



Inventory of Melastomataceae In Mountain Sibutan Nagalingga Village Brand District District Karo Province of North Sumatra

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ABSTRACT

Plant inventory is an exertion to group data or classify a type of factory that exists in an area. This study aimed to identify plants in the Melastomataceae family and determine the characteristics of plant species based on the key determination of the Melastomataceae family found in Sibutan Mount Nagalingga Village Merek District Karo Regency North Sumatra Province. This research was conducted from January 2021 to September 2021. The research method used a qualitative descriptive method by exploratory observations along the path starting from the jungle door, shalter 1, shalter 2, to shalter 3. The data analysis was descriptive analysis qualitative. Based on the results of the inventory, 15 specieses of the Melastomataceae family were obtained : *Dissochaeta macrosepala* Staf., *Medinilla alpestris* (Jack) Bl., *Medinilla beamanii* J. C. Regalado., *Medinilla ridleyi* Merr., *Melastoma malabathricum* L., *Melastoma* sp. 1, *Melastoma* sp. 2, *Memecylon* sp. 1 , *Memecylon* sp. 2, *Miconia appendiculata* Triana., *Miconia laevigata* (L.) DC. , *Phyllagathis griffthii* (Hook. Fil. Ex Teriana) King., *Pternandra* sp., *Sonerila heterophylla* Jack., and *Sonerila tenuifolia* Bl. The characteristics of the Melastomatacea family are mountaintop ornamental plants with leaves that have three veins that curve upwards, striking flowers and berry-shaped fruit (round).

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INTRODUCTION

Indonesia is one of the " megabiodiversity countries ", namely the country with the highest biodiversity in the world. With a wealth of living things (plants and animals) reaching around 25% of the world's biodiversity, it is estimated that there are 40,000 plant species and 300,000 animal species. This is proof that Indonesia has a rich biodiversity above the normal level of other countries in the world (Mangunjaya, et al ., 2017).

Sumatra Island has the highest diversity in Indonesia with extensive forest areas and a wealth of flora included in the mountain forest ecosystem (Taufik, 2016). One of these mountains is Mount Sibuatan, which is located in North Sumatra Province, which is a tropical rainforest with very high plant diversity (Ritonga, 2019).

Mount Sibuatan is an inactive mountain which has a height of 2,457 meters above sea level, located at Nagalingga Village, Brand District, Karo Regency, North Sumatra Province. The Mount Sibuatan region has very little information regarding local plant diversity but is known to have a forest ecosystem that is still beautiful and well maintained because the Mount Sibuatan forest is a protected forest (Normasiwi, et al., 2015).

The maintained tropical rainforest ecosystem has a high biodiversity position due to its diverse niche conditions. Varying niche conditions provide openings for colorful types of shops to live together in an ecosystem, one of which is the Melastomataceae family (Smith (1990) in Arbiastutie, et al., (2017)).

Melastomataceae plants are pantropical plants , namely plants that live in tropical areas, consisting of 163 genera and 4,300 species, most of which are found in the Southeast Asia region (Renner, 1993). In Indonesia, specifically in the mountains of Java, 6 genera and 9 species of Melastomataceae plants are found, including *Astronia spectabilis* (Gembirung) , *Creochiton bibracteata* (Kambola) , *Medinilla laurifolia* (Kimanjell) , *Medinilla speciosa* (Parijoto) , *Medinilla alpestris* (Kappa-kappa) , *Melastoma trachyphyllum*, *Sarcopyramis napalensis*, *Sonerila heterophylla*, *Sonerila tenuifolia* (Steenis, 2006).

Mount Sibuatan is a protected forest that is separate from the Bukit Barisan mountains. Based on observations, several types of plants were found including Orchidaceae, Areceae, Zingiberaceae, and Melastomataceae. However, data regarding the types of Melastomataceae plants on Mount Sibuatan is still relatively limited so further research needs to be carried out.

RESEARCH METHOD

The research location was carried out on Mount Sibuatan, Nagalingga Village, Brand District, Karo Regency, North Sumatra Province. Sample identification was carried out at the MEDANENSE Herbarium Biology Laboratory (MEDA) at the University of North Sumatra. The research was carried out in January 2021-September 2021.

The tools used in this research are hanging labels, plant scissors, plastic sample bags, plastic clips, newsprint, camera, *Global Positioning System* (GPS) as a navigation tool during sampling, *soil tester* to measure soil moisture , *thermohygrometer* to measure air humidity, and a jar as a sample collection container.

The material used in this research is 70% alcohol which functions to kill the microorganisms contained in the sample.

The method used in this research is a qualitative descriptive method by means of exploration, namely exploring the research location and identifying plant types in the Melastomataceae family to describe the morphology of Melastomataceae plants found on Mount Sibuatan, Nagalingga Village, Brand District, Karo Regency, North Sumatra Province along the observation route starting from the jungle gate. , shelter 1, shelter 2 to shelter 3.

The data analysis used in this research is qualitative descriptive analysis, namely that samples obtained from the field are identified at the MEDANENSE Herbarium Biology Laboratory (MEDA) at the University of North Sumatra, then the characteristics of the Melastomataceae plant species are described, and a key for determining the Melastomataceae plant species is created .

RESULTS AND DISCUSSION

Identification of Melastomataceae Family Types

Table 1.

Results of Identification of Melastomataceae Family Types

No	Famili	Genus	Species	Shelter Pengamatan			Σ
				1	2	3	
1	Melastomat aceae	Dissochaeta	<i>Dissochaeta macrosepala</i> Staf.	3	0	0	3
2			Medinilla	<i>Medinilla aëstris</i> (Jack) Bl.	2	0	0
3		<i>Medinilla beamanii</i> J. C. Regalado.		5	0	0	5
4		<i>Medinilla ridleyi</i> Merr.		15	60	40	115
5		Melastoma	<i>Melastoma malaibaricum</i> L.	30	0	0	30
6			<i>Melastoma</i> sp. 1	5	0	0	5
7			<i>Melastoma</i> sp. 2	0	0	11	11
8		Memecylon	<i>Memecylon</i> sp. 1	21	3	0	24
9			<i>Memecylon</i> sp. 2	0	0	3	3
10		Miconia	<i>Miconia appendiculata</i> Triana.	4	0	0	4
11			<i>Miconia laevigata</i> (L.) DC.	40	0	0	40
12		Phyllagathis	<i>Phyllagathis griffithii</i> (Hook. Fil. Ex Teriana) King.	4	30	14	48
13		Pterandra	<i>Pterandra</i> sp.	17	0	0	17
14		Sonerila	<i>Sonerila heterophylla</i> Jack.	51	0	0	51
15			<i>Sonerila tenuifolia</i> Bl.	0	15	0	15
Jumlah				197	129	71	397

Description: Observation shelter 1: starting from the jungle door to shelter 1.

Observation shelter 2: starting from shelter 1 to shelter 2.

Observation shelter 3: starting from shelter 2 to shelter 3.

Based on table 4.1. The number of Melastomataceae families found in shelter 1 was 197 individuals, shelter 2 was 129 individuals and shelter 3 was 71 individuals with a total of 397 individual plants found on Mount Sibuatan, Nagalingga Village, Brand District, Karo Regency, North Sumatra Province. In this study, from the three observation shelters, the largest number of Melastomataceae family plants were found in observation shelter 1 (starting from the jungle entrance to shelter 1) with a total of 197 individual plants. This is due to the difference in height of the three observation shelters. At observation shelter 1 (altitude 1500-1600 masl) is an observation shelter with a lower altitude than observation shelter 2 (1600-2000 masl) and observation shelter 3 (>2000 masl), the reduction in the number of species can be attributed to increasing altitude and rainfall. reduced, causing a further decline in the diversity of the Melastomataceae family (Katili, 2013).

Based on measurements of physical factors in observation shelter 1, it can be seen that the average soil pH is 5.6, soil humidity >80%, soil temperature 18.37 ° C, air humidity 66.7% and air temperature 21.85 ° C. In the shelter Observation 2 can be seen that the average soil pH is 4.9, soil humidity is >75%, soil temperature is 19 ° C, air humidity is 68% and air temperature is 21.3 ° C. And in observation shelter 3 it can be seen that the average soil pH is 4.6, soil humidity >80%, soil temperature 18 ° C, air humidity 94% and air temperature 20.2 ° C. From the three observation shelters it can be seen that the pH has decreased. According to Sasmitamihardja & Siregar (1996) in general, plants will easily absorb minerals from their environment, if the pH is close to normal, which is in the range of 6-7.8. Observation shelter 1 has a soil pH of 5.6 so that plants in the Melastomataceae family can grow well with a pH close to the normal range and plants in observation shelter 1 have higher diversity compared to shelters 2 and 3 with a lower pH (Handayani, 2018).

, *Medinilla ridleji* Merr species . is the largest plant with 115 individuals, followed by *Sonerila heterophylla* Jack. with a total of 51 individuals. This is because these two plants have a reproductive system that makes flowering easier, which can be seen from the large number of flowers on one flower stalk (compound flowers), thus allowing pollination to take place more quickly and making it easier for new individuals to grow. The fewest plants found with 2 individuals were *Medinilla alpestris* (Jack) Bl. This is due to the fact that when observing the plant, no flowers were found as a means of reproduction, so this is one of the factors inhibiting the spread of growth and is less common than other plants of the Melastomaceae family. Then, the threat to its existence in nature is getting higher because the rate of environmental degradation in the highlands has occurred. This situation requires better attention to the existence of *Medinilla* in nature and its conservation ex-situ (Peneng, 2011).

Papua has 12 clans consisting of around 160 species. The most common types are woody climbers such as *Cathanthera*, *Dissochaeta*, *Poikilogyne*, *Medinilla* . Epiphytic

shrubs (*Medinilla*), and above ground shrubs (*Astronia*, *Astronidium*, *Ptenandra*). Papua does not have Melastomaceae herbs and very few tree species (*Astronia*, *Ptenandra*). This type is mostly found in primary, secondary forests, and often near water (Kartikasari, 2013).

According to Rugayah (2019), Melastomataceae is referred to as the sedunia-senduniaian tribe, characterized by its leaves which have three veins that curve upwards, and showy flowers. From searches of the three observation shelters on Mount Sibuatan, Nagalingga Village, Brand District, Karo Regency, North Sumatra Province, 15 species of the Melastomaceae family were found.

In general, the morphological characteristics of the Melastomataceae family are shrubs or herbs, sometimes lianas, rarely trees. Opposite leaves are rarely in circles, single, leaf veins are often curninervis (curved), stipules (supporting leaves) are generally absent (none). Simosa flowers (compound flowers with the stem end of the stem always covered with a flower), bi or uni sexual (perfect flowers or imperfect flowers), have a hypanthium (concave flower base) generally 4 or 5 pieces. Stamens (stamens) 2 circles as many as 2 times the number of petals (flower crown). Gynecium (pistil) 3-5 strands. Immersive ovaries (flowers whose fruit will sink) or semiinferus (flowers whose fruit will sink slightly at the base of the flower), 3-5 chambers, many ovules (ovule) per chamber. The fruit (capsule) has seeds without endosperm (Silalahi, 2014).

Morphological Description of the Melastomataceae Family

***Dissochaeta macrosepala* Staff.**

Dissochaeta macrosepala Staff. is a plant species from the Melastomataceae family that has a brown hairy stem surface texture with a stem diameter of 1.3 cm. The green leaves have an elongated oval shape, the leaf edges are flat, the leaf tips are tapered, the leaf base is rounded, the surface texture of the upper and lower leaves is smooth, and the shape of the leaf spine is pinnate, with an area of 3.5-6.5 cm and a length of 4-14 cm. The surface of the leaf stalk is hairy, brown, 1 cm long and 0.7 cm in diameter.



Picture 1. *Dissochaeta macrosepala* Staff
(Source: Personal Documentation, 2021)

***Medinilla alpestris* (Jack) Bl.**

Medinilla alpestris (Jack) Bl. is a plant species from the Melastomataceae family that has a smooth, white stem surface texture with a stem diameter of 1.8 cm. The green leaves are oval in shape, the edges of the leaves are flat red, the tips of the leaves are tapered, the base of the leaves is rounded, the surface texture of the upper and lower leaves is smooth, and the shape of the leaf spines is pinnate, with an area of 3-5 cm and a length of 5-10 cm. *Medinilla alpestris* has. flower stalk diameter 0.2 cm, with a length of 2.5 cm. Then, the shape of the fruit of this plant is round, orange in color.



Picture 2. *Medinilla alpestris* (Jack) Bl
(Source: Personal Documentation, 2021)

***Medinilla beamanii* JC Regalado**

Medinilla beamanii JC Regalado is a plant species from the Melastomataceae family which has a brownish green patterned cottony stem surface texture with a stem diameter of 2 cm. The green leaves are oval in shape, the edges of the leaves are flat, the tips of the leaves are tapered, the base of the leaves is rounded, the surface texture of the upper and lower leaves is smooth, and the shape of the leaf bones is curved, with an area of 8-10 cm and a length of 15-23 cm. *Medinilla beamanii* JC Regalado has a flower stalk diameter of 0.6 cm, with a length of 7 cm. Then, the shape of the fruit of this plant is round, pink.



Picture 3. *Medinilla beamanii* JC Regalado
(Source: Personal Documentation, 2021)

Medinilla is a herbaceous plant and some are creepers because the stems stretch and droop, some flowers are axillary and some are terminal and the most unique thing is that they open at the root neck of the stem so that around the base of the stem it is closed. by truly unique and imaginative flowers.

The abundance and diversity of Medinilla species are basically planted on mounds (more than m above sea level), this is because Medinilla generally prefers cool but sticky areas. Considering that several types of Medinilla are epiphytic plants that support host trees and are more common in mounds, their actual problem in nature is increasing because the level of environmental damage in the mounds has passed. This situation requires better attention to the existence of Medinilla in nature and its ex-situ conservation (Peneng, 2011).

Melastoma malabatricum L

Melastoma malabathricum L. is a plant species from the Melastomataceae family that has a dark red hairy stem surface texture with a stem diameter of 1 cm. The green leaves are oval in shape, the edges of the leaves are flat, the tips of the leaves are tapered, the base of the leaves is rounded, the surface texture of the upper and lower leaves is hairy, and the shape of the leaf spines is pinnate, with an area of 5-6 cm and a length of 9-10 cm. The surface of the leaf stalk is hairy, reddish brown, 1-2 cm long and 0.8 cm in diameter.

Melastoma malabatricum L. has flowers with 5 reddish brown petals, 6 stamens and 5 petals with a light purple color. The diameter of the flower stalk is 1.4 cm, with a length of 2.5 cm. Then, the shape of the fruit of this plant is round and dark red. According to Ritonga (2019), when the fruit of this plant grows old, it will burst with black seeds. Ripe fruit can be consumed. This plant is also useful as an indicator of soil fertility and can be used by children as a toy (Rugayah, 2019).



Picture 4. *Melastoma malabatricum* L
(Source: Personal Documentation, 2021)

Melastoma malabathricum L. (known to the Harendong or Sendunia community) is a shrub plant that lives in many countries such as Sri Lanka and Southeast Asia

including Indonesia, the Philippines, Taiwan, Papua New Guinea, Australia and America. Harendong spreads and grows in many Indonesian woods. This plant grows well with sufficient sunlight such as mountain fields, bushes, fields that are not too thirsty, or as a cosmetic shop in tourist attractions. Warung can be used as a natural dye because the anthocyanin in harendong flowers has been widely used as a food coloring and the fruit is used in fabrics for dyeing cotton cloth (Azizah, 2018).

According to Ritonga (2019), this plant has the local name senbangun (Batak) or senggani (Javanese). This plant is a medicinal plant that is widely distributed in Asia, which is used as a medicine for diarrhea, treating digestive disorders, hemorrhoids, dysentery, vaginal discharge, wounds, toothache and canker sores. Apart from that, this plant can remove the bitter taste of processed food and can be used to tenderize meat when it is cooked. This plant is distributed in the lowlands to the highlands of the mountains of North Sumatra. This plant is a cosmopolitan plant that can be found on beaches and mountain peaks (open land) (Ritonga, 2019).

From the results of identification of the Melastomataceae family carried out at three observation shelters on Mount Sibuatan, Nagalingga Village, Brand District, Karo Regency, North Sumatra Province, 15 species of the Melastomataceae family were obtained, namely: *Dissochaeta macrosepala* Staf., *Medinilla alpestris* (Jack) Bl., *Medinilla beamanii* JC Regalado., *Medinilla ridleyi* Merr., *Melastoma malabathricum* L., *Melastoma* sp.1, *Melastoma* sp.2, *Memecylon* sp.1, *Memecylon* sp.2, *Miconia appendiculata* Triana., *Miconia laevigata* (L.) DC., *Phyllagathis griffithii* (Hook. Fil. Ex Teriana) King., *Pternandra* sp., *Sonerila heterophylla* Jack., and *Sonerila tenuifolia* Bl.

CONCLUSION

Based on the results of an inventory of the types of the Melastomataceae family that live on Mount Sibuatan, North Sumatra Province, there are 15 types of the Melastomataceae family originating from 8 genera, namely: *Dissochaeta macrosepala* Staf., *Medinilla alpestris* (Jack) Bl., *Medinilla beamanii* JC Regalado., *Melastoma malabathricum* L., *Medinilla ridleyi* Merr., *Melastoma* sp.1, *Melastoma* sp.2, *Memecylon* sp.1, *Memecylon* sp.2, *Miconia appendiculata* Triana., *Miconia laevigata* (L.) DC., *Phyllagathis griffithii* (Hook. Fil. Ex Teriana) King., *Pternandra* sp., *Sonerila heterophylla* Jack., and *Sonerila tenuifolia* Bl. Characteristics of plant species from the Melastomataceae family based on key determinations found on Mount Sibuatan, Sumatra Province Utara is a plant that decorates the slopes of mountain peaks with leaves that have three veins that curve upwards, showy flowers and *berry-shaped* (round) fruit.

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