

University of Groningen

Bottlenecks, budgets and immunity

Buehler, Deborah Monique

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:

2008

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

Citation for published version (APA):

Buehler, D. M. (2008). *Bottlenecks, budgets and immunity: The costs and benefits of immune function over the annual cycle of red knots (Calidris canutus)*. s.n.

Copyright

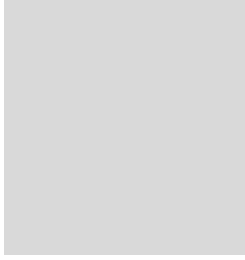
Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

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.



Acknowledgements

To my family, *in every sense of the word*

Family: A group of individuals related by blood or marriage or by a feeling of closeness.

I've always been a dreamer, but if someone would have told me when I was 10 that I'd get paid to feed my own curiosity and to travel around the world studying migrating birds, even I might not have believed them. And yet, in many ways that is what I've been privileged enough to do these past four years. But doing a PhD is not all the stuff of dreams, it is hard work and many people have helped me on this journey.

I would like to start by thanking my supervisors – or perhaps “mentor” is a better word. A mentor is defined as “a wise and trusted counselor or teacher” and both Theunis Piersma and Irene Tieleman have been mentors to me and have taught me much about science and about being a scientist. I thank Theunis for always believing in me, even when I couldn't believe in myself. Your guidance and support, from my arrival in the Netherlands to our “Tuesday meetings” while I was writing up, were invaluable. Even the most cryptic of comments ended up making sense in the end. I thank Irene for coming in as a guiding light during the “dark days” of start-up and for keeping me grounded. Your clarity of mind is unlike anything that I have encountered before, thank you for sharing it with me and for teaching me to think and write more clearly. Thank you also for our conversations about ideas and ideals in academia. They were wonderful “career counselling sessions” for me.

This research was conducted both at the University of Groningen and at the Royal Netherlands Institute for Sea Research (NIOZ), and more people than I can mention here helped me in both places. During the bleary-eyed days of our year-long experiment François Vézina was an endless source of inspiration and comic relief. Your humour kept me going and you taught me much about experimental design, bird metabolism, and how to balance being a scientist with having a family. Wouter Vahl was kind enough to offer me his house during the food limitation experiment and was also a wonderful office mate. I enjoyed our discussions about science and life immensely. When I needed “girl power” Jutta Leyrer was there, at NIOZ, on the *Navicula* and in Mauritania. Thanks for the friendship, conversations, rants and laughs. Jeroen Reneerkens shared his knowledge about food limitation experiments and corticosterone studies at NIOZ, and in Mauritania he taught me much about photography and the art of sanderling catching. All of my experiments at NIOZ and in the Wadden Sea were helped by Maarten Brugge, Anne Dekinga, Bernard Spaans and the crew of the H. M. *Navicula* who provided excellent technical support in the field and lab, and by Judith van Bleijswijk who generously allowed me to run assays in the ML II lab. I also thank Anneke Bol and Oliver Haddrath (in Toronto) for helping with the molecular sexing of birds when I couldn't be in contact with ethidium bromide. Finally, I thank the whole Department of Marine Ecology at the NIOZ for a stimulating work environment and lots of support (I still owe you all cake).

In Groningen, Julia Schroeder stood by me from start to finish (even now as my paranymph) offering stimulating professional conversation, great food and most importantly friendship. You helped me to stick with this thing through good times and bad, and have been a role model in terms of balancing family and PhD. I think that neither one of my “babies” would be here without your support. Yvonne Verkuil has also been there from start to finish offering support when I first arrived in Groningen and insight with my synthesis figures in Toronto just a few weeks ago. At the halfway point of this work “Team Tieleman” entered the scene and I found myself surrounded by an interna-

tional group of great people all interested in immune function and disease in birds! Nick Horrocks, Arne Hegemann, Katie Hine and Liz Kleynhans thanks for great fun at social gatherings, field sites and in the lab. Kevin Matson and Maaïke Versteegh thanks for being great office mates and exercising your uncanny ability to listen to (and even enjoy) my rants. Thanks also for lots of supervision, especially with stats (Kevin) and for being a fellow “everythingologist”, document translator, and paranymph (Maaïke). From an administrative standpoint, Suus Bakker-Geluk, carole Elling, Joke Nunnink and Joyce Rietveld helped me to navigate the Dutch university system and handled a myriad of organizational tasks. Many more people entered my life at the Biology Centre in Groningen and I thank in particular members of the Animal Ecology Group for a stimulating work environment and members of the Theoretical Biology Group for letting me sit in on a few of their meetings even though most of it sailed right over my head.

Academic jobs are as much about teaching as about research and I thank my students and assistants Daliborka Barjaktarov, Nina Bhola, Francisco Encinas-Viso, Steven Haan, Mieke Lange, Eeke Marks and Magali Petit for their excellent assistance and for helping me to gain the confidence I needed to supervise students. I’ll not soon forget the laughter, brain storming sessions, ferry rides, camper living, or bucket carrying (“over the dyke”). I would also like to thank the people in my “adoptive” group in Toronto for providing me with a place to work while finishing the last bits of writing.

Of course I cannot forget the finances. This work was supported by the Natural Sciences and Engineering Research Council of Canada (NSERC), the University of Groningen (to me in the form of an Ubbo Emmius grant and to my supervisors), Schure-Beijerinck-Popping Fonds, the Netherlands Organization for Scientific Research (NWO) and the Royal Netherlands Institute for Sea Research (NIOZ). It was also *unofficially* supported by the Groningen student’s financial “holy trinity”: CareX which kept us housed, Adli which kept us fed and Mamamini/ Notabene which kept us clothed and furnished.

PhD researchers are also supported by many people outside of their working groups. I thank all of my friends, close by and far away, for showing an interest in my research and then for helping me to forget about it. Thank you for accepting me as I am and for encouraging me to never be anything less. I also thank my parents who have always supported my “global gallivanting” and my academic endeavours. Your love and support from day one have helped to make this thesis possible, in particular chapters 1, 8 and 12 could not have been written without the excellent childcare provided by “grandma and grandpa” when we moved back to Canada.

My husband Alberto Castillo supported and helped me in so many ways that I don’t even know where to begin. This work is just as much yours as it is mine. When I had ideas and goals, you helped me to achieve them as my field technician, my lab technician and my computer technician ... the list goes on and on. When I needed a break you provided the music, the laughter and the love. In the beginning when all was dark, you were my light. And in the end when we produced a baby, you were there to take care of him so that chapters 8, 10 and 11 could be written.

Finally I thank Aramis, my beautiful baby, for giving me the most important personal and professional gift of all – perspective.

Deborah M. Buehler – Toronto, 1 September 2008