

Research for PECH Committee – Animal welfare of farmed fish



This 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, for the Members of the European Parliament.

Fish welfare is a major component of sustainable fish farming and has attracted considerable attention in recent years. The widespread view amongst the scientific community is that welfare is intimately

connected with the absence of stress and disease. Stress is an essential, genetically embedded, adaptive mechanism designed to secure survival and other critical biological functions; therefore, it is crucial to determine, in a manner that is specific to the species, life-stage and farming system, at what point do we cross the red line, where stress impairs fish welfare. Moreover, as stated by Broom¹, *‘when an animal’s health is poor, so is its welfare, but poor welfare does not always imply poor health’*. Thus, interlinks between stress, disease resistance and welfare of farmed fish should be further investigated.

Four **major challenges** are identified in this study:

1. the interplay between **science** and **ethics** (Chapter 2);
2. **assessing fish welfare**, especially on-site (Chapters 2 and 3);
3. the identification of **species-specific needs** and welfare assessment, according to the farming system, husbandry operations and managerial practices (Chapter 3);
4. the appropriate **regulatory framework** for farmed fish welfare needs (Chapter 4).

The present document is the executive summary of the in-study on ‘Animal welfare of farmed fish’. The full study, which is available in English can be downloaded at: <https://bit.ly/43JooKD>

¹ Broom, D.M. (2007 a) Welfare in relation to feelings, stress and health. Revista Electronica de Veterinaria VIII: 1695-7504.

The interplay between science and ethics

As the concept of welfare has philosophical, scientific, and legal dimensions, views on welfare can be expected to differ, which often leads to heated public debates. Three main differing views can be identified, when talking about animal welfare, which in general are **function**-based, **feeling**-based, and **nature**-based. These views are not necessarily mutually exclusive, but may be conflicting in specific situations. At the applied level, the view of welfare emphasised will determine the criteria and results of welfare assessment. Scientific data indicate that fish can experience pain and possess a sophisticated and effective sensory system and cognitive abilities, making them capable of adapting to an incredible array of habitats. However, the question of **fish sentience** and awareness is both experimental and conceptual in nature and needs to be further investigated (see Chapter 2).

Assessing fish welfare

All farmed fish have **common welfare needs**, such as adequate nutrition, proper water quality, good health/fitness, behavioural freedom, and safety. However, **species-specific differences** exist, as do individual differences within the same species with regard to coping styles, stress tolerance and disease resistance, in relation to the developmental stage of the fish and its physiological condition. These should all be considered when developing **fish welfare indicators** that are valid, repeatable, reliable, and usable by farmers and regulatory authorities in order to assess welfare status on farms. Further research and technological advances are required to develop operational welfare indicators and methods to assess fish welfare on-site in an impartial manner (see Chapter 3).

Production methods and welfare challenges by farmed fish species

Five case studies were undertaken, one for each of the five main freshwater and marine fish species reared in the EU namely Atlantic salmon, rainbow trout, common carp, gilthead sea bream and European sea bass, reared under different production systems and life cycle phases in captivity. The case studies present (1) **production data** per Member State, (2) the main on-growing **production systems**, (3) the production cycle in relation to **life cycle for each species** of fish, (4) the biological characteristics and **welfare needs** of the species being studied, and (5) welfare challenges at each respective critical production phase and operation.

Finally, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was conducted to establish welfare strategies in specific areas of interest. (see Chapter 3):

Outcome of legislative review

The study identifies three categories of regulatory and non-regulatory **provisions that are in place** regarding fish welfare.

1. Standards, codes of conduct and good practices.
2. **Recommendations** from public institutions ('soft' rules), generally from EFSA or other public authorities.
3. **Rules**, in a strict sense ('hard' rules): these are binding and mandatory for farmers and operators involved in the different phases of the fish farming operations.

An analysis of the legislative framework in place at both EU and Member State level reveals that rules on the matter (except for organic aquaculture and some specific provisions on key aspects referred to in this document) do not directly impose specific welfare requirements for farmed fish.

Thus, there is a need to **improve the legislative framework** on welfare of farmed fish. The updated legislation should include:

- the fundamental **legislative objectives** and fish welfare principles in general;
- the delegation of **authority** and establishment of **enforcement** mechanisms;
- the framework for developing **new law** on important areas of fish welfare, including management, handling/keeping, transportation and slaughter.

It is recommended that **welfare codes of practice** be developed by producer organisations or associations and submitted for **approval to the competent authorities**. The competent authorities would then verify that the codes of practice are in line with the principles of an updated legislative framework for fish welfare, and the verified codes of practice would be enforceable and obligatory for members of producer organisations and associations.

Policy recommendations

The following recommendations are set out:

1. Encourage scientific, ethical and public **debate**, and support multi-disciplinary **research** on welfare of farmed fish.
2. Support research on the identification of **welfare needs** and standards for farmed fish species depending on the farming systems and the production phases, especially during early development and harvest.
3. Support research on the development of **technological tools** to monitor and analyse farmed fish **behaviour** on-site.
4. Support research on the development of reliable and user-friendly **operational welfare tools** for the assessment of farmed fish welfare.
5. Support the development of species-specific **welfare scoring systems** that will ensure welfare assessment by fish farmers on-site and evaluation of farmed fish welfare status by the competent authorities.
6. Emphasise on the development and implementation of **humane slaughter methods**.
7. Develop and promote fish welfare **training courses for veterinarians** and health professionals, who specialise in fish to support fish farm staff.
8. Develop and promote **basic training programmes for fish farmers** to provide fundamental knowledge on fish biology and behaviour, relevant EU and national regulations and standards, husbandry procedures that can cause suffering, and good husbandry practices leading to improved fish welfare.
9. Develop and promote **life-long education and training of fish farm personnel** to certify that staff responsible for the care of fish is competent, well-trained and have management skills appropriate to the technical requirements of the farming system and production phase.
10. Nominate a **welfare officer** for each fish farm. The person in charge must safe-guard that fish welfare needs and the implementation of fish welfare recommendations are taken care of. The welfare officer is responsible for preparing all relevant documentation for the

competent authorities (annual report on fish welfare related outputs, including mortalities, injured animals, and disease outbreaks).

11. Develop **support measures for the industry** to incorporate recent technological advances for implementing welfare monitoring and humane slaughter methods.
12. Improve the **legislative framework** on animal welfare, for example through amending Directive 98/58/EC, with clearly defined provisions to avoid suffering, pain, and distress of fish in farming operations, focusing also on fish welfare and incorporating the latest scientific advances in this field. The updated legislation should include:
 - a) the fundamental legislative **objectives** and general **fish welfare principles**,
 - b) the delegation of authority and establishment of enforcement and **official auditing mechanisms**, and
 - c) the framework for the development of secondary legislation on areas such as **management, handling/treatments, transportation, and slaughter**.
13. Incorporate fish **species-specific requirements** as annexes of secondary law on **animal welfare** and/or promoting the development of codes of good practice by interested parties (i.e. producer organisations).

Further information

This executive summary is available in the following languages: English, French, German, Italian and Spanish. The study, which is available in English, and the summaries can be downloaded at: <https://bit.ly/43JookD>

More information on Policy Department research for PECH:
<https://research4committees.blog/pech/>



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