



Low-impact agriculture requires urgent attention not greater caution: response to Phalan and colleagues

Hugh L. Wright, Iain R. Lake, & Paul M. Dolman

School of Environmental Sciences, University of East Anglia, Norwich, NR4 7TJ, United Kingdom

Keywords

Land sharing; land sparing; low-impact agriculture; rural livelihoods; seminatural habitat; wildlife-friendly farming.

Correspondence

H. L. Wright or P. M. Dolman, School of Environmental Sciences, University of East Anglia, Norwich, NR4 7TJ, United Kingdom.
Tel: +44 1603 593175;
Fax: +44 1603 591327.
E-mail: hugh.wright@uea.ac.uk or p.dolman@uea.ac.uk

Received

3 April 2012

Accepted

3 April 2012

Editor

Andras Baldi

doi: 10.1111/j.1755-263X.2012.00247.x

Phalan *et al.* (2012) set out to present four reasons for caution when considering agriculture in developing-world conservation. However, contrary to their suggestion, our article (Wright *et al.* 2012) emphasized not those species that make use of agricultural habitats at some stage of their life history, but those whose populations depend on agriculture. We agree that the agricultural dependence of birds does not indicate that other biodiversity will follow the same pattern; although birds are widely used as proxies, their congruence is incomplete and scale dependent (Prendergast *et al.* 1993; Schulze *et al.* 2004). We know from Europe that distinctive and highly valued assemblages of plants and invertebrates now depend on seminatural habitats created by traditional farming practices that substituted for lost natural processes. Large mammals are unlikely to show such a response. Crucially however, the loss of large herbivores and extirpation of ecosystem functions they provided often resulted in the dependency of open-habitat birds on agricultural prac-

tices, where these mimicked the processes that species require. Although it is obvious that species evolved before the advent of agricultural transformation, this is not useful when their natural habitats are now absent. Like Phalan *et al.*, we also advocate restoration of large-scale natural ecosystem dynamics, but this is not immediately practical in many regions. Not preserving species in the seminatural and farmed habitats in which they occur risks their loss in the short to medium term. The paradigm of seminatural habitats, essential to European conservation, therefore has wide application in developing countries also.

Phalan *et al.* are correct to point out that, within the constraints of finite land resources and increasing demands for food, any action to conserve one set of species must be traded off against other biodiversity. Their trade-offs model (Green *et al.* 2005; Phalan *et al.* 2011a) provides an appropriate starting point to examine the optimal balance of land sparing versus land sharing. We urge

the wider adoption of such models in regions of contrasting biota and land-use history for which different trade-offs may apply. At least some degree of land sparing may be crucial in frontier regions where the emphasis is on conservation of forest biota. In contrast, responses to anthropogenic land use may differ in grassland and savannah biomes and landscapes with a long history of human transformation, particularly in systems of extensive pastoralism and traditional cereal cultivation. The choice between land sparing and wildlife friendly farming should not be simplified into a dichotomy; a mixed approach may conserve the broadest range of a region's biota, especially in regions with contrasting habitats. Furthermore, strategies must also account for a range of other, often context-specific, social, political, and ecological considerations that the simple trade-offs model does not yet incorporate (Phalan *et al.* 2011a, b); for example the size, range, and conservation significance of individual species' populations. Advocating a single strategy may therefore be unhelpful, particularly beyond the regional scale.

Contrary to the suggestion by Phalan *et al.*, we have not advocated "fossilizing" low-impact farming practices. Rather, we made clear (Wright *et al.* 2012) that threats of land-use transformation come not just from the land grabbing of external actors, but also from within rural communities. Conservation must design mechanisms that are compatible with social and economic change, not defend uneconomic agricultural systems. The conservation imperative therefore, is to urgently identify those cases where agriculture currently sustains valuable biodiversity, and to develop instruments to maintain or mimic such land use while supporting development (see also

Fischer *et al.* 2012). Our article highlighted both the threat to farming practices valuable to agriculture-dependent species and the challenges in maintaining them; these are reasons why conservation should pay urgent attention to beneficial farming systems, not reasons for caution.

References

- Fischer, J., Hartel T. & Kuemmerle T. (2012) Conservation policy in traditional farming landscapes. *Conserv. Lett.* doi: 10.1111/j.1755-263X.2012.00227.x.
- Green, R.E., Cornell S.J., Scharlemann J.P.W. & Balmford A. (2005) Farming and the fate of wild nature. *Science* **307**, 550–555.
- Phalan, B., Balmford A. & Green R.E. (2012) Agriculture as a key element for conservation: reasons for caution. *Conserv. Lett.* doi: 10.1111/j.1755-263X.2012.00248.x.
- Phalan, B., Balmford A., Green R.E. & Scharlemann J.P.W. (2011a) Minimising the harm to biodiversity of producing more food globally. *Food Pol.* **36**, **Supplement 1**, S62–S71.
- Phalan, B., Onial M., Balmford A. & Green R.E. (2011b) Response. *Science* **334**, 594.
- Prendergast, J.R., Quinn R.M., Lawton J.H., Eversham B.C. & Gibbons D.W. (1993) Rare species, the coincidence of diversity hotspots and conservation strategies. *Nature* **365**, 335–337.
- Schulze, C.H., Waltert M., Kessler P.J.A. *et al.* (2004) Biodiversity indicator groups of tropical land-use systems: comparing plants, birds, and insects. *Ecol. Appl.* **14**, 1321–1333.
- Wright, H.L., Lake I.R., & Dolman P.M. (2012) Agriculture—a key element for conservation in the developing world. *Conserv. Lett.* **5**, 11–19.