

Review by Peer 297 on manuscript:

Manuscript title censored

Revision recommendation: Major revision

ADDED INFO

Author of this peer review is Dr. Asko Lõhmus,

ABOUT PUBLICLY

Senior Researcher at Institute of Ecology and Earth Sciences,

FEATURED

REVIEW

Tartu University, Estonia.

PEQ = 4.6 / 5

Peer reviewed by 5 Peers.

Introduction

This short commentary [1] argues that while the ecological roles of [REDACTED] have been assessed separately in scientific literature so far, these management strategies have similar biodiversity conservation aims and its linked ecological and economic aspects. The five paragraphs could be described as (1) an introduction, (2) the statement on shared ecological features and roles of the two management systems, (3) a call for focusing future studies on threatened forest species, (4) stressing the importance of cost-effectiveness analyses considering alternatives at the landscape scale, and (5) two summarizing sentences. Thus, the main content of the paper is a verbal expression of three opinions (2-4 above).

Merits

score: 4.6 / 5

The main merit of this paper is an attempt to present complex management issues in a simple ecological framework, bringing together important topics of 'land-sharing' for biodiversity conservation in the tropics and in temperate and boreal areas. Thanks to such simplicity, the message is easy to grasp by wide audiences and could fit well to a popular-scientific magazine.

Critique

score: 4.6 / 5

I have two main reservations, which, given that the paper itself is only a very short verbal commentary, make me generally disappointed. The first is that the parallel between the two management systems, which is the main point, is insufficiently elaborated and all its potential problems are hidden. It is not clear why the authors have picked up just these two systems amongst all land-sharing approaches that contain trees, given that they do not consider it important whether

the land is used for [REDACTED] or [REDACTED]. Why not include parks or wooded grasslands, for example? No attention is paid to that the trees in [REDACTED] function as [REDACTED] and thus are managed on completely different grounds (e.g., [2]) than in [REDACTED], where natural vegetation (including trees) is left for biodiversity purposes (ideally) in an attempt to emulate the biological legacies of natural disturbances. Differently from the authors, I argue that the geographical context of these techniques does matter, given the contrast between natural tree species richness in the tropics versus that in temperate or boreal areas. Thus, the main biodiversity focus in [REDACTED] systems is on tree species diversity (e.g. [3, 4]), while [REDACTED] is much more planned in terms of abundance and spatial pattern of trees to conserve tree-dwelling biota. Finally, although some general ecological principles regarding the keystone position of trees in ecosystems indeed may be similar in these (but not only in these) systems, it is not obvious whether the distinct successional dynamics (in forests the open phase is only temporary) and natural or anthropogenic disturbance regimes really do not matter in terms of the main biodiversity strategies. For example, why is it important to compare biodiversity of managed areas only with undisturbed forest (3rd paragraph)? It is well known that there are also specific (and often threatened) disturbance-phase species and successional species, and these also differ in forest and grassland ecosystems. Briefly, it is not possible to understand what does the ‘parallel’ of [REDACTED] and [REDACTED] in this commentary actually include, and on what grounds. It has been made too simple!

The second problem is related to the applied value of the commentary, as presented in its paragraphs 3-4. Because the paper starts with a clear applied focus, one could expect that the ‘parallel’ mentioned will turn out to be useful and is not a mere mental exercise. What can be learned from that parallel in terms of methods, applications, problems and solutions? Unfortunately, the authors do not outline such lessons in any representative way and instead seem to be mostly repeating what others have already said in research papers. Misleading are constructs such as „Similarly, although past research has shown that species richness may be relatively high on green-tree retention sites (Rosenvald and Löhmus 2008), several specialized species requiring interior-forest conditions cannot persist there (e.g. Nelson and Halpern 2005).“ – here the second half of the sentence is also taken from the review by Rosenvald & Löhmus [5], not spotted by the authors. In fact, this review explicitly addresses the problem of target species, which is the main point of 3rd paragraph. The main framework of the 4th paragraph, the system explicitly incorporating three main management alternatives (intensive production, ecological production, protection), dates back at least to classic descriptions of ecological forestry [6] and has been not only extensively studied since then but is also put into practice in many regions (it is sometimes even termed as the Triad-approach). A major research question regarding cost-effectiveness – whether high yield-high biodiversity approaches can be found – has not even been mentioned. Note that, while in [REDACTED], some promise has been seen (several biodiversity measures do not correlate with yields; [7]), timber yields are generally considered to diminish with [REDACTED]. This may constitute another fundamental difference of these systems. Finally, research on landscape planning that includes [REDACTED] has already started, so this idea is not new.

Discussion

score: 4.6 / 5

I argue that the main values of this contribution [1] are still hidden and the approach is over-simplified. The parallel between [redacted] and [redacted] should be more elaborated and real insights should be developed to make it useful for researchers in this field. It might be also good to analyse how this pair of management systems is related to other forms of land-sharing – perhaps they are not distinct in biodiversity aspects over all? Note also the importance of bringing trees back to conventional agricultural landscapes in restoration ecology literature [8]. Developing the manuscript in these directions is clearly not a minor task but perhaps worth trying.

References

- [1] Anonymous authors (2013) [redacted] (unpublished manuscript)
- Peerage of Science
- [2] Tschardt T., Clough Y., Bhagwat S.A., Buchori D., Faust H., Hertel D., Hölscher D., Juhbandt J., Kessler M., Perfecto I., Scherber C., Schroth G., Veldkamp E. & Wanger T.C. (2011) Multifunctional shade-tree management in tropical agroforestry landscapes - A review. - *Journal of Applied Ecology* 48: 619-629.
- [3] Correia M., Diabaté M., Beavogui P., Guilavogui K., Lamanda N. & de Foresta H. (2010) Conserving forest tree diversity in Guinée forestière (Guinea, West Africa): The role of coffee-based agroforests. – *Biodiversity and Conservation* 19: 1725-1747.
- [4] Negash M., Yirdaw E. & Luukkanen, O. (2012) Potential of indigenous multistrata agroforests for maintaining native floristic diversity in the south-eastern Rift Valley escarpment, Ethiopia. – *Agroforestry Systems* 85: 9-28.
- [5] Rosenvald R & Löhmus A. (2008) For what, when, and where is green-tree retention better than clear-cutting? A review of the biodiversity aspects. – *Forest Ecology and Management* 255: 1-15.
- [6] Seymour R.S. & Hunter M.L., Jr., (1999) Principles of ecological forestry. In: Hunter Jr., M.L. (Ed.), *Managing Biodiversity in Forest Ecosystems*. Cambridge University Press, Cambridge, pp. 22–61.
- [7] Clough Y., Barkmann J., Juhbandt J., Kessler M., Wanger T.C., Anshary A., Buchori D., Cicuzza D., Darras K., Dwi Putra D., Erasmi S., Pitopang R., Schmidt C., Schulze C.H., Seidel D., Steffan-Dewenter I., Stenchly K. Vidal S., Weist M., Wielgoss A.C. & Tschardt, T. (2011) Combining high biodiversity with high yields in tropical agroforests. – *Proceedings of the National Academy of Sciences of the United States of America* 108: 8311-8316. [8] Rey Benayas J.M. & Bullock J.M. (2012) Restoration of biodiversity and ecosystem services on agricultural land. – *Ecosystems* 15: 883-899.