



Perspective

Animal welfare and decision making in wildlife research

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ABSTRACT

Wildlife scientists are increasingly encountering difficulties conducting research on wild animals due to opposition from animal welfare proponents. Given the current biodiversity crisis, research into animal biology and ecology is urgently needed. Collecting such information may involve invasive research on individual animals, which to some parties is unacceptable, even if ultimately it leads to better conservation outcomes for populations. We argue that these conflicting philosophies on how to treat animals represent a tension between two attitudes to animals. Nevertheless, an acceptable space for essential research can be found. By judicious application of the principles outlined in Bateson's Decision Cube, conservation scientists can effectively and clearly highlight the benefits of their work and more successfully engage the public in the complex debate about the value of conservation research to protecting ecosystem function, ecosystem services and evolutionary potential.

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1. Introduction

Given the current biodiversity crisis, with species being lost at rates 100–1000 fold greater than the average background rates (Pimm and Raven, 2000) research into basic animal biology and ecology is vital to successful conservation of species and biodiversity (Kremen and Ostfeldb, 2005). However, collecting this basic information may involve invasive research on a small sample of individuals within an animal population or species. To some parties this is unacceptable, even if it may ultimately lead to better conservation outcomes. This is a topic of increasing importance and debate among conservation biologists and animal welfare advocates as is illustrated by the volume dedicated to this subject in the journal *Animal Welfare* (Volume 19, issue 2) as well as other commentaries (Linklater and Gedir, 2011; McMahon et al., 2012;

Parris et al., 2010; Peniche et al., 2011). It is understandable, indeed appropriate, that widely held belief systems and public opinion should inform standards of animal welfare. On the other hand, conducting research on wild animals is becoming increasingly difficult due to escalating public concerns for the welfare of individual animals, a concern that has been in large part directed by the activities of animal rights groups. While the public may reluctantly tolerate laboratory tests on animals under the rationale that they have a clear and distinct benefit, specifically a benefit for human health (Isa et al., 2009), research on wild species is often not afforded this leniency. As a consequence, wildlife research is increasingly subject to significantly more stringent welfare standards than those applied to laboratory or farmed animals (Dawkins, 2006).

At its most extreme, some perceive that the best way to conserve animals is to leave them alone regardless of circumstance (Ehrlich, 2001). This is in direct conflict with a scientific approach to conservation. Conservation science contends that the knowledge gained from temporarily disturbing, or even killing, some individuals can be fundamental to appropriately informing conservation action plans and in so doing, ensuring evolutionary potential

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(Dalton, 2003, 2005; Ehrlich, 2001). This gives rise to a fundamental paradox in animal conservation. On the one hand, effective conservation actions, such as protecting core habitats, or enumeration of vital rates for population viability, inevitably involve adverse interactions with individuals from wild animal populations of conservation concern. On the other hand, maximising the welfare of individuals arguably means that all animals in the wild are left undisturbed, despite the fact that animals in the wild face disease, starvation, predation and the perils of anthropogenic changes.

Essentially, conservation biology addresses a complex continuum of issues ranging from individual animal welfare through species persistence, ecosystem function and ultimately evolutionary potential (Soule, 1985). However, increasing concerns about individual animal welfare have come to outweigh the potential benefits of research into wildlife populations and evolutionary processes (Jabour-Green and Bradshaw, 2004). This trend, we contend, emerges from the varied motivations of welfare advocates, ranging from concern for ‘wilderness’ preservation through to determined philosophical pursuit of animal rights. However, common to these divergent groups is the effective dissemination of preservationist positions of a simple unified message that individual animal welfare is paramount and that no amount of good can justify any level of animal suffering. One outcome of this ideology is that the opinions and interpretations of the general populace about “ecological issues” often diverge from those of scientific practitioners.

This fundamental conflict between individual welfare and ecosystem welfare is well documented and illustrated by highly publicised controversies arising over recent management programs requiring culling to maintain animal populations and ecosystem integrity. Ironically, concerns about short-term interference (e.g. managing populations by culling) may ultimately result in greater suffering by large numbers of individuals due to resource shortages resulting from over-population or increased exposure to infectious diseases and parasites (Kissui and Packer, 2004). Examples include the wild horse culling in the mid-west USA and Australia, koalas in South Australia and elephants in Africa (Anonymous, 2010; Bagust, 2010; Leader-Williams et al., 2001; Marris, 2007; Nimmo and Miller, 2007).

We argue that the role of research is to provide the scientific information required for effective conservation and management of species and ecosystems. A germane example is the branding of wild seals. Three major research programs on the demography of endangered seal populations (elephant seals, Hookers and Steller’s sea Lions) have been halted after lobbying by animal welfare groups (Dalton, 2005, 2006; McMahon et al., 2006, 2007). All three of these studies were designed to detect the underlying mechanisms of long-term population viability in ‘at risk’ or declining populations and halting them has resulted in an information vacuum, thereby weakening the decision-making capacity for management of these vulnerable populations.

2. Conflicting approaches in conservation

We contend that there are two contrasting ideologies about how best to conduct wildlife research on animals. The first one asserts that only a hands-off no interference approach should be permitted, while the other permits, indeed requires, appropriate intervention. A totally hands-off approach, in its purest form, necessarily argues for observational research only, which is not as powerful, nor robust, as experimental research and leads to lower confidence in conclusions. However, we suggest that this impasse can be resolved. The answer lies in how the necessity for specific research is articulated. Animal welfare activists often have a simple message e.g. ‘research is harmful to animals’, or ‘killing animals is

bad’ without acknowledging that human activities are already threatening the survival of species and compromising ecosystem integrity. At the same time, they rarely offer alternative approaches that will help solve pressing conservation problems. By contrast, conservation scientists have to convey complex ideas and theories such as evolutionary potential, deal with uncertainty and probabilities and account for alternative interpretations of data analyses. As Ehrlich so eloquently stated in his discourse on Evolution and Ethics (Ehrlich, 2001), ‘It is clear that the activities of *Homo sapiens* are dramatically altering the future course of biological evolution. But the possible consequences of this for humanity are much less obvious.’ This complexity inevitably means that a large amount of information needs to be clearly and unequivocally transmitted with a high probability that errors and misunderstandings will arise (Henderson-Sellers, 1998). Hence, the simple message of the ‘individualist approach’ i.e. that favouring individual animal welfare over all other concerns has a high probability of being transmitted from the advocacy groups to the public at large without error or change even if this enables the conservation problem to persist. We contend that this simplistic outcome is damaging. By contrast, the more complex ‘conservation approach’ with its message containing inherent complexity and uncertainty, will struggle to compete with the simple individualist approach on shorter time-scales, even if it may actually benefit some individuals directly and provide more overall fitness benefits to the ecosystem function and evolutionary potential.

Competition between two entities may end in one of two outcomes. The first is that one becomes entirely dominant and the other is driven to extinction or marginalized to such an extent that it has little impact in the debate thus rendering it functionally extinct. The second is that both may persist if a decision space can be found in which conservation research is deemed acceptable. An appropriate framework was promulgated over 25 years ago in the form of a cube by Bateson (Bateson, 1986). The cube is a three dimensional decision tool (Fig. 1), arrived at by assessing the trade-off between animal suffering, the importance of the research and the likely benefit the research will bring, in order to decide whether a scientific project should proceed. The dimensions of the Bateson Cube refer to three independent assessments: (i) the degree of suffering that animals are likely to endure, (ii) the overall scientific importance of the research and (iii) the likelihood of benefit from the research, which in the first iteration was medical

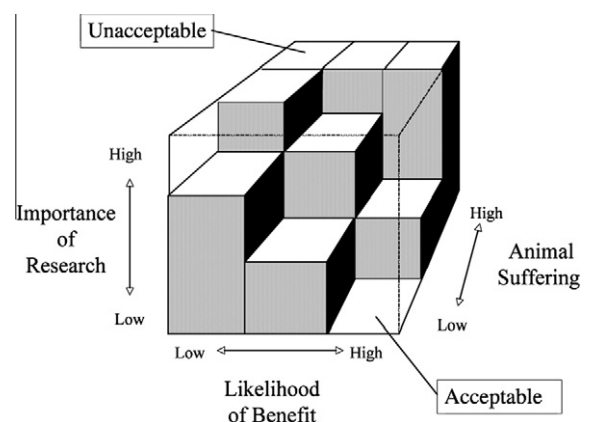


Fig. 1. The generalised form of the Bateson decision cube (Bateson, 1986, 2005) is a simple (because it is qualitative and hence an easily comprehensible) tool to assess the tradeoffs between animal suffering, the importance of a particular piece of research and the likely benefit the research will bring. Research activities are deemed acceptable when animal suffering is low, the likely benefit of the research high and the research is important. In the schematic the unacceptable refers to all of the solid space in the cube and acceptable refers to all of the clear space in cube.

benefit, but has come to encompass more generally the benefits to other biological disciplines. The decision cube, which has been helpful in medical and behavioural research has as yet not been embraced by conservation scientists and equally importantly not by animal welfare advocates. However, used appropriately the decision cube is a mechanism for reducing the complexities of the conservation approach.

We as conservation scientists along with the animal welfare advocates need to be cognisant of the trade-offs between animal suffering and scientific and conservation benefit. By judicious application of the principles outlined in Bateson's Cube conservation scientists can simply highlight the benefits of their work in the same way that medical research has done so effectively for the last three decades. Thoughtful use of the Bateson Cube to simplify the complex conservation approach will have two benefits. The first is ensuring the persistence of the conservation approach. The second is that the simplified message will engage the public in the debate about the value of conservation research in supporting ecosystem function, ecosystem services and evolutionary potential, all of which are vital to our survival. Our poor understanding of the ecological basis for evolutionary potential (Kremen and Ostfeldb, 2005) highlights the need for detailed research, including research on animals, as a vital investment in our own fitness and future viability. The Bateson cube is a helpful tool to simplify independent assessments, by providing a clear set of criteria with which to work. However, bringing the assessments together still need to be presented on a case-by-case basis. Clarity of information must therefore, be the focus of conservation researchers, and we suggest that judicious application of the Bateson Cube when arguing for conservation research is one way to achieve this.

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