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Data Article

Dataset of seasonal mean volumes of phytoplankton cell size classes in Mediterranean shallow coastal lagoons

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ABSTRACT

In this article, the floristic lists and the seasonal mean cell volumes of phytoplankton taxa observed in three Mediterranean lagoons are reported. These datasets include 40 species, 67 other taxa identified at least at genus level, and further 13 taxa attributed only at order or class level. These data are associated with Pulina et al. "Seasonal variations of phytoplankton size structure in relation to environmental variables in three Mediterranean shallow coastal lagoons" (Pulina et al., 2018) [1], where phytoplankton taxa were included in two different cell size classes (Utermöhl fraction of phytoplankton, cell size $> 3\,\mu m$; Picophytoplankton, cell size $< 3\,\mu m$) and in which their seasonal variations were interpreted and discussed.
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Specifications Table

Subject area	Biology
More specific subject area	Phytoplankton ecology
Type of data	Tables, text file

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How data was acquired	Inverted microscope (Zeiss, Axiovert 25), epifluorescence microscope (Zeiss, Axiovert 100)
Data format	Analyzed
Experimental factors	Water samples were collected and immediately fixed in 2% acid Lugol's solution and in 2% formaldehyde for microscopic analyses
Experimental features	Phytoplankton cells were identified at microscope and measured with a manual micrometer. Cell volumes were calculated approximating the shape of each taxon to known solids or to solid compositions and applying the corresponding calculation formula
Data source location	University of Sassari, Sassari, Italy
Data accessibility	Data is with this article
Related research article	S. Pulina, C.T. Satta, B.M. Padedda, N. Sechi, A. Lugliè, Seasonal variations of phytoplankton size structure in relation to environmental variables in three Mediterranean shallow coastal lagoons, Estuar Coast Shelf Sci [1].

Value of the data

- Seasonal mean volumes of taxa from two different phytoplankton size classes were shown for the first time for Mediterranean transitional ecosystems.
- Floristic lists reported improve the overview on phytoplankton biodiversity in transitional ecosystems worldwide.
- The data presented can be compared to those of other transitional ecosystems worldwide for further insights on effects of seasonal environmental variations on phytoplankton size structure.

1. Data

In this paper, we report phytoplankton floristic lists and mean cell volumes from three shallow costal lagoons located in north west Mediterranean Sea: Calich (CA), Santa Giusta (SG) and Corru S'Ittiri (CI) lagoons (Sardinia, Italy) [2] (Tables 1–3). These datasets include information on 40 species (10 species in CA, 19 in SG and 23 in CI), 67 taxa identified at least at genus level (25 genera in CA, 30 in SG and 35 in CI), and further 13 taxa attributed only at order or class level (6 taxa in CA, 9 in SG and 7 in CI). These data are associated with Pulina et al. "Seasonal variations of phytoplankton size structure in relation to environmental variables in three Mediterranean shallow coastal lagoons" [1]. Two cell size classes were considered, Utermöhl fraction of phytoplankton (UFP, cell size $> 3\,\mu m$) and picophytoplankton (Pico, cell size $< 3\,\mu m$). For each site, seasonal mean cell volume of every taxon observed was reported to show seasonal variation in values. The means were accompanied by standard deviations of different sampling stations in each lagoon and different months in each season.

2. Experimental design, materials and methods

Monthly samplings were performed from May 2011 to April 2012 in the three lagoons. Water was collected from superficial layers ($-$ 0.20 m) in different sampling stations (3 in CA and CI, 5 in SG) located following the salinity gradient in each site. Part of samples was immediately fixed with a 2% acid Lugol's solution for UFP analyses, and with 2% formaldehyde for Pico analyses.

Lugol fixed samples were prepared according to Utermöhl tecnique [3] and were observed with an inverted microscope (Zeiss, Axiovert 25), using 100X and 200X of magnifications for the smaller UFP species, and 400X for the larger ones. UFP species were identified observing both fresh and fixed samples, following the taxonomic guides listed in Ref. [4]. Flagellate and not flagellate cells from 5 to

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