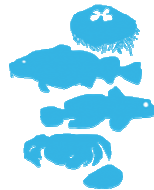


# Resource competition between round goby (*Neogobius melanostomus*) and eelpout (*Zoarces viviparus*)

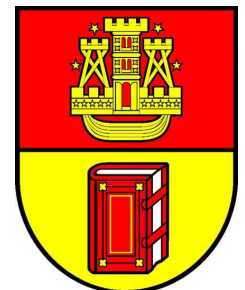
Artūras Skabeikis

<sup>1</sup> Marine Science and Technology Center, Klaipėda University, Manto 84, LT-92294, Klaipėda, Lithuania

<sup>2</sup> Lithuanian Sea Museum, Smiltynės 3, LT-93100, Klaipėda, Lithuania



BIO-C3





## Introduction

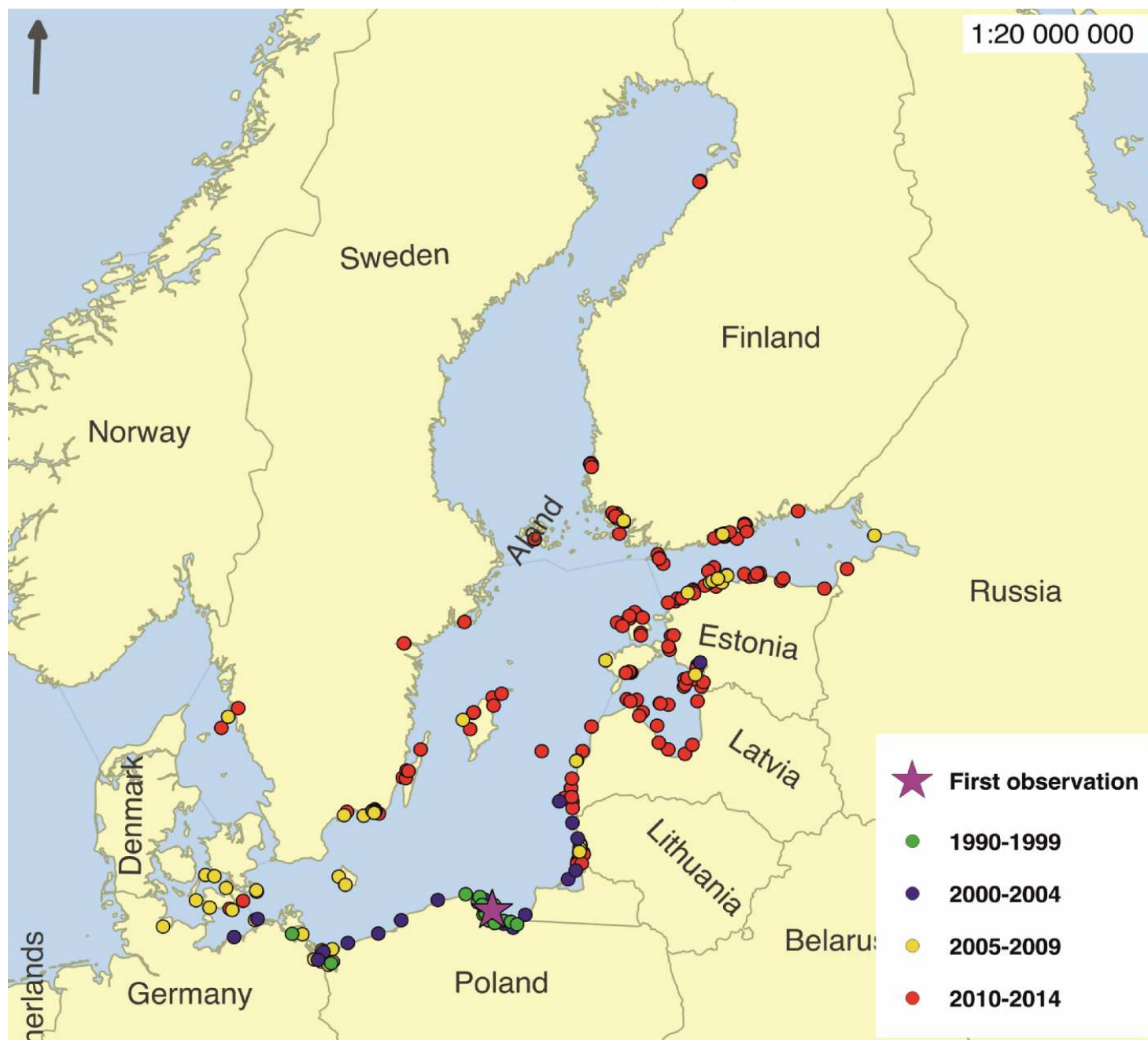


© J. Fedotova

Round goby (*Neogobius melanostomus*)

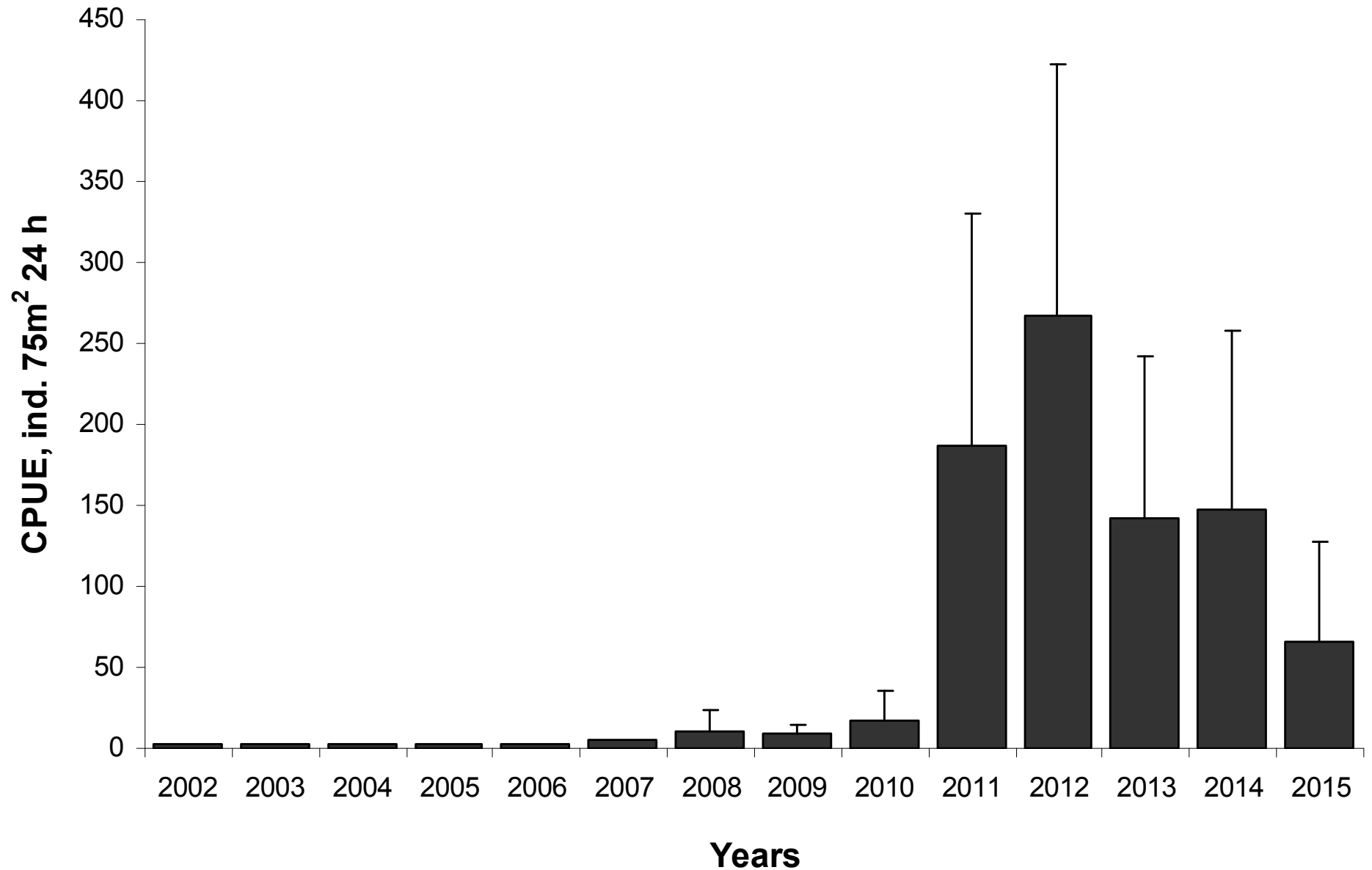


## Dispersion pattern of round goby in the Baltic Sea

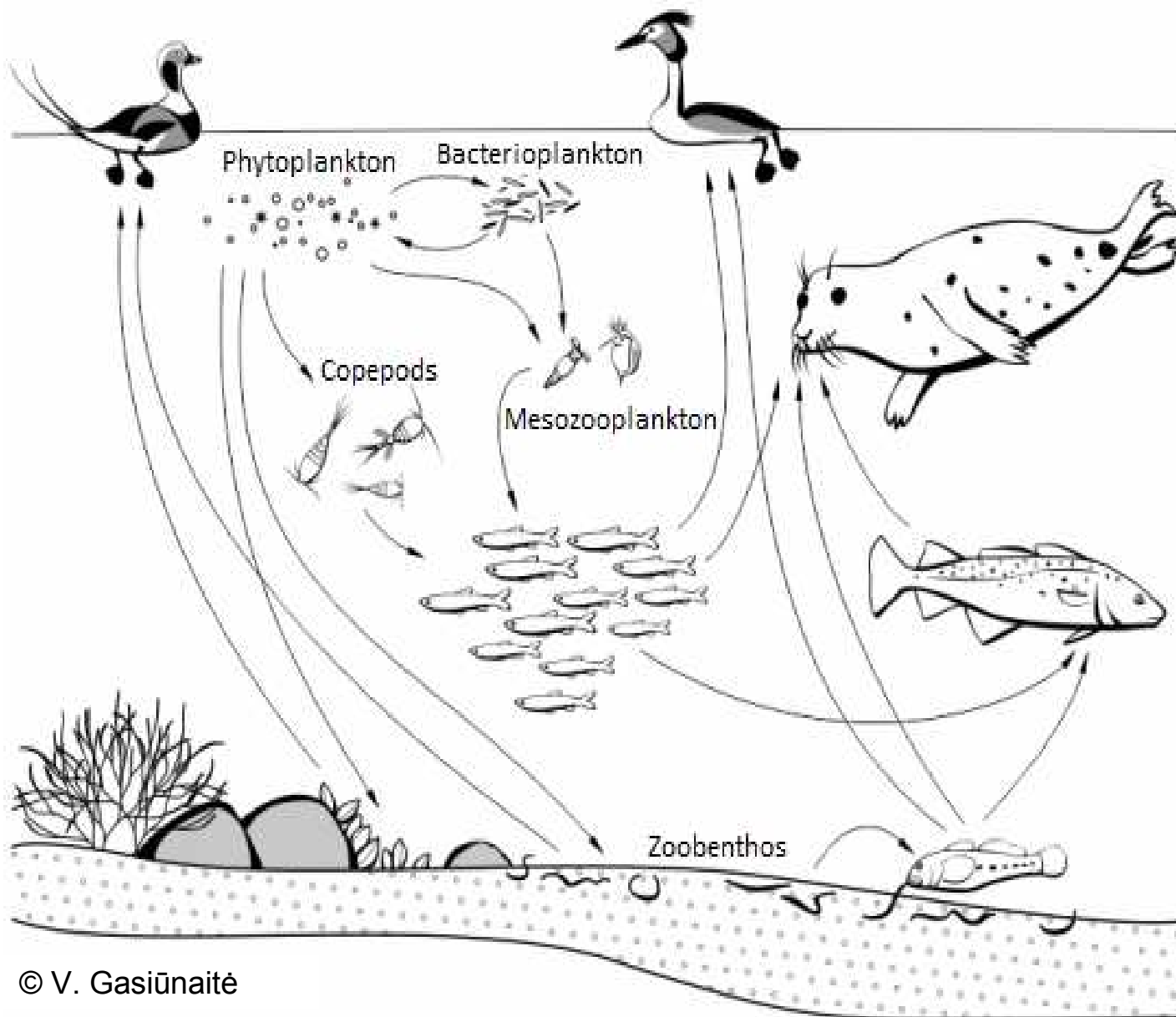


Kotta et al., under review

# Abundance dynamics of round goby in the Lithuanian coastal waters of the Baltic Sea



# Role of round goby in the food web of the Baltic Sea coastal ecosystem



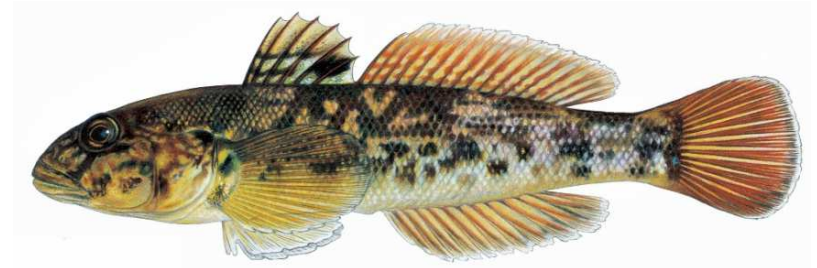
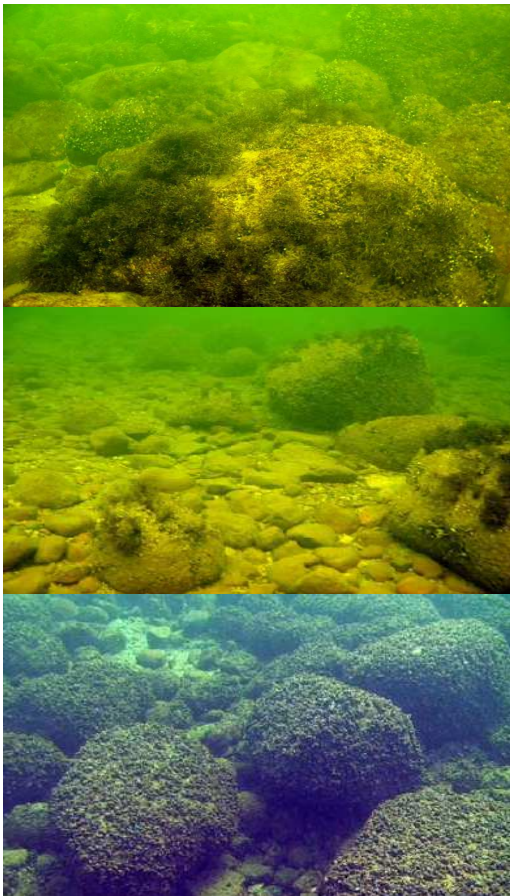
Round goby changes invaded ecosystem by reducing abundances of its feeding objects, competing for food resources with native demersal fish and bird species and becoming an important component in the diet of piscivorous fish, birds and mammals.



# Resource competition between round goby and eelpout



**Habitat**



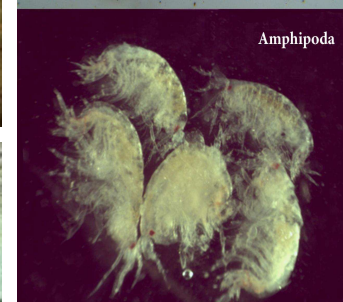
**Food**



*Hediste diversicolor*



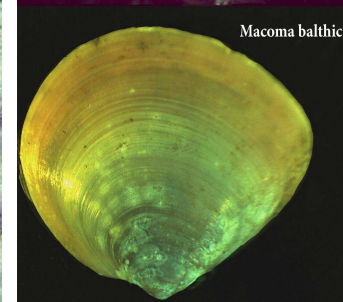
*Pisces sp.*



*Amphipoda*



*Balanus improvisus*



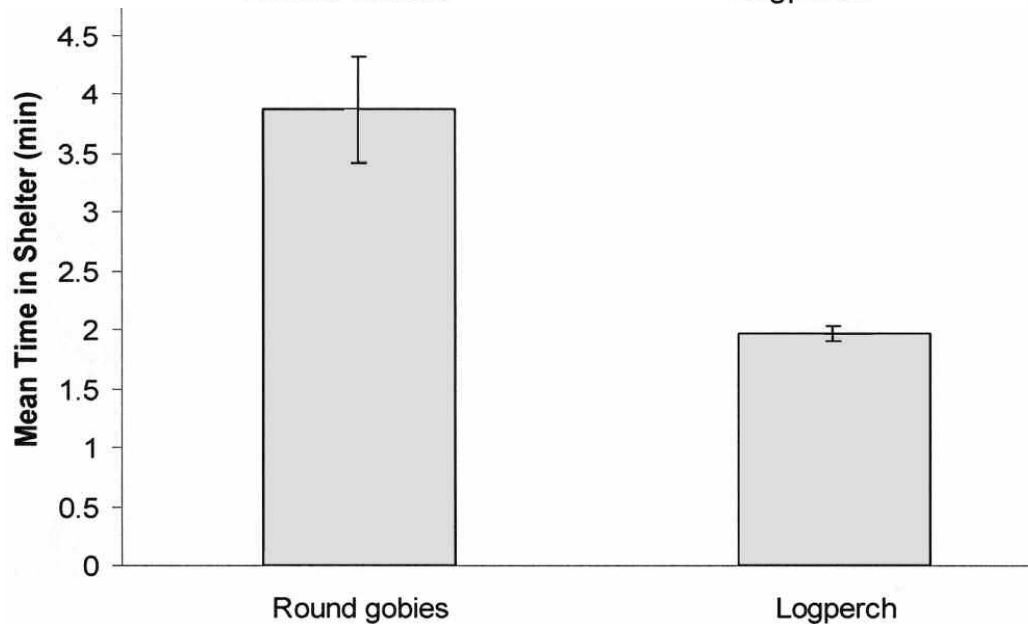
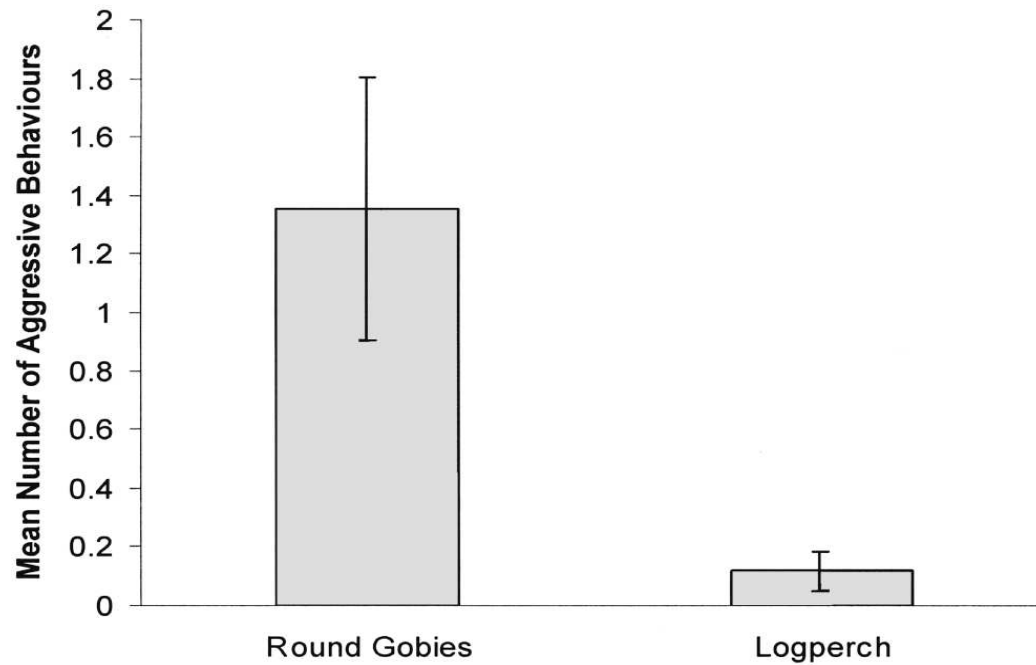
*Macoma balthica*



*Mytilus trossulus*



# Aggression and habitat competition between round goby and native fish

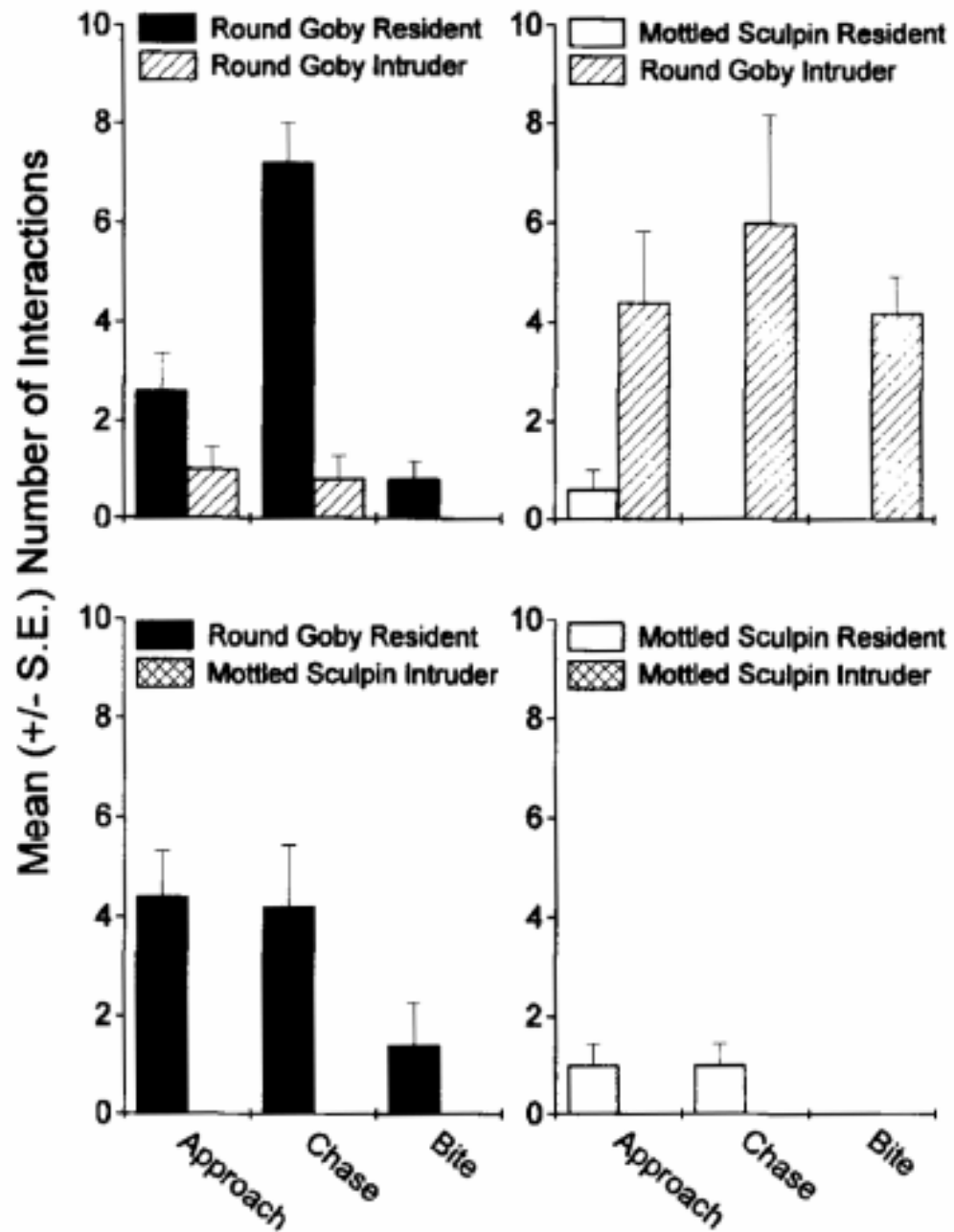


Balshine et al., 2005



Common logperch (*Percina caprodes*)





Mottled sculpin (*Cottus bairdii*)





# Plan for aggression and shelter competition experiment

E L >150 g



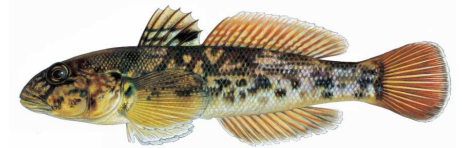
E S <100 g



RG S <100 g



RG L >150 g



**Resident**

**Intruder**

RG L	↔	E L
RG L	↔	E S
RG S	↔	E L
RG S	↔	E S
E L	↔	RG L
E L	↔	RG S
E S	↔	RG L
E S	↔	RG S

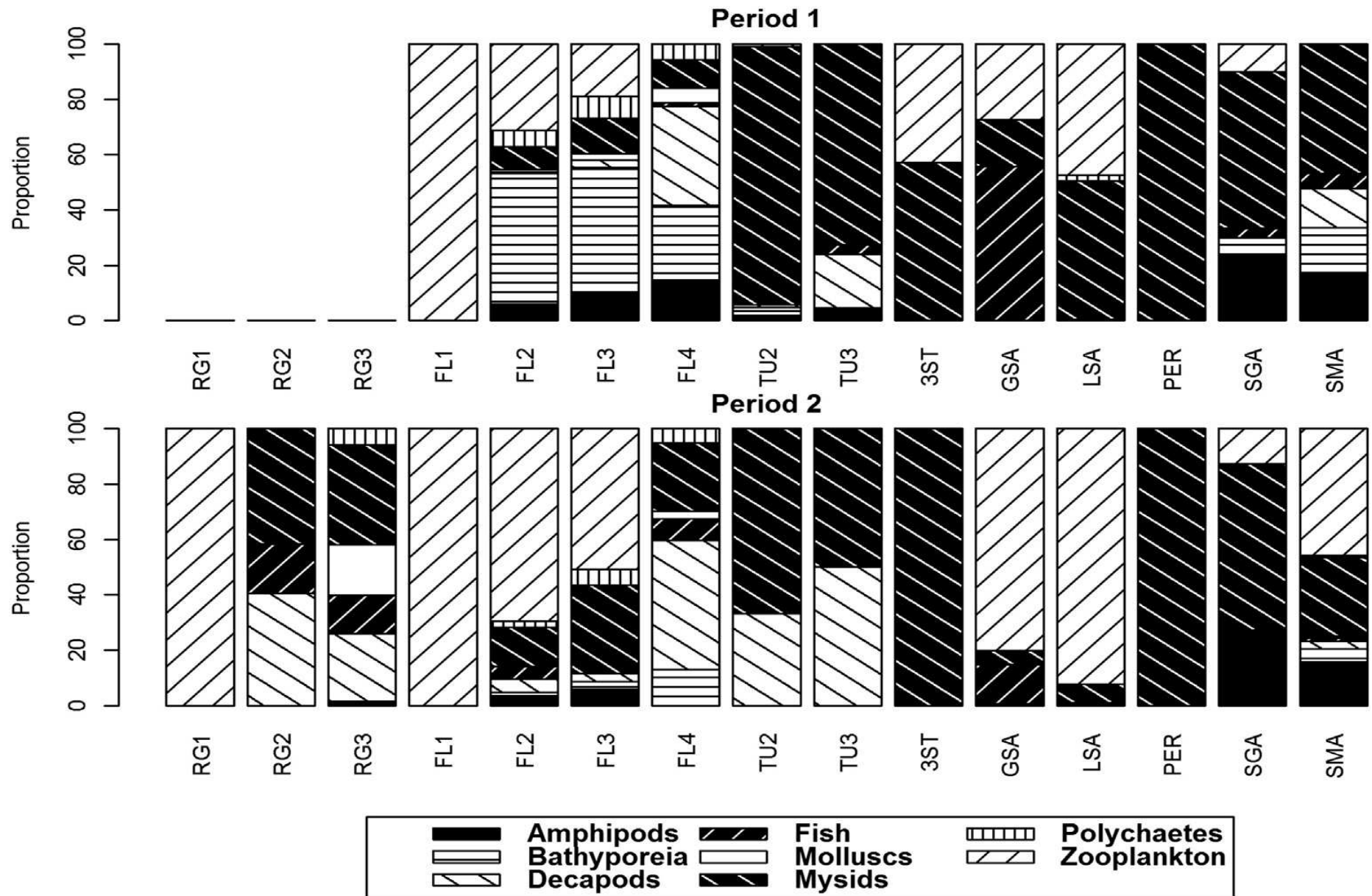
**Control:**

E L	↔	E S
RG S	↔	RG S
RG L	↔	RG L

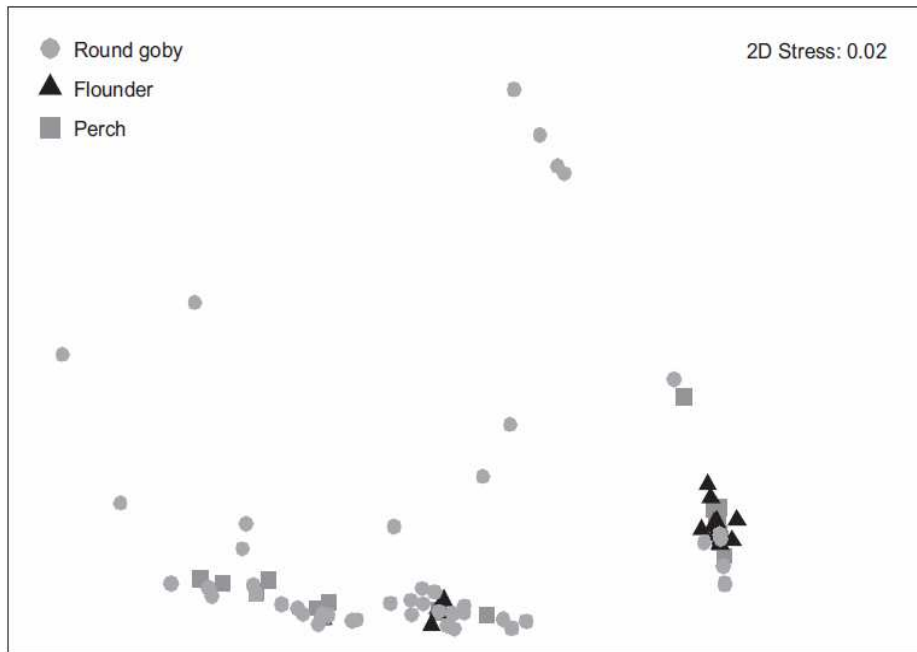
- 40 l aquarium; 2 cm sand layer;
- Shelter: half PVC pipe (inner diameter 15 cm);
- Resident: videotaped for 5 h in the tank alone before addition of intruder;
- Behavioural interaction filming time - 5 h;
- Scale of increasingly aggressive responses:
  - Approach;
  - Chase;
  - Bite.

**N<sub>each pair</sub> = 10**

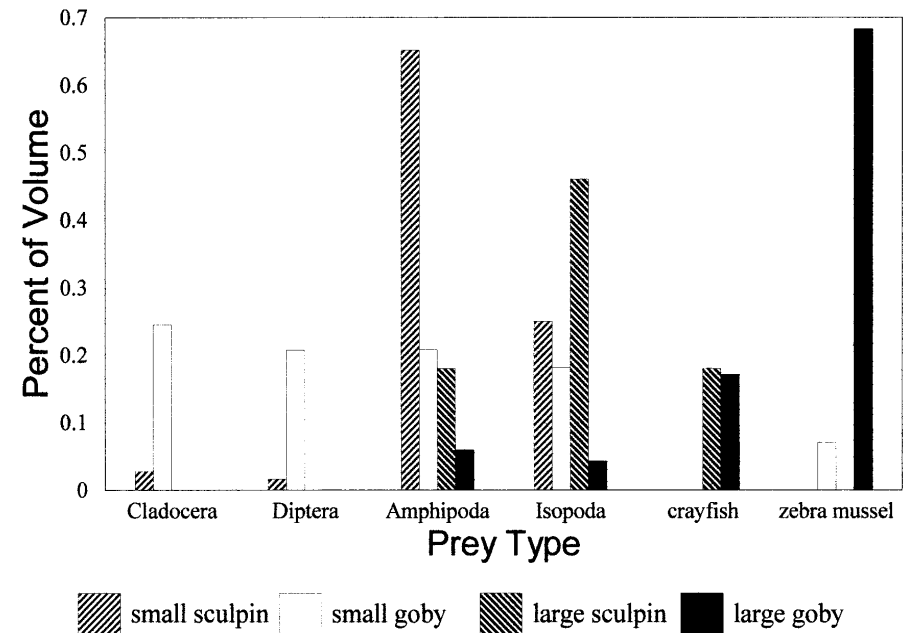
# Trophic interactions between round goby and native bottom dwelling fish



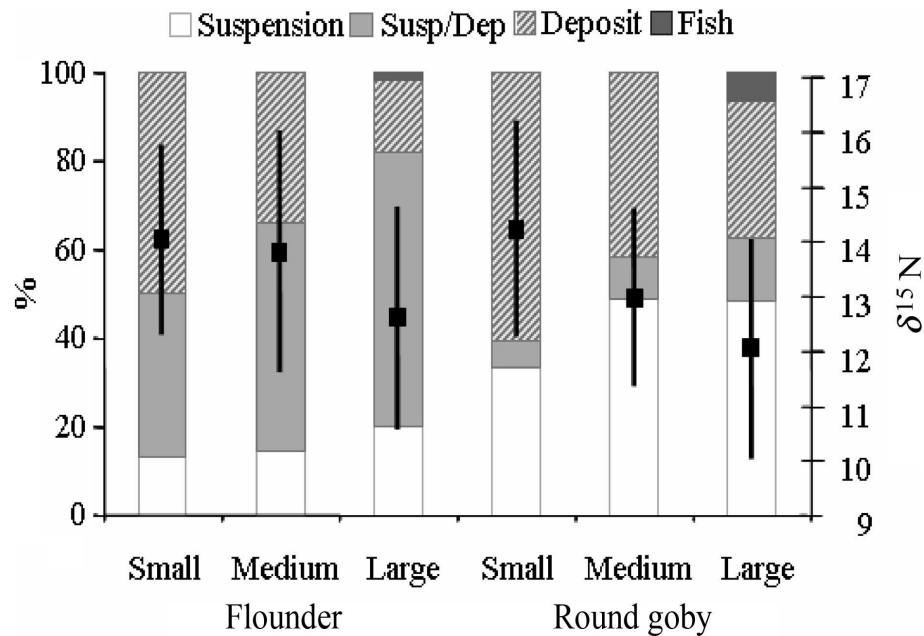




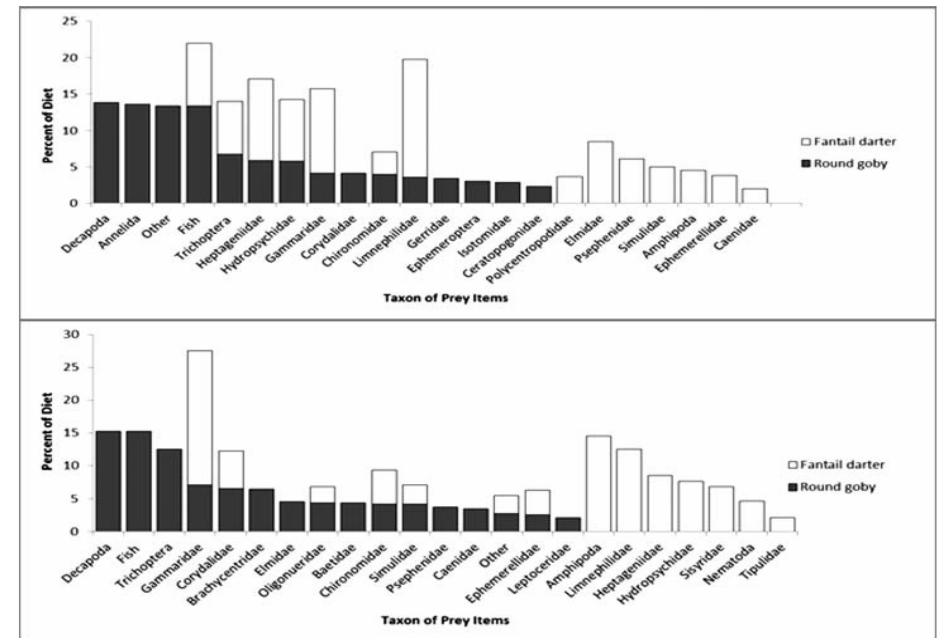
Järv et al., 2011



Janssen and Jude, 2001

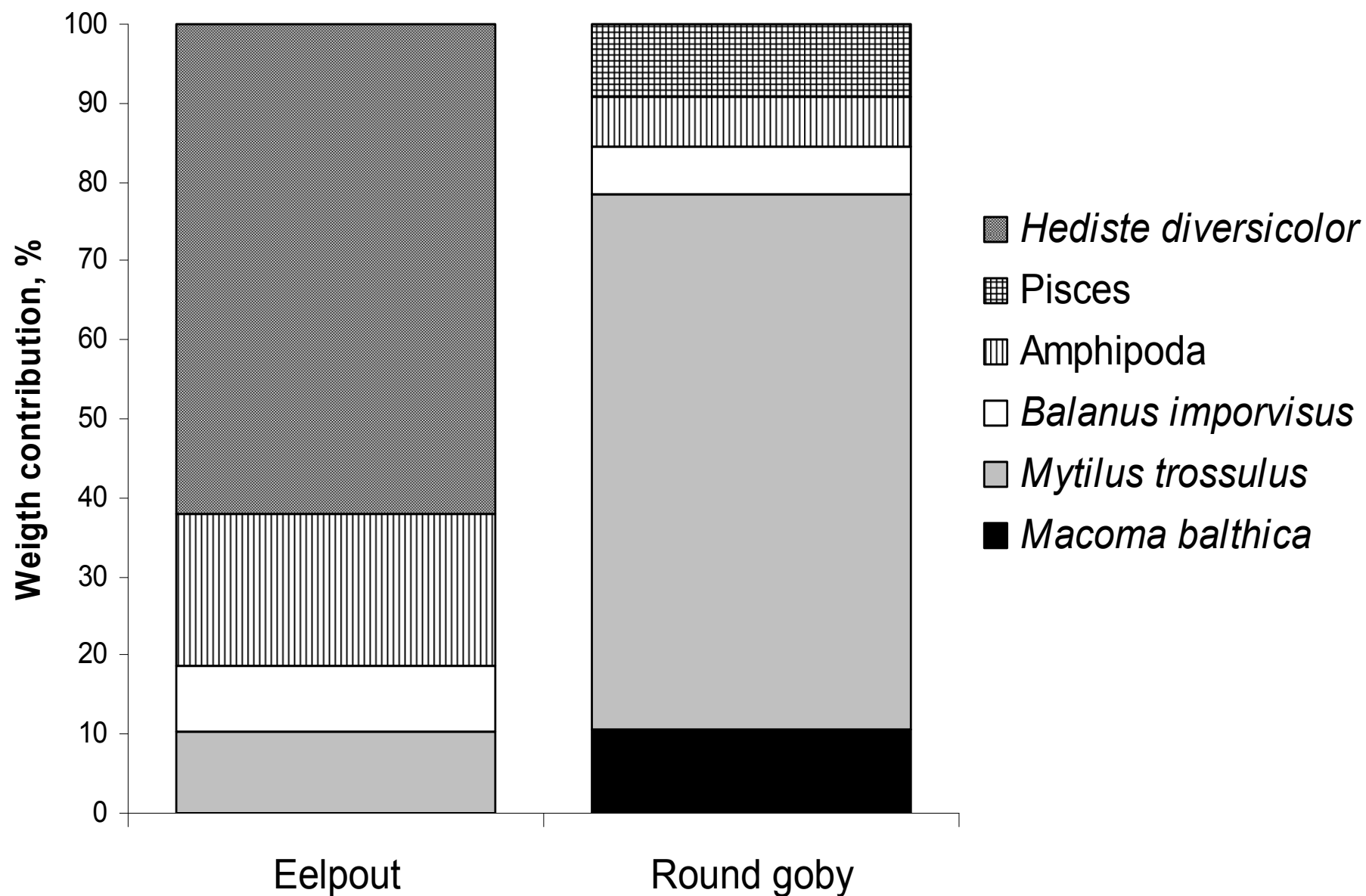


Karlson et al., 2007



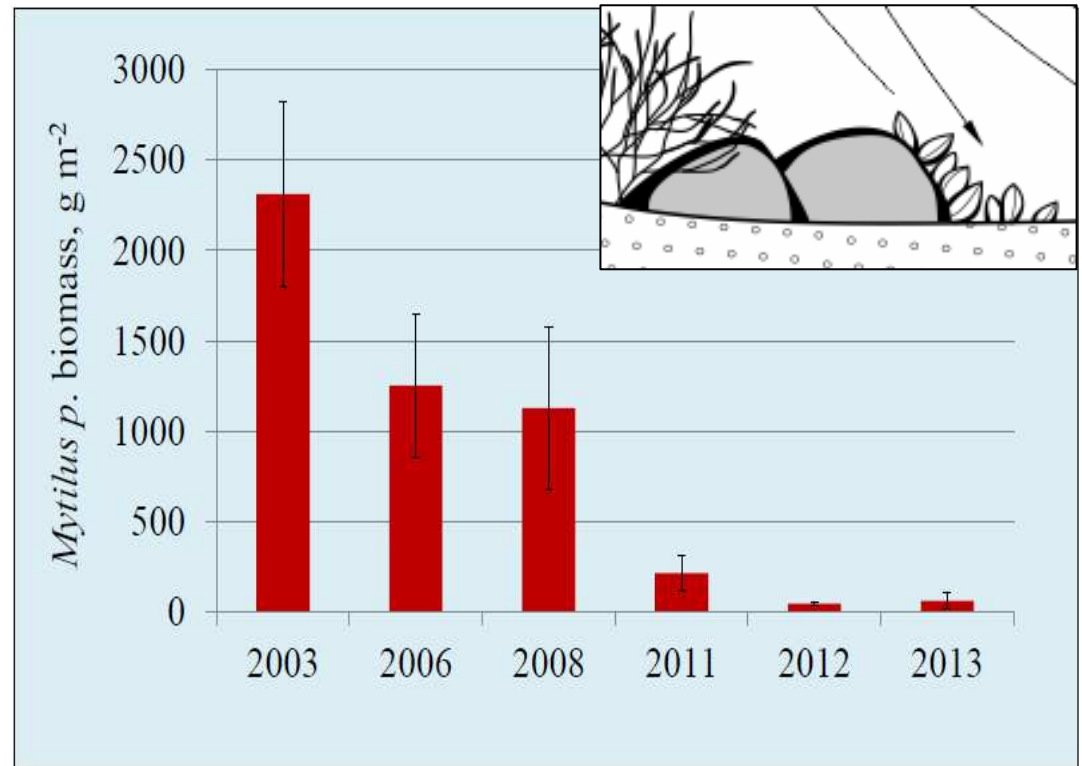
Abbett et al., 2013

## Mass percentage diet composition of round goby and eelpout in the coastal waters of SE Baltic Sea





# Impact of round goby on epifaunal zoobenthic community, indicating increased food competition between benthivorous fish



**Stupelytė A. 2014.** Distribution and biomass dynamics of blue mussel (*Mytilus edulis trossulus*, (Gould, 1850)) in the Lithuanian coastal waters of the Baltic Sea. Bachelor's thesis

Diversity and abundance of epifaunal zoobenthic community before (A) and after (B) round goby establishment in the Lithuanian Baltic Sea coastal waters.

# Plan for food competition experiment

E L >150 g



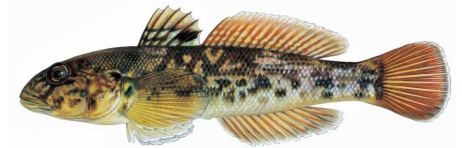
E S <100 g



RG S <100 g



RG L >150 g



## Interspecific competition:

RG L ↔ E L

RG L ↔ E S

RG S ↔ E L

RG S ↔ E S

## Control:

E L ↔ E L

E S ↔ E S

RG S ↔ RG S

RG L ↔ RG L

$N_{\text{each pair}} = 10$

- Success of food competition will be determined according to the changes in wet weight of examined fish;
- 40 l aquarium; 2 cm sand layer;
- Shelters: 2 half PVC pipes (inner diameter 15 cm);
- Limited food: 5 g of chopped herring will be provided for small and 10 g for large competitors every second day;
- All fish will be weighted individually at the start of experiment and weekly thereafter (duration of experiment 3-4 weeks);
- Fish with signs of injury or disease will be excluded from the experiment;
- All experiments dealing with RG must be conducted during winter time!



**Thank you for your attention**