

ชื่อวิทยานิพนธ์	ผลกระทบจากการรุกรานของพืชต่างถิ่นต่อสังคมพืชธรรมชาติในภาคกลางของประเทศไทยเนปาล
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บทคัดย่อ

สำรวจศึกษาโครงสร้างสังคมพืชบริเวณป่าสาละ (“Sal” forest) ในเขตเมืองจิตตวัน และบริเวณป่าดิบเขาระดับต่ำของภูเขาจามปาเทวี ในเขตเมืองกาฏมาณฑุ ภาคกลางของประเทศไทยเพื่อศึกษาผลกระทบจากการรุกรานของพืชต่างถิ่นต่อสังคมพืชธรรมชาติ การศึกษานี้ได้เลือกพืชรุกรานต่างถิ่นในเนปาลสองชนิดได้แก่ *Ageratina adenophora* (Spreng.) R.M. King & H. Rob and *Chromolaena odorata* (L.) King & Robinson ซึ่งจากการวิเคราะห์สังคมพืชในบริเวณป่าของภูเขาจามปาเทวีโดยพิจารณาจากองค์ประกอบพรรณไม้ โครงสร้าง และถิ่นอาศัย ตลอดจนบริเวณที่พบ พบว่ามีสังคมพืชแตกต่างกัน 5 แบบ โดยที่สังคม *Schima-Alnus* เป็นสังคมพืชที่ถูกรุกรานจาก *A. adenophora* มากที่สุด ซึ่งสังเกตได้จากการมีความหลากหลายและความหนาแน่นของพืชพื้นเมืองน้อยในสังคมพืชดังกล่าวในบริเวณที่ถูกรุกราน และการศึกษาในป่าสาละในเมืองจิตตวัน พบว่ามีผลกระทบของ *C. odorata* ต่อพืชพื้นเมืองคือต้นสาละ (*Shorea robusta* C.F. Gaertn.) เป็นไปในทำนองเดียวกัน. ซึ่งผลจากการทดลองแสดงให้เห็นว่าดิน ทรากอินทรีย์ (litter) รวมถึงผลกระทบที่มาจากสารระเหยจาก *A. adenophora* นั้นยับยั้งการเจริญของต้นกล้าของ *Schima wallichii* (DC.) Korth. ด้วย นอกจากนี้ ใบ และ สารสกัดจากใบสด ยังยับยั้งการเจริญของต้นกล้าของ *S. wallichii* และ *A. nepalensis* D. Don. ด้วย ยิ่งกว่านั้น ทรากอินทรีย์ของ *A. adenophora* ยังยับยั้งการเจริญของรากของต้นกล้าของ *S. wallichii* ในที่ที่มีความถี่ต้นต่ำ ซึ่งพบว่าปริมาณการรุกรานของ *A. adenophora* มีความสัมพันธ์เชิงผกผันกับความสูงของพื้นที่ที่พบสังคมพืชใดใด และ ความสูงของเรือนยอดที่เพิ่มขึ้น พืชรุกรานทั้งสองชนิดได้ทำลายสังคมพืชตามธรรมชาติโดยการยับยั้งการเจริญในลักษณะต่างๆกัน และยังพบว่า *A. adenophora* เปลี่ยนคุณสมบัติของดิน และ สารที่ถูกปล่อยที่สะสมอยู่ในดินช่วยส่งเสริมการรุกรานของพืชนี้อีกด้วย ในกรณีของการยับยั้งการรุกรานของ *A. adenophora* อาจทำได้โดยปรับความถี่ของต้นกล้าของพืชพื้นเมืองในสังคมพืชธรรมชาติ และการไม่ตัดทอนเรือนยอดของพืชพื้นเมืองให้เตี้ยลง

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ABSTRACT

The vegetation surveys had been conducted in a tropical “Sal” forest (Chitwan district) and a lower montane Champadevi hill forest (Kathmandu district) of the Central Nepal in order to study the impacts of invasive alien species on native vegetation in central Nepal. Due to the present aspect, the alien species to Nepal i.e. *Ageratina adenophora* (Spreng.) R.M. King & H. Rob and *Chromolaena odorata* (L.) King & Robinson were selected as they grow invasively in the natural forest of the central Nepal. Five types of plant communities identified in the Champadevi hill forest were characteristic in terms of the species composition, structures, habitats as well as locations. The *Schima-Alnus* plant communities were highly invaded by *A. adenophora*. Native species richness and density were significantly low in *A. adenophora* invaded sites. Likewise, the species composition; native species richness as well as the *Shorea robusta* C.F. Gaertn. (“Sal” tree) seedlings were severely impacted by *C. odorata* in the tropical “Sal” forest. The experiments had shown that *A. adenophora* invaded soil, its litter and the air born effect of litter had inhibited seedling growth and development of *Schima wallichii* (DC.) Korth. Fresh leaves and leaf extract of *A. adenophora* had inhibited the growth of seedlings of *S. wallichii* and *Alnus nepalensis* D. Don. Moreover, *A. adenophora* litter had reduced the root growth of *S. wallichii* at the lower seedling densities. *A. adenophora* invasion was lowered at higher altitude and under higher tree canopy. Both the invasive species have threatened natural vegetation by suppressing native species through different mechanisms of inhibition. Soil-based phytotoxins has contributed to the *A. adenophora* invasion. Adjustments of native seedling density and maintenance of tree canopy could be possible management strategy for *A. adenophora* invasion.

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Lal Bahadur Thapa, May 2016

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ABBREVIATIONS

ANOVA	Analysis of Variance
CCA	Canonical correspondence analysis
DPR	Department of Plant Resources, Nepal
EIH	Evolution of Invasiveness Hypothesis
ENH	Empty Niche Hypothesis
MoFSC	Ministry of Forest and Soil Conservation
NBS	Nepal Biodiversity Strategy
NEH	Natural Enemy Hypothesis
NWH	Novel Weapons Hypothesis
USAID	United States Agencies for International Development

LIST OF PAPERS

- I. **Thapa, L.B.**, Kaewchumnong, K., Sinkkonen, A. and Sridith, K. 2016. Plant Communities and *Ageratina adenophora* Invasion in Lower Montane Vegetation, Central Nepal. *International Journal of Ecology & Development* 31 (2): 35-49.
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- V. **Thapa, L.B.**, Kaewchumnong, K., Sinkkonen, A. and Sridith, K. “Soaked in rainwater” effect of *Ageratina adenophora* on seedling growth and development of native tree species in Nepal (Unsubmitted Manuscript, 2016).

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Full author list: Lal Thapa, M Sc; Krittika Kaewchumnong, Associate Professor; Aki Sinkkonen; Kitichate Sridith

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