

Regulatory Framework for Live Aquatic Animal Transport and Harvest

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Abstract

This deliverable presents an in-depth analysis of the current regulatory and non-regulatory framework governing the welfare of farmed fish during transport and harvest across the European Union and selected member states. It distinguishes between soft measures (e.g., guidelines and recommendations) and hard rules (legally binding regulations), examining how these are applied at both EU and national levels. Despite existing general regulations, a significant gap persists in species-specific welfare provisions for aquatic animals. The report reviews EU legislation, international standards (e.g., WOH, EFSA), and national approaches in countries such as Spain, France, Portugal, Greece, and others. The analysis highlights disparities in implementation and enforcement, the influence of scientific knowledge and advocacy efforts, and identifies opportunities for policy improvement. The document emphasizes the need for harmonized and species-specific legislation to enhance the welfare of aquatic animals during critical production phases such as transport and slaughter.

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LIST OF ABBREVIATIONS

BCAS	Biology Center of the Czech Academy of Sciences
CFP	Common Fisheries Policy
DG Mare	Directorate- General for Maritime Affairs and Fisheries
DGRM	Direção-Geral de Recursos Naturais e Marítimos (Portugal)
EC	European Commission
EFSA	European Food Safety Authority
EMFAF	European Maritime, Aquaculture and Fisheries Fund
EU	European Union
EURCAW	European Reference Center for Animal Welfare
EUPAHW	European Partnership on Animal Health and Welfare
HACCP	Hazard Analysis Critical Control Point
NGO	Non-Governmental Organization
SPS	Sanitary and Phytosanitary (WTO Agreement)
TFEU	Treaty on the Functioning of the European Union
UAB	Universitat Autònoma de Barcelona
UoC	University of Crete
WOAH	World Organisation for Animal Health (formely OIE)

INTRODUCTION

Over the past fifty years, there has been growing recognition and awareness of animal welfare, and more recently, increased focus on the welfare of fish and other aquatic animals. This has intensified interest in understanding all aspects of fish welfare, including the establishment of regulatory standards. A major factor contributing to this heightened interest is the exponential growth of fish farming activities, which has revealed significant gaps in scientific and technical knowledge, as well as in legal protections and ethical considerations surrounding aquatic animal welfare. Such uncertainties have heightened the awareness of producers, aquaculture professionals, consumers, advocacy groups, scientists, and policymakers, creating a collective drive to address these gaps (see Pavlidis et al., 2023).

Scientific and technical approaches to assessing fish welfare continue to advance, reflecting broader societal interest. However, unlike terrestrial farm animals, fish welfare must account for a diverse range of farmed species, varied biological characteristics across life cycles, differing production systems, and unique geographical conditions. These complexities make standardization efforts more challenging than those in terrestrial farming systems, which often focus on a single species. Furthermore, the scarcity of scientific and technical data in many areas complicates efforts to develop comprehensive, common regulations. Nonetheless, for some species, such as salmon, trout, seabream, and seabass, the available knowledge base is both extensive and precise, supporting the creation of targeted regulations.

EU LEGISLATIVE FRAMEWORK

To comprehend the general framework for legislative development on fish welfare, it is essential to consider three main categories or levels of regulatory and non-regulatory measures:

- a) **Standards, codes of conduct, and best practices**, typically formulated by NGOs, producer associations, certification bodies, or interest groups;
- b) **Recommendations** issued by public institutions, often referred to as 'soft' rules, which are generally species-specific and grounded in scientific or technical principles;
- c) **Legally binding regulations**, also known as 'hard' rules, which are mandatory for farmers and all other operators involved in various stages of fish farming operations.

Pavlidis et al (2023) in their report about the “Animal Welfare of Farmed Fish” presents in a comprehensive way the law documents binding the EU members to protect the welfare of farmed aquatic animals.

EU legislation related to fish welfare and more specific live transport, harvest and killing follows:

- The **European Convention for the Protection of Animals kept for Farming Purposes** signed by the Parties of the Council of Europe (CoE) in 1978, and revised in 1992, sets out general principles and asks for the establishment of experience and scientific knowledge on animal welfare. **Council Directive 98/58/EC** concerning the protection of animals kept for farming purposes incorporated the mandates of the Convention into EU legislation. Science in the field of animal welfare in general and of fish welfare in particular is moving on considerably in recent years.
- The **European Convention for the Protection of Animals during International Transport** firstly concluded 1968, and revised in 2003, provides recommendations for the transportation of livestock and horses and recognizes that local slaughterhouses are preferable to transportation. Many years later the first law with specific provisions on live animals’ transportation was the Council Regulation (EC) 1/2005 on the protection of animals during transport.
- A series of EU Regulations pertaining to various aspects related to fish farming were laid down, many of which directly or indirectly also affect fish welfare. Specifically, of these: **Regulation (EC) 178/2002 sets general principles and requirements for food law** (including feed); **Council Regulation (EC) 1099/2009 on the protection of animals at the time of killing**; **Regulation (EU) 2019/4 for placing medicated feed on the market and use of medicated feed** and **Regulation (EU) 6/2019 on veterinary medical products**
- Additionally, fish welfare is partially addressed in the Regulation **(EU) 2016/429 on transmissible animal diseases** (“Animal Health Law”), which came into effect in April 2021 (Animal Health Law). While primarily focused on animal health and disease prevention, this regulation includes references to animal welfare, particularly highlighting the role of veterinarians and aquatic animal health professionals in monitoring welfare.
- The next relevant legal milestone for animal welfare was in 2009/2012, with the **Treaty of Lisbon** and particularly in the Article 13, Title II of the TFEU (Treaty on the Functioning of the European Union) that formally recognised animals as sentient beings.

EU legislative framework in place for the ‘Protection of Animals kept for Farming Purposes’ consisted by directives and regulations manage aspects that impair fish welfare without providing detailed requirements focused on aquatic animals’ needs. These Directives and Regulations were very relevant

as they established the general basis for welfare during farming, transport and slaughter as well as specifications for terrestrial animal species, but did not contribute with relevant specifications for fish or other aquatic animals. More on that they do not take into consideration the variety of aquatic organisms farmed, and no species-specific provisions are provided.

Welfare in transport and slaughter, in general, is partially addressed in the legislation previously referred, although the main descriptions on specific aspects can be found in the following texts:

Transportation

Council Regulation (EC) No 1/2005 on the Protection of Animals During Transport and Related Operations

This regulation serves as the primary legislative framework for animal transportation within the EU. While it is comprehensive and detailed, its focus is mainly on the transportation of terrestrial farmed animals such as swine, horses, cattle, and small ruminants, without taking into account the specific needs and characteristics of fish. In point (9) of the preamble, the regulation mentions that “specific provisions for poultry, cats, and dogs will be set out in appropriate proposals when the relevant opinions of the European Food Safety Authority (EFSA) are available.” Although fish are not explicitly referenced, it is anticipated that specific provisions for fish should follow EFSA’s scientific input. Notably, EFSA first issued opinions on fish transportation in 2004 and provided an update in 2006.

- **EFSA Panel on Animal Health and Welfare, 2004.** Opinion of the Scientific Panel on Animal Health and Welfare (AHAW) on a request from the Commission related to the welfare of animals during transport. EFSA Journal 2004; 2(5):44, 219 pp. doi:10.2903/j.efsa.2004.44

These opinions were released after the Council Regulation’s publication, so they were not incorporated into the regulation itself.

However, Council Regulation (EC) 1/2005 includes several general provisions on animal transport that apply across species. These are outlined in:

- **Chapter I: Scope, Definitions, and General Conditions for the Transport of Animals** – This section establishes key principles for transportation, which could be adapted to fish.
- **Chapter II: Organizers, Transporters, Keepers, and Assembly Centers** – This technical chapter specifies who can conduct transport, planning requirements, necessary authorizations, documentation, and transportation traceability.
- **Chapter III: Duties and Obligations of Competent Authorities** – This section provides guidance applicable to all species.

- **Chapter IV: Enforcement and Exchange of Information and Chapter V: Implementing Powers and Committee Procedure** – These sections also apply a similar, broad approach.

The regulation's specific technical sections, including Health and Hygiene Measures and Technical Rules in Annex I, are predominantly centered on swine, horses, cattle, and similar terrestrial animals, with no particular guidelines for fish or other aquatic animals.

In this context, the **EFSA Opinion of the Scientific Panel on Animal Health and Welfare (AHAW)** serves as a complementary recommendation for fish transportation, although it is not legally binding under Regulation 1/2005.

Additional guidance on fish welfare during transport can be found in the *Guidelines on Water Quality and Handling for the Welfare of Farmed Vertebrate Fish* (Guidelines on Fish Welfare). This document contains recommendations for maintaining water quality both on farms and during transport, addressing specific requirements. For instance, point (13) advises:

- **Transport vehicles and containers holding fish should have adequate oxygenation and control of CO₂ and metabolic wastes, along with the necessary equipment for monitoring water quality.** The water quality monitoring system should be capable of managing variations in conditions throughout the journey to meet the needs of the fish. Additionally, vehicles, containers, and monitoring equipment should be kept in good working order and be cleaned and disinfected after each use.

These recommendations provide practical guidance for ensuring fish welfare in transportation but remain separate from the specific regulations laid out in Council Regulation 1/2005

International Guidelines on Fish Stunning and Slaughter

At the international level, WOAHP provides general recommendations on fish stunning and slaughter in Chapter 7.3 of its Aquatic Animal Code. These recommendations state that fish should be stunned prior to slaughter using methods that ensure an immediate and irreversible loss of consciousness. The Aquatic Animal Code also emphasizes additional considerations, such as appropriate equipment, an alternative system in case of malfunction, and staff training on best practices and safety measures.

Article 7.3.6 specifically recommends mechanical or electrical stunning methods based on species needs and explicitly advises against methods like CO₂ in water, salt or ammonium baths, asphyxiation, and direct exsanguination, as these methods do not ensure stunning.

In contrast to the transportation of fish cited in Regulation 1099/2009, with very general mentions, the European Union has not established specific regulations for fish stunning and slaughter. The regulatory framework largely consists of general recommendations and guidelines.

For a comprehensive understanding, additional resources and references can be found in:

Giménez-Candela, T., Saraiva, J., & Bauer, H. (2020). The Legal Protection of Farmed Fish in Europe: An Analysis of EU Legislation and the Impact of International Animal Welfare Standards on European Aquaculture. *Derecho Animal. Forum of Animal Law Studies*, 11, 65. DOI: 10.5565/rev/da.460.

Fruscella, L. (2023). The Welfare of Fish in EU Legislation: The Quest for Equal Rights Recognition. *Diritto degli Animali*. Retrieved from <https://ali.org/en/journal-animal-rights-law/the-welfare-of-fish-in-eu-legislation-the-quest-for-equal-rights-recognition/>

Pavlidis, M., Papaharisis, L., Adamek, M., Steinhagen, D., Jung-Schroers, V., Kristiansen, T., Theodoridi, A., & Otero Lourido, F. (2023). Research for the PECH Committee – Animal Welfare of Farmed Fish, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels.

GUIDELINES ON AQUATIC ANIMAL WELFARE

WOAH and animal code

In parallel with the regulatory developments by the Council of Europe and the European Commission, the World Organisation for Animal Health (WOAH, formerly OIE) has served as a longstanding reference in animal health, focusing in recent years on animal welfare as well (see WOAH's 3rd Animal Welfare Forum). Each edition of the WOAH Manual of Aquatic Animals includes a section dedicated to aquatic animal welfare, with specific guidelines on farmed fish welfare during transportation, stunning, and humane killing, both for human consumption and disease control purposes (WOAH Aquatic Code).

WOAH's guidelines and recommendations have significantly influenced both European and EU legislation on animal health and welfare, frequently referenced in regulatory frameworks.

The World Organization for Animal Health (WOAH) sets out the general obligation that animal husbandry operations should avoid suffering, distress and pain in the **Terrestrial and Aquatic Animal Health Codes**. The Animal Health Code, in its two versions (terrestrial and aquatic animals), sets veterinarian standards and recommendations for the welfare of farmed fish during transport and, slaughter and destruction for disease control reasons. These codes are recognised by the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures. The EU and

Member States competent authorities should use the standards and principles of Aquatic Animal Health Code to develop measures for animal health, animal welfare and use of antimicrobial agents. EU Member States have adopted mandatory rules (laws/acts and/or administrative regulations) setting some clear binding rules regarding the general principles of farmed animals, and in particular farmers' duty to avoid undue pain, suffering or distress of farmed animals, including fish.

EFSA recommendations/scientific opinions on transport stunning & killing

Another key European agency that provides independent scientific advice on critical aspects of animals production including animals' welfare is the **European Food Safety Authority (EFSA)**. Since its establishment in 2002, EFSA has provided impartial scientific advice to EU risk managers on food chain-related risks, encompassing animal disease and welfare issues. EFSA made substantial contributions to fish welfare in 2008 and 2009, forming scientific panels to assess welfare practices at various stages of fish farming, transport, and slaughter (EFSA Scientific Committee). This work led to numerous scientific opinions covering fish welfare, sentience, physiology, and studies focused on the welfare of specific European farmed fish species at all stages of their production cycles, including stunning practices.

EFSA has contributed significantly to the knowledge base on fish welfare during stunning and slaughter with several key documents, including:

- Animal Welfare at the Time of Killing ([link](#))
- Species-specific welfare aspects of stunning and killing methods:
 - Atlantic salmon (*Salmo salar*)
 - Rainbow trout (*Oncorhynchus mykiss*)
 - European eel (*Anguilla anguilla*)
 - Gilthead seabream (*Sparus auratus*)
 - European seabass (*Dicentrarchus labrax*)
 - European turbot (*Psetta maxima*)
 - Common carp (*Cyprinus carpio*)
 - Farmed tuna (*Thunnus* spp.)

These recommendations, produced over 14 years ago, may require updates to reflect advancements in scientific and technical knowledge. Nonetheless, EFSA highlighted concerns with certain traditional methods used for species like seabass and seabream, which often involve suffocation in air or chilling in ice or ice-water mixtures. These methods fail to achieve unconsciousness prior to slaughter, potentially subjecting fish to prolonged periods of pain or distress.

Additional guidance from the Guidelines on Water Quality and Handling for the Welfare of Farmed Vertebrate Fish could also be applied to stunning and slaughter practices. These guidelines, though generally focused on water quality and air exposure during handling, provide useful recommendations that can support welfare considerations during pre-handling, stunning, and killing.

EU POLICIES AND ACTIONS ON AQUATIC ANIMAL WELFARE

Fish welfare has been incorporated into various European Commission initiatives on farmed animal welfare. Among these initiatives, the establishment of the EU Platform on Animal Welfare stands out. The Platform has developed and continues to develop several working sub-groups, producing valuable documents and resources on fish welfare, including:

- **2017:** The Expert Group on the EU Platform of Animal Welfare (Decision 2017/C 31/12EN), which addresses various aspects of farmed animal welfare, including specific sessions on fish welfare.
- **2020:** *Guidelines on Water Quality and Handling for the Welfare of Farmed Vertebrate Fish* (https://food.ec.europa.eu/system/files/2022-07/aw_platform_guide_farmed_fish_en.pdf).
- **2020:** *Animal Welfare at the Time of Killing* (https://food.ec.europa.eu/animals/animal-welfare/eu-platform-animal-welfare/thematic-sub-groups/animal-welfare-time-killing_en).
- **2021:** *Guidelines on Water Quality and Handling for the Welfare of Farmed Vertebrate Fish*, developed by the EU Platform for Animal Welfare.

In parallel, the Standing Committee on Agricultural Research (SCAR) established a Working Group on Fisheries and Aquaculture Research (SCAR-FISH) to enhance coordination between EU Member States' fisheries and aquaculture ministries and the European Commission (DG Research & Innovation, DG MARE, and DG Environment) (SCAR-FISH Mission). One of the SCAR-FISH working groups focused specifically on fish welfare, aiming to identify key research gaps and foster consensus between researchers and the aquaculture industry on future research priorities. This group's findings were published in 2018 as a document titled "*Strengthening Fish Welfare Research through a Gap Analysis Study*" (Report).

In February 2023, the Council of Europe introduced the Fisheries Policy Package, a suite of measures aimed at enhancing the sustainability and resilience of the EU's fisheries and aquaculture sectors. This package explicitly acknowledges fish welfare as an integral aspect of aquaculture and fisheries sustainability. It encourages the European Commission to offer guidance and advance scientific knowledge on the welfare of aquatic animals. Additionally, it recommends incorporating provisions to improve the welfare of farmed fish in upcoming EU animal welfare legislation. However, as the

document lacked unanimous approval from all EU delegations, it was adopted as Presidency Conclusions, supported by 26 Member States, rather than as Council Conclusions.

On January 24, 2024, the European Parliament held a plenary session where members specifically called upon the European Commission to include animal welfare considerations for both farmed and wild-caught fish in the next Common Fisheries Policy (CFP) (European Parliament Resolution).

Later in January 2024, the European Commission established the European Reference Centre for Animal Welfare dedicated specifically to farmed fish (EURCAW Aqua). In the same year, the European Partnership on Animal Health and Welfare (EUPAHW) was launched as a major research and innovation initiative funded by the European Commission, aiming to control infectious diseases in animals and promote animal welfare. The EUPAHW includes a significant focus on fish and aquatic animal welfare in its projects.

Very recently, European Maritime, Aquaculture and Fisheries Fund (EMFAF) has also produced a new document entitled 'Good husbandry practices for aquaculture' (Alevra, A., Llorente Manzanares, M., Mente, E., Xandri Royo, P.M., Good husbandry practices for aquaculture, Publications Office of the European Union, 2024, doi: 10.2926/1713439). This document provides a list of general and species-specific good husbandry practices on key topics related to health and welfare in the different production techniques of some of the main European aquaculture, including current practices as well as innovative technologies still under research mainly related to fish rearing, but not in transportation and slaughtering. The document is intended primarily for aquaculture producers.

Alongside legally binding regulations ('hard' rules) and recommendations from public institutions ('soft' rules), a variety of private organizations have developed standards, guidelines, and codes of conduct. These include the *Code of Conduct for the Mediterranean Fish Farming Sector, Fish from Greece – the Mediterranean Fish Welfare Guide, and Welfare Guidelines for European seabass and gilthead seabream*, developed by Apromar.

Furthermore, a substantial amount of technical and scientific data on fish welfare is available from EU Horizon-funded projects, such as COPEWELL, DIVERSIFY, PERFORMFISH, MEDAID, CURE4AQUA, and IGNITION, as well as from international collaborations, including FISHWELL, which offers guidelines for Atlantic salmon and rainbow trout. Additional resources and databases, such as FishEthoBase, are maintained by various research institutions and collaborative projects (FishEthoBase).

REGULATIONS ON AQUATIC ANIMALS AT NATIONAL LEVEL

Spain

Spain's regulatory landscape for farmed fish welfare encompasses approximately 20 rules, primarily drawn from the European Union's directives and national laws. Only five of these focus specifically on fish welfare, while the rest incorporate welfare within broader animal health and hygiene regulations. Traditionally, welfare guidelines were appended to health regulations, with older laws providing general animal welfare protection. Recent legislative trends, however, show a shift toward including explicit fish welfare sections, mirroring developments at the EU level.

Key Regulatory Areas and Observations

- Disease Prevention and Treatment:** Spanish laws provide the most detailed welfare regulations concerning disease prevention and treatment, primarily addressing disease transmission control. Fish welfare within these laws is often treated indirectly, with a focus on overall health rather than specific welfare considerations.
- Transport and Slaughter Protocols:** Spanish legislation mandates the humane handling of fish during transport and slaughter to minimize suffering. Specific welfare protocols, however, remain limited. Inspectors have the authority to demand compliance with general welfare principles, known as "the Great Rule," which requires the prevention of avoidable suffering, pain, or distress across all aquaculture stages, especially during slaughter. Recently, animal health authorities have launched a data collection campaign on the stunning and slaughter method used by companies, currently in marine farms. This campaign runs in application of the Royal Decree 159/2023, which sets provisions for the application in Spain of EU regulations on official controls specifically on animal welfare.
- Legal Gaps:** Spanish legislation lacks a comprehensive, binding welfare code specific to farmed fish. This leaves the implementation of welfare parameters largely up to interpretation. Though health inspectors can enforce general welfare obligations, the absence of detailed procedures limits explicit guidance.
- General Welfare Obligations:** Despite the lack of specific legislation, Spain's laws impose a broad responsibility on aquaculture operations to ensure fish welfare throughout production. Inspectors can intervene when any procedure seems likely to cause undue pain or stress, thus maintaining a basic level of welfare enforcement indirectly.

EU and Spanish Legislative Framework for Fish Welfare

In Spain, key regulations include:

- **Rearing Regulations:** EU Council Directive 98/58/EC and Spain's Royal Decree 348/2000 require humane rearing practices for all farmed animals, including fish, with provisions to avoid unnecessary pain and meet physiological needs. Other laws, like the 2003 Animal Health Law, also impose general welfare measures, especially concerning disease control.
- **Transport Requirements:** The EU's Regulation (EC) 1/2005 and Spain's Royal Decree 542/2016 regulate live fish transport, emphasizing short journey times, adequate equipment, and operator training. Compliance with these standards is mandatory, with health authorities enforcing adherence.
- **Slaughter Protocols:** Regulation (EC) 1099/2009 ensures humane slaughter practices, although it includes only general recommendations for fish. Spanish laws, such as Royal Decree 842/2011, further regulate slaughter practices, though detailed species-specific stunning methods remain limited.

National Guides and Recommendations

Beyond legal requirements, Spain has collaborated with industry stakeholders and welfare organizations to produce guides for best practices in aquaculture. Notably, the Spanish Aquaculture Business Association (APROMAR) has published the **Guide on Fish Welfare in Spanish Aquaculture**, addressing general welfare concepts and specific guidelines for farmed species like seabass and seabream. These guides provide step-by-step recommendations for humane handling and slaughter, including pre-slaughter fasting and suitable stunning methods (e.g., electrocution or percussion), tailored to species and production contexts.

France

In France, fish welfare regulations largely stem from European Union (EU) legislation, with few additional national rules specifically dedicated to fish. Here's a breakdown of France's current regulatory framework on fish farming welfare:

Rearing and Animal Health Law

- **Water Quality:** The French government has transposed the EU Water Framework Directive, enforcing water quality regulations with binding orders issued on April 1, 2008, for freshwater fish farming. These orders emphasize maintaining specific chemical and physical water conditions, recognized as critical for fish welfare. Violations in water quality are closely

monitored and subject to penalties, making it one of the few enforceable welfare provisions directly impacting fish farming conditions.

○ **Animal Health:**

- **EU-Level:** France follows EU Regulation 2016/429, which oversees animal disease prevention and control across the EU. This replaced the earlier Directive 2006/88, which set foundational requirements for aquaculture animal health.
- **National-Level:** Two primary regulations address animal health:
 - **Order of November 4, 2008** – Defines sanitation and disease prevention requirements for aquaculture animals, aiming to curb transmissible diseases and enforce biosecurity.
 - **Order on Aquaculture Licensing (also from November 4, 2008)** – Mandates “good husbandry practices” and requires a health monitoring system to prevent disease spread. It involves both temporary and permanent licensing procedures, including compliance checks.
- **Implementation and Oversight:** The Ministry of Agriculture issues detailed technical notes for local authorities, helping standardize procedures for monitoring aquaculture practices across France. French aquaculture industry associations, such as CIPA (Comité Interprofessionnel des Produits de l’Aquaculture) and FFA (Fédération Française d’Aquaculture), have created a comprehensive “Guide of Good Fish Health Practices” to aid producers in implementing these health protocols.
- **Feeding:** The EU’s Regulation 178/2002 on food law applies in France, requiring a register for food traceability, mortality, and treatment records, initially set by a French order from March 30, 2000. However, there are no additional national rules on feeding specific to fish welfare.

Slaughter

- **EU-Level:** EU Regulation 1099/2009 governs animal protection at slaughter, prohibiting avoidable suffering. This regulation applies in France, though no further national rules specify requirements for fish slaughter.
- **Inspection and Monitoring:** French health authorities regularly inspect processing facilities to ensure compliance with slaughter requirements, checking that slaughter practices do not subject fish to unnecessary pain or stress.

Transport

- **EU-Level:** France adheres to EU Regulation 1/2005, governing animal protection during transport, but lacks specific national rules for farmed fish transportation.

Summary

Overall, France primarily relies on EU regulations for fish welfare, with its national regulations focusing heavily on disease prevention and water quality rather than specific welfare protocols. The French regulatory framework for fish farming emphasizes health monitoring, environmental controls, and minimizing disease risk, aligning with EU standards. Additional detailed welfare protocols or a specific code for fish could enhance this framework, particularly around transport and slaughter practices.

Portugal

In Portugal, the legal framework for aquaculture, as outlined by the General Directorate for Natural Resources and Maritime Affairs (Direção-Geral de Recursos Naturais e Marítimos, or DGRM), does not include specific provisions for farmed fish welfare. Instead, the regulations focus primarily on public health, disease prevention, and environmental concerns, particularly as they relate to mollusks and crustaceans rather than fish. Here's an overview of the regulatory areas impacting aquaculture in Portugal:

Aquaculture-Specific Legislation (Legislação Específica da Aquicultura)

- Portugal's domestic aquaculture legislation includes six key rules that center on public health and disease prevention, primarily to limit the transmission of diseases from aquaculture species to humans or other animals.
- These regulations, however, are specific to mollusks and crustaceans, with no explicit references to fish farming or farmed fish welfare.

European Union Law (Direito da União Europeia)

- Portugal enforces six EU regulations, all aimed at public health, disease control, alien species management, and environmental issues. Among these, only Regulation (EC) 710/2009 addresses welfare indirectly, focusing on organic aquaculture production, which requires adherence to welfare standards.
- While this regulation applies to organic aquaculture practices, it does not cover the broader fish farming industry, leaving conventional aquaculture practices without specific welfare requirements.

Legislation on Water Resources, Water Law, Maritime Spatial Planning, and Environmental Impact Assessment (Legislação referente Utilização dos Recursos Hídricos, Lei da Água, Ordenamento do Espaço Marítimo e Avaliação do Impacte Ambiental)

- This set of laws addresses maritime spatial planning, public domain management, environmental impact assessments (EIA), and water framework policies.
- While relevant to aquaculture operations, these laws focus on environmental impacts and resource management rather than the welfare or health of farmed fish or other aquaculture species.

Sanitary and Health Conditions for Bivalve Mollusk Purification and Dispatch Centers (Legislação referente às condições higio-sanitárias dos centros de depuração e de expedição de moluscos bivalves vivos)

- These regulations deal with public health standards for bivalve treatment centers and the commercialization of live mollusks, in line with EU Hygiene of Foodstuffs regulations (Regulations 852/2004 and 853/2004).
- This section is specific to bivalves and does not include any welfare or health requirements for fish or other aquaculture species.

Miscellaneous Legislation (Legislação Diversa)

- This includes several EU regulations that are binding for all EU Member States:
 - **Regulation (EC) 178/2002** – General food law principles and food safety, setting up the European Food Safety Authority.
 - **Regulation (EC) 1774/2002** – Animal by-products not intended for human consumption.
 - **Regulation (EC) 854/2004** – Hygiene rules.
 - **Regulation (EC) 882/2004** – Official controls on compliance with food law, animal health, and animal welfare.
- Regulation (EC) 882/2004 is the only regulation that mentions welfare, but the reference to welfare is minimal and generic, lacking practical application or specific welfare requirements for farmed fish.

Conclusion

- There is no Portuguese-specific mandatory rule for farmed fish welfare, and existing EU regulations offer only limited and general welfare provisions that apply indirectly to aquaculture.
- The focus of Portuguese legislation remains on public health, environmental protection, and regulatory compliance, without addressing the specific welfare needs of farmed fish.

Greece

Fish farming

In Greece, Presidential Decree 374/2001 focused on the practices that protect animals kept for farming purposes, in accordance with Directive 98/58/EC (on social interactions, hygiene, and nutrition and water quality). Health control requirements for aquaculture animals are also imposed. Ministerial Decision 2481/289147/2020 amending partially Presidential Decree 28/2009, lays down preventive measures for aquatic animal health, in compliance with Council Directive 2006/88/EC which replaced by regulation 2016/429. Provisions stated on Presidential Decree 28/2009 and Ministerial Decision 2481/289147/2020 are complying acts in the area of animal health protection referred in Regulation (EU) 2016/429 of the European Parliament and of the Council repealing Council Directive 2006/88/EC. It contains provisions for the prioritisation and categorisation of diseases of Union concern, on early detection, notification and reporting of diseases, on the registration and approval of establishments and transporters, on the entry of animals and germinal products into the Union and on the emergency measures to be taken on the event of a disease emergency situation. The competent veterinary authorities carry out regular official inspections of fish farming facilities based on a risk assessment. Finally, Presidential Decree 56/2013 lays down measures for the protection of animals used for scientific purposes in compliance with Directive 2010/93/EC.

Fish transportation

All fish transportation vehicles are registered and licensed by the veterinary office of the prefecture to which they belong. This is a legal requirement derived by the implementation of EU Regulation 1/2005 for animal protection during transport. The vehicles have to maintain a log for all fish transportation journeys carried out, including the species they carry and the farms visited. They are also required to record incidents and report losses. Records on equipment cleaning and disinfection are obligatory. Vehicle licenses are requested during the official audits on hatcheries.

Conclusions

- The Greek legislation provides a very solid legal framework for the protection of aquatic animal health, the administration of medicines and medicated feed, the adoption of biosecurity measures and good practices relating to the protection of animal health.
- Although there are no detailed provisions for live fish transportation, general requirements provide a robust framework for good practices during transport. More detailed provisions are expected to enhance the protection and welfare of live aquatic animal during transport.
- There are no specific legal requirements for fish stunning and killing. Monitoring plans for farms and primary packaging plants include controls of slaughtering methods.

Italy

Animal Health and Aquaculture Regulations

- Italy implemented **Directive 2006/88/EC replaced by EU Regulation 2016/429** through **Legislative Decree 148/2008**, which focused on aquaculture company registration, traceability, health status categorization, and disease prevention, including measures for aquaculture-specific diseases.
- The **Animal Health Law (AHL)** (EU Regulation 2016/429), while directly applicable in Italy, focuses on public health and transmissible disease control but does not address welfare explicitly. Italy's full adoption of AHL is still pending, with interim measures such as explanatory notes on fish disease classifications and digitized certifications for fish transport.

Fish Welfare at Farm Level

- The **Legislative Decree 146/2001**, derived from **Directive 98/58/EC**, applies to all farmed animals, including fish, but provides no fish-specific welfare standards. Official Veterinary guidelines assess basic welfare practices, but these are mainly tailored to terrestrial animals.

Transport

- **Regulation (EC) 1/2005** governs animal transport but does not provide species-specific guidance for fish. The Italian Ministry of Health has issued guidelines and a **Manual for Fish Welfare Control During Road Transport** to help operators and regulators address the unique welfare needs of live fish during transport.

Germany

Animal Welfare and Aquaculture Regulations

- In Germany, fish used for stocking or slaughter are classified as farm livestock under the **Animal Welfare Act (Tierschutzgesetz, TierSchG)**. Although these fish are not included under the **Animal Welfare Farm Animals Ordinance (TierSchNutztV)**, aquaculture farms must adhere to self-monitoring requirements under Section 11(8) of the Animal Welfare Act. This includes gathering welfare indicators to ensure fish care aligns with Section 2, which mandates species-appropriate food, care, and housing.

General Welfare Provisions

- The **Animal Welfare Act** requires caretakers to minimize avoidable suffering and uphold species-appropriate care.
- Relevant regulations include the **Animal Welfare Slaughter Ordinance** for humane killing, the **Animal Welfare Transport Ordinance** for animal transport, and the **Animal Welfare Livestock Ordinance** for general livestock welfare. These regulations apply to fish indirectly through broader EU requirements, such as EU Regulations 1/2005 (Transport), 1099/2009 (Slaughter), and 2016/429 (Animal Health Law)

Conclusion

Germany has structured aquaculture requirements within its Animal Welfare Act, mandating welfare assessments and appropriate care but lacks fish-specific welfare standards for farmed fish.

Denmark

Aquaculture and General Animal Welfare Laws

- Denmark has no specific laws targeting fish welfare, relying instead on EU regulations and the **Danish Animal Welfare Law** (Order 1597/2021). This law requires animals to be protected from pain, suffering, and undue harm but lacks fish-specific provisions. **EU Regulations 848/2016** and **464/2020** regulate organic fish farming, setting standards for water quality and stocking densities, which Danish authorities verify during organic inspections.

Transport Regulations

- **EU Regulation 1/2005** governs fish transport, with additional Danish requirements for transporters, who must complete an 8-hour training course on fish handling. This course,

provided by the Danish Aquaculture Organisation, fulfills the EU's Article 6, point 4 requirements for trained handlers. Danish authorities focus on verifying transporter qualifications rather than welfare conditions directly.

Killing and Slaughtering

- No Danish laws specifically address fish welfare during slaughter; the country follows **EU Regulation 1099/2009**, which mandates humane handling but does not provide fish-specific guidelines. Danish authorities inspect slaughterhouses primarily for disease control rather than welfare compliance.

Conclusion

Denmark applies only general welfare regulations to fish, with the exception of organic farming standards. Fish welfare during transport and slaughter is loosely enforced, with oversight focusing on handler training rather than direct fish welfare.

Czech Republic

General Animal Welfare Legislation

- The Czech Republic's main fish welfare legislation falls under general animal welfare laws, particularly **Law 246/1992**, which covers handling, marking, slaughtering, and transporting animals, including fish, in general terms. Section 5i addresses slaughter, and Sections 8c-8g cover basic transport standards, but fish are often exempt from more specific transport protections.

Specific Welfare Requirements for Sale and Transport

- **Decree 418/2012** outlines welfare standards for fish kept in tanks for sale, specifying water-to-fish weight ratios, oxygen levels, and seasonal adjustments. This decree is essential for high-welfare standards in commercial fish sales.
- The Czech State Veterinary Authority provides additional recommendations for fish handling and slaughter, especially for the traditional Christmas carp market. These guidelines emphasize humane practices for popular seasonal sales.

Conclusion

Czech Republic includes fish in general animal welfare laws and specific requirements for tank-stored fish during sales, while additional guidelines are applied seasonally for Christmas carp sales to promote humane practices.

Netherland

For farmed fish, only a general provision from Regulation (EC) No. 1099/2009 on the protection of animals at killing applies, when killing farmed fish, the animals shall be spared any avoidable pain, distress or suffering. In the absence of EU species specific rules here, member states can maintain or adopt national rules on the protection of fish at slaughter and killing. The Netherlands has taken advantage of this. Since July 1, 2018, the “Keepers of Animals Regulation on stunning eels” has been in force.

In addition, fish as vertebrates are also covered by the general provisions on the protection of animals during transport. Of the animal welfare regulations authorities only actively supervise the stunning of eels. The other laws and regulations are subject to passive supervision. Here we can only enforce it if it can be demonstrated conclusively that animal welfare has been impaired. In such cases, an official veterinarian draws up a veterinary declaration.

Norway

Animal Welfare Law and Guidelines

- Norway's **Animal Welfare Act** (Dyrevelferdsloven) provides general animal welfare rules, including recognizing animals' intrinsic value and protecting them from unnecessary stress. However, terms like “acceptable” and “unacceptable” are vague, leading to varied interpretations in aquaculture practices.

Research and Industry Guidelines

- Industry standards for fish welfare are informed by research projects such as **Fishwell** and **LaksVel**, which develop non-binding welfare indicators, particularly for salmon and trout production.
- The **Norwegian Seafood Federation** recently introduced a HACCP-based guideline to systematically monitor fish welfare in production, aiming for a unified welfare assessment approach. Although not legally binding, this initiative promotes consistent welfare standards across aquaculture operations.

Iceland

Animal Welfare Act and Aquatic Animal Regulations

- Iceland's **Animal Welfare Act No. 55/2013** ensures that animals are free from distress, pain, hunger, and other discomforts, reflecting an emphasis on animal sentience and natural behaviors.
- Specific regulations, such as **Regulation 300/2018**, address aquatic animal welfare, requiring appropriate treatment, care, and facilities to safeguard the health and well-being of fish in aquaculture.

Transport and Slaughter Regulations

- Icelandic welfare standards include **Regulation 527/2017** on the transport of animals and **Regulation 911/2012** on slaughter, both of which extend protections to aquatic species to ensure minimal stress and humane handling.

CONCLUSIONS

Desk research of regulatory and non-regulatory provisions that are in place at EU and national level regarding farmed fish welfare at transport and harvest was conducted. The study presents (a) not legal binding standards, codes of conducts and best practices, typically formulated by NGOs, producer associations, certification bodies, or interest groups, (b) recommendations (“soft” rules) issued by public institutions, which are generally species-specific and grounded in scientific or technical principles, and (c) legally binding regulations (“hard” rules) , which are mandatory for farmers and all other operators involved in various stages of fish farming operations. It is important to stress the fact that species specific provisions are missing and could be of added value to future legislation/guidelines. The report on the Evaluation of EU Strategy on Animal Welfare⁸⁶ (European Court of Auditors, 2018) with specific focus on fish welfare suggests that most of the objectives of the strategy remain relevant, although some progresses have been achieved. At member states level there are differences between the transfer of the EU Directives at national legal framework. This mainly is driven by the different priorities in terms of rearing systems and species farmed in member states but also the existence of other drivers such as NGOs and other interested parties. The gaps between the member states should be filled by updating existing legislation on live animals transportation and accepted killing methods. Species specific requirements should be taken in consideration and could be part of transportation and killing provisions.

About EURCAW-Aqua

EURCAW-Aqua is the European Union Reference Centre for the welfare of aquatic animals. It focuses on farmed fish (rainbow trout, common carp, Atlantic salmon, European seabass, gilthead seabream) welfare, and covers the entire life cycle of fish from the early ontogenetic stages to the end of life. EURCAW-Aqua will also review the welfare of cephalopods and decapod crustaceans. Furthermore, during the development of new aquatic organisms farming operations, the welfare of any novel/emerging fish species will be evaluated upon specific queries arisen either by the European Commission Services or the Member States' Competent Authorities (CA's).

EURCAW-Aqua supports:

- Inspectors of CA's;
- Aquatic animals welfare policy workers;
- Bodies supporting CA's with science, training, and communication.

Website and contact

EURCAW-Aqua's website <https://www.eurcaw-aqua.eu> offers relevant and actual information to support enforcement of aquatic animals' welfare legislation. Are you an inspector or aquatic animals welfare policy worker, or otherwise dealing with advice or support for official controls of aquatic animals' welfare? Your question is our challenge! Please, send us an email with your question and details and we'll get you in touch with the right expert.



info@eurcaw-aqua.eu



<https://www.eurcaw-aqua.eu>

Services of EURCAW-Aqua

• Legal aspects

European fish welfare and farmed aquatic animals legislation that has to be complied with and enforced by EU Member States.

• Welfare indicators

Fish and decapod crustaceans' welfare indicators, including resource based, management based, group and individual animal-based indicators, that can be used to verify compliance with the EU legislation.

• Training

Training activities and training materials for inspectors, including bringing forward knowledge about ambivalence in relation to change.

• Good practices

Good and best practice documents visualising the required outcomes of EU legislation.

• Demonstrators

Farms, transport companies and relevant stakeholders demonstrating good practices of implementation of EU legislation.

Partners

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- University of Crete, Greece
- Biology Centre CAS, Czech Republic
- Universitat Autònoma de Barcelona, Spain