Biological Conservation 217 (2018) 36–46

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

Where are commodity crops certified, and what does it mean for conservation and poverty alleviation?

Catherine Tayleur[a,b,c,*], Andrew Balmford[a], Graeme M. Buchanan[b], Stuart H.M. Butchart[c,a], Christine Corlet Walker[a], Heather Ducharme[b], Rhys E. Green[a,b], Jeffrey C. Milder[d,e], Fiona J. Sanderson[b], David H.L. Thomas[c], Lukasz Tracewski[b,f], Juliet Vickery[b], Ben Phalan[a,g]

[a] Conservation Science Group, Department of Zoology, University of Cambridge, David Attenborough Building, Pembroke Street, Cambridge CB2 3QZ, UK
[b] RSPB Centre for Conservation Science, The Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire SG19 2DL, UK
[c] BirdLife International, David Attenborough Building, Pembroke Street, Cambridge CB2 3QZ, UK
[d] Rainforest Alliance, New York, NY 10279, USA
[e] Dept. of Natural Resources, Cornell University, Ithaca, NY 14853, USA
[f] School of Engineering and Applied Science, Aston University, Birmingham B4 7ET, UK
[g] Dept. of Forest Ecosystems and Society, Oregon State University, Corvallis, OR 97331, USA

ARTICLE INFO

Keywords:
Agricultural certification
Voluntary sustainability standards
Tropical commodities
Eco-labeling
Governance
Fair trade

ABSTRACT

Voluntary sustainability standards have expanded dramatically over the last decade. In the agricultural sector, such standards aim to ensure environmentally and socially sustainable production of a variety of commodity crops. However, little is known about where agricultural certification operates and whether certified lands are best located for conserving the world's most important biodiversity and benefiting the most vulnerable producers. To examine these questions we developed the first global map of commodity crop certification, synthesizing data from over one million farms to reveal the distribution of certification in unprecedented detail. It highlights both geographical clusters of certification as well as spatial bias in the location of certification with respect to environmental, livelihood and physical variables. Excluding organic certification, for which spatial data were not available, most certification of commodity crops is in tropical regions. Certification appears to be concentrated in areas important for biodiversity conservation, but not in those areas most in need of poverty alleviation, although there were exceptions to each of these patterns. We argue that the impact of sustainability standards could be increased by identifying places where it would be most beneficial to strengthen, consolidate, and expand certification. To achieve this, standards organizations will need to undertake more rigorous collection of spatial data, and more detailed analysis of their existing reach and impacts, with attention to potential trade-offs between different objectives. Efforts to promote spatial prioritization will require new partnerships to align specific conservation aims with the interests and capabilities of farmers.

1. Introduction

Improving the environmental and social sustainability of agriculture is an ongoing challenge worldwide (Tilman and Clark, 2015). Governments have responded to this challenge by developing legislation and initiatives such as agri-environment schemes (Batáry et al., 2015). Alongside these government-led initiatives, the work of multiple stakeholders has led to the creation and promotion of voluntary sustainability standards systems, also referred to as certification schemes (Potts et al., 2014; Rueda et al., 2017). These standards typically define the practices of sustainable agriculture, and identify actions producers must take to be certified as environmentally and socially responsible (Milder et al., 2015). Over the last decade, there has been a near-exponential increase in area managed under certification (Tayleur et al., 2016). Certification is often promoted as a way for individual consumers to make more ethical purchasing decisions (Dauvergne and Lister, 2010). It is also proposed as a way to mitigate negative impacts of commodity production and improve the wellbeing of farmers and farm workers in the developing world (Lenzen et al., 2012). Many multi-national companies now use certification to help achieve and demonstrate progress towards public sustainability commitments (Dauvergne and Lister, 2012; Levin and Stevenson, 2012). Land under certification has also been adopted as an indicator of progress towards Aichi Target 7, which calls for “areas under agriculture… [to be]

* Corresponding author at: Conservation Science Group, Department of Zoology, University of Cambridge, David Attenborough Building, Pembroke Street, Cambridge CB2 3QZ, UK.
E-mail address: cath.tayleur@rspb.org.uk (C. Tayleur).

http://dx.doi.org/10.1016/j.biocon.2017.09.024
Received 1 December 2016; Received in revised form 16 September 2017; Accepted 21 September 2017

managed sustainably" by 2020 (Tittensor et al., 2014). Impact evaluations, while still sparse, suggest that standards are likely to vary considerably in their effectiveness. The need for more widespread and systematic evaluation of impacts – taking account of issues such as selection bias in recruitment of farmers – is well established and has been discussed in detail elsewhere (Blackman and Rivera, 2011; Milder et al., 2015). Although there is a need for improved evaluations, there is accumulating evidence (reviewed by Milder and Newsom, 2015; Steering Committee of the State of Knowledge Assessment of Standards and Certification, 2012; Tscharntke et al., 2015) that certification can contribute to both conservation and livelihood benefits. The analyses that follow are grounded in the assumption that certification can make such a contribution.

Despite the increasing prominence of certification, there is little information about its geographical distribution at sub-national scale. Globally, certification is estimated to cover just 1.1% of all cropland (Tayleur et al., 2016). Because coverage is limited, it is crucial that certification is targeted towards those areas where it can have most impact or additionality (Garrett et al., 2016), in line with the priorities and criteria of different standards. For example, standards whose priority is to reduce social inequality, such as Fairtrade, may wish to know whether they are reaching the poorest farmers, while those that also prioritize biodiversity conservation, such as Rainforest Alliance/SAN, may wish to know that they are certifying farmers in areas important for conservation. Other factors, such as literacy or a supportive policy environment, as well as consideration of other possible interventions, will also influence where certification is most appropriate and feasible. While crop-specific schemes include some unique criteria – such as restrictions on planting oil palm on peatland – there has also been some convergence of standards, and most schemes now include both environmental and social criteria (UNEP-WCMC, 2011). Therefore, most standards have some capacity to address biodiversity conservation, habitat loss (including deforestation) and livelihood protection, although they differ considerably in their specific requirements and in how these are implemented and audited (Tayleur et al., 2016).

1.1. What influences the spatial distribution of certification?

To the extent that spatial targeting of certification can be said to have occurred to date, it has largely been a by-product of the management of specific supply chains (Garrett et al., 2016; Getz and Shreck, 2006; Renard, 2010; Vellema et al., 2015). Companies that have committed to responsible practices have worked to ensure that those producing the agricultural commodities they use are certified. Some of these efforts have been reactive, responding to civil society campaigns, regulatory requirements, or anticipation of campaigns or regulations. Others have been more proactive, aiming to increase the security or quality of commodity supply, or reputational benefits to a company's brand. Such efforts reflect to some extent the imperative to target certification to places of greatest social and environmental risk. For instance, civil society campaigns have highlighted egregious instances of deforestation and infringements of community rights. Another mechanism is the use of certification as a policy proxy by governments. For instance, the US state of Pennsylvania obtains FSC certification for its state forests, and some government procurement policies preference or require responsibly sourced products, including certified products (Steering Committee of the State of Knowledge Assessment of Standards and Certification, 2012). Although indirect and often reactive, both supply chain commitments and procurement policies therefore offer some opportunities to effect spatial targeting. The creation of sustainability standards focused on specific crops implicated in environmental and social problems has also resulted in spatial targeting at a very coarse scale (it is notable that all of the certification schemes for which we obtained data are concentrated in tropical countries).

Despite these examples, there do not yet appear to have been coordinated strategic efforts to systematically identify the places where the impact of certification could be greatest. There are considerable opportunities to do so, to identify priorities for future civil society campaigns, corporate efforts, and government interventions. Currently, at the country level, agricultural certification has poor representation in the world's 31 poorest countries (those classified by the World Bank as low income) and for staple crops of low export value (Tayleur et al., 2016). Analogously, within the forestry sector, certification has been criticized for failing to protect tropical forests that are most at risk, with the majority of certified wood coming from temperate developed countries (Gullison, 2003). Without a more strategic approach to strengthening, consolidating, and expanding agricultural certification, there is a risk that it may not reach those areas and producers where the greatest additionality can be gained.

1.2. Spatial prioritization as a conservation and poverty alleviation tool

While global coverage of certification is still limited, its rapid uptake by producers of some of the most environmentally-damaging commodity crops indicates its potential to contribute to conservation and development. Given sparse resources, certification, like other voluntary incentive schemes, should be prioritized to where its introduction could have most additional beneficial impact (Wünscher et al., 2008). One of the few studies to explore how well standards are targeted found that adoption of two schemes (the Round Table on Responsible Soy (RTRS) and the Roundtable on Sustainable Palm Oil (RSPO)) was better directed towards places where they could reduce deforestation in some countries but less so in others, and that the standards were disproportionately adopted by large producers rather than smallholders (Garrett et al., 2016). While there has been some targeting of high-risk commodities for certification such as palm oil and soybeans, little is known about whether certification reaches those areas of greatest conservation and poverty alleviation need within the global ranges of these crops. Although the areas of greatest need are not always those where certification can have most impact – because supporting conditions for certification also vary, and alternative interventions may sometimes be more effective – identifying such areas provides an initial basis for spatial targeting.

We aimed to: (1) develop the first detailed global map showing where certification is located, synthesizing data from all of the main standards for which data were available; and (2) characterize biodiversity and poverty in landscapes in which certification currently operates, globally, regionally and within countries, using as case studies crops for which sufficient data exist. We use these analyses to illustrate methods for identifying priority areas that could be targeted to maximize the incremental benefits of improving, consolidating, and expanding certification, and outline how doing so could increase the contribution of certification to global sustainability. We have assumed that the expansion of certification has been too recent and limited to have yet had a detectable influence on the biodiversity and poverty datasets we used, and our analysis should thus be interpreted as an aid to priority-setting, rather than implying any causal influence of certification on these variables.

2. Materials & methods

2.1. Obtaining spatial data on certified producers

Data on the spatial location of certified farms were obtained through publicly available datasets and via direct approaches to standards bodies (see Supplementary materials for details). We sought data from all major standards and codes of practice covering the certified commodity crops with the highest levels of certification: banana, cocoa, coffee, cotton, tea, soybean, sugar, and palm oil (Potts et al., 2014). The scope of the data search was not limited to any particular geography, but the standards for which data were available operate primarily in tropical countries. Not all schemes were able or willing to provide data