

Deutscher Rat für Landespflege

# Kompensation von Strukturdefiziten in Fließgewässern durch Strahlwirkung

## 7 Summary<sup>1</sup>

The results of targeted studies of the morphological water structure in the watershed of the Ruhr and watercourses in other Federal Länder show evidence that semi-natural sections of water have a positive impact on neighbouring, structurally altered sections of water, therefore causing an improvement in their condition. This radiating effect is based on the active or passive migration of fauna and flora into the waters or water surroundings. It indicates the good ecological status or the good ecological potential in terms of the European Water Framework Directive in a section of a watercourse by the biological quality components, although the morpho-logical water structure is not (yet) optimal.

This radiating effect emanates from a semi-natural section of water – the radiation source –, which is distinguished by a stabile biocoenosis that is rich in species and individuals as corresponds to the type of water. Therefore, on principle these are watercourse stretches that are in very good or good status. The minimum size of the radiation source is elementary depending on the type of water – it must be safe-guarded by measures planning. Radiation sources do not necessarily need to be located in the main reaches of the water-course; downstream of transverse structures or other interruptions to the watercourse continuum, inflowing

tributaries, backwaters or other water segments (e .g. groyne fields) frequently act as radiation sources. The connecting radiating path-way is the stretch of water upon which organisms passively or actively move away from the radiation source. It is hardly possible for them to populate this stretch because of structural deficits – they merely migrate through. Stepping stones, or small, structurally rich sections of water with good habitat properties, can be populated at least temporarily, thus lengthening the radiating pathway. The radiating effect can account for several times the dimension of a radiation source.

We need to gain increased knowledge about the radiating effect by further intensifying basic and applied research, in order to support the substantiated further development of the specialist regulations.

Improving waters in ecological terms and in terms of the European Water Framework Directive should not be the job of a single sector, but ought to be embedded in the planning processes of the regional planning, the land conservation and the urban planning sectors. Renaturation measures for waters need to be realigned: instead of the present isolated treatment of single sections of water, neighbouring sections of water or water bodies must be considered as well. Accordingly, the German Council for Land Stewardship (DRL) recommends that the measures be

carried out according to knowledge of the functional interrelations of the watercourse ecosystem and according to the principle of maximal economy and supplies implementation-oriented proposals on the spatial dimensions of measures.

Knowledge and utilization of the radiating effect make it possible to implement the EU Water Framework Directive in a considerably more cost-efficient way. Targeted, regional measures for enlarging and interconnecting habitats and maintenance of waters in line with these goals can lead to area-wide improvement of the ecological condition. Use of funds can be optimized by restricting the measure in the section targeted for change to the minimum size required to activate the radiating effect, if supplemental supporting measures (e.g. removal of barriers or addition of stepping-stones) are implemented along the radiating pathway in the watercourse system.

As a result, even “rigid restricted areas” or “heavily modified waterbodies” can potentially be made accessible for improvement of the ecological condition, by creating or improving a radiation source that impacts them and by introducing elements for the radiating pathway within the restricted area under consideration.

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1 Translation/Übersetzung: Faith Gibson-Tegethoff.

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