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ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

SYSTEMATICS OF ISCHAEMINAE AND ROTTBOELLIINAE (POACEAE) IN
THAILAND

Miss Paweena Traiperm

A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy Program in Biological Sciences

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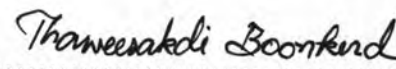
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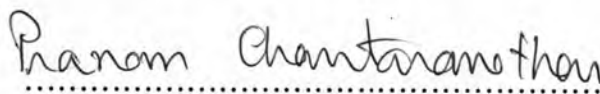
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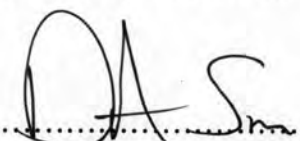

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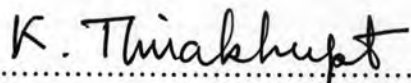
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ปวีณา ไตรเพ็ญ : อนุกรมวิธานของพืชวงศ์หญ้าเผ่าย่อยอิกเคมีนิ และรอตโทลลิอินี ในประเทศไทย (SYSTEMATICS OF ISCHAEMINAE AND ROTTBOELLIINAE (POACEAE) IN THAILAND) อ. ที่ปรึกษา : ศ.ดร.ทวีศักดิ์ บุญเกิด, อ. ที่ปรึกษาร่วม : ศ.ดร.ประนอม จันทโรนาศัย, ดร. เดวิด เอ ซิมสัน, 391 หน้า.

การศึกษาอนุกรมวิธานของพืชวงศ์หญ้าเผ่าย่อย Ischaeminae และ Rottboelliinae ในประเทศไทย พบหญ้าจำนวน 13 สกุล 49 ชนิด 2 พันธุ์ สกุลที่มีขนาดใหญ่ที่สุดสองสกุล ได้แก่สกุล *Ischaemum* มีจำนวน 13 ชนิด 1 พันธุ์ และสกุล *Eremochloa* มีจำนวน 11 ชนิด ในจำนวนนี้ได้ย้าย 1 ชนิดไปอยู่ในสกุล *Andropogon* L. คือ *I. tenuifolium* (A. Camus) P. Traiperm & T. Boonkerd ได้ยุบหนึ่งพันธุ์คือ *I. barbatum* Retz. var. *glaberrimum* Bor ให้เป็นชื่อพ้องของ *I. barbatum* Retz. นอกจากนี้ยังได้เลือกตัวอย่างต้นแบบจำนวน ห้าแทกซาของสกุล *Ischaemum* คือ *I. aristatum* subsp. *imberbe* var. *imbricatum*, *I. aristatum* var. *arfakense*, *I. lacei*, *I. magnum* และ *I. macrurum* พบว่ามีหญ้าที่รายงานเป็นครั้งแรกของประเทศไทย 2 แทกซา คือ *Ischaemum hubbardii* Bor และ *Mnesithea striata* (Nees ex Steud.) Koning & Sosef. var. *pubescens* (Hack.) S.M. Phillips & S.L. Chen และคาดว่า 6 ชนิด ในสกุล *Ischaemum*, *Eremochloa* และสกุล *Mnesithea* อาจจะเป็นพืชชนิดใหม่ของโลก ได้สร้างรูปวิธานจำแนกเผ่าย่อย สกุล ชนิดและพันธุ์ และได้จัดทำบรรยายลักษณะวาดภาพลายเส้น บันทึกภาพ ข้อมูลการกระจายพันธุ์ของแต่ละชนิด

การศึกษาลักษณะกายวิภาคศาสตร์ของแผ่นใบและลำต้นเหนือดินของพืชทั้งสองเผ่าย่อย โดยวิธีลอกผิวและตัดตามขวาง จากตัวอย่าง 25 ชนิด ใน 12 สกุล พบว่าสามารถนำลักษณะของแผ่นใบและลำต้นเหนือดินมาใช้ระบุสกุลของพืชทั้งสองกลุ่มนี้ในประเทศไทยได้

การวิเคราะห์สายสัมพันธ์ทางวิวัฒนาการของพืชจำนวน 44 ตัวอย่าง 38 แทกซา จากลำดับนิวคลีโอไทด์ในคลอโรพลาสต์ดีเอ็นเอ (*trnL* intron และ *trnL-F* intergenic spacer) และในไรโบโซมดีเอ็นเอบริเวณ internal transcribed spacer (ITS) ด้วยวิธี Maximum Parsimony โดยโปรแกรม PAUP* 4.0b10 พบว่าการวิเคราะห์ร่วมกันของยีนในไรโบโซมดีเอ็นเอ และคลอโรพลาสต์ดีเอ็นเอ แสดงความน่าเชื่อถือและพบว่าพืชทั้งสองเผ่าย่อยไม่เป็นชาติพันธุ์เดียว (non-monophyletic) เมื่อพิจารณาสายสัมพันธ์ภายในสองเผ่าย่อยพบว่า สกุล *Ischaemum* และ *Mnesithea* ไม่เป็นชาติพันธุ์เดียว และสกุล *Hemarthria*, *Hackelochloa* และ *Eremochloa* เป็นชาติพันธุ์เดียว (monophyletic)

สาขาวิชา วิทยาศาสตร์ชีวภาพ
ปีการศึกษา 2550

ลายมือชื่อนิสิต..... ปวีณา ไตรเพ็ญ
ลายมือชื่ออาจารย์ที่ปรึกษา..... *Thamsakdi Boonkerd*
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PAWEENA TRAIERM: SYSTEMATICS OF ISCHAEMINAE AND
ROTTBOELLIINAE (POACEAE) IN THAILAND. THESIS ADVISOR :
PROF. THAWEESAKDI BOONKERD, Ph.D., THESIS COADVISOR :
PROF. PRANOM CHANTARANOTHAI, Ph.D., DAVID A. SIMPSON,
Ph.D. 391 pp.

A taxonomic study of subtribes Ischaeminae and Rottboelliinae in Thailand was carried out. Thirteen genera, 49 species and two infraspecific taxa are enumerated. *Ischaemum* (13 species and one infraspecific taxon) and *Eremochloa* (11 species) are the two largest genera. One new combination in *Andropogon* L.: *I. tenuifolium* (A. Camus) P. Traiperm & T. Boonkerd is made. A variety, *I. barbatum* Retz. var. *glaberrimum* Bor is treated here as a synonym of *I. barbatum* Retz. In addition, five taxa of *Ischaemum* namely, *I. aristatum* subsp. *imberbe* var. *imbricatum*, *I. aristatum* var. *arfakense*, *I. lacei*, *I. magnum* and *I. macrurum* are lectotypified. It was found that two taxa, i.e. *Ischaemum hubbardii* Bor and *Mnesithea striata* (Nees ex Steud.) Koning & Sosef. var. *pubescens* (Hack.) S.M. Phillips & S.L. Chen are new records. Six species in *Ischaemum*, *Eremochloa* and *Mnesithea* are new to science. Keys to the subtribes, genera and species together with descriptions, line drawings, photographs and distributional information of each species are given.

Epidermal peels and transverse sections of leaf-blades and culms were investigated in 25 species of the 12 genera from the two subtribes. It is evident that anatomical features are taxonomically useful for generic delimitation.

Phylogenetic analyses of 44 samples from 38 taxa were carried out using non-coding chloroplast DNA *trnL* intron, and *trnL-F* intergenic spacer sequence data together with nuclear ribosomal internal transcribed spacer (ITS) sequence data. Maximum Parsimony analyses were conducted using PAUP* 4.0b10. It was found that combined ITS and *trnL-F* analyses strengthen the phylogenetic signal and reveal that both subtribes are not monophyletic. The combined data also reject the monophyly of the genera *Ischaemum* and *Mnesithea* but provide evidence to show that *Hemarthria*, *Hackelochloa* and *Eremochloa* are monophyletic.

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LIST OF ABBREVIATIONS

c. or ca.	circa or circiter	about, approximately
comb. nov.	combinatio nova	new combination of name and epithet
det.	determinavit	he determined
e.g.	exempli gratia	for example
et al.	et aliorum	and others
f.	filius or filial	son or son of
l.c.	loco citato	compare reference
ined.	ineditus	unpublished
nom. nov.	nomen novum	new name
nom. nud	nomen nudum	name published
p.p.	pro parte	partly, in part
s.l.	sensu lato	in a broad sense
sp.	species	species (singular)
spp.	species	species (plural)
ssp.	subspecies	subspecies
syn.	synonymon, synonymia	synonym, synonymy
var.	varietas	variety
viz.	videlicet	namely

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