

**Wiener Biometrische Sektion  
der Internationalen Biometrischen Gesellschaft  
Region Österreich – Schweiz**

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**Einladung zum  
Biometrischen Kolloquium**

am Mittwoch, dem 27. November 2002, 16:15 Uhr

im Seminarraum des  
Instituts für Mathematik und Angewandte Statistik  
Max-Emanuelstr. 17 (Haupteingang)  
A-1180 Wien  
Tel. 47654 5062

Es spricht Fr. Ph. Lic. Sharon Köhlmann-Berenzon, Dept.  
Mathematical Statistics Chalmers University of Technology  
Eklandagatan 86,  
412 96 Gothenburg, Sweden., zum Thema:

**A matched case-control study in the forest:  
influence of trees on  
understory vegetation.**

Thomas Waldhör  
Präsident

Karl Moder  
Sekretär

Abstract:

The principles of matched case-control studies were applied in the analysis of the influence of trees on the presence of an understory vegetation species. Matched case-control studies (or conditional logistic

regression) are traditionally used in medicine to compare affected and unaffected patients that have been matched by certain characteristics. In those instances, the interest lies on the odds ratio of the disease associated to an explanatory variable.

In this study, the data was collected in plots systematically distributed over all of Finland. The influence of single-trees, quantified by the ecological index "Influence Potential", was expected to be evident at short ranges, i.e. at a local scale. Due to the size of the study area, however, large scale factors such as climate, latitude, and soil types were implicitly present in the measurements. To overcome the large scale factors, a conditional logistic model was derived, where the cases were observed, and the corresponding controls were hypothetical but quantifiable.

Results applied to cowberry (*Vaccinium vitis idaea* L.) showed that higher influence of Scots pine (*Pinus sylvestris* L.) and Norway spruce (*Picea abies* L.) decreased the odds ratio of finding cowberry in the forest. For "Wald-Reitgras" (*Calamagrostis arundinacea* L.), only the influence of Norway spruce was significant, and its higher effect also caused a decrease in the odds.

Keywords: conditional logistic model; local scale; forestry; understory vegetation; influence potential.

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