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Comparative studies on peatland properties along a land use gradient in Ireland
Irish peatland data as a source for the assessment of sustainable peatland use

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Peatlands cover 1.5 million hectares or 20.6 % of the land area in the Republic of Ireland[1].

Current land uses

Peatland Type
–
Land Use
–
Management

<u>National peatland survey</u>:
Five Land Use Categories (LUC) each with a drainage gradient in a multi-stage design:

- Natural/near-intact peatland → undrained "control" Forestry → deeply drained to restored;
- Grassland → deeply drained to shallow drained;
- Domestic turf cutting → deeply drained to 'drained only and rewetted';
- peat mining → deeply drained to rewetted

<u>Peatland properties of >2000 peat samples and 50 sites</u>:

- Bulk densities
- pH, EC, von Post Humification
- Stoichiometry & elemental ratios
- Carbon density & Carbon stock
- Nutrient composition
- Vegetation structure
- Hydrology

Soil properties

Water levels

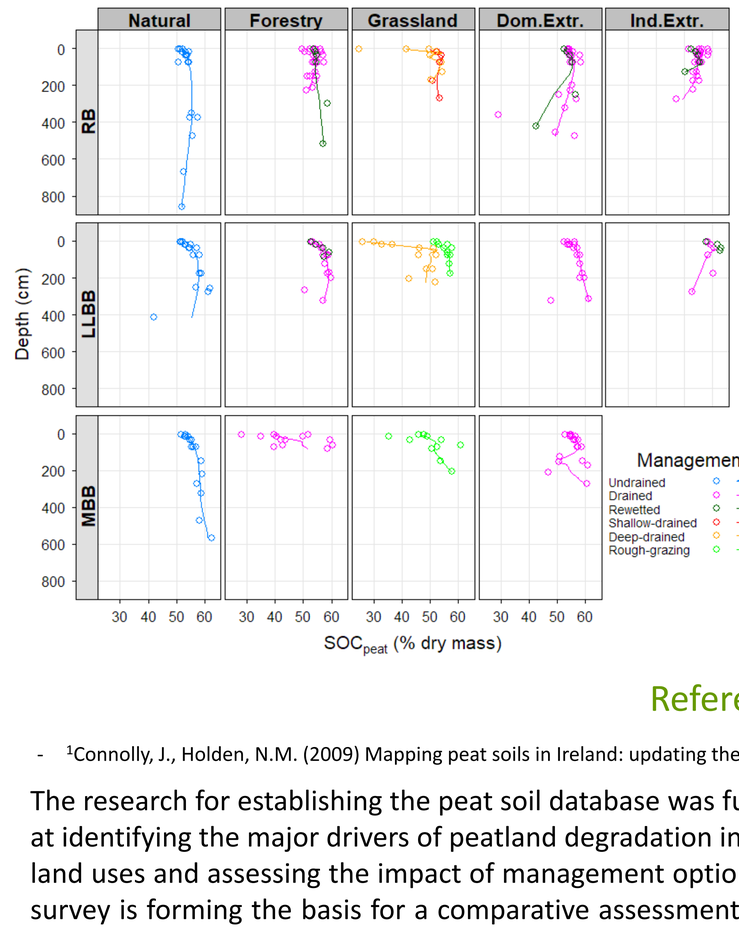
Vegetation

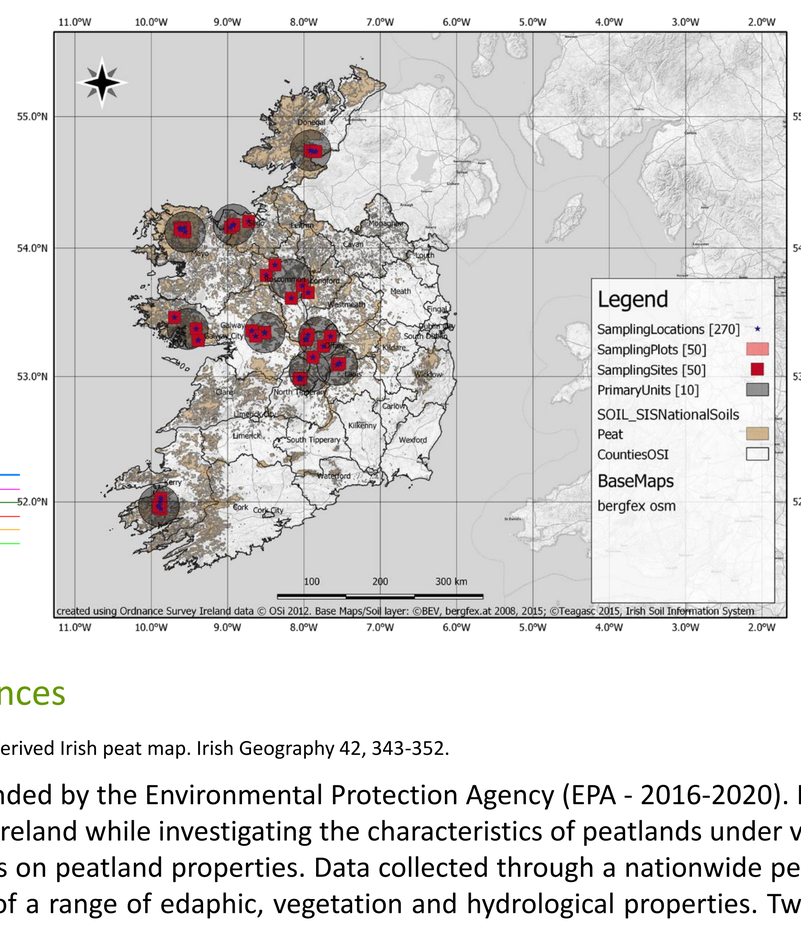
Current degradation status

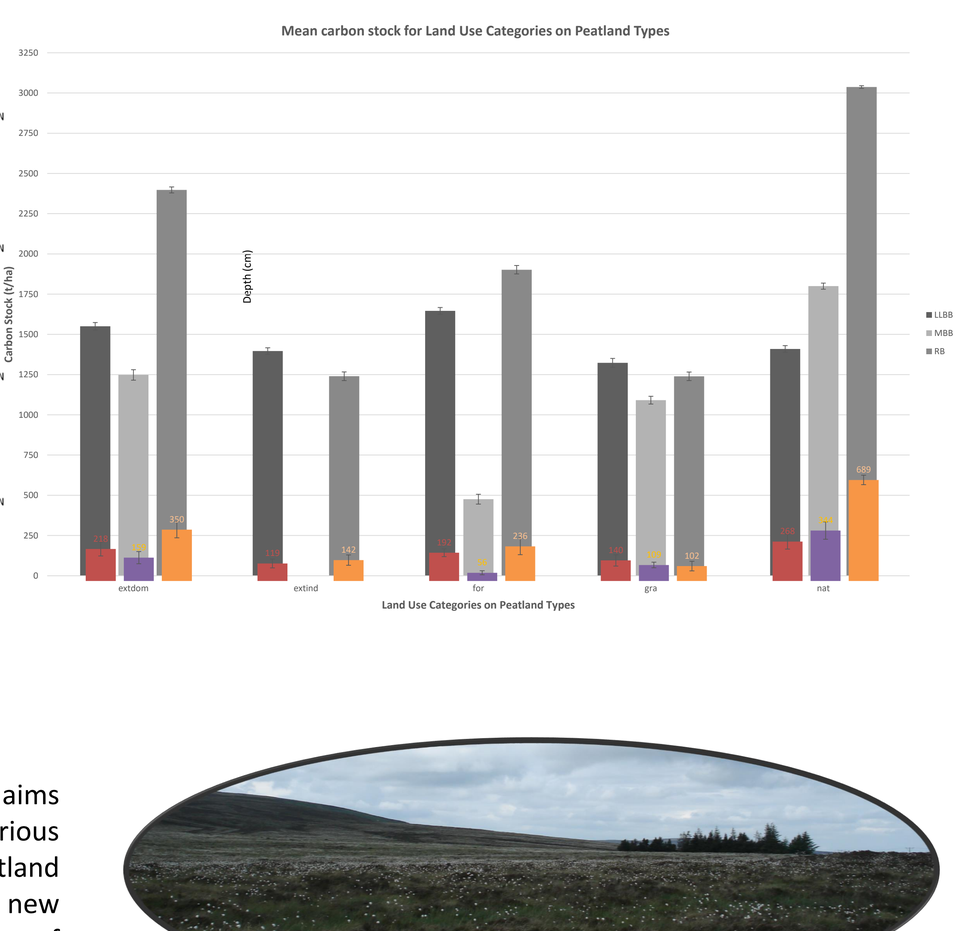
Derived Irish Peat Map & Irish SIS

Multiple criteria decision making for best option

Peat Soil Organic Carbon (SOC_{peat}) along depth gradient







References

- [1]Connolly, J., Holden, N.M. (2009) Mapping peat soils in Ireland: updating the derived Irish peat map. Irish Geography 42, 343-352.

The research for establishing the peat soil database was funded by the Environmental Protection Agency (EPA - 2016-2020). It aims at identifying the major drivers of peatland degradation in Ireland while investigating the characteristics of peatlands under various land uses and assessing the impact of management options on peatland properties. Data collected through a nationwide peatland survey is forming the basis for a comparative assessment of a range of edaphic, vegetation and hydrological properties. Two new soil datasets will help to identify potentials for sustainable land use options of peat soils and provide a framework for mapping of sustainable peatland use.