Freshwater pearl mussel conservation in Lower Bavaria, Germany – stories about breeding and releasing juveniles





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Rearing methods









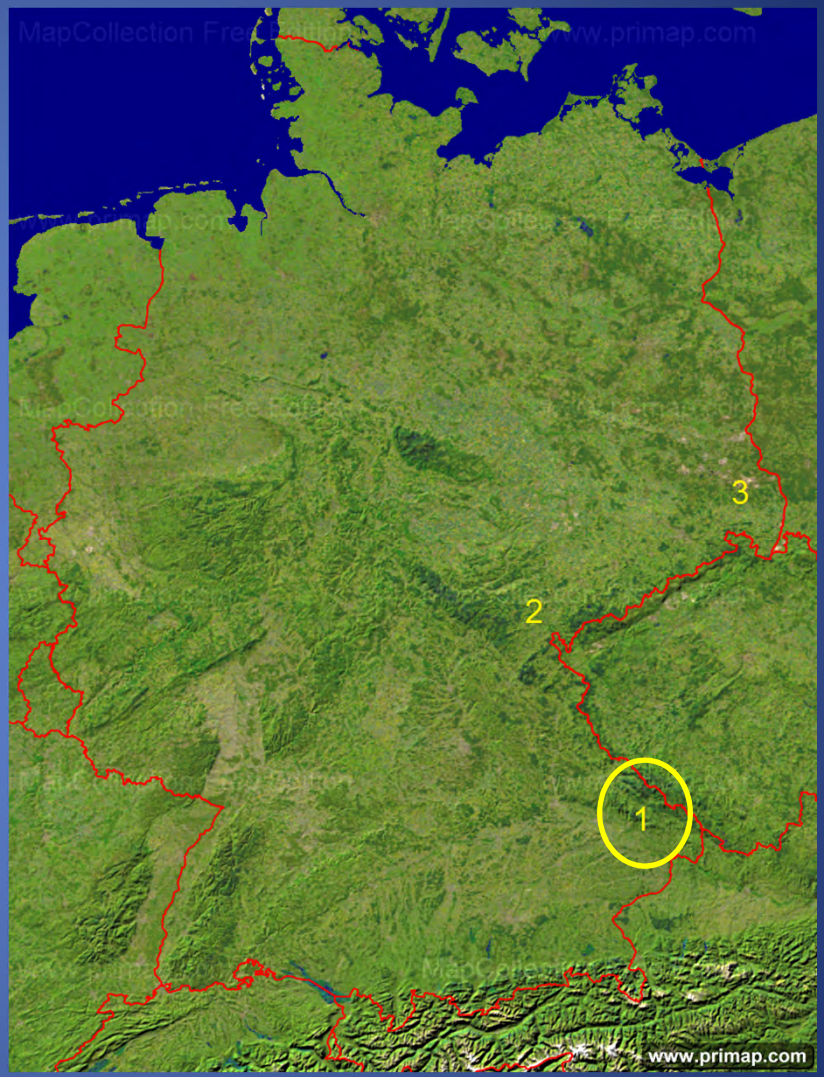


Study area

4 Study streams

All left side tributaries of the Danube

Große Ohe = GO
Ilz = IL
Kleine Ohe = KO
Wolfsteiner Ohe = WO



Experimental design

- 10 sites in 4 rivers
- 3 Buddensiek cages and 3 sediment boxes per site stocked with 30 1+ juveniles each

- Exposure for 12 months
- Sampling dates of juvenile shell length and survival: 0, 3, 12 months
- Biweekly interval for brushing of Buddensiek cages and measurement of Turbidity, Oxygen content, pH and Specific Conductance
- Four weekly cleaning of sediment boxes during summer season only brushing during the winter season







Hypotheses:

1. Juvenile Growth rate is higher in Buddensiek cages than in sediment boxes.
2. Juvenile survival is higher in Buddensiek cages than in sediment boxes.
3. Time for maintenance and juvenile mussel sampling is higher for Buddensiek cages than for sediment boxes.



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COMPARISON OF TWO DIFFERENT FIELD CAGES FOR SEMI-NATURAL REARING OF JUVENILE FRESHWATER PEARL MUSSELS, *MARGARITIFERA MARGARITIFERA* (LINNAEUS, 1758) (BIVALVIA: UNIONOIDEA: MARGARITIFERIDAE)

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All contents related to the comparison of two rearing methods for juvenile freshwater pearl mussels can be retrieved from the corresponding publication.

It is open access and can be downloaded via the following link:

https://doi.org/10.12657/folmal.026.018

Conclusions

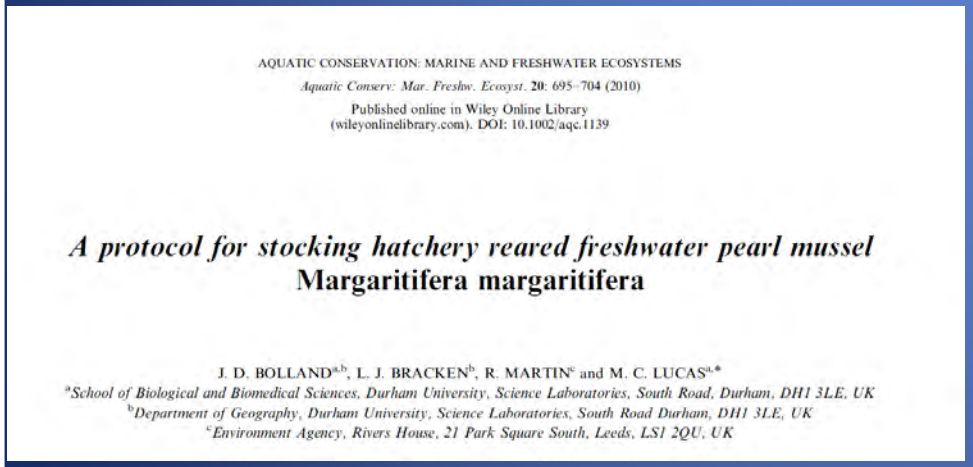
1. Buddensiek cages are applicable for juveniles smaller than 3 mm shell length in all streams, where mussels can survive and grow.
2. Sediment boxes are suitable in higher quality habitats with lower turbidity and nutrients.
3. Growth rates are stream dependent and not breeding element dependent.

How to find the most suitable place for introduction of juveniles?

Stocking protocols should be followed.

However, forecasts on microhabitat stability are difficult

⇒ One possible tool are hydraulic-numerical models



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A protocol for stocking hatchery reared freshwater pearl mussel Margaritifera margaritifera

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Assessment of potential release sites

1. Microhabitat

- Tachymetry and flow velocity measurements for hydraulic-numerical models
- Substratum analyses

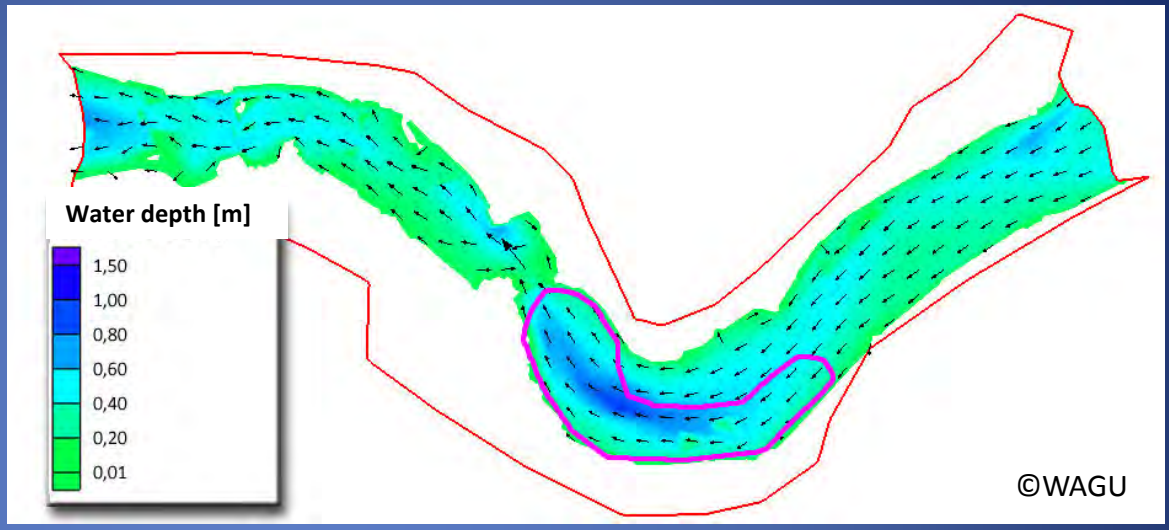
⇒ Carried out by WAGU, Kassel

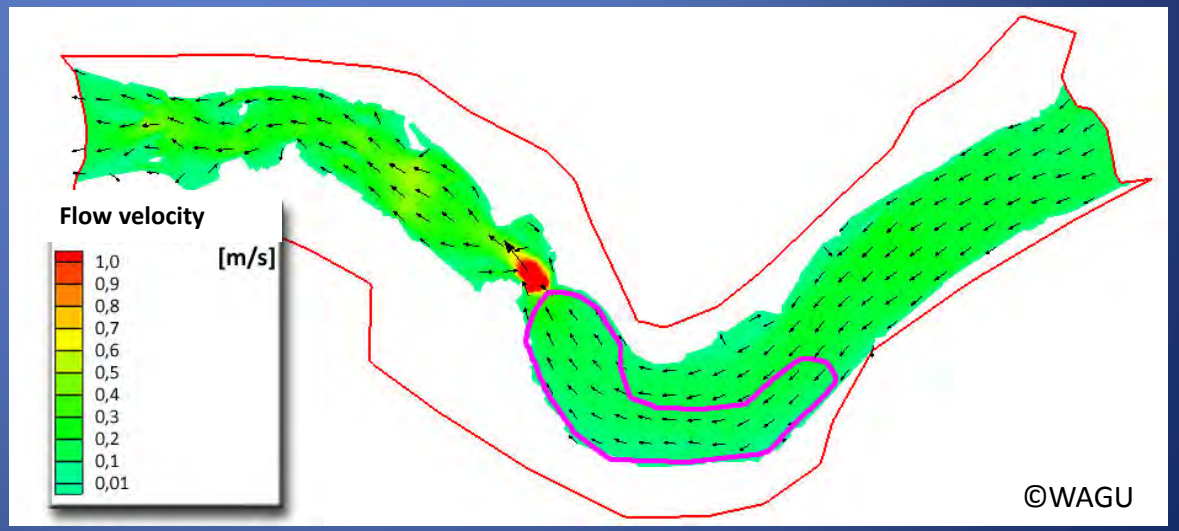




Hydraulic modelling







colonized area

Q = 200 l/s

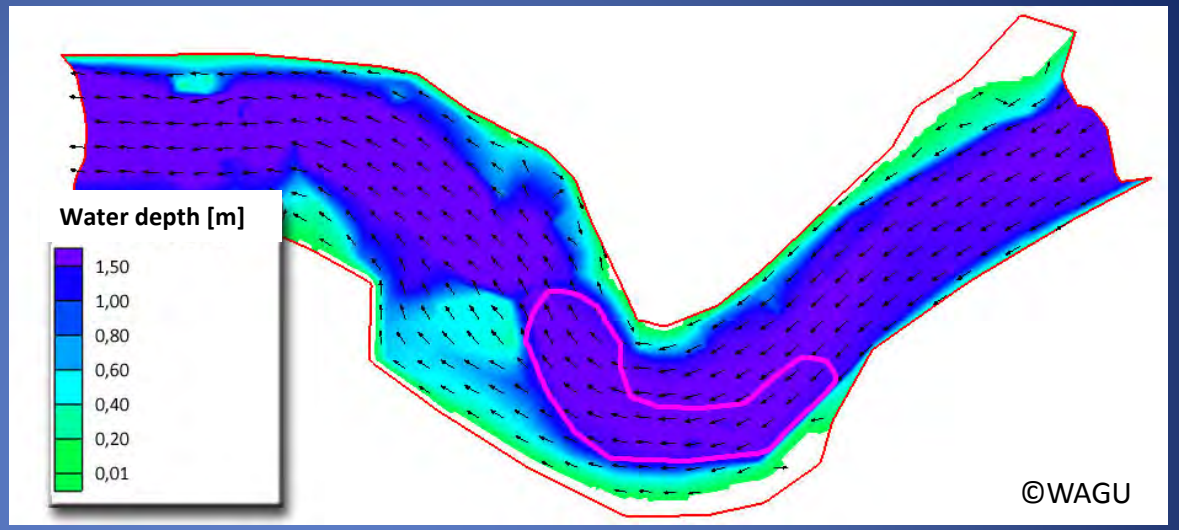
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Hydraulic modelling

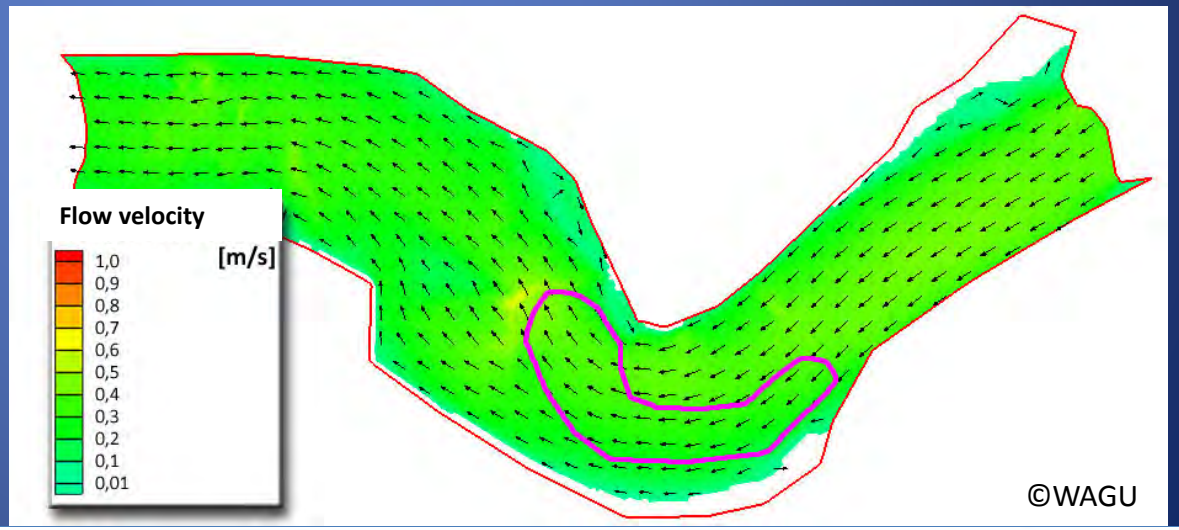




Bankfull discharge

colonized area

Q = 3.000 l/s

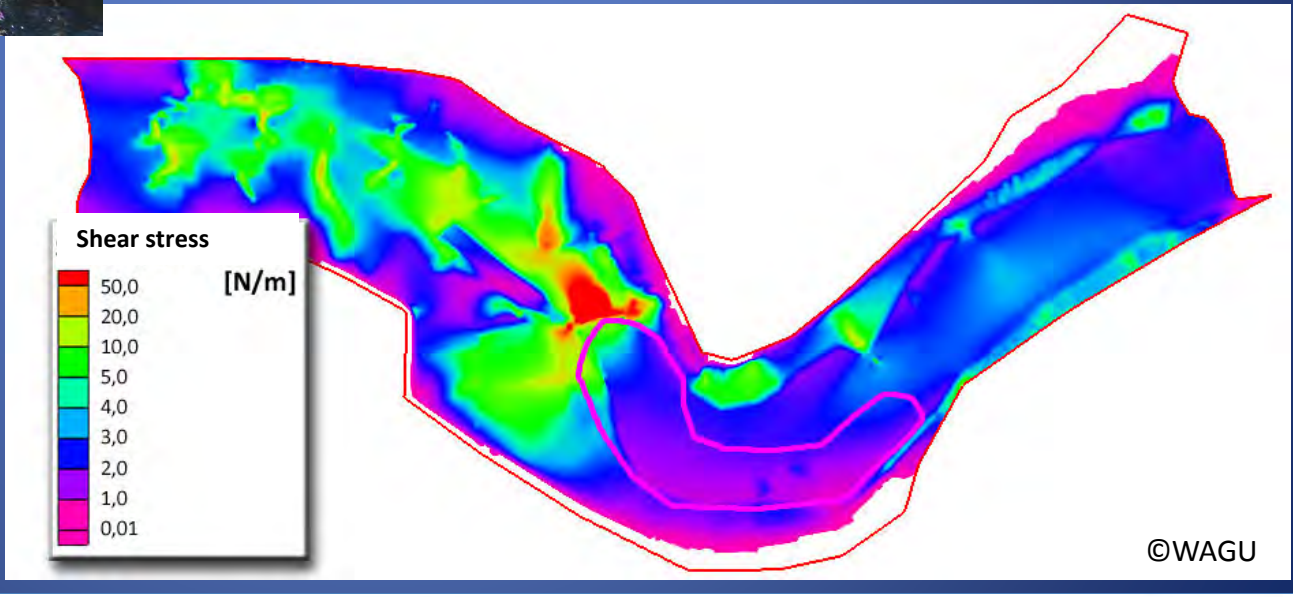


Hydraulic modelling



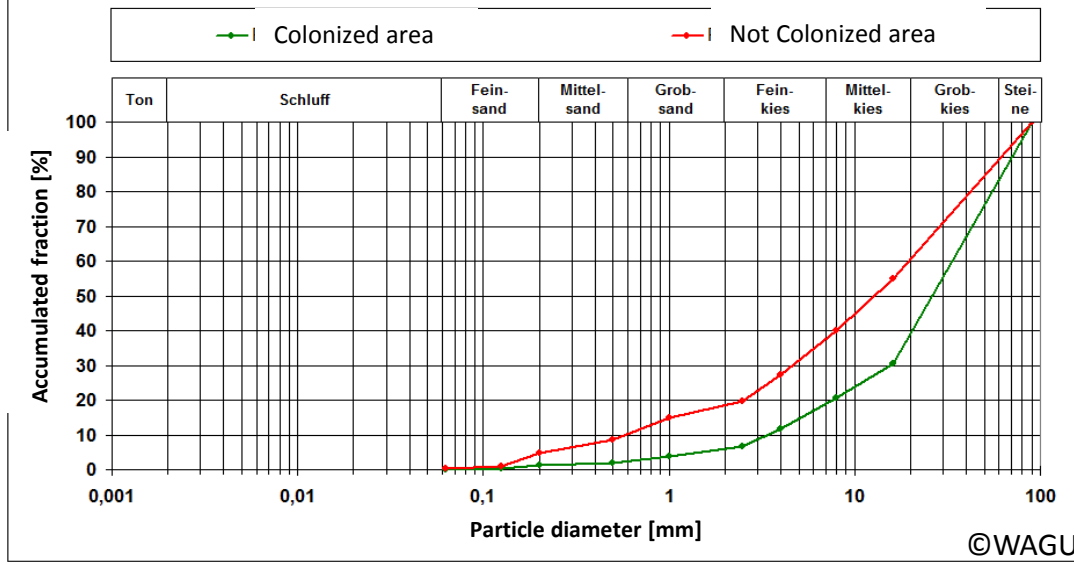
maximal Shear stress

colonized area

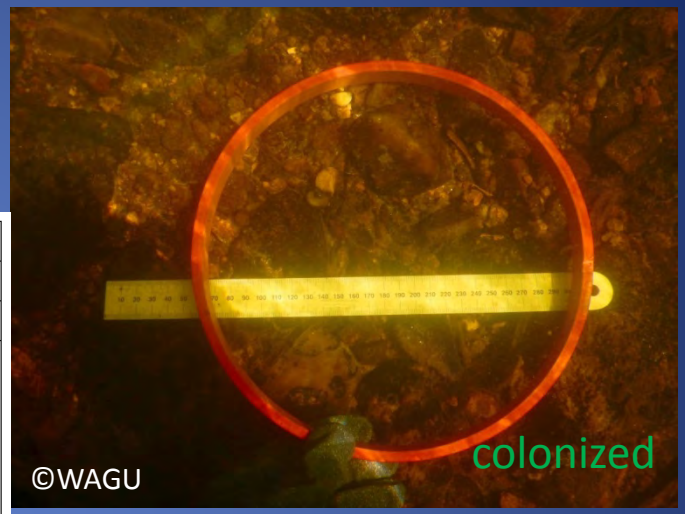


Texture analysis

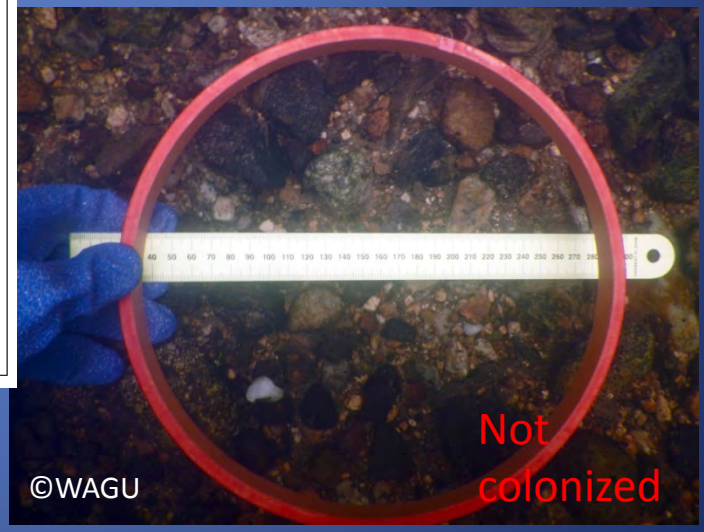
Korngrößenverteilung		WAGU GmbH, Kassel	
Gewässer:	Große Ohe	PS-Nr:	1 + 2
Probestelle:	II - südl. Ranfels	Datum:	28.10.2016



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