

Determining Priority Conservation of Endemic Palms in the Philippine Islands Using a Localized Conservation Priority Index

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Abstract

The mass production of palms for economic and cultural use in the Philippines leads to risk of extinction, genetic erosion, and biodiversity loss. This study aimed to identify top-priority endemic Arecaceae species in the Philippine Islands using a modified localized conservation priority index (LCPI), which considered factors such as distribution, harvesting risk, and economic and cultural use. A taxonomic list of 89 species was constructed, spanning 12 genera, with *Calamus* being the most speciose genus containing 25 endemic species. The LCPI assessment designated 31 high priority species for conservation, 24 as medium priority, and 34 as low priority. High-priority palms scored highly on the LCPI due to their limited distribution, high susceptibility to overharvesting, and significant economic and cultural value to local communities. The study reveals the diversity and importance of endemic Philippine palms needing urgent conservation efforts to sustain their valuable ecosystem services.



Keywords

Arecaceae endemics conservation status LCPI palms priority level

Introduction

Arecaceae, also known as the palm family, is a monophyletic group including 183 genera and 2364 species (Govaerts & Dransfield, 2005). Most palms are distributed worldwide in tropical and subtropical regions (Henderson et al., 1990). At present, Arecaceae is composed of five subfamilies including Arecoideae, Calamoideae, Ceroxyloideae, Coryphoideae, and Nypoideae with Calamoideae as a sister group to the rest of the palms and Nypoideae as the next branch (Asmussen et al., 2006). Out of the subfamilies, Arecoideae is the largest with 107 genera and approximately 1300 species. Species under this subfamily are characterized by reduplicate pinnate leaves, with flowers arranged as triads, acervuli, or their derivatives (Dransfield et al., 2008). Palms are principally cultivated for drupe production, and are useful materials for construction, food, handicrafts, rituals, and therapeutics throughout the tropical regions of Asia, Africa, and Oceania (Renate et al., 2008). Subsequently, in regions where drupe consumption is not common among populations, palms are used for ornamental purposes (Coppola et al., 2008).

The palm family is recognized as highly valuable due to its species diversity, which occurs in a wide range of habitats and has played an essential role in the culture and family-based economy of many traditional and nontraditional societies (Martins et al., 2014). Palms also has a role in maintaining the population dynamics of plant communities in forests (Pasion et al., 2022). In the Philippines, the Arecaceae family is a high-value crop not just for food and medicinal properties, but also utilized as raw material for constructions and handicrafts. One particular palm species, *Cocos nucifera* L. or the coconut, is dubbed as the tree of life since no part of the palm is wasted (De La Torre et al., 2016). This is without doubt since the Philippines, being a tropical country, owns a rich and diverse flora of palm having 133 recorded species, and 89 of these are endemic (Pelser et al., 2011 onwards). However, due to its uses and potential, there is a risk of extinction and genetic erosion because overharvesting is evident (Lacuna-Richman, 2003).

This study primarily focused on determining the localized conservation priority index (LCPI) of endemic palms in the Philippines. Conceptualized by Buot et al. (2024a, 2024b), the LCPI is a point-scoring technique designed to tailor-cut conservation efforts at a local level by utilizing indicators such as harvesting risk, distribution, and uses to prioritize species for conservation. The primary aim of this is to assess the LCPI for the endemic palms in the Philippine Islands. Secondly, this study will compare the results of the LCPI method from other established conservation indices such as the IUCN Red List and the List of Threatened Plants of the Philippines.

Materials and Methods

A taxonomic list of Arecaceae endemic to the Philippines was initially constructed using Co's Digital Flora of the Philippines (CDFP) (Pelser et al., 2011 onwards). Notes on the conservation status, distribution, and other pertinent information were also taken from the website. The species were assessed based on a modified LCPI framework from Villanueva and Buot (2020), Chanthavong and Buot (2019), Buot et al. (2024a), and Buot et al. (2024b) (Table 1). The distribution data from CDFP was used to evaluate the palms using the Distribution criterion. The scoring system was established as follows: palms found in only a specific province or area were given a score of 5. Palms found in two and

three provinces received scores of 4 and 3, respectively. Palms located in four provinces were given a score of 2, and cosmopolitan palms, found in many regions, were assigned a score of 1.

Table 1. Criteria used to assign localized conservation scores to the Philippine-endemic palm species.

Criteria	Categories	Score	Sources of Information
Distribution	Species is found in only one province	5	Co's Digital Flora of the Philippines (Pelser et al., 2011 onwards); Literature Search.
	Species is found in two provinces	4	
	Species is found in three provinces	3	
	Species is found in four provinces	2	
	Species is found in five or more provinces	1	
Harvesting Risk	Removal of the whole plant, or if removal of crucial parts, e.g. stem or buds that cause death of an individual.	5	Philippine Traditional Knowledge Digital Library on Health (2016); StuartXChange (Stuart Jr. 2017)
	Removal of four out of five basic parts (basic parts: root, stem, leaf, flower, and fruit)	4	
	Removal of three out of five basic parts	3	
	Removal of two out of five basic parts	2	
	Removal of at least one out of five basic part	1	
Economic and cultural use	Five or more economic uses, or the species is critical to the identity of a community, and plays a central role in the cultural and traditional practices of a community.	5	StuartXChange (Stuart Jr. 2017)
	Four economic uses, or the palm species is critical to the identity of a community.	4	
	Three economic uses, or the palm species has three documented uses	3	
	Two economic uses, or the species has two documented cultural uses	2	
	One economic use, or the palm species has only one documented cultural use.	1	

For the Harvesting risk criterion, multiple sources and publications, such as the Philippine Traditional Knowledge Library on Health and StuartXChange (Stuart Jr., 2017) were consulted. A scoring system was implemented based on the level of risk associated with harvesting. A score of 5 was given to palm species that have a very high harvesting risk due to removal of the entire plant, or removal of crucial parts that cause the death of an individual. A score of 4 was given for plants that risk removal of four out of the five basic parts: root, stem, leaf, flower, and fruit. Species at risk due to the removal of three parts were assigned a score of 3, while those at risk of removal of two parts received a score of 2. Lastly, species at risk due to removal of one part were given a score of 1.

The economic and cultural use criteria were combined due to the significant overlap in how palm species are utilized. References such as StuartXChange (Stuart Jr., 2017) and other scholarly papers on the uses of Philippine endemic palms were consulted (e.g. Adorador, 2017; De La Torre et al., 2016). A scoring system was implemented as follows: a score of 5 was given for the palm species with five or more documented economic uses, or those that play a critical role in shaping the identity of a community and are integral to cultural and traditional practices. A score of 4 was given for palms with four known documented uses or those essential to the community's identity. Palms with three documented economic or cultural uses received a score of 3. Palms with two known uses were assigned a score of 2, and species with only one documented economic or cultural use received a score of 1.

The scores are summed to calculate an overall priority score for each species. Species are then ranked based on their overall scores, with higher scores indicating higher conservation priority (Table 2). The ranked list of species are then

compared with their status on the IUCN Red List and the Department of Environment and Natural Resources (DAO-2017-11) status. Discrepancies or alignments between the priority scores and established conservation indices are noted.

Table 2. Priority scores and priority levels for each plant species, and the corresponding recommended action to take. Modified from Villanueva and Buot (2020) and Chanthavong and Buot (2019).

Score	Priority Level	Decision
1-5	Low	Suitable for high-impact harvesting
6-10	Medium	Can be harvested with specific quotas
11-15	High	Require strict regulation in harvesting

Results and Discussion

The Localized Conservation Priority Index of the Philippine Endemic Arecaceae

The Philippines is home to 88 endemic species of the Arecaceae family. These species belong to 12 different genera, the most speciose of which is *Pinanga* which contributes 29 species. Followed by *Calamus*, which contains 25 endemic species, and *Heterospatha* with 13 species. *Areca* and *Orania* contributed eight and three species, respectively. *Korthalsia*, *Plectocomia*, and *Oncosperma* contribute two species each. Lastly, *Corypha*, *Arenga*, *Saribus*, and *Caryota* contribute only one endemic species each.

The LCPI assessment determined that 31 species are classified as high-priority level, 24 species are classified as medium-priority level, and the remaining 34 species were classified as low-priority level. Table 3 presents data on the species with the high priority levels, as well as the medium and low priority levels, according to LCPI. For each of these species, the table provides the scores in the following categories: distribution, harvesting risk, economic and cultural use, as well as the overall LCPI score.

The ranking in Table 3 shows several palm species endemic to the Philippines that are of high importance to be prioritized for conservation. At the top of the list is *Calamus oblongus* ssp. *gracilis* which scored the maximum LCPI score of 15. This subspecies is widely distributed, heavily harvested, and has a high economic and cultural value. Following closely behind are other *Calamus* species, such as *Calamus melanorhynchus*, *Calamus arugda*, and *Calamus erinaceus* ssp. *daemonoropoides*. While their distribution scores may be slightly lower, these *Calamus* palms maintain high harvesting risk and economic/cultural use scores, resulting in LCPI scores of 14 or 13. This means that they are also top priorities for ensuring sustainable livelihoods and conservation efforts. The ranking also includes *Arenga tremula*, as well as several other *Calamus* species like *Calamus cumingianus* and *Calamus loherianus*. These species have LCPI scores of 12, which also indicates that they are important for both livelihood and conservation. The list includes *Korthalsia merrillii* and *Orania sibuyanensis*, which have high distribution and harvesting risk scores but lower economic/cultural use scores, positioning them more as conservation priorities. Additionally, *Plectocomia elongata* var. *philippinensis* has high distribution, and economic and cultural use scores but with low harvesting risk score.

Table 3. Localized Conservation Scores for Various Indicators among Endemic Arecaceae Species in the Philippines.

Species	Distribution Score	Harvesting Risk Score	Economic and Cultural Use Score	LCPI Score
<i>Calamus oblongus</i> ssp. <i>gracilis</i> Becc.) A. J. Hend.	5	5	5	15
<i>Calamus melanorhynchus</i> Becc.	4	5	5	14
<i>Calamus arugda</i> Becc.	3	5	5	13
<i>Calamus erinaceus</i> ssp. <i>daemonoropoides</i>	3	5	5	13
<i>Arenga tremula</i> (Blanco) Becc.	5	5	2	12
<i>Calamus cumingianus</i> Becc.	2	5	5	12
<i>Calamus loherianus</i> (Becc.) W. J. Baker	2	5	5	12
<i>Korthalsia merrillii</i> Becc.	5	5	2	12
<i>Orania sibuyanensis</i> (Becc.) Adorador & Fernando	5	5	2	12
<i>Calamus balerensis</i> Fernando	5	5	1	11
<i>Calamus discolor</i> Mart.	1	5	5	11
<i>Calamus filispadix</i> Becc.	1	5	5	11
<i>Calamus manillensis</i> (Mart.) H. Wendl.	1	5	5	11
<i>Calamus maximus</i> Blanco	5	5	1	11
<i>Calamus megaphyllus</i> Becc.	1	5	5	11
<i>Calamus mitis</i> Becc.	1	5	5	11
<i>Calamus ochrolepis</i> (Becc.) W.J.Baker	1	5	5	11
<i>Calamus politus</i> (Fernando) W.J.Baker	5	5	1	11
<i>Calamus vidalianus</i> Becc.	1	5	5	11
<i>Calamus vinosus</i> Becc.	5	5	1	11
<i>Calamus warayanus</i> Adorador & Fernando	5	5	1	11
<i>Calamus zollingeri</i> ssp. <i>merrillii</i> (Becc.) A.J.Hend.	1	5	5	11
<i>Calamus zollingeri</i> ssp. <i>foxworthyi</i> (Becc.) A.J.Hend.	5	5	1	11
<i>Caryota cumingii</i> Lodd. ex Mart.	1	5	5	11
<i>Corypha microclada</i> Becc.	5	1	5	11
<i>Heterospathe elata</i> var. <i>elata</i>	1	5	5	11
<i>Pinanga insignis</i> var. <i>gasterocarpa</i> Becc.	4	5	2	11
<i>Pinanga samarana</i> Becc.	5	5	1	11
<i>Plectocomia elongata</i> var. <i>philippinensis</i> Madulid	5	1	5	11
<i>Saribus merrillii</i> (Becc.) Bacon & W.J.Baker	1	5	5	11
<i>Areca parens</i> Becc.	4	5	1	10
<i>Calamus carsicola</i> Adorador & Fernando	4	5	1	10
<i>Korthalsia scaphigeroides</i> Becc.	2	5	3	10
<i>Plectocomia elmeri</i> Becc.	4	5	1	10
<i>Calamus bicolor</i> Becc.	2	5	2	9
<i>Areca catechu</i> L.	1	5	2	8
<i>Calamus aidae</i> Fernando	1	5	2	8
<i>Calamus samian</i> Becc.	2	5	1	8

Species	Distribution Score	Harvesting Risk Score	Economic and Cultural Use Score	LCPI Score
<i>Pinanga insignis</i> var. <i>leptocarpa</i> Becc.	1	5	2	8
<i>Areca camarinensis</i> Becc.	5	1	1	7
<i>Areca hutchinsoniana</i> Becc.	1	5	1	7
<i>Areca ipot</i> Becc.	1	5	1	7
<i>Calamus pedicellaris</i> (Becc.) W.J.Baker	1	5	1	7
<i>Orania decipiens</i> Becc.	1	5	1	7
<i>Heterospathe califrons</i> Fernando	5	0	1	6
<i>Pinanga batanensis</i> Becc.	4	0	2	6
<i>Pinanga curioi</i> Adorador & Fernando	5	0	1	6
<i>Pinanga leonardcoi</i> Adorador & Fernando	5	0	1	6
<i>Pinanga sclerophylla</i> Becc.	5	0	1	6
<i>Pinanga sibuyanensis</i> Becc.	5	0	1	6
<i>Pinanga sierramadreana</i> Fernando	5	0	1	6
<i>Pinanga sobolifera</i> Fernando	5	0	1	6
<i>Pinanga speciosa</i> Becc.	5	0	1	6
<i>Pinanga urdanetensis</i> Becc.	5	0	1	6
<i>Heterospathe dransfieldii</i> Fernando	5	0	0	5
<i>Heterospathe sibuyanensis</i> Becc.	5	0	0	5
<i>Heterospathe trispatha</i> Fernando	5	0	0	5
<i>Oncosperma platyphyllum</i> Becc.	5	0	0	5
<i>Orania zheae</i> Adorador & Fernando	5	0	0	5
<i>Pinanga bicolorana</i> Fernando	4	0	1	5
<i>Pinanga glaucifolia</i> Fernando	4	0	1	5
<i>Pinanga isabelensis</i> Becc.	4	0	1	5
<i>Pinanga negrosensis</i> Becc.	4	0	1	5
<i>Pinanga rigida</i> Becc.	4	0	1	5
<i>Heterospathe brevicaulis</i> Fernando	4	0	0	4
<i>Heterospathe scitula</i> Fernando	3	0	1	4
<i>Pinanga curranii</i> Becc.	3	0	1	4
<i>Pinanga egregia</i> Fernando	3	0	1	4
<i>Pinanga heterophylla</i> Becc.	3	0	1	4
<i>Areca caliso</i> Becc.	1	1	1	3
<i>Areca costulata</i> Becc.	1	1	1	3
<i>Areca whitfordi</i> Becc.	1	1	1	3
<i>Heterospathe cagayanensis</i> Becc.	2	0	1	3
<i>Heterospathe elmeri</i> Becc.	2	0	1	3
<i>Heterospathe negrosensis</i> Becc.	2	0	1	3
<i>Pinanga basilanensis</i> Becc.	3	0	0	3
<i>Pinanga gruezoi</i> Adorador & Fernando	2	0	1	3

Species	Distribution Score	Harvesting Risk Score	Economic and Cultural Use Score	LCPI Score
<i>Heterospathe fernandoi</i> Adorador	2	0	0	2
<i>Heterospathe intermedia</i> (Becc.) Fernando	1	0	1	2
<i>Heterospathe philippinensis</i> (Becc.) Becc.	1	0	1	2
<i>Oncosperma gracilipes</i> Becc.	1	0	1	2
<i>Pinanga copelandii</i> Becc.	1	0	1	2
<i>Pinanga geonomiformis</i> Becc.	1	0	1	2
<i>Pinanga maculata</i> Porte ex Lem.	1	0	1	2
<i>Pinanga modesta</i> Becc.	1	0	1	2
<i>Pinanga philippinensis</i> Becc.	1	0	1	2
<i>Pinanga urosperma</i> Becc.	1	0	1	2
<i>Pinanga woodiana</i> Becc.	1	0	1	2

Comparison of the LCPI with other conservation indices

In the most recent IUCN Red List Assessment, 34 species of the endemic palms in the Philippines are considered Near Threatened to Threatened (Vulnerable, Endangered and Critically Endangered) (Table 4). Three species were considered Data deficient, and two species were considered as Least Concern. The rest of the 49 species are still unassessed. In contrast, the Department of Environment and Natural Resources List of Threatened Plants of the Philippines only assessed 29 out of 89 of these endemic palm species. In this present work, the researchers identified 30 high-priority palm species in need for conservation. Twenty four medium-level and 34 low-level conservation priority species are also identified.

Calamus oblongus ssp. *gracilis*, *Plectocomia elongata* var. *philippinensis*, *Calamus melanorhynchus*, *Calamus arugda*, *Calamus cumingianus*, and *Orania sibuyanensis* have all been assigned a "High" priority level by the LCPI but they have not been assessed in both the IUCN and DAO-2017-11 assessments. This discrepancy between the high local conservation priority and the lack of formal assessments at the national and international levels is quite significant. It suggests that these species have been identified as needing urgent conservation attention within their local context, but this level of concern has not been reflected or recognized in the wider conservation frameworks. For *Calamus erinaceus* ssp. *daemonoropoides*, the LCPI identifies this species as a high priority for conservation, but the DAO-2017-11 assessment classifies it as "Other Threatened Species." The local-level assessment recognizes this species as requiring urgent attention, but the national-level evaluation does not consider it to be as critically threatened. A similar discrepancy can be seen with *Arenga tremula*, which is identified as a high priority by the LCPI, but is assessed as "Near Threatened" by the IUCN. The local conservation needs for this species are not fully reflected in the IUCN's global assessment. There are cases where the local and national assessments align with each other. For example, *Calamus loherianus* is classified as High in LCPI and Critically Endangered in the DAO-2017-11.

Table 4. Uses, Distribution, and Conservation Status of Endemic Arecaceae species in the Philippines.

Species	Uses	Reference	Distribution	Reference	LCPI Priority Level	IUCN	DAO
<i>Areca caliso</i> Becc.	Betel chewing; food.	(Johnson, 2011)	Biliran, Leyte, Sorsogon, Agusan del Norte, Agusan del Sur, Davao, Davao del Sur, Surigao del Sur, Samar	(Pelser et al., 2011 onwards)	Low	Vulnerable	-
<i>Areca camarinensis</i> Becc.	Betel chewing; food	(The International Palm Society, 2023)	Camarines Norte, Camarines Sur	(Pelser et al., 2011 onwards)	Medium	Endangered	Endangered
<i>Areca catechu</i> L.	Betel chewing; Medicine; Used in rituals	(Paulino et al., 2017)	Batan, Bataan, Cagayan, Camarines Norte, Camarines Sur, Ilocos Norte, Isabela, Laguna, NCR, Quezon, Rizal, Misamis Occidental, Zamboanga, Zamboanga del Sur, Mindoro, Palawan, Panay, Polillo, Sabtang, Samar, Sulu Archipelago	(Pelser et al., 2011 onwards)	Medium	Data Deficient	-
<i>Areca costulata</i> Becc.	Food	(Johnson, 2011)	Dinagat, Leyte, Bukidnon, Surigao del Norte, Surigao del Sur, Samar	(Pelser et al., 2011 onwards)	Low	-	-
<i>Areca hutchinsoniana</i> Becc.	Food	(Pelser et al., 2011 onwards)	Basilan, Lanao, Zamboanga Sibugay, Zamboanga del Norte, Zamboanga del Sur, Siasi	(Pelser et al., 2011 onwards)	Medium	Endangered	Vulnerable
<i>Areca ipot</i> Becc.	Food		Aurora, Ilocos Norte, Isabela, Laguna, Quezon, Polillo	(Pelser et al., 2011 onwards)	Medium	Endangered	Vulnerable
<i>Areca parens</i> Becc.	Food		Camarines Norte, Camarines Sur	(Pelser et al., 2011 onwards)	Medium	Endangered	Critically Endangered
<i>Areca whitfordi</i> Becc.	Food	(Johnson, 2011)	Aurora, Cagayan, Isabela, Nueva Vizcaya, Quezon, Sorsogon, Mindoro	(Pelser et al., 2011 onwards)	Low	Vulnerable	-
<i>Arenga tremula</i> (Blanco) Becc.	Basketry; ornamental.	(Pelser et al., 2011 onwards)	Bataan, Batangas, Camarines Sur, Laguna, NCR, Quezon, Davao, Davao Oriental, Davao Del Sur, Mindoro, Palawan	(Pelser et al., 2011 onwards)	High	Near Threatened	-
<i>Calamus aidae</i> Fernando	Furniture-making; basketry; weaving.	(Adorador & Fernando, 2017)	Biliran, Dinagat, Sorsogon, Agusan del Sur, Surigao del Norte, Surigao del Sur, Negros, Samar	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Calamus arugda</i> Becc.	Basketry, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork	(Stuart Jr., 2017)	Cagayan, Ifugao, Isabela	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus balerensis</i> Fernando	Basketry, weaving.	(Adorador & Fernando, 2017)	Aurora	(Pelser et al., 2011 onwards)	High	-	Endangered
<i>Calamus bicolor</i> Becc.	Ornamental, Basketry, weaving	(Adorador & Fernando, 2017)	Bukidnon, Davao, Davao del Sur, Zamboanga	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Calamus carsicola</i> Adorador & Fernando	Basketry, weaving	(Adorador & Fernando, 2017)	Samar, Siargao	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Calamus cumingianus</i> Becc.	Basketry, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork	(Adorador & Fernando, 2017)	Quezon, Sorsogon, Agusan Del Norte, Bukidnon	(Pelser et al., 2011 onwards)	High	-	-

Species	Uses	Reference	Distribution	Reference	LCPI Priority Level	IUCN	DAO
<i>Calamus discolor</i> Mart.	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork.	(Adorador & Fernando, 2017)	Catanduanes, Cebu, Dinagat, Luzon, Masbate, Mindanao, Mindoro, Negros, Samar, Siargao	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus erinaceus</i> ssp. <i>daemonoropoides</i> (Fernando) A.J.Hend.	Basketry, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork	(Adorador & Fernando, 2017)	Leyte, Luzon, Mindanao, Samar.	(Pelser et al., 2011 onwards)	High	-	Other Threatened Species
<i>Calamus filispadix</i> Becc.	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork.	(Adorador & Fernando, 2017)	Catanduanes, Luzon, Palawan, Polillo, Samar	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus loherianus</i> (Becc.) W. J. Baker	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork; ornamental	(Adorador & Fernando, 2017)	Quezon, Agusan Del Norte, Davao, Samar	(Pelser et al., 2011 onwards)	High	-	Critically Endangered
<i>Calamus manillensis</i> (Mart.) H.Wendl.	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork; Fruits are known delicacies.	(Adorador & Fernando, 2017)	Dinagat, Luzon, Mindanao, Mindoro	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus maximus</i> Blanco	Basketry, weaving.	(Adorador & Fernando, 2017)	Rizal, Caytimon	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus megaphyllus</i> Becc.	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork; Young shoots are eaten.	(Adorador & Fernando, 2017)	Leyte, Mindanao, Samar	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus melanorhynchus</i> Becc.	Basketry, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork, food	(Adorador & Fernando, 2017)	Davao, Davao Del Sur	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus mitis</i> Becc.	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork.	(Adorador & Fernando, 2017)	Batan, Batanes, Camiguin, Dinagat, Mindanao, Samar	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus oblongus</i> ssp. <i>gracilis</i> A. J. Hend.	Basketry, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork	(Adorador & Fernando, 2017)	Mt Pulgar, Puerto Princesa, Palawan	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus ochrolepis</i> (Becc.) W.J.Baker	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork.	(Adorador & Fernando, 2017)	Alabat, Biliran, Catanduanes, Leyte, Luzon, Mindanao, Panay, Polillo, Samar.	(Pelser et al., 2011 onwards)	High	-	-

Species	Uses	Reference	Distribution	Reference	LCPI Priority Level	IUCN	DAO
<i>Calamus pedicellaris</i> (Becc.) W.J.Baker	Basketry, weaving	(Adorador & Fernando, 2017)	Basilan, Leyte, Agusan, Agusan del Norte, Davao, Davao del Sur, Lanao, Zamboanga Sibugay, Negros, Samar	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Calamus politus</i> (Fernando) W.J.Baker	Basketry, weaving.	(Adorador & Fernando, 2017)	Zamboanga.	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus samian</i> Becc.	Basketry, weaving	(Adorador & Fernando, 2017)	Leyte, Sorsogon, Davao, Davao del Sur.	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Calamus vidalianus</i> Becc.	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork.	(Adorador & Fernando, 2017)	Luzon, Panay, Samar.	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus vinosus</i> Becc.	Basketry, weaving.	(Adorador & Fernando, 2017)	Agusan del Norte	(Pelser et al., 2011 onwards)	High	-	Critically Endangered
<i>Calamus warayanus</i> Adorador & Fernando	Basketry, weaving.	(Adorador & Fernando, 2017)	Samar	(Pelser et al., 2011 onwards)	High	-	-
<i>Calamus zollingeri</i> ssp. <i>merrillii</i> (Becc.) A.J.Hend.	Basketry, weaving.	(Adorador & Fernando, 2017)	Basilan, Luzon, Masbate, Mindanao, Negros, Palawan, Panay, Samar.	(Pelser et al., 2011 onwards)	High	-	Other Threatened Species
<i>Calamus zollingeri</i> ssp. <i>foxworthyi</i> (Becc.) A.J.Hend.	Basketry, weaving.	(Adorador & Fernando, 2017)	Palawan	(Pelser et al., 2011 onwards)	High	-	Endangered
<i>Caryota cumingii</i> Lodd. ex Mart.	Basketry, hats, walking sticks, cane furniture, walking-sticks, umbrellas, tables, chair bottom, hammocks, and general wickerwork; Young shoots are eaten.	(Useful Tropical Plants, 2023)	Balabac, Guimaras, Luzon, Mindanao, Negros, Mindoro, Palawan, Panay, Samar, Tawi-tawi	(Pelser et al., 2011 onwards)	High	Data Deficient	-
<i>Corypha microclada</i> Becc.	Main source for raw materials for Buntal/Calasiao hats, sago.	(Pickard & Edward, 1929)	Biliran	(Pelser et al., 2011 onwards)	High	Critically Endangered	-
<i>Heterospathe brevicaulis</i> Fernando	-		Aurora, Isabela	(Pelser et al., 2011 onwards)	Low	Critically Endangered	Endangered
<i>Heterospathe cagayanensis</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Aurora, Cagayan, Ilocos Norte, Isabela	(Pelser et al., 2011 onwards)	Low	Endangered	-
<i>Heterospathe califrons</i> Fernando	Ornamental	(Rare Palms Seeds, 2023)	Laguna, Surigao del Sur	(Pelser et al., 2011 onwards)	Medium	Critically Endangered	Critically Endangered
<i>Heterospathe dransfieldii</i> Fernando	-		Palawan	(Pelser et al., 2011 onwards)	Low	Critically Endangered	Critically Endangered
<i>Heterospathe elata</i> var. <i>elata</i>	Seeds are chewed as betel nut substitute; Leaflets used for basketry and making Salokot (sunhats). Apical buds eaten as palm cabbage.	(Useful Tropical Plants, 2023)	Bohol, Bucas Grande, Cebu, Dinagat, Luzon, Masbate, Mindanao, Mindoro, Panay, Samar, Siquijor	(Pelser et al., 2011 onwards)	High	Least Concern	-

Species	Uses	Reference	Distribution	Reference	LCPI Priority Level	IUCN	DAO
<i>Heterospathe elmeri</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Camiguin, Mindoro, Negros, Samar	(Pelser et al., 2011 onwards)	Low	Endangered	-
<i>Heterospathe fernandoi</i> Adorador	-		Bucas Grande, Dinagat, Surigao del Norte, Samar	(Pelser et al., 2011 onwards)	Low	Endangered	-
<i>Heterospathe intermedia</i> (Becc.) Fernando	Ornamental	(Rare Palms Seeds, 2023)	Biliran, Leyte, Sorsogon, Agusan del Norte, Davao Oriental, Surigao del Norte, Samar	(Pelser et al., 2011 onwards)	Low	Vulnerable	-
<i>Heterospathe negrosensis</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Sorsogon, Masbate, Negros, Sibuyan	(Pelser et al., 2011 onwards)	Low	Endangered	-
<i>Heterospathe philippinensis</i> (Becc.) Becc.	Ornamental	(Rare Palms Seeds, 2023)	Biliran, Bucas Grande, Dinagat, Leyte, Albay, Apayao, Aurora, Benguet, Cagayan, Camarines, Ifugao, Isabela, Laguna, Nueva Vizcaya, Quezon, Rizal, Sorsogon, Davao Oriental, Davao del Sur, Surigao del Norte.	(Pelser et al., 2011 onwards)	Low	Near Threatened	-
<i>Heterospathe scitula</i> Fernando	Ornamental	(Rare Palms Seeds, 2023)	Albay, Camarines Norte, Camarines Sur	(Pelser et al., 2011 onwards)	Low	Endangered	Critically Endangered
<i>Heterospathe sibuyanensis</i> Becc.	-		Sibuyan	(Pelser et al., 2011 onwards)	Low	Data Deficient	Critically Endangered
<i>Heterospathe trispatha</i> Fernando	-		Aurora	(Pelser et al., 2011 onwards)	Low	High	-
<i>Korthalsia merrillii</i> Becc.	Construction; basketry	(Useful Tropical Plants, 2023)	Palawan	(Pelser et al., 2011 onwards)	High	-	Vulnerable
<i>Korthalsia scaphigeroides</i> Becc.	Construction; basketry; ornamental	(Useful Tropical Plants, 2023)	Basilan, Agusan del Sur, Surigao, Zamboanga	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Oncosperma gracilipes</i> Becc.	Ornamental	(Adorador & Fernando, 2017)	Biliran, Aurora, Laguna, Quezon, Sorsogon, Palawan	(Pelser et al., 2011 onwards)	Low	High	Least Concern
<i>Oncosperma platyphyllum</i> Becc.	-		Negros	(Pelser et al., 2011 onwards)	Low	Critically Endangered	Endangered
<i>Orania decipiens</i> Becc.	Durable wood utilized as house posts	(Adorador & Fernando, 2017)	Basilan, Homonhon, Cagayan, Isabela, Quezon, Zambales, Agusan del Norte, Davao del Sur, Mindoro, Panay, Samar, Sibuyan	(Pelser et al., 2011 onwards)	Medium	Least Concern	Vulnerable
<i>Orania sibuyanensis</i> (Becc.) Adorador & Fernando	Thatching; building houses and bridges, bows or harpoons; ornamental; making alcohol	(Keim & Dransfield, 2012; Palms of the World Online, 2023)	Sibuyan	(Pelser et al., 2011 onwards)	High	-	-
<i>Orania zheae</i> Adorador & Fernando	-		Samar	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga basilanensis</i> Becc.	-		Basilan, Maguindanao, Zamboanga.	(Pelser et al., 2011 onwards)	Low	Endangered	-
<i>Pinanga batanensis</i> Becc.	Ornamental, indoor landscaping	(Rare Palms Seeds, 2023)	Batan, Batanes	(Pelser et al., 2011 onwards)	Medium	Critically Endangered	Critically Endangered

Species	Uses	Reference	Distribution	Reference	LCPI Priority Level	IUCN	DAO
<i>Pinanga bicolana</i> Fernando	Ornamental	(Rare Palms Seeds, 2023)	Camarines Norte, Camarines Sur	(Pelser et al., 2011 onwards)	Low	Critically Endangered	Critically Endangered
<i>Pinanga copelandii</i> Becc.		(Rare Palms Seeds, 2023)	Basilan, Bohol, Leyte, Camarines, Sorsogon, Agusan del Norte, Agusan del Sur, Davao, Davao del Sur, Zamboanga del Norte, Zamboanga del Sur, Negros, Panay, Samar	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga curioi</i> Adorador & Fernando	Ornamental	(Rare Palms Seeds, 2023)	Panay	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Pinanga curranii</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Busuanga, Dumarán, Palawan	(Pelser et al., 2011 onwards)	Low	-	Vulnerable
<i>Pinanga egregia</i> Fernando	Ornamental	(Rare Palms Seeds, 2023)	Camarines Norte, Camarines Sur, Quezon, Bukidnon, Polillo	(Pelser et al., 2011 onwards)	Low		
<i>Pinanga geomiformis</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Catanduanes, Apayao, Aurora, Camarines Sur, Laguna, Quezon, Rizal, Lanao del Sur, Mindoro, Polillo	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga glaucifolia</i> Fernando	Ornamental	(Rare Palms Seeds, 2023)	Catanduanes, Camarines Norte	(Pelser et al., 2011 onwards)	Low	Critically Endangered	Endangered
<i>Pinanga gruezoii</i> Adorador & Fernando	Ornamental	(Rare Palms Seeds, 2023)	Bucas Grande, Dinagat, Surigao del Norte, Samar	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga heterophylla</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Sorsogon, Negros, Rapu-rapu	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga insignis</i> var. <i>gasterocarpa</i> Becc.	An ornamental plant.	(Palmpedia, 2023; Adorador & Fernando, 2017)	Masbate, Negros	(Pelser et al., 2011 onwards)	High	-	-
<i>Pinanga insignis</i> var. <i>leptocarpa</i> Becc.	Ornamental; Edible palm heart		Negros	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Pinanga isabelensis</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Isabela, Zambales	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga leonardcoi</i> Adorador & Fernando	Ornamental	(Rare Palms Seeds, 2023)	Apayao, Cagayan	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Pinanga maculata</i> Porte ex Lem.	Ornamental	(Rare Palms Seeds, 2023)	Babuyan Islands, Catanduanes, Aurora, Bataan, Benguet, Cagayan, Ifugao, Isabela, La Union, Laguna, Pampanga, Quezon, Rizal, Zambales, Mindoro, Polillo	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga modesta</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Basilan, Bucas Grande, Agusan del Norte, Bukidnon, Davao, Lanao del Sur, Misamis Occidental, South Cotabato, Surigao del Norte, Surigao del Sur, Zamboanga	(Pelser et al., 2011 onwards)	Low	Endangered	-
<i>Pinanga negrosensis</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Dinagat, Surigao del Norte, Negros	(Pelser et al., 2011 onwards)	Low	Critically Endangered	-

Species	Uses	Reference	Distribution	Reference	LCPI Priority Level	IUCN	DAO
<i>Pinanga philippinensis</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Babuyan Islands, Camiguin de Babuyanes, Catanduanes Dinagat, Leyte, Aurora, Bataan, Batangas, Benguet, Cagayan, Ifugao, Ilocos Norte, Isabela, Laguna, Mountain Province, Nueva Vizcaya, Pampanga, Pangasinan, Quezon, Rizal, Sorsogon, Zambales, Bukidnon, Davao del Sur, Mindoro, Negros, Panay	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga rigida</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Negros	(Pelser et al., 2011 onwards)	Low	Critically Endangered	-
<i>Pinanga samarana</i> Becc.	An ornamental plant.	(Adorador & Fernando, 2017)	Dinagat, Homonhon, Luzon, Samar	(Pelser et al., 2011 onwards)	High	Endangered	Critically Endangered
<i>Pinanga sclerophylla</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Mindoro	(Pelser et al., 2011 onwards)	Medium	Critically Endangered	Critically Endangered
<i>Pinanga sibuyanensis</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Sibuyan	(Pelser et al., 2011 onwards)	Medium	Critically Endangered	Critically Endangered
<i>Pinanga sierramadreana</i> Fernando	Ornamental	(Rare Palms Seeds, 2023)	Nueva Vizcaya, Quezon	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Pinanga sobolifera</i> Fernando	Ornamental	(Rare Palms Seeds, 2023)	Quezon	(Pelser et al., 2011 onwards)	Medium	Critically Endangered	Endangered
<i>Pinanga speciosa</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Basilan, Agusan del Norte, Agusan del Sur, Bukidnon, Davao, Davao del Sur, Lanao, Misamis Oriental, Surigao del Sur, Zamboanga	(Pelser et al., 2011 onwards)	Medium	-	-
<i>Pinanga urdanetensis</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Agusan del Norte, Bukidnon, Cotabato, Surigao del Sur	(Pelser et al., 2011 onwards)	Medium	Endangered	-
<i>Pinanga urosperma</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Camiguin de Babuyanes, Homonhon, Apayao, Aurora, Cagayan, Isabela, Surigao del Norte	(Pelser et al., 2011 onwards)	Low	-	-
<i>Pinanga woodiana</i> Becc.	Ornamental	(Rare Palms Seeds, 2023)	Mountain Province, Rizal, Davao, Davao del Sur, Mindoro	(Pelser et al., 2011 onwards)	Low	-	-
<i>Plectocomia elmeri</i> Becc.	Handicrafts	(Fern, 2022)	Davao, Davao del Sur	(Pelser et al., 2011 onwards)	Medium	-	Critically Endangered
<i>Plectocomia elongata</i> var. <i>philippinensis</i> Madulid	Making chair legs, frames of tables and beds, strong baskets for use by miners, and also in handicrafts	(Palmpedia, 2023)	Biliran, Leyte, Agusan Del Sur, Surigao Del Sur, Palawan, Samar	(Pelser et al., 2011 onwards)	High	-	-
<i>Saribus merrillii</i> (Becc.) Bacon & W.J.Baker	Leaves used in general handicrafts, decoration, and roofing material.	(Palmpedia, 2023; Beccari 1919)	Luzon, Mindanao, Polillo.	(Pelser et al., 2011 onwards)	High	Vulnerable	Vulnerable

Similarly, *Korthalsia merrillii* is categorized as High Priority in the LCPI and Vulnerable in the DAO-2017-11. This implies that conservation of important species should emanate from the local level. Though LCPI is still in its beginning stage, at least, it has some significant contribution to the localized protection and wise utilization of species of social and cultural relevance to local people.

Notes on the High Priority Palm species for Conservation

Arenga tremula (Blanco) Becc.

Arenga tremula is a perennial or subshrub and grows primarily in the wet tropical biome (POWO, 2024) (Figure 1D). It has multiple uses, primarily in the production of baskets and as an ornamental. The parts of the plant that are utilized include the bud and the stem (Pelser et al., 2011 onwards). This plant species is found across the Philippines, including Bataan, Batangas, Camarines Sur, Laguna, the National Capital Region, Quezon, Davao, Davao Oriental, Davao Del Sur, Mindoro, and Palawan (Pelser et al., 2011 onwards). The broad geographic distribution of the *A. tremula* enables it as an accessible resource for local communities in these places, who incorporate the plant into their basket-making and ornamental plant industries.

Calamus arugda Becc.

Calamus arugda is another rattan species that has a variety of uses. The different parts of the plant that are used include the leaves, fruits, seeds, and roots. The primary use of the *C. arugda* plant is for crafts and woven products. The stems of the plant are used to make a range of items, including baskets, walking sticks, cane furniture, umbrellas, tables, chair bottoms, hammocks, and general wickerwork (Stuart Jr., 2017). This rattan species is found in Cagayan, Ifugao, and Isabela, provinces of Northern Luzon (Pelser et al., 2011 onwards).

Calamus cumingianus Becc.

The different parts of *C. cumingianus* that are utilized include the leaves, fruits, seeds, and roots. The primary application of this another rattan species is in the production of crafts and woven products. The stems of this rattan species are used to make a range of items, such as baskets, walking sticks, cane furniture, umbrellas, tables, chair bottoms, hammocks, and general wickerwork (Stuart Jr., 2017). It is located in Quezon, Sorsogon, Agusan Del Norte, and Bukidnon (Pelser et al., 2011 onwards).

Calamus loherianus (Becc.) W. J. Baker

Calamus loherianus is another rattan species, with the stem being the primary part of the plant that is utilized. This rattan has a multitude of uses, particularly in the industry of crafts and woven products. The stems are incorporated into the production of a wide range of items, such as baskets, walking sticks, cane furniture, umbrellas, tables, chair bottoms, hammocks, and general wickerwork. Beyond these craft uses, the plant also finds application in furniture, baskets, handicrafts, and even serves as an ornamental. This rattan species is distributed in Quezon, Agusan Del Norte, Davao, and Samar (Pelser et al., 2011 onwards). It is an important resource that local communities can leverage for their handicraft, basket-making, and furniture industries.

Calamus melanorhynchus Becc.

The *Calamus melanorhynchus* is another rattan species widely utilized for a variety of purposes. The different parts of the plant that are used include the leaves, fruits, seeds, and roots (Stuart Jr., 2017). Its primary use is for crafts and woven products. The stems of the plant are used to make a range of items, including baskets, walking sticks, cane furniture, umbrellas, tables, chair bottoms, hammocks, and general wickerwork. In addition to the use of the stems, the young shoots of this plant are also edible. This rattan species is found in Davao and Davao Del Sur in the Philippines (Pelser et al., 2011 onwards). The abundance of the *C. melanorhynchus* plant in these areas makes it an important resource for local communities, who utilize the stems to support their handicraft and basket-making industries.

Calamus oblongus ssp. *gracilis* (Becc.) A. J. Hend.

The *Calamus oblongus* ssp. *gracilis* is a rattan species that is valued for its versatile stems, which are commonly used in a variety of crafts and products, including baskets, walking sticks, cane furniture, umbrellas, tables, chair bottoms, and hammocks. It is found primarily in Mt. Pulgar, a part of Victoria Annepahan Range in Puerto Princesa, Palawan in the Philippines (Pelser et al., 2011 onwards).

Caryota cumingii Lodd. ex Mart.

C. cumingii is a palm tree species growing primarily in the wet tropical biome (POWO, 2024). The fronds of *C. cumingii* are commonly used for making a variety of woven products such as baskets, hats, walking sticks, cane furniture, umbrellas, tables, chair bottoms, and hammocks. The plant's flexibility and durability make it well-suited for these applications. The young shoots of the palm are also edible and can be consumed as a vegetable. It is an important resource plant for many communities in the Philippines, providing materials for both household and commercial uses. It is found throughout the Philippine archipelago, including the islands of Balabac, Guimaras, Luzon, Mindanao, Negros, Mindoro, Palawan, Panay, Samar, and Tawi-tawi (Pelser et al., 2011 onwards). This wide distribution across multiple Philippine islands suggests that the species is well-adapted to the tropical climate and diverse ecosystems found in the country.



Fig 1. Some of the top-priority palms of the Philippines, *Calamus oblongus* ssp. *gracilis* (A), *Plectocomia elongata* var. *Philippinensis* (B), *Calamus erinaceus* ssp. *daemonoropoides* (C), and *Arenga tremula* (D). Photo Credits: P.B. Pelser and J.F. Barcelona, in Co's Digital Flora of the Philippines (A, D); Jiro Adorador (B, C).

Corypha microclada Becc.

Corypha microclada is a key source for the raw materials used in the production of Buntal/Calasiao hats (leaf petiole fiber) and sago (fruit), along with other *Corypha* species. This palm species is only found in Biliran (Pelser et al., 2011 onwards).

Heterospathe elata var. *elata*

The seeds of this palm variety are chewed as a substitute for betel nut. The leaflets are used for making baskets and Salokot (traditional sun hats). The apical buds of the palm are eaten as a palm cabbage. *Heterospathe elata* var *elata* is found in various regions of the Philippines, including Bohol, Bucas Grande, Cebu, Dinagat, Luzon, Masbate, Mindanao, Mindoro, Panay, Samar, and Siquijor (Pelser et al., 2011 onwards).

Korthalsia merrillii Becc.

Korthalsia merrillii is a spiny, climbing, evergreen palm that grows primarily in the wet tropical biome. It is a plant species that has documented uses in construction and basketry. The primary part of the plant that is utilized is the stem. This plant is found in the Philippine province of Palawan (Pelser et al., 2011 onwards). Beccari (1918) first noted that the species, along with others in the same genus, have ants living on the plants' ocreas.

Orania sibuyanensis (Becc.) Adorador & Fernando

Orania sibuyanensis is a palm species found in the wet tropical biomes (POWO, 2024). Its leaves are utilized for thatching, while the trunk is used for building houses and bridges, as well as for making bows or harpoons (Keim & Dransfield, 2012). Additionally, the plant serves an ornamental function. Beyond these practical applications, the *Orania sibuyanensis* also produces a brown liquid that can be used for alcohol (Keim & Dransfield, 2012). This multifaceted plant is found on the island of Sibuyan (Pelser et al., 2011 onwards), making it an important local resource for the communities there who leverage its parts for construction, thatching, tool-making, and even alcohol production.

Pinanga insignis var. *gasterocarpa* Becc.

Adorador and Fernando (2017) spotted *Pinanga insignis* var. *gasterocarpa* growing in the lowland evergreen forests of Samar Island, over ultramafic areas. It is cultivated as an ornamental species and it is also known for its palatable palm heart. This palm variety is also native to the Philippine provinces of Masbate and Negros (Pelser et al., 2011 onwards).

Pinanga samarana Becc.

Pinanga samarana, locally known as "tagibunga" and "salangisog" in Samar, is cultivated for its ornamental value. In Samar, this species is known for its palatable, yet bitter, palm heart. This palm variety is native to several areas in the Philippines, including Dinagat, Homonhon, Luzon, and Samar (Pelser et al., 2011 onwards). Adorador and Fernando (2017) spotted this species, along with other palms, growing on limestone-derived soils and in open and heavily-disturbed areas in Samar Island. In addition, they noted that this palm species dominated in metal-rich or ultramafic soils, along with *Areca* species, *Calamus aidae* and *Plectocomia elongata* var. *Philippinensis*.

Plectocomia elongata var. *philippinensis* Madulid

The *Plectocomia elongata* var. *philippinensis* is a climbing palms species, found in the wet tropical biomes of Eastern Visayas and Mindanao (POWO, 2024) (Figure 1B). It is valued for its canes, which have a variety of uses. The canes from this plant, which range from 30-50 mm in diameter, are commonly used to make chair legs, construct the frames of tables and beds, and create strong baskets utilized by miners. Additionally, the canes are incorporated into various handicrafts. However, it is noted to have canes with relatively poor durability and flexibility compared to other rattan species. Despite this limitation, the wide distribution of this plant across several regions of the Philippines, including Biliran, Leyte, Agusan Del Sur, Surigao Del Sur, Palawan, and Samar (Pelser et al., 2011 onwards), makes it an important

resource for local communities. The abundance of the *Plectocomia elongata* var. *philippinensis* allows it to play an important role in the handicraft and furniture industries in these areas, as communities capitalize on the availability of the plant's canes to create a range of practical and artisanal products.

Saribus merrillii (Becc.) Bacon & W.J. Baker

Saribus merrillii is also a palm tree species abundant in wet tropical biomes throughout major islands in the Philippines (POWO, 2024). The leaves of *Saribus merrillii* are utilized for a variety of purposes, including handicrafts, decoration, and as a roofing material. This palm species is found in the Philippine islands of Luzon, Mindanao, and Polillo (Pelser et al., 2011 onwards).

Conclusion and Recommendations

The Philippines is home to 89 endemic palm species belonging to 12 genera. *Calamus* is the most speciose genus containing 25 endemic species. The Philippine endemic palms have a wide geographic distribution across the archipelago. These plants have diverse uses, with their stems, leaves, fruits, seeds, and roots commonly utilized for various purposes. The study emphasizes the significant diversity and value of endemic Philippine palms.

The LCPI assessment determined that 31 palm species are classified as high-priority for conservation, 24 as medium-priority, and 34 as low-priority. The top priority species for conservation include *Calamus oblongus* ssp. *gracilis*, *Calamus melanorhynchus*, *Calamus arugda*, *Calamus erinaceus* ssp. *daemonoropoides*, *Arenga tremula*, *Calamus cumingianus*, *Calamus loherianus*, *Korthalsia merrillii*, and *Orania sibuyanensis*. These species scored highly on the LCPI due to their wide distribution, high harvesting risk, and significant economic and cultural importance.

A comparison with other conservation assessments (IUCN, DAO-2017-11) revealed some discrepancies. Several high-priority LCPI species are yet to be formally evaluated at the national or international level. The LCPI provides a useful tool for prioritizing conservation efforts at the local level. To enhance both habitat and plant protection for the endemic Philippine palms, the researchers recommend implementing several local-level conservation policies. Additionally, *ex situ* conservation efforts can be bolstered through community engagement to also preserve the genetic diversity of these high-priority palm species. Moving forward, the researchers encourage conservationists to undertake further research to refine and improve the LCPI framework used in this study. Continued evaluation and refinement of this localized assessment tool will strengthen its effectiveness in prioritizing conservation actions for the Philippines' endemic palm flora.

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