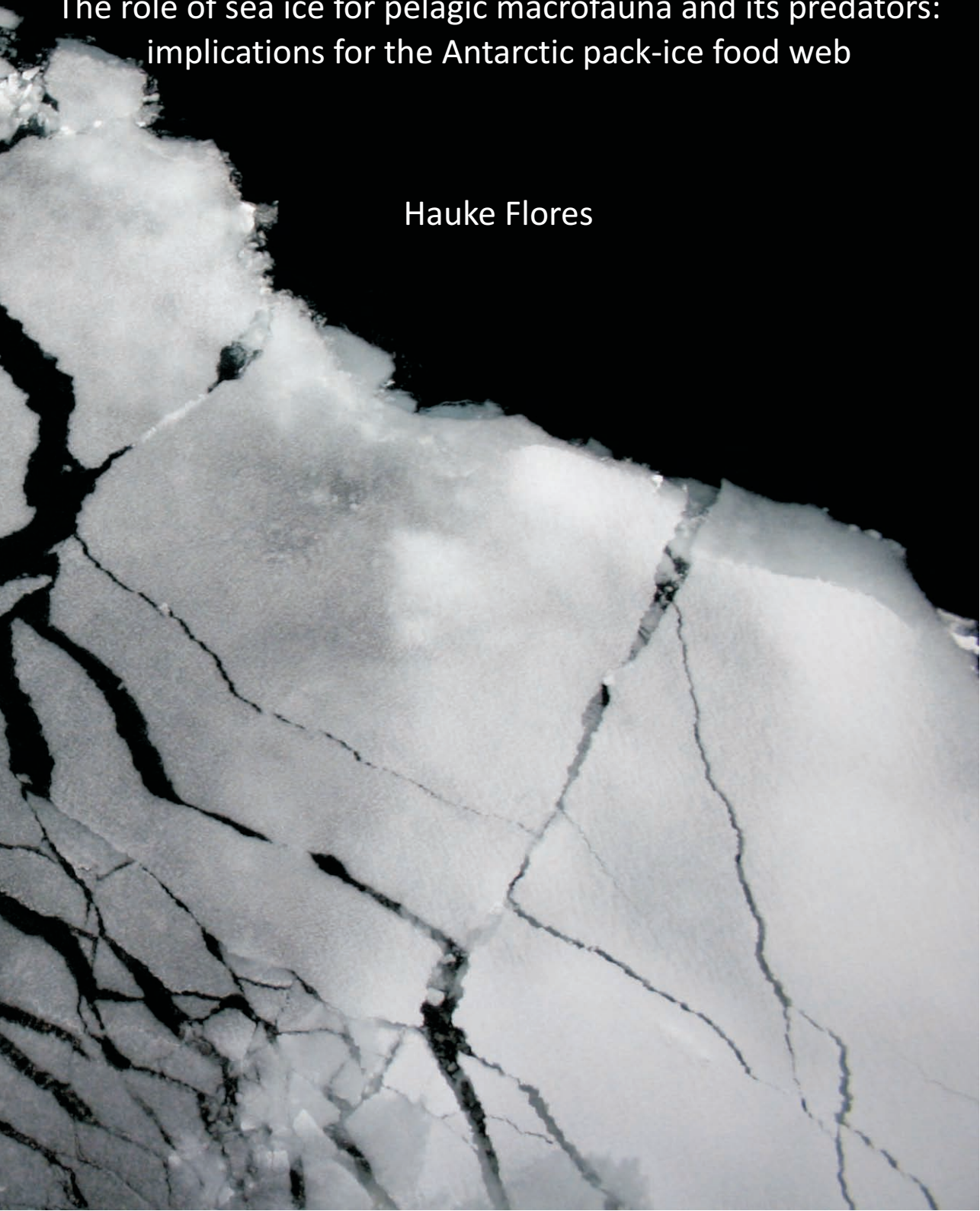


Frozen Desert Alive

The role of sea ice for pelagic macrofauna and its predators:
implications for the Antarctic pack-ice food web

Hauke Flores



Frozen Desert Alive

The role of sea ice for pelagic macrofauna and its predators:
implications for the Antarctic pack-ice food web

Printed by Ponsen & Looien b.v., Ede

Electronic version available at:

<http://www.rug.nl/bibliotheek/catalogibestanden/elepubrug/dissertaties/index>

ISBN: 978-90-6464-339-2

RIJKSUNIVERSITEIT GRONINGEN

Frozen Desert Alive

The role of sea ice for pelagic macrofauna and its predators:
implications for the Antarctic pack-ice food web

PROEFSCHRIFT

ter verkrijging van het doctoraat in de
Wiskunde en Natuurwetenschappen
aan de Rijksuniversiteit Groningen
op gezag van de
Rector Magnificus, dr. F. Zwarts,
in het openbaar te verdedigen op
vrijdag 1 mei 2009
om 13.15 uur

door

Hauke Flores

geboren op 18 september 1974
te Bremerhaven

Promotor : Prof.dr. W.J. Wolff

Copromotor : Dr. J.A. van Franeker

Beoordelingscommissie : Prof.dr.ir. H.J.W. de Baar
Prof.dr. U.V. Bathmann
Prof.dr. F.A.M. Volckaert

In memory of my grandmother
In Gedenken an meine Großmutter

Gisela Flores
(24 Sep. 1921 - 26 Jan. 2008)

Contents

English summary		8
Dutch summary		11
German summary		14
Chapter 1	General Introduction	19
Chapter 2	Diet of two icefish species from the South Shetland Islands and Elephant Islands, <i>Champsocephalus gunnari</i> and <i>Chaenocephalus aceratus</i> in 2001 – 2003	39
	<i>Polar Biology 27 (2004) 119-129</i>	
Chapter 3	Energy content of Antarctic mesopelagic fishes: implications for the marine food web	61
	<i>Polar Biology 29 (2006) 1045-1051</i>	
Chapter 4	Distribution, abundance and ecological relevance of pelagic fishes in the Lazarev Sea, Southern Ocean	73
	<i>Marine Ecology Progress Series 367 (2008) 271 -282</i>	
Chapter 5	Density of pack-ice seals and penguins in the western Weddell Sea in relation to ice thickness and ocean depth	93
	<i>Deep-Sea Research II 55 (2008) 1068–1074</i>	
Chapter 6	Sympagic occurrence of Eusirid and Lysianassoid amphipods under Antarctic pack ice	105
	<i>Deep-Sea Research II 55 (2008) 1015–1023</i>	
Chapter 7	Epipelagic macrofauna under sea ice and in open waters of the Lazarev Sea, Southern Ocean	121
Chapter 8	Antarctic krill species (Crustacea: Euphausiidae) under sea ice and in the open surface layer	155
Chapter 9	The Surface and Under-Ice Trawl (SUIT)	181
Chapter 10	Synthesis: Untangling the Antarctic sea ice food web	189
References		206
Acknowledgements		233
Contributing authors		237