

Interreg
Sudoe



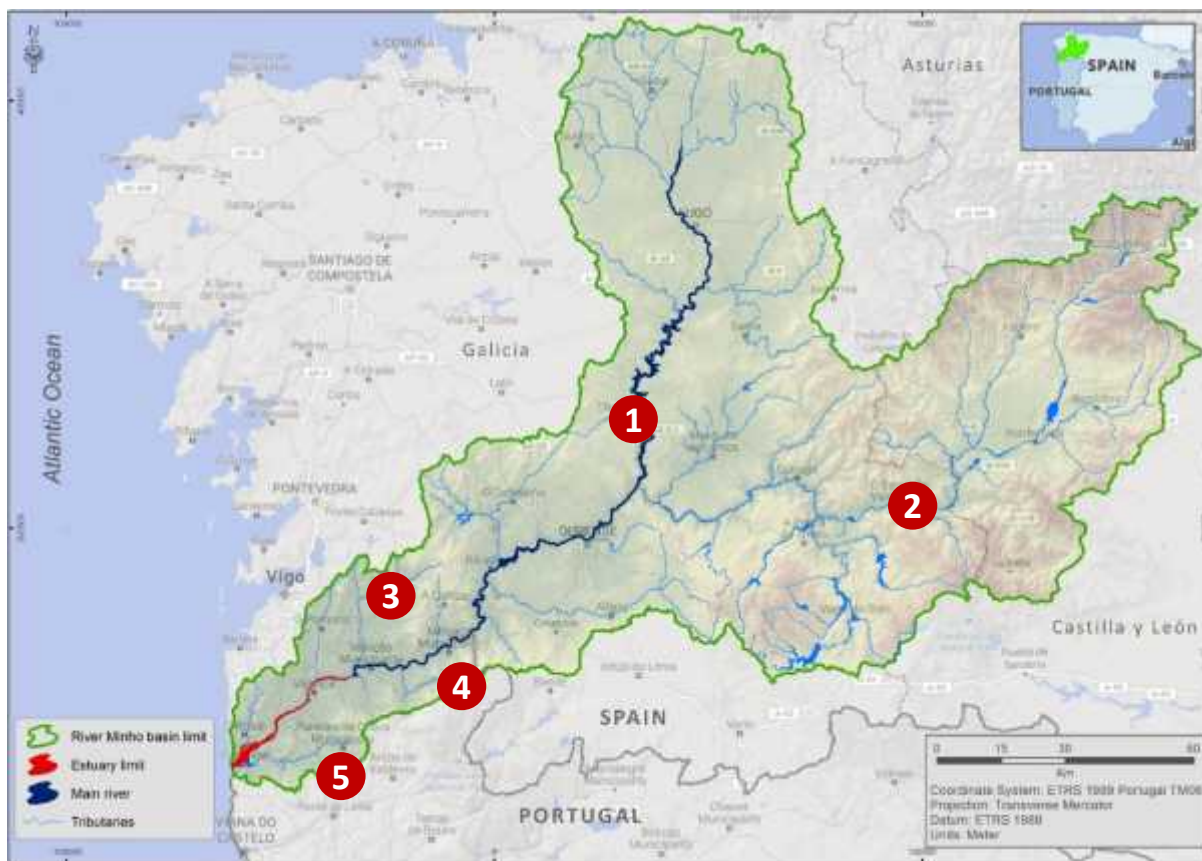
PILOT BASINS - River Minho



Carlos Antunes



The river basin



River length - 343 km **1**
 River basin area – 17.080 km²
 (5% in Portugal)

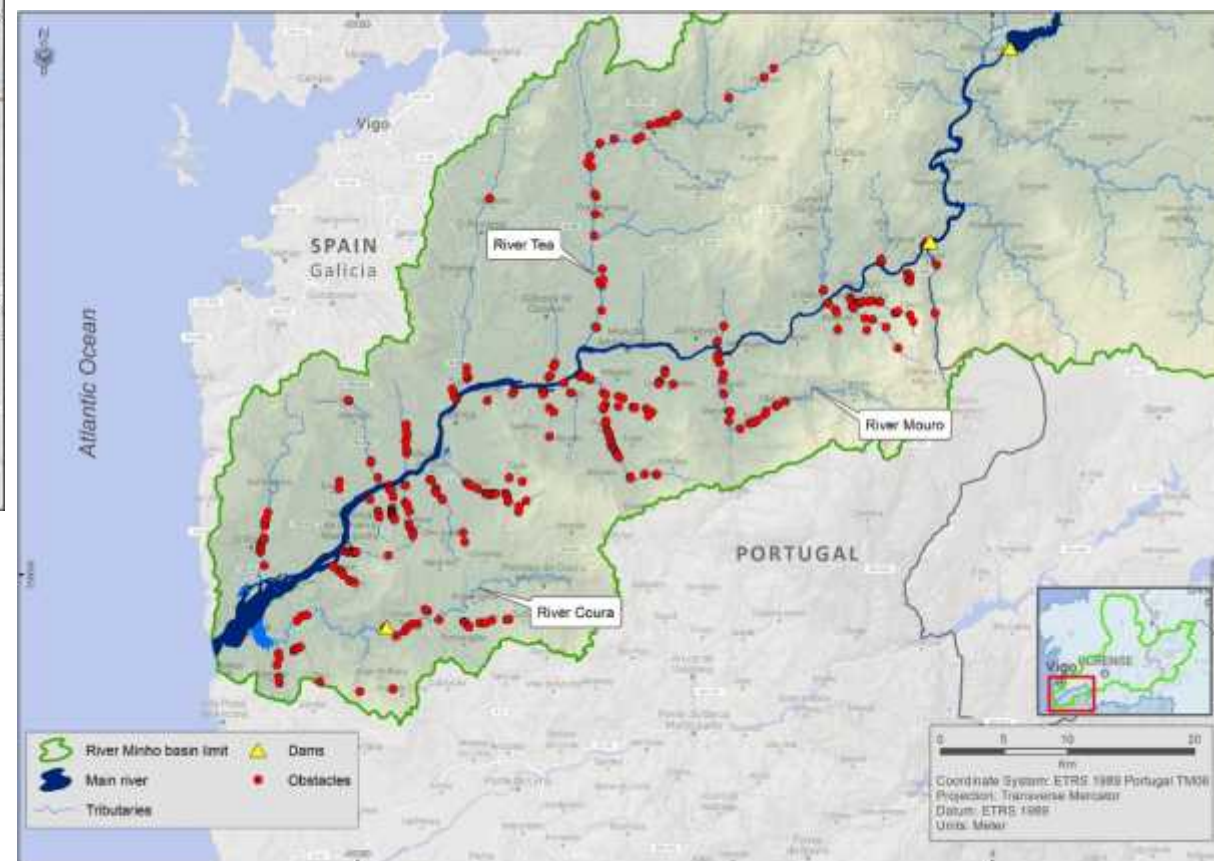
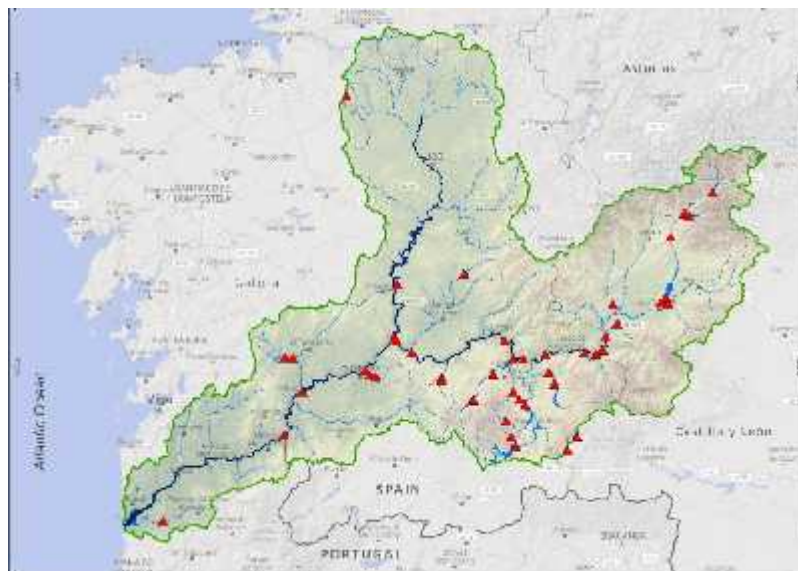
Several tributaries

- River Sil **2**
- River Tea **3**
- River Mouro **4**
- River Coura **5**
- ...

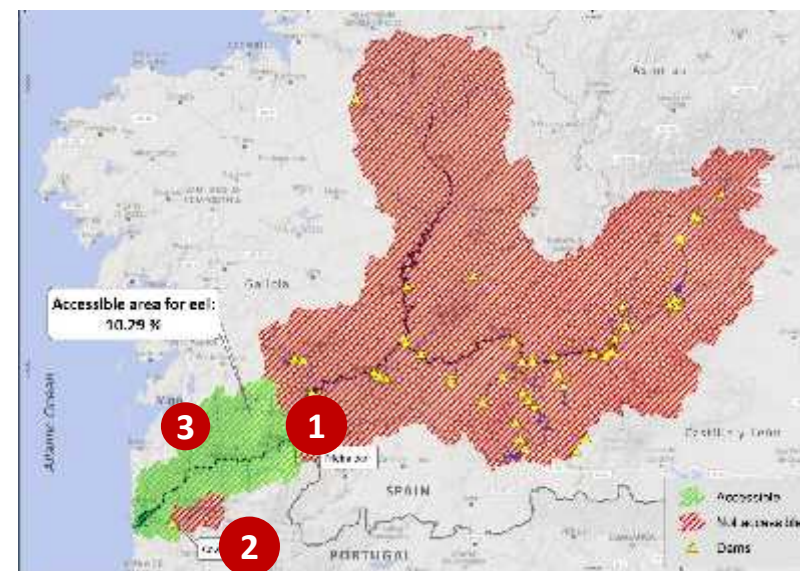
Estuarine length

- 37 km

Obstacles to migration

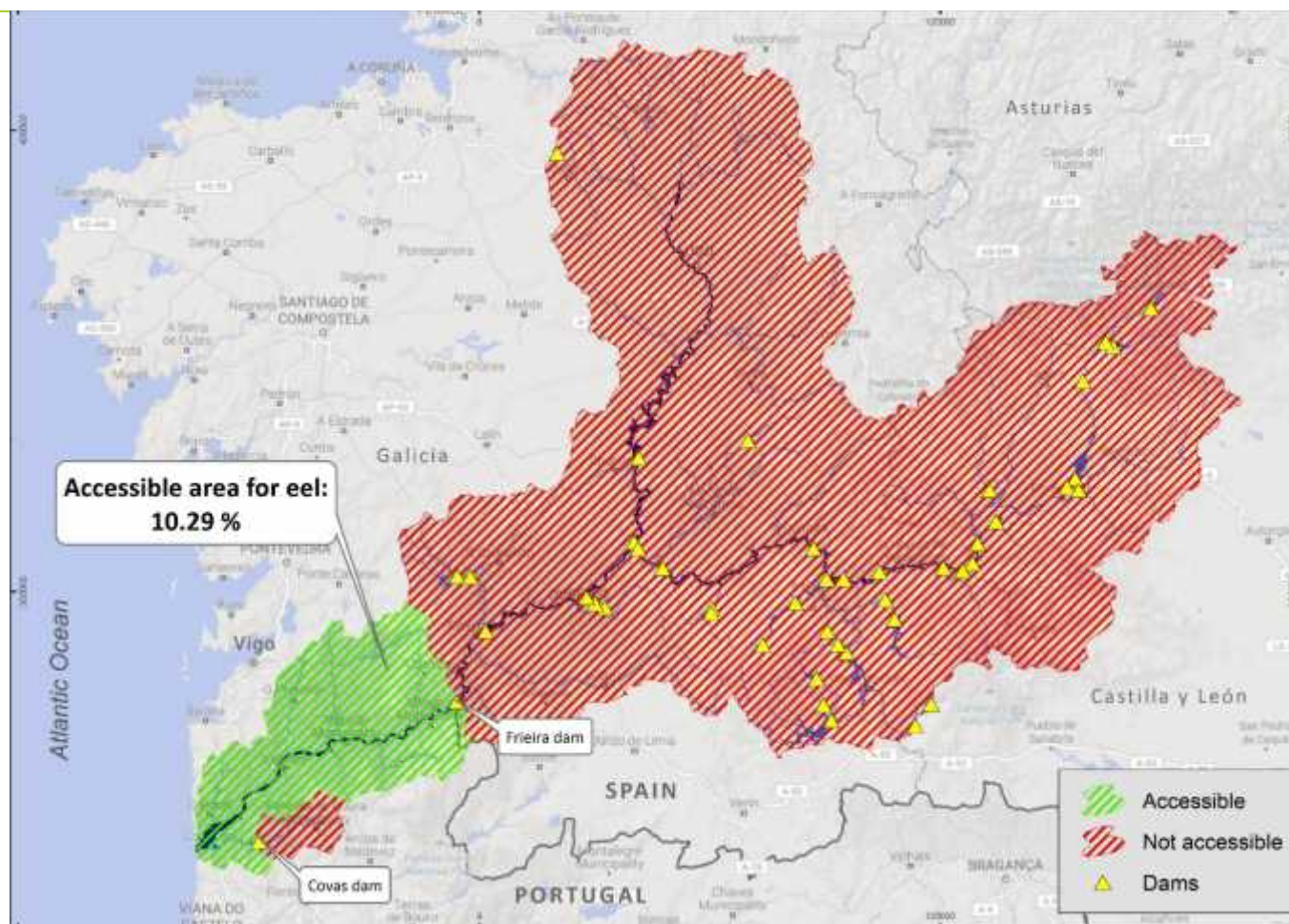


Obstacles to migration



- 1 Frieira dam
- 2 Covas dam
- 3 Small obstacles / weirs

Obstacles to migration



The eel fishery



Floatline: 10+10 m
 Depth: 8 m
 Leadline: 15 m
 Mesh size: 1-2 mm



Fishing period:
 60 days (4 new moon)
 IFQ= 3 Kg /day/
 fisherman



	Estuary	River
Glass eels	YES	NO
Yellow eels	NO	NO
Silver eels	NO	NO

FISHING GEARS

	Estuary	River
Glass eels	Tela (stow net)	-
Yellow eels	-	-
Silver eels	-	-

Yellow/silver eel not allowed by:
 Commercial fishing (since 2008/2009)
 Recreational fishing (since 2010)

Other pressures on the eel

WATER QUALITY / POLLUTION



Water Treatment Plant



Outbreaks of organic pollution



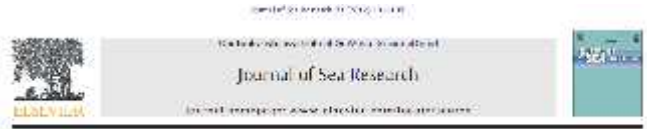
Potential chemical pollution

ANGUILICOLOIDES



Local	Ano	Nº de Enguias	Prevalência
Tinto	2009	24	54%
Seixas	2011	17	100%
Lanhelas	2010	9	67%
S. Gonçalo	2009	12	58%
Marina da Lenta	2008-2011	142	75%
Campos	2009	21	57%
Gontige	2009	19	58%
Ínsuas	2009	36	47%
Veiga da Mira	2009	12	67%
Valença	2011	12	92%
Ranhão	2010	42	60%
Manco	2010	7	71%
Várzea	2010	10	100%
Mouro	2011	23	78%
S. Gregório	2009	13	23%
Melgaço	2010	3	67%
Total		402	68%

CORMORANT



Natural food indicators: Great common Mullet (*Mullus barbatus*) as monitors of river discharge influence on estuarine ichthyofauna.
 Date: 2014-09-15, River Minho, 45, Nandik Vesgud, 5, 5000, Coimbra, BAF

7% of the diet is eel
 Consumption estimate
 (2005-06):
 0,1 – 2,5 tons



Eel Management Plan



Com Fish

Prohibit the eel fishery

Eel stage

Y/S

Reduce fishing effort

G

Introduce obligation to fill in logbooks

G

Rec Fish

Prohibit the eel fishery in marine jurisdiction

Y/S



2011 – 2016

2,6 Tons

12 cm eel translocation for Minho River tributaries

Frieira dam fish ladder



Approved by EU - 2012



Monitoring

- **Recruitment**

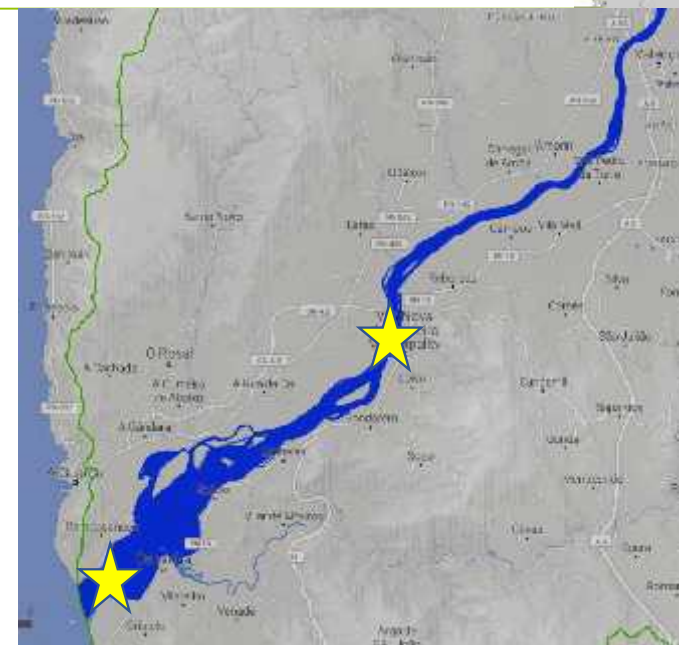
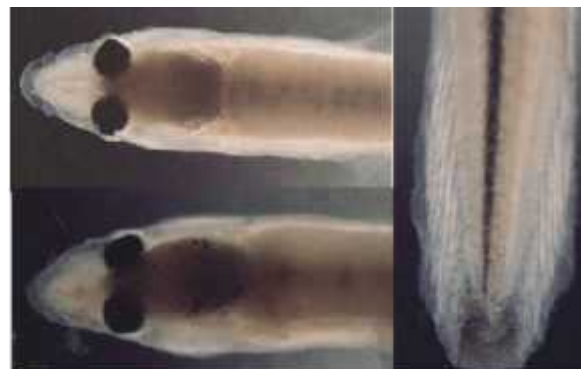
(Estuary / glass eels)

Experimental fishing started in 80's

It was interrupted several times (financial dependence)

Glass eel

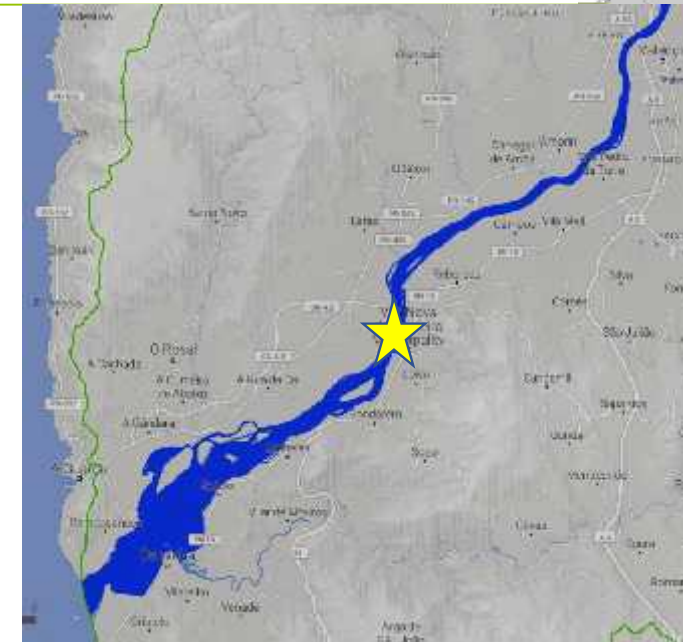
- 1 sample every month
- Biometric data
- Pigmentation stage analysis



Monitoring

- **Yellow / Silver eel**
(Estuary / glass eels)
Experimental fishing started in 2007
Without direct financial support

- Biometric data
- Eel maturity (Durif et al, 2005)
- Tetracycline injection
- Mark-recapture growth rate (PIT-tag)
- Age (linear growth rate)



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