



Universität  
Basel

## Research Project

### The *Alnus*-problem and the exceedance of critical loads for nitrogen in the Alps

#### Third-party funded project

**Project title** The *Alnus*-problem and the exceedance of critical loads for nitrogen in the Alps

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**Organisation / Research unit**

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**Department**

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**Probable end** 31.12.2014

**Status** Completed

Large areas of abandoned pasture land in the Alps are currently encroached by shrub at a breath-taking speed, with green alder (*Alnus viridis*) playing the most prominent role. Dense *Alnus* thickets reduce plant diversity in former species-rich upper montane grassland, prevent natural forest succession, change the water relations at the landscape scale by reducing runoff, contribute through symbiotic N<sub>2</sub> fixation substantially to eutrophication by leaching nitrate to the river system and exert risks to local drinking water springs. Paradoxically, this conversion into species-poor, nitrogen enriching and releasing *Alnus* thickets occurs in mountain regions considered particularly rich in biodiversity and essential for the continuing provision of many ecosystem goods and services, particularly for clean and plentiful water. Except from local sources, critical loads for nitrogen by atmospheric deposition are only rarely exceeded in these high elevation regions.

The project ALNEX is designed (1) to quantify the water quality impact of *Alnus* by measuring the nitrogen pools and fluxes from single alder shrub to catchment-wide landscapes, (2) to elaborate land management guidelines towards preserving of open, centuries-old pasture land and (3) to assess the policy implications in a critical load and biodiversity context.

**Keywords** *Alnus*, nitrogen, Alps, pasture land

**Financed by**

Foundations and Associations

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