

What alters Ellenberg's indicator of soil moisture?

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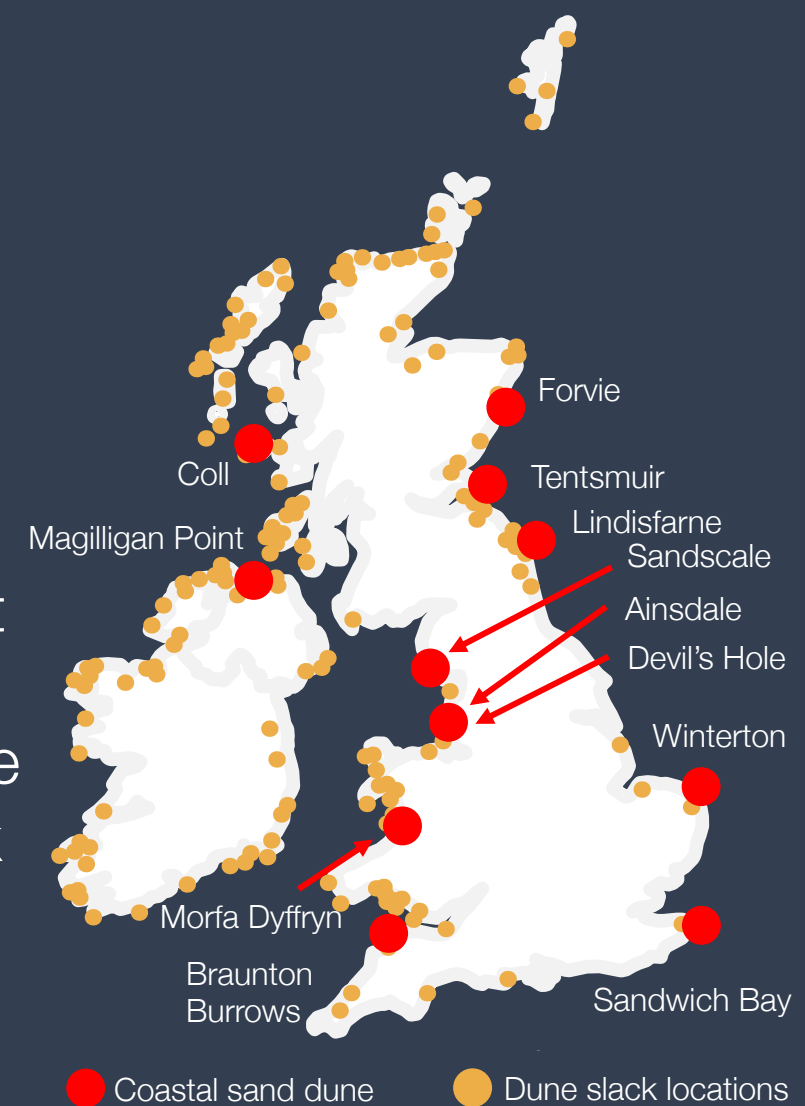
Aim: Investigate the controls over the relationship between hydrology and Ellenberg moisture in coastal wetlands

Background

- **Ellenberg moisture (F)** indicator values provide a measure of **soil conditions**, without direct measurements
- F values may be influenced by species interactions and environmental factors
- This makes **interpretation difficult** for site managers
- **Dune slacks** are seasonal coastal wetlands that are biodiversity rich. They are valuable systems for understanding the hydrology – plant community interactions as their formation is influenced by the hydrological regime

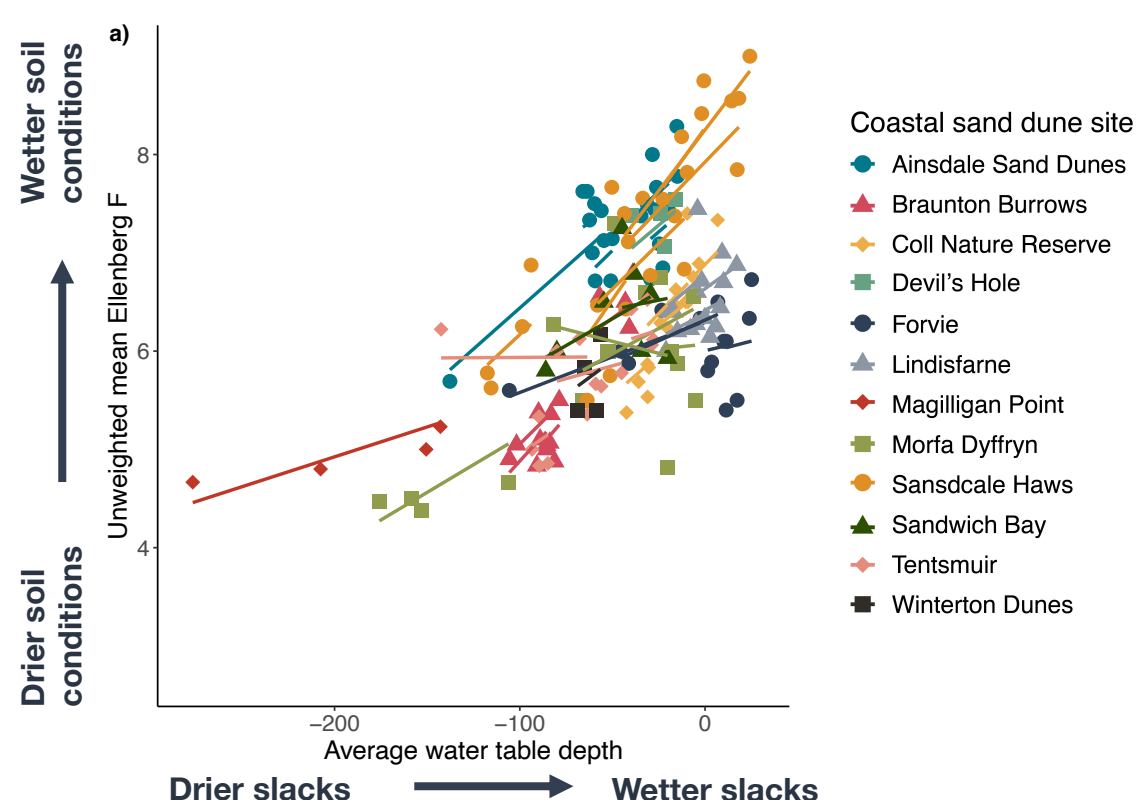
Methods

- **12 coastal sand dune** sites were visited in 2017 and 2018
- Plant communities and water levels were surveyed. Soil and plant samples were taken
- Water table depths were modelled for each slack
- Atmospheric deposition data and climatic data was downloaded

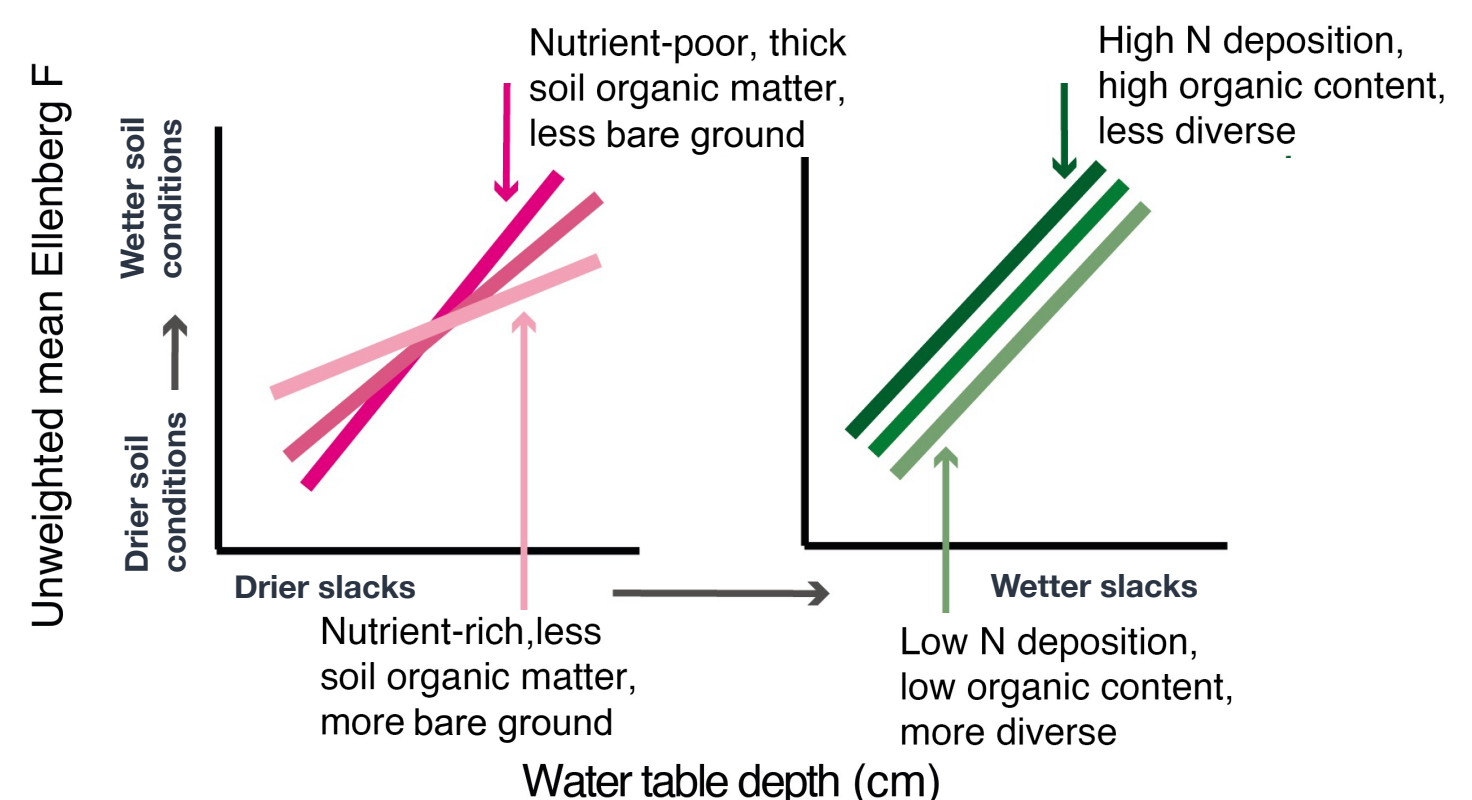


Results

- Ellenberg F index indicates soil hydrology in dune slacks (water table depth - WTD)
- As WTD become more positive (dry to wetter slacks), F increases (from plants found in drier to wetter conditions)



- WTD and F relationship is altered by other factors
- Steeper WTD – F slope at low nutrients, thick organic matter and less bare ground
- F is lower for sites with low N deposition, low organic content and high diversity



Why is this important?

- Demonstrate that Ellenberg F is **strong ecological indicator** of soil hydrology
- Environmental factors and species interactions alter this relationship
- The findings help interpret what Ellenberg F tells us about hydrological conditions