

University of Groningen

The role of parasites in host speciation

Gobbin, Tiziana P.

DOI:
[10.33612/diss.168426043](https://doi.org/10.33612/diss.168426043)

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:
2021

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

Citation for published version (APA):

Gobbin, T. P. (2021). *The role of parasites in host speciation: Testing for parasite-mediated divergent selection at different stages of speciation in cichlid fish*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen. <https://doi.org/10.33612/diss.168426043>

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.



Grazie

Dank u

Merci

Thank you

Danke

Acknowledgements

This journey began a long time ago... when I started my academic career in Neuchâtel, doing my bachelor and master. Thank you Prof. **Bruno Betschart**. With your enthusiasm and competence, you first convinced me that parasites are incredibly interesting creatures, inspiring me to do a Master on them.

After that, I temporarily set aside the wonderful world of biological research to officially become a teacher and search for a “proper job” (as my family continues to say). However, the fire of biology was still burning... and it exploded when I found this PhD position! It really seemed to have been created to suit my interests. Therefore, I am very thankful to my supervisors, who offered me this incredible opportunity and walked me through this long, fascinating (and honestly sometimes painful) process of achieving a doctorate.

Martine Maan, you gave me an amount of freedom that I did not always know how to handle, but that in the end somehow resulted in this thesis. I have thoroughly enjoyed working with you over the past 4+1 years, and I count myself lucky to have been supervised by you.

Ole Seehausen, your way of thinking outside the box and aiming just a bit higher than I usually feel comfortable with has been a great inspiration to me. Our contacts may have been infrequent, but your input on this project has been crucial.

Ton Groothuis, a frontman in the backstage: although our meetings were sporadic, your contribution to this thesis has been invaluable.

In addition to my supervisors, another person was all-important in guiding me through this adventure. Thank you, **Maarten Vanhove**! Your collaboration was extremely precious, and I learnt a great deal about monogenean critters and the parasitological world in general.

Antoine Pariselle, your knowledge of monogeneans is astounding and comparable only to your enthusiasm in digging into the Lake Victoria parasitofauna.

The **Natural History Museum in Lugano**: thank you for being so kind and open to share your “old but gold” microscope. It was a pleasure to work in such a beautiful place on the lake in a very friendly environment. In particular, I would like to thank **Neria Römer**, for endless chats about cats. **Michele Abderhalden** thank you for introducing me to geocaching, an amazing hobby that rendered my days off highly enjoyable. You will be missed very much.

The fish group at Groningen University: you made my transition from a mountainous country to a flat one much smoother. Many thanks to **Shane Wright** for showing me all the secrets of the aquarium facility, and the best pubs in the city. To **Elodie Wilwert**, for making me smile through the difficulties of doing research. And to **Gerrit Potkamp**, for reminding me that research is a serious commitment.

Thanks to all the numerous PhD and post-doc students who were part of the Dutch side of this journey, for sharing the big office at the Linnaeusborg, a drink or simply a chat. **Xiaocui Wang**, thank you for organizing so many fun activities. I really enjoyed each one of them! **Flavia Berlinghieri**, è stato un sollievo potermi lamentare con qualcuno della qualità della pizza e del caffè olandesi. **Andrea Soto**, I really needed that hug when I had the car accident. My thanks also go to **Pinar** and **Philip Kohlmeier**, **Joana Sabino Pinto**, **Mario Mira**, **Tom Sarraude**, **Tiphaine Bailly**, **Paolo Panizzon**, **Yoran Gerritsma**, **Aude Giraud**, **Casey Yanos**, **Neeraj Kumar**, **Asmoro Lelono**; for the great times together.

The Fishec group at EAWAG and Bern University: **Oliver Selz**, thanks for colour scoring Pundamilias from Luanso, and a big “thank you” for swapping offices, my dog and I really appreciated it. **Florian Moser**, for your friendly chat on cichlids and students’ life. Many thanks also to **Julian Junker**, **Carmela Donz**, **Anna Feller**, **Joana Meier**, **David Marques**, **Moritz Muschick**, **Kotaro Kagawa**, **Ayana De Brito Martins** (and of course her dog Ponyo) and **Timothy Alexander** (sorry if my dog scared you) for sharing their experience with me. And all the other colleagues who, despite belonging to other research groups, shared their time with me in Lucerne: **Cas Retel**, **Jaime Anaya-Rojas** (it was nice not being the only “parasite person” in KB). A special thought to **Adrien Gaudard**, who tragically passed away.

The parasite group in Belgium, in particular **Michiel Jorissen** and **Chahrazed Rahmouni**. Your warm welcome at Hasselt University was as valuable as your precious insights on *Cichlidogyrus* morphology and biology. The visit to your group was academically enriching, but also great fun... Belgian beers are the best.

To Master students **Renée Veenstra**, **Giulia Leone** and **Ron Tiemersma**: your hard work contributed to the progress of this thesis, both with data and ideas. But you also contributed to my professional growth, as you were encouraging me to become a better scientist and teacher.

Many thanks to **Ariane Le Gros** for assessing endoparasites of many cichlids, you saved me a lot of time.

The supporting staff in Switzerland and in the Netherlands: **Nadja Pepe**, **Patricia Achleitner**, **Therese Oesch**, **Rahel Schwitter**, **Salome Mwaiko** (please, always keep your energy and smile), **Raffaele Leonetti** (your espresso is great), **Beat Kienholz**, **Pleunie Kraak**, **Corine Eising**, **Gerard Overkamp** and **Roel van Eijk**.

The animal care teams in Switzerland and in the Netherlands: **Andreas Taverna**, **Marcel Häsler**, **Erwin Schäffer**, **Sjoerd Veenstra**, **Willelm Diderich** and **Brendan Verbeek**. Although my work was mainly based on dead fish, I highly appreciate your efforts in keeping the fish in good condition.

Thanks to all those who crossed my path during this PhD and whom I forgot to mention here (sorry, I am getting old).

To Switzerland, a wonderful place where to hike, swim and do research. My studies brought me in different cities in three different linguistic regions, allowing me to discover many wonderful places and to appreciate my homeland. Thank you, mom Helvetia.

To the Netherlands, and especially Groningen, thank you for adopting me. It is incredible how two countries can be so different and so similar at the same time: I felt at home here. The dynamic Dutch weather will never cease to surprise me... having the four seasons in one single day is somehow a life-experience.

A special thank you to the reading committee, for the time and effort spent in reading and evaluating this thesis: **Katie Peichel** (University of Bern), **Bregje Wertheim** (University of Groningen), **Caroline Nieberding** (University of Louvain), **Joachim Kurtz** (University of Münster).

Last but not least, I would like to mention my family, who always told me to follow my dreams, no matter how strange or outright crazy they may have sounded to their ears. Mamma **Rosangela** e papà **Luciano**: grazie per esserci sempre stati e per tutta la positività con cui avete sempre creduto in me. La mia sorellina, **Stefania**, con cui ho potuto condividere tutte le gioie e frustrazioni di essere studenti, ma soprattutto grazie per avermi supportata e sopportata in tanti modi diversi. Nonna **Paolina**, ce l'ho fatta ad "andare a vivere sul bastimento" anche se in maniera ridimensionata. Zia **Patricia**: come vedi, ho finalmente imparato l'inglese (per favore, nessun commento sul mio rifiuto fisiologico del tedesco).

Ovviamente, fanno parte della famiglia anche i miei gatti e il mio cane. **Ketchup VecchioMulino**, **MoonPet Quimper** e la loro piccola peste **Haribo PureSwissness**: riuscite sempre a farmi sorridere e a scaldarmi il cuore (non solo metaforicamente). Un abbraccio speciale a Ketchup, che fin dall'inizio mi ha accompagnata nella mia carriera universitaria, sempre al mio fianco tra lunghi viaggi in treno e in auto e numerosi traslochi. Non avrei potuto desiderare un daimon migliore. Il mio gigante tigrato **Æternit de La Cala del Leone**, per accompagnarmi in lunghe passeggiate rigeneranti alla scoperta di nuovi posti e per costringermi a fare delle pause di tanto in tanto.

Davide Prosperi, non ci sono parole per descrivere l'amore, la pazienza e il supporto che mi hai dato. Sei stato il mio rifugio dalla pressione di questo PhD, come dimostrano gli innumerevoli viaggi Lugano-Groningen e Lugano-Lucerna che entrambi abbiamo intrapreso. Malgrado la distanza, la tua presenza è sempre stata costante, nell'incoraggiarmi e nello sfidarmi a sorpassare i miei limiti. Senza di te questo PhD non sarebbe stato possibile.

Declaration of consent

on the basis of Article 18 of the PromR Phil.-nat. 19 (University of Bern)

Name/First Name: Tiziana Paola Gobbin

Registration Number: 05-502-331

Study Program: Ecology and Evolution

Bachelor Master Dissertation

Title of the thesis: The role of parasites in host speciation.
Testing for parasite-mediated divergent selection at
different stages of speciation in cichlid fish.

Supervisor: Ole Seehausen
Martine E. Maan

I declare herewith that this thesis is my own work and that I have not used any sources other than those stated. I have indicated the adoption of quotations as well as thoughts taken from other authors as such in the thesis. I am aware that the Senate pursuant to Article 36 paragraph 1 litera r of the University Act of September 5th, 1996 and Article 69 of the University Statute of June 7th, 2011 is authorized to revoke the doctoral degree awarded on the basis of this thesis.

For the purposes of evaluation and verification of compliance with the declaration of originality and the regulations governing plagiarism, I hereby grant the University of Bern the right to process my personal data and to perform the acts of use this requires, in particular, to reproduce the written thesis and to store it permanently in a database, and to use said database, or to make said database available, to enable comparison with theses submitted by others.

Lugano, 02.02.2021

