

B5\_025\_Pf: BIODIVERSITY OF DISCOLICHES IN MANGROVE FOREST AT CHUMPHON PROVINCE, THAILAND

Phimpisa Phraphuchamnong\*, Kawinnat Buaruang, Patchara Mongkolsuk  
Lichen Research Unit. Department of Biology. Faculty of Science. Ramkhamheang University.  
Huamark, Bangkok, Bangkok 10240, Thailand  
e-mail: phimna191@gmail.com

**Abstract:** The Discolichens are a lichenized discomycetes is a group of lichens with disc-shaped fruiting bodies (apothecia), which fruiting bodies of this type will produce ascospore in ascus. During February 2018, six hundred and forty-four discolichens samples collected from seventeen phorophytes in mangrove forests at Chumphon province were compiled and taxonomically catalogued into nine families twelve genera and twenty-three species (plus two species to be expected). Whereas the highest species diversity was *Cresponia proximata*, followed by *Malmidea aurigera*, *Bacidia submedialis*, and *Lecanora helva* frequently found respectively.

**Introduction:** Chumphon is one of the southern provinces on the Gulf of Thailand. The area 6,010.5 square kilometers. Chumphon province is divided into three types; the central plains area, the area in the west is high mountains, and coastal plains. The province which consists of six coastal districts into Lamae, Lang Suan, Muang Chumphon, Pathio, Sawi, and Thung Tako. A total 164.0 square kilometers of mangrove forest in Chumphon province. Four mangrove forest study sites consist of Lang Suan (4.1 km<sup>2</sup>), Muang Chumphon (22.9 km<sup>2</sup>), Pathio (7.5 km<sup>2</sup>) and Sawi (10.6 km<sup>2</sup>) [22], [23]. Always we found the crustose lichen are abundant on phorophytes tree. Discolichens in this study is a group of lichen-forming fungi (Ascomycota). This group is characterized to as crustose lichens with disc-like apothecia (fruiting bodies). The apothecia disc may be exposed, flat, convex or concave and normally upraised on the thallus. Two types of apothecia were found, the margin of an apothecia can be concolorous that have been called lecanorine, which the margin entirely fungi with algae, but apothecia with only a proper margin are referred to as lecideine or biatorine, which the margin entirely fungal without algae. Ascospores are produced within the ascus with the distinguished variety of colorless ascospores type as simple, polarilocular, septate, muriform or sub-muriform ascospores [6]. Objectives of research for in order update lichen database in Thailand and collected discolichens samples in mangrove forest are indispensable for the known taxonomy, diversity and distribution as well as an information for the conservation and sustainable utilization of biodiversity resource.

**Methodology:** Discolichens were collected from mangrove forest of Chumphon province Latitude: 10° 29' 20.39" N, Longitude: 99° 10' 27.00" E. All specimens were examined for their morphological, anatomical and chemical characteristics. Chemicals were clarified by using spot test and Thin Layer Chromatography (TLC). Preliminarily color tests for lichen substances are usually carried out with the following reagents according to Elix's method [8]. Thin layer chromatography was performed according to the standard method of White and James [20]. Taxa were determined to morphology and anatomy structures according to Awasthi (2) Brodo et. al (3), Kantvilas et. al (4), Lumbsch (12) and Rambold (16).

**Results and Discussion:** The taxa of six hundred and forty-four discolichens samples in mangrove forest at Luang Suan, Muang Chumphon, Pathio and Sawi district of Chumphon province were collected and catalogued into nine families twelve genera and twenty-three species (plus two species to be expected). Discolichens was founded on phorophytes, a total of eight families, eleven genera and seventeen species. Mostly found in the family Rhizoporaaceae. The List of lichen-taxa on seventeen phorophyte trees in mangrove forest is

shown in table 1. Proportion of number of species among families of discolichens is shown in Figure 2. The highest discolichens species diversity is in family Lecanoraceae and Ramalinaceae (5 taxa). The second highest is in Malmideaceae and Pilocarpaceae (4 taxa). Observation on the occurrence of lichens on the various phorophytes revealed that twenty-three species are growing on the various mangrove trees. However, the highest species diversity of lichen was recovered twenty-four taxa on *Excoecaria agallocha* and *Rhizophora mucronata* with sixteen species, followed by *Rhizophora apiculata* with fifteen species. However, *Kandelia candel* and *Thespesia populnea* were discovered for one species of discolichen. Besides, *Cresponia proximata* (Nyl.) Egea & Torrente, *Malmidea aurigera* (Fée) Kalb, Rivas Plata & Lumbsch. *Bacidia submedialis* (Nyl.) Zahlbr, and *Lecanora helva* Stizenb.were frequently found.

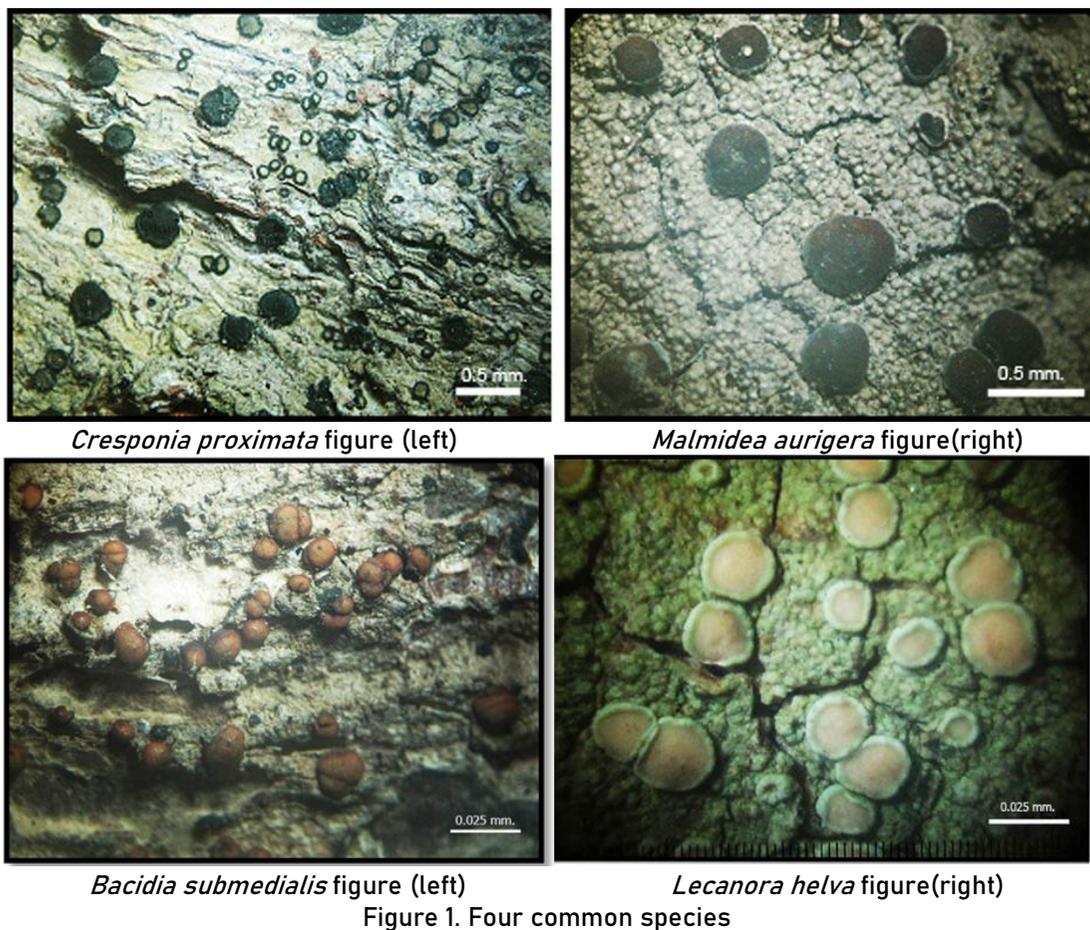


Table1. List of Lichen-taxa on phorophyte trees of mangrove forest in Chumphon province.

Lichen taxa	Phorophyte																	Total specimens
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
<b>COENOGONIACEAE</b>																		
<i>Dimerella lutea</i> (LS, SW)						1						1						2
<i>Dimerella pineti</i> (LS, MC, PT, SW)						3		3				1		1			1	9
<b>LECANORACEAE</b>																		
<i>Lecanora astrothelin</i> (LS)														1				1
<i>Lecanora conizaoides</i> (MC)														3				3
<i>Lecanora helva</i> (LS, PT, SW)	4	5		12		5	1	2			1	7	17	6			1	61
<i>Lecanora leproplaca</i> (SW)	6													1				7
<i>Lecanora tropica</i> (LS, MC, PT)									1	1				1				3
<b>LETROUITIACEAE</b>																		
<i>Letrouitia domengensis</i> (LS)									1									1
<i>Letrouitia leprotyoides</i> (LS, PT, SW)				4		12		1				1					1	19
<b>MALMIDEACEAE</b>																		
<i>Malmidea aurigera</i> (LS, MC, PT, SW)			2	15	15	10	1	4		1		34	12			1		95
<i>Malmidea inflata</i> (LS)						2						1	2					5
<i>Malmidea perplexa</i> (LS, MC, SW)				2		3		7				4	25		1		1	43
<i>Malmidea piae</i> (LS, SW)					1	2												3
<b>OPEGRAPHACEAE</b>																		
<i>Cresponea proximata</i> (LS, MC, PT, SW)			2	42	7	21		8				29	61	1		1	4	176
<b>PILOCARPACEAE</b>																		
<i>Byssoloma subdiscoedans</i> (PT)													2	1				3
<i>Calopadia fusca</i> (LS)						1						1	4					6
<i>Calopadia subcoerulea</i> (LS, MC, SW)						1		1		1			3					6
<i>Fellhanera bouteillei</i> (LS, PT)						3							8	1				12
<b>RAMALINACEAE</b>																		
<i>Bacidia igniarii</i> (MC)									3									3
<i>Bacidia phacodes</i> (LS, MC, SW)			3	1		3		2				6	18					33
<i>Bacidia rubella</i> (LS, PT)												3	1	2				6
<i>Bacidia submedialis</i> (LS, MC, PT, SW)	2	4	3	5	7			6			1	18	37	2				85
<i>Lecania</i> Chum1. (LS, MC, PT)						1		1				22	20					44
<b>ROCELLACEAE</b>																		
<i>Bactrospora</i> cf. <i>medicans</i> (LS, MC, PT, SW)	3		2		3		1			1	4		2				1	17
<b>TELOCHISTACEAE</b>																		
<i>Caloptaca</i> Chum1. (SW)	1																	1
<b>Total of lichen species</b>	<b>11</b>	<b>10</b>	<b>11</b>	<b>81</b>	<b>28</b>	<b>78</b>	<b>2</b>	<b>41</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>132</b>	<b>215</b>	<b>17</b>	<b>1</b>	<b>2</b>	<b>9</b>	<b>644</b>

Note: 1= *Avicennia alba* Blume.; 2= *Avicennia officinalis* L.; 3= *Bruguiera gymnorrhiza* (L.) Savigny.; 4= *Bruguiera parviflora* Roxb.; 5= *Ceriops decandra* (Griff.) Ding Hou.; 6= *Excoecaria agallocha* L.; 7= *Ficus benghalensis* L.; 8= *Hibiscus tiliaceus* L.; 9= *Kandelia candel* (Linn.) Druce.; 10= *Lumnitzera litorea* (Jack) Voigt; 11= *Lumnitzera racemosa* Wild.; 12= *Rhizophora apiculata* Blume; 13= *Rhizophora mucronata* Poir.; 14= *Sonneratia alba* J.S.M.; 15= *Thespesia populnea* (L.) Sol. ex Correa.; 16= *Xylocarpus granatum* Koenig; 17= *Xylocarpus moluccensis*

(Lam.) M. Roem.; (LS)= Lang Suan, (MC)= Muang Chumphon, (PT)= Pathio, and (SW)= Sawi district.

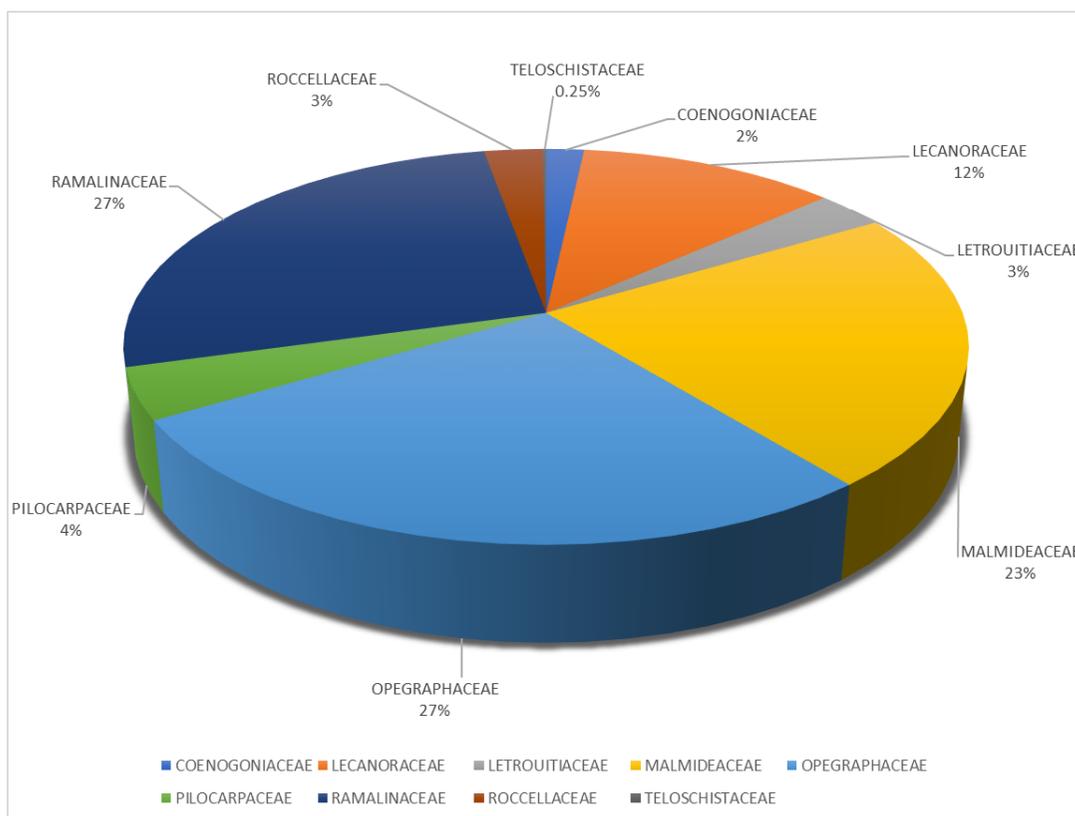


Figure 2. Proportion of number of species among nine families of Discolichens.

**Conclusion:** Six hundred and forty-four discolichens samples in mangrove forest in Chumphon province. Twenty-two species were found in Lung Suan, fourteen species in Sawi, Twelve species in Pathio and only eleven species in Muang Chumphon district. Discolichens from seventeen substrates were scrutinized and taxonomically classified in nine families twelve genera and twenty-three species (plus two species). *Rhizophora mucronata* Poir is the highest discolichens species rich (seventeen species) because it is the dominant tree in mangrove forest, while *Kandelia candel* (Linn.) Druce and *Thespesia populnea* (L.) Sol. ex Correa. are only one species. However, the dominant species are *Cresponia proximata* (Nyl.) Egea & Torrente. was found in four study sites at Phatio, Luang Suan, Mueng Chumphon and Sawi district respectively. The lichen communities that occur in mangroves forest are indicate their smooth of the tree barks, tolerance to hot, humid and saline breeze environmental conditions prevailing in mangrove, it would be an interesting aspect to study in detail the environmental factors and the physiology of these lichens enabling them for the successful colonization in mangrove forest.

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