

# Spatio-Temporal Modelling of a Forest Defoliator In the European Alps

Bronwyn Price<sup>1</sup> & Andreas Fischlin<sup>1</sup>

Temporal dynamics of the larch bud moth (lbm), a cyclic forest defoliator in the European Alps, have been extensively researched and modelled. This study aims for the spatio-temporal modelling of lbm defoliation as related to landscape heterogeneity across a hierarchy of scales.

A spatio-temporal lbm model has been constructed, which combines local population dynamics with moth migration at the scale of the Alps (Fischlin, 1983). The model matched traveling waves of population data from the Alps while assuming host plant-lbm interactions. This model indicated that spatial arrangement of valleys may significantly affect synchronisation among local populations. Secondly, in a recent paper, Bjørnstad *et al.* (2002) have proposed an alternative explanation for the same phenomenon, however assuming lbm-parasitoid interactions and requiring a currently hypothetical gradient of landscape heterogeneity. Thirdly, landscape metrics and geostatistics (variograms, kriging) have been successfully applied to model defoliation patterns and outbreak durations for other defoliators, and related these to structural properties of the landscape. Our study will employ such methods to quantify the relationship between lbm and landscape heterogeneity while building on existing, dynamic spatio-temporal models.

This poster presents first results and invites discussion of previous and anticipated approaches to tackle such problems in general.

## Cited References

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<sup>1</sup> Terrestrial Systems Ecology ETH Zurich, Grabenstr. 3, CH-8952 Schlieren/Zurich, Switzerland