Dovine River Basin:

WATERDRIVE Case Area in Lithuania

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Baltic Environmental Forum

Lithuania

Agricultural pressure on wetland system

In the 19th and 20th century, land reclamation and wetland drainage projects were carried out in the case area in order to expand agricultural lands and make use of fertile lands in the Dovinė river catchment. Hence, the natural hydrological cycle was interrupted, many wetlands were drained and ameliorated to provide space for agricultural lands.

Currently, most of the surrounding areas are productive agricultural lands. As a result, the water quality in the lakes within the Dovine river catchment, is remarkably deteriorating and results in eutrophication of the water bodies within the catchment

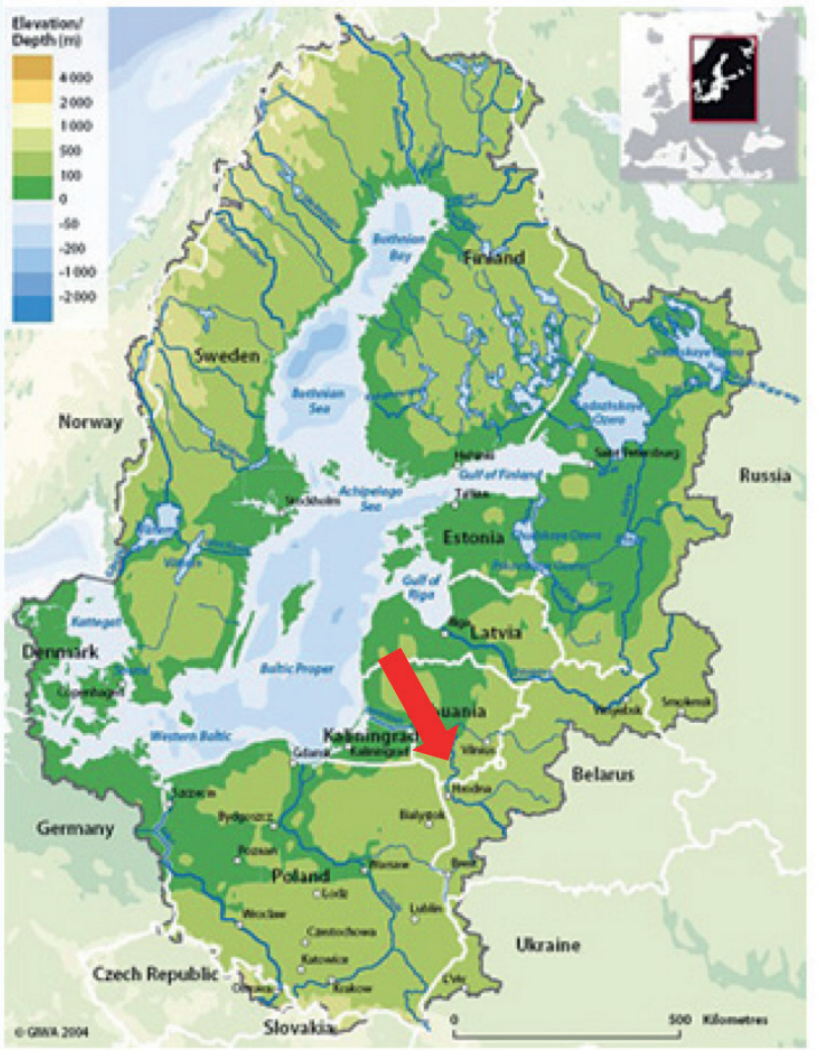
Source: Žuvintas Biosphere Reserve Directorate

Dovine River Basin in The Baltic Sea Region

The Dovine River Basin covers an area of approximately 588.7 km2 and is located in the southern part of Lithuania.

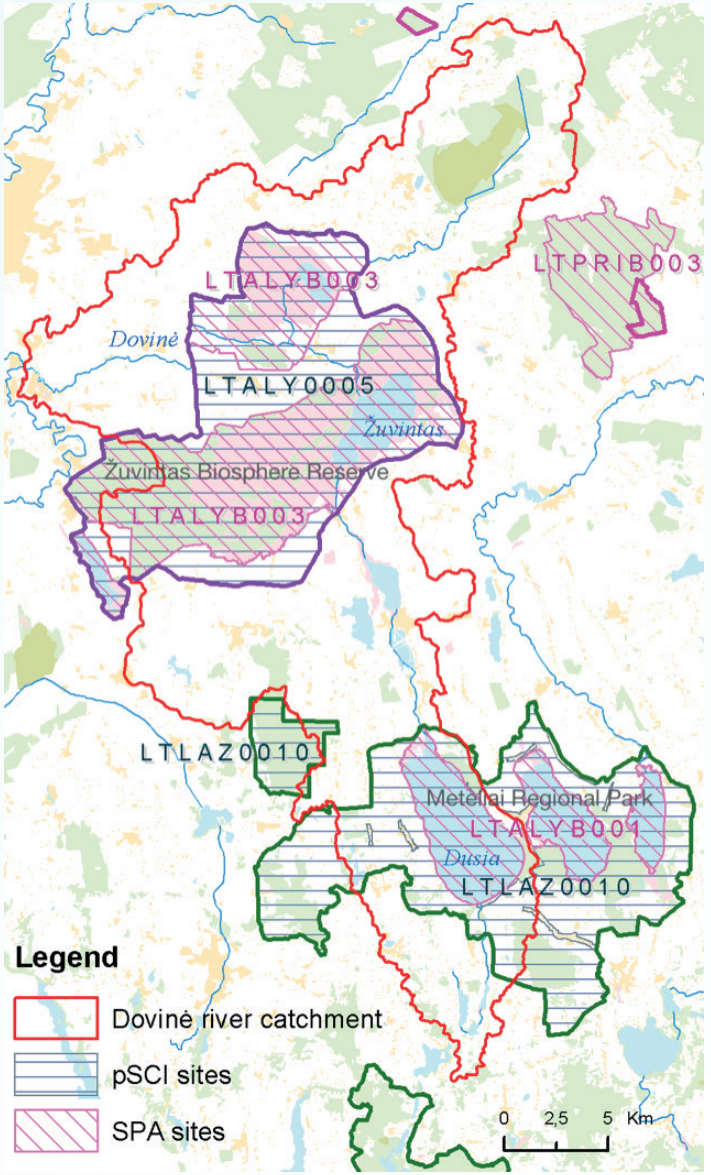
The basin is one of the small catchment areas of the larger Neman river basin, which covers around 75% of the territory of Lithuania and is the 4th river basin in size in the whole Baltic Sea Region.

The Dovine river catchment consists of a network of rivers and water bodies formed by five big lakes (Dusia 23,3 km2, Zuvintas 9,3 km2, Simnas 2,4 km2, Giluitis 2,4 km2, Amalvas 1,9 km2) and a number of rivulets and small lakes.



Uniqueness of Dovine River Basin

Dovinė catchment is a unique area because within the borders of the catchment lies 2 protected areas – Meteliai Regional Park and Žuvintas Biosphere Reserve. Both protected areas contain Natura 2000 areas for protection of birds and habitats listed in the Birds Directive Annex 1 and the Habitats Directive Annex 1 and 2.



Žuvintas Biosphere Reserve

Žuvintas Biosphere Reserve is one of the most valuable Natura 2000 territories in the country, value of which is recognised internationally. It hosts valuable habitats for biodiversity, breeding and feeding areas for protected species, especially migratory birds. A part of the reserve has been protected by the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat since 1993 and in 2011 the reserve was enlisted into UNESCO’s Man and the Biosphere Programme.

Meteliai Regional park

Meteliai Regional Park is famous for its conservation efforts of European pond turtles (Emys orbicularis), also there are at least 13 protected habitats and 12 protected species under Birds and Habitats directives

Dusia lake is one of the most important regional tourist attraction sites also called – the Sea of Dzukija Region

Source: Erik Ovčarenko (15min.lt)

Source: Lukas Balandis (15min.lt)

Main Actors identified for the task:

- Ministry of Environment
- Ministry of Agriculture
- Fisheries Service under the Ministry of Agriculture
- State Service for Protected Areas
- Meteliai Regional Park Directorate
- Žuvintas Biosphere Reserve Directorate
- Management of Simnas fishery ponds
- Environmental Protection Agency
- NGOs
- academic institutions
- Lithuanian Hydrometeorological Service
- municipalities.

BEF-LT – facilitator of communication process

The main findings during short-term local water quality monitoring:

One of the main issues in the catchment is disrupted hydrological regime due to extensive water control infrastructure (weirs, especially on outlets of Dusia and Simnas lakes, sluices and artificial water bodies – reservoirs such as Birutos reservoir) and fishery pond impacts as a lot of water is used to fill up the ponds and a lot of water is lost due to evaporation. This results in lower water levels downstream of the catchment and therefore less water reaching Žuvintas lake.

One of the spill-weirs in Metelytė (between Dusia lake and Simnas Fishery Ponds). Due to hydrological drought the water level is becoming dangerously low and at risk of not flowing through the weirs.

It was estimated that compared to the natural hydrological regime in 1970 before it was disrupted, Žuvintas lake now potentially loses up to 50% of water, which results in higher pollutant concentrations and faster eutrophication processes which can cause significant impact on protected habitats, species and ecosystems. Moreover, the hydrological regime changes may be exacerbated by climate change.

The main findings during short-term local water quality monitoring:

In 2020 during the water discharge from Simnas fishery ponds, the Biochemical Oxygen Demand (BOD7) in Spernia indicates bad condition and the indicator is substantially higher compared to other months during the year.

In 2021 higher amounts of phosphorous were recorded amounting to bad and medium water quality due to fishery pond discharge.

The main findings during short-term local water quality monitoring:

The water quality of a tributary flowing to Dusia lake was in bad or very bad condition in terms of dissolved oxygen amounts in 2020. This shows that Dusia potentially receives water with pollutants from agriculture. In 2021 the monitoring recorded high levels of nitrates, nitrogen and phosphorous most likely due to spreading of liquid manure around Dusia lake which is especially harmful due to sandy soils.

In 2020 Spernia, Sūrava and Kiaulyčia catchments the water quality is in bad condition in terms of phosphorus amounts and in 2021 the average water quality was bad in term of nitrogen and medium in terms of phosphorous and that is potentially due to agricultural pollution, especially liquid manure spreading.

Suggestions for the future

- In order to ensure the protection of the ecosystems in the protected areas, the activities of Simnas fishery ponds must be balanced with the protection needs of the protected areas, the aim must be to reduce the impact on Žuvintas biosphere reserve.

  There is a need for close cooperation between stakeholders on the impact minimisation of fishery ponds on the catchment and protected areas.

  A concrete action plan is needed for the Dovine River catchment, reconciling economic and environmental objectives and comprehensively considering the impacts of the decisions at the catchment level.

- Work closely with local farmers, educate and help them address unsustainable farming practices resulting in nutrient and chemical toxin run-off from fields into water bodies.

- Progress with mainstreaming the use of soil testing and fertilisation plans and encouraging intensive farmers to use precision farming technologies to optimise fertiliser use.

  Terminate (or minimise) practices leaving open soil such as fallow land and minimise arable land areas in the sensitive zones. There should be a targeted promotion of agri-environmental schemes, especially catch crop and stubble fields over winter and extensive management of meadows and wetlands.

Suggestions for the future

- Effective local water management in the case area could be achieved through establishing a specific expert position within the protected territory, catchment or municipality such as Catchment Officers in Denmark.

- Address the data gaps. While closely working with farmers one could collect data into a case area database on fertilization, pesticide and other hazardous chemical use in farms. Improve water quality data collection, also, ensure proper analysis and interpretation is done in order to identify pollution sources, other issues and necessary measures.

- Empower and engage local communities and local action groups in water management and protection but for their successful participation it is important that they have a certain level of environmental and local knowledge on condition of and threats to local water bodies. Carry out environmental education of locals.

- In collaboration with universities carry out a study on impacts of climate change and hydrological system transformations for the runoff of the Žuvintas basin and the impact on the water balance on lake Žuvintas. Research and discussions with experts and stakeholders are needed on possibilities for further restoration and renaturalisation of the hydrological cycle

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