



Biodiversity in Beaverponds

The impact of the European Beaver *Castor fiber* on the Dragonfly fauna (Odonata) of the Northern Eifel (West Germany).

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Introduction

As a result of a reintroduction project in 1981 the European Beaver returned to the Hürtgenwald, a large woodland area in the Eifel mountain range in the extreme west of Germany.



In the course of a diploma thesis (S. Schloemer) we studied the effects of the large scale changes to dragonfly and damselfly communities in the narrow, originally wooded, mountain valleys of the northern Eifel.

Methods

In order to compare beaver ponds with woodland streams representative of large areas north of the Alps, but yet not influenced by the beaver, we studied the following habitat types:

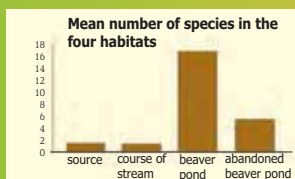
1. Natural springs (definite woodland springs)
2. Streams (natural - semi-natural in woodland, not influenced by the beaver)
3. Beaver ponds (some 10 -15 years old, up to 2000 m², sunny to half-shaded).
4. Beaver ponds abandoned for 1 to 3 years.

All areas were searched for dragonflies and damselflies, their larvae and exuvia throughout the season in 2011 and 2012.

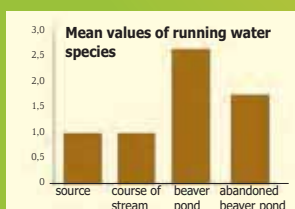
In addition chemical and physical parameters such as pH-value, temperature, and water speed were measured at all sample sites, and makrozoobenthos collected, in order to gather information on the water quality in both the presence and absence of the beaver.

Results

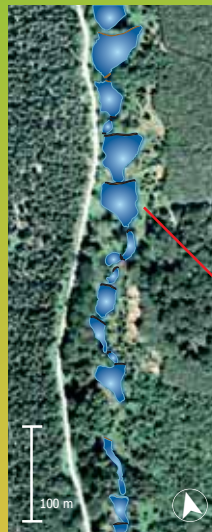
With a total of 29 species, the number of species in beaver ponds is markedly higher than in ponds without beavers (4 species). Even in abandoned beaver ponds the number of species is higher than in the streams (14 species)..



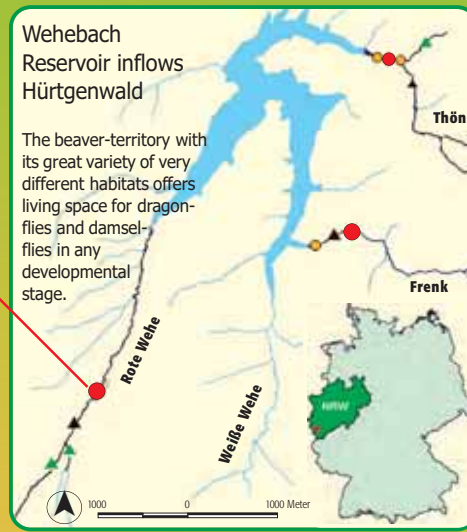
Habitat created by the beaver promotes species diversity and frequency of dragonflies and Damselflies fauna.



Established species also profit from the newly created habitat.



Calopteryx virgo



The beaver-territory with its great variety of very different habitats offers living space for dragonflies and damselflies in any developmental stage.



Orthetrum coerulescens,
Red List/NRW 1



Cordulegaster boltonii,
Red List/NRW 3



Ceriagrion tenellum,
was considered as missing in the Eifel, Red List/NRW 3

Particularly notable are:

- The extraordinary combinations of species (boreal alongside sub-Mediterranean species)
- The extremely different habitat requirements of the species
- The increase in typical stream dragonflies and damselflies in spite of damming by the beaver
- The increase in part of highly endangered species



Leucorrhinia pectoralis, Red List/NRW 1



Platynemesis pennipes



Leucorrhinia rubicunda, Red List/NRW 2

Conclusion:

Despite the relatively short period of time since the return of the beaver, and the rather small number of beaver ponds, the ponds already now make a remarkable contribution to the conservation and spread of rare dragonfly and damselfly species. Beavers contribute markedly to nature and species conservation in the densely settled countryside of Central Europe.

The species should therefore be more greatly integrated into plans to implement conservation measures and renaturation of water bodies than it has been to date.