

Status of the eel stock in Italy: an overview of eel fisheries and management framework for the stock recovery



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- Eel presence is documented in most river basins and lakes of north and central Italy, as well as in coastal lagoons and embayments. It is more rare and scattered in southern Italy.



- Eel fisheries are concentrated in some Regions, and occur mainly in coastal lagoons and major lakes, riverine fisheries being less relevant. Glass eel fisheries occur in coastal and estuarine waters, mostly on the Thirrenyan coast.

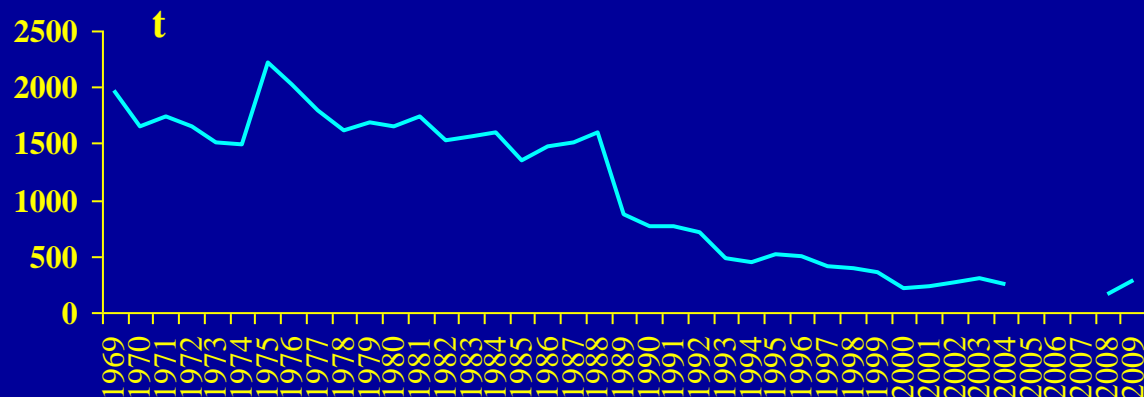
- Target of fisheries are all life stages, included glass eel
- Patterns of exploitation were specialised. In most cases eel is the target species, without bycatch.



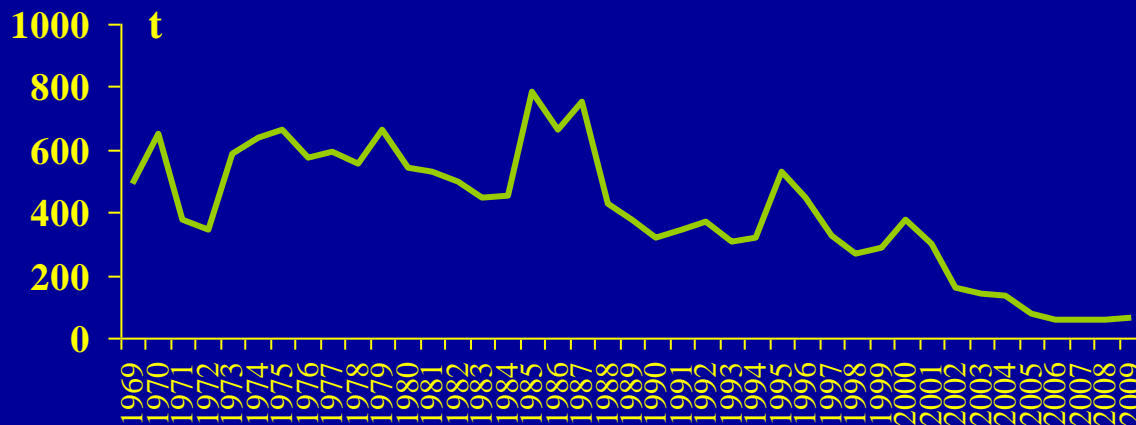
COMACCHIO, FERRARA, "SOPHIA LOREN"
Foto ANDREA SAMARITANI - MERIDIANA IMMAGINI



Capture fisheries in coastal lagoons (source: ISTAT)



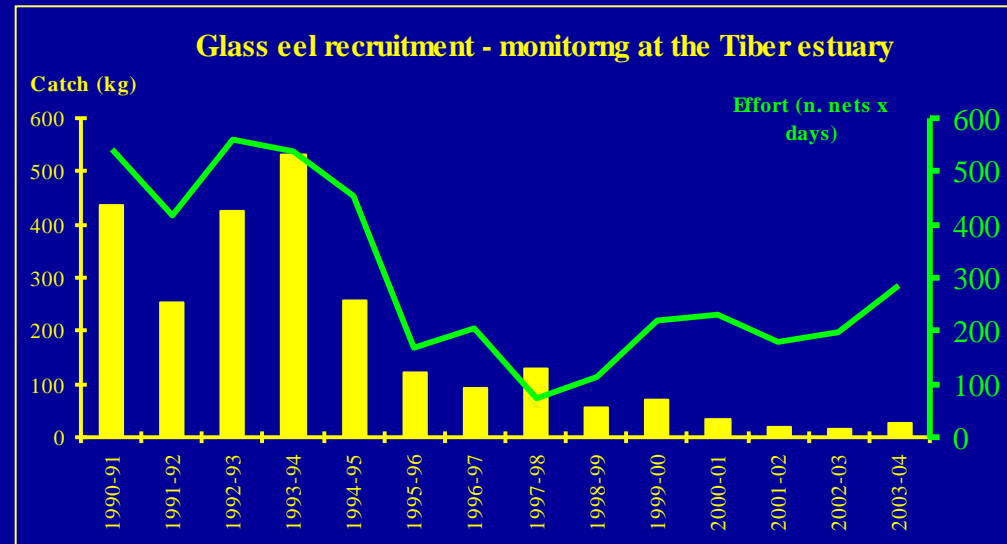
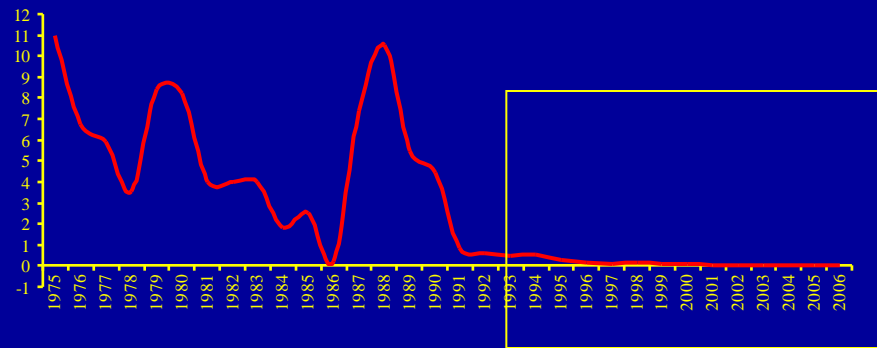
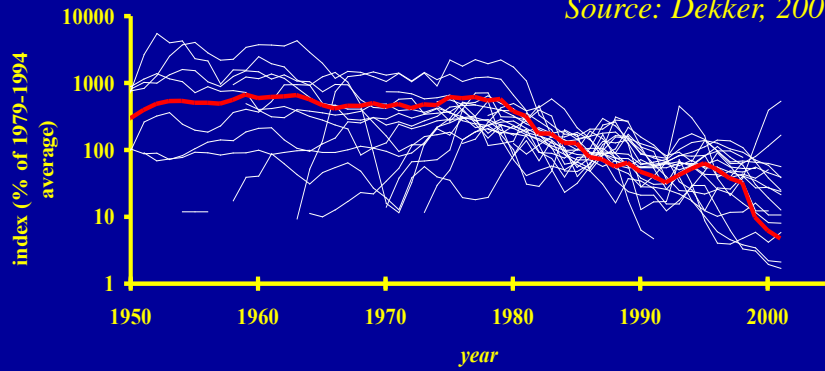
Capture fisheries in inland waters (source: ISTAT)



Status of the stock: eel production trends

Recruitment in Europe (1950-2000): data series and trend

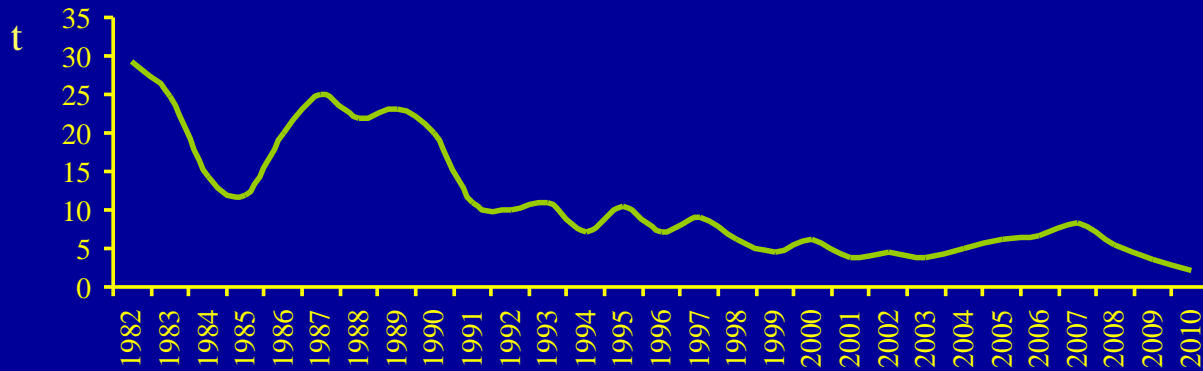
Source: Dekker, 2001



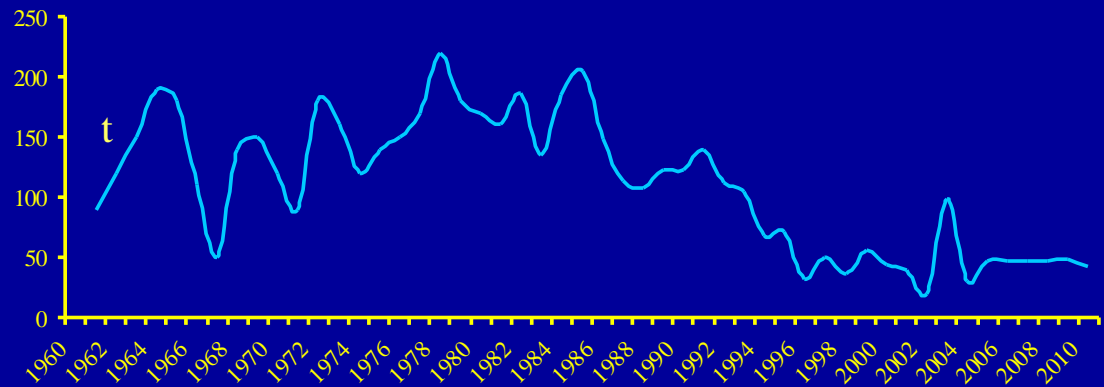
➡ *The decline in recruitment is confirmed*

Status of the stock: recruitment

Tiber river - eel yields 1982-2010



Orbetello lagoon - Eel yields 1961-2010



- Spreading of *Anguillicola*
- Predation by cormorants
- Overfishing
- Habitat loss



Impacts on eel stocks are shared with other areas

Po River Delta Province of Ferrara Emilia-Romagna Region

Comacchio FE

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2009 DigitalGlobe
Image © 2009 European Space Imaging
Image © 2009 GeoEye

Isola Palmaria



Castelfranco Veneto

Veneto

Padova

Rovigo RO

Ferrara

ento

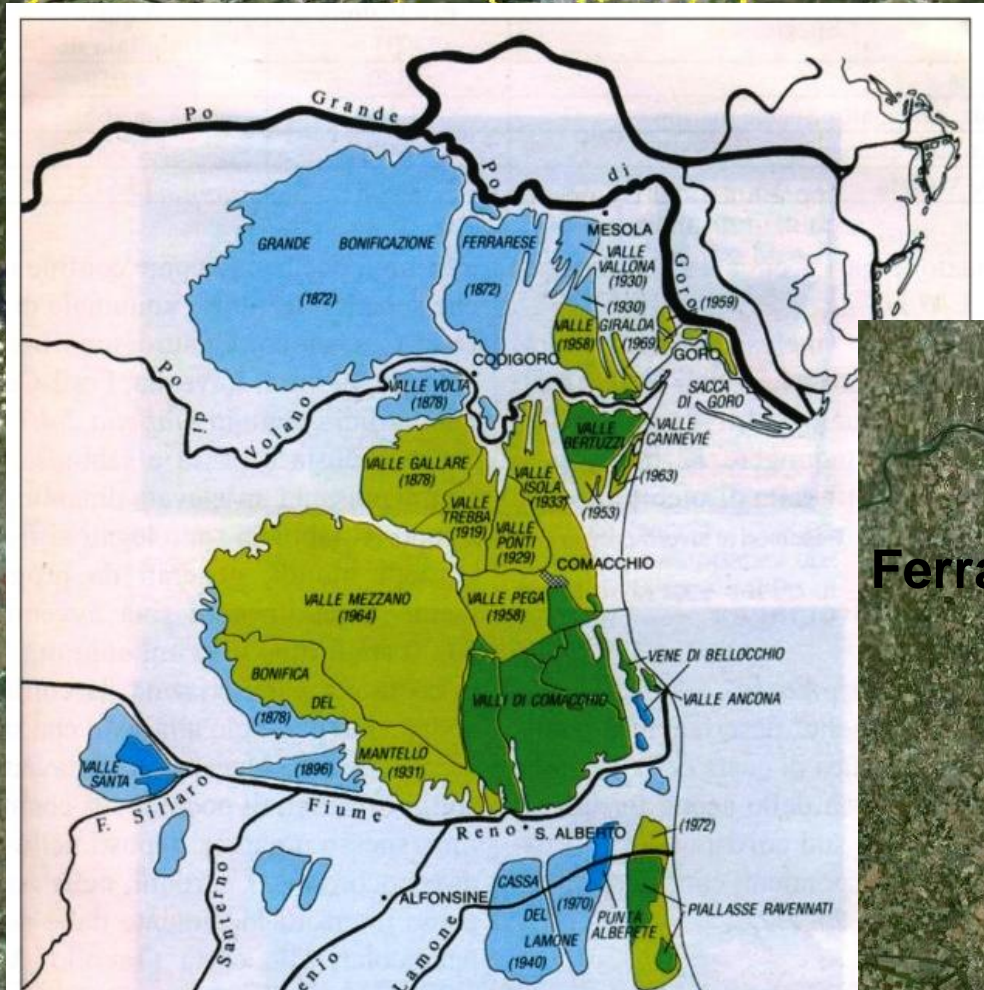
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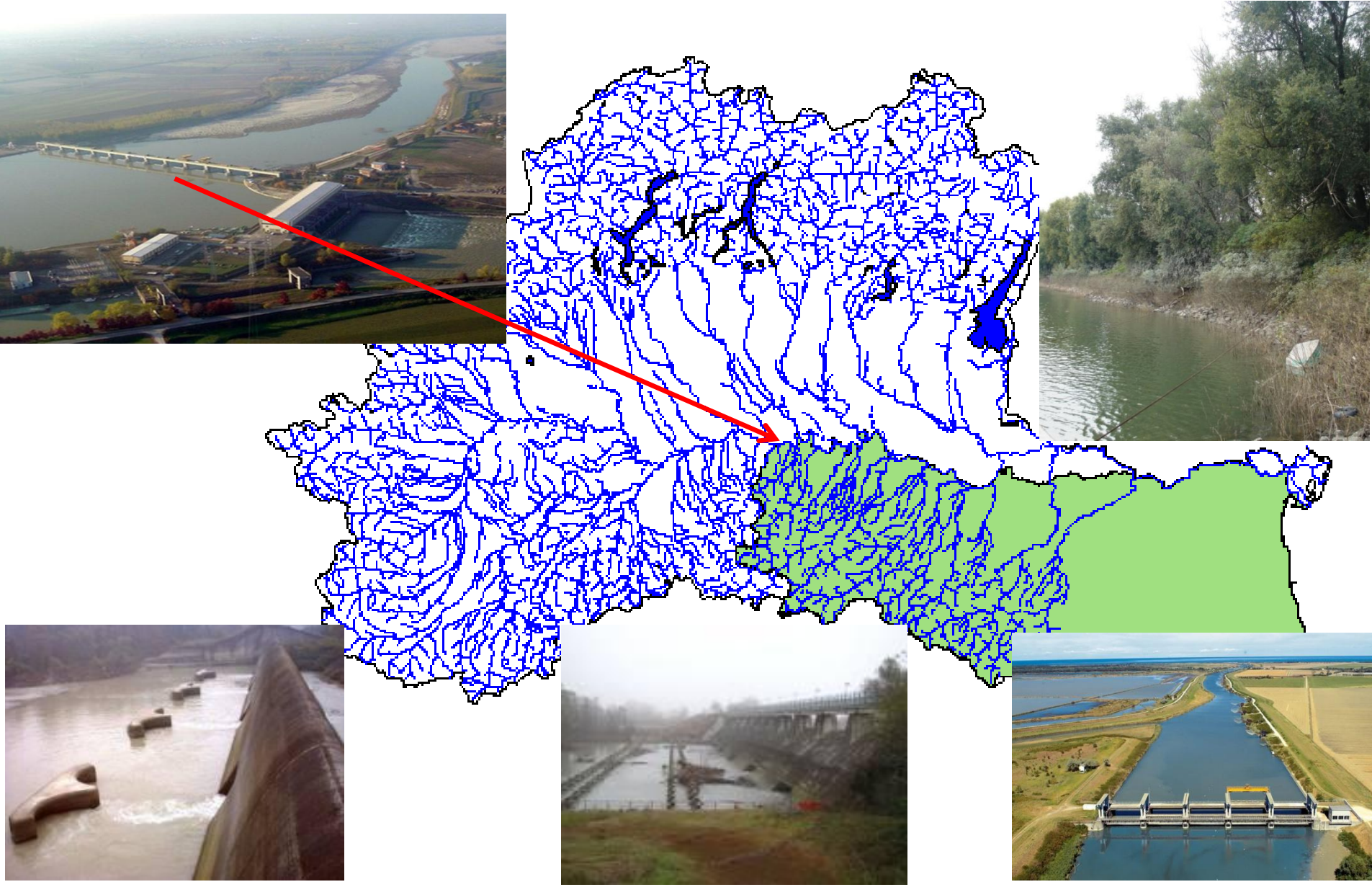
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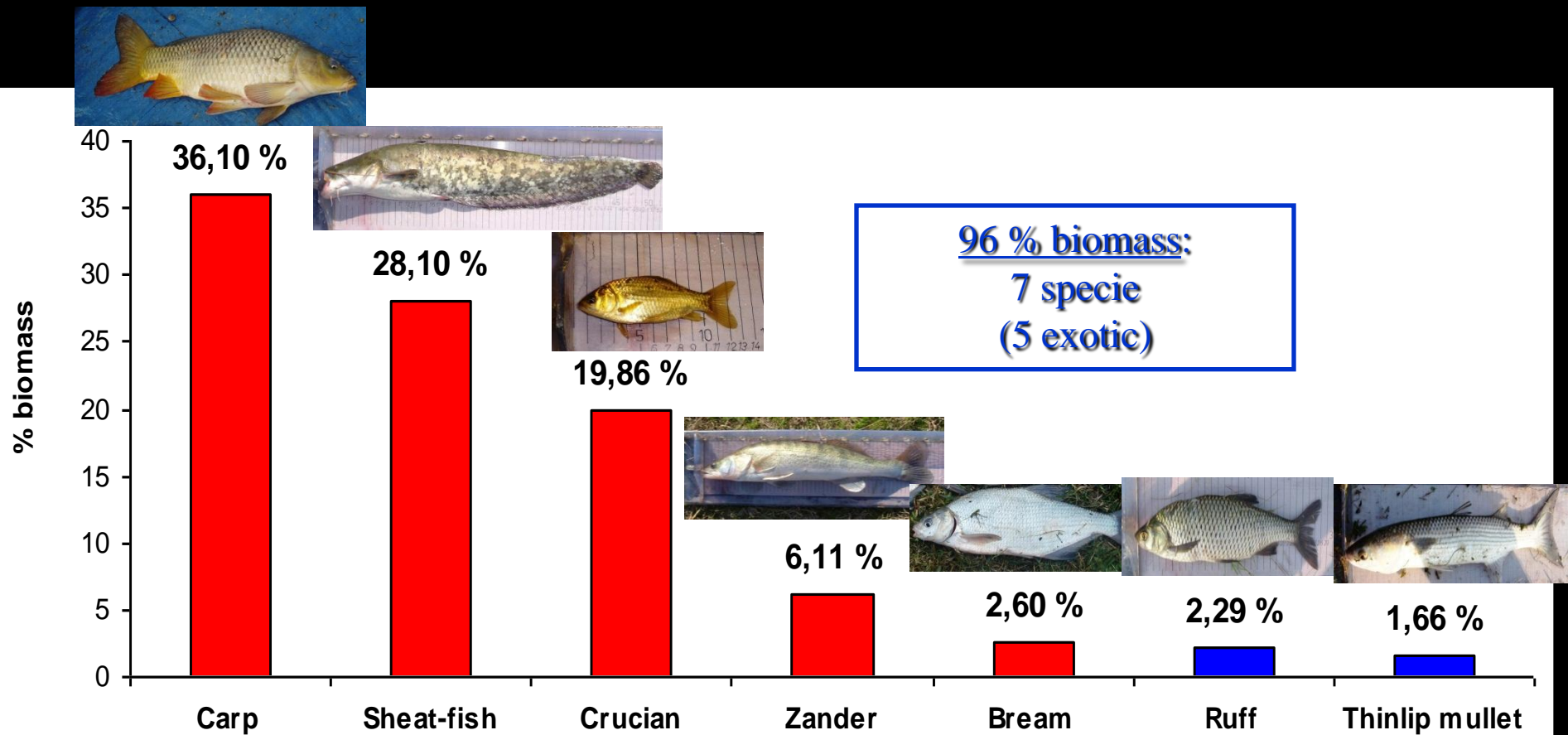
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Silent loss of habitats due to hydroelectric dams and of other kind





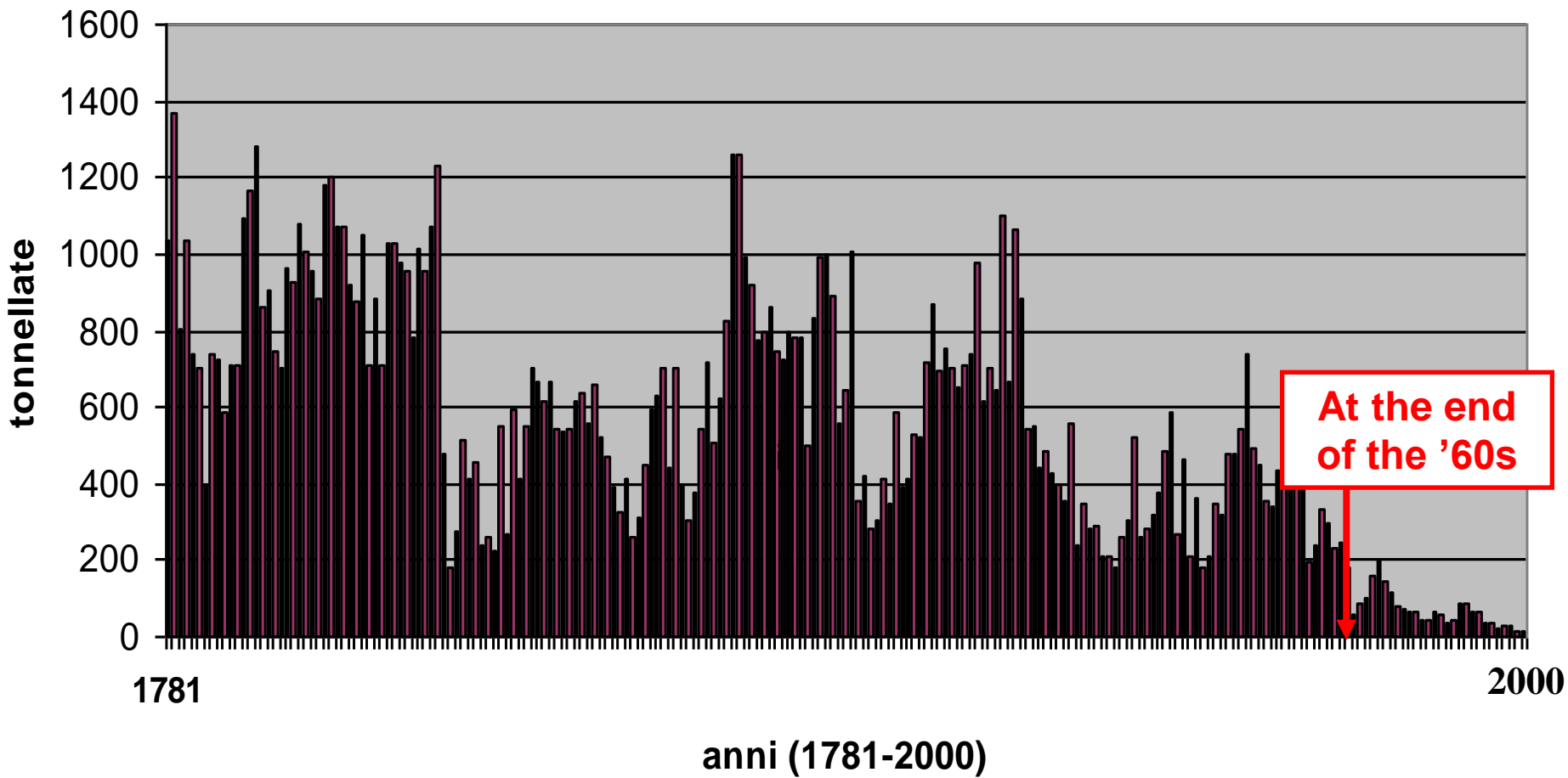


**114 kg - Po River, 30 km
upstream the delta, in 2011**

Le Valli di Comacchio from the extension of 40.000 ha, in the '60s, are reduced now to 8.500 ha



Silver eel production (t/y) in the valli di Comacchio from 1781 to 2000 (Rossi e Cataudella, 1998)



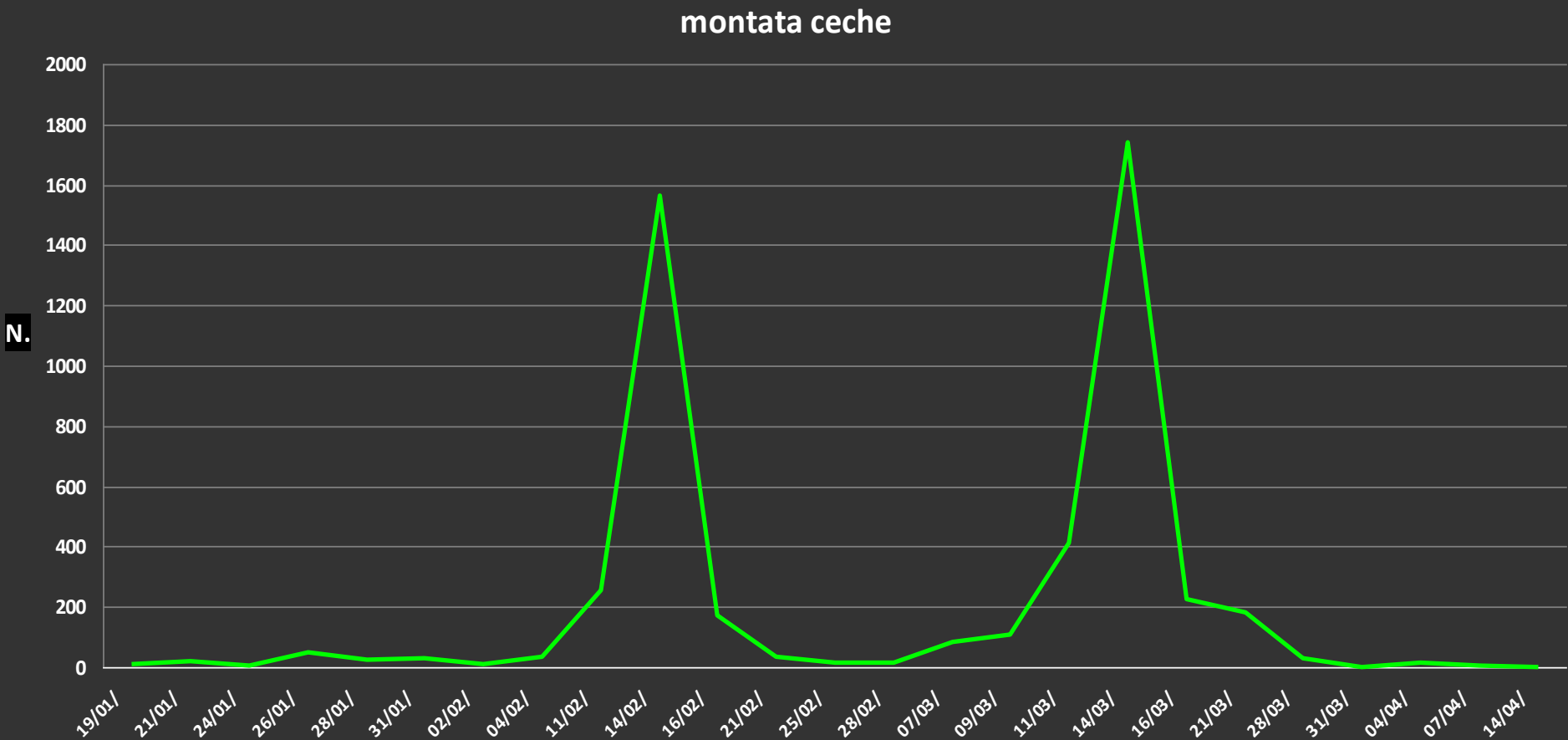






5033 glass eels were caught and measured





D'Ancona U., 1940 – *Montata ed accrescimento delle giovani anguille dell'Alto Adriatico in confronto a quelle delle altre parti del Mediterraneo e delle coste europee settentrionali.* Atti del Reale Istituto Veneto di Scienze, Lettere ed Arti. 99: 447- 464.





25/05/2011 06:05



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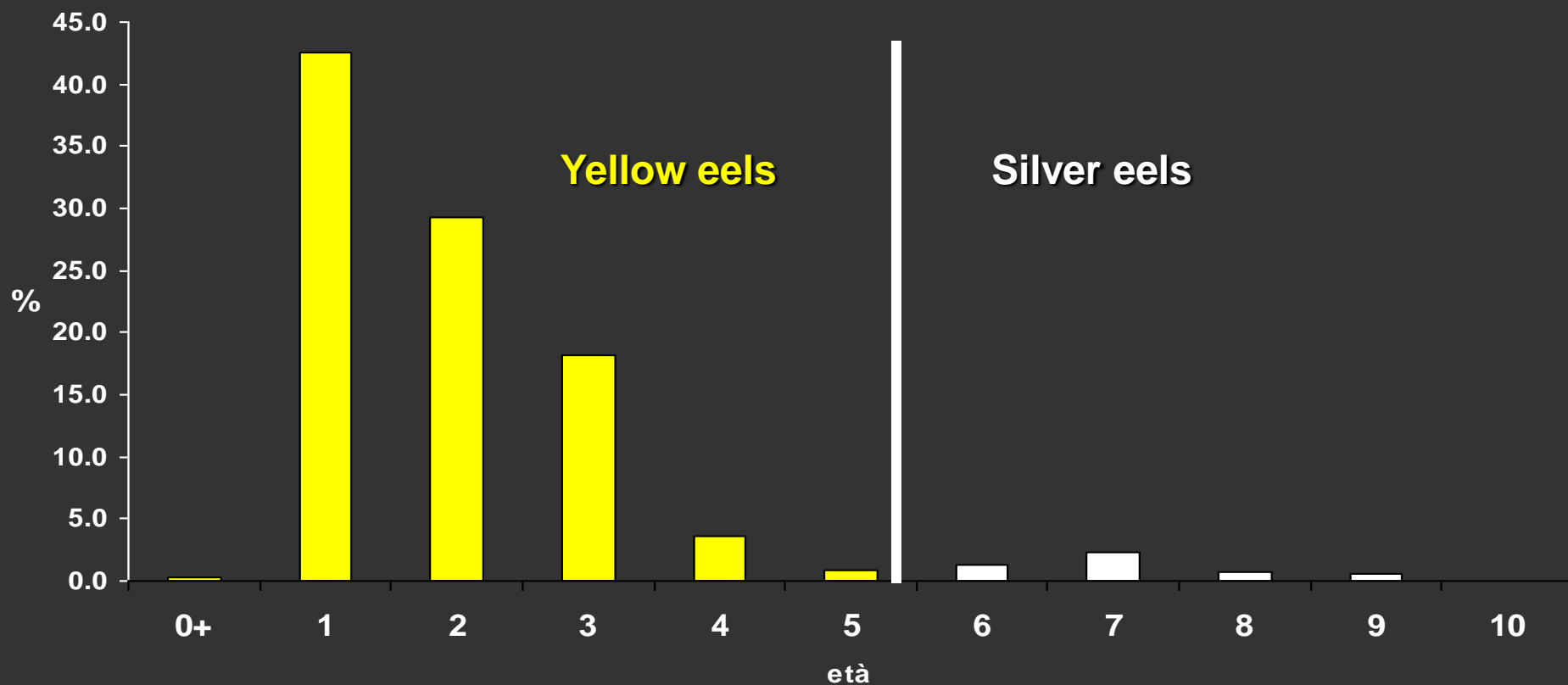


SILVER EELS
mean length 85.5 cm
mean weight di 1393.5 g



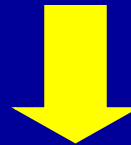
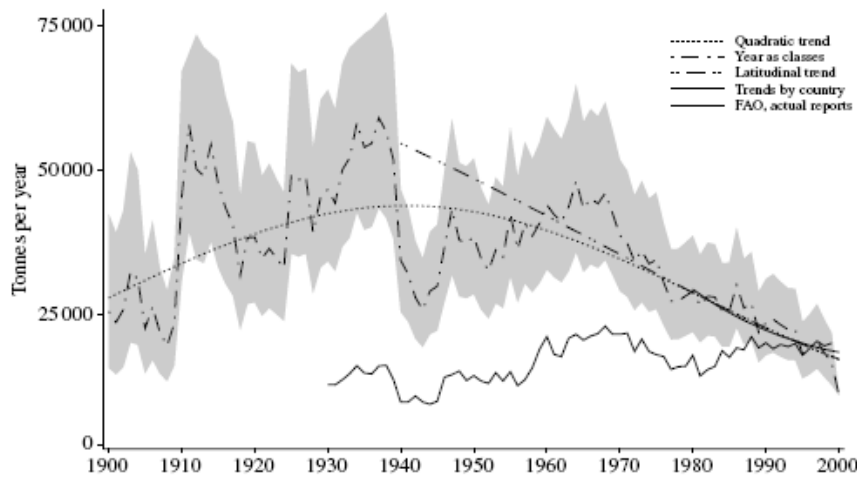
Età	L.t. (cm)	D.S.	Range
0+	15.1	1.42	13,5-16,2
1	22.38	4.22	17,9-31
2	33.16	5.18	25,6-42,5
3	47.61	6.00	37-56,8
4	58.62	4.45	52-64,3
5	67.37	1.89	65-69,5
6	70	1.50	68,5-72
7	78.43	3.85	72,7-83
8	83.7	0.44	83,2-84

Yellow eels become silver after 6-7 years within the lagoon!



The 2011 monitoring of the stock in the Valli di Comacchio proved that:

- **recruitment is still occurring (need of interannual replication)**
- **yellow eels size distribution agrees with previous studies**
- ***Angiullicola crassus* is nearly absent**
- **they are all females (>99%)**
- **they grow very fast and differentiate early**



22.9.2007

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Official Journal of the European Union

L 248/17

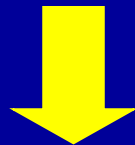
COUNCIL REGULATION (EC) No 1100/2007
of 18 September 2007
establishing measures for the recovery of the stock of European eel

Goal: ensure an adequate escapement level of silver eels. 40 % of the pristine level

Method: setting up of Eel Management Plans in each Member State

Drafting of the IT EMP: time schedule

- ❖ September 2007 Regulation 1100 is issued by EU
- ❖ 2008 In Italy consultation with stakeholders take place
- ❖ 2009 Italy prepares and submits a final version of the IT
EU and ICES evaluate the Plan, and ask for some changes
- ❖ 2010 IT - EMP is approved
- ❖ 2009-2011 IT- EMP implementation
- ❖ 2012 MS prepare and submit to EU
a report based on monitoring
and evaluation
- ❖ 2013 stock-wide assessment for eel



- ❖ new actions are foreseen at EU level

IT EMP - structure

1) Choice of the Eel Management Units (EMU)

In Italy the River Basins as EMUs would have been a choice not functional to management, and not applicable to the Italian Administrative framework.

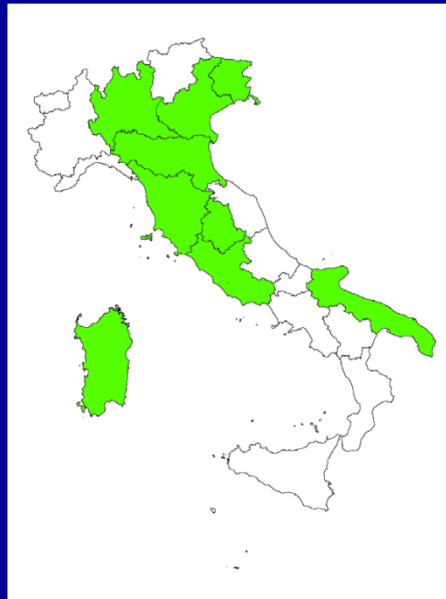
Italy has decided to avail itself of the opportunity provided in Article 2 of the Eel Regulation 1100, which stipulates that 'if appropriate justification is provided, a Member State may designate the whole of its national territory or an existing regional administrative unit as one eel river basin'



In Italy EMUs are the Regions

9 key areas (Regions) declared interest to maintain eel fisheries and to participate to the stock recovery process

Lombardia
Veneto
Friuli Venezia Giulia
Emilia
Romagna
Toscana
Lazio
Umbria
Puglia
Sardegna



In the remaining 11 Regions, total closure of the fisheries (both recreational and commercial) has been adopted

2) *Habitat typologies*

Within the 9 Regions involved in the IT – EMP, many eel habitats are present
rivers,

lakes,

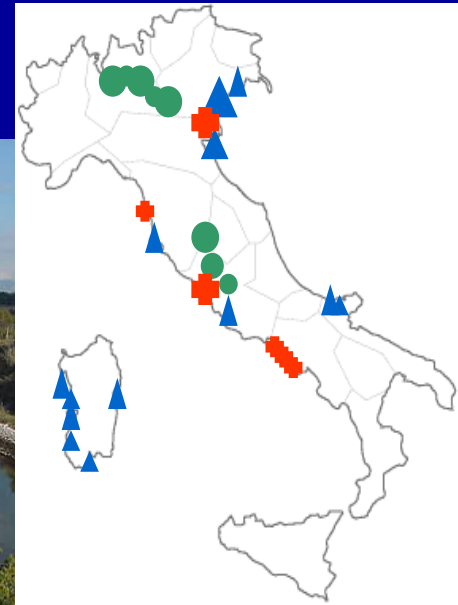
coastal lagoons,

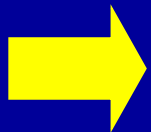
managed lagoons

where eel ecology and population structure are different, and where local stocks are managed differently

➡ *within each region, habitat types have been considered separately*

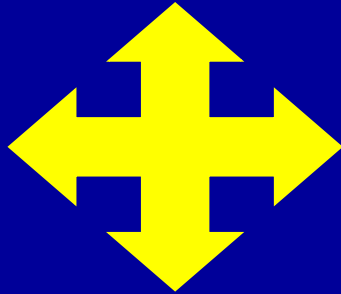
➡ *24 strata*





IT – EMP is a mixed Plan

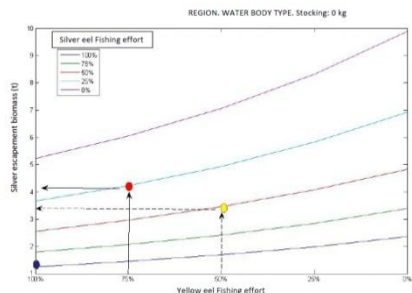
There is a National Plan that ensures the general framework and methodology, and provides for coastal waters under the Central Administration



There are 9 Regional Plans, where each Region defines

- its own target (Bo): escapement to be ensured, 40 % of the pristine escapement*
- the management strategy to achieve this target*

Region	Total ha	Key Centre	Regional Management plan
Valle d'Aosta	1620	no	
Piedmont	11970	no	
Lombardy	50277	yes	x
Trentino Alto Adige	8803	no	
Friuli-Venezia Giulia	16085	yes	x
Veneto	90754	yes	x
Liguria	2437	no	
Emilia-Romagna	21953	yes	x
Tuscany	12489	yes	x
Marche	3370	no	
Umbria	16459	yes	x
Lazio	28142	yes	x
Abruzzi	4352	no	
Molise	3638	no	
Campania	4211	no	
Basilicata	5742	no	
Apulia	14394	yes	x
Calabria	8077	no	
Sicily	10656	no	
Sardinia	32623	yes	x



- The 9 regions have used the same methodology to evaluate their target Bo (DEMCAM Model)*
- The management strategies have been set according to common guidelines*

IT EMP - Main contents

New regulation for glass eel fishery, into force since 2011:

- Limitations to effort (only enruled fishermen, restriction of fishing areas)*
- Quotas*
- Entire traceability of fishing and trade*

Coordination of glass eel fishery regulation in coastal waters (Ministry) and in inland waters (Regions)



IT EMP - Main contents

The New Italian regulation for glass eel fishery fulfils the obligations laid by Article 7(2) of Regulation 1100/2007 concerning restocking measures:



The Glass eel regulation provides that quantities of the annual quotas will be mandatorily set aside for restocking in waters which flow into the sea, so that the restocking will contribute to reaching the target 40% escapement level stipulated in Article 2(4) of the regulation.

Fulfilment of this obligation will be verified using the sales reporting system set out in this new regulation.

The mandatory quantities set aside for restocking will be as follows:
at least 35% of the authorised quota in 2010,
to be increased in successive 10% increments each year, in other words:
at least 45% of the authorised quota in 2011,
at least 55% of the authorised quota in 2012,
at least 60% of the authorised quota in 2013.

The regions which authorise glass eel fishing will be obliged to set aside restocking quotas that are no lower than the quotas stated above for each yearly period.

IT EMP - Main contents

Each Region- EMU has its own target, Bo → tons of silver eels to be allowed to escape from each

Region	Water body type	Area in ha	Former Production (t)	Current Prod. (t)	40% of former level (target)	Former Prod. (kg/ha)	Current Prod. (kg/ha)
Friuli-Venezia Giulia	low yield lagoons	14300	16.51	2.53	6.60	1.15	0.18
	high yield lagoons	1700	23.80	3.65	9.52	14.00	2.14
	rivers	6837	16.77	1.68	6.71	2.45	0.25
Regional total					22.83		
Veneto	medium yield lagoons	43000	243.00	21.4	97.20	5.65	0.50
	rivers	5000					
	lakes	38400	55.00	5.1	22.00	1.43	0.13
Regional total					119.20		
Emilia-Romagna	medium yield lagoons	15957	303.18	106.01	121.27	19.00	6.70
	rivers	5359	97.53	8.04	39.01	18.20	1.50
	lakes	637	0.89	0.6	0.36	1.40	0.10
Regional total					160.64		
Lombardy	rivers	5378	114.00	5.0	45.60	2.27	0.11
	lakes	44899					
Regional total					45.60		
Tuscany	medium yield lagoons	2700	236.00	40.00	94.40	16.12	2.73
	rivers	10640					
	lakes	1300					
Regional total					94.40		
Lazio	medium yield lagoons	1243	17.40	1.0	6.96	14.00	1.21
	rivers	3577	15.00	15.00	6.00	4.19	4.19
	lakes	22021	90.00	90.00	36.00	4.09	4.09
Regional total					48.96		
Umbria	rivers	2717	3.80	0.3	1.52	1.40	0.14
	lakes	13742	56.00	5.6	22.40	4.08	0.41
					23.92		
Apulia	medium yield lagoons	11723	190.30	77.5	76.12	16.23	6.61
	lakes	2671	0.00	0.00	0.00	0.00	0.00
	rivers						
Regional total					76.12		
Sardinia	low yield lagoons	3880	29.47	24.85	11.79	7.59	6.40
	medium yield lagoons	4111	117.55	44.68	47.02	28.59	10.87
	high yield lagoons	2267	101.36	20.30	40.54	44.72	8.96
	rivers	2370	4.50	1.35	1.80	1.90	0.57
Regional total					101.15		
Total national target					692.82		

Target

IT EMP - Main contents

Regions have contemplated measures such as:

a) SHORT TERM

- Reduction of commercial fishing effort
- Reduction of recreational fishing effort
- Return quotas
- Restocking

b) LONG e MEDIUM TERM

Restoring river continuity

Reducing predation

Systems to keep eel away from
turbines

Improving habitat quality



Management measures

IT EMP - Main difficulties

Lack of coordination among the different levels of intervention:

Ministry of the Agriculture and Forestry Politics (that interacts with EU – DG Mare) → Regions → Provinces

Lack of coordination among EMUs-Regions, in particular in the North East where there are River Basins shared among Regions

Lack of awareness of the stakeholders (both commercial and recreational fishermen) concerning the status of the eel stock, the existence of a recovery plan, their potential role

Difficulty for some regions in translating the contents of the Regional Plans in operational programs

Difficulty in setting up EFF programs for eel