



University of Groningen

Sex-specific foraging

Duijns, Sjoerd

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: 2014

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA): Duijns, S. (2014). Sex-specific foraging: The distributional ecology of a polychaete-eating shorebird [S.I.]: [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).

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.

Sex-specific foraging The distributional ecology of a polychaete-eating shorebird



The work in this thesis was conducted at the Department of Marine Ecology (MEE), Royal Netherlands Institute for Sea Research (NIOZ) according to the requirements of the Graduate School of Science (Faculty of Mathematics and Natural Sciences, University of Groningen). The research was supported by operational funds from NIOZ and by *Metawad* (WF 209925), a project awarded by Waddenfonds to T.P. and a VIDI grant (no. 864.09.002) awarded to J.A.v.G. by the Netherlands Organisation for Scientific Research (NWO). The printing of this thesis was funded by the Royal Netherlands Institute for Sea Research (NIOZ) and the Faculty of Mathematics and Natural Sciences of the University of Groningen.

This thesis should be cited as:

Duijns, S. (2014) Sex-specific foraging: The distributional ecology of a polychaeteeating shorebird. PhD Thesis, University of Groningen, Groningen, The Netherlands

Cover design: Narisa Togo (aka Ting) Lay-out & figures: Dick Visser Photographs: Sjoerd Duijns, Jacintha van Dijk and Jan van de Kam (Chapter 8)

Printed by: Ipskamp Drukkers, Enschede

ISBN: 978-90-367-7386-7 ISBN: 978-90-367-7385-0 (electronic version)



Sex-specific foraging

The distributional ecology of a polychaete-eating shorebird

Proefschrift

ter verkrijging van de graad van doctor aan de Rijksuniversiteit Groningen op gezag van de rector magnificus prof. dr. E. Sterken en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op

maandag 22 december 2014 om 11:00 uur

door

Sjoerd Duijns

geboren op 6 oktober 1976 te Breda

Promotor

Prof. dr. T. Piersma

Copromotor

Dr. J. A. van Gils

Beoordelingscommissie

Prof. dr. S. Bearhop Prof. dr. J.M. Tinbergen Prof. dr. D.W. Winkler

Contents

Chapter 1	General introduction	7
Chapter 2	Revisiting the proposed leap-frog migration of bar-tailed godwits along the East-Atlantic Flyway	13
Chapter 3	Sex-specific winter distribution in a sexually dimorphic shorebird is explained by resource partitioning	25
Chapter 4	Foraging site selection of two subspecies of bar-tailed godwit <i>Limosa lapponica</i> : time minimizers accept greater predation danger than energy minimizers	39
Chapter 5	Bar-tailed godwits <i>Limosa l. lapponica</i> eat polychaete worms wherever they winter in Europe	53
Chapter 6	Interference competition in a sexually dimorphic shorebird: prey behaviour explains intraspecific competition	67
Chapter 7	Field measurements give biased estimates of functional response parameters, but help explain foraging distributions	81
Chapter 8	Phenotype-limited distributions: short-billed birds move away during times that prey bury deeply	101
Chapter 9	General discussion	115
Box 1	Molecular sexing of bar-tailed godwits Limosa lapponica using droppings	129
	References	133
	Summary / Samenvatting	149
	Dankwoord	159
	Authors affiliations and addresses	166
	List of publications	168

