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# Baix Ter Wetlands

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## ENVIRONMENTAL SYNTHESIS AND TYPIIFICATION

**TYPE OF LAGOON OR WETLAND:** Baix Ter Wetlands are situated in northeastern Iberian Peninsula (Catalonia, Spain) in the deltaic plain of the Ter and Daró Rivers. In these wetlands several kinds of waterbodies can be found, from confined coastal brackish or hyperhaline ponds in La Pletera salt marshes to fluctuating freshwater systems with high nutrient inputs like Ter Vell and Basses d'en Coll lagoons

**HYDROCHEMICS:** Examples of physical and chemical characteristics of one brackish and one freshwater ecosystem are summarized in the table of the next page. More data are available in: Badosa et al. 2006; in press; López-Flores et al. 2006, and <http://ciencias.udg.es/iea/>

**TROPHIC STATE:** Total nutrients, which achieved high concentrations, appear mainly in organic form in the confined brackish ecosystems but in inorganic form in the freshwater ones. Nitrogen compounds dominate in the latter due to the irrigation freshwater inputs. In the former ecosystems, inorganic nitrogen is low due to denitrification and phosphorus tends to cumulate progressively in the sediment (Badosa et al. 2006).

**MAIN IMPACTS:** In freshwater ecosystems, supplies of the excess irrigation water, the rainfall runoff and urban wastewaters have lead to an artificial hydrology and to a eutrophication process. As a consequence, a proliferation of the common reed and a reduction of the free-water surface are usually observed. Species indicative of eutrophy tend to dominate the planktonic community.

In La Pletera salt marshes, the hydrology has been also modified due the canalisation of the Ter River, the construction of levees in several points of the marsh and a urbanisation plan partially developed.

As a consequence, several lagoons and wetlands have disappeared and salt marshes have remained almost totally isolated from the river and sea. The isolation of the unique lagoon of the marsh that supported a population of the endemic fish Iberian toothcarp (*Aphanius iberus*) have involved a threat for the conservation of this endangered species.

Moreover, the high population and tourism development have also involved a decrease of temporary waters, a degradation of riparian vegetation and the stablishment of the invasive species, such as the turtle *Trachemys scripta* which have caused the decline of the native European pond turtle (*Emys orbicularis*). Populations of amphibians were also highly affected.

**STATE OF CONSERVATION:** These wetlands are under the protection of PEIN (Autonomic law 12/1985) and are included in the NATURA 2000 Network (EU Habitats Directive 92/43/EEC). The EU Life project “Arrangement and management of the Baix Ter coastal lagoons and marshes” (LIFE 99 NAT/E/006386) was developed between 1999 and 2003, and another one “Recovery of the habitat of amphibians and *Emys orbicularis* in the Baix Ter” (LIFE 04 NAT/ES/000059) is being developed since 2005.

**INTERESTING SPECIES AND HABITATS:** The creation of permanent confined brackish lagoons as new refuges for *A. iberus*, the recovery of temporary waters to increase habitat availability for amphibians, and the creation of freshwater pools as refuges for *E. orbicularis*, have been the main proposals of two EU Life restoration projects developed in the Baix Ter Wetlands.

## SUMMARIZING TABLE



Name wetland/lagoon		<i>Fra Ramon lagoon</i>	<i>Ter Vell lagoon</i>
Type		Coastal brackish water	Coastal freshwater
Main water inputs		Sea storms and rainfall	Irrigation water, runoff
UTM (x,y)		515861, 4653239	516045, 4655224
Màx. water level (cm above sea level)		135	113
Min. depth (cm below sea level)		-175	-125
Conductivity (mS cm <sup>-1</sup> )		15.00 - 68.30	0.60 - 40.90
Dissolved Inorganic Nitrogen (mg l <sup>-1</sup> )		< 0.016 - 0.328	0.02 - 5.74
Total Nitrogen (mg l <sup>-1</sup> )		1.10 - 4.99	0.40 - 5.74
Soluble Reactive Phosphate (mg l <sup>-1</sup> )		< 0.003 - 0.048	< 0.003 - 1.170
Total Phosphorus (mg l <sup>-1</sup> )		0.12 - 0.81	0.05 - 1.58
Chlorophyll- <i>a</i> (mg l <sup>-1</sup> )		0.010 - 0.222	0.001 - 0.281
Main vegetation communities	hydrophytic	<i>Chaetomorpha-Ruppium</i>	
	halophytic	<i>Puccinellio-Arthrocnemum fruticosi typicum</i>	
	helophytic		<i>Typho-Schoenoplectum tabernaemontani subas. phragmitetosum australis</i>
Main phytoplankton taxa:		Dinoflagellates ( <i>Glenodinium, Oxyrrhis, Scrippsiella</i> ), Cryptophytes and picoflagellates	
Main microcrustacean taxa:		<i>Brachionus plicatilis</i> (rotifera) <i>Eurytemora velox</i> (calanoida) <i>Mesochra lilljeborgi, Canuella perplexa</i> (harpacticoida) <i>Cyprideis torosa</i> (ostracoda)	<i>Brachionus angularis, B. calyciflorus</i> (rotifera) <i>Chydorus sphaericus, Daphnia curvirostris, Simocephalus vetulus</i> (branchiopoda) <i>Calanipeda aquaedulcis</i> (calanoida) <i>Acanthocyclops trajani</i> (cyclopoida)
Main macroinvertebrate taxa:		<i>Ficopomatus enigmaticus, Nereis diversicolor</i> (polychaeta) <i>Gammarus aequicauda</i> (amphipoda) <i>Nebrioporus ceresyi</i> (coleoptera) <i>Chironomus salinarius</i> (diptera) <i>Hydrobia acuta</i> (gasteropoda)	<i>Gammarus aequicauda</i> (amphipoda) Coenagrionidae larva (odonata) <i>Cloeon inscriptum</i> (ephemeroptera) Chironomidae larva (diptera)

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### CONTACTS:

Life projects: [www.torroella.org/life](http://www.torroella.org/life) and [www.lifeemyster.com](http://www.lifeemyster.com)  
 Research group: Limnology of Mediterranean wetlands and ponds, Institut of Aquatic Ecology, University of Girona  
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### REDMARISMAS:

RedMarismas is the name of a nationwide Spanish scientific network founded in March 2005. It assembles a great number of scientists and other specialists working with topics related to transitional waters (wetlands and coastal lagoons). More information is available at [www.irta.es/redmarismas](http://www.irta.es/redmarismas).