



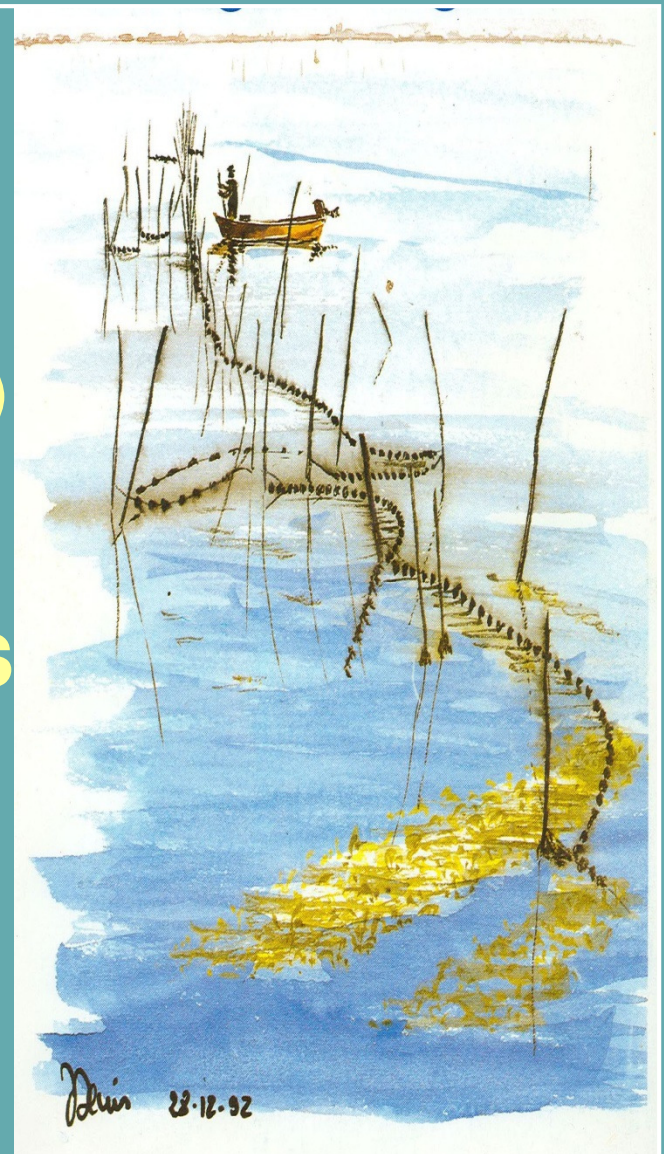
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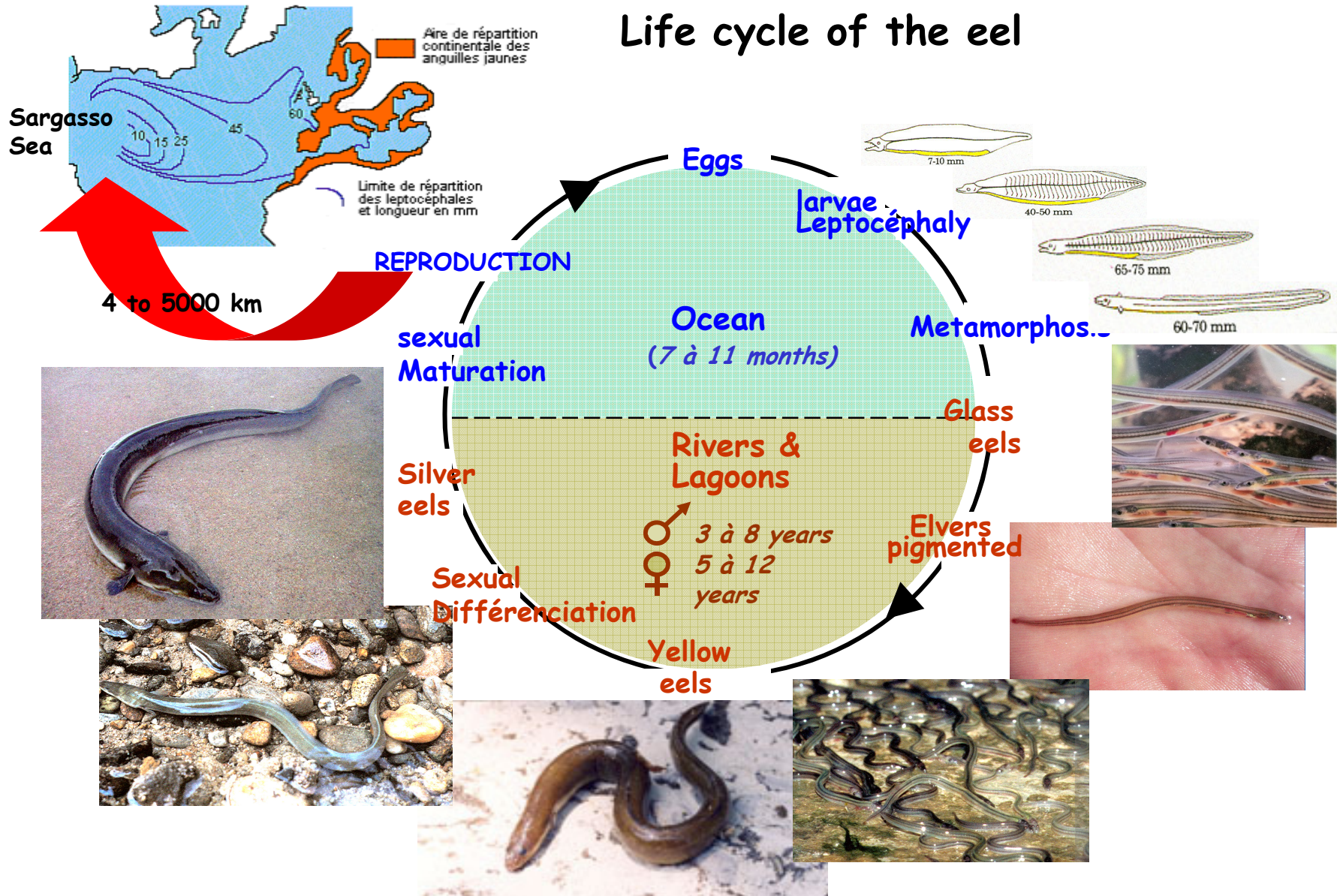
Exploitation of the European eel (*Anguilla anguilla*, Linné 1758) in the Mediterranean lagoons

Henri FARRUGIO





Life cycle of the eel



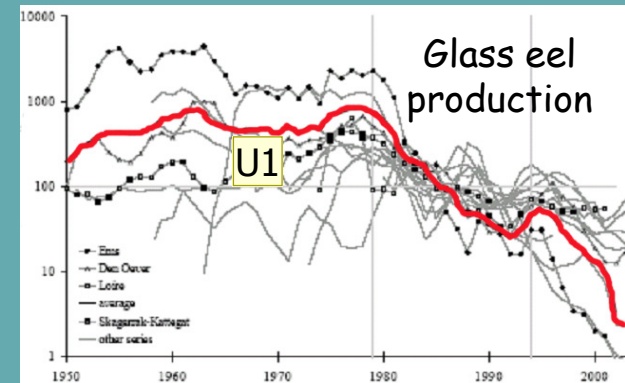
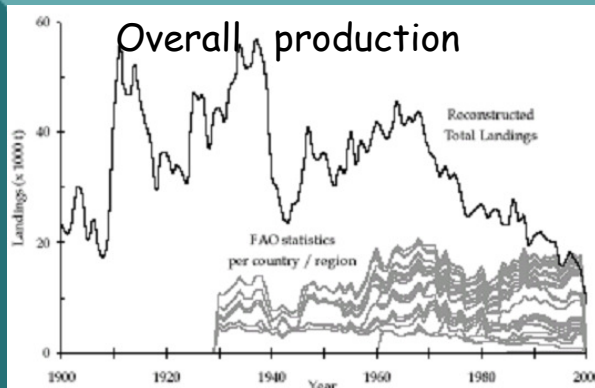


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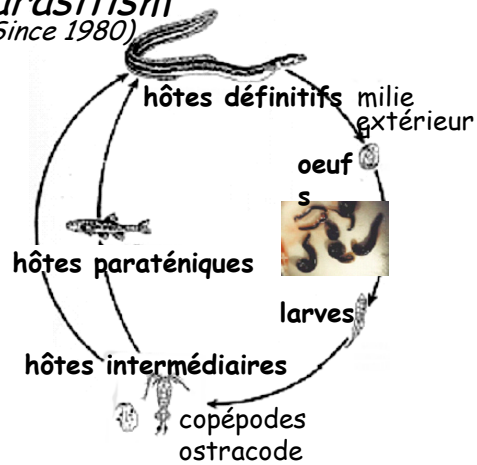


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THE DECLINE
OF EEL
POPULATIONS



Parasitism
(Since 1980)



Anguillula crassus

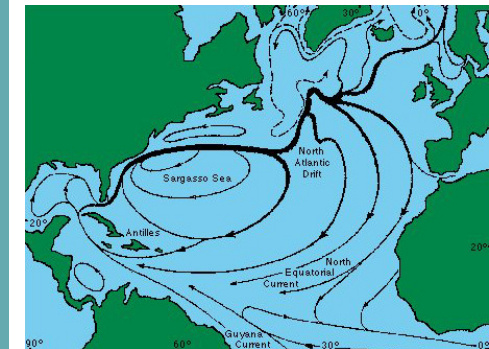
Camargue, 1989-2000 :

80 à 90% d'argentées parasitées

Obstacles to migration



Gulf-stream changes



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Other diseases

DISEASE	AGENT	TYPE	SYNDROME
Red fin disease	<i>Aeromonas hydrophila</i>	Bacterium	Tail rot; fin rot; haemorrhagic septicaemia
Red eel pest	<i>Vibrio anguillarum</i>	Bacterium	Red spots on ventral & lateral areas; swollen & dark skin lesions that ulcerate
Viral diseases (Red head)	Herpes & Rhabdoviruses	Viruses	Haemorrhages around the head and operculum initially; later spread to the whole body
Fungal infections	<i>Saprolegnia</i> spp.	Fungi	White to brown cottony or hairy patches on the skin, fins and gills; death may occur if gills obstructed; usually secondary infection.
	<i>Dermocystidium anguillae</i>	Sometimes classed as a protozoan but probably a fungus	Swellings on gills, fins or body
Parasitic infections	<i>Pseudodactylogyrus anguillae</i> ; <i>P. bini</i>	Monogeneans	Invade the gills; respiratory distress
	<i>Trichodina</i> spp.	Ciliates	Flashing; lethargy; increased mucus production; sometimes ulcers and frayed fins; respiratory distress if gills affected
	<i>Ichthyophthirius multifiliis</i>	Protozoan	White patches on body; becoming lethargic; attempt to remove parasites by rubbing on enclosure surfaces

Contamination by chemicals

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As the eel is situated on the top of the trophic chain it can contain high levels of contamination due to the bioaccumulation mechanisms existing in the trophic webs of various ecosystems (coastal zone, lagoons, estuaries, rivers...).

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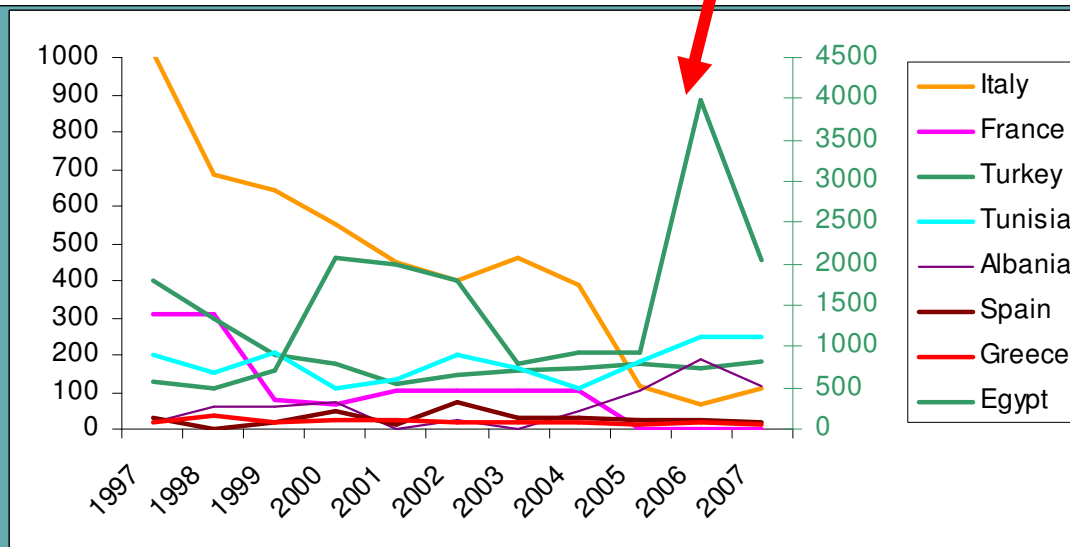
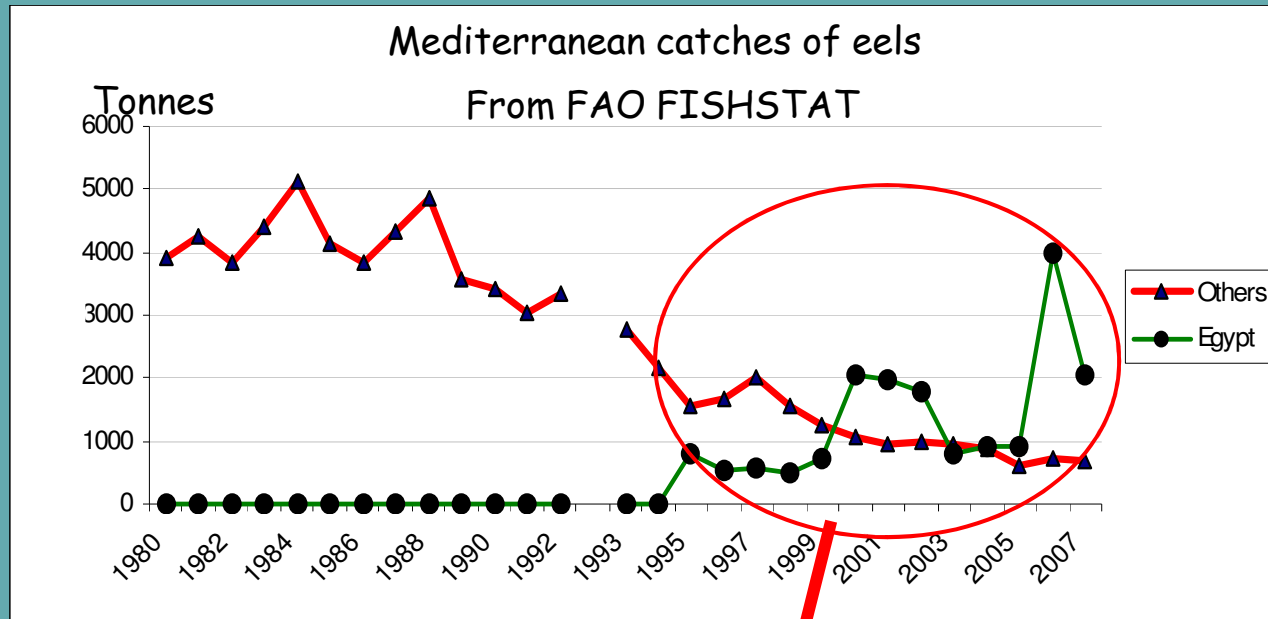
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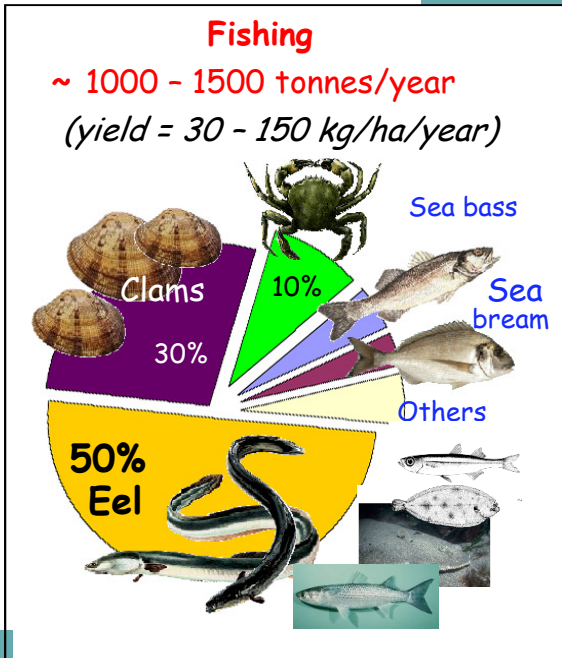
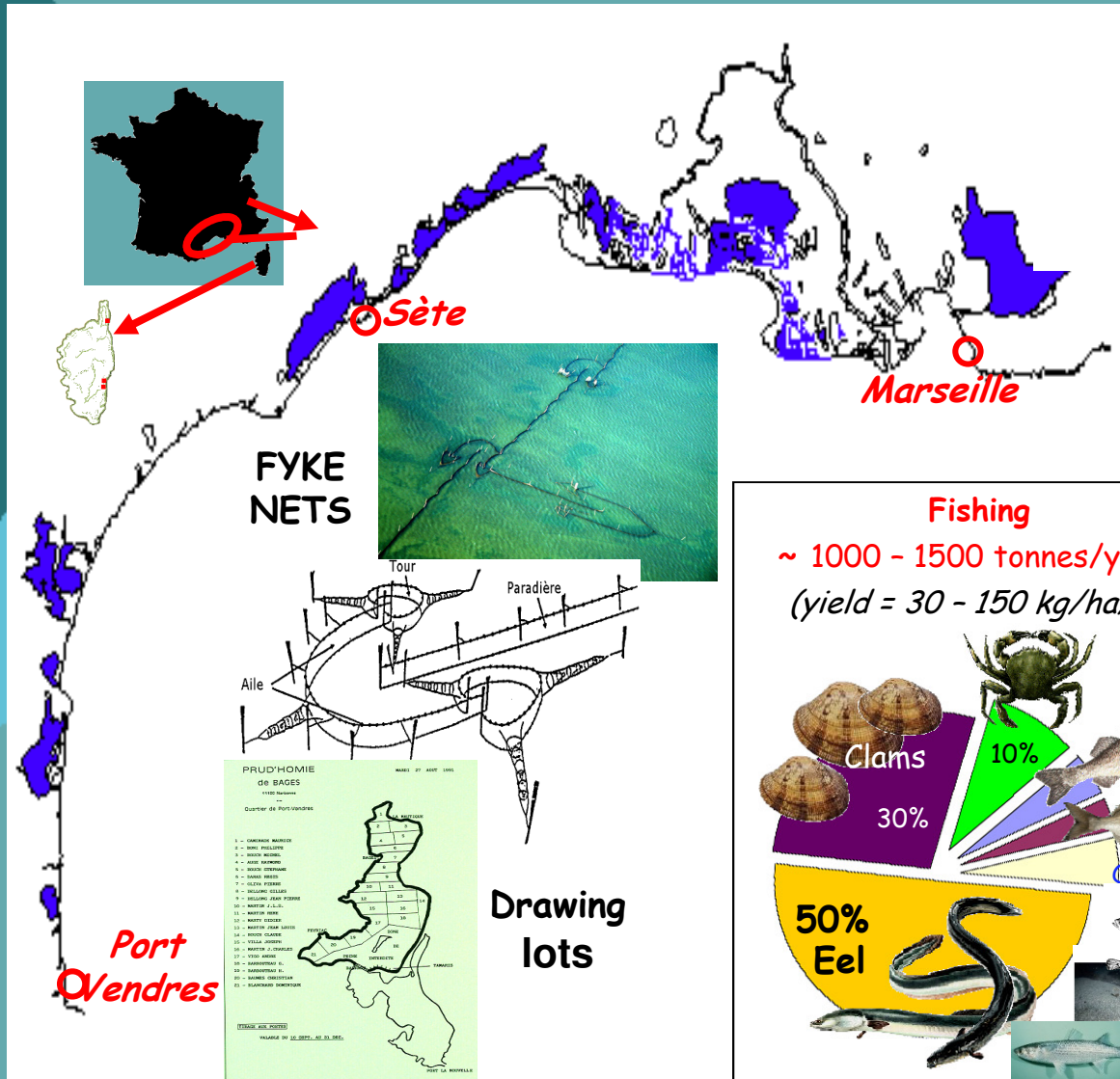
FRANCE

1980: 2000 tonnes

1998: 1000 tonnes

Silver eels = 10%

Small eels (10-20 cm)
exported for valliculture





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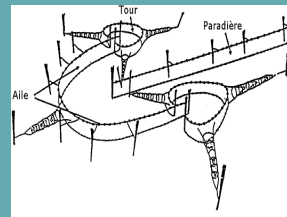
ITALY

1970_80 : 1500-2000 tonnes/year —————> 1990 : 500 tonnes —————> 2000 : 200 tonnes

Valliculture total surface of about 36 323 ha

Strong reduction in eel production in favour of sea bream and sea bass. Impact of ichthyophagous birds & anthropic activity on coastal environment.

Productivity 30 kg/ha/year (Valli di Comacchio) and 150 kg/ha/year (Valli Venete). Euryhaline species, such as sea bass, sea bream, mullets and eel



Import from maghreb and France





ALBANIA

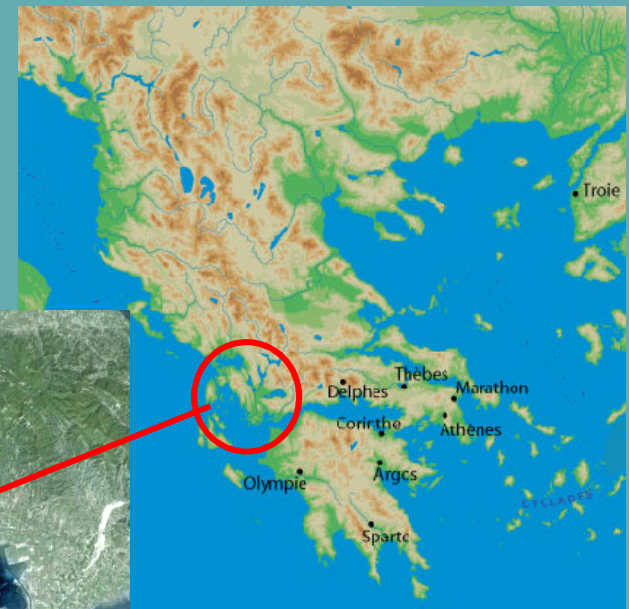
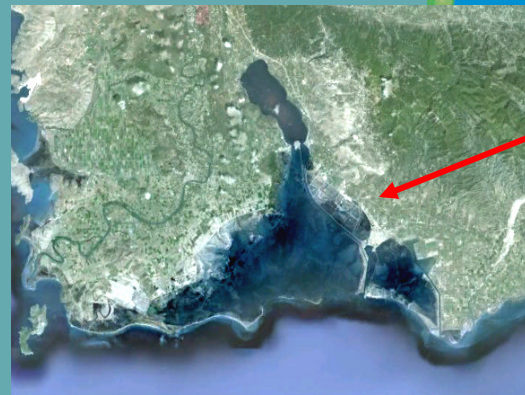
Kanavasta
Narta



GREECE

Eel catches + aquaculture from
300 tonnes in 1980 to 1000 tonnes in 2001

Messolonghi
Aitoliko



SPAIN ?



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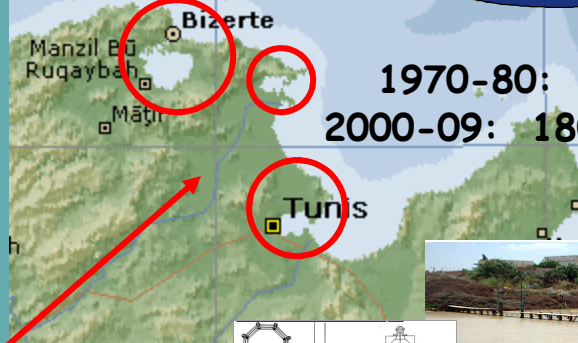
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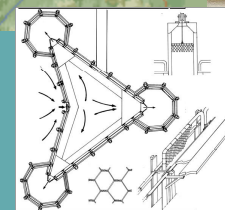
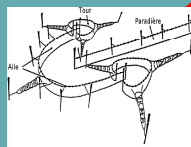
Nador lagoon



Tunis, Ghar El Melh & Ichkeul



1970-80: 1000 tonnes
2000-09: 180 tonnes



Fish barriers





Conservation and management issues

*The recent level of harvest of the species
is unsustainable .*

*Since 2000 the European eel has been added to
the annex II of the CITES*



Also declared an endangered species by IUCN

*The commercial trade is submitted to the
setting up of management plans*



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GFCM SCIENTIFIC ADVISORY COMMITTEE (SAC)

13th session, Marseille, France, 7-11 February 2011

Advice to set up a Regional Management Plan on eel :

- (i) Gather and synthesize information on the biological parameters by habitat and on the regulations (Fisheries and Habitat conservation) by countries, in coordination with the LaMed project.

- (ii) Collate and analyze information useful for the Eel Management Plans

- (iii) Initiate the setting up of a network of Mediterranean experts on Eel fisheries in collaboration with the working group on Eel management of EIFAC/ICES.

THANK YOU FOR THE
ATTENTION

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