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Session D2: Coimbra Fishway: Restoring Connectivity in River Mondego

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COIMBRA FISHWAY

Restoring connectivity in River Mondego

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COIMBRA FISHWAY, Restoring connectivity in River Mondego

- ✓ **Where is river Mondego?**
- ✓ **What was the problem?**
- ✓ **What was done?**
- ✓ **What we expect to do?**

Where is River Mondego?

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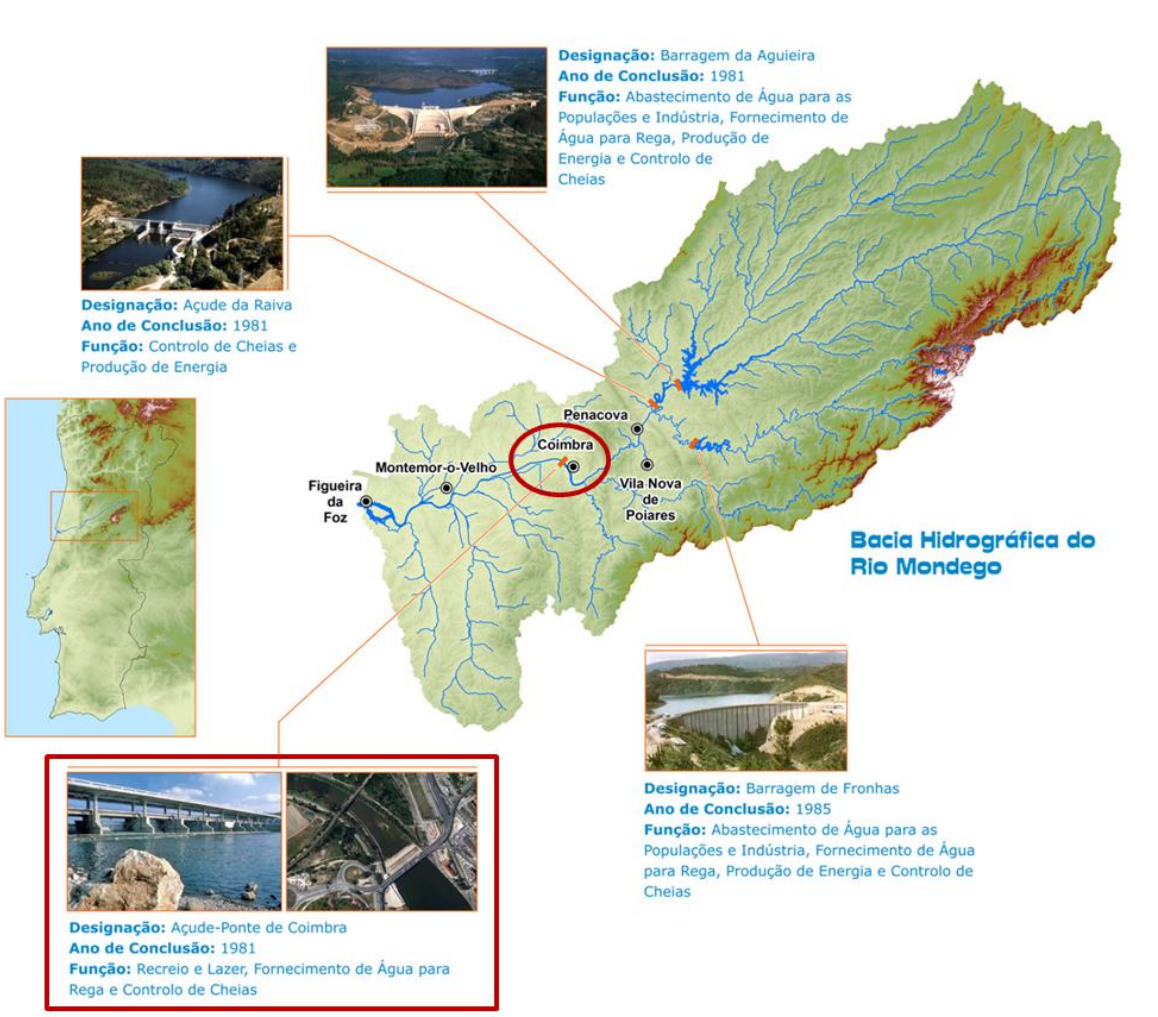
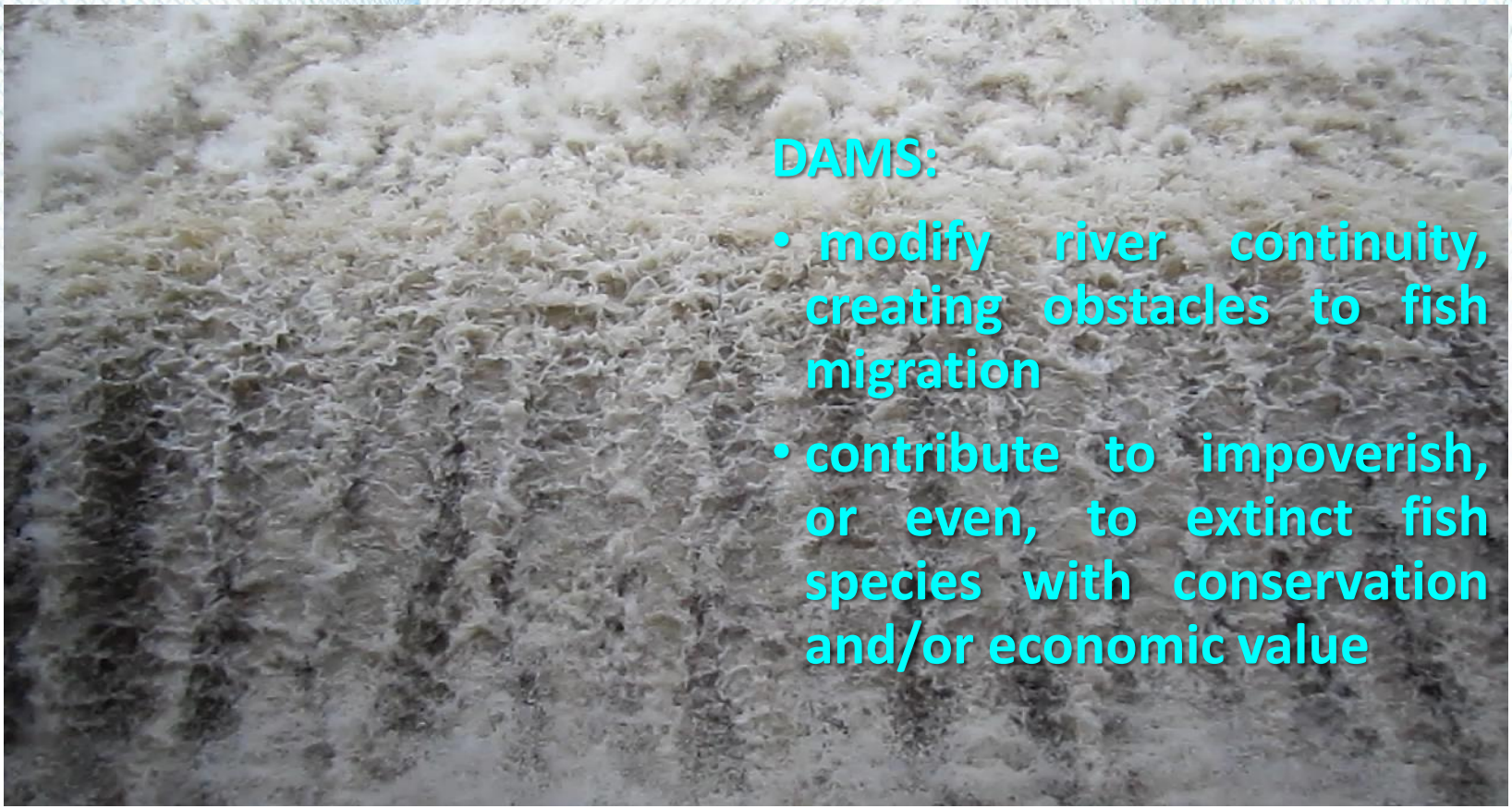


What was the problem?



What was the problem?

River Mondego had severe floods and, for that reason, it was regulated.

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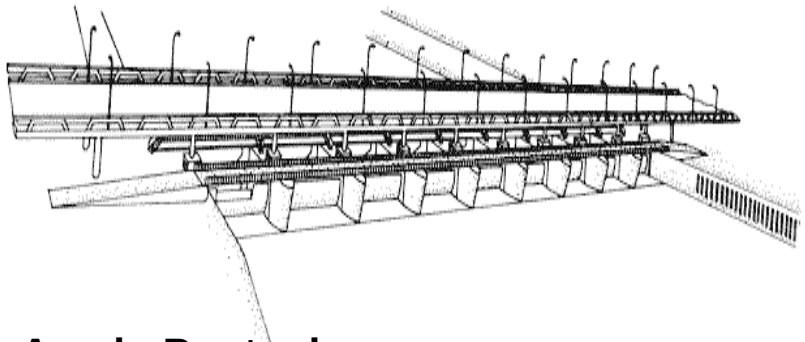
Four large dams were built in **river Mondego basin** with the purpose of:

- flood control
- hydroelectric power generation
- public and industry supply
- irrigation

What was the problem?

Coimbra Açude-Ponte dam was built in 1981 with a fish passage but the dam became the first large obstacle for diadromous fish.

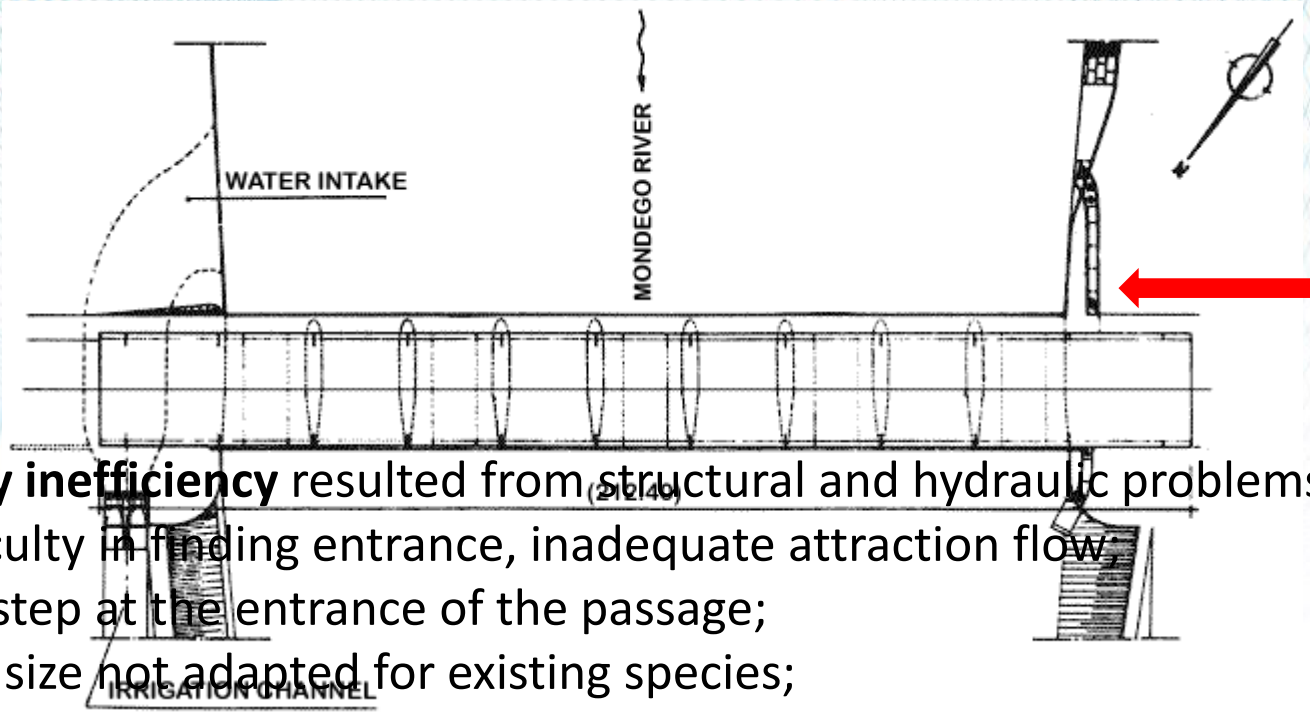


Açude-Ponte dam

	Dam Characteristics
Type	Gate struture
Crest lenght	202,4m
Height	22m
Maximum discharge	2000 m^3/s
distance from Atlantic Sea	45 km

What was the problem?

What was the problem?

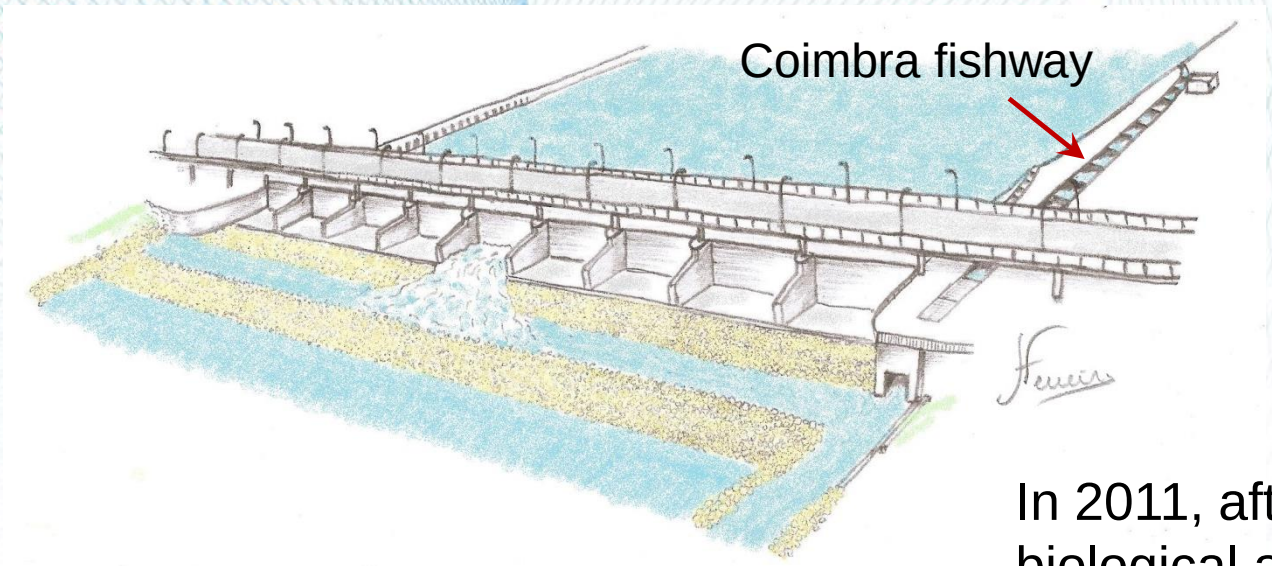


Pool type Fishway (11 pools, 71,5m total length)

Fishway inefficiency resulted from structural and hydraulic problems:

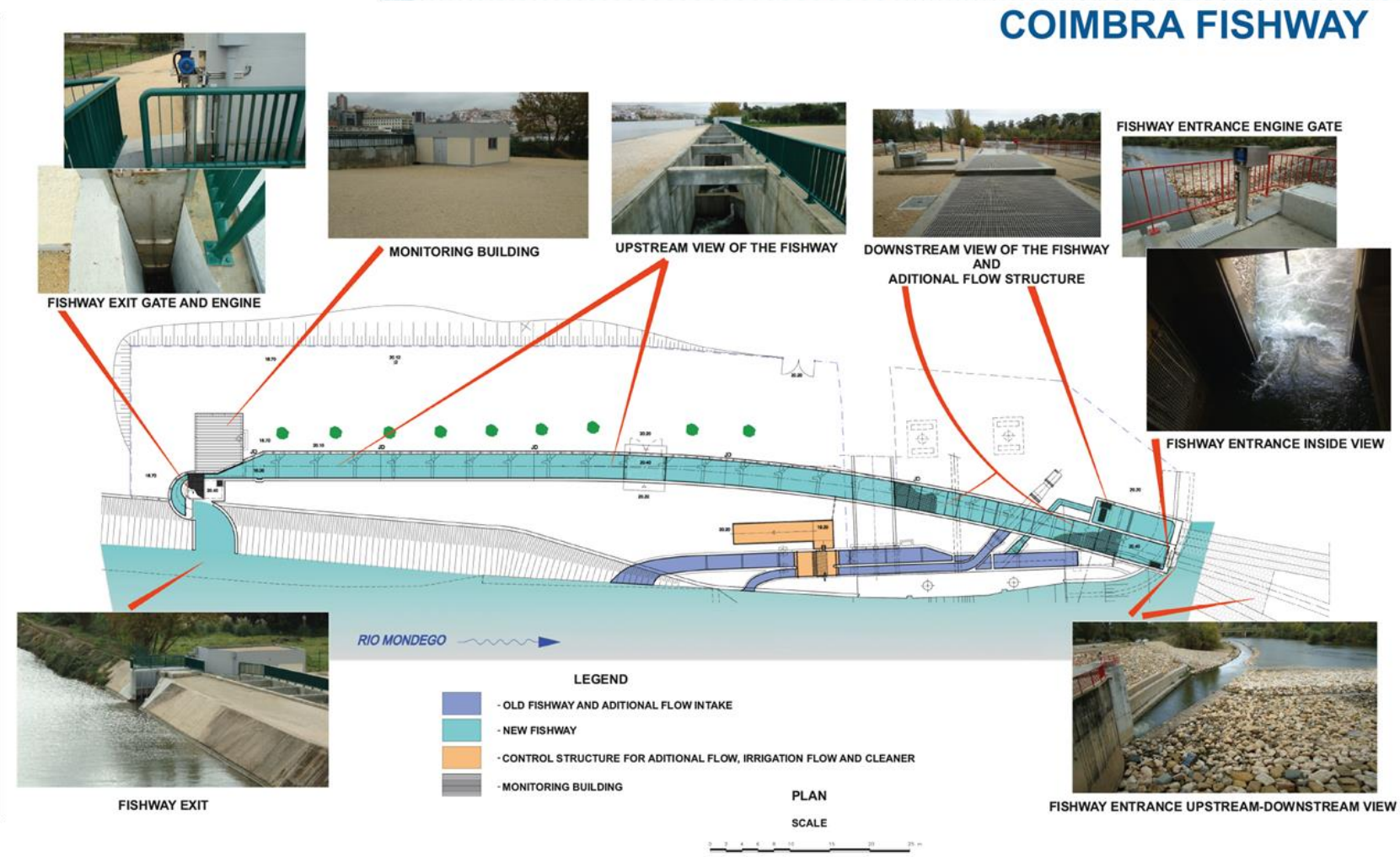
- difficulty in finding entrance, inadequate attraction flow;
- higt step at the entrance of the passage;
- pool size not adapted for existing species;
- high gap between pools;
- high water speed inside the passage.

What was done?



In 2011, after several years of biological and hydraulic monitoring and studies, a new vertical-slot pool type fishway was built, near the old one, in order to restore river connectivity.

What was done?



What was done?

	Fishway characteristics
Total length	125m
Number of pools	23
Length and width of each pool	4,5x3m
Flow inside the fishway	Between 1 - 1,5 m^3/s
Water height in the pools	Between 1 - 2 m
Dissipated power	<150 $Watt/m^3$

What was done?

What was done?

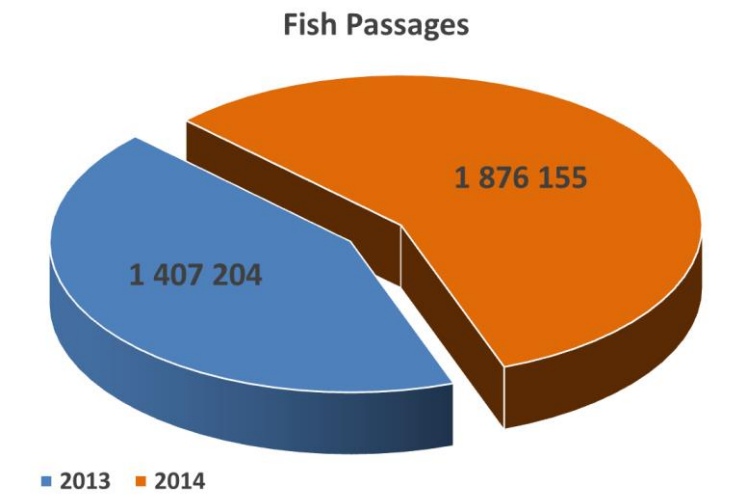
The Coimbra fishway was monitored from 2012 to 2014 using:

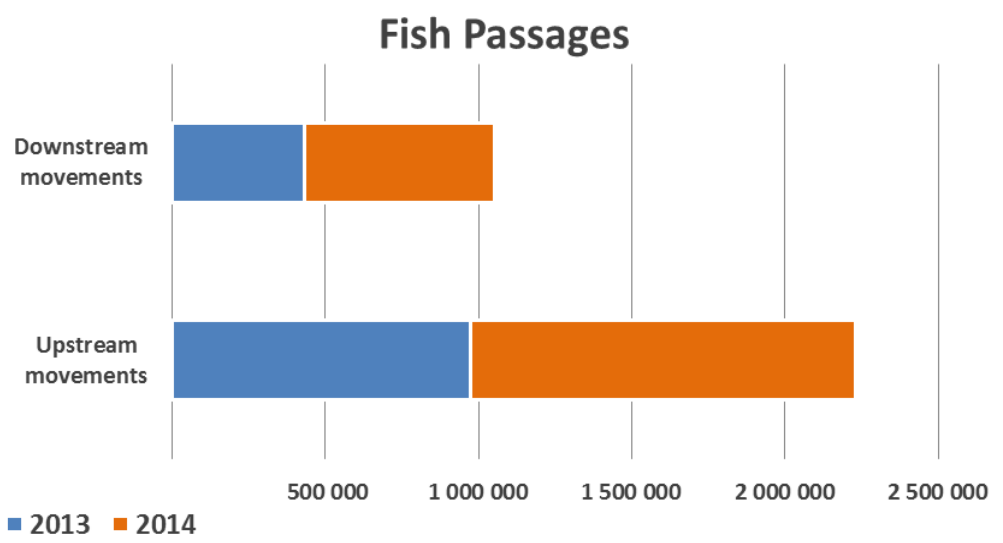
- visual counts (video);
- biotelemetry techniques;
- CPUE abundance with electrofishing.

- Monitoring results show that several autochthonous species use the Coimbra fishway, including the diadromous sea-lamprey, Allis and Twaite shad and European-eel.

What was done?

What was done?

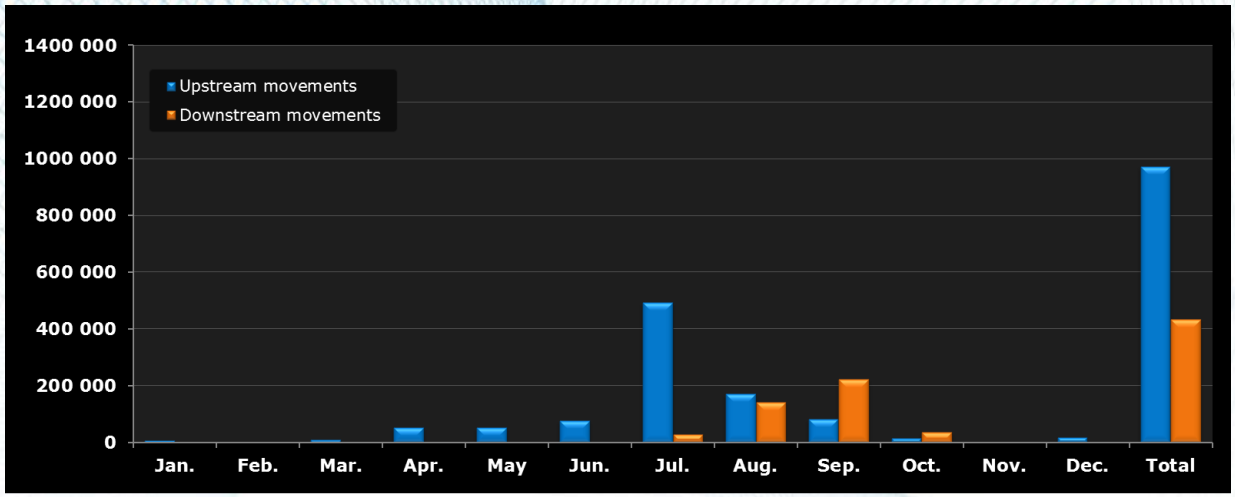




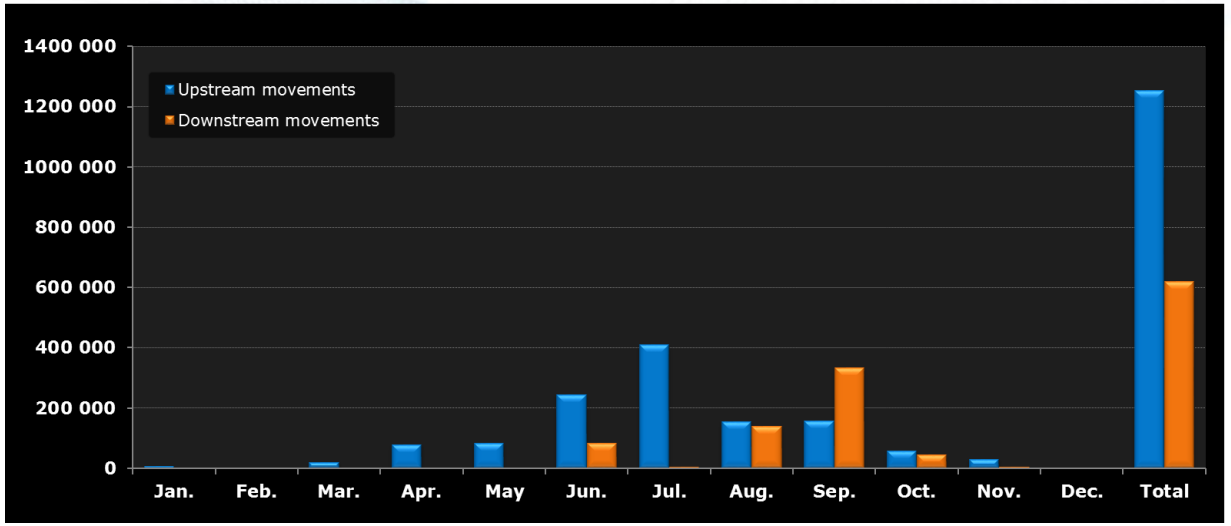
During 2013 and 2014 more than 3 000 000 million fishes used the Coimbra Fishway

What was done?

2013



2014



What was done?

	Downstream - upstream movements	Upstream – downstream movements
Sea Lamprey	30 310	-
Allis and twaite shad	10 930	-
Iberian barbel	39 544	5 583
Iberain nase	101 317	3 356
Thinlip grey mullet	2 033 255	1 029 682
European eel	1 370	221
Trout	406	18
Exotic Species	392	105
Non identified specimens	11 901	14 969
Total	2 229 425	1 053 934

- PIT telemetry has shown an efficiency of 30% for *Petromyzon marinus* and 14% for *Luciobarbus bocagei*

- Pre and post fishway construction electrofishing monitoring shows improvements in sea-lamprey larvae abundance both upstream and downstream from the Açude-Ponte dam

What we expect to do?

- Public divulgation of monitoring results and promotion of public visits to the Coimbra Fishway;
- Assuring funds for long term monitoring;
- Monitoring fish migration in association with experiences in the exploitation regimes of upstream hydropower dams;
- Maximize the results of the Coimbra Fishway with other projects/tasks (increase river continuity upstream from the Açude-Ponte dam, eel passage experiences, integrated management of fisheries in river Mondego).

Conclusions

- The construction of the new Coimbra Fishway is worth the investment (both in terms of conservation and socio-economics);
- Monitoring results show that the Coimbra fishway is efficient;
- Improvements on the good results of the Coimbra fishway are possible if other measures are implemented in the Mondego River Basin.

Thank you

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