

# Translocation as a conservation measure for protecting freshwater mussels - experiences with *Unio crassus* in Poland

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# Active conservation measures

- Habitat restoration in hope of spontaneous recolonisation
- Adult relocation
- Seeding with juveniles from captive breeding



# Translocate - where?



# Unio crassus – threatened, HD



# Restoring of range, population integrity and recolonisation of thick-shelled river mussel (*UNIO CRASSUS*)

*Coordinator: dr Katarzyna Zając, IOP PAN*

**project POIS-05.02.00-00-084/08  
pn. "Przywrócenie drożności korytarza ekologicznego doliny rzeki Biała Tarnowska"**

[www.losos.org.pl](http://www.losos.org.pl)



**INFRASTRUKTURA  
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NARODOWA STRATEGIA SPÓJNOŚCI



**UNIA EUROPEJSKA**  
EUROPEJSKI FUNDUSZ  
ROZWOJU REGIONALNEGO



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ze środków Europejskiego Funduszu Rozwoju Regionalnego  
w ramach Programu Infrastruktura i Środowisko

*Aim:*

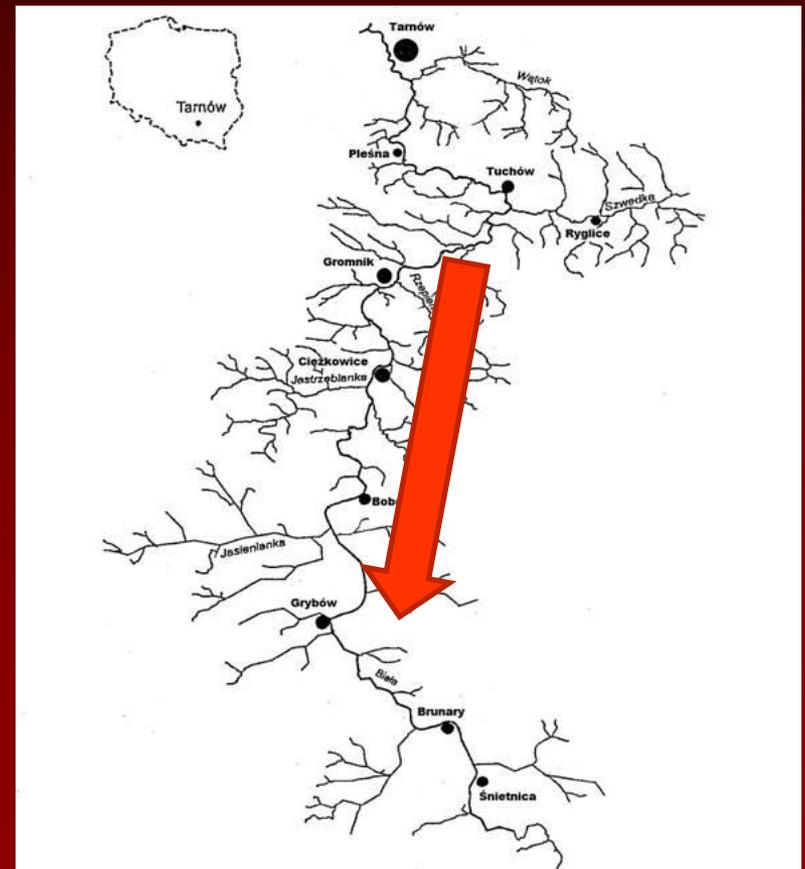
Recolonisation of ecological corridor  
of the river Biała



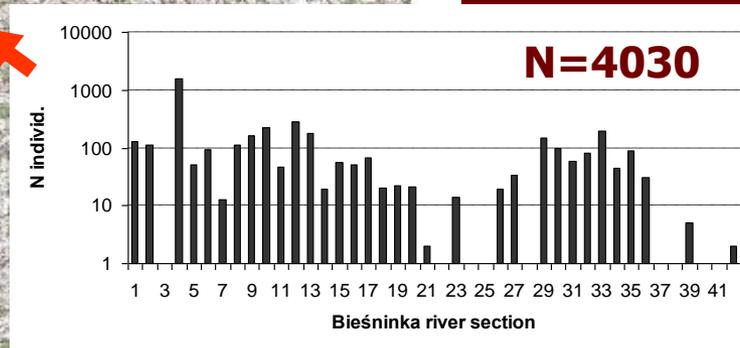
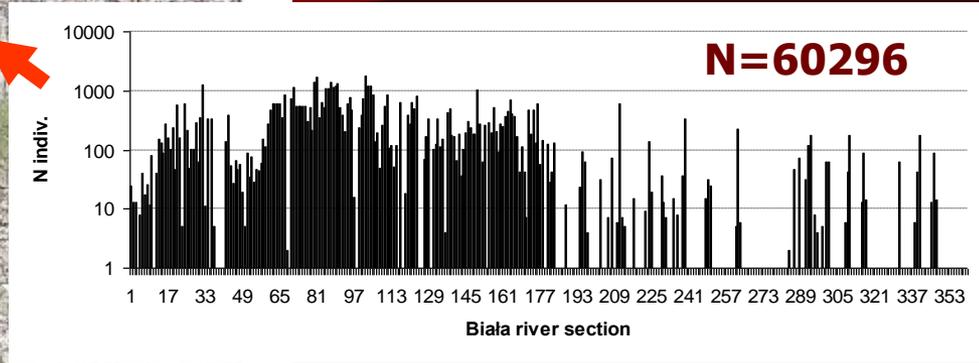
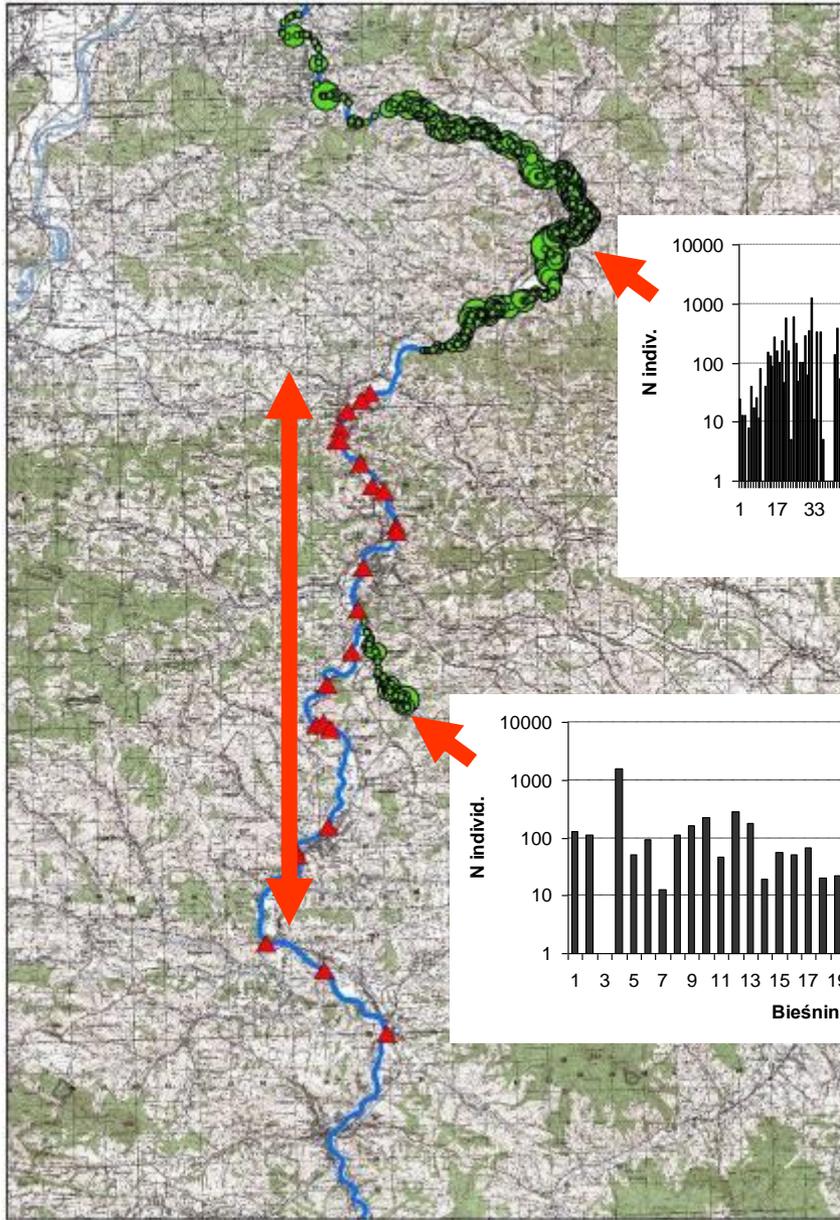
***Task No 3. Species & Habitat  
survey***

***Task No 10. Re-introduction***

***Task No 16. Monitoring of the  
results***



# Survey

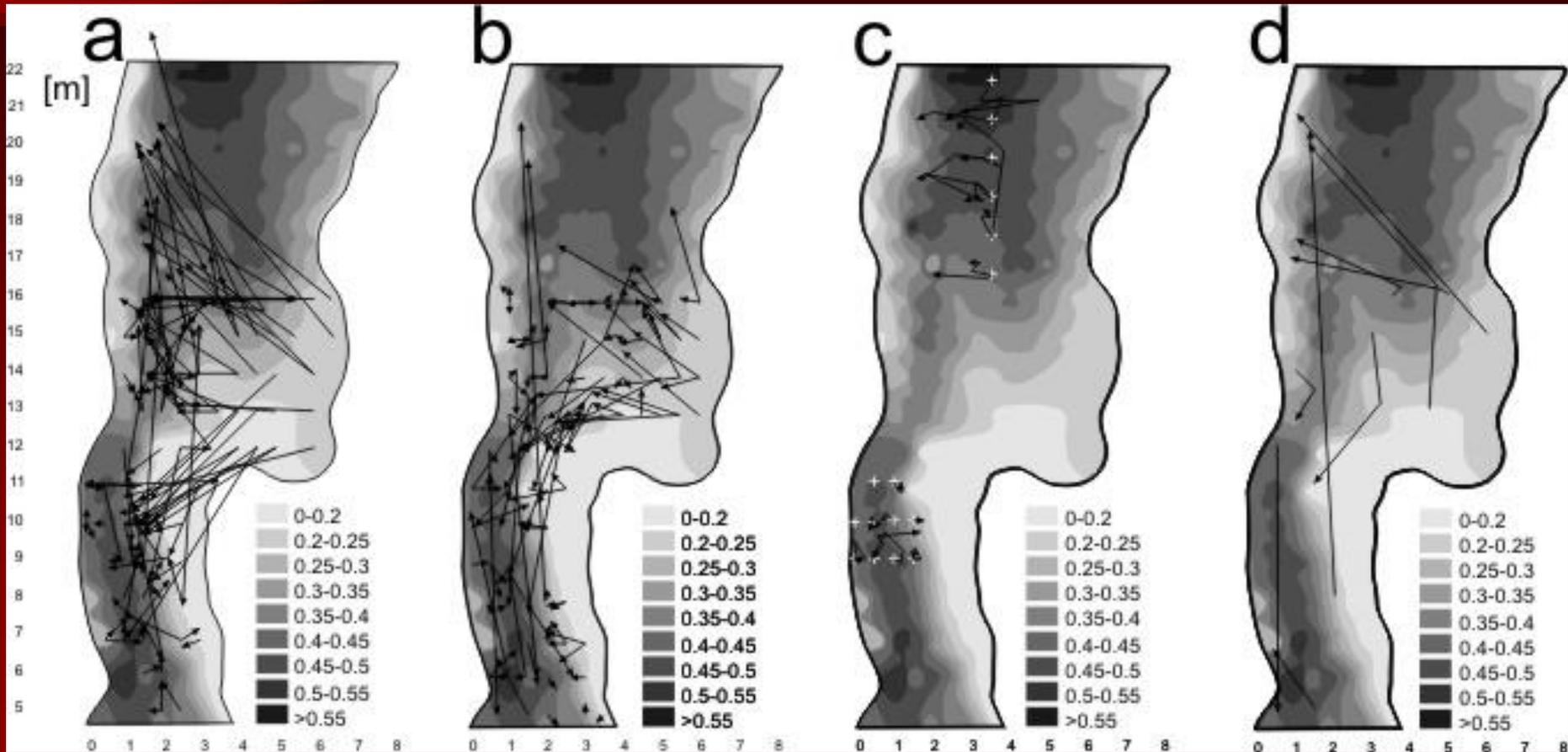


Stepping stones  
to join isolated  
populations  
and extend the  
species range

# Small streams



# Small stream



# Lentic sites

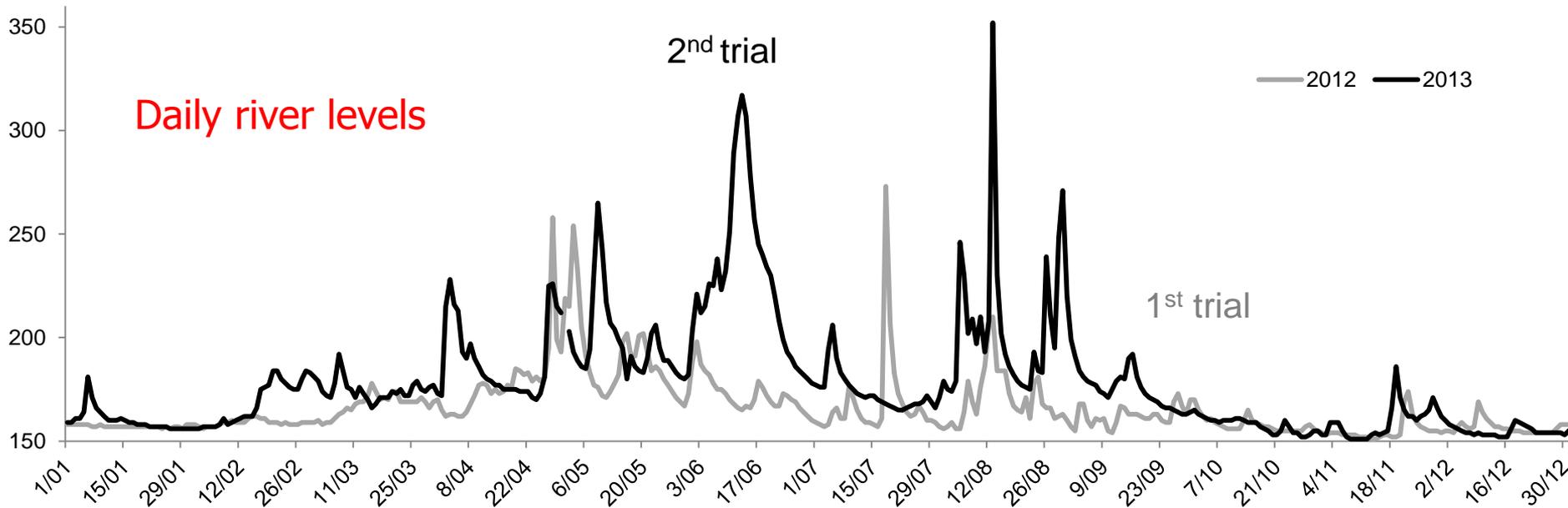


# Lotic sites

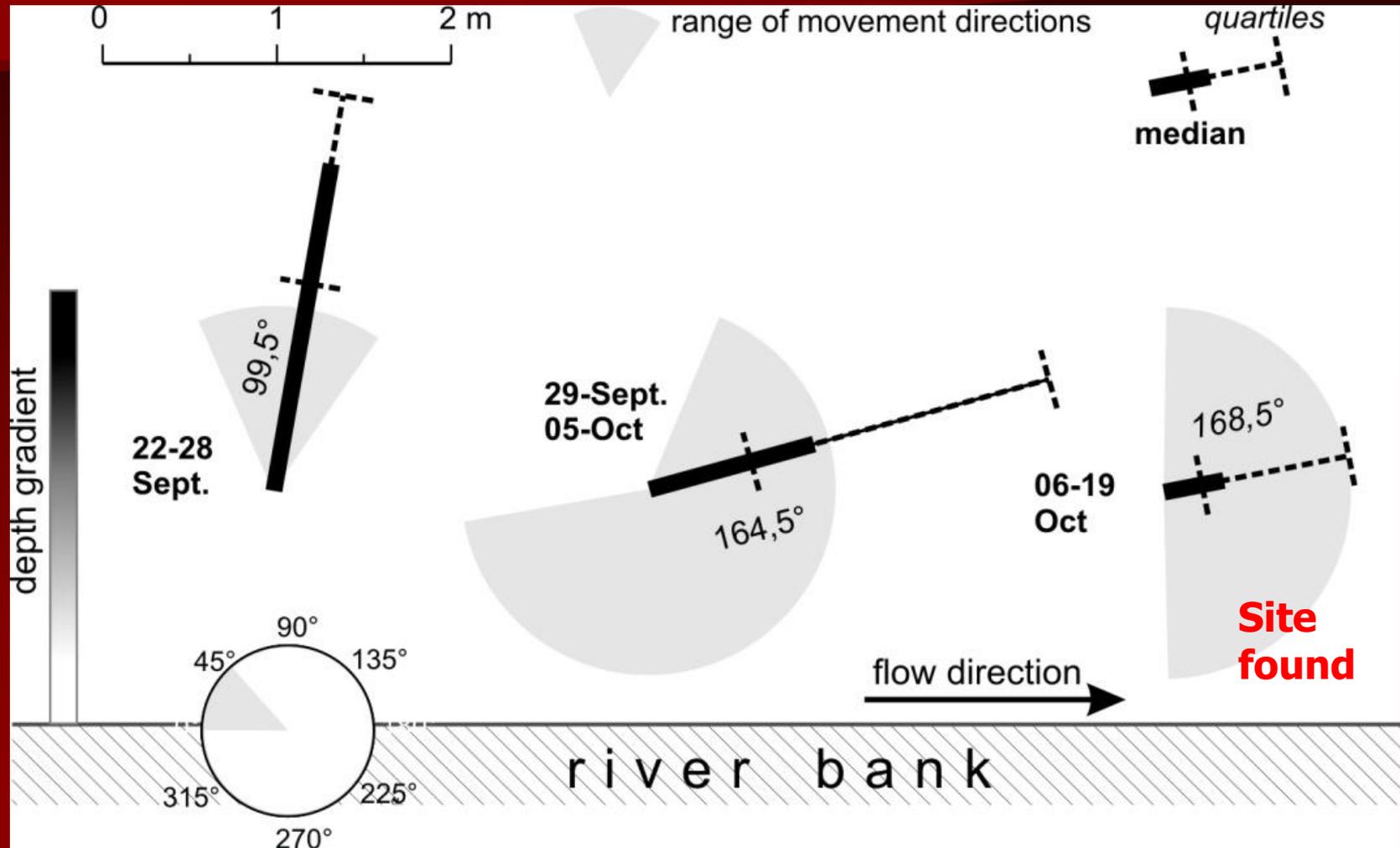


# Behaviour

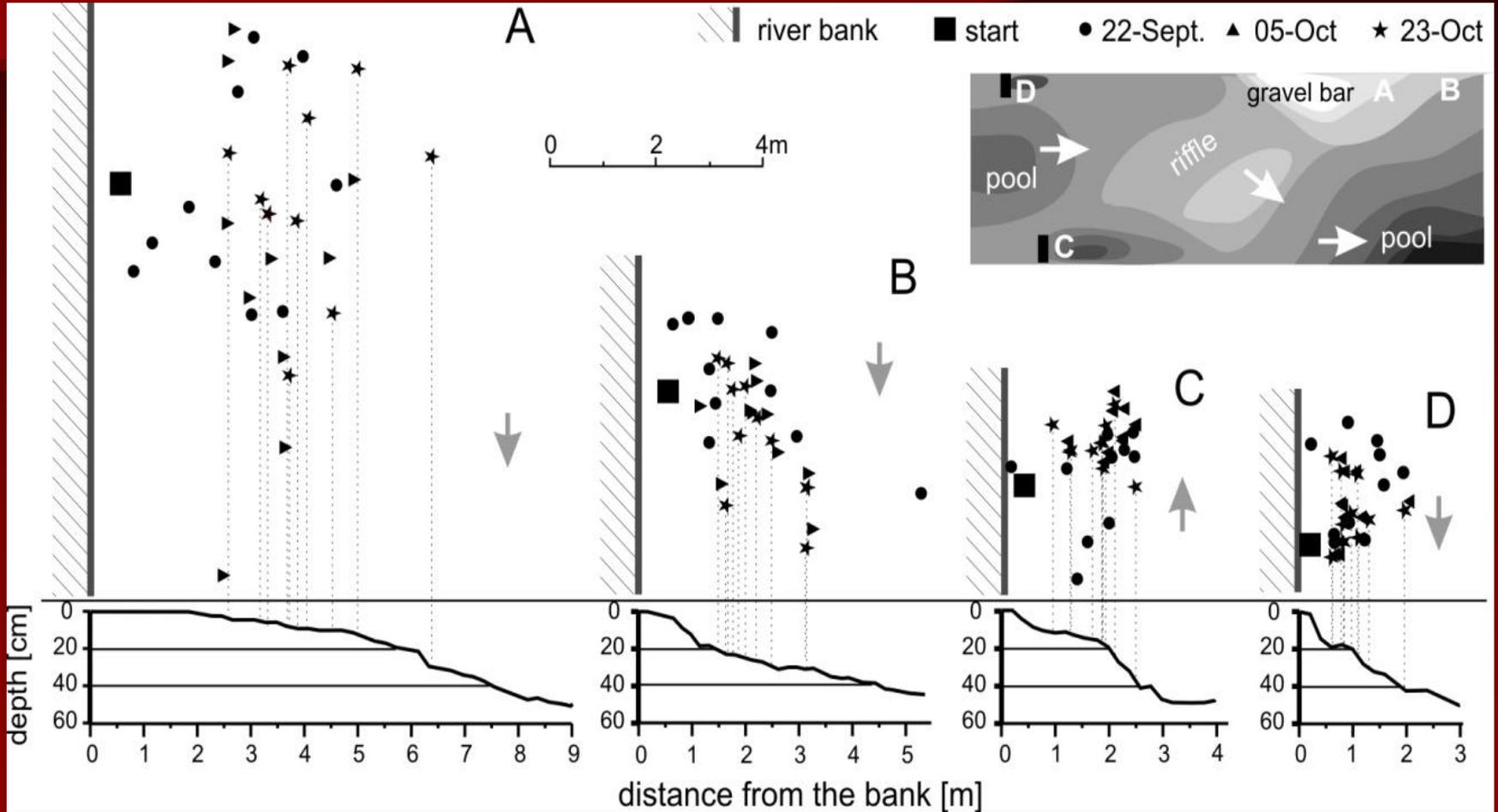
*Aquatic Conservation: Marine and Freshwater Ecosyst.*, 2019, 29 (3), 331-340.



# Direction & distance



# Behaviour



Hastie et al.  
2001

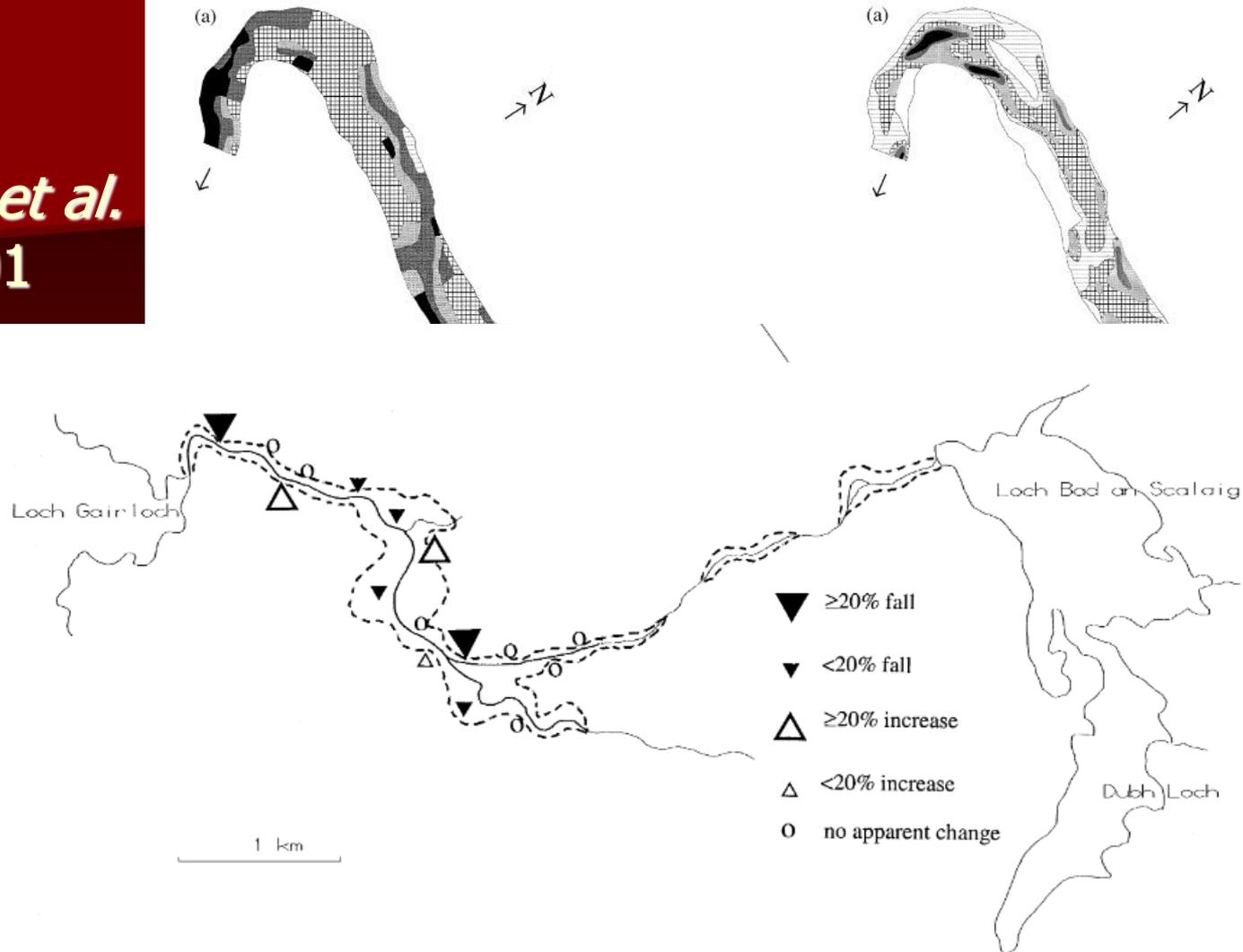


Fig. 2. Estimated changes in mussel abundance based on field notes (two spot checks per freshwater station). Broken lines represent positions of outer strand lines indicating maximum extent of flood.

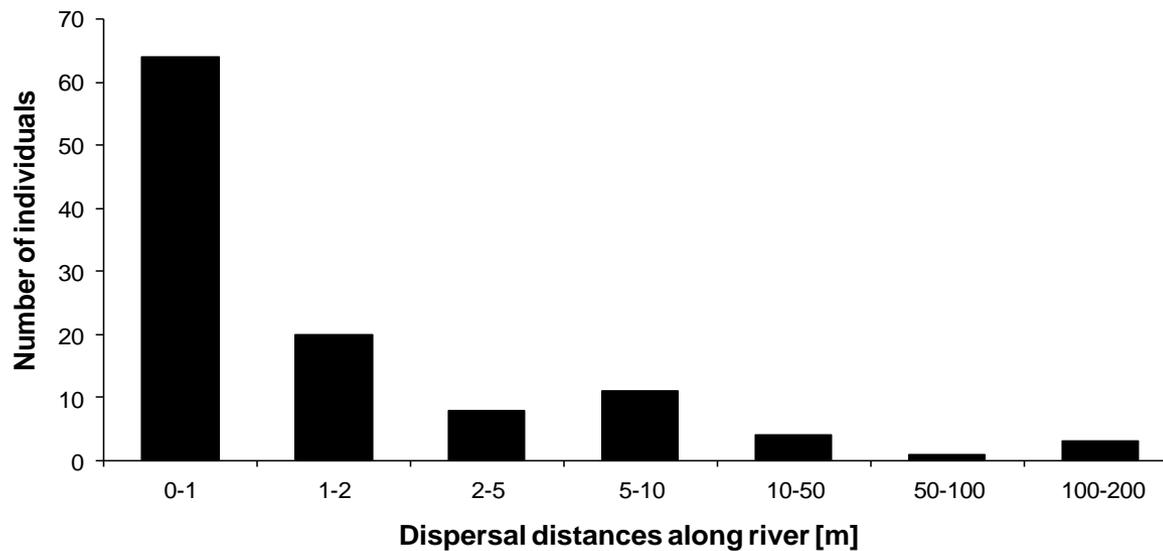
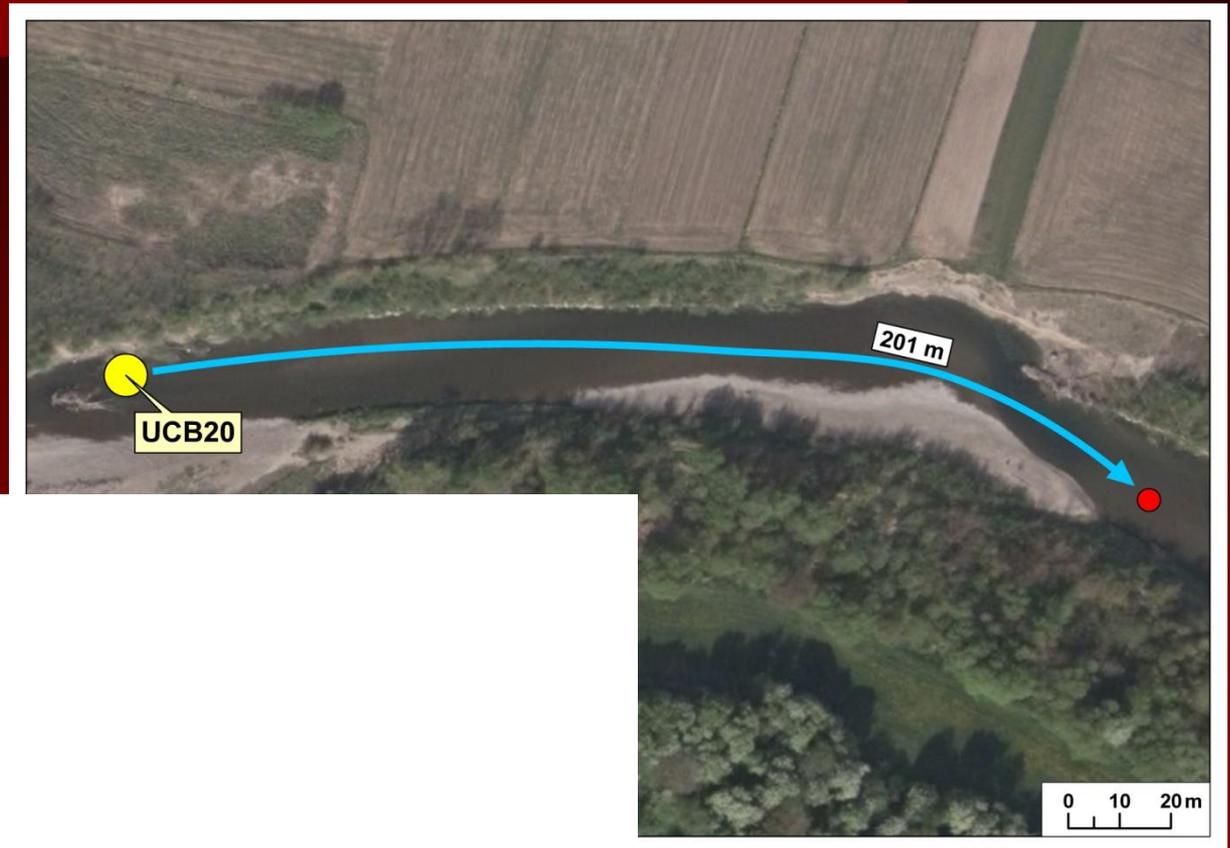
after the flood. based on predominant types (by area covered) in 1-m<sup>2</sup> quadrats ( $n=445$  and  $434$ , respectively) observed in 36 cross-river transects.

(o) after the flood. based on visible numbers per 1-m<sup>2</sup> quadrats ( $n=445$  and  $434$ , respectively) observed in 36 cross-river transects.

# Mortality

- 1st trial – zero
- 2nd trial – 91 found again – 3 dead with transmitters (ca 3.3%)
  - Md per site = 9
  - 15% burrowed completely
  - 20% invisible (roots, boulders)
  - 19 (17%) not found again, although with transmitters

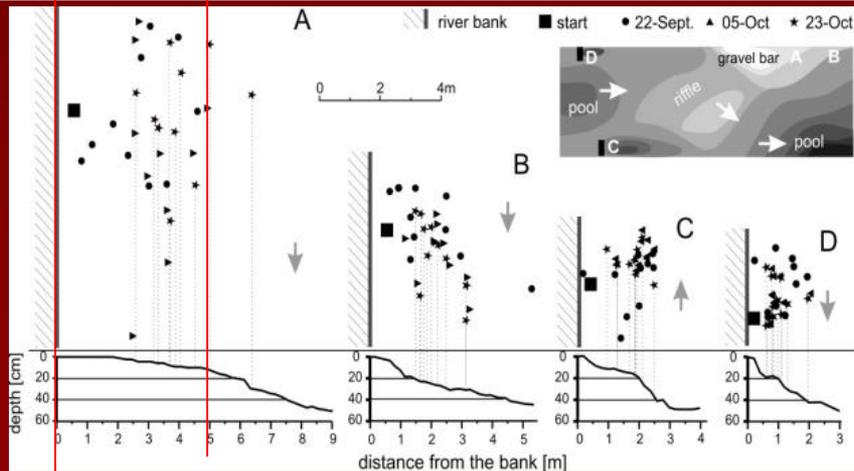
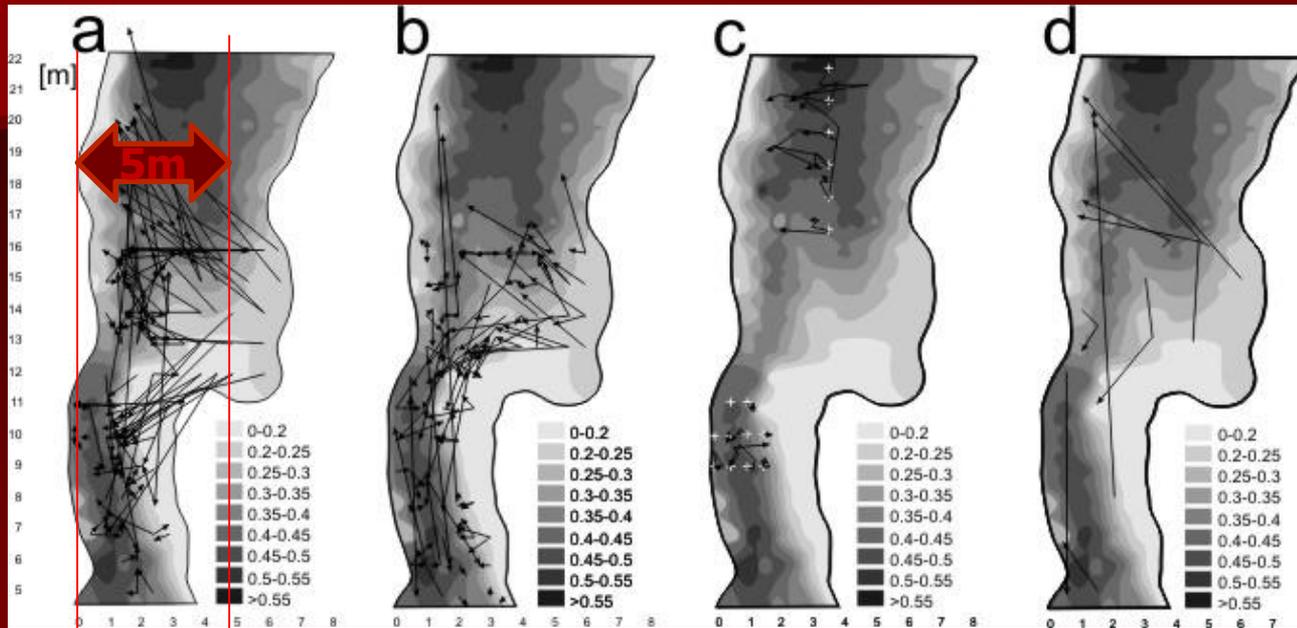
# Dislodging



# Dislodging

- regulated:
  - $d_{max} = 48.6\text{m}$ , wild  $d_{max} = 1.8\text{m}$ ,  $p = 0.025$  ( $n = 11$ )
- destroyed:
  - $d_{max} = 63\text{m}$ , stable:  $d_{max} = 2.58\text{m}$ ,  $p = 0.014$
- character:
  - Lentic  $d_{max} = 2.5\text{m}$ , lotic ( $d_{max} = 76\text{m}$ ,  $p = 0.045$ ).

# Large vs small



# Success in field

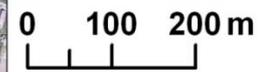
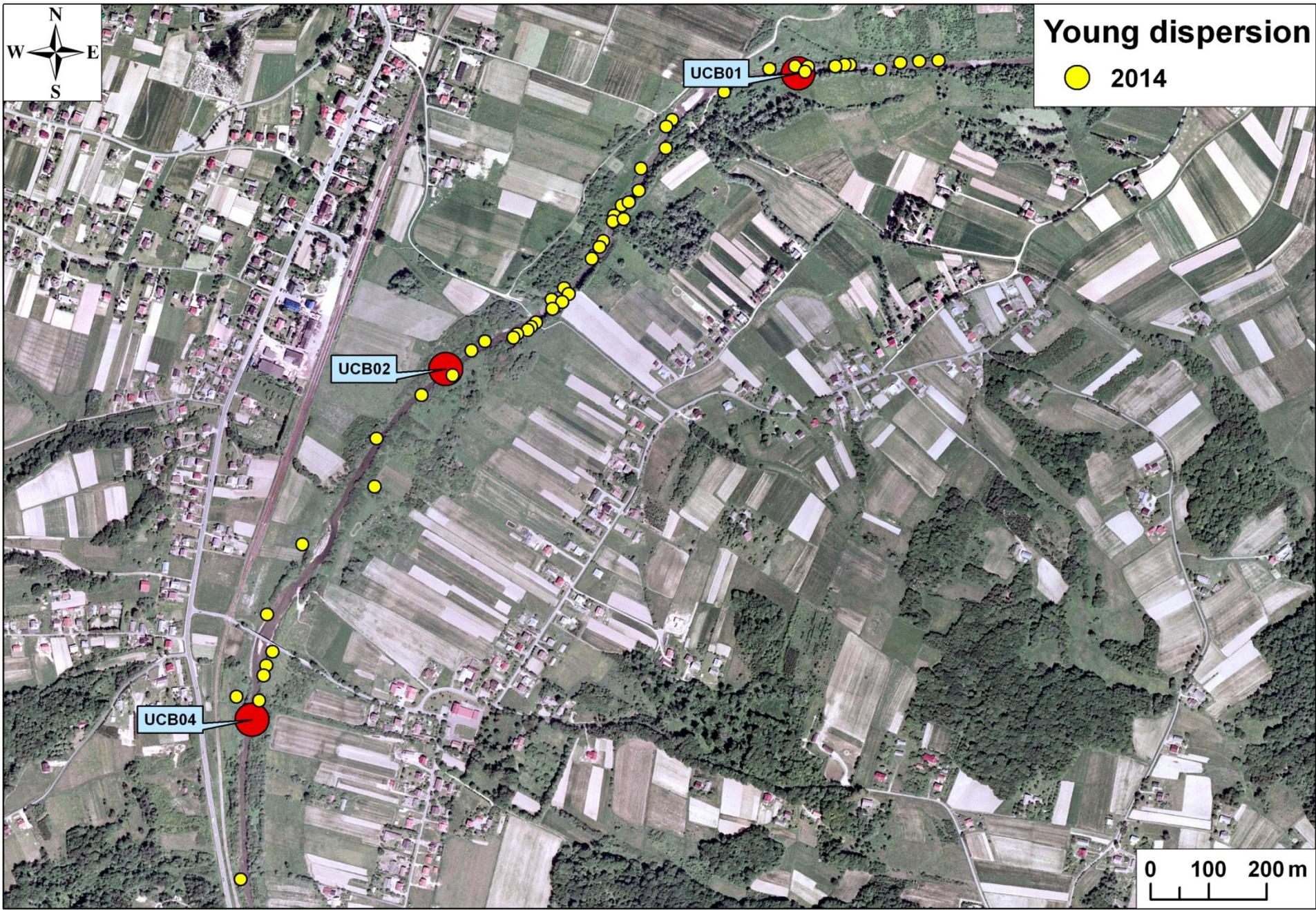
Science of the Total Environment, 2018, v.624: 273-282.



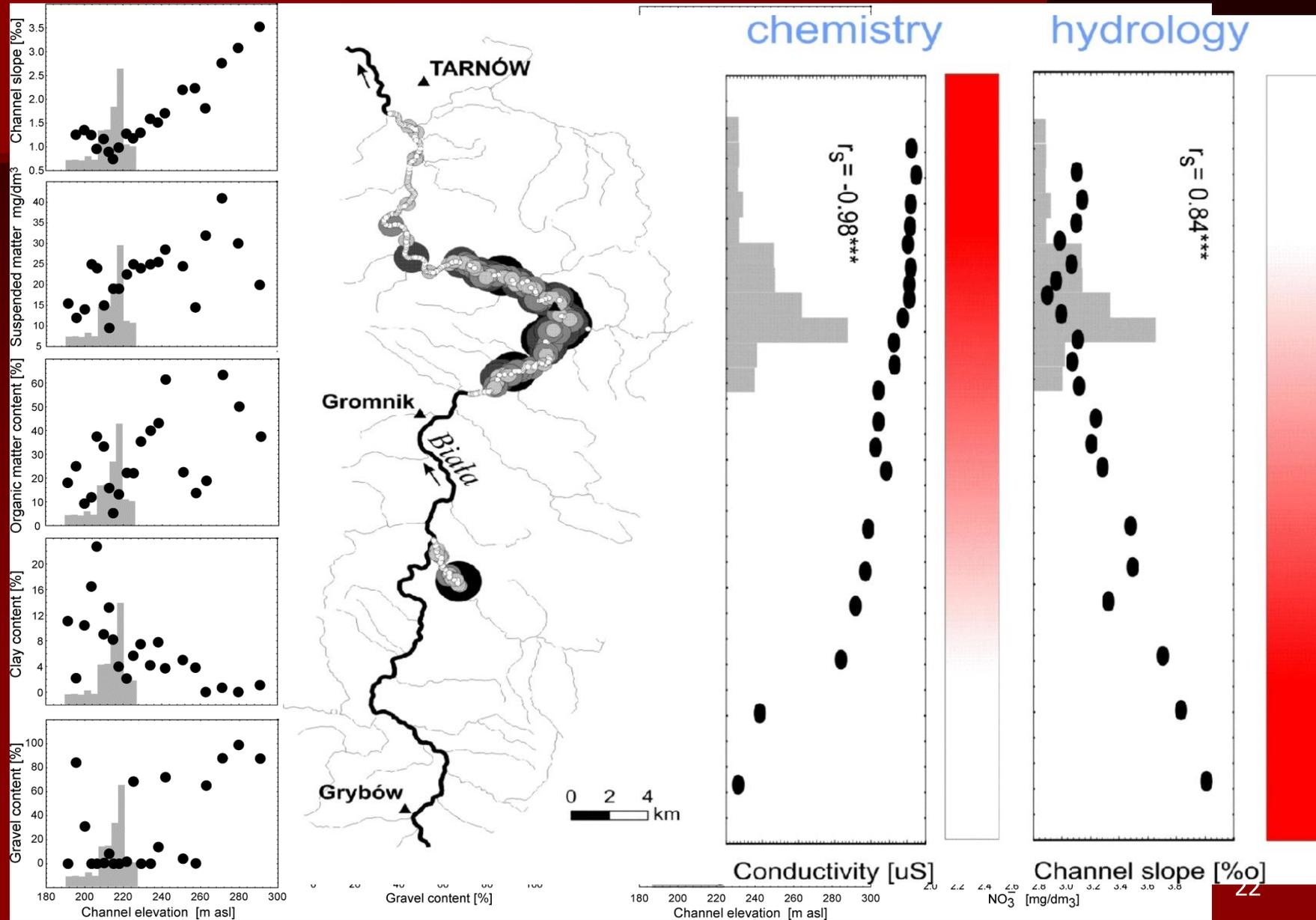


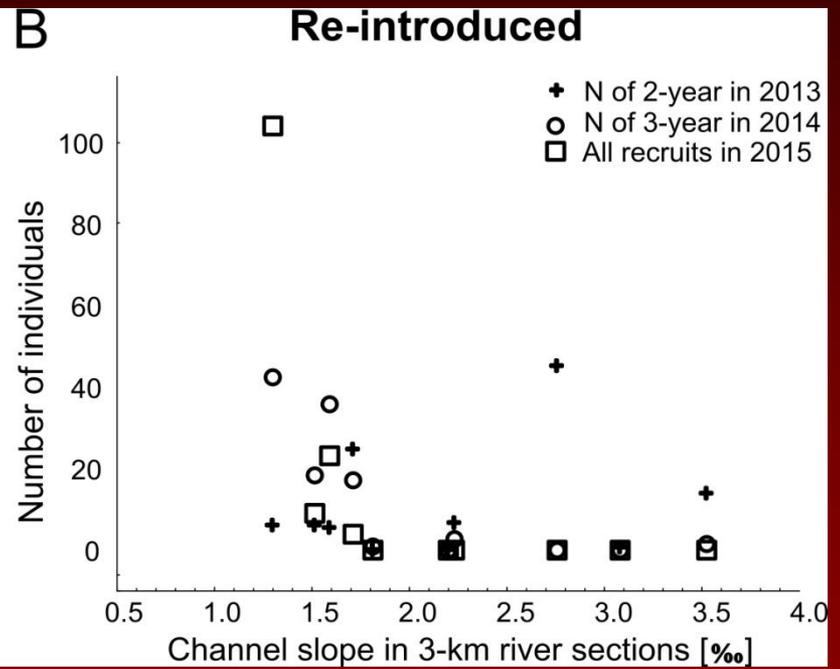
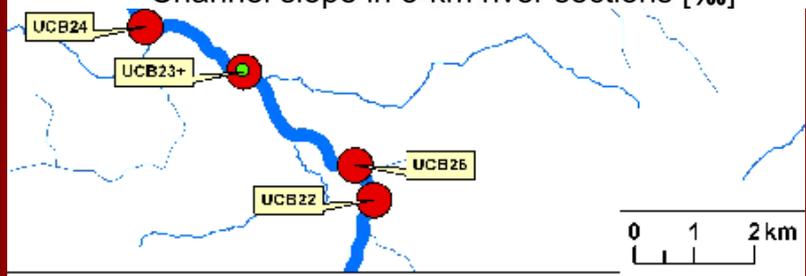
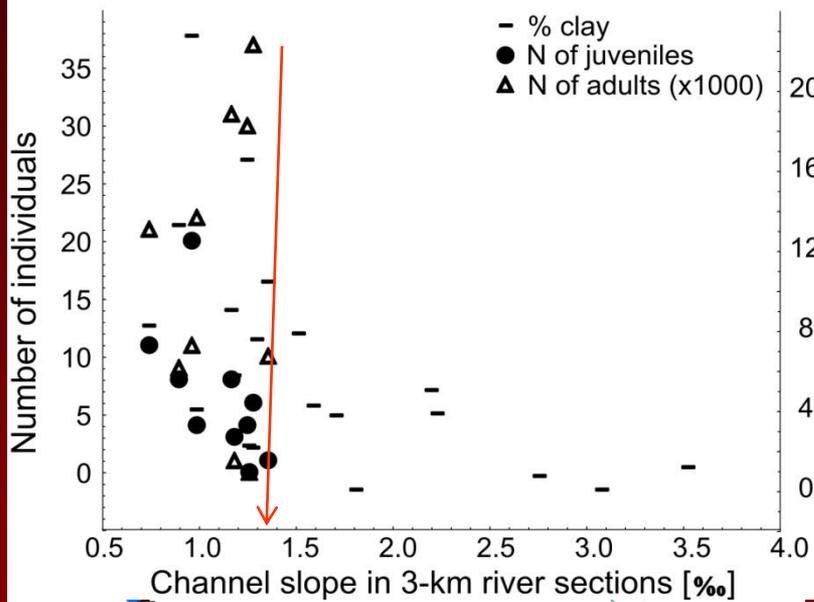
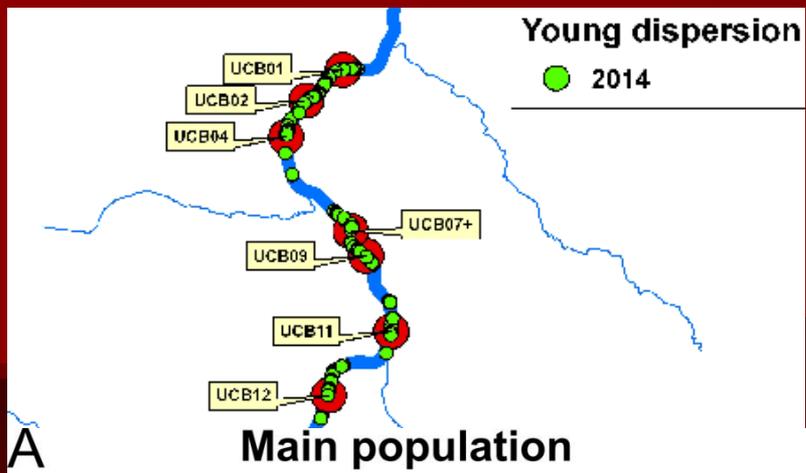
# Young dispersion

● 2014



# Gradients





**EU investment boom = gravel fever...**



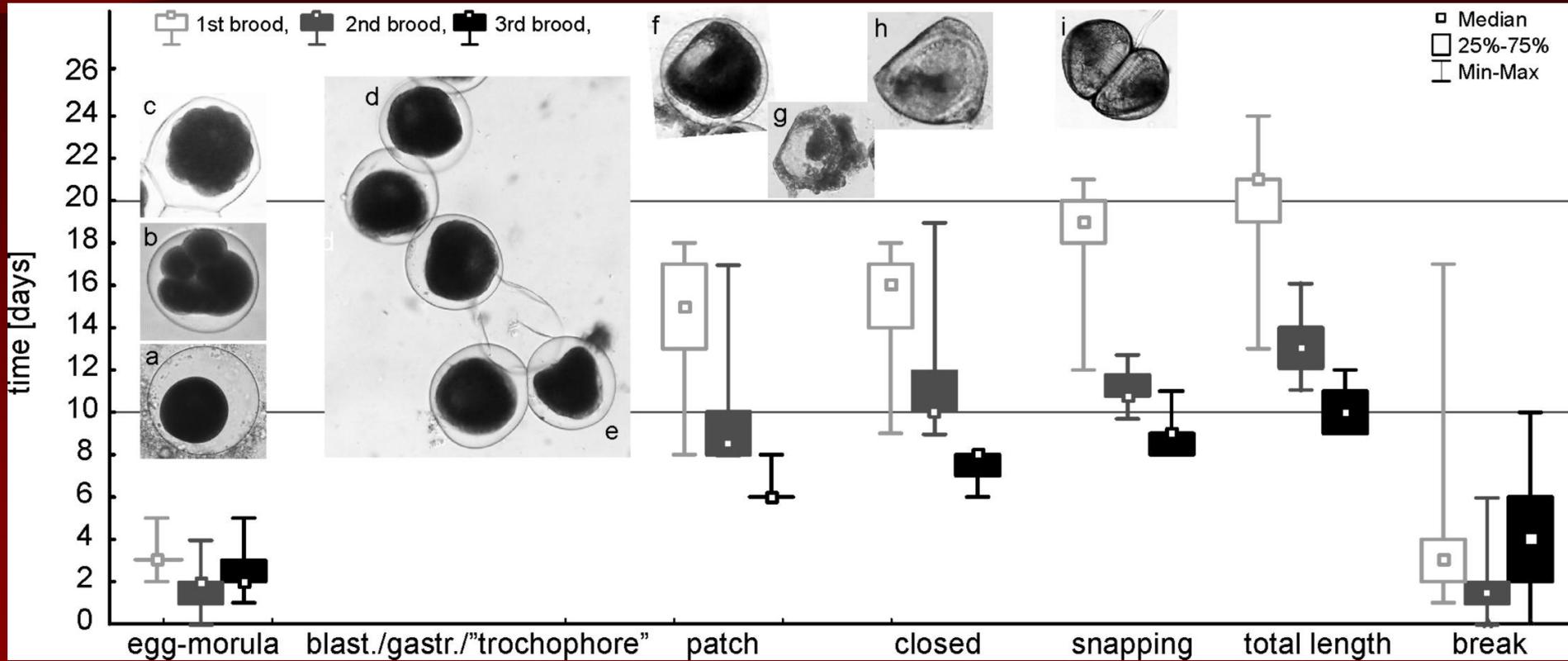
# Forthcoming issues

- Behaviour – still unexplained
- Global warming
- Other habitats

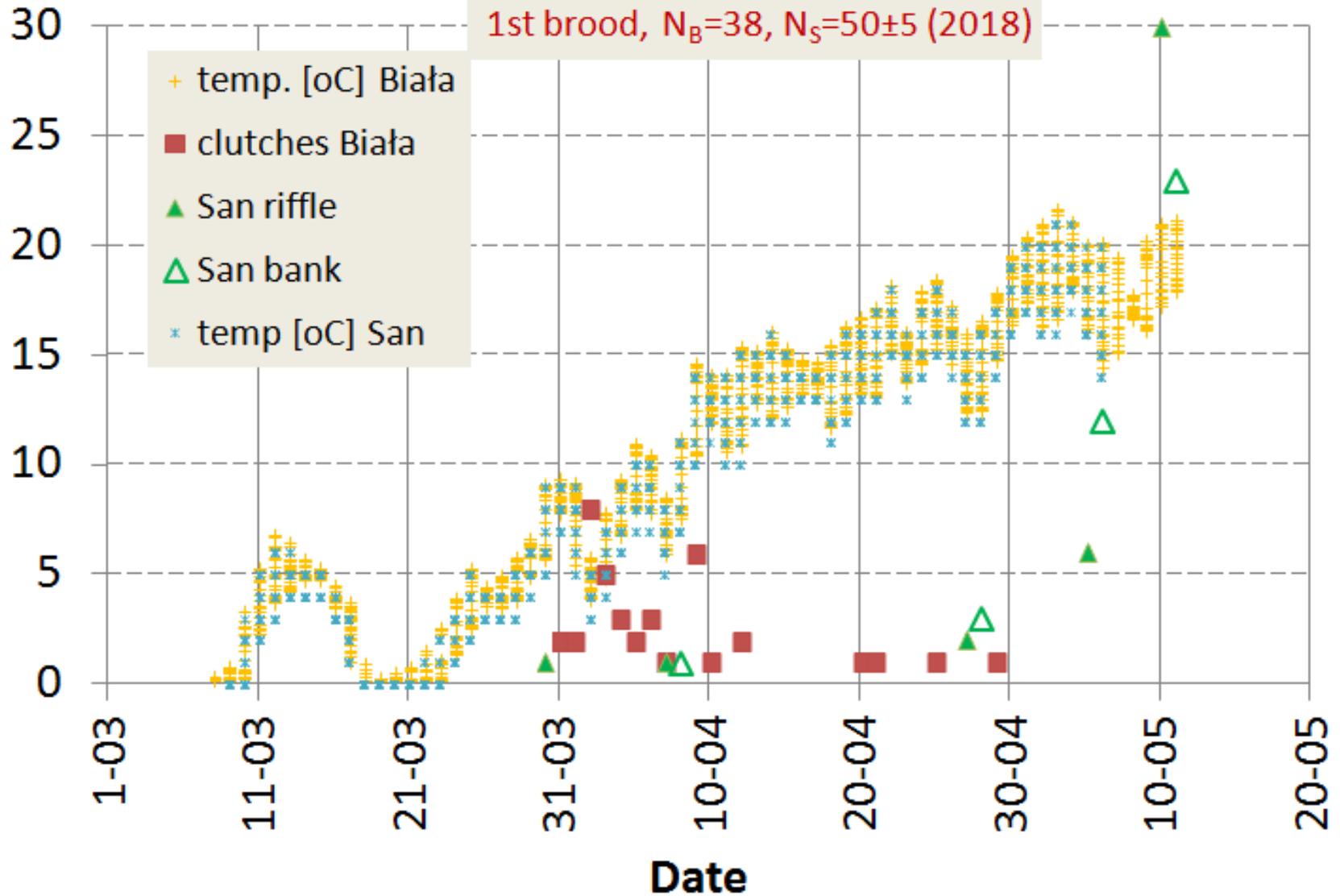
# Glochidia release



# Developmental rates



# Warming?



# Lowland rivers

**LIFE+**

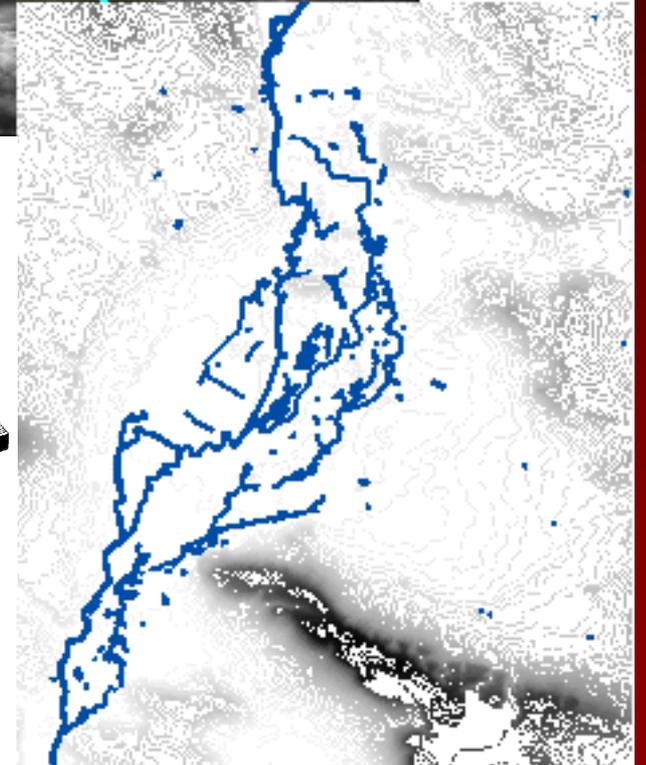
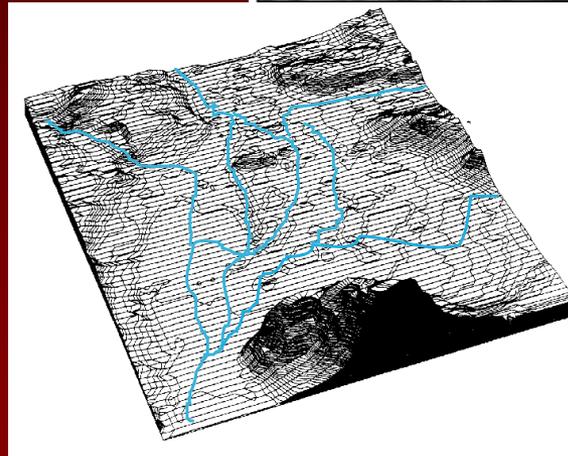
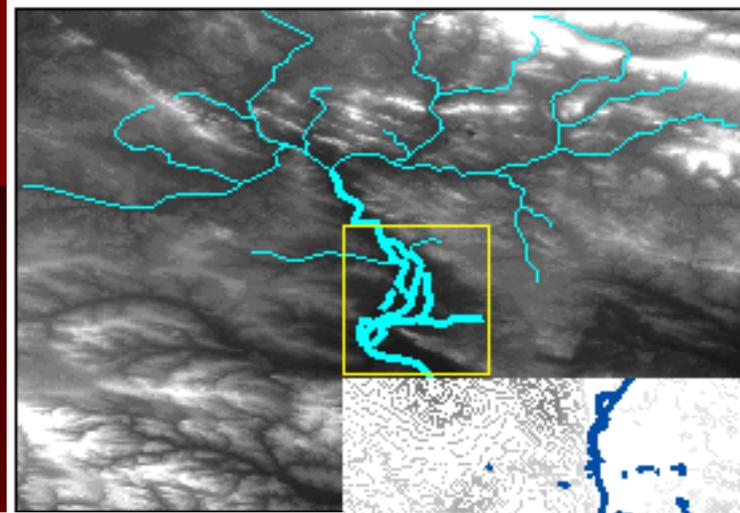
**NAT/PL000018**

**Renaturalisation  
of inland delta  
of the Nida river**

***Life4Delta***



# Inland delta



# Reclaimed land



# Wetlands restoration







**Thank you !**



**The team:**

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**Tadeusz Zając  
Marta Potoczek  
Anna Lipińska  
Zofia Książkiewicz**



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