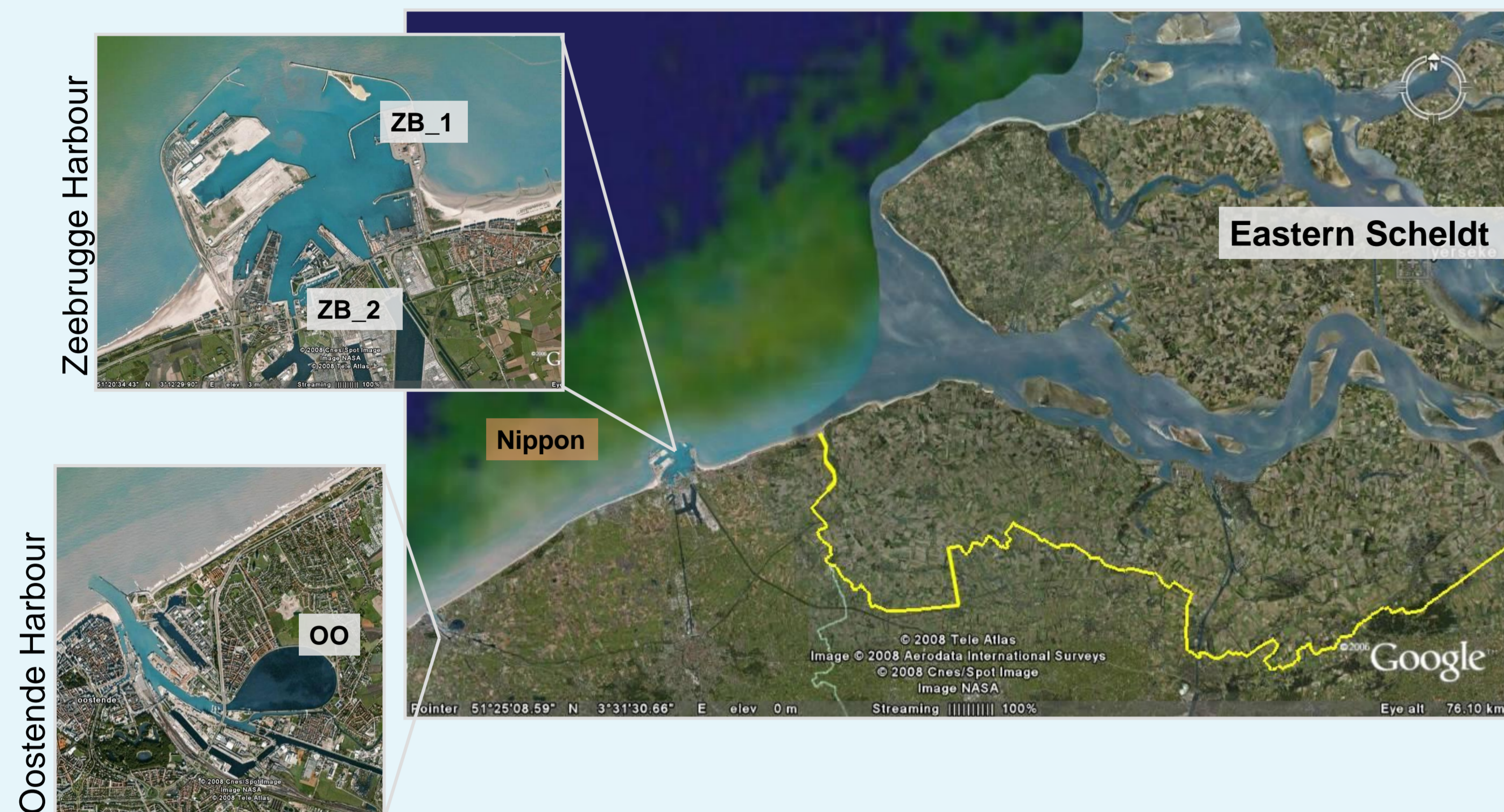


Introduction

Harbours receive, as semi-enclosed structures, high loads of chemical substances through river inputs and direct discharges (oil spills) as well as by indirect ways such as shipping traffic, atmospheric deposition, wastewater, etc. This means that organisms living in harbours are exposed to a wide range of pollutants which have the potential to cause stress by disturbing the normal functioning of the biological organisation.

As part of the INRAM project, in which the risk of micropollutants is studied for the Belgian coastal zone, a cage experiment with mussels and oysters was conducted in three coastal harbours to study the susceptibility of these bivalves to the prevailing stress.

Methodology



In situ field assay with *Mytilus edulis* & *Crassostrea gigas*:

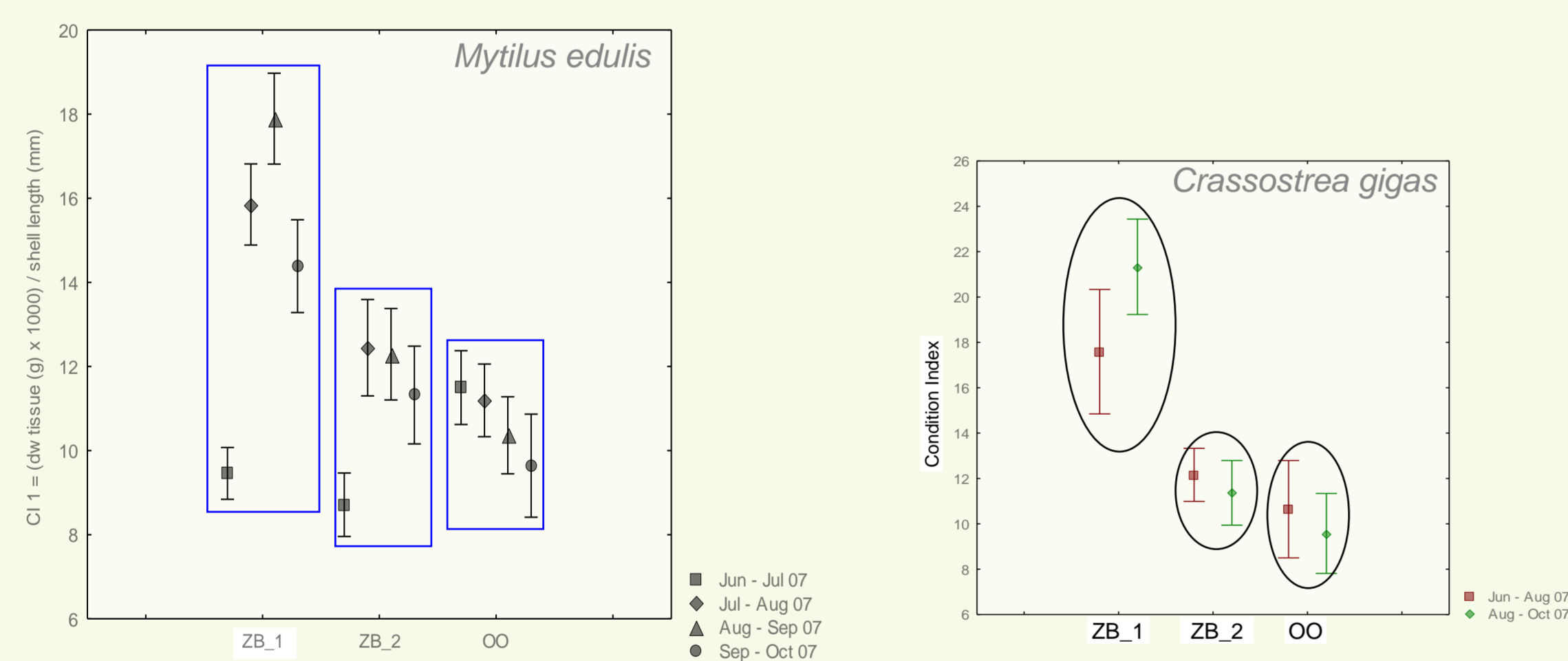
- Mussels & oysters collected in the Eastern Scheldt were transplanted to two stations in the harbour of Zeebrugge (ZB_1, ZB_2), one station at Oostende Spuikom (OO) and one station in open sea (Nippon)
- The organisms were exposed from June - October 2007
- Growth, condition index and gonadal development were recorded
- Contaminant tissue concentrations were measured
- Abiotic factors were recorded (salinity, temperature, oxygen, chl a)

Results & Discussion

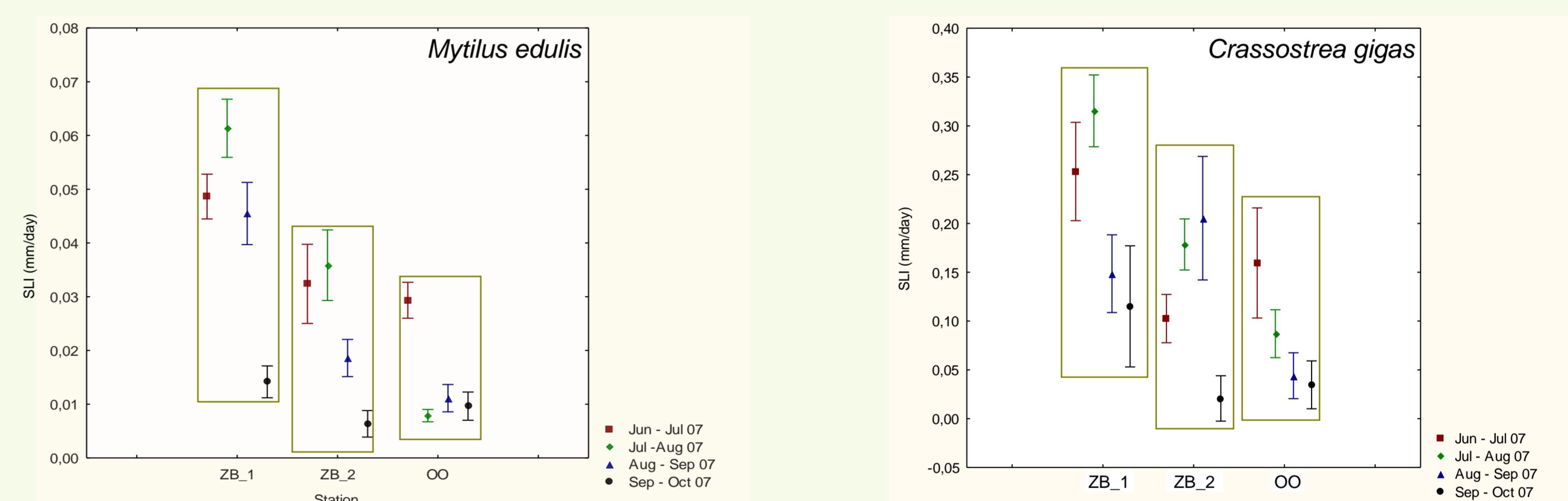
Growth & Condition Index

- Monitored for 125 mussels & 30 oysters per cage
- 35 mm < length of mussel & oyster < 46 mm

Condition index = (dw tissue (g) x 1000) / shell length (mm)



Growth expressed as **Shell Length Increment: SLI (mm/day) = (SL t+1 - SLt) / dt**
(Jantz & Neumann, 1998)



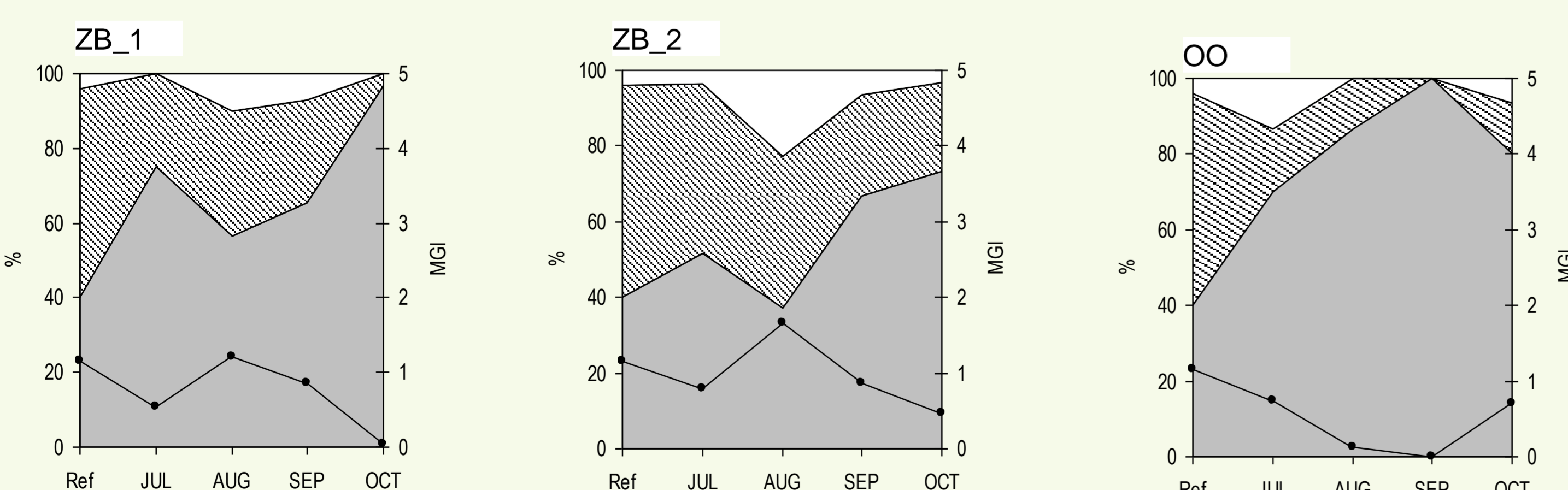
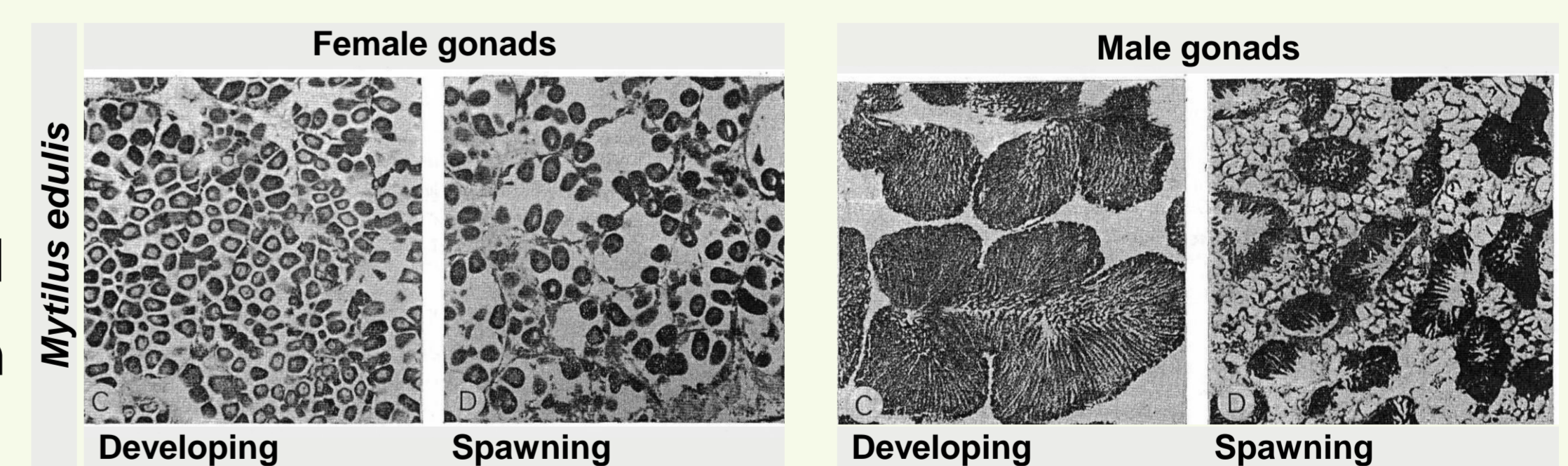
The Mann-Whitney U-test indicated no significant difference in growth between the replicates of each station ($p > 0.05$)

Kruskal-Wallis analysis showed a significant difference in SLI between the stations ($p < 0.05$)

The Shell Length Increment and Condition Index values show a decrease according to a spatial gradient from outer harbour towards inner harbour. Further research will examine a possible correlation with the presence of micropollutants.

Gonad Development

- Monitored monthly for 25 mussels & bimonthly for 15 oysters
- Staging, into developing / spawning / spent, is done by means of histological preparations of the gonad
- Mean Gonad Index (MGI), based on different stages, defines the reproductive condition of a population



- During the whole sampling period repeated spawning occurs.
- By late September-October the percentage of spent individuals increases, as the majority of the population entered the resting condition.
- At first sight, no clear difference can be made between the different stations, statistical analyses will clarify this.
- The low MGI (0 – 1.8) confirms that spawning is in progress.
- In the near future a possible correlation with the body burdens will be studied.

Partners