

To: whom it may concern

L.S.

Recently I was informed that there are very concrete plans to build the so-called Via Baltica motorway through the fen-system Rospuda, near the city of Augustow. I have been asked to depict the possible outcomes of building activities in such a system. The reason why I have been asked to do so is (1) because of my 20 years involvement in studies on the development of wetland systems after human interference, both as a result of drainage and of restoration attempts by rewetting; (2) because –to my knowledge– I am the only person who has carried out actual measurements on the ecohydrology of this system.. These measurements were conducted in June 2005 with a group from the *Community and Conservation Ecology Group* of the University of Groningen, the Netherlands in close cooperation with experts from the Institute for Land Reclamation and Grassland Farming in Falenty, Raszyn, Poland.

The results of these measurements showed:

- that Rospuda is a so-called percolation fen, characterized by a very stabile equilibrium between upwelling groundwater flows and infiltrating rainwater;
- this creates smooth local gradients within the mire, conditioning distribution and persistence of many protected Red list species, such as *Herminium monorhis*, *Saxifraga hirculus*, *Paludella squarrosa*, *Liparis loeseli*, and others;
- that open fens of Rospuda should be classified unambiguously as *Caricion davallianae*, a EU priority habitat (Directive 92/43/EEC, Treaty of Accession 2003)

With respect to the above I can state from my experience:

- that the above-mentioned equilibria are very sensitive to small changes in the hydrology; even a temporarily lowering of the water table or small shifts in the balance between the different water flows almost always result in dramatic ecological changes;
- that Rospuda is by far the best preserved example of this type of fen that I have ever seen all over Europe;
- Rospuda fen is the only one left that we know of in Europe that can be called ‘natural’, i.e. can persist in its present state for a very long time, probably many centuries or even longer, without any necessity for active human interference.

- All other more or less similar systems need regularly active nature conservation management to keep them in their present state. This is also a prove of how easily the hydrological balance -and with that the ecological equilibrium- can be disturbed.
- Millions of Euros are spent in countries like Germany, Switzerland, Austria, Slovakia, the UK and others in attempts to restore similar systems. To my judgment all these attempts are only moderately successful and none of them comes close to the situation in Rospuda.

Concerning the expected effects of drainage due to building activities:

- A direct effect that may be expected is compaction of the peat. To our present knowledge this is a rather irreversible process, which results in increased resistance for water flow. The consequence is that –even in the unlikely event that the hydrology is completely restored after a certain period– groundwater flow intensity at the surface will be much lowered or even stopped. In other words: the original equilibrium between the different water flows cannot be restored. This process takes a very short time.
- A second effect is that the influence of rainwater may increase in the system. Depending on the amount of nutrients –especially Phosphorous– stored in the system this may lead to internal eutrophication. The protected Red List species will certainly disappear under such conditions (see e.g. a recent paper in Nature by Wassen et al.).
- Depending on the degree of drainage the effect of surface water may also increase. Again, this will lead to the disappearance of the protected species.
- All above-mentioned effects occur at drainage levels that are hardly visible to the human eye, only measurements show the differences. If the drainage is a bit more intensive, the peat will start to mineralize and large amounts of nutrients will then be liberated. The mire will completely change its character under such conditions. The latter three process are a bit slower than the first one and will all probably take one or two years.

Finally, even though I have visited numerous attempts to restore degraded wetlands, I have never seen nor heard of a complete restoration of this type of percolation mires that has been successful, not even of systems that were relatively little disturbed and only for a short while. Because of our limited experience of only a few decades we are not able to tell whether it is possible to restore such systems at all but if so it will surely cost large amounts of money (in the order of magnitude of millions).

Groningen, 22 november 2006



Dr. R.v.Diggelen
Expert on Eco-hydrology and Restoration Ecology