

ห้องสมุดงานวิจัย สำนักงานคณะกรรมการวิจัยแห่งชาติ



E41026



REALIZED ECOLOGICAL NICHES OF TRANSPLANTED LICHENS IN
VARIOUS ECOSYSTEMS IN THE TROPIC

MONGKOL PANGPET

A THESIS PRESENTED TO RAMKHAMHAENG UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE
(BIOLOGY)

2010

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วิทยานิพนธ์เสนอต่อมหาวิทยาลัยรามคำแหง
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Thesis Title Realized Ecological Niches of Transplanted
Lichens in Various Ecosystems in the Tropic

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ABSTRACT

Thesis Title	Realized Ecological Niches of Transplanted Lichens in Various Ecosystems in the Tropic
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Lichens have a high potential for being variously used, but they remain at risk of extinction in view of human activities.

In this light, then, the objectives of this study were (1) to determine the effects of changes in microclimate on site-specific lichens. Furthermore, (2) to ascertain optimal microclimates for the growth and propagation of lichens in differing ecosystems. Finally, to establish (3) what would be suitable artificial substrata for growing lichens.

The experiment was conducted by transplanting lichens at Khao Yai National Park. The results of experimentation showed that species of lichens which grew in warm sites could adapt and grow well in the cool microclimate

in selected sites to which they were transplanted. By way of contrast, lichens whose original habitats were located in a cool microclimate area could barely survive and grow in sites with warm microclimates.

More importantly in this study, it was found that *Heterodermia lepidota* and *Parmelinella chozoubae* with cool habitats and *Relicina subconnivens* with a warm habitat could not adapt to the new locations to which they had been transplanted. However, vegetative propagules of the common lichens initially survived and grew well after transplantation to lower montane forest sites, but long term investigation still showed that all of them eventually disintegrated. Tropical rain forest and dry evergreen forest could not support the growth and propagation of transplanted lichens. Areas of secondary forest growth could be the most suitable area for lichen propagation.

Among the artificial substrates, glass bottles supported the highest proportion of surviving thalli. In addition, plastic nets at 45° inclination supported the growth and propagation of transplanted lichen quite well.

In conclusion, successful transplantation of lichens depended on proper interactions of factors, i.e., light, atmospheric humidity, water holding capacity, and orientation of substrates. These factors varied from ecosystem to ecosystem. Careful consideration is of the essence when considering what is required for the conservation and sustainable utilization of lichens.

ที่สุดในการใช้เป็นที่ขยายพันธุ์ไลเคน ในระหว่างวัสดุสังเคราะห์ วัสดุแก้วมีสัดส่วนของไลเคนที่ย้ายปลูกเหลือรอดมากที่สุด นอกจากนี้ตาข่ายพลาสติกที่เอียงทำมุม 45° รองรับการพัฒนาของไลเคนได้ดี โดยสรุป ความสำเร็จในการย้ายปลูกไลเคน ขึ้นอยู่กับปฏิสัมพันธ์อย่างจำเพาะของปัจจัยหลายอย่าง เช่น แสง ความชื้นในบรรยากาศ การอุ้มน้ำ และทิศทางของวัสดุให้อาศัย ซึ่งแตกต่างกันในระบบนิเวศต่าง ๆ การพิจารณาปัจจัยเหล่านี้อย่างรอบคอบ จึงจำเป็นในการอนุรักษ์ และใช้ประโยชน์ไลเคนอย่างยั่งยืน

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Mongkol Pangpet

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ABBREVIATION

Ave.	= Average
cm ²	= Centimeter square
DDF	= Dry Dipterocarp Forest
DEF	= Dry Evergreen Forest
DSGT	= Double-Sided Glue Tape
h	= Hour
KYPN	= Khao Yai National Park
LMF	= Lower Montane Forest
Max	= Maximum
MDF	= Mixed Deciduous Forest
Min	= Minimum
m.a.s.l.	= Meters Above Sea Level
mm	= Millimeter
mm/month	= Millimeter per month
mm/yr	= Millimeter per year
°C	= Degree Celsius
P	= Plantation forest
PAR	= Photosynthetically Active Radiation ($\mu\text{mol m}^{-2} \text{s}^{-1}$)
PPFD	= Photosynthetically Photon Flux Density ($\mu\text{mol m}^{-2} \text{s}^{-1}$)
RH	= Relative Humidity (%)
SF	= Secondary Forest
TRF	= Tropical Rain Forest