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DECISION TREES FOR DATA PUBLISHING MAY EXACERBATE CONSERVATION CONFLICT

Jeroen Minderman, Jeremy J. Cusack, A. Bradley Duthie, Isabel L. Jones, Rocío A. Pozo, O. Sarobidy Rakotonarivo & Nils Bunnefeld

Affiliation: ConFooBio, Biological & Environmental Sciences, University of Stirling, Stirling, FK4 9LA, United Kingdom. Correspondence: J. Minderman (Jeroen.minderman2@stir.ac.uk).

To the editor - Tulloch et al.[1] have rightly highlighted the need to increase accessibility of species occurrence data to better support conservation efforts. They present a tree to aid decisions regarding making data publicly available, essentially a visual aid to existing protocols[2]. However, due to its failure to explicitly account for likely disagreements among stakeholders throughout the process, we feel that the proposed method may inadvertently fuel conservation conflicts[3].

Conservation conflicts occur "*when two or more parties with strongly held opinions clash over conservation objectives and when one party is perceived to assert its interests at the expense of another*"[4]. Such situations are becoming increasingly widespread, and often involve the illegal killing of protected species because of real or perceived adverse impacts on objectives other than biodiversity conservation, such as livelihoods or income. High profile examples include killings of hen harriers *Circus cyaneus* in the UK[5], elephants *Loxodonta* sp. using agricultural land in Africa[6] and recolonizing wolves *Canis lupus* in Europe[7]. These alternative objectives may be equally legitimate, but are not necessarily recognised by all stakeholders[3,4].

Decision trees are only effective if unequivocal decisions can be made at each branch point, but conservation conflicts lead to potential stakeholder disagreement at many branches[3,4]. Such disagreements become highly problematic for the proposed decision tree, particularly where data release may increase risks of decline. For example, where Tulloch and colleagues' tree asks whether "*conservation/policy mechanisms are in place to mitigate declines*",

the effectiveness of such measures might be limited, and their legitimacy contested[8,9].

As an example, consider the conservation of hen harriers in the UK. Illegal persecution in areas managed for recreational shooting of grouse (*Lagopus lagopus* scoticus) is likely to have contributed to rapid declines in numbers of breeding hen harriers over recent decades. Although the species is legally protected, such conservation measures are difficult to enforce. Thus, one stakeholder might decide that conservation measures are in place, while another might insist that they are not sufficiently effective. Working through the decision tree for this example leads to highly contrasting decisions. Making data available may increase risk of persecution, but restricting access to data may be perceived as obstructive or authoritarian by some stakeholders, decreasing trust, and thereby worsening the conflict. This is only one example of potential conflict issues for the tree: stakeholders may disagree over most of the individual decisions within it, ranging from the saliency or reliability of certain data, to the feasibility or (cost-) effectiveness of some conservation action, or even whether species are exploited in a particular area.

Thus, the outcome of the decision tree regarding the release of biodiversity data is likely to be contentious. Because the availability of data to one or more stakeholders may be at the root of conservation conflicts, perceived pressure on whether or not data should be made available may cause some stakeholders to disengage entirely from the problem, rather than contribute to a consensus[8].

Tulloch et al. are right to point out that to improve global conservation efforts, biodiversity data should be made as available as possible. Indeed, if there are no disagreements over data release, we question why the decision tree is needed. However, such disagreements are by definition (part of) conservation conflicts. For this reason, decision processes regarding data release (such as the proposed tree) should take explicit account of conservation conflicts, and include explicit structures to mitigate them[4,10]. If they do not, they are at best of limited use and at worst may exacerbate existing conflicts, or even fuel new ones. This may be particularly the case when such considerations are made

only implicitly, because this risks strongly different interpretations of the basis for decisions throughout the tree, again fuelling conflict.

We believe that decision-making regarding biodiversity data release should not, and cannot, be separated from the process to mitigate disagreements over such decisions. This requires a more flexible approach than what is possible in static decision trees, and one that instead focuses on process, feedback and engaging all stakeholders – suitable frameworks for this are available elsewhere[4,10] and are widely applicable.

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