A CATALOGUE OF LOCALLY THREATENED PLANTS FOR PRIORITY CONSERVATION

at Samar Island Natural Park

Inocencio E. Buot Jr.
Anne Frances V. Buhay
Marne G. Origenes

2024

A CATALOGUE OF LOCALLY THREATENED PLANTS FOR PRIORITY CONSERVATION AT SAMAR ISLAND NATURAL PARK

Journal of Nature Studies
Supplement No. 5

Inocencio E. Buot Jr.
Anne Frances V. Buhay
Marne G. Origenes

Philippine Society for the Study of Nature (PSSN), Inc.
2024

Recommended Citation
Buot IE Jr, Buhay AFV & Origenes MG. 2024. A Catalogue of Locally Threatened Plants for Priority Conservation at Samar Island Natural Park (Journal of Nature Studies Supplement 5). Philippine Society for the Study of Nature (PSSN), Inc. 91p.

Published by the Philippine Society for the Study of Nature (PSSN), Inc.
Los Baños, Laguna, 4030 Philippines
Website:https://www.journalofnaturestudies.org/

Printed in the Philippines

PDF ISBN 978-621-96871-4-0
Print ISBN 978-621-96871-3-3

TABLE OF CONTENTS

PREFACE

The move for localized biodiversity conservation has been under discussion for decades. But finding the practical and most appropriate strategy to operationalize this concept has been admittedly difficult. The CONserve-Kaigangan research program led by the University of the Philippines Los Baños in close partnership with the Eastern Samar State University (ESSU), Samar State University (SSU), the Department of Environment and Natural Resources (DENR) Protected Area Superintendent (PASU) Office, attempts to design a localized conservation prioritization of plant diversity in Samar Island Natural Park (SINP), in Paranas, Samar. Kaigangan is the local dialect for forests over limestone in Samar which has one of the most extensive forests over limestone in the Philippines and in southeast Asia. It is now nominated as one of the UNESCO's World Natural Heritage.

Incidentally, there are numerous threats to biodiversity loss in Samar Island kaigangan. Hence, the urgent necessity to commence collaborative conservation efforts of various stakeholders at the community level. With the funding initially acquired from the Department of Science and Technology's Grants-In-Aid Program (DOST-GIA) and later from the Department of Science and Technology's-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD), the CONserve-Kaigangan team identified threatened plant biodiversity for priority conservation, using the Localized Conservation Priority Index (LCPI), developed at the Plant Systematics Laboratory, Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines Los Baños. It is a composite index, comprising ecological and sociocultural indicators which may trigger loss of biota. The book presents photographs of the top 20 priority plants for urgent conservation at SINP. It contains field spot characters too and reason why they are endangered locally. The book aims to enhance biodiversity community awareness and hence, calls for unified action among community sectors, such as the education, local government and Peoples' Organizations such as the Basaranan nga Organisasyon han San Isidro Samar (BOSIS), Tour guide and Boat Operators for River Protection and Environmental Development Organization (TORPEDO) and Tenani Association for Women and Development (TAWAD) to sincerely help in the collaborative conservation initiative.

PREFACE

You will notice that the introductory part, the LCPI concept, the presentation style of the top 20 priority species and the concluding part, are more or less similar to that of the other book dealing with the top priority species for conservation in Guiuan Marine Resource Protected Landscape and Seascape. The main differences are the unique top 20 species for priority conservation for each protected area.

On behalf of the authors, I thank the DOST, DOST-PCAARRD, for the funding. The collaborative partnership of UPLB, SSU and ESSU does amazing outcomes. San Isidro Elementary School and the People's Organizations BOSIS, TORPEDO and TAWAD have been very cooperative and accommodating. The former PASU of the Samar Island Natural Park, Forester Zenaida Baisa, and the current, PASU Leona M. Tumamak and their hospitable staff helped us tremendously. We had been working under the Gratuitous Permits number 2019-16, 2020-10, 2021-14, 2022-18 and 2023-21 granted by the DENR Region 8 in Tacloban City.

Inocencio E. Buot Jr
Professor and Project Leader

INTRODUCTION

The Philippines is considered the hottest hotspot of biodiversity (Myers et al., 2000), comprising mosaic of diverse terrestrial and aquatic ecosystems. One of these ecosystems is the forests over limestone, thriving on limestone outcrops. Geologically, forests over limestone are unique formations in tropical forests with ages ranging from the Cambrian to the Quaternary (Day & Urich 2000). This formation is quite extensive, especially in Southeast Asia, northern Central America, southeastern Brazil and the Greater Antilles (Tang et al. 2011). The Philippines is one of the countries in the ASEAN region with vast forests over limestone landscapes (Fernando et al. 2008). Incidentally, Samar Island, the third largest island in the country, has one of the most extensive forests over limestone (Quimio 2016; Tolentino et al. 2020). Locally known as ***kaigangan***, the forests over limestone landscape of Samar Island has unique flora and fauna, including the Philippines' national bird, the large Philippine monkey-eating eagle (*Pithecophaga jefferyi*). Sightings were recorded in a protected area in Taft, Eastern Samar, under the jurisdiction of the Samar Island Natural Park.

The Samar Island Natural Park (SINP) encompasses an area of 333,000 hectares which spans across 35 municipalities, 3 cities, and 3 provinces within Samar (DENR-SINP. n.d.) (**Figure 1**). It was initially proclaimed as Samar Island Forest Reserve in February 1996, through Presidential Proclamation 744, designating 360,000 hectares for protection from rampant logging that started in the 1980s. On April 13, 2003, the establishment of SINP was authorized through Presidential Proclamation No. 442. This was in accordance with Republic Act 7586, also known as the National Integrated Protected Area System Act, as amended by RA 11038, or the E-NIPAS Act of 2018.

The recent assessment conducted by CONserve-KAIGANGAN in Samar Island Natural Park, in Samar, Eastern Visayas, Philippines, has shown the outstanding biodiversity of forests over limestone (Tolentino et al., 2020; Obeña et al., 2021; Villanueva et al., 2021). New species had been discovered such as, *Decaisnina tomentosa* (Tandang et al., 2022), *Corybas kaiganganianus* (delos Angeles et al., 2022a), *Begonia normaaguilariae* (delos Angeles et al., 2022b), *Schismatoglottis minuta* (delos Angeles et al., 2023) and *Hoya kaiganganiana* (delos Angeles et al., in press). It is worth knowing that the Samar Island Natural Park has been nominated as UNESCO World Natural Heritage Site (Villanueva et al., 2021). More should be uncovered in the next coming years.

Given the exceptional value of Samar kaigangan biodiversity, community stakeholders should be informed of its importance, as well as conservation, protection, and sustainable use. Locals should understand that the environment and ecosystem services they are enjoying right now, are made possible because of the existence of kaigangan. Degradation of the forests over limestone, can negatively affect the food productivity, regulatory, cultural and aesthetic services afforded by this forest formation type. Local communities can be good stewards of this ecosystem to sustain health of the environment, the people and the biodiversity in it. They should be encouraged and empowered to develop their capacities and be involved in the planning, implementation, and decision making to conserve kaigangan biodiversity even at the local level. This is where setting localized conservation priorities becomes valuable.

Setting conservation priorities is essential in biodiversity conservation since not all plant species had been assessed by IUCN and by the national committee on Red List, led by the Department of Environment and Natural Resources (DENR), Philippines. This helps identify the taxa that need to be

Figure 1. Map of Samar Island Natural Park (SINP)

targeted for priority conservation with local communities taking active part. Thus, a list of conservation priorities provides knowledge on the level of priority and recommended action for plants that are targeted for regulation and wise utilization by the local communities in Samar before these are overharvested and may even become eventually extinct. It is also a crucial step in creating conservation strategies for the species and ecosystems, given the limited financial resources allocated in any conservation efforts. It can give the planners, resource managers, and local people essential information on local biological diversity of cultural and economic importance (Brehm et al., 2010). Moreover, this approach can also be used in identifying the priority areas for conservation as demonstrated by Chanthavong and Buot (2019).

Localized conservation initiatives will provide equal opportunity for men and women in the local communities to actively participate in addressing biodiversity decline. The conservation priority setting is instrumental for the formulation of science-based strategies on sustainable use and conservation of biodiversity. A local policy can be formulated in consultation with stakeholders from different sectors. This book documents the top 20 priority plants for conservation at the Samar Island Natural Park, particularly, in the municipalities of Paranas, Samar and Taft, Eastern Samar, using the localized conservation priority index (LCPI), especially developed for the locality. Photographs we got from the field are shown for easy identification by villagers across ages and backgrounds.

This initiative hopes to contribute to SDGs 5 (Gender equality), 6 (Clean water), 11 (Sustainable cities and communities), 12 (Responsible consumption and production), 13 (Climate Action), 15 (Life on land) and 17 (Partnership to achieve goal).

THE LOCALIZED CONSERVATION PRIORITY INDEX

The **Localized Conservation Priority Index (LCPI)** is a point scoring method used to rank species by the level of priority. This index is composed of five criteria: harvesting risk, economic use, cultural use, species distribution, and frequency value. These criteria make up the ecological and socio-cultural aspects of each species (**Table 1**). We started developing this localized conservation index in 2009 (Sopsop and Buot, 2009). Later this was improved by Chanthavong and Buot (2019), Caringal et al. (2020) and Villanueva and Buot (2020a and 2020b). Each criterion in the LCPI can have a score ranging from 1 (lowest) to 5 (highest), where a higher score could indicate a higher conservation priority. The scores of the criteria can be summed up using the formula:

Localized Conservation Priority Index = Harvesting Risk + Economic Use + Cultural Use + Species Distribution + Frequency Value

Each plant is scored according to these criteria. The scores will be summed up to identify the priority level (**Table 2**). Based on the formula above, the plant can have a maximum of 25 points. A higher score indicates a higher conservation priority. The priority level and recommended action of each corresponding score are indicated in Table 2 (Villanueva and Buot, 2020a).

LCPI is just the start of our way to operationalize localized prioritization in biodiversity conservation (**Figure 2**). LCPI was devised according to the premise that there is ongoing nature and culture interaction (Buot et al., 2024a, Buot et al., 2024b, Villanueva and Buot, 2020). This is quite common in the discipline of ethnobotany and ethnobiology (Buot 2009, Pretty et al., 2009). By considering the interface of nature and culture, a more objective and holistic approach to preparing localized conservation strategies for plant resources is possible (Buot et al., 2024a, Buot et al., 2024b, Villanueva and Buot, 2020a, 2020b, Caringal et al., 2020, Chanthavong and Buot, 2019, Sopsop and Buot, 2009).

Our initial LCPI also combines the perspectives of local communities and global conservation authorities, which are relevant in conservation management. This current LCPI is in conformity with the concept of the new conservation science, espoused by Karieva (2012, 2014) and Karieva and Marvier (2012), where both humans and nature are of equal importance. Though this was opposed by Soule (2013), we believe that the concept of the new conservation science is the way to go (Buot, 2008a, 2008b). While there is an urgent need to conserve biodiversity, there is also a need to consider the traditions and values of the local people (Villanueva and Buot, 2020a and 2020b). As the direct users of these resources, local communities have a critical role in conservation (Engels et al., 2011; Caringal et al., 2020).

Our LCPI is just in the beginning stage. Perhaps this is still a crude attempt to operationalize localized conservation. Scientific methodologies always start this way (Buot, 2020). However, we have high hopes that this can be enhanced and improved with criticisms and new suggestions from readers and colleagues.

Table 1. Criteria and scores in calculating the conservation priority scores of the plants using a point-scoring procedure. The sources of information that will be considered in scoring are indicated in the rightmost column (modified from Villanueva and Buot, 2020)

CRITERIA	CATEGORIES	SCORE	Sources of Information
Harvesting Risk	Harvesting represents the removal of the whole plant (includes all the basic parts: root, stem, leaf, flower, and fruit).	5	Interview (Key informants)
	Harvesting of four out of the five basic parts	4	
	Harvesting of three out of the five basic parts	3	
	Harvesting of two out of the five basic parts	2	
	Harvesting of at least one of the five basic parts	1	
Economic Use	Five or more economic uses	5	Interview (Key informants); Ethnobotanical survey from CONserve-KAIGANGAN Project 2; Published literature
	Four economic uses	4	
	Three economic uses	3	
	Two economic uses	2	
	One economic use	1	
Cultural Use	Five or more cultural uses	5	Interview (Key informants); Published literature
	Four cultural uses	4	
	Three cultural uses	3	
	Two cultural uses	2	
	One cultural use	1	
Species Distribution	Within SINP/GMRPLS	5	Merrill; Catalogue of Life (2020); IPNI; Pelser et al. (2011-)
	Within Samar Island	4	
	Within Visayas	3	
	Within the Philippines	2	
	Cosmopolitan	1	
Frequency Value (%)	Not recorded (0) - 20	5	Vegetation sampling in three municipalities (CONserve-KAIGANGAN Project 1)
	21-40	4	
	41-60	3	
	61-80	2	
	81-100	1	

Table 2. Conservation priority classification based on CPI scores column (modified from Villanueva and Buot 2020).

Score	Priority Level	Decision
1-8	Low	Suitable for high-impact harvesting
9-16	Medium	Can be harvested with specific quotas
17-25	High	Requires strict regulation in harvesting

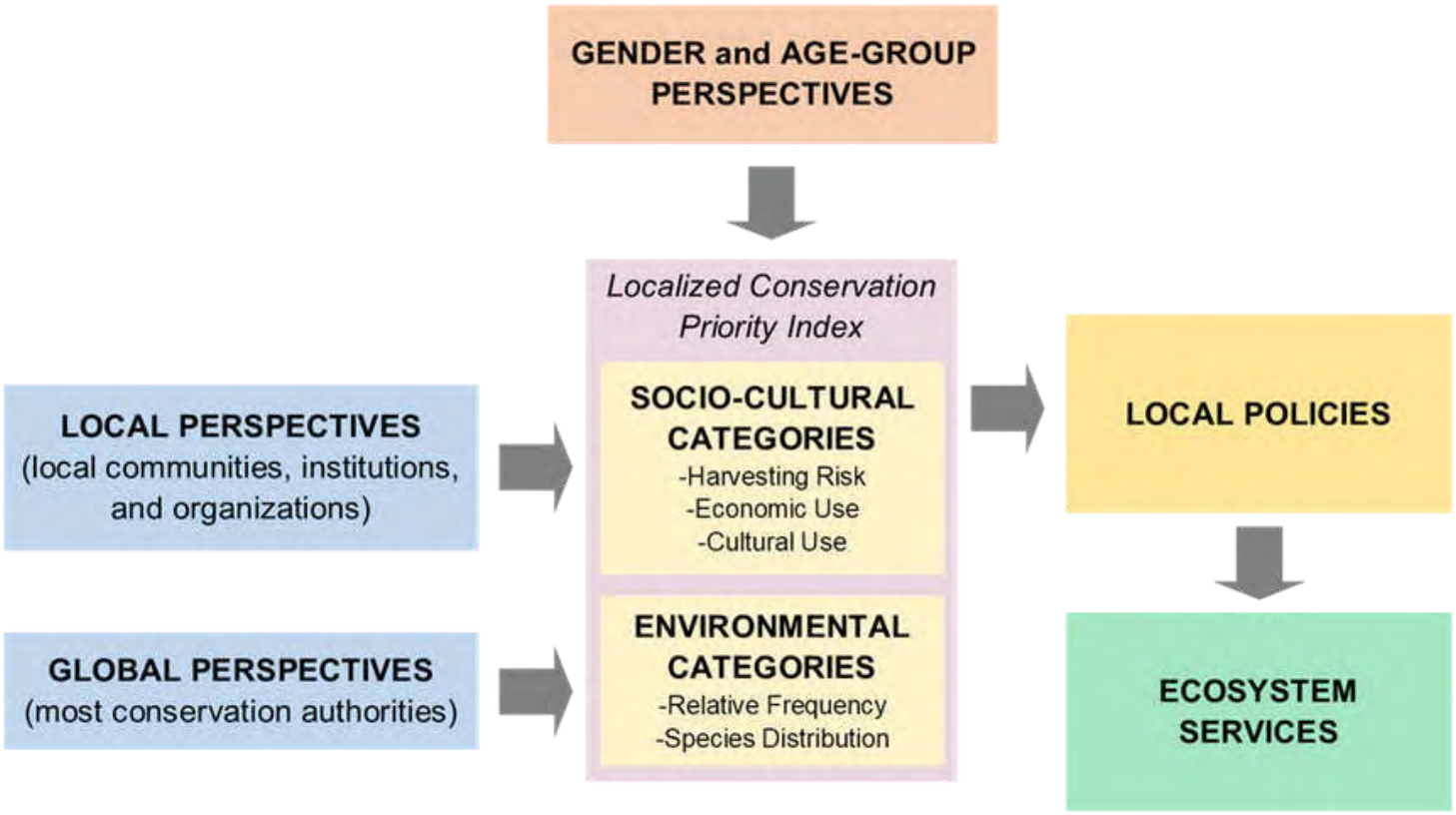


Figure 2. A framework showing how localized conservation priority index (LCPI) combines local and global perspectives with due consideration of the gender and age group perspectives in sustaining ecosystem services in local communities, particularly in forests over limestone.

THE TOP 20 PRIORITY PLANTS FOR CONSERVATION

The following section presents field photographs of the top 20 plants in SINP using the LCPI scoring scheme. The species are arranged from the species occupying the first rank and so on to the species occupying the 20th rank. Field spot characters are identified, occurrences in the Philippines and in other parts of the world, conservation status, the localized conservation priority index (LCPI) score and the reasons for the threat are given. Additionally, the priority level and the recommended action are also highlighted. A map on the species occurrences in Samar Conserve-KAIGANGAN plots and in the Philippines are also included.

01 ***Caryota rumphiana* Mart. (Arecaceae)**
Pugahan

Family: Arecaceae
Scientific Name: *Caryota rumphiana* Mart.
Local Name: Pugahan

Field spot character: Leaves have a distinctive fish-tail shape (Dransfield, 1974). Trunk is solitary with widely spaced nodes forming a ring.

Samar plot occurrences: Plots 1 & 3

Other places of occurrences in the Philippines: LUZON: Cagayan, NCR, and Sorsogon, VISAYAS: Negros and Samar, MINDANAO: Agusan del Norte and Davao del Sur (Pelser et al., 2011 onwards).

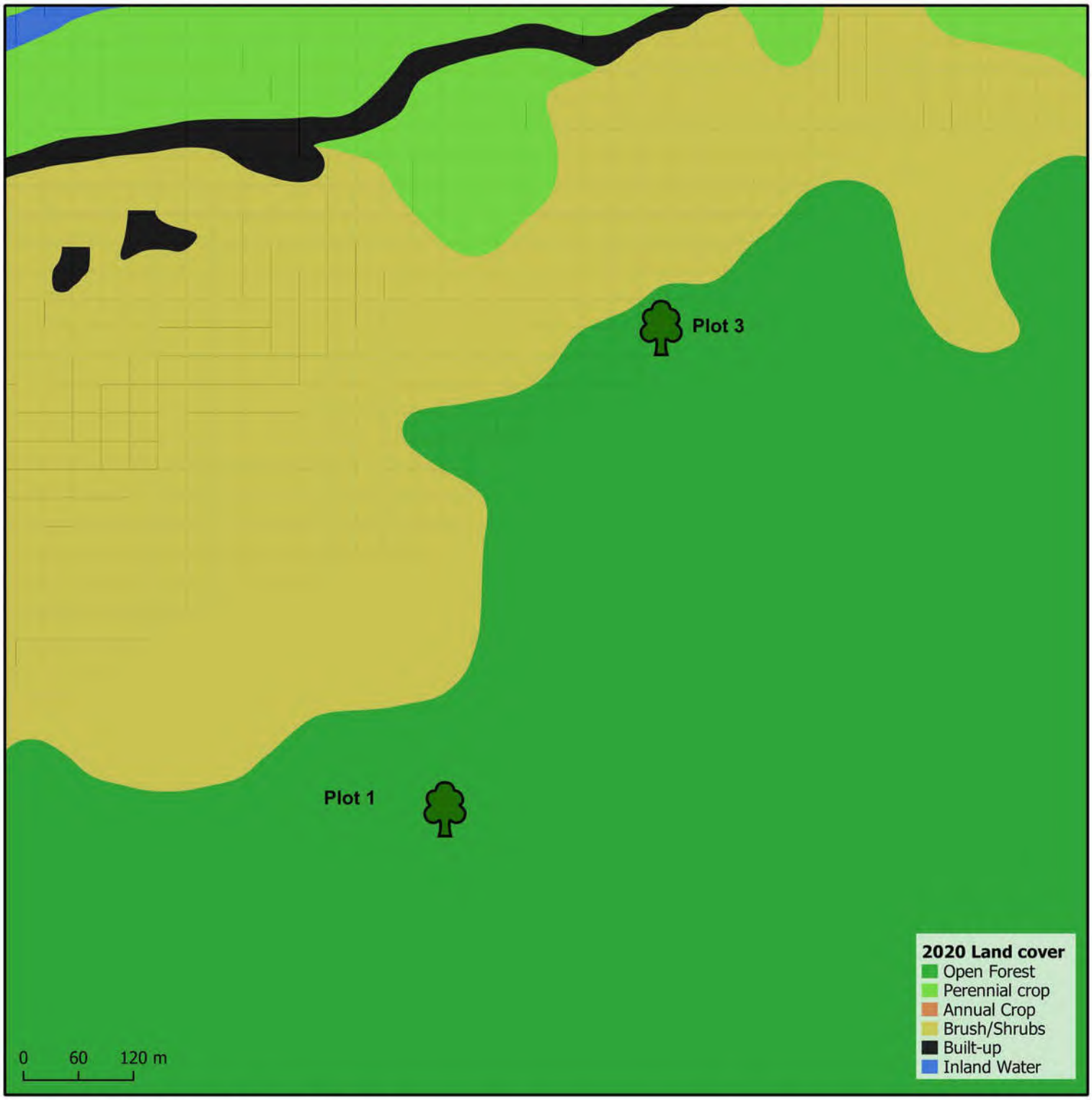
IUCN conservation status: Least Concern

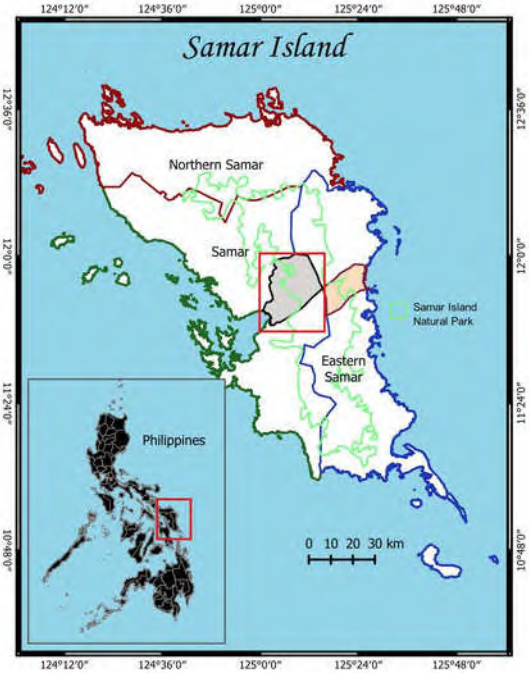
DAO conservation status: Not assessed

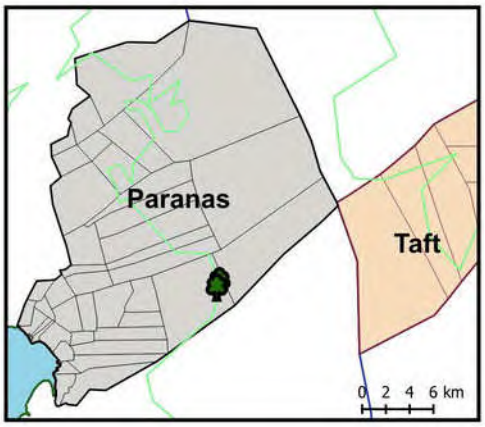
LCPI score: 20/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested as this is used for landscaping, festival decoration, medicine, food, and fiber (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Caryota rumphiana

N

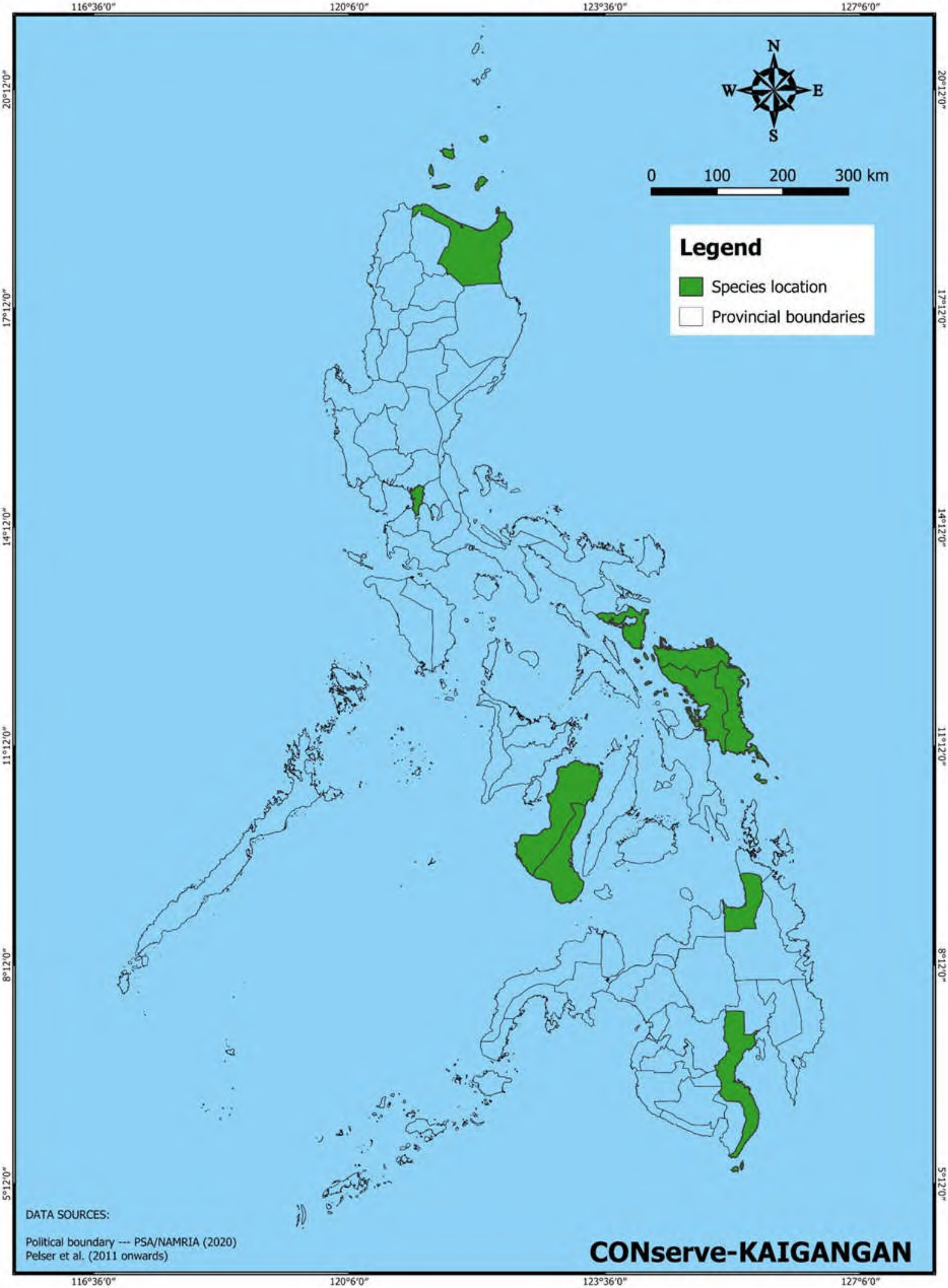
Legend

Caryota rumphiana

Plot 1 (1 individual)
Plot 3 (1 individual)

CONserve-KAIGANGAN

Philippine distribution map of Caryota rumphiana

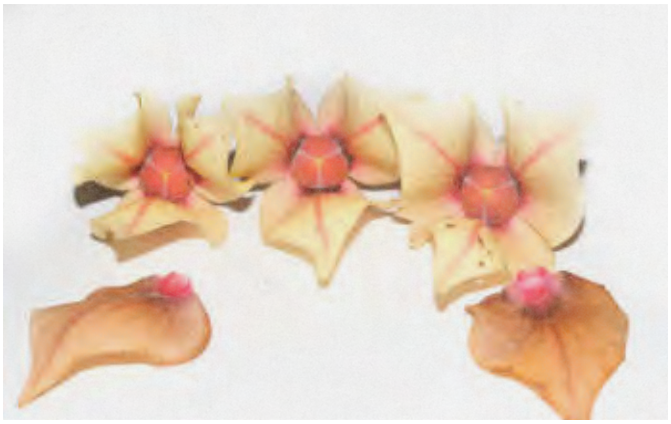


02 ***Aquilaria cumingiana* (Decne.) Ridl. (Thymelaeaceae)**

Agar, Lapnisan

Family: Thymelaeaceae
Scientific Name: *Aquilaria cumingiana* (Decne.) Ridl.
Local Name: Agar, Lapnisan






Field spot character: Bark is gray, mottled and smooth. Leaves alternate, smooth, and elliptically oblong. Fruit is green turning orange-red in color when mature, containing a single seed and two locules across which splits upon opening (Stuart, 2023). Resinous.

Samar plot occurrences: Plot 1

Occurrences in the Philippines: LUZON: Alabat, Albay, Aurora, Bulacan, Camarines Norte, Camarines Sur, Catanduanes, Laguna, Nueva Ecija, Quezon, Polillo, and Sorsogon, VISAYAS: Panay, Samar, and Tablas, MINDANAO: Agusan Del Norte, Agusan Del Sur, Bukidnon, Davao Del Sur, Lanao Del Sur, Maguindanao Del Norte, South Cotabato, Tawi-Tawi, Zamboanga Del Norte, and Zamboanga Del Sur (Pelser et al., 2011 onwards).

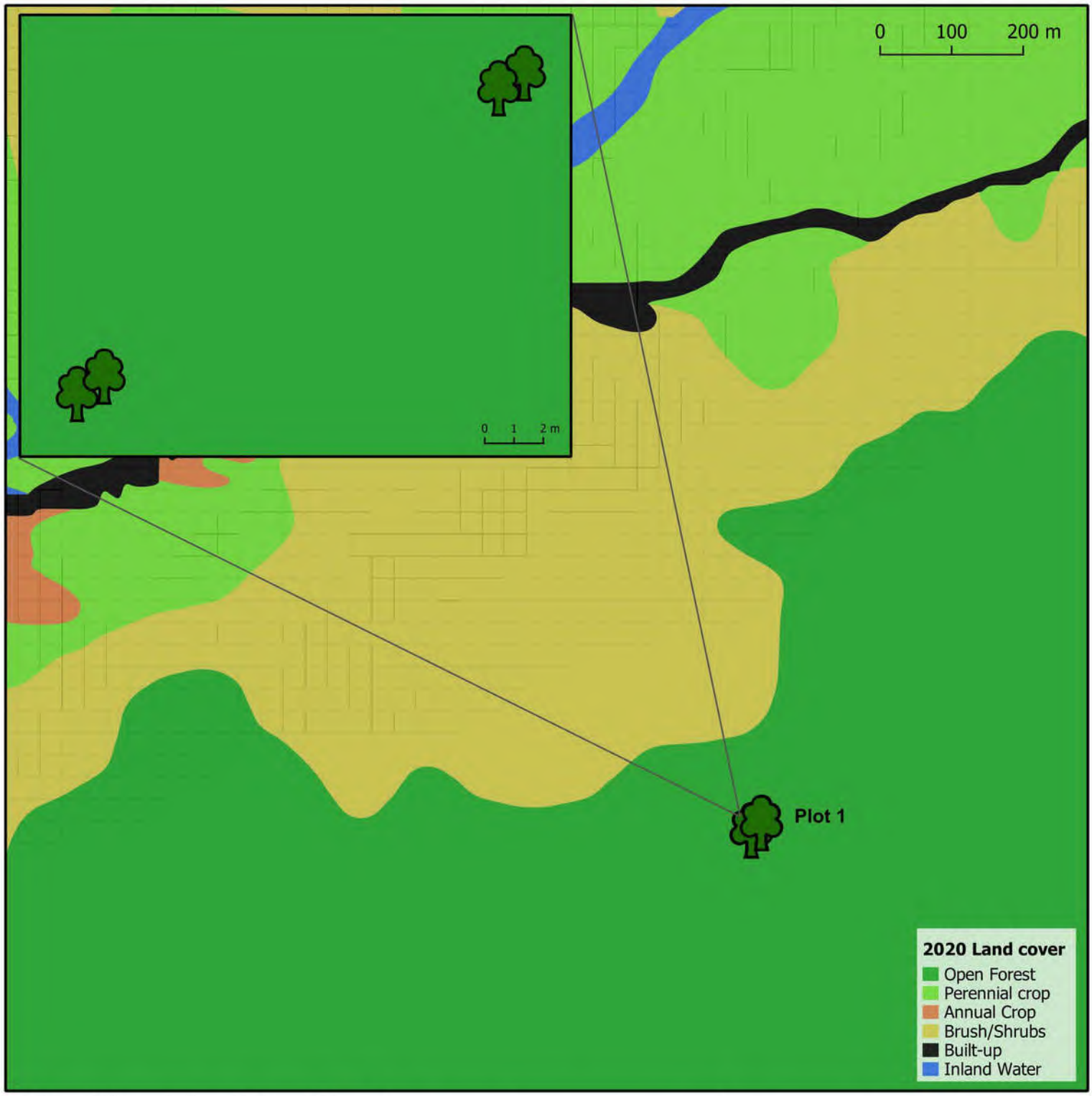
IUCN conservation status: Vulnerable

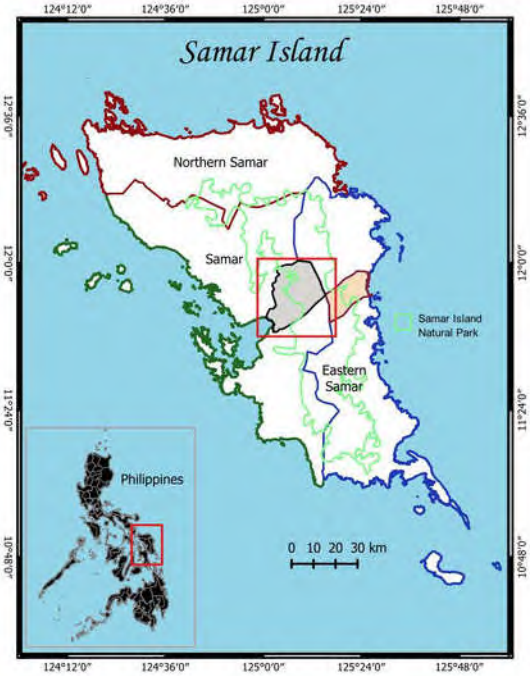
DAO conservation status: Vulnerable

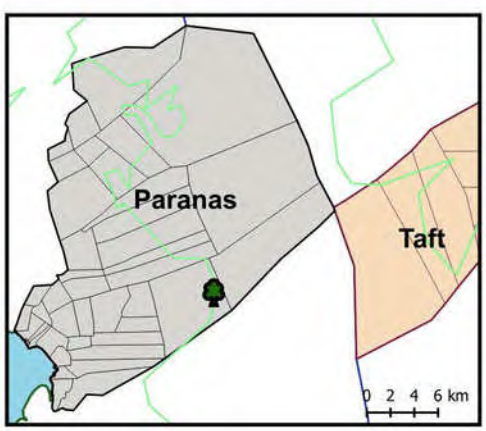
LCPI score: 19/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested. The roots, bark, and fruits are used for medicine, bark has resins, trunk is utilized for timber, plant is ornamental and industrial products (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Aquilaria cumingiana

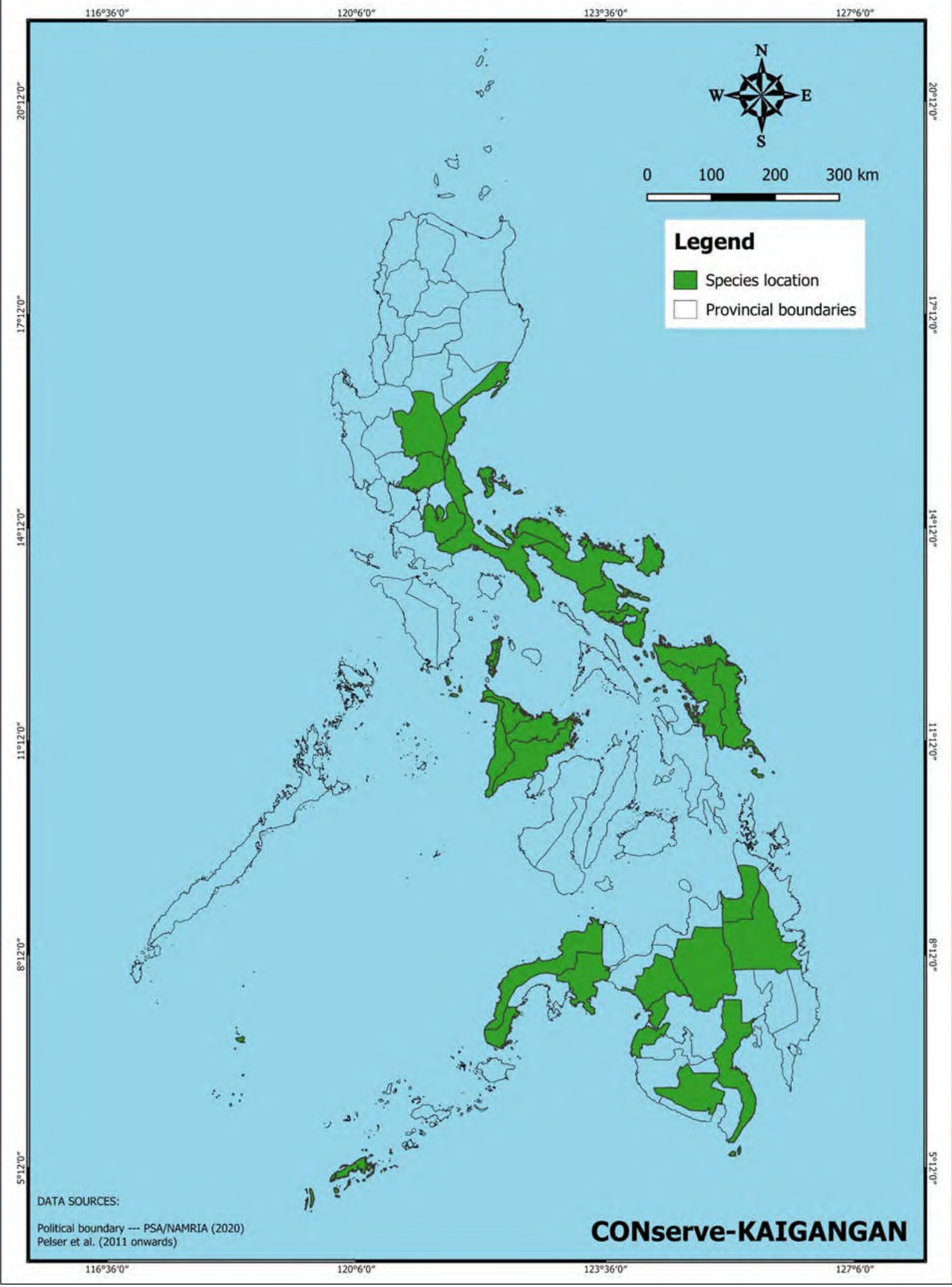
Legend

Aquilaria cumingiana

Plot 1 (4 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Aquilaria cumingiana



03 ***Cycas riuminiana* Regel (Cycadaceae)**

Pitogo

Family: Cycadaceae
Scientific Name: *Cycas riuminiana* Regel
Local Name: Pitogo

Field spot character: Short, stout, and woody trunk, with a wide and stiff crown of pinnate leaves.

Samar plot occurrences: Plot 16

Occurrences in the Philippines: LUZON: Batan, Bataan, Batangas, Cagayan, Cavite, Ilocos Norte, Isabela, Laguna, Mindoro, NCR, and Pampanga, VISAYAS: Leyte and Samar (Pelser et al., 2011 onwards).

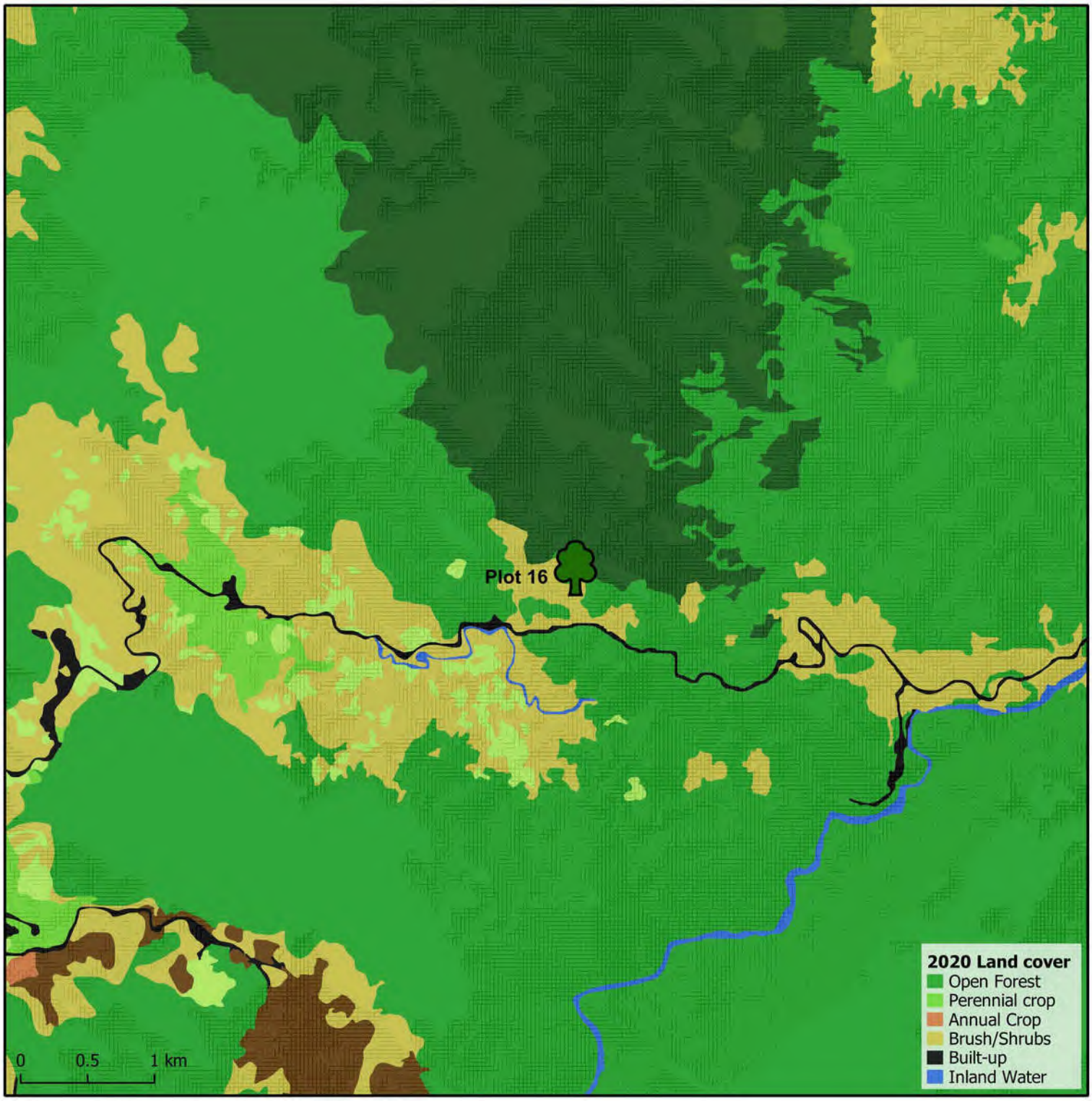
IUCN conservation status: Endangered

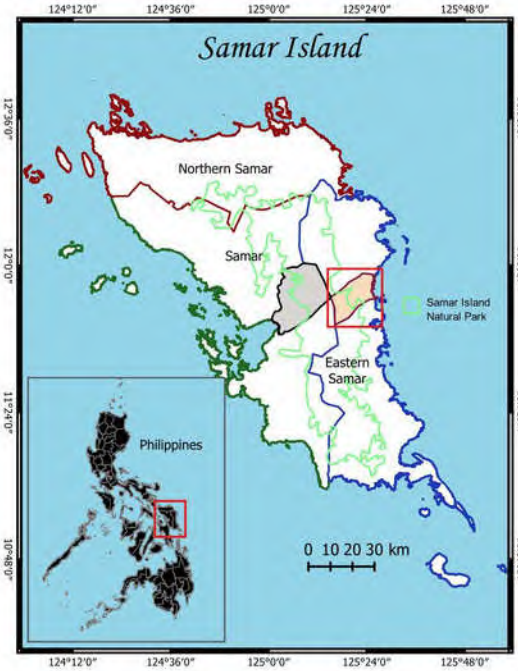
DAO conservation status: Vulnerable

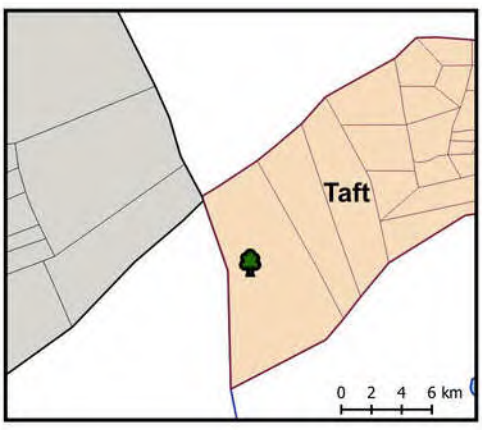
LCPI score: 18/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested for food, landscaping, religious activities, and festival decoration (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

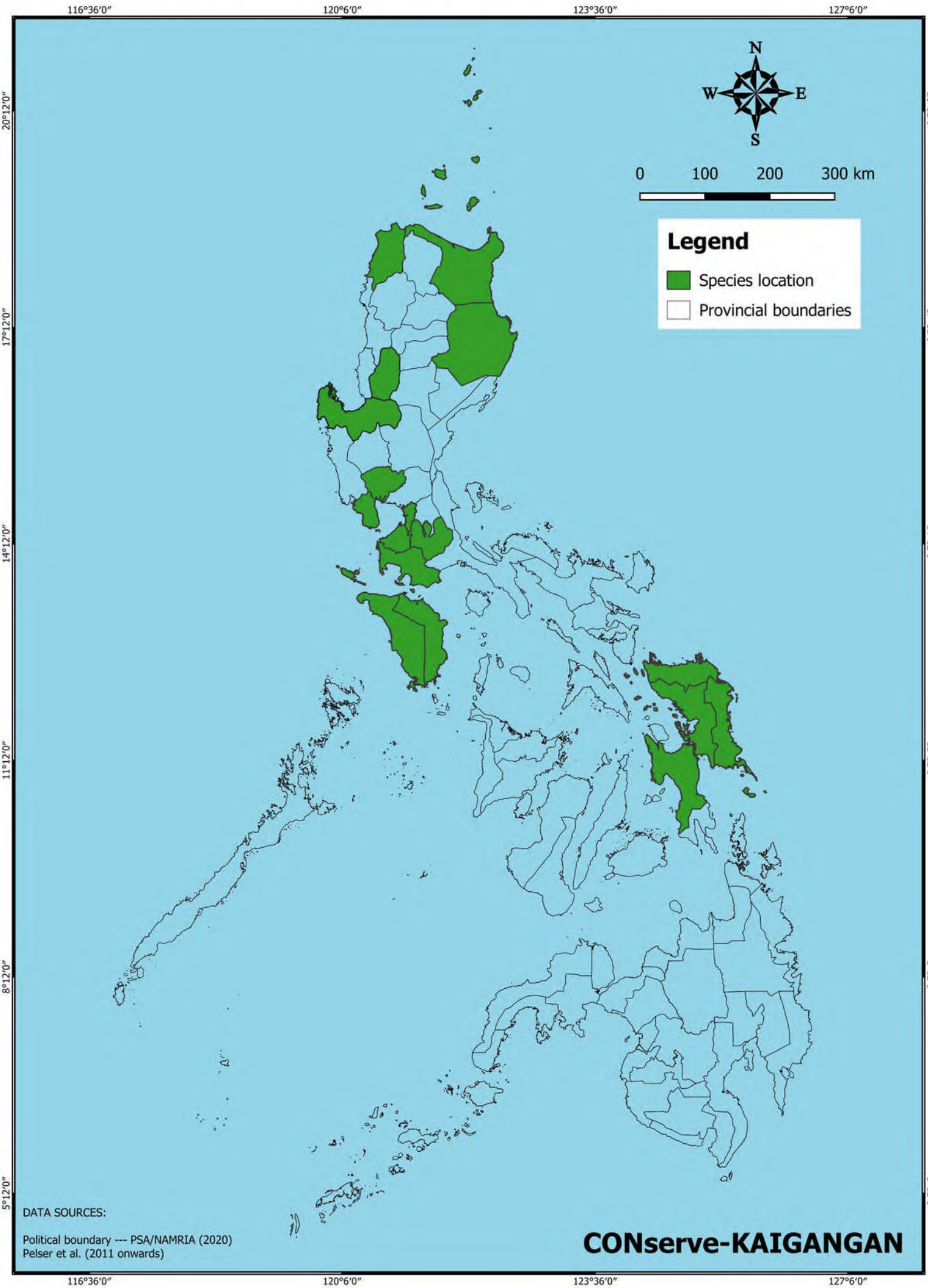
Samar distribution of Cycas riuminiana

Legend

Cycas riuminiana
Plot 16 (1 individual)

CONserve-KAIGANGAN

Philippine distribution map of Cycas riuminiana



04 ***Dracaena angustifolia*** **(Medik.) Roxb. (Asparagaceae)**
Tulang

Family: Asparagaceae
Scientific Name: *Dracaena angustifolia* (Medik.) Roxb.
Local Name: Tulang

Field spot character: Long, narrow pointed leaves with lighter green to whitish yellow towards the center.

Samar plot occurrences: Plot 16

Occurrences in the Philippines: LUZON: Albay, Apayao, Aurora, Bataan, Benguet, Bulacan, Cagayan, Catanduanes, Golo, Ifugao, Ilocos Sur, Isabela, Itbayat, La Union, Mangsee, Mindoro, Nueva Vizcaya, Palawan, Pangasinan, Polillo, Quezon, Rizal, Sibuyan, Sorsogon, and Zambales, VISAYAS: Biliran, Guimaras, Leyte, and Samar, MINDANAO: Cagayan De Sulu, Davao Del Sur, Kinapusan, Lanao Del Sur, and South Cotabato (Pelser et al., 2011 onwards).

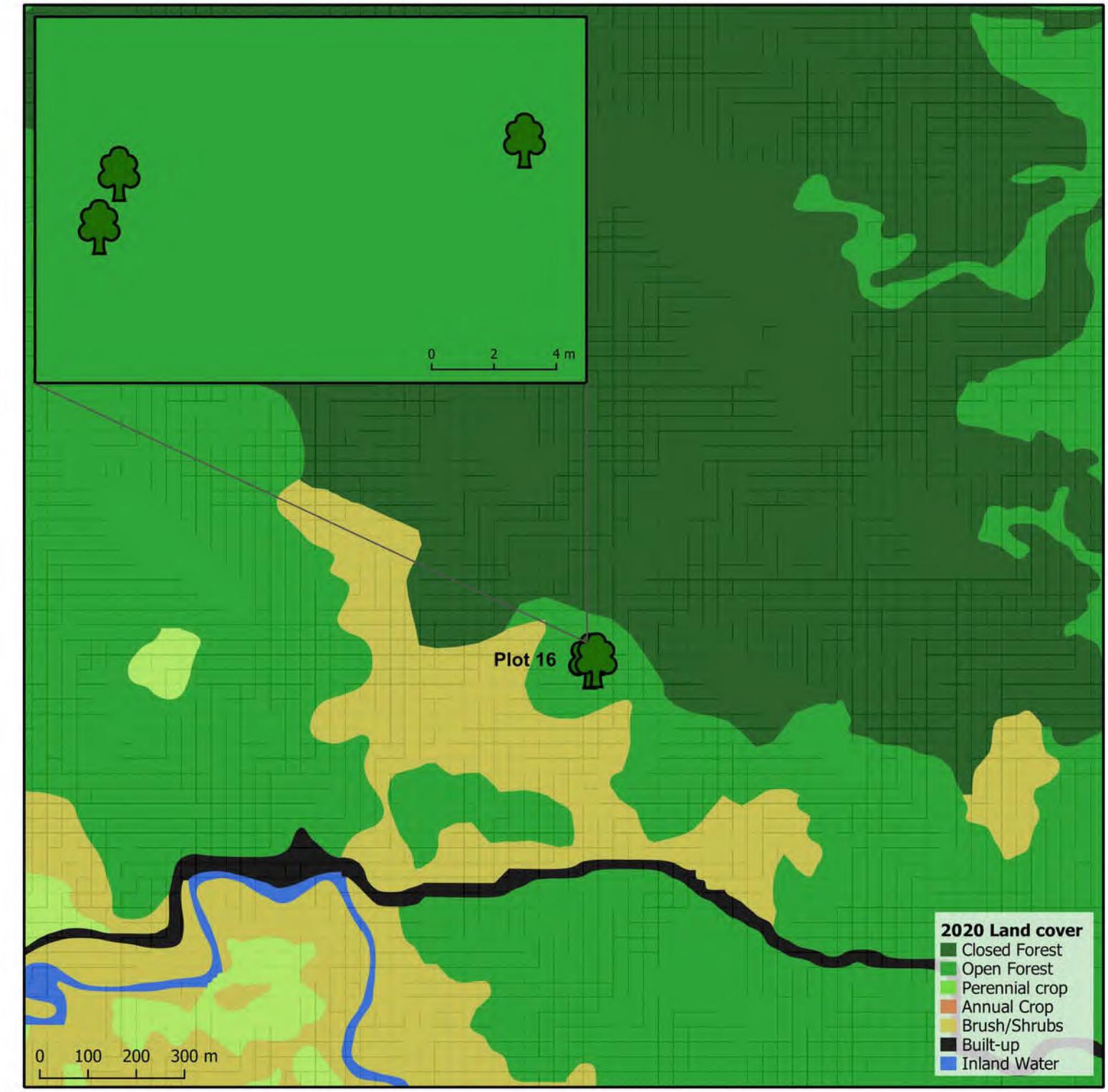
IUCN conservation status: Not assessed

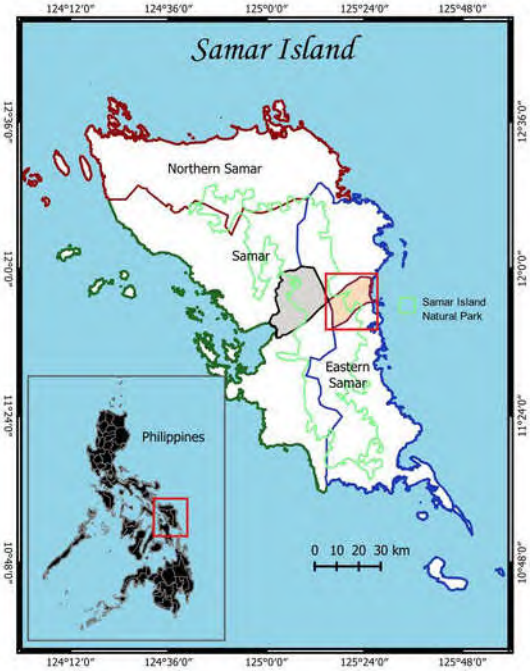
DAO conservation status: Not assessed

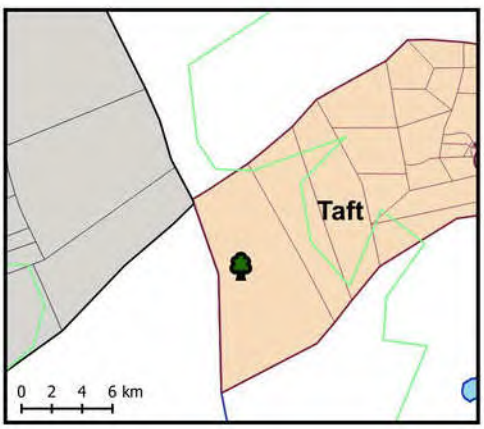
LCPI score: 18/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested. It is utilized as ornamental, food; roots and leaves for medicine and industrial products (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Dracaena angustifolia

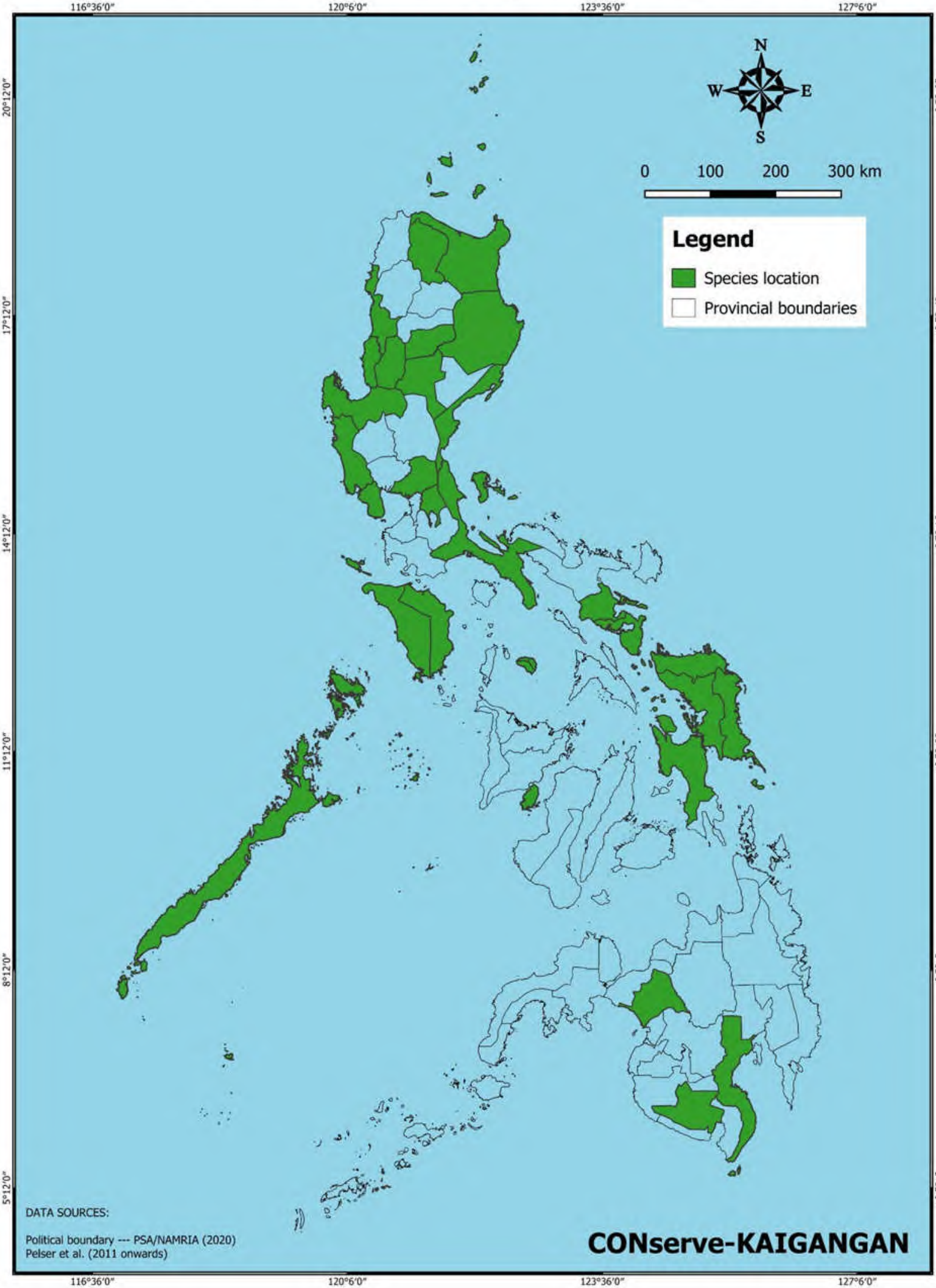
N

Legend

Dracaena angustifolia
Plot 16 (3 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Dracaena angustifolia



05 ***Oncosperma tigillarium* (Jack) Ridl. (Arecaceae)**
Anibong

Family: Arecaceae
Scientific Name: *Oncosperma tigillarium* (Jack) Ridl.
Local Name: Anibong

Field spot character: A medium-sized palm tree with a clustering habit, covered with long black spines (Nparks, 2024). Leaves are pinnate and slightly curved. Young fruits are light green and purple-black when ripe.

Samar plot occurrences: Plots 1 & 3

Occurrences in the Philippines: LUZON: Palawan and VISAYAS: Samar (Pelser et al., 2011 onwards)

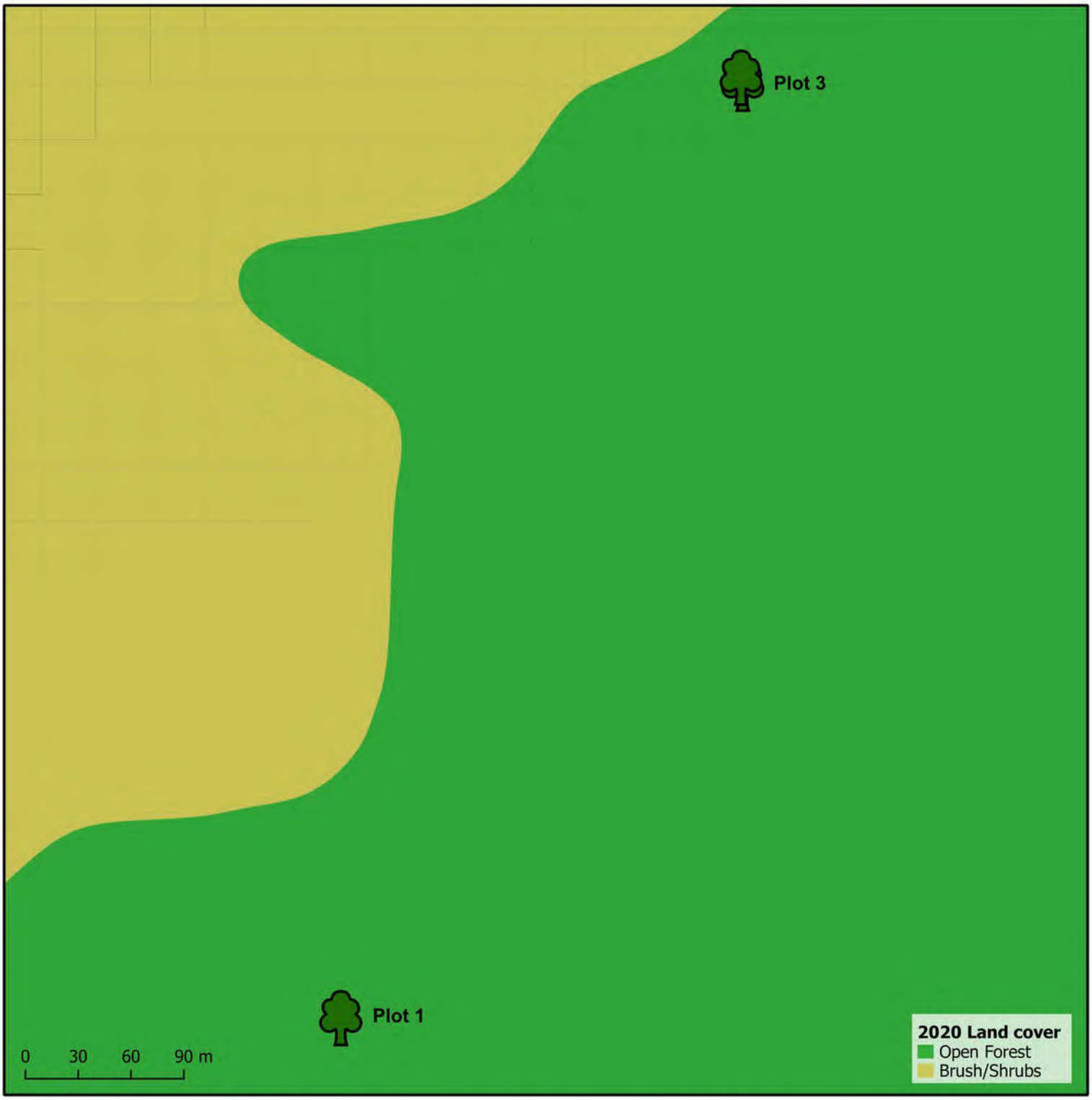
IUCN conservation status: Not assessed

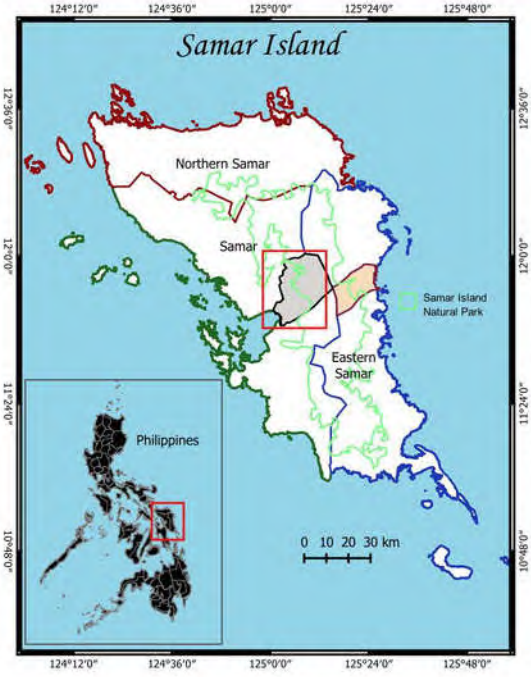
DAO conservation status: Vulnerable

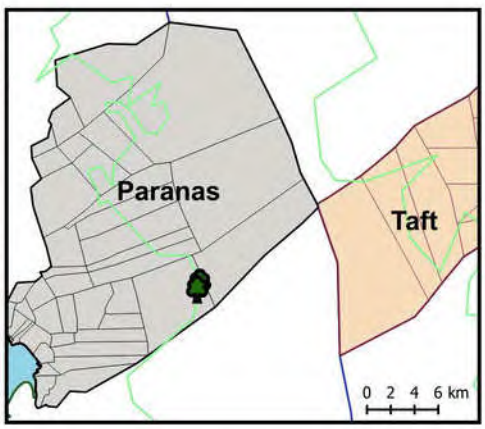
LCPI score: 18/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested. It is used as ornamental, construction material; roots for medicine and handicrafts; and leaves for food and fiber (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Oncosperma tigillarium

N

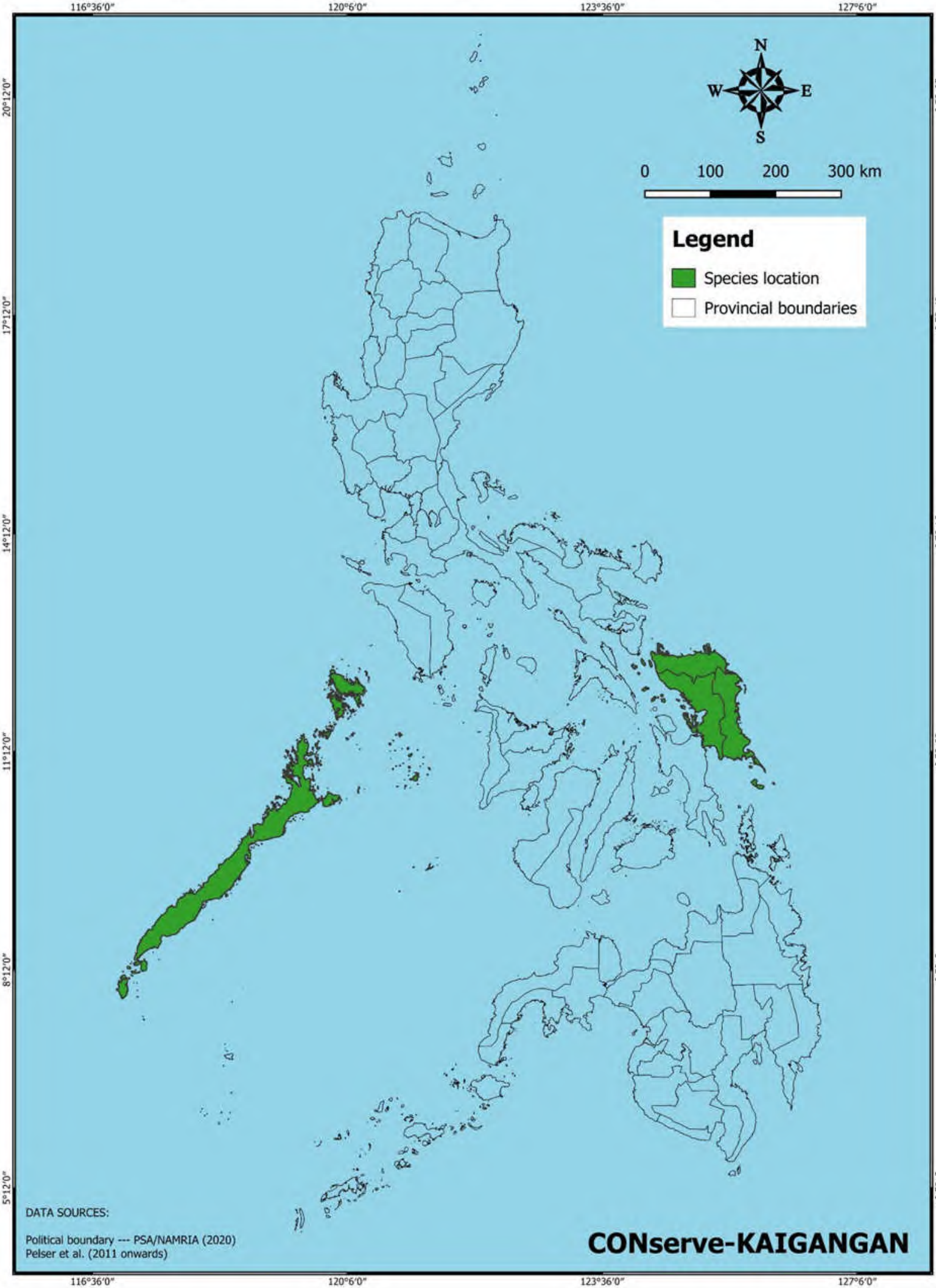
Legend

Oncosperma tigillarium

Plot 1 (1 individual)
Plot 3 (2 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Oncosperma tigillarium



06 ***Oreocnide rubescens*** **(Blume) Miq. (Urticaceae)**

Lingatong

Family: Urticaceae
Scientific Name: *Oreocnide rubescens* (Blume) Miq.
Local Name: Lingatong

Field spot character: Big leaves, ovate or lanceolate with prominent venation. It has star-shaped flowers when open and fruits dominantly red orange in color. Bark grayish brown or gray.

Samar plot occurrences: Plots 1, 3 & 4

Occurrences in the Philippines: LUZON: Albay, Camarines Sur, Laguna, Mindoro, Quezon, and Sorsogon, VISAYAS: Biliran, Bohol, Leyte, Negros, and Samar, MINDANAO: Agusan Del Norte, Bukidnon, Camiguin, Davao, Davao Oriental, Jolo, Lanao Del Sur, Maguindanao Del Norte, Misamis Occidental, Misamis Oriental, Sulu Archipelago, Zamboanga, Zamboanga Del Norte, and Zamboanga Del Sur (Pelser et al., 2011 onwards).

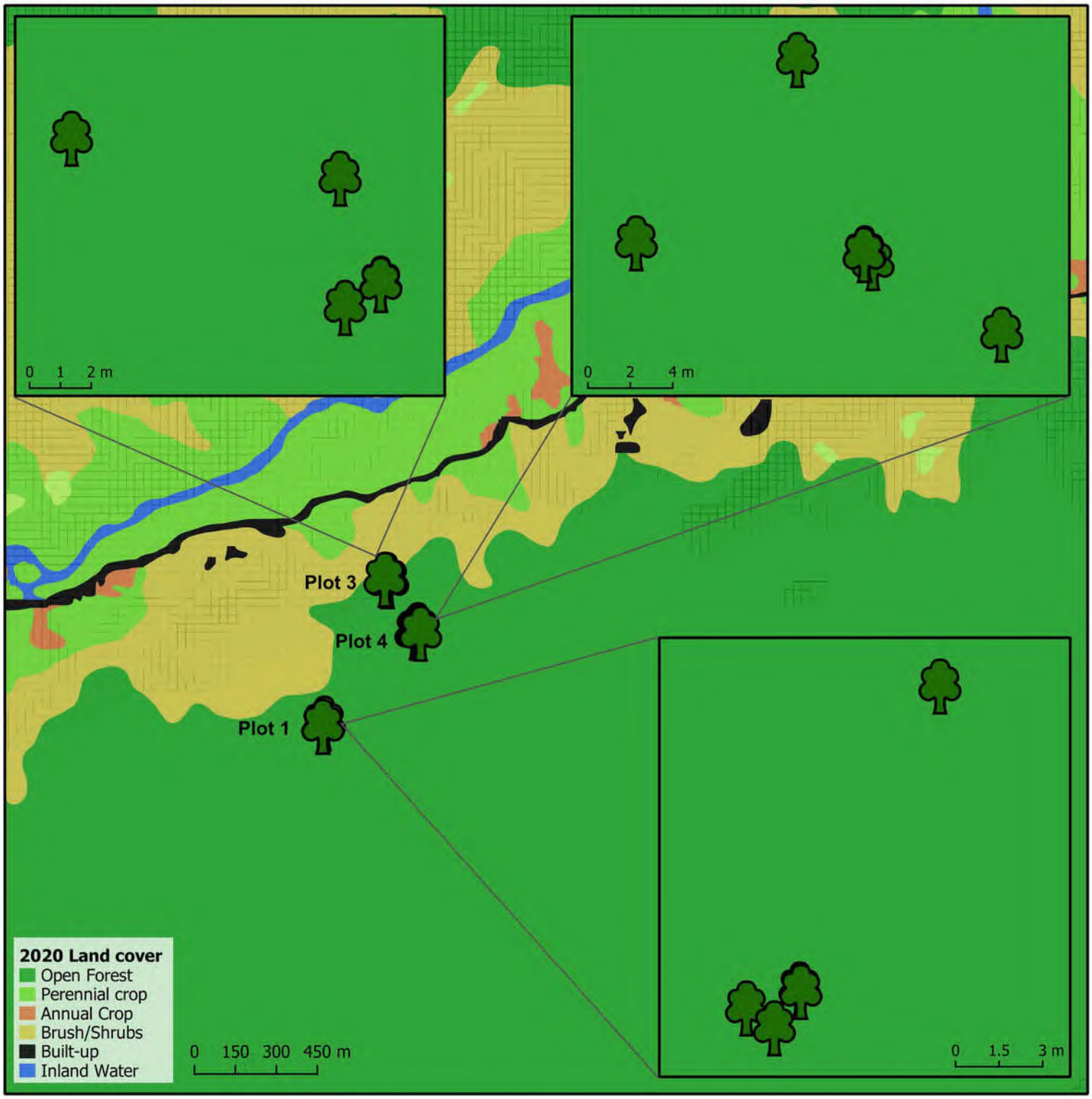
IUCN conservation status: Least Concern

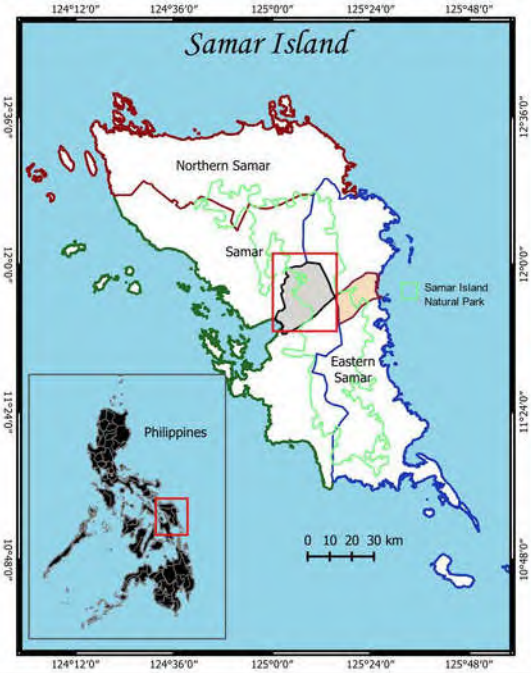
DAO conservation status: Not assessed

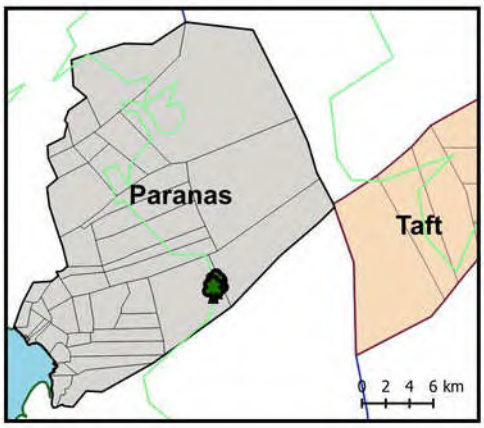
LCPI score: 18/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested. It is utilized as fiber, dye and fence; roots for medicine; and leaves for food (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Oreocnide rubescens

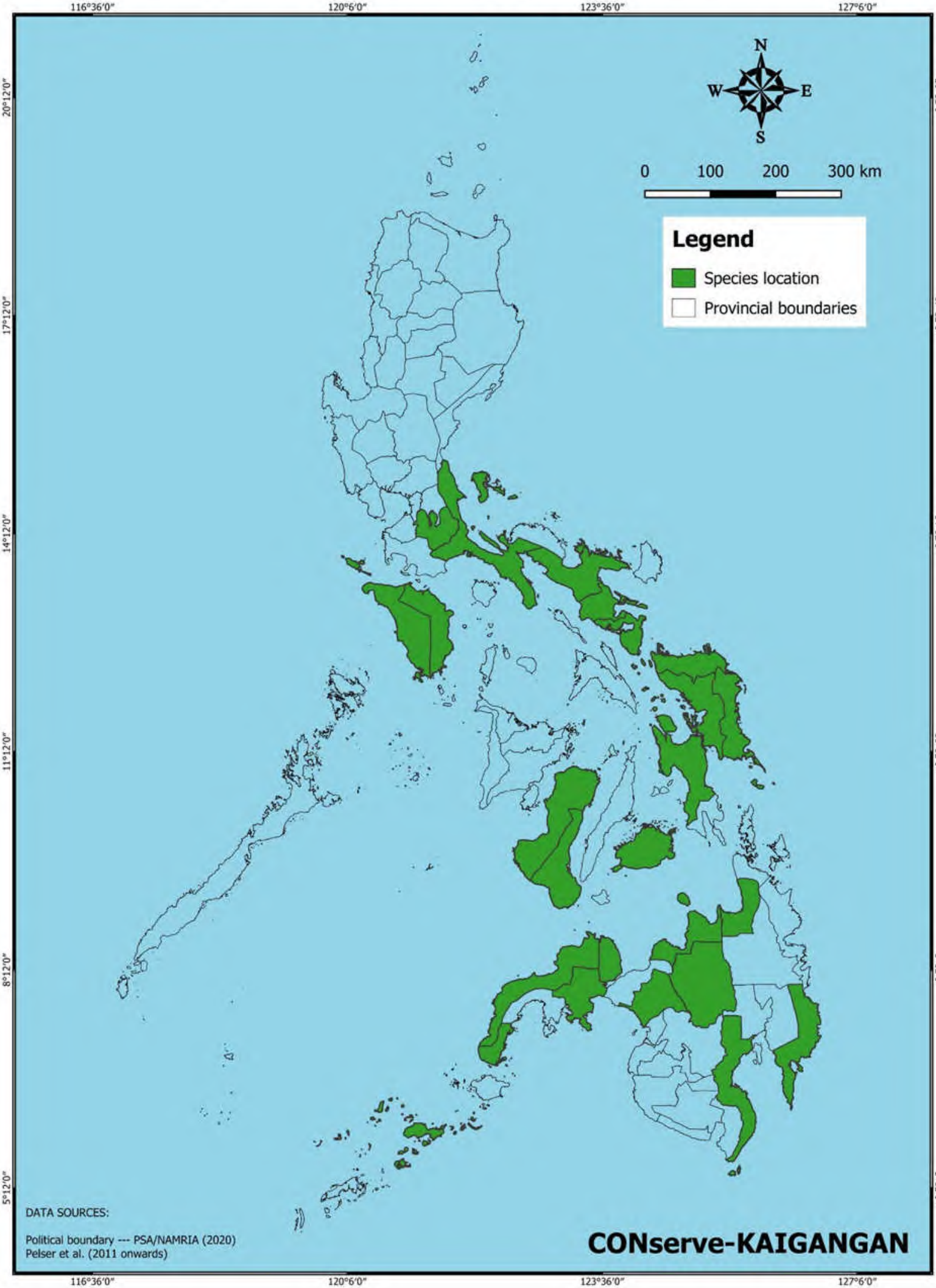
N

Legend

- ***Oreocnide rubescens***
  - Plot 1 (5 individuals)
  - Plot 3 (5 individuals)
  - Plot 4 (7 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Oreocnide rubescens



07 ***Kleinhovia hospita* L. (Malvaceae)**

Tan-ag

Family: Malvaceae
Scientific Name: *Kleinhovia hospita* L.
Local Name: Tan-ag

Field spot character: A bushy tree with dense rounded crown and prominently pink flowers. Leaves are ovate to heart-shaped while the fruits are rounded, with five-lobed seedpods turning brown when mature (Orwa et al., 2009).
Samar plot occurrences: Plots 4 & 5

Occurrences in the Philippines: LUZON: Albay, Ambil, Apulit, Aurora, Balabac, Bataan, Bulacan, Camarines Norte, Camarines Sur, Catanduanes, Coron, Culion, Ilocos Norte, Ilocos Sur, La Union, Laguna, Marinduque, Mindoro, Mountain Province, NCR, Palawan, Quezon, Rizal, Sibuyan, Sorsogon, and Zambales, VISAYAS: Bohol, Guimaras, Leyte, Masbate, Panay, Samar, and Semirara, MINDANAO: Agusan Del Norte, Agusan Del Sur, Basilan, Cagayan De Sulu, Davao, Davao Del Sur, Lanao Del Norte, Lanao Del Sur, South Cotabato, Surigao, and Zamboanga (Pelser et al., 2011 onwards).

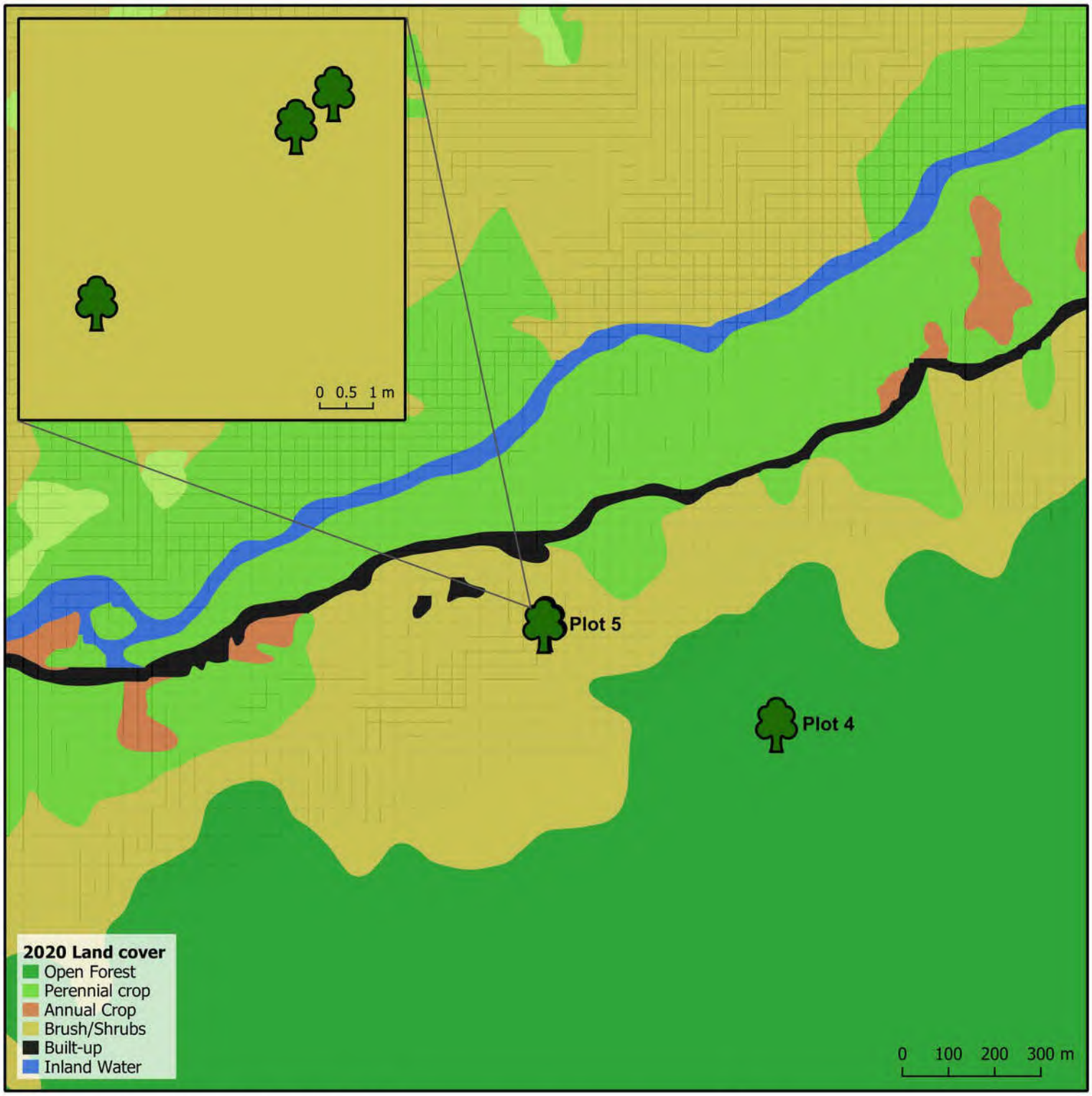
IUCN conservation status: Least Concern

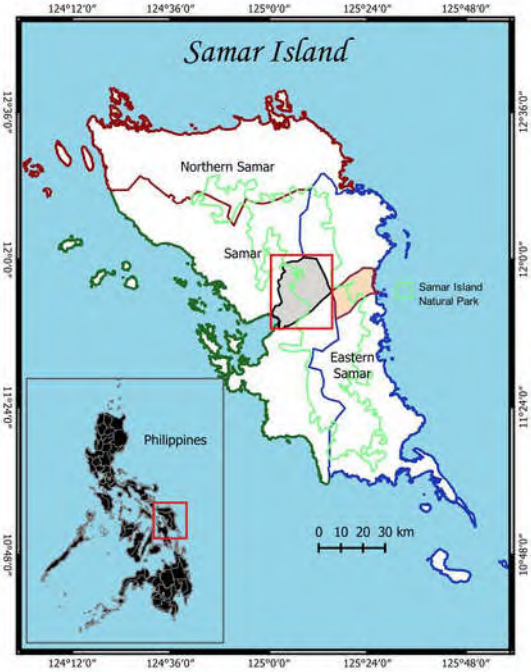
DAO conservation status: Not assessed

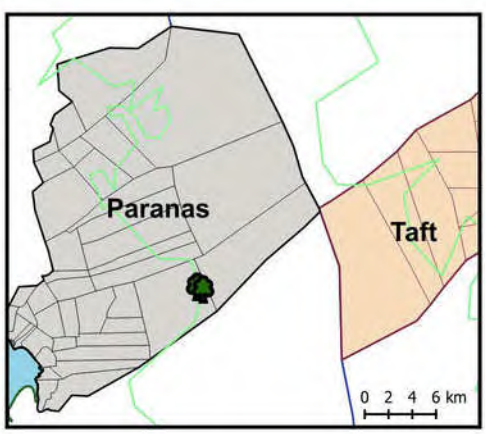
LCPI score: 18/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested. It is used as ornamental, furniture, poles, and fiber; leaves for food and medicine; and bark used for removing ecto-parasites (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Kleinhovia hospita

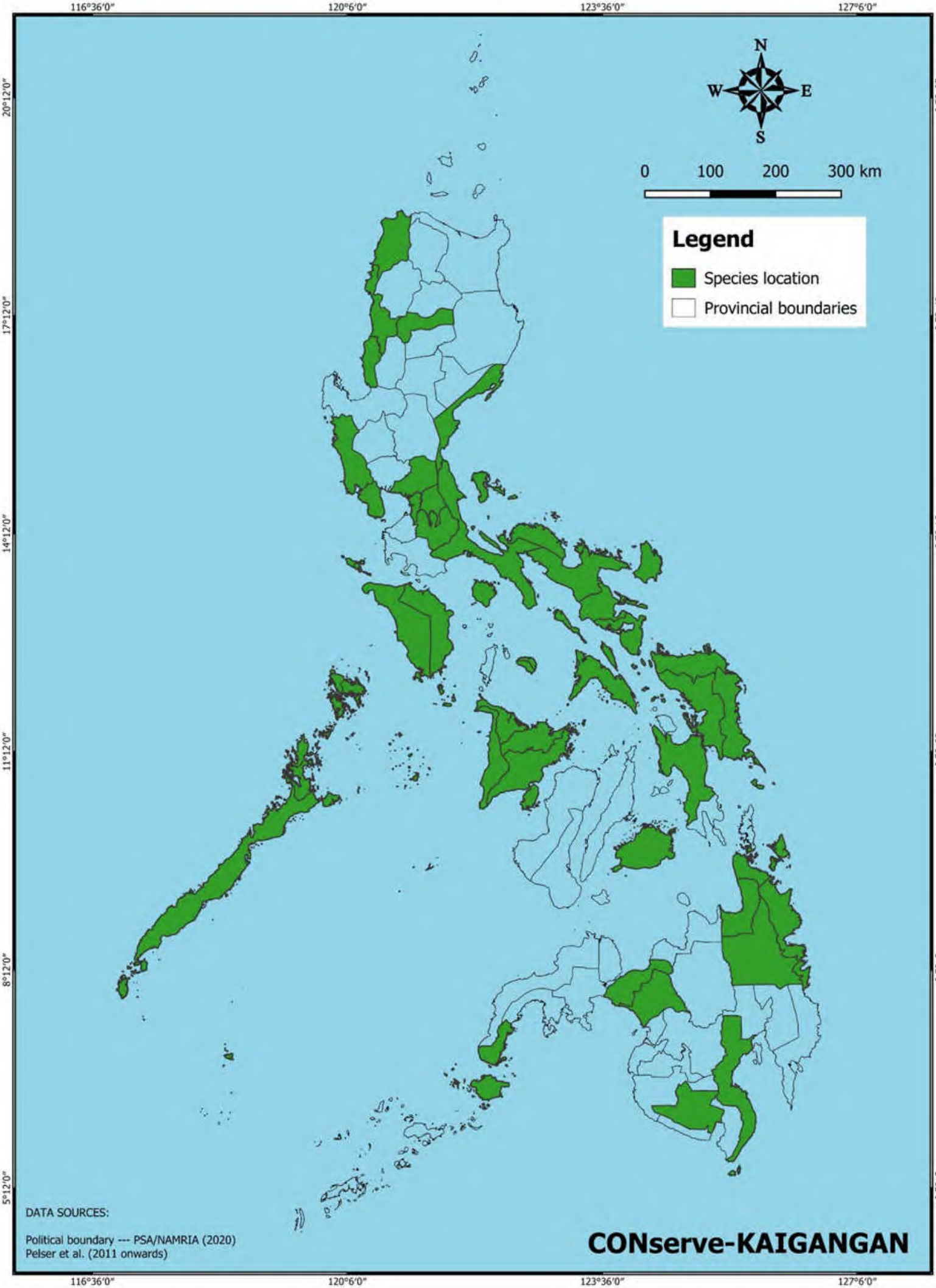
N

Legend

Kleinhovia hospita
Plot 4 (1 individual)
Plot 5 (3 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Kleinhovia hospita



08 ***Diospyros blancoi* A. DC. (Ebenaceae)**

Kamagong

Family: Ebenaceae
Scientific Name: *Diospyros blancoi* A. DC.
Local Name: Kamagong

Field spot character: Straight and erect trunk with rounded or spreading crown. The leaves are leathery, with a dark green, glossy, and shiny upper surface and a silvery under surface (NParks, 2024).

Samar plot occurrences: Plots 1 & 13

Occurrences in the Philippines: LUZON: Albay, Aurora, Batan, Bataan, Bulacan, Cagayan, Camarines, Camarines Sur, Catanduanes, Laguna, Malapackun, Mindoro, NCR, Palawan, Pampanga, Quezon, Rizal, Sorsogon, and Zambales, VISAYAS: Camotes, Guimaras, Leyte, Panay, and Samar, MINDANAO: Agusan Del Norte, Davao Oriental, and Surigao (Pelser et al., 2011 onwards).

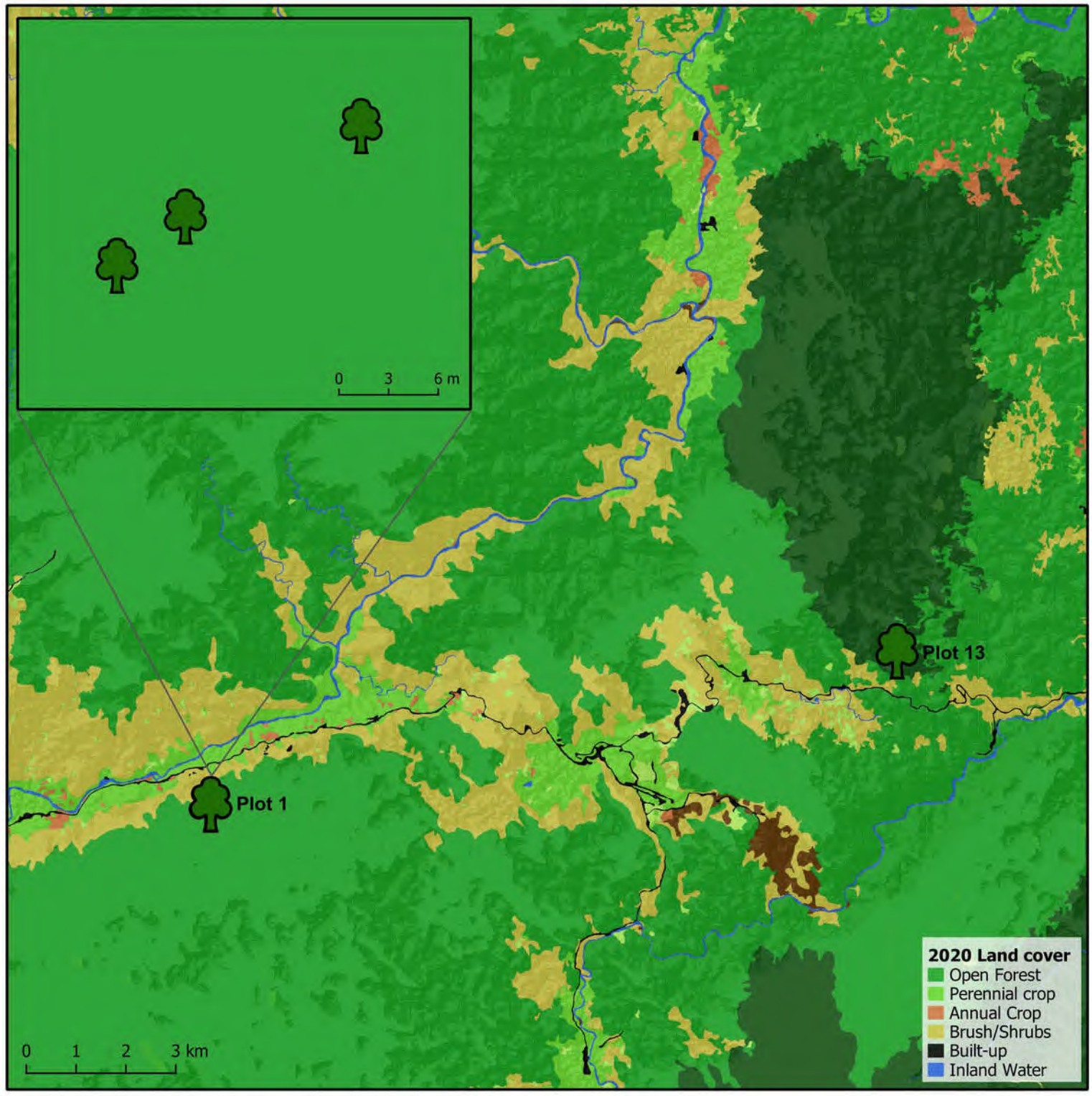
IUCN conservation status: Not assessed

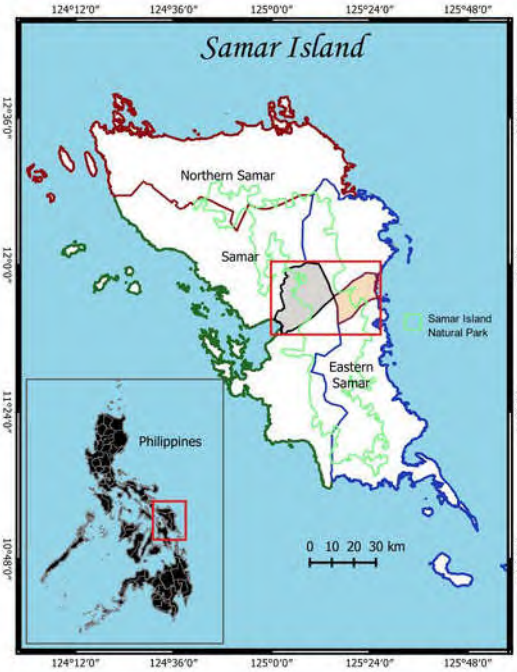
DAO conservation status: Vulnerable

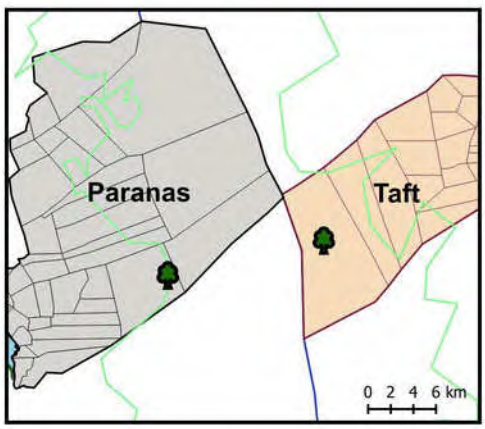
LCPI score: 18/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested. It is used for landscaping, material for handicraft, furniture, construction purposes, food, and medicine (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Diospyros blancoi

N

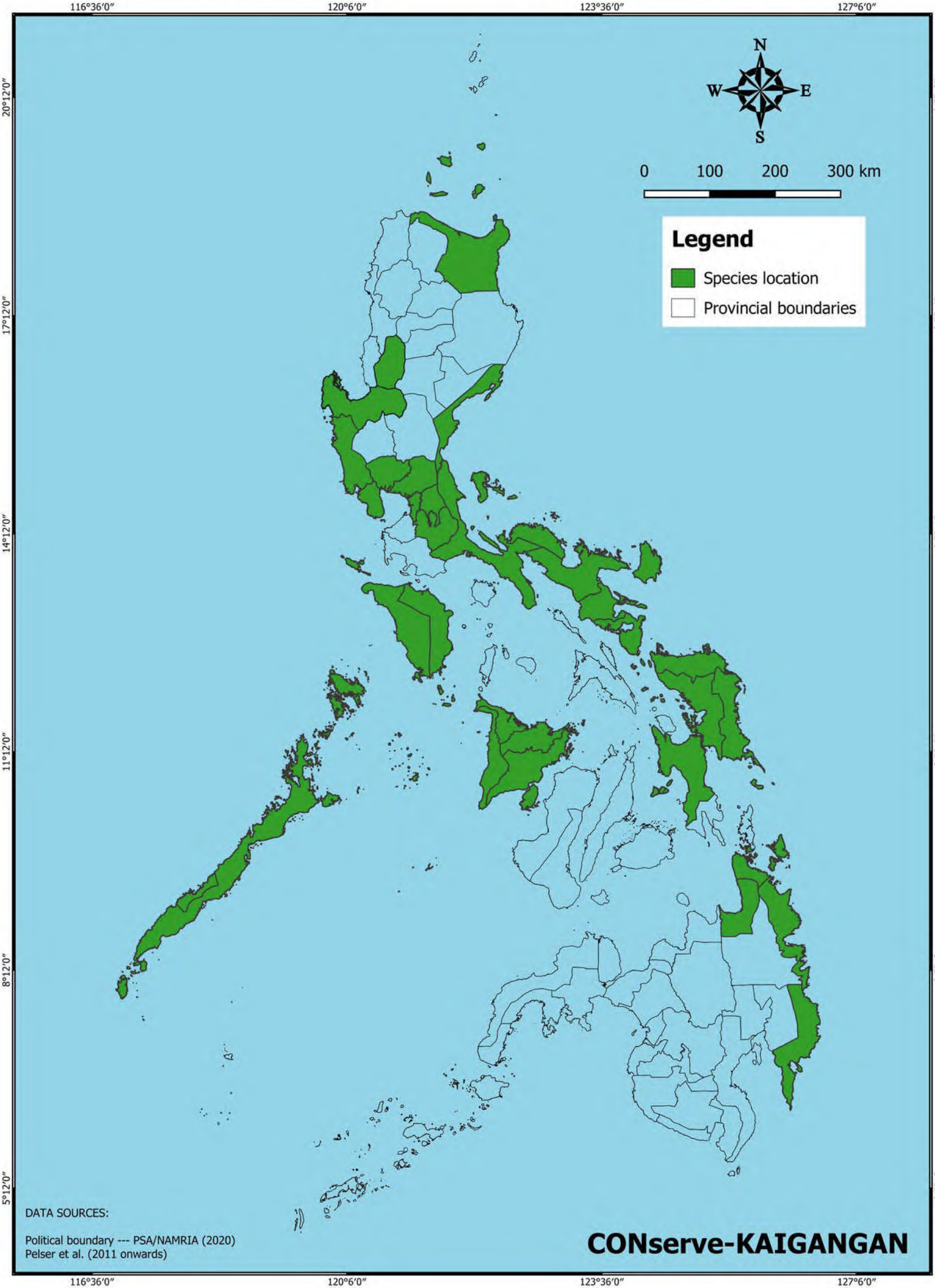
Legend

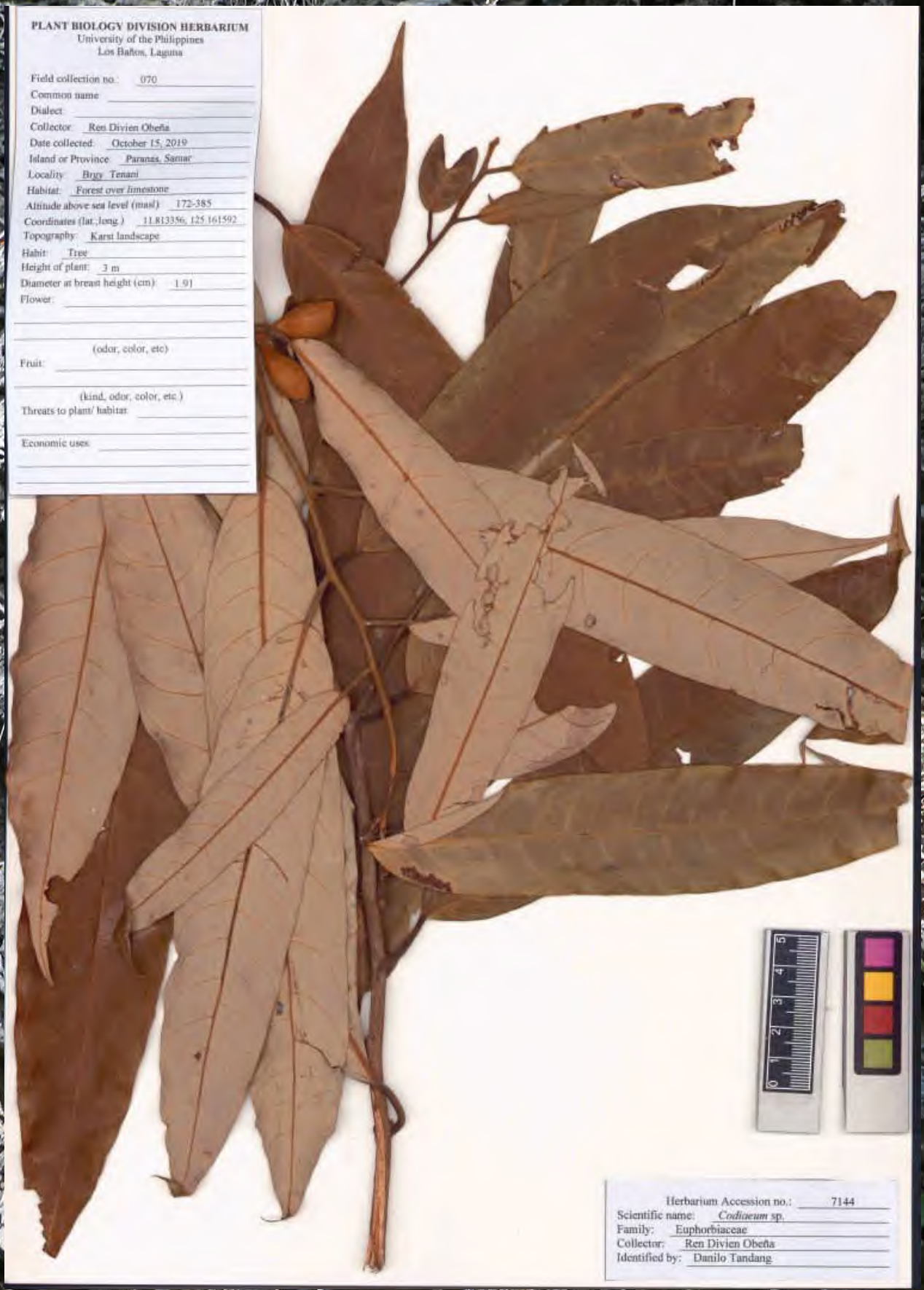
Diospyros blancoi

Plot 1 (3 individuals)
Plot 13 (1 individual)

CONserve-KAIGANGAN

Philippine distribution map of Diospyros blancoi





09

Codiaeum sp. (Euphorbiaceae)

Dug-an

Family: Euphorbiaceae
Scientific Name: *Codiaeum sp.*
Local Name: Dug-an

Field spot character: Leaf with a leathery texture and prominent intramarginal vein. Inflorescence yellow to red orange in color.

Samar plot occurrences: Plots 1 & 2

Occurrences in the Philippines: Not enough information aside from the current study in Samar.

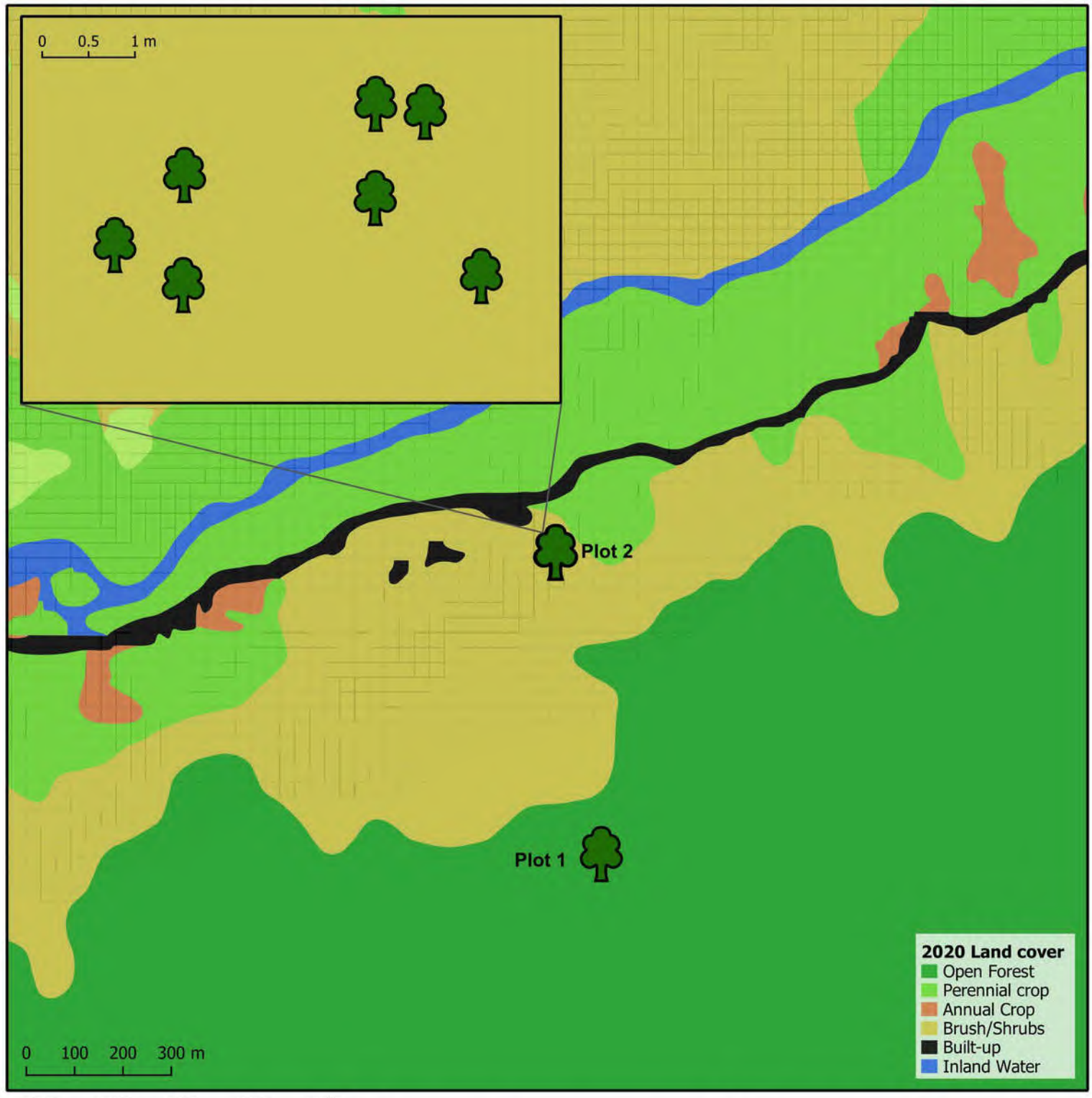
IUCN conservation status: Not assessed

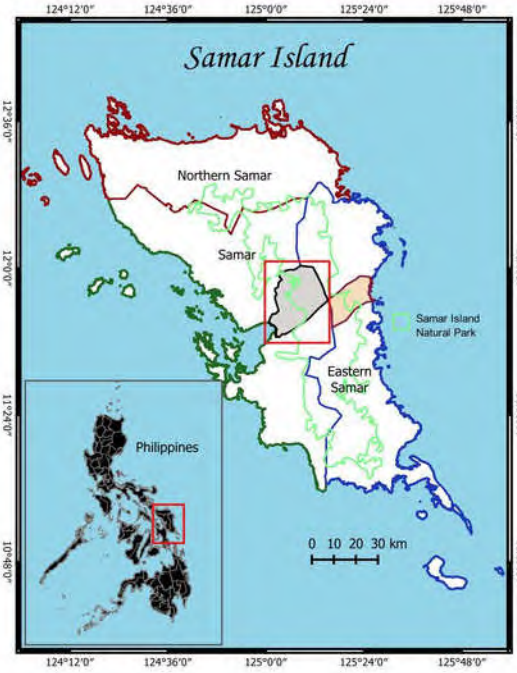
DAO conservation status: Not assessed

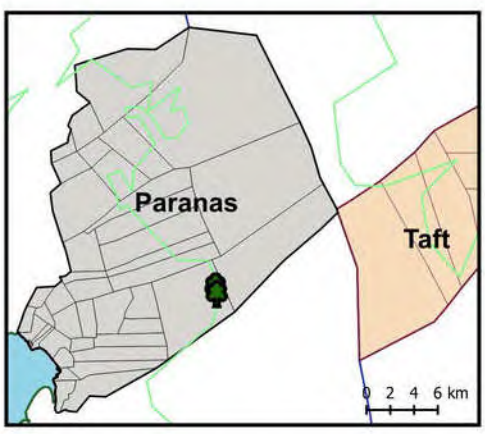
LCPI score: 18/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested for medicine, construction materials, firewood, and forage (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Codiaeum sp

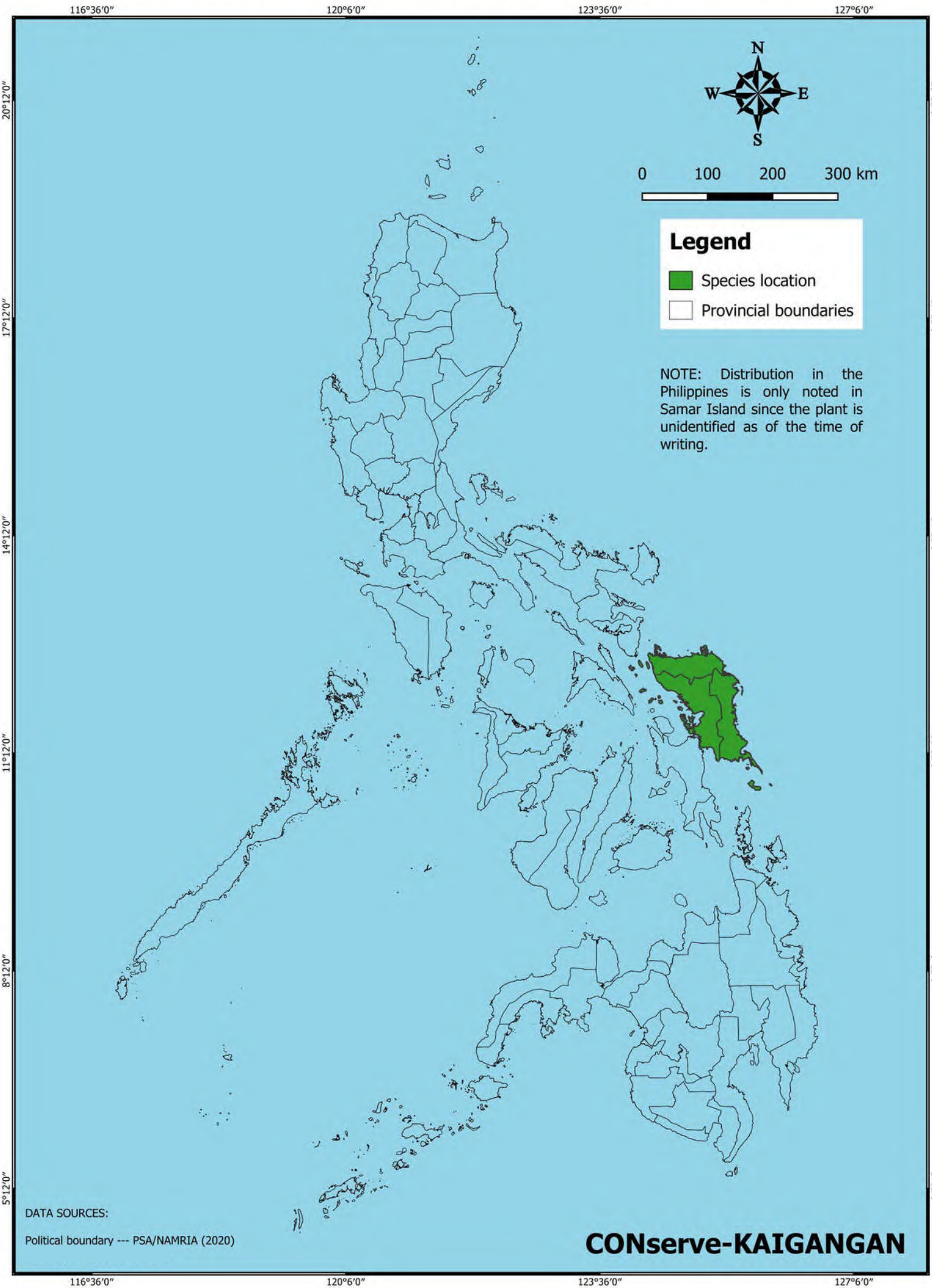
Legend

Codiaeum sp.

Plot 1 (1 individual)
Plot 2 (7 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Codiaeum species



10 ***Gymnostoma rumphianum* (Miq.) L.A.S.Johnson (Casuarinaceae)**

Agoho

Family: Casuarinaceae
Scientific Name: *Gymnostoma rumphianum* (Miq.) L.A.S.Johnson
Local Name: Agoho

F**ield spot character:** The crown is pyramidal in shape, with many lateral branches and soft busy appearance similar to some conifer species (NParks, 2024). Leaves (twigs) are needle-like and segmented, unlike Pinus species. Bark is often rough in texture.

Samar plot occurrences: Plot 4

Other places of occurrences in the Philippines: LUZON: Albay, Aurora, Camarines Norte, Camarines Sur, Laguna, Mindoro, NCR, Palawan, Quezon, Sibuyan, Sorsogon, and Tarlac, VISAYAS: Biliran, Leyte, Panay, and Samar, MINDANAO: Agusan Del Norte, Bucas Grande, Bukidnon, Cotabato, Davao, Davao Del Sur, Lanao, Lanao Del Sur, Misamis Occidental, and Zamboanga (Pelser et al., 2011 onwards).

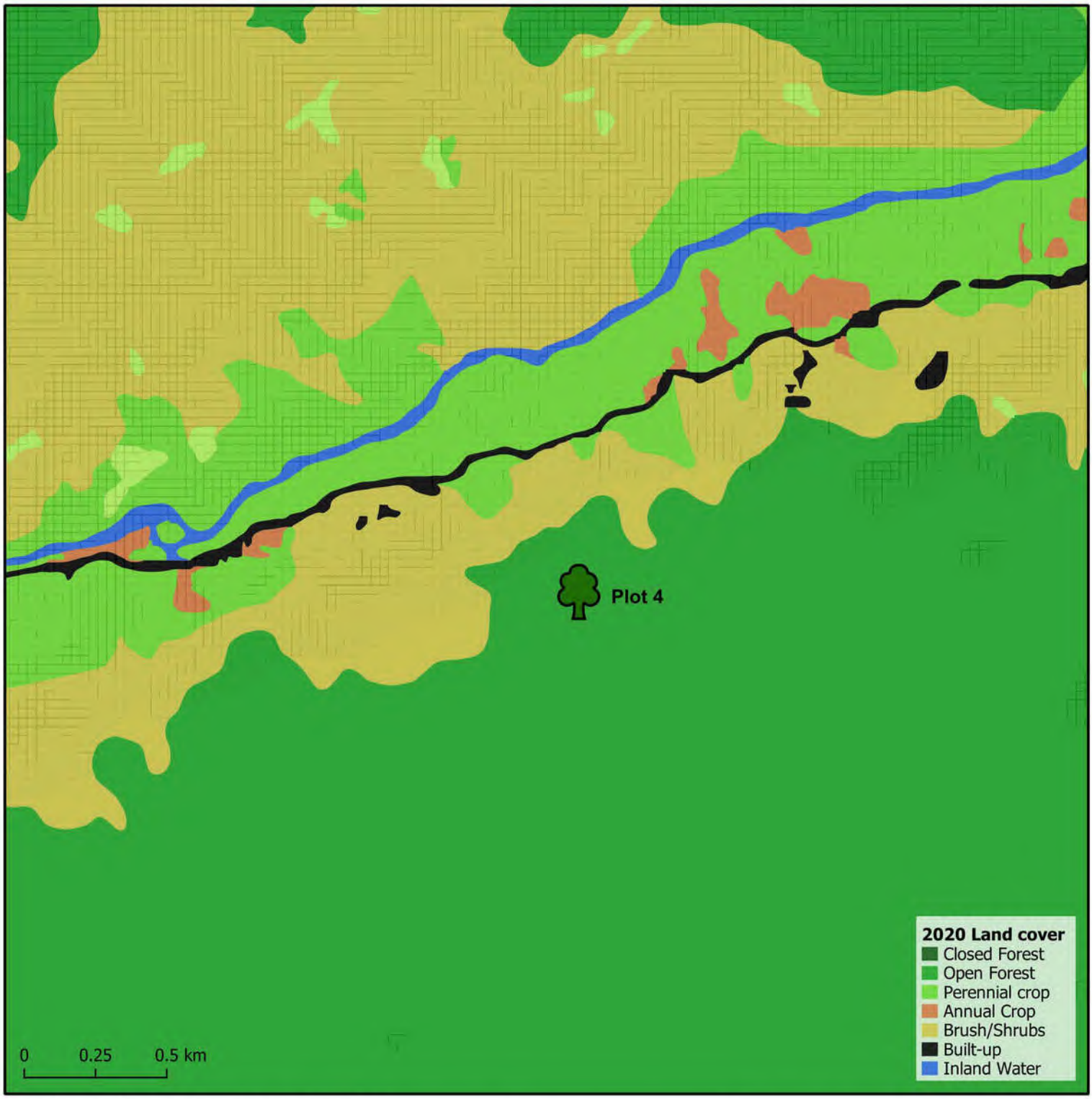
IUCN conservation status: Not assessed

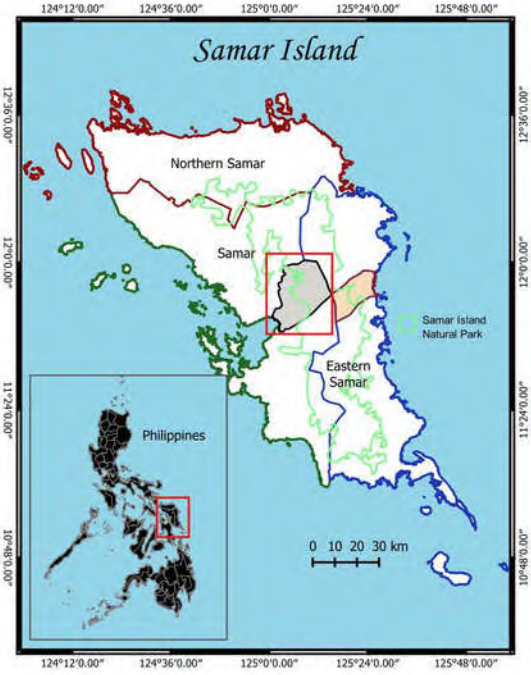
DAO conservation status: Other threatened species

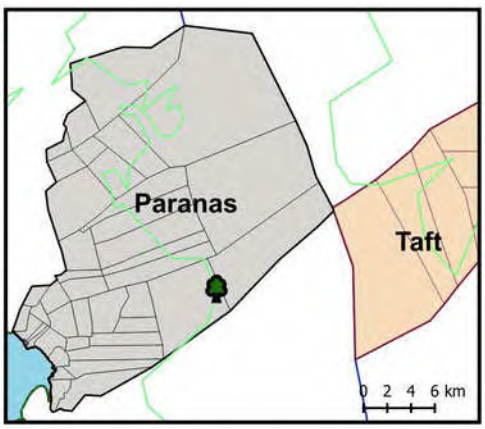
LCPI score: 17/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested for building materials, fuelwood, ornaments, and medicines (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Gymnostoma rumphianum

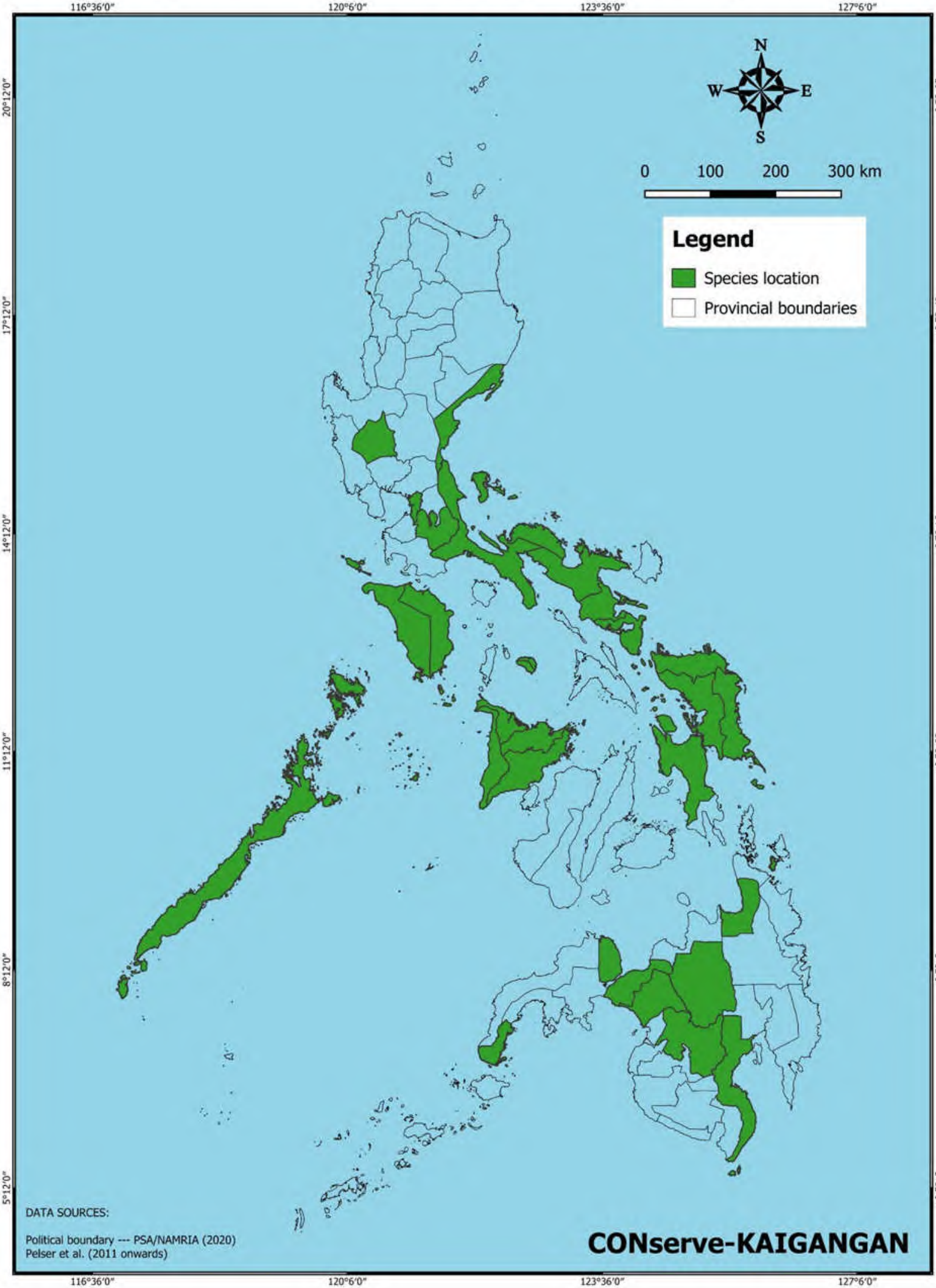
N

Legend

Gymnostoma rumphianum
Plot 4 (1 individual)

CONserve-KAIGANGAN

Philippine distribution map of Gymnostoma rumphianum



11 ***Caryota cumingii* Lodd. ex Mart. (Arecaceae)**

Karyota

Family: Arecaceae
Scientific Name: *Caryota cumingii* Lodd. ex Mart.
Local Name: Karyota

Field spot character: Palm with feather-like leaves attached to the central stem. Seeds are large, elongated or ovoid in shape that turns red when mature.

Samar plot occurrences: Plots 1 & 3

Occurrences in the Philippines: LUZON: Apayao, Balabac, Bataan, Ifugao, Ilocos Norte, La Union, Laguna, Mindoro, NCR, Nueva Ecija, Nueva Vizcaya, Palawan, Pangasinan, Quezon, Rizal, and Zambales, VISAYAS: Guimaras, Negros, Panay, and Samar, MINDANAO, Tawi-Tawi (Pelser et al., 2011 onwards).

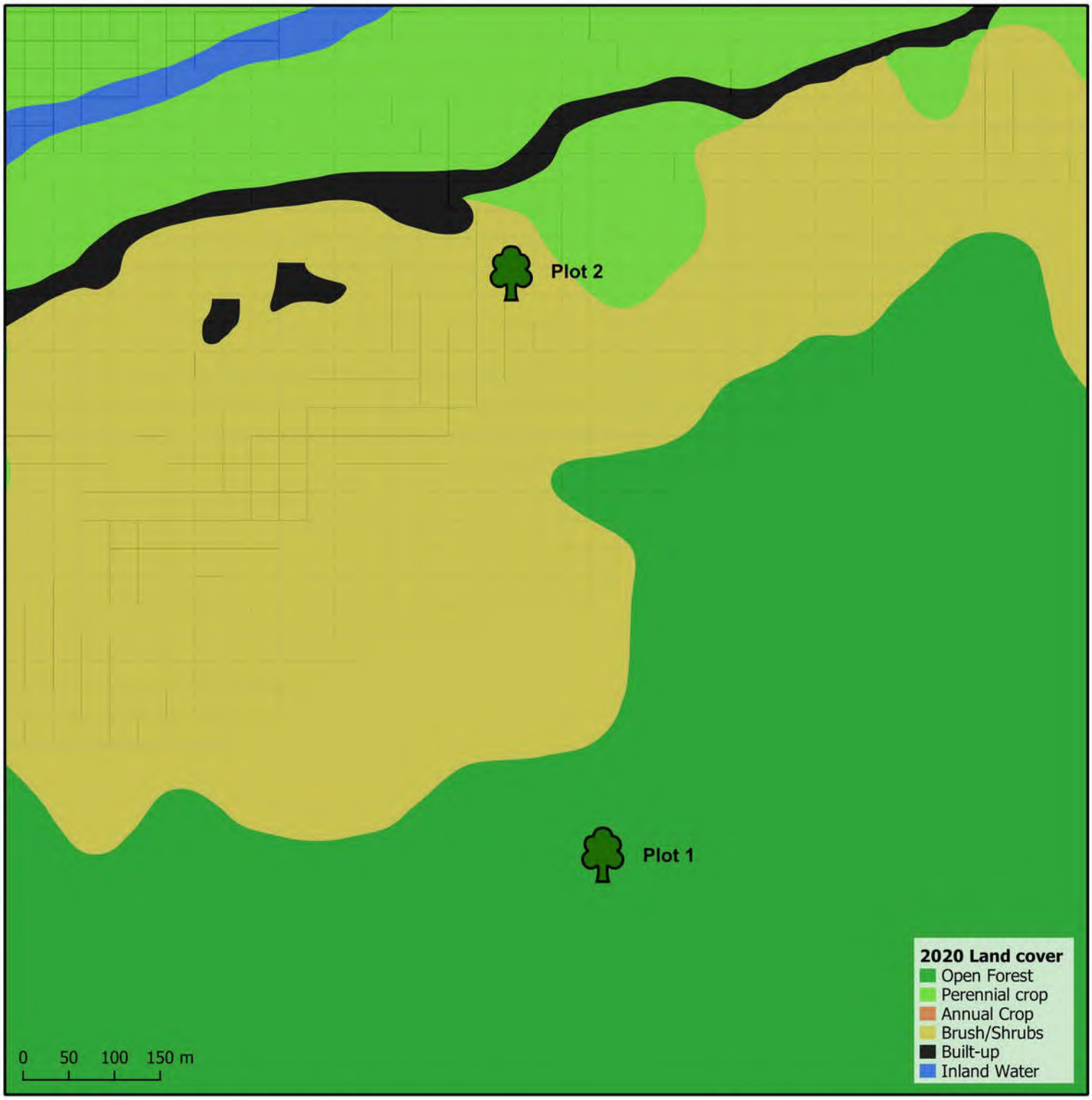
IUCN conservation status: Data deficient

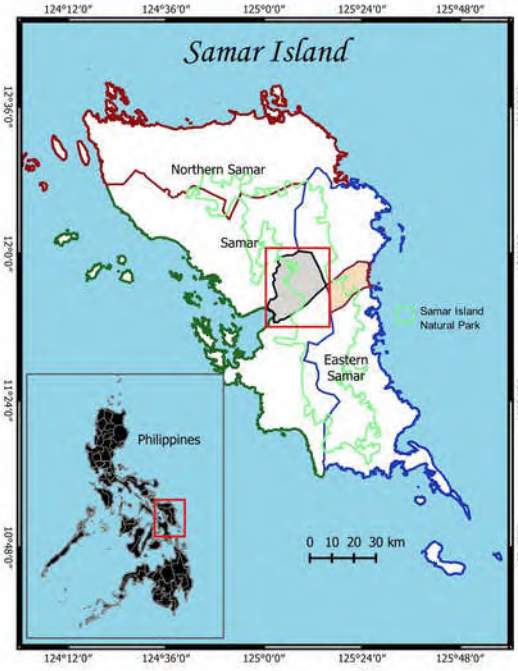
DAO conservation status: Not assessed

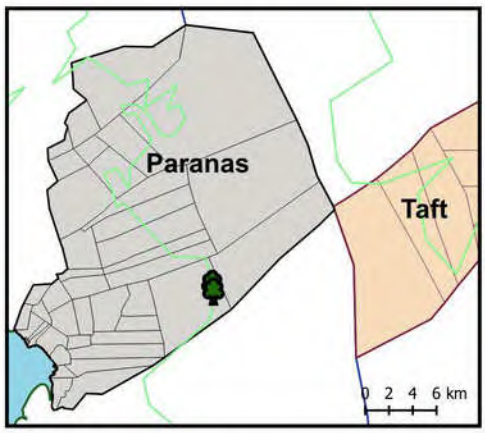
LCPI score: 17/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested as ornamentals and for food, fiber, and handicrafts (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Caryota cumingii

N

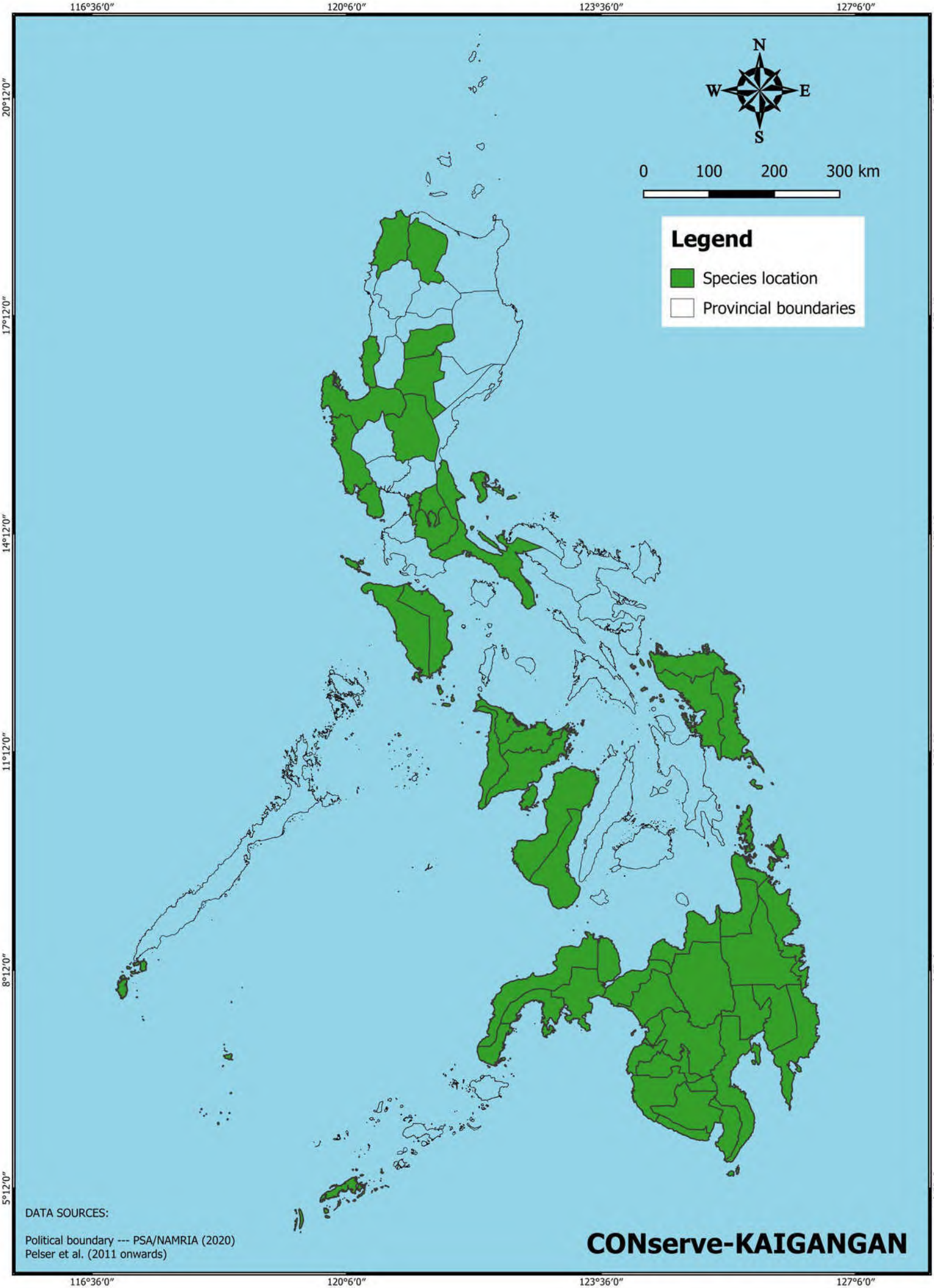
Legend

Caryota cumingii

Plot 1 (1 individual)
Plot 2 (1 individual)

CONserve-KAIGANGAN

Philippine distribution map of Caryota cumingii



12 ***Artocarpus rubrovenius* Warb. (Moraceae)**

Tugop

Family: Moraceae
Scientific Name: *Artocarpus rubrovenius* Warb.
Local Name: Tugop

Field spot character: A large and tall tree with slightly visible buttress. Fruit is a fleshy syncarp with hairy and yellowish flexible long spiky texture, containing several light brown seeds (Seibert & Jansen, 1991).

Samar plot occurrences: Plots 1, 2, 3, 4, 5, 6, 7, 8, & 10

Occurrences in the Philippines: LUZON: Batan, Albay, Aurora, Bataan, Batangas, Camarines, Isabela, Laguna, Pampanga, Quezon, Rizal, Sorsogon, and Mindoro, VISAYAS: Samar (Pelser et al., 2011 onwards).

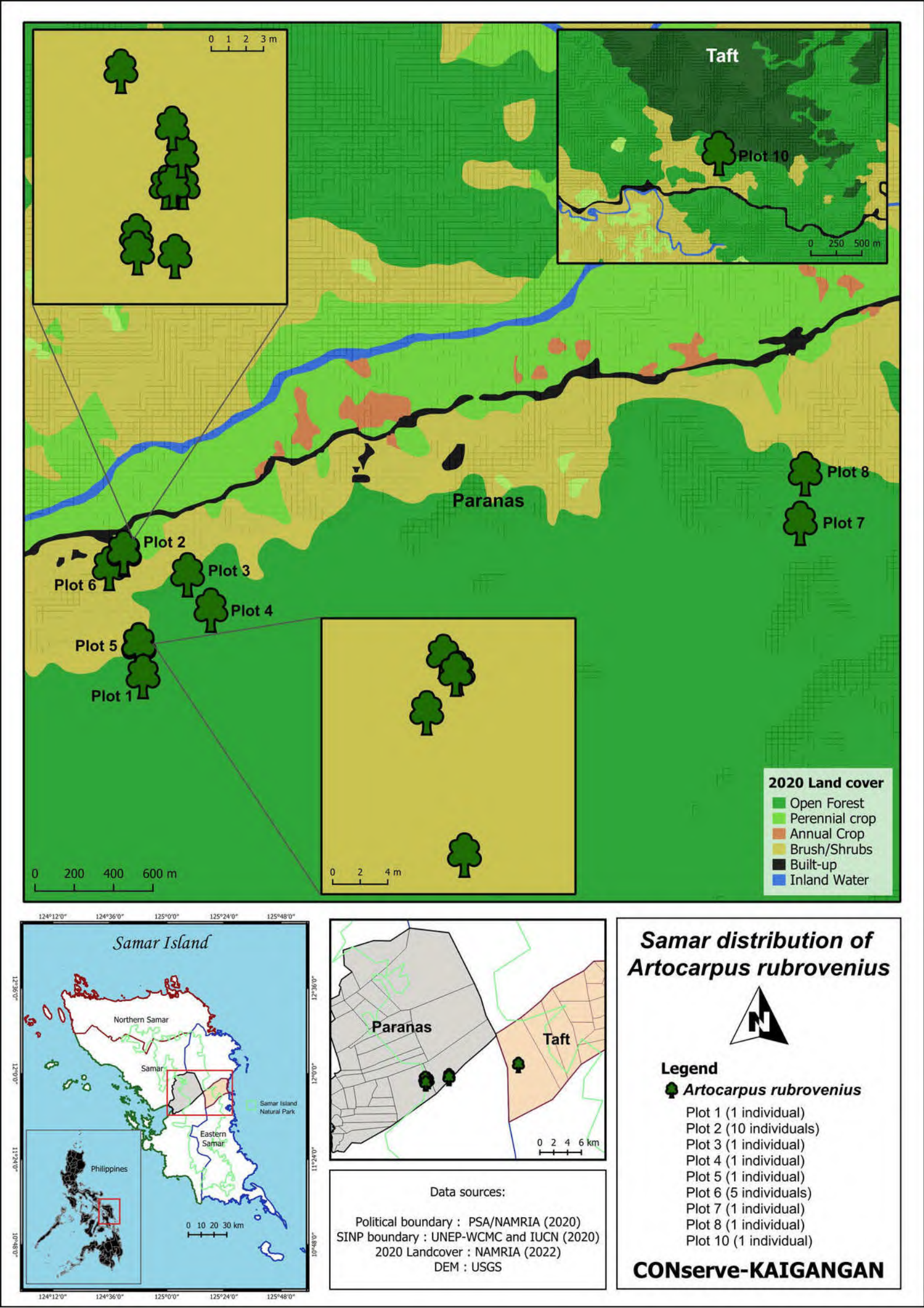
IUCN conservation status: Not assessed

DAO conservation status: Other threatened species

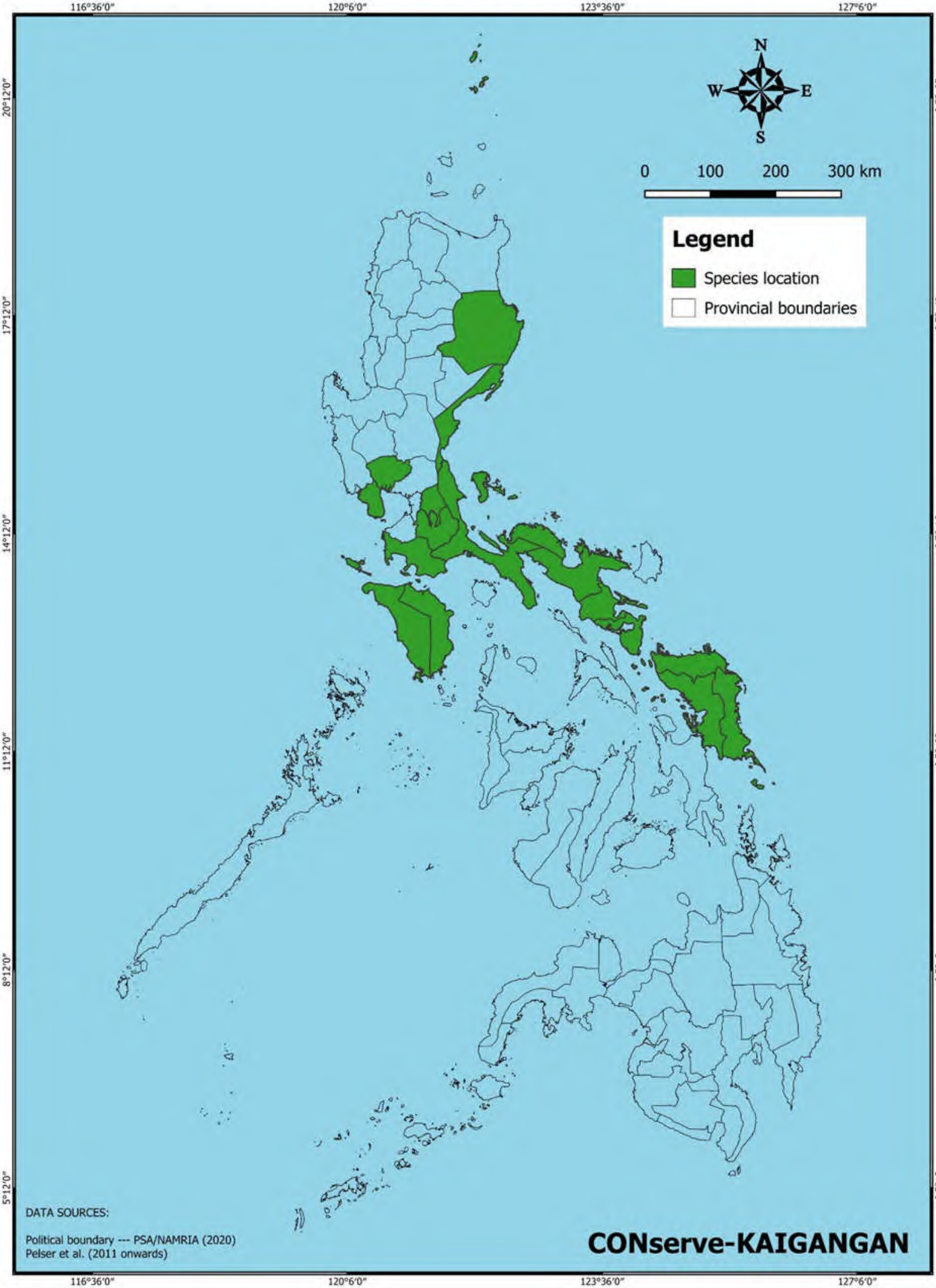
LCPI score: 17/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested. It is utilized as construction materials, medicine, handicrafts, forage, hunting, food, and firewood (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting.


0 1 2 3 m
Taft
Plot 10
0 250 500 m
Paranas
Plot 8
Plot 7
Plot 2
Plot 6
Plot 3
Plot 4
Plot 5
Plot 1
0 200 400 600 m
0 2 4 m
2020 Land cover
Open Forest
Perennial crop
Annual Crop
Brush/Shrubs
Built-up
Inland Water
Samar Island
Northern Samar
Samar
Eastern Samar
Samar Island Natural Park
Philippines
0 10 20 30 km
Paranas
Taft
0 2 4 6 km
Data sources:
Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS
Samar distribution of Artocarpus rubrovenius
N
Legend
Artocarpus rubrovenius
Plot 1 (1 individual)
Plot 2 (10 individuals)
Plot 3 (1 individual)
Plot 4 (1 individual)
Plot 5 (1 individual)
Plot 6 (5 individuals)
Plot 7 (1 individual)
Plot 8 (1 individual)
Plot 10 (1 individual)
CONserve-KAIGANGAN

Philippine distribution map of Artocarpus rubrovenius



13 ***Palaquium sp.*** **(Sapotaceae)**
Bagotambis

Family: Sapotaceae
Scientific Name: *Palaquium sp.*
Local Name: Bagotambis

Field spot character: A large tree with slightly larger, rounded boles and small obovate leaves.

Samar plot occurrences: Plots 2, 3, 5, 13, & 16

Occurrences in the Philippines: Not enough information aside from the current study in Samar.

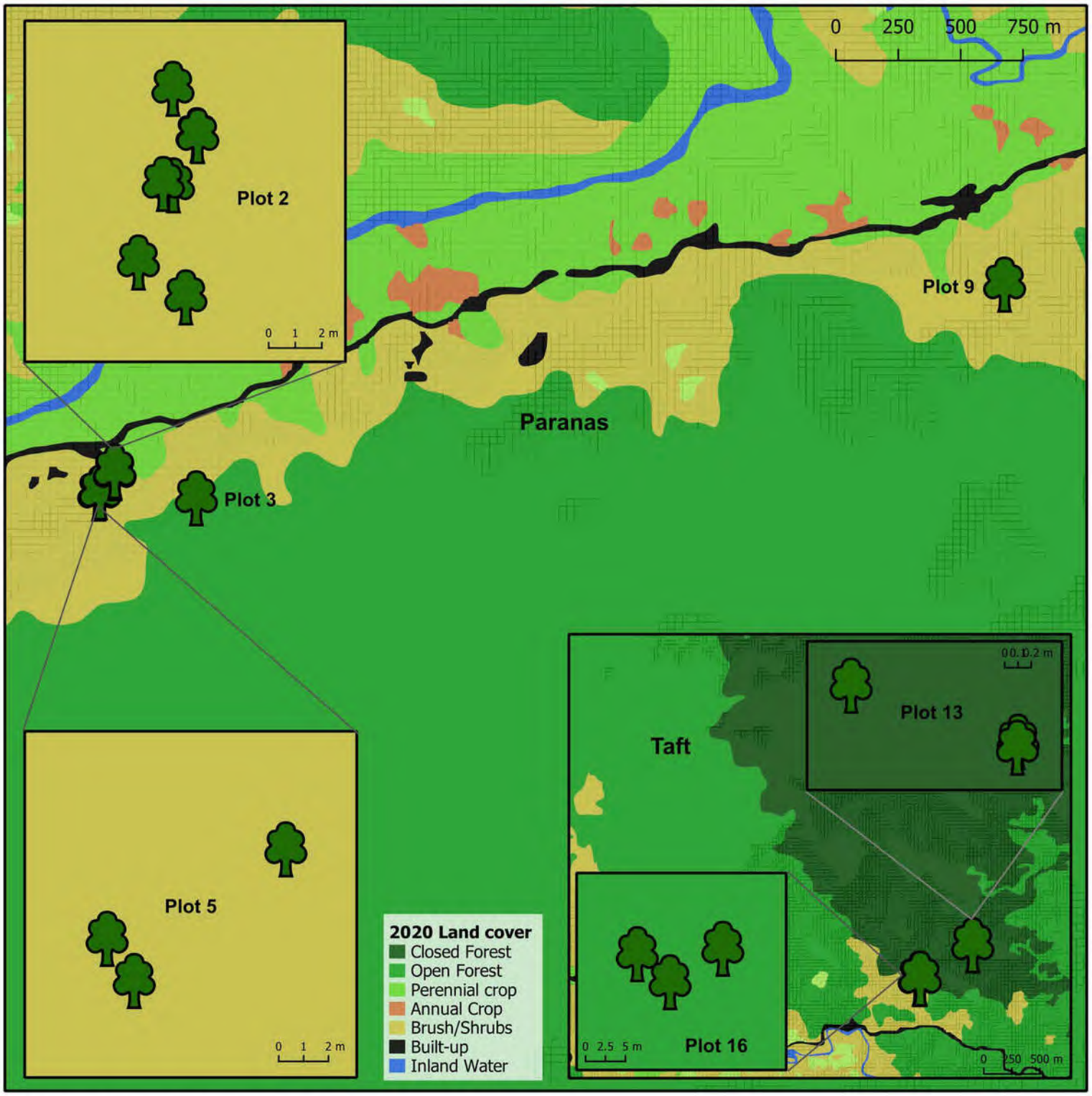
IUCN conservation status: Not assessed

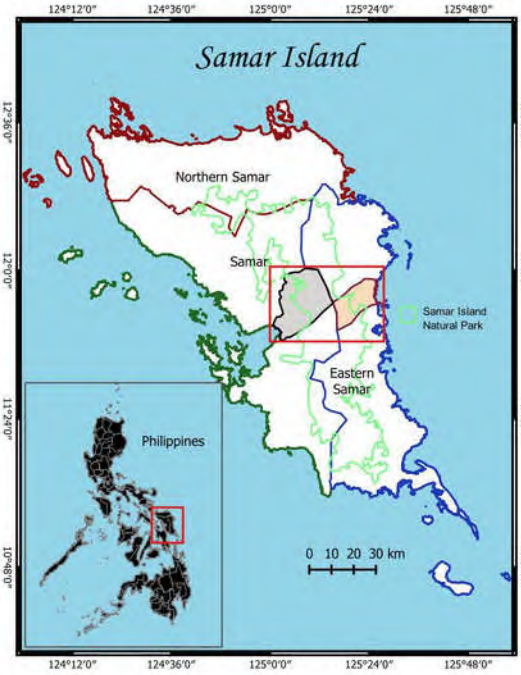
DAO conservation status: Not assessed

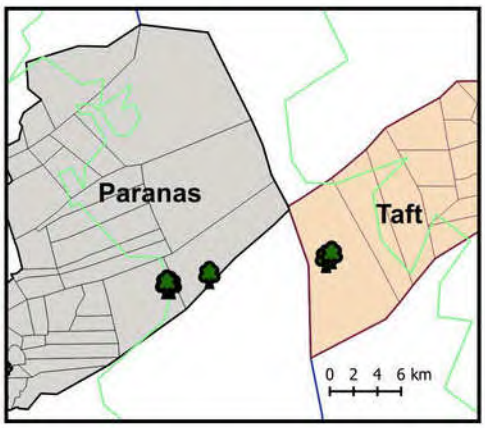
LCPI score: 17/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested for food, forage, ornamental and construction materials (Buot et al., 2024a).

Priority level & Recommended Action: High: Requires strict regulation in harvesting







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Palaquium sp.

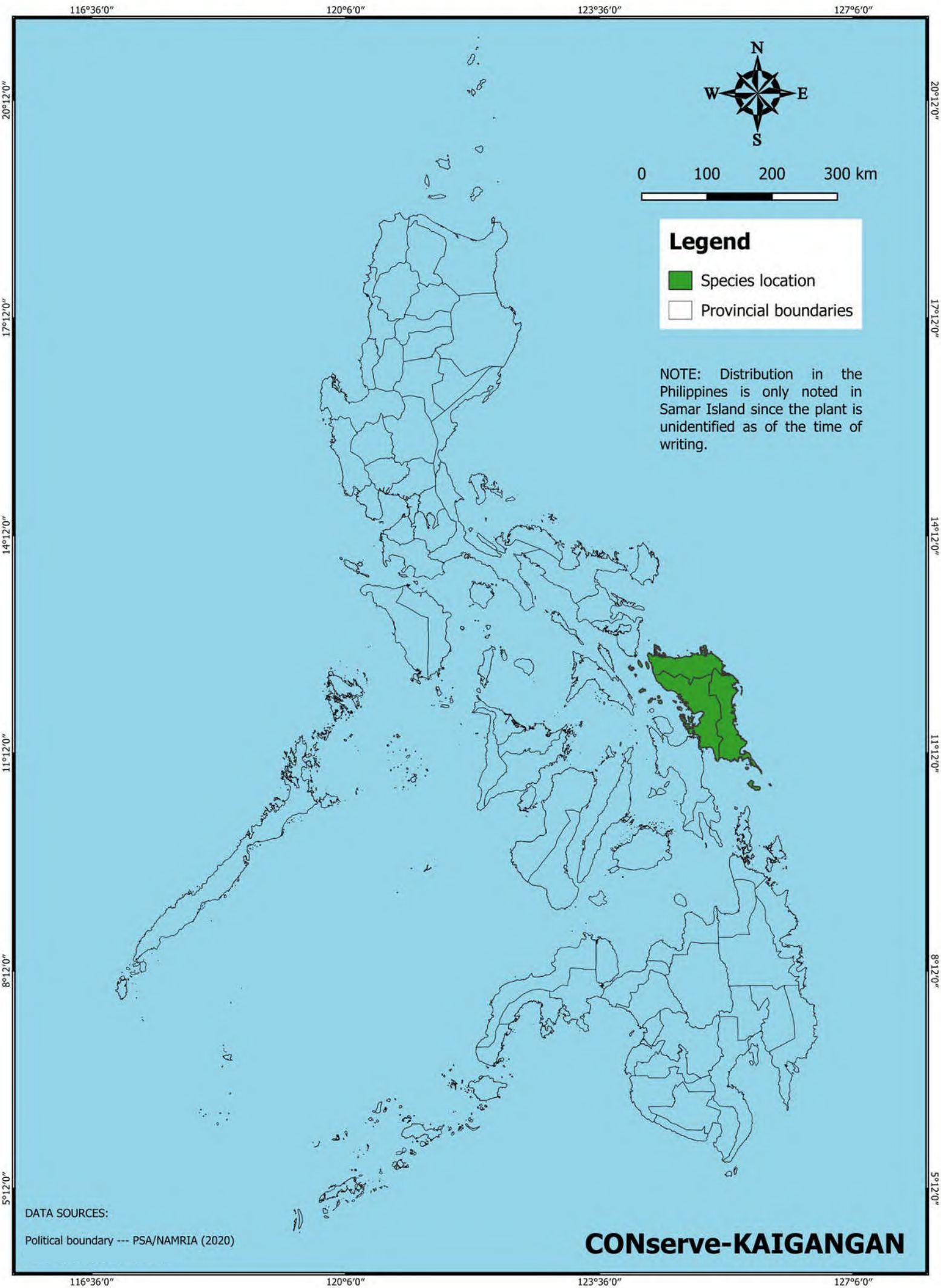
Legend

Palaquium sp.

Plot 2 (7 individuals)
Plot 3 (1 individual)
Plot 5 (3 individuals)
Plot 9 (1 individual)
Plot 13 (3 individuals)
Plot 16 (3 individuasl)

CONserve-KAIGANGAN

Philippine distribution map of Palaquium species



14 ***Hancea wenzeliana*** **(Slik) S.E.C.Sierra, Kulju & Welzen (Euphorbiaceae)**

Apanang

Family: Euphorbiaceae
Scientific Name: *Hancea wenzeliana* (Slik) S.E.C.Sierra, Kulju & Welzen
Local Name: Apanang

Field spot character: A small tree growing up to 10 meters tall, with most parts having short hairs. Stipules of up to 20 mm long are present.

Samar plot occurrences: Plots 1-18

Occurrences in the Philippines: VISAYAS: Samar (Fernandez et al., 2020; Villanueva et al. 2021), MINDANAO: Surigao and Surigao del Norte (Pelser et al., 2011 onwards).

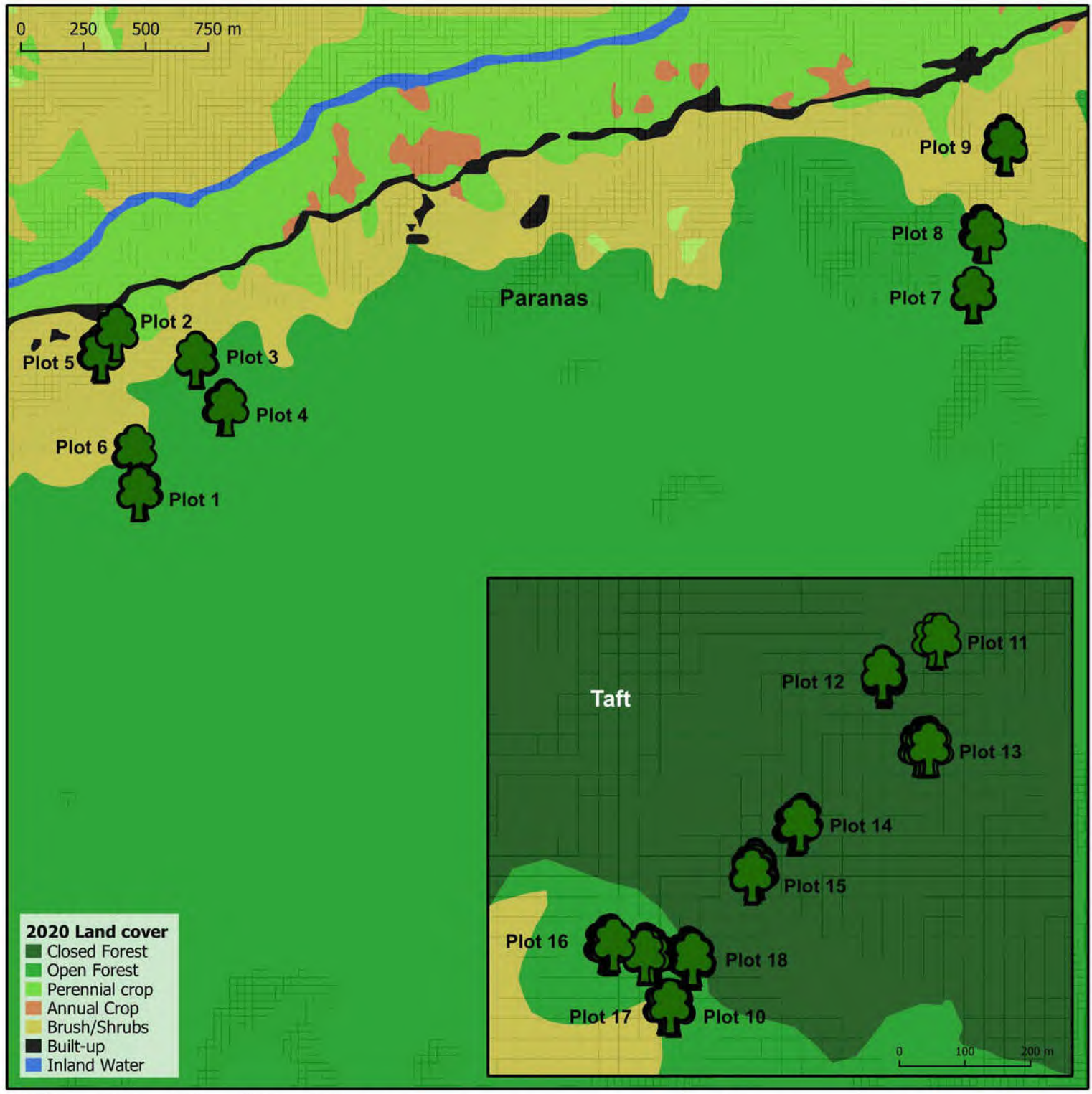
I**UCN conservation status:** Critically endangered

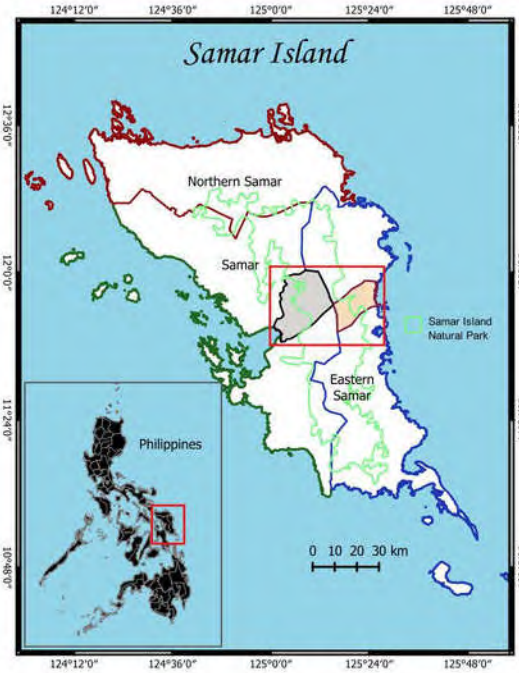
DAO conservation status: Not assessed

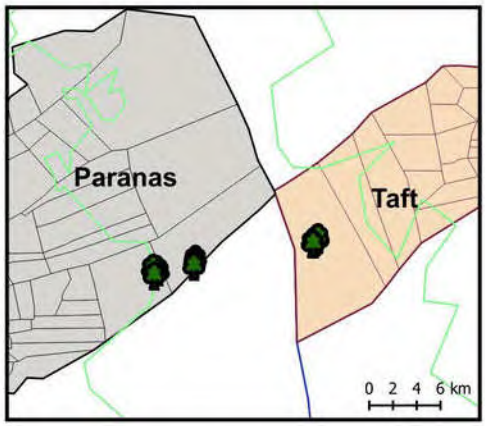
LCPI score: 16/25

Reason for the threat: Four (4) parts of the plants (stem, leaf, flower and fruit) are utilized and harvested for forage, construction materials and firewood (Buot et al., 2024a).

Priority level & Recommended Action: Medium: Can be harvested with specific quotas







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Hancea wenzeliana

N

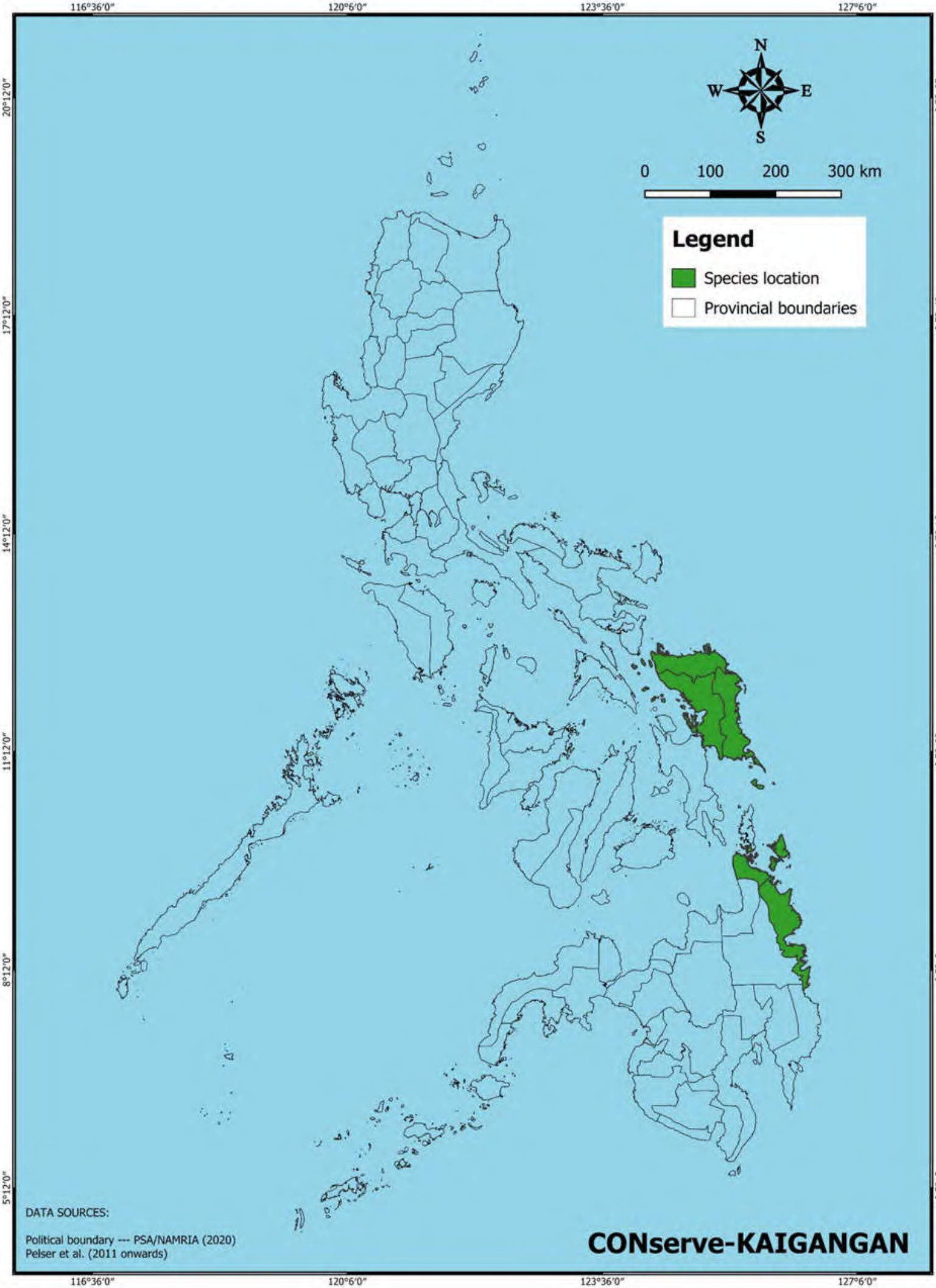
Legend

Hancea wenzeliana

Plot 1 (14 individuals)	Plot 10 (58 individuals)
Plot 2 (17 individuals)	Plot 11 (5 individuals)
Plot 3 (29 individuals)	Plot 12 (79 individuals)
Plot 4 (34 individuals)	Plot 13 (61 individuals)
Plot 5 (38 individuals)	Plot 14 (57 individuals)
Plot 6 (12 individuals)	Plot 15 (35 individuals)
Plot 7 (10 individuals)	Plot 16 (35 individuals)
Plot 8 (38 individuals)	Plot 17 (53 individuals)
Plot 9 (47 individuals)	Plot 18 (95 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Hancea wenzeliana



15 ***Aglaia rimosa* (Blanco) Merr. (Meliaceae)**
Bayanti, Balubar

Family: Meliaceae
Scientific Name: *Aglaia rimosa* (Blanco) Merr.
Local Name: Bayanti, Balubar

Field spot character: A small tree with ovate leaf shape with pointed tip. Bark is brownish grey or pale brown, rough, scaly or flaky (PNGTreesKey, 2024).

Samar plot occurrences: Plots 1, 2 & 3

Occurrences in the Philippines: LUZON: Alabat, Albay, Apayao, Aurora, Babuyan Isls, Balabac, Batan, Bataan, Batangas, Benguet, Bulacan, Cagayan, Camarines, Camarines Sur, Cavite, Ifugao, Ilocos Norte, Ilocos Sur, Isabela, La Union, Laguna, Mindoro, NCR, Nueva Ecija, Nueva Vizcaya, Palawan, Pampanga, Pangasinan, Polillo, Quezon, Romblon, Rizal, Sibuyan, Sabtang, Sorsogon, Zambales, and Y'ami VISAYAS: Biliran, Bohol, Cebu, Guimaras, Negros, Panay, Samar, and Ticao, MINDANAO: Agusan, Agusan del Norte, Bukidnon, Davao, Davao del Sur, and Sibutu (Pelser et al., 2011 onwards).

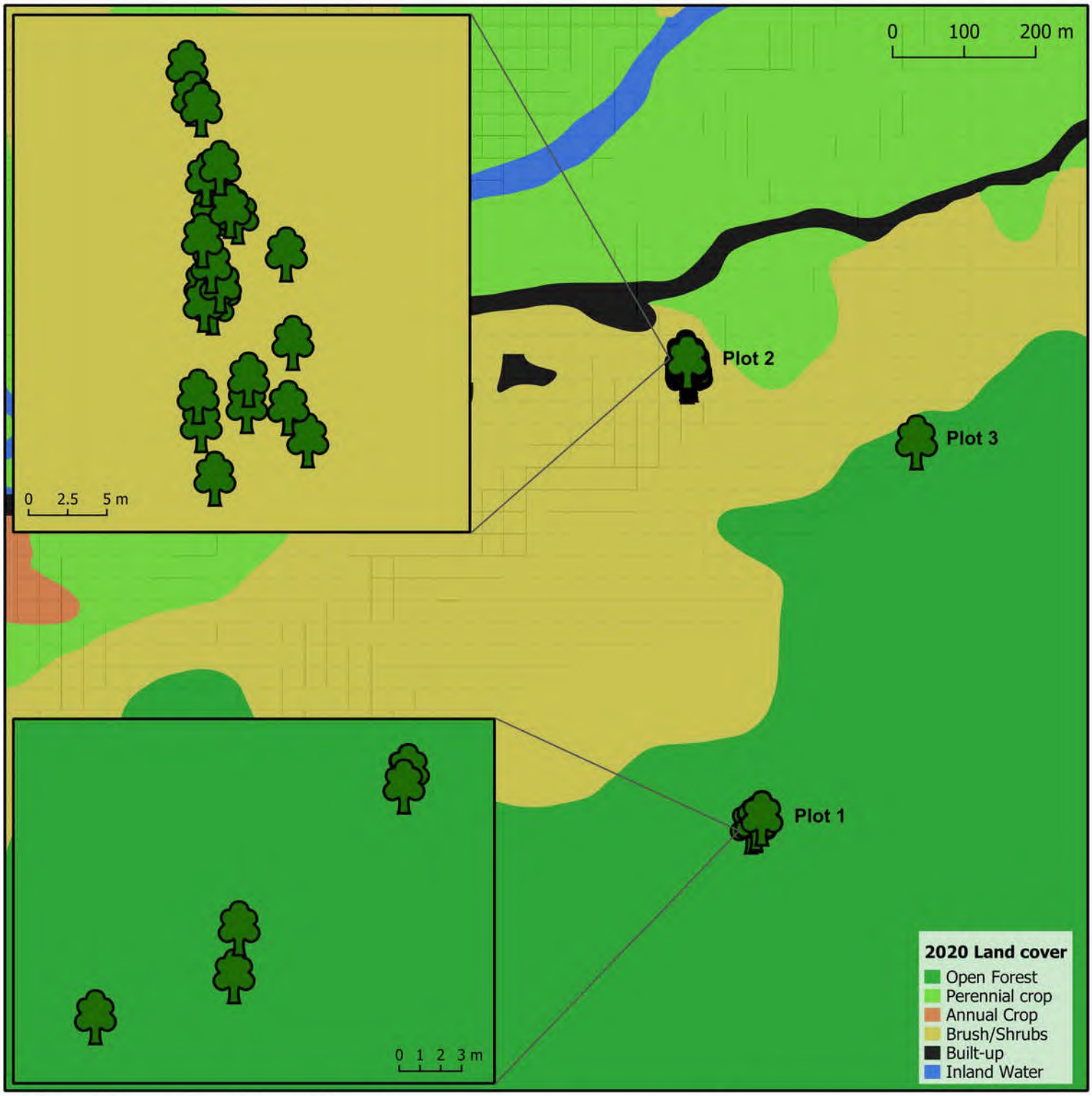
IUCN conservation status: Near threatened species

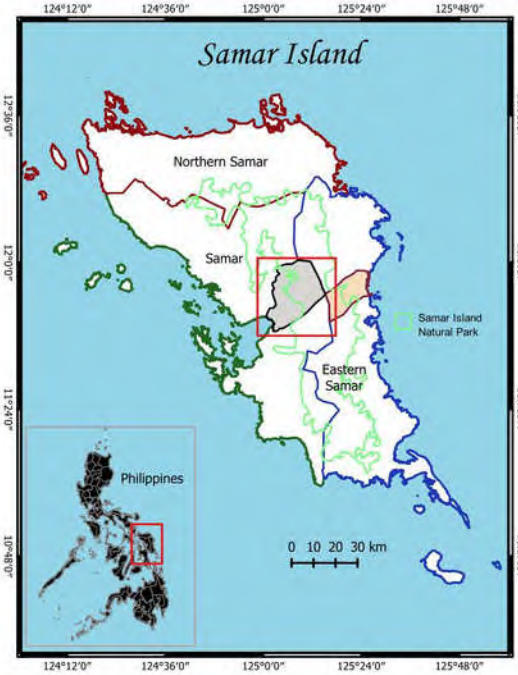
DAO conservation status: Other threatened species

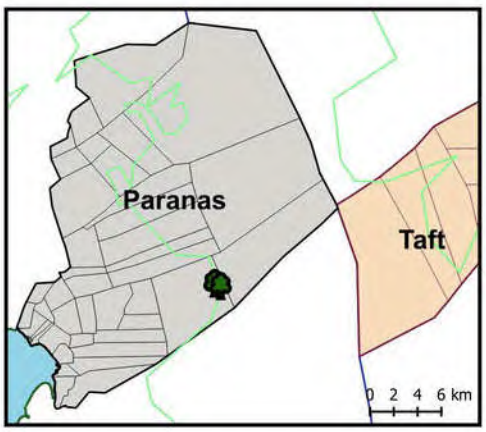
LCPI score: 16/25

Reason for the threat: Four (4) parts of the plants (stem, leaf, flower and fruit) are utilized and harvested for medicine, construction materials, forage, and firewood (Buot et al., 2024a).

Priority level & Recommended Action: Medium: Can be harvested with specific quotas







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Aglaia rimosa

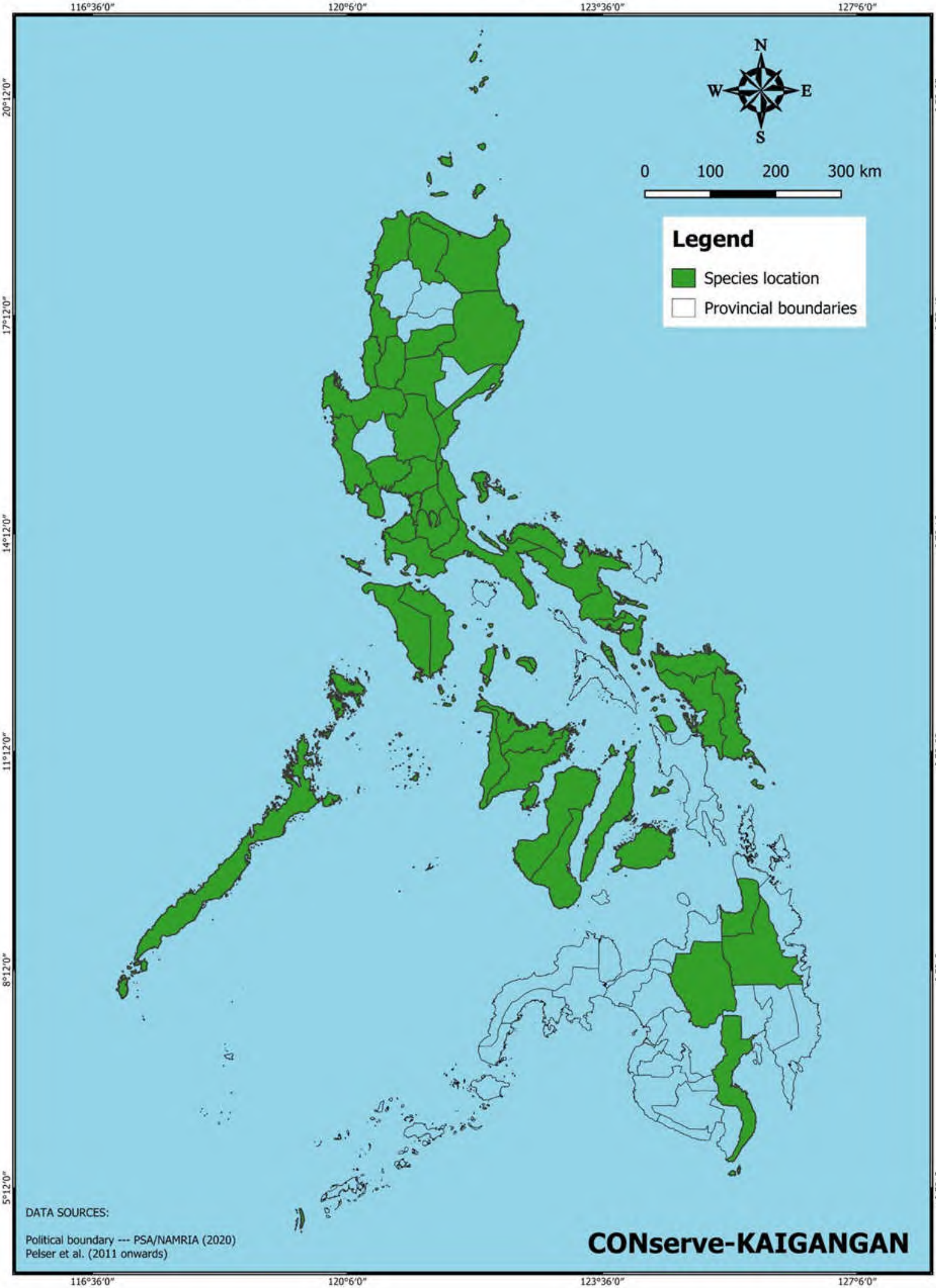
N

Legend

- ***Aglaia rimosa***
  - Plot 1 (6 individuals)
  - Plot 2 (26 individuals)
  - Plot 3 (1 individual)

CONserve-KAIGANGAN

Philippine distribution map of Aglaia rimosa



16 ***Canarium hirsutum* Willd. (Burseraceae)**
Milipili

Family: Burseraceae
Scientific Name: *Canarium hirsutum* Willd.
Local Name: Milipili

Field spot character: A large tree having straight bole and a slightly visible buttress. Bark has a greyish-brown to dark brown surface. Leaves are ovate in shape and covered in reddish-brown hairs. Fruits are ovoid and often dull orange to brown in color.

Samar plot occurrences: Plots 2 & 3

Occurrences in the Philippines: LUZON: Aurora, Bataan, Bulacan, Camarines Sur, Ifugao, Isabela, Mindoro, NCR, Palawan, Polillo, Quirino, Rizal, and Zambales, VISAYAS: Leyte and Samar, MINDANAO: Bukidnon, Davao Oriental, Davao del Sur, and Zamboanga del Norte (Pelser et al., 2011 onwards).

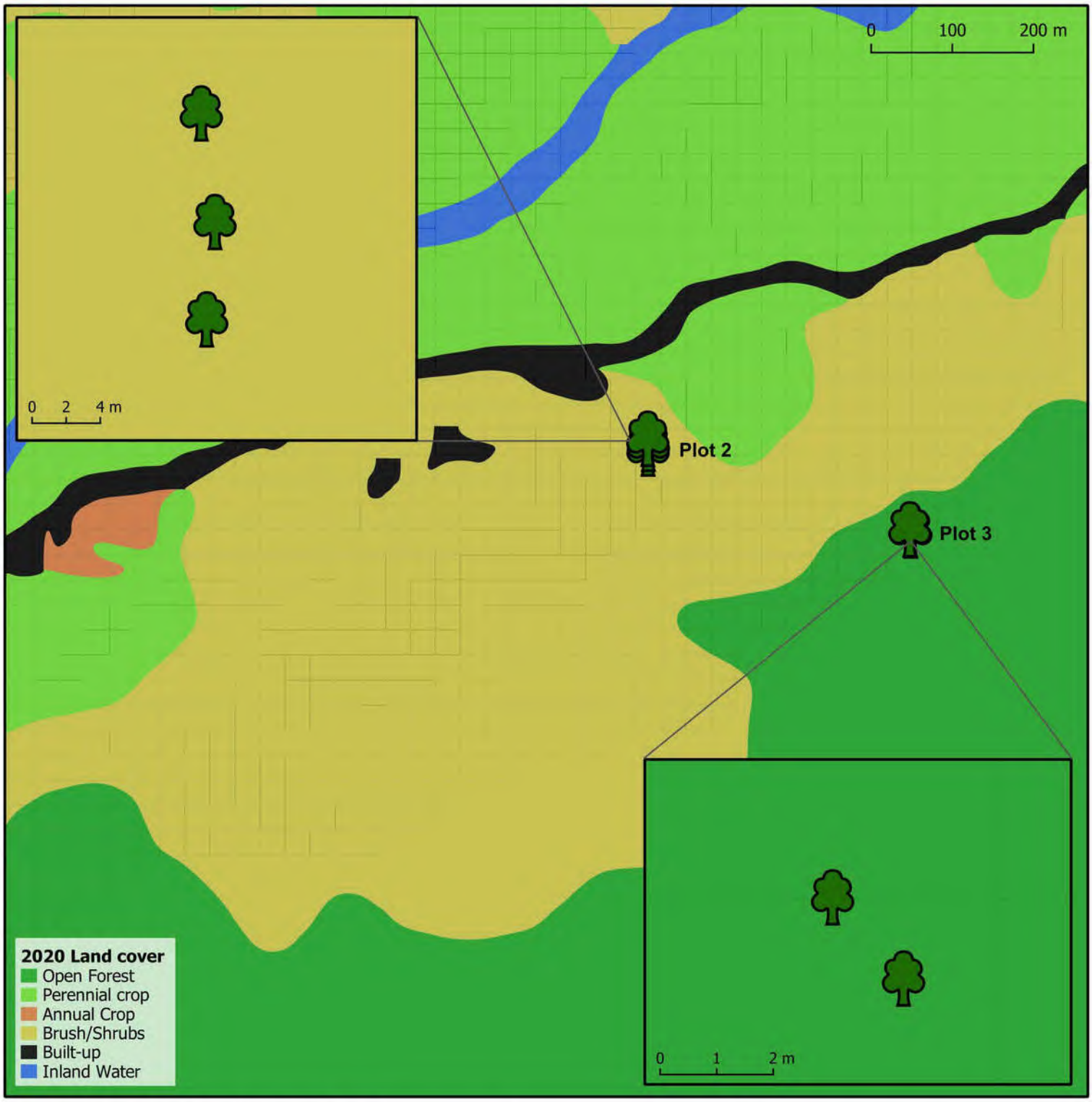
IUCN conservation status: Least Concern

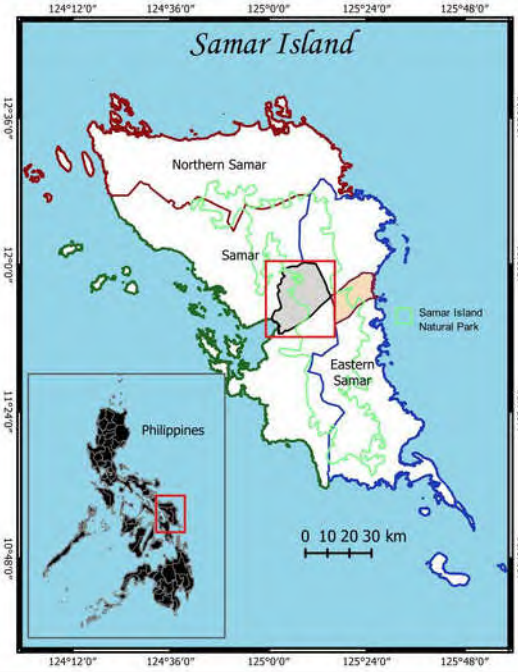
DAO conservation status: Not assessed

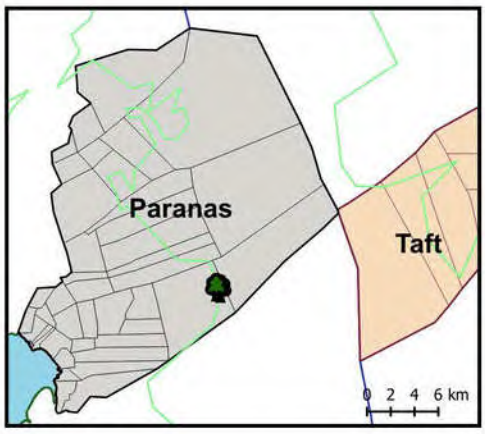
LCPI score: 16/25

Reason for the threat: Three (3) parts of the plants (root, stem, and leaf) are utilized and harvested. Its roots are used for medicine; the stem for resin production; and the leaves for food (Buot et al., 2024a).

Priority level & Recommended Action: Medium: Can be harvested with specific quotas.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Canarium hirsutum

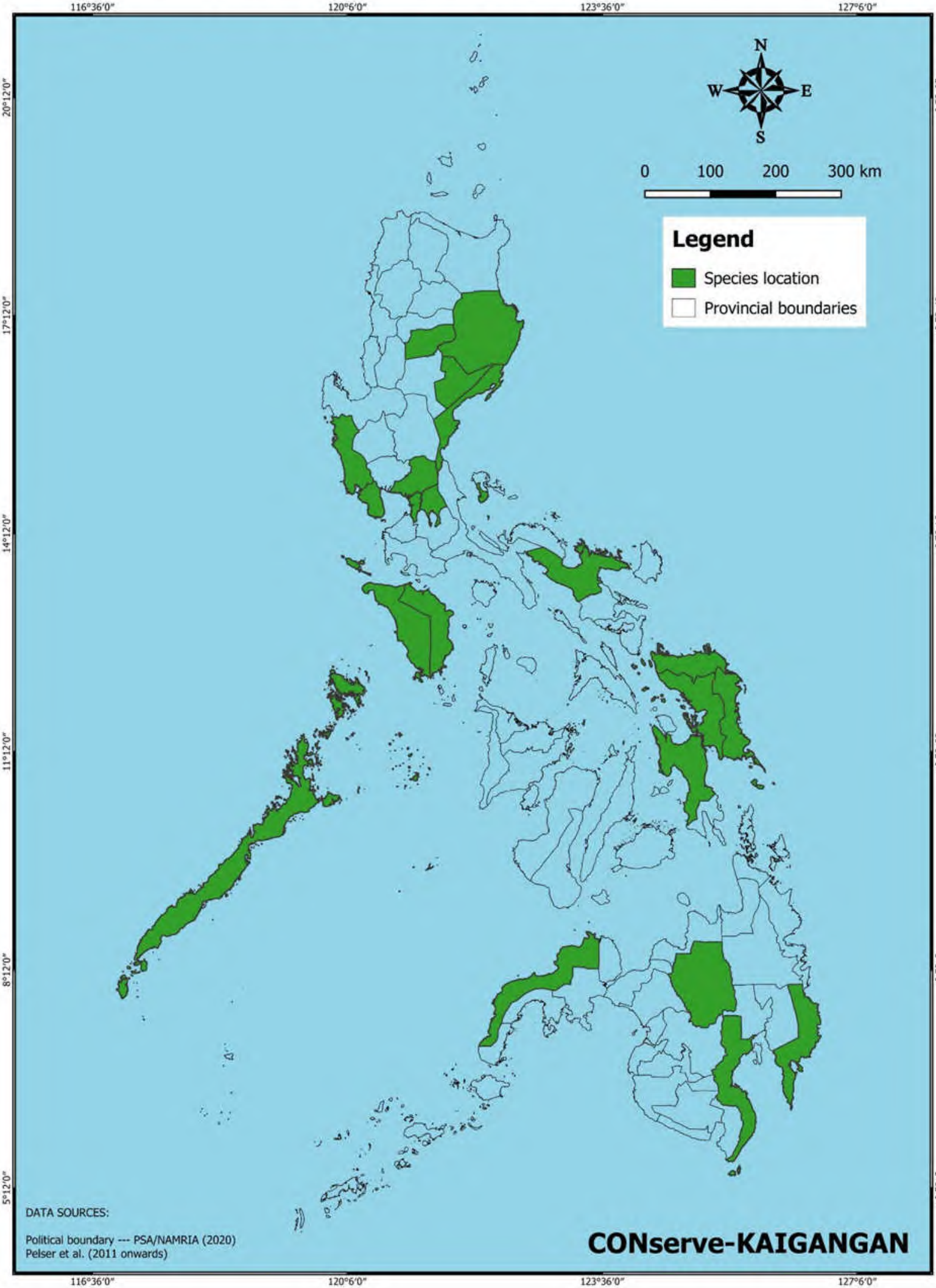
N

Legend

Canarium hirsutum
Plot 2 (3 individuals)
Plot 3 (2 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Canarium hirsutum



17 ***Lasianthus trichophlebus*** **Hemsl. ex F.B. Forbes & Hemsl. (Rubiaceae)**
Malabunot

Family: Rubiaceae
Scientific Name: *Lasianthus trichophlebus* Hemsl. ex F.B. Forbes & Hemsl.
Local Name: Malabunot

Field spot character: A small tree with lichen on the bark. Leaves are leathery, elliptical or oblong in shape.

Samar plot occurrences: Plot 11

Occurrences in the Philippines: LUZON: Mindoro and Palawan, VISAYAS: Samar (Pelser et al., 2011 onwards).

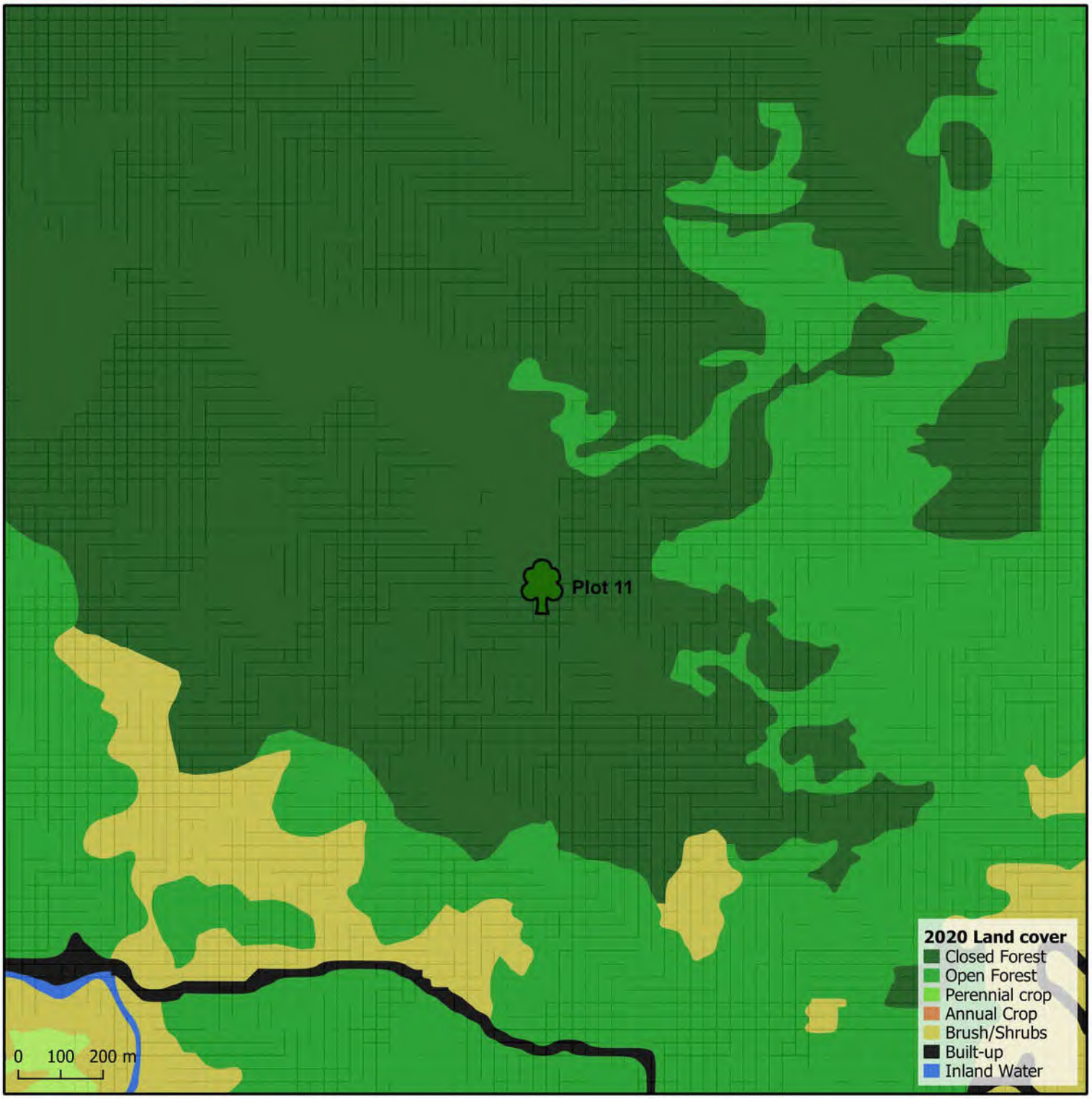
IUCN conservation status: Not assessed

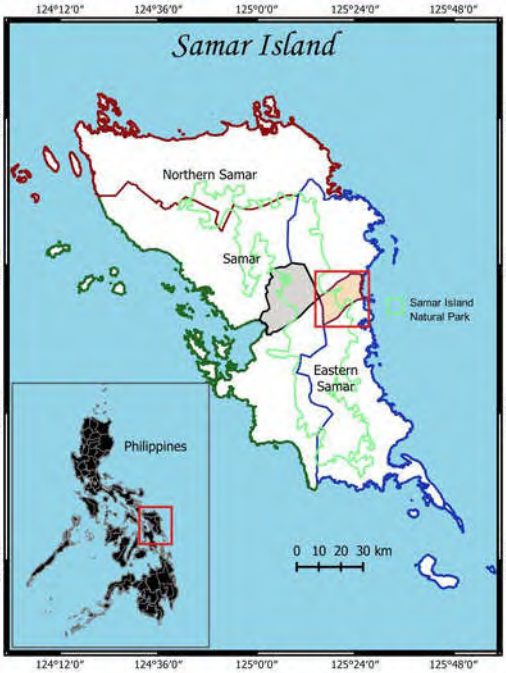
DAO conservation status: Not assessed

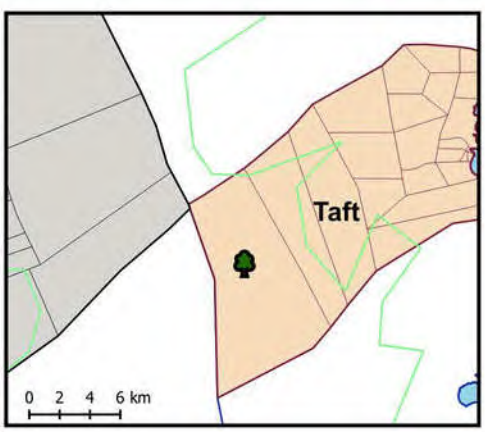
LCPI score: 16/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized and harvested for medicine, landscaping, and construction materials (Buot et al., 2024a).

Priority level & Recommended Action: Medium: Can be harvested with specific quotas







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Lasianthus trichophlebus

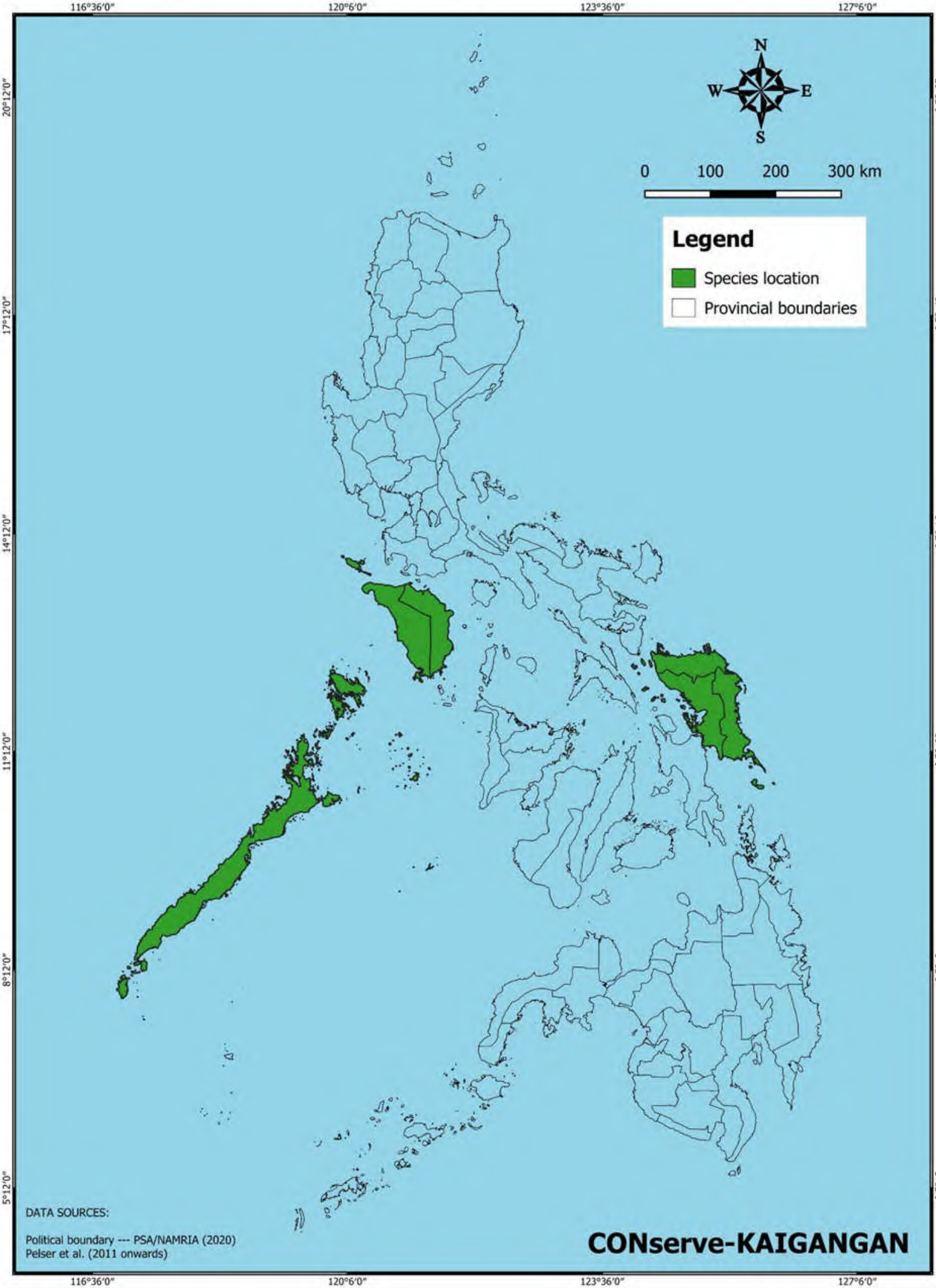
N

Legend

Lasianthus trichophlebus
Plot 11 (1 individual)

CONserve-KAIGANGAN

Philippine distribution map of Lasianthus trichophlebus



18 ***Polyscias nodosa* (Blume) Seem. (Araliaceae)**

Bongliw

Family: Araliaceae
Scientific Name: *Polyscias nodosa* (Blume) Seem.
Local Name: Bongliw

Field spot character: A single-stemmed tree, without branches. Bark is whitish or creamy white in color. Leaves are serrated and crowded on apices, widely spreading downward (Philippine flora, 2009).

Samar plot occurrences: Plot 2

Occurrences in the Philippines: LUZON: Albay, Bataan, Batangas, Benguet, Bulacan, Camarines Norte, Ilocos Norte, Laguna, Mindoro, NCR, Palawan, Pampanga, Pangasinan, Quezon, Rizal, Sorsogon, and Zambales, VISAYAS: Bohol, Leyte, and Samar, MINDANAO: Basilan, Davao Oriental, and Zamboanga (Pelser et al., 2011 onwards).

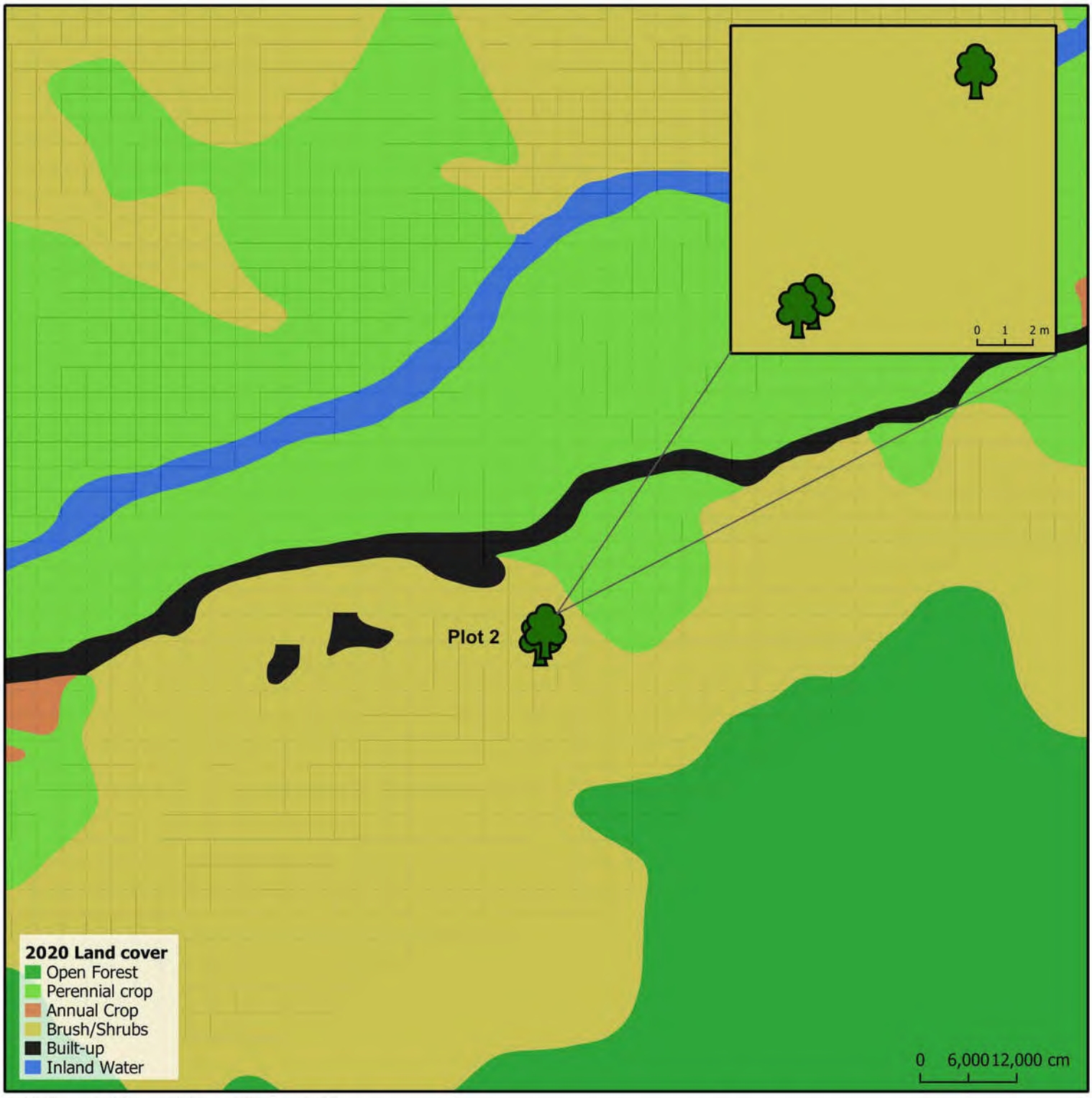
IUCN conservation status: Least Concern

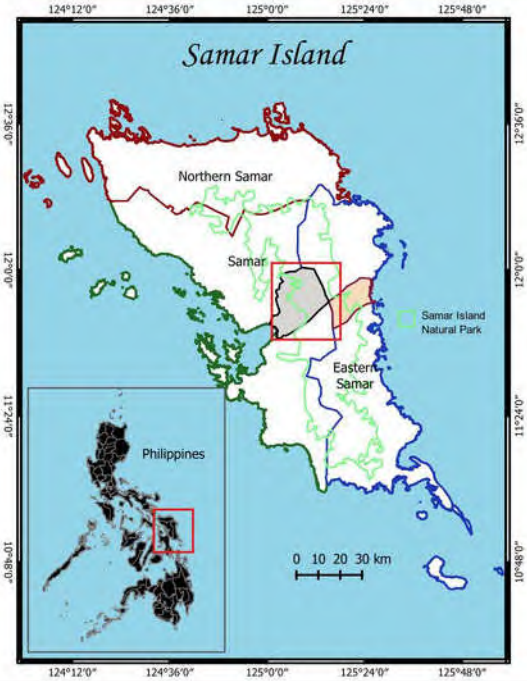
DAO conservation status: Not assessed

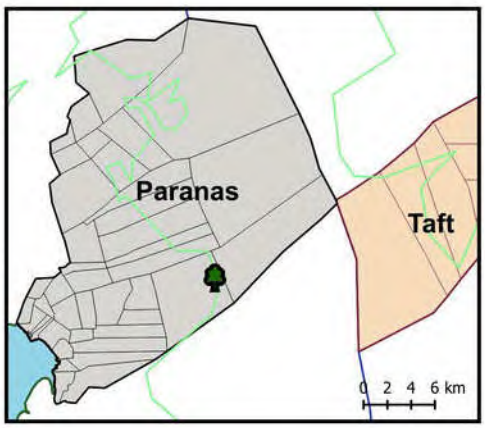
LCPI score: 15/25

Reason for the threat: Four (4) parts of the plants (stem, leaf, flower and fruit) are utilized and harvested. It is used as fodder, and the stem is used to make timber, plywood, handicrafts, and other wood products such as pencil slats and toothpicks (Buot et al., 2024a).

Priority level & Recommended Action: Medium: Can be harvested with specific quotas.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Polyscias nodosa

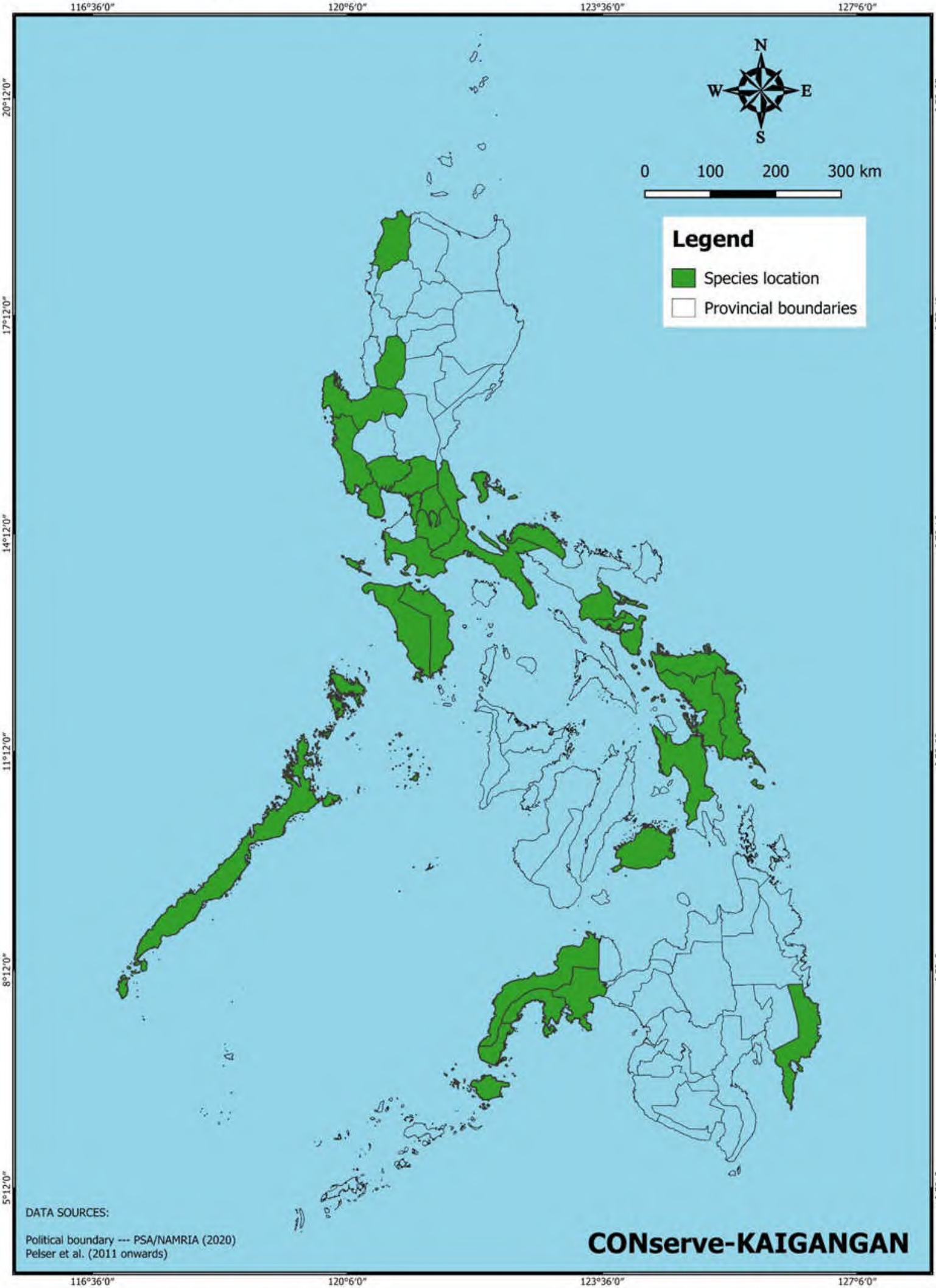
N

Legend

Polyscias nodosa
Plot 2 (3 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Polyscias nodosa



19 ***Shorea negrosensis* Foxw. (Dipterocarpaceae)**

Red Lauan, Takuban, Tangilis

Family: Dipterocarpaceae
Scientific Name: *Shorea negrosensis Foxw.*
Local Name: Red Lauan, Takuban, Tangilis

Field spot character: Large and straight cylindrical bole, with prominent buttress. Bark is dark brown with a tinge of reddish color (Stuart, 2024). Prominent small corky spots on the stem are arranged in vertical lines.

Samar plot occurrences: Plots 1-18

Occurrences in the Philippines: LUZON: Albay, Aurora, Cagayan, Camarines, Isabela, Laguna, Mindoro, Nueva Ecija, Polillo, Quezon, and Sorsogon, VISAYAS: Biliran, Cebu, Leyte, Negros, and Samar, MINDANAO: Agusan del Norte, Agusan del Sur, Bukidnon, Basilan, Cotabato, Davao, Lanao, Poneas, Surigao, and Zamboanga (Pelser et al., 2011 onwards).

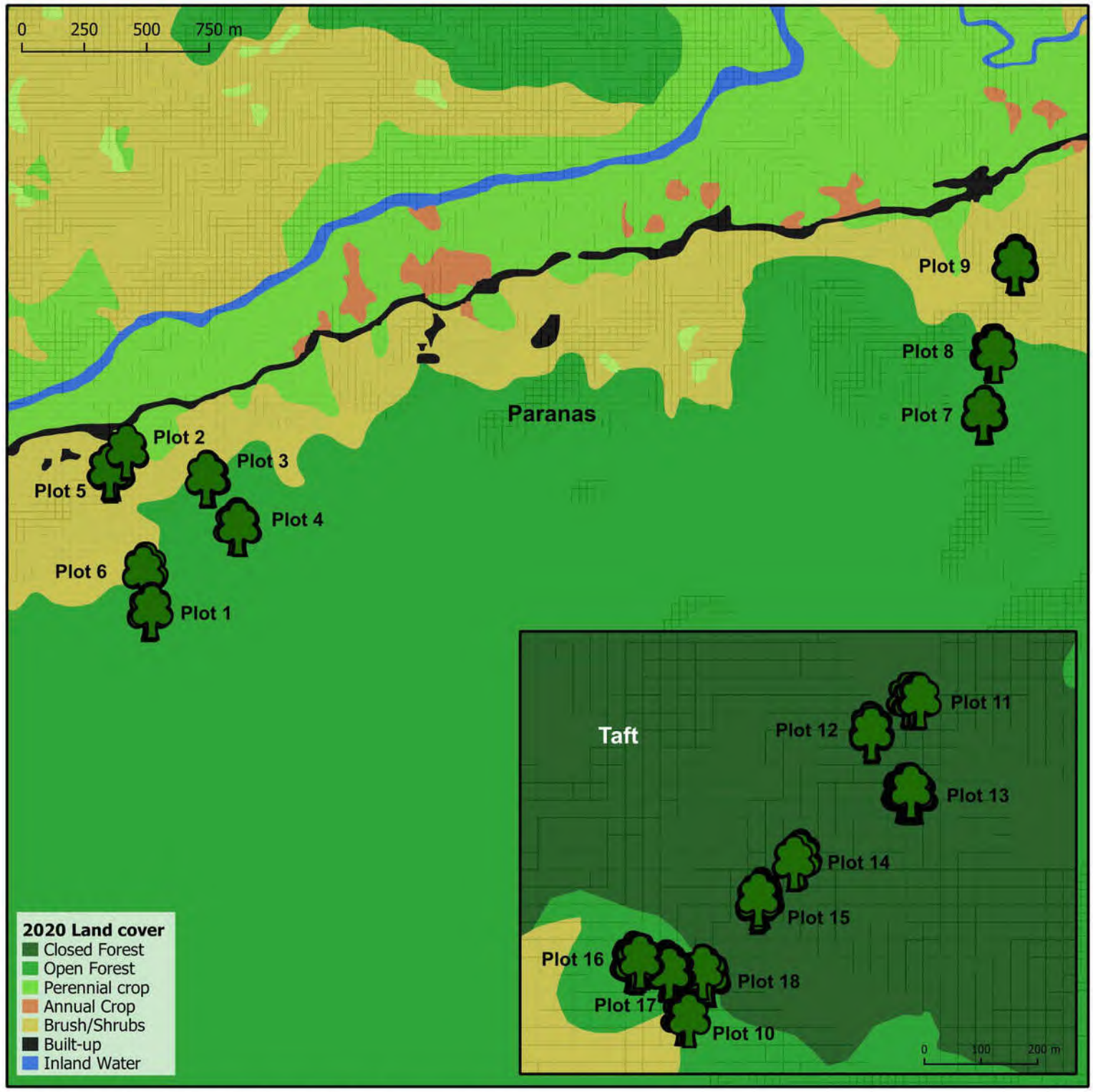
IUCN conservation status: Least Concern

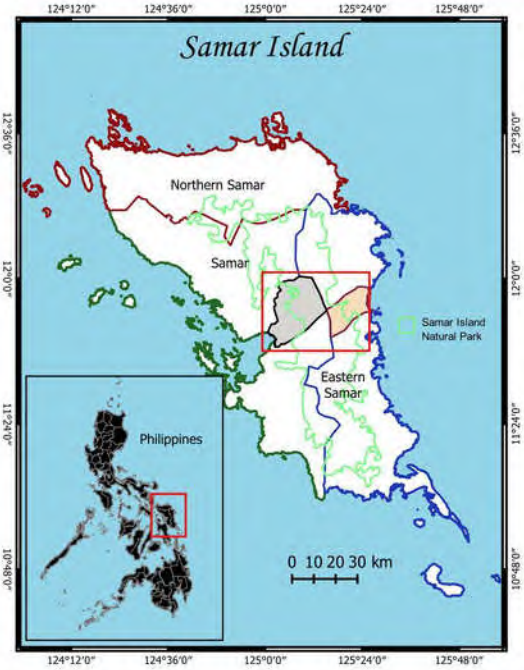
DAO conservation status: Vulnerable

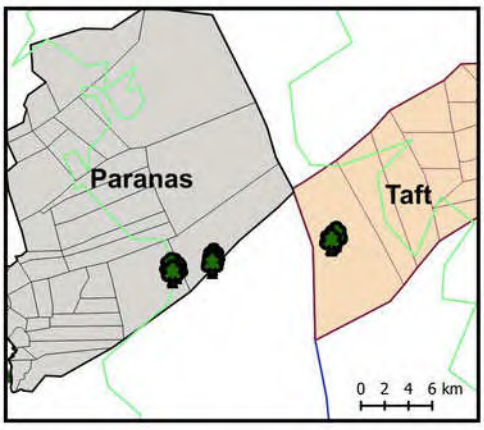
LCPI score: 15/25

Reason for the threat: All parts of the plants (root, stem, leaf, flower and fruit) are utilized for construction materials, furniture, medicine, forage, and firewood (Buot et al., 2024a).

Priority level & Recommended Action: Medium: Can be harvested with specific quotas.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Shorea negrosensis

N

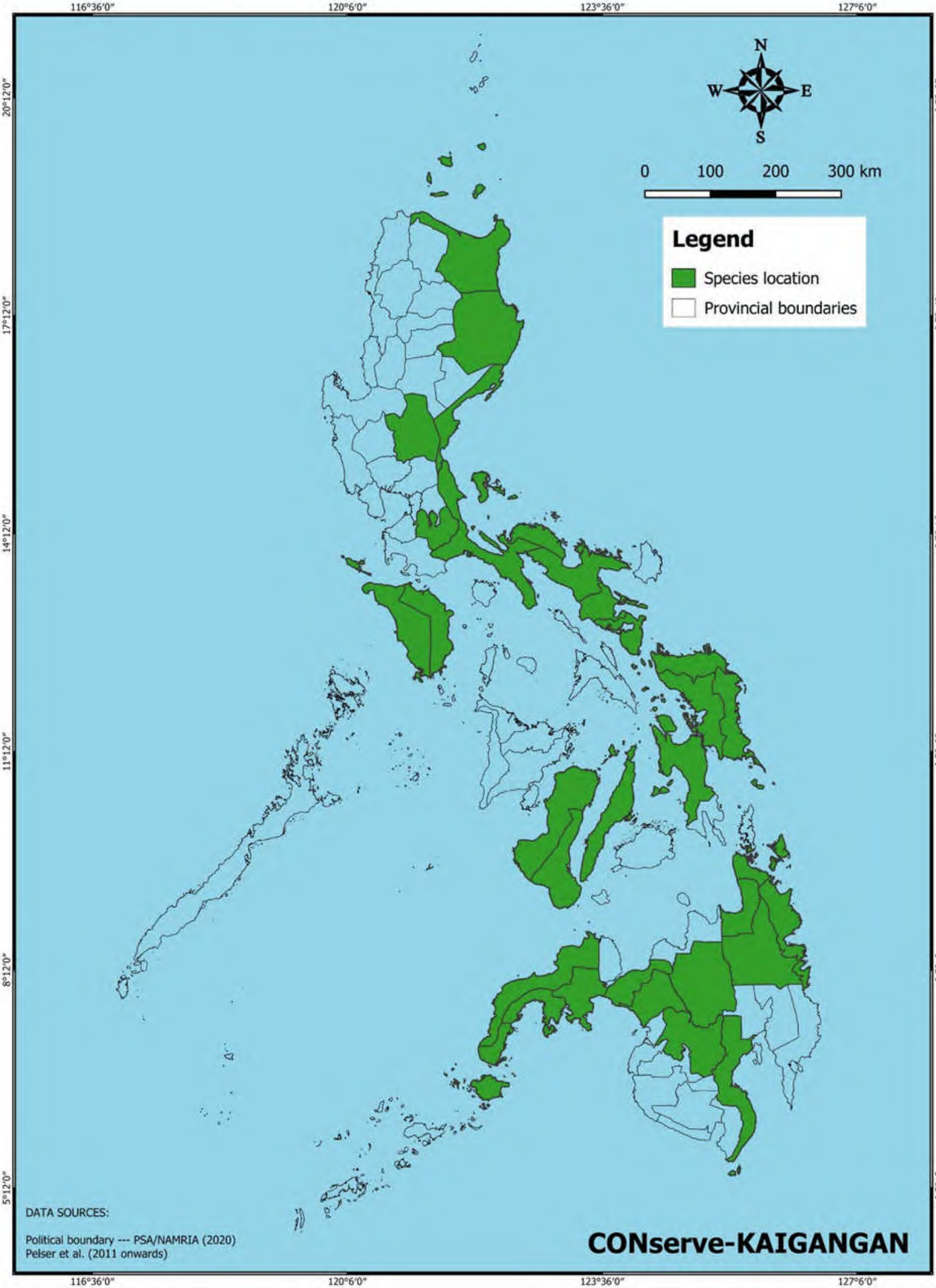
Legend

Shorea negrosensis

Plot 1 (23 individuals)	Plot 10 (47 individuals)
Plot 2 (2 individuals)	Plot 11 (61 individuals)
Plot 3 (27 individuals)	Plot 12 (97 individuals)
Plot 4 (32 individuals)	Plot 13 (74 individuals)
Plot 5 (70 individuals)	Plot 14 (68 individuals)
Plot 6 (78 individuals)	Plot 15 (71 individuals)
Plot 7 (78 individuals)	Plot 16 (82 individuals)
Plot 8 (79 individuals)	Plot 17 (91 individuals)
Plot 9 (86 individuals)	Plot 18 (84 individuals)

CONserve-KAIGANGAN

Philippine distribution map of Shorea negrosensis



20

***Shorea contorta* S.Vidal (Dipterocarpaceae)**

White Lauan, Hamis, Busag

Family: Dipterocarpaceae
Scientific Name: *Shorea contorta* S.Vidal
Local Name: White Lauan, Hamis, Busag

Field spot character: A large, tall, straight, and unbranched tree with buttresses. Leaves are ovate to elliptical in shape. Flowers are small, cream-colored, arranged in clusters. Fruits are round woody capsules that contain winged seeds (Synopsis IAS, 2023).

Samar plot occurrences: LUZON: Abra, Albay, Aurora, Babuyan Island, Bataan, Benguet, Cagayan, Calayan, Camarines, Ilocos Norte, Isabela, Laguna, Marinduque, Mindoro, Nueva Ecija, Pangasinan, Polillo, Quezon, Rizal, Sibuyan, Sorsogon, and Tarlac, VISAYAS: Leyte, Masbate, Negros, and Samar, MINDANAO: Agusan, Basilan, Bukidnon, Davao del Sur, Lanao, Lanao del Norte, Misamis Occidental, Sulu Archipelago, Zamboanga, Zamboanga Sibugay, and Zamboanga del Sur (Pelser et al., 2011 onwards).

Occurrences in the Philippines: Plot 1 & 6

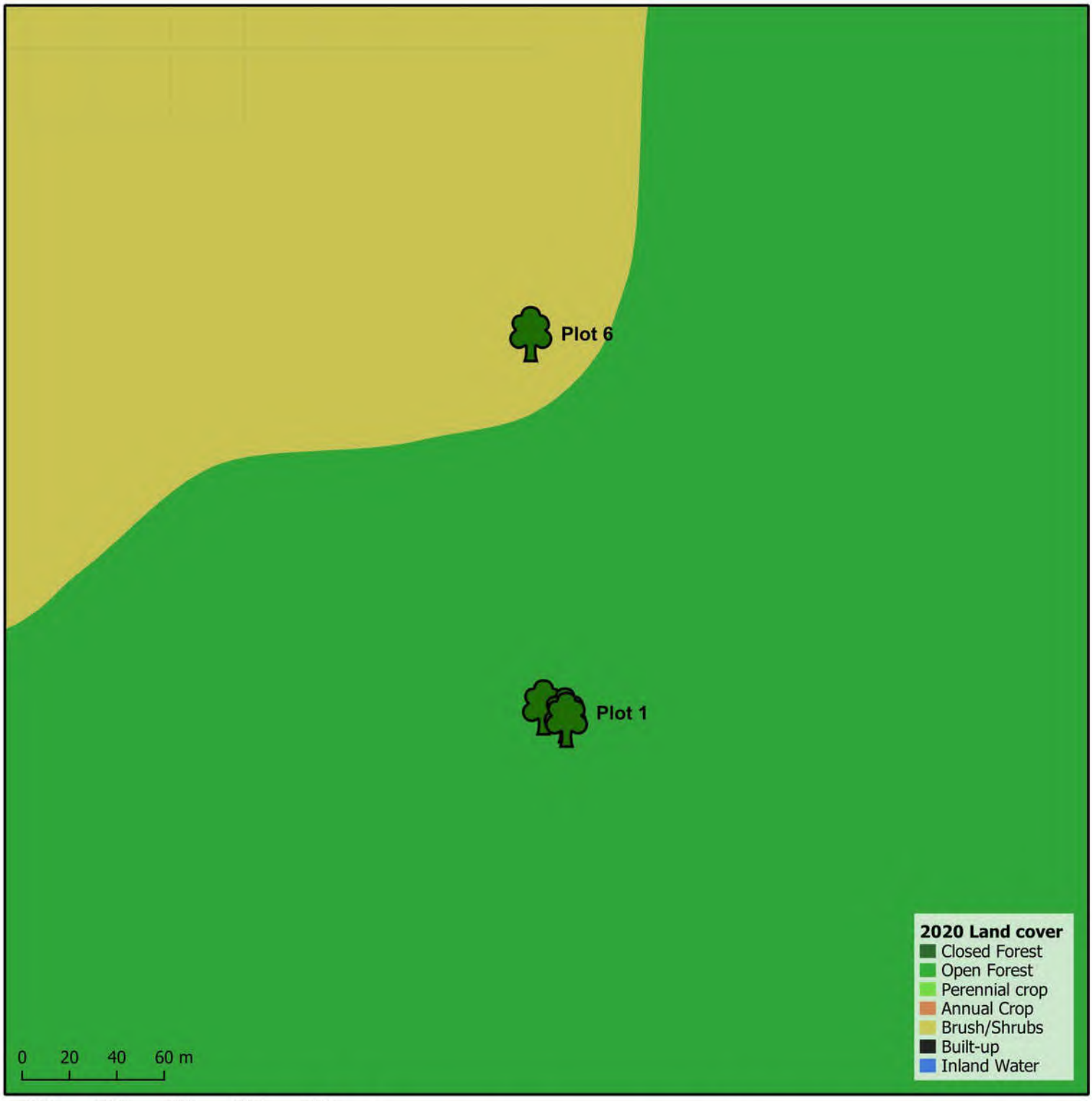
IUCN conservation status: Least Concern

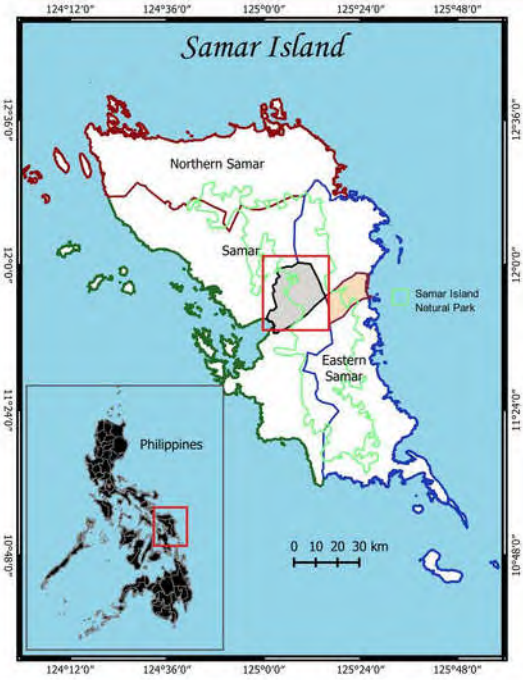
DAO conservation status: Vulnerable

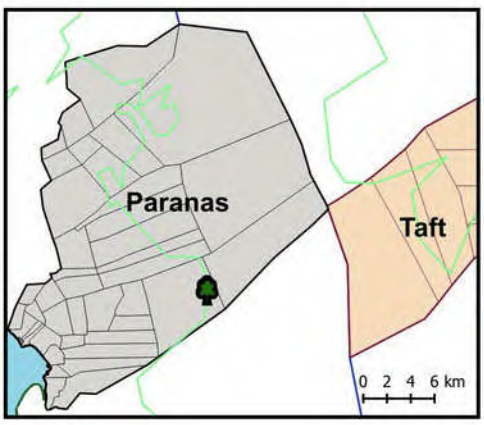
LCPI score: 15/25

Reason for the threat: Four (4) parts of the plants (stem, leaf, flower and fruit) are utilized and harvested for furniture and construction materials (Buot et al., 2024a).

Priority level & Recommended Action: Medium: Can be harvested with specific quotas.







Data sources:

Political boundary : PSA/NAMRIA (2020)
SINP boundary : UNEP-WCMC and IUCN (2020)
2020 Landcover : NAMRIA (2022)
DEM : USGS

Samar distribution of Shorea contorta

N

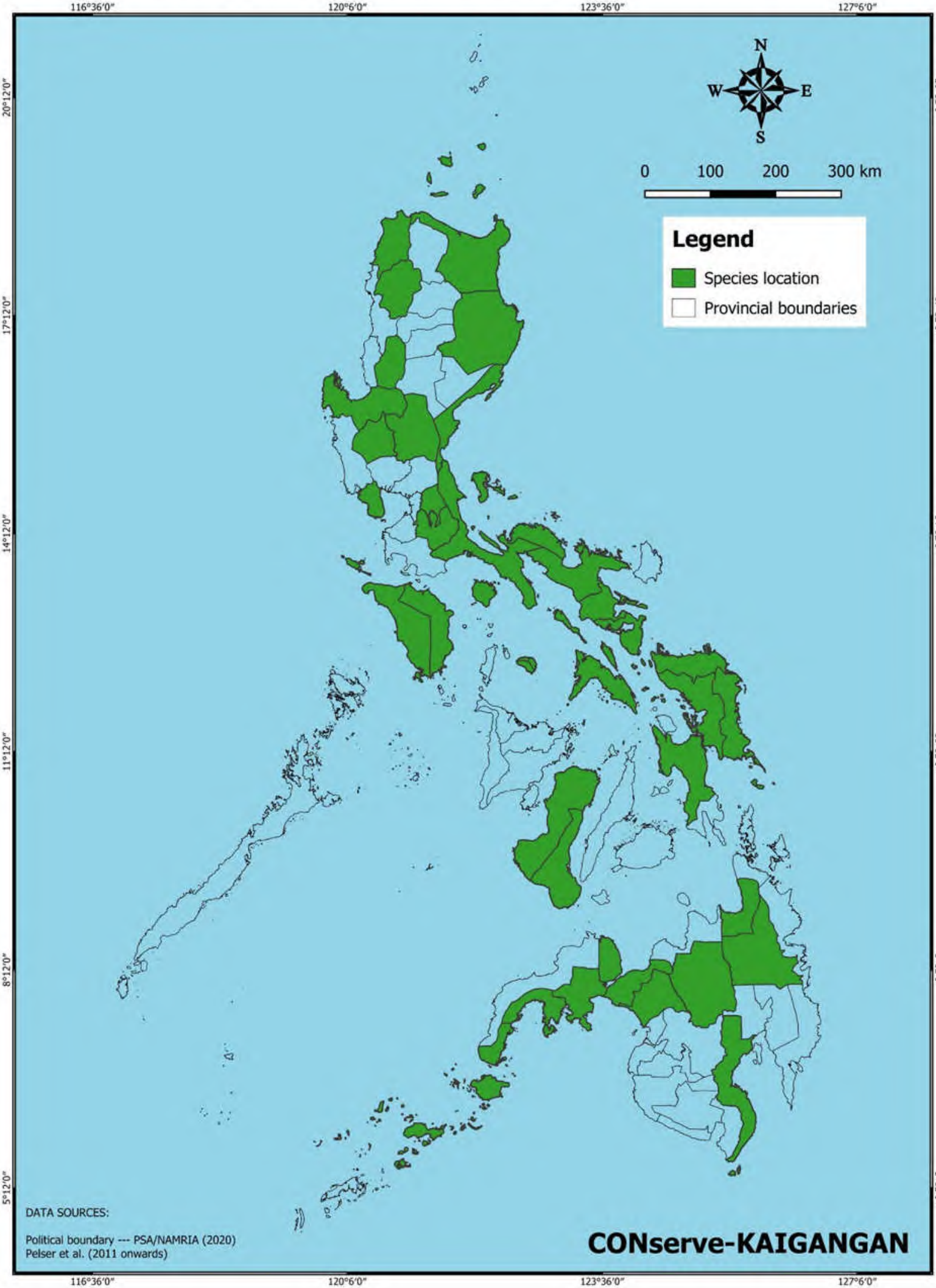
Legend

Shorea contorta

Plot 1 (3 individuals)
Plot 6 (1 individual)

CONserve-KAIGANGAN

Philippine distribution map of Shorea contorta



CONSERVATION PLANS

Indeed, urgent action is of necessity now. Pluralistic conservation approaches should be preferred and advocated. Priority plants in SINP had been geotagged in our study plots. But this has to continue even outside of our plots in the entire SINP. This will enable community sectors and even visitors and ecotourists to monitor the top priority species more closely. DENR staff at the PASU Office, particularly, can plan out better. Ex situ conservation approaches are helpful too. This could be in form of backyard domestication by residents or establishment of arboretum or botanic gardens. Excess propagules falling from the mother trees need to be collected for distribution to communities. Training programs on silviculture can be conducted by local Peoples' Organization. Education in the elementary, secondary and tertiary levels should be revitalized to include information on local natural heritage. With these, we believe, we can sustain ecosystem services to village communities.

REFERENCES

Brehm, J.M., Maxted N., Martins-Loução, M.A. & Ford-Lloyd, B.V. (2010). New approaches for establishing conservation priorities for socioeconomically important plant species. Biodiversity Conservation, 19: 2715-2740.

Buot, Jr., I.E., Origenes, M.G., Obeña, R.D.R., Hernandez, J.O., Hilvano, N. F., Balindo, D.S.A., & Echapare, E.O. (2024a). Identifying plants for priority conservation in Samar Island Natural Park forests (the Philippines) over limestone using a localized conservation priority index. Journal of Threatened Taxa, 16(3): 24821–24837.

Buot, Jr. I.E., Origenes, M.G., Obena & R.D.D.R. (2024b). Prioritizing plants for conservation in forests over limestone in Guiuan Marine Resource Protected Landscapes and Seascapes (GMRPLS), Samar Island, Philippines using a localized conservation priority index (LCPI). Journal of Marine and Island Cultures 13 (1): 41-59.

Buot, I.E.Jr. (ed.) (2020). Methodologies Supportive of Sustainable Development in Agriculture and Natural Resources Management. Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) and the University of the Philippines Los Baños (UPLB), Laguna, Philippines.

Buot, I.E. Jr. (2008a). A new way of looking at environmental health: Focused on man and his environment. Asia Life Sciences Supplement 2: 1-5.

Buot, I.E. Jr. (2008b). Sustaining Environmental health in Philippine Satoyama landscapes. Asia Life Sciences Supplement 2: 129-138.

Caringal, A.M., Buot Jr. I.E. & Villanueva, E.L.C. (2020). Analysis of human and Philippine teak forest interaction in the lasang-baybay landscape along Verde Island Passage Marine Corridor, Batangas Province, Philippines. Journal of Marine and Island Cultures, 9(1): 1-9

Chanthavong, S. & Buot, I. E. (2019). Conservation Status of Plant Diversity at Dong Na Tard Provincial Protected Area, Lao People' Democratic Republic. International Journal of Conservation Science, 10(2): 393-402.

Day, M.J. & Urich, P.B. (2000). An assessment of protected karst landscapes in Southeast Asia. Cave Karst Sci 27: 61-70.

delos Angeles, M.D., Tandang, D.N., Medecilo-Guiang, M.M.P., Buot, I.E.Jr., Schneider, H., & Carballo-Ortiz, M.A. (2023). A new diminutive species of Schismatoglottis (Araceae) from Samar Island, Philippines. Webbia. Journal of Plant Taxonomy and Geography 78(1): 21-28.

delos Angeles, M.D., Rubite, R.R., Chung, K.F., Callado, J.R.C., Buot, I.E.Jr. & Tandang, D.N. (2022). Begonia cucullata (Section Baryandra, Begoniaceae), a new species from the forests over limestone of Samar Island, Philippines. Phytotaxa 541 (1): 049–056.

delos Angeles M.D., Rubite R.R., Chung K-F., Buot I.E.Jr., & Tandang D.N. (2022). Corybas kaiganganianus (Orchidaceae), a new, rare helmet orchid from Samar Island, Philippines. Phytotaxa 543 (2): 127–134.

delos Angeles, M.D., Tandang, D.N. & Buot, I.E.Jr. (under review). Hoya kaiganganiana (Apocynaceae, Asclepedioideae): A New Species from Samar Island Natural Park, Philippines.

DENR-SINP. (n.d). General Management Plan (GMP) 2021- 2030 of the Samar Island Natural Park (SINP). DENR-SINP. Paranas, Samar.

Dransfield, J. (1974). Notes on Caryota no Becc. and Other Malesian Cayota Species. Herbaium Bogoriense, Bogor, Indonesia. Volume 18: 87-93.

Engels, J.M.M., Dempewolf, H. & Henson-Apollonio, V. (2011). Ethical considerations in agro-biodiversity research, collecting, and use. Journal of Agricultural and Environmental Ethics, 24: 107-126.

Fernandez, D. A. P., Delos Angeles, M. D., Obeña, R. D. R., Tolentino, P. J., Villanueva, E. L. C. & Buot, Jr, I.E. (2020). Fauna and Flora of Forests Over Limestone in Calicoan Island, Guiuan Marine Reserve Protected Landscape and Seascape (GMRPLS), Eastern Samar, Philippines. Journal of Marine and Island Cultures 9(2): 86-104.

Fernando, E.S., Suh, M.H., Lee, J, & Lee, D.K. (2008). Forest Formations of the Philippines. ASEAN-Korea Environmental Cooperation Unit (AKECU), Seoul National University, Korea, 240p.

Karieva, P. (2012). Failed metaphors and a new environmentalism for the 21st century. Retrieved from http://www.youtube.com/watch?v=4BOEQkvCook (accessed April 2013).

Karieva, P. (2014). New Conservation: Setting the Record Straight and Finding Common Ground Conservation Biology 28: 634-636.

Kareiva, P. & Marvier, M. (2012). What Is Conservation Science? BioScience, Volume 62: 962–969.

Myers, N., Mittermeier, R.A., Mittermeier, C.G., Fonesca, G.A.B. & Kent, J. (2000). Biodiversity hotspots for conservation priorities. Nature, 403(24): 853-858.

National Parks Board. (2024). National Parks Board. Retrieved June 7, 2024, from https://www.nparks.gov.sg/florafaunaweb/

Nickrent, D.L., Costea, M., Barcelona, J.F., Pelser, P.B. & Nixon, K. (2006 onwards) PhytoImages. Available from: http://www.phytoimages.siu.edu

Obeña, R.D.R., Tolentino, P.J.S., Villanueva, E.L.C., Fernandez, D.A.P., Delos Angeles, M.D.D. & Buot, I.E.Jr. (2021). Flora and Fauna Inventory of Limestone Forests in Taft, Eastern Samar, Philippines. The Thailand Natural History Museum Journal, 15(1): 1-20.

Orwa, C., Mutua, A., Kindt, R., Jamnadass, R. & Anthony, S. (2009). Agroforestry Database: a tree reference and selection guide version 4.0. Kleinhovia hospital. World Agroforestry Centre, Kenya. Feedipedia. Available from https://www.feedipedia.org/node/1650

Pelser, P.B., J.F. Barcelona, & D.L. Nickrent (eds). (2011–onwards). Co's Digital Flora of the Philippines. www.philippineplants.org.

Plant Resources of South-East Asia No 12(3): Medicinal and poisonous plants 3. PROSEA Foundation, Bogor, Indonesia. Database record: prota4u.org/prosea

Philippine Flora. (2009, September 2). MALAPAPAYA. https://philippineflora.wordpress.com/ 2009/09/02/malapapaya/

PNGTreesKey. (n.d.). Aglaia rimosa (Blanco) Merr. Retrieved June 7, 2024, from https://www.pngplants.org/PNGtrees/TreeDescriptions/Aglaia_rimosa_Blanco_Merr.html

Quimio, J.M. (2016). Floral Composition and Timber Stock of Forest in the Samar Island Natural Park. Annals of Tropical Research 38(2): 30-51.

Pretty, J., Adams, B., Berkes, F., Athayde, S.F., Dudley, N., Hunn, E., Maffi, L., Rapport, D., Robbins, P., Sterling, E., Stolton, S., Tsing, A., Vintinner, E. & Pilgrim, S. (2009). The Intersections of biological diversity and cultural diversity: Towards integration. Conservation and Society, 7(2): 100-112.

Seibert, B. & Jansen, P.C.M. (1991). Artocarpus J.R. & G. Forster. In: Verheij, E.W.M. and Coronel, R.E. (Editors): Plant Resources of South-East Asia No 2: Edible fruits and nuts. PROSEA Foundation, Bogor, Indonesia. Database record: prota4u.org/prosea

Sopsop, L.B. & Buot, I.E. Jr. (2009). The endangered plants of Palawan Island, Philippines. Asia Life Sciences 18(2): 251-279.

Soule, M. (2013). The "new conservation". Conservation Biology, 27: 895-897.

Stuart, G.U. (2023). Palisan, Aquilaria cumingiana: Philippine Medicinal Herbs / Philippine Alternative Medicine. (n.d.). Retrieved June 7, 2024, from http://www.stuartxchange.org/Palisan

Stuart, G.U. (2024). Lauan-pula, Shorea negrosensis: Philippine Medicinal Herbs / Philippine Alternative Medicine. Retrieved June 7, 2024, from http://stuartxchange.org/LauanPula

Synopsis IAS. (2023). Dipterocarpus spp. Forestry Optional for UPSC IFS. Retrieved June 10, 2024, from https://synopsisias.com/blog/dipterocarpus-spp-forestry-optional-for-upsc-ifs?category_slug=silviculture-of-trees

Tandang, D.N., delos Angeles, M.D., Buot, I.E.Jr. & Devkota, M.P. (2022). Decaisnina tomentosa (Loranthaceae), A New Species from Eastern Samar Island, Philippines. Biodiversity Data Journal 10: e78457: 1-9.

Tang JW, Lu XT, Yin JX, & Qi JF. (2011). Diversity, composition and physical structure of tropical forest over limestone in Xishuangbanna, South-West China. J Trop For Sci 23 (4): 425-433.

Tolentino, P. J., Navidad, J. R. L., Angeles, M.D., Fernandez, D.A.P., Villanueva, E.L.C., Obeña, R.D.R., & Buot Jr, I.E. (2020). Biodiversity of forests over limestone in Southeast Asia with emphasis on the Philippines. Biodiversitas Journal of Biological Diversity, 21(4):1597-1613.

Villanueva, E.L.C., Fernandez, D.A.P., Delos Angeles, M.D., Tolentino, P.J.S., Obeña, R.D. & Buot, I.E.Jr. (2021). Biodiversity in Forests over Limestone in Paranas, Samar Island Natural Park (SINP), A UNESCO World Natural Heritage Site Nominee. Tropical Natural History 21(1): 119-145.

Villanueva, E.L.C. & Buot, I.E.Jr. (2020a). Setting Localized Conservation Priorities of Plant Species for Sustainable Forest Use. In Buot, I.E.Jr. (Ed): Methodologies Supportive of Sustainable Development in Agriculture and Natural Resources Management. Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) and the University of the Philippines Los Baños (UPLB), Laguna, Philippines. pp.165-179.

Villanueva, E.L.C. & Buot Jr. I.E. (2020b). Useful Plants of the Alangan Mangyan of Halcon Range, Mindoro Island, Philippines. Journal of Marine and Island Cultures, 9(1): 76-102.

List of reviewers:

Journal of Nature Studies

July 2024

Scientific Peer-Reviewed Journal Published by the
Philippine Society for the Study of Nature (PSSN)

www.journalofnaturestudies.org

The **Journal of Nature Studies** is an online, open access, peer-reviewed journal in English that publishes reports of original research in the natural and applied sciences (agriculture, biology, and its allied fields including studies on social sciences as related to nature and the environment). It also publishes notes and reviews on relevant and timely subjects on nature. The Journal of Nature Studies aims to cater to global or international readership thus the broad composition of its Board of Editors/Reviewers. Two issues a year comprise a volume. The Journal of Nature Studies is indexed by Google Scholar and Open Academic Journal Index. Supplements may be issued amytime as necessary.

kaigangan.uplb.edu.ph

kaigangan.uplb@up.edu.ph

fb.com/conkaigangan

CONserve-KAIGANGAN

CONserve KAIGANGAN

Plant Systematics Laboratory