

Animal welfare of farmed fish



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This study investigates the welfare of the main fish species reared in the EU: European sea bass, gilthead sea bream, rainbow trout, common carp and Atlantic salmon. The research highlights current knowledge on fish welfare, fish needs and husbandry methods of concern for fish welfare, in terms of the different species, life stages and production systems. It provides a literature review, an evaluation of the regulatory framework in place at EU, Member States and its enforcement level, a stakeholders' consultation, case studies and a SWOT analysis. The study concludes proposing research priorities for fish welfare, and presenting conclusions and policy recommendations.

Main observations

The study

Presents the current scientific data, knowledge gaps, and regulatory framework on fish welfare for the main species that are reared in the EU.

It also provides welfare priorities and policy recommendations relevant to EU decision-making.

All fish species have common welfare needs like adequate nutrition, proper water quality, good health/fitness, behavioural freedom, and safety. However, variation among different species of fish and among individuals of a given population, in stress response and in behaviours related to survival and reproduction, necessitate differentiated research for each farmed species.

The study identified four major challenges:

- 1) the interplay between science and ethics,
- 2) identifying species-specific welfare needs,
- 3) assessing fish welfare on-site, and
- 4) developing an appropriate regulatory framework.

Major parameters of welfare concern for on-growing fish are the following: water quality and water shortages, imbalances in water temperatures and O₂, lack of specialised vaccines and licensed anaesthetics, lack of environmental control and low biosecurity, easy access by predators, inappropriate stocking densities, intensive

handling, climate-driven increase in parasitic diseases, live fish transportation and harvesting, lack of welfare monitoring tools on-site and absence of specialised life-long training courses.



The current legislative framework in the EU does not directly impose specific welfare requirements on the welfare of farmed fish. An updated legislation should include: the fundamental legislative goals and the general fish welfare principles, the delegation of authority and establishment of enforcement mechanisms, and a framework for the development of legislation on specific areas, such as handling, live transportation, and slaughter.

In addition, there is a need for further research in order to get a better understanding of fish welfare needs, and to develop welfare indicators and on-site assessment tools.

Conclusions and policy recommendations

There is an increasing social and political concern in fish welfare. Fish welfare is also crucial for a sustainable aquaculture. The impact of regular production operations and managerial practices on fish welfare need to be further examined. Interlinks between stress, disease resistance and welfare of farmed fish should be further investigated.



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Concrete conclusions and policy recommendations by the researchers for the EU legislative process relate to the following areas of concern:

- **Research**

To support multi-disciplinary research on welfare of farmed fish.

To support research on the identification of welfare needs and standards for farmed fish species reared under different farming systems and production phases, especially during early development and at harvest.

- **Technology and welfare tools**

To support the development of technological tools to monitor and analyse fish behaviour on-farm.

To support the development of species-specific welfare scoring systems and operational tools for ensuring welfare assessment by fish farmers on-site, and evaluating fish welfare status by the competent authorities.

To emphasise on the development and implementation of humane slaughter methods.

- **Training**

To develop and to promote fish welfare training courses for veterinarians and fish health professionals, for supporting fish farm staff.

To develop and promote life-long education and training programmes for fish farm personnel for certifying that staff responsible for the care of fish is

competent, well-trained and have all the appropriate management skills.

- **Support measures**

To develop support measures for the industry for incorporating recent technological advances for implementing welfare monitoring and humane slaughter methods.

To nominate a welfare officer for each fish farm, for safeguarding that fish welfare needs and the implementation of fish welfare recommendations are taken care of, and for ensuring proper preparation of all relevant documentation for the competent authorities.

- **Legislation**

To develop direct EU legislation including concrete binding provisions on fish welfare.

To link the legislation to the legal frameworks in place regarding feed ingredients, aquatic animal health, aquatic animal traceability, veterinary treatments applied, as well as farm hygiene and biosecurity.

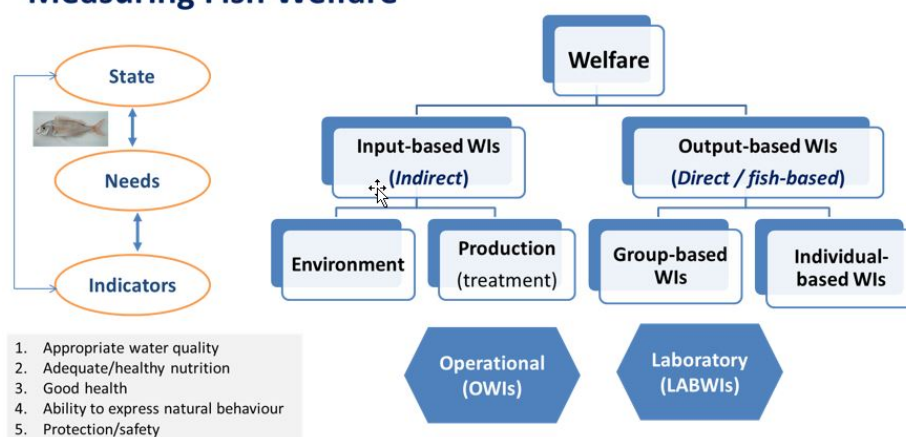
To incorporate species-specific requirements and/or to promote the development of codes of good practice by interested parties.

Key findings

- Welfare indicators, scoring systems and on-farm assessment tools shall be further developed.
- Training activities are missing.
- Legislative framework shall be updated.
- Research on fish welfare should be further supported.

Fish welfare needs and indicators (WIs) for an adequate assessment of fish welfare status under intensive culture conditions

Measuring Fish Welfare



Source: Pavlidis 2022, modified from Stien et al. 2020

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