



# Orchid Exploration in the Forest of Saenam Village as Nuftah Plasma Conservation

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**Abstract:** This research was conducted with the aim of determining the types of orchid species in the Saenam Protected Forest, North Middle East Regency, East Nusa Tenggara Province. The Saenam Protected Forest has an area of  $\pm 10$  km<sup>2</sup>, has biodiversity, including orchids. One of the information regarding the orchid inventory in Timor Mainland, especially in the Saenam Protection Forest, North Middle East Regency has never been reported. It is necessary to carry out this exploratory research as a basic data of the existing biological resources in the location. The research was carried out in July-September 2021. Sampling was carried out by purposive sampling with sampling using a plot method measuring 10 x 40 m. The distance of each plot is 10 m with the total number of plots in this study is 10 plots. The results showed that the types of orchids found in the Saenam Protection Forest were 9 genera of orchids. All orchids found in this study belong to the type of epiphytic orchid. The dominant orchids in this research area are *Pholidota globosa*, *Dendrobium smilliae* var. *alba*, and *Dendrobium smilliae*. The types of host trees found in the orchids were Pine and Forest Water Guava.

**Keywords:** Exploration; Orchid; Inventory; Protected Forest

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## Introduction

Orchids are a group of ornamental plants that belong to the Orchidaceae family. Orchid plants are favored by collectors because they have beautiful tepala (crowns and petals that can't be distinguished in color) (Kartikanungrum et al., 2004). Orchids have natural habitats in forests that have high light or humidity intensity (Puspaningtyas, 2018).

Forest orchids or species orchids are orchids that have never been crossed, especially human-assisted crosses (Soewilo, 1999; Puspaningtyas, 2019). The Saenam Protection Forest is one of the conservation areas that has a wealth of flora and fauna that are well preserved. One of the richness of flora in the protected forest is natural orchids / species of orchids. However, the current problem is the condition of the protected forest which is now being converted into local community plantations. The conversion of land

functions from protected forests to community plantations has resulted in a reduction in the orchid population.

The diversity of orchid species, especially in the Saenam Protected Forest, has never been studied. Exploratory research and inventory research needs to be carried out as an effort to obtain initial data on types of plants, especially orchids, which are in that location. According to Mujahidin et al. (2002) in Yubu et al. (2018) that before an area experiences ecosystem changes, it is necessary to explore and collect data on the diversity of flora and fauna species as a reference for basic data if one day the area experiences natural changes.

According to Puspaningtyas and Fatimah (1999), it is important to carry out inventory activities as a basic effort in assessing the diversity of biological resources. Inventory of kinds of orchids is an activity of collecting and recording primary field data which includes the

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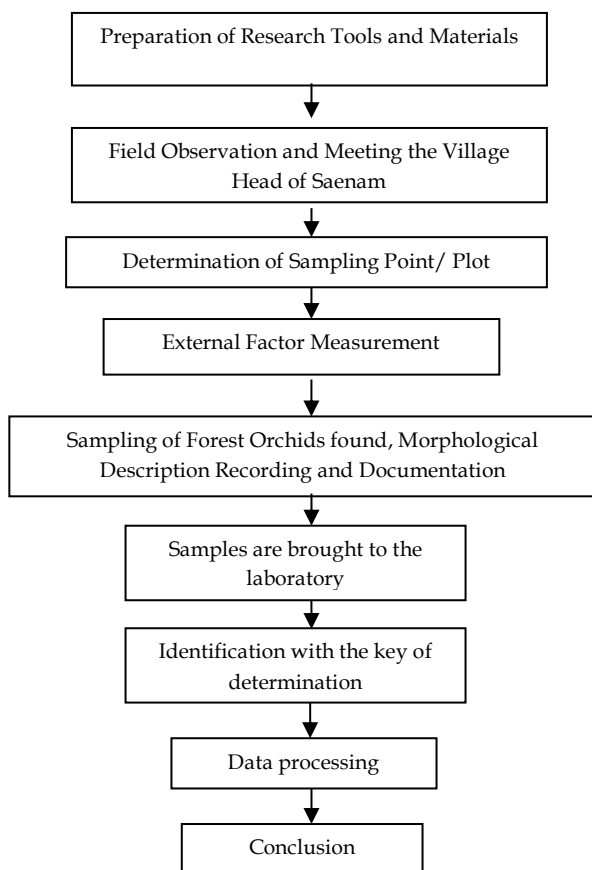
morphological characteristics of orchids in the forest or at the research site (Puspitaningtyas et al., 2003).

This exploratory research has the aim of knowing the kinds of orchids in the Saenam Protected Forest area. It can be hoped that the data regarding the types of orchids in the Timor area, especially in the area of Saenam Village, are documented and give orientation to the diversity of orchid species. According to Sadili (2013), that the importance of conducting research on the types of orchids will be one indicator of the forest area.

This research is basic research because there is no data obtained regarding various types of orchids in Timor Mainland, especially the Saenam Protected Forest. The data generated from this research is expected to be important information and insight for orchid lovers and the community to maintain their habitat/environment/forest area considering that species of orchid are one of the germplasm that need to be studied more deeply from various aspects.

**Method**

This study used a purposive sampling technique, according to Puspitaningtyas and Supriadi (2002), sampling was carried out with a plot size of 10 x 40 m using a meter roller then spaced 10 m between plots. There are 10 plots in this study.



**Figure 1.** Research Flowchart

The criteria used for the data are the name of the orchid, the Latin name, the type of orchid, the host plant (if it is an epiphytic orchid), the number of orchids and other information. To find out the types of orchids found, it is necessary to identify them. Identification of orchids is carried out up to the genus stage. In addition to using identification with taxon structure, identification of the external structure and shape of roots, stems, leaves, flowers and fruits was also carried out. The source of the literature is to match it with the determination key book from Dressler, 1993.

*Place and time of research*

This exploration research has been conducted in Saenam Village, West Miomaffo District, North Middle East Regency. This research was conducted in July-September 2021.



**Figure 2.** Research Location (Saenam Village, West Miomaffo District, North Middle East Regency-NTT)

*Research subject*

The subjects in this study were species of orchids/natural orchids that live in the village of Saenam which is close to the Mutis Natural Forest.

*Research Instruments*

The instrument that will be used to collect data is the identification of orchids found in Saenam Village. The results of the identification of orchids were obtained from matching with the determination library. The identification results were obtained based on the morphological characteristics (morphology of leaves, stems, and flowers) of each type of orchid encountered.

*Data analysis*

Identification is done by taking samples of orchids, documenting orchids in Saenam Village, and the results of the documentation are also used as a comparison in identification with the determination library.

## Result and Discussion

The research results that have been obtained and are presented in the table (Table 1 and Table 2).

**Table 1.** Types of orchids found in Saenam protected forest

Species	Number of Plots	Host Tree
<i>Pholidota globosa</i>	9	<i>Pinus</i> sp.
<i>Dendrobium smiliea</i> var <i>alba</i>	6	<i>Pinus</i> sp.
<i>Dendrobium smiliea</i>	5	<i>Pinus</i> sp.
<i>Aerides vandarum</i>	1	<i>Syzygium</i> sp.
<i>Platystele</i> sp.	1	<i>Syzygium</i> sp.
<i>Papilionanthe teres</i>	1	<i>Syzygium</i> sp.
<i>Phreatia</i> sp.	1	<i>Syzygium</i> sp.
<i>Thecostele</i> sp.	1	<i>Syzygium</i> sp.
<i>Vanda</i> sp.	1	<i>Syzygium</i> sp.
<i>Pomatocalpa</i> sp.	1	<i>Syzygium</i> sp.

**Table 2.** Epiphytic Orchid Dominance Percentage

Species	Number of Species	F	% Amount	% Frequency	% Domination
<i>Pholidota globosa</i>	188	90	52.66	33.33	85.99
<i>Dendrobium smiliea</i> var <i>alba</i>	32	60	8.96	22.22	31.19
<i>Dendrobium smiliea</i>	107	50	29.97	18.52	48.49
<i>Aerides vandarum</i>	2	10	0.56	3.70	4.26
<i>Platystele</i> sp.	2	10	0.56	3.70	4.26
<i>Papilionanthe teres</i>	3	10	0.84	3.70	4.54
<i>Phreatia</i> sp.	18	10	5.04	3.70	8.75
<i>Thecostele</i> sp.	1	10	0.28	3.70	3.98
<i>Vanda</i> sp.	3	10	0.84	3.70	4.54
<i>Pomatocalpa</i> sp.	1	10	0.28	3.70	3.98
Total	357	270	100.00	100.00	200.00

Research on the exploration of this orchid also obtained data on environmental parameters. The calculated parameters are humidity, temperature around the plot, and soil pH measurements. This greatly affects the types of orchids found in that location. Of the 10 plots carried out for orchid exploration, only the 10<sup>th</sup> plot found 7 types of orchids. The 10<sup>th</sup> plot had different host tree height, temperature, and humidity when compared to the other 9 plots. The height of the host tree in the plot ranged from 3 m-6 m, the temperature measurement results obtained were around 28°C, and the humidity measurement results reached 72%. The density of the lush host tree, the level of shaded light intensity and high enough humidity will support the growth or development of orchids, especially epiphytic orchids (Hartoyo et al., 2021; Yonzone, 2021).

Tables 1 and 2 show that there are 10 species of orchids found in the area. Overall, the orchids found were epiphytic, that is, attached to their host. The types of epiphytic orchids in the protected forest of Saenam are; *Platystele umbellata*, *Aerides vandarum*, *Pholidota globosa*, *Papilionanthe teres*, *Phreatia* sp., *Thecostele* sp., *Vanda* sp., and *Pomatocalpa* sp.. The most commonly found orchids were *Pholidota globosa*, totaling 188 individuals, and the rare orchid (only 1 individual) was *Thecostele* sp. and *Pomatocalpa* sp..

Orchids have a host as a source in supplying food/nutrients. The type of orchid found in the Saenam Protected Forest only found 2 types of hosts, namely *Syzygium* sp. and *Pinus* sp. *Syzygium* sp. Is the type of host tree found in almost 10 plots and found 6 types of orchids on *Syzygium* sp..



*Pholidota globosa*



*Dendrobium smilliae* var *alba*

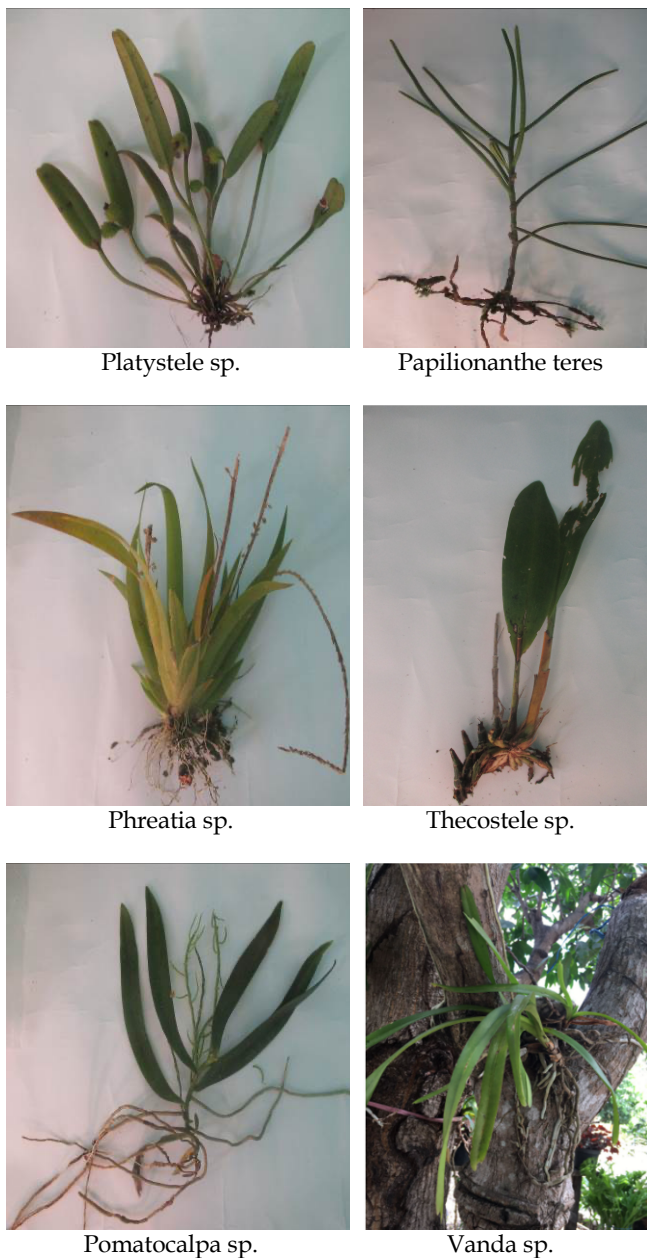


*Dendrobium smilliae*



*Aerides vandarum*





**Figures 3.** Ten (10) Types of Orchids found in the Saenam Protected Forest (Dewi Documentation, 2021).

*Orchid leaf external structure and shape*

The types of orchids found have different leaf shapes and leaf sizes. The orchids found have leaf lengths in the range of 1.5 cm-40 cm, then the leaf width range of the orchids found is 0.3 cm-4.2 cm. The types of orchids found in the Saenam protected forest have variations in the shape of their leaves. In general, the most commonly found are oblanceolate leaves on *Pholidota globosa*, leaves of *Aerides vandarum* and *Papilionanthe teres* with teret shape, on *Dendrobium smilliae* var *alba* and *Dendrobium smilliae* have triangular leaf shapes. Ten types of orchids were found to have a light green or dark green leaf color range (Tjtrosoepomo, 2007; Hidayat and Pariyanto, 2021).

*Orchid stem external structure and shape*

The external structure and shape of the orchid stems in the Saenam protected forest indicate that *Dendrobium smilliae* var. *alba*, *Dendrobium smilliae*, *Pholidota globosa*, *Thecostele* sp., *Phreatia* sp., *Platystele umbellata* have sympodial stems, while *Aerides vandarum*, *Vanda* sp., and *Papilionanthe teres*. It has a monopodial stem. The stems of the orchids found were 6 cm-70 cm long. Orchid stems found are green to dark green (Dressler, 1993; Darmawati et al., 2021; Siregar, 2008).

*The external structure and shape of the roots and flowers of orchids*

Description of the external structure and shape of the roots of the orchids found mostly have attached roots. The flower on the type of orchid found and recorded in this study was *Dendrobium smilliae* var *alba* which has white tepala and greenish labellum lips. While the type of *Dendrobium smilliae* tepala owned is red with greenish labellum lips. In addition to the type of *dendrobium*, the flower that was recorded in this study was *Pholidota globose*. This type of orchid has yellowish white tepala and brownish yellow labelum lips (Darmawati et al., 2018; Hartini and Popi, 2020 ; Pant et al., 2018). Then the leaves from the *Phreatia* sp. The light brown color is added with a dark brown labellum lip color.

**Conclusion**

From this research, it can be concluded that there are 10 species of orchids found in the Protected Forest in Saenam Village, all of which are epiphytic. The dominant orchids in this protected forest are *Pholidota globosa*., *Dendrobium smilliae* var. *alba*, and *Dendrobium smilliae*. The host trees of the orchids found in this study, namely Pine and Guava Air Hutan.

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