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Characteristics of trees and shrubs felled by a Eurasian beaver

by

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Abstract: The Eurasian beaver *Castor fiber* is on the verge of a return to Luxembourg. Between 2000 and 2002, beaver activity was recorded on the river Clerve in the North of the country. For 234 trees and shrubs felled during this time, species respectively genus as well as diameter and distance from the water were recorded. 78% of the felled trees and shrubs that could be found were willows *Salix* spp. European alder *Alnus glutinosa* was hardly taken, and Norway spruce *Picea abies* was not felled at all. 80% of cut trees and shrubs had a diameter of less than 10 cm, and 97% were felled at a distance of less than 10 m from the water. These results are consistent with findings from other countries and highlight the importance of riparian vegetation bands along water courses for beaver conservation and management.

Key Words: *Castor fiber*, damage, conservation, management, human-wildlife conflict, Luxembourg.

Introduction

The Eurasian beaver *Castor fiber* (L., 1758) is native to Luxembourg and went extinct in this country and the bordering regions at least 200 years ago (Véron 1992). However, the species is now on the verge of returning to Luxembourg. As a result of several reintroduction projects carried out in Belgium (f. ex. near Arlon and Houffalize) and Germany (Eifel and Saarland), this rodent is now becoming more common in the bordering regions, and spreading (R. Denné pers. comm., B. Manet pers. comm.; see also Huijser & Nolet 1991, Nolet 1997, Neu 2000). The latest example is the discovery of a beaver family in August 2003 on the river Our, around 15 km north of Luxembourg (B. Manet pers. comm.). In Luxembourg, beaver activity was discovered in 2000 on the river Clerve (Schley et al. 2001) and ceased following the death of a beaver on the railway line near Maulusmühle in February 2002 (Schley 2003). It therefore seems likely that only a solitary individual was present (but see Schley 2002). This hypothesis was also supported by the degree of usage of the felled trees for feeding (R. Denné pers. comm., F. Rosell pers. comm.). During the time that this beaver was living on the river Clerve, its activity was monitored regularly. The objective of the present paper was to determine the characteristics of the felled trees and shrubs, to compare these to studies from other European countries and to briefly discuss the implications for conservation and management of beavers.

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Methodology

The study was carried out in the North of Luxembourg on the river Clerve between the localities of Drauffelt and Maulusmühle. The stretch of river where the survey was carried out totaled around 5 km in length. In general, the arboreal and shrub vegetation along the water course was limited to a width of less than 5 m. However, where more vegetation was present, the survey covered a strip of up to around 80 m wide. Only trees and shrubs cut by beavers were recorded; no overall vegetation survey was carried out.

For each tree and shrub cut by the beaver, three parameters were recorded. Determination was made down to species level, except for the genus *Salix*. Diameter of the trees and shrubs was measured to the nearest cm, and distance from the water course was measured to the nearest 50 cm.

Results

In total 234 felled trees and shrubs were recorded between January 2000 and November 2001. Of these, 78% were willows *Salix* spp. and 17% were aspen *Populus tremula* (Fig. 1.). However, the European alder *Alnus glutinosa* is a very common species along the river Clerve (pers. obs.) but was hardly cut by the beaver (3%). Moreover, several large Norway spruce *Picea abies* monocultures exist immediately adjacent to the river stretch where beaver activity was observed, but not a single spruce tree was felled.

80% of the trees and shrubs had a diameter of less than 10 cm; trees of a diameter of more than 20 cm were only very rarely taken (Fig. 2.). The tree with the largest diameter (43 cm) was an aspen.

97% of trees and shrubs were felled at a distance of less than 10 m from the water, and 84% of them were located less than 5 m from the water (Fig. 3.). The largest distance from the water edge (63 m) was found for an aspen tree.

Discussion

Since no overall quantitative vegetation survey was carried out, the data on species cut by the beaver cannot be directly related to the availability of tree and shrub species at the site (see Nolet et al. 1995). However, the fact that alder and spruce were hardly taken despite their commonness seems to indicate that the results do not simply reflect high availability of willows and aspen, but a certain preference for these species compared to others.

The results of the present study, albeit from a single individual, are in line with those from other European countries: these indicate that beavers restrict their activity to areas very close to the water body in and around which they live (Anonymous 1995, Macdonald et al. 1995, Langer 1997, Zahner 1997). Apart from providing information about the ecology of the species, this also has implications for the conservation and management of beavers. Essentially, most potential conflicts between humans and beavers occur within 10-20 m of the water (Anonymous 1993) and can be minimized if not avoided if the use of these areas by humans is limited. It thus seems that the establishment of at least 10 m wide bands of riparian vegetation along water courses through a more extensive land-use policy should be a first priority in terms of beaver conservation and management. The implementation of financial compensation schemes can help to

achieve this goal (see Schley et al. 2004). Ideally, though, the aim should be to preserve or recreate intact natural habitat for beavers. Large river restoration projects represent an ideal means of achieving this objective (Nolet & Rosell 1998).

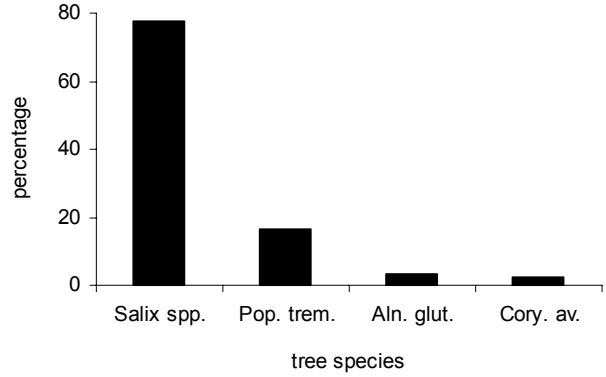


Fig. 1. Tree / shrub species felled on the river Clerve. Aln. glut.: *Alnus glutinosa*, Cory. av.: *Corylus avellana*, Pop. trem.: *Populus tremula*.

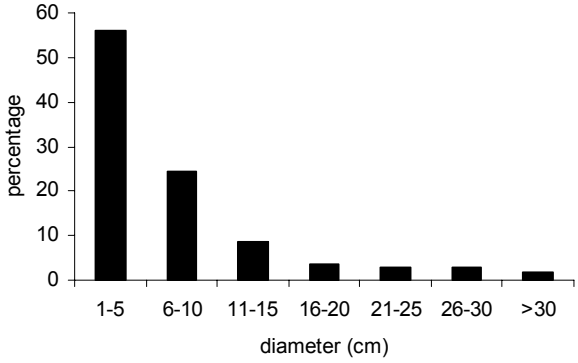


Fig. 2. Diameter of felled trees and shrubs.

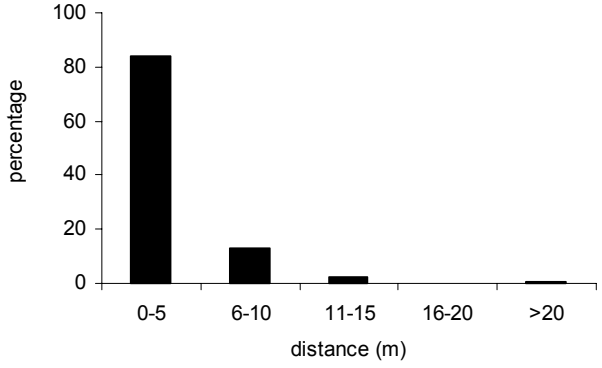


Fig. 3. Distance of felled trees and shrubs from the water course.

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