HYDROPOWER EUROPE

Lateral fish shelters in river banks as an innovative measure for hydropeaking mitigation and river restoration

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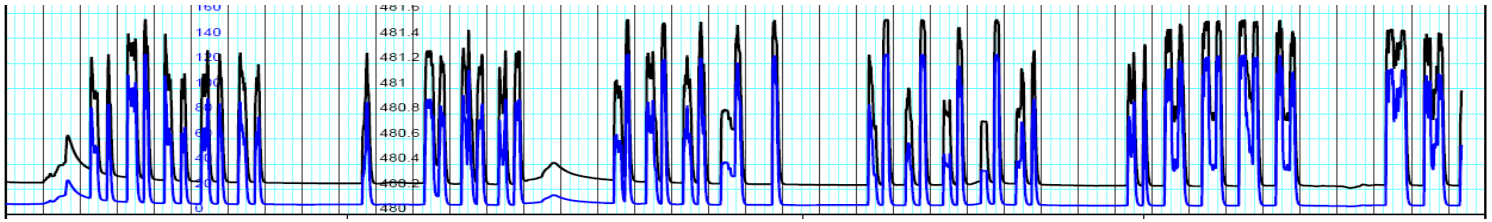
Background

Research Project

Jean-Marc Ribi

Aquatic Sciences, 2014

Débit et hauteur d'eau de la Sarine en aval de Schiffenen



Débit d'éclusée/débit de base: 120/5 = 24 Marnage: 2 mètres

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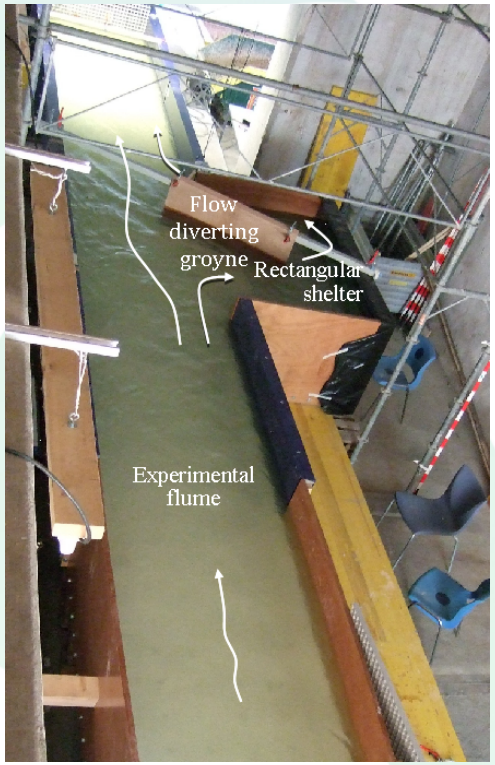
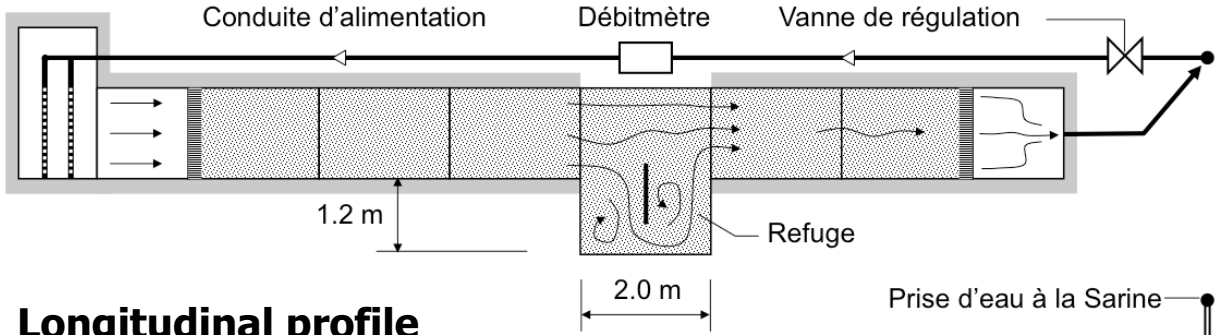
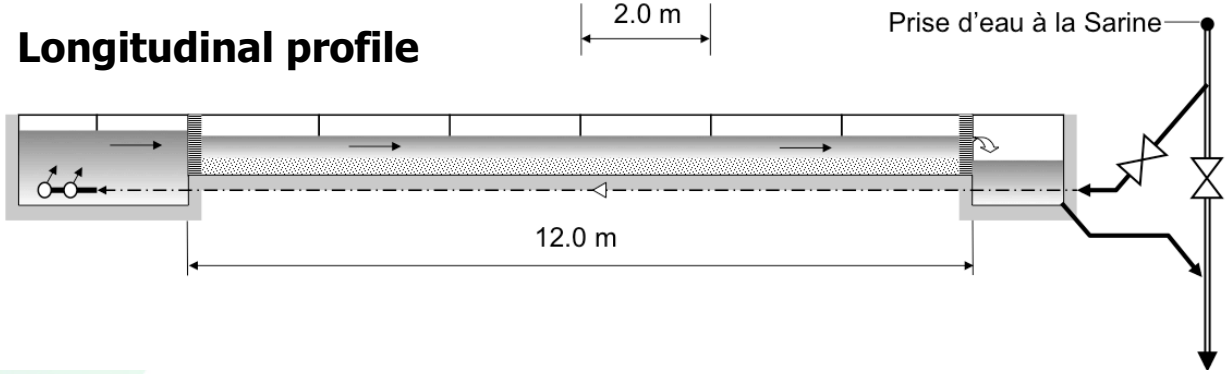
Experimental study



Flume plan view



Longitudinal profile



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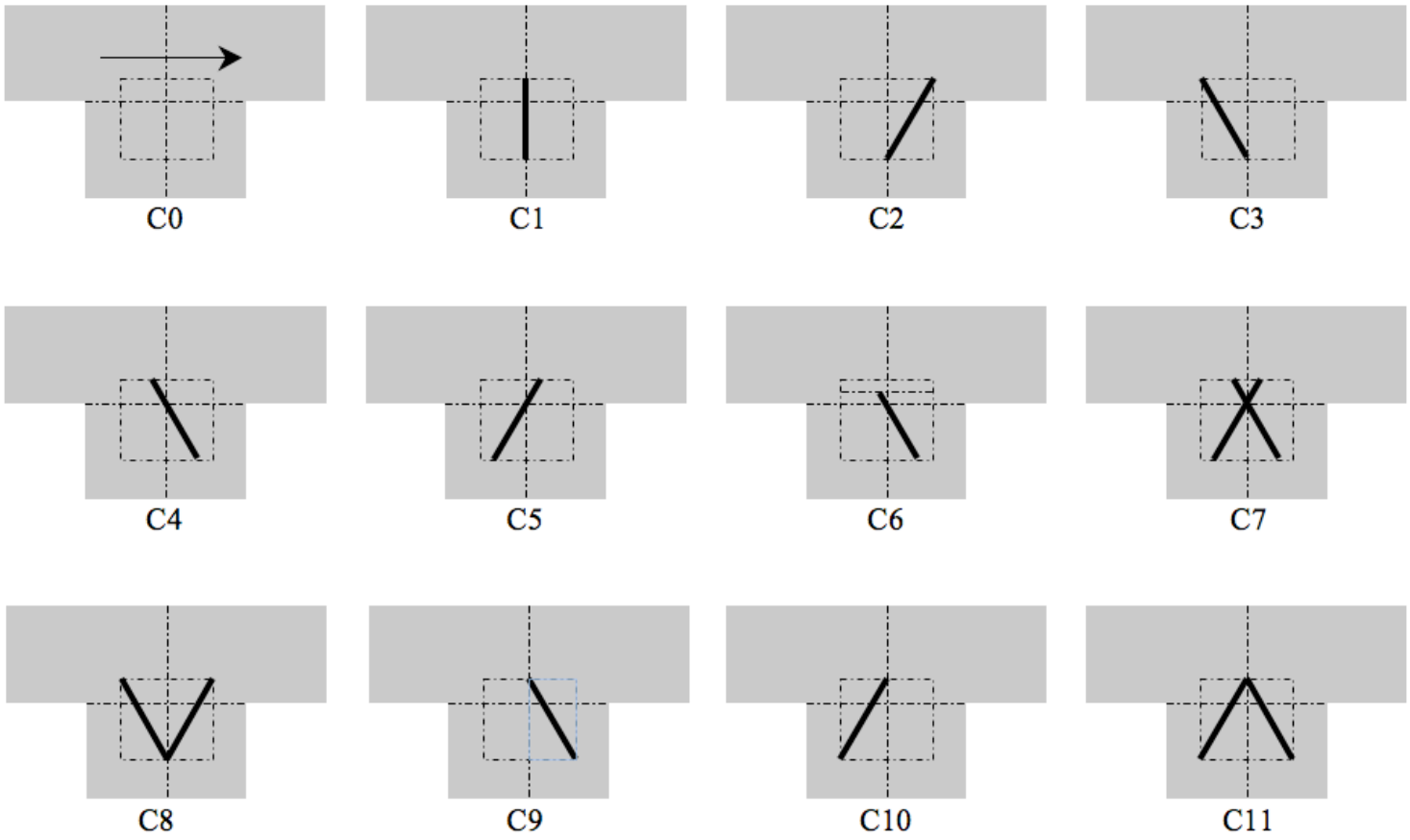
Tested configurations for different shelter entrances:

the bold line represents the structures tested for diverting water through the shelter



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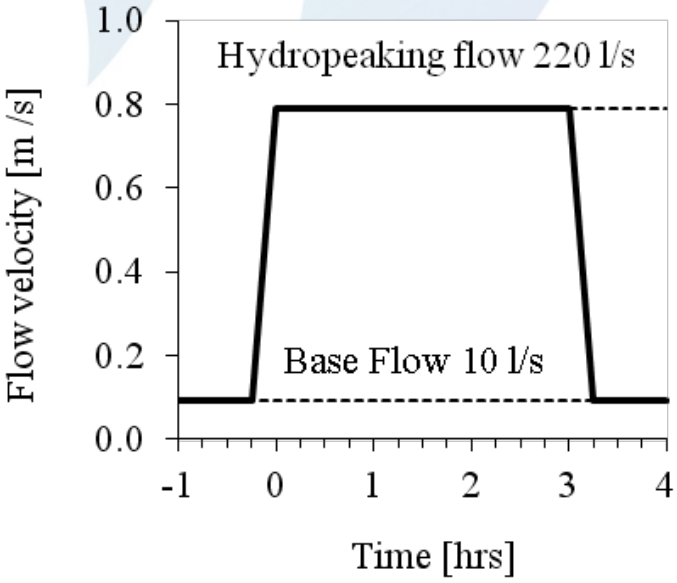
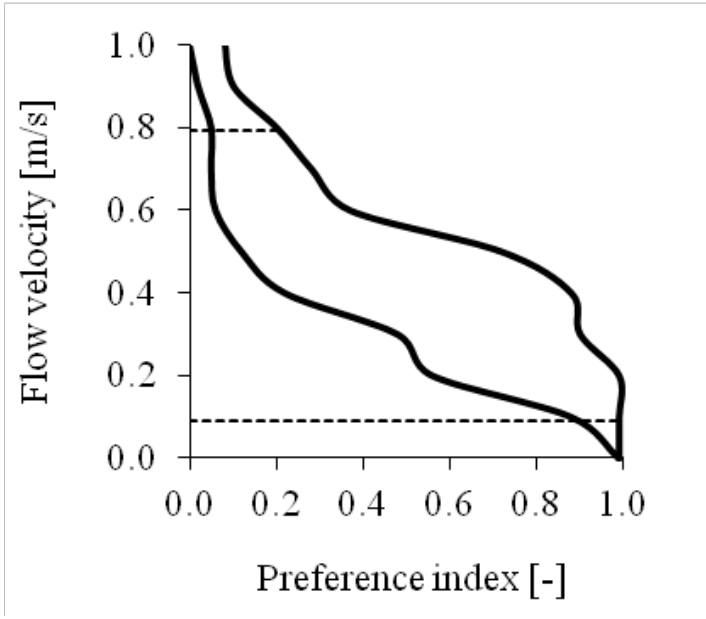
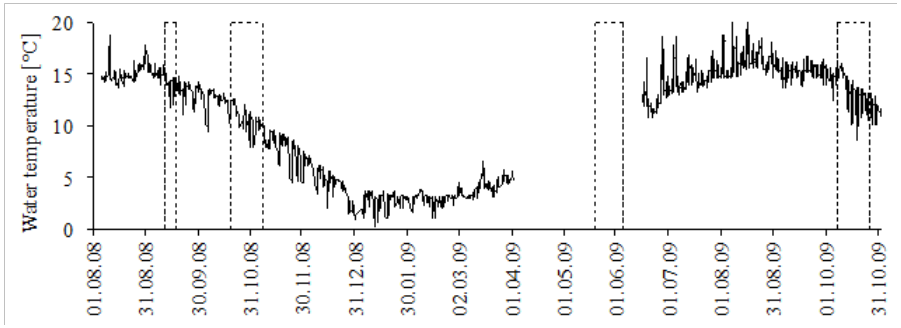
Channel hydraulic parameters related to preference index for juvenile brown trout (*salmo trutta fario*), taken from the results of different studies by Vismara et al. (2001)







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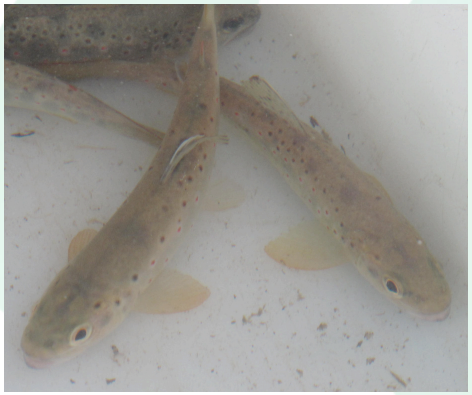
Sarine


Tannenbach in Büttisholz (LU).

Table 2 Characteristic (length) of fish captured by electrofishing in the Tannenbach river at Buttisholz village near Lucerne, Switzerland

Date of electric fishing	08.08.08	14.10.08	15.05.09	05.10.09
Number of fish caught	21	22	33	20
Average length (mm)	165	164	125	151
Maximum length (mm)	196	196	161	187
Minimum length (mm)	139	139	88	107
Standard deviation (mm)	19	17	18	18



Configuration	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
Effectif pêché	22		21			33			20			
Effectif essai a	**11**	11	**9**	11	11	**10**	10	10	**9**	8	10	9
Effectif essai b	**10**	10	**11**	11	11	**10**	10	8	**9**	11	10	8
Effectif essai c	21	21	22	22	22	20	20	20	20	19	20	15
Effectif rendu		22			21			26				20

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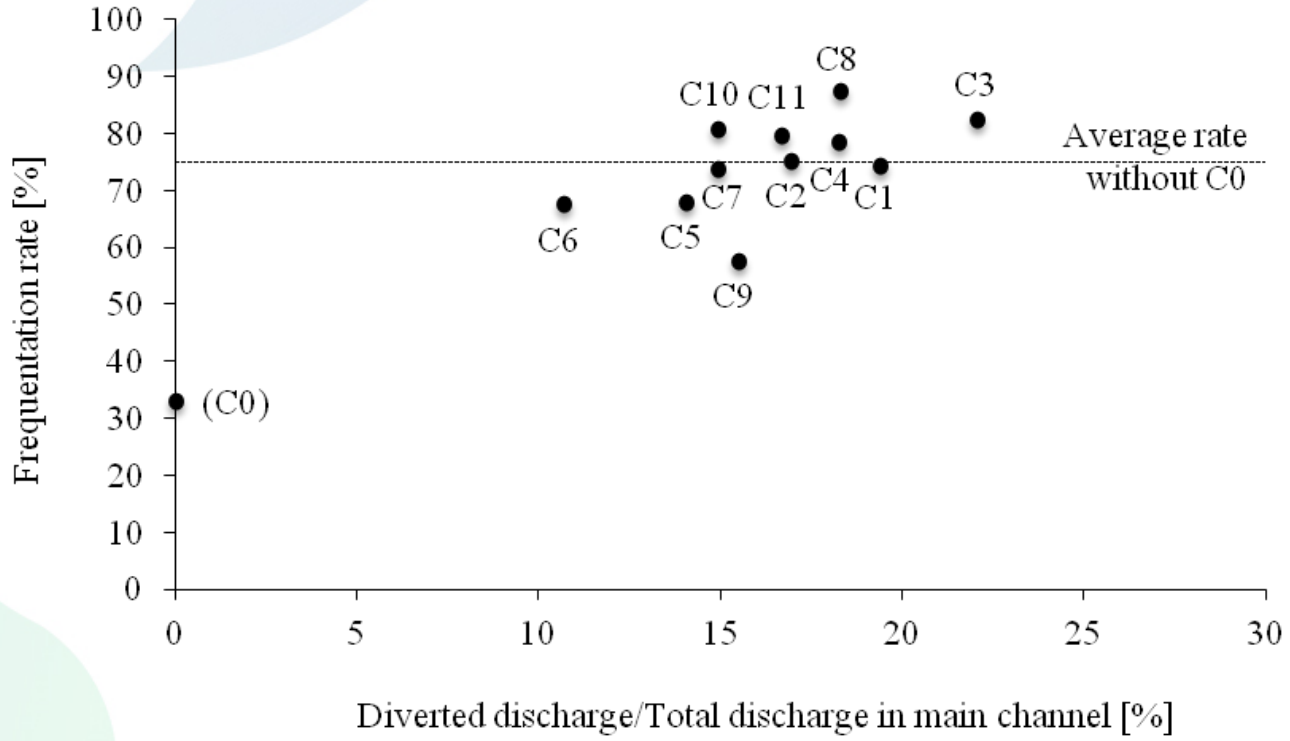
Average utilization rate of the refuge by the fish as a function of the relative diverted discharge from the channel into the refuge: configuration C0 is shown for reference



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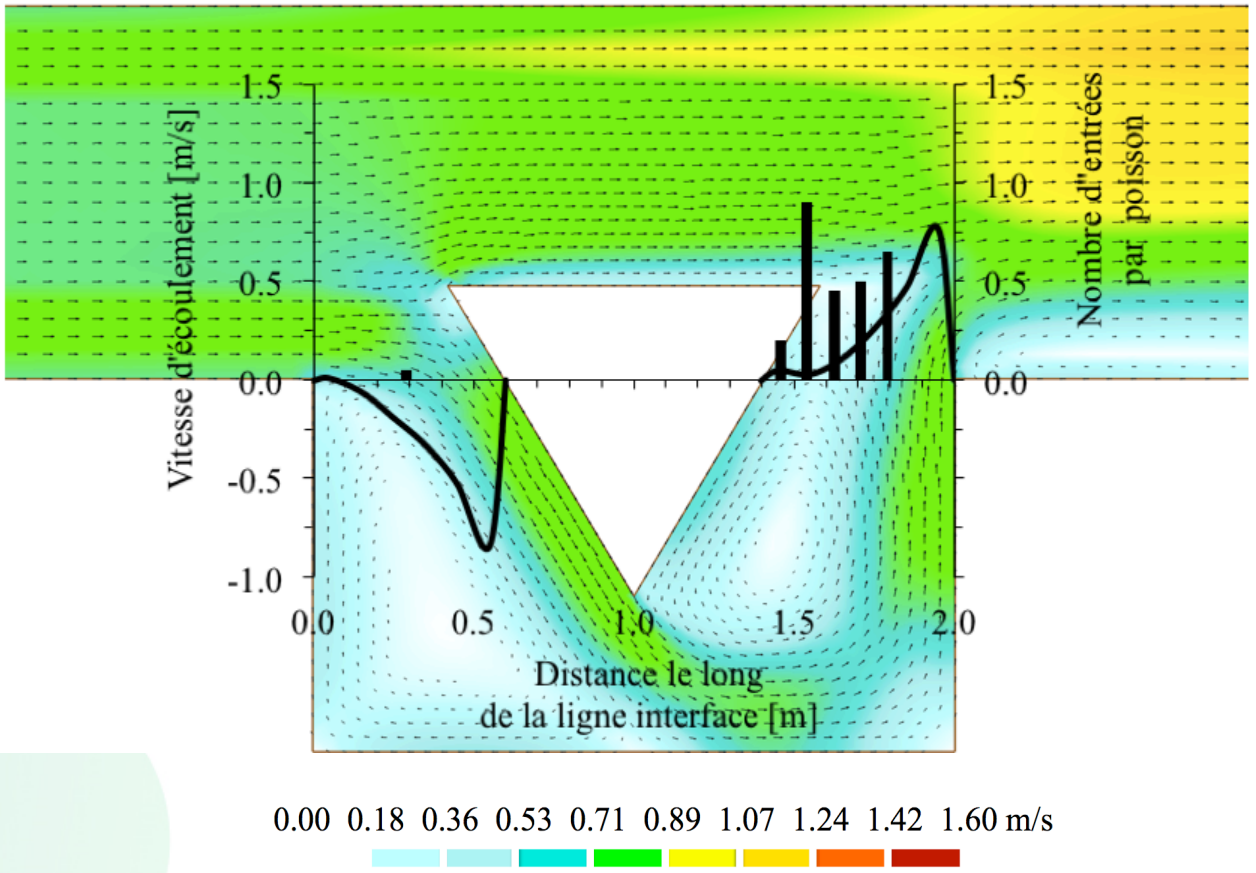
Proposed configuration C8



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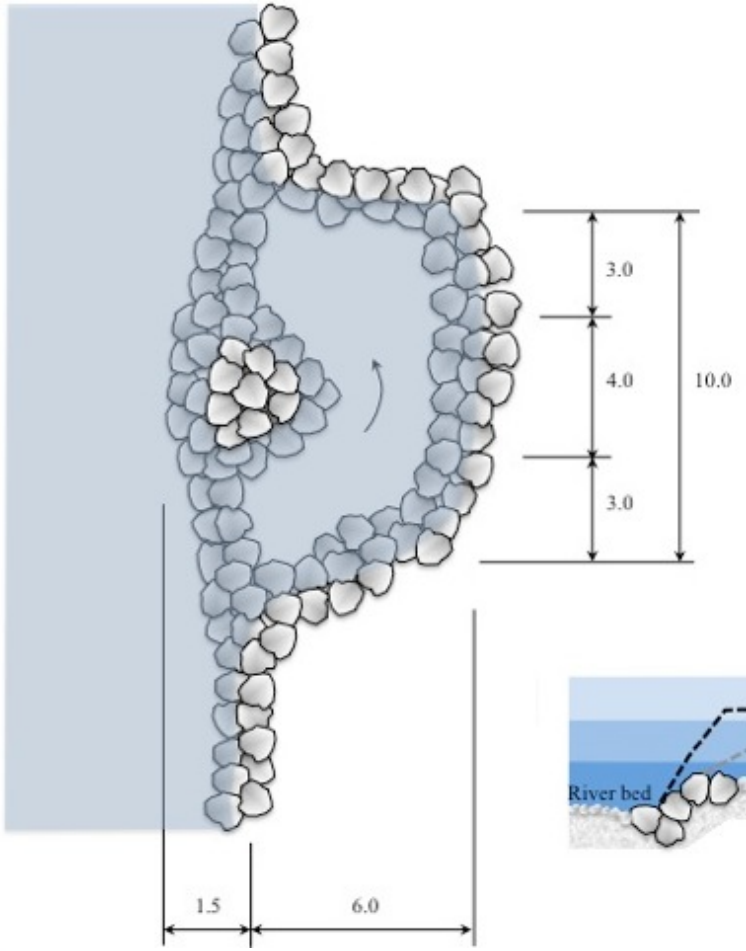
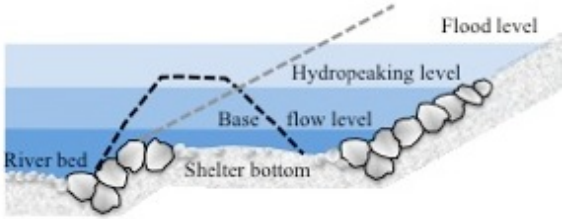
Proposed configuration C8

From the experiments to the prototype: minimum dimensions

(for a river width of <10 m; otherwise length of shelter should correspond to river width)





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Thank you for your attention

Attractiveness of a lateral shelter in a channel as a refuge for juvenile brown trout during hydropeaking

J.-M. Ribi, J.-L. Boillat, A. Peter & A. J. Schleiss

Aquatic Sciences
Research Across Boundaries

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