Situation of the Allis shad population in the Gironde-Garonne-Dordogne watershed

David Clavé – MIGADO – LIFE Plateformmeeting Tartu 10/09/2014

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MIGADO : association since 1989

Administrative council of anglers federation

Missions :

- Restoration of salmon and sturgeon population ;
- Monitoring of Allis shad, sea lamprey and eels.

Partenaires techniques et financiers :

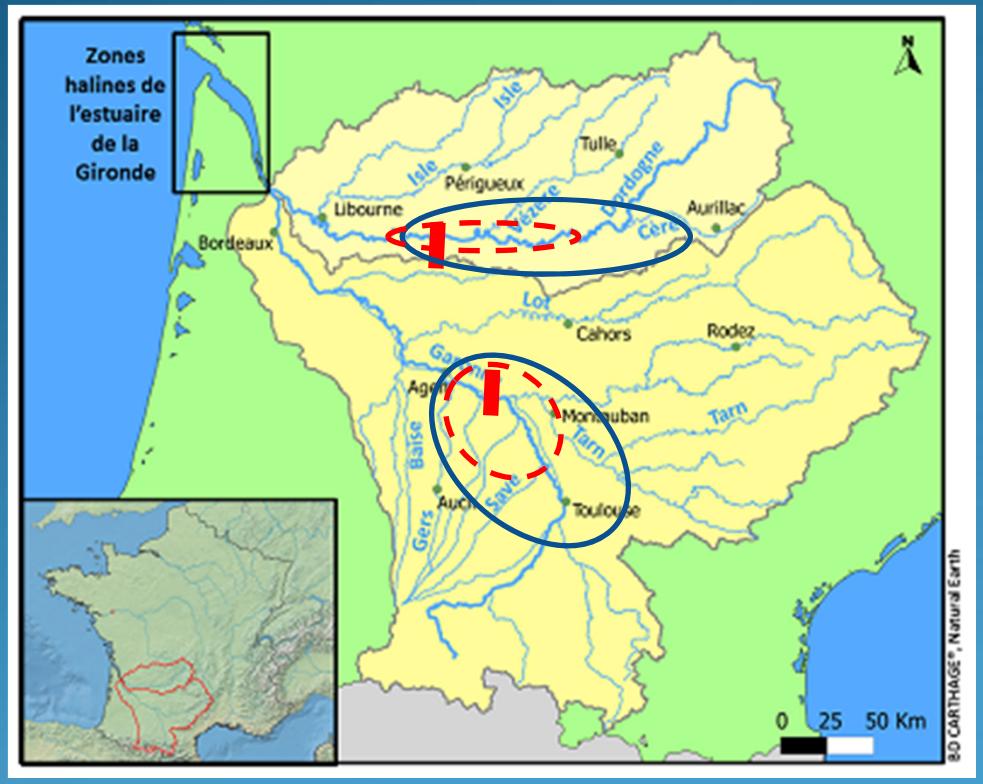
Biology of the Allis shad

- Family of clupeids;
- Anadromous fish ;
- High fecondity (150 000 eggs/fem.) ;
- Maturity 3 to 6 years ;
- Death after reproduction ;

Geographical distribution and abundance

- Presence from Denmark to Portugal ;
- Decrease of abundance along the XIX's and XX's century;
- Late XX's, the biggest population of Europe was in Gironde.

Focus on the Gironde-Garonne-Dordogne watershed



: Dams

: Formal spawning grounds

: Actual spawning grounds

Beguinning of the XX's

- Allis shad is a huge income for fisheries ;
- major impact of dams and extraction of gravels ;

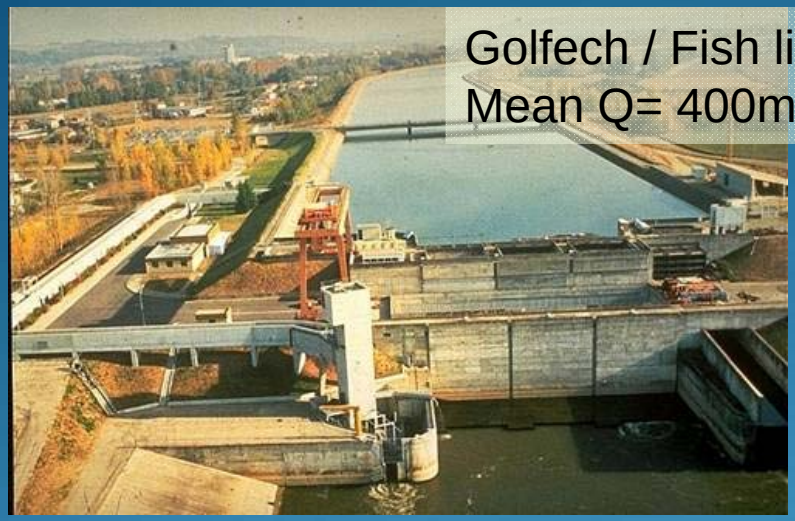
=> Decrease of the abundance

After 80's

- Allis shad is a huge income for fisheries ;
- Equipment of dams with fish ladders ;
- Beginning of monitoring ;

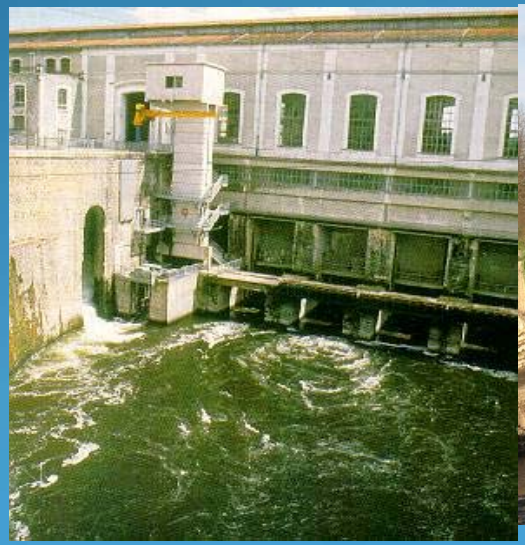
=>Increase of the population abundance and fishing pressure.

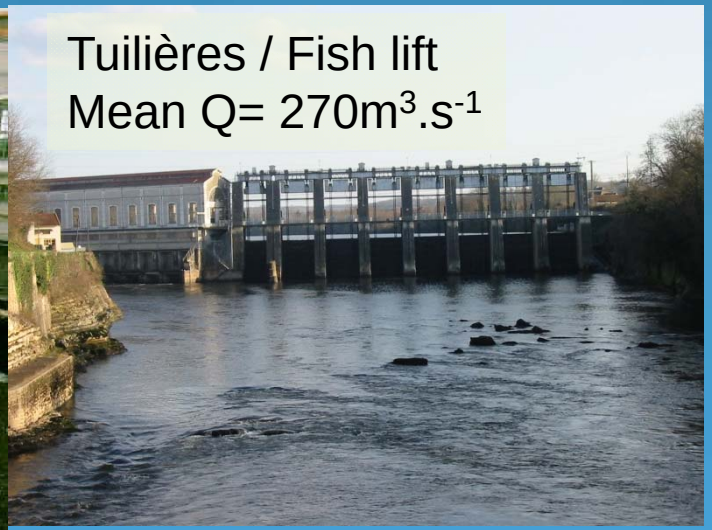
First dams in Garonne and Dordogne river.



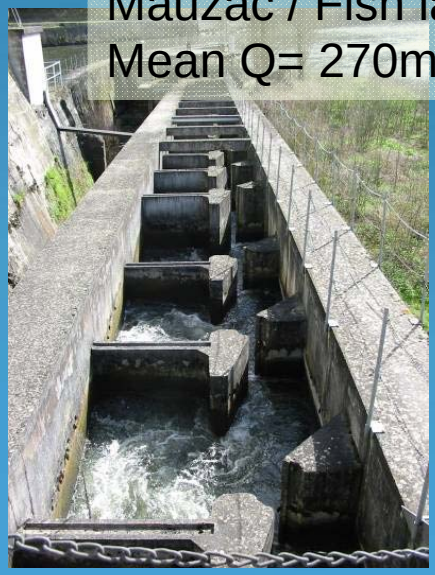
Golfech / Fish lift
Mean Q= 400m^3.s^{-1}

Bergerac / Fish ladder
Mean Q= 270m^3.s^{-1}



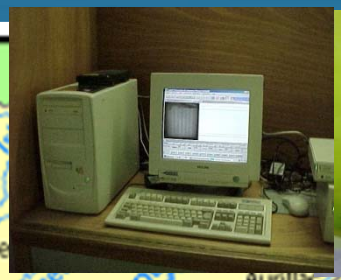


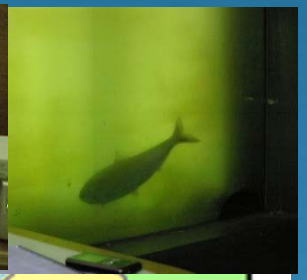
Tuilières / Fish lift
Mean Q= 270m^3.s^{-1}



Mauzac / Fish ladder
Mean Q= 270m^3.s^{-1}

More than 20 years of gathering knowledges within the dynamic of the population.





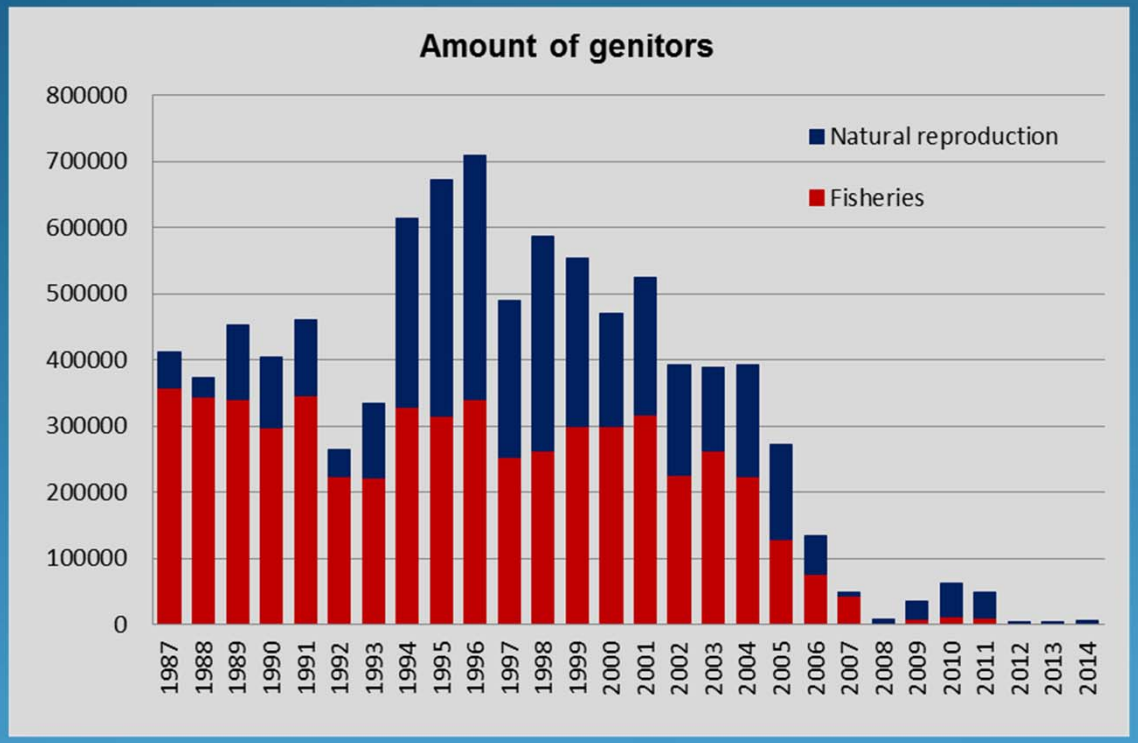
Spawners:

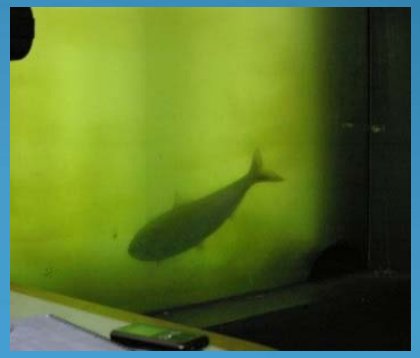
- 1-Statement of catches made by professionnal fishermen only;
- 2- video stations at dams;
- 3-Evaluation of the number of mating adults below dams.

Drifting YOY:

- 4-Sampling in the estuary.

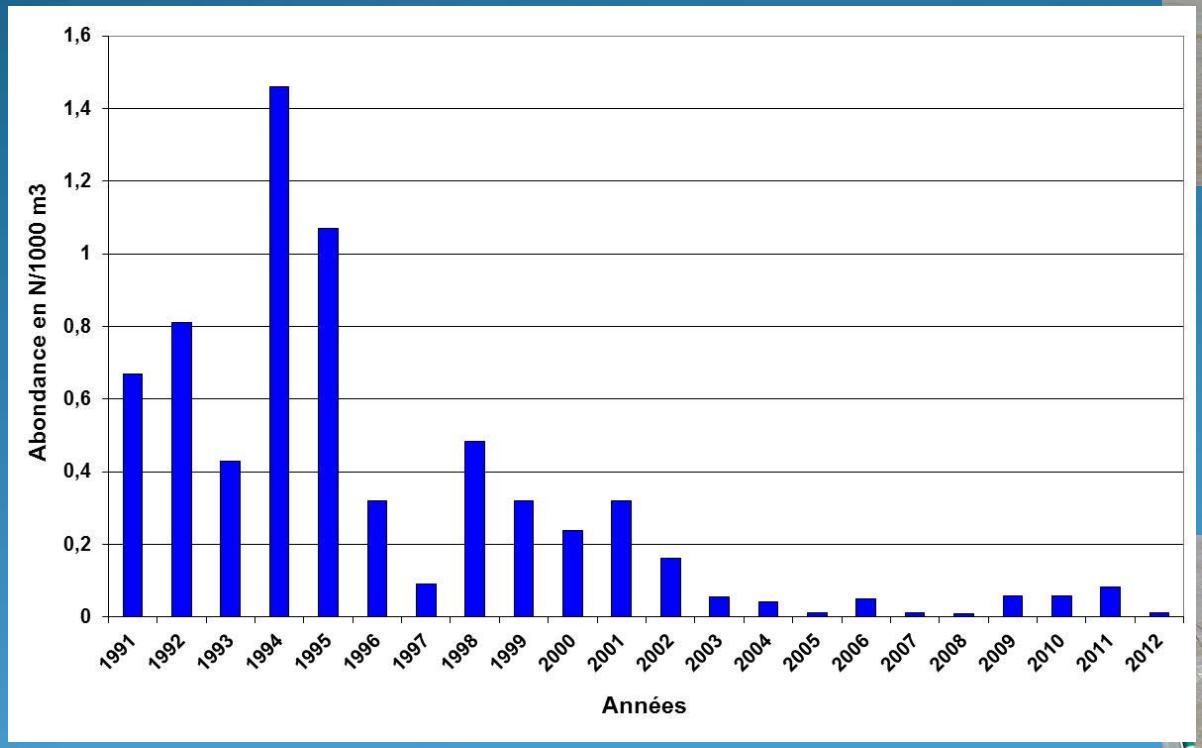
Evolution of the number of genitors in the catchment within 27 years





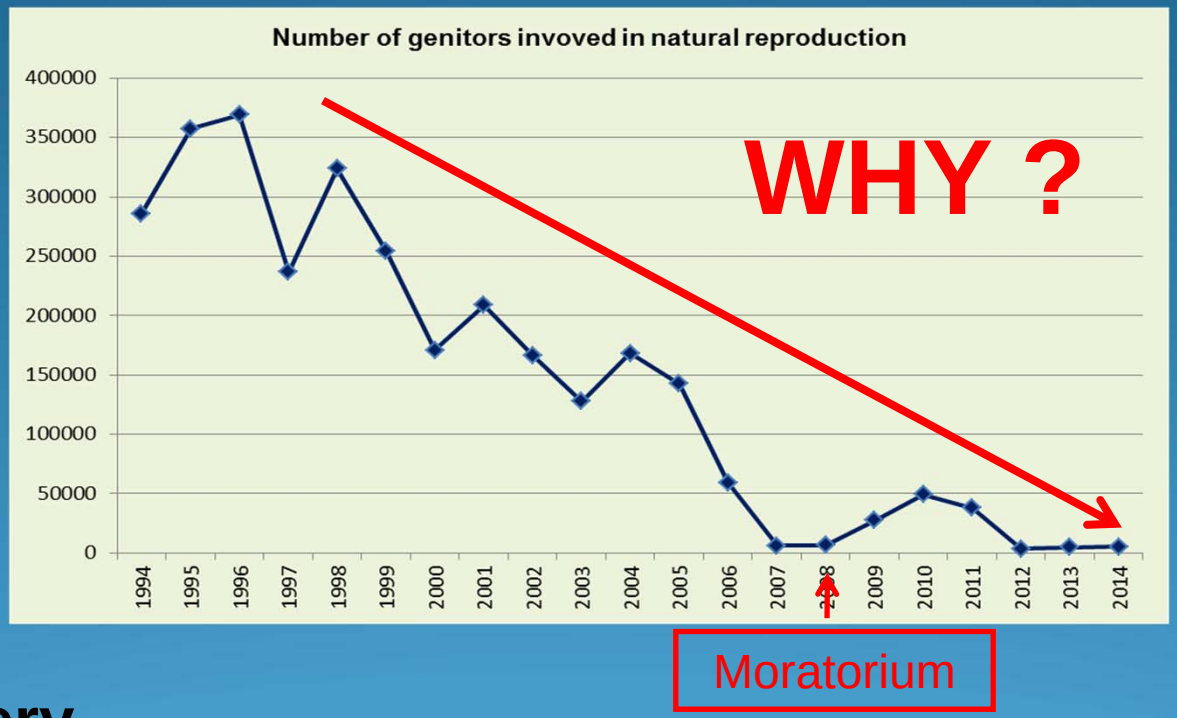
Before 94 => evaluation of natural reproduction is not exhaustive
From 94 to 04 => mean amount of spawners around 500 000
Since 05 => severe decrease of the number of adults

Samples of drifting YOY in the Estuary (IRSTEA) within 21 years



Before 96 => catching rate around 0,8
After 96 => catching rate decreasing constantly

From the top to the flop



1- Fishery

- **explotation rate of estuarian and fluvial fisheries was around 55-60 % ;**
- **Marine fisheries ????**

2 Free running

- Undeniable efficiency (50 to 70%) of fishways (first fish lift in France and bigger fish ladder in Europe) and improvment of the devices on a regular basis to reach the optimal efficiency of the fishlift (ladder).

BUT

- An important part of the population spawn below the dams on the lower part of the rivers, up to 80-90% of the genitors. Especially when the number of spawners is low ;

-Cumulated effects on The Dordogne (3 dams in 20 km) ;

By default, obligation to reproduce in downstream habitats, sometime a few hundreds meters downstream the dams, where habitat conditions have decrease since 20 years (gravels issues) and are not optimal every year (floods, temperature, water quality).

3- Mud plug in the estuary

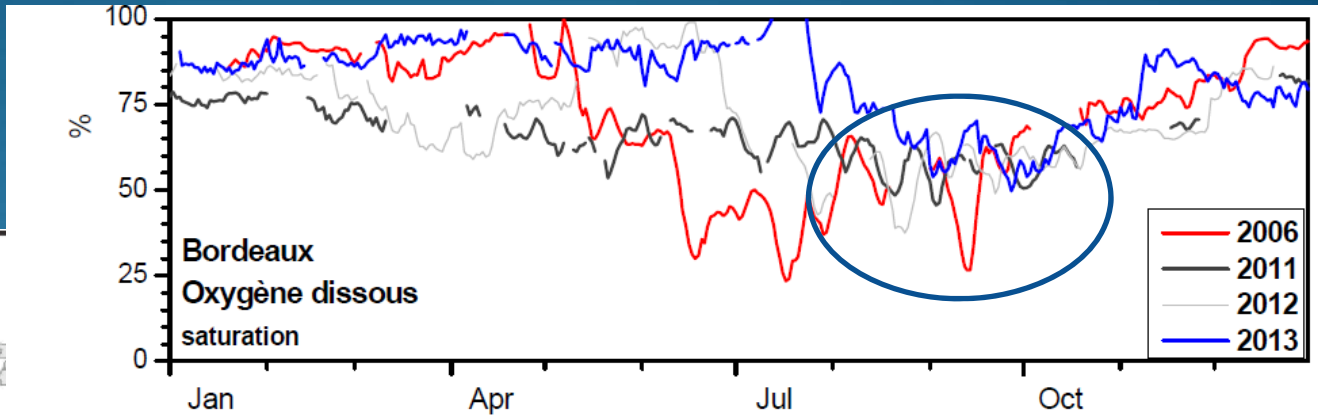
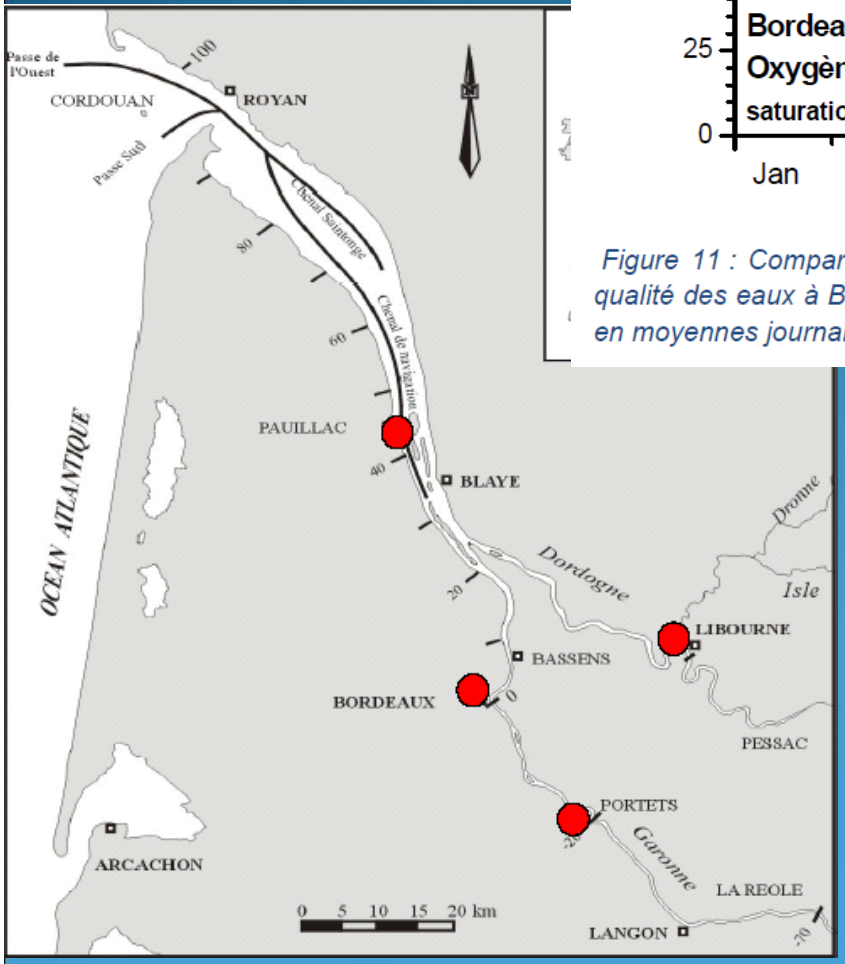
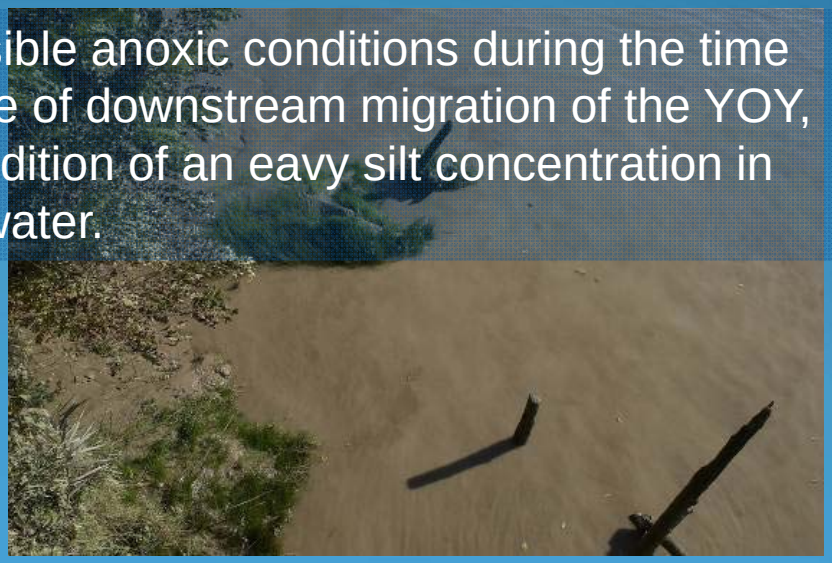


Figure 11 : Comparaison des débits de la Garonne (La Réole) et des enregistrements MAGEST de la qualité des eaux à Bordeaux, i.e. température, turbidité, oxygène dissous (concentration, % de saturation) en moyennes journalières, pour les années 2006, 2011, 2012 et 2013.



Possible anoxic conditions during the time frame of downstream migration of the YOY, in addition of an eavy silt concentration in the water.



Some solutions ?

1 Short term actions are necessary:

- **Moratorium for fluvial and estuarian fisheries ;**
- **Improvment of the fish passages with additionnals fish ladders regarding to the size of the rivers ;**
- **Improvment of the downstream spawning grounds (assessment of sedimentary context and addition of gravels if necessary).**

2 Medium term reflexions should start :

- **Real impact of marine fisheries;**
- **Real impact of mud plug;**
- **Water quality and foodweb;**
- **Relevance of stocking.**

3 Strong political involvement (local, national and Europeen);

Huge need to do this at a large scale in order to understand and improve the situation for other anadromous species too (Sea lamprey, salmon, etc).

Thanks for your attention