

## The impact of Directive 2010/63/EU on cephalopod research

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**Abstract** Here we discuss several impacts of some of the changes that have occurred since the implementation of Directive 2010/63/EU and of other regulations and directives on the scientific research involving cephalopods. Changes that correspond to a significant turning point of policies require responses from all those involved in research with cephalopods (including aspects of aquaculture research) as well as those responsible for their daily care and welfare.

**Keywords** Policies · Cephalopods · Directive 2010/63/EU · MFSD · Welfare

### Policies, directives and cephalopods

It has been almost 3 years (1 January 2013) since the Directive 2010/63/EU (referred to as “the Directive” for shorthand in this paper), which regulates the use of animals for scientific research and educational purposes, came into force in Member States of the European Union. From

hatching to death cephalopods (e.g. nautiloids, cuttlefish, squid and octopus) are the sole representatives among invertebrates that are now included in the Directive, meaning that all the procedures exceeding *the threshold* for induction of pain, suffering, distress or lasting harm (PSDLH) carried out on those animals are regulated in an identical way to any other classic vertebrate laboratory animals (Smith et al. 2013; Andrews et al. 2013; Fiorito et al. 2014). The *threshold for regulation* is stated in Directive 2010/63/EU as “any procedure which may cause pain, suffering, distress or lasting harm equivalent to, or higher than that caused by the insertion of a hypodermic needle in accordance with good veterinary practice” (European Parliament, Council of the European Union 2010).

This has major consequences for EU researchers working on cephalopods but is likely to impact also those working outside the EU as journals may adopt some of the welfare standards included in the Directive and the application of the 3Rs (replacement, reduction and refinement; Fiorito et al. 2014).

With this brief note, we aim to take stock of some of the changes that have occurred since the implementation of Directive 2010/63/EU; changes that correspond to a significant turning point of policies requiring responses from all those involved in research with cephalopods (including aspects of aquaculture research) as well as those responsible for their daily care and welfare.

### The needs for “guidelines” for care and welfare of cephalopods and the resulting challenges

Guidelines for Care and Welfare of cephalopods have been developed to facilitate compliance with the Directive (Fiorito et al. 2015). The publication of the “Guidelines” represents the culmination of several years of work

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