EXPLORING A MEDITERRANEAN MESOZOOPLANKTON 13 YEAR TIME-SERIES

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Introduction

- Zooplankton:
  - is **abundant**, world-wide spread and highly diverse;
  - ensures **vital ecosystem roles** in food webs, organic carbon flux and microbial communities;
  - represents **bio-indicators** of climate change.
- **Long time series** are crucial to understand long-term changes of the ecosystem.
- This study was conducted in the framework of the **STARECAPMED** program.

Materials and Method

- Sampling was carried out in the Calvi Bay (Corsica, France), NW of the Mediterranean Sea (**Fig. 1**). Sub-surface samples were collected bimonthly from 2004 to 2016, using a WP2 net (200 µm) and preserved in formaldehyde.
- In addition, 10 variables (physical, biological and chemical) were registered.
- Zooplankton data were obtained through **digital imaging** and **automatic classification** (**Fig. 2**) using the **Zoo/PhytoImage software** and a **high resolution scanner** (**Fig. 3**).

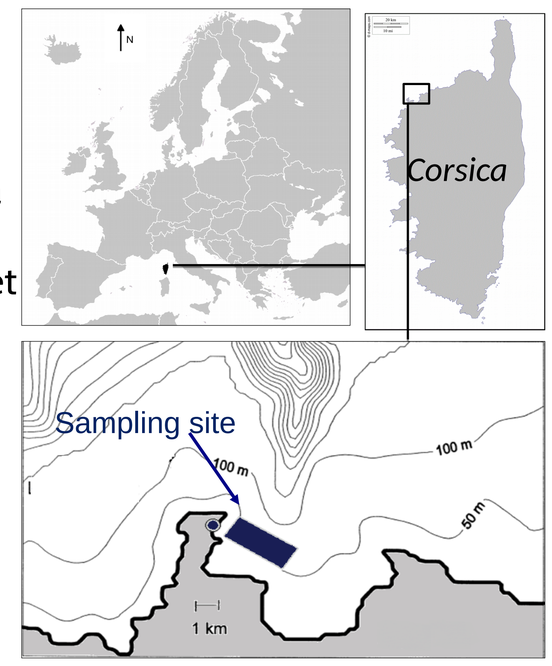

Fig. 1: Sampling area location

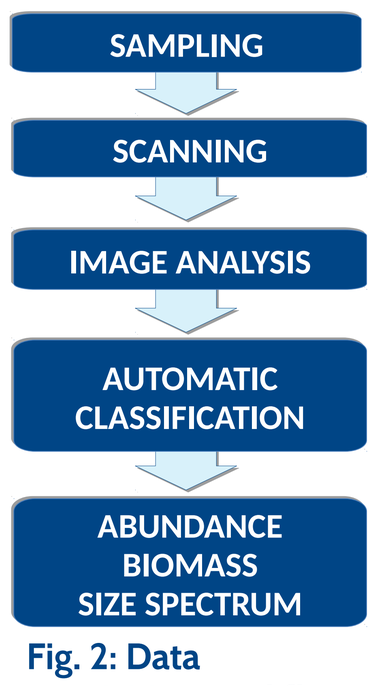

Fig. 2: Data acquisition workflow

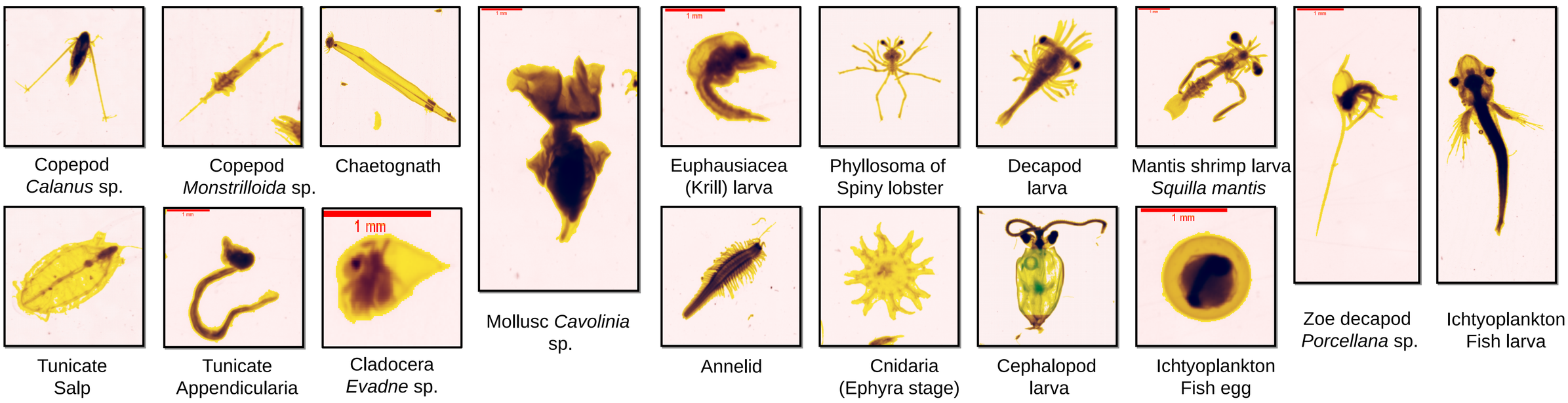

Fig. 3: Examples of acquired plankton images

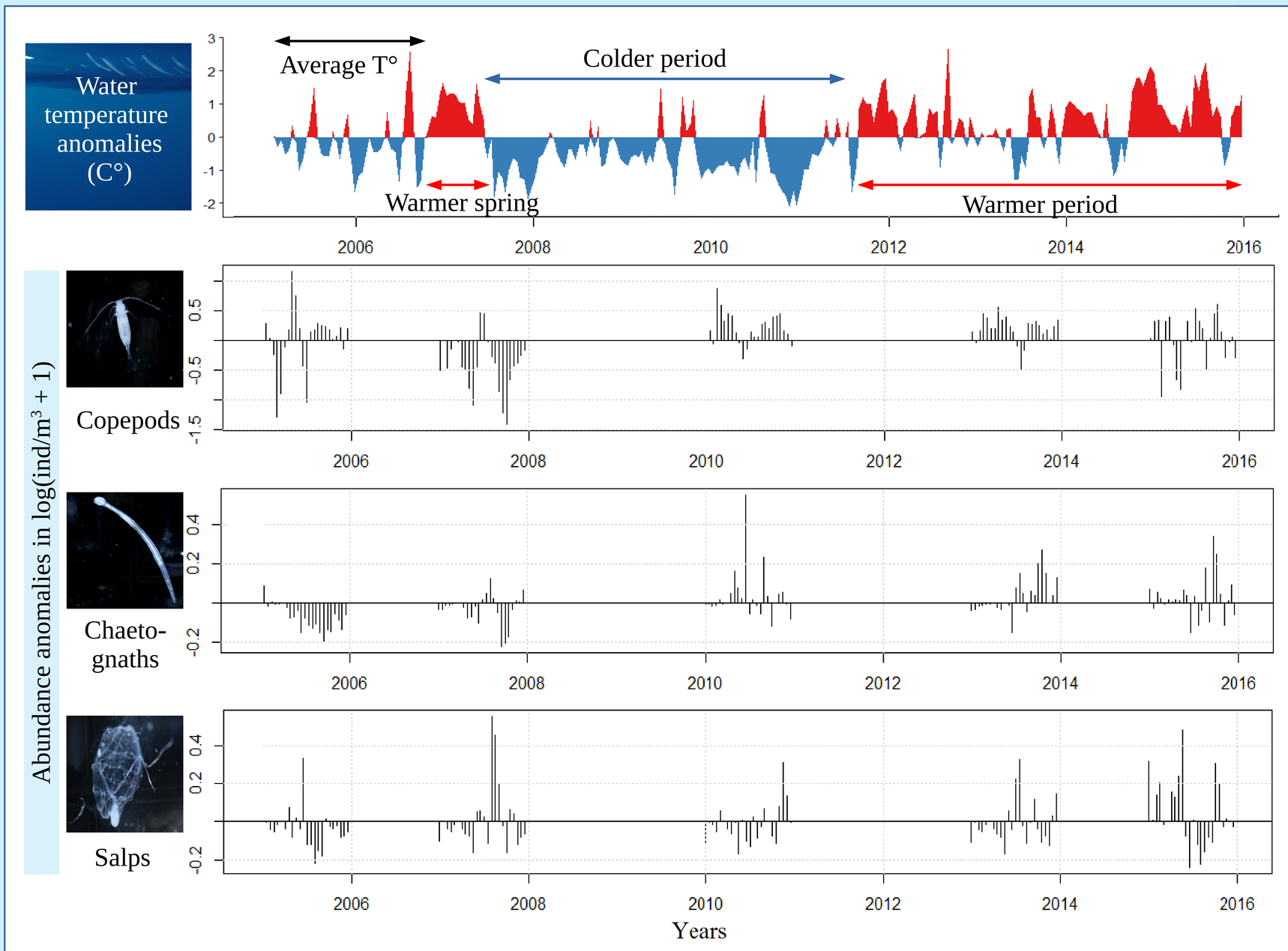

Fig. 4: Partial analysis of the plankton series (five years). Temporal evolution of water temperature and the abundance of a few taxonomical plankton groups. Interannual differences are already observable.

Preliminary results

- Strong interannual variations.
- Contrasting results regarding the relationship between water temperature and plankton abundances.
- Chaetognaths positive anomalies coincide with positive anomalies of copepods abundances.
- Salps show sporadic swarms and coincide with warmer water temperatures.

Perspectives

With the complete series (13 full years) we will be able to:

- identify **seasonal or annual patterns and trends** of the mesozooplankton community over the last 13 years,
- identify **correlations with environmental variables**,
- identify **interactions between plankton components** (cascade events),
- check whether the **size spectra is shifting with climate changes**.

Final results are still to come, we'll be back...