

Symbiotic interactions challenged by environmental stress in aquatic transitional habitats

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Estuaries

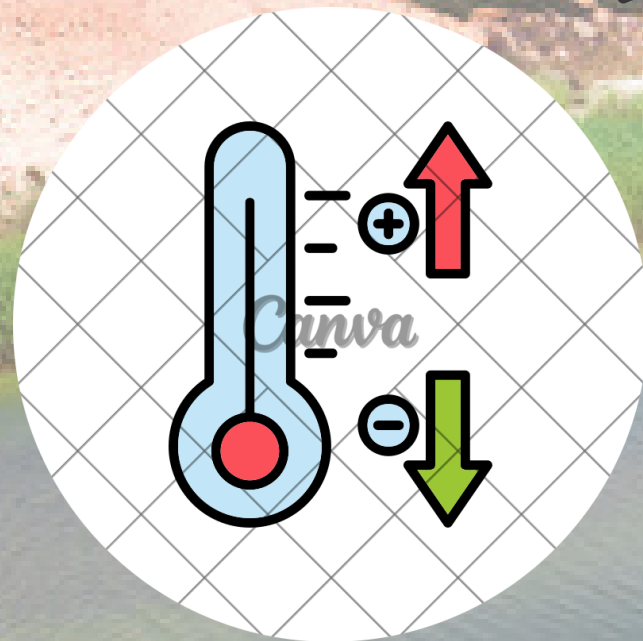


Diversity in estuaries

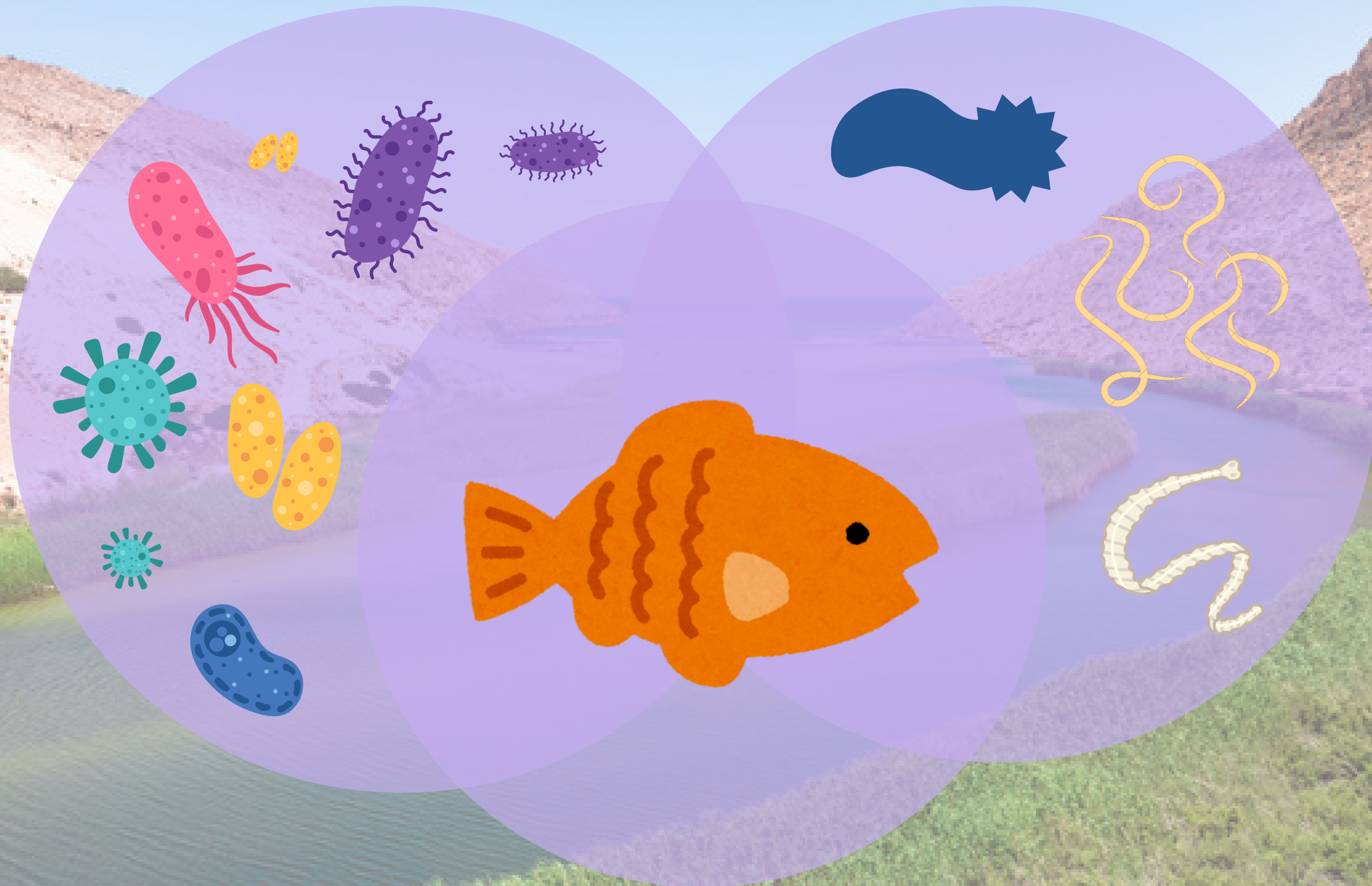


Environmental stress

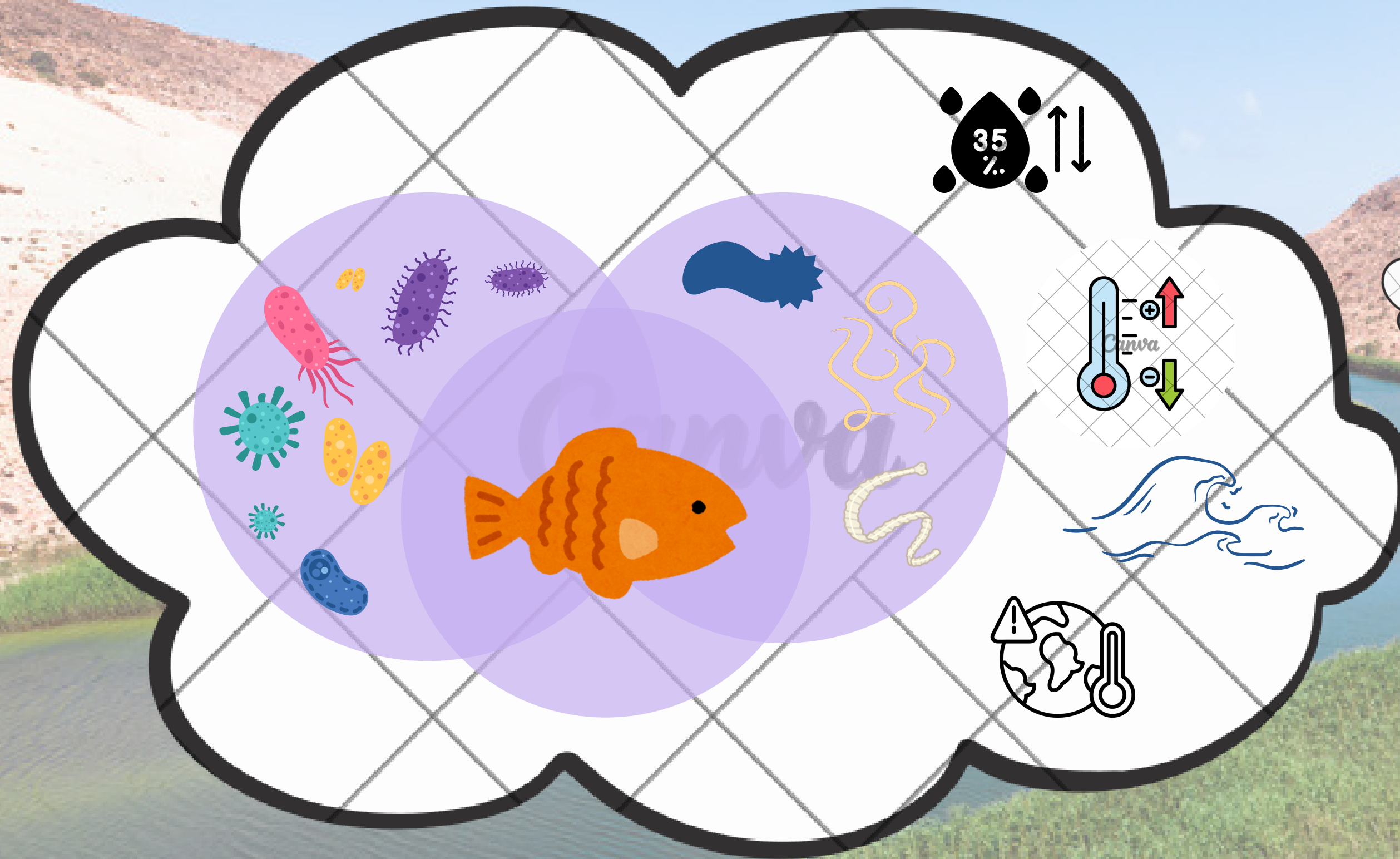
Estuarine communities
challenged by...



No organism lives alone...

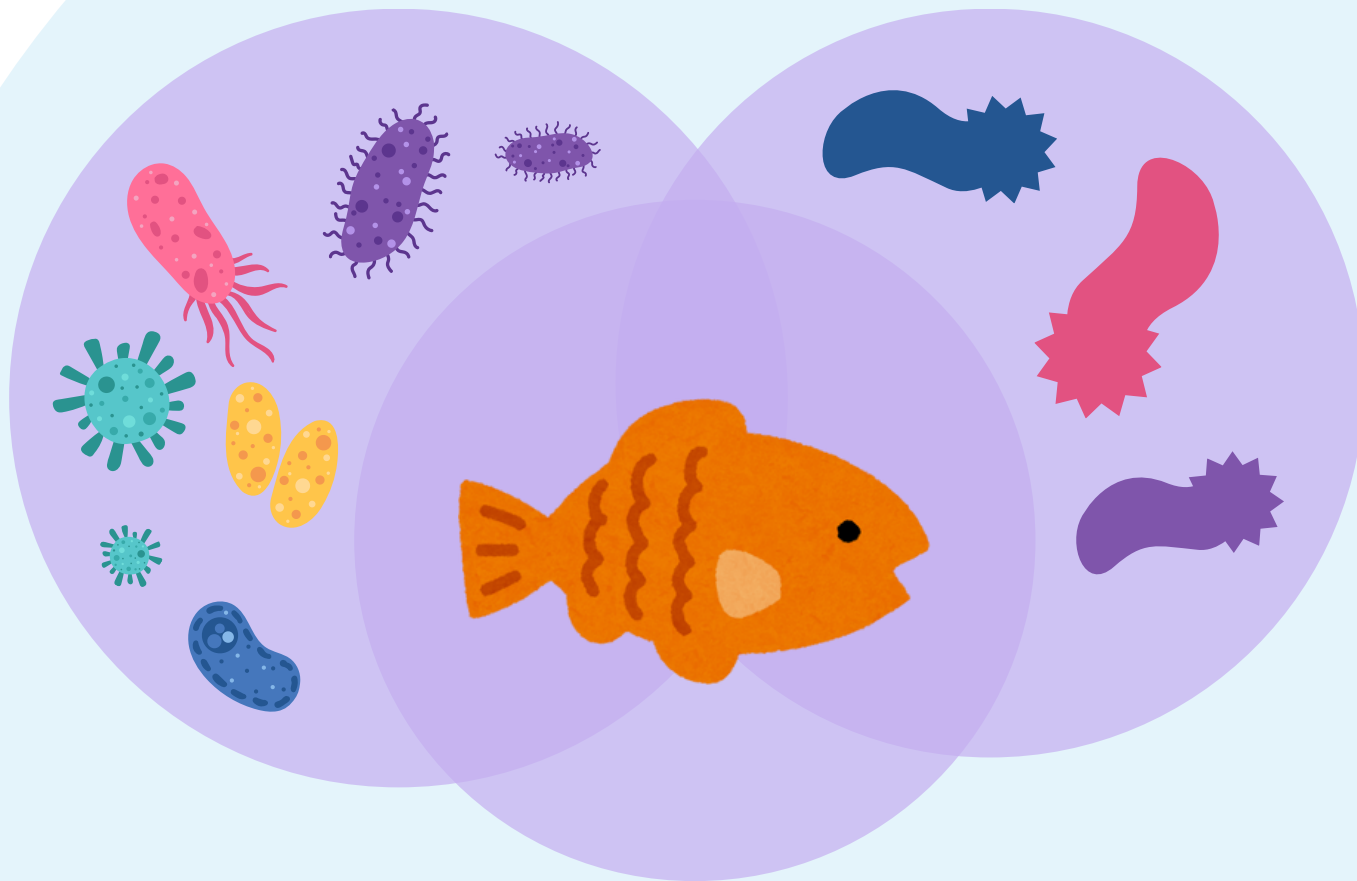


The aim of the project



Estuarine symbiotic community project

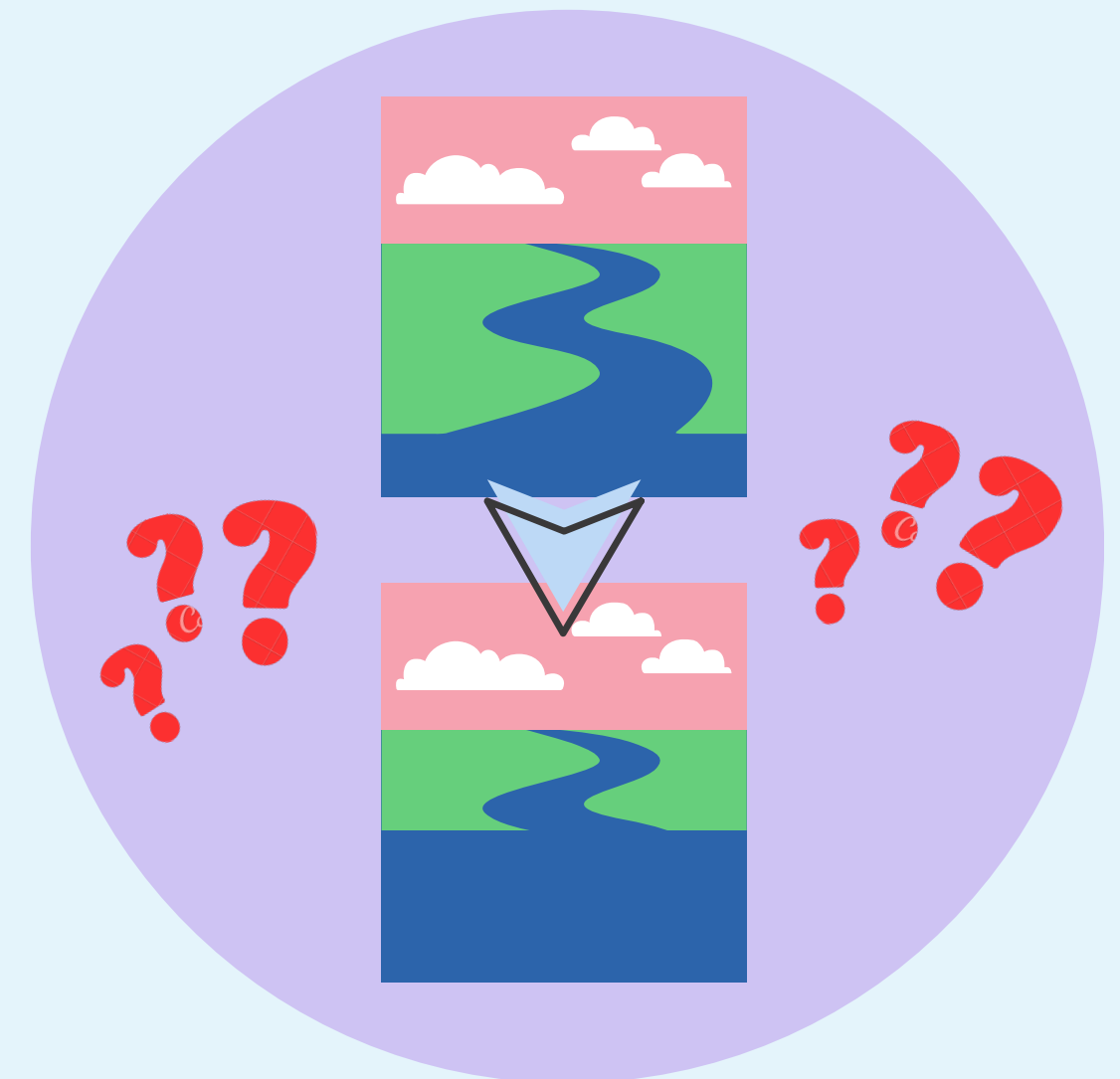
Diversity?



Stress response and genomic landscape?



Change in community?



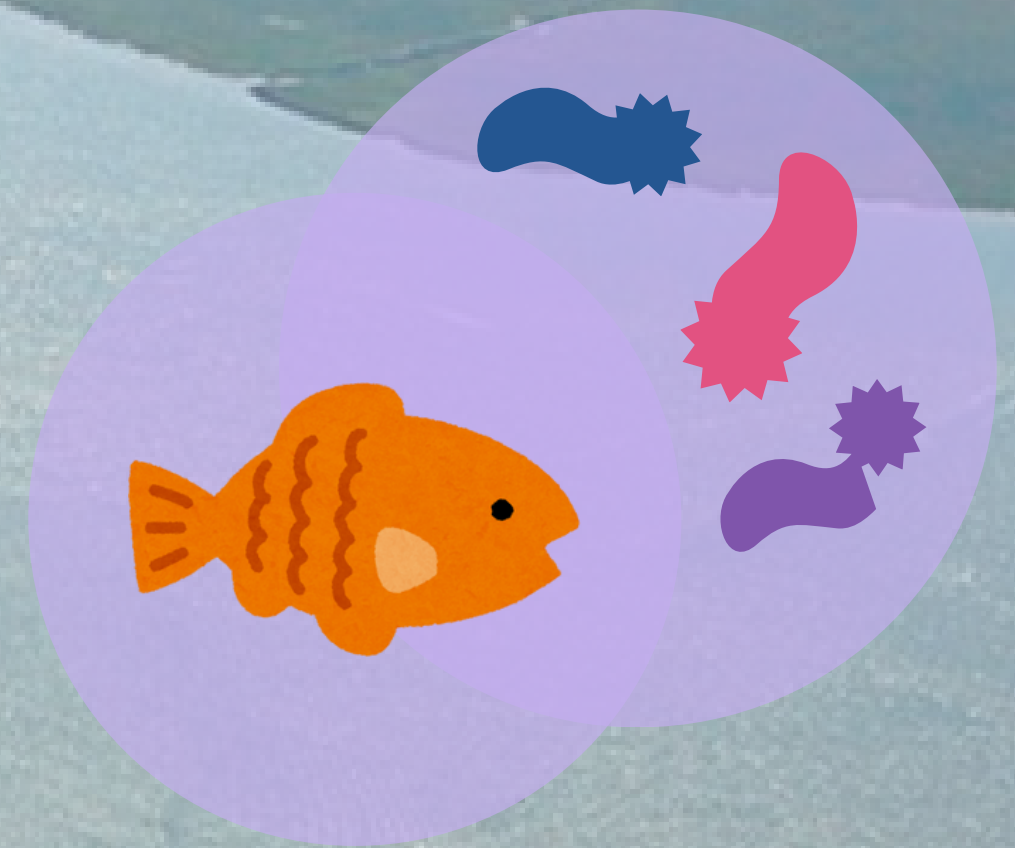


Killifish as a model?



1st phase - exploration of diversity in a symbiotic community

- North American Atlantic Coast estuaries
- BioBlitz 2023 - Stono River estuary, SC, USA
- Estuarine fishes collected and screened for ectoparasites



1st phase - exploration of diversity in a symbiotic community

- 125 fish specimens of 12 genera (17 species) caught and screened for parasites
- Six genera (nine species) infected: *Anchoa* (*A. mitchilli*), *Fundulus* (*F. confluentus*, *F. heteroclitus*, *F. majalis*), *Gambusia* (*G. holbrooki*), *Gobiosoma* (*G. bosc*), *Menidia* (*Menidia* sp.) and *Mugil* (*M. cephalus*, *M. curema*)



Mugil cephalus
Linnaeus, 1758



Fundulus heteroclitus
(Linnaeus, 1766)



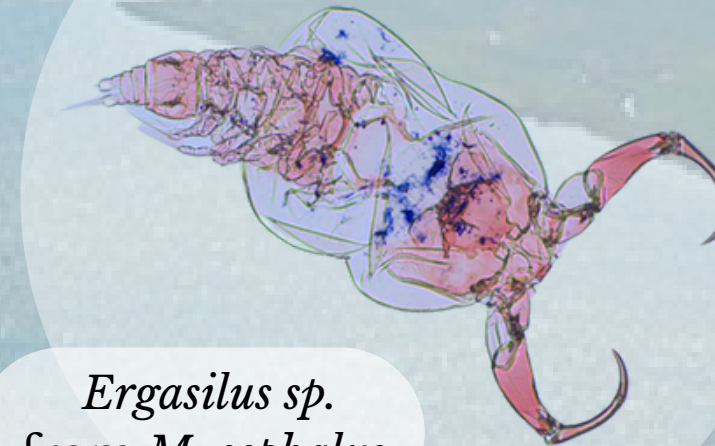
Gambusia holbrooki
Girard, 1859



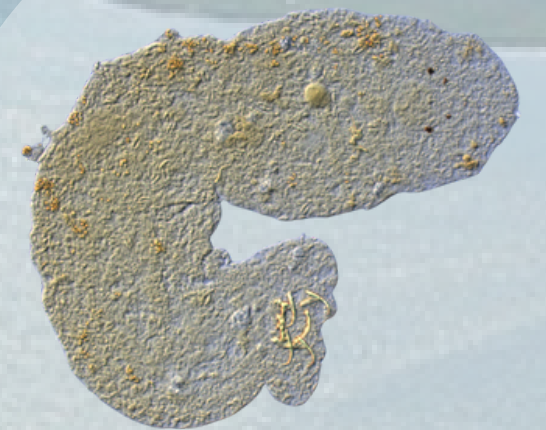
Gobiosoma bosc
(Lacepède, 1800)

1st phase - exploration of diversity in a symbiotic community

- 130 parasites collected; identified based on morphology and genetic markers (28S, 18S and ITS rDNA)
- 15 species observed -
monopisthocotylan flatworms (*Fundulotrema*, *Gyrodactylus*, *Ligophorus*, *Salsuginus*), polyopisthocotylan flatworms (*Metamicrocotyla*) and copepods (*Bomolochus*, *Caligus*, *Ergasilus*, *Naobranchia*)



Ergasilus sp.
from *M. cephalus*



Ligophorus mugilinus
from *M. cephalus*

Salsuginus angularis
from *F. heteroclitus*



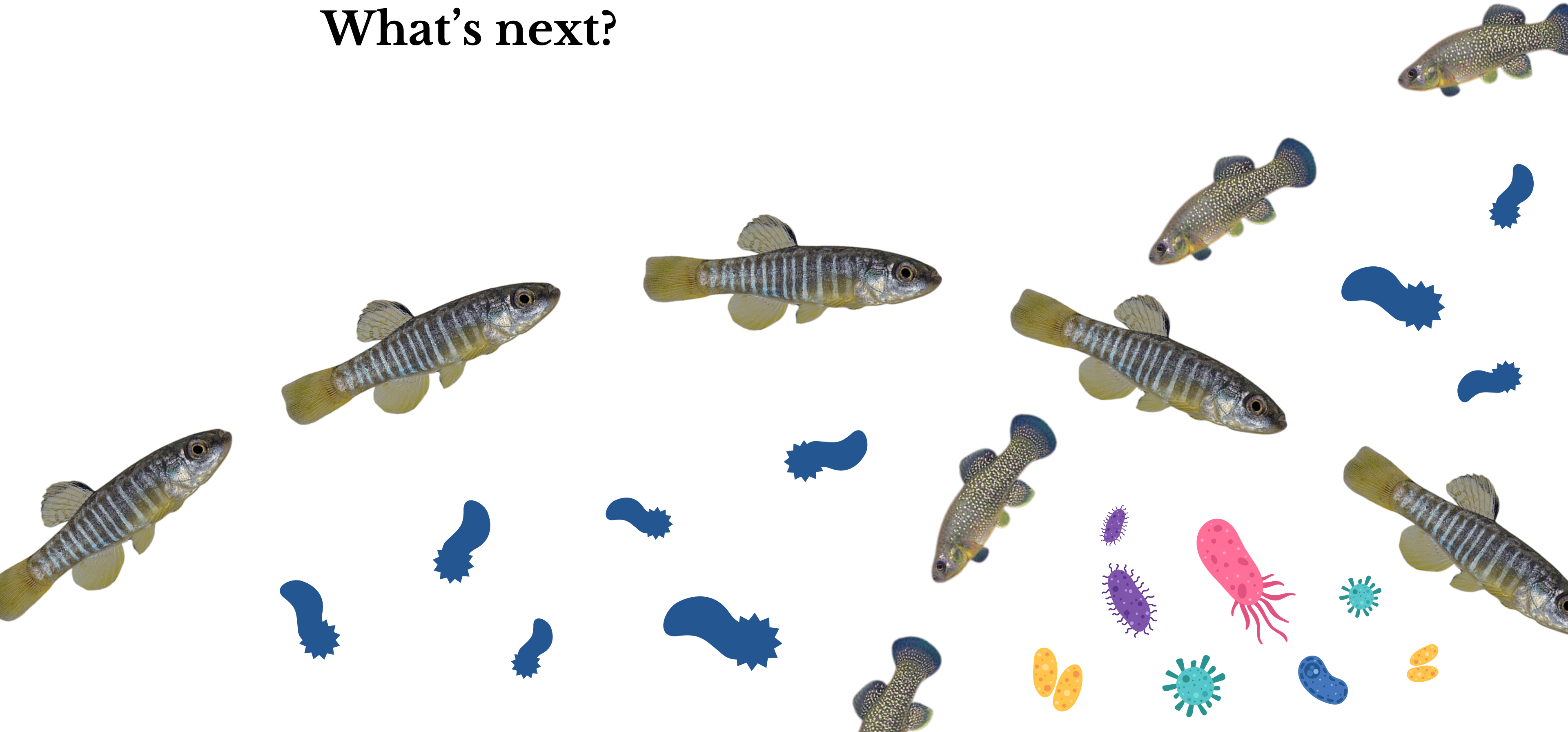
1st phase - exploration of diversity in a symbiotic community

- Mean intensity and prevalence - *Ligophorus* vs. *Fundulotrema*
- Parasite species richness - *M. cephalus* (seven) vs. *Anchoa mitchilli* and *Menidia* sp. (one)
- New records for the Atlantic coast of the USA

- Strong patterns of host-specificity
- Different habitats within the estuary (creeks, small lakes, water reservoirs)
- Lack of molecular data available for North American fish parasites
- Greater knowledge of parasite diversity - influence of environmental change



What's next?



Thank you for your attention!

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