Interreg

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“Latvian and Lithuanian conjunction - Improvement of Baltic salmon and pikeperch rearing methods for more sustainable, resilient and healthy fish populations” (SPPwelfare)

Report

MISTAKES IN BIOSECURITY DURING PIKEPERCH REARING

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Fisheries Service under the Ministry of Agriculture of the Republic of Lithuania

the Institute of Food Safety, Animal Health and Environment "BIOR"

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Introduction

The main aim of the project is to improve pikeperch rearing methods and biosecurity measures for more sustainable, resilient and healthy fish populations, and thus positively to affect ecosystems in the Programme area.

The main object is improvement of the biosecurity measures for pikeperch artificial breeding.

Both Latvia and Lithuania carry out artificial breeding of fish caught from natural reservoirs and spawners remain in the same flow-through or RAS system. Thus, it is necessary to develop and systematize biosecurity activities to avoid the spread of diseases.

The applied biosecurity measures and indicated improvements and adaptations specific to pikeperch during the whole artificial breeding process, starting from quarantine of the spawners, as well as most common mistakes which are possible during this process.

All actions directly or indirectly related to biosecurity will be taken into account, including disinfection principles and reduction of the impact of various stressors.

Main Objectives

The primary objectives are:
- To develop and apply welfare-oriented practices during artificial reproduction of pikeperch.
- To strengthen biosecurity protocols in hatchery environments.
- To ensure coordinated practices between Latvian and Lithuanian partners.

1. Disinfection

At all operational stages (preparation of spawners, eggs incubation, rearing), strict cleaning and disinfection protocols are essential. Disinfection procedures and controlled environmental parameters were maintained to ensure optimal development and reduce contamination risks. For cleaning and disinfection process to start need establish a strict cleaning schedule and record each disinfection event. Staff must adhere to approved methods, use appropriate protective clothing, and footwear. Need regularly disinfected equipment, working tools, tanks, nets before and after use. Visitors' access must be restricted to prevent contamination. Ensure hand and clothes disinfection is consistently applied. Need use only tested and approved disinfectants.

1.1. Biosecurity mistakes and risks

To keep pikeperch healthy, every step of cleaning and disinfection must be done correctly. Cutting corners or ignoring rules can quickly lead to problems that harm the fish.

- Skipping or irregular disinfection.
  If tanks, tools, or equipment are not cleaned regularly, dirt and waste build up. This creates the perfect environment for bacteria and parasites to grow and spread.
- Using the wrong concentration or unapproved chemicals.
  Too weak a solution won't kill pathogens, while too strong a mix can harm the fish, damage equipment, or pollute the water. Unapproved products may also cause legal or food safety issues.
- Incomplete disinfection.
  If surfaces or tools are only partly cleaned, disease-causing organisms can remain and spread later, especially when fish are stressed.
- Poor sterilization of equipment.
  Nets, pipes, or transport tanks that are not properly sterilized can carry pathogens from one tank or batch of fish to another, risking the entire stock.

- Not controlling access to the facility
  Staff, visitors, or outside equipment can bring in unwanted pathogens. Without proper rules (like footbaths, protective clothing, and restricted entry), the chance of introducing diseases rises sharply.

1.2. Recommendations

To ensure biosecurity and minimize health risks, it is strongly recommended that all facilities:

- Maintain accurate records of all disinfection events.
- Conduct routine training for staff on correct disinfection practices.
  Implement strict access control policies.
- Periodically review and update disinfection protocols based on latest approved chemicals and methods.
- Carry out regular audits to ensure compliance.

2. Quarantine

Quarantine is a critical biosecurity measure in aquaculture, designed to prevent the introduction and spread of pathogens into fish farming systems. The success of quarantine depends on strict protocols for fish handling, health screening, and environmental management.

2.1. Quarantine Measures

All new fish must be placed under quarantine immediately upon arrival at the facility. Before introducing fish into spawning or farm tanks, comprehensive health screening should be carried out, including bacteriology, virology, and parasitology. Advanced laboratory methods such as PCR and bacteriological cultures should be employed to detect hidden infections. Fish should be sourced from a single population and held as a closed group under the "all-in-all-out" stocking principle. This prevents mixing of populations and maintains stock integrity during quarantine.

2.2. Benefits of Quarantine

- Early detection of potential pathogens before fish are integrated into the farm population.
- Prevention of disease outbreaks by isolating infected or carrier fish. Improved survival and performance of farm stock by minimizing pathogen exposure.
- Enhanced traceability and control of fish health through systematic testing and documentation.

2.3. Challenges and Risks

- Lack of Quarantine Facilities. Absence of separate quarantine tanks increases the risk of pathogen spread throughout the farm.

- Environmental Stress. Sudden changes in water parameters such as temperature or pH can cause stress and high mortality rates in quarantined fish.
- Operational Limitations. Effective quarantine requires infrastructure, trained personnel, and diagnostic support, which may be lacking in some facilities.

3. Pikeperch rearing practice in Lithuania

Larval and juvenile rearing was conducted under welfare-oriented practices. Feeding protocols, stocking densities, and water management were optimized to support healthy growth. Biosecurity barriers were maintained to reduce pathogen transmission.

Before pikeperch were placed in tanks all procedures of disinfection were done. System and all equipment were cleaned and disinfected.

The pikeperch grow in unlit tanks and are being fed using from automatic feeders. Water quality data (temperature, pH, dissolved oxygen), feed rates and types, mortality, and changes in appearance are recorded daily.

Pikeperch measurement

Controlled environment helps to reduce stress and metabolic activity, improving survival rates. Daily inspections are performed to remove dead larvae, otherwise it is a reason to appear the bacteria.

Conclusion

The SPPwelfare project highlights the importance of integrating welfare and biosecurity considerations throughout the artificial reproduction of pikeperch. By harmonizing practices across Latvian and Lithuanian institutions, the project provides a foundation for more sustainable and resilient aquaculture practices in the region. The collected data and outlined biosecurity risks and possible improvements are a strong basis for developing guidelines. The crucial step is the transfer of spawners to the fish farm and the most important biosecurity principles concern correct disinfection, traceability and regularity.