CHAPTER 14

Impact of changed plant stoichiometric quality on heathland fauna composition

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Increased atmospheric deposition of nitrogen and sulphur and resulting changes in soil chemistry are known major causes for the decline in floristic biodiversity of heathlands. In contrast, decline of heathland fauna species has mainly been attributed to secondary deposition-mediated effects on habitat structure and floral composition. Here, we present evidence that soil chemical status influences heathland fauna performance, through shifts in plant stoichiometric nitrogen to phosphorus ratios. These findings suggest that the decline of heathland fauna is also directly linked to deposition mediated changes of heathlands.

**Introduction**

Northwest European heathland landscapes are subject to considerable anthropogenic disturbance. In this densely populated and highly industrialized region, land reclamation has resulted in a sharp decline in the total area of heathland. For example, the area of Dutch heathland has declined from 800,000 ha in 1800 to 42,000 ha in the late 20th century (Diemont 1996). The remaining heathland fragments are now largely Natura 2000 protected areas, preventing further habitat loss. Simultaneously, industrialization and intensification of agricultural practices has resulted in a sharp increase in atmospheric pollution. Emissions of nitrogen ($\text{NO}_x$, $\text{NH}_3$) and sulphur ($\text{SO}_x$)