
LAKE ALIMINI GRANDE - ITALY

Basset, A., Sangiorgio, F., Vadrucchi, M.R., Fiocca, A. and Pinna, M.
*Dipartimento di Scienze e Tecnologie Biologiche e Ambientali,
Università degli Studi di Lecce 73100 Lecce, Italy*

Lake *Alimini Grande* is a salt-marsh ecosystem on the Adriatic coast of southern Italy (40.19°-40.22°N, 18.44°-18.46°E). Lake *Alimini Grande* has a surface area of 1.37km², a sinuosity index of 2.29, an average depth of 1.5m and a volume of 2.1x10⁶m³. It has an irregular shape (major axes:2.86km, minor axes:1.54km) and it is affected by dominant winds of the area along its major axes. It is connected with the sea through its mouth (length: 100m, width: 15m) and with a freshwater lake, *Alimini Piccolo*, through a natural canal 1.5km long, called the “*Strittu*”. The lake receives freshwater inputs from the Lake *Alimini Piccolo* in the South, from the *Zuddeo* Canal in the North-West and from the *Traugnano* Swamp in the North. The freshwater fluxes vary seasonally since in the Apulian region the climate is very hot and dry during summer (Fig. 1).



Figure 1: Image from above of Lakes Alimini. On the right is Adriatic Sea (SIT – Provincia di Lecce).

Lake *Alimini Grande* was originated as a marine gulf in Quaternary age, subsequently closed by sand sedimentation. It seems that at the end of Pliocene age the extension of this lake and of its mouth was larger than actually. The lake mouth was probably 250 meters wide in the XV century

and it was 150 meters wide at the end of XIX century. The measurements of mouth width are allowed by the discovery in late XIX century of temporary wood dams remains that were originally used to favour sand deposition during the fall season in order to close the lake mouth until the next spring and improving fisheries in the lake; *i.e.* the so called “*vallicoltura*”.

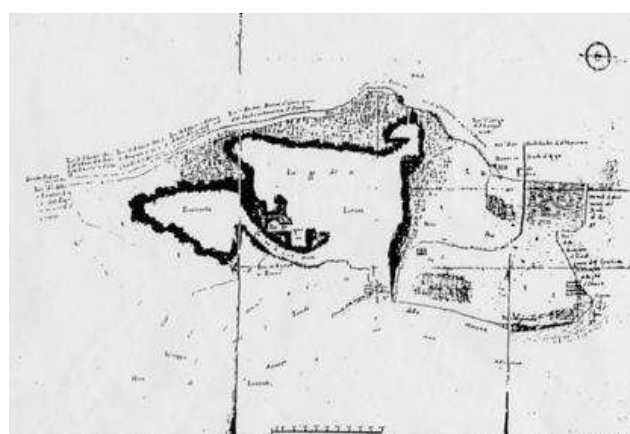


Figure 2: Historical map of Lakes Alimini (1785-1809).

Primary producers in Lake *Alimini Grande* are restricted to phytoplankton and littoral macrophyte guilds (submerged macrophytes occur at a very low density and only locally). The dominant phytoplanktonic species is a diatom belonging to *Thalassiosira* genus (Fig.3). Globally, diatoms are present during all year and their contribution, in term of relative abundance, increases above all in the winter period.

The littoral macrophyte guilds are dominated by the reed *Phragmites australis* (Cav.)Trin. ex Steud. (Fig. 4). Lake *Alimini Grande* is used for traditional fishery of species with high commercial value as *Sparus aurata* (L.), *Anguilla anguilla* (L.); moreover it has an importance as natural reserve because it lies along one of the main migratory routes of many birds. Detailed information on Lake Alimini Grande ecology are available at the site <http://www.ecomuseoalimini.unile.it>



Figure 3: *Thalassiosira* sp. (Diatoms) and other relevant phytoplanktonic taxa in Lake Alimini Grande.



Figure 4: *Phragmites australis* (Cav) Trin ex Steud. along the shores of Alimini Lakes.

LaguNet (<http://www.dsa.unipr.it/lagunet/>) is a scientific observational network studying the fluxes of nutrients and other contaminants from lagoon catchments to the near coastal environment. The objectives of LaguNet are to support and encourage co-operation of research groups studying lagoons, wetlands and saltmarsh systems situated along the Italian coast and to evaluate the application of the LOICZ (Land Ocean Interactions in Coastal Zones, a core project of IGBP) biogeochemical flux model and typology classification to such sites.

The methodology has been applied by LOICZ to approximately 170 coastal environments worldwide; it is based on a mass balance approach

and provides important information on the flux of nutrients and ecosystem functions; the approach used is applicable to a majority of coastal ecosystems with data that are normally available from conventional monitoring campaigns. In this way it is possible to compare and to group aquatic systems having different characteristics based on properties related to biogeochemical cycles and to the ecosystem functions that result from these processes.



Figure 5: LaguNet sites around the Italian peninsular.

On the basis of this experience and considering the paucity of LOICZ sites in the Mediterranean and Southern Europe it was decided to apply this methodology to a series of Italian coastal environments where sufficient data are available (Fig. 5).

Contact Person

Alberto Basset
Scienze e Tecnologie Biologiche ed Ambientali - Lecce
SP Lecce-Monteroni
73100 Lecce - Italy
E-mail: alberto.basset@unile.it

References

- De Giorgi, C. 1895 Il lago Alimini in Terra d'Otranto. *Estratto dalla Rivista Geografica Italiana*. Anno II Fascicolo VIII-IX Firenze
- Basset, A., Sangiorgio, F., Vadrucci, M.R., Fiocca, A. 1998 Progetto "Master Plan"- Laghi Alimini (Otranto). *Protocollo d'intesa Provincia di Lecce-Università degli Studi di Lecce*
- Basset, A., Pinna, M., Sangiorgio, F., Fonnesu, A., 2001 Community complexity and decomposition process in aquatic systems: an ecosystem approach to manage biodiversity. *Final Report CN: ENV4-CT97-0584*