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Ausgezeichnetes Projekt UN-Dekade Biologische Vielfalt 2018 leben.natur.vielfalt die UN-Dekade
FLUSSMUSCHELN
Faculty of Environmental Sciences Department of Hydrosciences Institute of Hydrobiology

Small steps leading to success in detail:
Three years habitat characterisation for reintroduction of captive- bred juvenile freshwater pearl mussels




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BfN Bundesamt für Naturschutz
Bayerischer Naturschutzfonds
leben.natur.vielfalt die Strategie
FKZ: 01LC1313A-D, FKZ 3514685E13-I13

Status quo of Freshwater Pearl Mussel in Vogtland

1800 & 2000 → **captive breeding** → **reintroduction since 2009**

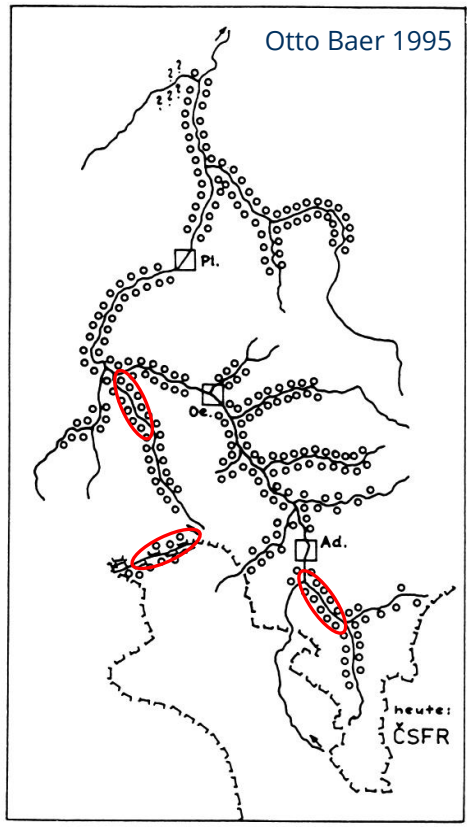


Abb. 4: Vogtländische Vorkommen der Flußperlmuschel um 1800. Pl Plauen, Oe Oelsnitz, Ad Adorf. Nach FIEDLER (1937) und HERTEL (1959).

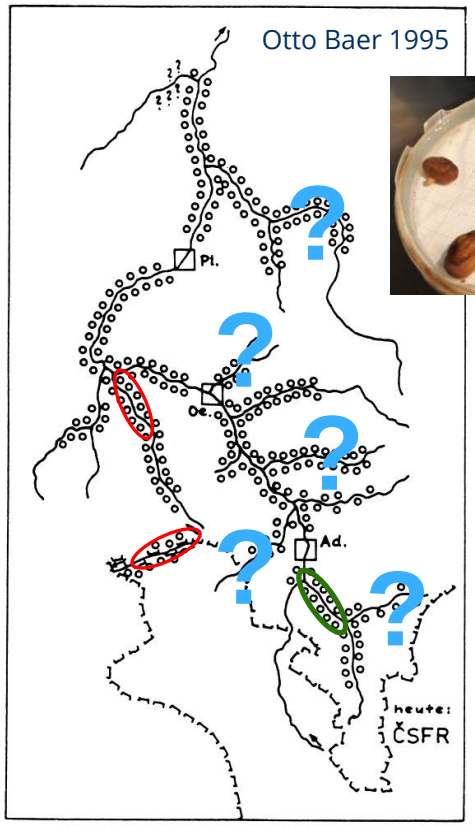
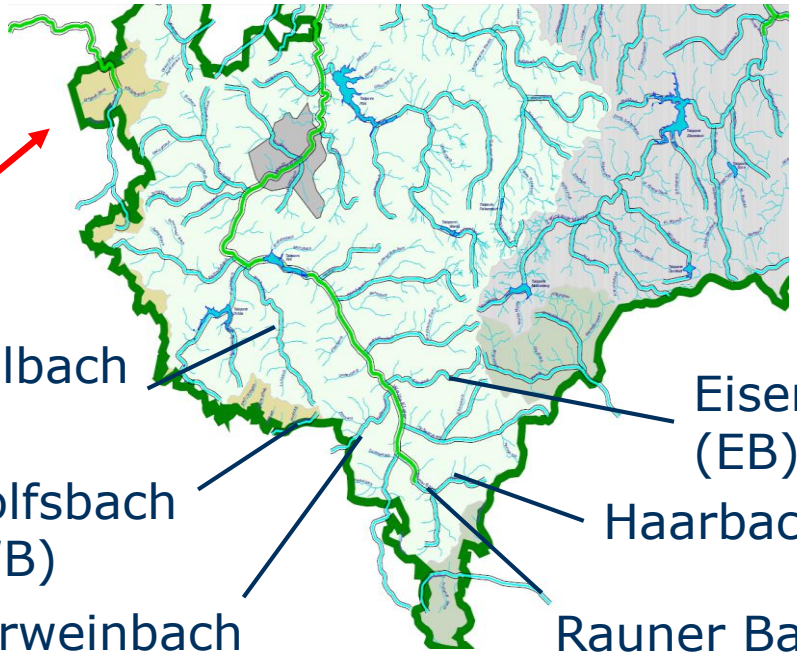


Abb. 4: Vogtländische Vorkommen der Flußperlmuschel um 1800. Pl Plauen, Oe Oelsnitz, Ad Adorf. Nach FIEDLER (1937) und HERTEL (1959).

Analysis of potential brooks for reintroduction



Triebelbach (TB)

Wolfsbach (WB)

Tetterweinbach (TW)

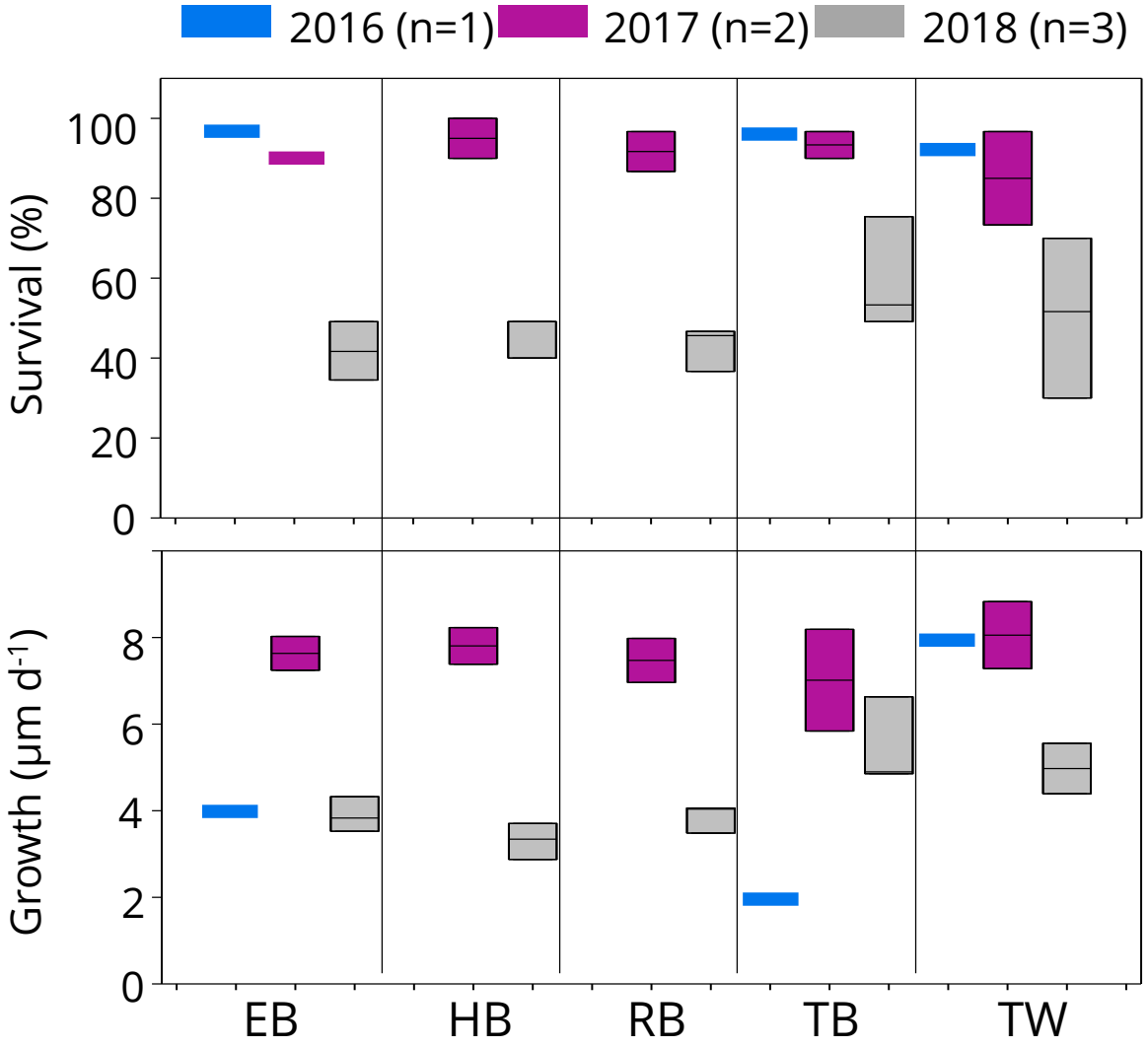
Eisenbach (EB)

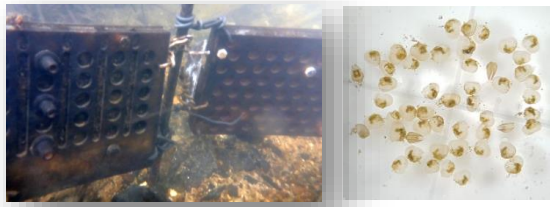
Haarbach (HB)

Rauner Bach (RB)

Map „Fischregionen 2011“ (LfULG)

Bioindication with post-parasitic FPM in Buddensiek cages 2016-2018





2018 < 2016, 2017
(p < 0.001)

2017 > 2016, 2018
(p < 0.001)
Ø 2017: 7.6 µm d^{-1}
Ø 2018: 4.3 µm d^{-1}

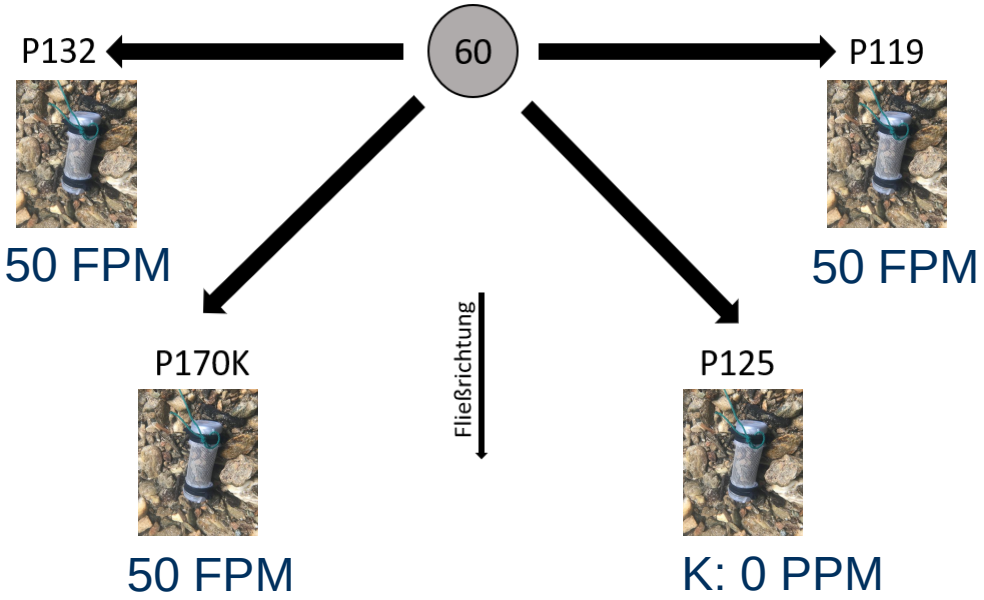
Start length: 500-800 µm

Final length: 900-1300 µm

Bioindication with post-parasitic FPM in wire mesh tubes

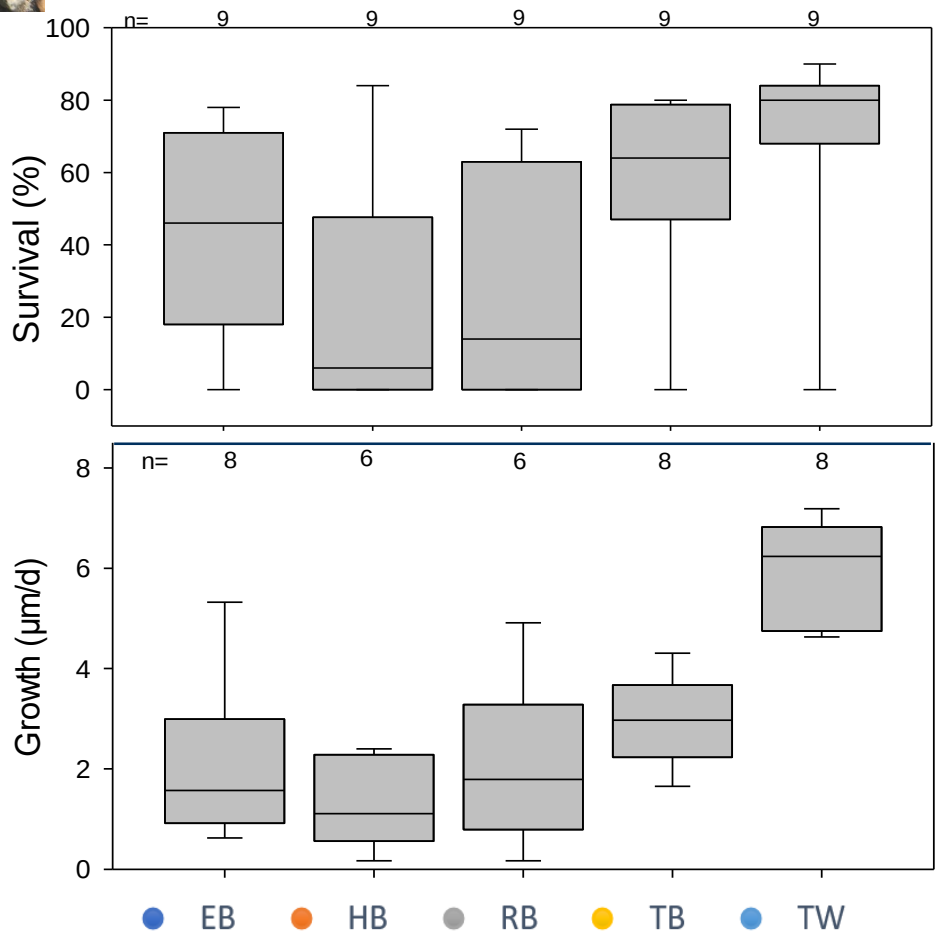
- cylindrical wire mesh tubes:
  - 7 cm long, Ø 2,2 cm, mesh size ~ 600µm
  - filled with sediment (2-6,3 mm grain size)
  - buried vertically in the sediment
  - 50 post-parasitic FPM (700-800µm) each
- period: 9 weeks (27.06.-31.08.2018)
- 5 rivers: ● EB ● HB ● RB ● TB ● TW
  - 3 sites each with 3 replicates + 1 control

Bioindication with post-parasitic FPM in wire mesh tubes



- measured parameter **in tubes**: survival/growth FPM, POC
- measured parameter nearby tubes **in interstitial** and flowing wave: T, Redox, Oxygen, pH, Cond, DW & POC (food quantity), flow, depth

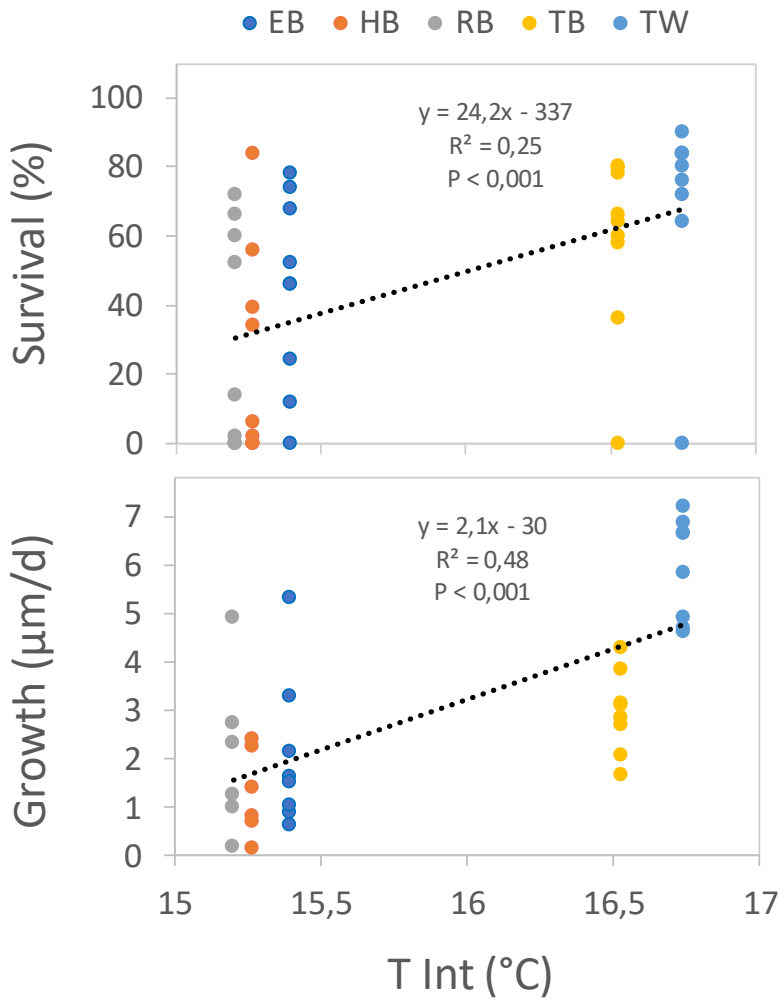
Bioindication in wire mesh tubes
Survival and growth



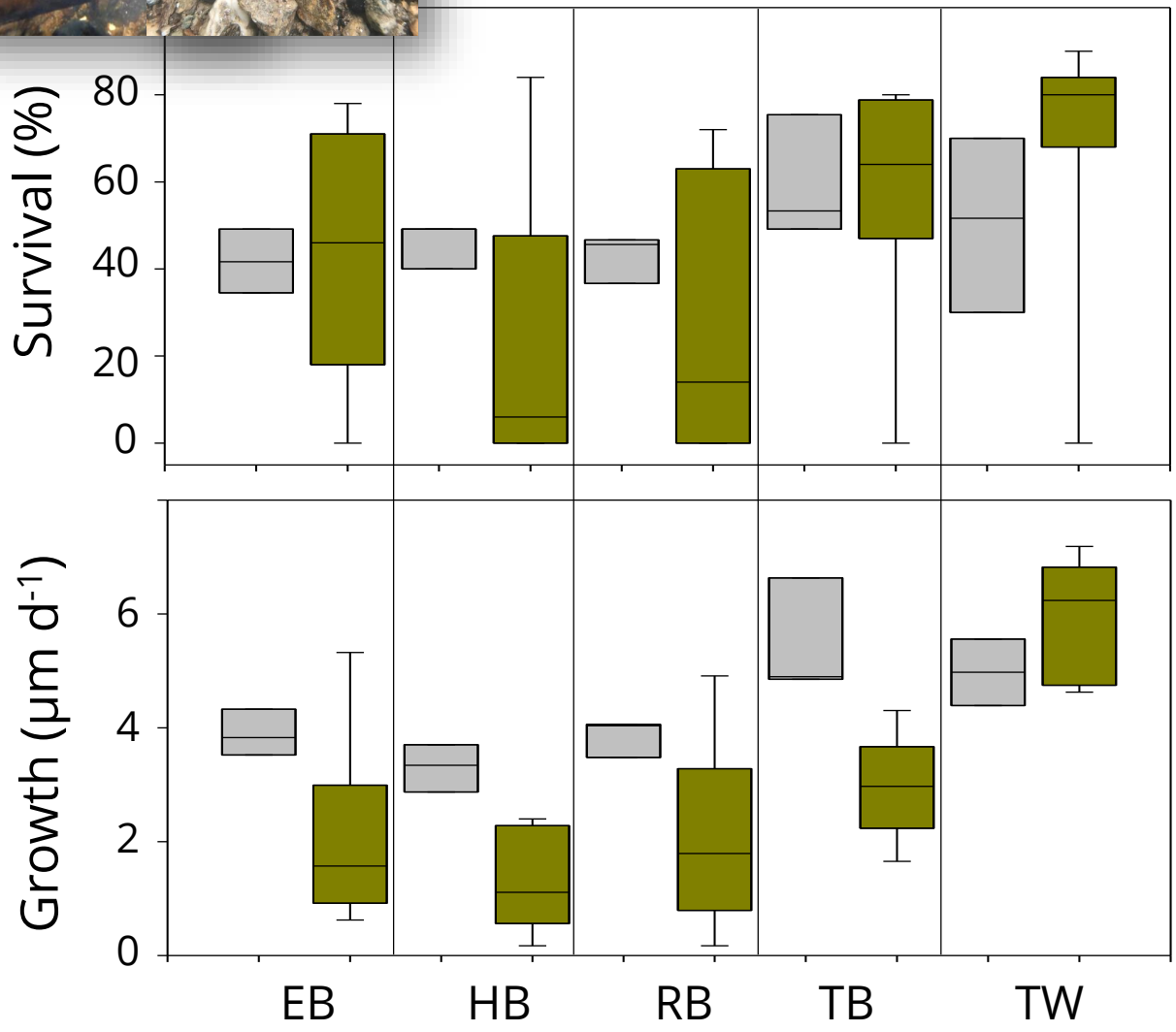
TW > HB, RB
P < 0,05

TW > EB, HB,RB,TB
P < 0,001

Bioindication in wire mesh tubes - Survival and growth
Effect of temperature



Bioindication: Buddensiek cage vs. wire mesh tubes (Summer 2018)



No significant difference

Ø BC: 48 %
Ø WMT: 45 %

BC > WMT
($p < 0.05$)
Ø BC: 4.1 µm d^{-1}
Ø WMT: 2.1 µm d^{-1}

Buddensiek cage (n=3)
WMT (Hyporheic zone, n=9)

Conclusions

- High spatial variability of sediment quality conditions
- Temperature is positively correlated with survival and growth
- Further investigations are concentrated on food quantity, food quality and effects of oxygen limitation

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