

Harmonisation of the Care and Use of Fish in Research



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Fish constitute a large proportion of the total number of animals used in research in many countries. Definitions vary somewhat between countries, making it difficult to compare statistics. In Norway fish account for over 95% of the approximately 2.5 million animals used annually in all forms of research. Statistics from EU countries show that fish comprise approximately 15% of the roughly 10 million animals used annually. "Fish" consist of over 20,000 species, many with vastly different physiological needs and behavioural characteristics. Our knowledge of these animals, even of the species most used in research, is still poor.

The current revisions of the Council of Europe's Convention ETS 123 and the EU's Directive 86/609 have highlighted the challenges of providing science-based guidelines on these species, and the need for more research into fish welfare, including implementation of the three Rs.

The last FELASA meeting, held in June 2004, had as its theme '*Internationalisation and Harmonisation in Laboratory Animal Care and Use Issues*'. This meeting was followed up by an international consensus meeting at Gardermoen, Oslo, in May 2005 on '*Harmonisation of the Care and Use of Fish in Research*'. The meeting attracted 99 delegates from 10 countries. Topics discussed included:

- *Welfare and ethics*
- *Challenges in regulating, inspecting and accrediting facilities for fish research*
 - *Anaesthesia, analgesia, humane killing and pain assessment*
 - *Health monitoring*
 - *Handling and procedures*
- *Challenges in fish research design and the use of statistics to reduce animal numbers*
 - *Genetic and environmental standards, including environmental enrichment*
 - *Guidelines for implementing the three Rs and Good Clinical Practice*
 - *Reporting fish experiments*

The main conclusions from this meeting were:

- The main challenges facing those working with fish are the procurement of healthy fish, the identification of monitoring mechanisms for health and welfare, and the identification of pain/distress in order to refine study endpoints.
- Reporting the numbers of fish used in research is very different between countries, despite the attempts to harmonise this under ETS 123. The presentation of these statistics is politically sensitive because of the large numbers of animals involved. Consistency in the definitions of what constitutes an experimental animal is required. This will make it easier to develop welfare standards appropriate to animal use.
- Health and welfare monitoring is currently heavily based on elementary parameters such as visual inspection, growth rate and mortality levels. Criteria for selection, health monitoring and welfare need refinement. The risk of introducing pathogens into housing systems must be given more consideration.
- The precautionary principle that it is likely that fish have the ability to feel pain should be applied when designing fish research protocols. The effects of chronic disease and suboptimal housing conditions are still poorly understood and more research should be performed in this area.
- Methods for sedation, anaesthesia, analgesia, surgery and killing require refinement to reduce their impact on fish welfare. Pre-anaesthetic sedation and the additional use of local anaesthetics appears to be helpful.
- Some routine procedures used in fish husbandry need refinement, to avoid side-effects such as the fibrous adhesions seen after vaccination.
- The effects of husbandry systems on behaviour require more research, since behavioural data may be meaningless if the environment is aversive to the animals.
- Guidelines on best (or least acceptable) practice for commonly used procedures should be developed. Production of an overview of existing guidelines is a priority. In particular, methods for marking fish, bleeding techniques and water quality parameters should be evaluated.
- An overview of experiments currently required by law, and recommendations for refinement of these, should be developed.
- The design of fish studies should be improved to ensure a more rational use of animals and to reduce numbers.

A website was developed for this meeting, containing links to guidelines for fish research:

<http://oslovet.veths.no/fish>

The site is undergoing expansion to include all the presentations from the meeting and the conclusions reached. Researchers and technicians involved in fish research are encouraged to submit information for this website.

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