

Wageningen,
Lumen,
Artificial Streams Lab
19.10.2009
10:59:00 h

‘Our research has helped to produce
the clearly specified European Water
Framework Directive’

Piet Verdonschot, aquatic ecologist

20.01.

00 Research into ecological assessment
criteria for the EU's Water Framework
Directive officially started on 20
January 2000

Made by Alterra, 2000-2010

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In Piet Verdonschot's view, the European Water Framework Directive (WFD), introduced in 2000, is one of the most advanced directives the EU has ever produced. Verdonschot was involved in a project to specify the ecological criteria that the various types of running surface water types would have to meet, which was one of Alterra's first European projects.

by Leo Klep

‘What made the introduction of the Water Framework Directive special is that this was the first time that environmental policy was explicitly guided by biology, by the living environment as such, rather than abiotic environmental requirements which can be measured and expressed in exactly quantified numbers. Although it's often claimed that ecology is a poorly defined concept, it's precisely those ‘exact numbers’ which often turn out to be very vague when it comes to conserving the environment we live in. The authors of the WFD understood this very well. In fact, environmental protection is one of Brussels' strongest points. Initially, the European Community's jurisdiction was limited to a few areas only. The environment was one of the exceptions, probably because many Member States thought that such a ‘minor’ subject could safely be left to Brussels. This resulted in a number of highly dedicated officials in the European capi-

tal, as well as a really effective European policy. The Dutch government experienced this when it failed to meet its targets under the Nitrate Directive, and Brussels immediately imposed a large fine.

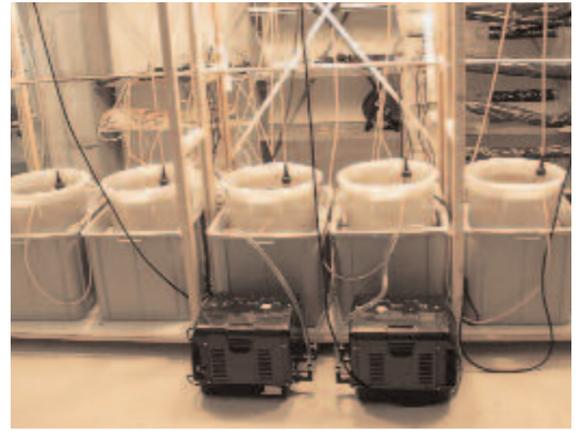
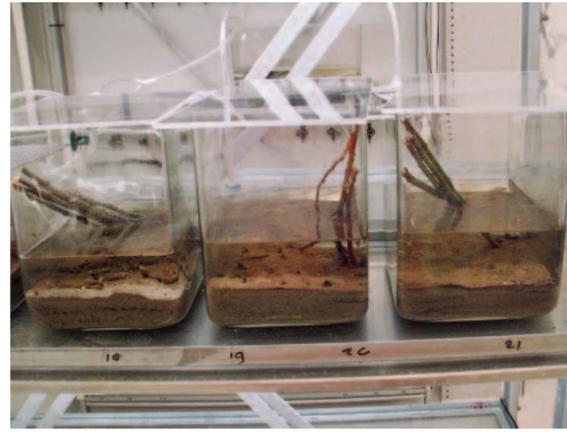
‘The most important project for us aquatic ecologists was AQEM, which started in 1999. It was intended to produce an ecological assessment system for the Water Framework Directive, which was then being developed. At the time, we were very keen on the idea of ecological water assessment, as were some of our colleagues, such as those in Essen, Germany. Once you've worked out a system for that, you can set biological standards, make assessments and predict the effects of restoration measures.

‘The word ecological implies that you don't look at just one group of organisms, but at the whole combination of groups and their interactions. For fresh water, this includes algae, aquatic plants, fish and invertebrates. The project had to define a natural reference condition for each water type, which we did for two types of stream in the Netherlands. Since the Water Framework Directive allows conditions to ‘deviate only slightly’ from the undisturbed situation, we also had to specify what is meant by a ‘slight deviation’, for instance in terms of numbers of species. And finally, after having described the reference or very good and good classes, we had to define the three disturbance-related classes: moderate, poor and bad.

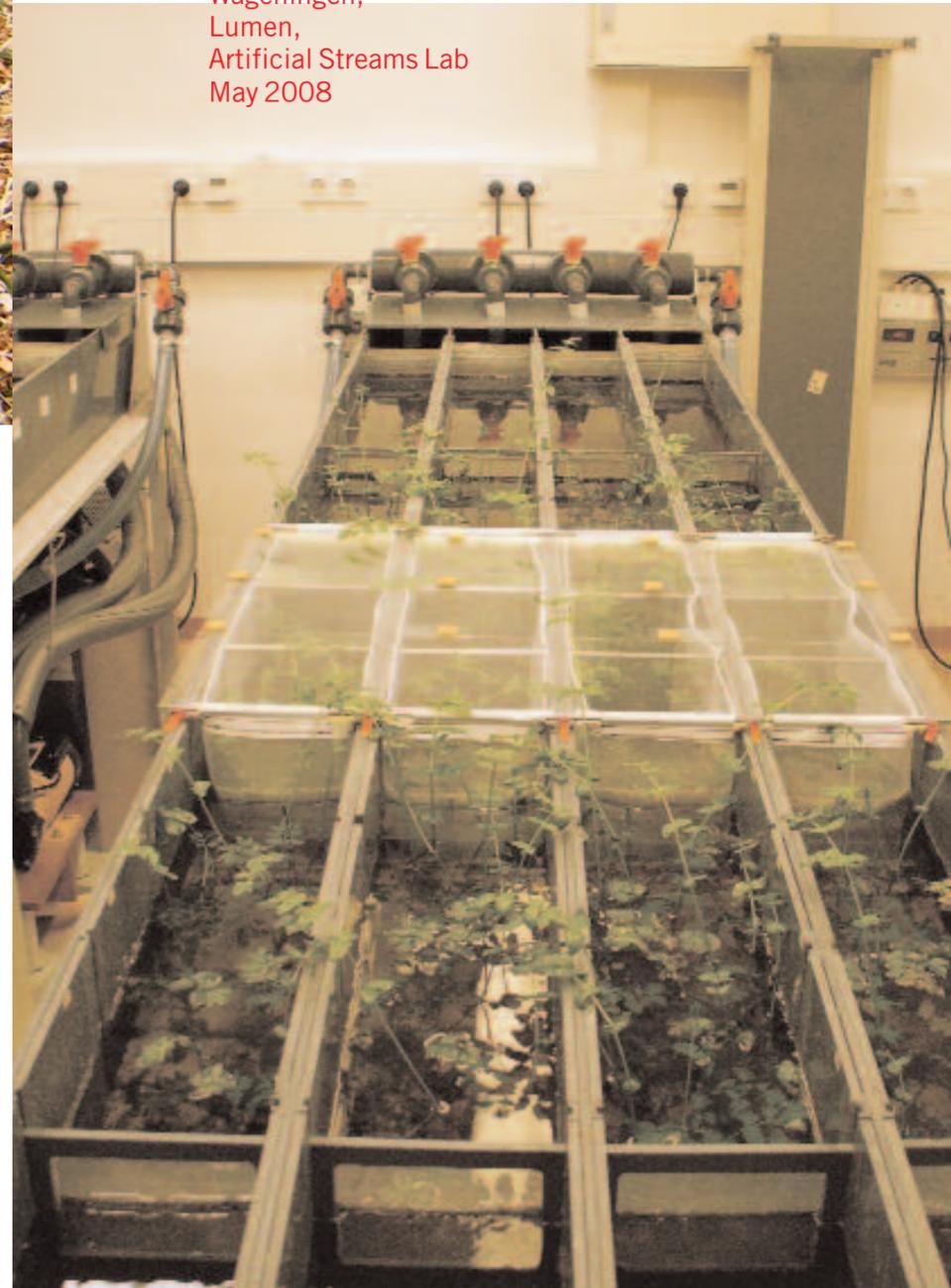


Ootmarsum, Netherlands
Springendal Nature Reserve
October 2002

Experimental set-up (above) and measuring instruments (below) to produce quantified threshold values for hydrological aspects of the Water Framework Directive, such as peak discharge (bottom right) and sediment transport (bottom left). Discharge and sediment transport measurements and peak discharge experiments were carried out in the Springendal stream (in the Twente region) and the Frederik-Bernhard stream (Veluwe region).



Wageningen,
Lumen,
Artificial Streams Lab
May 2008



Experiments to assess the responses of water plants and invertebrates to temperature (climate change) and oxygen (ecosystem function). These experiments were carried out in the artificial streams laboratory and the climate room.

Deventer,
Netherlands,
Lake Bolwerk
November 2005



An automated water level gauge is attached underneath a platform.

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I had done my PhD on water typology in the Dutch province of Overijssel, and other European aquatic ecologists had also been considering the idea of constructing assessment and prediction models on the basis of a typology, which made it easy to find European partners. Many colleagues felt 'finally we can start doing what we've been wanting to do for so long'.

'So, we were really hoping that we would get this project, not only to strengthen the profile of our discipline, but also because it would generate work for us – it would involve half our research group. And finally, the research would enable us to publish papers, which is what you want to do as a researcher. It's strange that national clients are rarely interested in this aspect, whereas it's an important criterion for the quality of research.

'We were up against stiff competition, and we were relatively inexperienced newcomers on the market. We'd

had no experience in dealing with Brussels at all, and we had no idea who would be judging our proposal there. And the same was true for our project partners in Germany, Sweden, Austria, Czech Republic, Portugal, Greece and Britain; some were institutes that had been privatised in similar ways as Alterra had been. We got together and studied the 10-line letter from Brussels, every third word of which represented a key aspect that needed to be addressed, and drafted our proposal. We hardly worried about what the competition might do; we just tried to present a strong project proposal and thought: nothing ventured, nothing gained. We were very happy when we did get the project. We had a cake during the office coffee break, and after our kick-off meeting in Essen we all celebrated in the pub. The contracts were signed on 12 January 2000, and that meant we now had to get down to business. We had blithely, almost naively, come up with a daring plan, but now

we had to implement it. I think we managed quite well in the end, and our research helped to support the present clearly specified Water Framework Directive. The WFD survived the political process intact, and has had considerable consequences in many countries.

'The results in the Netherlands have so far been a bit disappointing. We already felt a lack of interest when we applied to various ministries and other water management agencies for match funding, and none of them responded. Most of them had never even heard of the Water Framework Directive. In the end, Alterra provided half the project funding from their budget for 'strategic expertise development'. It's unfortunate that there is no source of funding for long-term applied research in the Netherlands, which would give research institutes a more independent position. As it is, research projects that could result in publications come only from Brussels.

'As regards the implications of the Water Framework Directive, the Dutch government is smart enough to use legal options. For instance, the WFD includes an exception for 'heavily modified' and 'artificial' water bodies, and countries can refer to 'significant adverse effects' on other uses and 'disproportionate costs', and the Dutch authorities have made liberal use of these options. Most of the current targets are hardly above those already in place before the WFD. If you offer some clever arguments, you can get a deferment until 2027.

'The other problem in the Netherlands was all the regional water boards, each with their own opinions and approaches. Each had its own small group of ecologists, who were hardly taken seriously by the other departments. One favourable effect of the Framework Directive is that the water boards responsible for the Rhine, Scheldt, Meuse and Eem basins have now started to collaborate much more closely, which is a start at least. And the ecologists have set up a joint platform, from which they profit.

'Another missed opportunity is the limited scope of many of the projects that have been implemented. We recently re-evaluated the ecological effects of stream restoration projects, and found ecological progress in only two to five percent of the projects. You can restore the natural meandering course of a stream, but that in itself brings no benefits. Plants and animals also need reduced discharge dynamics and moderate nutrient concentrations. Discharge patterns in Dutch streams are usually far too dynamic: too low in summer and too high in winter or after a downpour. If you want to restore a stream ecosystem, you have to tackle the system as a whole. You can repair a

Piet Verdonschot, aquatic ecologist

clock, but if you leave out the final cog, it won't work. Hence the four parameters included in the WFD's ecological assessment system: algae, higher plants, invertebrates and fishes. A healthy stream system implies that the food web should include all of these, in a suitable environment. It's not just a matter of creating meanders that look nice; you'll have to work on the valley and the upstream ranges, including ditches and gullies. Just as Germany and Switzerland will have to do something to prevent peak discharges in the Rhine. And the problem of eutrophication hasn't been solved either. It was a hot topic for twenty years, but attention has recently shifted to climate change.

'It's now nine years since the Framework Directive was published, and we're actually beginning to see some progress. Many people are now thinking in more integrated terms. An example is the transition towards a habitat-based approach at the Dutch Ministry of Agriculture, Nature and Food Quality. They're still thinking mostly in terms of species rather than ecosystems, but it's a step in the right direction. On the other hand, it's now 2009 and we still need to find out how the guidelines for the WFD and Natura 2000 can be coordinated in such a way as to allow targets to be met, even though plants and wildlife by definition need water.

'However, the time seems ripe. People are warming up to these ideas. The first evaluation moment for the WFD is in 2015, and for biodiversity it's supposed to be 2010. People are beginning to see that something will have to be done, and we can assist them.'

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Ternelles,
Mallorca
May 2006

Sampling groundwater fauna in an intermittent Mediterranean stream.

