



atlas

UNDERSTANDING DEEP ATLANTIC ECOSYSTEMS



Feeding biology of habitat forming CWC: preferences and assimilation efficiencies of selected food sources

ATLAS General Assembly 2017

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Introduction

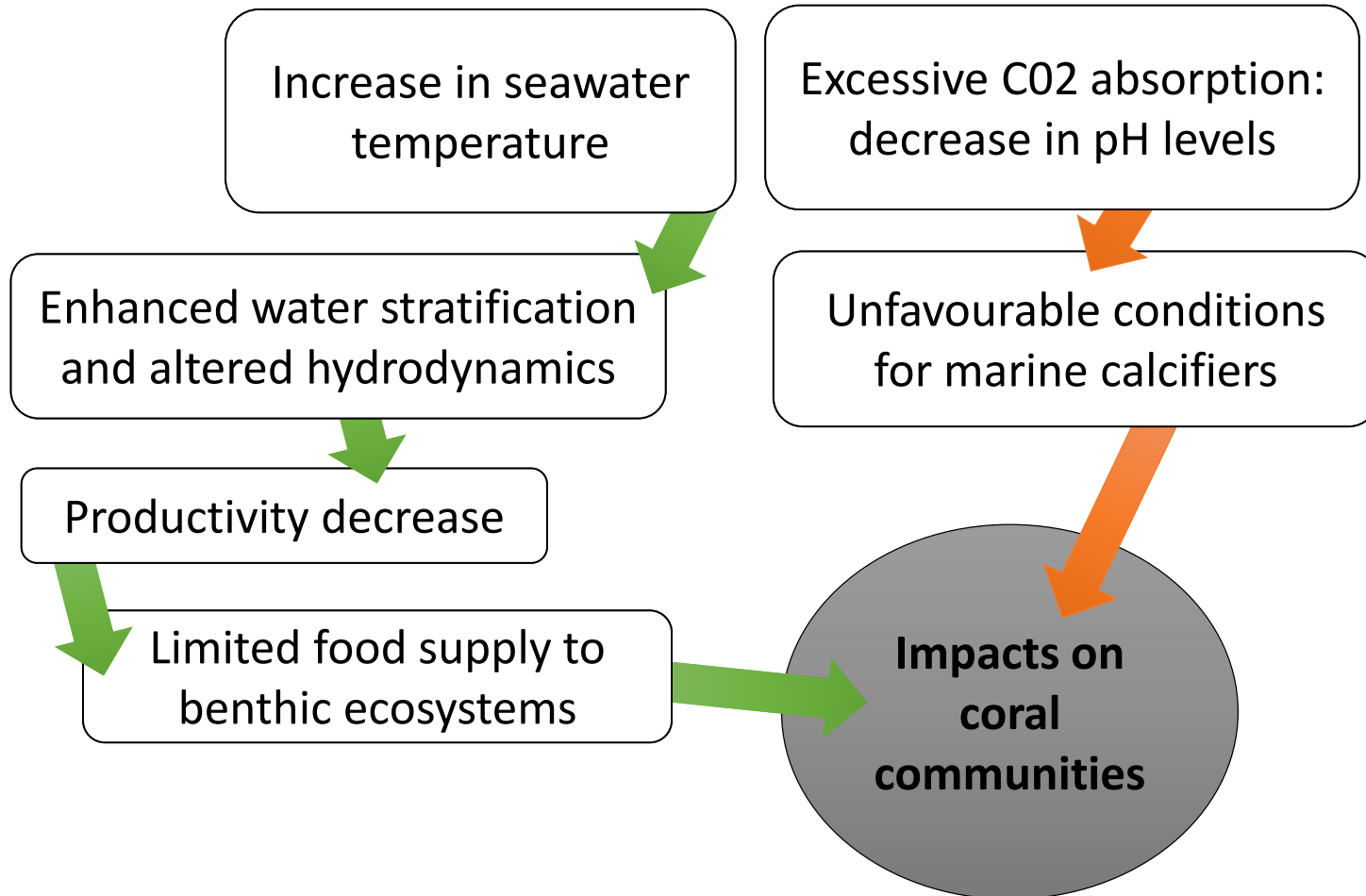
Cold water corals in a changing environment: Potential impacts of global climate change across coral life history stages

1. Study the feeding biology of selected CWC species
2. Perform a first description of early life history stages of selected CWC species
3. Assess the potential effects of ocean climate change (temperature, OA) on the physiology of different life history stages of selected CWC species



Introduction

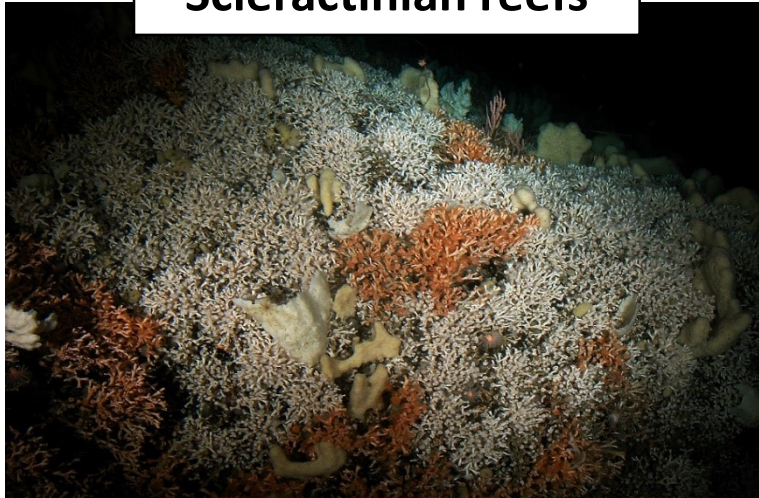
Climate change



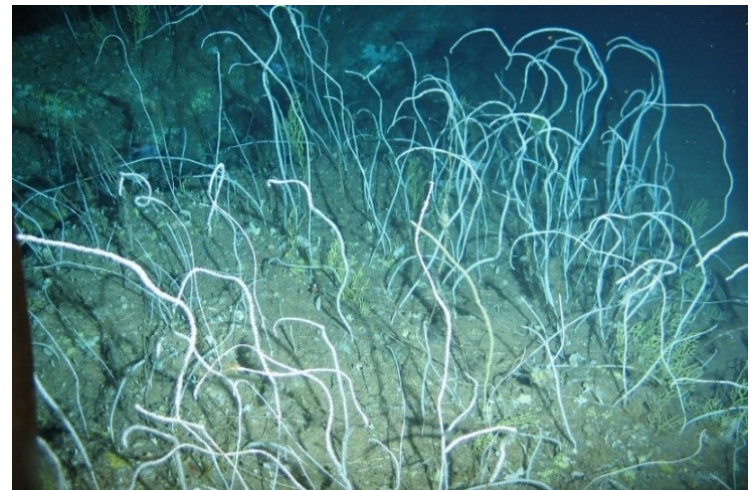
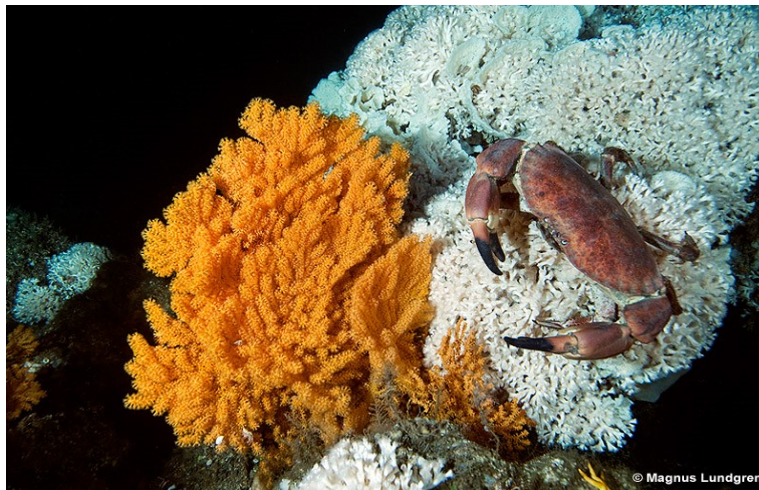
Introduction

Coral gardens

Scleractinian reefs



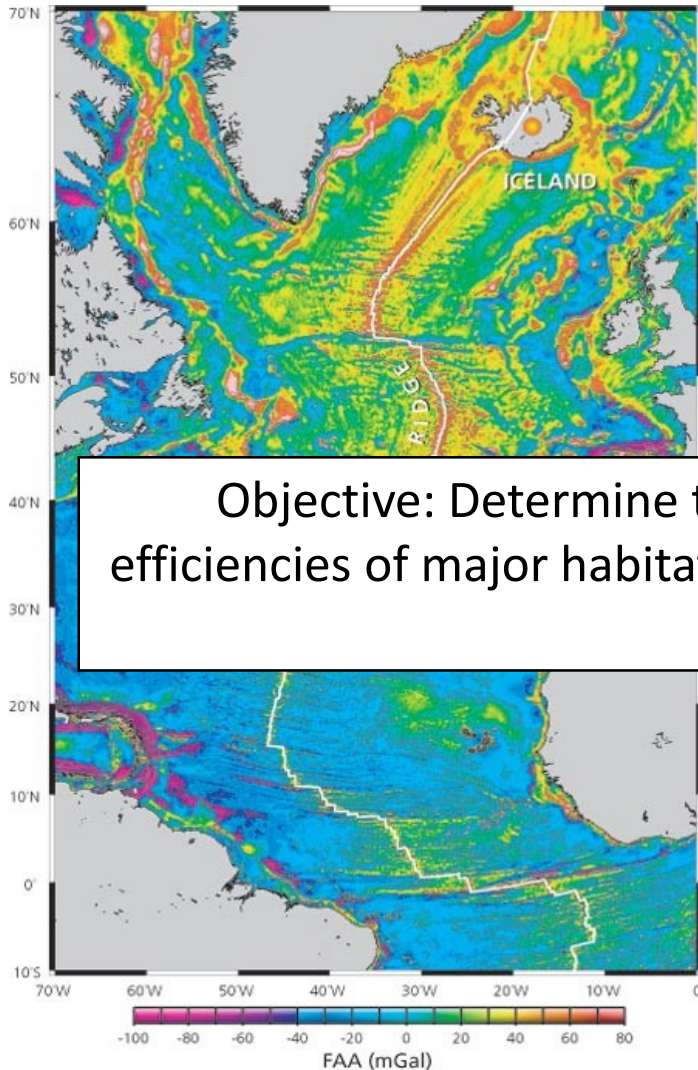
Coral Gardens





Introduction

Case study



Objective: Determine the feeding preferences and assimilation efficiencies of major habitat forming coral species upon various live food sources





Introduction

Target species

Dentomuricea aff. meteor

- Octocoral
- Common in the Azores Archipelago
- Forms coral gardens between 120-800 m
- Typically encountered in seamounts



Antipathella wollastoni

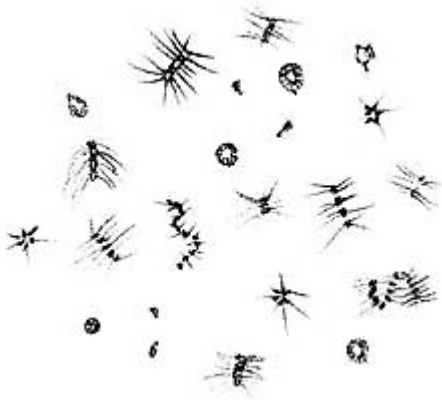
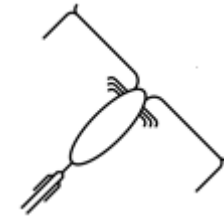
- Antipatharian
- Endemic in the Macaronesia
- Forms coral gardens between 20-1200m
- Typical habitat former in island slopes



Hypothesis: We expect to see differences in the capturing capacity, rates and assimilation efficiencies of the two species

Provide different sources of live food:

1. Phytoplankton source
2. Zooplankton source
3. Dissolved organic carbon
4. Control (starved)



Determine:

- Fatty acid composition
- Stable isotope incorporation
- Feeding behaviour

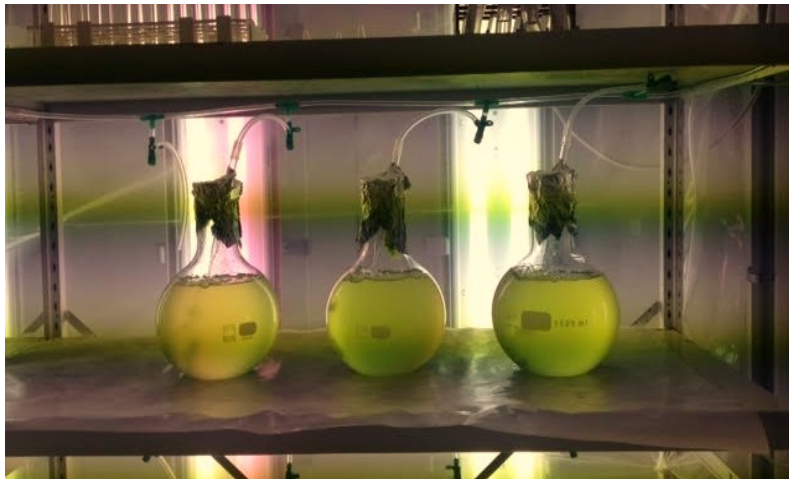
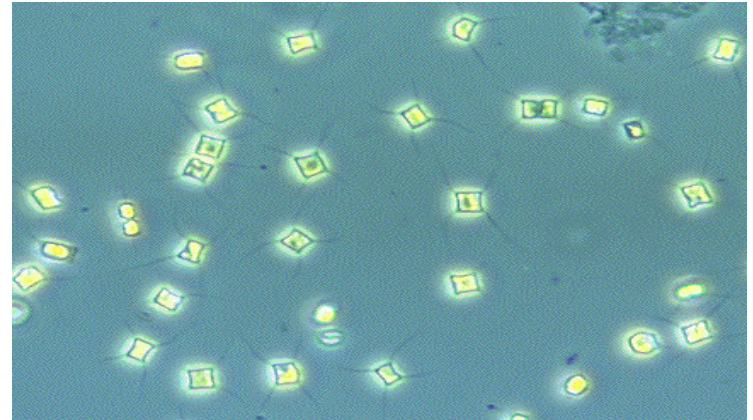


Introduction

Food sources

Phytoplankton source: *Chaetoceros* sp.

- Common diatom in the Azores
- Sizes: 10-15 μm
- Easy to culture





Introduction

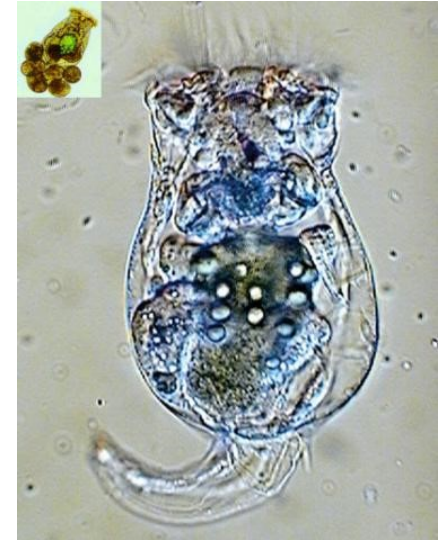
Food sources

Zooplankton source: Rotifers

- Small size
- Slow moving
- Can be cultured in high concentrations (~200 cells/ml)
- Non selective feeders-high metabolism
- Quite common in marine systems
- Easy to culture

Branchionus plicatilis: 130-340 μm

Branchionus rotundiformis: 100-210 μm



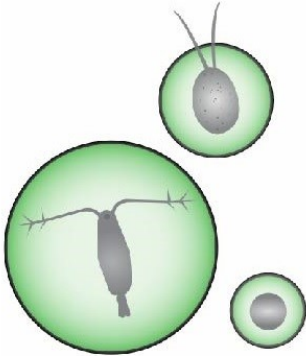
Introduction

Food sources

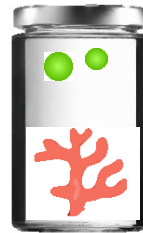


Planning and tasks

1 Culture and maintain food sources



2 Preliminary experiments



Are they suitable for the
species?
What are the required
concentrations?

3 Labelling trials





Preliminary experiments

Chaetoceros sp.

Experimental Design

Coral
Phytoplankton



Coral
Phytoplankton



Coral
Phytoplankton



4x 1 ml samples every hour
Observation with 5 mins
interval

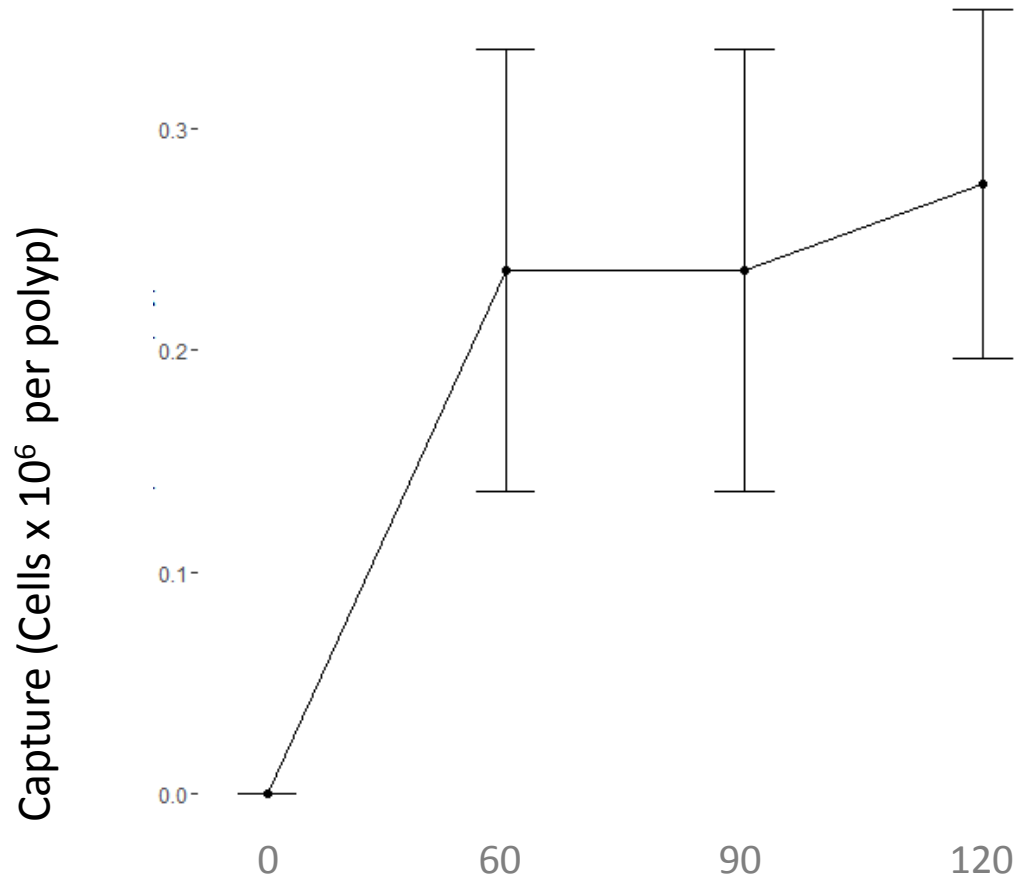
Observation with 5 mins
interval



Preliminary experiments

Chaetoceros sp.

Experimental Design



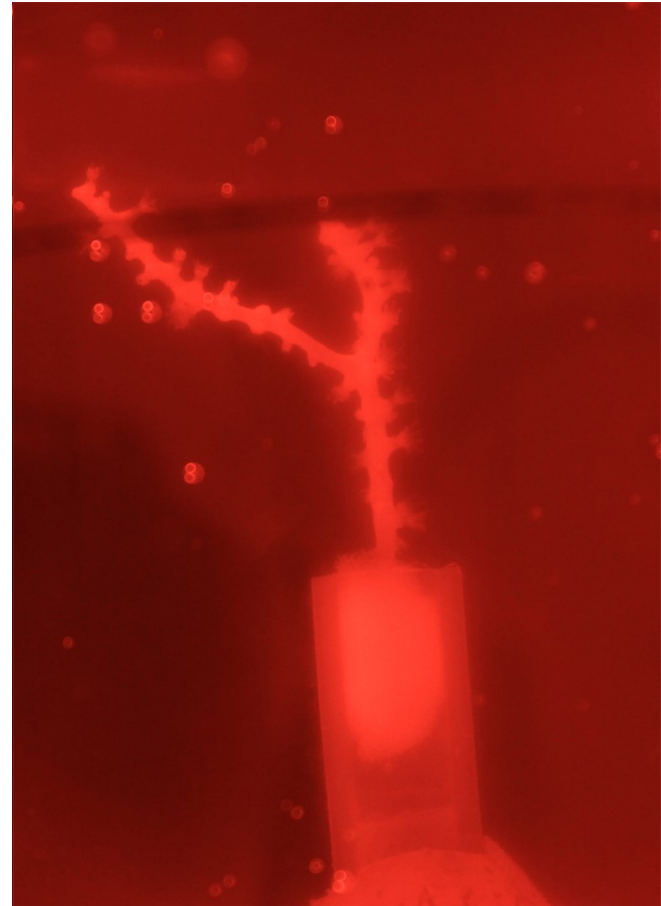


Preliminary experiments

Chaetoceros sp.



Control

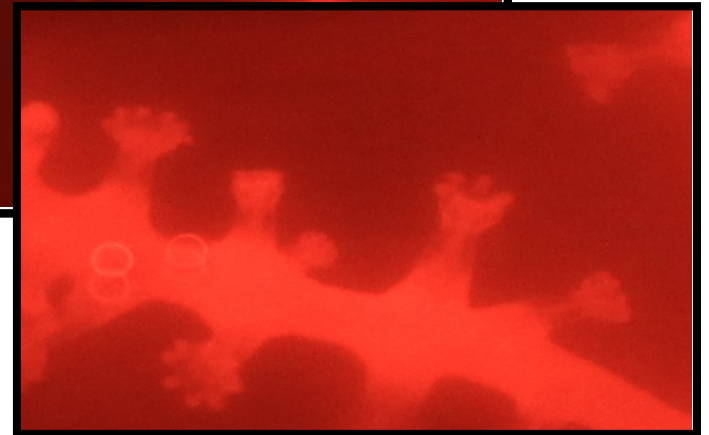
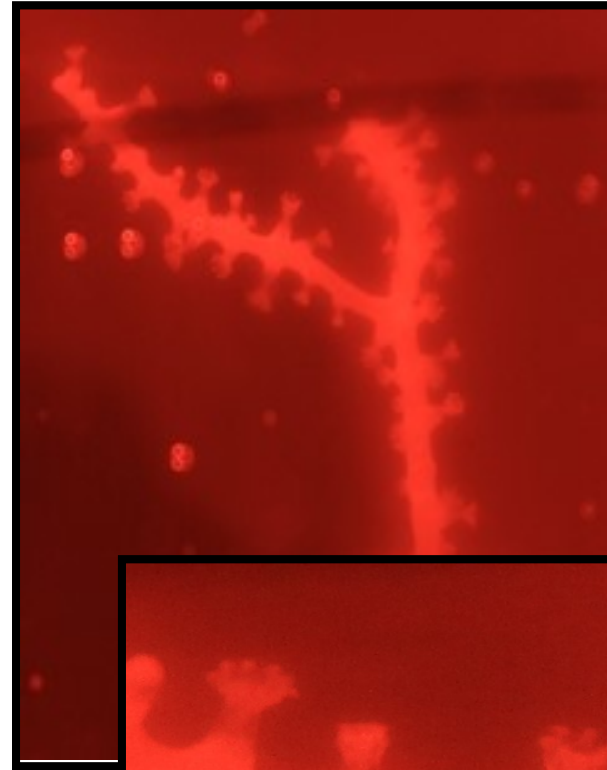
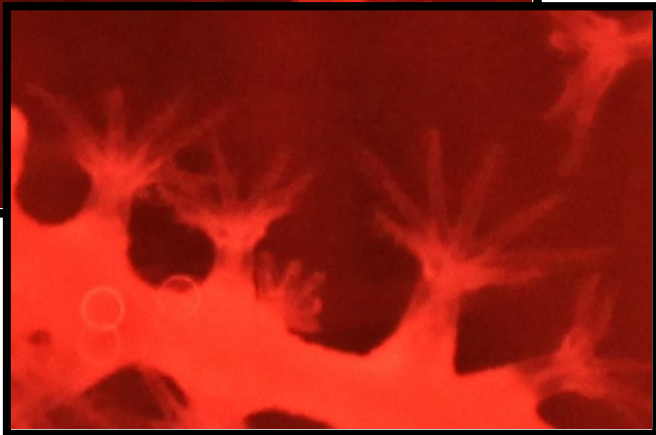
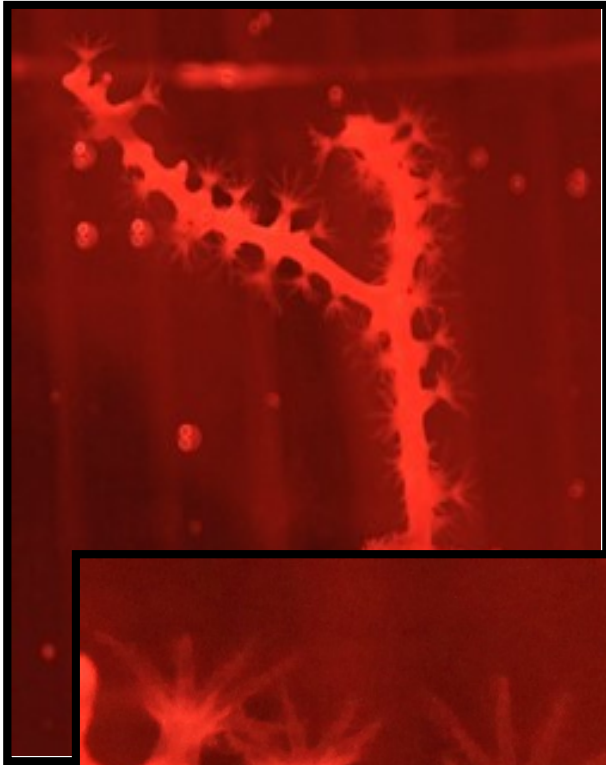


+ Phytoplankton



Preliminary experiments

Chaetoceros sp.





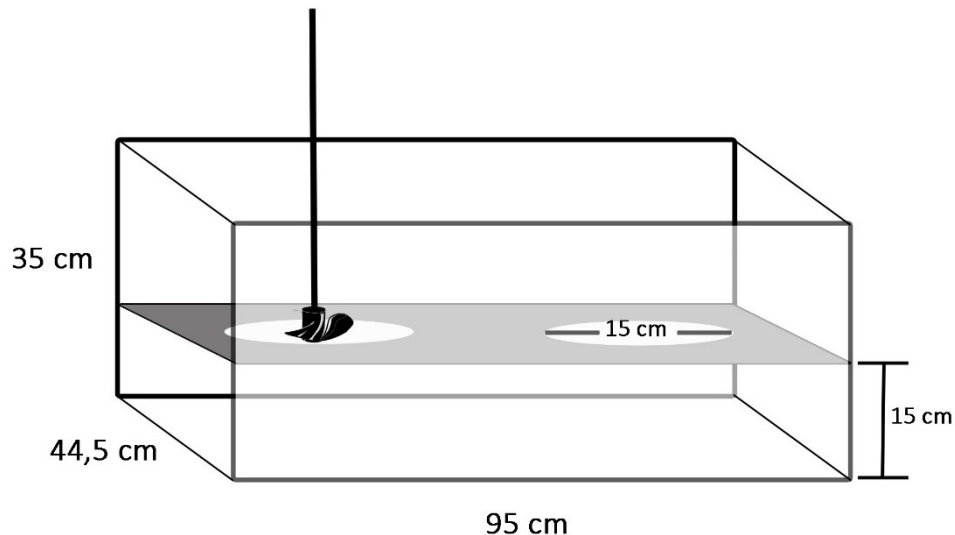
Future planning

Experimental unit

1. Tank building
2. Flow trials
3. Mortality of live food in tank

Optimizing methods

1. Respiration baseline studies
2. Labelling
3. Pilot experiment



Main experiments
August-October 2017

Thank You!



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