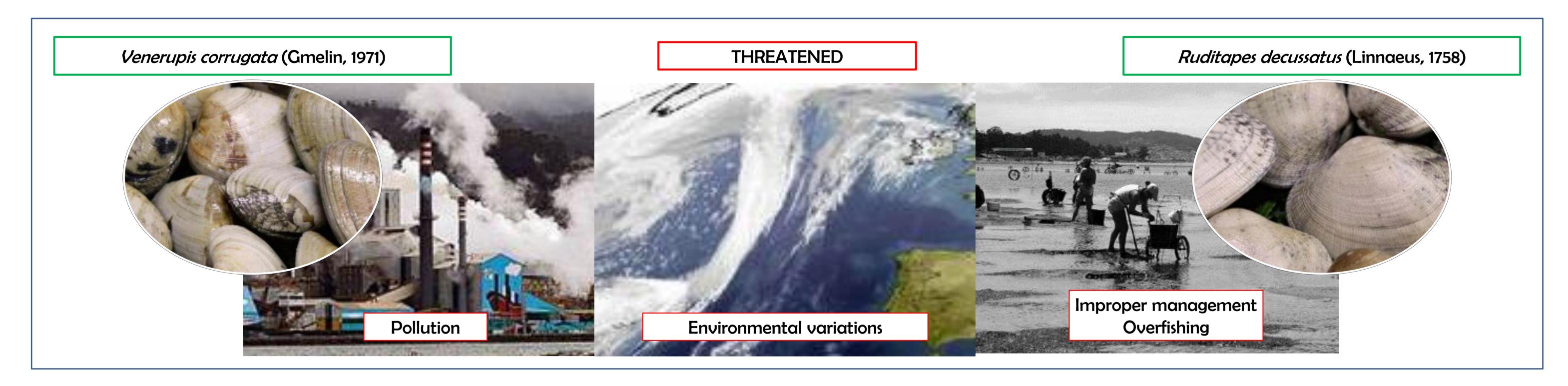
## CRYOPRESERVATION OF CLAMS FOR CONSERVATION OF THREATENED FISHING RESOURCES

\*Heres P.1,2, Paredes E.1,2

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## Cryopreservation

Hatchery production

Sustainability of natural stocks.

Selective breeding

Socioeconomic importance

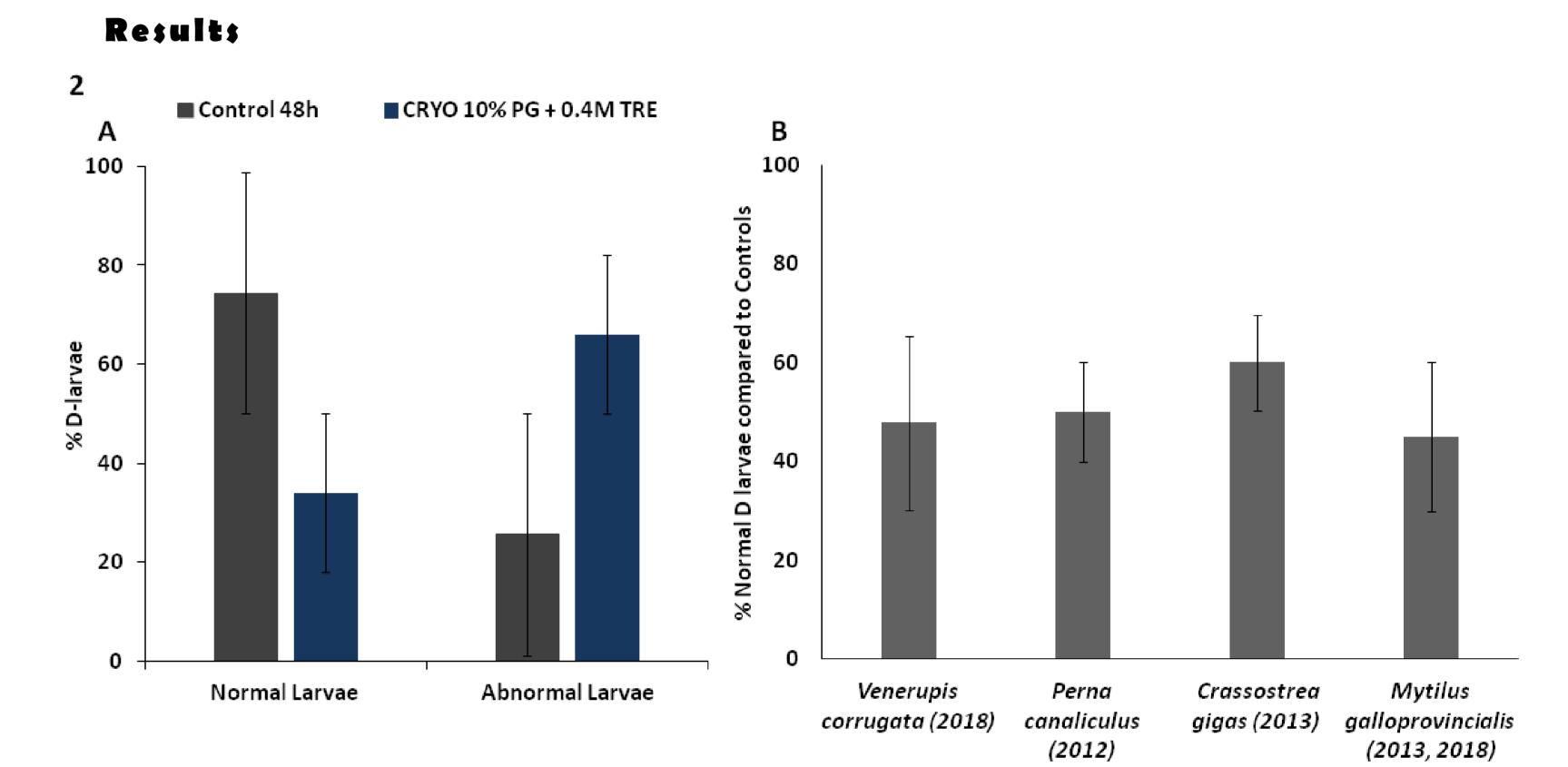
## Aim

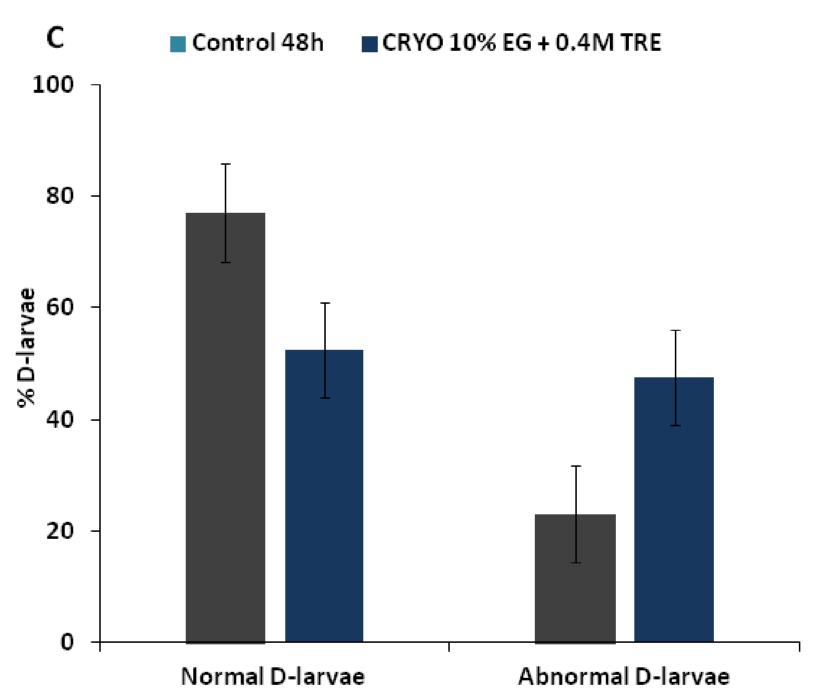
## Development of larval cryopreservation protocols for both species

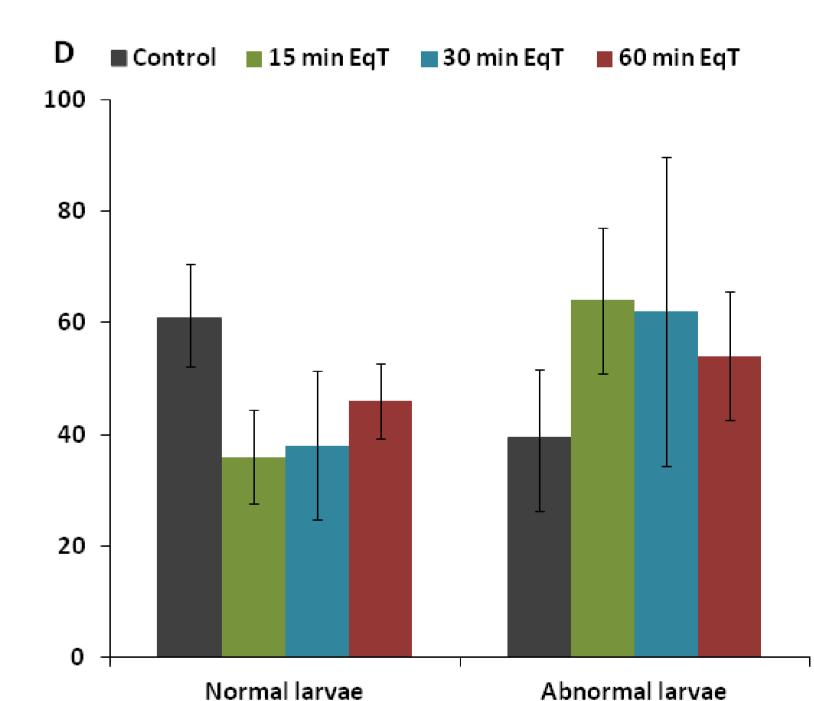
# EG PG Me<sub>2</sub>SO GLY A 100 B 10

Figure 1. A. Percentage of abnormal D-larvae developed from *Venerupis corrugata* trochophore larvae following exposure to increasing concentrations of cryoprotecting agents (CPAs) ranging from 0.5 to 3M for 15 minutes. B. Percentage of abnormal D-larvae developed from *Ruditapes decussatus* 48h-old D-larvae following exposure to increasing concentrations of cryoprotecting agents (CPAs) ranging from 0.5 to 3M for 15 minutes. All data has been normalized to the controls. Mean ± SD. EG - Ethylene-Glycol. PG - Propylene-Glycol. Me<sub>2</sub>SO - Dimethyl-Sulfoxide. GLY- Glycerol.

Figure 2. Cryopreservation experiments. A. Percentage of *Venerupis corrugata* trochophores developing to D-larvae following cryopreservation as described in Paredes *et al.*, 2013. B. Comparison between marine mollusk trochophore cryopreservation from 2013 to 2018. C. Percentage of D-larvae developed from *Ruditapes decussatus* 48h-old D-larvae cryopreservation following Paredes *et al.*, 2013 guidelines. D. Percentage of D-larvae developed from *Ruditapes decussatus* 72h-old D-larvae following increasing equilibrium times from 15 to 60 minutes and cryopreservation considering Paredes *et al.*, 2013. Mean ± SE.







## Conclusions

- **EG** recommended for clam larval cryopreservation.
- Cryopreservation technique is able for conservation of endangered clam species.

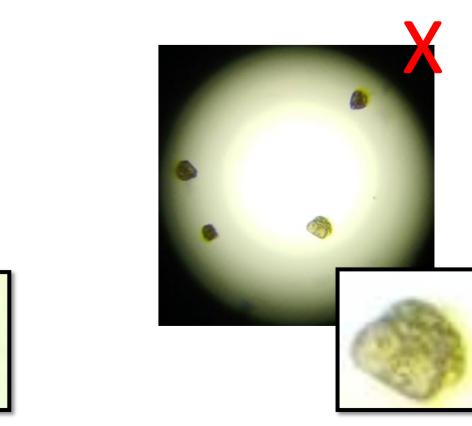
Further research should focus on optimizing the protocol by studying

- Factors involved on cryoprotection: optimal equilibrium time, improvement of CPA combination, determination of membrane permeability parameters.
- Long-term effects

## Methodology

Toxicity tests

Cryopreservation protocol (Paredes et al., 2013)



Percentage of normal and abnormal D-larvae

Larvae exposed for 15 minutes to 0.5, 1, 1.5, 2 and 3M of Ethylene-Glycol (EG), Propylene-Glycol (PG), Dimethyl-Sulfoxide (ME2SO) and Glycerol (GLY). Incubation at 16°C for 48h. Fixed in formalin.

## -1°C/min -1°C/min -35°C

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