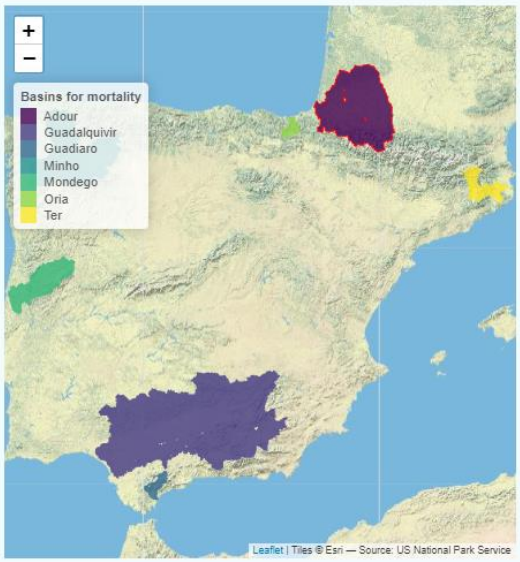
MORTALITY

This is a demonstrator for the calculation of mortalities in turbine. It uses various scenarios (flow, repartition, etc.) to provide modelled estimates of hydropower mortalities at the dam and basin level. It uses the eel production and size structure estimated in GT4.First select a basin by clicking on the map and then choose the model: options include eel repartition scenario, migration flow scenario and the opportunity to use an average mortality figure to hydropower plants where information is missing.

Click on "proceed" button to get basin wide results. In the dam results below, you will get a basin overview of mortality results. Click on a dam, either in the table or in the map to display results for that dam.

1. CHOOSE A BASIN AND CALCULATIONS OPTIONS

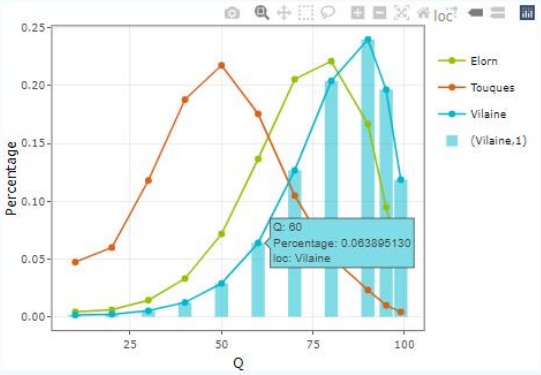


Repartition scenario: Current

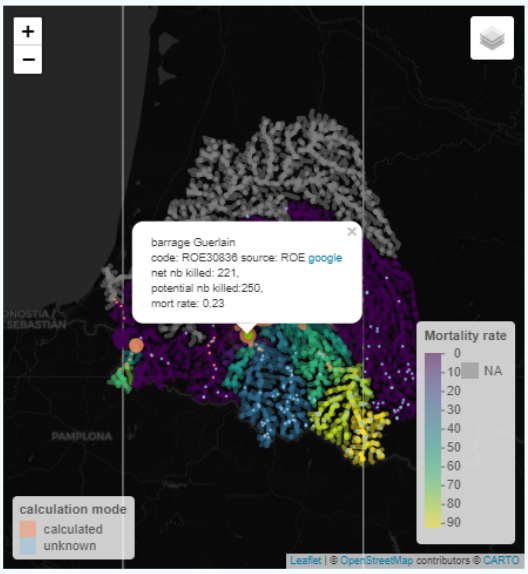
Migration scenario: Vilaine

☐ Model missing

Basin selected Adour



Proceed



BASIN : Adour

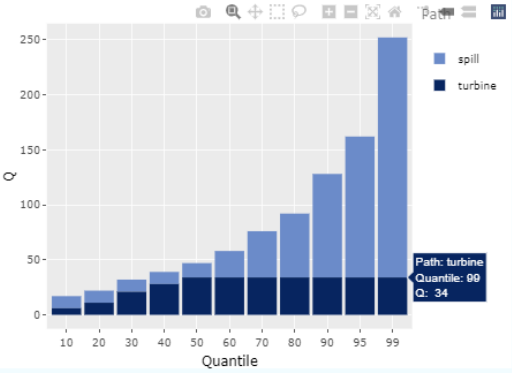
- The number of fish dead in the basin is N ǂ : **4382**
- This must be compared to the total silver production N : **337966**
- Dividing number of eel dead by basin wide production gives a **basin wide mortality rate of : T ǂ: 1.3 %**
- In their **course downstream the average mortality rate is τ ζ : 13.5 %**
- If we only choose those eels coming from upstream Hydropower plants (HPP), the mortality is τ ζ up : **22.7 %**
- This is low but the percentage of population downstream from the first HPP dam is Ndown : **83 %**
- Finally, when crossing HPP dams, **the average mortality rate is τ : 9.8 %**

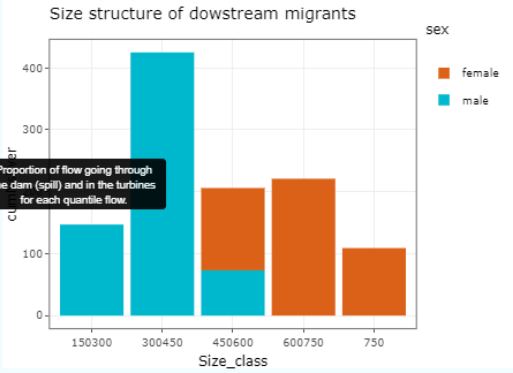
Ranked mortality rate

Excel Show 10 entries Search:

num	op_placename	id_original	mort_rate	net_nb_killed	potential_nb_killed	mode
1	Seuil de la centrale hydroelectrique de Puyoo	ROE44848	0.15	1205	1619	calculated
2	BIRON / CASTETIS	ROE44866	0.15	858	986	calculated
4	Barrage EDF de CASTETARBES	ROE44855	0.10	532	758	calculated
3	ARTIX - PARDIES	ROE44863	0.23	648	685	calculated
5	StA(C) des USINES D'ORTHEZ (SAPSO)	ROE44854	0.07	339	461	calculated
6	barrage Guerlain	ROE30836	0.23	221	250	calculated
7	CHANTIENA	ROE38071	0.40	178	208	calculated
9	Seuil de Dognen	ROE30749	0.06	83	107	calculated
8	Barrage HeÃ¯d	ROE63800	0.18	93	104	calculated

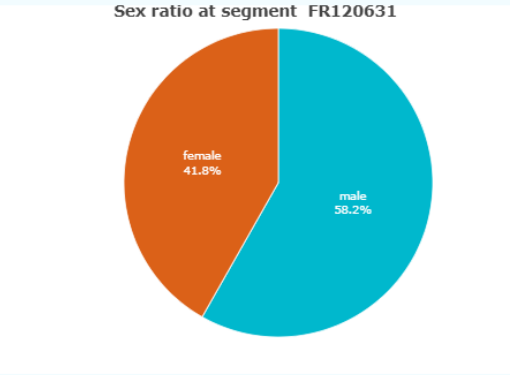
2. DAM RESULTS





Flow extrapolation

- Hydro station reference : **Q7002910**
- at idsegment **FR121008**
- The value has been extrapolated to idsegment **FR120631**
- using Q50 RHT as flow source : **59.84**
- The station Q50 (October to April) is **48.13 m³/s**
- The extrapolated Q50 for the idsegment is **47.14 m³/s**



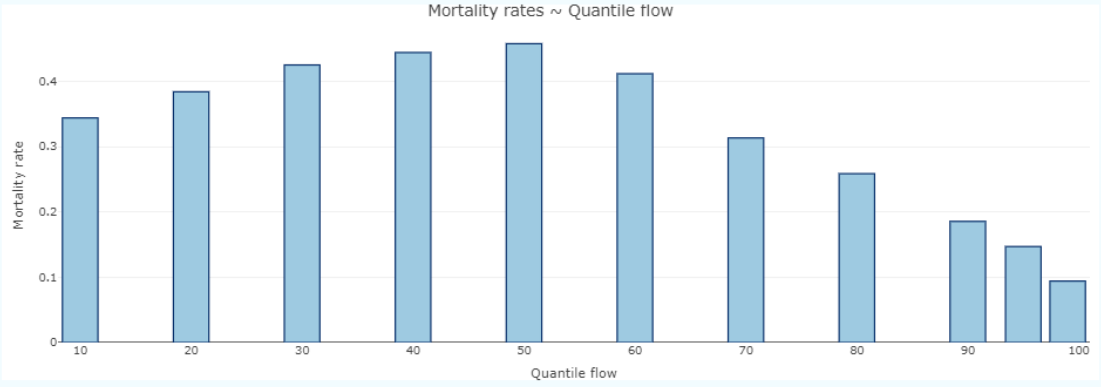
Turbine characteristics and calculated mortality rate

Show 10 entries Search:

type	Dr	N	H	Q	m50cm	m70cm	m90cm	mcurrent	assumptions
Kaplan	1.8	167	4.6	17	30.03	47.46	66.8	53.98	1&3_4
Kaplan	1.8	167	4.6	17	30.03	47.46	66.8	56.09	1&3_4
Other			2					44.5	2_1+6&4_3

Showing 1 to 3 of 3 entries Previous 1 Next

Mortality rate at the dam level according to quantile flow



Downstream migration information

- HPP: **barrage Guerlain**
- Code: **ROE30836**
- Downstream migration presence bypass: **TRUE**
- Downstream migration presence bar rack: **NA**
- Bar rack space: **65**
- Surface bar rack: **NA**
- Inclination bar rack: **NA**
- Presence bypass on bar rack: **NA**
- Number of bypass on bar rack: **NA**
- Total flow in the bypass: **NA**

Dam level information

- Dam: **barrage Guerlain**
- Code: **ROE30836**
- HPP: **barrage Guerlain**
- Code: **ROE30836**
- Joined dams (hpp): **Centrale hydroA(C)lectrique de Guerlain-ROE6833**
- Other joined dams:
- Dam height: **2 m**
- Comment on height: **CA(C)dric and Mathilde : initial insertion Height:Choix bdoe (2)**

Downstream migration

- Water depth downstream: **NA**
- Dam Height: **2 m**
- Mitigation measure for downstream migration: **NA**

Assumptions used in the turbine calculations

Show 10 entries Search:

type calculation	code	description
Full	1	All data required to calculate mortalities are there
Suplementary assumptions	2	See category below
Missing equipment flow per turbine	2_1	Assumption the turbines have equal flow and turbine flow missing is replaced by hpp max turbine flow
Missing number of blades (Kaplan)	2_2	If the number of blades is not there suppose it's 4
Missing equipement flow	2_3	Devalpomi, auto consumption mean equiment flow, other dams (connected to grid) 75% of the module. (Not used currently)
Missing diameter Kaplan (N Q)	2_4	Calculation of turbine diameter (From Rotation speed and Q) Gomes and Larinier, 2008
Missing diameter Kaplan (Q)	2_5	Calculation of turbine diameter (From Q) Gomes and Larinier, 2008
Missing height	2_6	Dam_height (not present in HPP table => collected at dam level)
Missing diameter Francis	2_7	Diameter francis (See Briand et al., 2015)
Mortality calculation used	3	

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SUDOANG

Aknowledgement Back to top