

# What is driving benthic biodiversity of Lancaster Sound Region ?

## Comparison of two sampling methods

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### INTRODUCTION

Which environmental factors structure biodiversity and explain its spatial variability?

The answer depends on **WHEN** and **WHERE** !  
**Arctic** → Short growing season, ice cover limits primary production.

These factors can vary depending on studied habitats...



### OBJECTIVES & HYPOTHESES

Identify environmental parameters which structure benthic biodiversity and which are common to different communities (infauna and epifauna) for a given ecosystem.

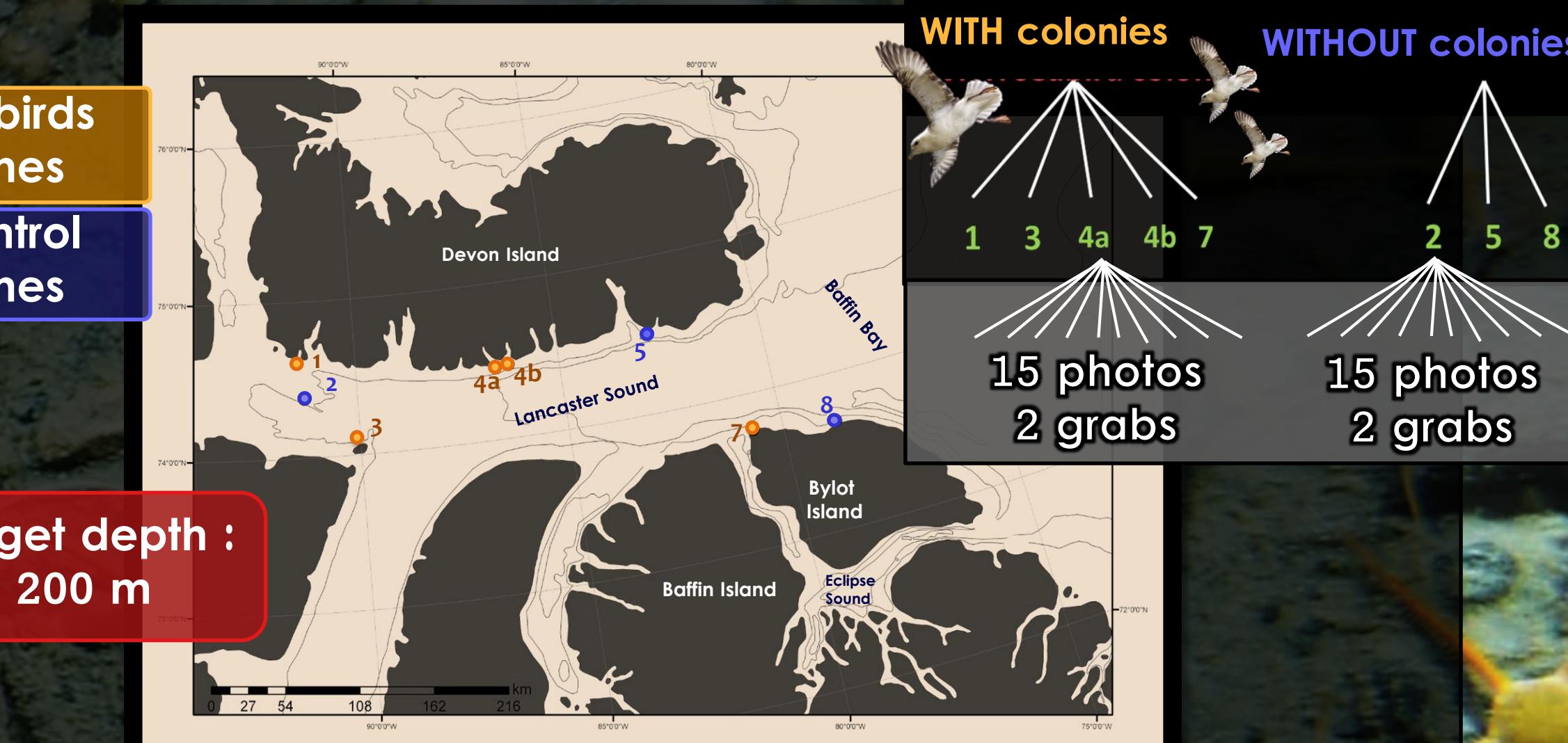


Because of local spatial scale, weak variations of depth and sediment type between studied zones, these factors weren't considered important at the beginning of this project :

Depth X Sediment type X Nutrients X

### MATERIALS & METHODS

Mission aboard CFAV Quest, august-september 2012



Target depth : 200 m

- Sampling on board:** benthos (grabs and pictures), sediment, seawater ( $\text{Chl}\alpha$  and nutrients filtrations).
- Laboratory work:** Sorting and taxonomical identification : biodiversity, abundances, biomasses. Sediment and nutrients analyses ( $\text{PO}_4^3-$ ,  $\text{Si(OH)}_4$ ,  $\text{NO}_3^-$ ,  $\text{NO}_2^-$ ,  $\text{NH}_4^+$ ). Visual estimates of proportions of different sediment size classes.

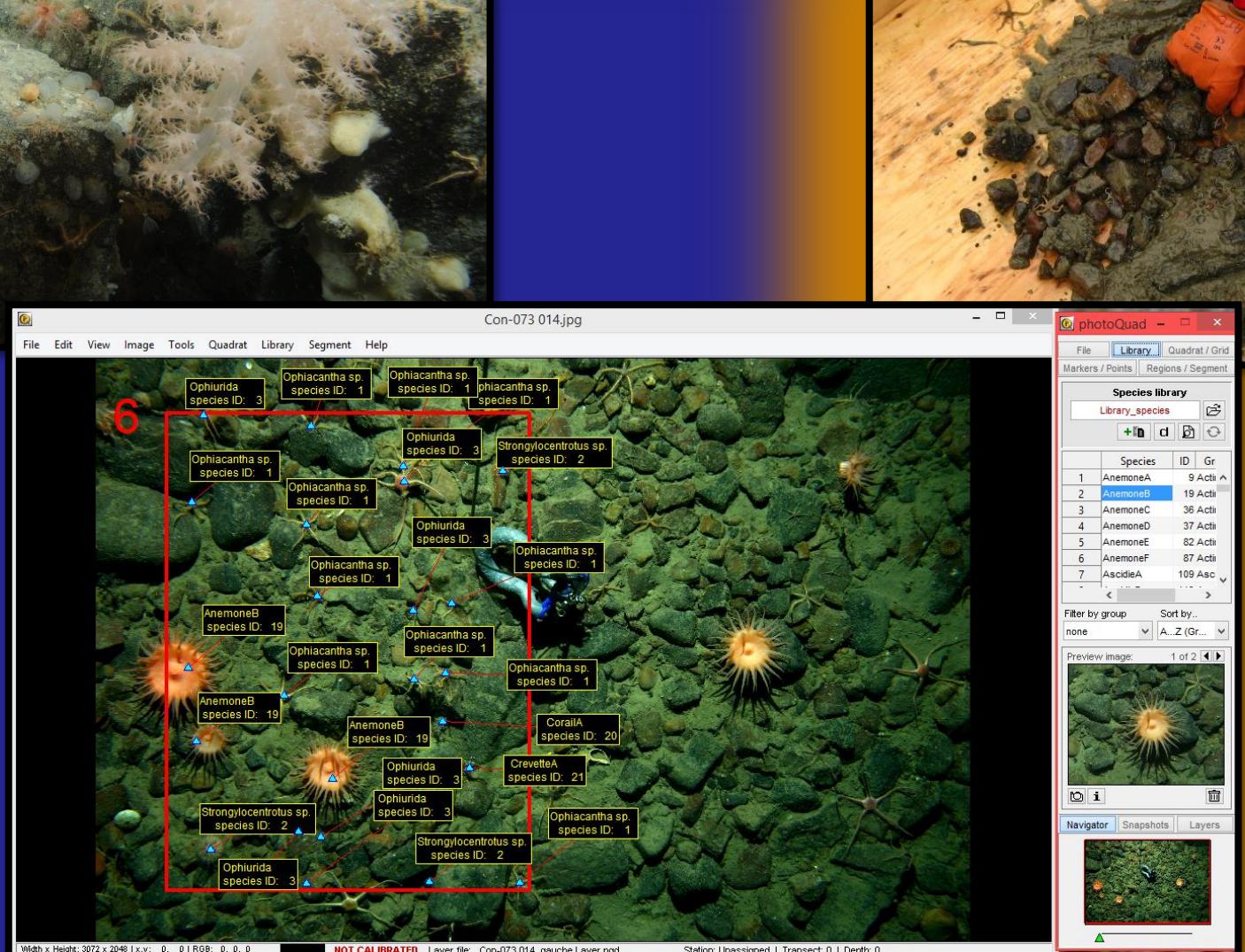
### CAMERA : EPIFAUNA



A<sub>1</sub>-No significant difference between seabirds colonies zones (▲) and control zones (△).

B<sub>1</sub>-Each zone is unique in terms of epifauna.  
(Figure B<sub>1</sub> not shown here)

### RESULTS & DISCUSSION

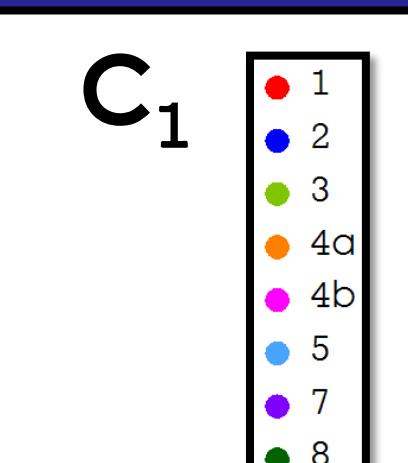


### GRAB : INFANIA



A<sub>2</sub>-No significant difference between seabirds colonies zones (▲) and control zones (△).

B<sub>2</sub>-All zones are similar in terms of infauna.  
(Figure B<sub>2</sub> not shown here)

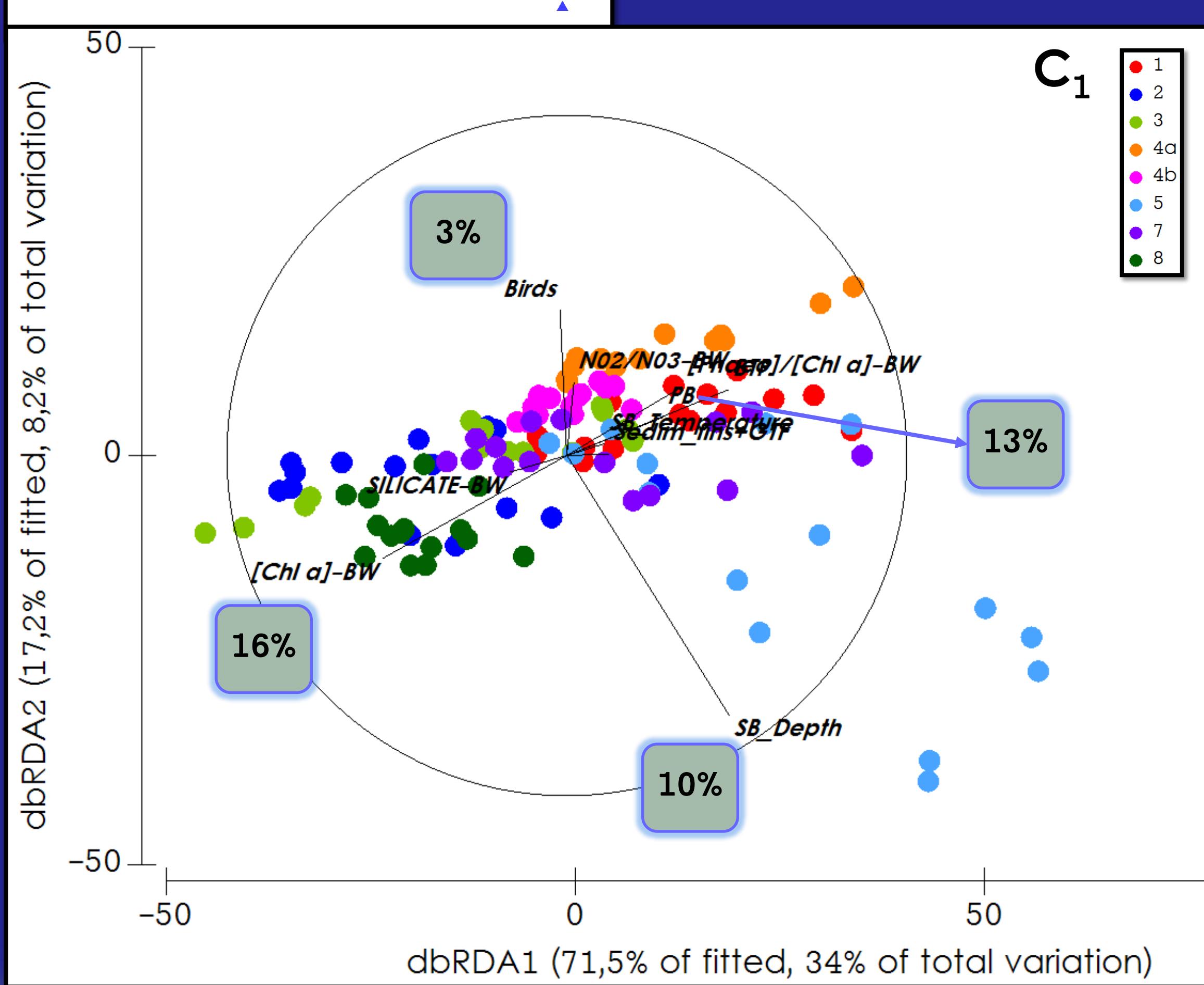


C<sub>1</sub>-Model explains 42.2% of the total variation within the data set coming from photo analyses.

#### Important factors :

1.  $[\text{Chl}\alpha]^*$
  2. % pebbles (64 to 256 mm)
  3. Depth
  4. Seabirds colonies importance index (Birds)
- \* From bottom water

- No important influence of seabirds colonies on benthic biodiversity, but these results show the importance of food resources !
- Results demonstrate the relevance of using two methods in parallel to study different biological compartments for a better characterization and understanding of benthic ecosystems.



C<sub>2</sub>-Model explain 55% of the total variation within the data set coming from grab samples.

#### Important factors :

1.  $[\text{NO}_2/\text{NO}_3]^*$
  2. % granules (4 to 8 mm)
  3.  $[\text{SiO}_4]^*$
  4.  $[\text{Phaeo}]/[\text{Chl}\alpha]^*$
- \* From bottom water

