Gmail **Daniel Kissling <wdkissling@gmail.com>**

Re & Fwd: WG: GEB-2016-0368

Jens-Christian Svenning <svenning@bios.au.dk> 4. Februar 2017 um 09:55
An: Søren Faurby <soren.faurby@bios.au.dk>, Daniel Kissling <wdkissling@gmail.com>, Bastian Göldel <bastian.goeldel@bios.au.dk>

Hi Bastian,
Excellent - thanks!
Well, it's really good news - I don't see anything that's not easily addressed either by explanation or simple sensitivity analyses (notably removal of imputed values).
Good that you contacted GEB as they actually give us a 3 months return deadline in the letter.
Cheers,
Jens

Start på videresendt besked:

> **Fra:** Bastian Göldel <bastian.goeldel@bios.au.dk>
> **Dato:** 4. februar 2017 kl. 08.53.01 CET
> **Til:** Jens-Christian Svenning <svenning@bios.au.dk>
> **Emne: WG: GEB-2016-0368**
>
> Hi Jens,
>
> I finally booked in a more sophisticated place in Hoi An (Vietnam) where I could open outlook after a while. Could you please forward this mail to Daniel and Søren?!
>
> Below you can see the answers of 3 reviewers. Looks like it can be published in GEB, but needs some more work when I am back. There is no limited time frame for resubmission as far as I can see. Nevertheless, I responded them already some time ago and explained them my travel situation (as we discussed before I left Aahus). As I did not get an answer back so far, I just wrote them again to make sure they are ok with it. As soon as they reply and I can see it I will let you know.
>
> Sorry for the delay again.
>
> Cheers,
> Bastian
>
> _____
> Von: onbehalfof+geboffice+wiley.com@manuscriptcentral.com [onbehalfof+geboffice+wiley.com@manuscriptcentral.com]
> Gesendet: Dienstag, 20. Dezember 2016 10:02
> An: Bastian Göldel
> Cc: rwinfree@rutgers.edu

Betreff: GEB-2016-0368

20-Dec-2016

Dear Dr. Göldel

We have now completed the review process on your manuscript ‘Extinction of New World mega-frugivores disrupts the fruit size-body size relationship in palms and mammals’ (Ref. GEB-2016-0368). You will find the reports of the referees, and the comments of the handling editor, Dr Rachael Winfree, appended below. As you will see, the referees and the editor have expressed serious reservations about the manuscript. Consequently, we cannot accept the present version of the paper for publication. However, you may be able to address the reviewers’ concerns in a fully revised manuscript.

I invite you to prepare a modified version of your manuscript. In a cover letter, please explain how you have modified the manuscript in response to each of the reviewers’ and the editor’s comments, preferably point by point. In cases where you disagree with those comments, or you feel that modification of the original text is not warranted, please explain why. It is possible that we will have the revised manuscript reviewed again, either by the original referees and/or new ones. In preparing your revisions, please consult our web site http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1466-8238/ for further advice on journal style and format. Please note that there is no guarantee, at this point, that the manuscript will eventually be accepted for publication.

When you are ready to submit your revised manuscript please enter your corresponding author centre, press 'Manuscripts with Decisions' and then 'Create a revision'.

Responding to reviewer and editor comments: prepare and upload a document containing the reviewer comments interspersed with your responses to these comments. Provide justification in any places where you have not followed the advice of the reviewers. Designate this document as file type ‘Comments for reviewers’. When the system combines your files together to produce a PDF for review purposes, this file will be included together with your manuscript and will be available to reviewers (if applicable) and editors. To assist reviewers you may like to use a dark blue font (rather than black) for revised passages of the manuscript.

If you do not submit straightaway, the revision will be stored in 'Revised manuscripts in draft' until submission at a later stage. When you submit your manuscript, you will receive an email saying that submission was successful and your revision should have the same manuscript number as the original submission. If it doesn't, please notify the editorial office immediately or it may be treated as a new submission.

Please send a single file containing all the text, tables and figures for review purposes. For supplementary material, please supply a separate file for each appendix. If your paper is accepted, we will require a high quality version of each figure at that stage (please refer to the Author Guidelines on the journal homepage www.blackwellpublishing.com/geb for instructions on the preparation of figures and acceptable file formats). Please note that there is a charge for colour figures as detailed in http://www.blackwellpublishing.com/pdf/SN_Sub2000_F_CoW.pdf. This form must be returned for all papers that contain colour figures.

We look forward to receiving your revised manuscript within 3 months. PLEASE CONTACT THE EDITORIAL OFFICE IF YOU WILL BE UNABLE TO SUBMIT YOUR REVISION WITHIN THIS TIME.

A copy of this letter is also available in your Corresponding Author Centre at https://mc.manuscriptcentral.com/geb.

Thank you again for submitting to Global Ecology and Biogeography.

Yours sincerely

Brian McGill, Maria Dornelas and Richard Field

Global Ecology and Biogeography

EDITOR'S COMMENTS TO AUTHORS
Editor: Winfree, Rachael
Comments to the Author:
This manuscript addresses the question, originally proposed by Janzen and Martin in the 1980s, of whether the existence of large-seeded fruits in the New World can be explained by the previous presence of the now extinct megafauna. It finds that there are positive associations between palm fruit size and frugivorous mammal body size within most biogeographic regions of the world but excluding the New World, where the steepest megafaunal extinctions took place. Overall the writing is good, and the methods seem sound insofar as I can evaluate them (see note to EIC above).

The reviewers have provided useful feedback which all needs to be addressed. The most important issues have to do with the use of the data that are available for this analysis, to gain confidence in the authors' interpretations:
1) The handling of missing data on fruit size for 30% of species. The authors substituted the mean value of congeners for missing values, but I would like to see the results performed only on the actual data, as well as information on how correlated fruit size is within palm genera for those groups that are well-known. Reviewer 1 has additional good suggestions.
2) Rev 3 asked whether the results could be driven by rare species, given that only P/A data were used and data on relative abundance are apparently unavailable.
3) Has it been ruled out that the observed patterns were driven by radiations of small mammals in the same place as small-fruited palms, etc? I realize that a complete phylogenetically corrected analysis may not be possible with these data, but the issue should be acknowledged in the ms, and it would be nice to see some simple common-sense tests of the robustness of the conclusions to the non-independence of species within a radiation. These could be in the response to review only, at the authors' discretion.

On the whole, I think this paper is a good fit for GEB due to the biogeographical / global scope and the inherent interest of testing a hypothesis that has been familiar to most ecologists for a long time but not, to my knowledge, tested at the necessary scale. To be sent out to review next time, please be sure to address all the issues raised by the reviewers with special attention to the points I highlight above.

Dr Rachael Winfree, Editor

REVIEWER COMMENTS TO AUTHOR

Referee: 1

Comments to the Author
The authors evaluate the cascading consequences of megafauna extinction on the relationship between palm fruit size and body size of frugivorous mammals at global and biogeographical scales. I found the study particularly interesting, innovative and with potential for publication. The authors clearly presented the problem, delineated pertinent hypotheses/predictions, accessed different kind of data to answer the questions and their results support conclusions. However, I have some conceptual and methodological considerations, as follow. Hope the authors find my suggestions interesting and worthwhile to improve their study. I start with major points, and then present minor ones.

Introduction: Megafauna extinctions were a global event and the authors properly test their effects at the same scale. However, it seems that the justifications and examples of extinction events and palms seed dispersal throughout the introduction are limited to the context of New World or Neotropics. I invite the authors to amplify that context, describe the global nature of such phenomena, and make their justifications and examples compatible with their predictions. For example, the authors could describe the ranks of megafaunal extinctions across continents or biogeographical regions, highlight that Americas present the highest amount of species extinction, whereas Africa present the lowest one (related to second prediction).

Methods:
Fruit size: For species missing fruit size, the authors used a mean of congeners to estimate trait value. In this case, all species with missing values into a given genus would unrealistically have the same trait value. Such approach hampers the authors to considerate trait variation among species across their analyses and may strongly affect the relationships against body size. This is really serious because, besides around 30% of species are missing, there are relatively so much genera (~30 genera) with more than 10 missing species, reaching 113 missing species in genus Calamus. An alternative, maybe more robust and realistic, would be impute missing values from phylogenies. Why you did not phylogenetically impute missing values (e.g. using your own species level phylogeny for palms – Faurb et al. 2016 in Mol. Phyl. Evol.)? Or why you did not simply ignore such missing species and considerate just the species with observed trait value to average fruit size into TDWG units? I think the text needs a least a justification for such choice. Which are the advantages of using the mean of congeners? Conversely, which are the consequences to the regression analyses by using the unrealistically invariant mean of congeners?

Paleoclimate: Why the authors used paleoclimatic simulations from PMIP2 if more recent simulations from PMIP3 are already available in WorldClim database? Because climatic simulations advance at every PMIP version, new versions (e.g. PMIP3) present a suit of more realistic parameters and reliable predictions than older versions (e.g. PMIP2), such that I would expect the authors to choose new rather than older version of paleoclimatic simulations in their analyses.

Mammal's distribution: The authors used the present-natural ranges by Faurby and Svenning (2015) to estimate where megafauna would geographically distribute nowadays if they had not been extinct at the end of the Pleistocene. Although authors properly cite Faurby and Svenning (2015), it is needed describe here the basic criteria and assumptions used to estimate the present-natural ranges. A basic description would facilitate the understanding of interested readers. Moreover, I invite the authors to reflect, and if the case discuss across the methods, the advantages of using the present-native ranges, an primitive paleoecological approach based on relatively coarse co-occurrence of fossil records in the past to predict species distribution in the present, rather than recent methods based on ecological theory (e.g. species distribution modelling). Specifically, why the authors did not use Species Distribution Modeling in the context of paleobiology (like review in Svenning et al., 2011 – Quaternary Science Reviews) to predict geographical ranges of extinct species over the present conditions?

Analyses: The authors analyzed the relationships of current climate (PCA axes) and paleoclimate (temperature and precipitation anomalies from LGM to present-day) against current and present-natural frugivorous. Once current scenario is considered as for climate as for mammal's assemblies, why the authors did not considerate the LGM climate (e.g. PCA axes considering bioclimatic variables at LGM instead of, or complementally to, anomalies), nor mammal's assemblies during the LGM (instead of present-natural distributions)?

Minor points:

L. 37: Should the word "present" be removed from this sentence? In lines 35-36, the authors state that New World did not present a positive association between palm fruit sizes and CURRENT mammal body sizes. Here, in line 37, the authors contradict that statement saying that a positive relationship was found between fruit size and PRESENT and extinct mammalian body size, including in New World. After all, does the positive relationship exist or not between palm fruit sizes and CURRENT/PRESENT mammal body sizes in New World?

L. 52: the word "even" is repeated.

L. 62-63: … suggest that seed dispersal of megafaunal fruits might to some extent HAS BEEN substituted by other dispersers… ?

L. 121-123: An innovative study is the key assumption in scientific research. I think this sentence unnecessary.

L. 123: …we test THE following…?

L. 149: Insert a comma to separate "Aarhus University Herbarium" from "herbarium of the Royal Botanic Gardens Kew".

L. 177: Why estimate present-natural-ranges for 691 current frugivorous mammals? Which are these species? What differ these 691 current mammals from those 1806 compiled from IUCN? Moreover, the total of 1899 species (L. 178) is the result of 1806 current IUCN species plus 93 extinct species. I was really not able to understand about these 691 current species.

Sincerely,
Matheus S. Lima-Ribeiro

Referee: 2

Comments to the Author
I feel that this manuscript will make a significant contribution as it highlights the importance of accounting for extinction events when examining size coupling between fruits and frugivores. Furthermore, the analyses are appropriate, the use of SEM's allow the direct and indirect effects of predictors to be examined, and the manuscript is well written. As such, I only have relatively minor comments and suggestions to make.

Specific comments:
Introduction
P3L79: "…strongly reduced dispersal…" reduced dispersal distances, or a reduction in successful dispersal? Please clarify.

P4L99: "Besides biotic...plants, various…" delete beginning of sentence and begin at 'Various' to avoid repetition.

P4L100: "…are likely to have shaped…" consider replacing with 'also influence' to make sentence more concise.

P4L117: "…predictor variables, incl. current…" replace 'incl.' with 'including'.

Methods
P6L145-146: "We also run analyses by including…" replace with 'We also ran analyses including'

P6L149: "Aarhus University Herbarium the…" insert a comma after 'Herbarium'

P6L166: "…(Kissling et al. (2014)…" remove extra bracket

P7L173: "…(following Faurby and Svenning (2015))." Remove extra brackets

P7L179-181: "For diet information…fruit and seed dispersers." Currently, this sentence does not read very well. Consider rewriting/amending it

P7L201-202: Was the structure of Principal components qualitatively identical between the global analysis and the analysis of biogeographic realms? Would be nice to have tables of PCA outputs in the supplementary material.

P9L235: "…current mammal body sizes, with…" Consider ending the sentence at 'body sizes.' to reduce repetition.

P9L261-262: Was the structure of components consistent? See comment above.

Results
P12L324: "Fig. S2" replace with 'Fig. S3'

Discussion
P13L335: "…smaller losses than in…" delete 'than'

P13L352: "…of fruit sizes..." replace with 'of palm fruit sizes'

P14L375-379: The parentheses used in this sentence need to be tidied up.

P15L410-411: Consider amending this sentence by removing 'of animal-dispersed plants and their vertebrate counterparts' and replacing 'consumer body sizes' with 'frugivore body sizes'.

Figures
In an effort to save space, I recommend omitting Figure 3 (or moving it to the supplementary material). I feel the information in this figure can be adequately described in the text of the results.

Referee: 3

Comments to the Author
In this paper Göldel et al. study the association between the distribution of palms with varying seed sizes and the body mass of potential seed-dispersers in the present and recent past (Late Pleistocene). Their results suggest that the occurrence of large mammals, in particular the extinct megafauna, can partially predict the spatial distribution of mean fruit size in a broad scale. This is a relevant paper exploring an important question. My main suggestion is that the authors be more explicit about the limitations of their analyses. For instance each region is characterized by a mean size of the fruits and mammals. All information on the variation within a unit is disregarded. How could this be considered in future studies and what would they expect? Also, abundances are not taken into account, only presence absence data. Therefore in some cases the mean body size and mean fruit size might be driven by very rare species. What is their expectation if body sizes and fruit sizes are weighted by local abundances? I don't think new analyses need to be conducted, especially because this information would not be available for most units, certainly not for the extinct mammals. Yet, the authors should at least discuss these limitations and their expectations if this information was available. Please see other minor suggestions below.

Ln 42. Why bringing up deep time scales here? This was not analyzed and is not mentioned elsewhere

Ln 44. add comma before which

Ln 45. change survival for persistence

Ln 53 change megafauna for megafaunal

I suggest rewriting the conclusion section of the abstract so that it is more in line with the discussion of the paper.

Ln 63. change other by surrogate

Ln 84. It is not clear what they refers to here. I guess you mean palms? In fact it would be more accurate to say that the fruits of the palms are important food sources, right? Please rewrite.

Ln 109. comma after New World.

Ln 173. I understand the term “present-natural ranges” is being used in reference to a previous study. However, this term is not self-explanatory and may make the interpretation of the results and figures harder, especially when instead of present-natural ranges or distribution you use present-natural mammals or frugivores, which makes no sense at all.

Ln 177. change current for extant

Ln 178. It’s not clear why you have 691 “current” species in the previous sentence and 1899 here.

Ln 180. “are most likely represent” - please rewrite

Ln 181. This sentence is hard to follow. These details should be presented in a clearer way.

Ln 183-185. This sound a bit awkward. Are you thus choosing a biased estimate on purpose?

Ln 214. “calculated mean values were calculated” Please correct

Ln 328. A co-adaptation implies reciprocal evolution what, in the case of these seed dispersal interactions is unlikely. I think it is not reasonable that large frugivores evolved large body sizes in response to changing size of fruits.

Ln 330. I think the argument that your results offer “strong support to the functional relationship between palms and frugivores” should be toned down… it is still correlational.

Ln 355. Maybe it would be more accurate to say that the listed factors affect the current distribution patterns.

Ln 359. Would it be possible that fruit sizes are affected by the vegetation type as a whole, i.e., open vs closed habitats?

Ln 360-362. This argument is hard to follow. Please rewrite the sentence

Ln 382. What about primates? Do they use a different set of fruits?

Ln 394. This is a finalist sentence. Please rewrite

Ln 396. Possible mechanisms were already discussed in the introduction so I would not say it can be considered that “mysterious”. Moreover although seed dispersal is certainly important for recruitment for several plants, it is not essential for reproduction.

Ln 471. have - has

Ln 419. Doughty et al. were not discussing population structure but vegetation structure. Population structure can change very quickly locally and there are a number of studies showing, for instance, how hunting of frugivores can impact recruitment of fleshy-fruited plants. see Harrison et al. 2013 - Ecol Lett; Brodie et al. 2009 - Ecol Appl, Effiom et al. 2013 Proc B; Wright et al. 2007 - Biotropica, Vanthome et al. 2010 - Biotropica…

Ln 430. megafauna - population of megafauna species

Ln 434. Check Pires et al. 2014 - Oecologia

Ln 439. …but this relationship only emerges…

Ln 444. Do you mean studies such as this one?

Figure 1. The term present -natural is confusing

figure 3. There is no need for a figure to present two values. Unless this figure conveys more information it should be removed

Figure 4. Again this term present-natural makes the figure harder to read, especially since you are talking about both extant and extinct mammals.

If there are no comments above, the reviewer may have chosen to upload a file. Please check ScholarOne Manuscripts for any attached files, which may be found at the end of the decision letter in your author centre under 'Manuscripts with decisions'.
