachillae 1.2 cm long,



10-14 flowers, 3-4.5 cm long. Infructescence borne high on leaf sheath; first 2-3 bracts empty, tubular; rachillae 1-3.5 cm long, with 12-22 fruits.

Fruits oblong or ovoid, 6-13 mm long, 5-10 mm thick, brown; scales 12-15, slightly grooved or without grooves.

Seeds ovoid or oblong, 8 mm long, 7 mm thick, black, pitted.

Uses
Canes for basketry and tying.

Calamus siphonospathus Mart. var. ***sublaevis*** Becc. 1 — habit of plant showing leaf arrangement and inflorescence with flowers; 2 & 3 — ocrea; 4 — elongated ocrea; 5 & 6 —inflorescence.

Calamus spinifolius Becc.

Rec. Bot. Surv. India 2: 202 (1902).

Slender Clustering Cirrus

Look for:

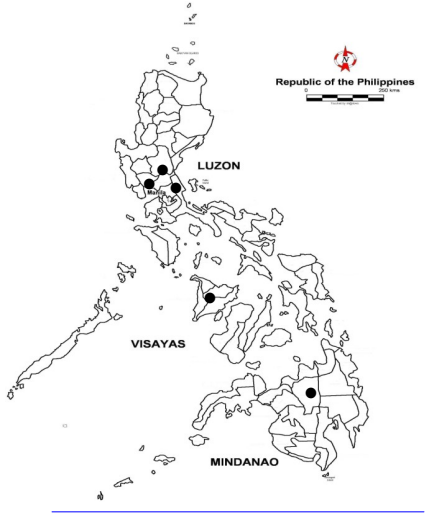
- **Spines horizontal.**
- **Leaflets irregular, with scattered black spines above.**

Common/Local Name

Kurakling (Kap., Tag.).

Distribution/Habitat

Luzon (Nueva Ecija, Pampanga, Rizal), Visayas (Panay, Negros Occidental) and Mindanao (Bukidnon). Altitudes 100-200 masl. Pleonanthic.



Description

Stems 5 m tall, slender. ***Canes*** ≤ 1 cm diameter, spine markings distinct on sheath, armed; spines acicular.

Leaves 1 m long. Leaflets irregular in pairs, 12-14 per side of rachis, 10-16 cm long, 20-25 mm wide, elliptic lanceolate, with entire margin, 5-7 nerves and spinulous above. Knee elongate fold, ocrea minute.

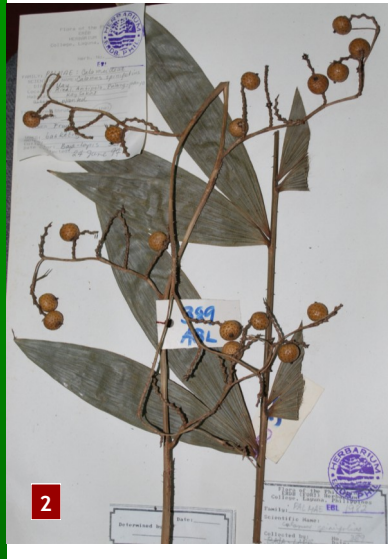
Inflorescence male and female bract flagelliform. Female spadix elongated. Bract tubular, subtending rachilla.

Fruits ellipsoid or spherical, 10 -12 mm diameter.

Uses

Canes for basketry and tying.

- ***C. mitis*: leaflets with black spines.**
- ***C. javensis*: petiole long, base leaflets smaller than leaflets at mid of rachis.**
- ***C. elmerianus*: leaflets broadly lanceolate, in pairs.**



Baja-Lapis 389

Calamus spinifolius Becc. 1 — leaf arrangement; 2 — fruits; 3 — inflorescence.

Calamus subinermis H. Wendl. *ex* Becc.

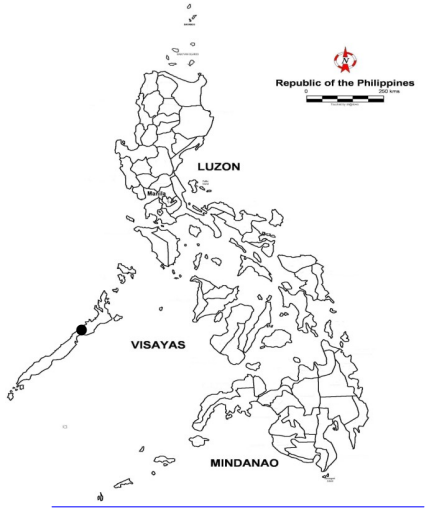
Rec. Bot. Surv. India 2: 212 (1902).

Robust Solitary Cirrus
Look for:

- **Large diameter species.**
- **Single-stemmed and clump-forming.**

Common/Local Name
Bogtong (Tag.).

Distribution/Habitat
Luzon (Palawan: St. Paul Subterranean Park, Irawan), 60-80 masl. Along the coastal forests of Sabah and East Kalimantan. Grows on sandy soils on hill slopes and flat alluvial soils.



Description
Sheaths armed with short, 2 -3 mm long spines, ocrea minute. ***Stems*** 4-5 cm diameter. ***Canes*** 3 cm diameter, internodes 60 cm long.

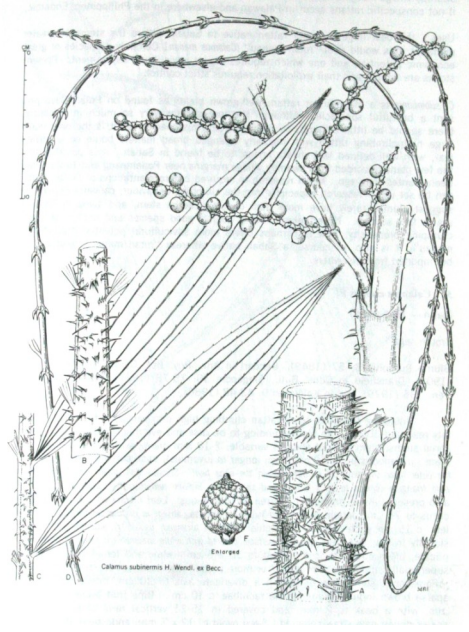
Petiole 45 cm long. Cirrus rachis with brownish indumentum. Leaflets regular, broadly lanceolate, 5 -6 cm apart, 35 x 4-5 cm, margin tips bristly; spinules underneath leaflet along 5 nerves. Knee bulgy, armed at top bulge and mouth.

Inflorescence bract sheathing flat with defined edges. Unarmed, bracteoles loosely shearing, unarmed. Infructescence flagelliferous. Subpartials 17, rachillae, spreading.

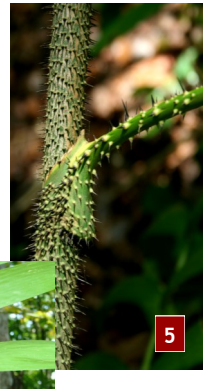
Fruits ovoid/globose, beak brown, 2 types of scale margin tips, distinct brown and creamy.

Seed only 1, rough, flat top portion opposite the raphae.

Uses
Canes for furniture frames; cabbage cooked as a vegetable; fruit sometimes eaten.



Calamus subinermis H. Wendl. *ex* Becc. A. part of stem with sheaths. B. leaf base. C. Mid portion of leaf. D. leaf tip. E. part of infructescence. F. fruit. (after Dransfield 1984)



Calamus subinermis H. Wendl. *ex* Becc. 1 & 2 — fruits; 3 & 4 — habit and leaf arrangement; 5 — leafsheath and knee. .

Calamus symphysipus Mart.

Hist. Nat. Palm. 3: 336 (1853). — *Palmijuncus symphysipus* (Mart.) Kuntze, Revis. Gen. Pl. 2: 734 (1891).

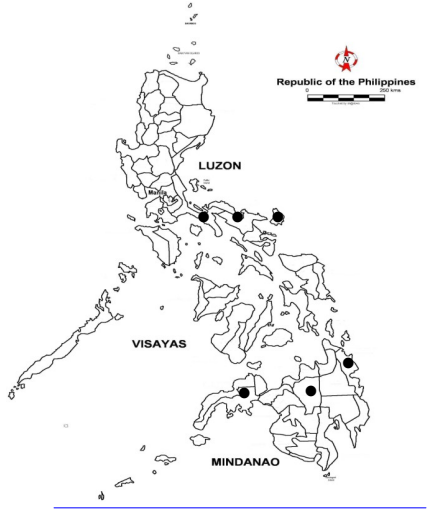
Robust Clustering Flagellum

Look for:

- **Leaflets elongate to lanceolate, with the characteristic subochraceous powdery brown coating.**
- **Spines transversely arranged, 2.5 cm long and every 4 cm apart.**
- **Sheath brown.**

Common/Local Names
Bolanog (Mbo.), Palanog (Tag.).

Distribution/Habitat
Luzon (Quezon, Bicol, Catanduanes, Bucas Grande) and Mindanao (Surigao, Bukidnon, Zamboanga). Altitudes 500-1000 masl.

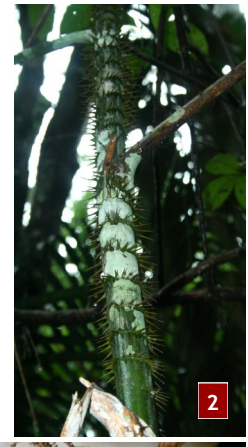


Description
Sheaths bright green, densely spiny. Flagellum. Knee elongate fold. Ocrea minute; sheath spines triangular, in ring, groups of 2 or 3. ***Stems*** 3 cm diameter, 5 cm diameter on leafy portion, 10 m tall. ***Canes*** 2 cm diameter.

Leaf ecirrate. Leaves alternatingly scattered every foot, 1.8 m long, shoulder plates at base smooth, otherwise sheath provided with transversely arranged spines, 2.5 cm long and every inch apart. Leaflets regular, broadly lanceolate, brown indumentum underneath.

Infructescence nearly opposite leaves, ascending, as long as leaves but more recurved. Fruiting branches alternate, 30 cm long or less, strongly recurved. Rachis ascending and ultimately recurved, clawed beneath.

Uses
In manufacture of chairs and pack saddles for animals.



Calamus symphysipus Mart. 1 & 2 — net-comb arranged spines; 3 — leaflet arrangement and brown indumentums underneath; 4 — inflorescence; 5 — stem, leafsheath and leaflets; 6 — habit.

Calamus trispermus Becc.

In: G.H. Perkins et al., Fragm. Fl. Philipp. 1: 46 (1904).
— *Calamus blancoi* Kunth, Enum. Pl. 3: 595 (1841).
— *Palmijuncus blancoi* (Kunth) Kuntze, Revis. Gen. Pl. 2: 733 (1891). — *Rotang blancoi* (Kunth) Baill., Hist. Pl. 13: 299 (1895).

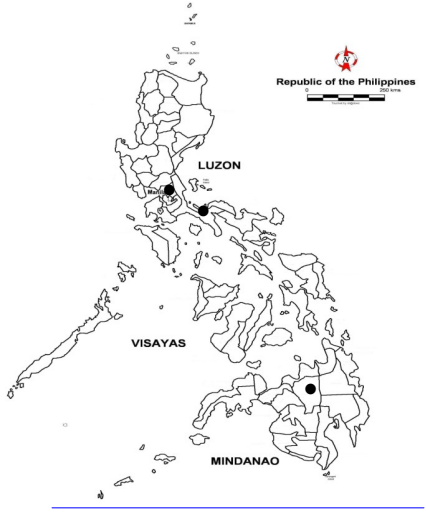
Robust Solitary Knee unarmed

Look for:

- **Leaflets not spinulous.**
- **Leaflets regular.**
- **Lanceolate.**

Common/Local Names
Giwi (Ilk.), Singyan (Bis.), Likuto (Tag.).

Distribution/Habitat
Luzon (Rizal, Quezon) and Mindanao (Bukidnon). Altitudes 200-500 masl. Rare.



Description
Canes 2.5 cm diameter. ***Sheaths*** 5-6 cm diameter, sheath spines short, with bulbous base; triangular black spines markings on sheath.

Leaves 2.2 m long, armed. Petiole 2.5 cm wide, armed. Rachis flat. Spines 5-10 mm long. Leaflets equidistant, alternate, 30 per side of rachis, 3-6 cm apart, 30 cm long, 50-70 mm wide, elliptic lanceolate with ciliate margin, 5 nerves, not bristly and not spinulous. Knee bulgy, unarmed.

Inflorescence 20-35 cm long, 4-5 partial, 20-25 cm. Bracts tubular. Spikelets 6-8, 7-12 cm long. Infructescence bracts tubular, flat. Female rachilla subtending fruit, funnel-shaped.

Fruits globose, 12 x 8 mm including beak; scales thinly grooved, margins prominently brown, 15 vertical lines.

Seeds 2-3, 11 mm long, 4 mm wide, 9 mm thick, angular, brown, raphae indistinct, hilum depressed, strophiole rounded, embryo basal.

Uses
As ingredients in food preparations such as "*sinigang*" (sour stew) and "*dinuguan*" (pork's blood stew). Served as "*pulutan*" (appetizer) during drinking sprees. Young shoots cooked as vegetable. Canes for furniture.

Calamus trispermus Becc. 1 — nose-like knee; inflorescence; 2 — fruits; 3 — leaf arrangement; 4 — fruits and leaf arrangement.

Calamus usitatus Blanco

Fl. Filip.: 265 (1837). — *Palmijuncus usitatus* (Blanco) Kuntze, Revis. Gen. Pl. 2: 733 (1891). — *Calamus blancoi* Kunth, Enum. Pl. 3: 595 (1841). — *Palmijuncus blancoi* (Kunth) Kuntze, Revis. Gen. Pl. 2: 733 (1891). — *Rotang blancoi* (Kunth) Baill., Hist. Pl. 13: 299 (1895).

Slender Clustering Knee developed Flagellum

Look for:

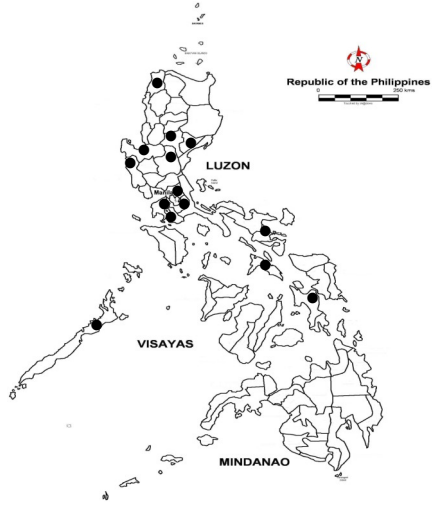
- **Leaflets irregular, in groups of 2-3-4, leaflets with gaps along rachis.**
- **Ocrea 5 mm long.**
- **Erect spines 10 mm long at periphery of leafsheaths.**

Common/Local Names

Tandulang parang, Tamarura, Talola (Tag.); Hanapas (Bik.), Babuyan (Smbl.).

Distribution/Habitat

Luzon (Ilocos Norte, Nueva Vizcaya, Pangasinan, Aurora, Nueva Ecija, Zambales, Bataan, Rizal, Laguna, Batangas, Albay, Masbate, Palawan Island), Visayas (Leyte) and Mindanao (Surigao). Altitudes 100-200 masl. Pleonanthic.



Description

Sheaths dull green, densely spiny, spines grayish brown. Knee bulgy, sheath mouth with erect spines, 1.5-5 cm diameter sheath. ***Canes*** 0.8-1.5 cm diameter. Internodes 23 cm long.

Leaves 0.8-0.9 m long. Petiole 3-15 cm long. Rachis unarmed; spines 10 mm long, pointing in different direction, yellow. Leaflets irregular, alternate, 22-30 per side of rachis, 20-25 cm long, 5-10 mm wide, linear, with ciliate margin, 1-3 nerves, bristly above.

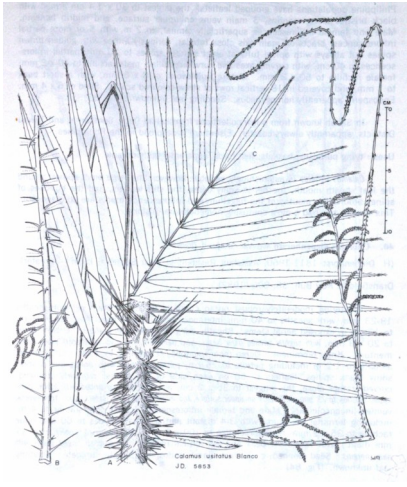
Inflorescence 2 m long, with 2-5 partials. Flagelliferous. Partial inflorescence 10 cm long. Bracts tubular. Extending with flagellum.

Fruits ovoid-globose, 8 mm diameter, brownish red.

Seed 1, 6 mm long, 4 mm thick, black , rough.

Uses

Canes for basketry, furniture and handicrafts, tying purposes and fish traps; apparently fairly durable.



Calamus usitatus Blanco. A. part of stem with sheaths and one male inflorescence. B. leaf base. C. leaf tip. (After Dransfield 1984)

Calamus usitatus Blanco. 1 — habit; 2 — flowers; 3 — stem sheath spines; 4 — inflorescence.

Calamus vidalianus Becc.

Rec. Bot. Surv. India 2: 212 (1902).

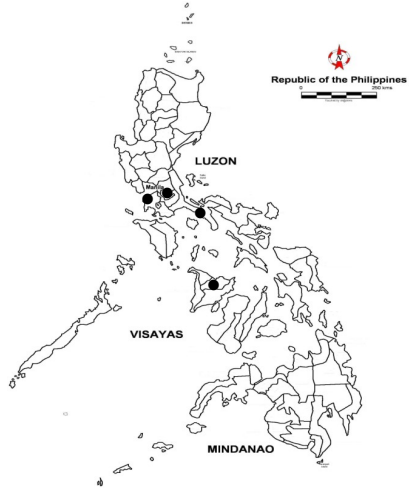
Slender Clustering Cirrus

Look for:

- **Spines acicular, semi-ring.**
- **Leaflets irregular; in 2's, 3's (with gaps).**
- **Petiole short.**

Common/Local names
Butarak (Ilk.), Barit (Tag.).

Distribution/Habitat
Luzon (Bulacan, Rizal, Cavite, Quezon) and Visayas (Panay). Altitudes 200-500 masl. Indeterminate.



Description
Sheaths armed with acicular light brown spines. Knee elongate folded. ***Stems*** 7 m tall. ***Canes*** 1 cm diameter, with sheath 2 cm diameter.

Leaves 1.6 m long, armed. Petiole short, leaflets equidistant, 30 per side of rachis, armed. Spines 2-3 cm long, 1.5-2.5 cm wide, linear lanceolate, with entire margin, 3 nerves, with cirrus and gaps 8 cm from each other, bristly above.

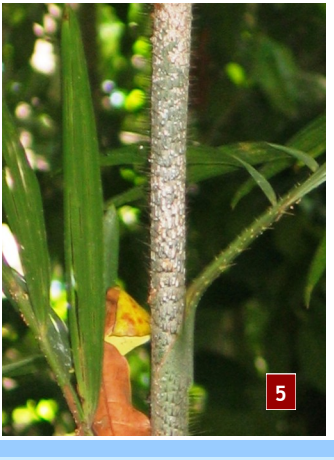
Inflorescence pedicelliform, with 4-5 partials. Partial inflorescence 30-35 cm long. Bracts tubular, bracteoles loosely sheathing, subtending rachillae of 6 cm long with 24 flowers. Bracteoles slightly spreading.

Fruits 13 x 11 mm, including beak, scales with brown tips, with 17 vertical lines.

Seed 1, brown, 7-8 mm, pitted.

Use
Canes for furniture.

Beccarri (1913)



Calamus vidalianus Becc. 1 & 2 — leaflet arrangement and inflorescence; 3 — stem and spine arrangement; 4 — habit; 5 — stem, spines and elongated knee.

Calamus vinosus Becc.

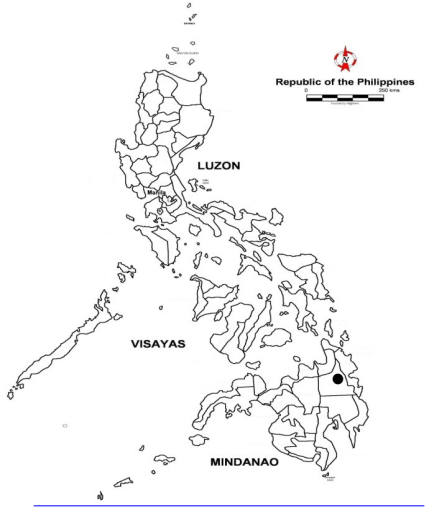
Leafl. Philipp. Bot. 8: 3061 (1919).

Robust Scandent Cirrus

Look for:

- **Leaf-bearing stem 5 cm thick.**
- **Leaflet regular, elongate to lanceolate.**
- **Rachises extended into dangling hooked cirrus.**

Distribution/Habitat
Mindanao (Mt. Urdaneta, Agusan). Altitudes 1000-1500 masl. Rare.



Description
Canes 3 cm diameter, with sheaths 4-5 cm diameter. Stem very dark green, with whitish scales (indumentum), spines crowding leafsheath mouth.

Leaves large, 2 m long in the pinniferous part. Petiole short and robust, 3 cm, flat and spiny on its upper surface, convex beneath, margins bluntish and armed with short spines. Leaflets regular, numerous; intermediate leaflets 38-40 cm long, 3.5-4 cm wide, 5-7 nerves, not bristly and not spinulous, elongate to lanceolate.

Inflorescence female spadix shorter than leaves, robust, rigid, forms a diffuse and large panicle, 1.5 cm long or longer. Nonflagelliferous at apex, ending in a very short caudiculum, composed of several gradually diminishing spike-bearing partial inflorescences.

Uses
Ripe fruits used for red wine.

Fruits red maybe when fresh, reddish brown when dried, 16-18 mm long x 12-14 mm wide, distinctly pedicelliform, hardened calyx broadened at base. Ovoidly ellipsoid, rounded at both ends. Scale slightly fine, margin indistinct.

Seeds enveloped by a copious fleshy acid integument, irregular, flattened 8 mm broad, 4 mm thick, lenticular, homogenous.

Note
Beccari (1919) wrote that the native Manobo had no name for this most characteristic of Philippine species or the only red-fruited rattan known. Further, he noted two female flowers at every spathe with a neutral one interposed.

∞ **Similar to *C. multinervis* in leaflets, but leafsheath mouth of *C. vinosus* crowded with spines and with whitish scales.**

Calamus vinosus Becc. 1 — fruits and leaflet arrangement.

Calamus viridissimus Becc.

Ann. Roy. Bot. Gard. (Calcutta) 11 (App.): 84 (1913).

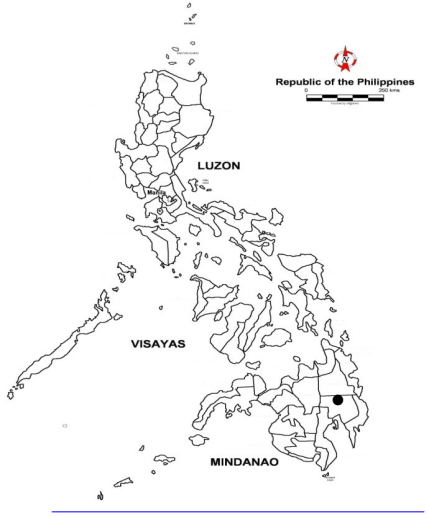
Robust Knee elongate Cirrus

Look for:

- **Leaves alternate.**
- **Spines horizontal.**
- **Leaflet in pairs.**

Common/Local Name
Acal (Mbo.).

Distribution/Habitat
Mindanao (Mt. Apo, Davao). Altitudes 200-500 masl. Rare.



Description
Canes 2.5 cm diameter, with sheath 4 cm diameter. Knee bulgy, unarmed. Ocrea minute sheath, spines with distinct black base, short spines 2 mm long.

Leaves 30 cm apart, 1.5 cm long, rachis flat; spines 13 mm long, inequidistant, elliptic lanceolate, entire, 5 nerves. Leaflets irregular in pairs, broadly lanceolate, 17 X 2.5 cm. Rachis round in cross section, no spines.

Inflorescence male and female spadix flagelliferous. Calyx trilobed or tripartite. Corolla as long as calyx. Branches 50-60 cm long, 1 partial, bracteole tubular; rachillae spreading, 4 cm long, 22 flowers per side.

Use
Handicrafts.

Beccari (1913)

Calamus viridissimus Becc. 1 & 2 — leaflet arrangement and inflorescence; 3 — stem and knee; 4 — leaflet arrangement; 5 — inflorescence.

Daemonorops pedicellaris Becc.

Daemonorops

Daemonorops affinis Becc.

Leafl. Philipp. Bot. 8: 3042 (1919).

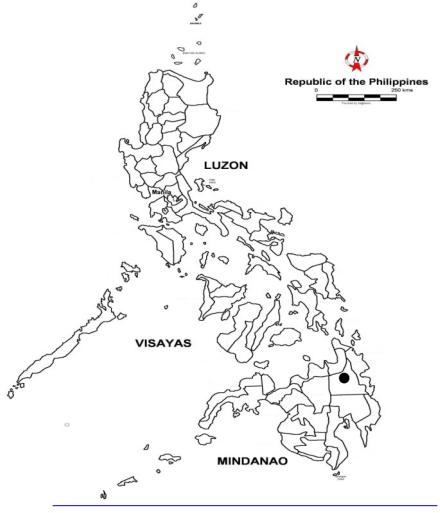
Cirrus

Look for:

- **Spines at the mouth of the leaf sheath.**
- **Midvein with few short bristles.**
- **Numerous leaflets, 5 cm apart.**

Common/Local Name
Bagbag (Mbo.).

Distribution/Habitat
Mindanao (Agusan). Ridges and peaks at 1000-1500 masl.



Description
Leafsheaths armed with closely seriate, spreading, slender, elongate, laminar black spines. Plant moderate size, looping climber. ***Stems*** 13-19 mm diameter, round and smooth, dull green, with sheaths 3 cm diameter.

Leaves large, 1.8 m on pinniferous part. Rachis prickly on upper salient angle and armed underneath at regular distances, with half whorls of hooks; gradually long, acuminate. One half of nerves smooth on upper surface except for few spinules near apices. Leaflets linear, narrow lanceolate, 5 cm apart, 20 mm wide, 3 x 2 cm long.

Inflorescence inner primary spathes longer than outer ones. Male spadix elongated paniculate; female spadix paniculate, 60 cm long; inflorescence 13-15 cm long. Bracts boat-shaped and enclosing along their length. Male flowers with 3 lobes, female flowers with 3 petals.

Fruits globose or rounded, 12 mm diameter, green. Fruit scales with 25 vertical rows, polished. Vertical lines narrow furrowed, each fruit with peduncle 5 mm long.

Seeds globose or rounded, with 7 x 9 mm diameter, rough.

Use
Handicrafts.

Daemonorops affinis Becc. 1— fruits.

Daemonorops clemensiana Becc.

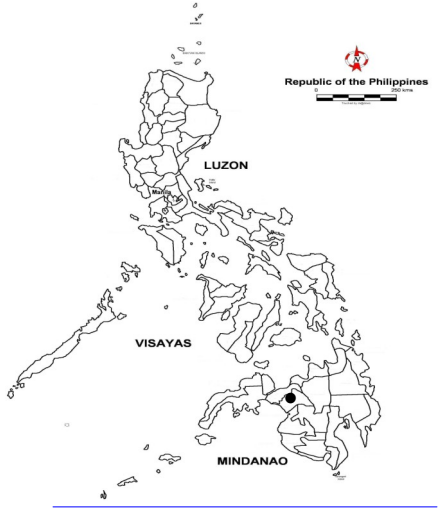
Philipp. J. Sci., C4: 636 (1909).

Cirrus **Leafsheath unarmed**

Look for:

- **Leaflets with one nerve, irregularly set.**
- **Flowers unisexual.**

Distribution/Habitat
Mindanao (Lanao).
Pleonanthic.



Description
Leaves armed. Leaflets equidistant, 40-42 cm long, 13-15 mm wide, set with gaps 2.5 cm apart, linear lanceolate, narrow densiform. Leaflets with entire margin and bristly below on midvein, spinulous on both sides.

Inflorescence inner primary spathes longer than outer ones. Male and female spadix elongated. Bracts boat-shaped. Corolla 2 times as long as calyx. Male spikelets scale-like; female spikelets annular.

Fruits ellipsoid or spherical, 22-24 mm diameter; vertical scales deeply set.

Seeds embryo basal, rough.

Uses
Canes for basketry and tying.

1

Daemonorops clemensiana Becc. 1 — leafsheath with spines; leaf arrangement and inflorescence.

Daemonorops curranii Becc.

Philipp. J. Sci., C2: 238 (1907).

Clustering **Cirrus present** **Yellow knee**

Look for:

- **Sheath bright green, few spines.**
- **Leaflets narrow lanceolate, 4 cm apart, 20 cm wide.**
- **Leaflets regular, numerous.**

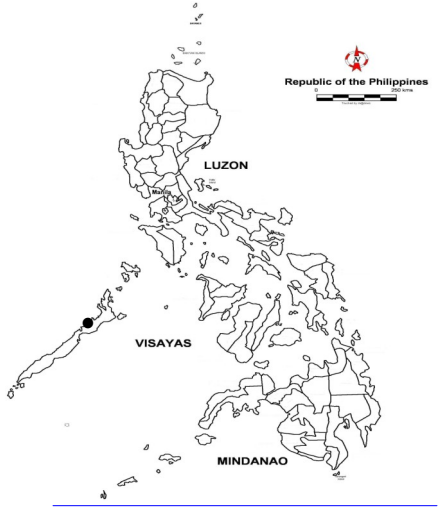
Common/Local Names
Pinpin, Saruringan, Gatasan uway, Saranoi (Tagbn.).

Distribution/Habitat
Luzon (Palawan). Altitudes 0-10 masl.

Description
Stems 5 m long, 2.5 cm diameter. ***Canes*** 1-2 cm diameter; internode every 18 cm.

Leaves 2.25 m long and armed. Petiole 40 cm long with numerous rigid spines. Leaflets regular, equidistant, subopposite, 40 per side of rachis, 4 cm apart, 33-40 cm long, 17-20 mm wide, lanceolate densiform and with entire margin. Spinulous on 3-5 nerves. Knee bulgy, full spines, distinctly dense on mouth, erect, triangular brown.

Inflorescence male and female spadix elongated. Inflorescence with 6-7 partials. Bracts boat-shaped. Bracteoles inconspicuous.



Calyx tridentate. Corolla 4 times as calyx. Flowers 12-18, unisexual.
Fruits 12 mm diameter, ellipsoid or spherical, yellow; spathe spines very numerous, triangular. With fruit scales 11-12, grooved and with one seed, ovoidly globose or acorn-like, with distinct vertical lines.

Seeds globose or rounded, 9.5 mm long, 7.6 mm wide, 8 mm thick, brown. Endosperm perforated. Hilum depressed. Embryo basal.

Uses
Canes for basketry and tying.

Daemonorops curranii Becc. 1 — stem with knee; leaflet arrangement; 2 — infructescence.

Daemonorops gracilis Becc.

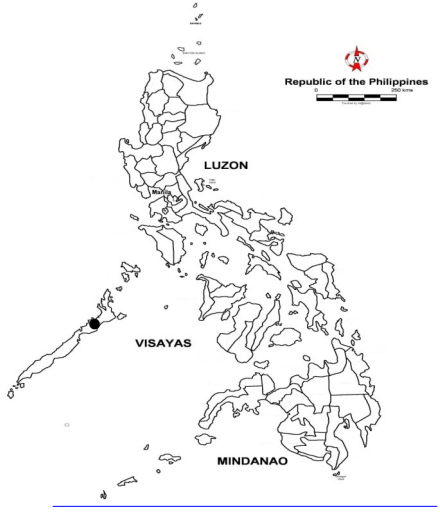
Leafl. Philipp. Bot. 8: 3044 (1919).

Slender Sprawling Cirrus

Look for:

- **Leafsheath mouth/orifice armed with spines.**
- **Needle-like spines along the margins toward the base.**
- **Spines scattered.**

Distribution/Habitat
Luzon (Palawan). Primary forests. Plant of altitudes below 200 masl. Pleonanthic. Rare.



Description
Sheathed ***stems*** 12-15 mm in diameter. Old stem 1.5 cm thick at most, even thinner near root, very flexible, terete, greenish on exposed portions, otherwise yellowish. ***Canes*** 4-8 mm diameter.

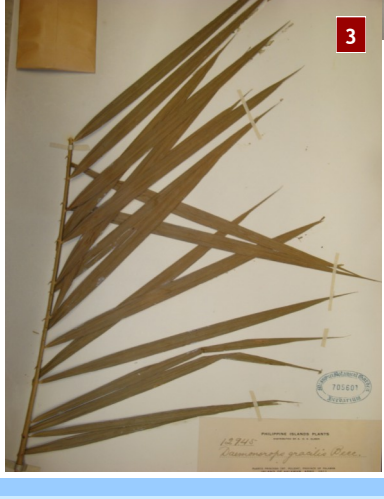
Leaves 1 m long, armed. Petiole 15-25 cm long, armed. Rachis armed. Spines 10-20 mm long, black. Leaflets 25-28 cm long with 3 nerves, spinulous above. Cirrus present and armed. Petiolate 25 cm long, leaflets with gaps 2-3 cm apart. No spinules.

Inflorescence primary spathes linearly oblong. Male and female spadix elongated. Inflorescence 6-7 cm. Bracts boat-shaped. Calyx tridentate. Male flowers with 3 lobes, female flowers with 3 petals, axillary borne inside leafsheath.

Fruits ovoid ellipsoid, yellow, scales with 15 vertical rows and grooved.

Seeds globose-oblong, 8 mm long, 6 mm diameter. Endosperm ruminated. Embryo basal.

Use
Handicrafts.



Daemonorops gracilis Becc. 1— fruits; 2 — stem sheath, knee and inflorescence; 3 — leaflet arrangement.

Daemonorops loheriana Becc.

Philipp. J. Sci., C4: 637 (1909). — Becc., Ann. Roy. Bot. Gard. (Calcutta) 12 (1): 104 (1911).

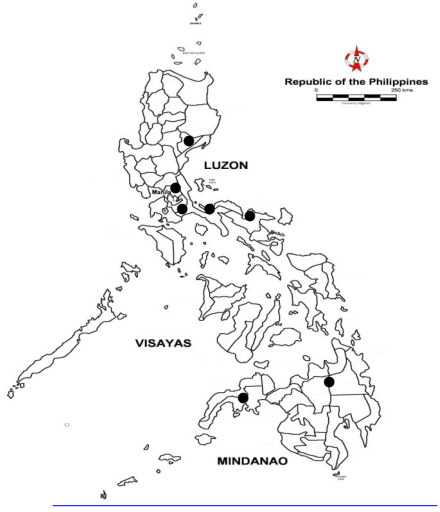
Clustering **Knee developed** **Cirrus**

Look for:

- **Spines in semi ring or unequal groups.**
- **Leaflets subopposite.**

Common/Local Name
Pangamo (Bukid).

Distribution/Habitat
Luzon (Rizal, Laguna, Quezon, Sierra Madre, Camarines Sur) and Mindanao (Zamboanga, Bukidnon). Altitudes 200-500 masl. Pleonanthic.



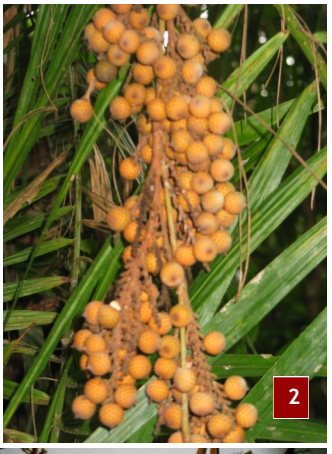
Description
Sheaths dull green and densely spiny, with brown acicular spines in groups when fresh. Spines brown to black when dried. ***Canes*** 3.5 cm diameter, internodes 25 cm long.

Leaves 1.25 m long and unarmed. Petiole 30-35 cm long. Rachis chalky. Spines pointing at different directions, brown. Leaflets regular and equidistant, 10-18 mm wide, linear lanceolate, with entire margin and bristly on both sides, with fine bristles above leaf, 3-nerved surface.

Inflorescence primary spathes tubular, inner longer than outer. Inflorescence 75 cm long. Flowers unisexual. Male spikelets imperfectly bifarous and scale-like, female spikelets annular.

Seeds embryo basal.

Use
Handicrafts.



Daemonorops loheriana Becc. 1— stem with dense acicular spines; 2— fruits; 3 — inflorescence and leaflet arrangement; 4 — leafsheath with spines; 5 — infructescence.

Daemonorops longipes (Griff.) Mart.

Hist. Nat. Palm. 3: 329 (1853). — *Calamus longipes* Griff., Calcutta J. Nat. Hist. 5: 68 (1845). — *Rotang longipes* (Griff.) Baill., Hist. Pl. 13: 300 (1895).

Clustering Robust Cirrus

Look for:

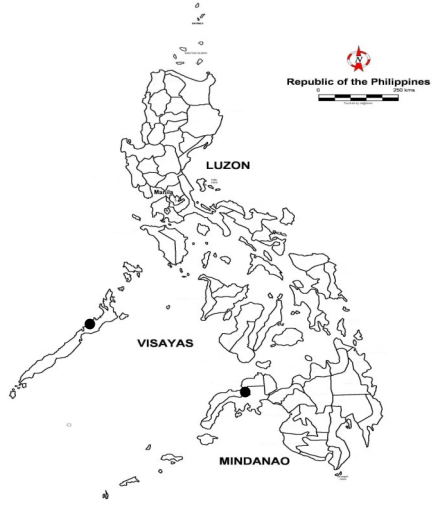
- **Ocrea present.**
- **Spines horizontal, brown to black.**
- **Leaflets irregular, 3 cm wide, widely lanceolate.**

Common/Local Name

Labsikan (Palw.).

Distribution/Habitat

Luzon (Palawan) and Mindanao (Zamboanga).



Description

Sheaths bright green. Spines 1-4 cm long, brown triangular in semi-ring. ***Stems*** 5 cm diameter. ***Canes*** 3 cm diameter, internodes 5-12 cm long.

Leaflets irregular, entire lanceolate, 3 cm wide. Petiole long, armed with brown, triangular spines, 4-5 cm long. No knee or poorly developed.

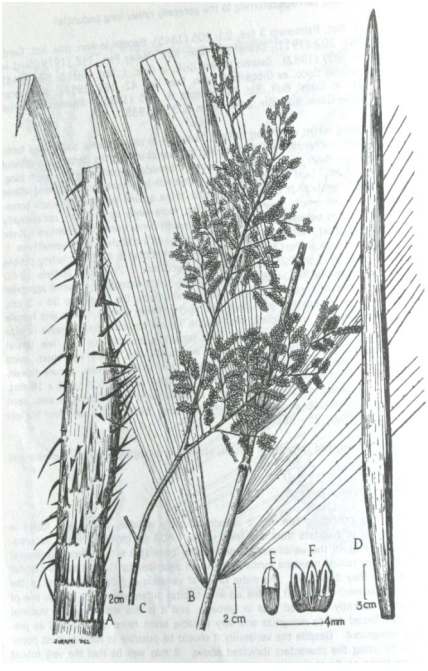
Inflorescence primary spathes unarmed. Bracts boat-shaped. Flowers unisexual. Male flowers with 3 lobes, female flowers with 3 petals. Male spikelets imperfectly bifarous, female spikelets annular.

Fruits oblong or ovoid, 25 mm long, brown.

Seeds ovoid or oblong, 10 mm thick, 16 mm long; embryo basal.

Use

Handicrafts.



Daemonorops longipes (Griff.) Mart. A. leaf sheath B. part of leaf with subregular lealeaflets. C. part of male inflorescence D. outermost bract. E. male flower. F. opened male flower. (after Dransfield 1984)

Daemonorops longipes (Griff.) Mart. 1 — Infructescence; 2 — stem with knee; upper portion; 3 — male inflorescence.

Daemonorops margaritae (Hance) Becc. var. *palawanica* Becc.

Ann. Roy. Bot. Gard. (Calcutta) 12(1): 57 (1911).

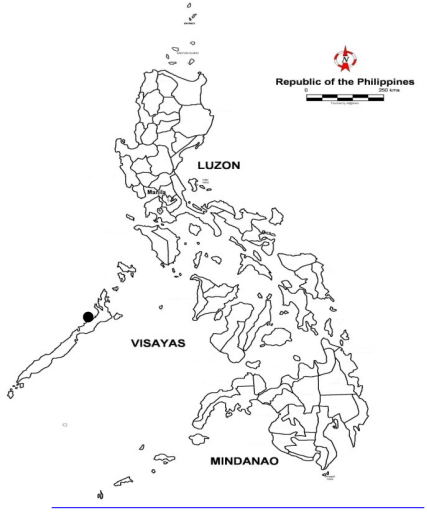
Robust Clustering Cirrus Knee Yellow

Look for:

- **Spines in rows.**
- **Leaves alternate.**
- **Spathes enclosing fruits.**

Common/Local Name
Pinpin (Tagbn.).

Distribution/Habitat
Luzon (Palawan). Primary forests. Altitudes below 200 masl.



Description
Sheaths densely spiny, with triangular spines, tattered with brown-black indumentum. ***Stems*** 4-5 cm diameter. **Canes** 2-2.5 cm diameter.

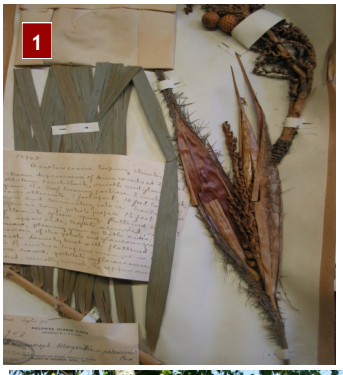
Leaflets regular. Petiole 45 cm long, terminating into a hooked rachis twice as long, spines black. Leaflets 80-100 per side of rachis, with entire margin.

Inflorescence primary spathes cymbiform, 55 cm long; spines needle-like, brushy. Pistilate inflorescence leaf opposed, usually several, upper ones in anthesis while lower ones bear fruit. Ascending or sub-erect, upon short spiny stalk. Bracts 25 cm long, pointed, inner ones yellowish and smooth. Flowers similar in color and covered with an ochraceous scurfy powder.

Fruits globose or rounded, 13 mm diameter, green, with 1 seed; enclosed in spathes, boat-shaped, very spiny; bracteole unarmed.

Seed ovoid or oblong, 10 mm long, 12 mm wide, 11 mm thick, brownish black; raphae indistinct, endosperm ruminated.

Uses
Handicrafts. First class canes for furniture.



Daemonorops margaritae (Hance) Becc. var. ***palawanica*** Becc. 1 — bract, leaflet and infructescence; 2 & 4 — stem with knee and boat-like bracts; 3 — habit; 5 & 6 — bracts; 7 & 8 — fruits.

Daemonorops mollis (Blanco) Merr.

Sp. Blancoan. 86 (1918). — *Calamus mollis* Blanco, Fl. Filip. 264 (1837). — *Palmijuncus mollis* (Blanco) Kuntze, Revis. Gen. Pl. 2: 733 (1891).

Clustering Cirrus present Knee and petiole yellowish

Look for:

- **Leafsheath spines semi-ring to diagonal, at leafsheath mouth periphery long, erect.**
- **Leaflets regular.**

Common/Local Names

Ditaan, Gatasan (Tag.); Nokut (Bis.).

Distribution/Habitat

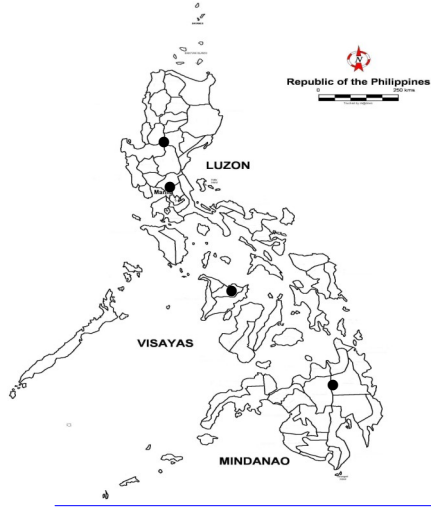
Throughout the Philippine Islands. Primary forests; 200-500 masl. Abundant.

Description

Sheaths bright green. ***Stems*** 3-5 cm diameter, 6.5 cm diameter on leafy portion. Plant 10 m tall. ***Canes*** 1-2 cm diameter.

Leaves 15 cm apart, 2-2.5 m long and armed. Petiole 15-20 cm long x 2.5 cm wide, yellowish. Spines acicular to triangular, 20-45 mm long. Spines horizontal, brown to black, base yellowish. Leaflets 60 per side of rachis, with ciliate margin, bristly above. Cirrus present, 1-1.2 m long and armed. Knee distinct yellow.

Inflorescence axillary, ascending from base of leaf sheath mouth. Pendulous, 50-90 cm long. Inflorescence 3-5. Bracts boat-shaped. Calyx tridentate.



Flowers unisexual.

Fruits pink (Ifugao), 13 mm long, 8-12 mm diameter, with beak, globose or rounded, white or cream to orange when ripe, scales vertical line.

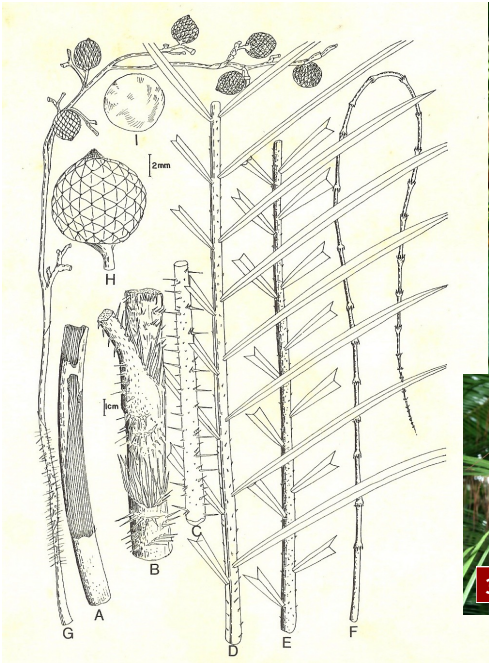
Seeds globose or rounded, 8-10 x 12-14 mm, brown, rough.

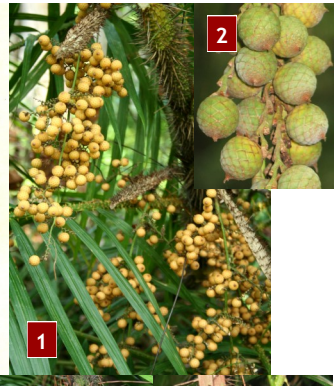
Uses

Handicrafts; for binding.

Notes

Freshly cut canes produce a milky sap. Fruits eaten by wild pigs, birds, bats and monkeys (Catibog-Sinha 1994).





Daemonorops mollis (Blanco) Merr. A. cane. B. stem with leafsheath. C. petiole. D. lower most portion of rachis with leaflets. E. upper most portion of rachis with leaflets. F. portion of cirrus. G. infructescence. H. fruit. I. seed. All based on *Baja-Lapis 001* (FORI Herb.).

Daemonorops mollis (Blanco) Merr. 1 & 2 — infructescence; 3 — male spines; 4 — female spines; 5 — habit; 6 — fruiting stem; 7 — leaflet arrangement.

Daemonorops ochrolepis Becc.

In: G.H. Perkins et al., Fragm. Fl. Philipp. 1: 47 (1904).

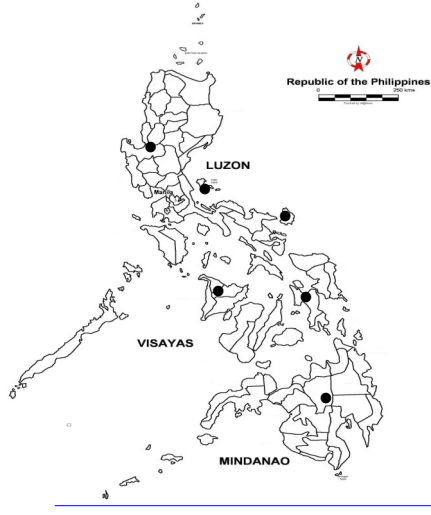
Solitary Climbers Cirrus Knee bulgy

Look for:

- **Leaflets in regular, shiny, 30-35 mm wide, widely lanceolate.**
- **Sheath densely spiny, spines acicular, in definite rings.**

Common/Local Names
Palaklakanin, Sumulid, Tabanga (Tag.).

Distribution/Habitat
Luzon (Pangasinan, Polillo, Catanduanes), Visayas (Panay, Leyte) and Mindanao. Primary forests. Altitudes 200-2000 masl. Abundant.



Description
Canes 2.5 cm thick, green, ringed every foot, leafy portion twice as thick, dark green with a transverse ring of spines every inch or so. Spines descending or younger ones divaricate, 2.5-4 cm long including yellowish green solid basal rim, young ones purplish.

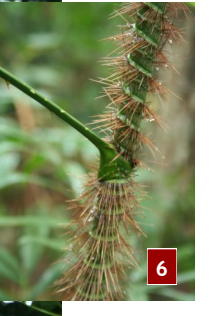
Leaves 30 cm apart, 1.25-1.8 m long and armed. Petiole 25-30 cm long, 25 mm wide and armed. Leaflets equidistant, 17 per side of rachis, 30-45 cm long, 30-35 mm wide, lanceolate densiform, entire and not spinulous. Cirrus present.

Inflorescence primary spathes unarmed. Flowers unisexual. Male flowers with 3 lobes; bracts loosely tubular, armed, rachillae very fine. Female flowers with 3 petals. Involucre truncate. Involucrophore scale-like.

Fruits with 1 seed, ellipsoid or spherical, 18-20 mm diameter, yellowish when fresh.

Seed globose or rounded, 15 mm long, 14 mm wide, 14 mm thick, brown.

Uses
Canes for furniture, baskets, bags, etc.; for home industries and local commercial use.



Daemonorops ochrolepis Becc. 1 & 8 — infructescence; 2, 3 & 6 — leafsheath and spine pattern; 4 — leafsheath and infructescence; 5 — habit; 7 — leaflets and infructescence.

Daemonorops oligolepis Becc.

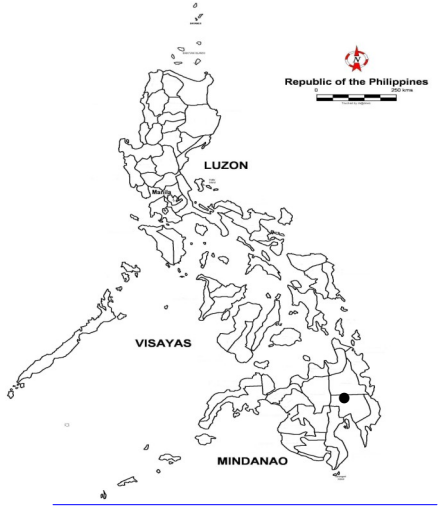
Leafl. Philipp. Bot. 8: 3035 (1919).

Robust Cirrus Knee present

Look for:

- **Spinulous tips.**
- **Leaflets equidistant, 5 cm apart.**
- **Sheath spines slender, black.**

Distribution/Habitat
Mindanao (Davao). Primary forests. Intermediate. Altitudes 1000-1500 masl.



Description
Sheathed stems 4 cm diameter. Leaf sheath armed with several interrupted transverse series of slender spines, 4 cm diameter. ***Canes*** 1-2 cm diameter.

Leaf averaging 2 m long for leaflets bearing portion. Rachis conspicuously spinescent throughout upper surface. Leaflets numerous, equidistant, linear lanceolate, 5 cm apart, acuminate to subulate spinulous tips. Transverse veinlets rather sharp, short and interrupted. Leaflets 30-40 cm long, 20-25 mm wide.

Inflorescence partial inflorescence erect, appressed to main axis. 1-1.5 cm long. At basal portion, 6-8 cm long and carry 5 to 6 flowers only on each side. Upper spikelets become abruptly shorter and contain fewer flowers.

Fruits globose or rounded, 16-18 mm diameter, white or cream; scales with 15 vertical rows, shiny/polish.

Seed only 1. Rough black. 12-14 mm diameter, angular, chalazal fovea distinct.

Use
Handicrafts.

Daemonorops oligolepis Becc. 1 — leafsheath with knee and petiole; upper portion of the rachis with leaves and cirrus; 2 — infructescence; 3 — leaflet arrangement.

Daemonorops pannosa Becc.

Leafl. Philipp. Bot. 8: 3033 (1919).

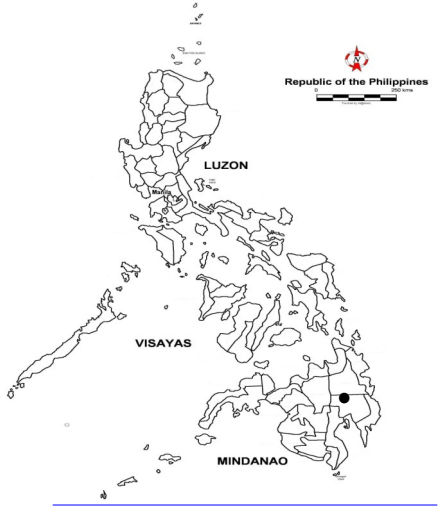
Flagella absent Climber

Look for:

- ∞ **Leaves alternatingly scattered.**
- ∞ **Seriate brown, slender spines but with smooth mouths.**
- ∞ **Petiole flattened.**

Common/Local Name
Sabilog (Dav.).

Distribution/Habitat
Mindanao (Davao). Altitudes 100-1500 masl. Rare. Discovered in a very humid ravine along the Mainit Creek at 1220 m altitude.



Description
Sheaths 2.5-3 cm diameter, armed with approximately oblique or transverse interrupted series of slender brown spines, 2.5-3 cm diameter. ***Canes*** 1-2 cm diameter.

Leaflets regular, numerous, 30-32 cm long x 20-25 cm wide, ciliate and spinulous on both sides. Leaves alternatingly scattered, ascending and then recurved, 1.8 m long. Leaflets horizontal and tips recurved.

Inflorescence spikelets of lower part of every partial inflorescence 5-6 mm long and with 4-6 on each side. Upper spikelets speedily become shorter and with fewer flowers, all with a rather thick main axis.

Fruits ovoid-ellipsoid, 11 mm thick, yellow; scales with 15 vertical rows and grooved.

Seeds embryo basal.

Use
Handicrafts.

Notes
This is the only rattan with hairlike extension of leafsheath tip about 1-2.5 cm long. Based on one rachilla, bracteolules very hairy brown.

Daemonorops pannosa Becc. 1 & 2 — leaflet apices.

Daemonorops pedicellaris Becc.

Leafl. Philipp. Bot. 8: 3040 (1919).

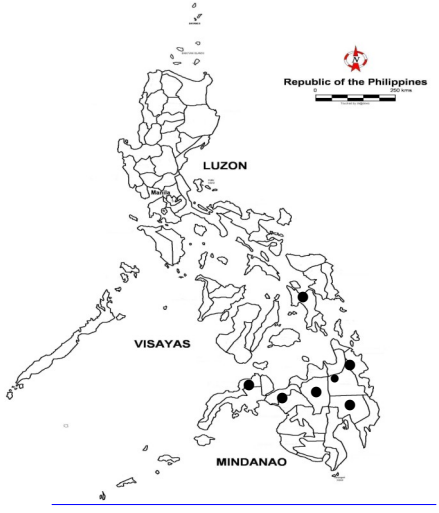
Clustering Slender Cirrus

Look for:

- **Spines ring, brown to black.**
- **Leaflets regular, tip with hairlike extension.**
- **Old stem looping.**

Common/Local Names
Dilot (Bukid.), Rogman (Bag.); Hanamham, Hiyod (Mbo.).

Distribution/Habitat
Visayas (Leyte) and Mindanao (Davao, Agusan, Lanao, Surigao, Bukidnon, Zamboanga). Altitudes 200-2000 masl. Indeterminate.



Description
Stems scandent, moderate size or rather slender. ***Sheathed stems*** 18-25 mm in diameter and canes 10-15 mm thick. Spines pointing at different directions, brown to black. Spines often so slender as to resemble bristles.

Petioles 10-20 cm long, flattened, variously prickly especially along edges. ***Leaflets*** subopposite, 25-30 cm long, 12-20 mm wide, linear lanceolate, with 3-5 nerves and bristly on both sides. Cirrus similarly clawed at approximately regular intervals.

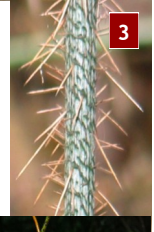
Inflorescence 8-10, 0.4-0.6 cm long. Infructescence 30 cm long. Flowers unisexual, 10-14. Spikelets 8-10, 4-5 cm long.

Fruits globosely ovoid or ovoidly elliptic, equally rounded at both ends, suddenly and obtusely beaked, 12-17 mm long including beak and perianth, 9-11 mm broad, yellow.

Seeds ovoid or oblong, 6 mm wide, 10 mm long, reddish brown.

Use
Handicrafts.

Daemonorops pedicellaris Becc. A. leafsheath and portion of petiole. B. lower most rachis with leaflets. C. mid portion rachis. D. upper most portion of rachis. E. cirrus. F. portion of infructescence. G. fruit. H. seed. A-E based on *Baja-Lapis 049* (FORI Herb.); F-H based on *B. de Castro s.n.* (LBC).



Daemonorops pedicellaris Becc. 1 & 5 — habit; 2 — stem spines and leaflet arrangement; 3 — stem spines; 4 & 6 — infructescence.

Daemonorops polita Fernando

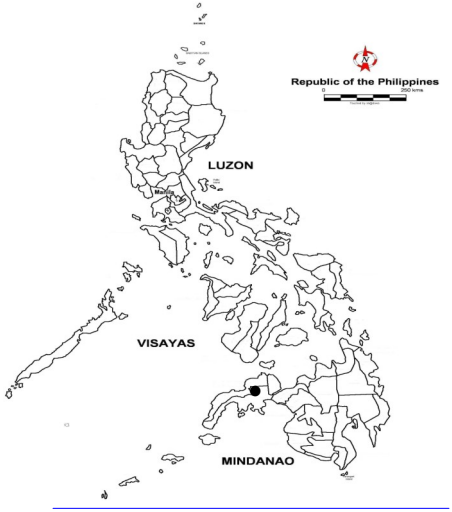
Gard. Bull. Singapore 41: 56 (1988, publ. 1989).

Solitary Clustering Robust

Look for:

- **Knee elongate.**
- **Spines laminar in groups.**
- **Stem with reddish brown indumentum.**

Distribution/Habitat
Mindanao (Zamboanga Peninsula). Pleonanthic. Dipterocarp forests at 600-800 m altitude. Endemic.



Description
Sheaths reddish brown, armed with pale yellowish laminar spines, 4 cm long. Plants 15 m tall. ***Stems*** with sheaths, 4 cm diameter. ***Canes*** 2.5 cm diameter, internodes 22 cm long.

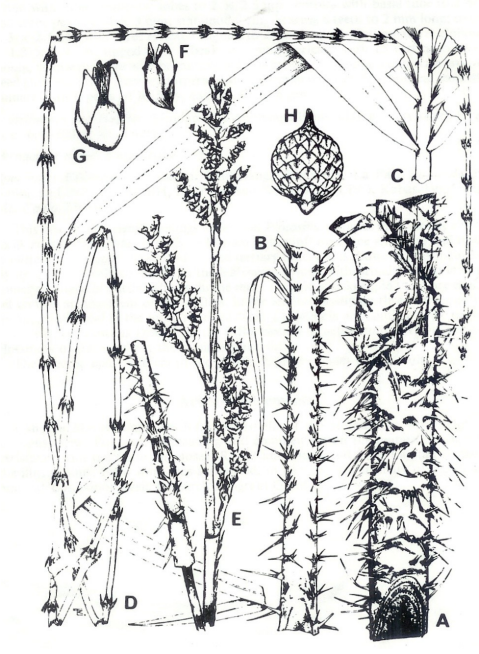
Leaves 2 m long; petiole 20 cm long, armed; spines 40 mm long, ring, yellow. Leaflets 85 per side of rachis, 1.6-2 cm apart, 32 cm long, 27 mm wide, linear lanceolate, with ciliate margin, bristly above. Knee armed and cirrus present.

Inflorescence 70 cm long. Staminate inflorescence erect, with 14 partial inflorescences spaced to 4-8 cm apart, decreasing in size distally.

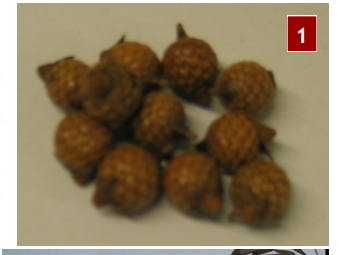
Fruits globose or rounded, 14 mm long, 13 mm thick; yellow with prominent reddish brown margins.

Seeds globose, 1 x 1 cm. Seedling leaf pinnate, with 6 pairs of leaflets.

Uses
Handicrafts.



Daemonorops polita Fernando. A. sheathed stem, x2/5; B. petiole, x2/5; C. mid-portion of leaf, x2/5; D. leaf apex with cirrus, x2/5; E. portion of infructescence, x2/5; F. sterile staminate flower, x3; G. pistillate flower, 3x; H. immature fruit, x 1 1/4. All from *Fernando 575*.



Baja-Lapis 183

Daemonorops polita Fernando. 1 — infructescence; 2 — cane with prominent laminar spines; petiole with leaf arrangement; 3 — knee; 4 — stem, cane, leaflets and cirrus.

Daemonorops urdanetana Becc.

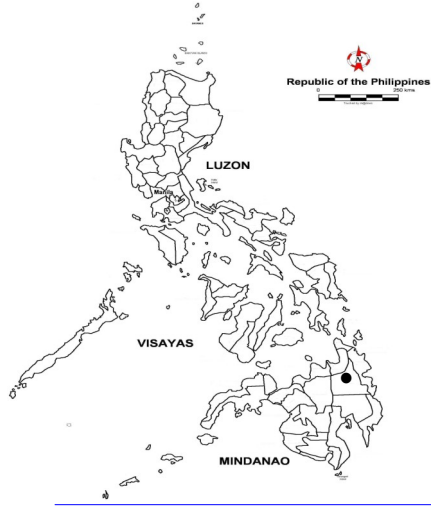
Leafl. Philipp. Bot. 8: 3038 (1919).

Looping Cirrus
Look for:

- **Spines diagonal.**
- **Medium-sized tree climber.**
- **Petiole armed.**

Common/Local Name
Sahaan (Mbo.).

Distribution/Habitat
Mindanao (Agusan). Discovered in dense forest of a gentle rocky slope at 1680 m altitude or about 150 m above a small alpine lake. Rare.



Description
Sheaths dull green, densely provided with brown bristles averaging 2.5 cm. ***Stems*** 13 mm thick or only 8 mm toward base. Nodes every 20 cm apart, dark brown, quite smooth. ***Canes*** 2.5 cm diameter.

Leaves alternating every 20 cm, more or less recurved, 1.8 m long without subpendant clawed rachis. Leaflets regular 30 cm long, 15-16 mm wide, linear-lanceolate with ciliate margin. Spinulous above and midvein only.
Inflorescence female spadix strict, at first erect, apparently nodding when in fruit, 65 cm long and composed of 6 superposed partials appressed to the main axis, lower ones about 10 cm long, carrying on each side 5 or 6 gradually shortened spikelets which are inserted. Very hairy peduncle near rachillae.

Fruits ovoid-globose, 18 mm long, 15-16 mm diameter, yellow. Scales deeply set, grooves prominent; shiny scales 15 vertical lines.

Seeds globose or rounded, 13 mm diameter, rough.

Use
Handicrafts.

Daemonorops urdanetana Becc. 1 — inflorescence; 2— stem, inflorescence and leaflet arrangement.

Korthalsia scaphigeroides Becc.

Korthalsia

Korthalsia laciniosa (Griff.) Mart.

Hist. Nat. Palm. 3: 211 (1845). — *Calamus laciniosus* Griff., Calcutta J. Nat. Hist. 5: 23 (1845).

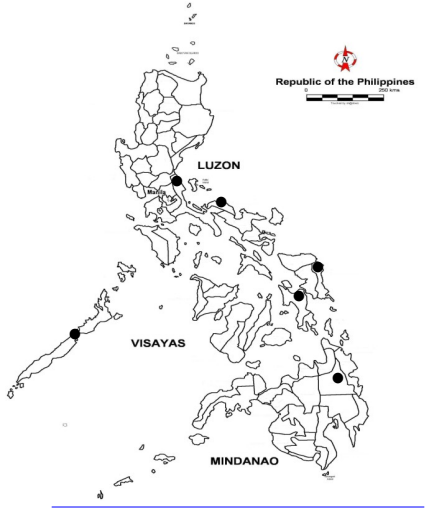
Clustering Branching Cirrus

Look for:

- **Fish-tail leaflet.**
- **Leafsheath mouth lacerate.**
- **Fibrous with ocrea.**
- **Inflorescence catkin.**

Common/Local Names
Daanan, Tapnigid (Bis.); Dakanan (War.).

Distribution/Habitat
Luzon (Quezon, Camarines Norte, Catanduanes, Palawan) and Visayas (Leyte, Samar). Second-growth forests, steep slopes; 500 m altitude.



Description
Sheaths sparsely spiny. ***Canes*** 1.5 cm diameter.

Leaf cirrate, petiolate, 12-20 cm long; petiole and rachis with brownish buff indumentum, leaflets whitish underneath. No knee; ocrea flat on sheath, 4 cm long, fibrous down to enveloping sheath.

Inflorescence flower rachillae catkin.

Use
Not commercially tapped for basket making.

Korthalsia laciniosa (Griff.) Mart. 1 & 2 — leaflet arrangement, stem and infructescence; 3 & 4 — habit; 5 — rhomboid leaflet arrangement.

Korthalsia merrillii Becc.

Ann. Roy. Bot. Gard. (Calcutta) 12(2): 128 (1918).

Clustering Climbing Cirrus armed

Look for:

∞ Spikes amentiform or catkin-like.
∞ Densely spinous ocrea.
∞ Green on both surface.

Common/Local Names
Buragat (Tag.), Taing manok (Tagbn.).

Distribution/Habitat
Luzon (Palawan). Primary forests. Grows at 50-200 masl. Hapaxanthic.

Description
Sheaths bright green, with few spines (Madulid 2001). Spines many on sheath. Plants 25 m tall. S***tems*** 1 cm diameter. ***Canes*** 0.5 cm diameter.

Leaves 1 m long, petiole 5 cm long. Presence of ocrea enveloping/tubular ocrea. Spines brown. Leaflets 4 per side of rachis, rhomboidal cuneate, praemorse and glaucous. Leaflets concolorous. Leaf cirrate; leaflets near inflorescence smaller, squarish.

Infructescence terminal, catkin-like. Bracts dense, spiral, over-lapping. Flowers hermaphrodite and amentiform or catkin-like. Primary and secondary spathes appressed. Bract tips with extenders, small leaf with cirrus.

Fruits oblong 2 x 1.5 cm, beak pointed, scales deeply furrowed.

Uses
Handicrafts and for binding.

Korthalsia merrillii Becc. 1, 2 & 3 — leaf arrangement and infructescence; 4, 5 & 6 — habit; 7 — fruits.

Korthalsia rigida Blume

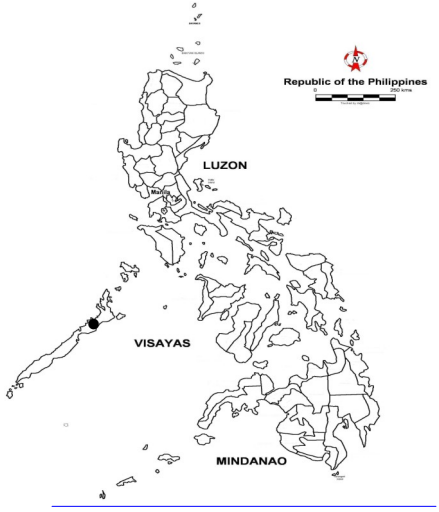
Rumphia 2: 167 (1843).

Clustering Climbing Knee developed

Look for:

- **Sheath dull green, petiole armed.**
- **Spines triangular.**
- **Leaflets rhomboidal cuneate.**

Distribution/Habitat
Luzon (Palawan). Grows in areas at 200-500 masl. Hapaxanthic.



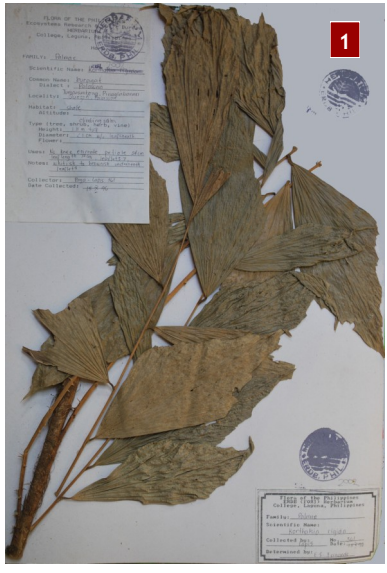
Description
Plants 5 m tall. ***Stems*** clustering, 2.5 cm diameter. ***Canes*** 2 cm diameter.

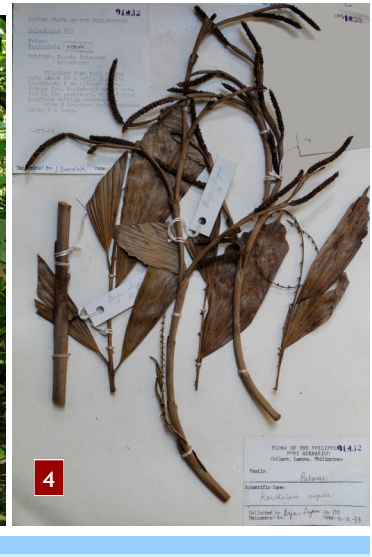
Leaf 0.5-1.5 m long. Petiole 2-5 cm long and armed. Leaflets alternate, with 4-6 per side of rachis, 12-18 cm long, 5-7 cm wide, rhomboidal cuneate, praemorse with 6-7 nerves.

Inflorescence bracts dense, spiral, overlapping; bracteoles 0.4 cm long. Calyx cyathiform, corolla 2 times as long as calyx; stamens 6. Flowers hermaphrodite.

Fruits globose or rounded, 8-12 mm long, 8-10 mm diameter, brown. Scales with 12-15 vertical rows.

Use
Canes for tying and basketry.





Korthalsia rigida Blume. 1 & 4 — leaflet arrangement, inflorescence; 2 — branching stem; 3 — habit.

Korthalsia robusta Blume

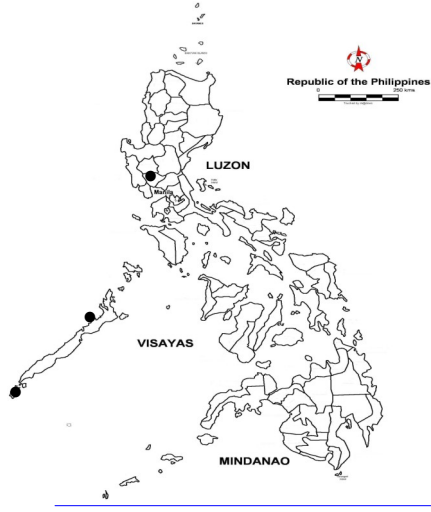
Rumphia 2: 170 (1843).

Clustering Climbing Cirrus

Look for:

- **Sheath bright green.**
- **Ocrea present.**
- **Leaflets praemorse.**

Distribution/Habitat
Luzon (Palawan, Balabac). Primary forests.



Description
Sheaths armed with black acicular spines. Plants 20 m tall, with stems 3.5 cm diameter. ***Canes*** 2.5 cm diameter. Ocrea 15 cm long, enfolding, pointed, armed with long (2 cm) spines.

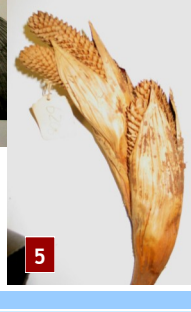
Leaves 1.5 m long. Petiole 30 cm long, with spines 10 mm long. Leaflets 7 per side of rachis and shiny green. Cirrus 50 m long.

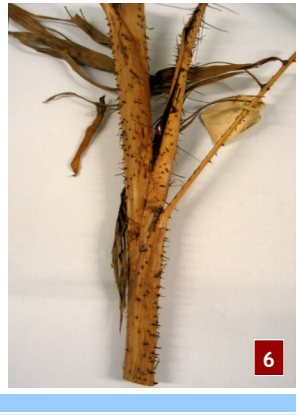
Inflorescence catkin-like. Bracts dense, spiral and overlapping. Flowers hermaphrodite.

Fruits 25 mm thick, 40 mm long, brown.

Use
Handicrafts.

Korthalsia robusta Blume. A. portion of stem and ocrea. B. tip of ocrea. C. petiole. D. leaflet E. cirrus. F. part of congested inflorescence. G. flower. H. fruit. (after Dransfield 1984)





Korthalsia robusta Blume. 1 & 2 — leaflet arrangement and inflorescence; 3, 4 & 5 — infructescence; 6 — stem with elongated ocrea.

Korthalsia scaphigeroides Becc.

Philipp. J. Sci., C4: 619 (1909).

Clustering Slender Cirrus

Look for:

- **Spathes appressed.**
- **Ocrea elongated-elliptic.**
- **Leaflets more or less nearly white underneath.**

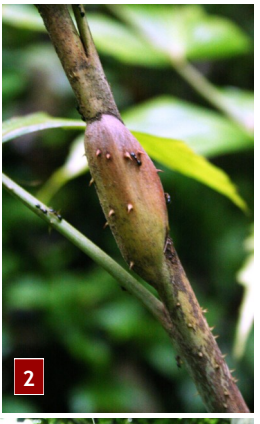
Distribution/Habitat
Luzon and Mindanao (Davao, Basilan). Grows at 10-200 masl.

Description
Canes 15-18 cm diameter. Petiole 20 cm long, 4 mm wide. Ocrea 9-10 cm long. Spines scattered.

Leaf cirrate, petiolate. Leaflets petiolate, alternate, 20 cm long and 40-50 mm wide, rhomboidal cuneate, shiny green and glaucous, with 7 nerves, whitish underneath.

Inflorescence primary and secondary spathes appressed, catkin-like. Bracts dense, spiral and overlapping. Flowers hermaphrodite and amentiform or catkin-like.

Uses
Handicrafts and ornamental.



Korthalsia scaphigeroides Becc. 1 & 4 — habit; 2 — ocrea with ants; 3 — leaflet arrangement; 5 — ocrea.

Plectocomia elmeri Becc.

Plectocomia

Plectocomia elmeri Becc.

Ann. Roy. Bot. Gard. (Calcutta) 12(2): 34 (1918).

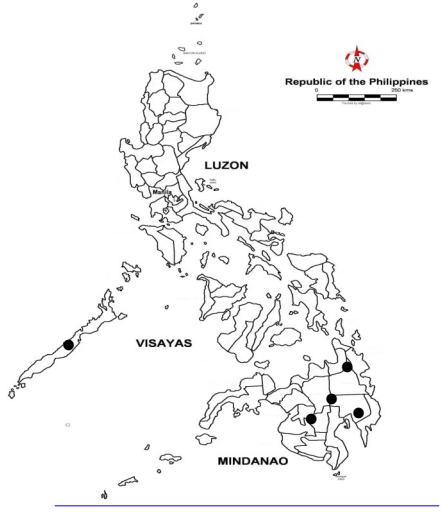
Robust **Solitary** **Large tree climber** **Spines** **Cirrus**

Look for:

∞ **Old stem yellowish green, when young glaucous green.**
∞ **Leaflets twisted and ascending from the yellowish bases.**
∞ **Yellowish spines along the edges.**

Common/Local Names
Laanan (Palw.), Ungang (Min.).

Distribution/Habitat
Luzon (Palawan), Mindanao (Agusan del Sur, Bukidnon, Davao, North Cotabato). Large size. Primary forests. Altitudes 1000-1500 masl.



Description
Canes 5-7.5 cm diameter, hard, smooth, rigid; Stem 7-10 cm diameter. Knee absent.

Leaves alternate, scattered every foot. Petiole 60 cm long and unarmed. Rachis armed. Glaucous green along smooth underside; widely grooved on upper side.

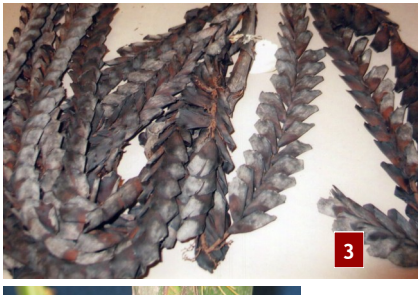
Inflorescence 3 m long, terminal, quite smooth. Branchlets pendulous or nearly evenly provided with bracts and fruits.

Fruits globose, 25 mm diameter.

Seeds 19-22 mm long, 15 mm thick. Endosperm perforated.

Use
Handicrafts.







Plectocomia elmeri Becc. 1, 2 & 3 — inflorescence, fruits; 4, 5 & 6 — habit; 7 — spine pattern.

Plectocomia elongata Mart. & Blume var. *philippinensis* Madulid

Kalikasan, Philipp. J. Biol. 10: 52 (1981).

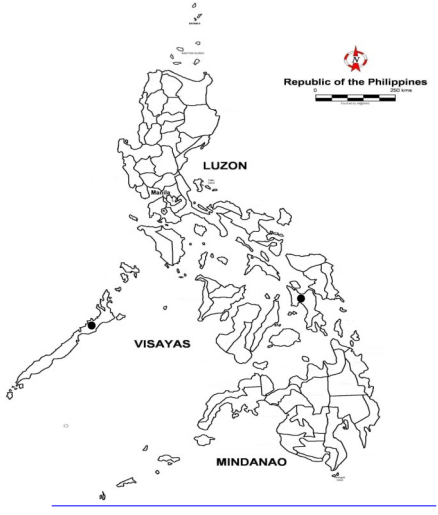
Robust Solitary Cirrus

Look for:

- ∞ **Spines scattered.**
- ∞ **Sheath dull green.**
- ∞ **Knee undeveloped.**

Common/Local Names
Paang dalaga, Maruha (Tag.).

Distribution/Habitat
Luzon (Palawan) and Visayas (Biliran, Leyte). Primary forests. Hapaxanthic (dies after flowering).



Description
Petiolate ***sheaths*** with powdery indumentum. ***Canes*** 6-10 cm diameter; plants 20 m tall, stems 10-20 cm diameter, internodes 30 cm long, sheaths dull green. Spines 40 mm long, diagonal, brown.

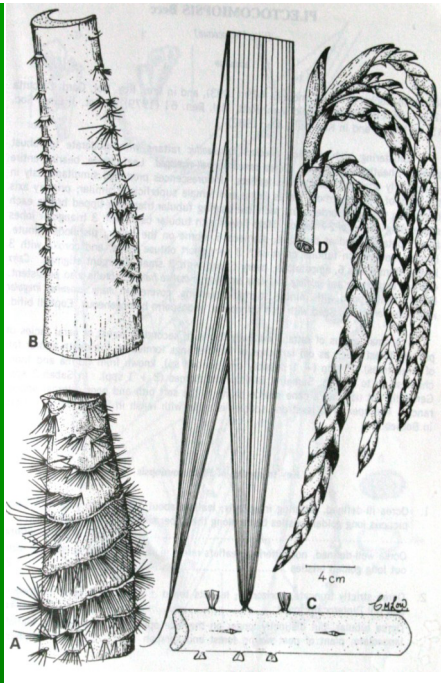
Leaflets irregular, 22-30, entire, glaucous, petiolate. Cirrus in groups of 2-3, on different plane, 1.5-2 cm long and armed. Knee absent.

Inflorescence pendulous. Flowers unisexual.

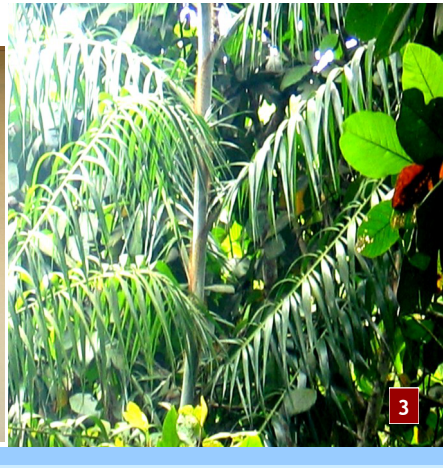
Fruits brownish red.

Seeds 15-20 mm diameter, globose or rounded, brown.

Use
Handicrafts.



Plectocomia elongata Mart. & Bl. var. *philippinensis* Madulid. A. leafsheath of juvenile stem; B. leafsheath of uppermost part of flowering stem; C. abaxial surface of rachis with leaflets; D. portion of male inflorescence. (After Dransfield 1984)



Plectocomia elongata Mart. & Blume var. ***philippinensis*** Madulid. 1 & 3—habit; 2—leaflet arrangement; 4 — infructescence.

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Index to Scientific Names of Philippine Rattans

Abbreviations

A. Languages/Localities

Bag. — Bagobo
Bik. — Bikol
Bis. — Bisaya
Bukid.— Bukidnon
Ceb.-Bis. — Cebuano-Bisaya
Dav. — Davao
Engl. — English
Ibng. — Ibanag
Ifg. — Ifugao
Ilk. — Ilokano
Iv. — Ivatan
Kap. — Kapangpangan
Mbo. — Manobo
Min. — Mindanao
Neg. — Negrito
Palw.— Palawan
Sam. — Samar
Smbl. — Sambal
Tag. — Tagalog
Tagbn. — Tagbanua
War. — Waray

B. Authors of Binomials

Baja-Lapis— Aida C. Baja-Lapis
Becc.— Odoardo Beccari
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Blume — Karl Ludwig von Blume
J. Dransf. — John Dransfield
Elmer — Adolph Daniel Edward Elmer
Fernando — Edwino S. Fernando (ESF)
Griff. — William Griffith
Hance — Henry Fletcher Hance
Lour. — Joao de Loureiro
Madulid — Domingo A. Madulid
Mart. — Karl Friedrich Philipp von Martius
Merr. — Elmer Drew Merrill
Miq. — Friedrich Anton Wilhelm Miquel
H. Wendl. — Hermann Wendland

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45	2	Herbario Florence, Italy
	3 & 4	Photo by Gino Laforteza
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51	type specimen	Herbario Florence, Italy
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77	line drawing	after Dransfield 1984
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81	line drawing	after Dransfield 1992
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	5	Photo by Ulysses Ferreras
99	line drawing	after Dransfield 1984
103	line drawing	after Baja-Lapis 1983
105	2	after Beccari 1913
109	1	after Beccari 1913
111	line drawing	after Baja-Lapis 1983

113	line drawing	after Fernando 1988
117	line drawing	after Baja-Lapis 1983
	2	after Beccari 1913
119	1	after Beccari 1913
121	1	Photo by Ulysses Ferreras
	line drawing	after Dransfield 1979
123	1	after Beccari 1913
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133	3 & 4	Photo by Gino Laforteza
137	line drawing	after Dransfield 1984
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145	1	after Beccari 1913
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151	1	Herbario Florence, Italy
153	1	Herbario Florence, Italy
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183	1	after Beccari 1913
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189	line drawing	after Dransfield 1984
	3	after Beccari 1913
191	1 & 4	Photo by Gino Laforteza
195	3	Type specimen, Herbario Florence, Italy
197	line drawing	after Dransfield 1984

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A FIELD GUIDE TO PHILIPPINE RATTANS

Aida C. Baja-Lapis

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International Tropical Timber Organization (ITTO)

ITTO is an intergovernmental organization promoting the conservation and sustainable management, use and trade of tropical forest resources. Its members represent about 80% of the world's tropical forests and 90% of the global tropical timber trade.

ITTO occupies an unusual position in the family of intergovernmental organizations. Like all commodity organizations it is concerned with trade and industry, but like an environmental agreement it also pays considerable attention to the sustainable management of natural resources. It manages its own program of projects and other activities, enabling it to quickly test and operationalize its policy work. Other features include:

- an equal partnership in decision-making, policy formulation and project development between producing members (tropical developing countries) and tropical timber consuming members (mostly temperate developed countries);
- the active participation of civil society and trade organizations in meetings and project work;
- the formulation and implementation of projects in producing member countries, using mostly local expertise;
- frequent meetings of its governing body (the International Tropical Timber Council), meaning a comparatively rapid pace of debate, decisions and action.

The ITTO is a commodity organization, which brings together countries, which produce and consume tropical timber to discuss and exchange information and develop policies on all aspects of the world tropical timber economy. The ITTO headquarters is located in Yokohama, Japan.

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ITTO