



KALME

VALSTS PĒTĪJUMU PROGRAMMA
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*Hopes and expectations: the
conceptual course of future for
marine ecosystems and fishery*

Latvian Institute of Aquatic Ecology

Latvian Fish Resources Agency

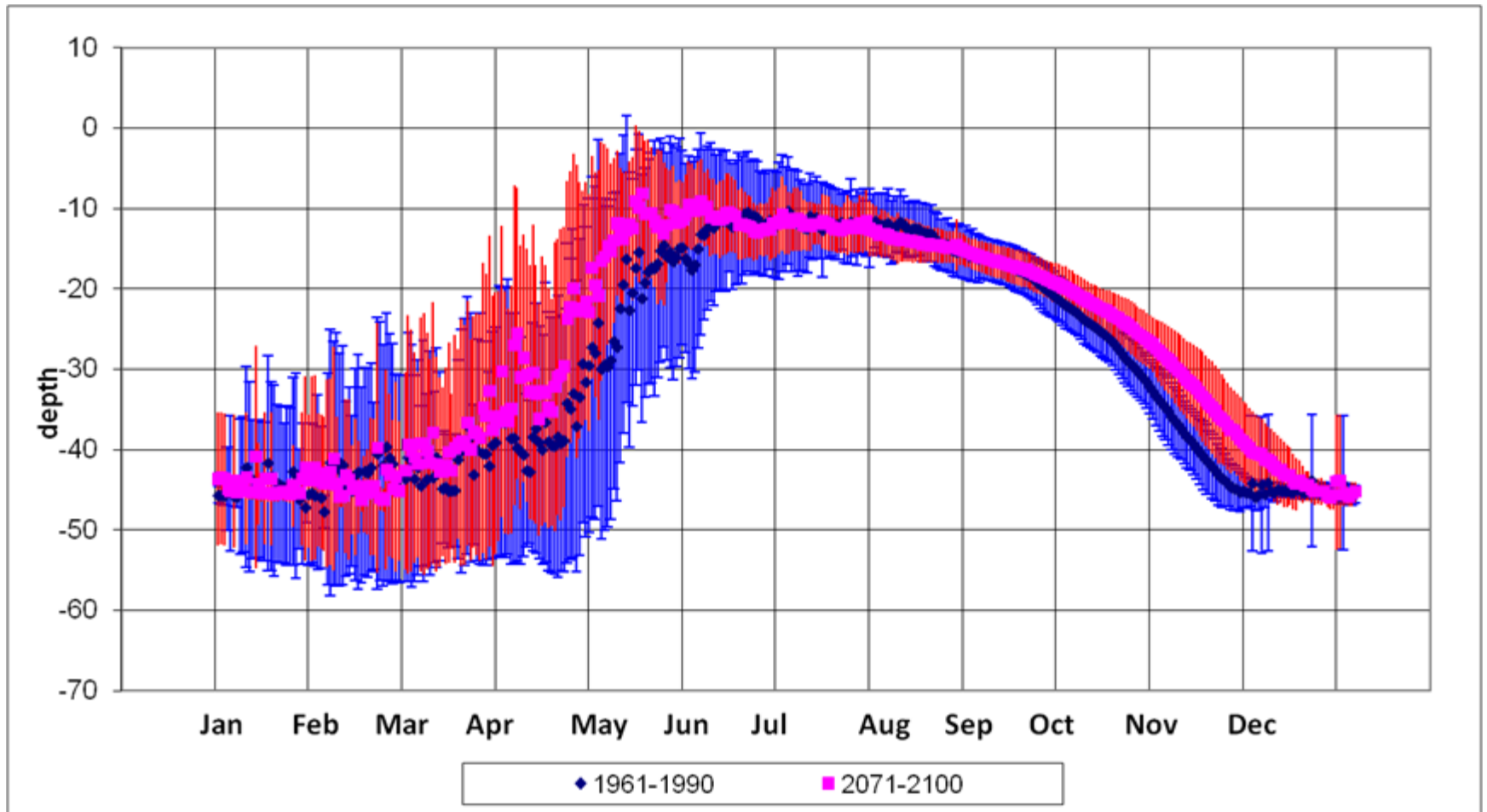
UL Institute of Biology

UL Faculty of Biology

Expected outcomes of WP work

- Improved knowledge on possible processes;
- Participation in constructing environmental legislation;
- Recommendations for management and adaptation strategies.

Gulf of Riga – future scene



Gulf of Riga – ecosystem projections

Winters without ice cover -

- Earlier development of plankton communities, higher biomass

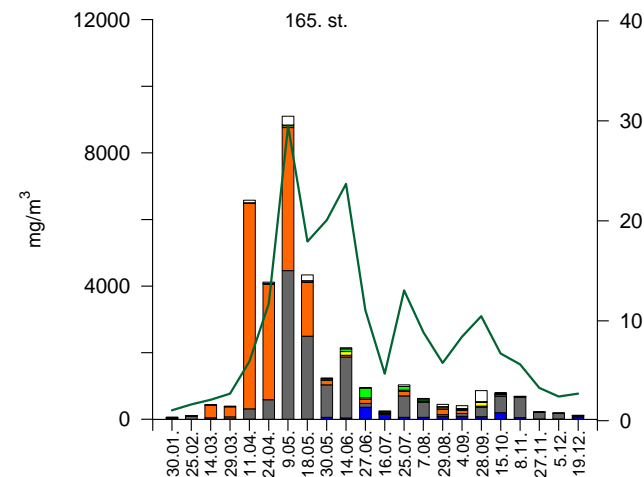
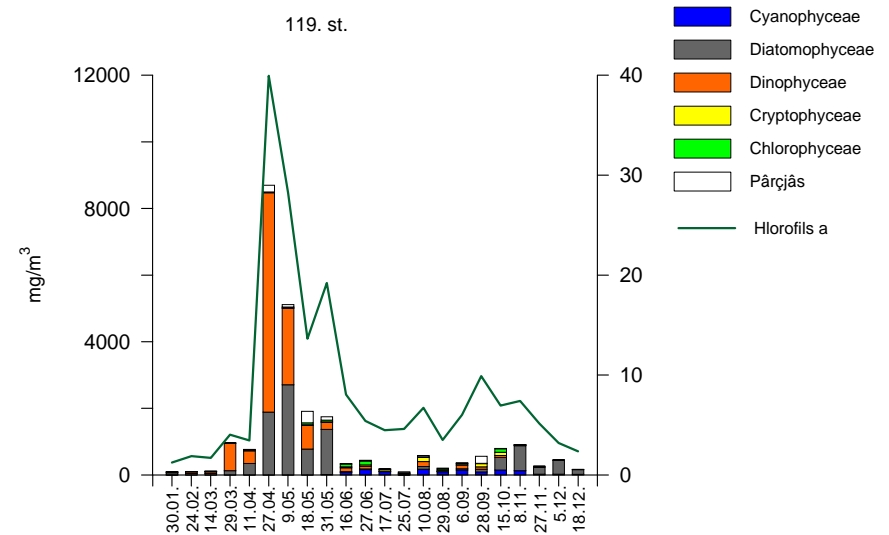
Shift from Achnantes taeniata to Thalassiosira baltica, Chaetoceros spp., Melosira nummuloides

- Shift in breeding time of benthic species, mostly amphipods

Gulf of Riga – ecosystem projections

Springs with faster stratification –

- Dominance of dinoflagellates or ...nothing special;
- Higher share of small size fraction in zooplankton.

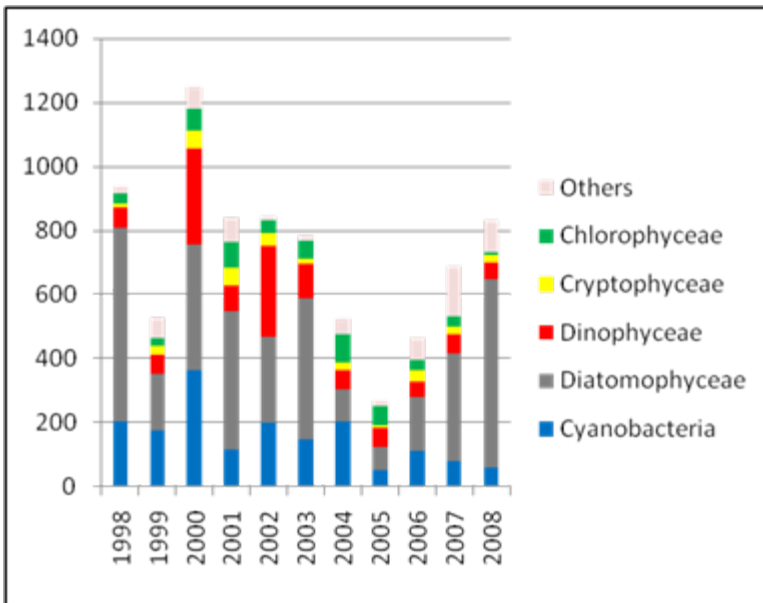


Gulf of Riga – ecosystem projections

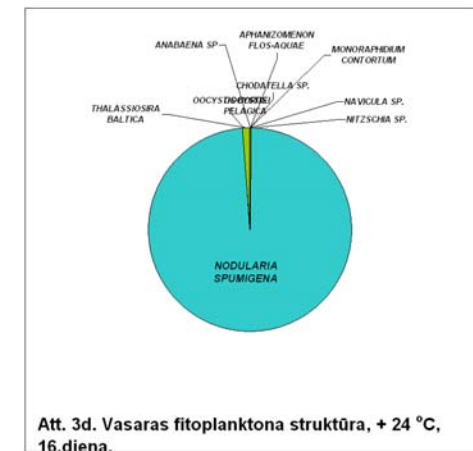
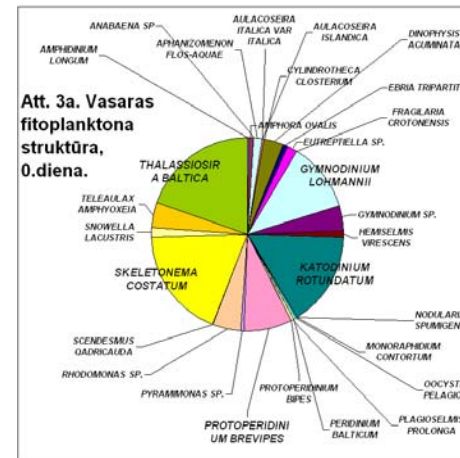
Warmer summers: two options

Increased wind intensity:

- Frequent upwellings, productive coastal areas;
- Reduced cyanobacterial blooms.



Calm weather dominating:



Gulf of Riga – ecosystem projections

- Zooplankton

↓ *Acartia bifilosa*, *Limnocalanus macrurus*,
Evadne nordmanni, *Pleopsis polyphemoides*

↑ *Daphnia spp.*, *Cyclops spp.*

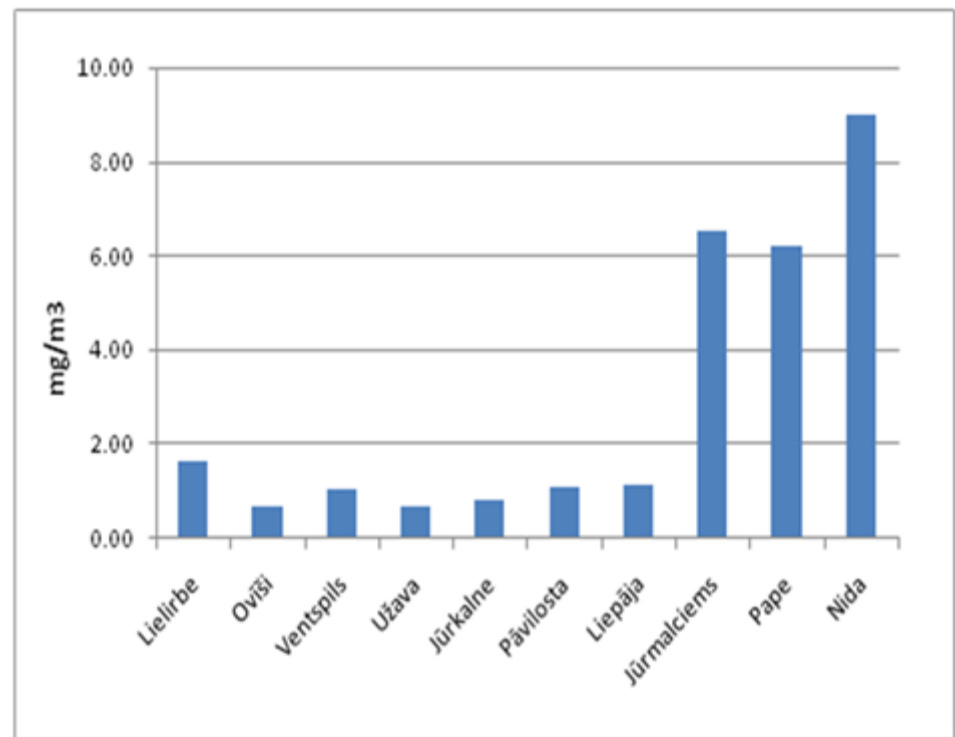
- Macrozoobenthos

↑ *Gammarus sp.*, *Bathyporeia pilosa*,
Marenzelleria viridis, *Macoma baltica*

- Phytobenthos ???

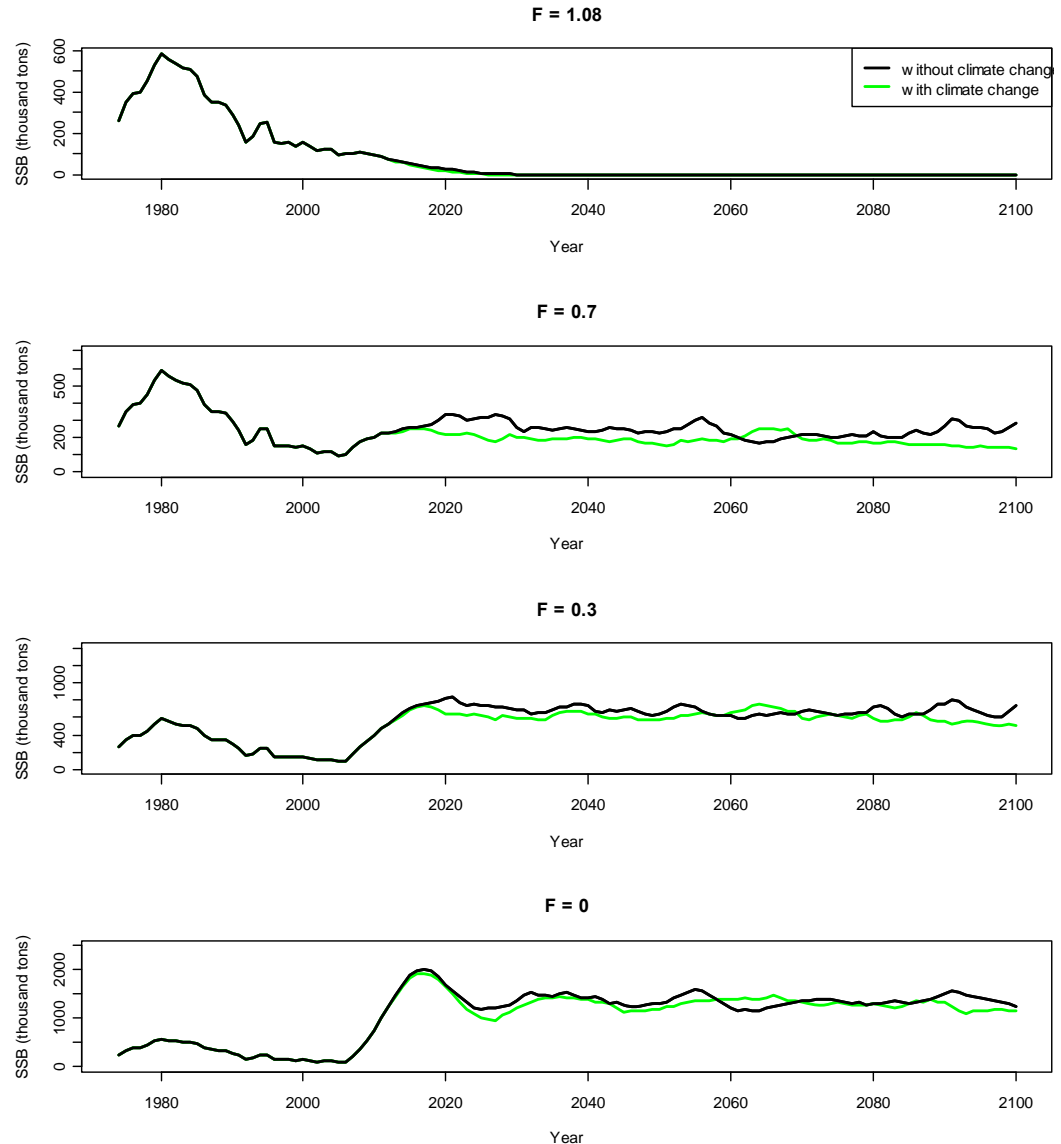
The Baltic Sea – ecosystem projections *in conditions of reduced salinity and higher temperature*

- Species structures gradually similar to the Gulf of Riga;
- Coastal areas – level of human activities significant: nutrient loads;
- Further reduction of inhabited bottoms.



The Baltic Sea - fisheries

- The Eastern Baltic cod – fishing mortality as a key factor



Conclusions

- Coastal zone would strengthen its position as a key area in the aspect of productivity and biodiversity;
- The Gulf of Riga and the Baltic Sea would continue being attractive for invasive species;
- The climate change would intensify or mask the impact of key factor - human activities.

Recommendations:

- elaborate and implement the load reduction activities as soon as possible in all related areas (agriculture, water resources management etc.);
- create zonation of the coastal underwater areas with various level of protection according to the functional importance of the site;
- perform regular observations of marine environment and provide model calculations of processes, based on the observations for flexible management decisions;
- reduce the fishing mortality via exclusion of illegal fishing;
- follow the international regulations preventing the distribution of non-native species.

Thank you for your attention!

