University of Groningen

Modelling species interactions in macroevolution and macroecology

Xu, Liang

DOI:
[10.33612/diss.125954510](https://doi.org/10.33612/diss.125954510)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2020

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Xu, L. (2020). *Modelling species interactions in macroevolution and macroecology*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen. <https://doi.org/10.33612/diss.125954510>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Modelling species interactions in macroevolution and macroecology

Printed by: Ridderprint | www.ridderprint.nl

Front & Back: Beautiful cover art is designed by Li Huang.

Copyright © 2020 by Liang Xu

ISBN

978-94-034-2733-1 (printed version)

978-94-034-2734-8 (electronic version)

university of
 groningen

Modelling species interactions in macroevolution and macroecology

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. C. Wijmenga
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on

Friday 5 June, 2020 at 12:45 hours

by

Liang Xu

born on 18 April 1986
in Chongqing, P.R.China

Supervisor

Prof. R.S. Etienne

Co-supervisor

Prof. G.S. van Doorn

Assessment Committee

Prof. L. Harmon

Prof. F. Bokma

Prof. I.R. Pen

To my family

Contents

1. Introduction	1
2. Detecting local diversity-dependence in diversification	11
3. Inferring the effect of species interactions on trait evolution	29
4. The spatially explicit phylogenetic Janzen-Connell effect predicts realistic macroecological and macroevolutionary patterns	63
5. Synthesis	83
6. Bibliography	95
7. Summary	115
Samenvatting	119
8. Acknowledgements	123
Curriculum Vitae	129