



A Network for Improvement of Cephalopod Welfare and Husbandry in Research, Aquaculture and Fisheries - COST Action FA1301, *CephsInAction*

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Cephalopods are included in the new European Directive on animal protection of animals used for scientific purposes (Directive 2010/63/EU) making them the first and sole invertebrates considered. The Directive deserves special attention to assess and improve the welfare of animals utilized for experimental practices, and links tightly to the principle of the 3R's (Reduction, Refinement and Replacement) both for the application of procedures and for animals' care. Knowledge of the welfare and experimental practices for cephalopods are scattered among teams and there is lack of uniformity and consensus even in daily care. Recent efforts from the scientific community produced the first Guidelines for Care and Management of Cephalopods in Research and Education. However, practical implementation of the Guidelines, species-specific procedures in compliance with the Directive, application of the 3Rs and welfare/wellbeing concepts in rearing animals for other purposes, including aquaculture, are still required. *CephsInAction* is a COST Action established as an interdisciplinary network of experts aimed to promote sharing of tools, training, dissemination, and to increase scientific knowledge to improve methods and procedures required for the care of cephalopods in different contexts. Our COST Action is also aimed *i.* to foster multi-disciplinary and inter-species scientific exchanges to integrate knowledge on welfare practices, *ii.* to promote cephalopod research, conservation and public awareness.

Currently, *CephsInAction* is running its first year of operation (out of four) and includes 15 countries, involving about 130 researchers working on different aspects of cephalopods and fish biology. A database of participants to *CephsInAction* will be shortly available at www.cephsinaction.org. Other information on this COST Action is available at http://www.cost.eu/domains_actions/fa/Actions/FA1301.

Activities of *CephsInAction* span into four tasks: *i.* improve guidelines and experimental practices, *ii.* improve species specific research procedures, *iii.* develop new approaches to promote 3Rs principle, *iv.* dissemination & education. These are organized into five working groups aimed to:

Establish **Research Needs** for cephalopods (WG1), by assessing and improve best laboratory practices to implement the 3Rs principle to cephalopods for experimental, training and display purposes, also based on the biological needs for different cephalopod species.

Evaluate and improve knowledge on **Stress and Diseases** of cephalopods (WG2) including data on identification of diseases and their diagnosis, assessment of the health status, stress conditions and immune responses of cephalopods.

Establish appropriate studies on **Neurophysiology, Anaesthesia and Humane-end-points** for these species (WG3) with the sake to promote and standardize research on neurophysiology and behavioral Pharmacology, and to explore best anesthetic Agents and explore in vivo alternatives; to establish humane-end-points, euthanasia practices and criteria for death confirmation; to explore non-invasive methods for assessing physiological status of the animals.

Characterize welfare indicators with the aim to develop a Cephalopod Welfare Index (CWI) (WG4) to be utilized in the assessment of welfare (OWA) by semantic modeling to establish a Cephalopod Welfare Index Model (CWIM).

Finally, a great effort is devoted to Education and Training (WG5), to disseminate knowledge and to develop educational material including audiovisual alternatives (inspired to NORINA Database of Alternatives), the organization of Training Schools and thematic Workshops.

This presentation is also on behalf of 36 Members of the Management Committee of *CephsInAction*.