

# Examining Sediment Quality and its Influence on Brown Trout Egg Development with an Innovative Sediment Trap

Leonie Prillwitz  
Bremerhaven, Germany



## 1. Development of longterm Sedimentsampling Method

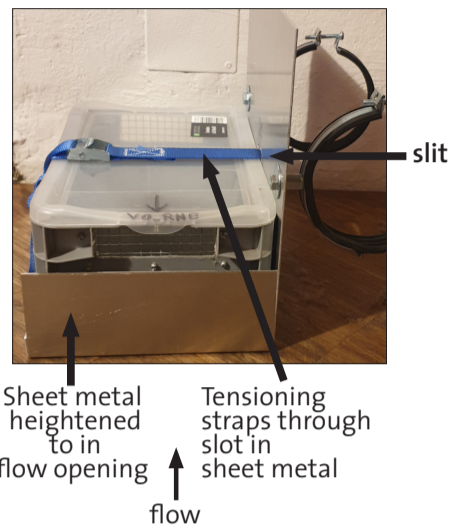


Fig. 1 Optimization ST after the Prien flood

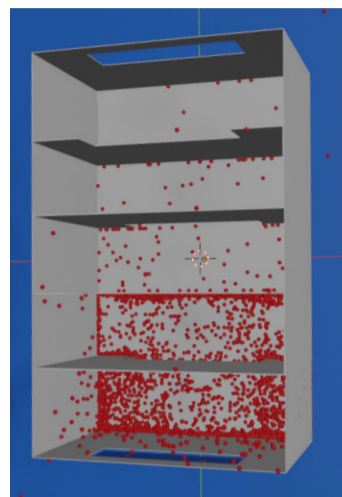
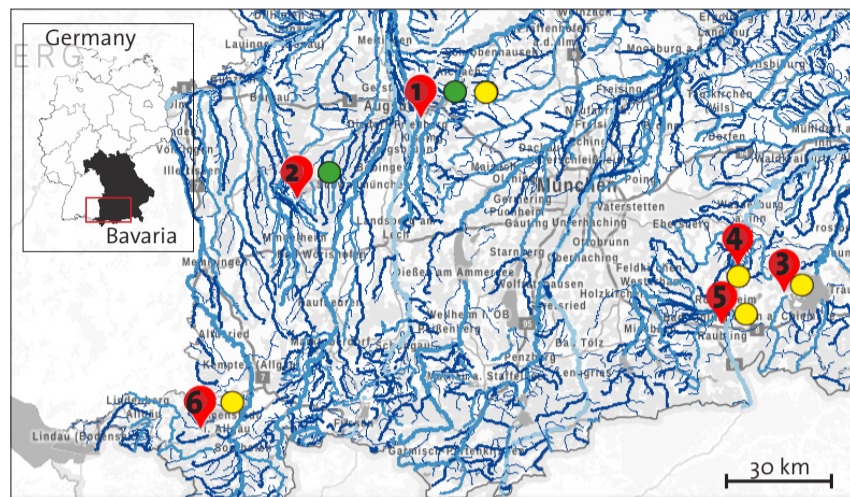


Fig. 2 Blender simulation sediment in Sediment Trap (ST)

## 2. Sampling Sites Pilot Study



- 1 Friedberger Ach: rainbow trout
  - 2 Weißbach, Salgen: rainbow trout
  - 3 Prien, Prien: brown trout (R. Kempf)
  - 4 Murn, Griesstätt: brown trout (M. Hirsch)
  - 5 Moosbach, Aschau: brown trout (M. Hirsch)
  - 6 Konstanzer Ach, Kempten: brown trout (A. Hernandez)
- SP 1 ● SP 2

Fig. 3 Overview of sampled water bodies, section of map of water bodies in Bavaria, LfU

## 3. Experimental Set-Up

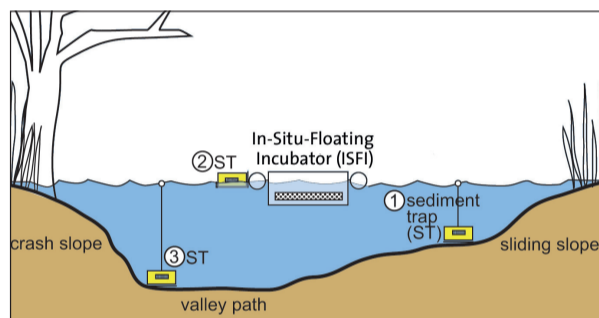


Fig. 4 In-Situ-Floating Incubator (ISFI) with ST

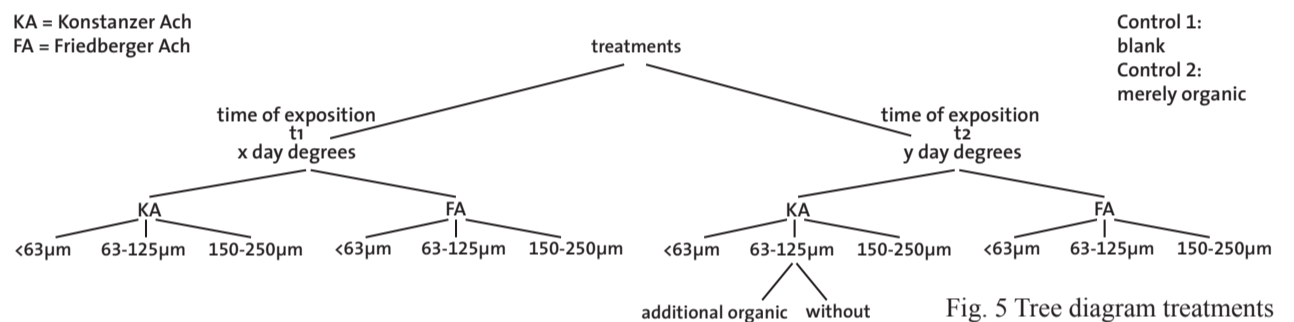


Fig. 5 Tree diagram treatments

## 4. Overview Mortality per Treatment

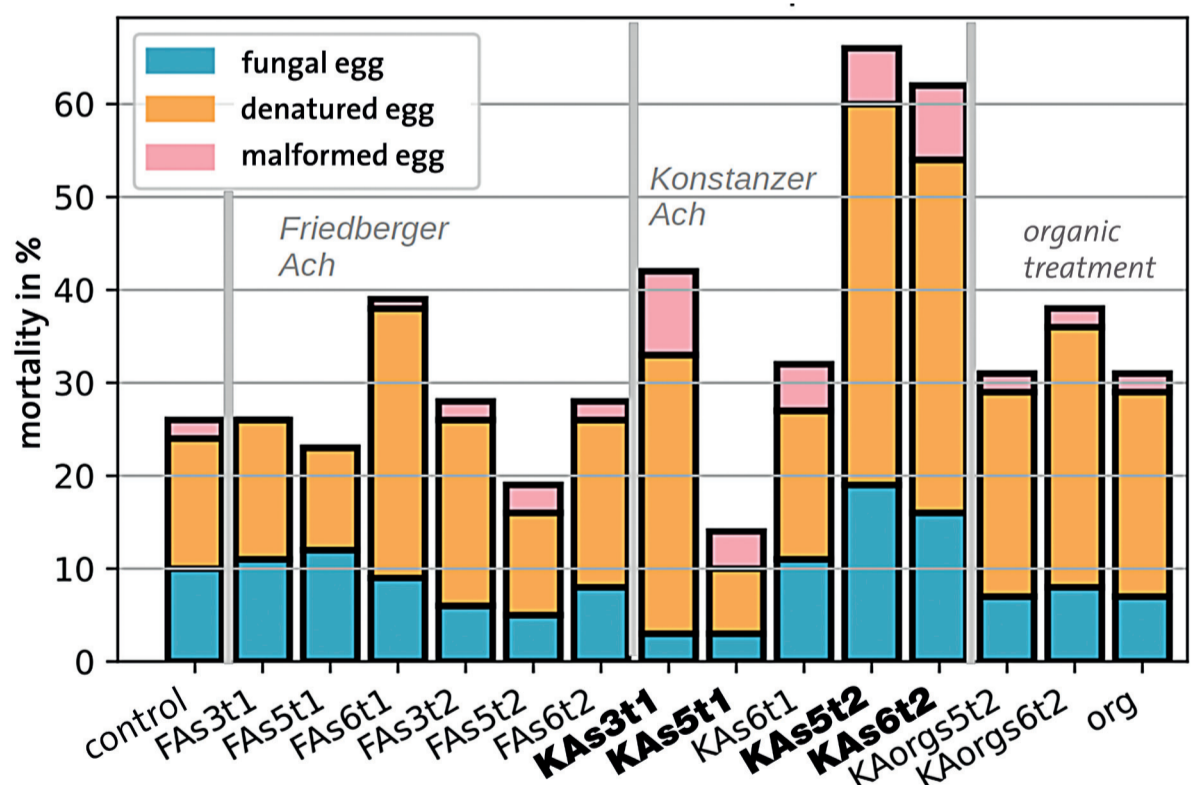


Fig. 7 Overview Mortality per Treatment (FA = Friedberger Ach, KA = Konstanzer Ach, s3 = grain size 250 - 150  $\mu$ m, s5 = 125 - 63  $\mu$ m, s6 = < 63  $\mu$ m, t1 = time of exposition 1, t2 = time of exposition 2, org = additional organic matter) statistically significant compared to control: KAS3t1, KAS5t1, KAS5t2, KAS6t2

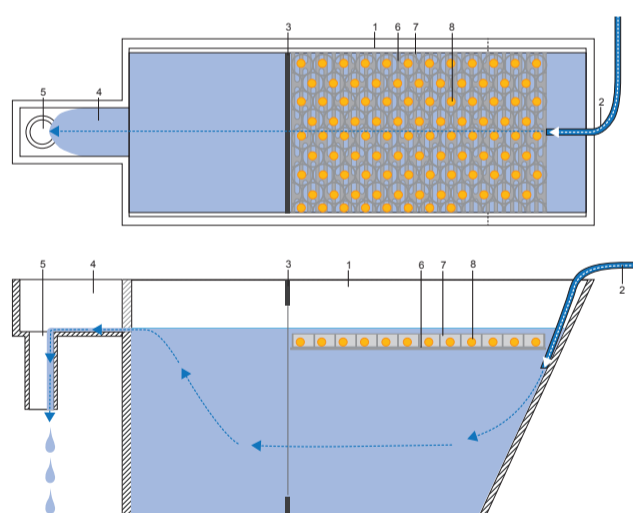


Fig. 6 Set-up single aquarium:  
1 single treatment-limited aquarium, 2 inflow, 3 separation  
4 spillway, 5 drain, 6 profile plate, 7 perforated plate, 8 egg

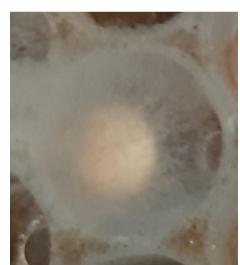


Fig. 8a Egg fungal



Fig. 8b Egg denatured

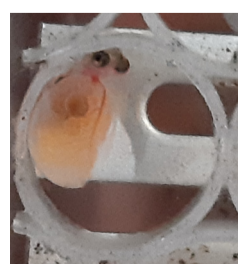


Fig. 8c malformed larva

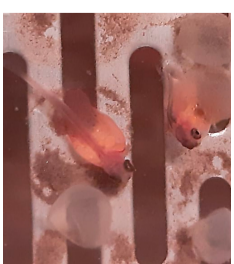


Fig. 8d Yolk sack larvae freshly hatched

## 5. Conclusions

- Konstanzer Ach samples with higher shares of organic matter have the higher impact on egg development compared to the Friedberger Ach
- Smaller grain sizes foster fungal hatch failure
- Shares of organic matter have a bigger impact on egg development than smaller grain sizes
- Sediment Trap enables large-scale longterm sampling to successfully restore *salmo trutta fario*