

Update on SW Plankton and the Western Channel Observatory

Angus Atkinson

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Outline of talk

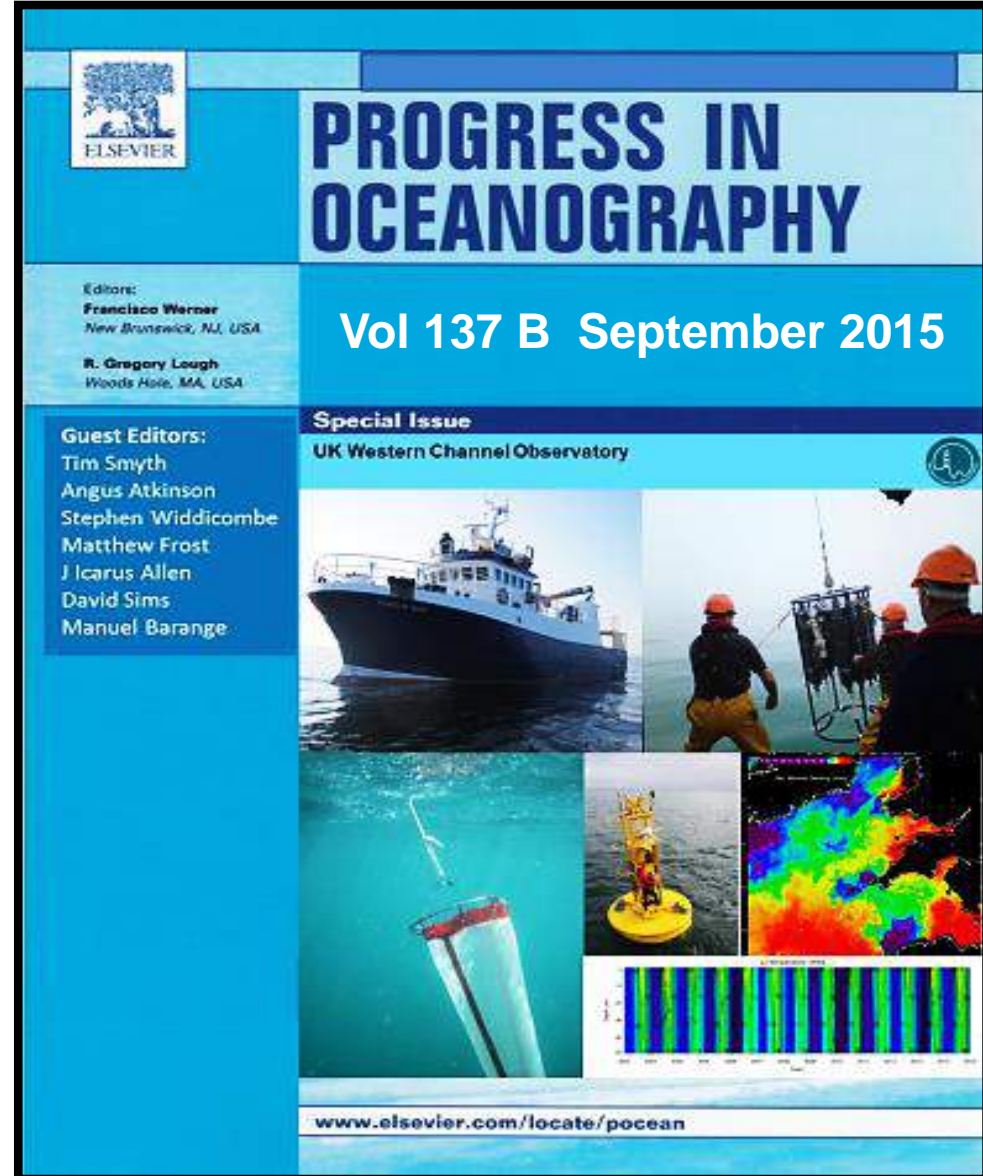
1. What is the Western Channel Observatory?
2. What does an “average season” look like?
3. Was 2015 atypical?
4. How much do the years vary?
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1. What is the Western Channel Observatory?



<http://www.westernchannelobservatory.org.uk/>

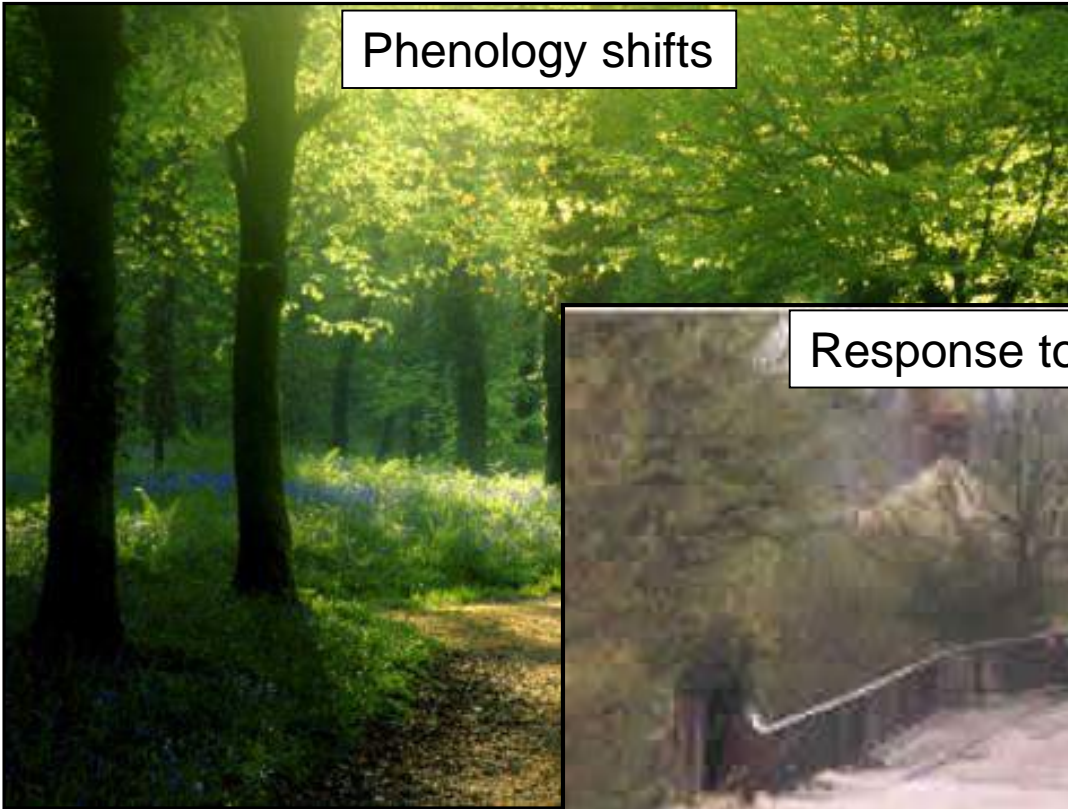
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<http://www.westernchannelobservatory.org.uk/>

Some strengths of L4

Phenology shifts

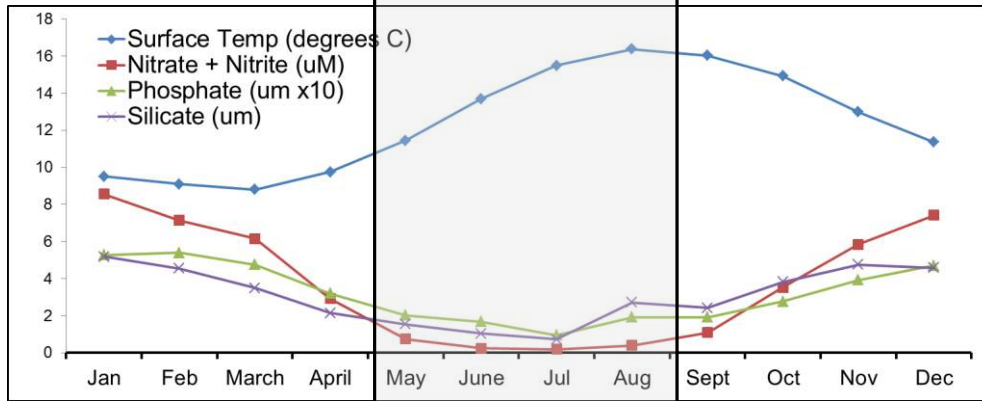


Response to extreme weather



L4: What does an “average season look like?”

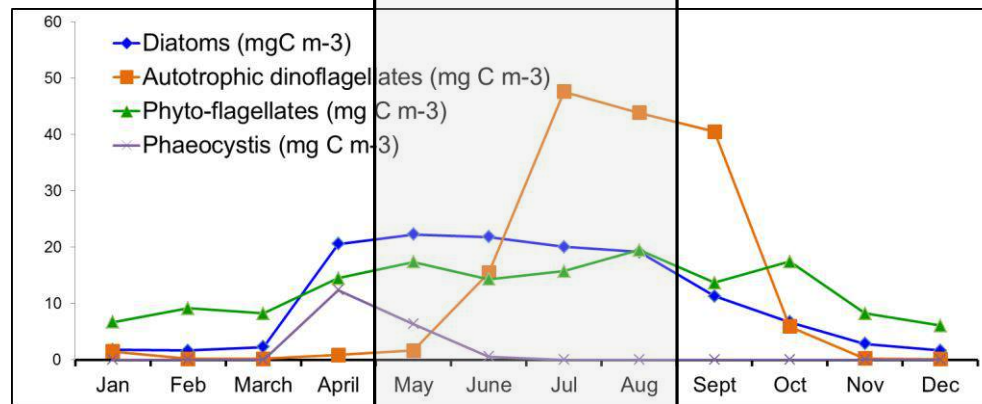
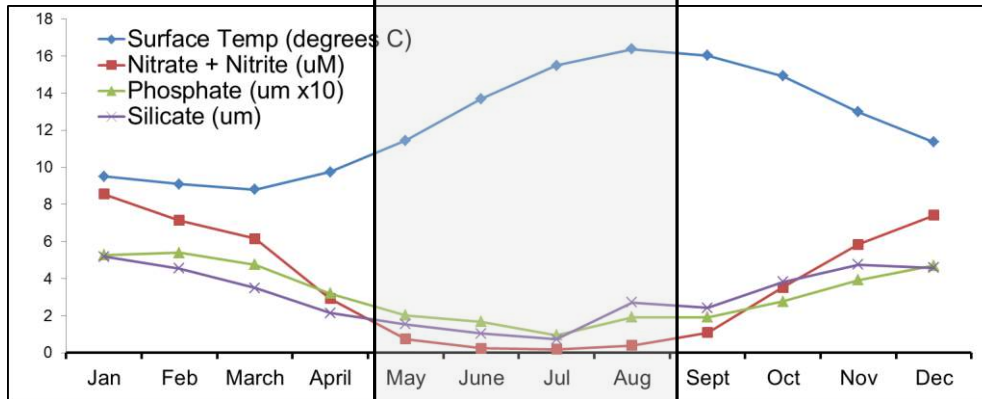
STRATIFICATION



The environment

Contacts: Tim Smyth,
James Fishwick, Malcolm Woodward

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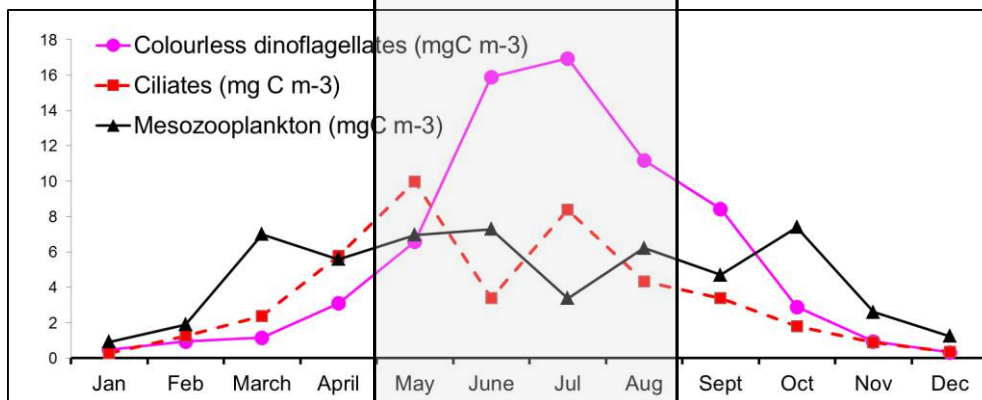
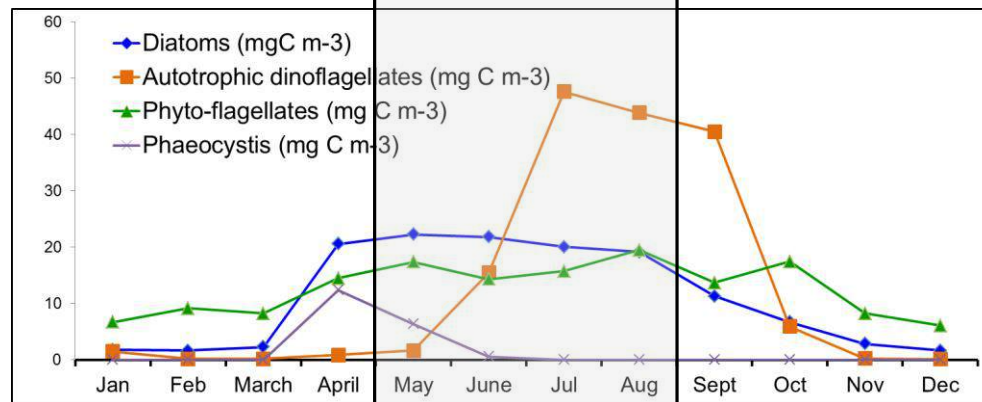
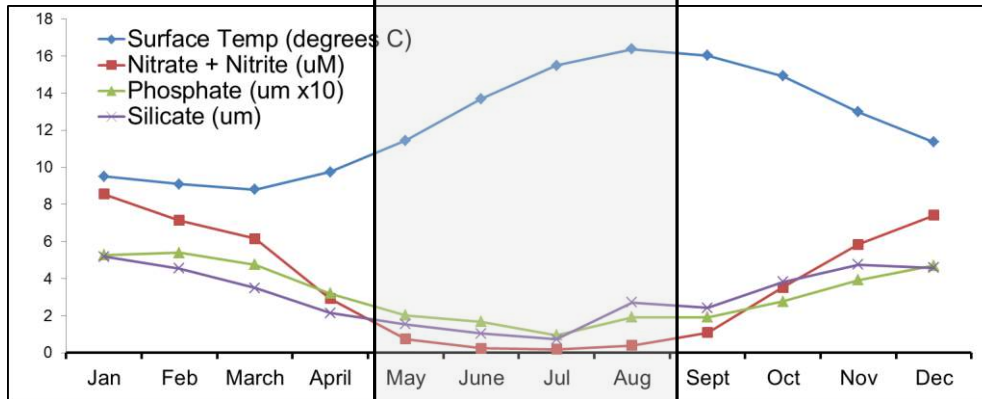
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Autotroph biomass

(~ 190 taxa counted)

Contacts: Claire Widdicombe,
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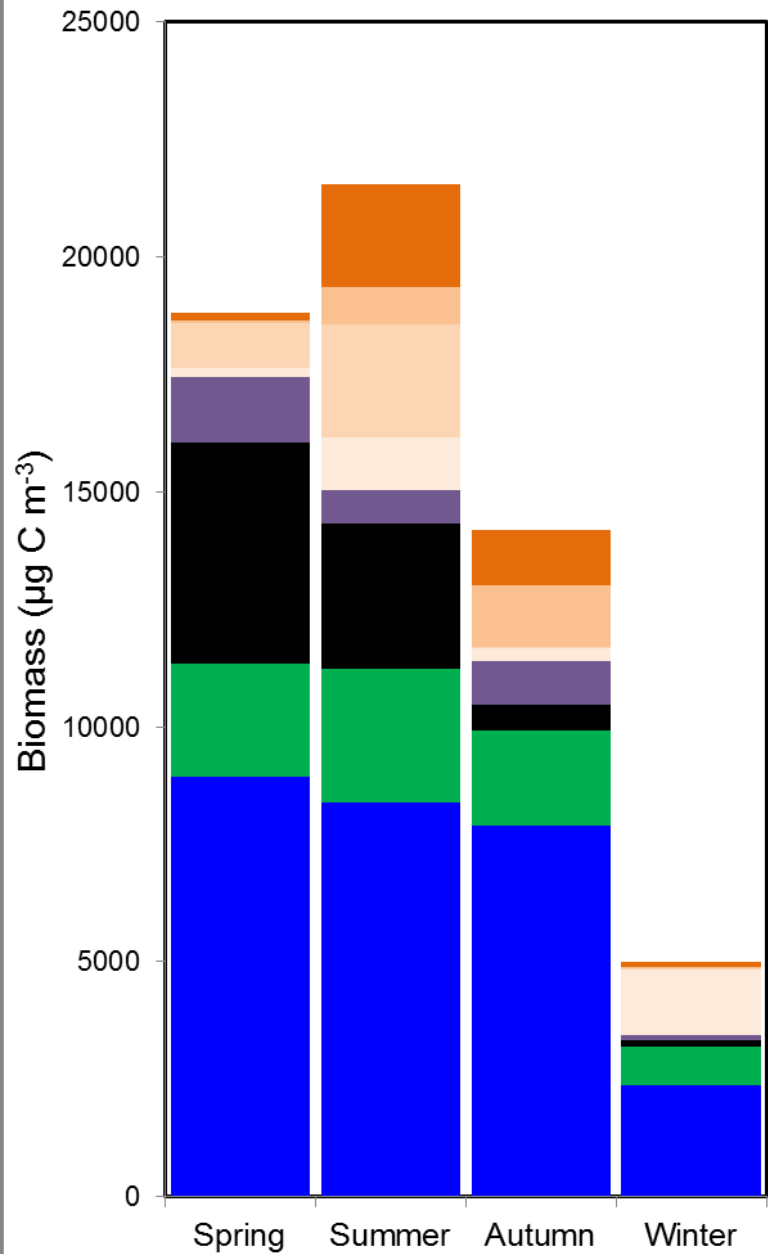
Contacts: Claire Widdicombe,
Glen Tarran, Elaine Fileman

Heterotroph biomass

(~360 taxa counted)

Contacts: Claire Widdicombe,
Andrea McEvoy, Angus Atkinson

L4: What does an “average” season look like?



Medusae

Siphonophores

Ctenophores

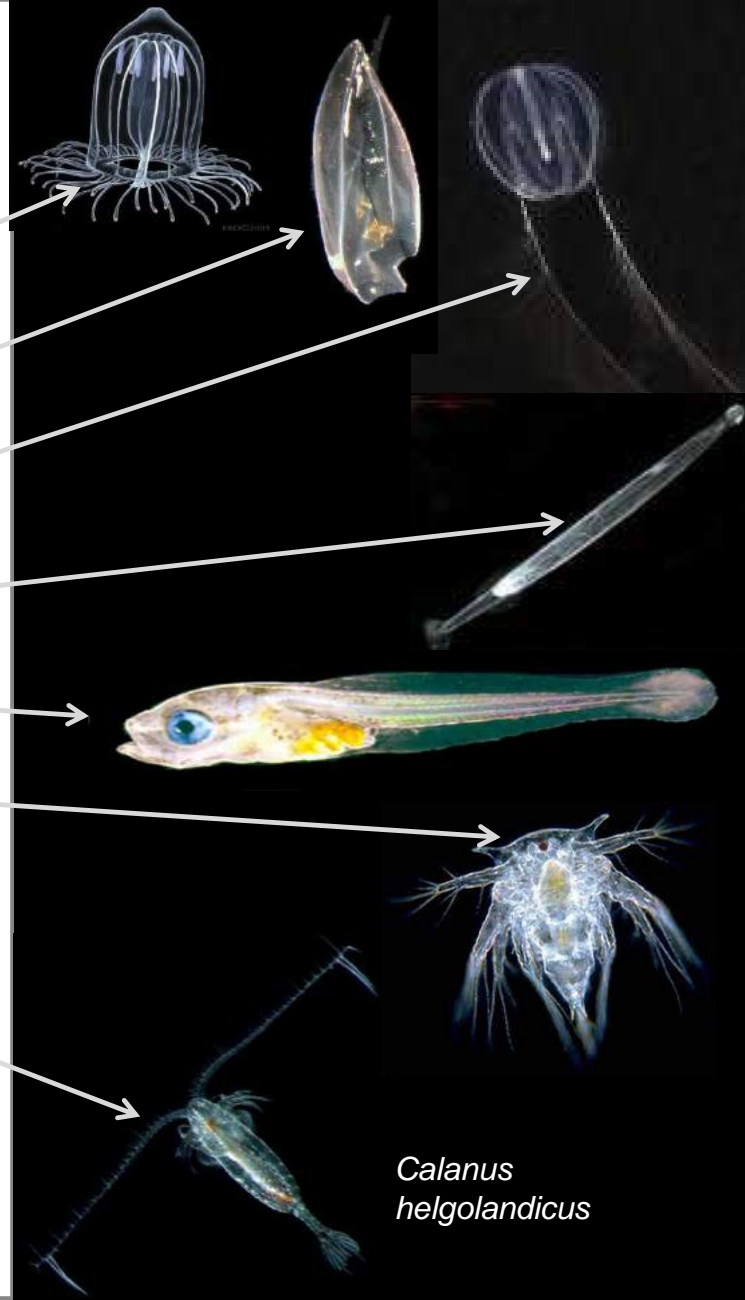
Chaetognaths

Fish larvae

Meroplankton

Other holoplankton

Copepods



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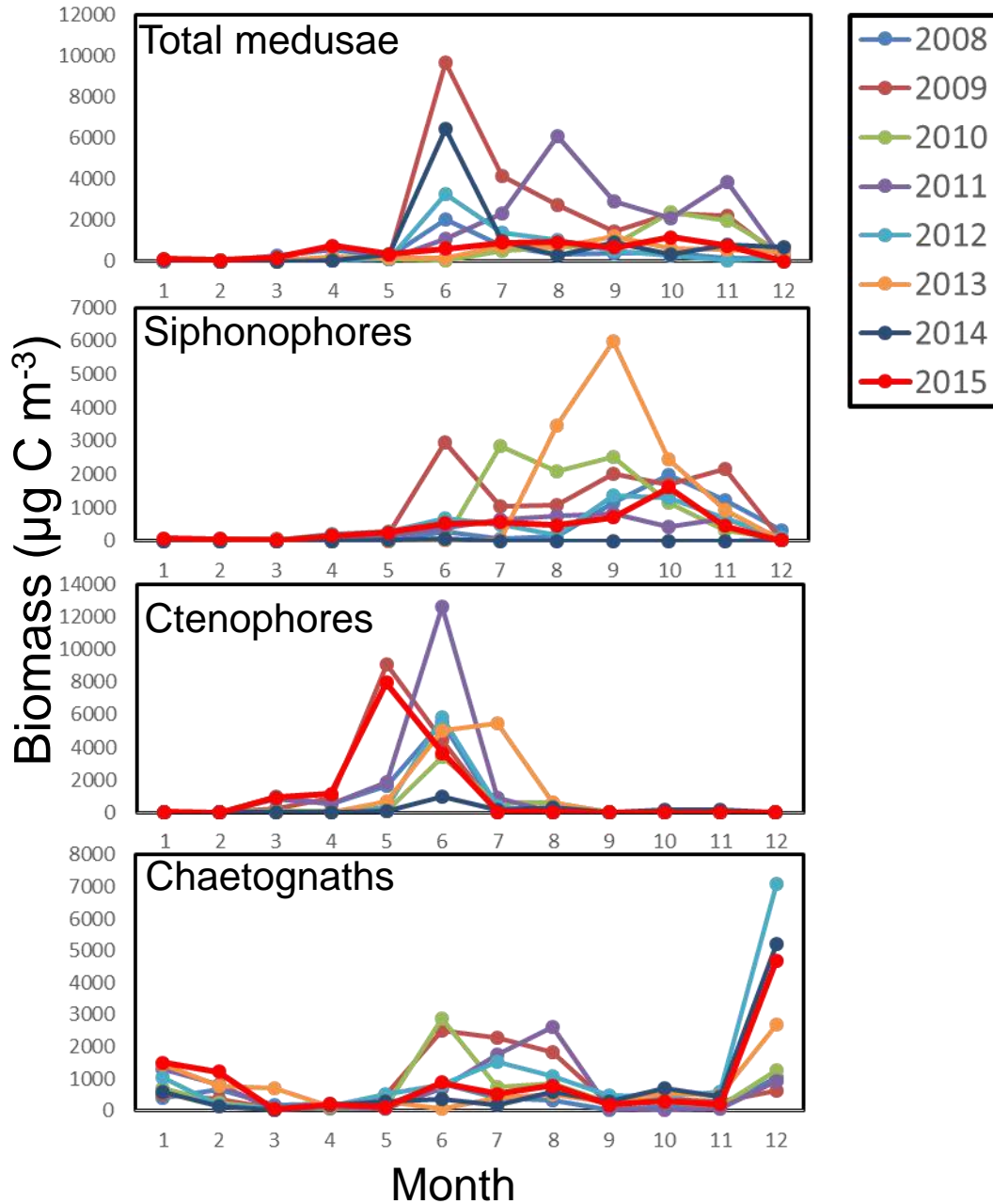
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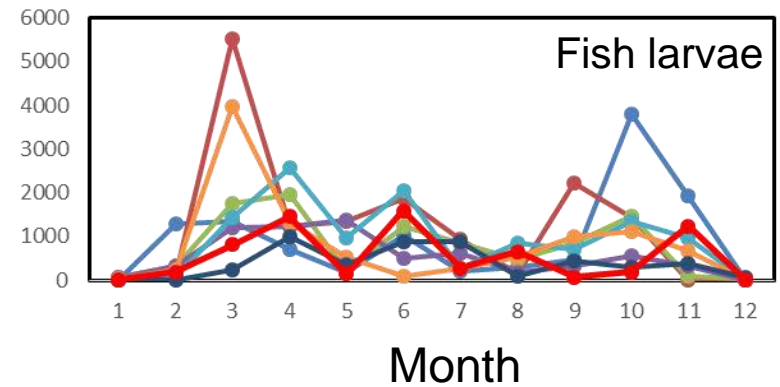
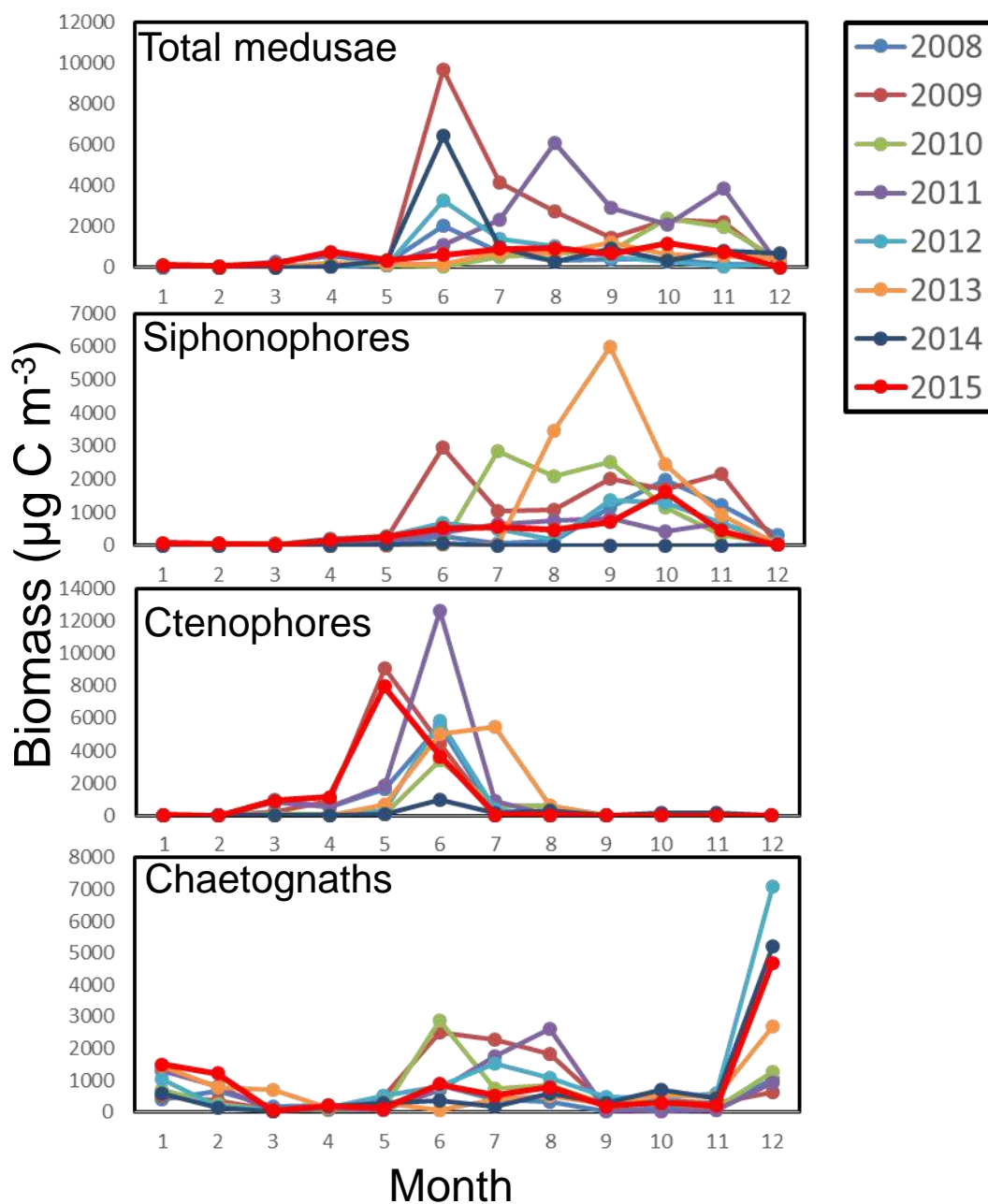
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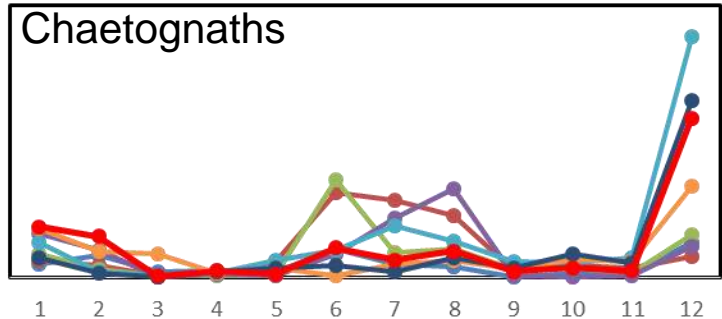
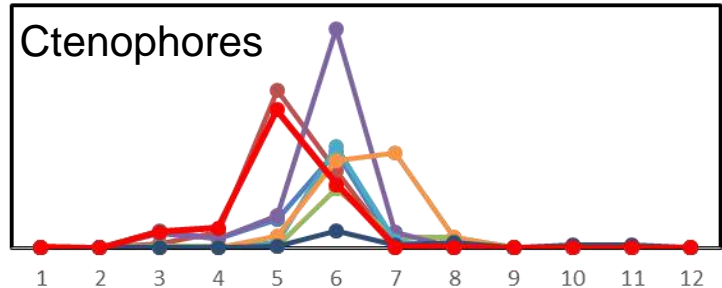
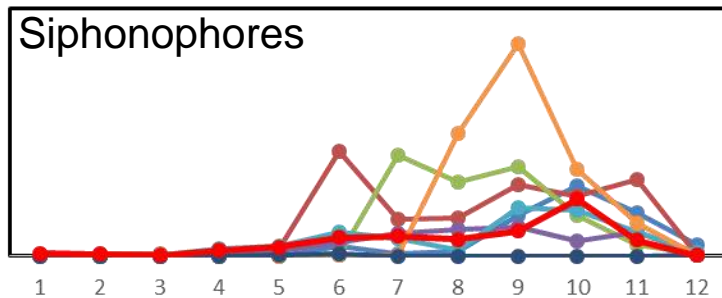
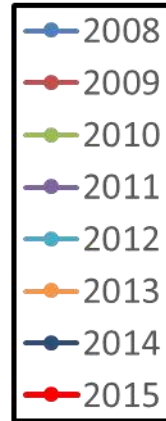
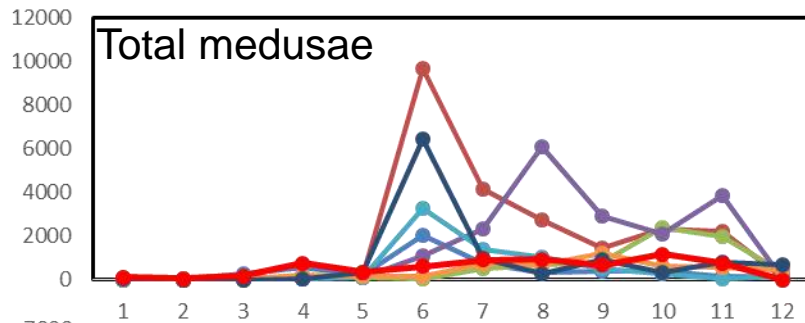


3. Was 2015 atypical?

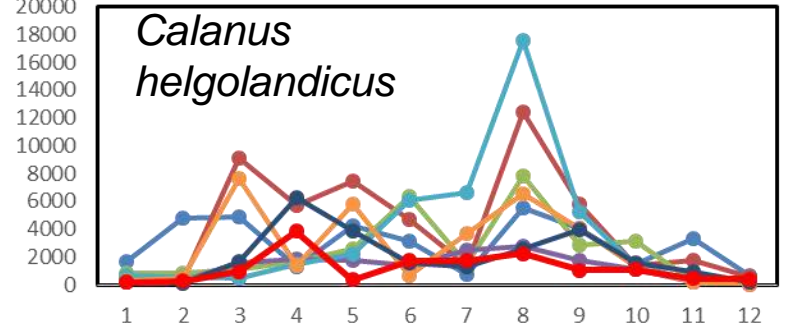
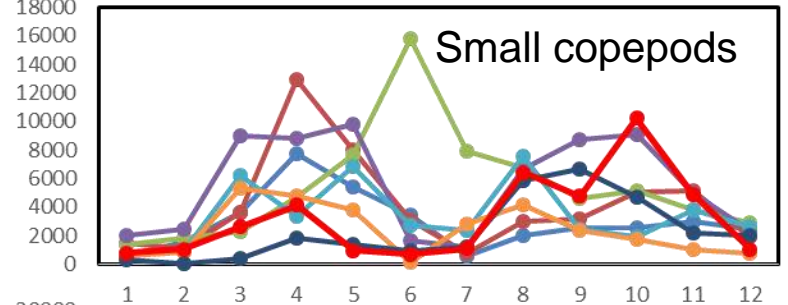
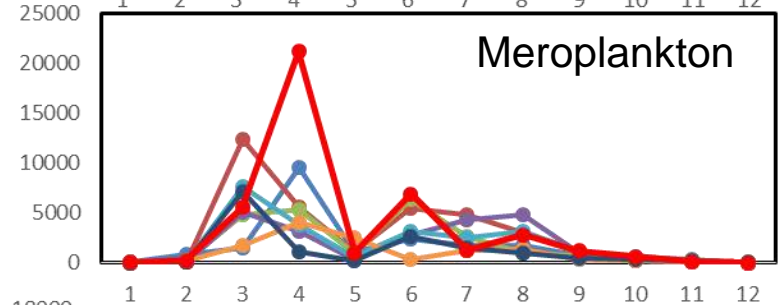
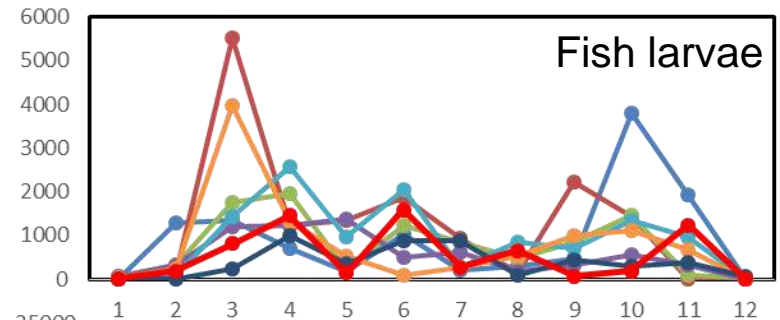


2015 does not stand out from the crowd (722 net samples)

Biomass ($\mu\text{g C m}^{-3}$)

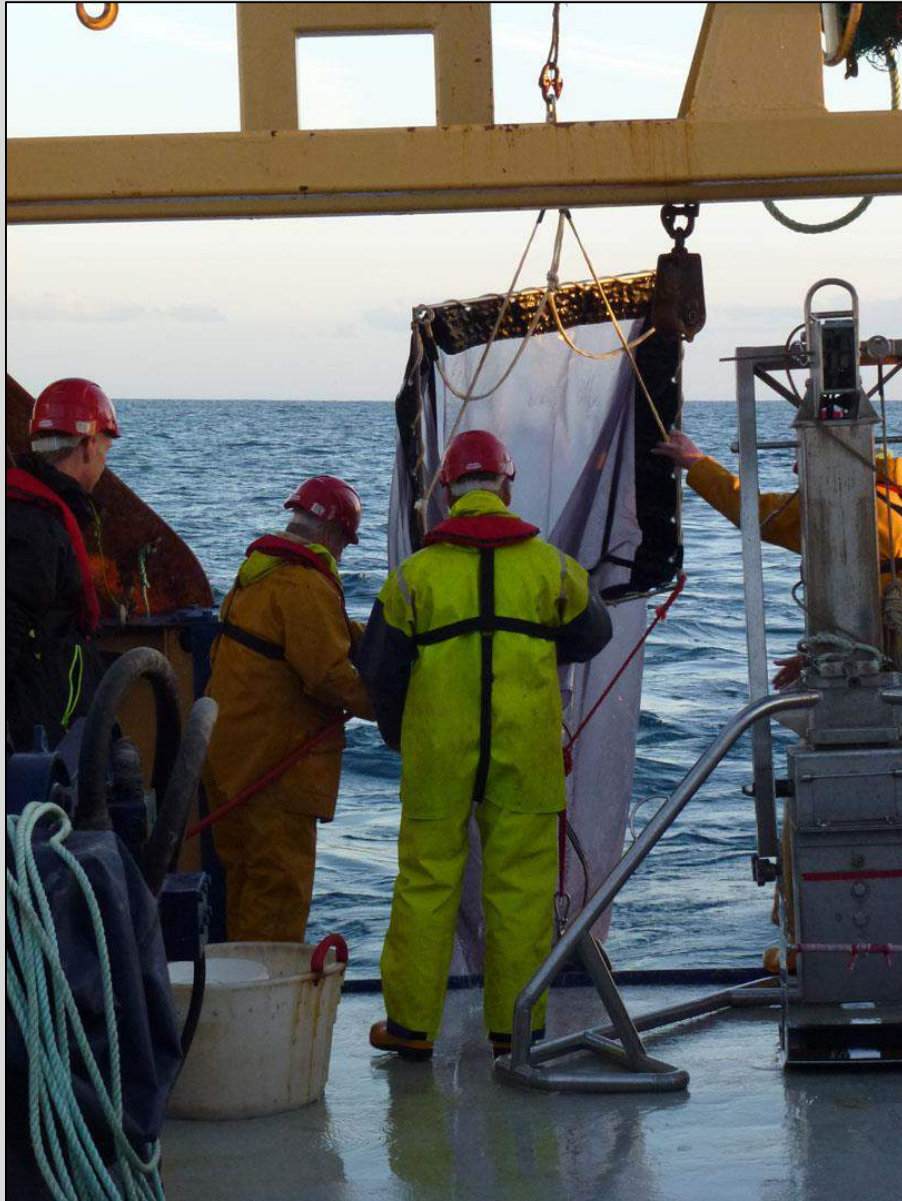


Month

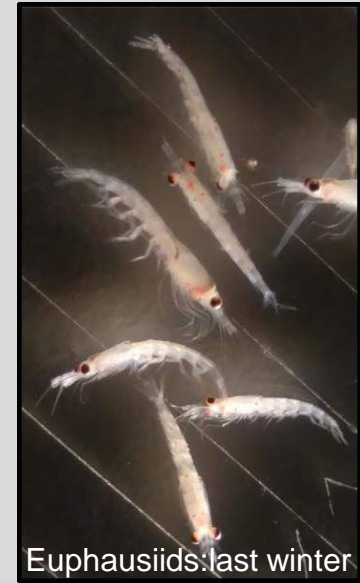


Month

2015-2016: What does our conventional sampling miss?



Compass jellyfish:
August 2015



Euphausiids: last winter

>50 jelly net hauls over 2015-2016

>60,000 m³ of water filtered

Only one, hand-sized jellyfish caught

-June 2015: Barrel jellyfish
counted at entrance
of Plymouth Sound,
max 0.5-1 per 1000 m²



Marine Ecosystems
Research Programme

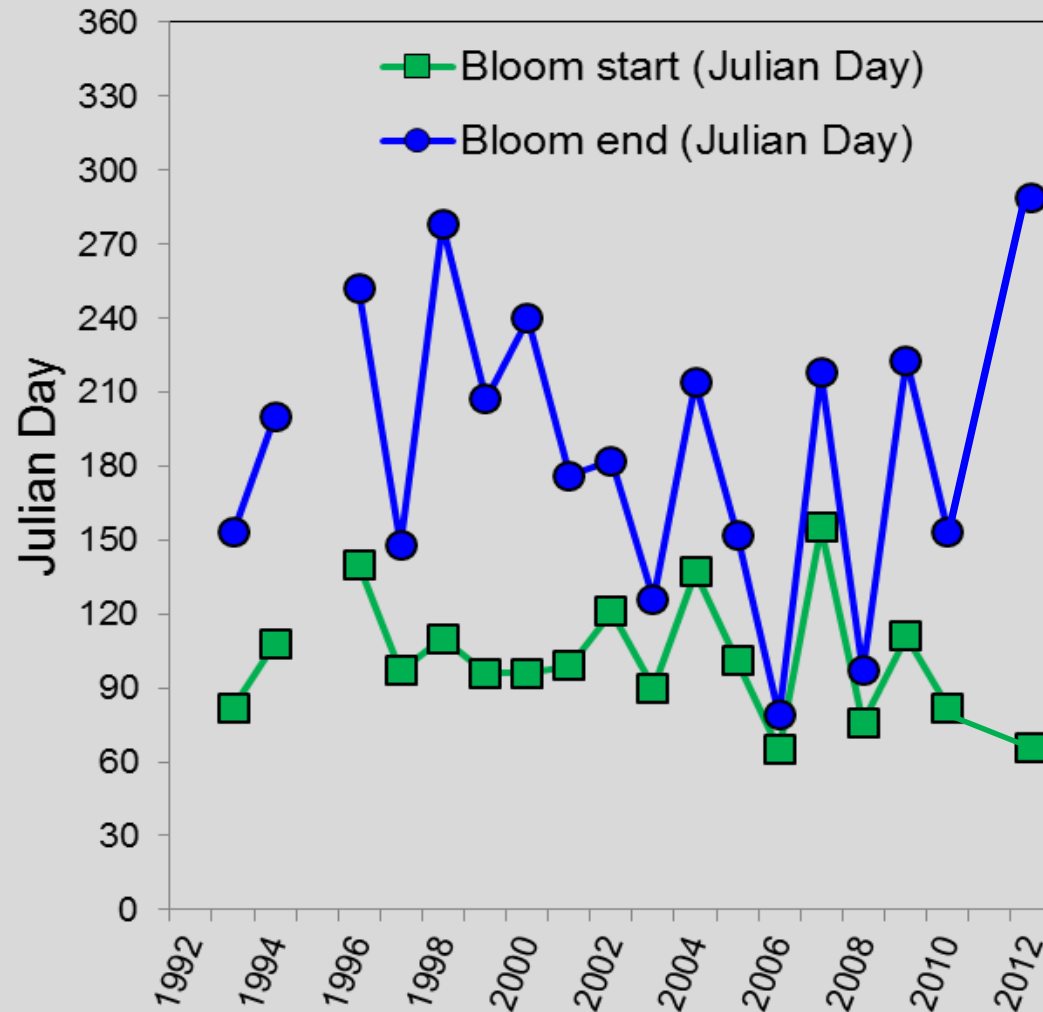
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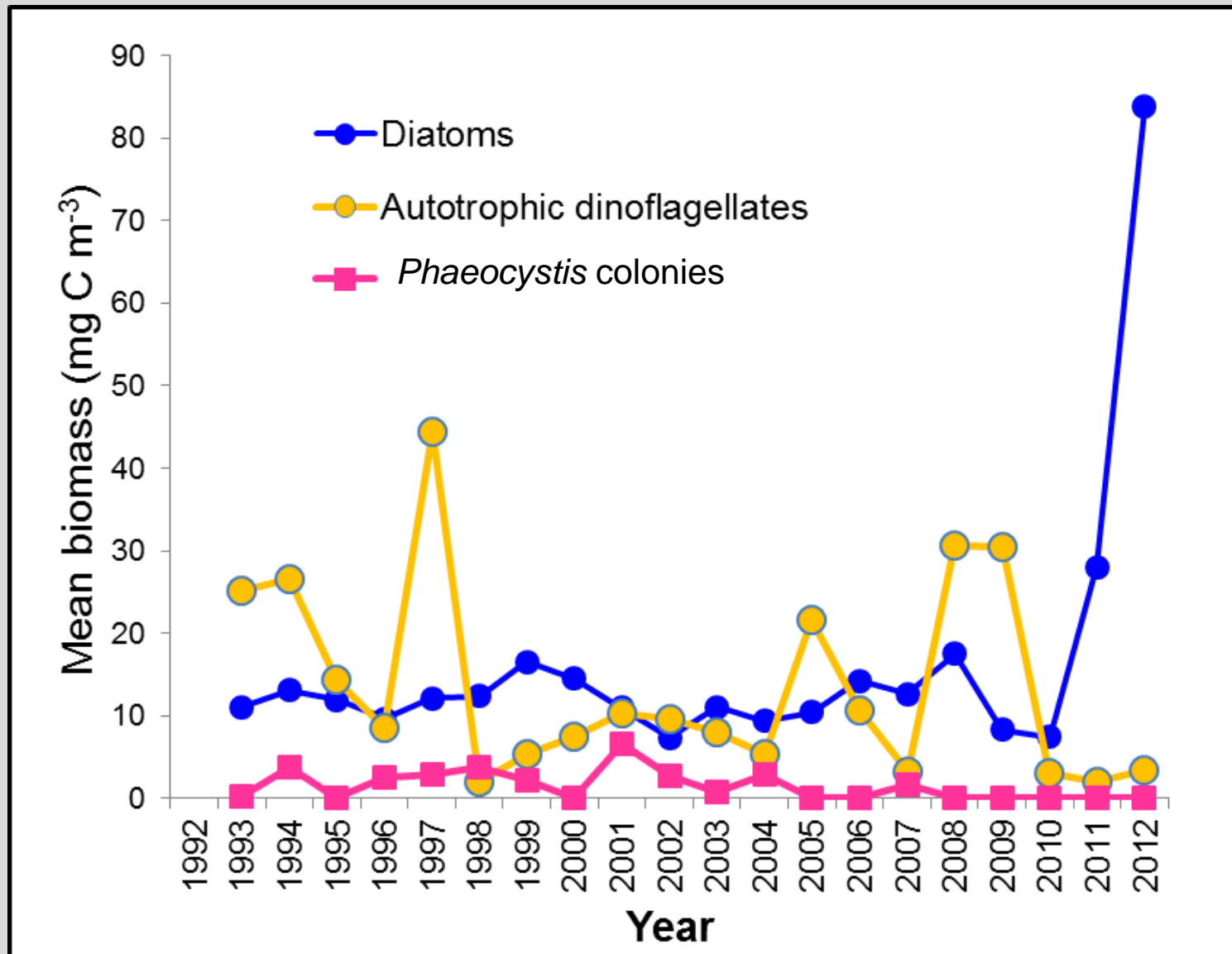
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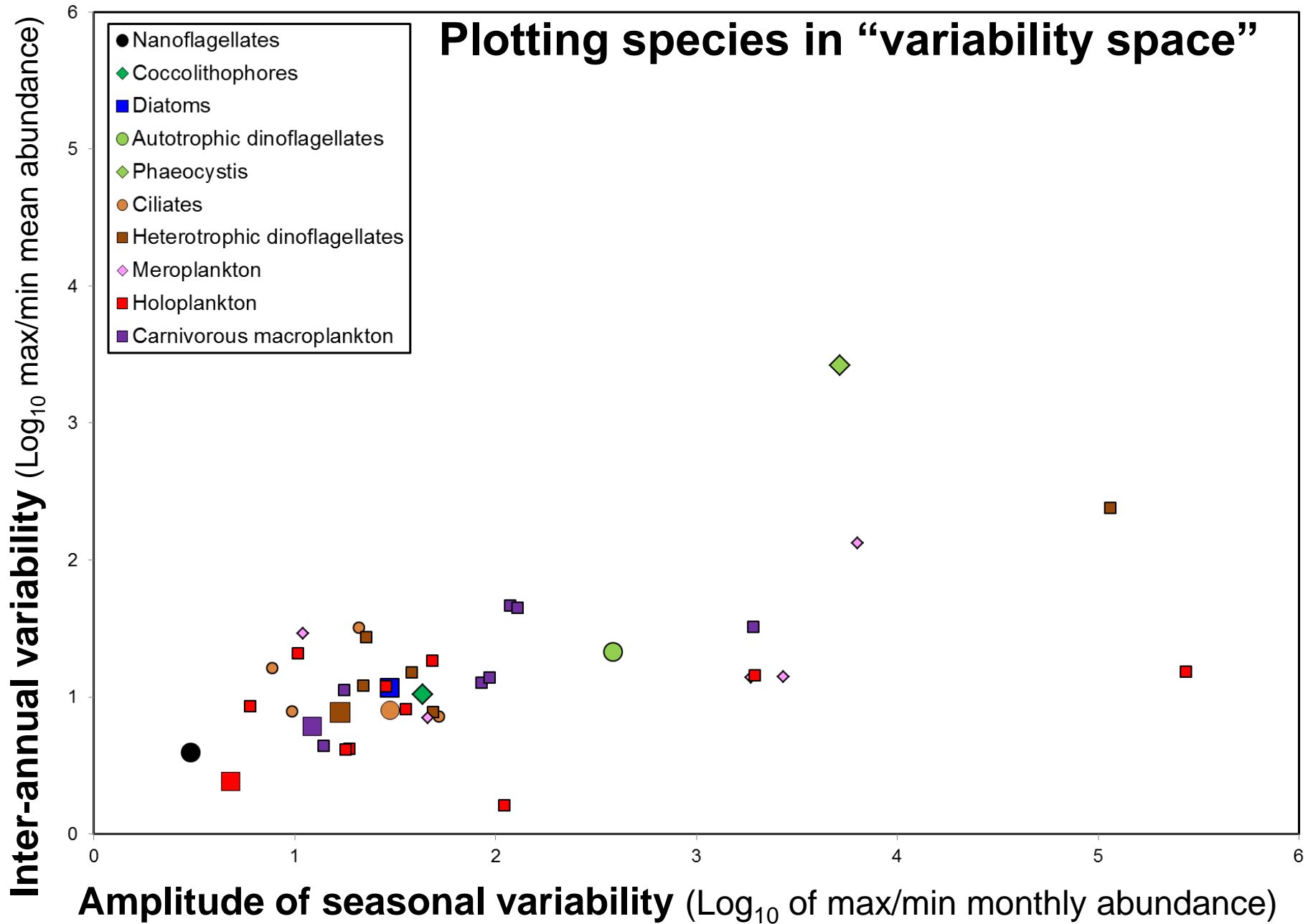
Variable timing of the diatom bloom



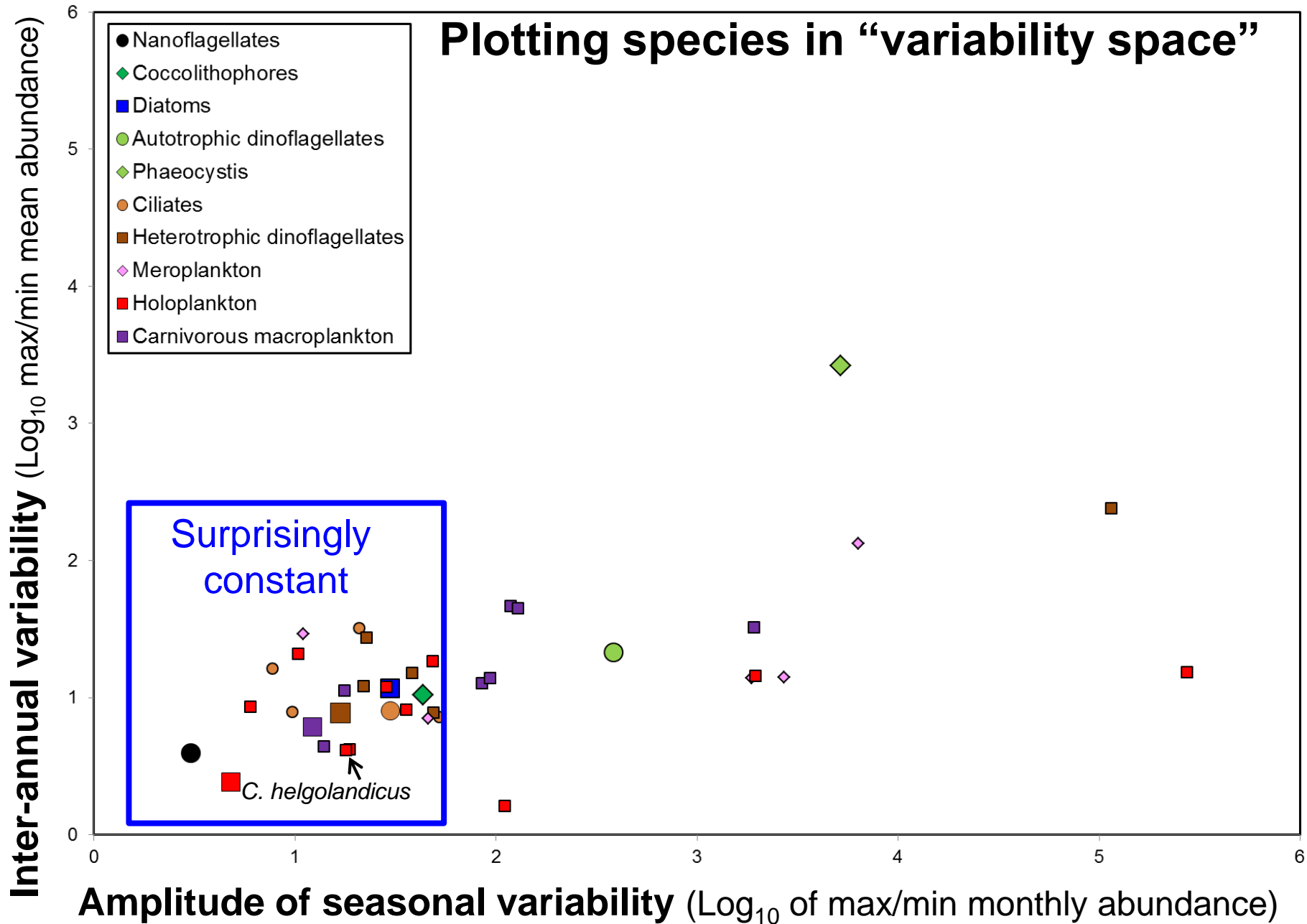
Great year-to-year variability



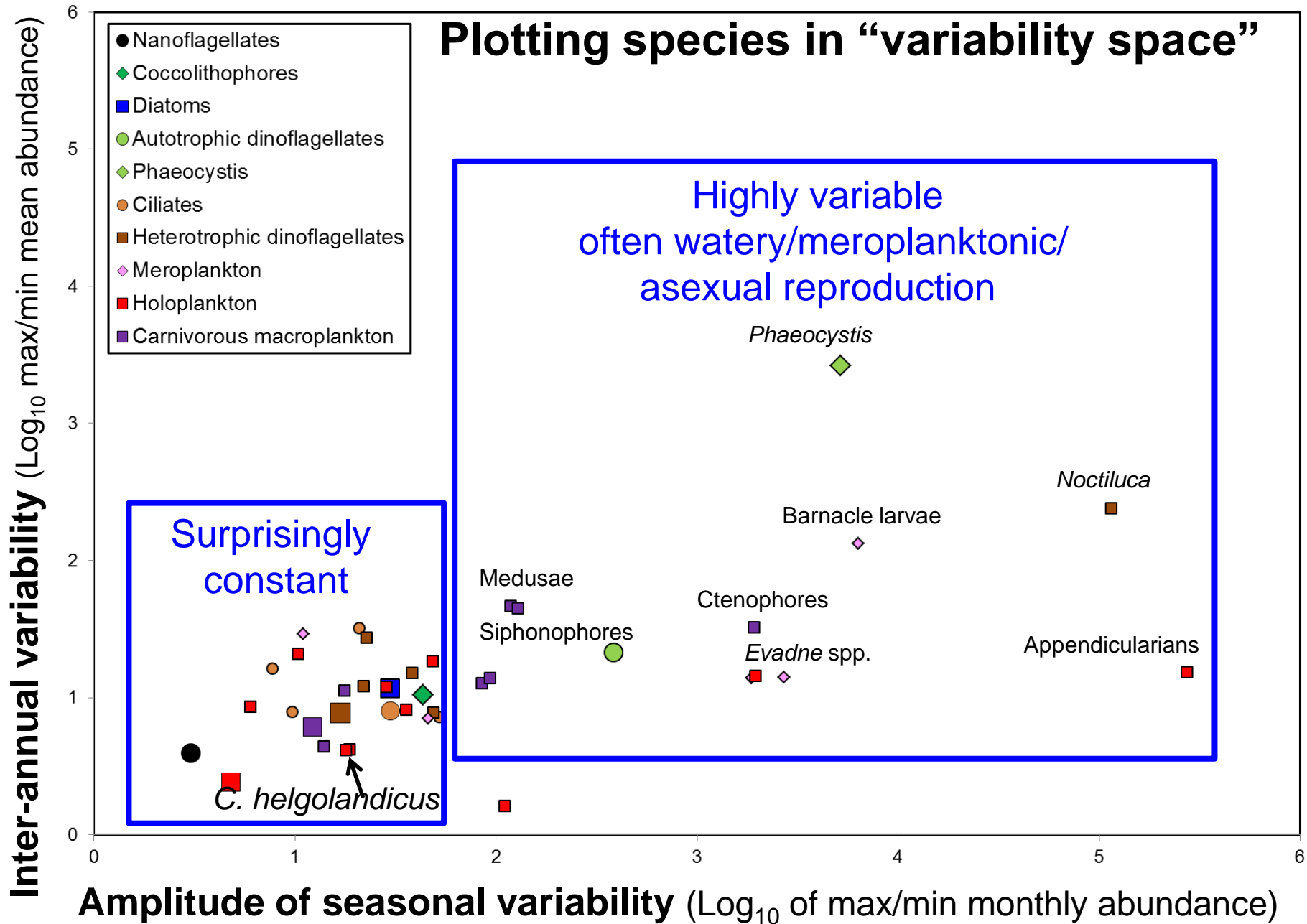
Plotting species in “variability space”



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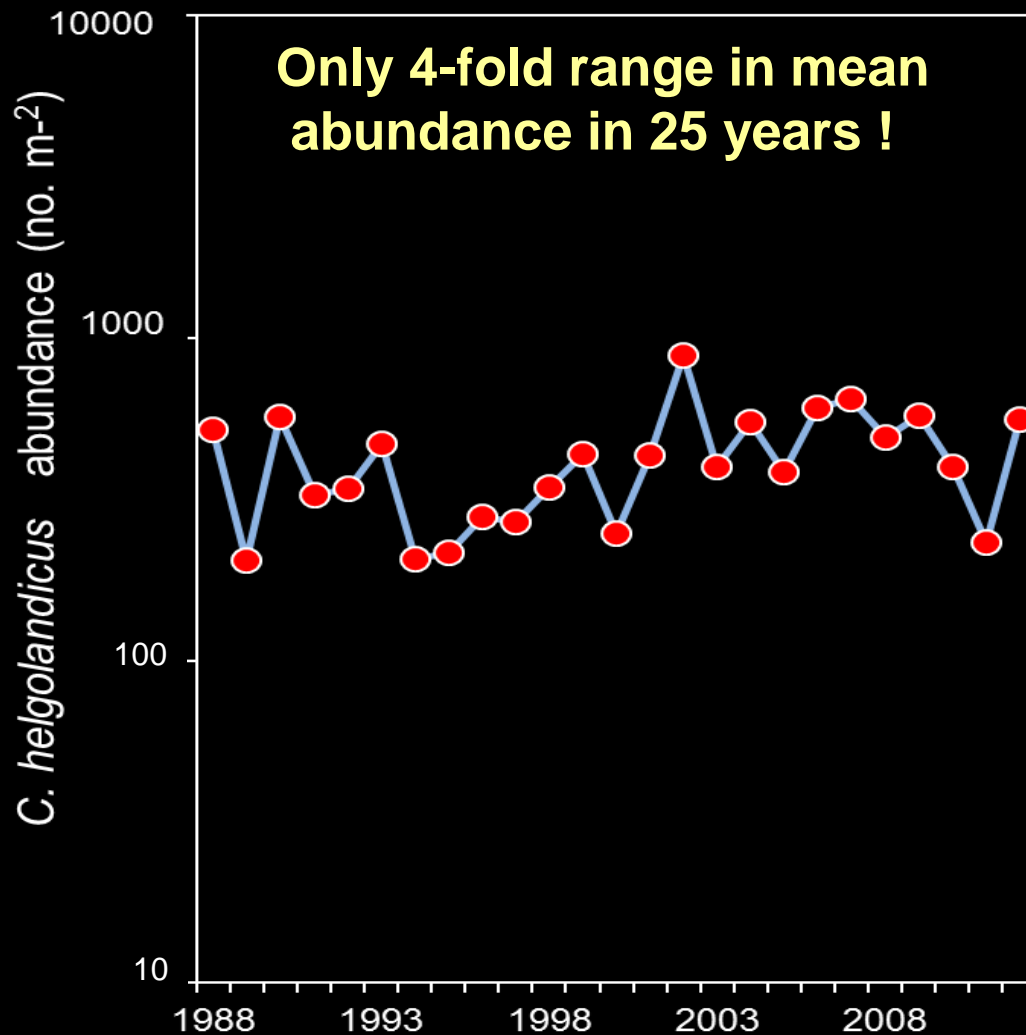
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Mortality constrains Calanus populations at L4



Maud et al. (2015) Progr. Oceanography

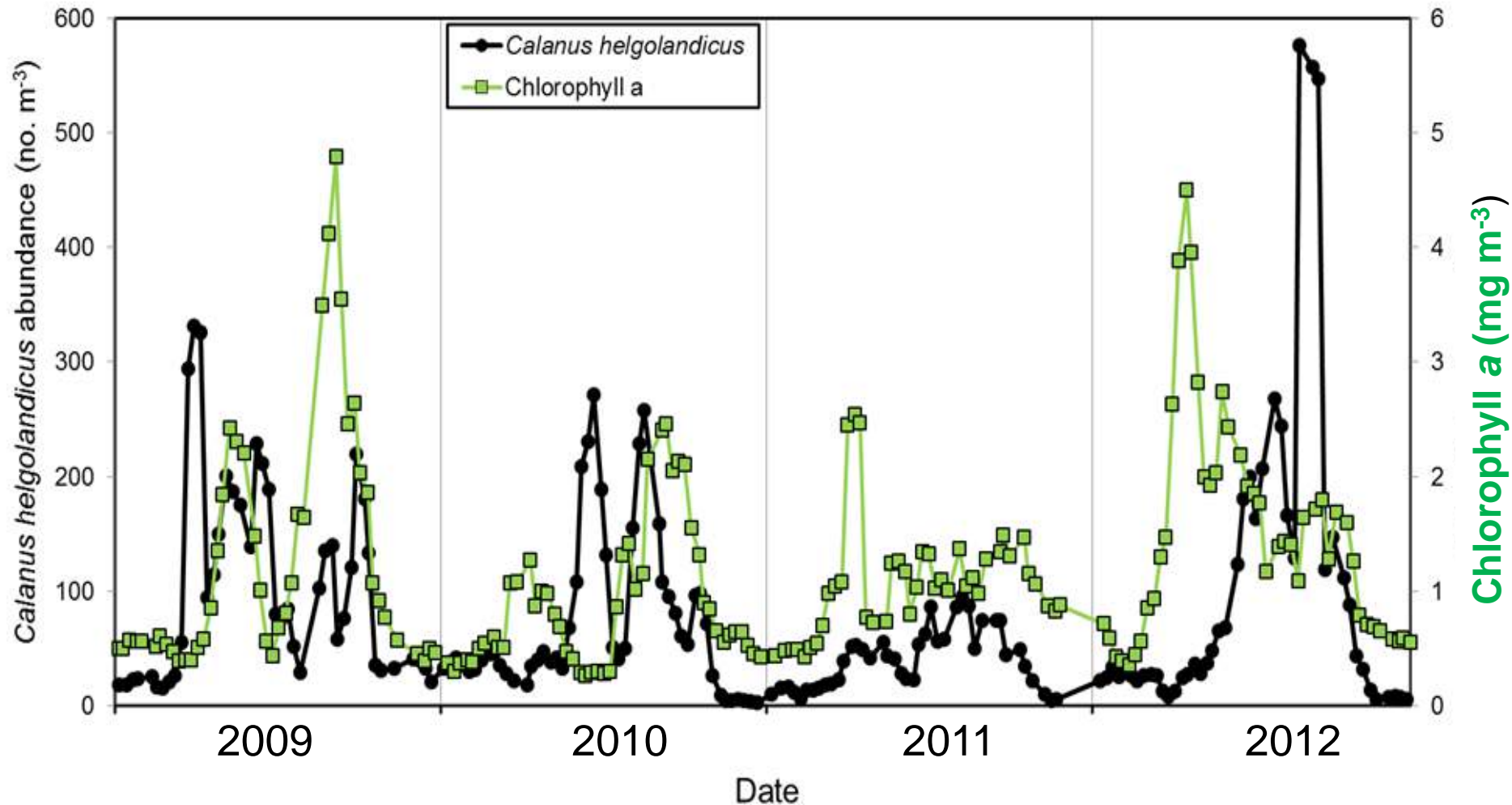
Calanus helgolandicus increases seldom coincide with food

**Big
Mismatch**

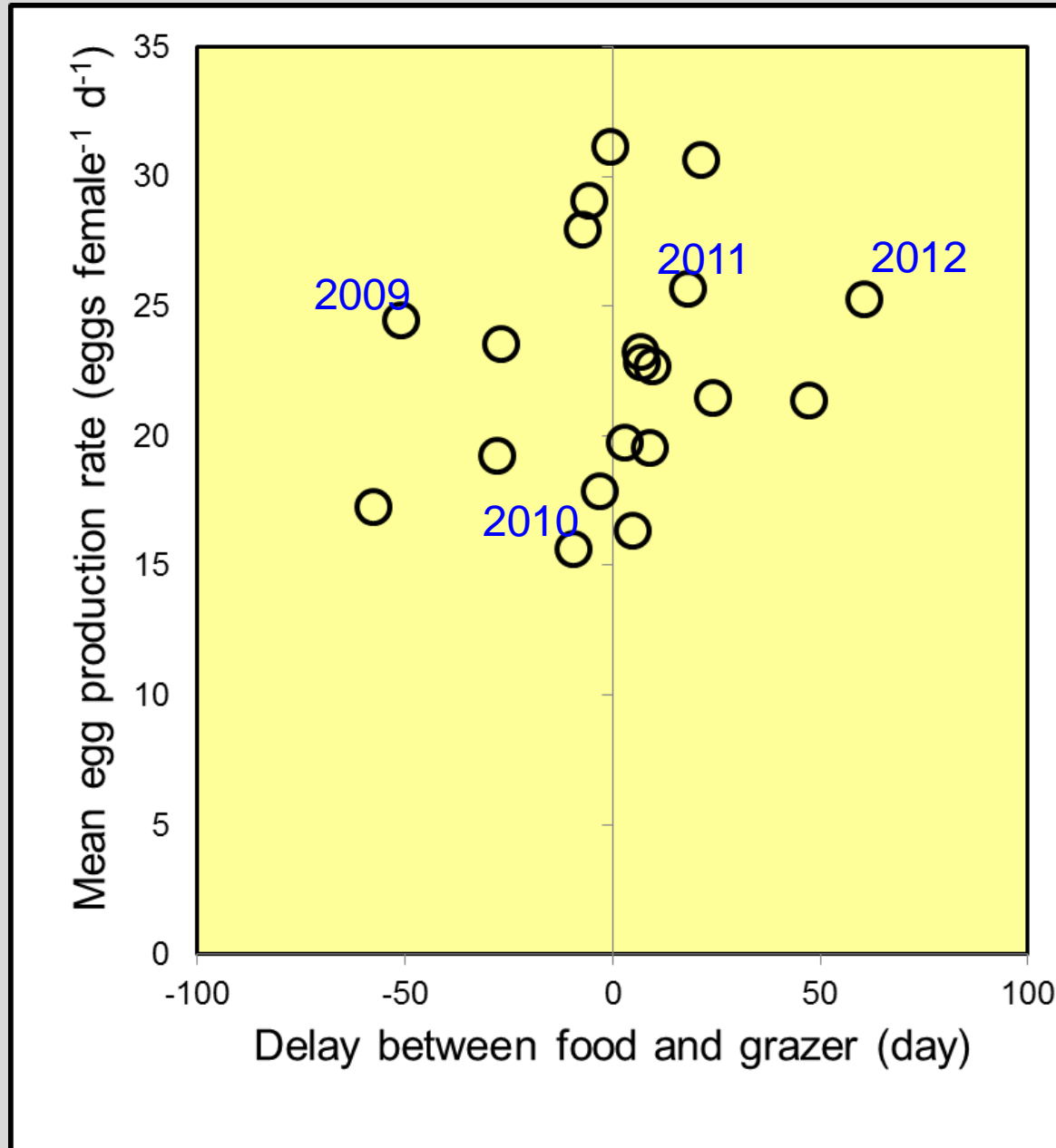
Mismatch

Match

**Big
Mismatch**



Reproductive performance unaffected by mismatching

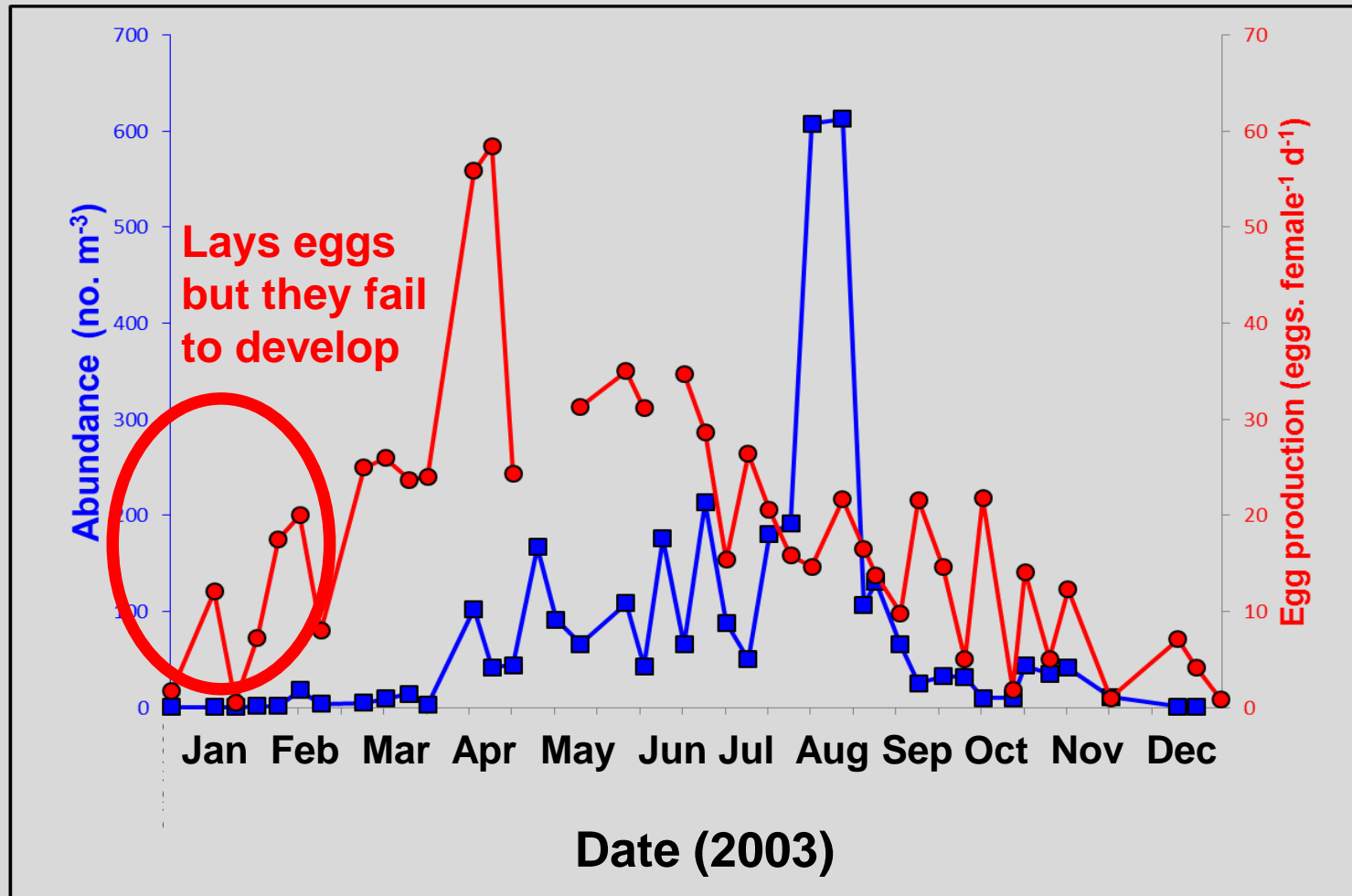


C. helgolandicus adapted to unpredictability?

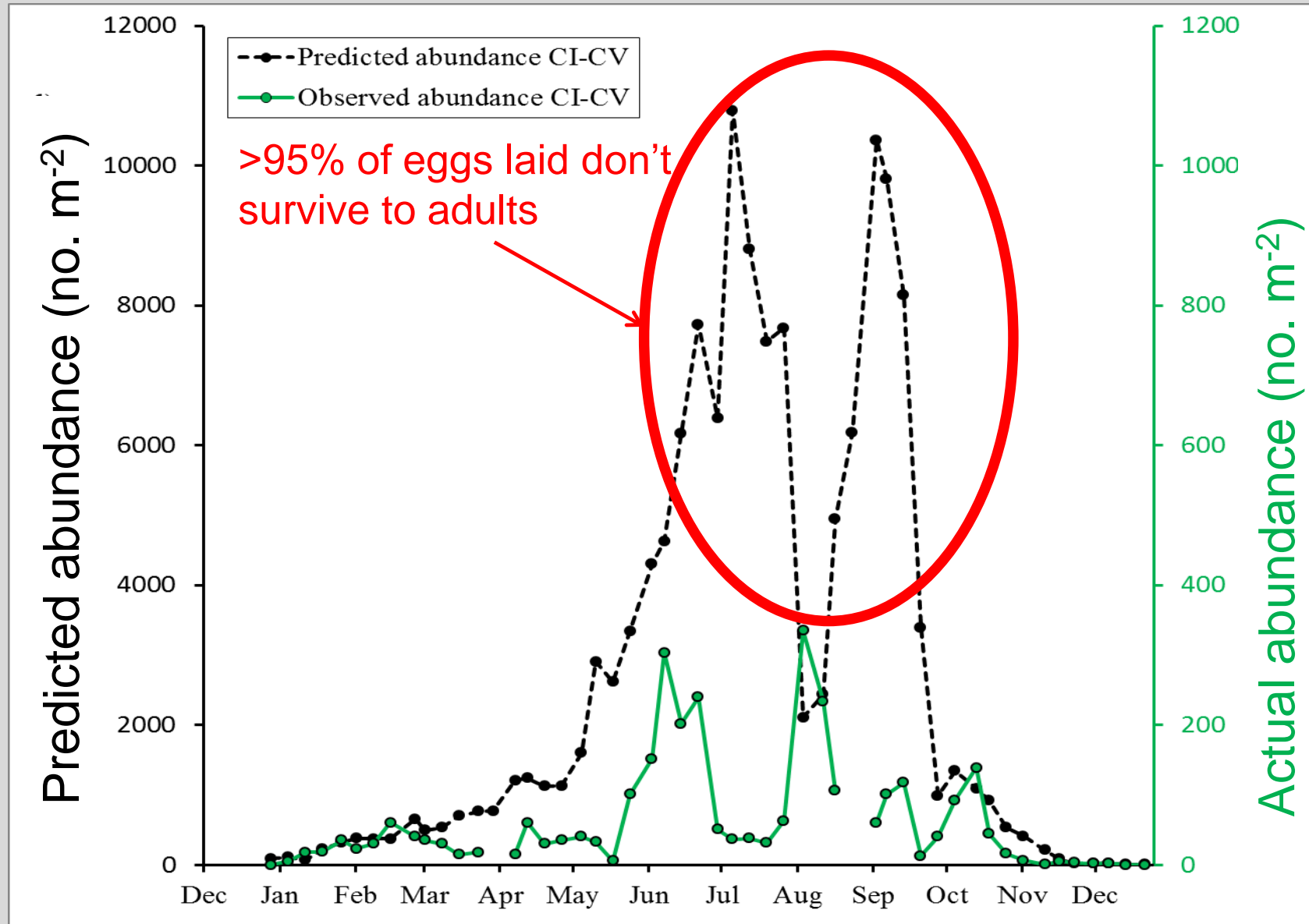
Food available year round

Flexible feeding

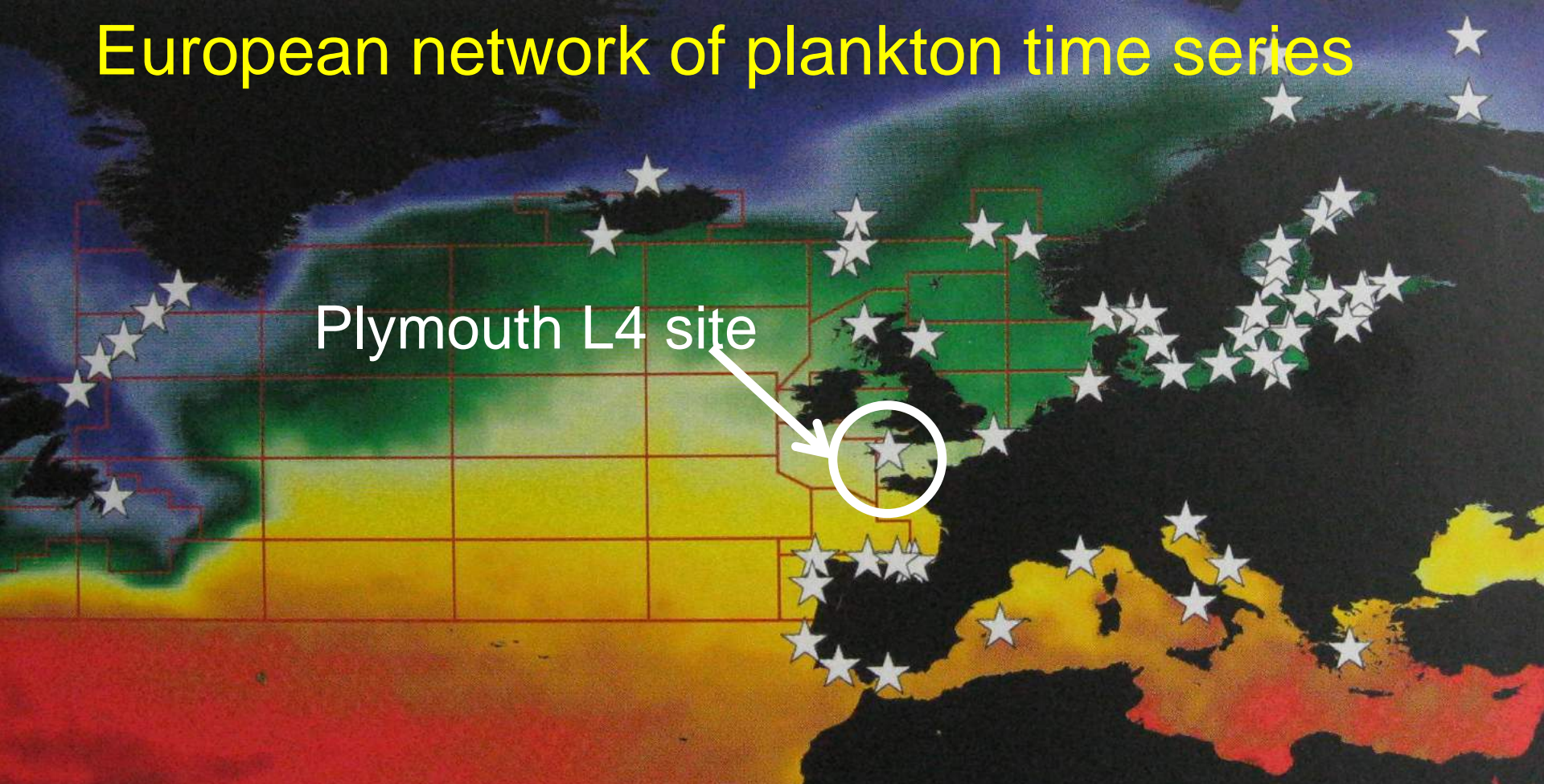
Reproduction responds to food



Mortality constrains *Calanus* populations at L4



European network of plankton time series



ICES network of monitoring sites

L4 is a sentinel site for UK monitoring under MSFD

5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 27.5

Average Sea Surface Temperature (°C)

and thanks.....

to everyone who kept the L4 time series going !

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