Management and control of Albufera wetland

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L’Albufera, its origin

- A wetland heavily modified by man:
  - Originally an open sea bay.
  - Transformation: from seawater to freshwater.
  - Silting process (XIX-XX), accelerated by man.

- Currently:
  - 19.200 ha of rice fields and 2.800 ha of lake.
Environmental crisis in the 70’s

- Great changes in the quality of the water
- Reduction of habitats
- Loss of biodiversity

Eutrophication
l’Albufera, protected environment

• Declared Natural Park in 1986.
• Ramsar site since 1989 (wetland of international importance).
• Subject to the regulations of the European Union: Water Framework Directive, Habitat and Birds Directives.
• Natural area included in the Natura 2000 network.

The current ecological status is far from its optimum

What is being done?
Minimum water requirements

- The minimum water requirements of the lake are set at 210 hm³ / year (percentile 90% of the inflows to the lake) in the Júcar River Basin Management Plan (RBMP) approved by RD 1/2016.

![Estimation of water inflows to l’Albufera lake (hm³/año)](chart)
Achieving good ecological potential

- Environmental objectives are established for Chlorophyll a: 90 μg / l in 2021 and 30 μg / l in 2027 in the Júcar RBMP.
Other Measures

- Control of external loads: improvements in the water sanitation and waste water treatment system.
- Good agriculture practices: reduction of nutrients (mainly P) in irrigation water returns.
- Control of internal loads: water treatment by constructed wetlands.
Constructed wetlands

• Several functions:
  • improve water quality,
  • restore lost habitats and enhancing biodiversity;
  • provide space for public use.
Albufera Special Plan

• Júcar River Basin Management Plan (RBMP) approved by RD 1/2016 establishes:
  • “For the specific case of Albufera lake water body, the public administrations with competences in managing this wetland, will boost the development of a special plan to achieve the environmental objectives established for the wetland”.

• The Albufera Special Plan has been elaborated with the agreement of the 3 administrations (national, regional and local) with competences in the Albufera wetland.
Albufera Special Plan: Measures

• Measures to achieve environmental objectives have been divided in six different types:

<table>
<thead>
<tr>
<th>Types of Measures</th>
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<tbody>
<tr>
<td>A. Water management: Inflows increase</td>
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<tr>
<td>B. Sanitation and water treatment</td>
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<tr>
<td>C. Improvement in farming practices (diffuse pollution reduction)</td>
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<td>D. Improving the environmental status</td>
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<td>E. Governance</td>
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<td>F. Control and monitoring</td>
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</table>
Control and monitoring

What for?

• To know if the general WFD environmental objectives (good status) are being achieved

• To know if the specific environmental objectives for the lake are being achieved:
  • Eutrophication reduction: (Clor_a) 90 µg/l in 2021 and 30 µg/l in 2027.
  • Minimum water requirements: 210 Hm³/year

• To know about measure effects
Control and monitoring

Water quality control in the lake:

Main control parameters of water quality:

- In situ parameters (Secchi disc, Temp, O₂, Electric conductivity, pH, Cl_a)
- Other parameters (TP, TN, NO₃, PO₄, Chlorides)
- Chemical parameters (annex IV RD 817/2015)

<table>
<thead>
<tr>
<th>Code</th>
<th>Water quality control point</th>
<th>Coefficient</th>
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<tbody>
<tr>
<td>JU07220026</td>
<td>(A) Punta de Llebeig</td>
<td>0,24</td>
</tr>
<tr>
<td>JU07220027</td>
<td>(B) Mata del Fang</td>
<td>0,40</td>
</tr>
<tr>
<td>JU07220028</td>
<td>(C) Mata de Sant Roc</td>
<td>0,20</td>
</tr>
<tr>
<td>JU07470030</td>
<td>(D) Tancat de Sacarés</td>
<td>0,16</td>
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Control and monitoring

- **Water quantity control:** The inflows to the lake have been estimated using a water balance model developed by Júcar RBA and Universitat Politècnica de València with data from the control monitoring network.

Water balance equation: \[ I = Q_s + E + \Delta \text{water} \]
Conclusions

• L'Albufera de Valencia stands out for its uniqueness in terms of environmental importance, great links with the cultivation of rice and existence of different administrations with competence in management.

• It requires:
  - Coordination between administrations: Albufera Special Plan (AEP)
  - Control and adequate monitoring.
  - A program of measures to recover the wetland. The AEP will be included in the RBMP update (year 2021).
Thank you for your attention