



Refuge Week

# INTRO TO PLANT IDENTIFICATION & INATURALIST

Chae Ragadio | GNWR Ritidian 2024



KAFFO' | PANDANUS TECTORIUS



# WHAT ARE WE DOING?

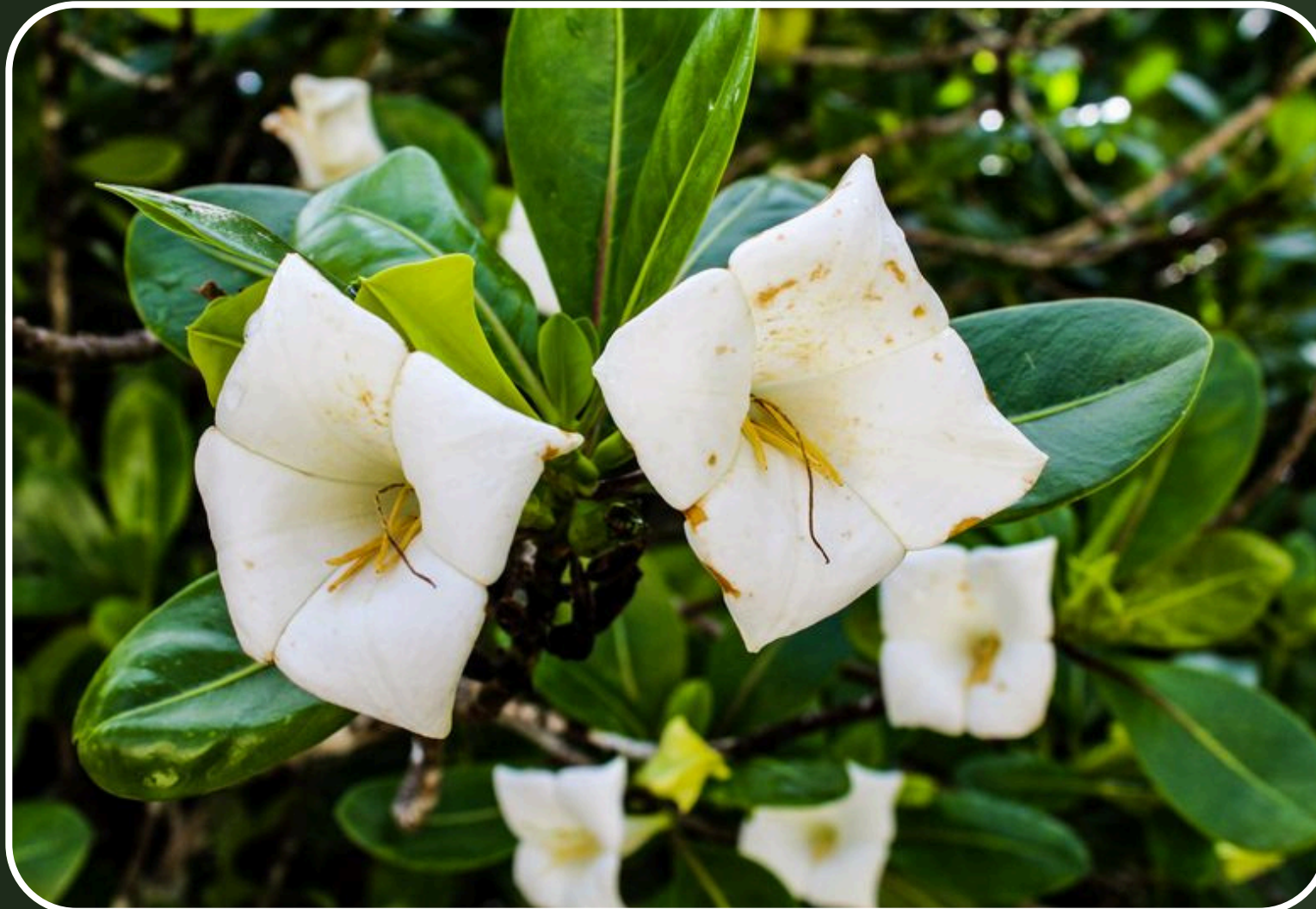
- Learning how to identify five species of plants that the fanihi population rely on
- Going over how to use iNaturalist, its purpose, and joining the GNWR iNaturalist project
- Discussing the importance of conserving and sustaining the fanihi population

# WHY DO WE NEED THIS DATA?

- Collect data on phenology, or information about the timing of natural processes and cycles
- Figure out the distribution of these species and determine what to focus on and where to plant
- Potentially find areas of interest for fanihi
- Get the community involved!



## EXAMPLE:



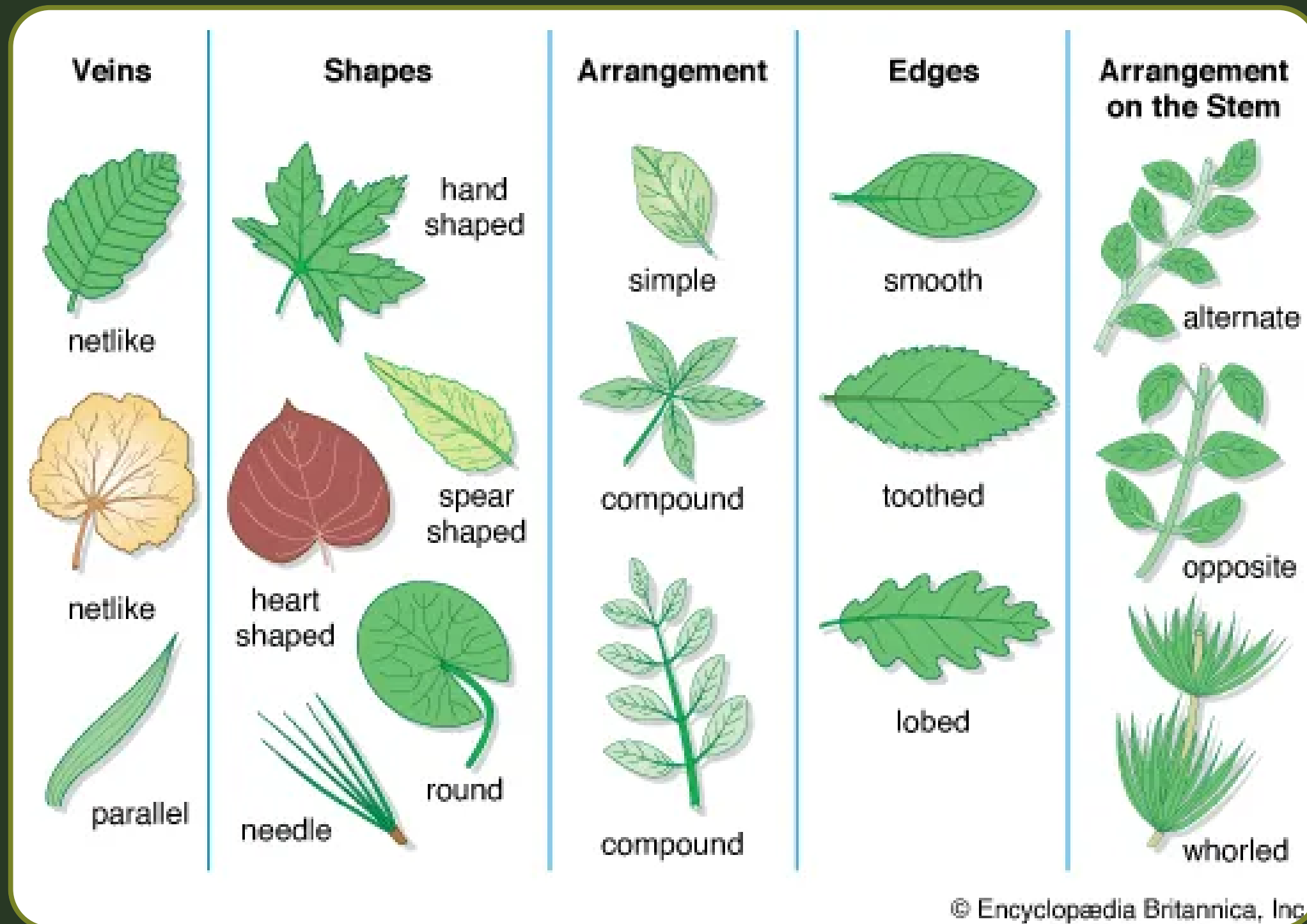
Gaosáli | Torchwood | *Bikkia tetrandra*

## PLANT ID BASICS

- Plants will be referred to by their Chamorro name when available, their common name, and their scientific name
- The scientific name will include a genus, and specific epithet ( a two part name )
- Plant identification is based on observable characteristics and known facts about plant habitats
- Important characteristics to consider when determining plant species: Habitat, Fruit, Flowers, Leaves, Stem/Bark



## Refuge Week



- These are only the basics and should be able to help you familiarize yourself with some of the words used to describe the five species we'll be looking for!

# LEAF FORMATION BASICS

# **DOKDOK** **SEEDED BREADFRUIT**

*Artocarpus mariannensis*

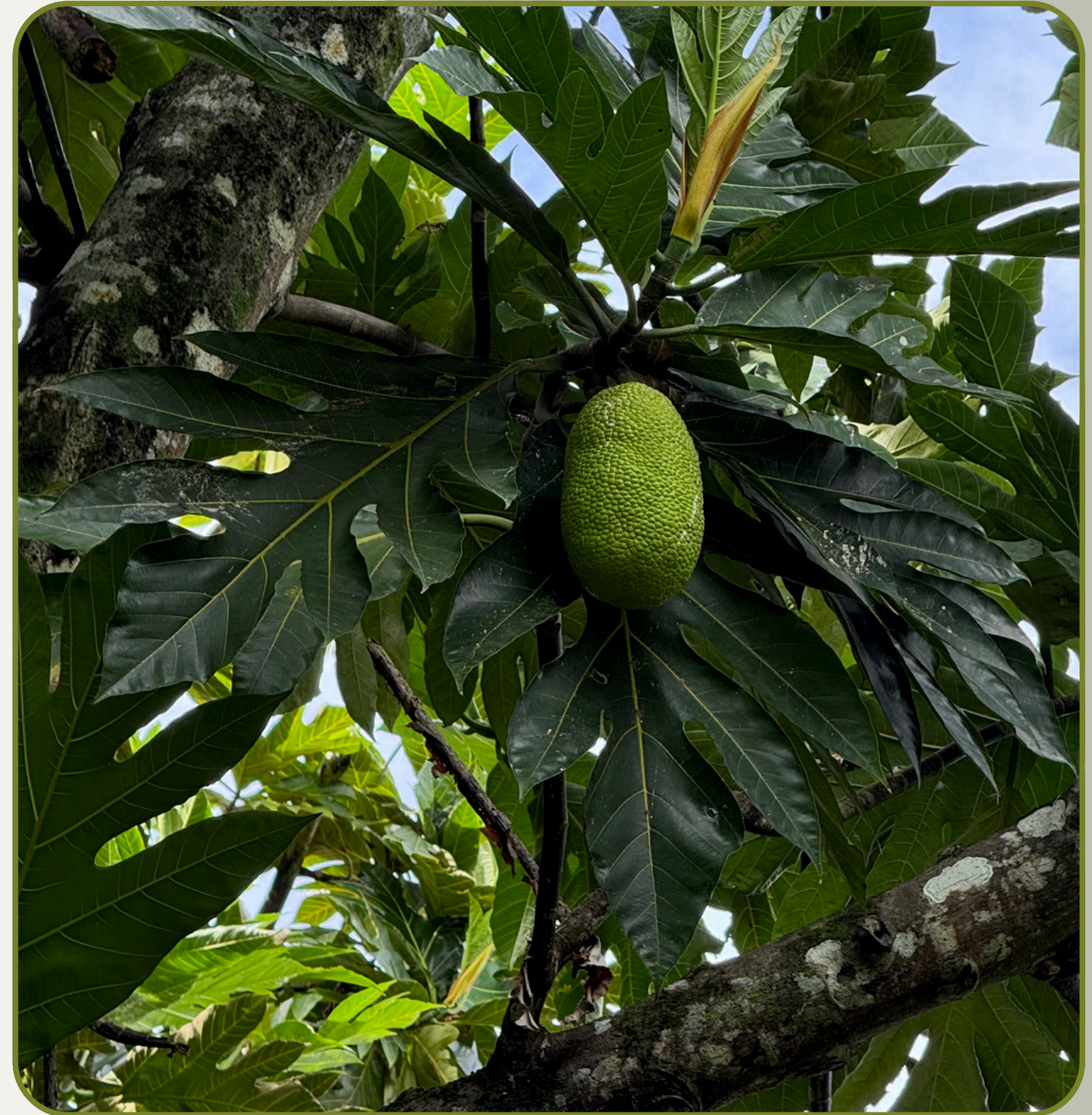
- Endemic to the Marianas
- Green, irregular shaped fruits with seeds
- Evergreen, large, simple, lobed leaves (“duck-foot”)
- Produces white, milky sap
- Grows up to ~20 m (65 ft)
- Found in coastal areas & limestone forests



# LEMMAI (SEEDLESS) BREADFRUIT

*Artocarpus altilis*

- Grows across the tropics
- Large, green, rounded fruits with no seeds
- Evergreen, large, simple, lobed leaves
- Produces white, milky sap
- Grows up to ~26 m (85 ft)
- Found in backyards and forests, with lots of sunlight



# DOKDOK VS. LEMMAI



While both species exhibit traits of the *Artocarpus* (breadfruit) genus, there are some key differences that can help you distinguish between the two.

- Fruit: Lemmai will typically have larger, rounded, green fruits with no seeds and lighter pulp, while dokdok will have smaller, rougher, lumpy fruits with seeds
- Leaves: Lemmai leaves will typically be larger and have more pronounced lobes than dokdok leaves
- Habitat: Dokdok will grow in more specific forest areas, near coasts and slopes, while lemmai are found in open areas where they can access more sunlight

# IDENTIFICATION TIPS:

Plants won't always look like the pictures and they aren't always immediately distinguishable from one another.

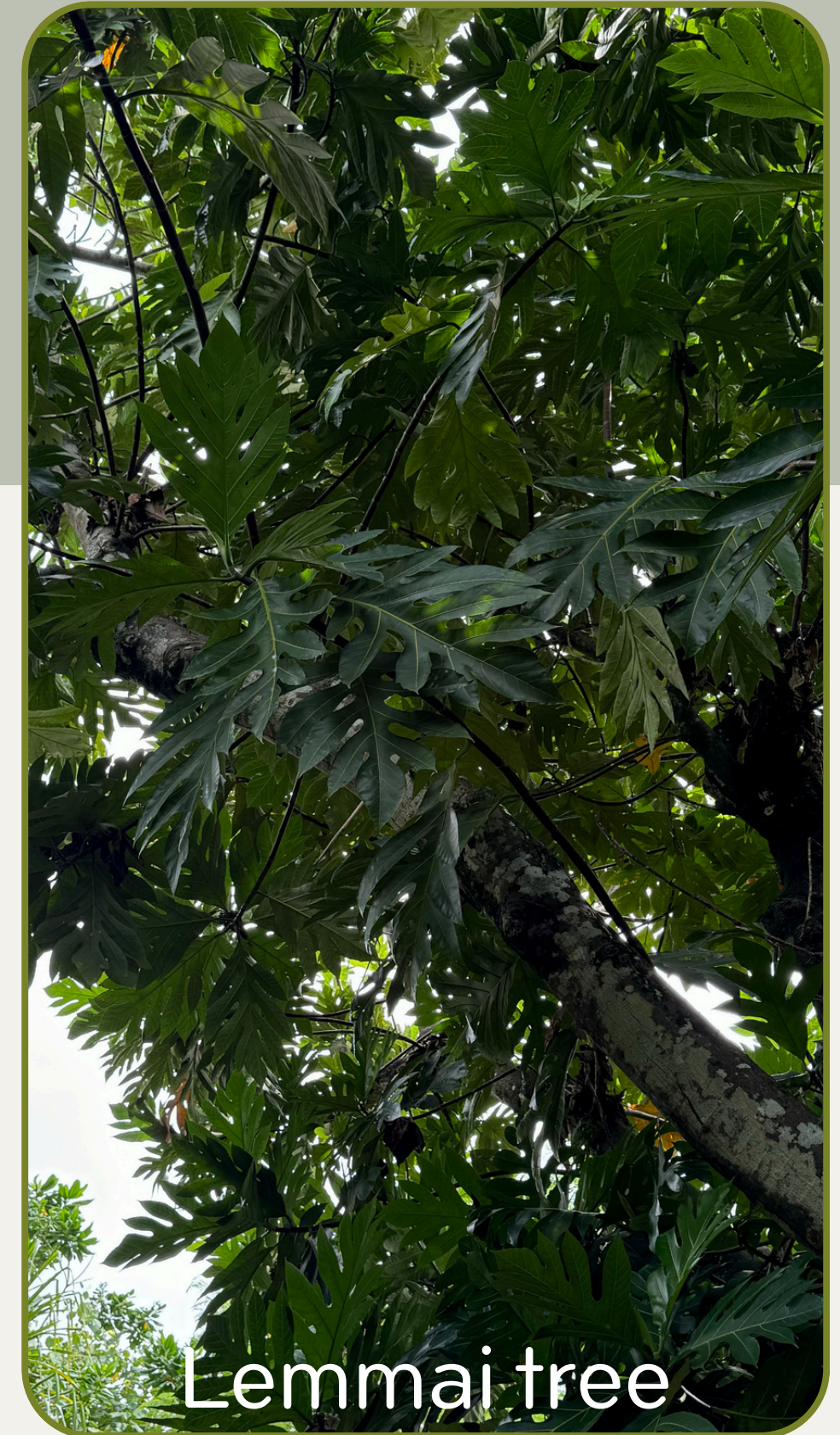
Here, we can see dokdok and lemmai leaves that look different from the examples.

The dokdok has more lobes than the pictures, but is substantially less lobed than the lemmai. The lemmai leaf is also MUCH larger! Make sure to look at the whole tree, not just a couple leaves.

Identifying characteristics are useful when comparing two different species against one another, so try and single out key observable differences!









**BAYOGO** **BURNY BEAN**  
*Mucuna gigantea*



- Vine that can grow up to 30 m (98 ft)
- Compound, trifoliate (occur in groups of 3) leaves
- Fruit is yellow/green seed pods with hairs, mature and turn brown
- Off-white/yellow/green flowers that grow in clusters (like an umbrella)
- Vine grows on tall trees and hangs down
- Thick, woody stem as it matures

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Mucuna can be found around other vines, so make sure not to confuse it with other species! Look out for the ***Canavalia*** vine.

The Mucuna can be distinguished from the *Canavalia* with these features:

**Leaves:** While both grow in threes, Mucuna is pointed and asymmetrical while *Canavalia* is rounded

**Flowers:** Mucuna produces a bundle of green/yellow flowers while *Canavalia* produces small pink flowers

**Vine:** The Mucuna vine is woody and dark, while the *Canavalia* vine remains green and soft

**Seed pods:** The Mucuna seed pod will be yellowish to brown with small hairs on it and flat round seeds, while *Canavalia* has longer green pods that mature brown with bean shaped seeds

# BEWARE FOR LOOKALIKES!





# **NUNU** PACIFIC BANYAN

*Ficus prolixa*

- Found along cliff lines or limestone forests
- Grows to 8–20m (24–60ft)
- Simple leaves
- Small green/yellow/orange fruits
- White sap from leaves/bark
- Aerial roots, grow around trees
- “Taotaomona tree”

# HODA DYE FIG

## *Ficus tinctoria*



- Found on cliffs, along coasts and in limestone forests
- Grows to 8m (26 ft)
- Simple asymmetrical leaves
- Small yellow/orange/red fruits
- White sap from leaves/bark
- Aerial roots, grow around trees





# WHY THESE PLANTS?

- Common plants around the Refuge, a critical habitat for Fanihi
- These plants are typically available year round, making them a reliable food source
- Trees are roosting areas for bats
- Dokdok specifically is higher in calcium than lemmai
- Fanihi are pollinators and seed distributors
- Get to know your environment!

# INATURALIST OVERVIEW



iNaturalist is an application where you can submit photos of different plant and animal species for identification.

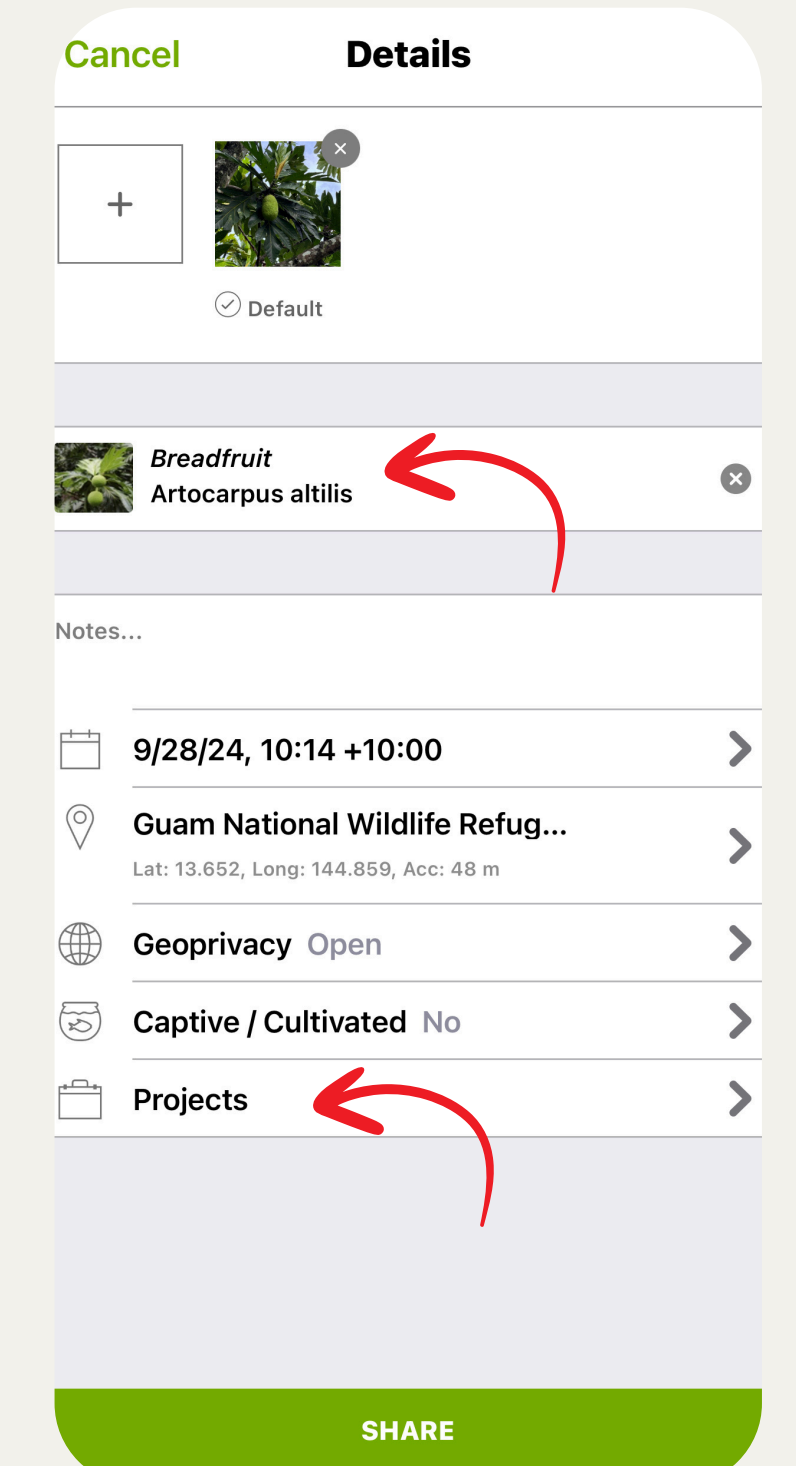
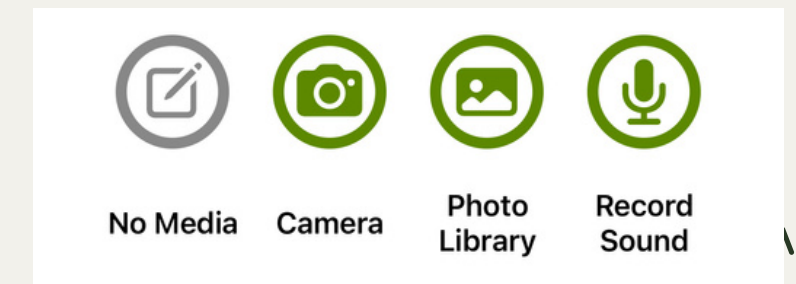
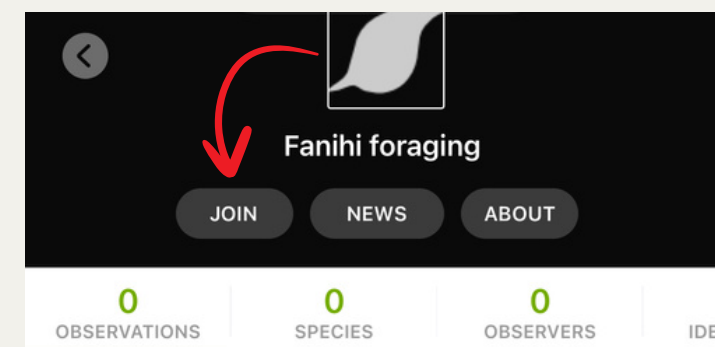
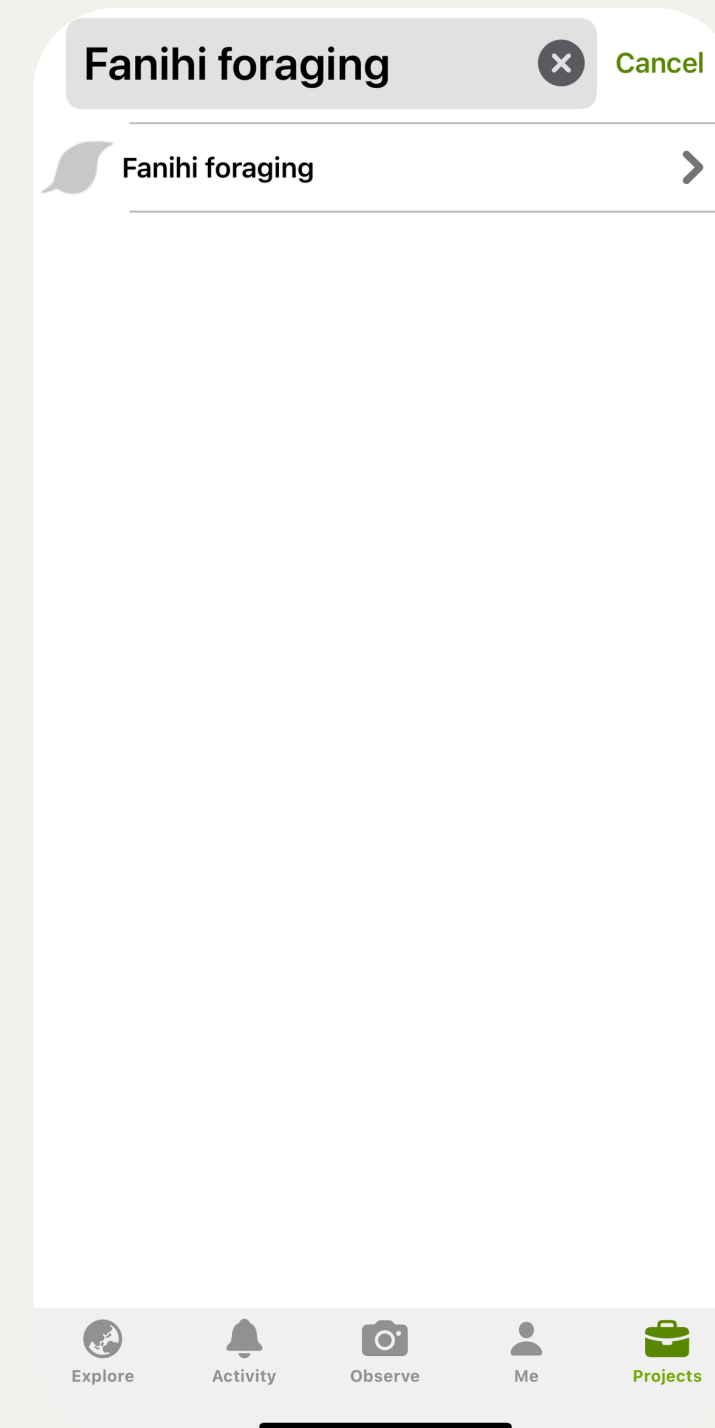
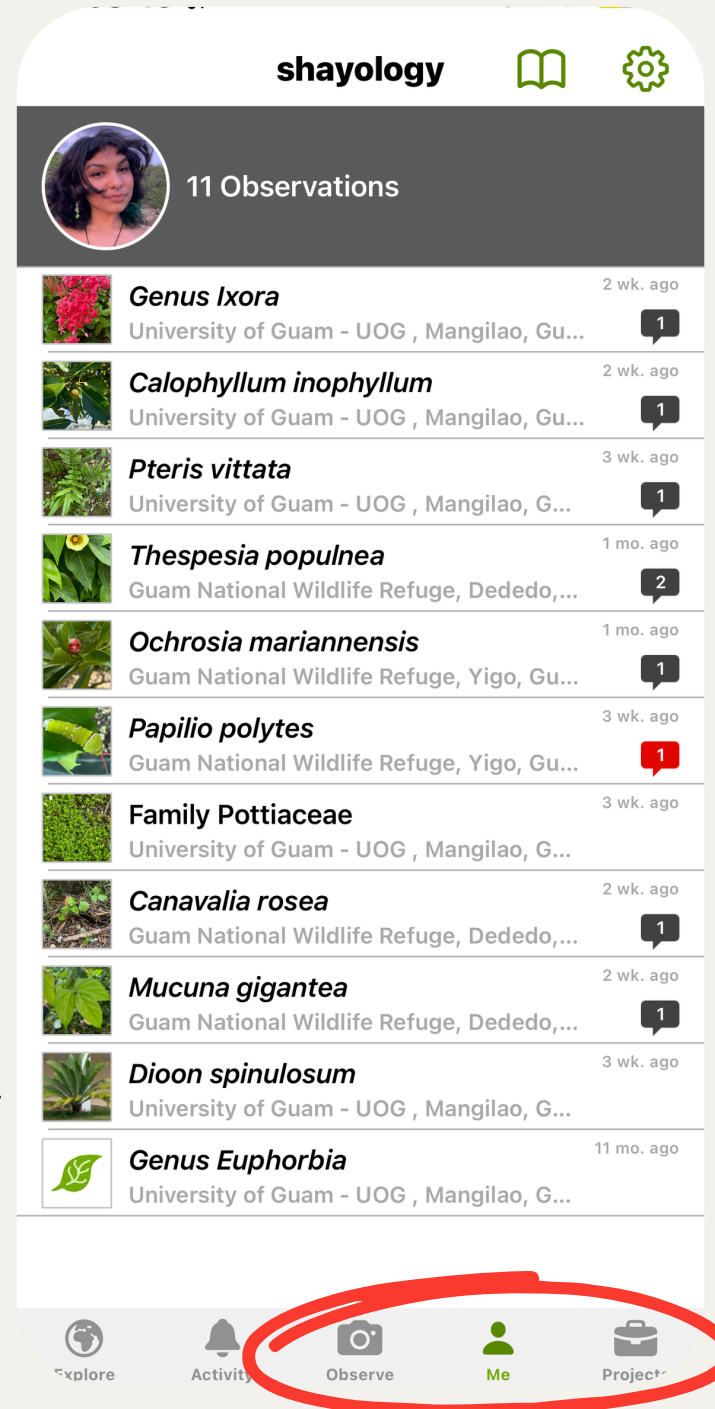
These observations are shared with the public and contribute to scientific data bases. The app is a great tool for collecting data in a large area and comparison with local observations.

## THE BASICS:

- Download the App
- Create an Account
- Take pictures of and try your best to identify the five species listed
- If you're unsure, put the genus name (Ficus or Artocarpus) and location

# INATURALIST SET UP

- Create an account and sign in, you can confirm you are signed in by going to the “Me” page
- Join our project by going to “Projects”, searching up “Fanihi foraging” then pressing “Join”
- Make an observation for the project by pressing “Observe” and choosing the type of media you want to upload
- Any identification that fits into our project will automatically be shared, but you can manually select it by going to “Projects”
- If you’re ever unsure, just list the genus (the first part of the two part name!) and we can go in to identify





# MORE RESOURCES

## Trees and Shrubs of the Marianas Islands -

L. Raulerson & A. F. Reinhardt

A brief field guide on plants with photos to help identify trees and shrubs, has a useful glossary and table of contents to quickly find entries and learn plant terminology

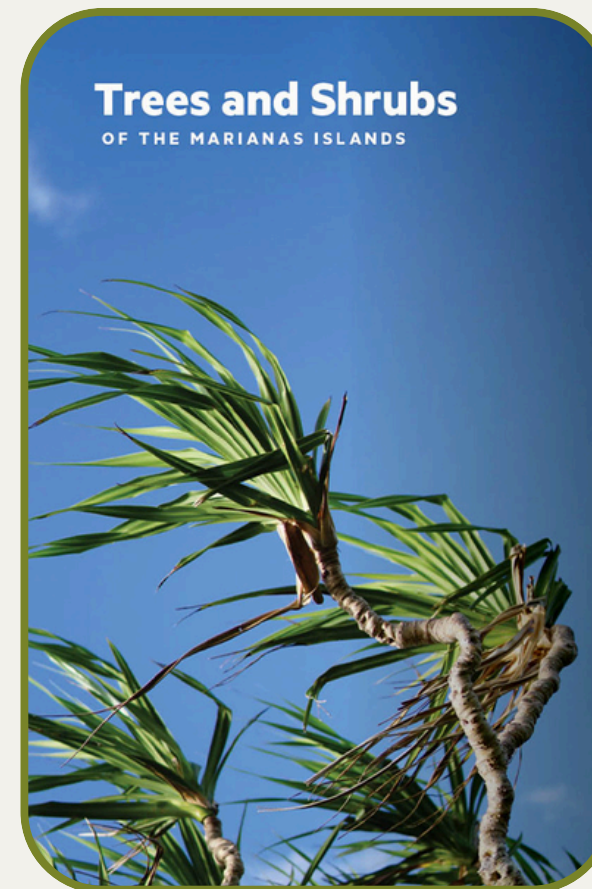
## Urban Trees of Guam Identification and Assessment Guide - Citizen Forester Program ([smarttreespacific.org](http://smarttreespacific.org))

A beginner-friendly guide to identifying local trees including some forestry methods to perform your own citizen science projects

## Micronesica: Flora of Guam - Ben Stone

A very technical scientific manual on the plants of Guam, but includes in-depth characteristics of plants and some dichotomous keys to help with identification between species.

Keep in mind this is from 1970, so some species have been renamed.



ARTOCARPUS INCISUS (Thunb.) L.f. Suppl. 411. 1781; Corner, Gard. Bull. 10: 280, 1939.  
*Artocarpus altilis* (Parkinson) Fosberg, J. Wash. Acad. Sci. 31: 95. 1941.  
*A. communis* Forst. Char. Gen. 191. 1776. Safford 1905: 189, pl. 7, 27, 36; Merrill 1914: 73. LEMAE, RIMAE; BREADFRUIT.  
Medium to large tree; sap thick milky; lvs. large (to 90 cm long), deeply pinnately lobed with about 5-7 lobes, glabrous, thick coriaceous, the midrib raised strongly beneath, dark green above, paler beneath; inflorescences axillary on small branches and branchlets; male spike 10-20 cm long (or more); fem. head rounded-oblong, in fruit to 25+ cm long, weighing up to 6 kgs., studded with slightly conic carpel apices, yellowish-green to brownish; inner flesh white or creamy, usually seedless.—Pl. 4a.  
This, and the next species, are the most common in Guam, and as is out below, the two species have hybridized extensively; village and garden trees are more or less "pure" *A. incisus*, while in the wild, slightly disturbed, or abandoned areas, hybrids showing various recombinations of features are found. Talofoto Valley (5024).  
The breadfruit is native in the Malaysian-Pacific area, but its exact original locality is not known. The fruit sweetens as it ripens, and hence is more "bread"-like when not fully ripe. It may be baked, boiled, or fried.

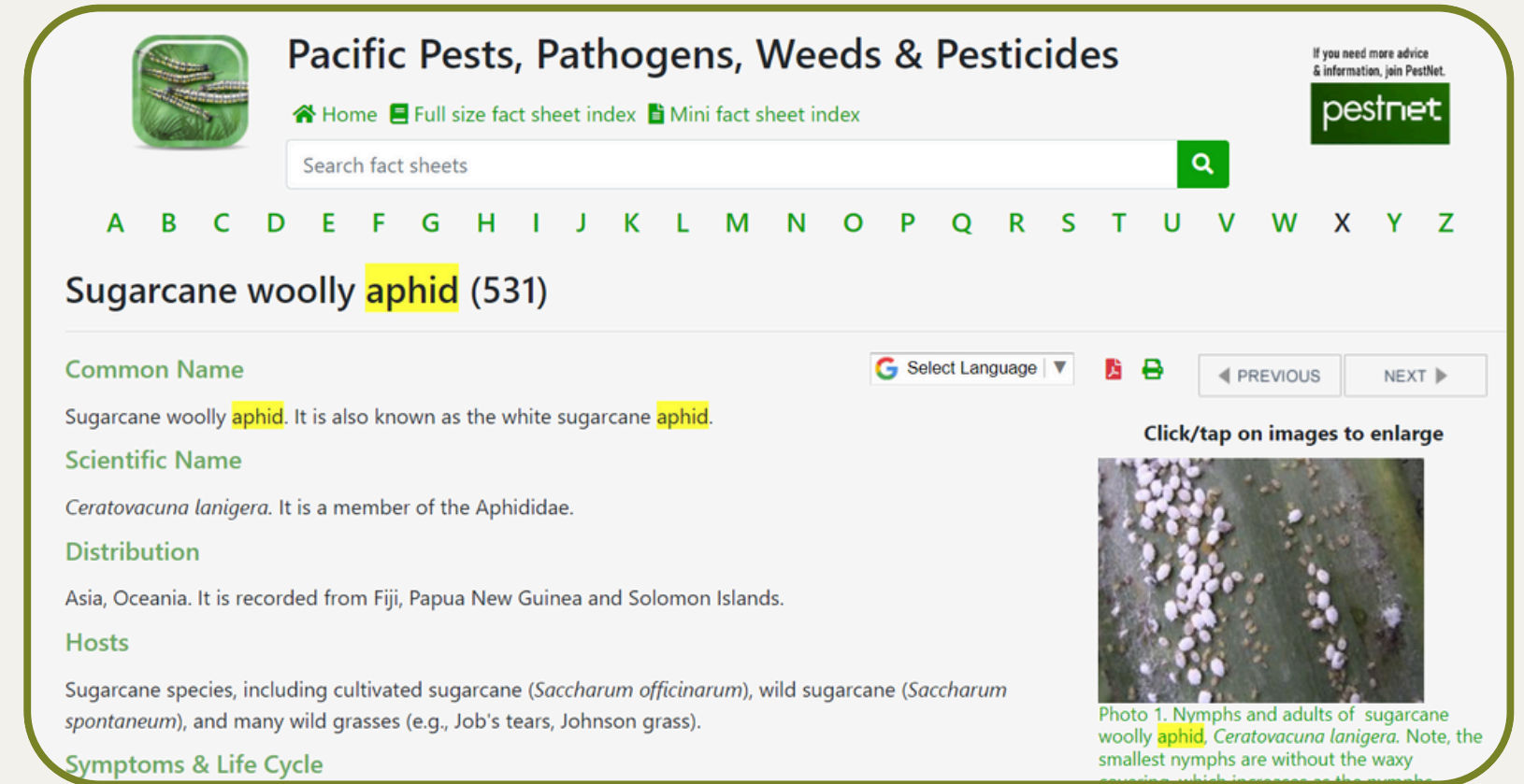
# MORE RESOURCES

## Lucid Central Data Bases

Lucid Central is a site where users can create their own pages for identification and fact sheets about different species. Many are tailored to specific geographic regions or certain types of plants (i.e: trees, moss, flowers). If you can't find information solely pertaining to Guam, you can look at Lucid Central pages for Australia, Hawaii, or Oceania as a whole. This is similar to iNaturalist but Lucid Central focuses on fact sheets and identifying characteristics rather than uploading observations.

## iNaturalist

Compare your entries against local entries to determine what plant you are identifying. The community can always comment on an entry and suggest new identification tags as well.



**Pacific Pests, Pathogens, Weeds & Pesticides**

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Search fact sheets

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

**Sugarcane woolly aphid (531)**

**Common Name**  
Sugarcane woolly aphid. It is also known as the white sugarcane aphid.

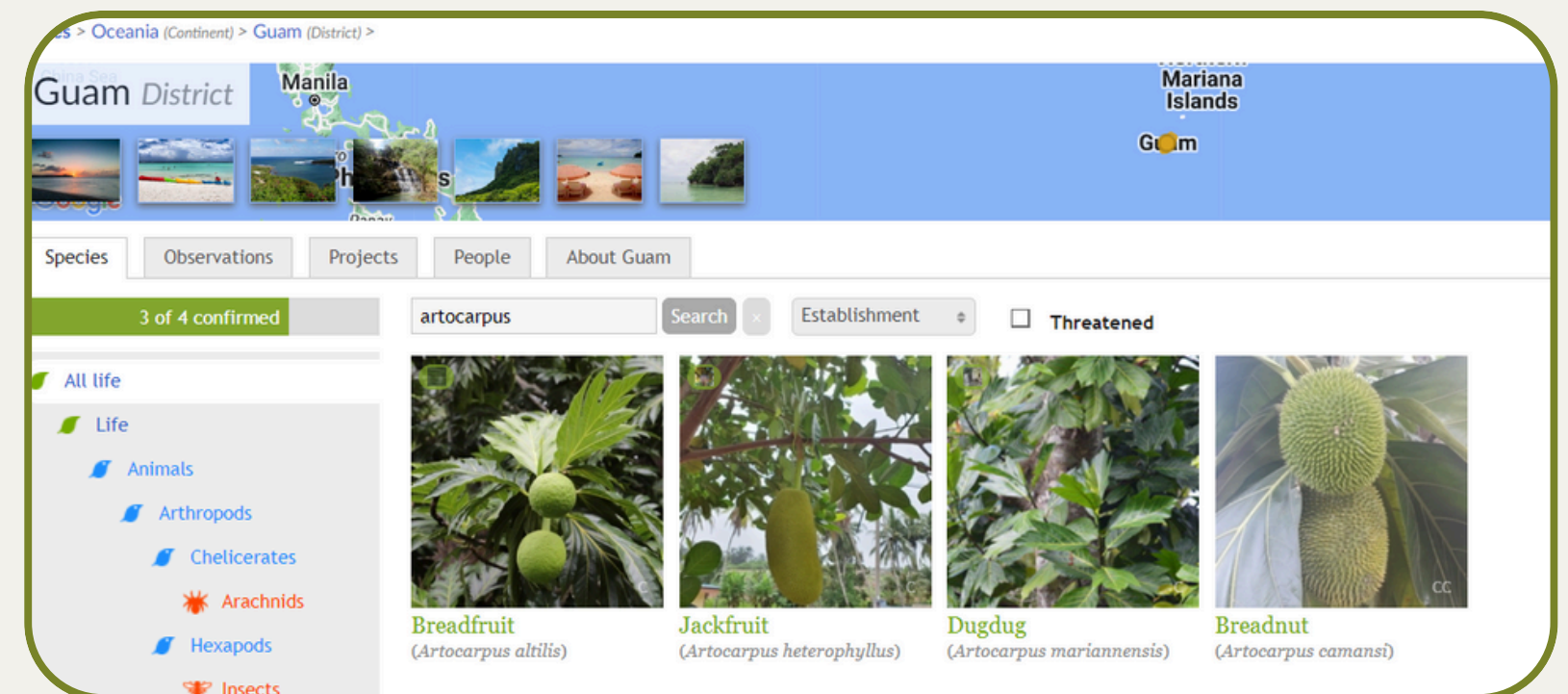
**Scientific Name**  
*Ceratovacuna lanigera*. It is a member of the Aphididae.

**Distribution**  
Asia, Oceania. It is recorded from Fiji, Papua New Guinea and Solomon Islands.

**Hosts**  
Sugarcane species, including cultivated sugarcane (*Saccharum officinarum*), wild sugarcane (*Saccharum spontaneum*), and many wild grasses (e.g., Job's tears, Johnson grass).

**Symptoms & Life Cycle**

Photo 1. Nymphs and adults of sugarcane woolly aphid, *Ceratovacuna lanigera*. Note, the smallest nymphs are without the waxy covering, which increases as the nymphs mature.



Oceania (Continent) > Guam (District) >

**Guam District**

Manila Mariana Islands Guam

Species Observations Projects People About Guam

3 of 4 confirmed

artocarpus Search Establishment Threatened

All life

- Life
  - Animals
    - Arthropods
    - Chelicerates
    - Arachnids
    - Hexapods
    - Insects

**Breadfruit** (*Artocarpus altilis*)

**Jackfruit** (*Artocarpus heterophyllus*)

**Dugdug** (*Artocarpus mariannensis*)

**Breadnut** (*Artocarpus camansi*)



**THANK YOU FOR  
YOUR ATTENDANCE!**

ANY QUESTIONS?