

Title : The Study and Comparison of the Natural Diversity of Lichens in the Rainforest and Native Forests in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province

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Abstract or summary

The study and comparison of the natural diversity of lichens in the rainforest and native forests in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province are to 1) study the types of lichens and the natural diversity of lichens in the rainforest and native forests in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province 2) compare the types and natural diversity of lichens in the rainforest and native forests in the Local areas of the Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province by setting up sampling points for lichens in native forests and tropical rainforests, studying the types and characteristics of lichens that lichens were divided into 3 groups such as the highly durable group, the hardy group, and good weather group. It was found that there are 13 types of lichens, commonly found in rainforests and native forests, including *Amandinea extunata*, *Anthracotheicum*, *Pyxine cocoes*, *Cryptothecia*, *Dirinaria*, *Graphid*, *Glyphis* & *Sacograpta*, *Laurera benguelensis*, *Lecanaro*, *Arthonia*, *Chrysothrix*, *Trypethelium tropicum*, *Parmotrema tinctorum*. There are 2 types of lichens that are found in native forests but not they are found in rainforests: *Physcia dimidiata*, *Trypethelium eluteriae*. Moreover, there are 3 types of lichens that are found in the rainforest but they are not found in the native forest: *Rinodina*, *Parmotrema praesorediosum* and *Fruticose* lichen. The rainforest is a deciduous forest. It is a forest that is green all year long. There is quite a lot of rain. It is highly fertile. Therefore, the types and natural diversity of lichens are found more than in native forests, which is a forest ecosystem. Moreover, the rainforest has good air lichen species, which are more indicators of good air quality than native forests.

Keywords: Natural diversity, lichens, rainforests, native forests, *Amandinea extunata* ,
Anthracotheceum ,*Pyxine cocoes* , *Cryptothecia* , *Dirinaria* ,*Graphid* , *Glyphis & Sacographa* , *Laurera benguelensis*, *Lecanaro*, *Arthonia*, *Chrysothrix*, *Trypethelium tropicum* , *Parmotrema tinctorum*, *Physcia dimidiata* , *Trypethelium eluteriae*, *Rinodina* , *Parmotrema praesorediosum* and Fruticose lichen

Introduction

Thung Khai Botanical Garden is a place to preserve plants, wildlife, and a recreational area for Trang people. Tourists have visited the Thung Khai forest area. With an area of 2,600 rai, it is suitable for tourists who are interested in ecology. Nature and various plants are divided into areas of plant species such as fern gardens, insectivorous plants, palm family plants, rubber family plants, and is also a collection of many southern plant species. In the International Botanical Garden, Thung Khai is a rich forest that has been observed for the trees in the botanical garden to contain a variety of living things, including lichens. They can be used to monitor air quality. The research team is therefore interested in studying the natural diversity of lichens in the Botanical Garden, Thung Khai, Yan Ta Khao District, Trang Province by studying the area of humid evergreen forest and native forest.

Research objectives

1) To study the types of lichens and the natural diversity of lichens in the rainforest and native forests in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province.

2) To compare the types and natural diversity of lichens in the rainforest and native forests in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province.

Scope of study

Southern International Botanical Garden (Thung Khai), Yan Ta Khao District, Trang Province.

Research question

Are the types and natural diversity of lichens in the rainforest and native forests in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province different?

Research hypothesis

The types and natural diversity of lichens in the rainforest and native forests in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province are different.

Primary variables : Tropical evergreen forest and native forest

Dependent variable : Type and variety of lichens

Control variables : Survey time Survey tools

Methods and Materials

1. Materials and equipment

- 1) CU Smart Lens
- 2) Geographic Coordinate Measuring Machine

2. Procedure

2.1) Determine the lichen sampling point correctly according to the Globe principles by collecting designated areas in the rainforest and native forest at Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province. Use the CU Smart Lens size 20X to study the characteristics of various types of lichens. Capture images and record data on lichen characteristics.

2.2) Prepare a sampling frame size A4, count the number of each type of lichen, record the results.

2.3) Classify and group lichen species found in both rainforests and native forests which is the habitat of lichens. Record the results.

Data analysis

1. Take the data obtained to analyze and compare relationships. Statistics used in data analysis include lichen types, lichen diversity, average temperature and humidity of the air.

2. Make a table showing the average of the comparative data.

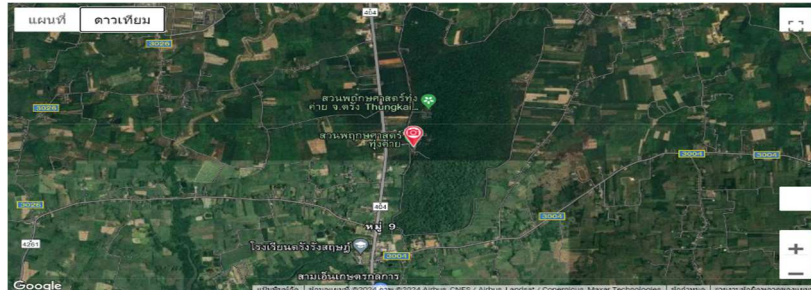
3. Summary of experimental results.

Geographic coordinates

Table 1 Geographic coordinates

Study point


Studying the natural diversity of lichens in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province by setting the following points




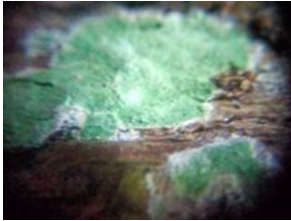

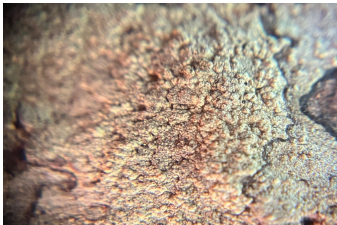








Study point	Geographic coordinates	
	Latitude (N)	Longitude (E)
Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province	7.46264	99.64150

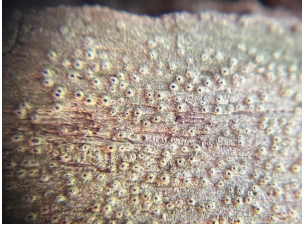

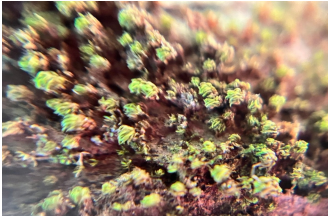
Results and data

- Table shows the types of lichens in the rainforest area in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province.

number	type	Picture of lichens
1.	<i>Graphid</i>	

2.	<i>Parmotrema tinctorum</i>	
3.	<i>Pyxine coxae</i>	
4.	<i>Anthracothecium</i>	
5.	<i>Cryptothecia</i>	
6.	<i>Arthonia</i>	
7.	<i>Lecanaro</i>	

8.	<i>Chrysothrix</i>	
9.	<i>Laurera benguelensis</i>	
10.	<i>Amandinea extunata</i>	
11.	<i>Glyphis & Sacograpta</i>	
12.	<i>Dirinaria</i>	
13.	<i>Trypethelium tropicum</i>	

14.	<i>Rinodina</i>	
15.	<i>Parmotrema praesorediosum</i>	
16.	Fruticose lichen	

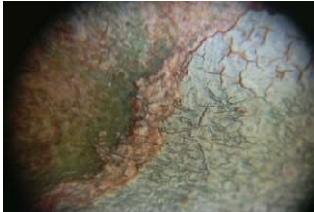
From the table, lichens for monitoring air quality can be separated into 3 groups.






1 group of highly durable, *Amandinea extunata*, *Anthracothecium*, *Pyxine cocoes*, *Cryptothecia*.





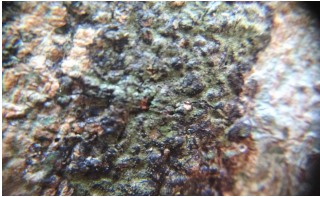

2 durable groups, *Dirinaria*, *Graphid*, *Glyphis* & *Sacograpta*, *Laurera benguelensis*, *Lecanaro*, *Arthonia*, *Chrysothrix*, *Rinodina*, *Trypethelium tropicum*.



3 groups of good weather, *Parmotrema tinctorum*, *Parmotrema praesorediosum* and Fruticose lichen.

2. Table shows the types of lichens in the native forest area in Thung Khai Botanical Garden, Yan Ta Khao District, Trang Province.

number	type	Picture of lichens
1.	<i>Graphid</i>	

2.	<i>Parmotrema tinctorum</i>	
3.	<i>Pyxine coxae</i>	
4.	<i>Anthracothecium</i>	
5.	<i>Cryptothecia</i>	
6.	<i>Arthonia</i>	
7.	<i>Lecanaro</i>	

8.	<i>Physcia dimidiata</i>	
9.	<i>Chrysothrix</i>	
10.	<i>Trypethelium eluteriae</i>	
11.	<i>Laurera benguelensis</i>	
12.	<i>Amandinea extunata</i>	
13.	<i>Glyphis & Sacograpta</i>	

14.	<i>Dirinaria</i>	
15.	<i>Trypethelium tropicum</i>	

From the table, lichens for monitoring air quality can be separated into 3 groups.

1 Group of highly durable, *Amandinea extunata* , *Anthracothecium* , *Pyxine cocoes* , *Trypethelium eluteriae* , *Cryptothecia*.

2 Durable groups, *Dirinaria* , *Graphid* , *Glyphis & Sacographa* , *Laurera benguelensis*, *Lecanaro*, *Arthonia*, *Chrysothrix*, *Physcia dimidiata* , *Trypethelium tropicum*.

3 Groups of good weather, *Parmotrema tinctorum*.

Discussion and conclusion

1. From the study, it was found that in the Botanical Garden, Thung Khai, Yan Ta Khao District, Trang Province there were various types of lichens, grouped into 3 groups:

- **Highly durable group, found 5 types:** *Amandinea extunata* , *Trypethelium eluteriae* , *Pyxine cocoes* , *Anthracothecium* , *Cryptothecia*.

- **Durable group, found 10 types:** : *Dirinaria* , *Graphid* , *Lecanora* , *Arthonia* , *Laurera benguelensis* , *Trypethelium tropicum* , *Glyphis & Sacographa* , *Physcia* , *Chrysothrix* , *Rinodina*.

- **Good weather group found 3 types:** *Parmotrema tinctorum* , *Parmotrema praesorediosum* and Fruticose lichen.

2. From comparing lichen types, was found that 13 types of lichens to be the same types of rainforests and native forests, including: *Amandinea extunata* , *Anthracothecium* , *Pyxine cocoes* , *Cryptothecia* , *Dirinaria* , *Graphid* , *Glyphis & Sacographa* , *Laurera benguelensis*, *Lecanaro*, *Arthonia*, *Chrysothrix*, *Trypethelium tropicum* , *Parmotrema tinctorum*. There are 2 types of lichens that are

found in native forests but they are not in rainforests: *Physcia dimidiata* , *Trypethelium eluteriae*. There are 3 types of lichens that are found in the rainforest but they are not in the native forest as *Rinodina* , *Parmotrema praesorediosum* and Fruticose lichen.

The Study has shown that rainforests are deciduous forests. It is a forest that is green all year long. There is quite a lot of rain. that is highly fertile. Therefore, the types and natural diversity of lichens are found more than in native forests, which is a forest ecosystem. In addition, the rainforest has 3 types of lichens in the good weather group: *Parmotrema tinctorum* , *Parmotrema praesorediosum* and Fruticose lichen. In the native forest, there is one type of good weather lichen, namely, *Parmotrema tinctorum*. The rain forest has good air for lichens, which are a better indicator of the air quality than native forests.

Acknowledgments

Environmental research for the study of the natural diversity of lichens in the Southern International Botanical Garden (Thung Khai), Thung Khai Subdistrict, Yan Ta Khao District, Trang Province was successful. Thanks to Teacher Kwanjai Kanchanasrimek and Teacher Rungtiwa Chiangsorn , Project Advisor, Mr. Yongyut Pukhao, Director of Wichienmatu School. My mother supported for the budget for environmental research. Parents of every student cooperated of this project as well.

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