

## DIATOM ASSEMBLAGES IN THE SPRINGS OF THE MARITIME ALPS NATURAL PARK (NW ITALY)

Maurizio Battezzore<sup>1</sup> & Luca Giraudo<sup>2</sup>

<sup>1</sup>Agenzia Regionale per la Protezione Ambientale del Piemonte (ARPA), Dipartimento di Cuneo

<sup>2</sup>Parco Naturale delle Alpi Marittime

In 2008-2010, the diatom communities of 60 springs of the Maritime Alps Natural Park, in the Piemonte Region (NW Italy) were studied. The area with an extension of over 28,000 ha is situated in the upper part of the basin of the R.Gesso and borders with the French Mercantour national Park. The study was coordinated by ARPA with the collaboration and financial support of the Maritime Alps Natural Park. Single springs, situated between 1000 and 2400 m a.s.l., occur in areas characterized by different geological substrates. This area is important for biodiversity, due to its particular position (in the Alps but close to the Mediterranean Sea). Springs are vulnerable habitats and also islands of biodiversity from which the colonization of the surrounding territory occurs. Diatoms are an often underestimated component of biodiversity and of the ecological functions of aquatic environments.

Diatom samples were taken once in each spring, following standard procedures. Over 24,000 individuals (about 400 for each sample) were taxonomically identified in the 60 springs. All samples yielded a list of 226 taxa while single spring maximum richness was 52 taxa.

Considering all 60 springs, the most abundant taxa were *Achnantheidium minutissimum* (36.8% of identified individuals), *Diatoma mesodon* (17.3%), *Planothidium lanceolatum* (5.0%), *Fragilaria arcus* (4.0%), *Achnanthes linearis* (3.5%), *Encyonema minutum* (3.1%), *Denticula tenuis* (1.5%), *Encyonema silesiacum* (1.4%), *Cocconeis placentula* var. *lineata* (1.3%), *Achnantheidium pyrenaicum* (1.0%) and *Cocconeis pseudolineata* (1.0%).

The most frequently occurring species (regardless of abundance) were *A.minutissimum* (57 samples), *D.mesodon* (53), *A.linearis* (50), *E.minutum* (44), *E.silesiacum* (34), *P.lanceolatum* (33) and *Amphora pediculus* (25).

Several taxa sampled in this study are considered to be rare or were found for the first time in the area. Moreover, a characteristic morphotype perhaps of *Diatoma hyemalis* or *D. mesodon* (but morphologically distinguishable from the typical forms of both species) was present in several springs.

The taxa found in this study were included in the database of the ATBI (All Taxa Biodiversity Inventories) promoted by the European Distributed Institute of Taxonomy (EDIT) in the Alpi Marittime and Mercantour nature reserves.

A number of diatom water quality and trophic indices were calculated for all samples.

This study supplied a preliminary inventory of the diatom taxa of the area's springs. Further investigations on diatoms, other taxonomic groups and water chemistry and hydrology of the springs are needed in order to improve the conservation and management of these habitats, which are sentinels of environmental change.