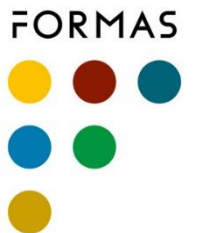


Understanding seed dispersal and germination in naturally disconnected stream networks to evaluate restoration success

Lovisa Lind^{1,2}, Xiaolei Su^{2,3}, Lina Polvi², and Christer Nilsson^{2,4}



Disconnectivity

Channelization and damming of rivers and streams

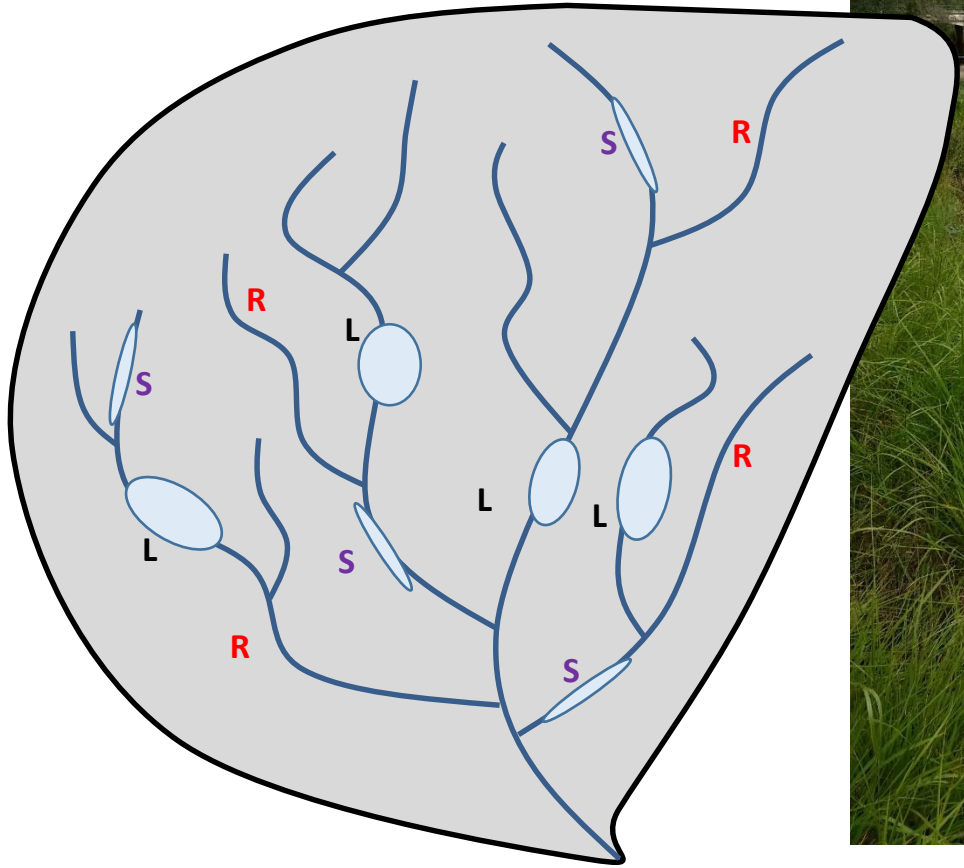


Restoration



Recovery...but it
takes time

Process domains

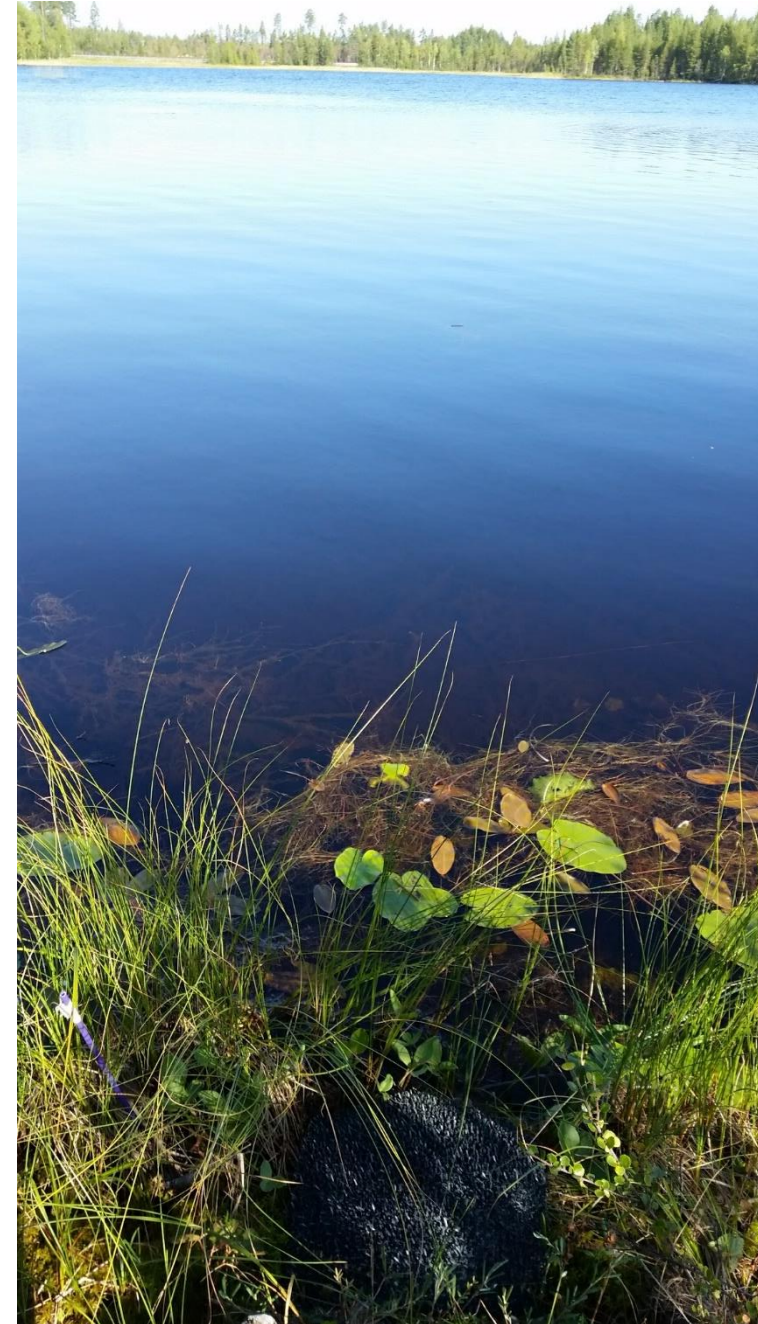


Questions

Q1: Are the habitat conditions for germination success different between different process domains?

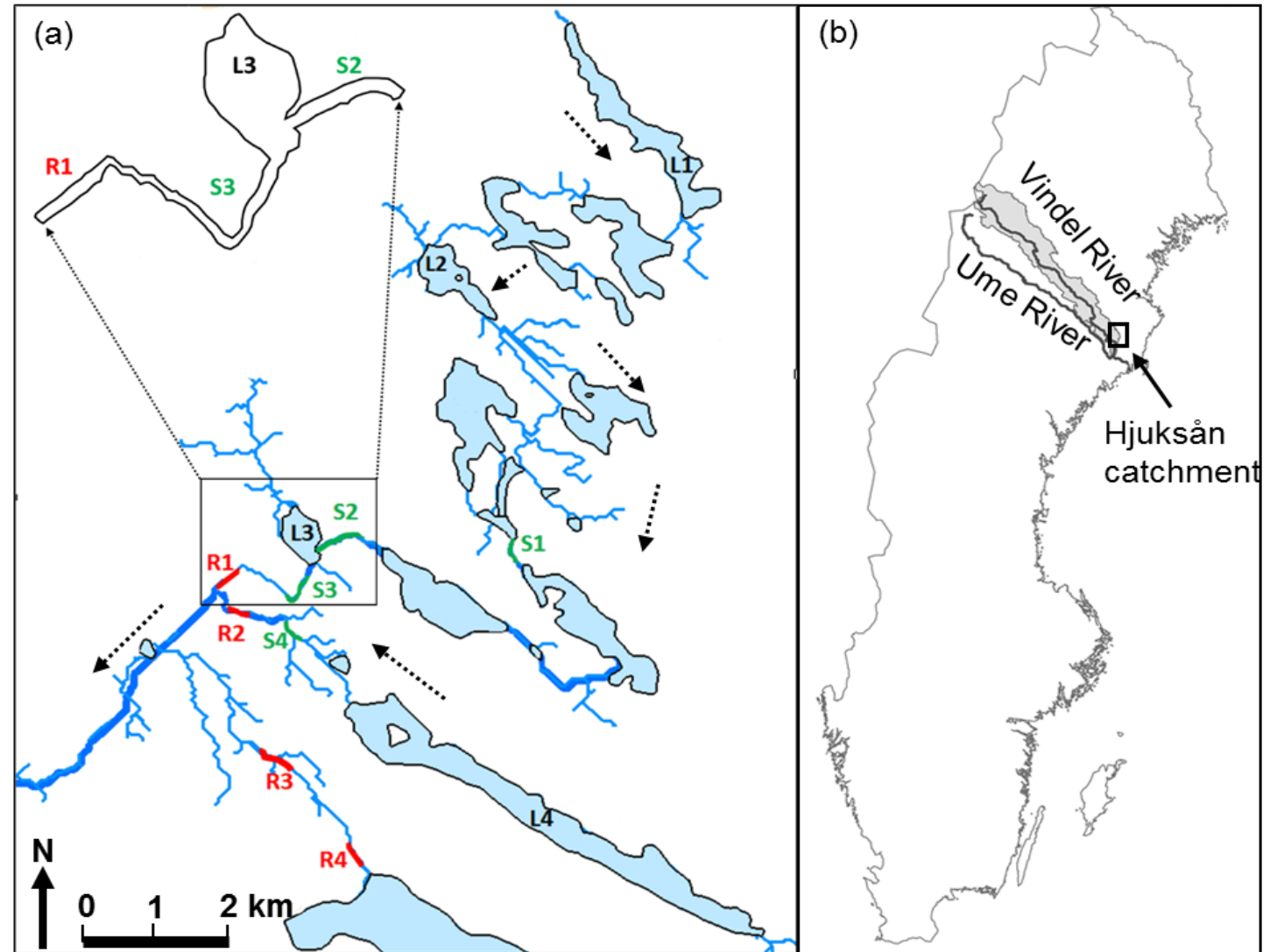
Q2: Are the habitat conditions for species establishment different between different process domains?

Q3: Are the possibilities for dispersal different between different process domains?

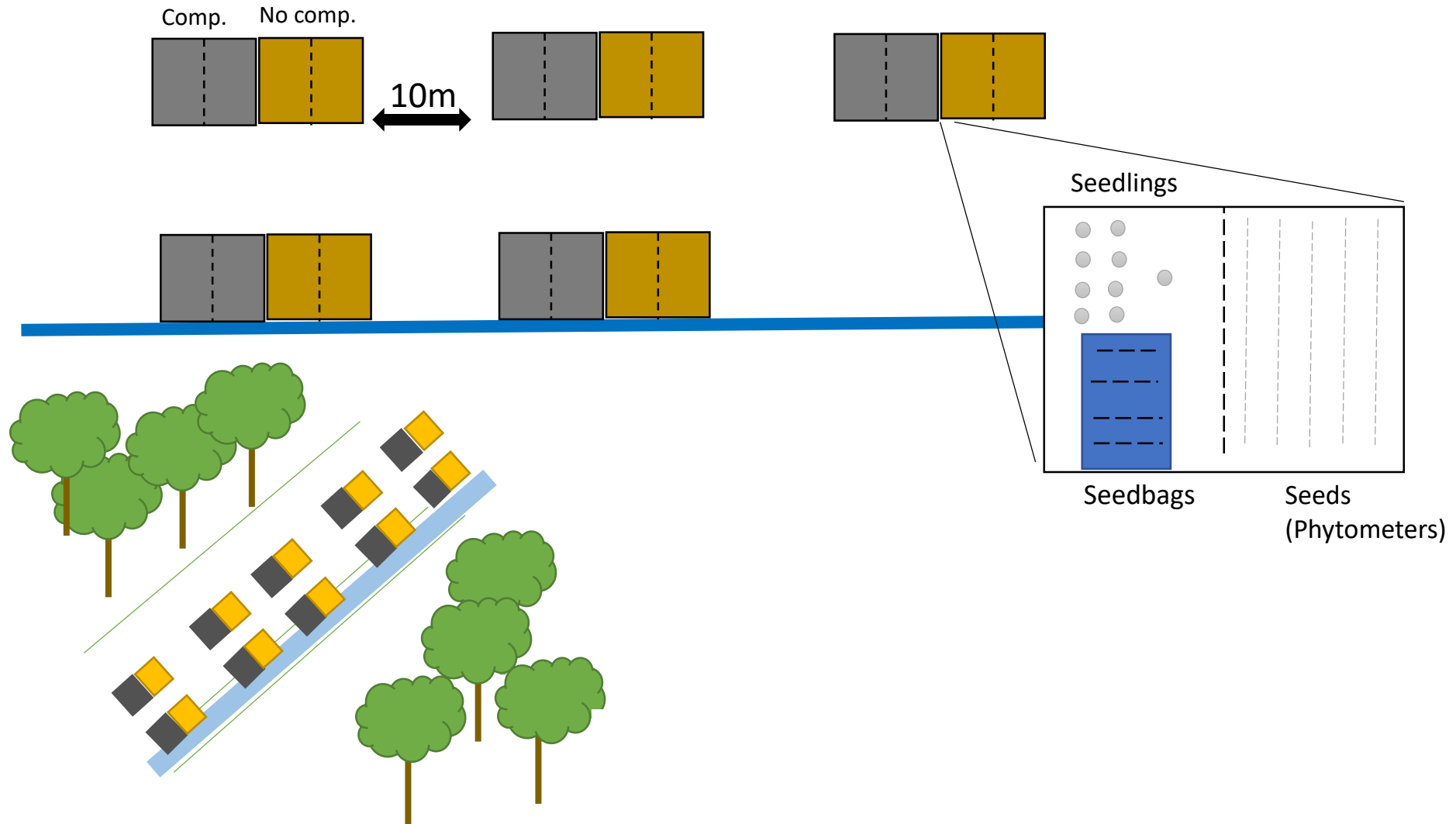


Methods

- Catchment: Hjuksån norther Sweden
- Process domains: rapids, slow-flowing and lakes
- All rapids have been restored
- Four sites of each type of domain = 12 sites



Methods



Methods

Germination



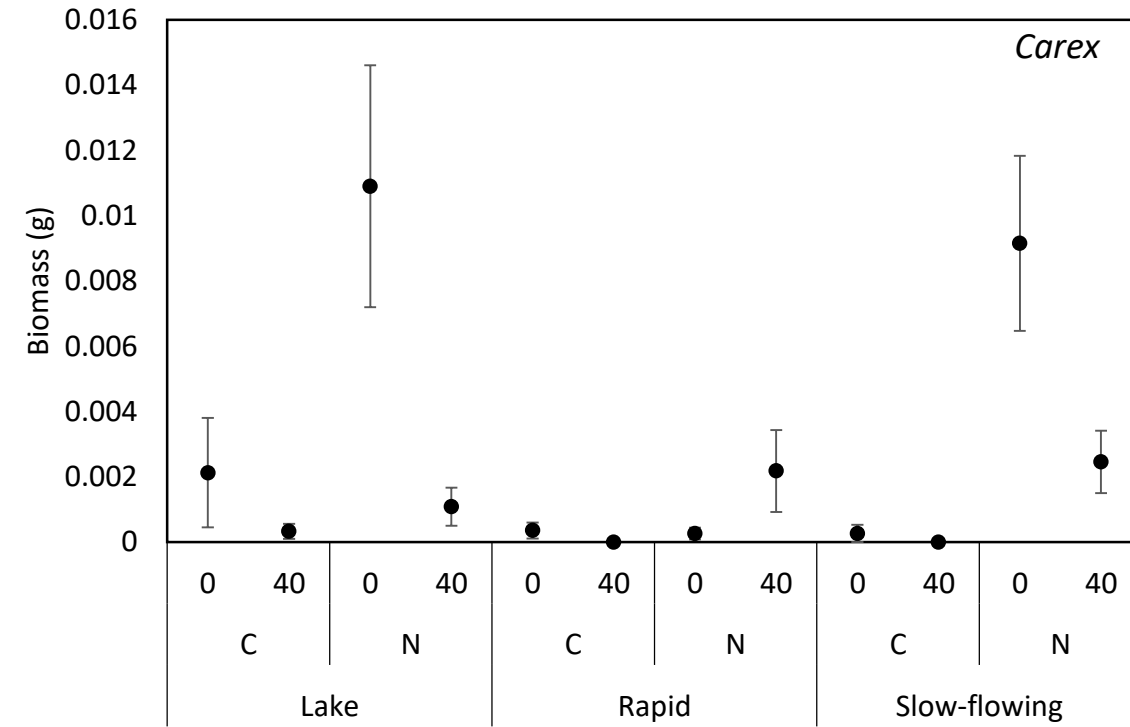
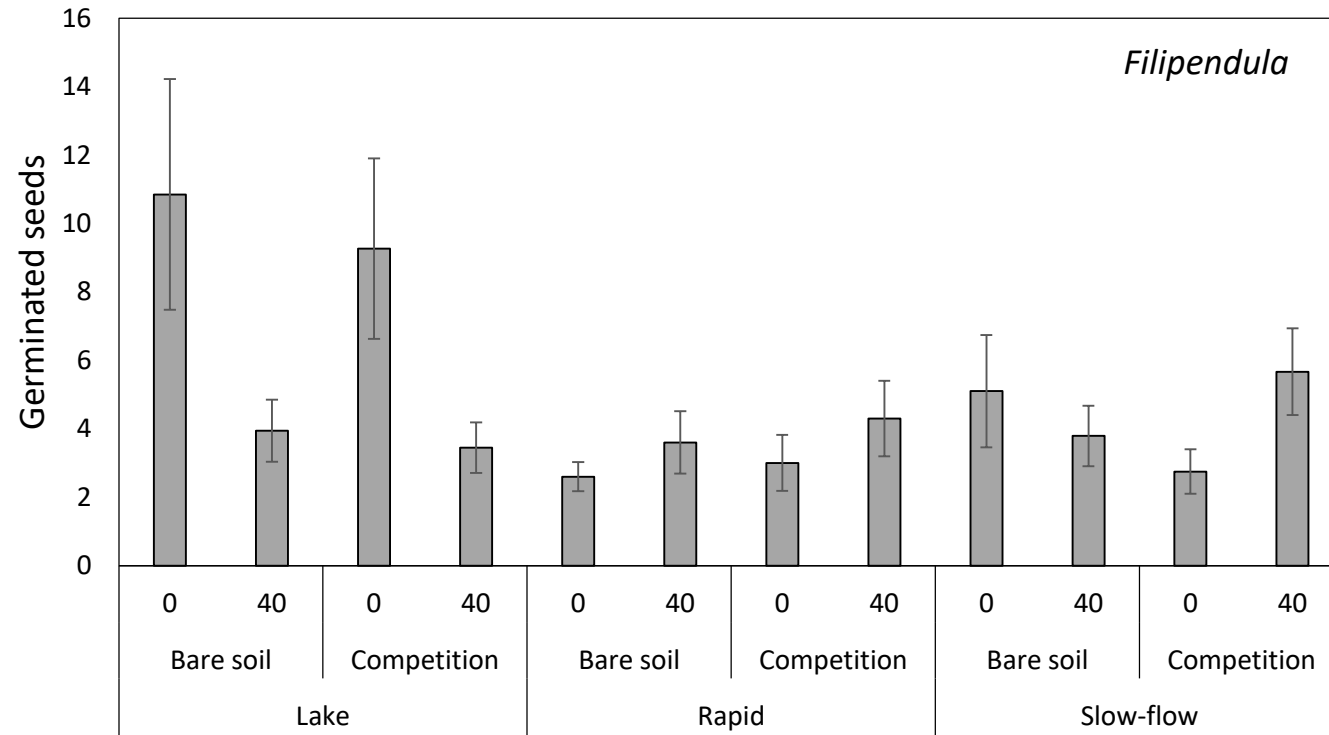
Establishment



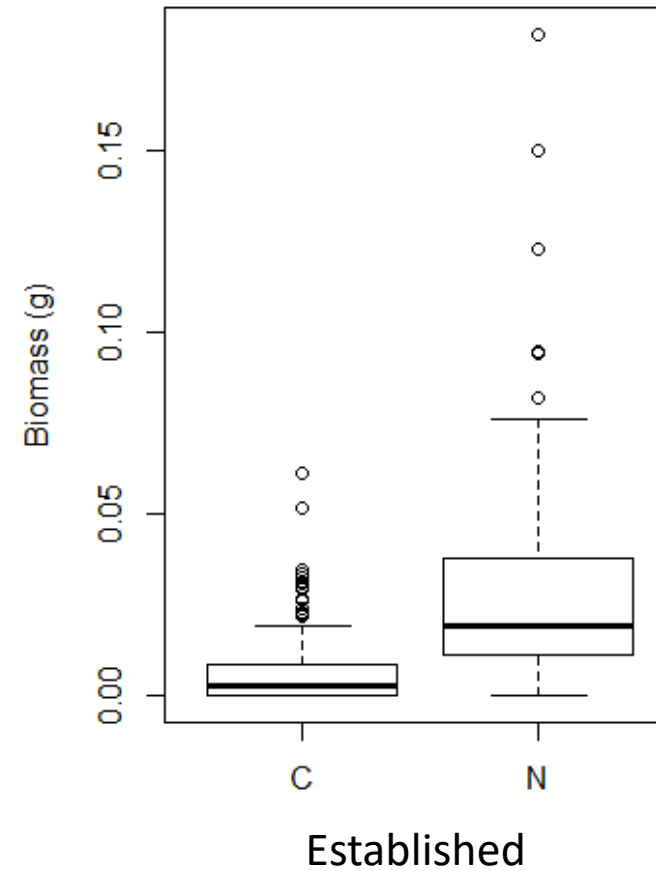
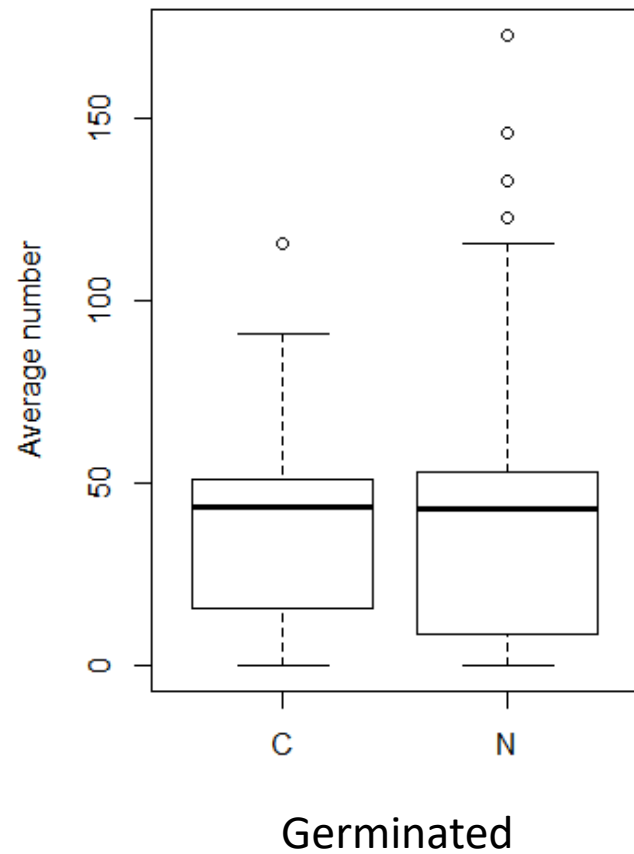
Dispersal



Results – Germination & Establishment



Results – Germination & Establishment



Results - Dispersal



Lakes and Rapids retained more seeds than Slow-flowing but not more than rapids but – more seeds stranding on banks than floating on water

The story of the seed

1. A higher number of seeds are trapped in the banks of lakes than of slow-flowing and rapids
 2. *(Potentially a higher number of species of seeds are trapped along lakes than along slow-flowing and rapids)*
 3. A higher number of seeds germinate along lakes than along rapids and slow-flowing – not species dependent
 4. Establishment is equal, except for *Carex* which can more easily establish along lakes
5. They all respond positive to removal of competition – hence areas that experience more disturbance, regardless of type of PD will have the chance to allow new species to grow
 6. Importance of hydrochory - lakes as natural barriers?

Conclusions

- Our study indicate that lakes retain more seeds than rapids and slow-flowing reaches
- The germination experiment showed that lakes had the highest germination success there were no such indications for the establishment
- Overall, this study indicated that the dispersal, germination and establishment is very low in naturally disconnected stream networks in northern Sweden



Thank You!



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