## Too hot to handle?



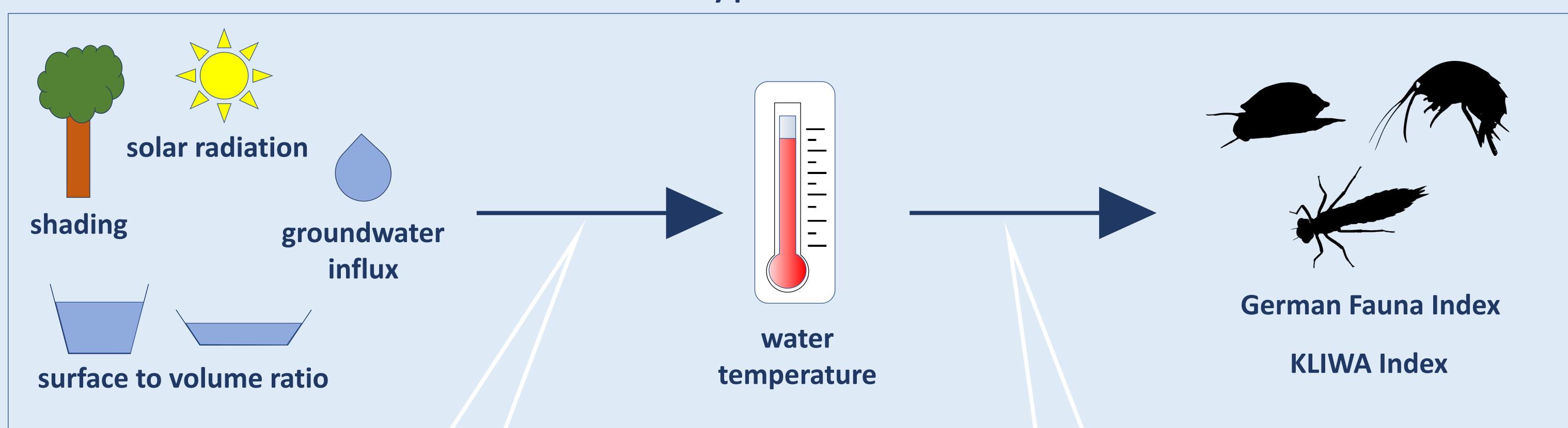
Hannah-Marie Stappert<sup>1</sup>, Jochem Kail<sup>1</sup>, Daniel Hering<sup>1</sup>

Methods

# Jochem Kall-, Daniel Hering-

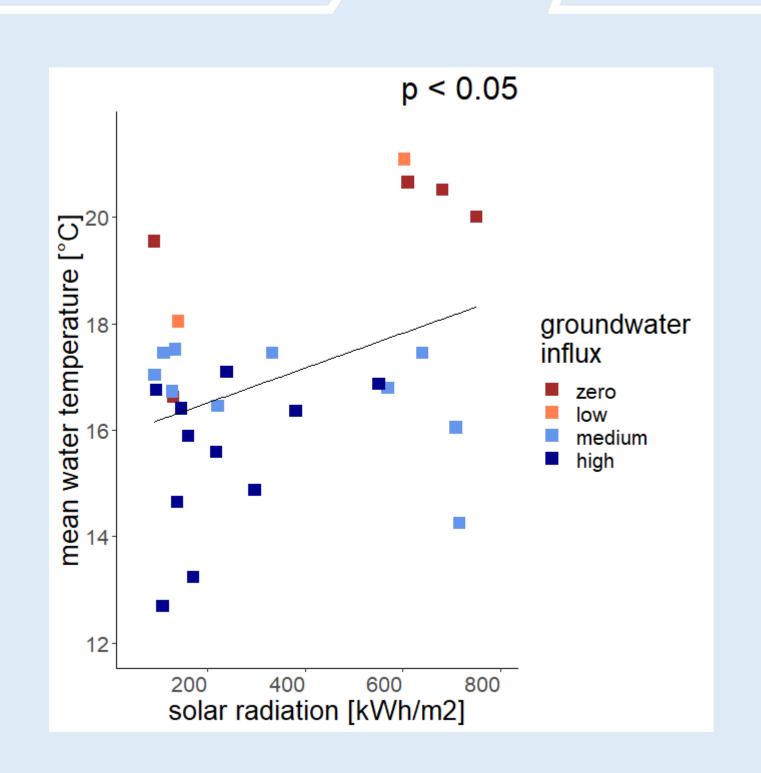
- 34 sampling sites in sand-bed streams (type 14) located in a lowland region in Germany
- Solar radiation on water surface calculated via drone images implementing shading
- Representative stream cross-sections measured to calculate surface to volume ratio
- Groundwater influx estimated based on expert knowledge; will be modelled in the future
- Water temperature measured every 20 minutes in summer prior to macroinvertebrate sampling
- Macroinvertebrates sampled in late summer 2022, directly after three months of a heavy drought, via multi habitat sampling

## Hypotheses

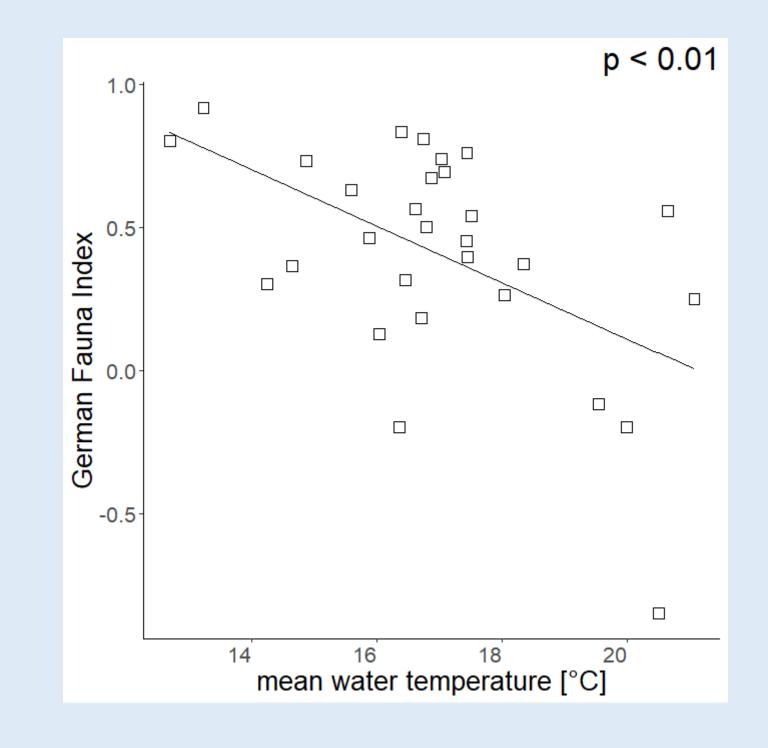


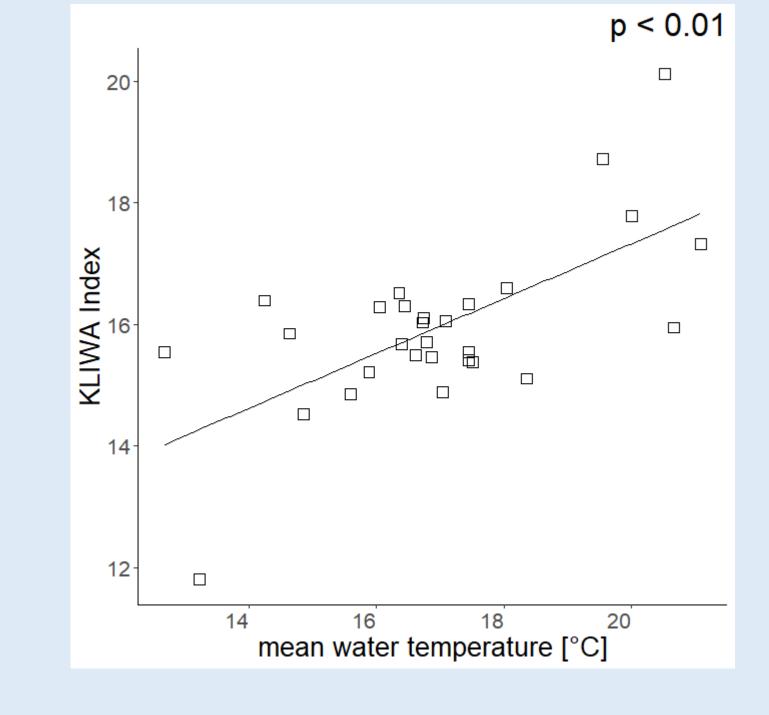
- Shading and small surface to volume ratio reduce water temperature in summer by reducing the amount of solar radiation reaching the water surface
- High groundwater influx reduces water temperature in summer
- Increase of water temperature leads to changes of macroinvertebrate community traits
- Lower German Fauna Index and higher KLIWA Index

### Results



- Reduced solar radiation (by shading) and high groundwater influx reduce mean water temperature
- Surface to volume ratio has no effect





 Higher mean water temperature leads to lower German Fauna Index and higher KLIWA Index

#### Measures that

- decrease solar radiation input by shading
- increase groundwater influx ...

# Conclusion

... decrease
water
temperature ...

... and may help to mitigate climate change effects on macroinvertebrate communities

#### Reference

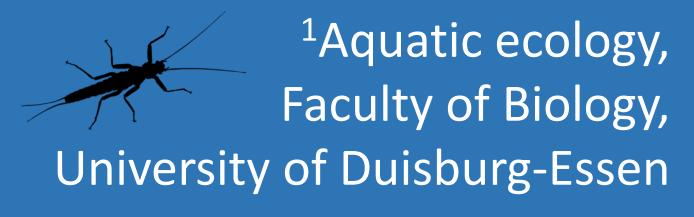
https://www.phylopic.org/













**Open-**Minded

