LYSOSOMAL MEMBRANE STABILITIES (LMS) IN VARIOUS FISH SPECIES OF THE BALTIC SEA- SPECIES DIFFERENCES AND POTENTIAL CAUSES

K. Broeg,[1*] M. Gschwind[2], T. Lang[2], S. Bahns[1], S. Schatz[1]

1 Alfred Wegener Institute for Polar and Marine Research, Am Handelshafen 12, 27570 Bremerhaven, GERMANY.
2 Institute for Fishery Ecology, Johann Heinrich von Thünen-Institute, Cuxhaven, GERMANY.
Katja.Broeg@awi.de

Indicator species and their distribution:

Herring (*Clupea harengus*).

European flounder (*Platichthys flesus*)

Objectives:

➢The BONUS+ project **BEAST** (**B**iological **E**ffects of **A**nthropogenic chemical **ST**ress) is aimed at the testing of biomarkers for the integrated monitoring of biological effects of anthropogenic pollution in Baltic Sea sub-regions.

➢These are quite diverse with respect to their biotic and abiotic environmental conditions.

➢Monitoring of biological effects in the Baltic Sea calls for appropriate indicator species and assessment criteria.

➢Subsequently, environmental assessment criteria (EACs) have to be determined for the particular indicator species. Lysosomal membrane stability (LMS), a sensitive biomarker for general toxic responses in marine organisms, is one of the core parameters of the project.

➢Here, we present a comparison of lysosomal membrane stabilities of four fish species which can be considered as indicator species in the Baltic Sea: European flounder (*Platichtys flesus*), dab (*Limanda limanda*), eelpout (*Zoarces viviparus*), and herring (*Clupea harengus*).

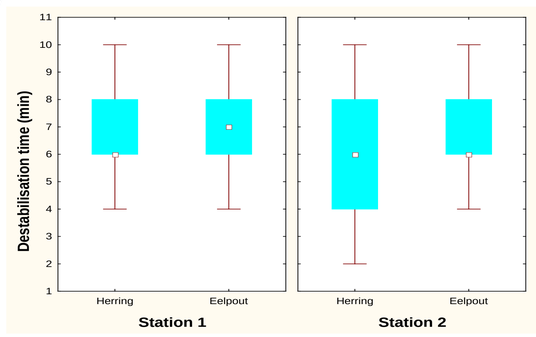
Eelpout (*Zoarces viviparus*)

COASTS

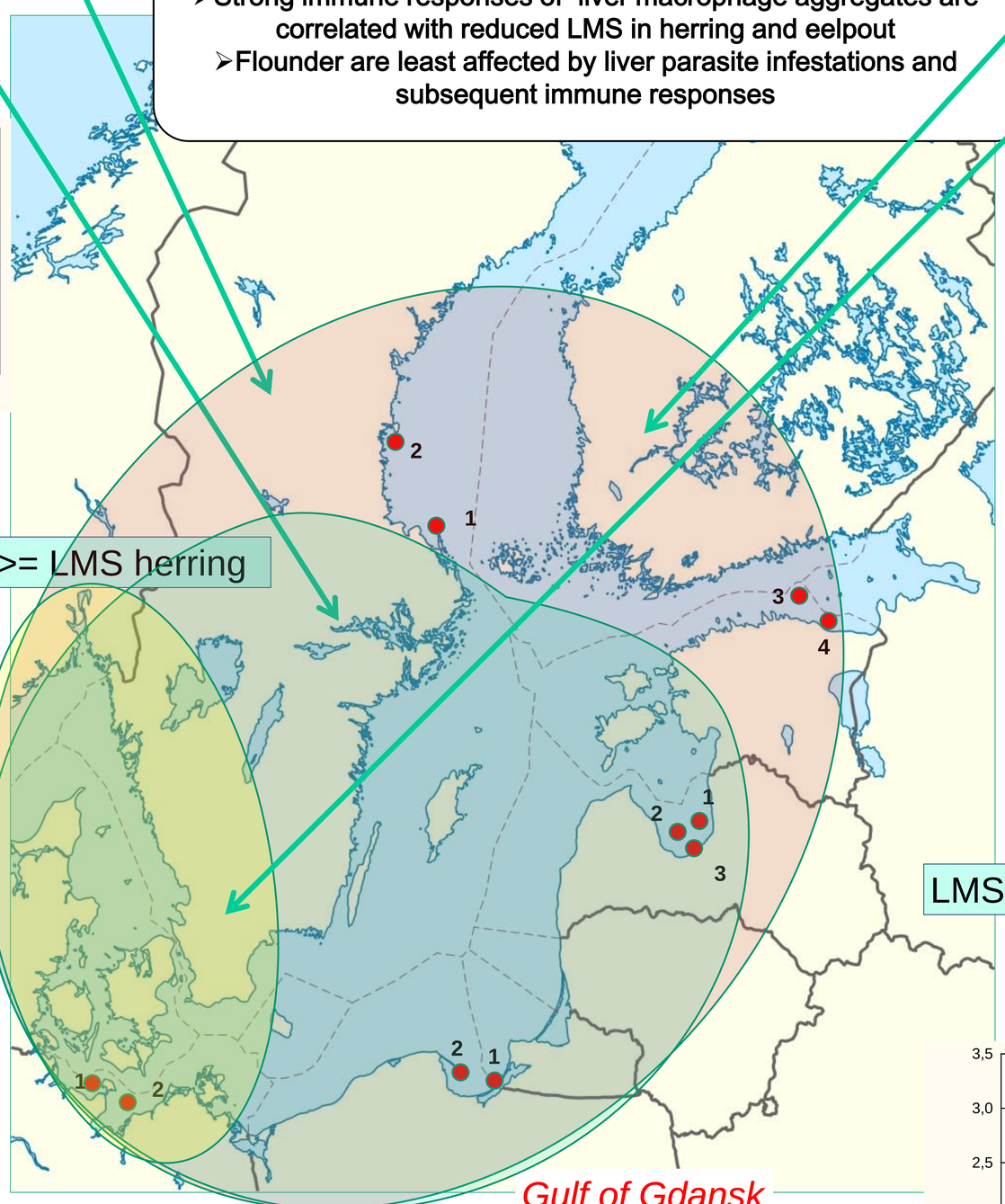
Dab (*Limanda limanda*)

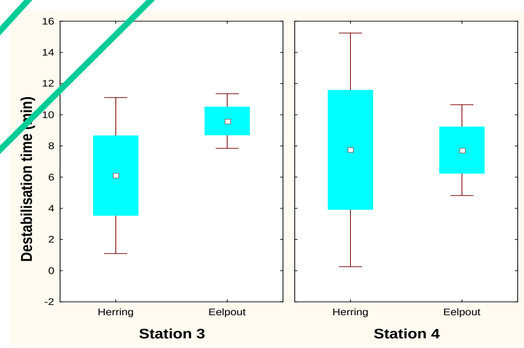
Results:

➢LMS differs between the fish species in a consistent order
➢Strong immune responses of liver macrophage aggregates are correlated with reduced LMS in herring and eelpout
➢Flounder are least affected by liver parasite infestations and subsequent immune responses

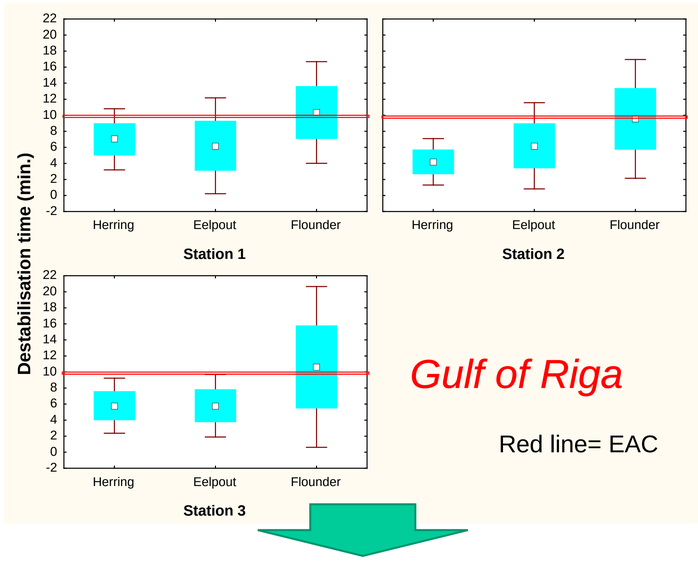


Bothnian Sea





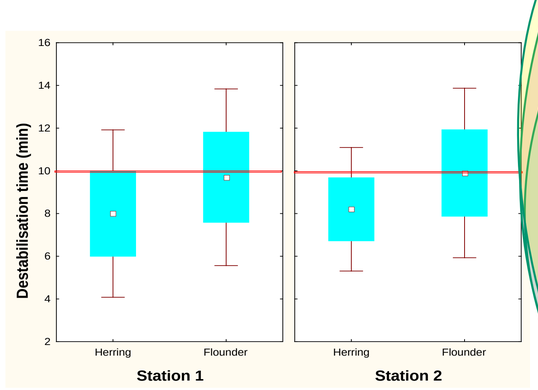
Gulf of Finland



Gulf of Riga

Red line= EAC

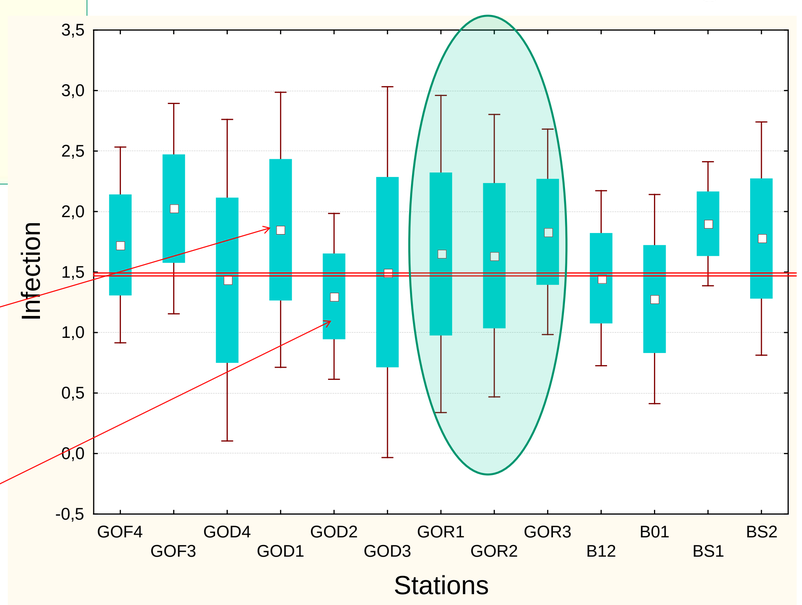
LMS flounder > LMS eelpout >= LMS herring

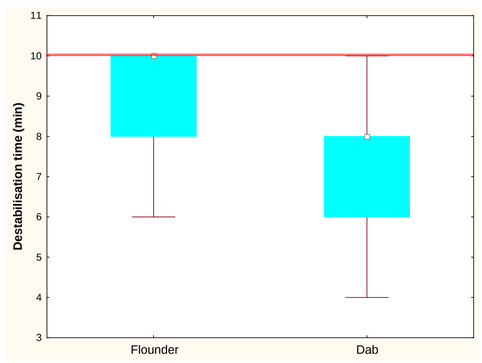


Western Baltic

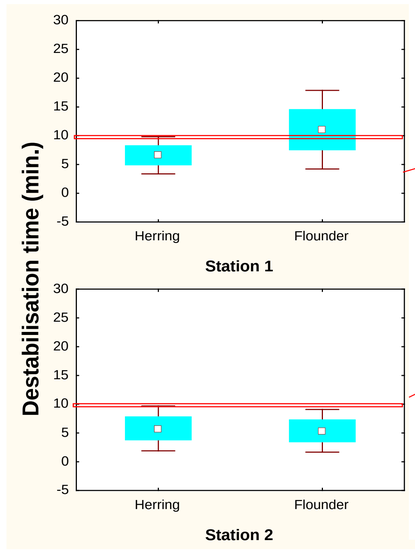
LMS flounder > LMS eelpout >= LMS herring

Liver infections in herring





LMS flounder > LMS dab



Gulf of Gdansk

Conclusions: Since most of the herring and eelpout caught in the Baltic Sea suffer from liver infections and/or parasite liver infestations accompanied by decreased liver LMS, the EAC has to be adjusted for these species if they are used as indicator organisms in monitoring programmes.