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Brook Restoration with Citizens Examples of the Metropolitan Region of Hamburg



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Brook Restoration with Citizens – Examples of the Metropolitan Region of Hamburg

The Water Framework Directive is not fulfilled. Of all stretches 80% (brooks and small rivers) are neglected. Public groups may help. Examples are given for urban and rural sites. Strong efforts have to be taken due to climate change, too. Agricultural and maintenance practice are to be changed.

Ludwig Tent

1 Improvements in riverine ecosystems still miss the goal

The official path to improve brooks and small rivers in Germany – excavated and destructed by hard maintenance – over the past decades has revealed as a humpy, ineffective attempt, not being enhanced by the Water Framework Directive. Up to now only 6,6% of watercourses' length have been restored in part, reaching a good status – the 80% of brooks and small rivers (we have to restore all waterways by law) is neglected. Especially ground-water fed brooks on morane ground, the headwaters, in the North German Lowland suffer by misunderstanding the natural temperature system and characteristic bottom structure (**Figure 1**). These watercourses once have been gravel brooks, functioning as habitats for the specific flora and fauna of the summer-cool stream, the trout region. – In this situation it has been shown that engagement of the public is a good tool to vitalize the forgotten stretches [1].

2 Instream restoration with engaged citizens

2.1 Trout 2010 as a start in the city of Hamburg

The River Wandse within the Alster system in the area of the City/the Federal State of Hamburg, was taken as an example to prove, whether an urban brook might be altered to the trout brook it once was (project Trout 2010). With Hamburg being the owner, the water authority and responsible maintenance institution, the frame to realize improvements was given – especially because there is the will to include the public [2]. This example, run under the signs of Agenda 21 (informal learning/teaching)

Synopsis

- The improvement of all brooks and small rivers in the North German Lowland is necessary, applying best practice.
- Engagement of interested public groups may play a significant role.
- In headwater regions the characteristic trout stream will be regained.



Figure 1: A brook in the North German Lowland, overheated and without structure

and sustainable development, has been applied to more brooks of the Alster catchment by the NGO Naturschutzbund Deutschland (Nabu), Landesverband Hamburg as Bach-Aktions-tage since 2007 and the co-operation project Lebendige Alster with the NGOs Aktion Fischotterschutz and Bund für Umwelt und Naturschutz Deutschland (BUND). The installation of current deflectors by introducing structures of dead wood as well as gravel and boulders, are main part of the groups' activities. The city enhances such efforts by having introduced the gravel pot, part of the budget for river maintenance. This is an adaption of the Danish experience, giving public money to good ideas in practical help to aquatic ecological systems (once grus pulje, now forenings pulje). With the city's attempt to restore the fluvial continuum with pathways for fish and other organisms to and fro the river Elbe, e.g. sea trout is able now to reach re-installed spawning grounds.

2.2 Brooks in rural states

For urban environments in area states, as e.g. Lower Saxony and Schleswig-Holstein, similarities to the Hamburg example may

occur. A more complicated situation, however, results from organisational differences in the rural countryside, where a variety of concerned parties has to be involved – private owners down to small area strips along the riverine shores, privately dominated maintenance associations, accompanied by public water authorities. This situation may be overcome by starting best practice-experiments in a try and error attempt – contacting the maintenance association, the owners and, if necessary, convincing the water authority, that e.g. instream restoration in a given intensively used landscape improves the structures and biota, without affecting the discharge potential of the watercourse in a negative way [3], [4]. Joint education and learning leads this way. A lot of salmonid reaches have been restored up to now. The presence of characteristic plants like Water Starwort (*Callitriche*) and others is improved by the characteristic gravel ground. Trout, brook, river and sea lamprey, stone loach and accompanying characteristic invertebrates reveal the positive results. The growth of wetland trees is to be enhanced, wherever possible by natural succession – growth of local origin (Figure 2).

3 Outlook

Angling and environmental protection clubs, as well as adopt-a-brook groups and engaged individuals co-operate with water authorities, land owners and maintenance organisations to further improve the situation.



Figure 3: Semi-shaded stretch – alders and water plants, 35 years after instream restoration



Figure 2: Succession of alder trees along an instream restored brook, young stadium

To stabilize the results on catchment level and develop the necessary adaptations in the time of climate change, however, strong efforts have to be taken within the total system (cf. international projects like Keep your river cool). Stream corridors with deciduous trees as buffer to avoid the entrance of erosive materials, pesticides and nutrients as well as re-gaining the characteristics of the summer-cool stream are the inevitable basis. In the semi-shaded stretches under alders a high variety of organisms including plants like waterparsnip (*Berula*) thrive. (Figure 3) [5]. Altering present day subsidies for agriculture, adaptation of river maintenance to the legally set goals and consequent action of water authorities are needed to adopt these improvements to the system of watercourses at every place.

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