Drastic decline in zooplankton in the inshore Western Baltic Sea

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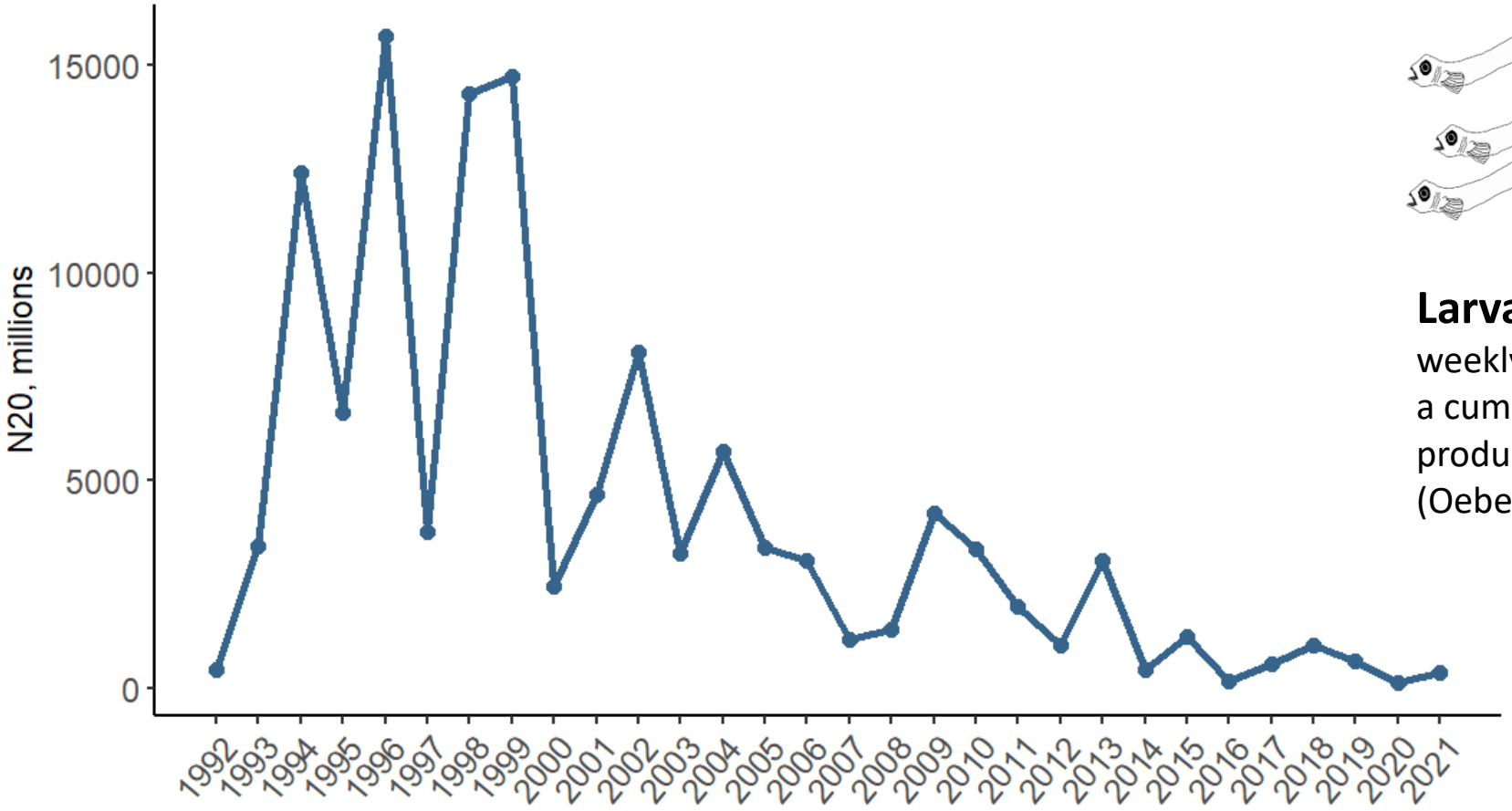
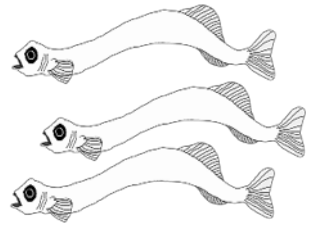
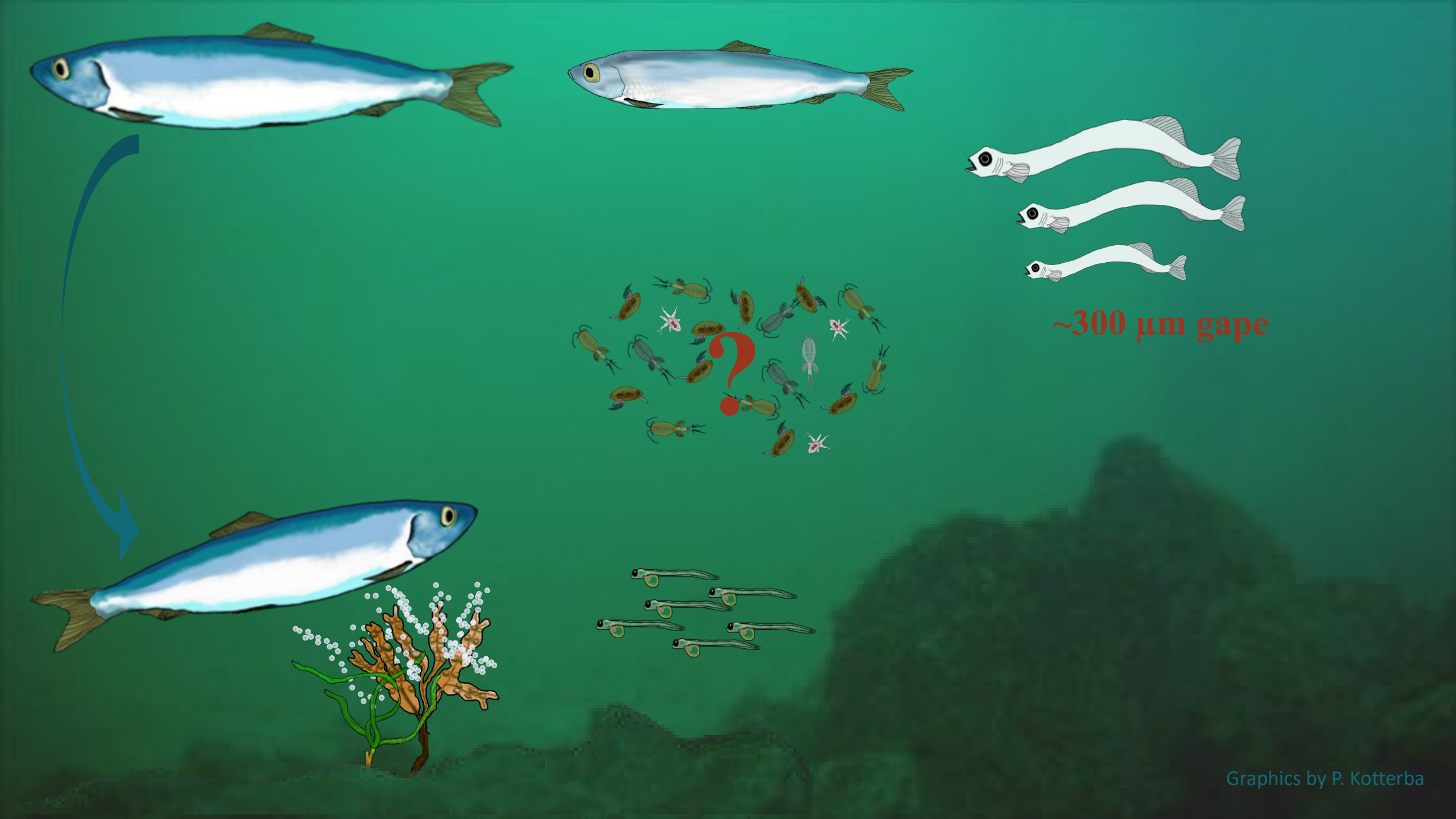
Decrease in larval index of Western Baltic herring





Larval index N20, No. ind. M

weekly larvae density is summarized by a cumulative index for annual production in a nursery area (Oeberst et al. 2009)


~300 µm gape
Graphics by P. Kotterba

Can decrease in larvae density of Western Baltic herring be explained by changes in their prey at first feeding?

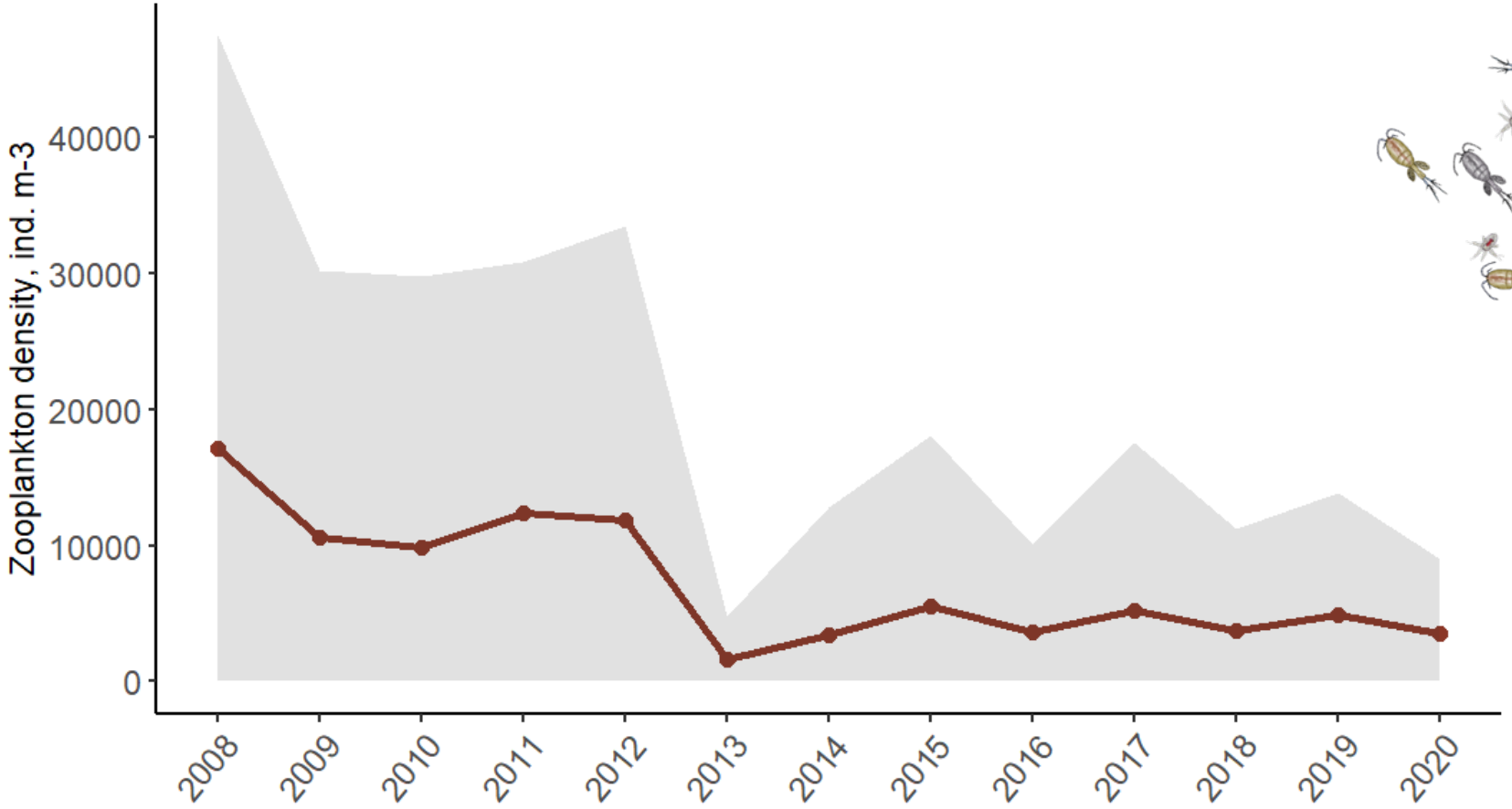
Zooplankton sampling in the Greifswald Bay

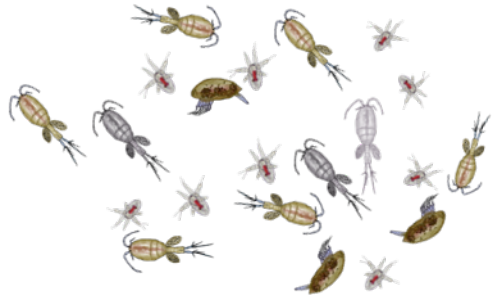
4 samples / week (Mar-Jun~17 weeks) 2008-2020

Species composition, abundance
Copepods staged N, C1-3, C4-5, M, F

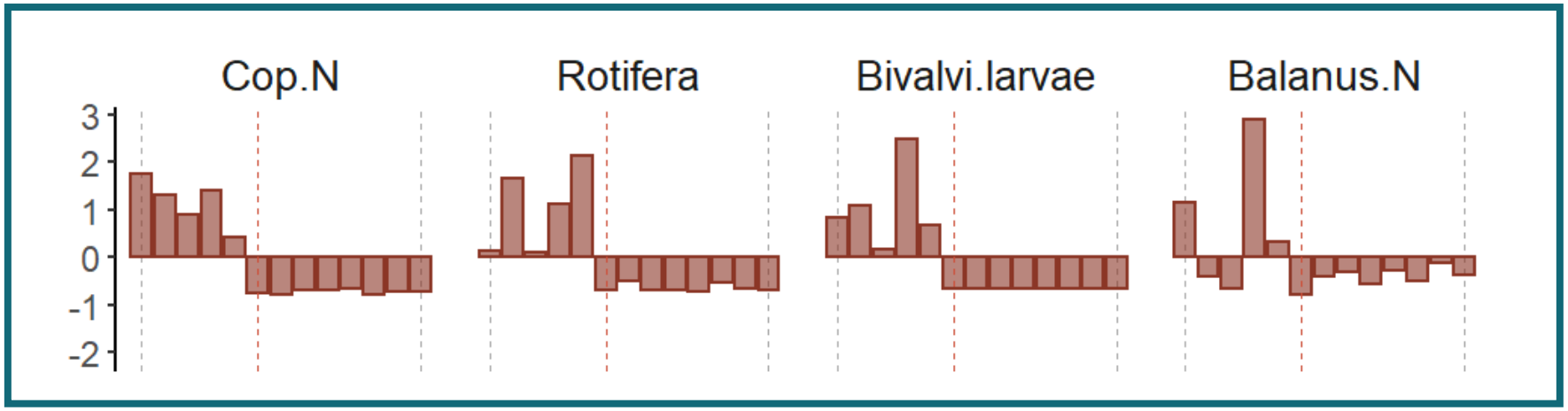
55 µm

Annual mean zooplankton density in 2008-2020

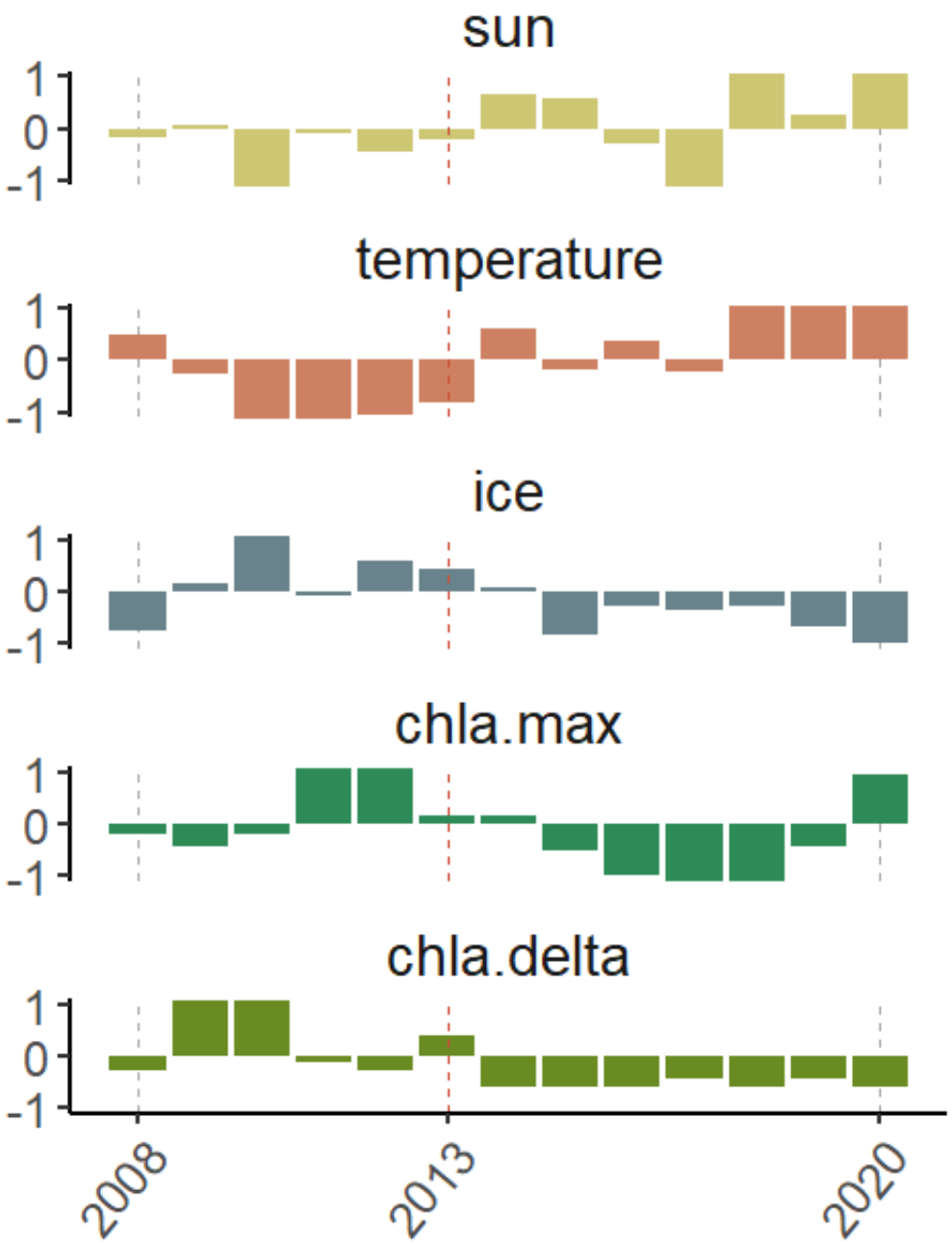




Anomaly plots of the key taxonomic categories

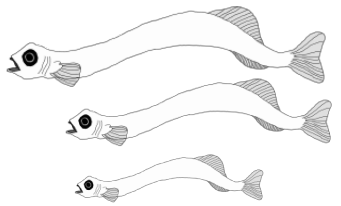


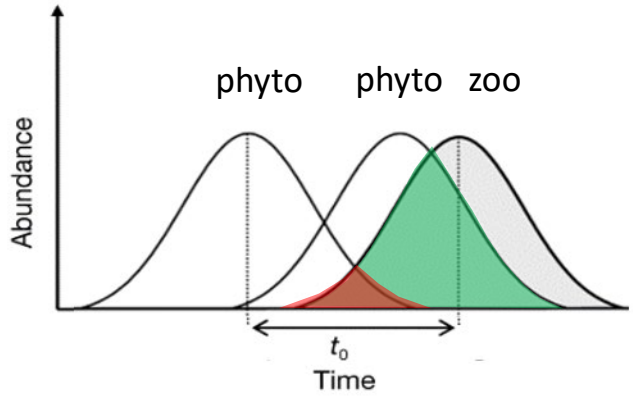
Pressures



Timing of the spring chlorophyll peak vs. density of key taxonomic categories

	Cop.N	Rotifera	Bivalvi.larvae	Balanus.N	Cop.C1.3	Cop.C4.5	Cop.Ad	Diplostraca	20mm.larvae
chla.delta	0.60 *	0.58 *	0.58 *		0.32	0.19		-0.25	0.85 *

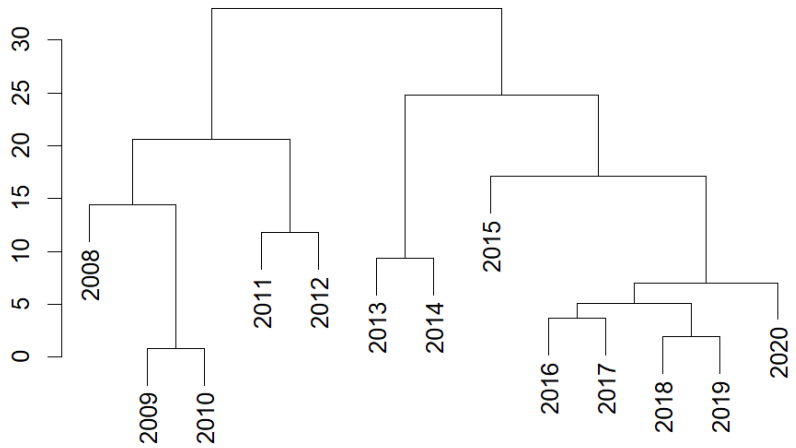




Durant et al. 2005, 2007

Conclusions

- The clustering algorithm indicates a change in the time series in between 2012 and 2013
- Climate change has lead the phytoplankton bloom to advance in spring
- Zooplankton taxonomic categories that have decreased are also the ones that depend on phytoplankton
- Herring larve density decreased along the small zooplankton



Coniss cluster plot

Thank you!

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