Finnish Stakeholders share a Commitment to Fish Welfare but Differ in Approach

Assessing the Current State of Farmed Fish Welfare in Finland: Insights from Stakeholder and Veterinary Surveys

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Introduction

Fish welfare is increasingly central to fish farming, shaping ethical legitimacy, public trust, and farm efficiency. Yet Finland lacks systematic assessment of fish welfare. This study addresses that gap by examining how farmers and veterinarians define welfare, which indicators they find practical and meaningful Their insights reveal strengths and blind spots in current observation, record-keeping, and reporting, pointing out priorities for adding welfare to daily decision-making, and highlighting improvement needs for fish welfare in Finland.

Methods

- An online questionnaire (Webropol): responses from 26 fish farmers (various companies) 16 veterinarians (regulatory and clinical roles)
- Statistical analyses in R (version 4.5.1) with base, lme4, and emmeans packages. Binomial logistic regression with random intercepts was used for the binary importance data and Wilcoxon rank-sum test for the ranked urgency data.

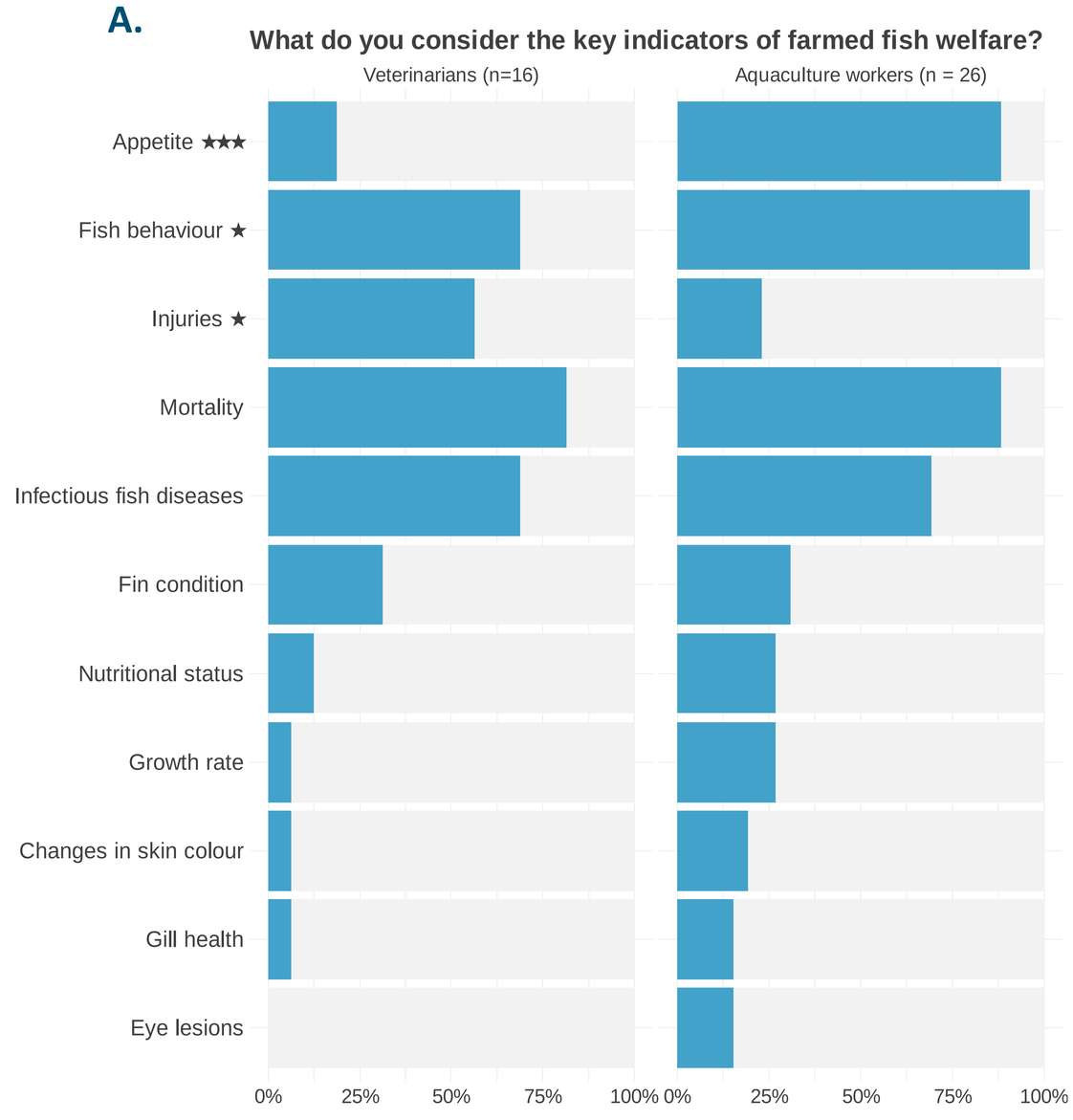
Results

- Both groups emphasized fish welfare as central and expressed willingness to invest in its improvement.
- Both groups focus on late welfare signs: serious behavioural changes, mortality, and diseases.
- Veterinarians stress species-specific needs and a broader welfare scope in urgent actions, while fish farmers emphasize production- and system-centered challenges such as fish health, water quality, and system-related issues.
- Challenges: Current welfare inspection protocols limit comprehensive evaluation; early signs are often missed.
- Key development needs: Practical, easy-to-use welfare indicators, suitable enrichment options for different aquaculture systems, humane slaughter (effective stunning), better oomycete infection treatment, better RAS water quality, predation control, automated welfare and health monitoring tools.

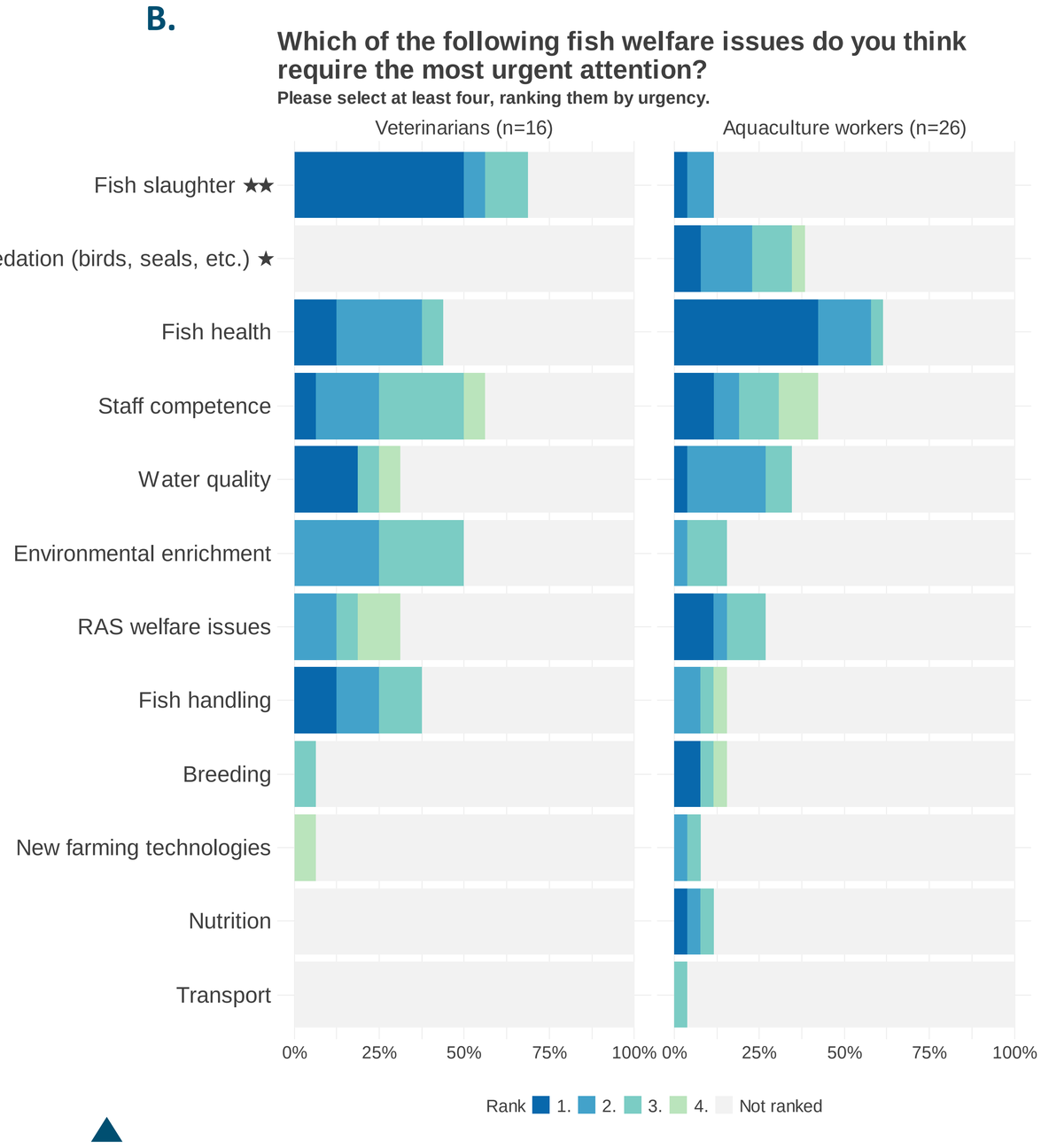
Discussion

- Finnish fish farmers and veterinarians are motivated to improve welfare and adopt better practices. Farmers would benefit from additional training in holistic welfare assessment, while veterinarians need enhanced training to strengthen their advisory role. Finland specific strategies are needed to support evidence-based welfare improvements across diverse production systems.
- While European studies (e.g., van den Boogaart et al., 2023. Aquaculture. 572) emphasize sea lice, disease prevention, and husbandry, our results point to Finland-specific priorities: environmental enrichment, prevention of oomycete infections, rigorous water-quality management, predation mitigation, and greater use of automated monitoring —issues less emphasized in broader European marine systems. Tailored strategies that address these areas will deliver the most meaningful welfare gains for Finnish fish farming.

A.



B.



Welfare indicators deemed important (A) and welfare issues ranked by urgency (B), with statistically significant differences (★★★ $p < 0.001$, ★★ $p < 0.01$, ★ $p < 0.05$) between groups and 80% statistical power in the first three indicators (A) and first two issues (B).

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