

The reintroduction and the present status of the beaver (*Castor fiber*) in the Netherlands: an overview

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Abstract: The beaver (*Castor fiber*) was reintroduced to the Netherlands in 1988, in the Biesbosch National Park. In the following years beavers were also introduced in several newly developed nature areas, including the Gelderse Poort, a natural area 100 km upstream from the Biesbosch. Fifteen years later, we see a steadily growing beaver population, living in a still expanding ecological network of traditional nature reserves and newly developed nature areas, especially along the rivers Rhine, Meuse and IJssel. The number of beavers in the Netherlands is estimated at about 200-250 individuals.

Keywords: core area, dispersal, ecological network, population, numbers.

Introduction

The beaver (*Castor fiber*) became extinct in the Netherlands, due to extensive hunting for its fur. Legend has it that the last beaver was killed by a fisherman in 1826; he mistook the beaver for an otter (*Lutra lutra*) trying to take fish from his nets and clubbed it to death (Belonje 1988). Sometimes a species will return on its own accord, when habitat conditions improve. This was impossible for the beaver as the nearest core population of beavers is in the river Elbe (Sachsen-Anhalt) in Germany. Reintroduction was the only possibility to get the beaver back in the Netherlands.

The discussion on the reintroduction of the beaver started in the early 1950s. The main argument in favour of reintroduction was that hunting had been responsible for the extinction of the beaver. Good quality habitats were still to be found in several parts of the country, for example in the Weerribben and the Biesbosch (van Wijngaarden 1959).

In 1985 the Dutch Government officially granted permission to reintroduce the beaver in the Biesbosch National Park. Permission was

granted for a five-year period, under the condition that this reintroduction should be surveyed intensively. Farmer organisations were strongly opposed to this experiment due to bad experience with the muskrat (*Ondatra zibethicus*) which caused a lot of damage by burrowing holes in dikes (van der Ouderaa 1984).

Over a period of three years (1988-1991) a total of 42 beavers from the Elbe region were released in the Biesbosch. Niewold and Lammertsma (2000) considered the reintroduction a success. The beaver had again become an indigenous species and was added to the 'Red List of endangered and vulnerable species' (c.f. Lina & van Ommering 1994), i.e. as a vulnerable species. The beaver was also legally protected in the same year by the 'Natuurbeschermingswet' – the Nature Conservation Act (Lina & van Ommering 1994). This article presents an overview of the developments in the Biesbosch in the years after 1994, as well as other (re-)introductions and developments of beaver populations in the Netherlands.

The beaver in National Park the Biesbosch: from start to present

The Biesbosch area was once part of the beaver's historical range (van Wijngaarden 1966). The

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area still satisfies the habitat and landscape requirements of the beaver and is expected to continue to do so in the foreseeable future (van Wijngaarden 1966). The Biesbosch is large enough, and of good enough quality, to provide a natural habitat for a viable and free ranging population.

Data on dispersion are rare. The first beaver known to migrate was in 1995. This individual drifted some 65 km downstream of the Biesbosch and built a lodge in a small nature reserve near Rhoon. In 1998 and 1999 beavers were also observed upstream near Stolwijk and the Kil van Hurwenen (figure 1). In 1996 an adult beaver, with the same earmarks used in the Gelderse Poort (see next section) was seen close to the Biesbosch. This could be the first case of immigration into the Biesbosch (Niewold & Lammertsma 2000).

In the first years following reintroduction only 31% of the adult pairs had young. In 1994 this figure had risen to 57%, though it fell again in

1999 to only 40% (Nolet 1994, Niewold & Lammertsma 2000, Dijkstra 2001). The percentage of adult pairs with young is somewhat lower than populations in Norway (Rosell et al. (1998) give 50%) and the same as the population in Sachsen-Anhalt in Germany (Heidecke & Langer 1998).

The territories of the beaver in the Biesbosch National Park are vast. Their winter territory consists of approximately twelve kilometres of banks, three kilometres of which are overgrown with willows and other trees and bushes (Rosell & Nolet 1997). A territory is occupied by a family group with an average of 2.9 adult and young beavers (Niewold & Lammertsma 2000).

Taking all the data on reproduction, mortality and dispersion into account, we see an annual growth of 7% in the beaver population in the Biesbosch during the period 1988-2001 (Dijkstra 2002).

In 1993 a minimum viable population analysis (Nolet 1993) indicated that in the short term (20 years) the chance of extinction was 20%. Over

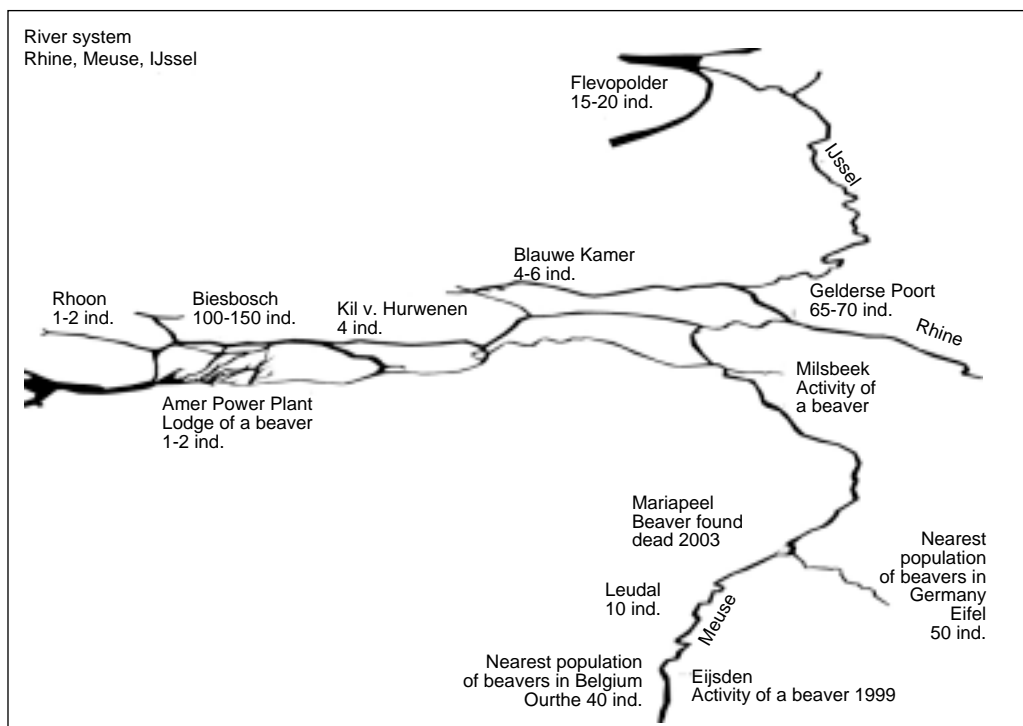


Figure 1. Distribution of beavers in the Netherlands in 2003.

the long term (100 years) the population of beaver was at greater risk, with a 60% chance of extinction. For the time being, Staatsbosbeheer (the Dutch Forestry Commission) is optimistic about the viability of the beaver population in the Biesbosch. Forty-five lodges were counted in 2002 and, in 2003 sixteen new lodges appeared. The number of beavers in the Biesbosch is now estimated at between 100-150 individuals. From the Brabantse Biesbosch the beaver now colonises parts of the national park on the opposite side of the Nieuwe Merwede (i.e. the Dordtse and Sliedrechtse Biesbosch). The beaver also colonises the area with willow coppices (so-called "grienden") downstream, along the Hollands Diep and the Oude Maas. Using newly developed nature areas along the rivers upstream as stepping stones, beavers from the Biesbosch should be able to migrate to other core areas, for example the Gelderse Poort population, and vice versa.

The Gelderse Poort: a second core population

The reasonably successful development of the beaver population in the Biesbosch paved the way for the reintroduction of the beaver in the Gelderse Poort, approximately 100 km upstream of the Biesbosch. A study of the results in the Biesbosch (Niewold 1995) was used for the reintroduction of beavers in the Gelderse Poort.

In this recently developed nature reserve, a total of 54 beavers were released in 1994 (figure 1). Losses were high (51%) during the reintroduction period. In March 2000 it was estimated that 37 beavers lived in the Gelderse Poort (Niewold & Müskens 2000a). A similarly high mortality was also found in the Biesbosch in the first years (BHB 1994). In 2000 the mortality rate was less than 10% (J. Rouwenhorst, personal communication).

In the period between reintroduction in 1994 and the year 2000, 20 young have been raised. At present, there are 65-70 beavers in the Gelder-

se Poort. This area has a great potential as habitat for the beaver. According to carrying capacity calculations from Niewold & Müskens (2000b) the beaver population in the Gelderse Poort could grow to 210 individuals. This model also indicates that, even with 15 individuals, the beaver population in the Gelderse Poort is out of the danger zone, Staatsbosbeheer still closely monitors the development of numbers. Annual counts over the whole area should continue to give insights into the growth of the population.

Recently an appeal has been made for robust natural rivers in the Netherlands (Anonymous 2003): rivers that have sufficient capacity to retain water in dry periods, to store it in wet periods and at the same time offer species such as the beaver the ecological network they require. At present the country accommodates two strong core beaver populations, in the Biesbosch and the Gelderse Poort. The beaver has the potential to spread from these core areas over the entire river system (see figure 1). In the near future, one could envisage not two separate core populations but one in which beavers have access to the entire river area.

The Leudal: an important stepping-stone in the Meuse estuary

Beavers have been observed over a longer period in the tributaries and streams of the Meuse (Kurstjens 2003). They probably originated from the Eifel in Germany. At the initiative of Province Limburg, at least ten beavers were released along the Meuse in 2002. Half of these animals were released in the Leudal (figure 1). The existing nature reserves and nature development areas along the Meuse form a potential habitat for beavers. Despite the fact that there are core populations of the beaver across the border in Belgium (Ourthe) and Germany (Eifel), Province Limburg was of the opinion that the beaver needed a helping hand to colonise these new nature areas.

Other locations in the Rhine and Meuse estuary and elsewhere

Very different from the reintroduction programme is the development of some small beaver populations along the rivers Rhine, Meuse and IJssel (figure 1). For example, some individuals from the Biesbosch population colonised small nature areas along the river, approximately 10 km from the core population. They now live there in newly made lodges and may have young in the near future.

Following the escape of a sub-adult beaver from the zoo "Dierenpark Ouwehand", one sub-adult settled some kilometres further away in the Blauwe Kamer (figure 1); presumably the escaped individual. The next winter this beaver remained in this nature reserve. Apart from the development in the river estuary in the Netherlands, some isolated observations have also been made. In the Mariapeel a beaver was found dead. This individual probably used small ditches and canals to reach the Mariapeel, which is approximately 10 km from the Meuse. In Flevoland a small group of beavers escaped from a zoo and had young in the forests and swamps of the Oostvaardersplassen. This population is now estimated at 15-20 individuals (figure 1).

Conclusion

Fifteen years after the reintroduction of the beaver in the Netherlands its population and distribution are both still growing. Beavers are now living in an ecological network of traditional nature reserves and newly developed nature areas along the rivers Rhine, Meuse and IJssel. There are now two core populations: in the Biesbosch and the Gelderse Poort. It is likely that in the near future contact will be established between the Dutch beaver population and the core populations in Belgium and Germany. The number of beavers in the Netherlands in 2003 is estimated at 200-250 individuals (see table 1 and also figure 1).

Table 1. Estimated number of beavers in the Netherlands in 2003.

Location	Number
Biesbosch	100-150
Gelderse Poort	65-70
Leudal	10
Flevopolder	15-20
Blauwe Kamer	4-6
Kil van Hurwenen	4
Rhoon	1-2
Total	200-250

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Samenvatting

De herintroductie en de tegenwoordige status van de bever (*Castor fiber*) in Nederland: een overzicht

De bever (*Castor fiber*) werd in Nederland in 1988 geherintroduceerd in het Nationale Park de Biesbosch. In de navolgende jaren zijn er ook bevers uitgezet in verschillende natuurontwikkelingsgebieden, waaronder de Gelderse Poort, een gebied met veel natuurterreinen, 100 km stroomopwaarts gelegen van de Biesbosch. Op dit moment, 15 jaar na de eerste herintroductie, is er sprake van een gestaag groeiende beverpopulatie binnen een zich nog steeds uitbreidend ecologisch netwerk bestaande uit 'oude' natuurgebieden en recent tot ontwikkeling komende natuurgebieden, met name langs de Rijn, de IJssel en de Maas. Het totale aantal omstreeks 2003 in Nederland voorkomende bevers wordt geschat op 200-250 individuen.

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