Description of the variables

## **Subset A**

*Sites without any silvicultural management between two sampling events (either between 1985 and 1995, or between 1995 and 2006), but with known timing of latest major disturbance prior to the sampling period.*

Site\_year\_pair An unique identifier for each site\_year\_pair. Some sites were surveyed three times and can therefore be used for calculating temporal changes over two sampling periods: 1985-1995 AND 1995-2006.

Sampling\_period Period of between two surveys.

Type\_year Start or End of the sampling period.

Year Year of the survey.

Site Site\_ID of a circular forest stand.

CN\_2006 Organic layer carbon (C) to nitrogen (N) ratio of organic layer measured in **year 2006**. Ten or twenty subsamples were systematically collected with a cylinder (d = 60 mm) from organic soil layer of 443 sites (400 m2), pooled together and contents of C and N were determined with a LECO CHN analyzer.

Cluster Sampling site network consists of clusters, which were located 16 km from each other in Southern Finland, and 24 and 32 km apart in Norther Finland along east-west and north-south axes, respectively. Each cluster consists of four linearly located sampling sites 400 m apart from each other in Southern Finland and three sampling sites 600 m apart from each other in Northern Finland.

Bioclim\_zone Boreal forest sub-zones (a factor with five categories) from south (1) to north (5).

Time\_since\_disturbance Timing of the lastest regeneration cutting (seed tree cutting, shelterwood cutting, strip clearcutting, clearcutting with a nurse crop, clearcutting) before the Start Year of a sampling period. The timing of the latest regeneration cutting before the Start Year of the Sampling period was visually estimated to following categories: 1, 2-5, 6-10 years. To estimate the timing of the latest major disturbance event before 1975, we used stand age (measured dendrochronologically from a cored sample tree per site, or counting branch whirls of younger trees) as a proxy for a disturbance that removed most of the canopy. We categorized the stand age to the following categories: 31-60, 61-80, 81-100, 101-120, 121-140 and over 140 years. Value in the variable is the middle point of each category.

Ave\_GDD5\_preceding\_10y Daily mean temperature sum exceeding +5°C (i.e. growing degree days over +5°C, GDD5) for each site for a ten-year period prior to each sampling year. Daily temperature data was obtained from Finnish Meteorological Institute’s interpolation on to a 10 km × 10 km resolution (Venäläinen *et al.*, 2005).

Richness Number of vascular plat species on four square-shaped 2 m2 the study plots within a Site.

Pool Number of species observed the circular 300 m2 Site **in 1995 and 1985.**

Species\_covers Average of species cover across the four sampling plots. At each plot, each species cover was visually estimated between 0-100% of the 2 m2 plot area.

## **Subset B**

*Sites that encountered forest management between years 1985 and 1995.*

Disturbance\_type Type of forest management action:1) **regeneration cutting**, which includes seed tree cutting, shelterwood cutting, strip clearcutting, clearcutting with a nurse crop and clearcutting, 2) **‘Commercial thinning’** which includes commercial thinning, selection cutting and removal of reserve trees, 3) **‘Pre-commercial tending’** which includes pre-commercial thinning and cleaning of the sapling stand (full descriptions of management types in the Suppl. Table 1).

Years\_since Number of years since disturbance counted from the End Year = Year 1995.

Other variables as described above for the subset A.

 **References**

Venäläinen, A., Tuomenvirta, H., Pirinen, P. & Drebs, A. (2005) A basic Finnish climate data set 1961–2000-description and illustration. *Finnish Meteorological Institute Reports*, **2005**, 27.