Fish movements and possible impact of invasive species in a native fishes' conservation project (LIFE MIGRATOEBRE) in the lower Ebre River (Catalonia, NE Iberian Peninsula)

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1 CERM Centre d'Estudis dels Rius Mediterranis

2 GEA Research Group Aquatic Ecology UVIC·UCC

3 Parc Natural del Delta de l'Ebre

4 IRTA Institut de Recerca i Tecnologia Agroalimentàries

OBJECTIVES

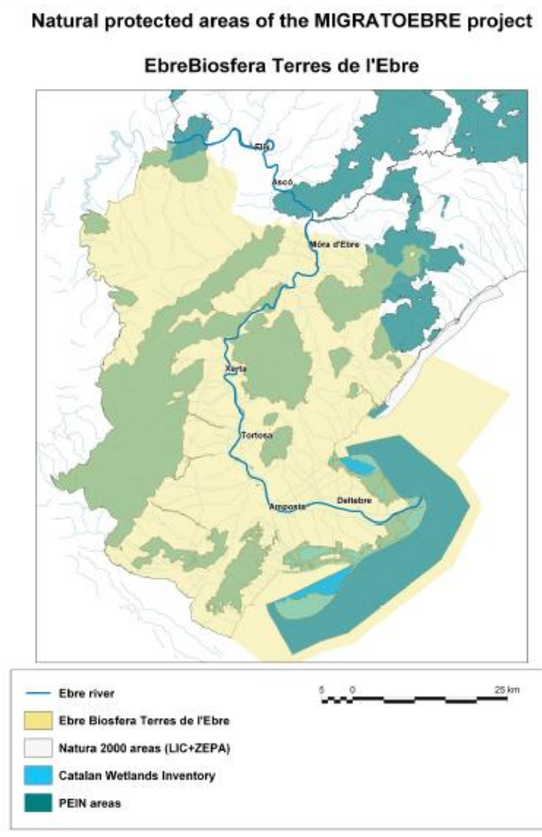
i) To know the movement patterns of European eel (*Anguilla anguilla*), twaite shad (*Alosa fallax*) and mullets (*Chelon ramada*, *Chelon labrosus* and *Mugil cephalus*) in the lower stretch of the Ebre river.

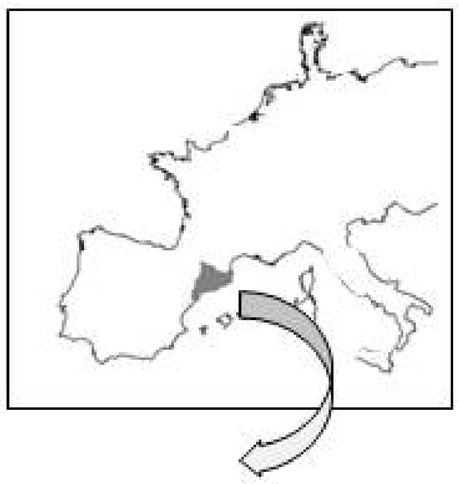
ii) To determine the magnitude of possible problems, mainly related to downstream fish migration and invasive species (as blue crab (*Callinectes sapidus*) and catfish (*Silurus glanis*)) in order to secure the success of fish recovery and the European sturgeon (*Acipenser sturio*) pilot release.

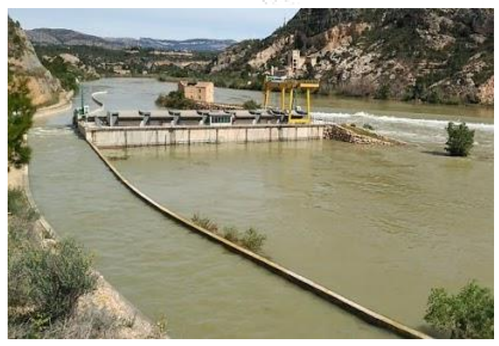
METHODS

Between 2017 and 2020, 150 fish (10 *Chelon ramada*, 13 *Chelon labrosus*, 21 *Mugil cephalus*, 45 *Alosa fallax* and 61 *Anguilla anguilla*) were monitored by acoustic telemetry, by using V9-2H (*A. fallax*) and V13 (other sp.) acoustic pingers , and 47 Vemco receivers located along the lower Ebre river and at the coastal lagoons of the Ebre delta (following Le Pichon et al., 2015).

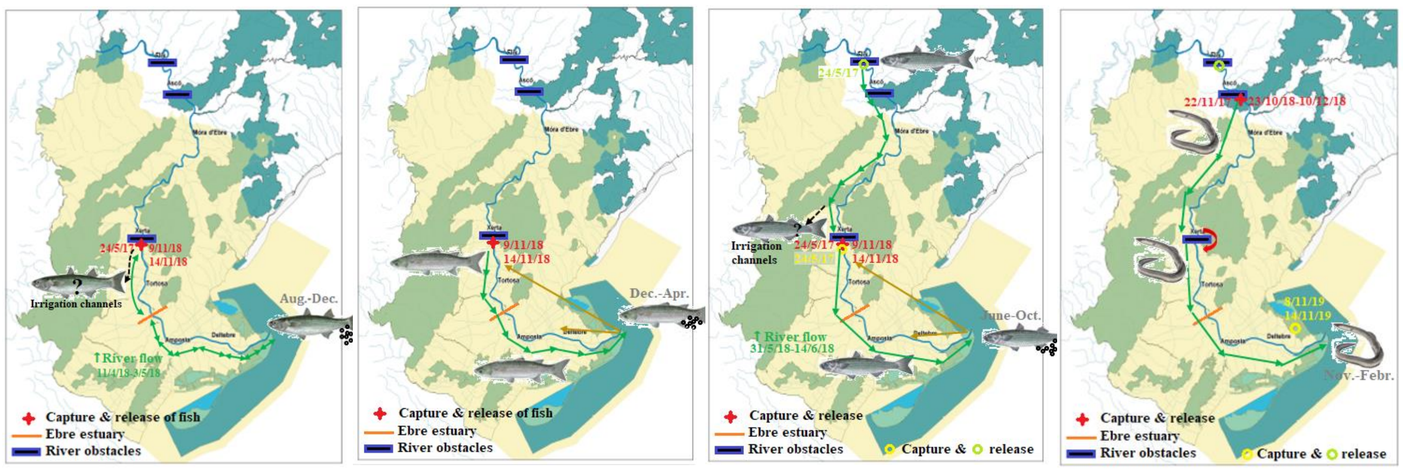
Study site



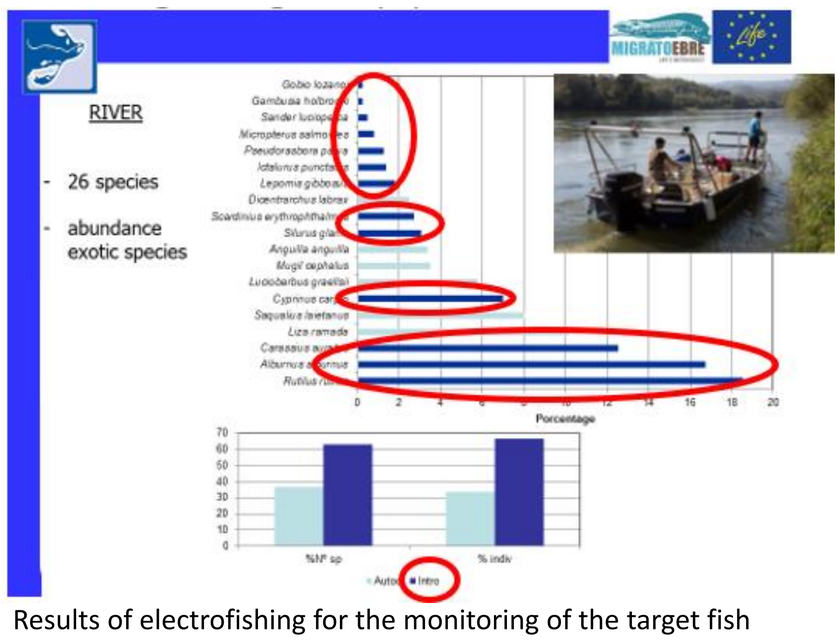




RESULTS AND DISCUSSION



Migratory movements of *Chelon ramada, Chelon labrosus, Mugil cephalus* and *Anguilla anguilla* (from left to right) in the lower Ebre river and its delta between 2017 and 2020.



Results of electrofishing for the monitoring of the target fish population of the lower Ebre river in 2019.

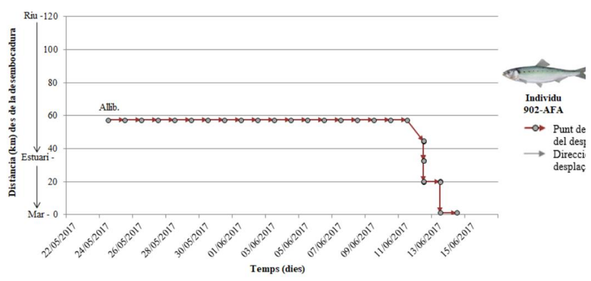


Figura 29.A: Distància de la desembocadura (en km) on es troba l'individu 902 respecte el temps (en dies). AFA: *Alosa fallax*; Allib.: alliberament de l'individu després del marcatge. Dibuix cedit per Toni Llobet.

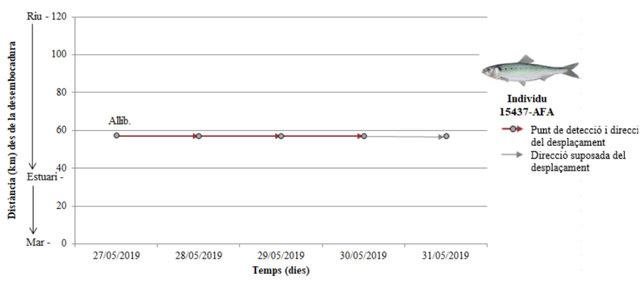
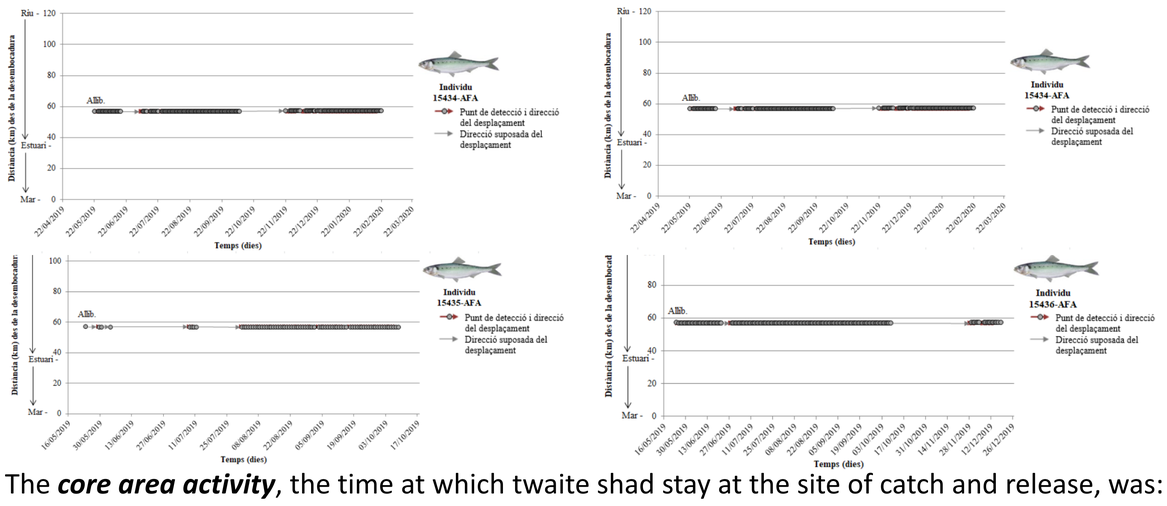


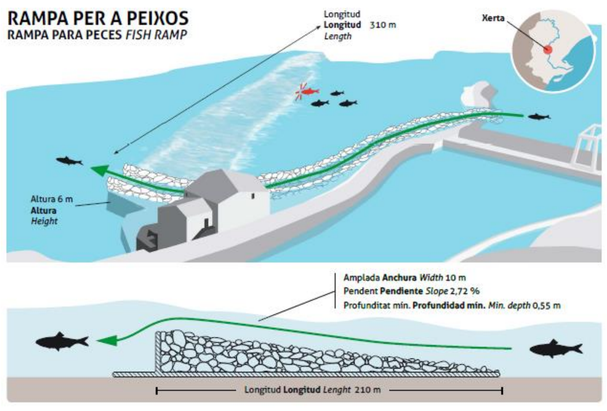
Figura 36.A: Distància de la desembocadura (en km) on es troba l'individu 15437 respecte el temps (en dies). AFA: *Alosa fallax*; Allib.: alliberament de l'individu després del marcatge. Dibuix cedit per Toni Llobet.

44,4% of fish (4 from 2017 and 16 from 2019) caught and released in May (already having spawned) **go downstream in June, until the sea**. 13,3% of fish (1 from 2017 and 5 from 2019) have only been detected for few days after their release, possibly by dead or poaching.



The ***core area activity***, the time at which twaite shad stay at the site of catch and release, was:

- 7 - 14 days in 2017
- 4 - **266 days** in 2019-2020 (19 fish, **42,2%, were probably predated**).



CONCLUSIONS

In order to prevent their loss to the irrigation canals of the Ebre delta (as happened with the mullets caught near the sea and released 52 km up), the pilot release of juveniles of European sturgeon will be preferably carried out downstream Xerta weir.

Even though Ebre river allows the recovery for this diadromous and other native species, mitigation measures are still needed, such as:

a) **improving river connectivity** for fish (finally, construction of the Xerta fish ramp will be completed in 2023), and

b) **invasive species control** (an intense involvement campaign for anglers is already planned).

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