

ความหลากหลายทางชีวภาพของจุลไลเคนบนหิน ณ เขตรักษาพันธุ์สัตว์ป่าภูหลวง

BIODIVERSITY OF MICRO-SAXICOLOUS LICHEN AT PHU LUANG WILDLIFE SANCTUARY

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บทคัดย่อ: จุลไลเคนบนหินเป็นไลเคนขนาดเล็กแบบครัสโตส และพลาโคอิดที่เจริญเติบโตบนหิน ณ เขตรักษาพันธุ์สัตว์ป่าภูหลวง จากการรวบรวมตัวอย่าง ตั้งแต่เดือนมิถุนายน 2551 ถึงเดือนพฤษภาคม 2552 ได้ 108 ตัวอย่าง พบจุลไลเคนบนหินทราย ส่วนใหญ่เป็นหินทรายสีขาว และหินทรายสีน้ำตาลถึงหินทรายปนหินกรวดมน กระจายอยู่ในระบบนิเวศป่า 4 ประเภทได้แก่ ป่าไม้พุ่ม ป่าดิบเขา ป่าเบญจพรรณ และป่าเต็งรัง นำมาวิเคราะห์และจำแนกได้ 11 วงศ์ 16 สกุล 42 ชนิด ในที่นี้จัดเป็นชนิดที่ไม่เคยพบมาก่อน 10 วงศ์ 12 สกุล 18 ชนิด และคาดว่าจะจะเป็นชนิดใหม่ของโลกที่ยังไม่สามารถจำแนกชื่อได้แน่นอน ซึ่งอยู่ในวงศ์ Rhizocarpaceae ส่วนวงศ์ที่มีความหลากหลายชนิดมากที่สุดได้แก่ Lecanoraceae วงศ์ที่มีความหลากหลายปานกลางได้แก่ Verucariaceae และวงศ์ที่มีความหลากหลายน้อยที่สุดได้แก่ Hymeneliaceae.

Abstract: Micro-saxicolous lichens are crustose and placoid growing on rocks at Phu Luang Wildlife Sanctuary. The lichens collecting sample were collected during June 2008 to May 2009 were 108 specimens on two kinds of rocks, white and brown sandstone to conglomeratic sandstone, in four ecoforest types; bush forest, hill evergreen forest, mixed deciduous forest and dry dipterocarp forest. The samples were identified into 11 families 16 genera 42 species, and 10 families 12 genera 18 species were expected to be new record of Thailand and unknown species in family Rhizocarpaceae was probably a new species of the world. Lecanoraceae as top families which higher species diversity. Verrucariaceae are medium species diversity and the lower species are Baeomycetaceae.

Introduction: Phu Luang Mountains emerged millions of years ago. Phu Luang means a large mountain or the Mountain of the King, formed by an uplift of the earth's crust and a slide of soft soil down to the lower land. It is situated in Amphoe Wang Saphung, Amphoe Phu Ruea, Amphoe Dan Sai and Amphoe Phu Luang, Loei province, Northeast Thailand. Phu Luang Wildlife Sanctuary is geologically similar Phu Kradueng and Phu Reua National Park. While Phu Luang tableland stretches from north to south, the geological features are those of Khorat group of sedimentary rocks, Phu Phan and Khok Kruat formation consists of sandstone, conglomeratic sandstone and conglomerate. The area is a vast plain of acid rocks outcrop scattering in all ecoforest types. Rock outcrops are frequent, and steep slopes, thin soils, and it is dominant with a stretch of undulating cliffs for their scenery are Pha Talern, Pha Somdet, Pha Chang Parn, Pha Loan Tae, etc. and covers an area at about 896.95 km² with elevation

differences between 400 m. on the foot hills and 1,500 m. on its summit. The areas support 7 forest types: bush forest, hill evergreen, coniferous forest, mixed deciduous forest, dry evergreen forest, tropical rain forest and dry dipterocarp forest. The sanctuary is covered with Lady's slipper orchids, white wild orchids, white and red rhododendrons. On the east of Phu Luang, dinosaur's footprints on the rock, aged more than 120 million years were discovered.

Lichens are abundant on rocks and called "saxicolous lichens" The rocks support micro-saxicolous crustose and placoid, and macro-saxicolous foliose, squamulose and fruticose.

Methodology: Micro-saxicolous lichen samples from rocks were collected, kept dry at room temperature, and prepared for herbarium preservation. Identification of samples were performed following of (1), (2), (3) and (4).

Results, Discussion and Conclusion: The taxa of 108 saxicolous lichen samples of two kinds of rocks at Phu Luang Wildlife Sanctuary is shown in table 1, which consists of 11 families, 16 genera, and 42 species. Most species were formed of two type saxicolous, endolithic and epilithic, of sandstone and conglomeratic sandstone outcrops, because of their high porosity, small grains verrucolose surface. Endolithic species, *Baeomyces* PH1.J, *Caloplaca* cf. *cinnabarina* (Fig. 2-A.), *Ramboldia* PL1.J, *R.* PL3.J and *Verrucaria aqualilis* and *V. praetermissa* are lichen thalli growing inside rock and penetrate into 0.75-2 mm. deep. Another epilithic species, *Aspicilia*, *Haematomma* (Fig. 2-B.), *Hymenelia*, *Lecanora* and *Miriotrema* are lichen thallus growing cover on surface and somewhat penetrate in the pore of grains. The dominante species on sandstone are *Lecanora* PH1.J, *Ramboldia heterocapa*, and *R.* PL1.J, where as *Caloplaca* cf. *cinnabarina* and *Haemmatoma* PL2.J were found on conglomeratic sandstone in dry dipterocarp forest. The bush forest had the greatest diversity of micro-saxicolous lichen because the area had low temperature, high light intensity, softly wind and hight relative humidity all year. The most wildely distributed lichens *Ramboldia*, and *Lecanora*. Furthermore, two semi-aquatic lichens, *Aspicilia*, and *Porina* were found on damp sandstone in Huai Nam San. *Porina* and *Verrucaria* lichens were dominant genera on damp sandstone near running streams in hill evergreen forest and mixed deciduous forest.

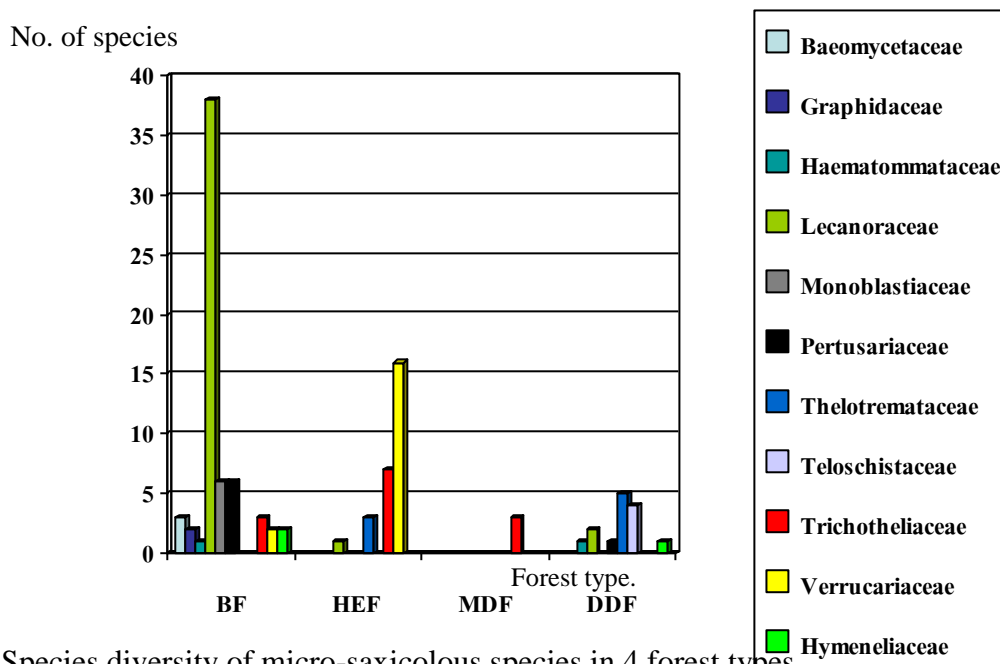


Fig.1. Species diversity of micro-saxicolous species in 4 forest types.

Table1. Families and species of micro-saxicolous lichens on 2 kinds of rock in 4 forest types at Phu Luang Wildlife Sanctuary.

Family	Species	No. of samples.		Forest types			
		sandstone	Conglomeratic sandstone	BF	HEF	MDF	DDF
<i>Baeomycetaceae</i>	<i>Baeomyces</i> PH1.J	3	-	3	-	-	-
<i>Graphidaceae</i>	<i>Graphina</i> P1.J	1	-	1	-	-	-
	<i>Pheographis dendriticella</i>	1	-	1	-	-	-
<i>Haematommataceae</i>	<i>Haematomma</i> PL1.J	1	-	1	-	-	-
	<i>H.</i> PL2.J	-	1	-	-	-	1
<i>Hymeneliaceae</i>	<i>Aspicilia calcarea</i>	1	-	1	-	-	1
	<i>Hymenelia</i> PL1.J	1	-	1	-	-	-
<i>Lecanoraceae</i>	<i>Lecanora argopholis</i>	1	-	-	1	-	-
	<i>L. dipersa</i>	1	-	1	-	-	-
	<i>L. intricate</i>	1	-	1	-	-	-
	<i>L. marginata</i>	2	-	2	-	-	-
	<i>L.</i> PL1.J	13	-	11	-	-	2
	<i>L.</i> PL2.J	3	-	3	-	-	-
	<i>Ramboldia heterocarpa</i>	10	-	10	-	-	-
	<i>R.</i> PL1.J	1	-	1	-	-	-
	<i>R.</i> PL2.J	1	-	1	-	-	-
	<i>R.</i> PL3.J	3	-	3	-	-	-
	<i>R.</i> PL4.J	2	-	2	-	-	-
	<i>R.</i> PL5.J	1	-	1	-	-	-
	<i>Pyrrhospora gowardiana</i>	2	-	2	-	-	-
<i>Monoblastiaceae</i>	<i>Acrocordia conoidea</i>	4	-	4	-	-	-
	<i>A.</i> PL1.J	2	-	2	-	-	-
<i>Pertusariaceae</i>	<i>Pertusaria multipuncta</i>	3	-	3	-	-	1
	<i>P. subvaginata</i>	2	-	2	-	-	-
	<i>P.</i> PL1.J	5	-	1	-	-	-
<i>Thelotremataceae</i>	<i>Chapsa</i> PL1.J	2	-	-	2	-	-
	<i>Diploschistes actinostomus</i>	3	-	-	-	-	3
	<i>D. caesioplumbeus</i>	2	-	-	-	-	2
	<i>Myriotrema</i> PL1.J	1	-	-	1	-	-
<i>Teloschistaceae</i>	<i>Caloplaca cf. cinabarina</i>	3	1	-	-	-	4
<i>Trichotheliaceae</i>	<i>Porina heterocapa</i>	5	-	2	2	3	-
	<i>P. macroverrucos</i>	1	-	-	1	-	-
	<i>P. mastoidea</i>	1	-	-	1	-	-
	<i>P. psilocapa</i>	1	-	-	1	-	-
	<i>P.</i> PL1.J	1	-	-	1	-	-
	<i>Polymeridium albidum</i>	2	-	1	1	-	-
<i>Verrucariaceae</i>	<i>Verrucaria aqualilis</i>	6	-	2	6	-	-
	<i>V. calciseda</i>	1	-	-	-	-	-
	<i>V. howensis</i>	3	-	-	3	-	-
	<i>V. papillosa</i>	2	-	-	2	-	-
	<i>V. praetermissa</i>	3	-	-	3	-	-
	<i>V.</i> PL1.J	2	-	-	2	-	-

BF= bush forest, HEF= hill evergreen forest, MDF= mixed deciduous forest, DDF= dry dipterocarp forest

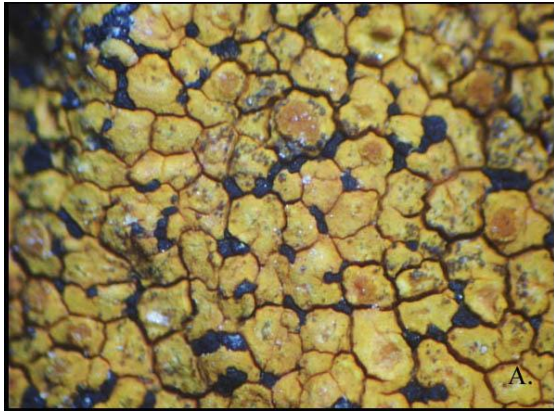


Fig. 2-A. Endolithic lichen

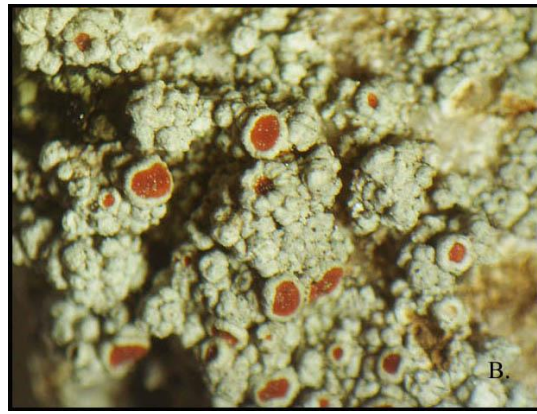


Fig. 2-B. Epilithic lichen

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Keywords: micro-saxicolous, endolithic, epilithic, semi-aquatic lichens, and biodiversity.