

Linear Feature Restoration in Boreal Wetlands



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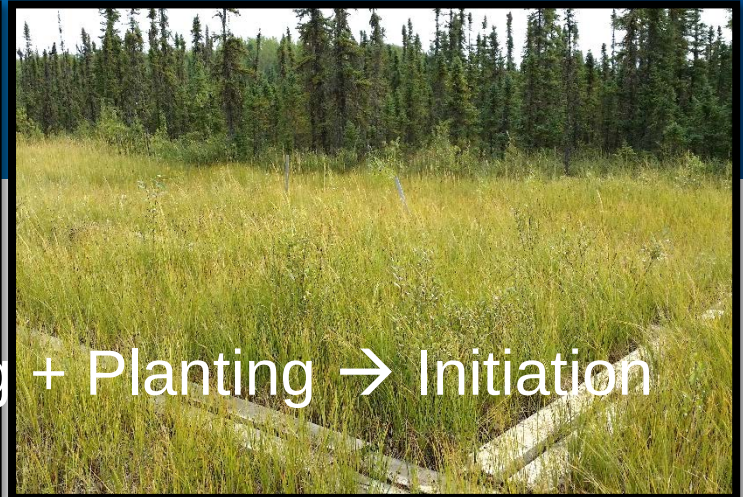
- Case Studies
 - Clay pads and OSE wells
 - Airstrip
 - Woodchip road
 - Winter access road
- Challenges and Considerations
 - Different types of wetlands and constraints
 - Well defined, clear, balanced end goals
 - Practical field technologies and HQP training
 - Monitoring and assessment
 - Cost and benefit

Well Pads and Linear Features





Partial Removal/Wetting + Planting → Initiation
on Mineral Substrate



Complete Removal/Peat Inversion + Moss Layer
Transfer



Wetland Initiation on Mineral Substrate - Airstrip





July 15, 2014



Spring 2015

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- Sedges as a vegetation management tool to control weed invasion
 - Microsite and woody establishment
 - Willow cuttings vs. seedlings
 - Natural Regeneration

2015/Early 2016



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- **Timing**
 - **Material Constraint**
 - **Clear Goal**
 - **Risk Management**
 - **Time**

Peat Inversion – Woodchip Winter Road

- What to do with the woodchips?
 - Dig and move?
- Connectivity, topography/hydrology
 - Buried pipeline
 - Road surface at level
- Treed fen
- Natural ingress vs. planting/transplanting





Aug 2015 (3 weeks
after re-blading)

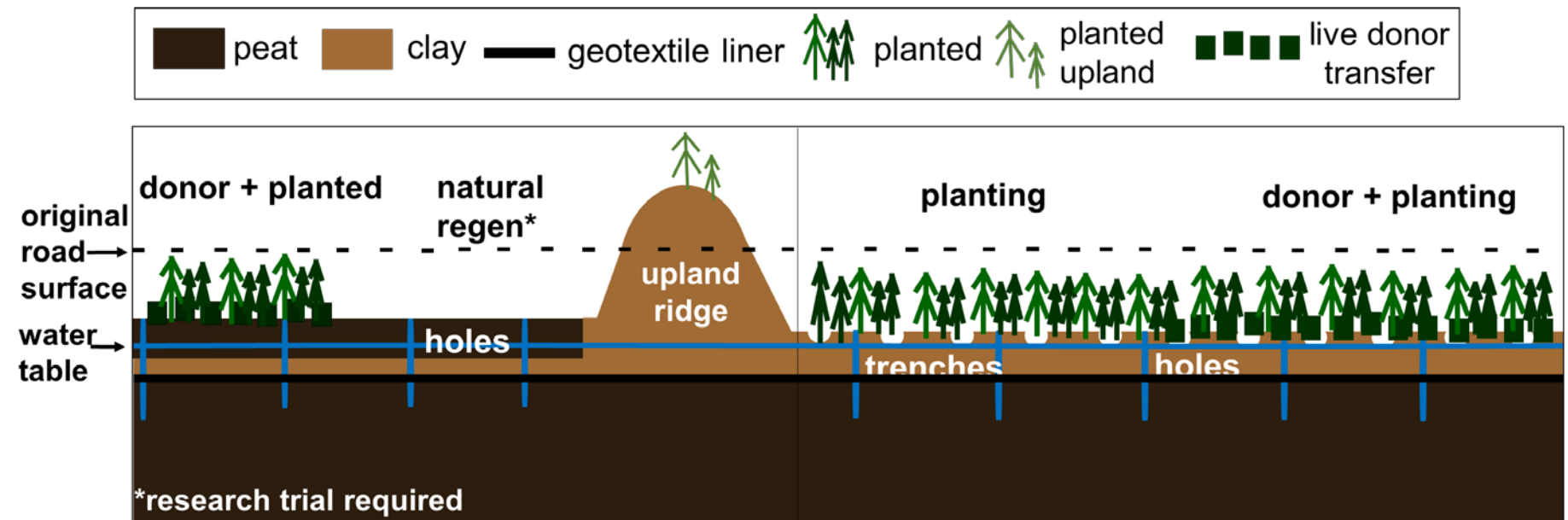


- See Melanie Bird's poster



30/11/2017

Future Research



See Kimberly Murray's poster for detail

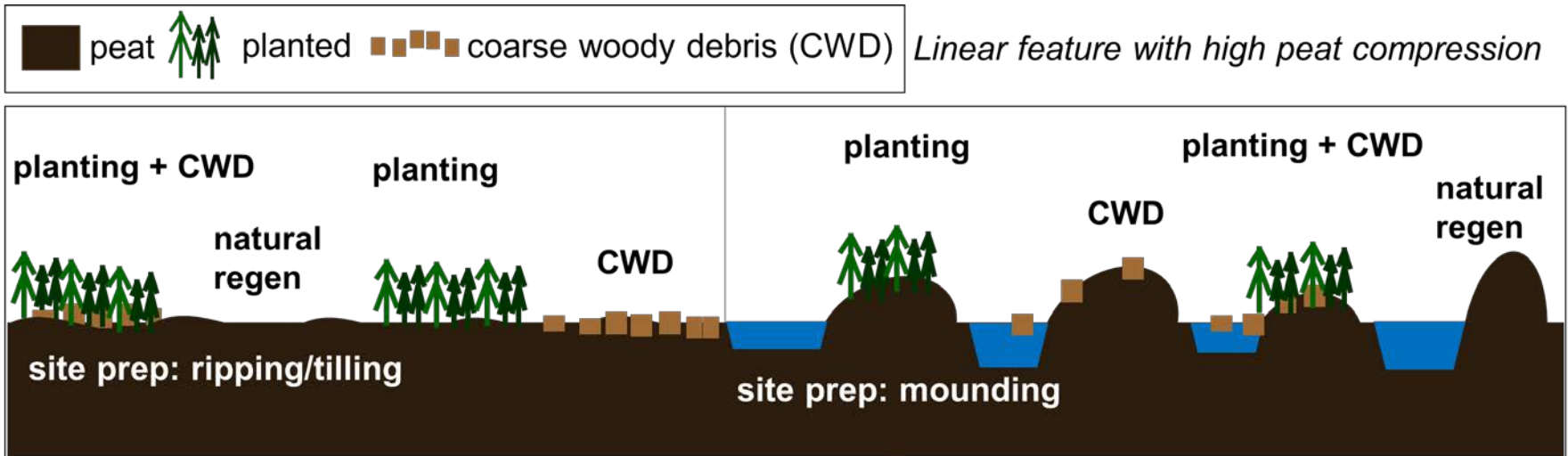
Winter Access Roads – Mounding and Planting

- Surface compaction → lack of trees (and mosses); dominance of sedges
- Corridors for predators
- Hotspots of GHG (Strack et al. 2017)





Future Research



Challenges and Considerations

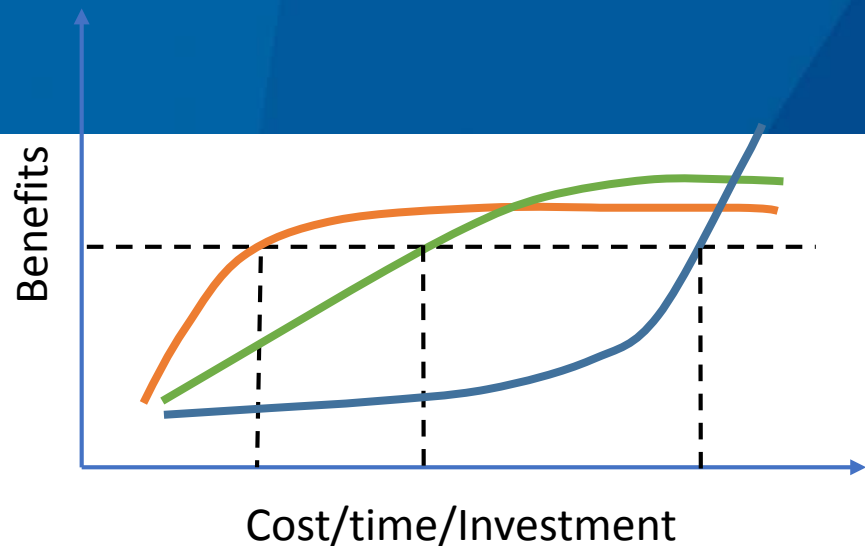
- Field methods and techniques
 - Partial vs. complete removal
 - Peat inversion (burial of material?)
 - Revegetation through planting, donor transfer, natural ingress
- Monitoring and Assessment
 - Short-term goal to achieve certification
 - Long-term restoration of functions and overall resilience
 - Innovative tools to assess hydrology, vegetation, and ecosystem services

Challenges and Considerations

- Understanding of the ecosystems and constraints
 - Bog, fen, marsh
 - hydrology and vegetation
 - All season vs. temporary access; winter vs. seismic lines
 - Timeline, costs, material,
 - Regulatory requirements
- Clearly defined restoration goals
 - landscape re-integration, GHG mitigation, tree growth, habitat for wildlife
 - Short-term vs. long-term
 - Risk management
 - Various stakeholders needs

- Improve efficiency and overall success while keeping cost reasonable

- What is the overall cost?
 - site preparation + re-vegetation + monitoring/management + certification?
- What are the benefits? →



- Integrated management and regional/landscape scale decision making
 - Better planning and construction?
 - Interim reclamation
 - Critical, high value wetlands

An aerial photograph showing a complex landscape. A winding river flows through the lower portion of the image, bordered by dense green forests. To the right, a large, irregularly shaped pond is surrounded by a mix of green vegetation and brown, possibly dried-out or bare, land. The overall scene suggests a dynamic environment, likely a wetland or a coastal area, where land and water boundaries are constantly shifting. The text is overlaid in the center, posing a question about coping with such changes.

How do we cope and live in a familiar but
different and dynamic landscape
under future climatic uncertainties?