Dear Dr Goymer,

Please find enclosed our manuscript ‘Is biodiversity as intact as we think?’ that which we are submitting for publication in Nature Ecology & Evolution.

Biodiversity indicators provide vital guidance for conservation. The Biodiversity Intactness Index (BII) has recently risen to prominence as a result of a high profile paper1 and has been adopted by the Convention on Biological Diversity as an indicators of biodiversity loss. In our comment piece we compare predictions of the BII made by Newbold et al (2016) to a recently published map of vegetation biomass intactness2.

We would expect the two variables to be closely related as the majority of recent biodiversity loss has been caused by land use change, which also tends to reduce vegetation biomass. However, we find that there is little agreement between the two metrics, particularly in areas of Europe, South East Asia, and Central America which have been subject to widespread deforestation. This disagreement is particularly striking in global biodiversity hotspots, where hotspots with less remaining vegetation biomass apparently have more intact biodiversity. Furthermore, we find that the human footprint, a measure of human alteration of natural ecosystems, is negatively correlated with biomass intactness, but is not correlated with BII.

This work is of interest to readers of *Nature Ecology & Evolution* because it suggests that a key metric used by international biodiversity agreements may have some major flaws. We think that it is crucial that this issue is highlighted so that BII can be tested more robustly and potentially refined.

I confirm that the enclosed work has not been published or accepted for publication in another journal or book.

I confirm that submission for publication has been approved by all relevant authors and institutions and that all persons entitled to authorship have been so named. All authors have seen and agreed to the submitted version of the manuscript.

Yours Faithfully

Philip Martin

References

1. Newbold, T. et al. Has land use pushed terrestrial biodiversity beyond the planetary boundary? A global assessment. Science (80-. ). 353, 288 LP-291 (2016).
2. Erb, Karl-Heinz, et al. "Unexpectedly large impact of forest management and grazing on global vegetation biomass." Nature 553.7686 (2018): 73.