

Differences in insect biomass, dead wood, and wood-inhabiting species between production forests and protected forests in southeastern Sweden

Angelica Weisner

angwe736@student.liu.se
Karl-Olof Bergman



INTRODUCTION

Commercial exploitation of forests has today resulted in monocultural, young, and relatively dense forests. In Sweden, almost all woodland has gone from natural forests to coniferous production forests during the last 150 years. In total, 69 % of Sweden's land surface consists of forest land, of which only 12.5 % is older than 140 years, and only 8.7 % is under formal protection. The transition from natural forests to monocultural production forests has had a large impact on forest ecosystems' structure and function. Invertebrates, wood-inhabiting fungi, and bryophytes are some of the groups affected by the transition.

The present study compared four different ages of production forests with younger protected forests and protected old-growth forests of **1)** biomass for five insect orders of flying insects, **2)** dead wood quantity and quality, and **3)** presence and abundance of wood-inhabiting fungi and mosses species respectively.

METHODS

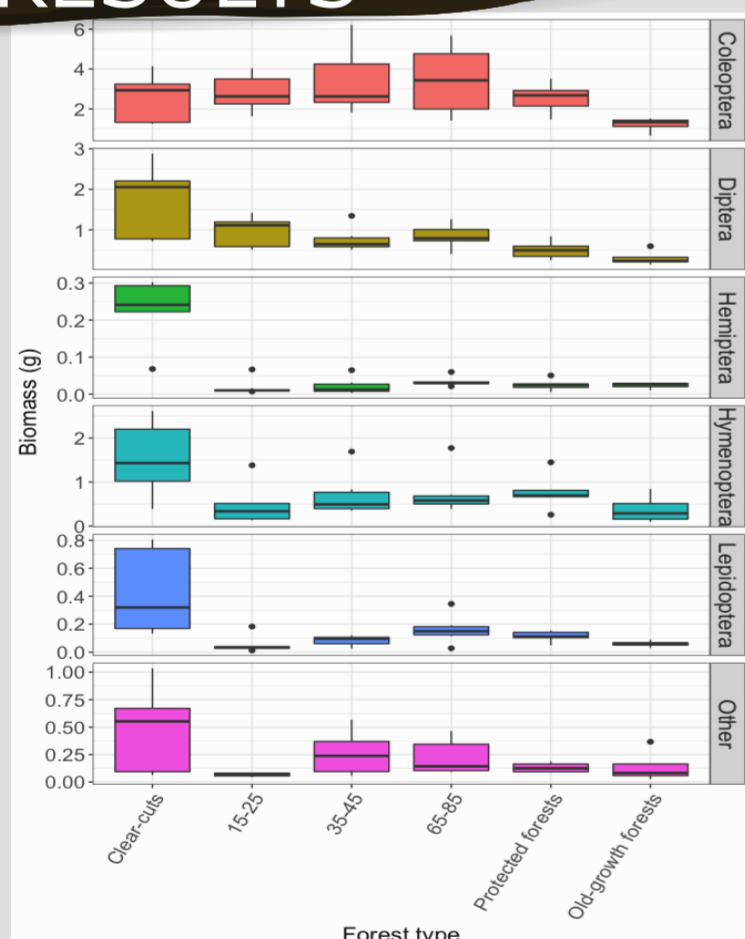


Thirty-five Malaise traps were up from May to September

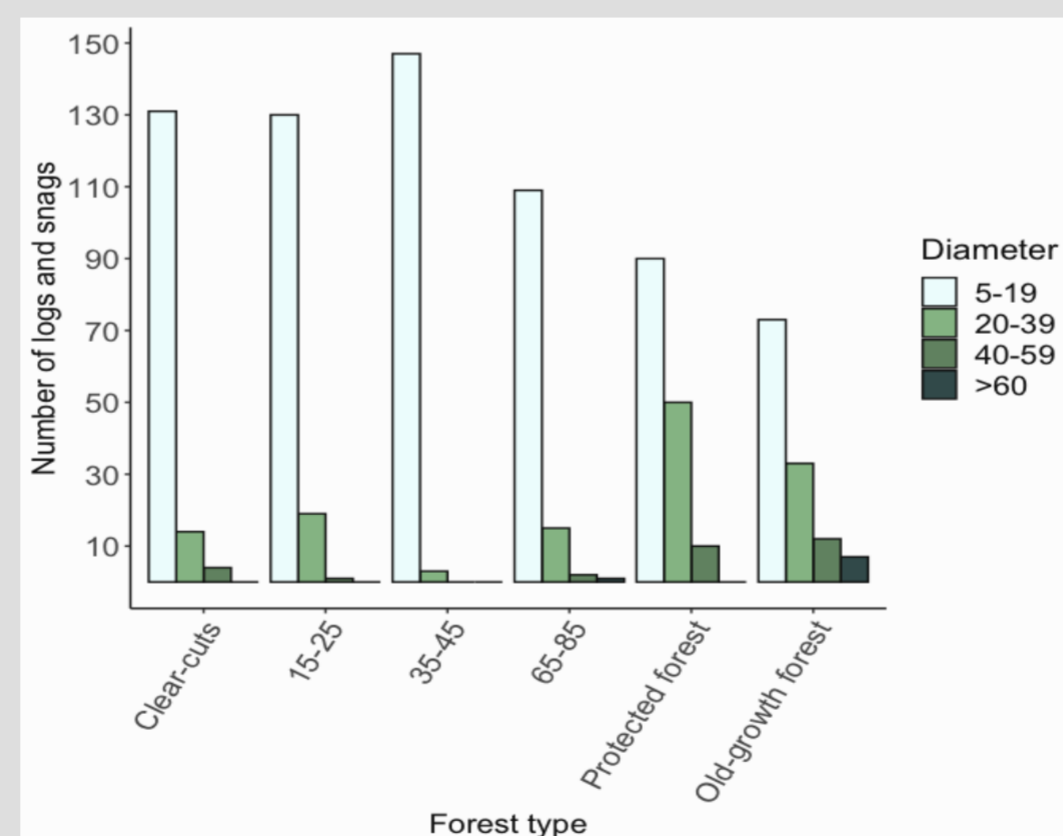
Insect biomass, dead wood quantity and quality, and saproxylic mosses and fungi were studied at 35 sites in Östergötland county. Data of insect biomass were collected by using Malaise traps. All samples were sorted into five insect orders, oven-dried and weighed.

A ten-meter-wide transect was measured out for dead wood and wood-inhabiting species of mosses and fungi. Within this transect, all area was searched after dead wood (snags and logs) > 5 cm in diameter, until 25 logs or snags were found. All dead wood was inventoried for 22 species.

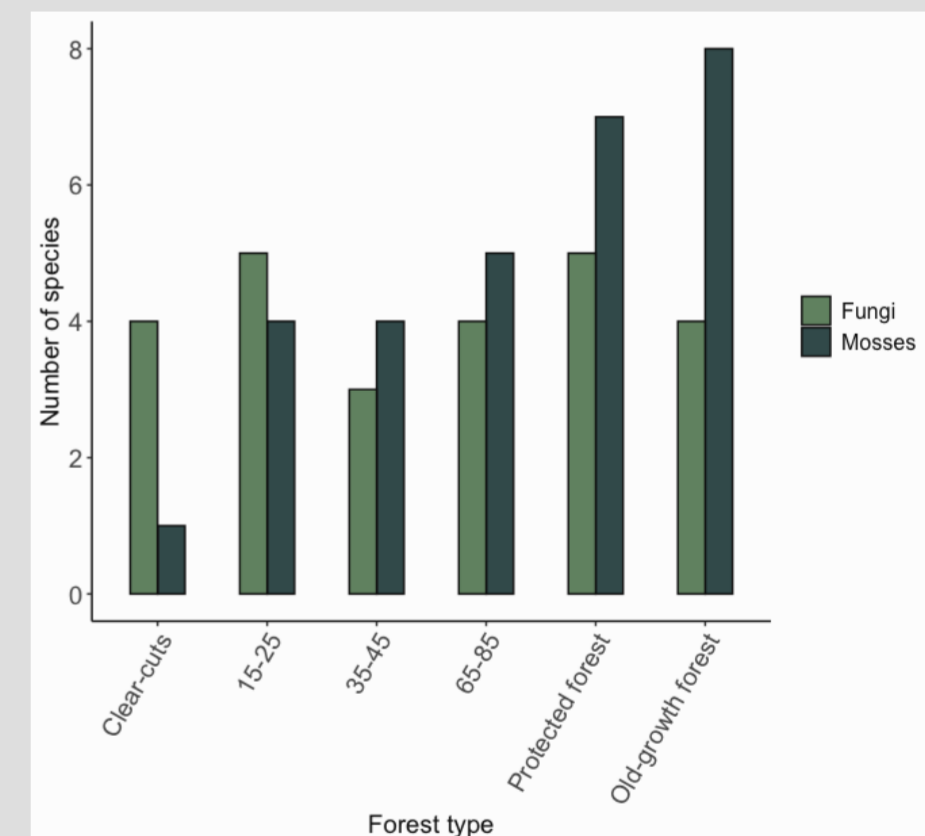
RESULTS



Clear-cuts had the highest weight of all insect orders except for beetles (Coleoptera). Beetles generated the highest weight of all orders.



Protected and old-growth forests had much more variation in diameter for dead wood. Protected and old-growth forests also had a significantly higher volume of dead wood compared to production forests.



In total, 15/22 species were found. Mosses species increased with forest age. GLM result showed that indicator species increased significantly with a higher volume of dead wood and number of dead tree species.

CONCLUSIONS

Malaise traps are a quite selective trapping method and may not reflect on the over-all state of the local entomofauna.

Dead wood quantity and quality is low in production forests compared to both younger and older protected forests.

Higher volume and more variation in dead wood can increase number of wood-inhabiting species.