

Klimaatverandering en verwachte verschuivingen in soortensamenstellingen (o.a. exoten)



Frank Collas, Rob Leuven

Vissennetwerk 26 – 11 - 2019



RiverCare
Towards self-sustaining multifunctional rivers

Radboud Universiteit



Inleiding

- Klimaatverandering:
 - Extreem lage afvoeren
 - Temperatuur ↑
 - Verdamping ↑
 - Droogte ↑
 - Invloed scheepvaart ↑
 - Hogere zeespiegel
 - Zout concentratie ↑

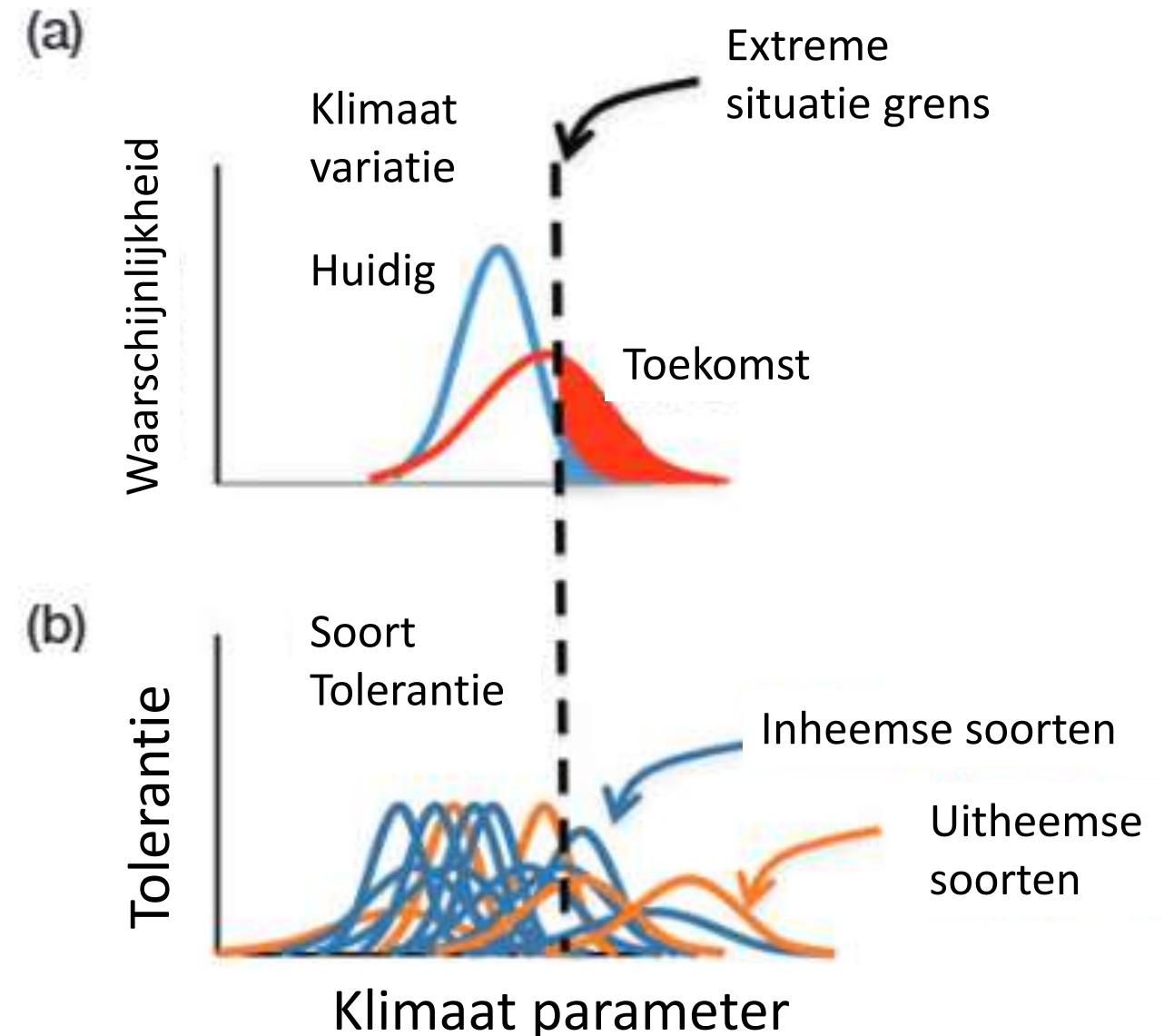


- Verandering in lokale omstandigheden



Inleiding

- Klimaatverandering:
 - Extreem lage afvoeren
 - Temperatuur ↑
 - Verdamping ↑
 - Droogte ↑
 - Invloed scheepvaart ↑
 - Hogere zeespiegel
 - Zout concentratie ↑



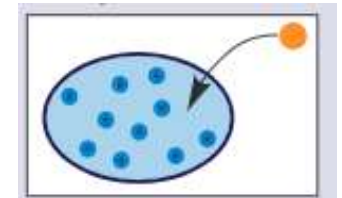
- Verandering in lokale omstandigheden



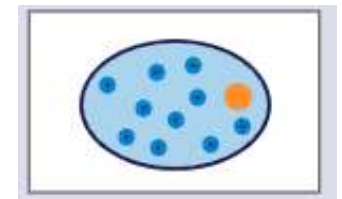
Inleiding

- Exoten:
 - Transport/introductie
 - Meer beweging producten/soorten
 - Vestiging
 - Verminderde weerstand natuurlijk systeem
 - Betere abiotische omstandigheden
 - Verspreiding
 - Barrières vervallen
 - Verminderde weerstand natuurlijk systeem
 - Impact
 - Relatief grotere dichtheden (bijv. droogte)
 - Hoger feeding rate

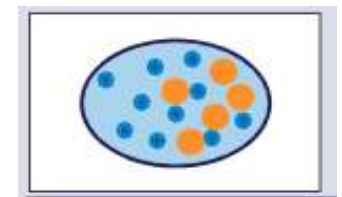
Transport



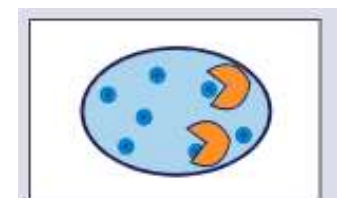
Vestiging

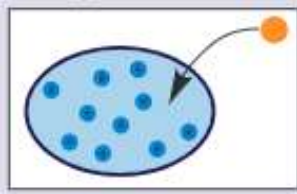


Verspreiding



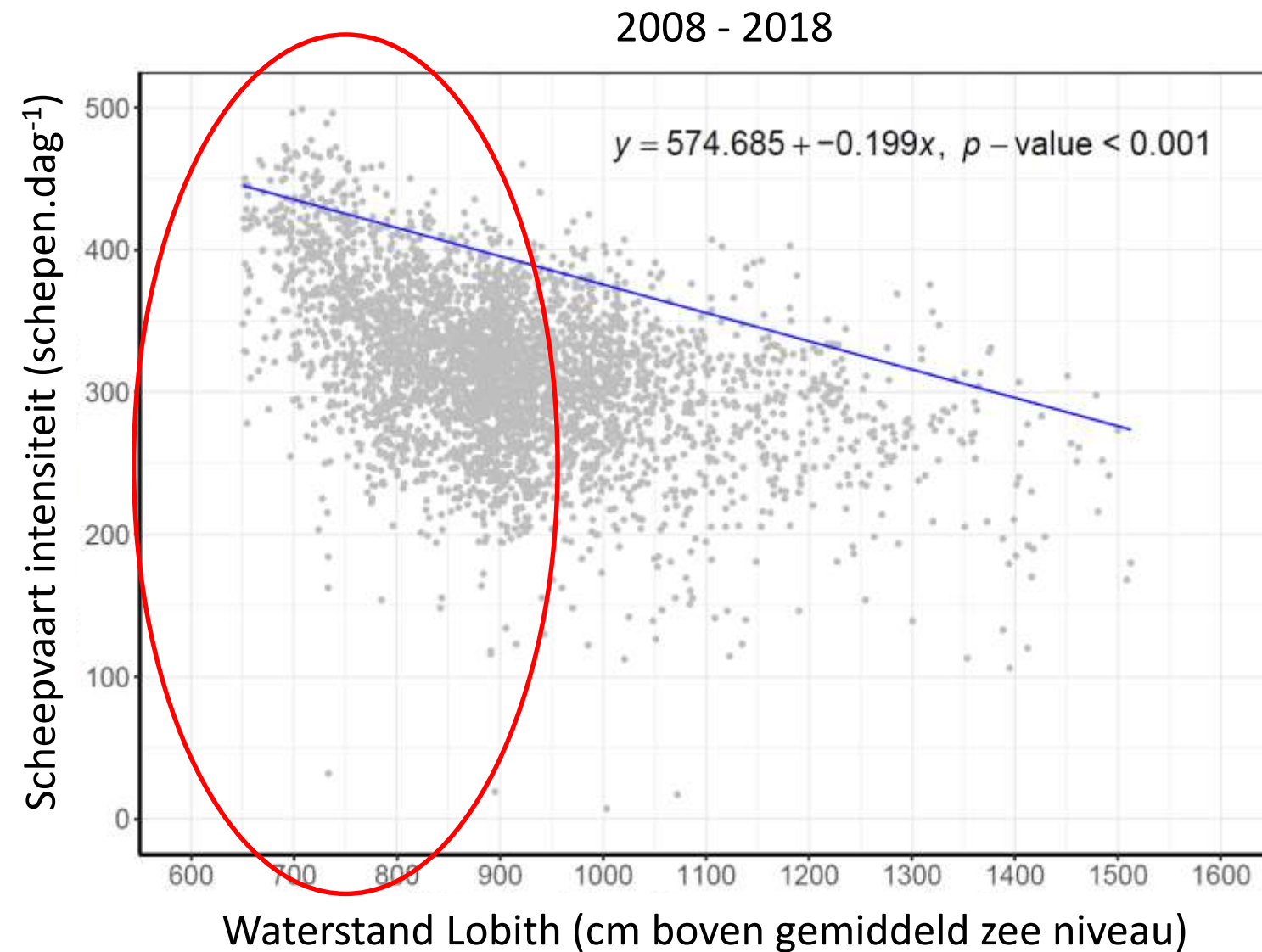
Impact

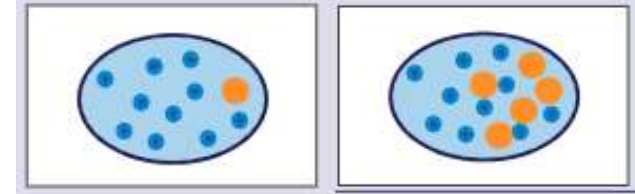




Transport/introductie

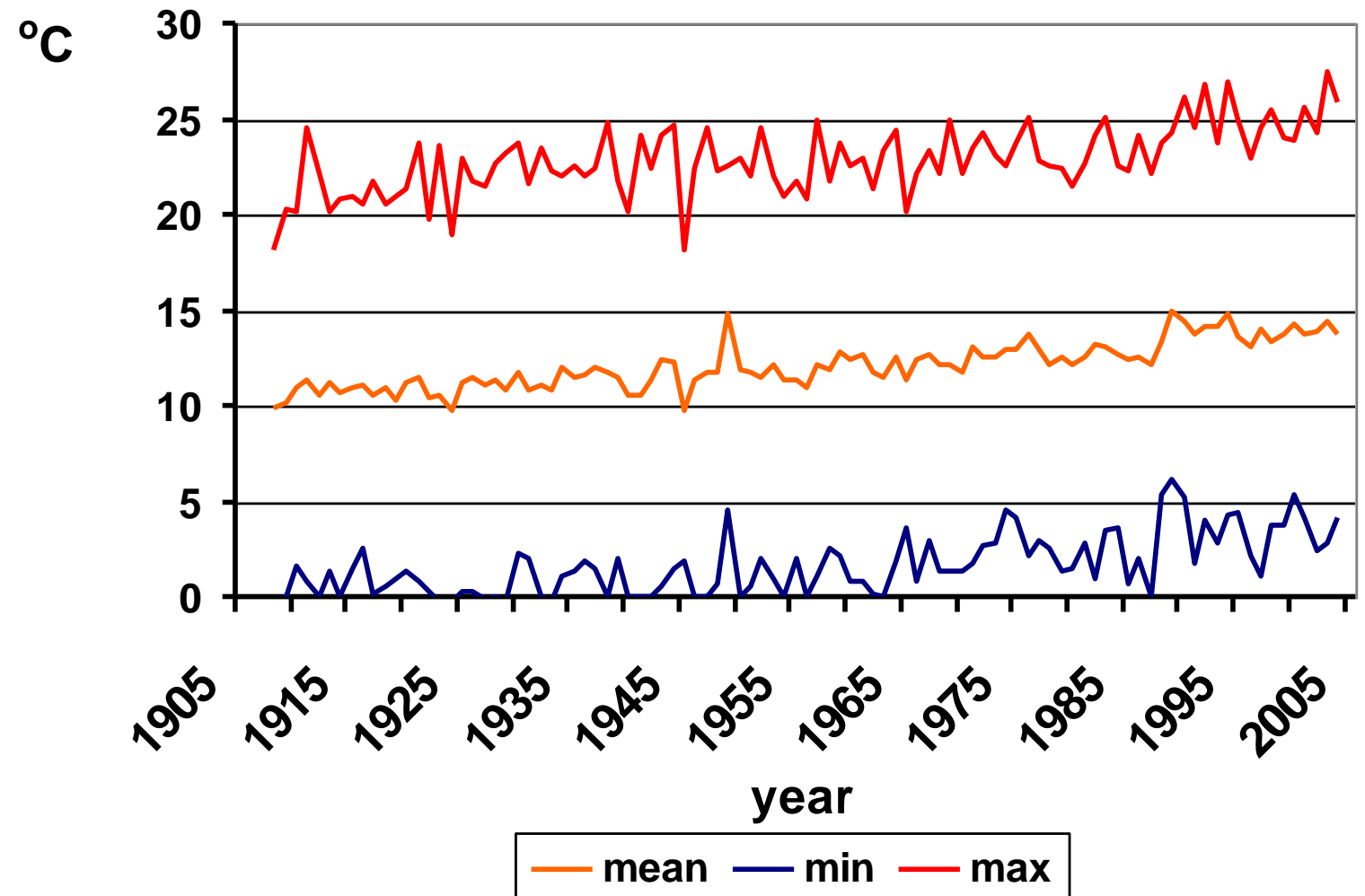
- Langere perioden warm weer
 - Meer recreatievaart
 - Lagere waterstanden
 - Meer commerciële scheepvaart
- Transport exoten

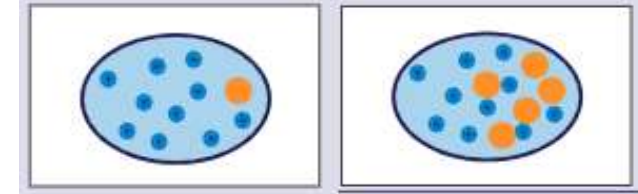




Vestiging en verspreiding: temperatuur

- Stijgende watertemperatuur Rijn Lobith
 - 0.5 °C per 10 jaar
 - 2/3 thermische lozing
 - 1/3 klimaat verandering
 - Langere periode $t > 25$ °C

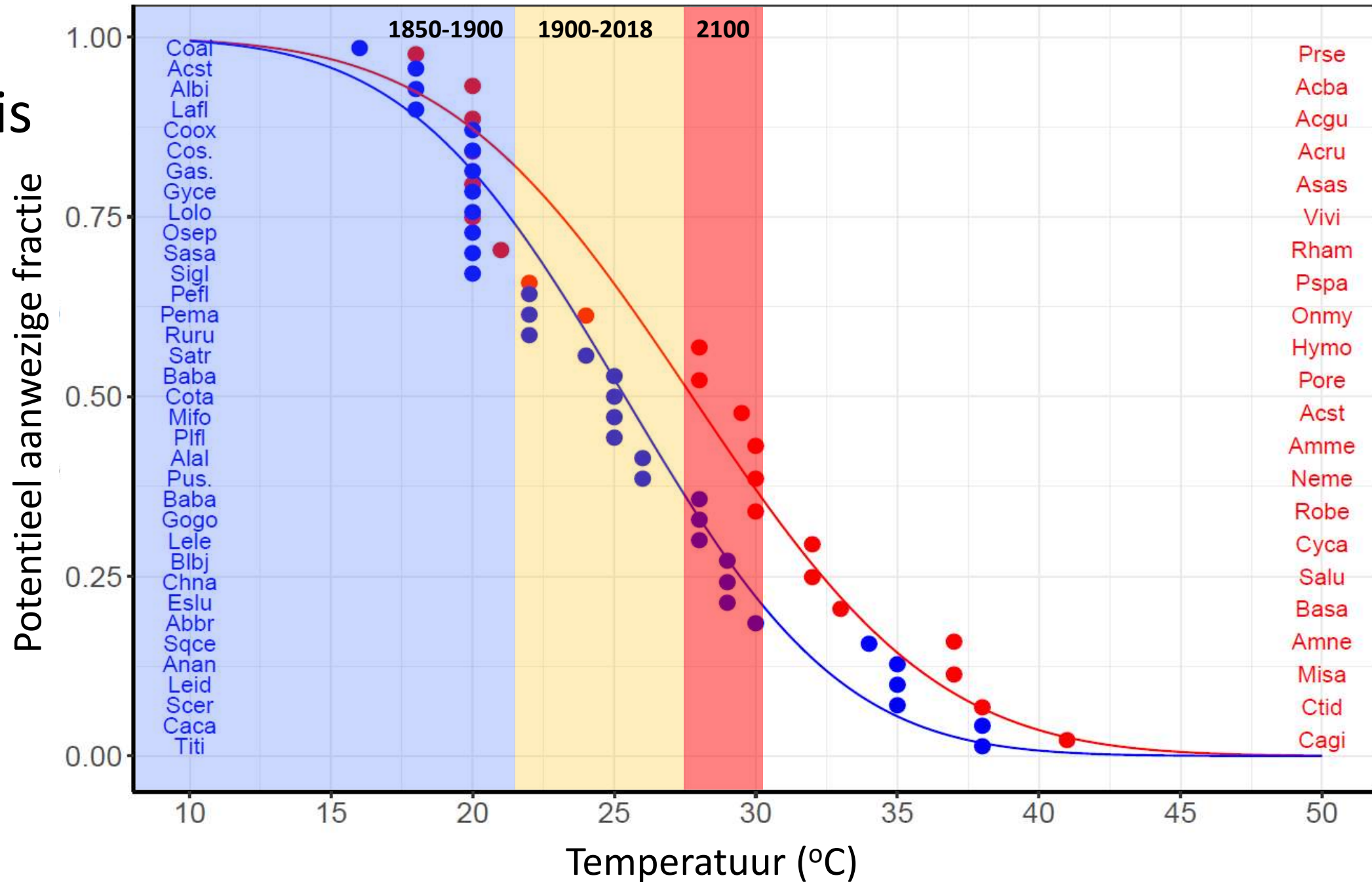


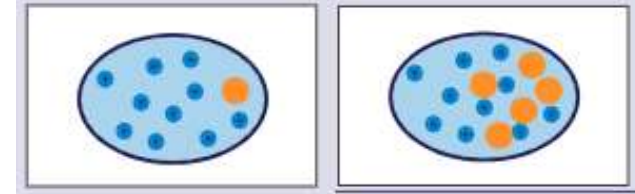


Vestiging en verspreiding: temperatuur

- **Adulte vis**

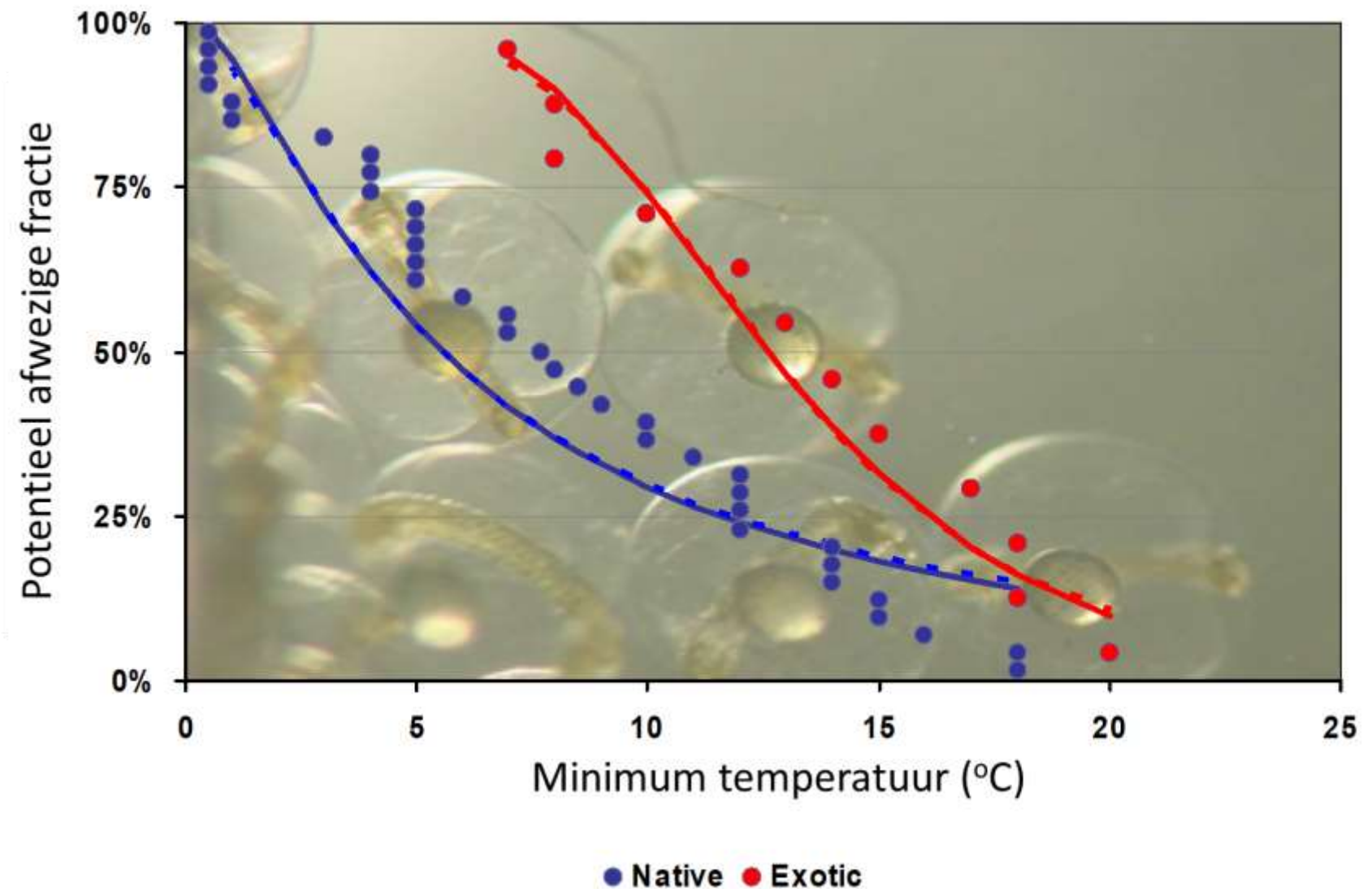
— Max.

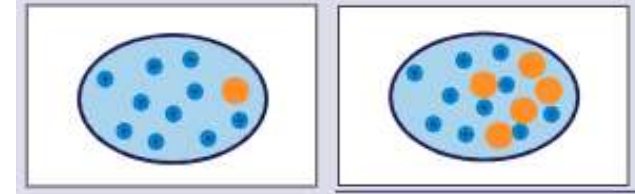




Vestiging en verspreiding: temperatuur

- Ei ontwikkeling vis
 - Min. temp
 - Hogere temp
 - Meer ontwikkeling uitheemse vis

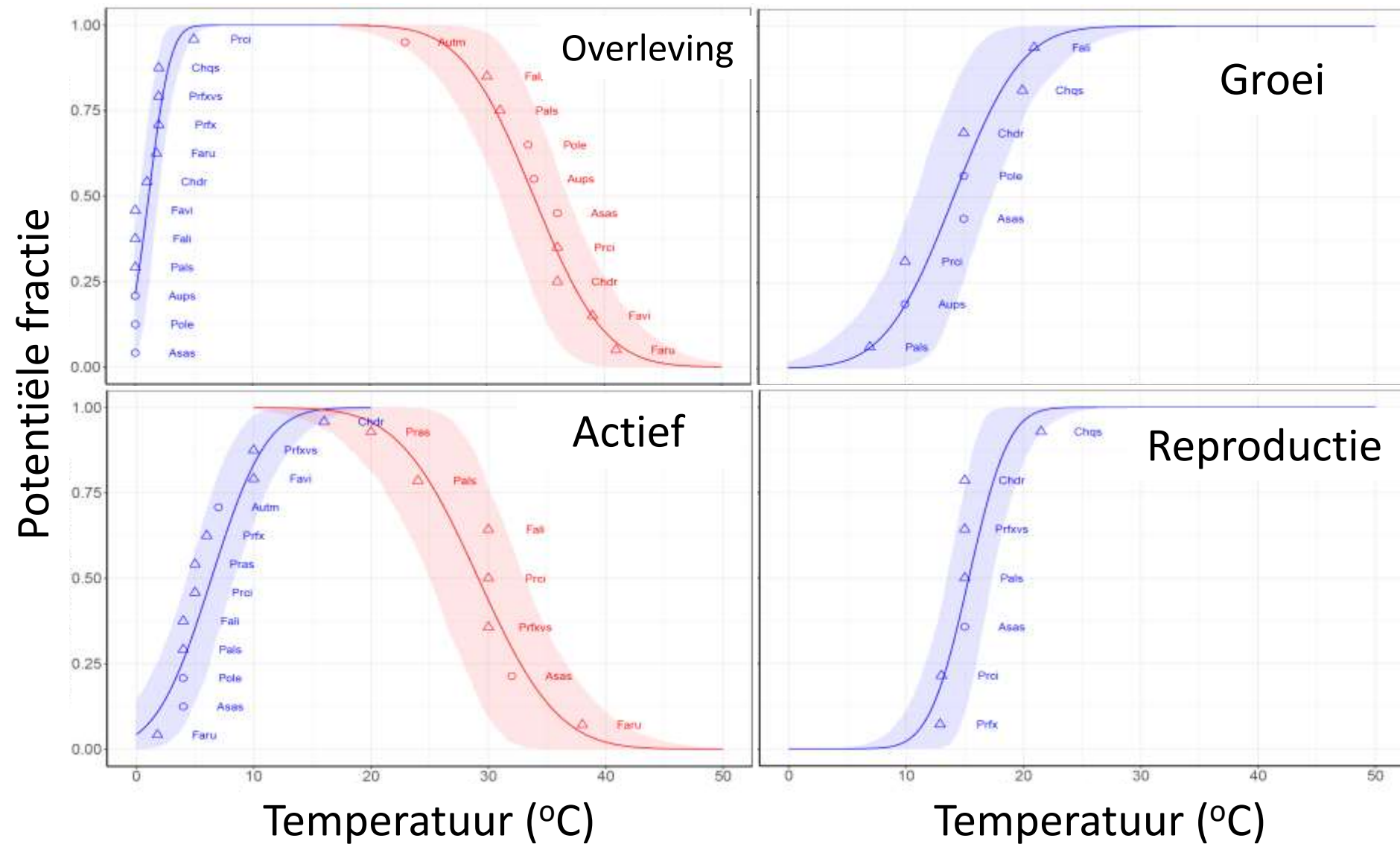


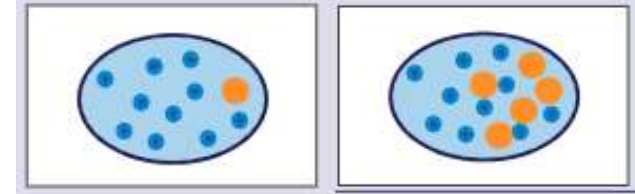


Vestiging en verspreiding: temperatuur

- Kreeften

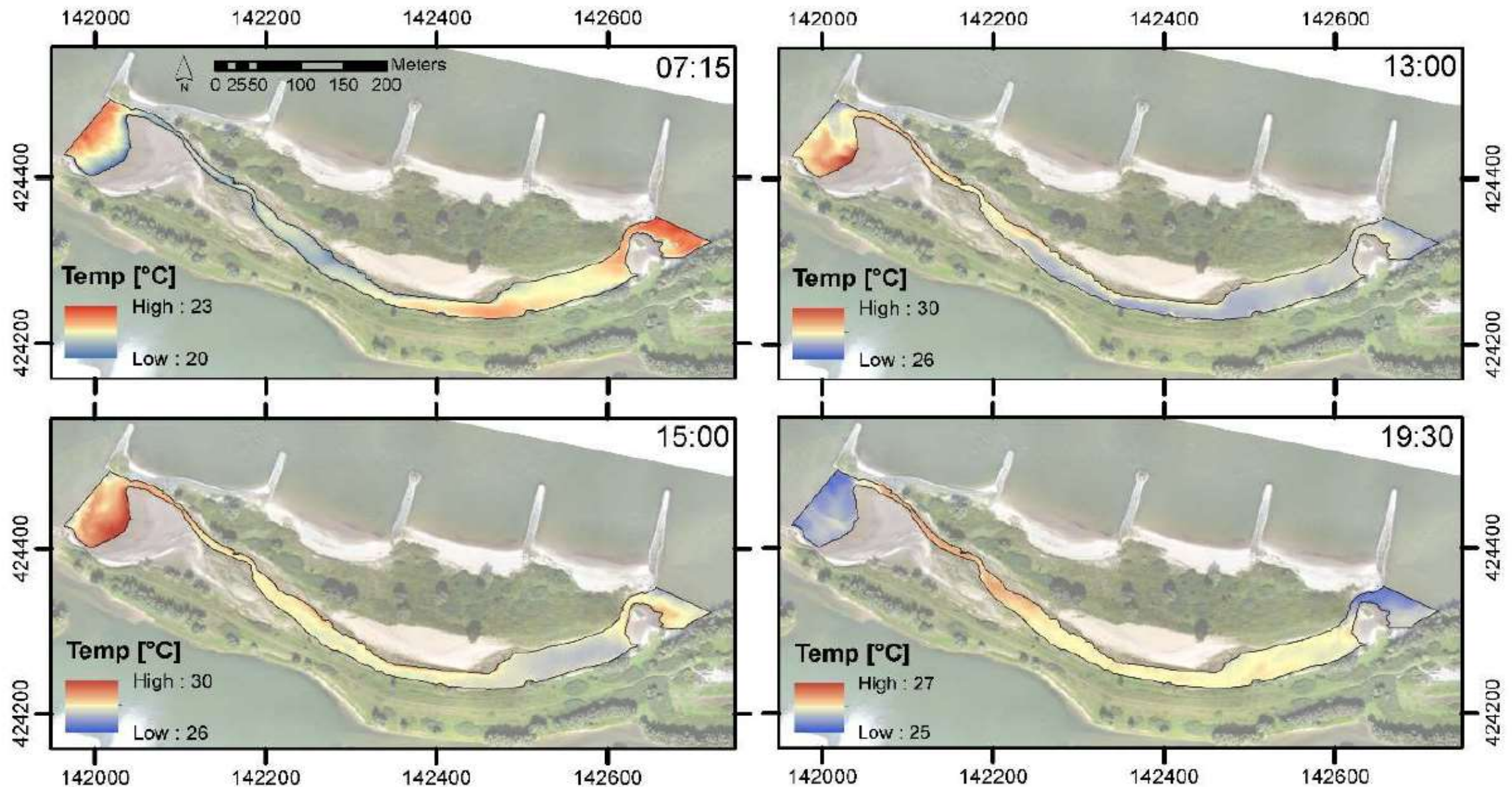
- Water steeds warmer
- Langere groei periode
- Eerder en langer actief
- Langere reproductie periode





Vestiging en verspreiding: temperatuur

Nevengeul: zomerdag 2017

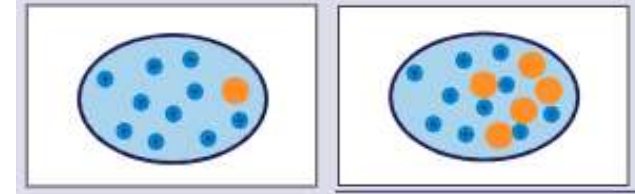


Collas et al. 2019

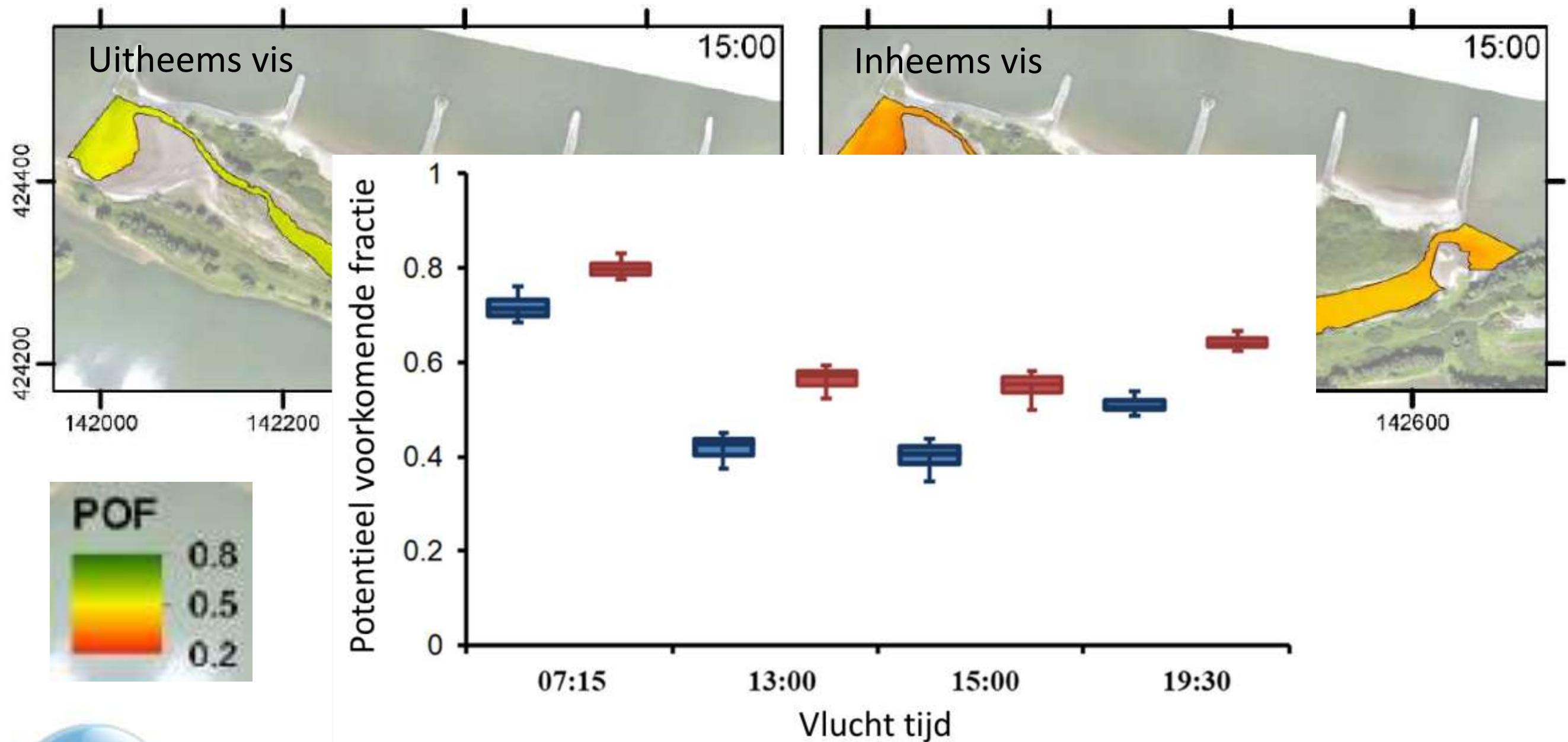


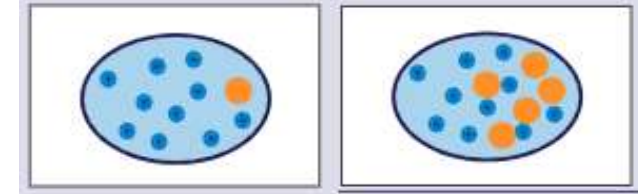
RiverCare
Towards self-sustaining multifunctional rivers





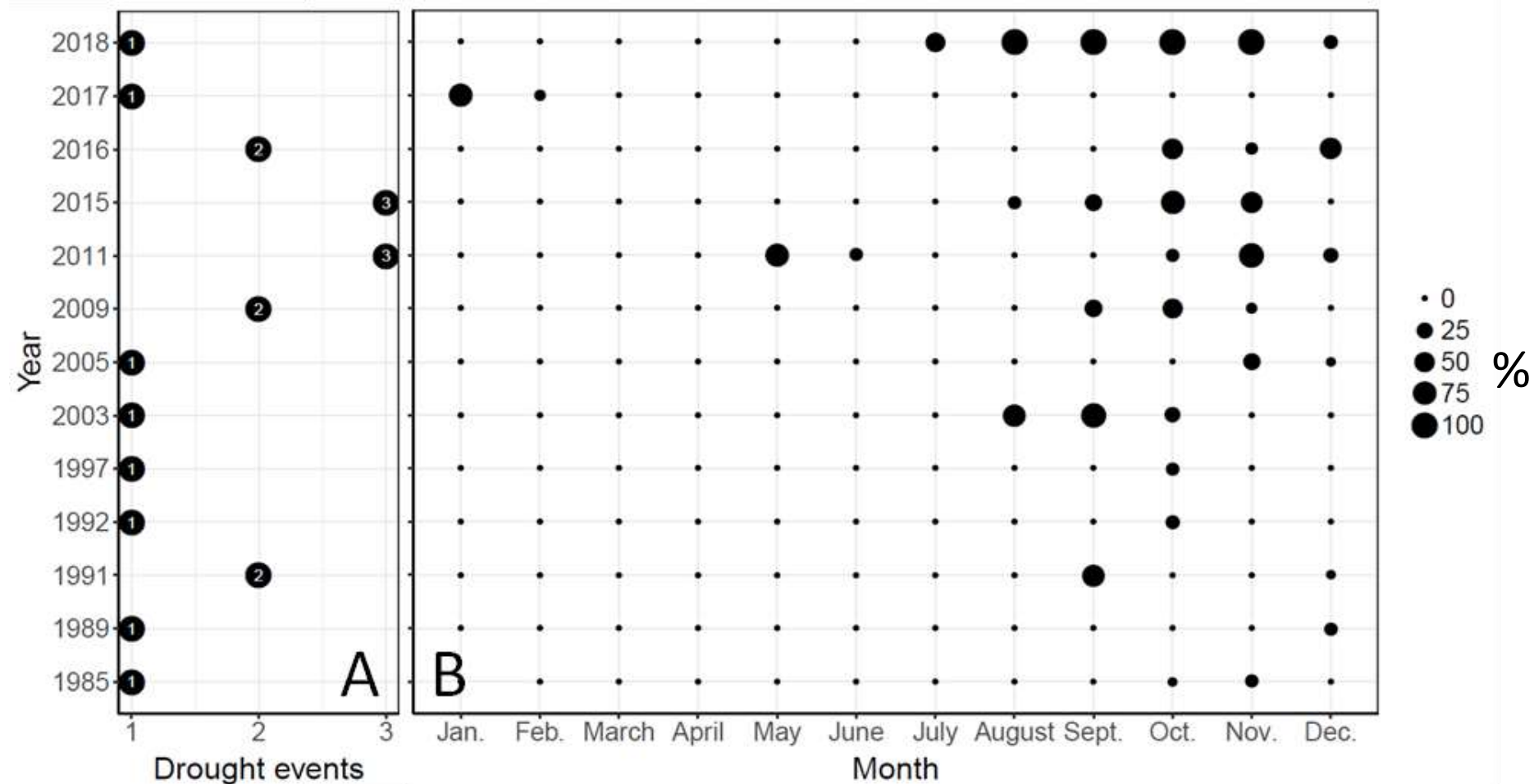
Vestiging en verspreiding: temperatuur

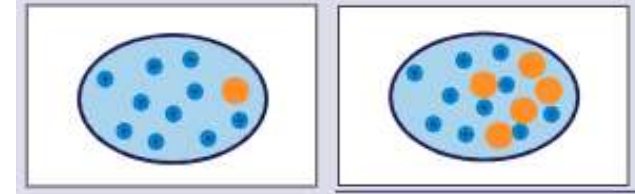




Vestiging en verspreiding: droogte

- Frequentie
 - # dagen waterstand < 750 cm (nevengeul droog)
 - # droogte events

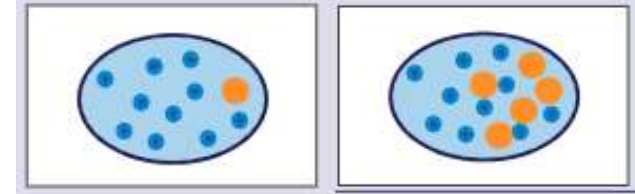




Vestiging en verspreiding: droogte

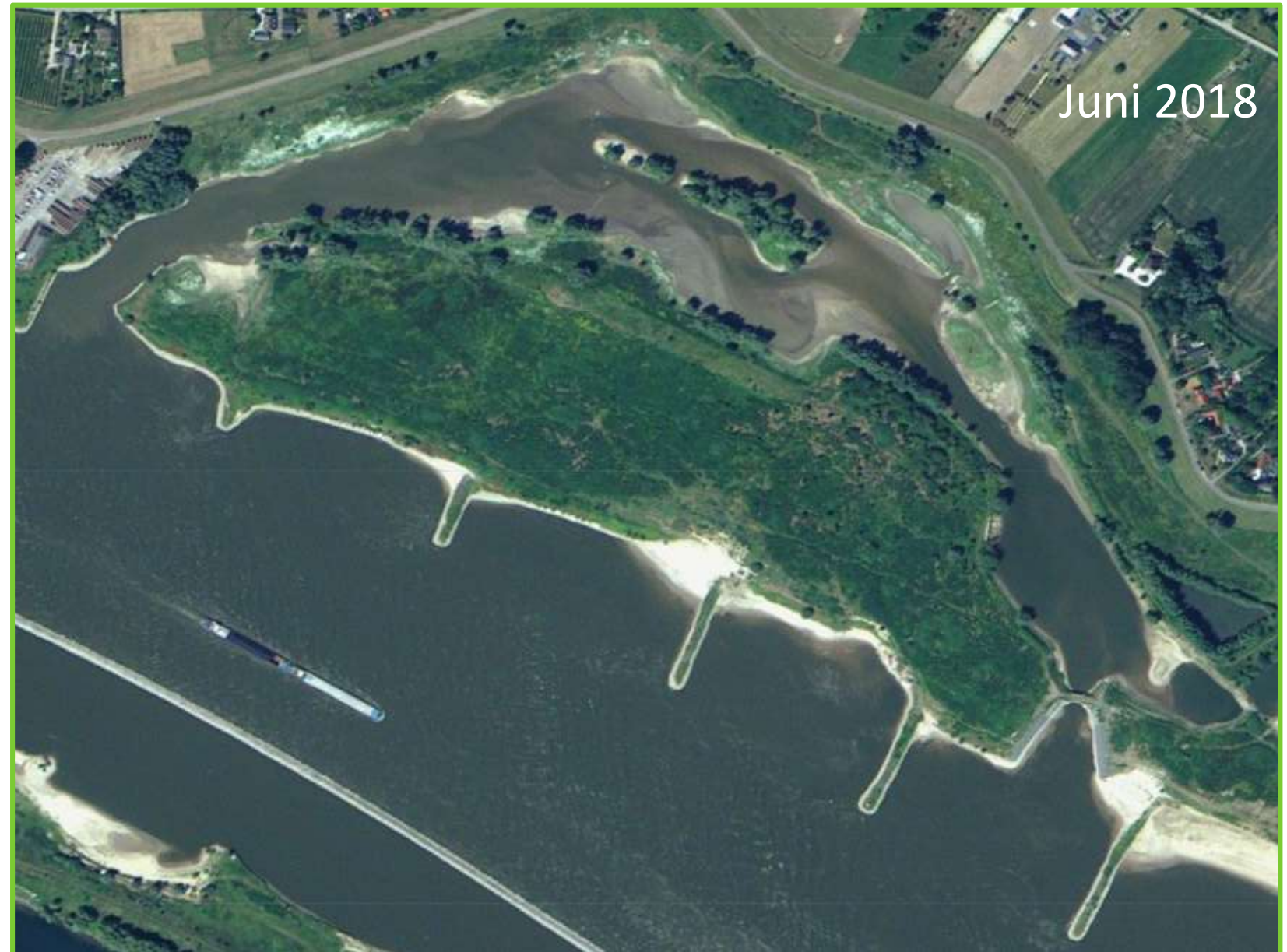
- Zomer 2018
 - Nevengeulen



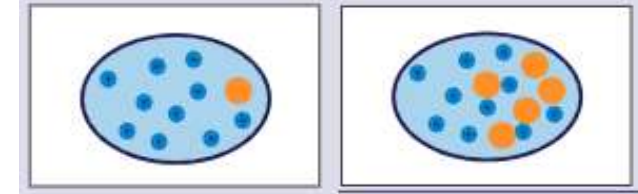


Vestiging en verspreiding: droogte

- Zomer 2018
 - Nevengeulen

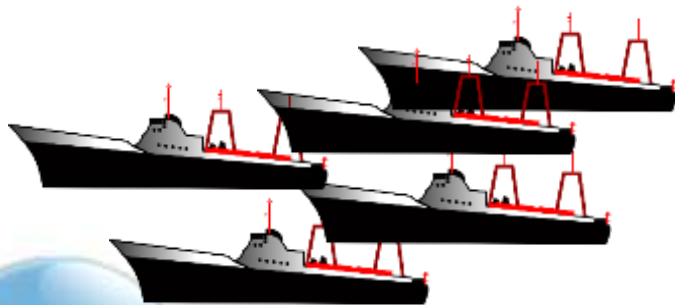


RiverCare
Towards self-sustaining multifunctional rivers

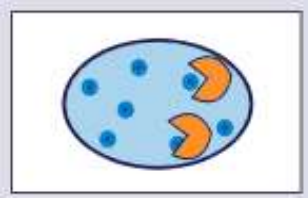


Vestiging en verspreiding: droogte

- Zomer 2018
 - Nevengeulen



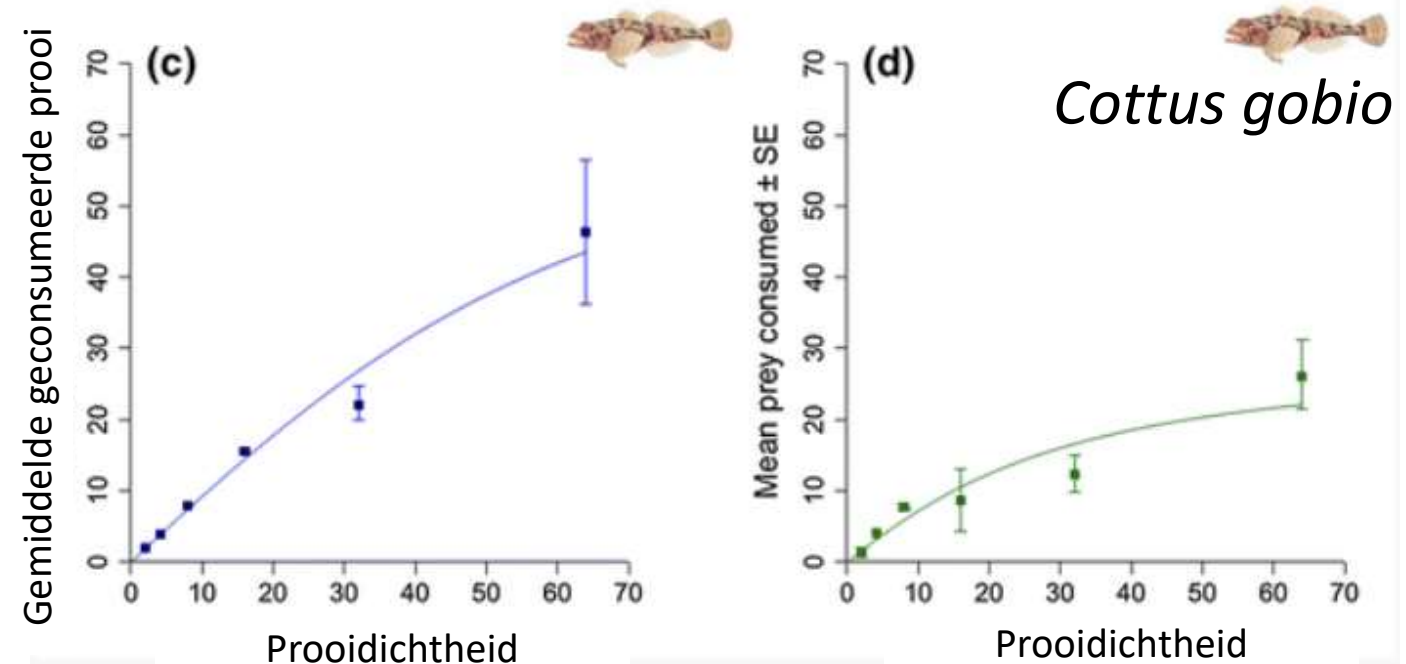
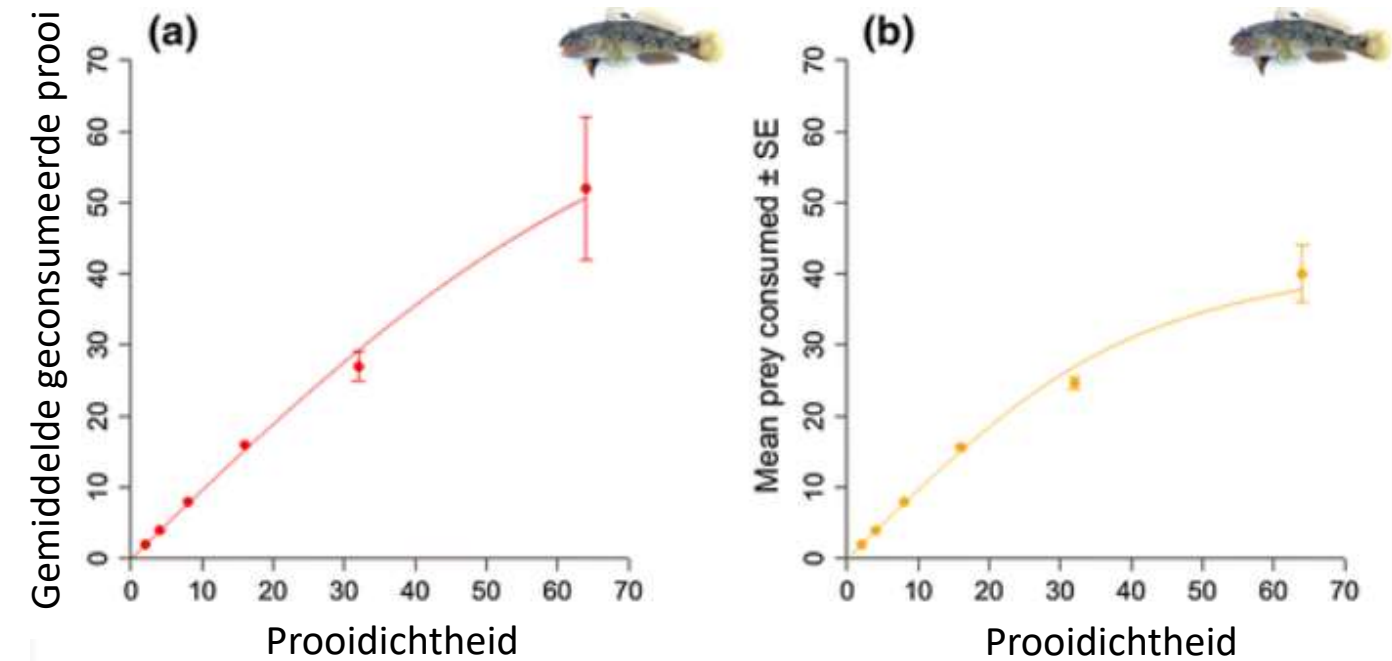
RiverCare
Towards self-sustaining multifunctional rivers



Impact

- Consumptie
 - Vlokreeft
 - Uitheems > inheems
 - Waterpissebed
 - Uitheems > inheems

Neogobius melanostomus



Cottus gobio

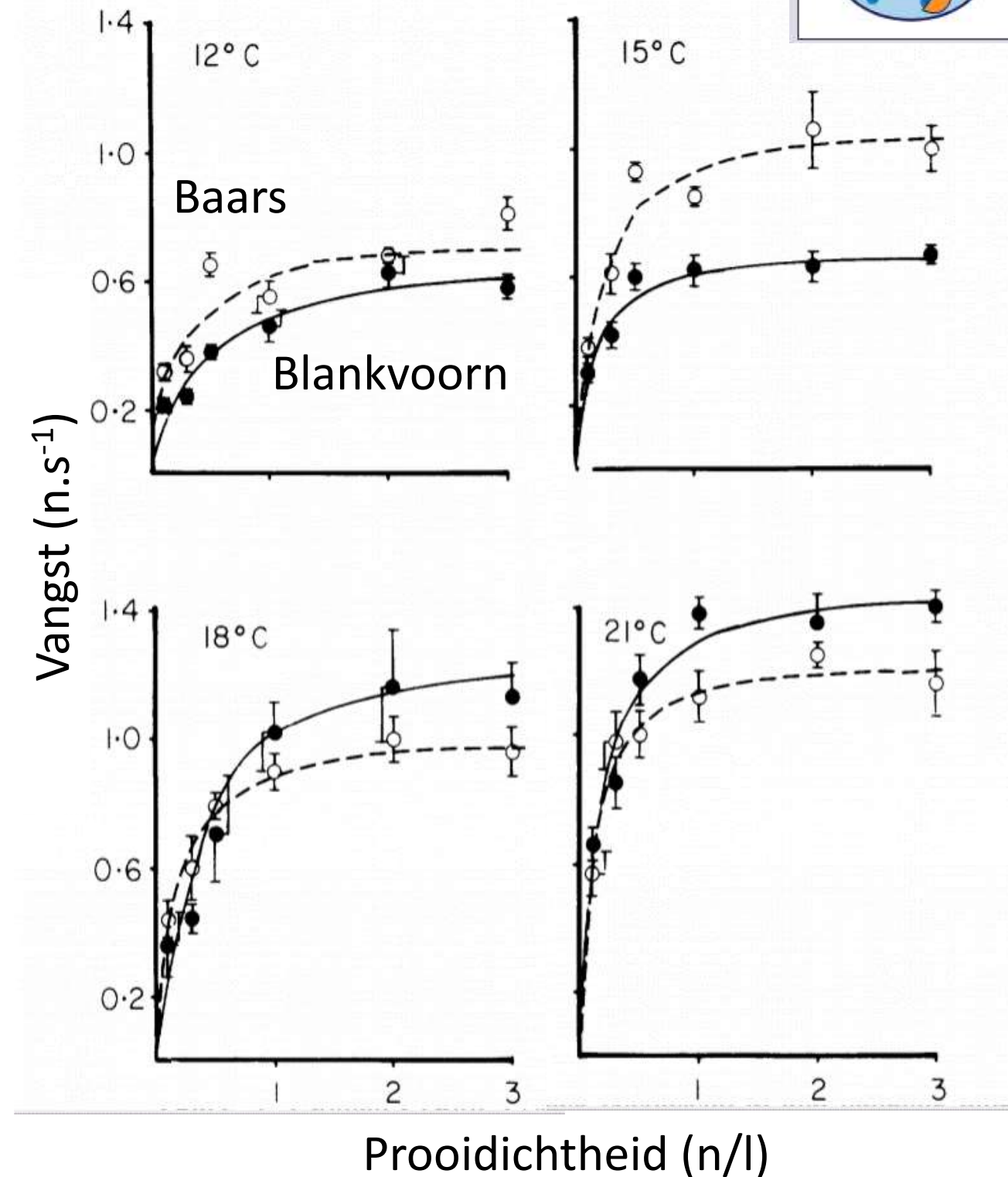


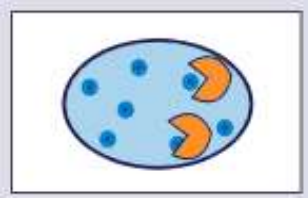
RiverCare
Towards self-sustaining multifunctional rivers



Impact

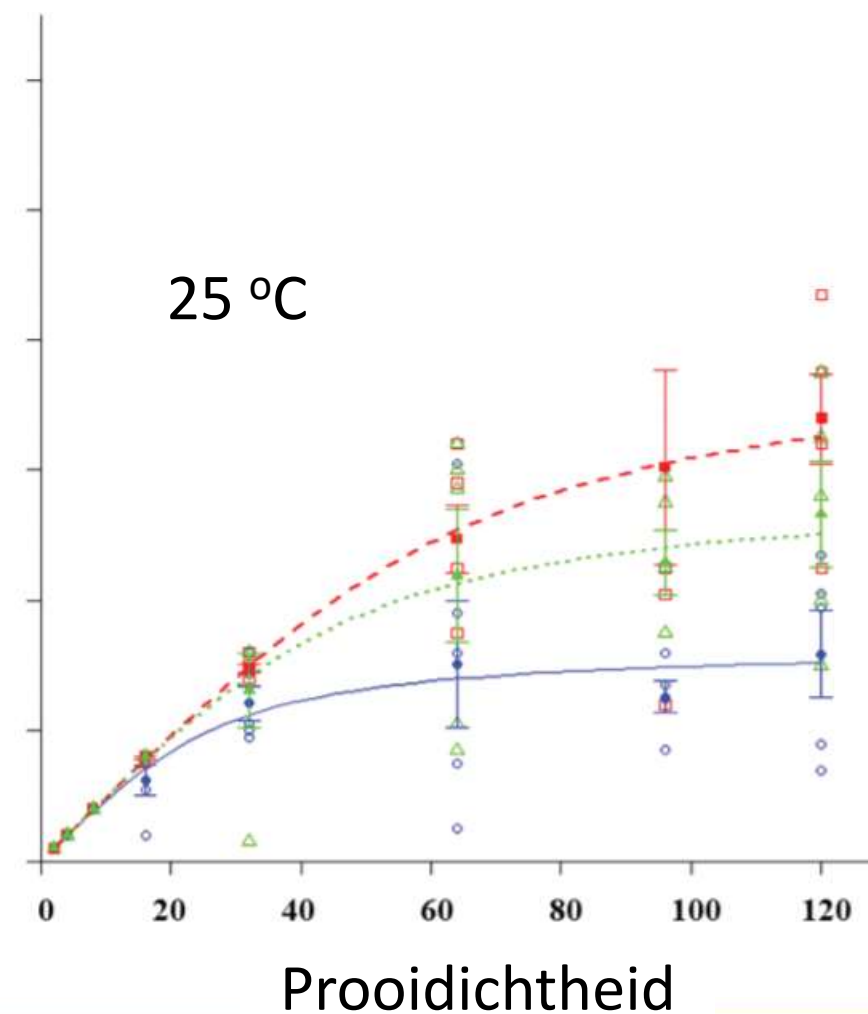
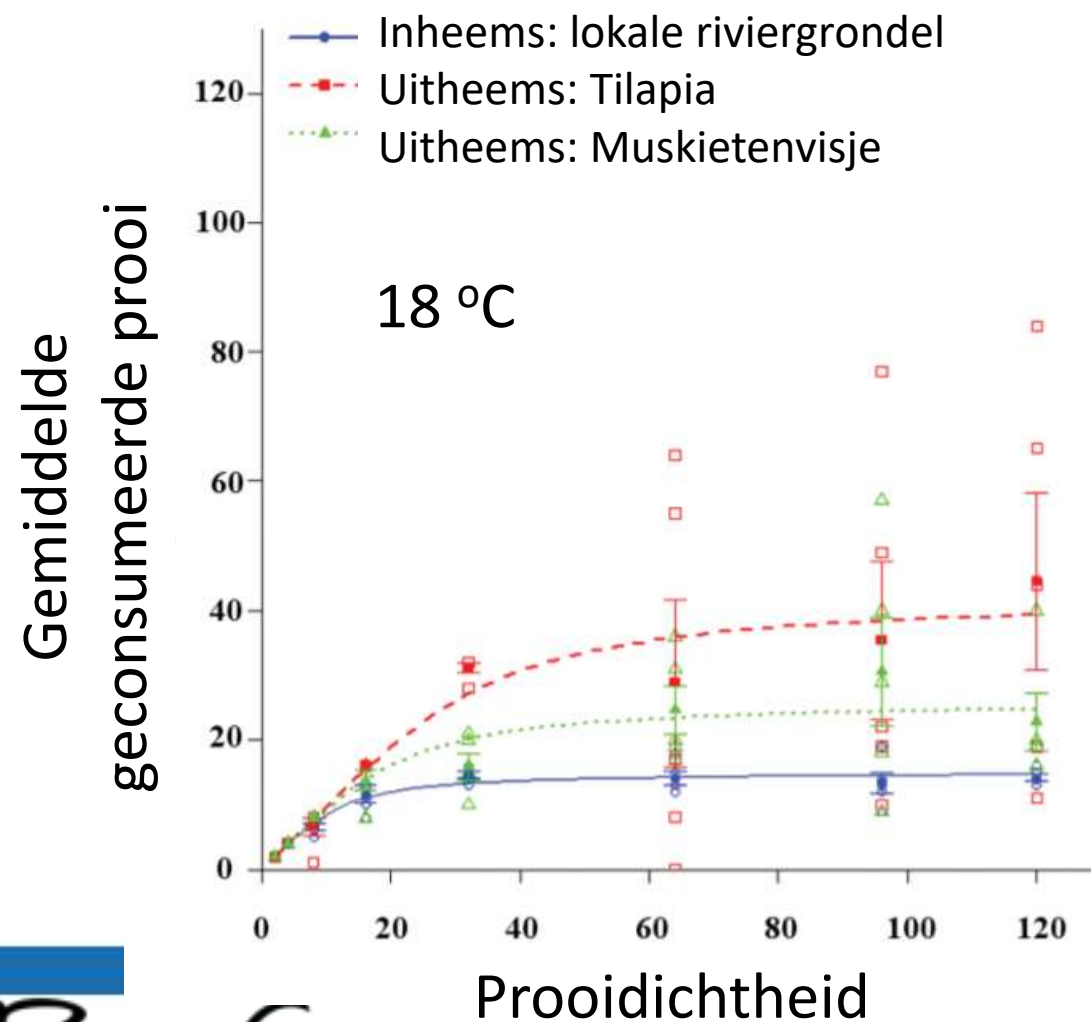
- Consumptie
 - Diptera larven
 - Hoe hoger de temp hoe hoger consumptie
 - $\leq 15\text{ }^{\circ}\text{C}$
 - Baars > Blankvoorn
 - $\geq 18\text{ }^{\circ}\text{C}$
 - Blankvoorn > Baars





Impact

- Consumptie
 - Chironomiden larven
 - Uitheems > inheems
 - Effect ΔT Uitheems > inheems



fu et al. 2019



RiverCare
Towards self-sustaining multifunctional rivers



Conclusie

- Verandering in soortensamenstelling
 - Hogere kans op introductie (meer transport)
 - Omstandigheden worden beter
 - Inheemse natuur heeft minder veerkracht
 - Impact van soorten (feeding rate) neemt toe
- Klimaatverandering/extreme gebeurtenissen faciliteert exoten en zal daarmee de soortensamenstelling beïnvloeden



Vragen?