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Editorial

Animal Welfare Concerns in Wildlife Research and Management

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The Authors' Guidelines of Canadian Wildlife Biology & Management clearly indicate that "if animal handling has occurred, authors must state that the protocol for the research project has been approved by a suitably constituted Ethics Committee of the research institution, or conforms with guidelines previously published in scientific journals or recognized organizations". Animal handling encompasses all activities starting from the capture of an animal to its final disposition, and all actions that may have an impact on the behaviour (e.g., hazing to force an individual to move) or survival (e.g., aircraft pursuing or tracking) of the animals. Unless such information is provided to our Editorial Office, a paper will not be considered for publication in CWBM.

I think it is important for me to re-iterate this condition of publication in our journal because, in the last years, I have seen a few too many critiques of papers in scientific journals where such a condition was overlooked or simply dismissed by wildlife researchers and managers, some editors and potentially some reviewers (e.g., Brook et al. 2015; Costello et al. 2016). This happened in spite of the fact that journals' publishing guidelines demanded proof of protocol review by an Animal Care Committee, or implementation of state-of-

the art animal care guidelines published by wildlife specialists (Table 1).

As importantly, researchers and managers must use common sense when developing research protocols. For example, while some capture techniques may be deemed acceptable by an Animal Care Committee, their use could cause injury and change normal behaviour and physiology (Cattet et al. 2008; Proulx et al. 2012). Researchers should then seek alternative methods to carry out their research program. Several non-invasive methods are now available (Long et al. 2008; Proulx and Do Linh San 2016) to minimize the impact of study and survey techniques on wildlife species.

Finally, while wildlife researchers and managers should select humane procedures and implement animal care guidelines, they must also minimize or eliminate the need for animals. This is the philosophy behind the 3Rs (standing for refinement, reduction, and replacement) of Russell and Burch (1959). Replacement strategies include non-invasive methods, collation and use of information already gained, population meta-analyses, population and habitat suitability simulations followed by field validation, and archived tissue samples. Reduction implies using the fewest animals needed to provide valid information and statistical inference.

Refinement suggests that researchers should use the most humane, least invasive techniques to minimize pain and distress (CCAC 2003).

science and endanger the reputation of science and scientists, as well as the journals willing to publish them (Brook et al.

Table 1. Examples of state-of-the-art guidelines that may be used by wildlife researchers and managers.

Organizations	References
AVMA – American Veterinary Medical Association	https://www.avma.org/Pages/home.aspx
CCAC – Canadian Council on Animal Care	http://www.ccac.ca/en/
CITES – Guidelines for the transport of wild animals	https://cites.org/eng/resources/transport/index.php
IACUC – Institutional Animal Care and Use Committee	https://grants.nih.gov/grants/olaw/guidebook.pdf
IUCN – Guidelines for the translocation of animals	http://www.issg.org/pdf/publications/RSG_ISSG-Reintroduction-Guidelines-2013.pdf
Subjects	
Animals in applied ethology studies	Sherwin <i>et al.</i> 2003
Ethics	Paquet and Darimont 2010; Brook <i>et al.</i> 2015; Dubois <i>et al.</i> 2017
Fishes in research	Use of Fishes in Research Committee 2014
Mammal capture and handling	Powell and Proulx 2003; Proulx <i>et al.</i> 2012
Wild amphibians and reptiles in research	American Society of Ichthyologists and Herpetologists 2004; Phillott <i>et al.</i> 2010
Wild birds in research	Fair <i>et al.</i> 2010; Winker <i>et al.</i> 2010
Wild mammals in research	Sikes, R. S., W. L. Gannon, and the Animal Care and Use Committee of the American Society of Mammalogists. 2011; Costello <i>et al.</i> 2014
Wildlife in field research	Dein <i>et al.</i> 2005

Experiments that involve the intentional inhumane treatment of animals violate the fundamental principles of ethical

2015). Wildlife researchers and managers wishing to publish in Canadian Wildlife Biology & Management are expected

to uphold the highest standards of practice in wildlife conservation and animal welfare.

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