

Impacts of forestry on the bumble bee-influenced pollination community

Lead by: [Chris Pengelly](#)

Theme: [Arthropod Diversity](#)

Status: Completed

Start: 2007

End: 2009

Participants

- [Ralph Cartar](#)
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Background

The research will assess the long-term impacts of forestry practices on the composition and dynamics of the bumble bee-influenced pollination community. The traditional harvest method of forestry companies is to use clear cutting, in which virtually all of the trees, and hence structure, is removed from the landscape. The loss of structure has been recognized as the single most important variable affecting biodiversity (Thompson et al. 2003). The Ideal Free distribution (IFD, Fretwell & Lucas 1970) is a tool which can be used to assess ecological impacts by humans. It states that the abundance of foragers in an area will be proportional to the abundance of resources. In the summer of 1998, before logging took place, plant species did not differ between sites and bumble bees were ideal-free distributed across the plants throughout EMEND (Cartar, 2005). The summer (1999) following logging (winter 1998), flower species composition and abundance was significantly altered in all areas that were logged. In the control and clear cut sites the bumble bees under-matched resources, meaning that there were too many bees in the flower poor areas and too few in the flower rich ones (Cartar, 2005). Potentially important consequences such as poor foraging success for the bees and inadequate pollination for the flowers could arise if these conditions persisted

Objectives

I plan to assess the long term effects (i.e., 8 bee generations later) on the distribution, density and species assemblage of the bumble bee community, the flowers that they visit, and the density-dependent inter-relationships between plants and pollinators.

Key Results

There does not appear to be an effect of harvest treatment on the community assemblage of bumble bees. The same cannot be said for the plant (measured by flower number) community: all logged areas had a different mix of plant species than did controls. Looking at abundance of bumble bees, control stands had fewer bees than clear cuts and burns but were not different from the intermediate levels of logging (10%,20%,50%,75%). Analysis of effect on nectar production and bumble bee distribution is ongoing.