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Commission Générale des Pêches pour la Méditerranée
LaMed-2 Project



Ecological and economic improvement in coastal wetland areas

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Meeting on

Mediterranean coastal lagoons management:
interaction between aquaculture and capture
fisheries

Cagliari, Italy, 28-30 June 2011



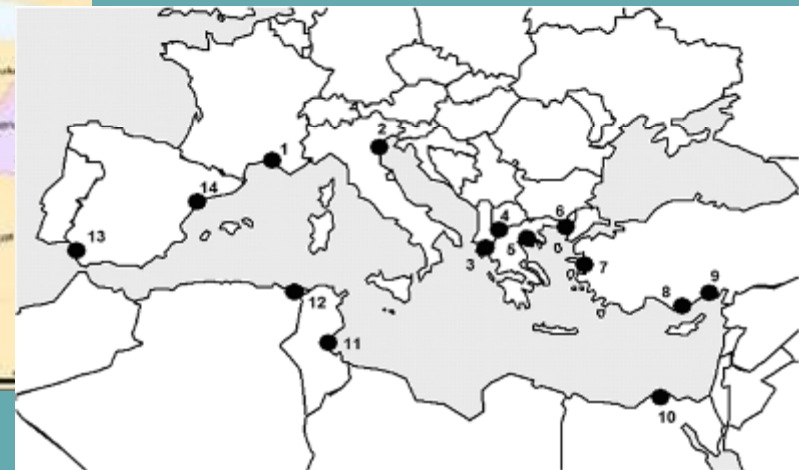


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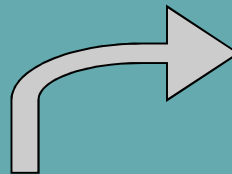


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The Mediterranean area biodiversity hotspot is the second largest hotspot in the world, covering more than 2 million square kilometers and stretching west to east from Portugal to Jordan and north to south from northern Italy to Cape Verde.



- | | | | |
|--------------------|---------------------|-----------------|------------------------|
| 1: Camargue Delta | 5: Aliakmonas Delta | 9: Seyhan Delta | 13: Guadalquivir Delta |
| 2: Po Delta | 6: Evros Delta | 10: Nile Delta | 14: Ebro Delta |
| 3: Amvrakikos Gulf | 7: Gediz Delta | 11: Gabès Gulf | |
| 4: Prespa Basin | 8: Göksu Delta | 12: El Kala | |



Mediterranean wetlands include a wide variety of natural habitats: river deltas, lakes, and marshes (freshwater, brackish or saline), permanent watercourses and *wadis*, riverside forests subject to flooding; and also *salinas* and dammed reservoirs.





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Coastal wetlands around the Mediterranean basin have traditionally provided local communities with essential services like water, food, fibre and transport.

Many of these ecosystems reached an equilibrium long ago with human activity dominating the landscapes.





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Their varied habitats, including salt-adapted scrub and grasslands, sheer cliffs and rocky shores, sandy beaches and tidal areas, estuaries and lagoons, also provide resources for nature, such as breeding grounds and habitats for marine organisms, waterfowl, shorebirds and other wildlife.





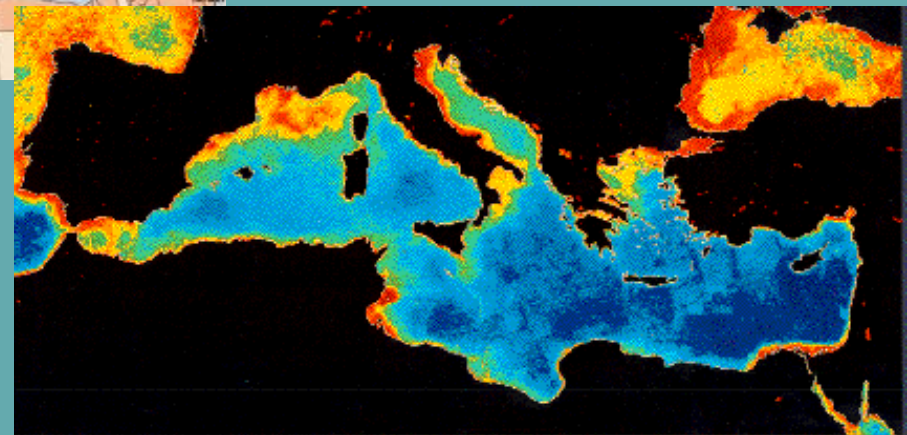
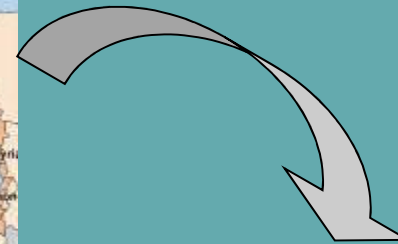
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However, Mediterranean coastal zones are under multiple pressures and face a large number of economic, social and environmental problems.

Conversion for agriculture; urbanization; massive tourist development; pollution from industrial, agricultural and urban sources; arrival of alien species; and warming of coastal waters are among the main threats.



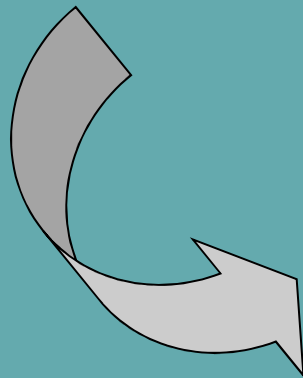
As an example, Spain has lost an estimated 60% of its original wetlands, while in northern Greece this percentage elevates to 73%.





In 2008, fourteen Contracting Parties to the Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention) signed a new Protocol on Integrated Coastal Zone Management (ICZM) in the Mediterranean, under the following principle:

Working with natural processes and respecting the carrying capacity of ecosystems, will make human activities more environmentally friendly, socially responsible and economically sound



Positive effects of **extensive and semi-intensive aquaculture** in coastal areas, particularly in those of ecological interest, have been clearly recognised within EU policy, including:

- environmental protection
- ecological restoration
- employment opportunity and development



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Extensive and semi-intensive fish farming systems have a long tradition in the Mediterranean coastal region



Courtesy of Abmar





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Valliculture (Italy)

Large lagoon systems of Northern Adriatic, mainly created by the Po and Adige hydrographic basins, covering a total surface of about 36,323 ha (26,615 as total water surface). Euryhaline species, such as sea bass, sea bream mullets and eel are traditionally farmed.

Accounts for 66% of the confined wet lands used for fish farming and 87% of the extensive production units in Italy, supplying about 70% of the aquaculture production from coastal lagoons.

Unique ecological, landscape and cultural heritage, contributing to the conservation of the Upper Adriatic wet lands.



Courtesy of ICRA M





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Integrated management of marine extensive ponds and lagoons for a sustainable eel fishery (France)

Ancient salt marshes and wetlands devoted to the extensive culture of eel.



These territories have an enormous environmental and patrimonial value.

Important part in the sustainability of eel and other fisheries.

As a consequence of eel stock depletion and labour cost increase, profitability of this activity is decreasing and most of those protected wetlands go to abandon and risk disappearing.





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Extensive polyculture (Spain)

Extensive fish culture in earthen ponds (*esteros*) is a traditional activity in the salt-marshes area surrounding the Bay of Cadiz (SW Spain). The main fish species produced are mullets, seabass, seabream, sole and eel.

In these farms, natural fry recruitment is obtained by an adequate management of water in-flow with the tides.

Integral use of many resources, including the recovery of drained areas and abandoned salt-works, and their transformation to extensive culture.

Progressive sedimentation and drying up of ponds, and low profitability are threatening this activity and, consequently, the landscape.

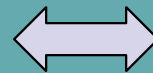


Courtesy of CSIC





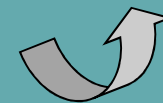
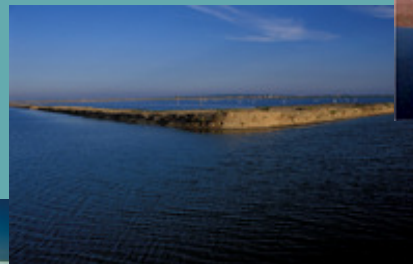
Therefore, in a current scenario of degraded wetlands, extensive aquaculture operations may be managed to restore the damage produced by anthropic action, while minimizing its own ecological footprint and combining the economic benefits of aquaculture with conservation objectives.





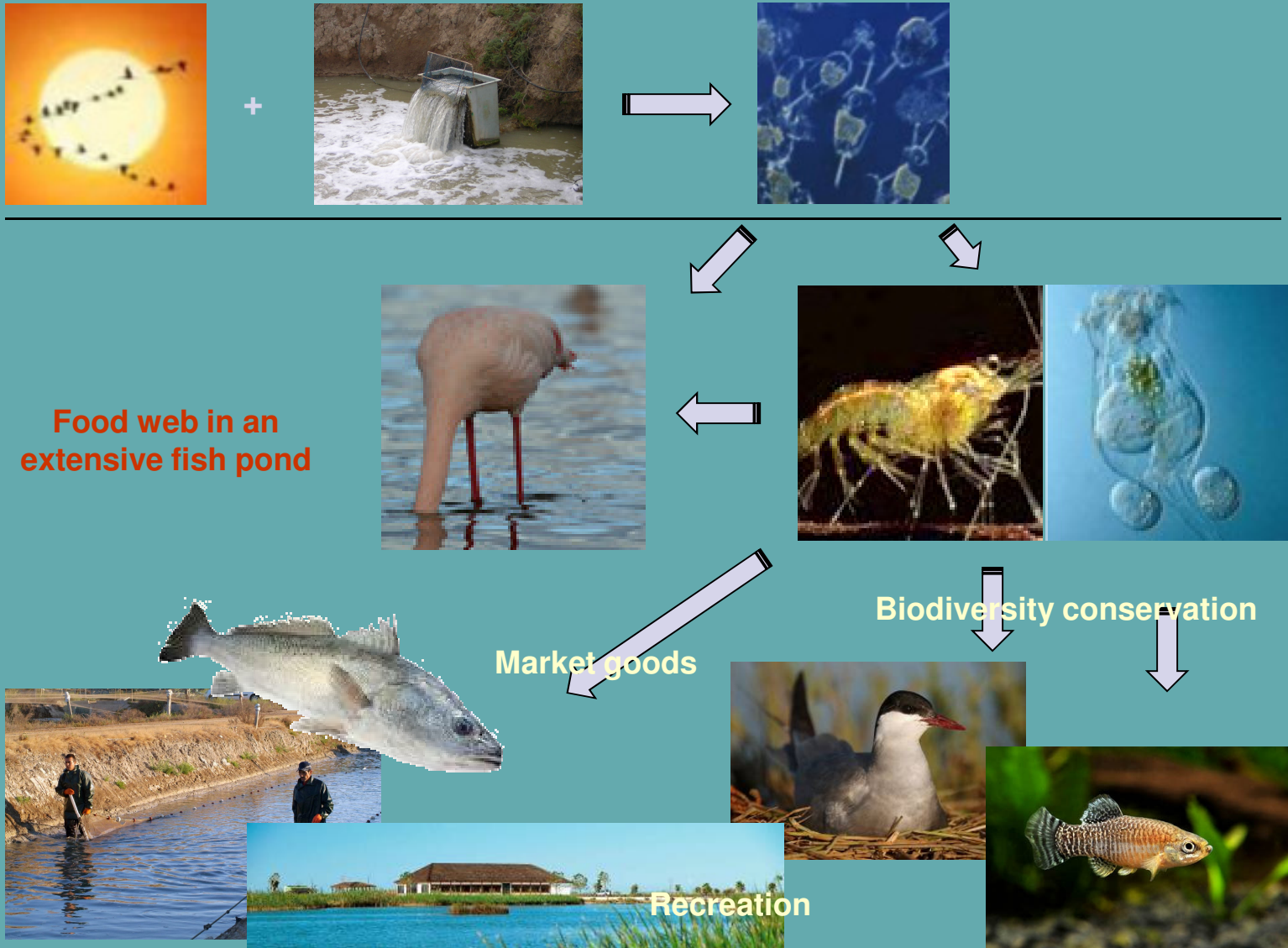
How may extensive aquaculture effectively restore and support the hydrology and ecology of coastal wetlands?

1. Restoring the flow of water into and out of the degraded wetland, and the flood storage





2. Restablishing the transport of nutrients and nutrient cycling, providing natural trophic resources for the fish





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3. Improving water quality through natural water purification

Typical fish ponds are usually surrounded by reed belts and natural vegetation, thus providing important habitats for flora and fauna, and acting as huge water treatment plants where the excess of nutrients (nitrogen, phosphorus, etc.) and organic matter are removed from the water and transformed into living biomass by means of natural processes.





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Restoring and enhancing nature through sustainable aquaculture

These aquaculture methods are included in what the *Directorate-General for Fisheries and Maritime Affairs, European Commission*, has named *aqua-environmental measures*.

As defined in the *European Fisheries Fund (EFF)*, *aqua-environmental measures* aim to promote aquaculture techniques which help to protect and improve the environment and to conserve nature (EU, 2007).

Such technologies have to be ecologically efficient and respectful, under hardest environmental exigencies within the framework of NATURA 2000.





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Thank you very much for your attention

*“Give a man a fish and
you feed him for a day,
teach the man how to
grow that fish and you
feed him for life”*

Ancient Chinese Proverb 500 B.C.

