SINGULAR PROJECT

PROJECT FOR THE DEVELOPMENT AND DIVERSIFICATION OF CROPS IN USEFUL AUTHOCTONOUS AQUATIC PLANTS

Objective

Expansion and consolidation of a line of work in network for the multiplication of wild plants of local origin or nonexistent to the market, especially freshwater aquatic plants. These plants are selected based on three criteria: their use by sewage water purification systems, natural or ornamental pools.

A parallel action will be the creation of didactic material on the utilities of the native aquatic plants for high-school level and for professional level

Who forms the Singular Project?

The Singular Project is a collaboration agreement of several entities to develop and diversify the cultivation of several native aquatic plants with different utilities. This project is funded by the Department of Labor of the Generalitat of Catalonia and has as promoter the Tres Turons Nursery and other associated organizations such as:

Grouped entities:

- Consortium Museum of Natural Sciences of Barcelona (Botanic garden of Barcelona)
- Urban River Lab (Naturalea)
- Association of Nursery Farmers of Barcelona
- Iberic group of Naturalized Water (Water projects, Carles Pérez Ortega).
- Eduxarxa S.C.C.L.
- Cabinet of Advice and Management by Companies, S.L.
- Filigrana productions 360, S.C.C.L.
- Tres Turons Nursery S.C.C.L. (Promoter entity)

Collaborators entities:

- INS Castellar
- City council of Castellar del Vallès
- Natural Park of Delta of Ebro
- Natural Park from the High Pyrenees
- Environmental association La Sínia
- Collective Eixarcolant

The role of Naturalea

Naturalea's work has focused on the selection of species of interest for purification. The process began with a selection of suitable species by the team of the Botanical Garden of Barcelona coordinated by the Tres Turons Nursery. Then, a meeting was held with all the members of the project to select the most appropriate ones. The basis of the selection is that they are normally unused species, in this sense; three species with very different strategies were selected. Some following the criteria of the most used helophytes and others opening new routes.

Once the species have been selected, a new experimental design has been prepared to see their phytodepuration capacity. This research work is done in 12 of the 18 channels of the Urban River Lab (URL) to analyze the purification capacity of 3 native aquatic species (*Potamogenton pectinatus*, *sparganium erectum* and *apium nodiflorum*) and see how they respond in purification systems.

The basis is to have 3 channels of each species in the way you can see if the results really follow a trend or are random.

The Urban River Lab is the experimental platform located at Montornes del Valles Waste Water Treatment Plant (Barcelona) where a multidisciplinary team formed by members of the Blanes Advanced Studies Center (CEAB-CSIC), the University of Barcelona (UB), the Besòs-Tordera Consortium (CBT) and the company Naturalea, are carrying out different research projects that allow evaluating the effects of WWTP effluents on river systems. (www.urbanriverlab.com).

During the months of June and July, the channels were prepared to carry out the experiment that will end at the end of the year when the plants are in a stationary/ senescent phase.

The work consists in evaluating the incidence of the absence or presence of these species in relation to the parameters such as ammonium, nitrite, nitrate and phosphate; organic material; metabolism and oxygen concentration data... The direction of the research project is led by Dr. Miquel Ribot of the CSIC-CEAB with the collaboration of researchers from the same center and the UB who usually work within the framework of the URL:

Dr. Miquel Ribot, Dra. Eugenia Martí, Dra. Esperança Garcia, Dra. Susana Bernal / CSIC-CEAB
Adrian Lochner and Albert Sorolla / Naturalea
Dr. Francesc Sabater / UB
Manel Isnard / Consorci Besòs Tordera


Construction process of the setting for the experiment

This experiment will give the possibility to introduce new autochthonous species in natural purification systems and therefore will help the diversification of species in these systems.

The experience has coincided with some remodelling and improvement works of the URL channels with a new waterproofing system and the renewal of the entrance and exit systems. Moreover, there is the creation of two 32-meter channels that have their own drive system that they will allow to begin works of hydrology and sediment transport in combination with those of biogeochemistry that have been done so far.


New waterproofing system for URL channels