

Distribution Patterns of Forest Gastropod Communities

S.E. Abele, J.R. Spence & S.E. Macdonald

Department of Renewable Resources
University of Alberta, Edmonton, Alberta, Canada
Contact: sabele@ualberta.ca



Research Goal:

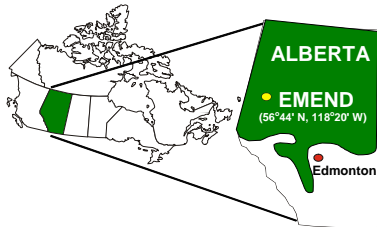
Investigate the effects of environmental characteristics on gastropod communities in a boreal mixedwood forest

What we know about slugs and snails...

- Forest gastropods are important decomposers, herbivores, and prey items
- Distribution is driven by factors such as soil calcium and pH (1), vegetation communities (2), and moisture and temperature (3, 4)
- Gastropods have been associated with deciduous forests (5)

There are many areas of Alberta in which gastropods have never been surveyed, including the site of this study

Study site:



EMEND is located 90 km Northwest of Peace River, Alberta

Green colour indicates the boreal forest region

Sampling design:

Snails and slugs from 72 board traps were collected and identified. A number of environmental parameters were measured at each trap location.



Collecting gastropods from a board trap

Community Patterns:

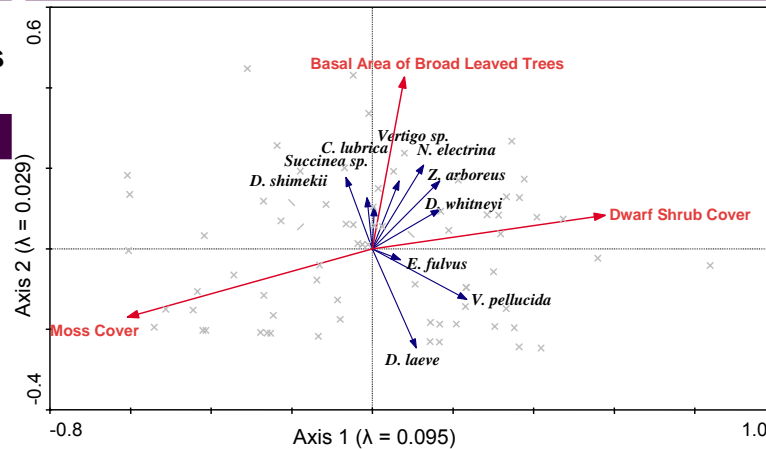


Figure 1: Constrained ordination (RDA) of gastropod community. Red vectors = environmental parameters, blue vectors = species, and points = sampling locations. Environmental vectors shown are those that significantly explain community variation as chosen through forward selection.

Species Patterns:

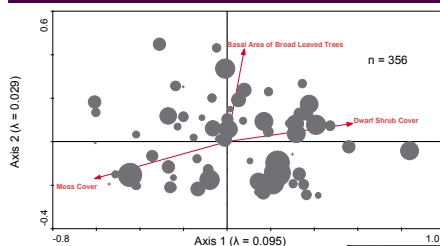
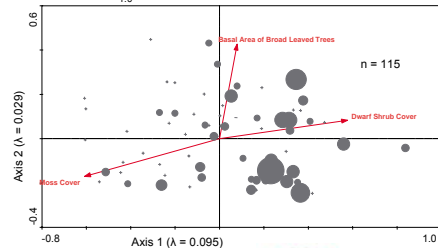


Figure 2: Relative abundance of the common species *Discus whitneyi* overlaying the ordination from Figure 1. Larger circles indicate greater abundance.



Figure 3: Relative abundance of the less common species *Vitrina pellucida* overlaying the ordination from Figure 1. Larger circles indicate greater abundance.



Results Summary:

- 10 species and 935 individuals were collected
- Basal area of broad leaved trees, dwarf shrub cover and moss cover significantly explain variance in the community (Fig. 1)
- At the community level, gastropods prefer areas with broad leaved trees, dwarf shrub cover, and low moss cover (Fig. 1)
- Common species, like *Discus whitneyi*, show low environmental preference (Fig. 2)
- Rarer species, like *Vitrina pellucida*, show environmental preference (Fig. 3)

Management Implications:

- Maintaining heterogeneity on the landscape is important for conserving all gastropod species, especially those that are rare
- Understanding what comprises ideal gastropod habitat and what drives gastropod distribution will help us better manage this group and preserve forest biodiversity
- Effective conservation of biodiversity requires an understanding of poorly known taxa

Future Work:

- Investigating distribution patterns using two other sampling methods
- Investigate the effects of partial harvesting on gastropod communities
- Examine the relationships between gastropod and bryophyte communities

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References

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