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Identification of Types of Ferns (*Pteridophyta*) in the STKIP Gotong Royong Masohi Environment

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Abstract. Ferns (*Pteridohyta*) are cormophyte plants that have spores and are able to live in varying environmental conditions. The diversity of fern species can be identified through identification activities. Identification is the initial process in classifying a type of plant. Ferns are widely found in the STKIP Gotong Royong Masohi campus environment, but their species are not yet known. Therefore, this study aims to identify the types of ferns in the STKIP Gotong Royong Masohi campus environment. The type of research used is descriptive exploratory with a qualitative approach. This research was conducted in the STKIP Gotong Royong Masohi campus environment in August 2024. This research consists of 4 stages, namely the preparation stage, the sampling stage and the fern type identification stage. Based on the research results, it is known that there are 7 families and 9 types of ferns found in the STKIP Gotong Royong Masohi campus environment, namely *Phymatosorus sclopendria*, *Cristella dentata*, *Asplenium nidus*, *Nephrolepis biserrata*, *Selaginella* Sp, *Pyrrosia lanceolata*, *Davallia denticulata*, *Lygodium flexuosum*, and *Pteris ensiformis*.
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Keywords: Environment; Ferns (*Pteridophyta*)

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INTRODUCTION

Ferns (Pteridohyta) are cormophyte plants that have spores and are able to live in varying environmental conditions. However, the existence of these ferns still receives less attention when compared to other plant groups. Sometimes these plants are also considered to provide less benefit to life, even though ferns have quite high economic value and have potential as ornamental plants, medicinal plants, vegetables and other potentials (Afriani et al., 2020).

These ferns can spread easily, thus forming a diversity that can be identified based on their morphology and anatomy (Adlini et al., 2021). The diversity in question is the richness of fern species found in an area determined by their reproduction (Saputro & Utami, 2020).

The reproduction of ferns is influenced by abiotic factors including temperature, humidity, light intensity, geospatial location and altitude of the location. And biotic factors are factors related to the characteristics of the spores possessed by the fern (Janna et al., 2020).

The types of ferns that are spread are known to be around 10,000 and 3,000 species exist in Indonesia (Luckita et al., 2021). Ferns are classified into 4 classes based on morphological differences found in taxonomy, namely Psilotopsida, Equisetopsida (Sphenopsida), Marattiopsida and Polypodiopsida (Pradipta et al., 2023). The diversity of fern species can be known through identification activities.

Identification is the initial process in classifying a type of plant. Identification of ferns aims to name ferns to the species level. Fern species can be determined based on morphological characteristics. Basically, identification and classification are sorted from the highest level to the lowest level, namely kingdom, division/phylum, class, order/nation, family/genus and species/type (Pranita et al., 2017). These ferns also grow and spread widely in the STKIP Gotong Royong Masohi campus environment. However, the existence of these plants has not been identified and research on ferns has not been conducted. Therefore, this study aims to identify the types of ferns in the STKIP Gotong Royong Masohi campus environment.

MATERIALS AND METHODS

The type of research used is descriptive exploratory with a qualitative approach. This research was conducted in the STKIP Gotong Royong Masohi campus environment in March 2024. The tools and materials used in this study were cameras, stationery, scissors, specimen plastic, label paper, identification guidebooks, and ferns found at the research location. Furthermore, the research carried out consisted of 4 stages, namely the preparation stage, the sampling stage, and the identification stage of fern types.

RESULTS AND DISCUSSION

Types of Ferns in the STKIP Gotong Royong Masohi Campus Environment

Based on the results of research conducted in the STKIP Gotong Royong Masohi campus environment, there are 7 families and 9 types of ferns found at the location. The results of the identification of types in taxonomic levels can be seen in Table 1.

Table 1. Results of Identification of Ferns in the STKIP Gotong Royong Masohi Environment

Family	Genus	Species
Polypodiaceae	Phymatosorus	*Phymatosorus sclopendria*
	Pyrrosia	*Pyrrosia lanceolata*
Thelypteridaceae	Cristella	*Cristella dentata*
Aspleniaceae	Asplenium	*Asplenium nidus*
Nephrolepidaceae	Nephrolepis	*Nephrolepis biserrata*
Pteridaceae	Pteris	*Pteris ensiformis*
Lygodiaceae	Lygodium	*Lygodium flexuosum*
Selaginellaceae	Selaginella	*Selaginella Sp*
Davalliaceae	Davallia	*Davallia denticulata,*

Morphological Description of The Types of Ferns Found in The STKIP Gotong Royong Masohi Campus Environment

Based on the data in Table 1. The most commonly found family is the Polypodiaceae family with the number of species of each family found being 2 species. A number of results of observations of fern

identification in the STKIP Gotong Royong Masohi campus environment are shown in the following Figure 1.

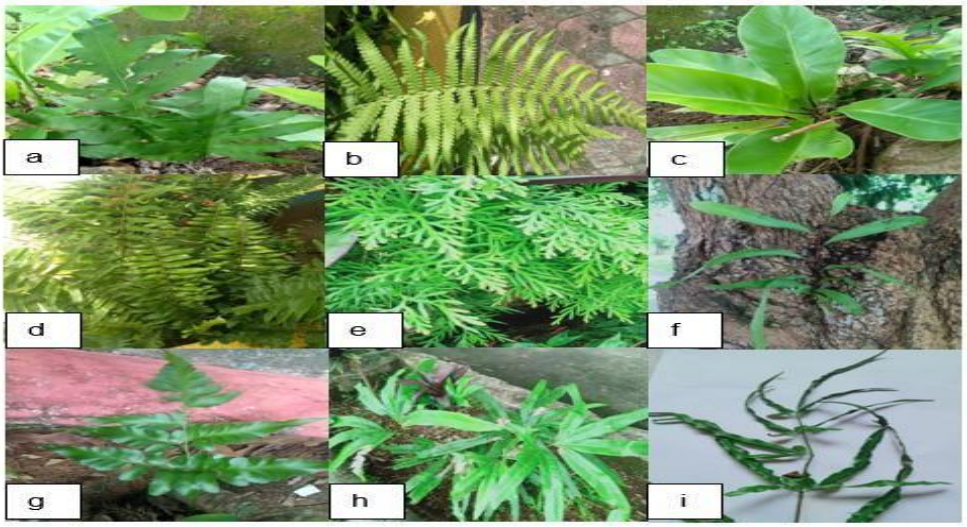

Figure 1. Types of ferns found in the STKIP Gotong Royong Masohi campus environment: (a) *Phymatosorus sclopendria*, (b) *Cristella dentata*, (c) *Asplenium nidus*, d) *Nephrolepis biserrata*, (e) *Selaginella* Sp (f) *Pyrrosia lanceolata*, (g) *Davallia denticulata*, (h) *Lygodium flexuosum*, , (i) *Pteris ensiformis*

Phymatosorus sclopendria

Phymatosorus scolopendria is found as an epiphyte on tree trunks. The leaves are green, finger-shaped, smooth surface, leaf position in pairs, and the leaf tips are pointed, leaf length is about 40 cm and width is 20 cm (Sari, 2018). The rhizome stem is creeping, small scales, has a fibrous root shape that creeps (Agatha et al., 2019). Sorus is found under the leaf surface, clustered parallel, brown in color. yellowish and round in shape.

Cristella dentata

Based on the observation results *Christella dentata* has morphological characteristics of fibrous roots with upright rhizomes. The color of the stalks on this plant is green with a round stalk shape. *Christella dentata* plants have light green leaves with a flat leaf surface. The edges of the leaves of this fern are serrated and have alternate leaf arrangements, the tips of the fern leaves are tapered with the base of the leaves being notched. The habitat of this fern is found in the soil near water sources. *Christella dentata* has upright and creeping rhizomes, brown scales. Ental pinatus penatifit, the leaf arrangement is alternate, because the fork, the leaf edges are gapped, on sterile leaves the distance between leaves is close together and on fertile leaves the distance between leaves is loose. The stalk is greenish brown, there are brown scales. Sorus is kidney-shaped on the abaxial leaf, located in the Supra media of the leaf sorus is arranged in two rows on each leaf consisting of 2 to 4 sorus on each line. The habitat of this fern is flat or sloping land on cliffs and also on rocky terrain.

Asplenium nidus

Asplenium nidus is a plant that grows as both an epiphyte and a terrestrial plant. It is often found attached to rocks or trees (Prasani et al., 2021). *Asplenium* nidus is a plant that lives as an epiphyte or terrestrial plant. This species is 1.5 cm tall (rarely up to 2.5m) (Steenis & dkk, 2013). This species has a single leaf type, green in color, very short leaf stalks that are almost invisible because they are covered by fine hairs, pinnate leaves, pointed leaf tips, flat leaf edges and wavy and shiny leaf surfaces, and small leaves measuring 7-150 cm long and 3-30cm wide (Imaniar, 2017). The stem of this species is a rhizome with a hairy surface and is called a pseudostem because it fuses with the leaf veins. This species has fibrous roots that attach to its host (Karlita, 2020; Listiyanti et al., 2022). The sori are located under the leaves attached to the lines of the leaf veins, in the form of a line and brown in color. This species can be used as an ornamental plant.

Nephrolepis biserrata

Nephrolepis biserrata grows as an epiphyte or terrestrial, 0.6 - 4.5 m high. The rhizome is erect, with dense leaves. Leaf stalks are 10-50 cm, strong, covered with light brown scales and fall off easily. The leaflets are sitting or almost sitting, spaced apart, lanceolate or linear, the base is wedge-shaped or truncated and the upper edge is often weakly eared, the tip is narrowed, sharp; young leaflets are finely haired. Sterile leaflets

have flat edges or weakly serrated edges; fertile ones are as wide as sterile ones, have ears, not deeply serrated edges or at the tip are flat-edged. Leaf veins are parallel, close together, and end in sori. The rhizome of *Nephrolepis* is long-creeping, spreading along the ground near cliffs. The stipe is acicular with a dark brownish-green color. The lamina is pinnate alternate and the basal auriculate. Venation is net-like with reculate veins forming areoles. The distinctive characteristic of this plant is its acicular stipe (Maulidia et al., 2017).

Selaginella Sp

Based on observations, *Selaginella* sp. has morphological characteristics of fibrous roots with creeping rhizomes. The leaf stalks on this fern are green and rounded. The leaves are light green with a smooth surface. The edges of the fern's leaves are flat with pointed tips and rounded bases. The leaves of Selaginella sp. are alternate, and their habitat is found in the soil. *Selaginella* sp. has long creeping rhizomes. The leaves are microphyllous, alternate branching, and the tips of the leaves are thorn-like. The leaves are green, with a bluish-green hue. The rounded stalks are covered by microphyllous. This fern's habitat is typically found on cliff walls, flat and sloping ground, and root crevices. According to (Majid et al., 2022), *Selaginella* sp. produces single, small leaves. Each lateral branch grows two rows of large leaves that fall off easily, while the two front rows are small and produce sporangia that stand alone in the leaf axils.

Pyrrosia lanceolata

Pyrrosia lanceolata grows as an epiphyte. Rhizome roots, long creeping, covered by scattered scales. Dimorphic leaves, have unclear and clear stalks. Fertile leaf stalks can reach a length of 9cm, blades 2.5-3.1cm, blunt tips. The base narrows and is widest in the middle of the leaf. Sterile leaves have stalks up to 5cm, blades 2- 24 cm x 0.3 - 4.3 cm. Sori are arranged along the edge or spread across the leaf surface.

Davallia denticulata

Davallia denticulata is an epiphytic plant. When viewed directly, this plant has characteristics including strong rhizomes, and when young it is covered with scales, and the leaves are triangular and stiff, the edges are serrated, and the surface is shiny so that they are easy to see. The leaves are light green to dark green, the leaves are pinnately double or more with free veins (Afriani et al., 2020). Plants that attach to tree trunks and some live in the soil, fibrous root shape. The shape of the stem is not real because it is fused with the leaf veins. Compound pinnate leaves that can grow high on trees up to 150 cm or more. The surface of the leaves is dull green and stiff. leaves are located on all main leaf veins, the position of the leaflets alternates with flat leaf edges. Sorus spreads over the entire lower surface of the leaf with a round shape, when young the spores are green while when ripe the spores are brown (Yunita et al., 2021).

Lygodium flexuosum

Lygodium flexuosum grows terrestrially. The fern climbs and twines around other plants nearby. It has brown fibrous roots. The stem is round, smooth and green. The leaves are dark green and arranged alternately pinnately. Each side of the branch has 3-4 leaflets. The shape of the pinna is elongated, has a pointed tip, a rounded base and deeply serrated edges. The pinna has a short, light brown stalk. The leaf surface is smooth and shiny.

Pteris ensiformis

Pteris ensiformis, or silver lace fern, is a terrestrial fern. Its rhizomes are erect or creeping, short, and segmented (Andiana & Renjana, 2021). The length of sterile leaves is 5-20 cm, above the stalk from 5-20 cm, the final fin is 5-8 cm, the second side fin is short-stalked or sitting; leaflets on both sides of the axis, elongated obovate, rounded or blunt, sharply serrated, the lowest often shared, the tip of the leaflet is the longest (Steenis, 2008).

CONCLUSION

Based on the results of research conducted in the STKIP Gotong Royong Masohi campus environment, there were 7 families and 9 types of ferns found at that location.

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CONFLICT OF INTEREST

The authors declare no conflict of interest and take full responsibility for the content of the article, including the implications of AI-generated content.

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