UEAA NEWSLETTER

2025, No. 7

Bucharest, July 28th, 2025

LATEST NEWS

Latvian Scientists Contribute to Modernizing Aquatic Ecosystems and Strengthening Forest Resilience through International Collaboration

In this newsletter, we present three international research projects showcasing Latvia's active contribution to sustainable ecosystem management—highlighting new approaches in aquaculture and forestry, driven by strong cross-border cooperation and scientific excellence.

The implementation of the European Union-funded Interreg project "Latvian and Lithuanian conjunction – Improvement of Baltic salmon and pikeperch rearing methods for more sustainable, resilient and healthy fish populations" (SPPwelfare) is now in full progress. The project is led by the Institute of Food Safety, Animal Health and Environment "BIOR" (Latvia) in partnership with the Fisheries Service under the Ministry of Agriculture of Lithuania. It focuses on enhancing rearing methods and improving biosecurity practices for Baltic salmon and pikeperch—species that play a crucial role in the ecological, economic, and cultural heritage of both countries.

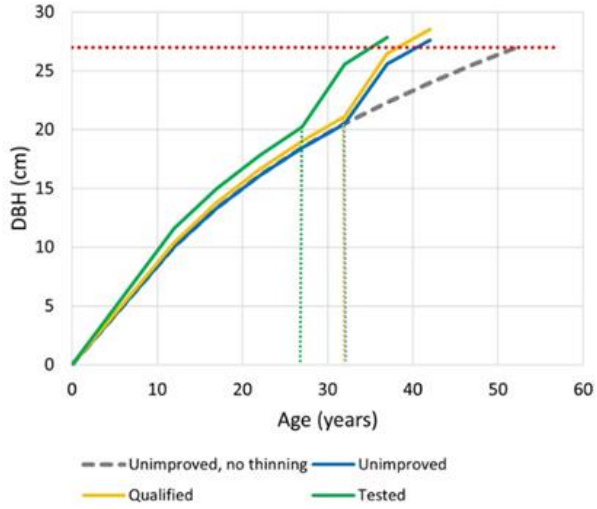
In this project, salmon are reared using recirculation and flow-through systems and released into rivers, while the survival of reared salmon depends largely on welfare conditions and handling practices. Artificial reproduction of pikeperch remains particularly demanding and requires the continuous exchange of knowledge and improvement of techniques to ensure successful restocking. So far, project partners have shared expertise in pikeperch reproduction and salmon restocking, and are currently conducting trials on the use of probiotics to improve the health and resilience of juvenile fish. In the next stages, the project will develop biosecurity guidelines for fish farms, introduce a Fish Health Index Model for salmon, and organize joint seminars with stakeholders. These efforts aim to reduce cadmium accumulation, lower antibiotic use, and protect aquatic ecosystems. The project runs from March 2024 to February 2026 and is co-funded by the European Union (https://latlit.eu/kick-off-meeting-of-the-sppwelfare-project/; https://latlit.eu/the-effect-of-probiotics-on-the-health -growth-and-antimicrobial-resistance-of-baltic-salmon/).

Meanwhile, Latvia's forest scientists are also engaged in an ambitious transnational initiative to protect forest biodiversity. The recently launched Diverse Gene Watch project introduces an early forecasting and monitoring system to detect genetic biodiversity loss in keystone forest tree species. Coordinated by Vytautas Magnus University in Lithuania, the project includes partners from Latvia, Estonia, Sweden, Denmark, Poland, and Germany—among them the Latvian State Forest Research Institute "Silava" and Latvia's State Forests.

Forest monitoring plots visit in Kazlų Rūda, Kaunas. ©Vytautas Magnus University (https://interreg-baltic.eu/project/diverse_gene_watch/#:~:text=The%20project %20DIVERSE_GENE_WATCH%20teams%20upand%20supports%20the%20forest%20economy).

The project addresses the growing need to preserve genetic diversity in forest ecosystems, which is essential for long-term resilience to pests, diseases, and climate extremes. It focuses on four keystone species: pedunculate oak, Norway spruce, small-leaved lime, and European ash. Although much research has been done, practical tools for genetic monitoring are still lacking. Diverse Gene Watch bridges this gap by combining DNA analysis, phenological observations, and remote sensing technologies. The kickoff meeting in April 2025 in Kaunas, Lithuania, gathered

forestry experts, researchers, sectoral institutions, and landowners to set a common vision for resilient forest landscapes in the Baltic Sea Region. The project will continue until February 2028 under the Interreg Baltic Sea Region Programme. The full study is available at: https://doi.org/10.1016/j.tfp.2025.100930.



Dynamics of diameter at breast height (DBH) until the target diameter of 27 cm (indicated by a red dotted horizontal line) across the simulated scenarios. Vertical dotted lines indicate the timing of commercial thinning for each scenario, with line colours corresponding to the respective forest reproductive material category. Source: Zeltiņš et al. 2025, https://doi.org/10.1016/j.tfp.2025. 100930

In parallel, the Latvian State Forest Research Institute "Silava" also leads national efforts in the Assess4EST project, part of the European ERA-NET ForestValue programme. This project aims to assess how forest regeneration and breeding strategies can contribute to long-term sustainability goals. A recent Latvian case study demonstrated that planting genetically improved silver birch, together with commercial thinning, could shorten rotation by up to 15 years, significantly increase the net present value, and maintain high carbon sequestration levels. This approach also enhances the proportion of high-quality veneer logs, combining economic returns with long-term climate benefits. These findings support more strategic forest management in Northern Europe, balancing production with environmental objectives.

All these projects demonstrate how science-led innovation, international cooperation, and responsible resource management can advance sustainability across both aquatic and forest ecosystems. Latvia's research institutions continue to play a key role in shaping a greener and more resilient future for the region.

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