Is international conservation aid enough?

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Is international conservation aid enough?

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Abstract

Bare *et al* (2015 *Environ. Res. Lett.* **10** 125010) ask an important question: is international conservation enough? Since the 1990's international conservation donors have spent over $3.4 billion on biodiversity conservation related projects in sub-Saharan Africa. Both donors and recipients have a right to know if this is effective. Surprisingly, this question is rarely asked. It is a difficult question—involving many rival social, environmental, and economic explanations. Bare, Kauffman and Miller uncover some interesting associations, supporting existing hypotheses and proposing their own: that conservation aid alone is insufficient to mitigate drivers of deforestation (and in some cases may even exacerbate forest loss). This controversial result warrants further investigation—but what is needed now is nuance and robustness in further analyses, to have more confidence in the critique and it's implications for international conservation aid.

Conservation science needs more impact evaluation. For decades, conservation policies such as protected areas and conservation aid have been rolled out internationally, though while there are occasional 'good news' stories, global indicators still show a general biodiversity decline (Tittensor *et al* 2014, Visconti *et al* 2015). This realisation is difficult—have all our efforts gone to waste? Unfortunately, for the large part, we don't know (Ferraro and Pressey 2015). We might be monitoring the trends—some of which are positive, others negligible, some negative—but without impact evaluations we have no way of assessing whether our concerted actions have made positive, negligible, or negative impacts on these trends (Ferraro and Pattanayak 2006, Miteva *et al* 2012, Ferraro and Hanauer 2014).

In the past, impact evaluations may have been challenged by insufficient expertise, lack of financial and institutional support to fund policy-relevant impact evaluations, fear of reporting negative or negligible outcomes (which may lead to loss of credibility or funding), and a perceived lack of adequate data (Ferraro and Pattanayak 2006, McKinnon *et al* 2015). However, this is changing: the case for rigorous conservation evaluations has been made (Ferraro and Pattanayak 2006, Miteva *et al* 2012), many funders now request or encourage them as a condition of funding,

and conceptual and technical how-to literature is increasingly available (Ferraro 2012, World Bank Group 2013, Fisher *et al* 2014), there is an expanding drive and capacity to collate the required data (Ferraro and Pressey 2015, Bare *et al* 2015), and institutions, including governments and NGOs, are recognising the need for rigorous evaluations within the context of evidence based policy, even if they uncover negligible or negative impacts (McKinnon *et al* 2015).

Bare *et al* (2015) contribute a significant case study at an international scale, exploring the associations of conservation aid, governance, and deforestation across sub-Saharan Africa, employing novel data collations aggregated by country. These big questions are highly relevant to Rio objectives (UNCSD 2012), and ongoing REDD+ discussions, particularly given the associated renewed push for integrated conservation and development projects on national scales evident in the recent UNFCCC Conference of Parties in Paris.

Alarmingly, Bare *et al* (2015) uncover a positive association between the volume of conservation aid and deforestation across sub-Saharan African countries. Their analysis also suggests that large increases in democracy and increasing protected area may also, at times, associate with increasing rates of deforestation. Bare *et al* (2015) find significance levels for conservation aid, democracy, and protected area were similar

to the well-known driver of deforestation, rural population (Rudel 2013), though the latter showed a much stronger and more consistent effect. Interestingly, Bare *et al* (2015) did not uncover significant associations between deforestation and previously hypothesised drivers such as agricultural area or production of livestock or timber, and their results point towards different patterns for high- and low-forest cover countries, and over time.

Yet the negligible- and negative-impact outcomes observed by Bare *et al* (2015) could well be true. We'd hope that conservation aid has positive impacts for biodiversity, but our hopes may not be an adequate driver of reality. Even with the best intentions there are potential for perverse effects in conservation. Some examples include increasing deforestation under Payments for Ecosystem Services facilitated by rising incomes (Alix-Garcia *et al* 2012), panic clearing under anticipation of land clearing legislation (Whelan & Lyons 2005) and pre-emptive destruction to avoid endangered species policy requirements (Brook *et al* 2003, Ferraro *et al* 2007). Further, recent analyses suggest that even the cornerstones of conservation, protected areas, are perhaps not as universally or as completely effective as commonly imagined (Joppa and Pfaff 2010).

We need to be sensitive to the controversial nature of the results and implications, however, and therefore consider just how confident we can be that these associations are real, and moreover, causal in nature. The results of Bare *et al* (2015) demand attention, but this study alone should not be cause for despair, or a retraction of conservation aid. For one, this study had a single evaluation metric (deforestation rate) that is not representative of the diversity of social, economic, and environmental outcomes that conservation aid is earmarked to address (Mace 2014). Second, the lack of associations found by Bare *et al* (2015) and other previously identified drivers of deforestation may point towards either poor analysis power, and/or the difficulty to disentangle complex drivers in analyses at this scale and resolution. Third, we need to be clear that the relationships between conservation aid, governance, and deforestation that Bare *et al* (2015) uncover using OLS regression are associative, and causal interpretation is subject to a number of (potentially tenuous) assumptions being held (Ferraro and Pressey 2015). Indeed, conservation aid may have been critical in avoiding even more extreme deforestation than we have observed. More rigorous methods for causal inference and impact analysis are available, including counterfactual methods (Ferraro and Hanauer 2014), partial identification (Manski 2007, McConnachie *et al* 2015), Bayesian networks, structural equation, and structural causal models (McCann *et al* 2006, Pearl 2010, Kline 2016), and advanced regression (Gelman and Hill 2006).

While it is (relatively) easy to challenge existing policies, it is harder to determine solutions that are guaranteed to be better. If conservation aid alone isn't

managing to outcompete larger drivers, does it therefore need more funding (McCarthy *et al* 2012)? Or should it take different approaches (i.e. the same level of funding but allocated more efficiently between, for example, sites, planning, management, enforcement, and advocacy; Waldron *et al* 2013)? Or could that funding be better spent on improving governance, education, health, technology, or poverty alleviation? Clearly we need to be relatively confident in the causal relationships we are assuming within the system before we can answer these questions. This means we need more rigorous causal inference studies, which might dig deeper into how conservation aid is actually spent. The analysis by Bare *et al* (2015) clearly point towards some important and worrying hypotheses, and provide a clear call for subsequent rigorous interrogation so can we be more confident of the causal relationships, impact estimates, and likely effectiveness of potential solutions.

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