# Trout 2010 - Restructuring Urban Brooks with engaged Citizens[1]

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**Abstract:** Running waters in Hamburg have been corrected, most of them look like straightened and deepened canals filled with mobile sand. For the limnologist, however, they are headwaters normally characterised by a stable bottom with gravel and boulders, being thus salmonid biotopes with summer cold water. Unfortunately, the knowledge about their potential richness has been lost. The poor status of brook habitats and the willingness of citizens to lend a helping hand, led to the idea of brook sponsorship in the eighties. These groups, "Bachpatenschaften", offer exciting activities and the chance of special identification with citizens` living sphere. After brook improvement work the observed species change from ubiquitous invertebrates to organisms of lively running waters is a real reward. The new perception of the watercourses is a phenomenon: You can hear riffles and where there was a silent slow flowing canal suddenly a murmuring brook appears. – A vision to restore the salmonid region in one pilot brook was transferred to action after checks of chemical and physical data of the Wandse and successful experiments to breed brown trout eggs. One main task will be to re-establish the river continuum by-passing park ponds which disturb the brooks` temperature regime and release nitrite from sedimented mud. – "Trout 2010" will solve necessary changes via co-operation of NGOs, the "Bachpatenschaften", sponsors and the Wandsbek administration. Universities will be engaged in special tasks. All of this can be considered as an aspect in Agenda 21 activities and a support for the improvement of the urban society.

## 1. Introduction

Having reported on sea trout catches in lowland brooks in North Germany (Tent, 1984) and - ten years after - about exciting changes (Tent, 1994) it was an interesting experience to watch the variety of SALMON 2000, recently named Salmon 2020, programs running. So in an oral presentation on the detrimental effects of river maintenance in the watercourses` reality at a meeting of the German Society for Limnology (Tent, 1998a) in the last overhead sheet something like a joke has been shown: There will be no sustainable Salmon 2000/2020 without a successful approach towards TROUT 2010 (fig. 1). The original slide shows the place name sign of the danish city of Skive, which has been altered by computer work. –

[1] In: Nijland, H. and M.J.R. Cals (eds.): River Restoration in Europe; Practical Approaches. – Proceedings of the Conference on River Restoration, Wageningen, The Netherlands 2000. ECRR and RIZA. RIZA report nr. 2001.023: 231-237.


*Fig. 1: Agenda 21 – without visions there will be no development: Wandse in Wandsbek – Trout 2010.*

What in fact hides behind this vision is the nowadays situation with migratory gravid salmon and other gravel spawners reaching devastated spawning reaches and "Kinderstuben" (nursery areas). Nowadays breeding and stocking programs will have the same negative fate as they had with millions of fry and fingerlings in the beginning of the 20th century along the river Weser after the huge spawning areas had been lost by the construction of the Eder reservoir. Only the restoration of the headwaters, the salmonid regions of our watercourses – named by indicator organisms like brown trout and grayling, will guarantee success. – The emphatic reactions of the limnologic auditorium ("You want to catch brown trout at your place of work before your retirement in the 2010s." – "No, it is not trout, but the salmonid region`s community we talk about, brown trout being but one key species which is known by the public.") gave the start for first checks whether the overhead joke might be a reasonable project to become reality.

**2. First checks and in-stream-tests**

Are there or have there been salmonid streams in the lowland of north Germany? Regularly, esp. in engineers talks, it is reported about slow, nearly not flowing watercourses. This, however, is highly contrasting to the geographic situation with most of the area being at least hilly shaped and it neglects the detrimental effects of construction works (Madsen and Tent, 2000). The total length of running waters in the Hamburg Borough of Wandsbek (14 755 ha, 400 000 inhabitants), the name of which arose from the beck „Wandse", is about 360 km. Up until the last few decades they have been corrected for housing and other construction purposes so that most of them look like straightened and deepened canals filled with mobile sand and mud. Bank vegetation has often been dominated by grassland of parks. Hydraulic engineers in the past talked about having no running waters but open rain water pipes in the urban surroundings. For the limnologist these stretches are headwaters in a landscape formed by the glacial ages characterised by a stable bottom with gravel and boulders, being thus potential salmonid biotopes with cold summer water. The bank vegetation normally consists of alder wood plants. Unfortunately, the knowledge about the potential of species richness and natural fish production has been lost. The Wandsbek brooks, like most urban running waters nowadays, are inhabited mainly by roach and perch with a few other mainly cyprinid fish species. This discrepancy reveals a huge amount of work needed to change today's status to a more sustainable environment. So a thorough investigation probably will lead to results.

Available data on temperature and water chemistry have been checked by students at the Wandsbek administration, specific situations like hot summer periods have been measured in detail. The results stand in close connection to the reality of the Wandse beck (fig. 2). The

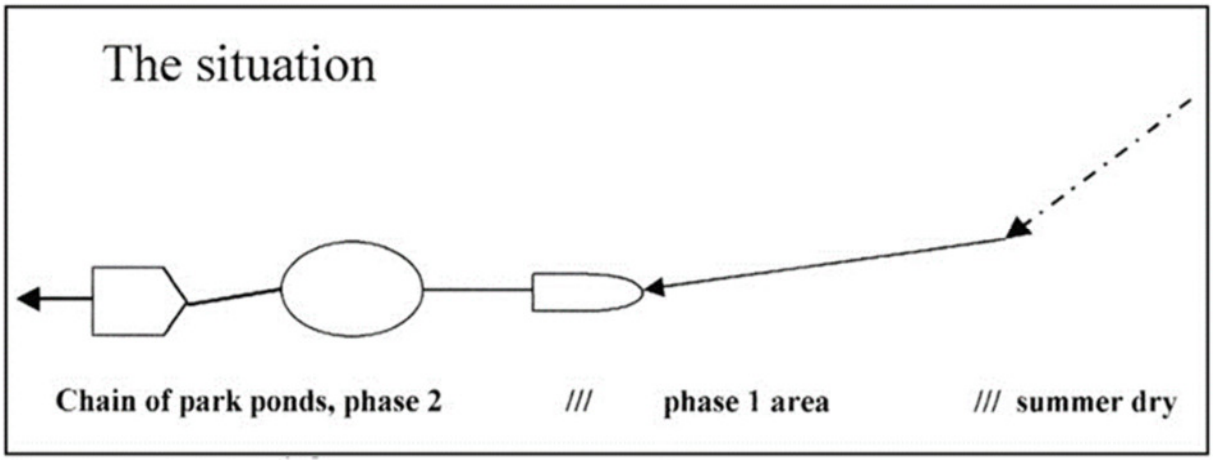


*Fig. 2: Scheme of the Wandse beck situation.*

summer cool water enters a chain of park ponds/lakes being called rain water retention basins. By this not only the river continuum is interrupted but the temperature regime is altered, as well. Undercooling in winter and overheating during summer time in connection with the river construction works of the 1960`s has lead to a potamalised situation of the former salmonid region. What might be even worse is the release of nitrite out of the sedimented mud in the park ponds (fig.3). By this chronic toxicity for developing salmonid fry might occur. As a result of the tests, however, there was no sign of unsolvable problems.

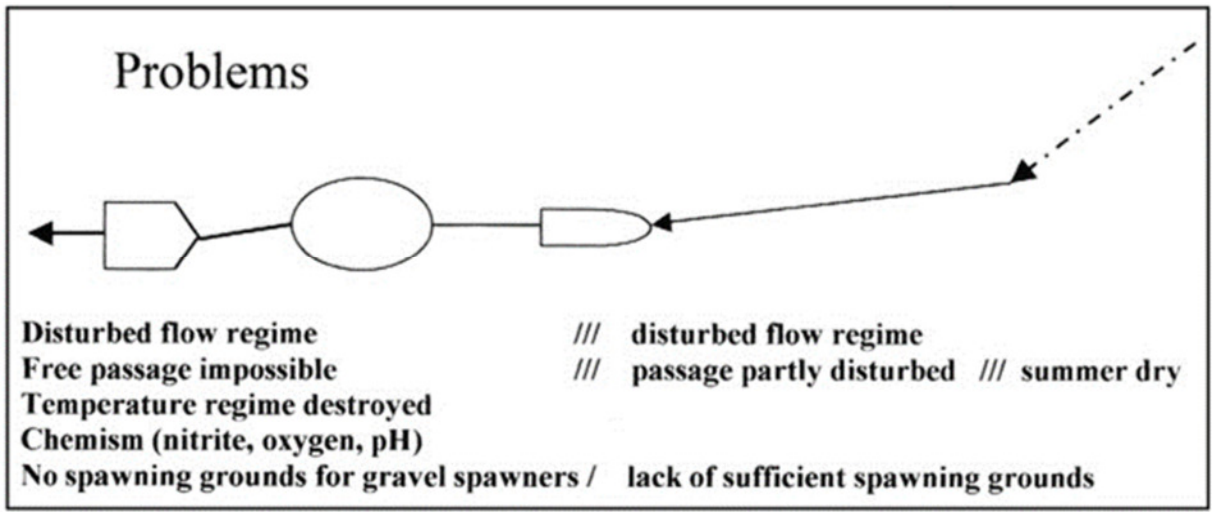


*Fig. 3: Wandse beck problems to be solved.*

In the winter 1998/99 an in situ test was run by the Junior Group of the Hamburg Angling Association trying to breed brown trout eggs in WV-boxes in the Wandse and in a tributary. Ten boxes in 5 places have been used (500 eggs each) and all but two were successful in breeding fry. Two places were destroyed by vandalism.

These results lead us to continue the in situ breeding and to start efforts for a long term project.

**3. How to realise the project**

After the positive results of the first checks the project had to be described, the project manager and sponsors had to be found. The Wandsbek administration – water authority, nature conservation and environmental protection – discussed necessary steps to improve the Wandse catchment. There should be in situ activities like inducing turbulence and establishing spawning grounds, the necessary amount of this leaving it not as a "minor" task of the project. For this "Bachpatenschaften", groups of engaged citizens (Tent, 1998b), were already active in other river catchments and showed good results. Heavier construction work, however, is needed for the restoration of the river continuum with bypasses alongside the park ponds or at least fish ladders. Furthermore, proposals have to be elaborated how to lower stormwater flows and how to improve periods of low flow. – For a first regional phase of "Trout 2010" a several 100.000 DM frame work was projected (fig. 2, fig. 4). This covers a period of 4 years and wants to realise steps in the upper part which is not summer dry.

Meanwhile the project had its official start with Friends of the Earth as project manager, the "Umweltstiftung der Hamburgischen Electricitäts-Werke" as the main sponsor and the Wandsbek administration as co-operator.

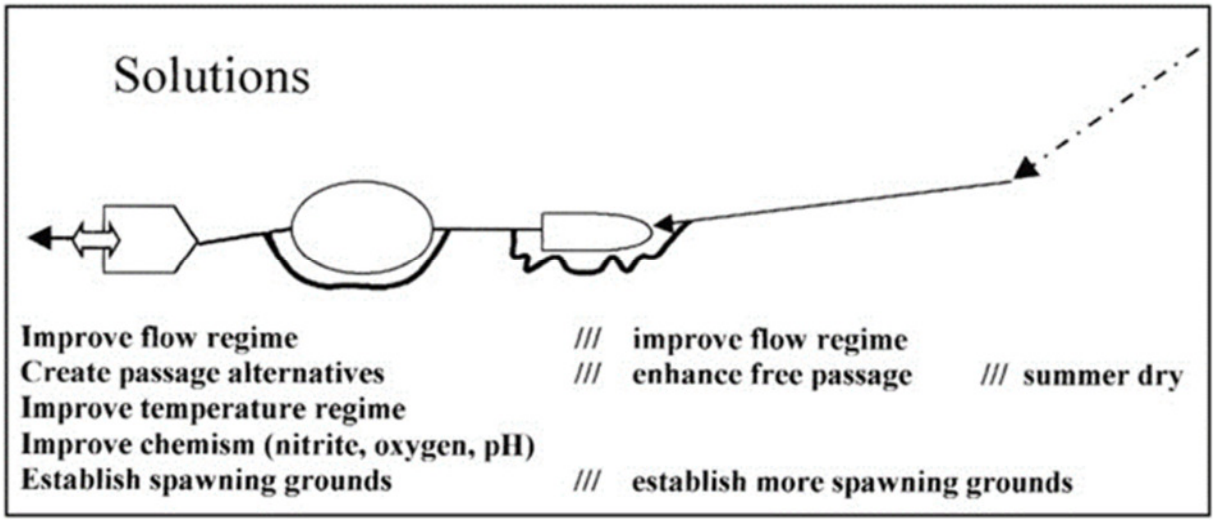


*Fig. 4: Solutions for the Wandse beck.*

**4. The hands-on approach**

The aspects of water in the urban situation are not only tasks to be dealt with by administrators, planners and engineers but interesting themes for the public as well. Co-operation in water related themes in schools, in adult education courses and active participation e.g. in "Bachpatenschaften" (brook sponsorship schemes/"adopt a brook") can lead citizens of different ages to feel more familiar with their place of residence.

The poor status of brook habitats and the willingness of engaged persons to lend a helping hand, led to the idea of brook sponsorship in the eighties. These "Bachpatenschaften" offer exciting activities for urban citizens thus being places of identification with their living sphere. Tasks of brook sponsors vary with personal interest and prior knowledge and the condition of the stretch of water. Following suggestions for remedial action, removing artificial bank protection systems, planting trees, introducing gravel beds and current deflectors etc. (fig. 5) are examples of the wide variety of actions. These activities base on sound practical approaches (cf. Madsen, 1995, Newbury, 1995, Hansen and Madsen, 1997) induce or enhance river dynamics and return characteristic river bottom features. Exhibitions

with presentations of invertebrate life to other citizens are exciting efforts carried out by brook sponsors as well. In the Borough of Wandsbek more than 70 brook sponsorship schemes exist. More than 800 individuals from pupils to the elderly feel responsible for their 'brook on the doorstep' and are active in improving urban waters and their surroundings. Information contacts have been established by several groups on a regional and an international scale using offers like G.R.E.E.N. (Global Rivers Environmental Education Network) and G.L.O.B.E. (Global Learning and Observation to Benefit the Environment).

After brook improvement work the documented species change from ubiquitous invertebrates to indicator organisms of lively running waters like mayflies and caddisflies (stone flies are still scarce) is a real reward for the participating citizens. And it is not only an ecological but a socio-psychological approach, as well (Tent, 2000). The new perception of waters is a real phenomenon: you can hear riffles (in german: Rauschen rauschen) and where there was a silent slow flowing canal suddenly a murmuring brook appears.

Since the end of the 1980s engaged citizen groups are active to restore river dynamics in the Borough of Wandsbek (Tent, 1998b).This has been mentioned as a best practice approach within the metropolitan region of Hamburg (Lenkungsausschuß der Gemeinsamen Landesplanung, 1999).

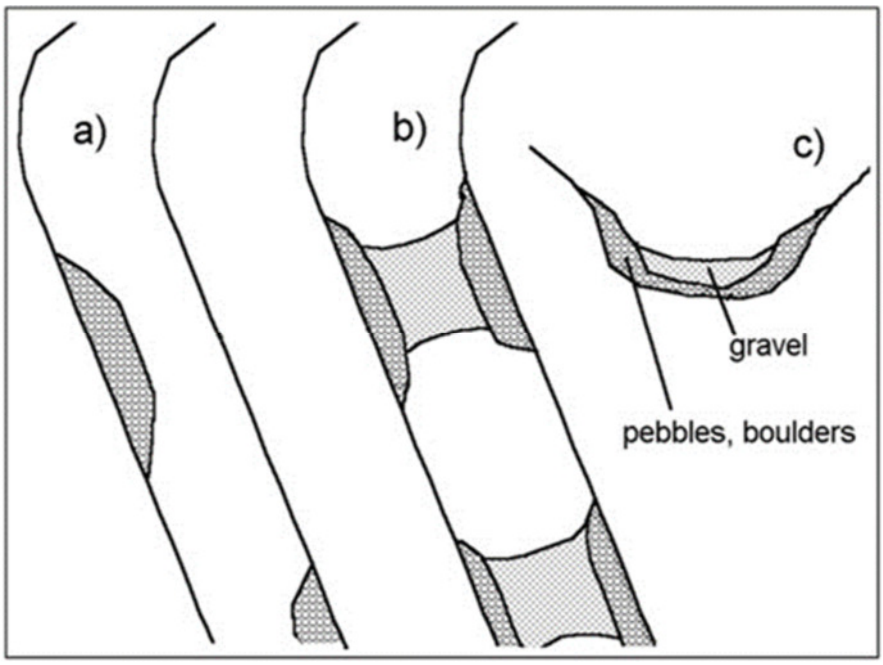


*Fig. 5: Induction of turbulence (a) and establishment of spawning grounds (b) from above, c)*

**4. Future Aspects**

It is expected to realize a species change, e.g. with the decrease of roach and perch numbers and dace, minnow, stone loach, grayling and brown trout increasing after re-introduction.

Scientific institutions like universities will engage in special tasks like elaborations of catchment improvements and low water level elevation. Environmental advice will be given to the citizens of how to enhance sustainability for the urban water cycle. After phase 1 it is planned to elaborate solutions for a river continuum from the Wandse via the Alster to the Elbe river. By this in the long term the return of migratory species like sea trout, river and sea lamprey is to be awaited in the Borough of Wandsbek.

All of this can be considered as an important aspect in Agenda 21 activities and a support for the improvement of the urban society. As such it is part of best practices for the „Metropolitan Region of Hamburg“, covering large parts of the federal states of Schleswig-Holstein, the Free and Hanseatic City of Hamburg and Lower Saxony.

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