

Arctic breeding waders indicate that lemming cycles are losing their grip on the Arctic ecosystem



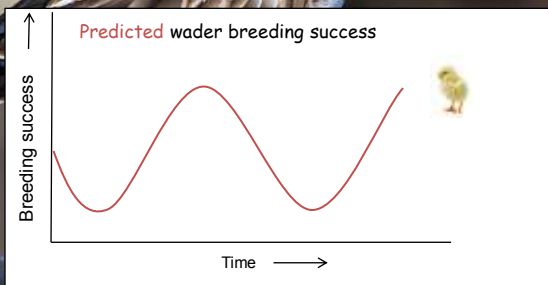
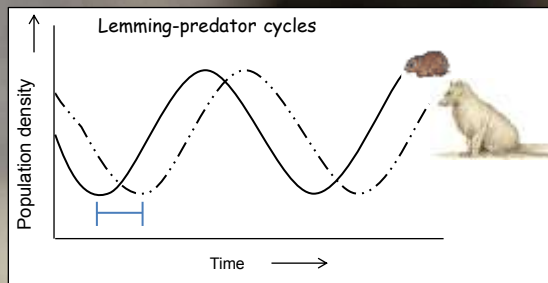
Yaara Aharon-Rotman, Marcel Klaassen, Clive Minton, Mikhail Soloviev, Pavel Tomkovich and Chris Hassell



Photo: R.D.Decker


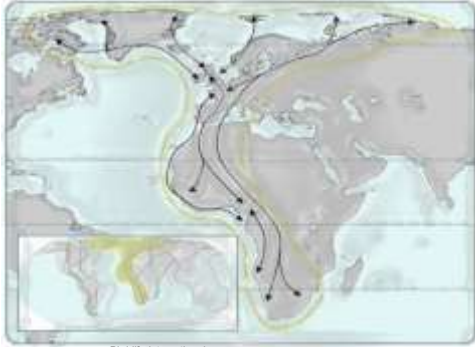


The alternative prey hypothesis

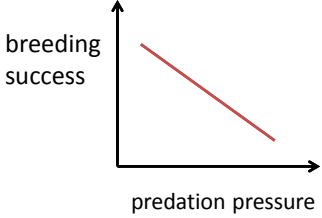


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Population Ecology
 Svea Blomquist · Neil Balggren · Jonatan Åkesson
 Anders Hedenström · Jan Pettersson
**Indirect effects of lemming cycles on sandpiper dynamics:
 50 years of counts from southern Sweden**
 Received: 22 August 2011 / Accepted: 26 June 2012 / Published online: 23 August 2012
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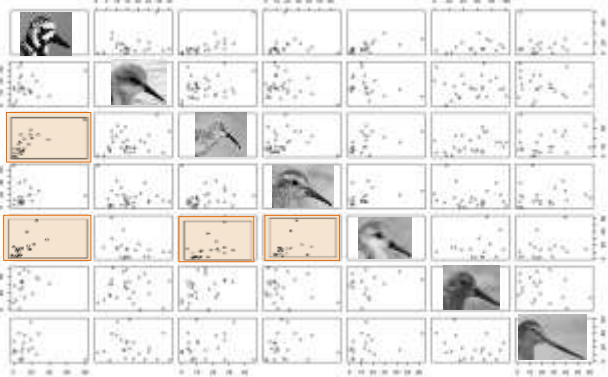
Bird life International

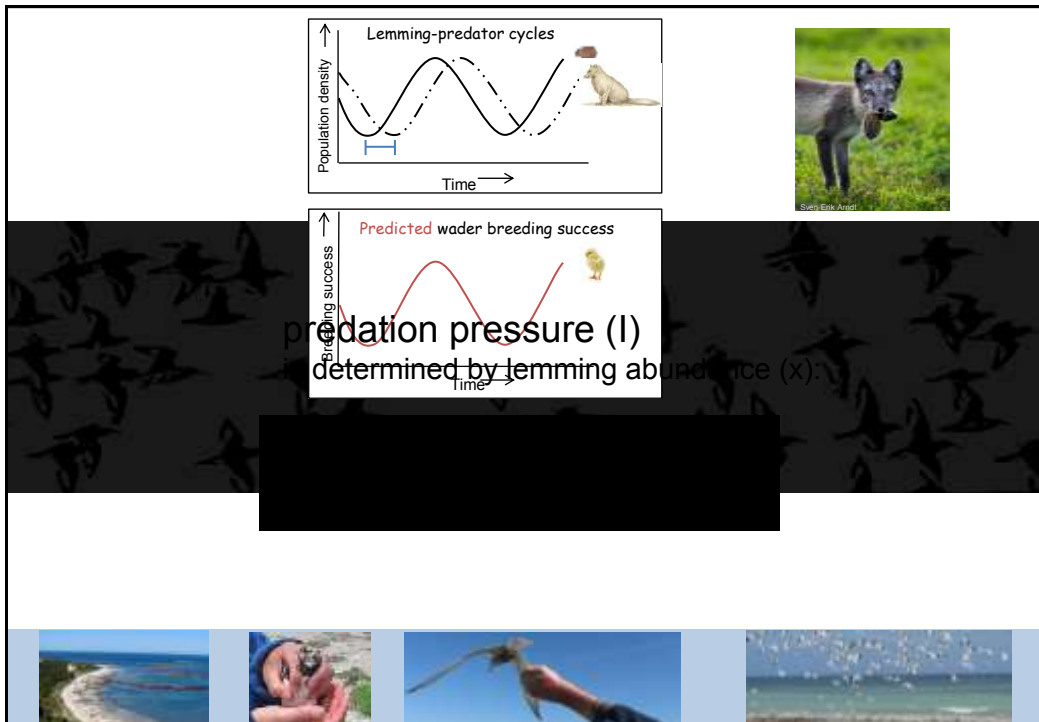


And in the East-Asian Australasian flyway?
 Breeding success=Juvenile Percentages
 (1978-2011)

Australia



Binomial logistic models

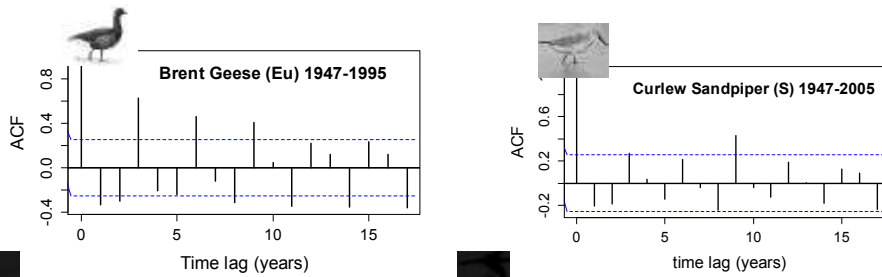
Juvenile proportions and predation pressure

Species SEA	Predation pressure Odd Ratios (~effect size)
Curlew Sandpiper	-
Ruddy turnstone	0.63**
Red necked stint	1.18**
Sharp-tailed sandpiper	0.81**
red knot	0.65**
Bar-tailed Godwits	0.75**
Species NWA	
Curlew Sandpiper	0.72**
Red necked stint	1.36**
red knot	2.26**
Bar-tailed Godwits	0.74**
Curlew sandpiper EAF	0.44**

Periodicity in Breeding Success

Lemmings show 3 year cycles in abundance - do waders show the same?

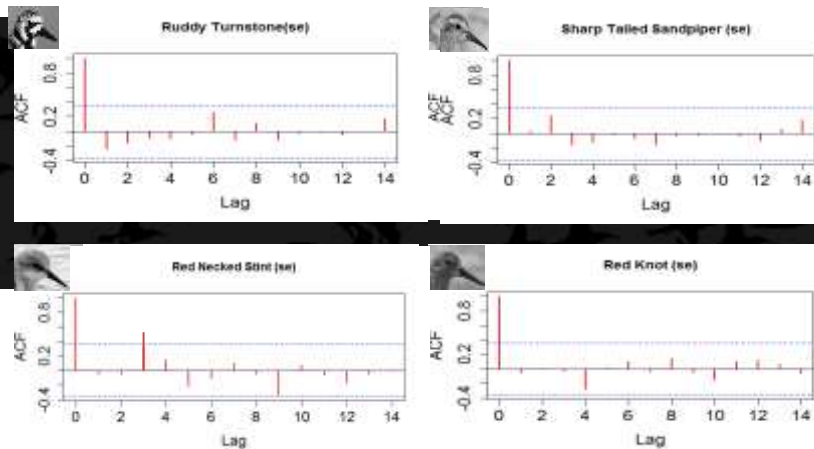
ARIMA model



All waders in the **East Atlantic Flyway** (South Africa) show 3-year cycle (data period: 1947-1995) (Blomqvist *et al* 1992)



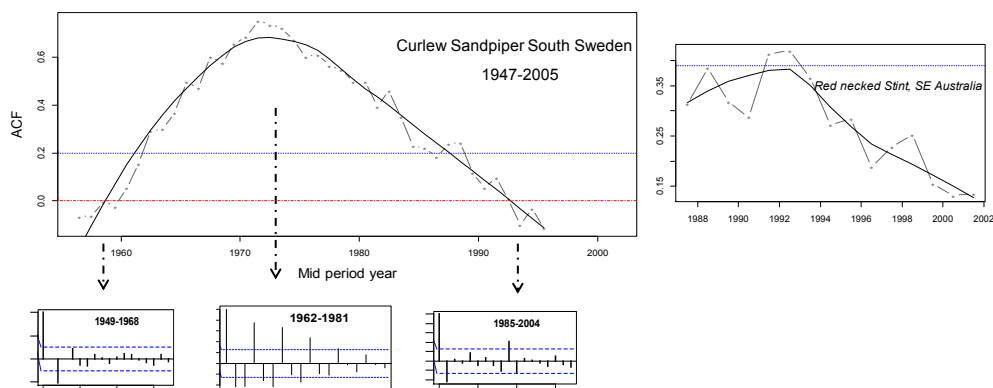
Do the “Aussie” Waders show the same periodicity? **NO**



The Aussie dataset is younger than the EAF dataset
(1978-2010) (1947-1995)



cycles come and go...? **Probably yes!**



Discussion

No correlation in juvenile % between Aussie waders

No major driver (lemmings) of breeding success

Different ecology and distribution across the Arctic

Weak correlation with lemming cycles in Aussie waders

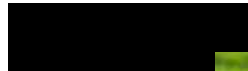
Unsynchronised lemming cycles across Arctic

Lemming cycles are fading (as suggested for Europe in Ims *et al*, 2008)





predation pressure (I)
 is determined by lemming abundance (x):



The high Arctic breeding grounds

