IMPACTS OF *MNEMIOPSIS LEIDYI* ON PHYTOPLANKTON COMMUNITIES IN A MEDITERRANEAN LAGOON: PRELIMINARY OBSERVATIONS.

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Abstract
Phytoplankton communities were studied in the Biguglia lagoon between May 2012 and March 2013. A massive invasion of *Mnemiopsis leidyi* occurred during the same period. We discuss the potential interactions between ctenophores and phytoplankton.

Keywords: Blooms, Chlorophyll-A, Ctenophora, Lagoons, Corsica Trough

Mnemiopsis leidyi (Agassiz, 1865; Ctenophora) is a species accidentally introduced in the Mediterranean Sea since 1990 [1]. It was found in a lagoon environment for the first time in 2005 (Berre lagoon, France; Bonnet, Com. Pers.). *M. leidyi* is not strictly carnivorous, but it may also eat the micro- and nanoplankton, which constitute important sources of nitrogen for its growth [2].

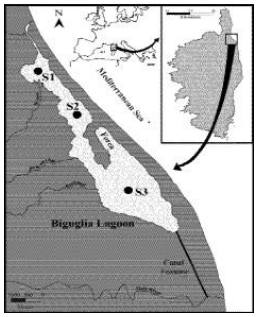

Fig. 1. Biguglia lagoon and sampling stations

M. leidyi appeared sporadically in August 2011 within Biguglia lagoon (Corsica, France,Fig.1). This brackish and shallow lagoon (average depth 1.5 m) is a confined ecosystem disturbed by a growing eutrophication since the eighties [3]. Phytoplankton communities were studied in three stations of the Biguglia lagoon between May 2012 and March 2013. A massive invasion of *Mnemiopsis leidyi* occurred during the same period. This study aims at pointing out the interactions between *M. leidyi* and phytoplankton communities. *M. leidyi* developed from August 2012 to February 2013 in the Biguglia lagoon with a maximum biomass in November 2012. During this period, salinity and temperature varied between 7-25 psu and 7-28°C, respectively. Subsurface Chl *a* concentrations measured with a FluoroProbe (BBE) ranged from 1.4 to 25.5 µg.L-1. Highest Chl *a* values were observed in November 2012 in all stations (Fig.2). Dinoflagellates were abundant all year round but a shift between Chlorophytes and Cryptophytes occurred in Oct-Nov. 2012 (Fig.2). Microscopic observations of phytoplankton communities revealed a codominance of *Gymnodinium sanguineum* and *Prorocentrum minimum* at that time. Both species are essential for the development of the larval stage of *M. leidyi* [4] and may have contributed to their expansion in the Biguglia lagoon in 2012.Conversely, this expansion also disturbed the phytoplankton communities'structure. In particular, the classical pico-nanoplankton summer bloom [4] has not been observed, in phase with literature indications [5]. However, there was an increase in biomass at each station (Oct-Nov.). Documenting key processes that influence ctenophore survival during early developmental stages may provide relevant insights to better understand the initiation and maintenance conditions of the *M. leidyi* adults' blooms commonly observed in coastal waters [4].

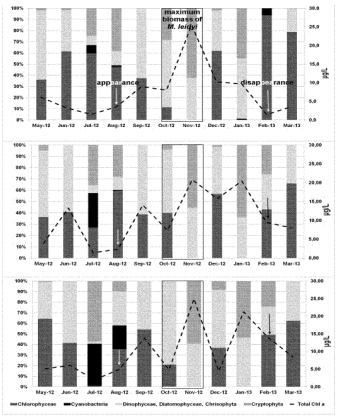

Fig. 2. Monthly fluctuations of the main phytoplankton groups and Chl. *a* with BBE FluoroProbefor each station.

In particular, it is important to improve our knowledge on the different growth stages of *M. leidyi*, their sizes and trophic behaviors. In the Biguglia lagoon and elsewhere, the study of this invasive species becomes essential to better understand the impacts of *M. leidyi* blooms on phytoplankton communities.

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