European MSc in Marine Environment and Resources
UPV/EHU–SOTON–UB-ULg

Erasmus Mundus
REF: 2013-0237

Océanologie biologique

Université de Liège

STARESO
Station de Recherches Sous-Marines et Océanographiques

Msc Thesis

Assessing edge-effects in *Posidonia oceanica* seagrass meadows: A multidisciplinary approach

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ZOOLOGY 2016

POSIDONIA OCEANICA MEADOWS

Endemic *Posidonia oceanica* (Magnoliophyta, kingdom Archaeplastida) dominant seagrass in the Mediterranean.

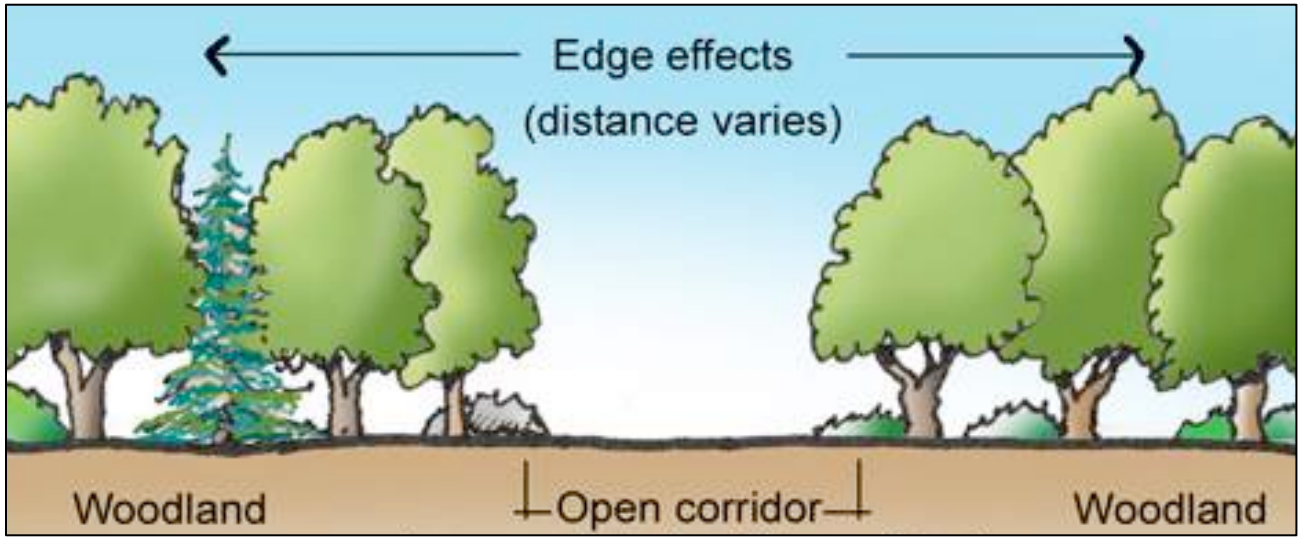
Most prominent aspect, its ecological role:

- **Autogenic ecosystem engineer species**
- Nursery areas
- Source of food for many organisms
- Stabilization of seabed → sediment trapping

WHAT ABOUT EDGES ?

<u>Structural boundaries</u> play an important ecological role:

- ***"edge"*** is the boundary or interface between two biological communities or different landscape elements. (1m)
- ***"effect"*** refer to the changes in population or community structure that occurs at these boundaries.

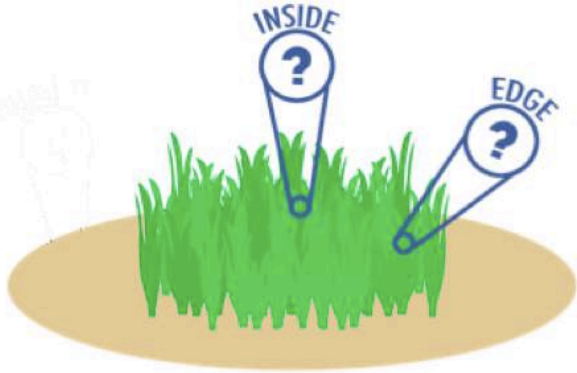


From LAND…

…to SEA

HYPOTHESIS first approach*

Do the edges in *P. oceanica* differ ecologically from continuous meadow?

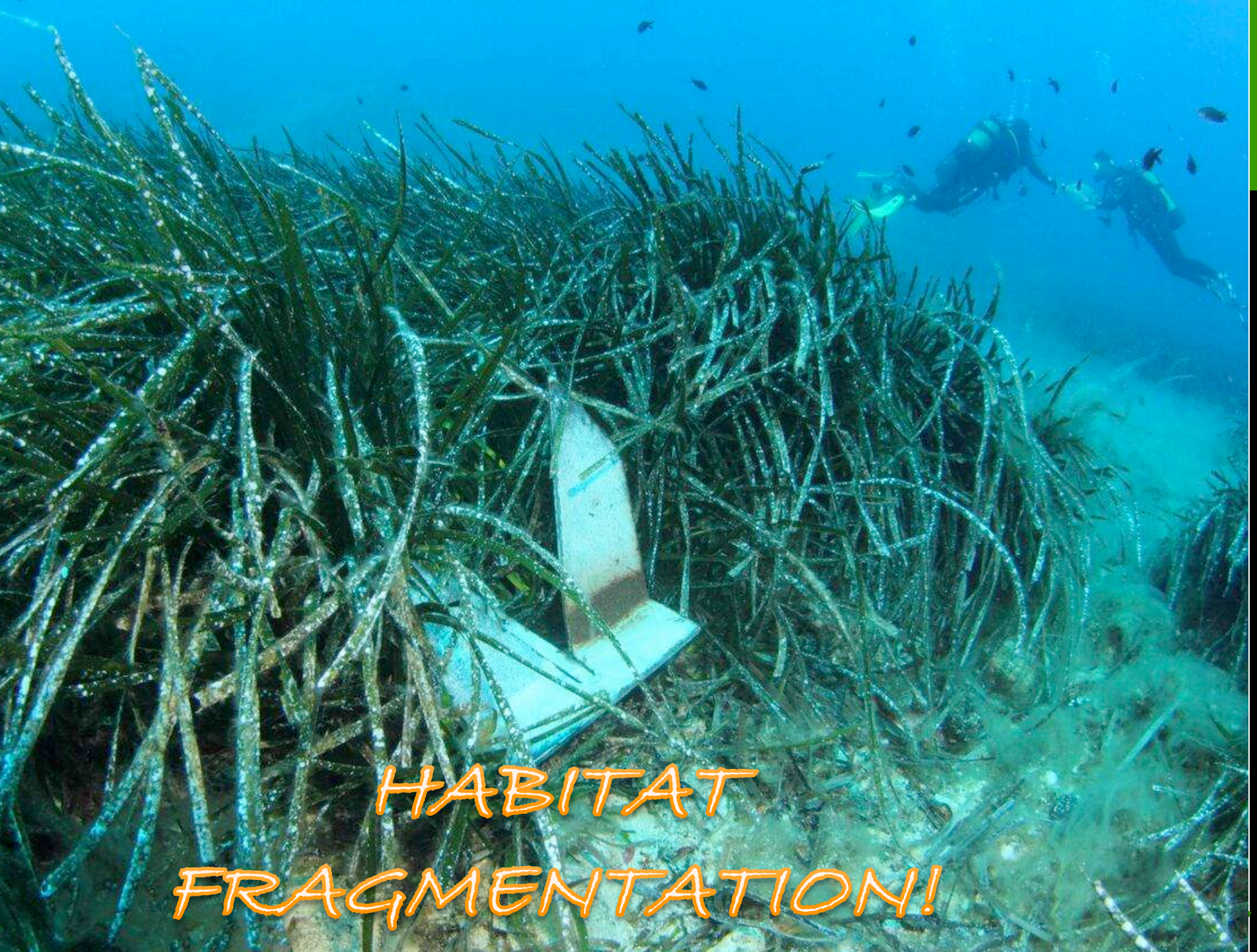


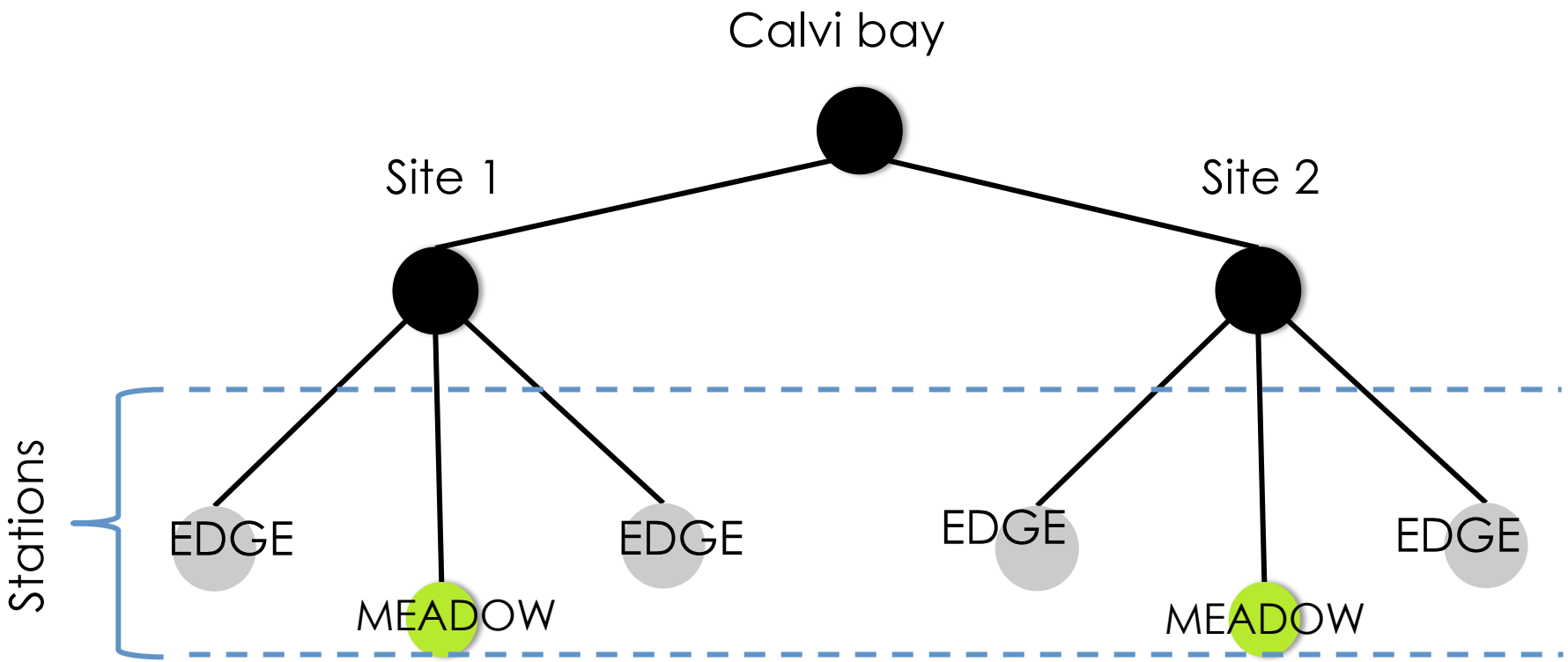
Specific Objectives

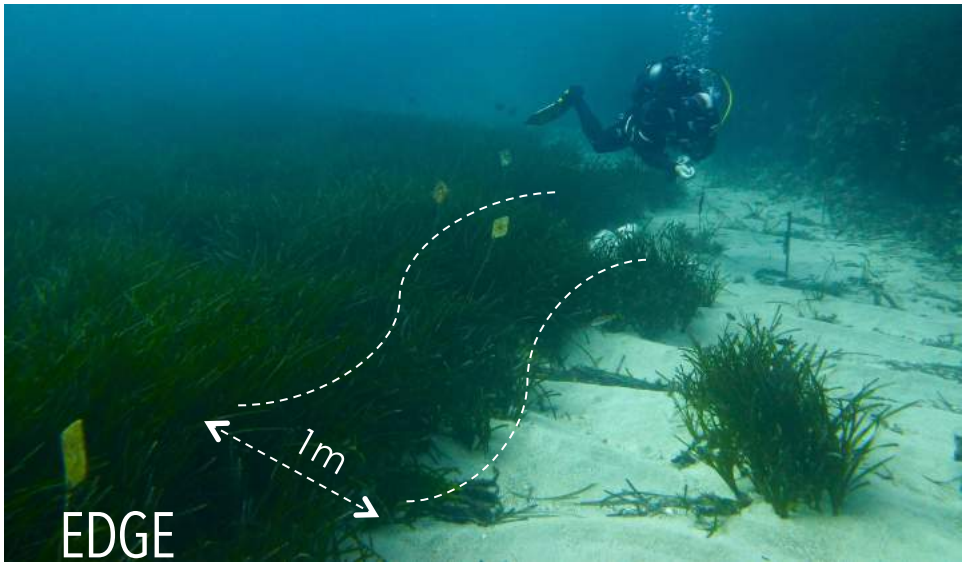
1. **Determine whether there are differences/patterns between the EDGE and the CONTINUOUS meadow in measurements carried out.**
2. **Investigate if anthropogenic pressures (anchoring) could cause disturbances in the measured parameters.**

STUDY AREA


ANCHORING
OVER THE MEADOW
Site 1 (STARESO)
Site 2 (L'ALGA)
Corsica
0 25 50 km
POINTE DE LA REVELLATA

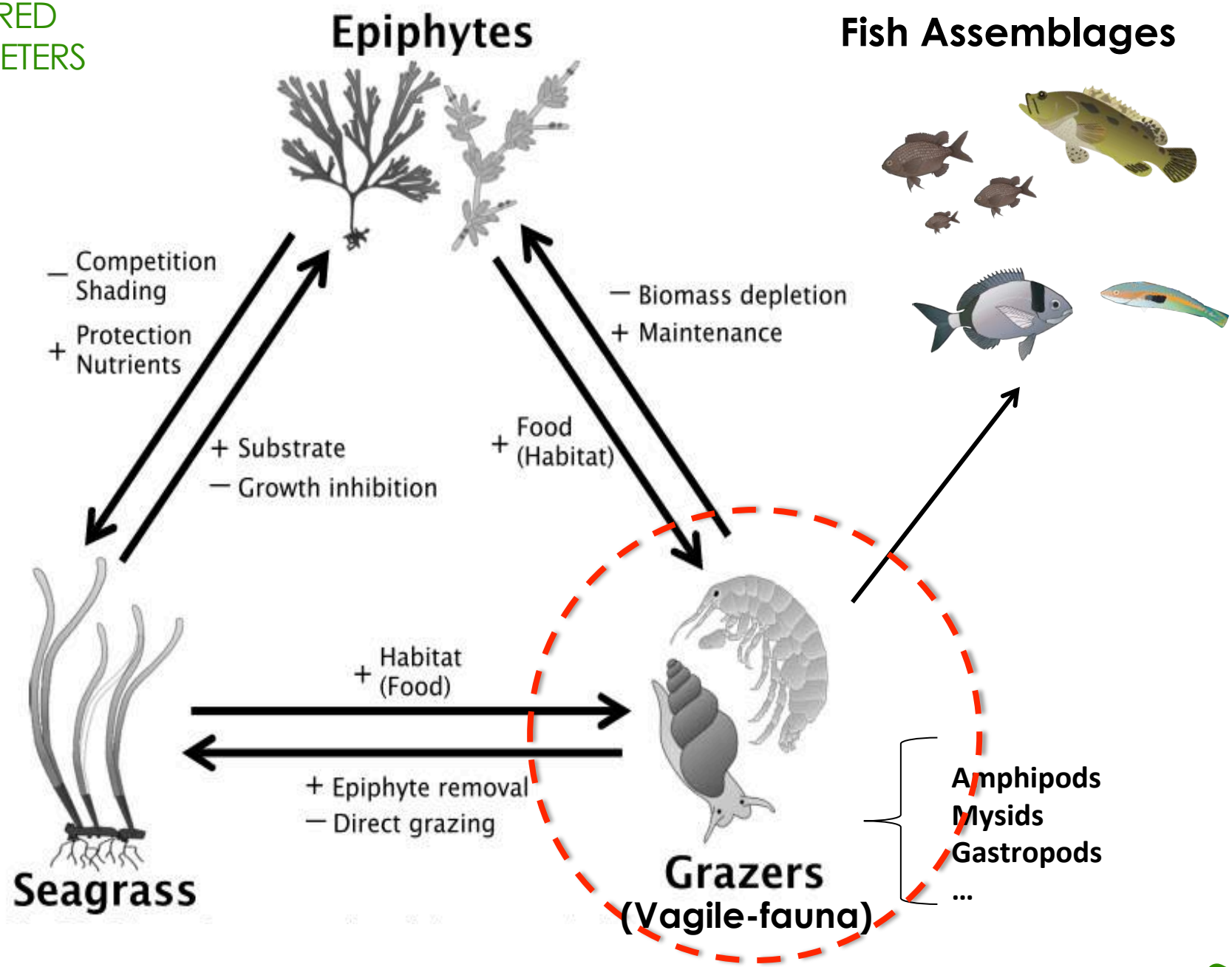

HABITAT
FRAGMENTATION!


Calvi bay
Site 1
Site 2
Stations
EDGE
MEADOW
EDGE
EDGE
MEADOW
EDGE


1m
EDGE


CONTINUOUS MEADOW

MEASURED PARAMETERS



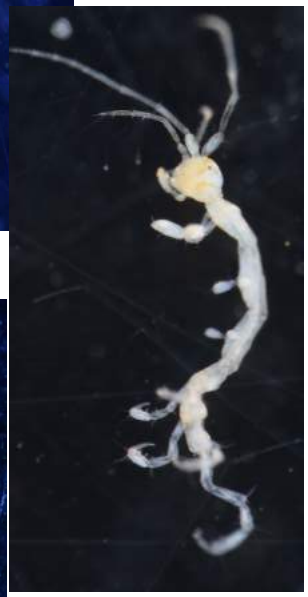
Michell (2011)

FIELD-WORK

RESULTS: VAGIL-FAUNA COMMUNITY COMPOSITION

OUT OF **2653** ORGANISMS

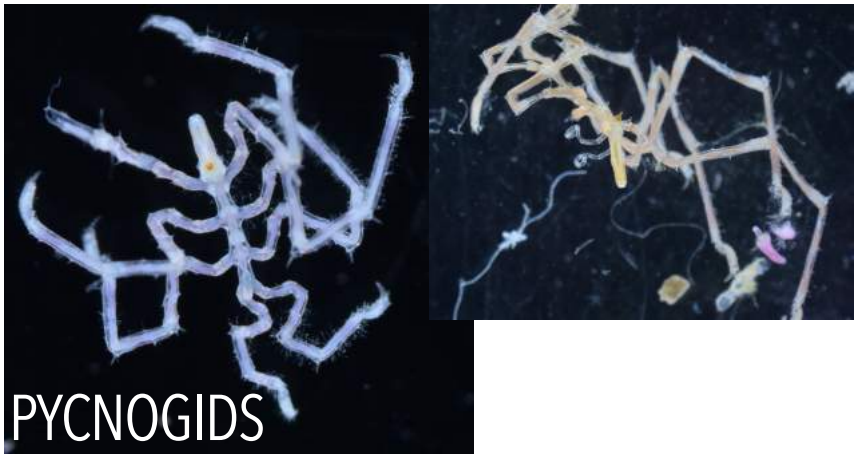
55 % AMPHIPODS
1546



30 % MYSIDS
830

<8 % DECAPODS
192

<4 % OTHERS
85


PYCNOGIDS

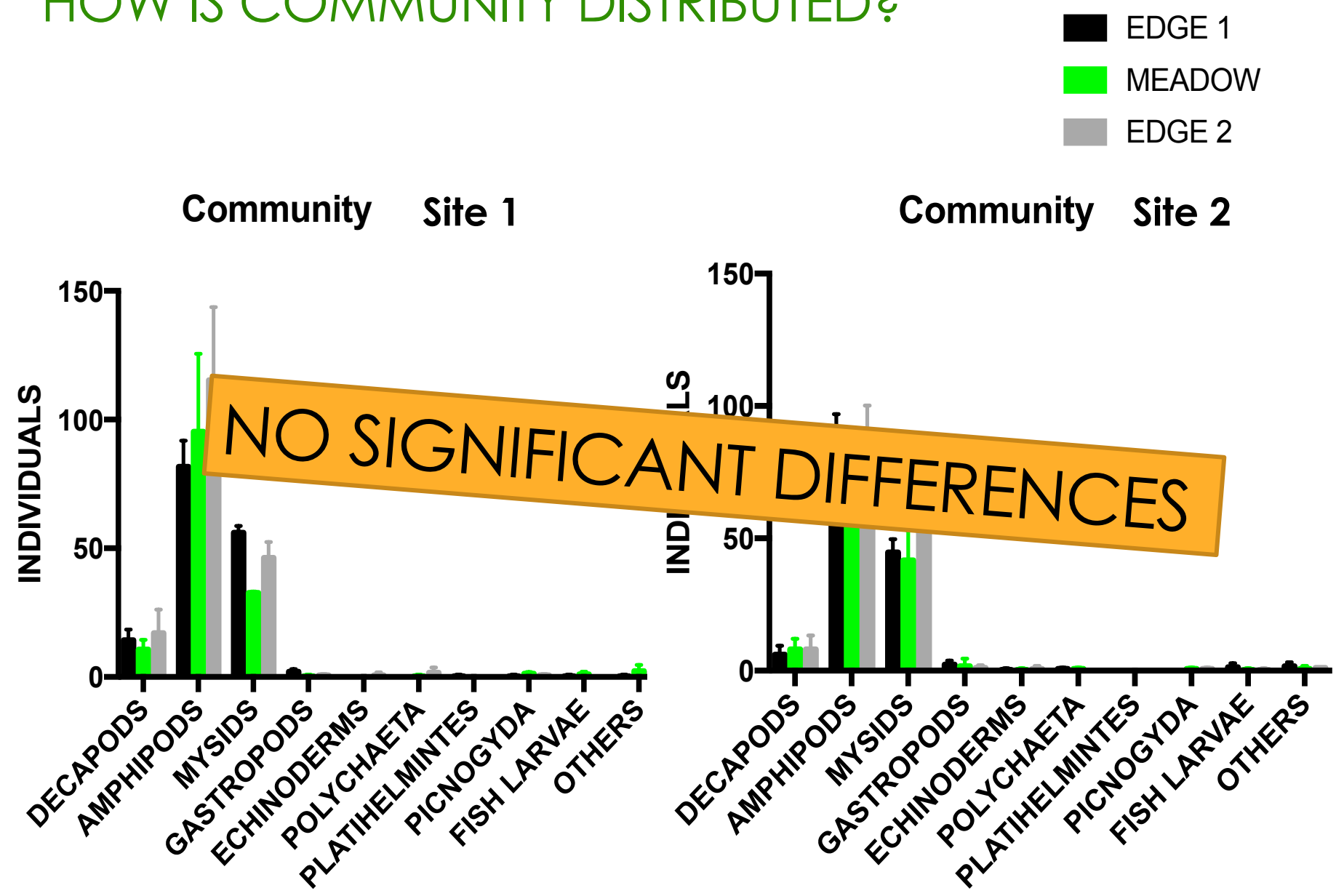

ECHINODERMS


GASTROPODS

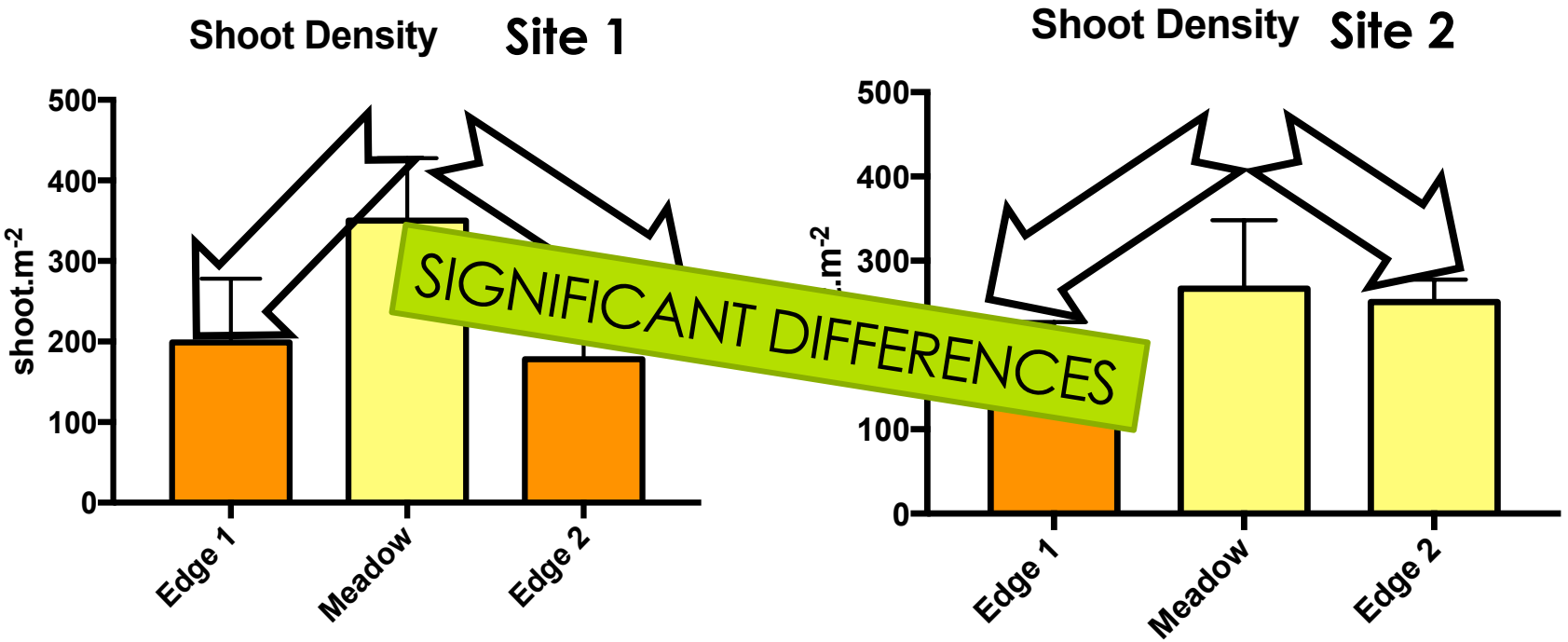

POLYCHAETA


FISH LARVAE

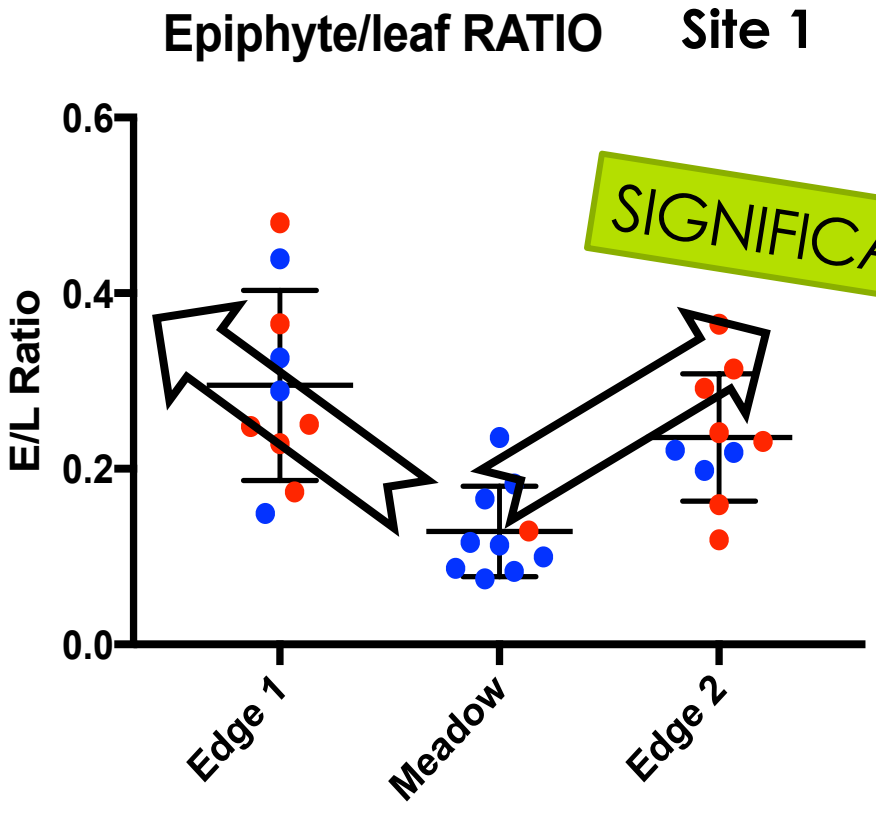
HOW IS COMMUNITY DISTRIBUTED?



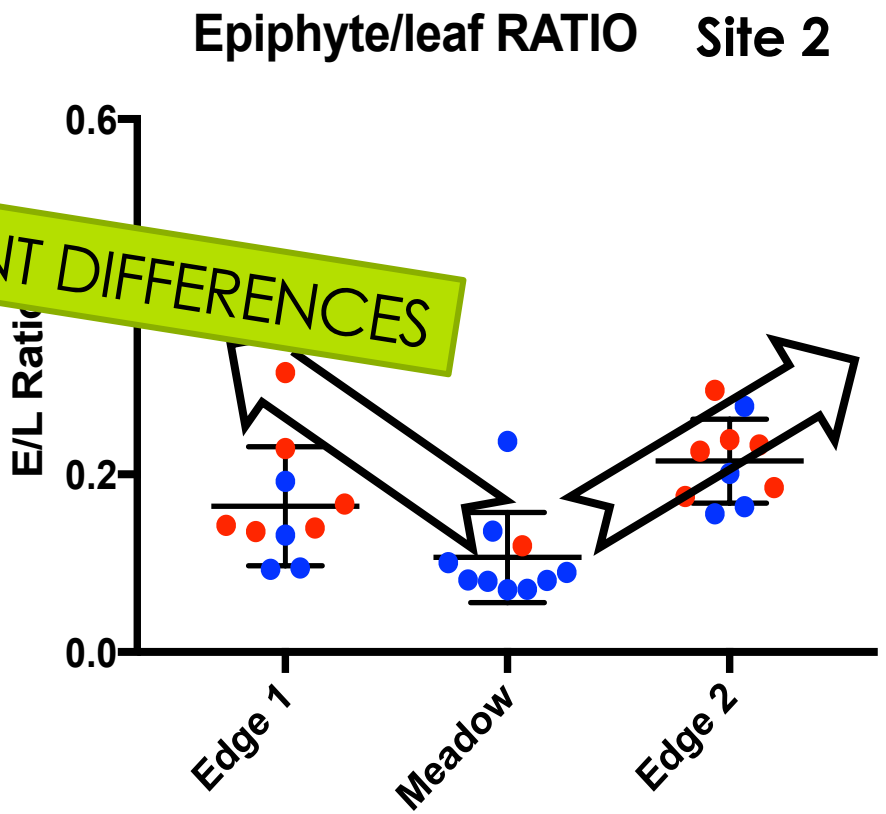
SEAGRASS STRUCTURE

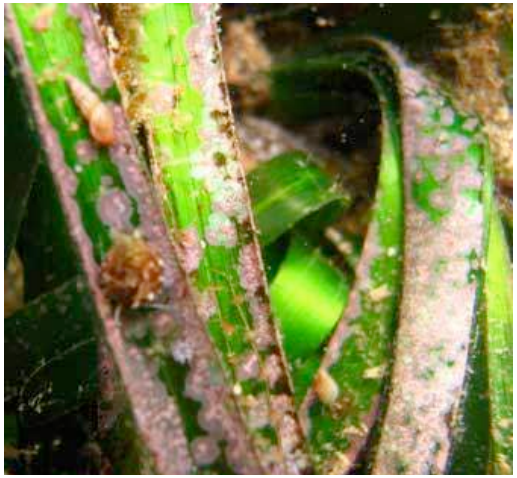


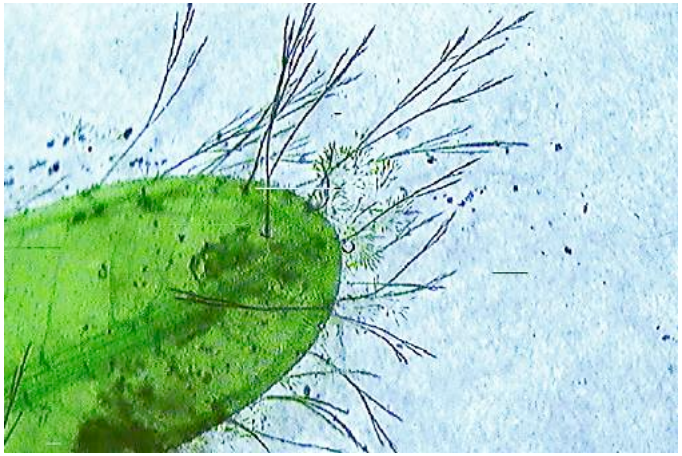
EPIPHYTES ABUNDANCE



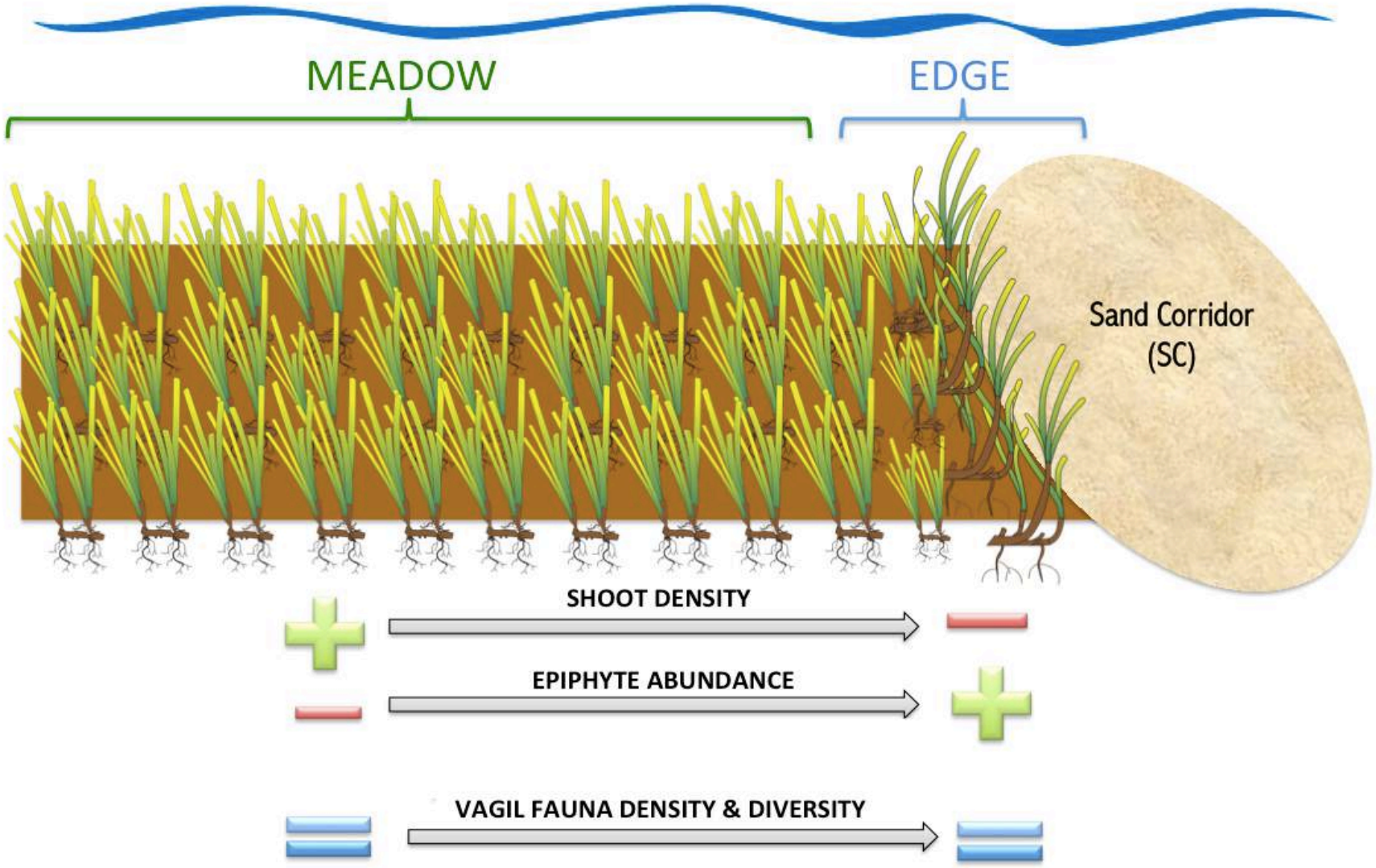
SIGNIFICANT DIFFERENCES





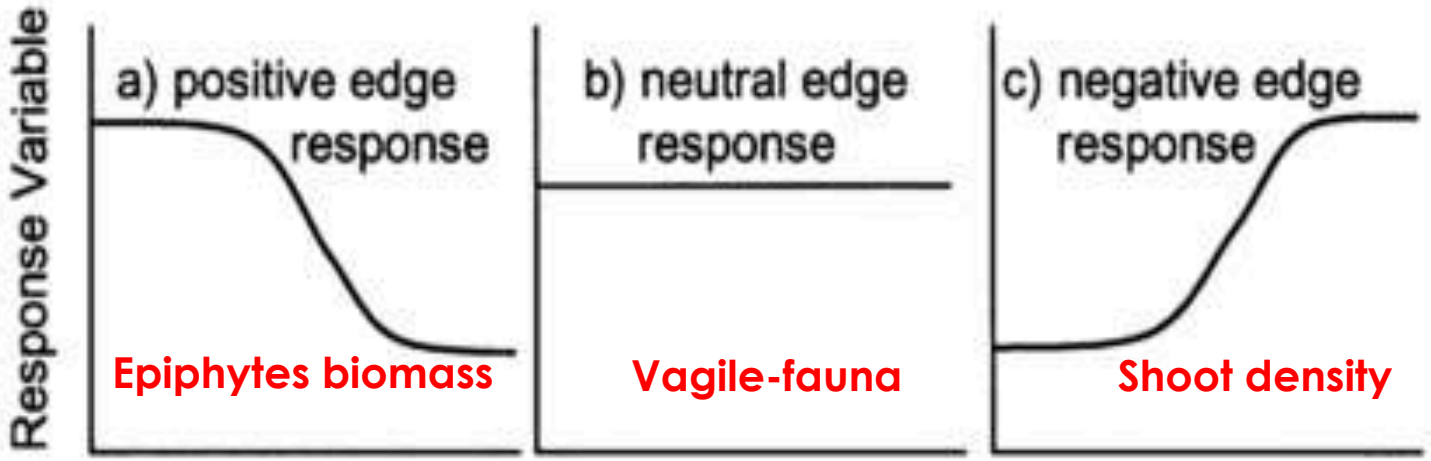


MAIN OUTCOMES

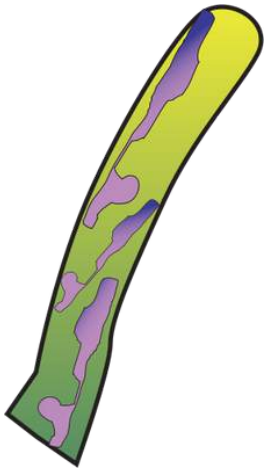


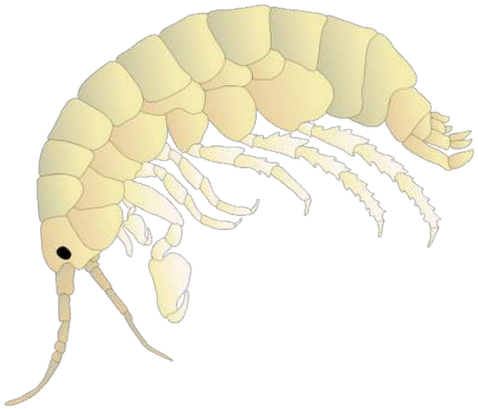
Changes in seagrass structure and epiphyte biomass.
However, no changes in vagile-invertebrates community structure.

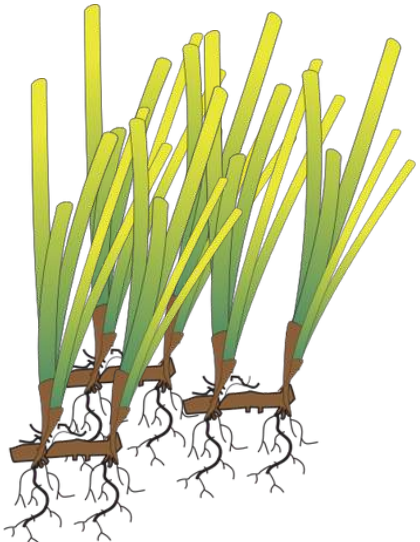
ECOLOGICAL RESPONSE TO HABITAT EDGES



Ries et al. (2004)







CONCLUSIONS

- ✓ **Edges differ from continuous meadow**
- ✓ Epiphytes increase?
  - ✓ **Exposed areas**, light penetration due to low shoot density
- ✓ Deeper vagile-fauna taxonomic studies needed.
- ✓ No differences between sites were detected.
  - ✓ The ecological distinctions of natural and anthropogenic fragmented meadow is far from being well understood.

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ALL MEASURED PARAMETERS