



# How much peat is left? The need for an up-to-date peat map

**Dr Nick Girkin & Prof Ian Holman**  
[n.t.girkin@cranfield.ac.uk](mailto:n.t.girkin@cranfield.ac.uk)

**18<sup>th</sup> March 2023**

[www.cranfield.ac.uk](http://www.cranfield.ac.uk)



## Overview

**The need for  
an up-to-date  
peat map**

**Sources of peat  
maps**

**Peat wastage**

**Peat extent  
and recent  
mapping  
approaches**



## Overview

**The need for  
an up-to-date  
peat map**

Sources of peat  
maps

Peat wastage

Peat extent  
and recent  
mapping  
approaches



## Why do we need an up-to-date peat map?

1. Where are peatlands currently found?
2. How deep are remaining peats?
3. At what rate is peat being lost?
4. How much carbon is present and may be released from disturbance?
5. Where can conservation and restoration, versus sustainable agricultural practices best be prioritised and targeted?



## Why do we need an up-to-date peat map?

- “Develop a more up to date and detailed England peat map by 2024, establishing a clear evidence base on which to build.”
- “...fund at least 35,000 ha of peatland restoration by 2025, through the Nature for Climate Fund and other sources.”
- “Secure our peatlands’ carbon store so they meet their contribution to Net Zero by 2050. This cannot be achieved by only restoring upland peat but will require significant changes to how we manage our lowland peat.”



TOGETHER  
FOR OUR  
PLANET

### England Peat Action Plan

May 2021



Butterburn Flow. © Iain Diack



UK Government



## Overview

The need for  
an up-to-date  
peat map

**Sources of peat  
maps**

Peat wastage

Peat extent  
and recent  
mapping  
approaches



# Who has peatland mapping data?

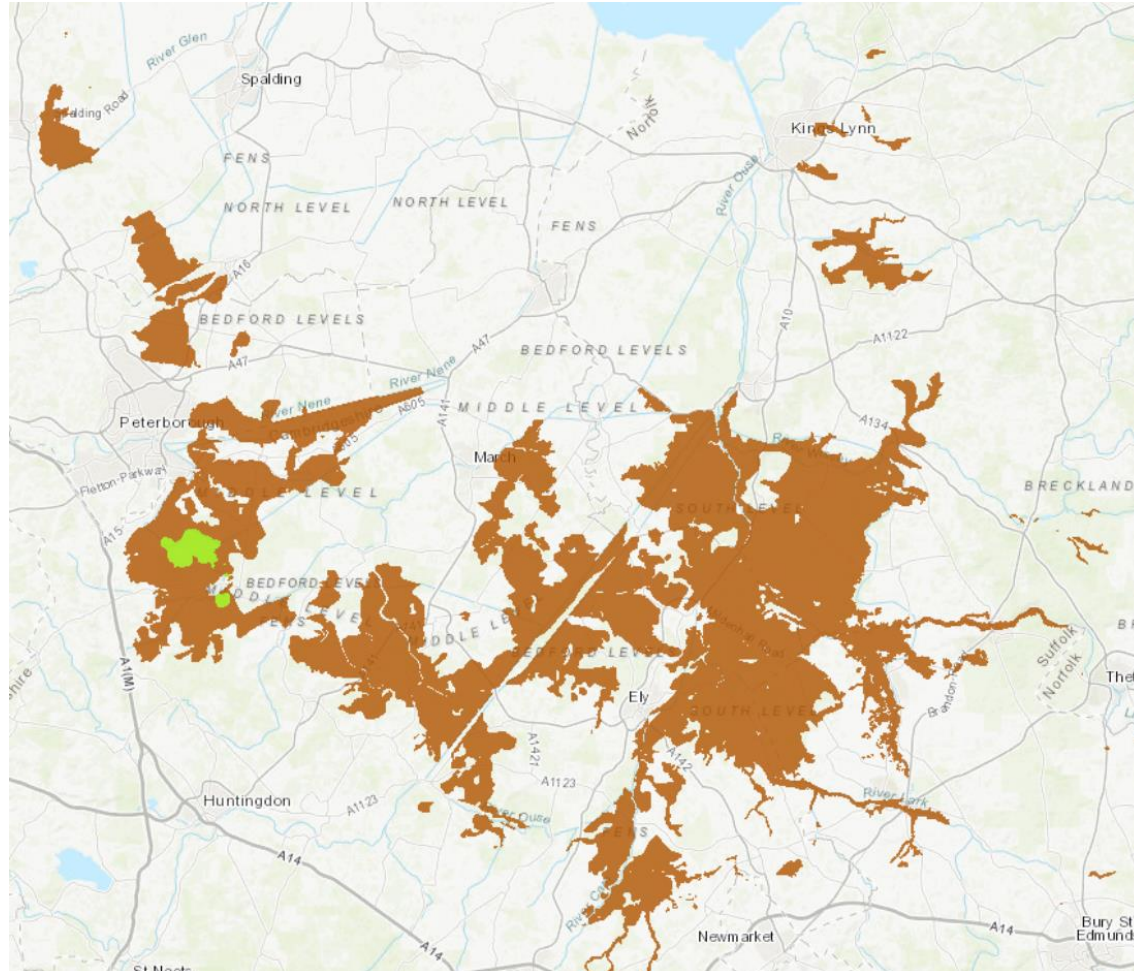
## British Geological Survey

- Peat: “partially decomposed mass of semi-carbonized vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps”
- “...Usually the map shows ....the lithology of the top metre of deposit” (McMillan and Powell, 1999. BGS Rock Classification Scheme Vol 4: natural superficial deposits)

## Soil Survey of England and Wales

- Peat: > 50% organic matter (LOI) [loamy / sandy peat > 20% OC / 35%OM]
- Peat soils: more than 40 cm of organic material in the upper 80 cm

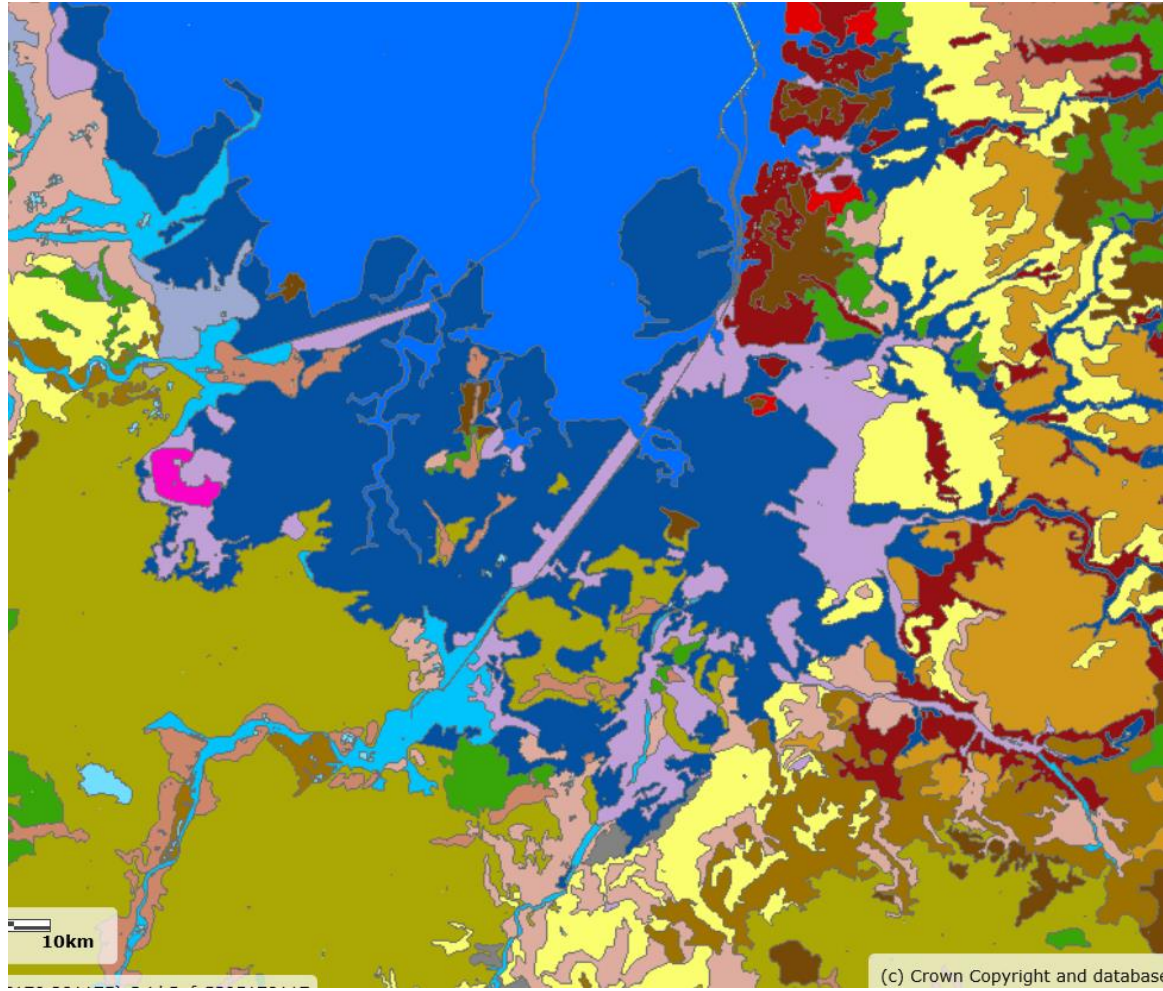
# Who has peatland mapping data?



Provides an indication of the presence of peat at 50 m resolution  
Derived from BGS Geology Surface dataset version 8.24

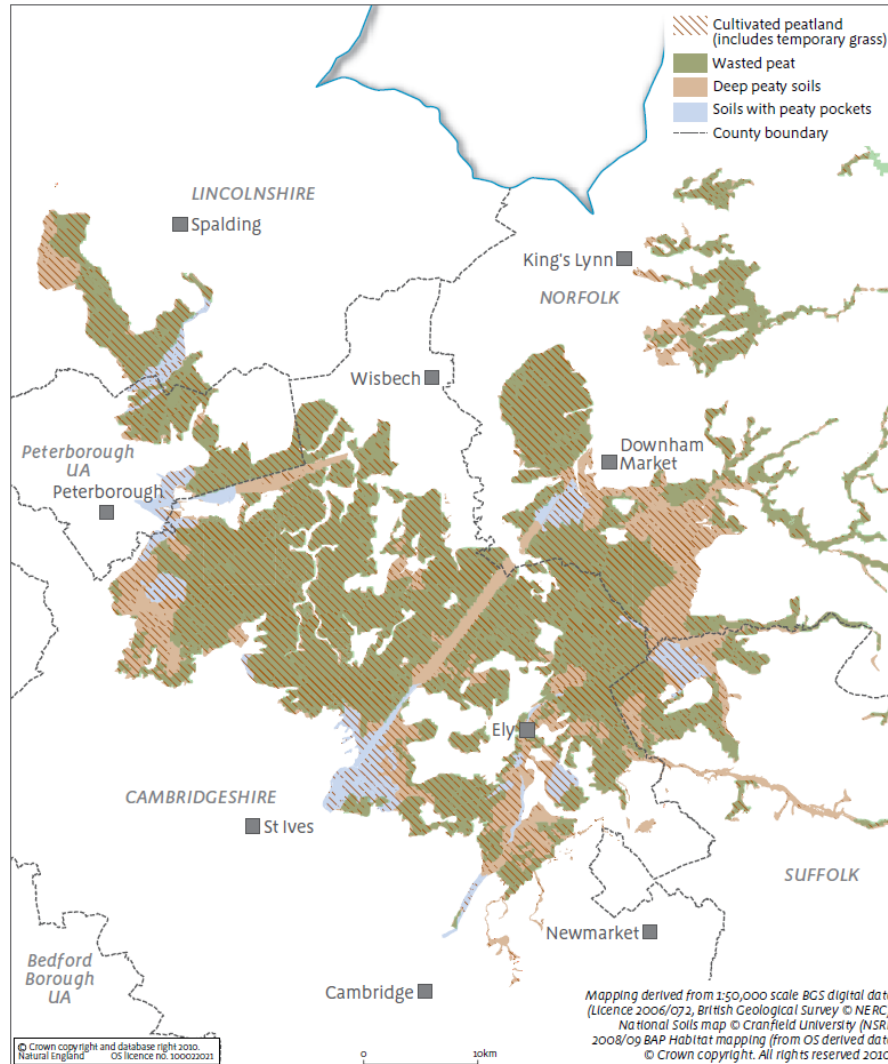


# Who has peatland mapping data?



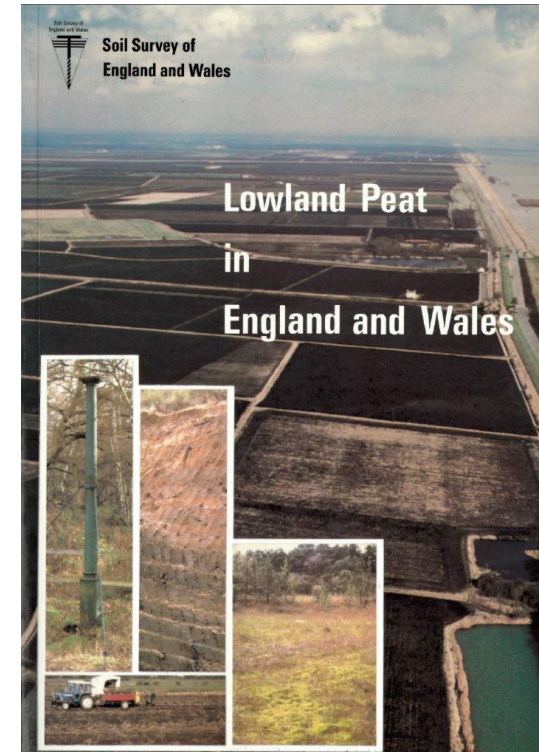
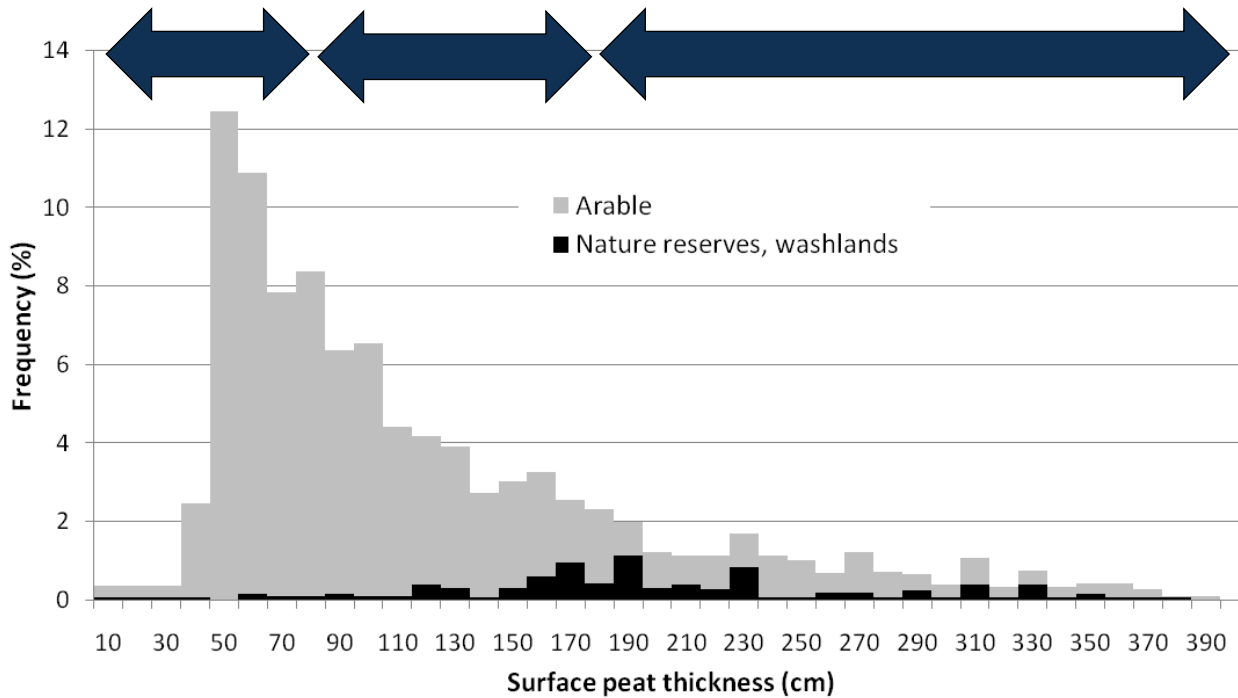
1:250,000 scale National Soil Map of England and Wales

# Who has peatland mapping data?

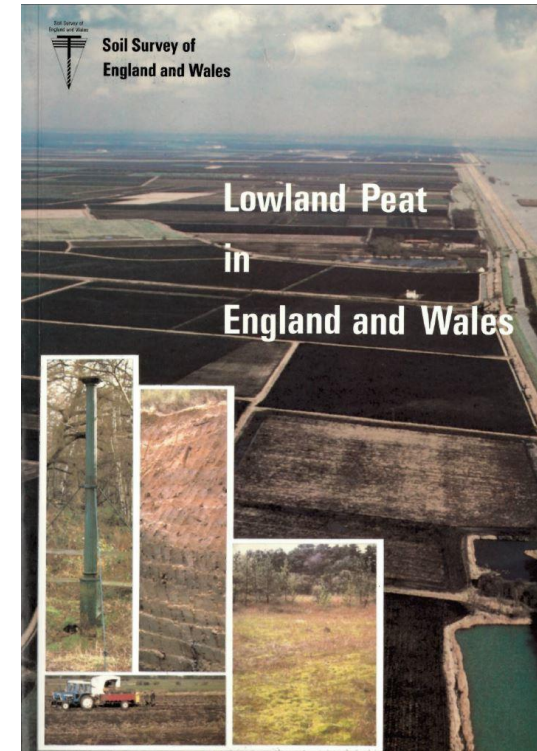
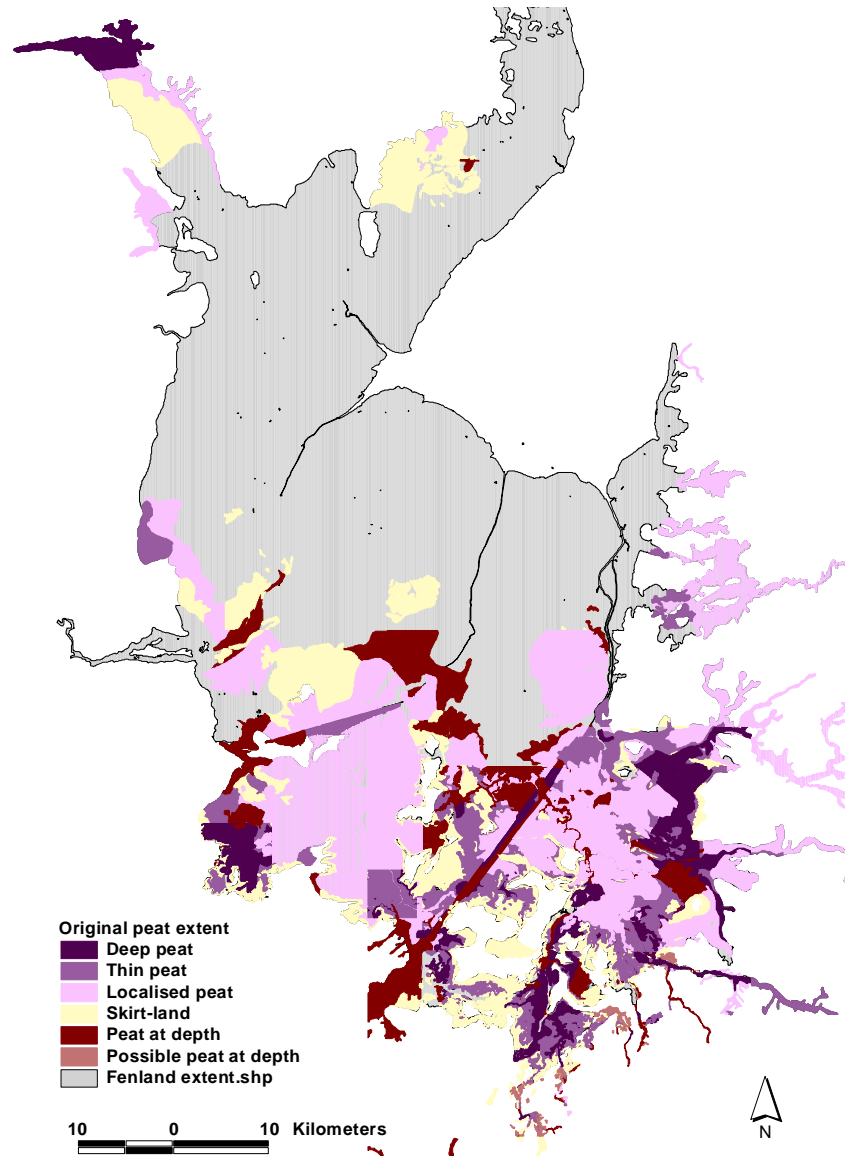


Natural England, England's peatlands: carbon storage and greenhouse gases (NE257)

# Who has peatland mapping data?



# Who has peatland mapping data?





## Overview

The need for  
an up-to-date  
peat map

Sources of peat  
maps

**Peat wastage**

Peat extent  
and recent  
mapping  
approaches

# Peat wastage

Consolidation



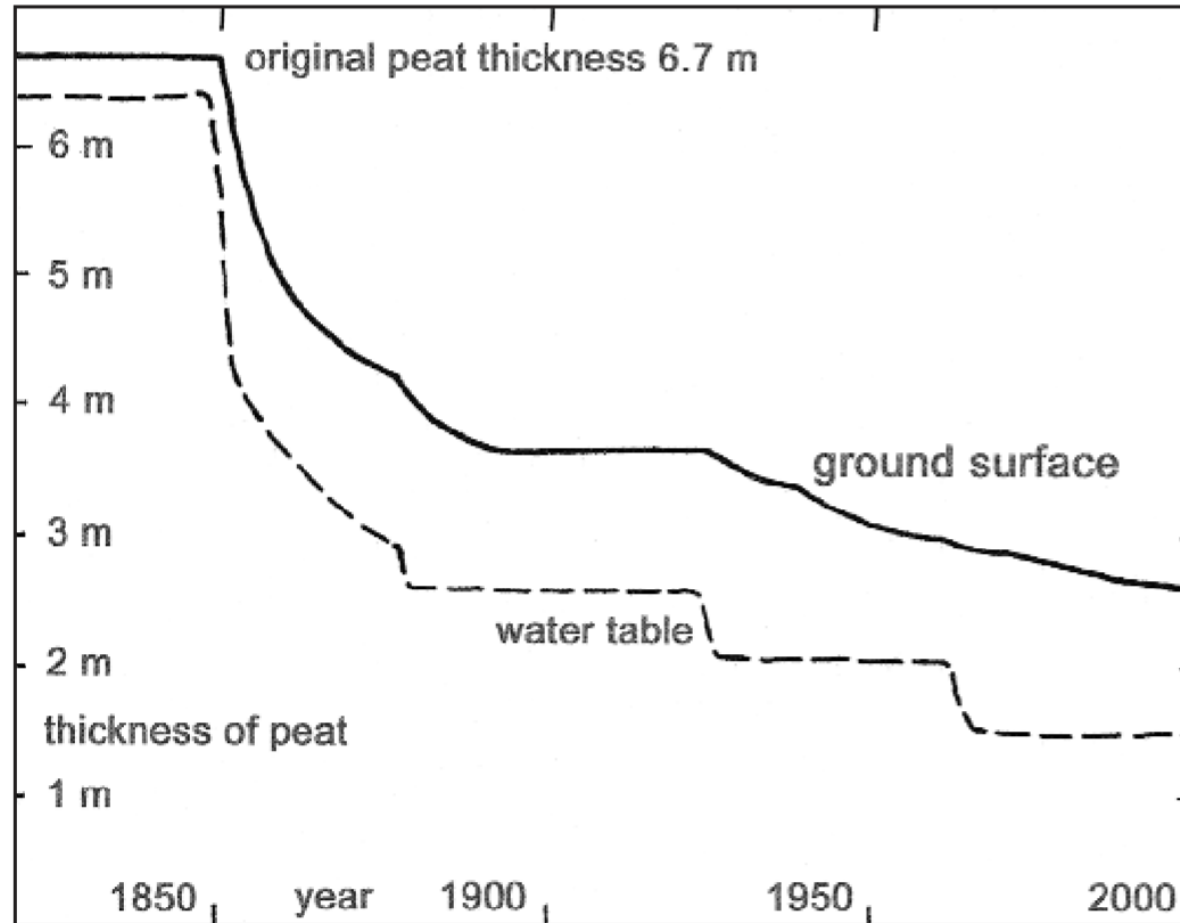
Compression



Oxidation



Wind erosion  
Crop offtake



The record of ground subsidence at the Holme Post, correlated with water table levels following pumped drainage (Landmark of Geology)

# Peat wastage

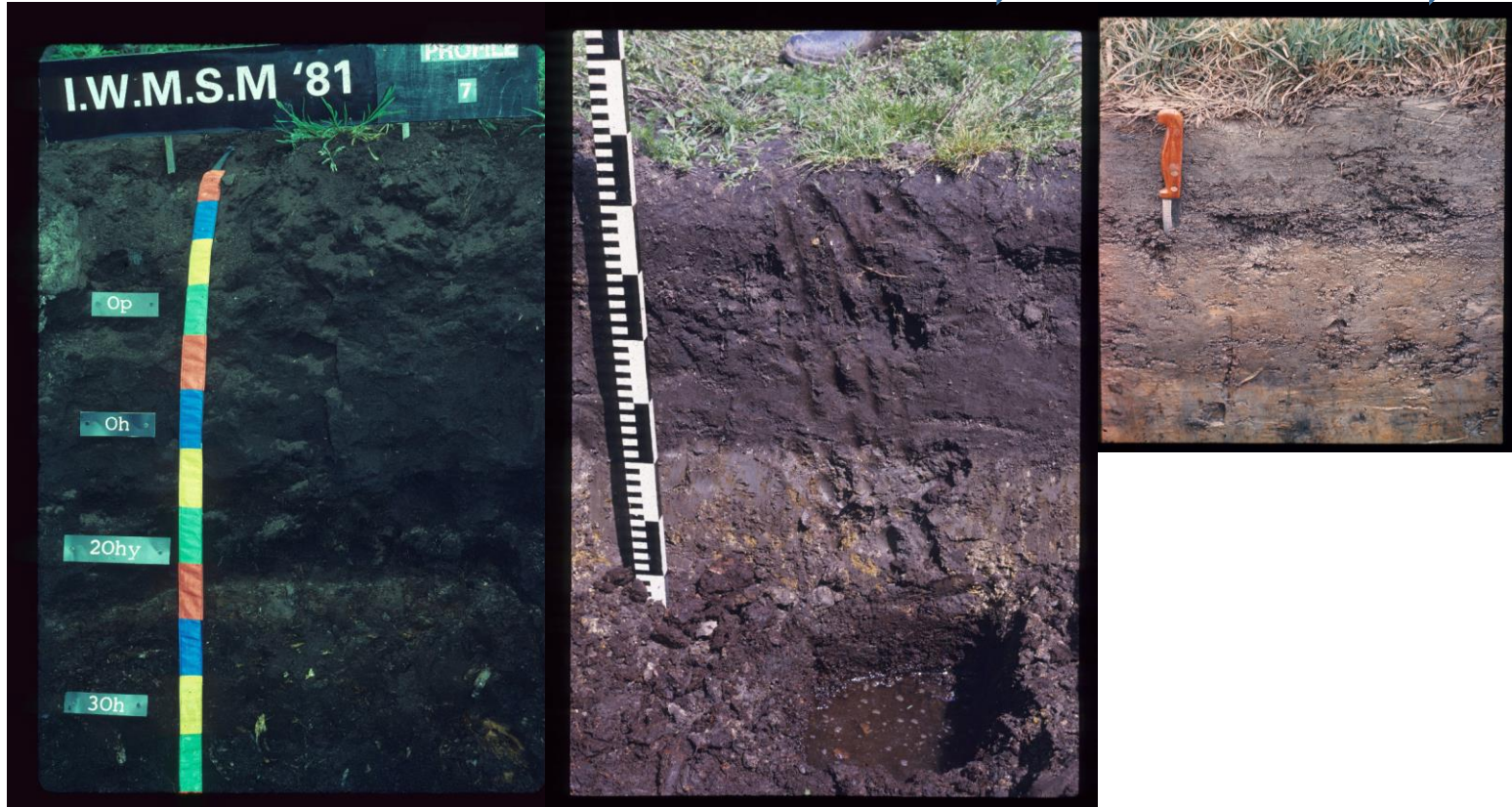
Deep to shallow peat soil

Organo-mineral soil

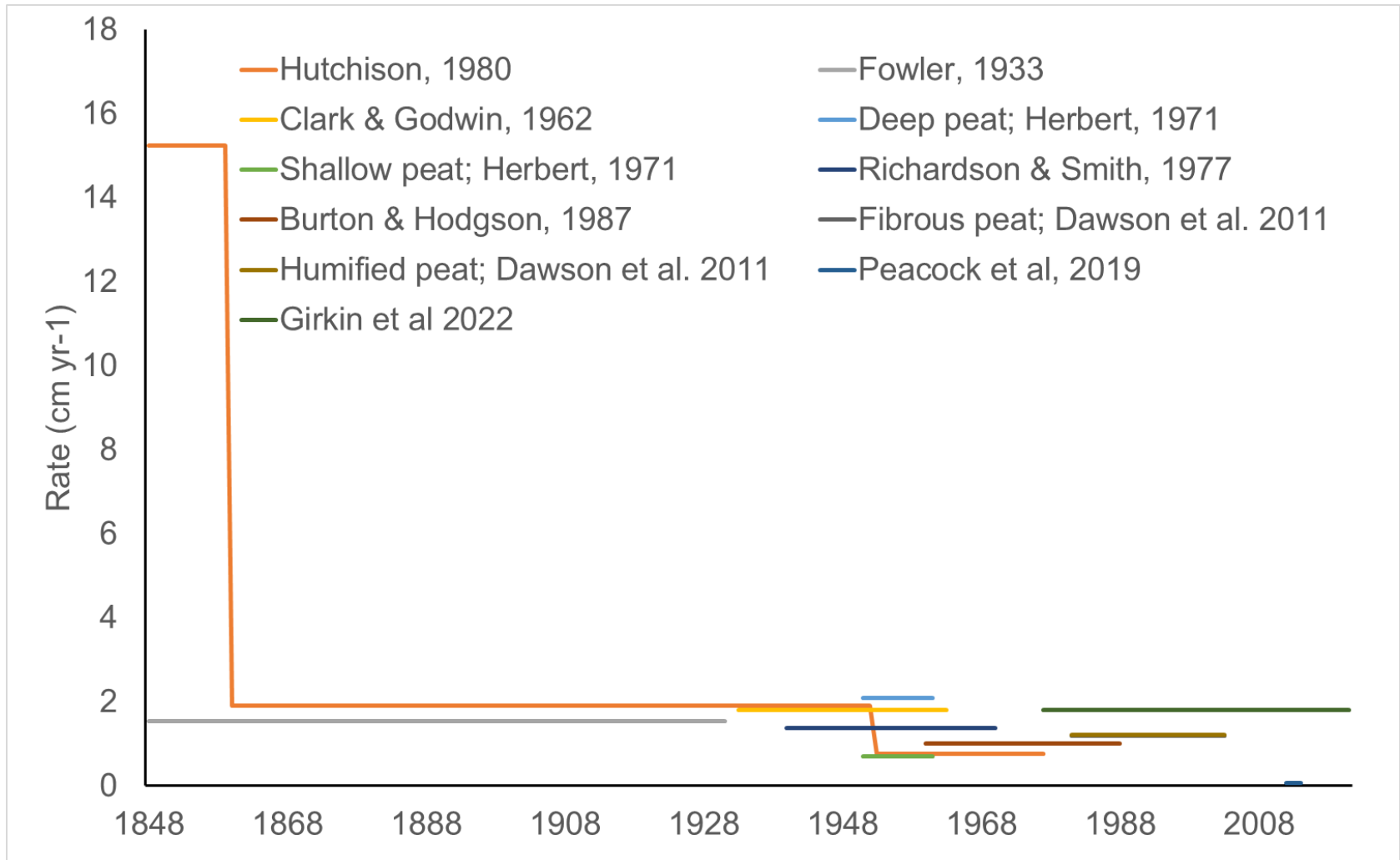
> 40 cm peat

≈ 40 cm peat

< 40 cm peat



# Peat wastage







## Overview

The need for  
an up-to-date  
peat map

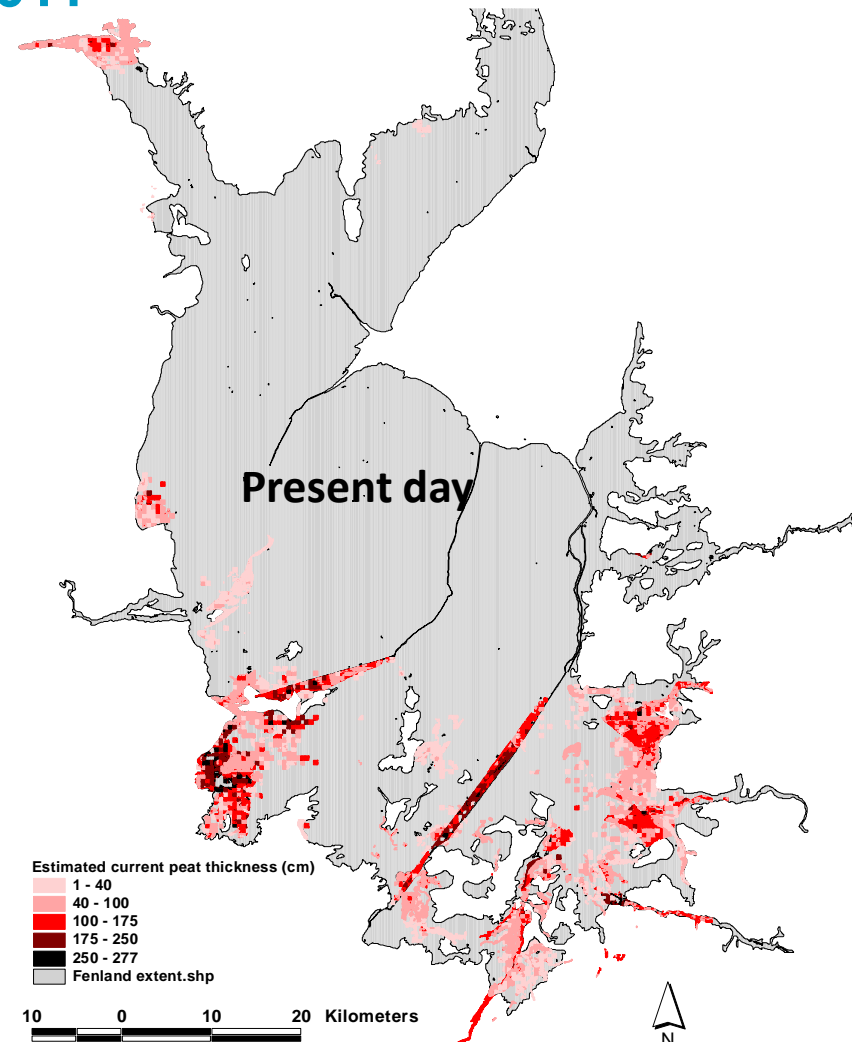
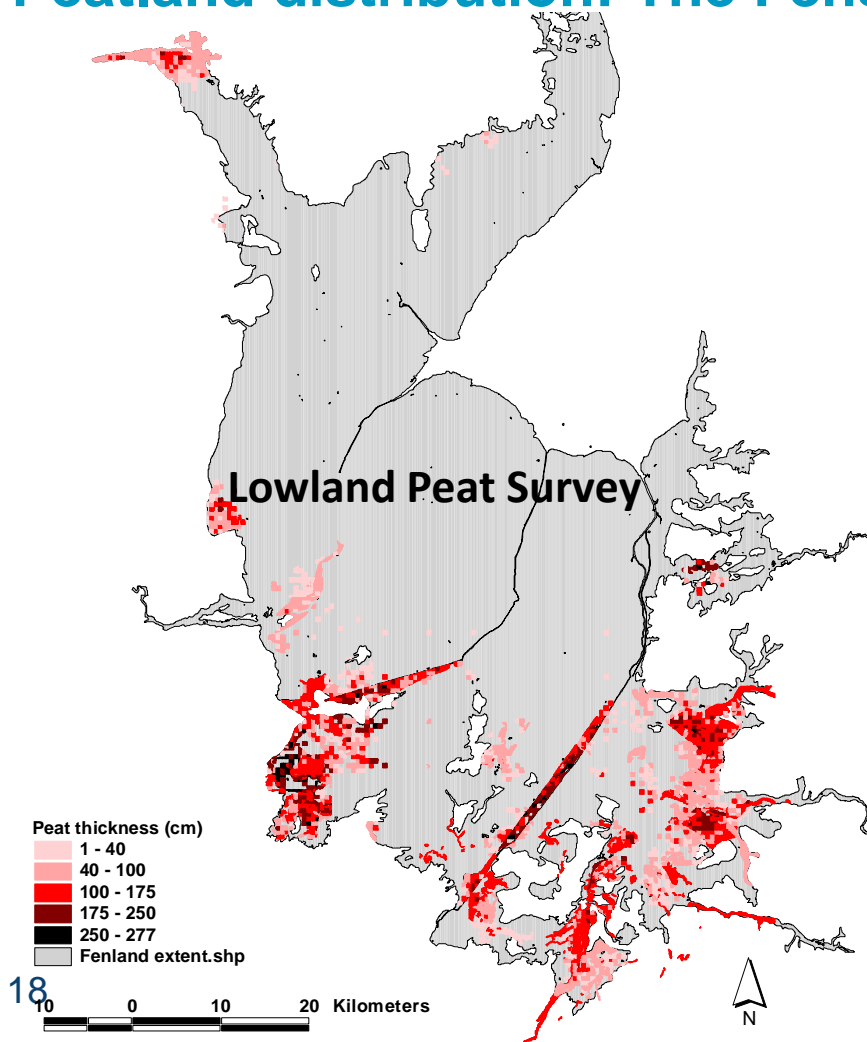
Sources of peat  
maps

Peat wastage

**Peat extent  
and recent  
mapping  
approaches**

## Peatland distribution: The Fens, 2011

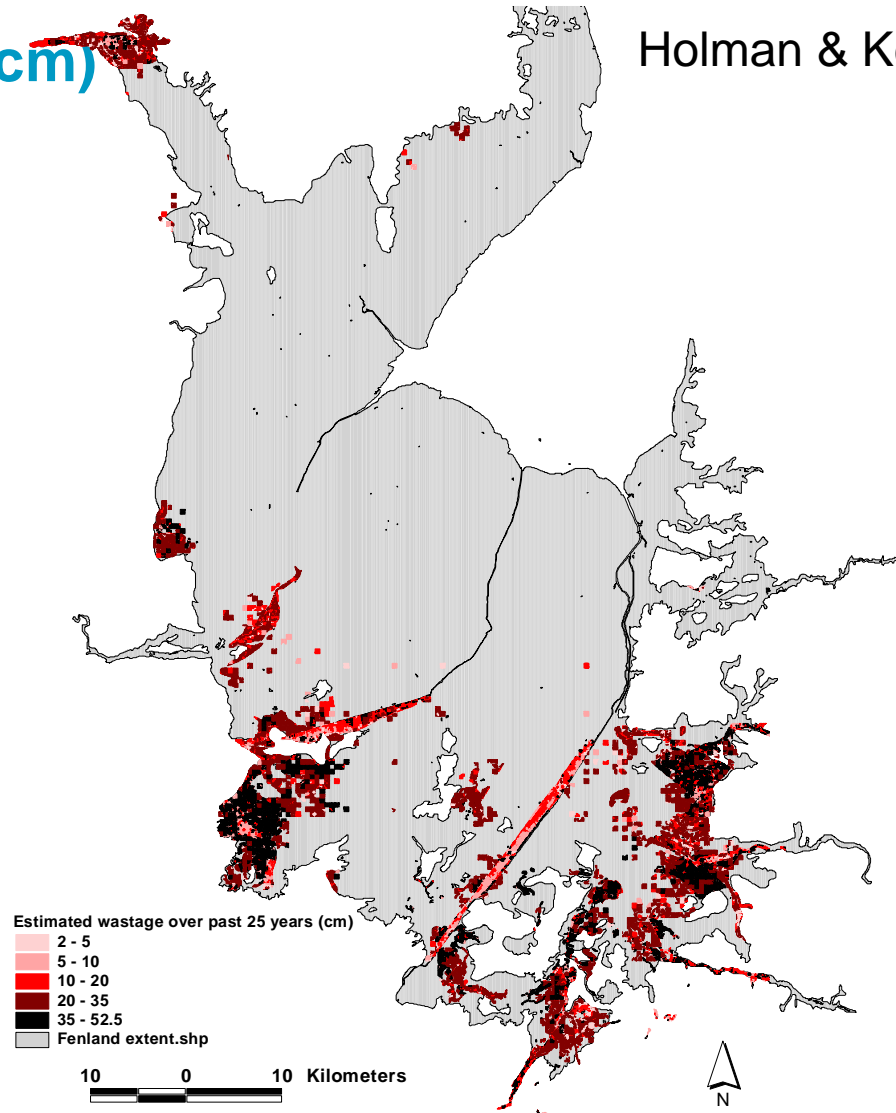
Holman & Kechavarzi, 2011



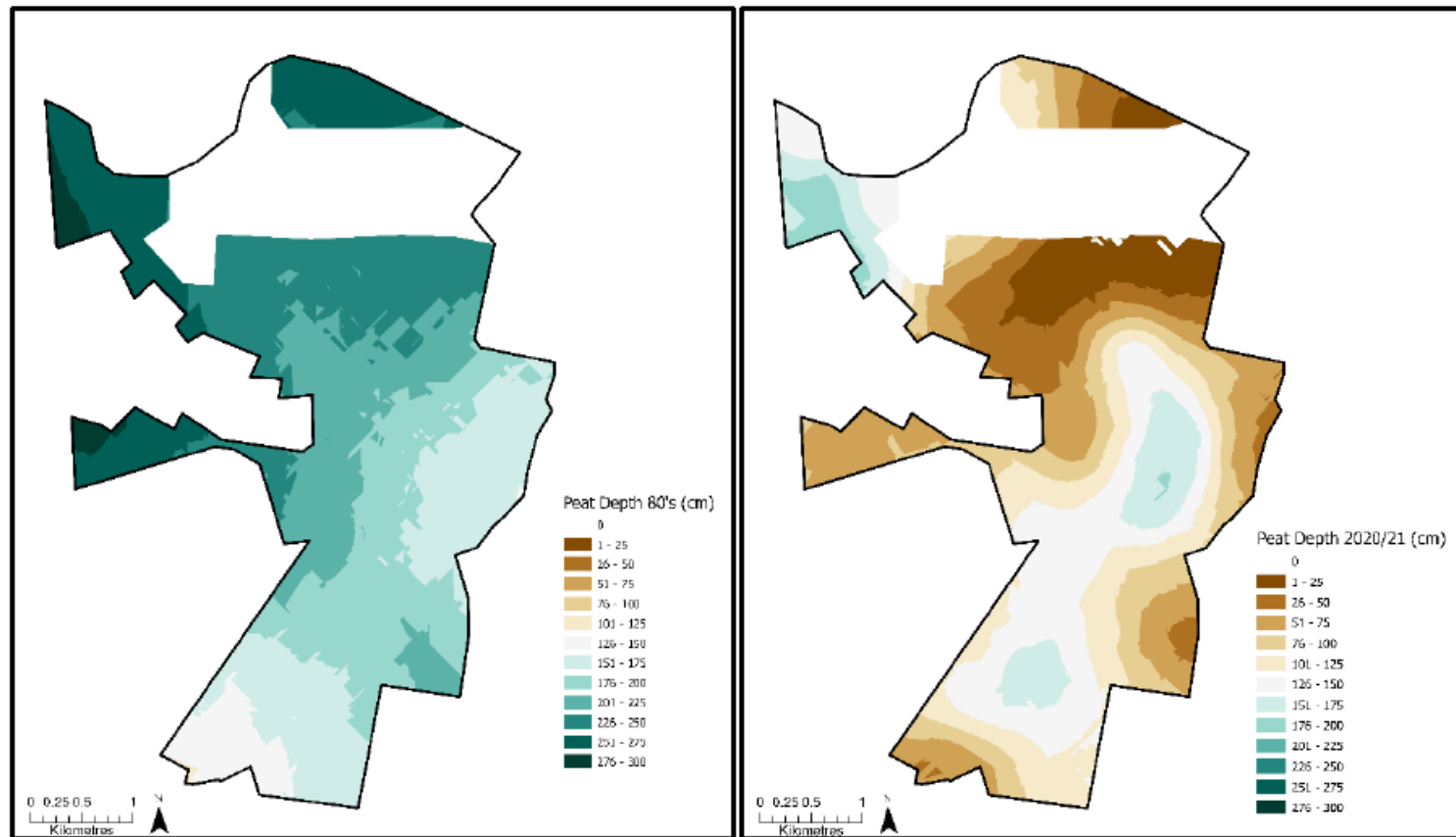
# Re-mapping the Fens

Peat wastage, 2011 (cm)

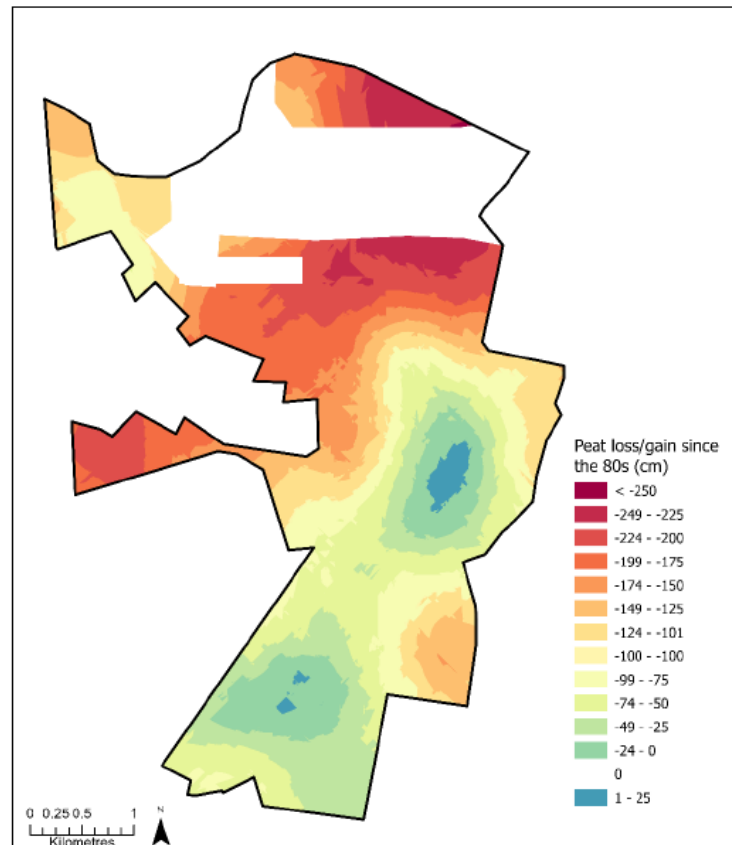
Holman & Kechavarzi, 2011



## Great Fen peat distribution and depth (cm)

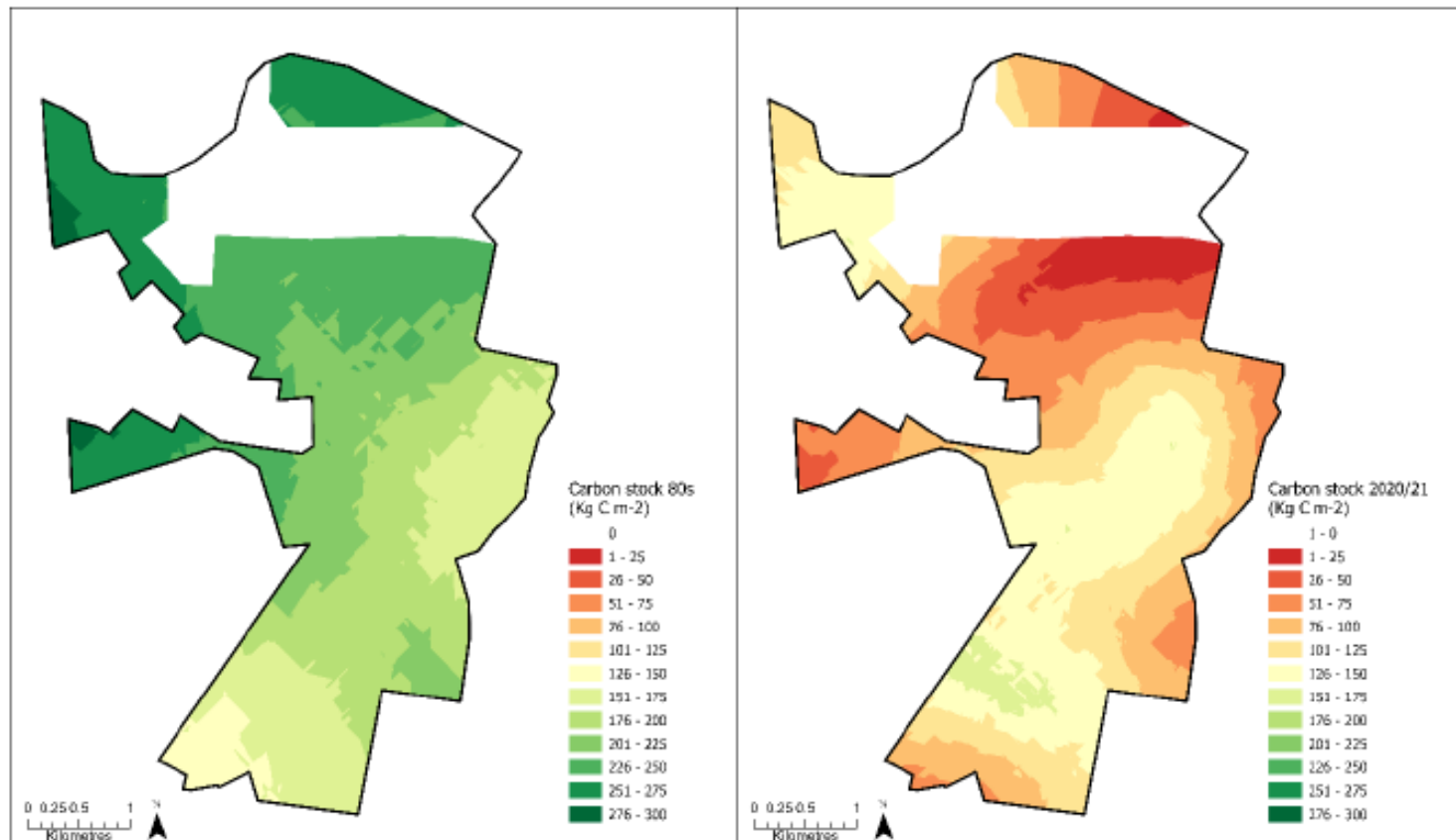


## Great Fen peat wastage (cm)



# Re-mapping the Fens

## Great Fen peat carbon storage (kg C m<sup>-2</sup>)



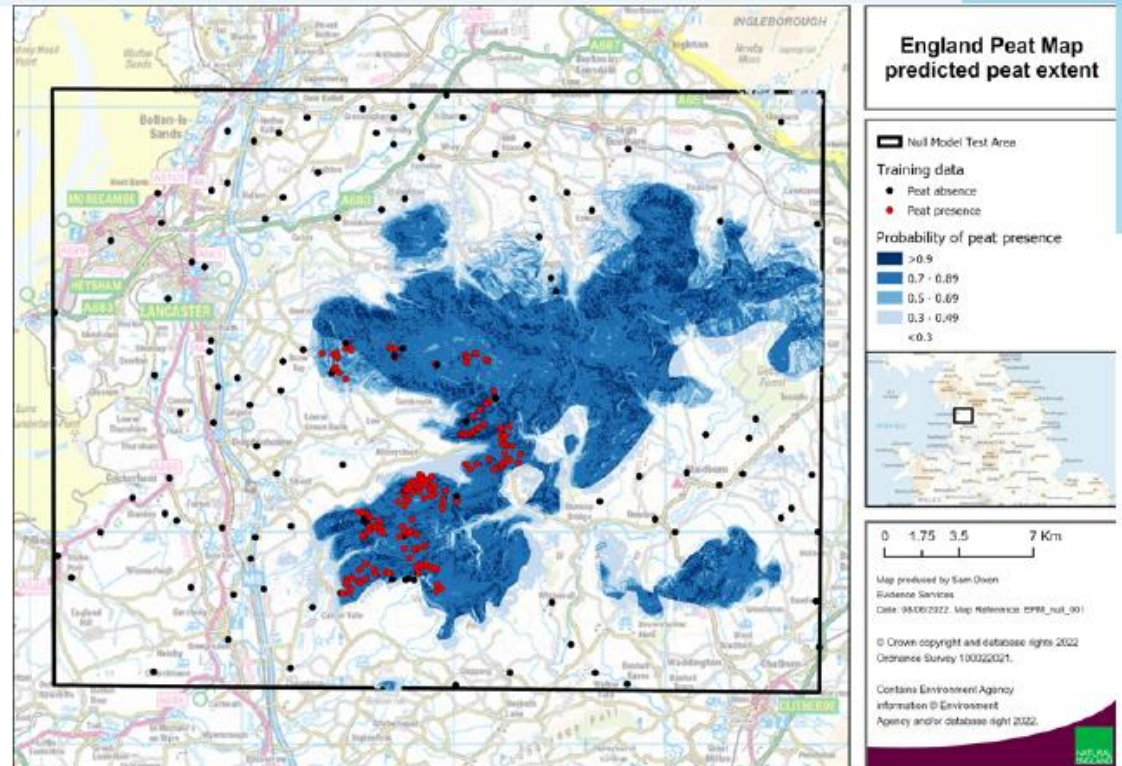
Lowland Peat Survey

2021 – 2022 reassessment

## The England Peat Map

- Mapping the extent, depth and condition of England's peatlands by 2024.
- Extent (Forest of Bowland) is mapped as the probability of peat occurrence in 10 m cells

### What will our models look like?





# Conclusions

## **The need for an up-to-date peat map**

Essential for climate change mitigation

## **Sources of peat maps**

Multiple data sources on past and present extent.

Ongoing development of England Peat Map

## **Peat wastage**

Evidence of ongoing wastage in intensively managed sites

Mitigation is required

## **Peat extent and recent mapping approaches**

Ongoing work at local to national scales

Engagement with local stakeholders critical for success