

# **Carbon Sequestration Potential of a Former Cutaway Irish Blanket Peatland located on Ireland's West Coast**

Presentation

by

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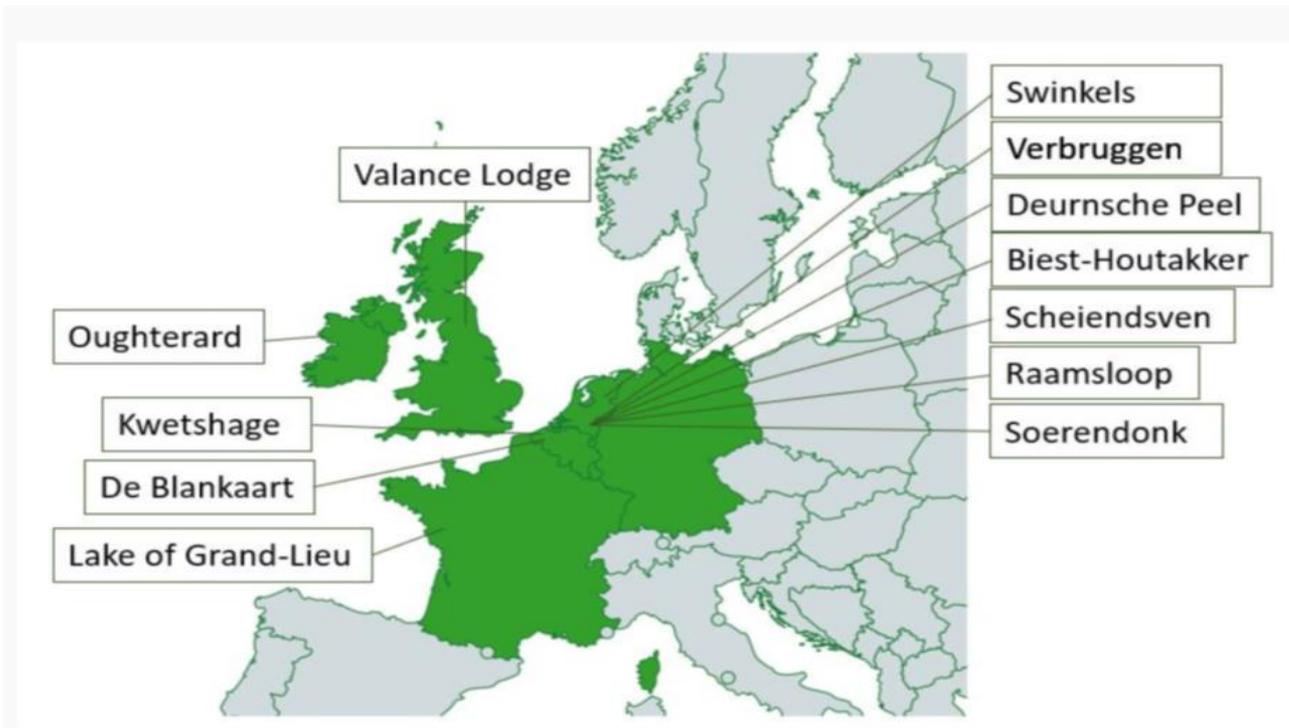
# Presentation Outline



- EU INTERREG Carbon Connects Project
- Goals and objectives of EU Carbon Connects
- Irish Limerick Institute of Technology (LIT) Carbon Connects Project
- Irish Carbon Connects Project Partners (Freshwater Pearl Mussel Project and Institute of Technology (IT), Sligo)
- Carbon Connects Blanket Peatland Pilot Site
- Carbon Connects Monitoring Results
- Quantifying GHG emissions using Site Emissions Tools (SET)

# EU Carbon Connects

- North-West European Project (2018-2021)
- Different peatland types
- European Regional Development Fund (ERDF)
- Project website: <https://www.nweurope.eu>



# Goals of EU Carbon Connects

- Enhancing Carbon Sequestration drained peatlands
- Farmer-Farmer session: rewetting; mitigating GHGs
- Influencing policy at national and EU level



Pilot Sites and Country	Business Models
Kwetshage and DeBlankaart (Belgium)	Reeds grown on peatlands and wetlands; composting; capturing nutrients
<b>Oughterard, Galway (Ireland)</b>	<b>Ecosystem Services (Vegetated Peatland and Improved Water Quality)</b>
Valence Lodge (UK)	Sphagnum Inoculation
Lake of Grand-Lieu (France)	Grasses for fodder, increasing biodiversity
Swinkels, Deurnsche Peel, Biest-Houtakker, Soerendonk, Scheiendsven, Raamsloop (Netherlands)	Wet-crops: Typha, Salix, Cattail harvesting; Cattle feed; biogas; composting; furniture

[www.nweurope.eu/media/10090/brochure-en.pdf](http://www.nweurope.eu/media/10090/brochure-en.pdf)

# LIT Carbon Connects (Pilot Site)

- Pilot site: 9 ha; drained and cutover blanket peatland
- Owenriff River Catchment; Pearl Mussel habitat
- Peat cutting ceased: 2016; private owned land
- Working: Freshwater Pearl Mussel Project and IT, Sligo
- Bare peat + Soft rush (*Juncus effusus*), Ling heather (*Calluna vulgaris*) and Cottongrass (*Eriophorum*)



# Freshwater Pearl Mussel Project: [www.pearlmusselproject.ie](http://www.pearlmusselproject.ie)



**HIGH QUALITY PEATLAND**



**LOW QUALITY PEATLAND**

**Interreg**   
 North-West Europe  
 Carbon Connects  
 European Regional Development Fund



*Pearl Mussel Programme results-based payment scale*



# LIT Carbon Connects (Pilot Site Activities)

- Rainfall, WTDs, Peat Carbon, Water Quality
- Pre-rewetting: May 2020-November 2020
- Post rewetting: November 2020-Dec 2021



DRONE PHOTO  
3<sup>RD</sup> Nov 2020

Drain block 1 (corner)

Drain block 2

Drain block 3

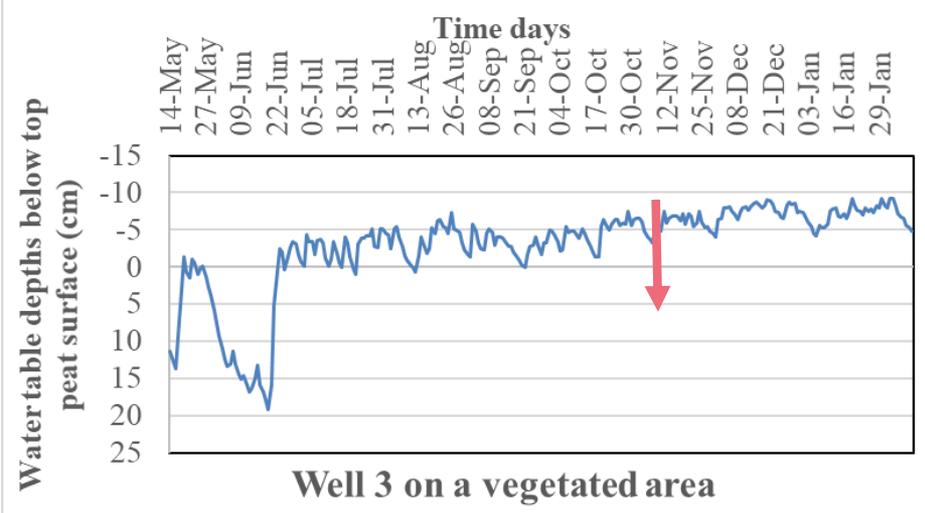
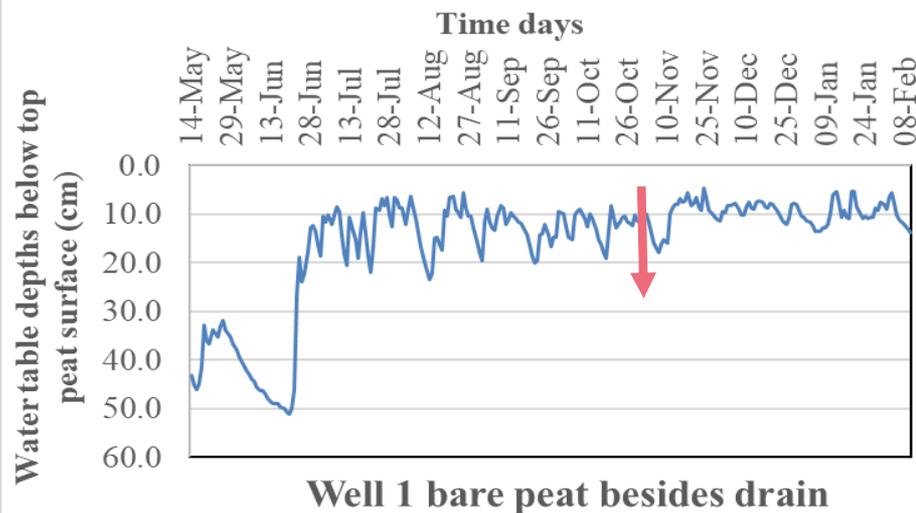
# (Monitoring Vegetation and beetles)

- IT, Sligo: quantifying co-benefits of land quality based incentives provided to farmers by PMP project
- **Beetles and Vegetation survey:** establishing types of communities present on cutaway/drained peatland compared to intact peatland
- **Vegetation: diversity:** detailed quadrat surveys; cover of plant species
- **Beetles survey:** pitfall traps; beetles samples/two weeks  
May-September peak activity



# Site Results

Spatial well positions (+ below peat surface and – above peat surface)	Average WTD (cm) before drain blocking (May 14-Nov 10, 2020)	Average WTD (cm) after drain blocking (Nov 11, 2020- Feb 10, 2021)
Well 1 (bare peat besides drain)	+20	+9.3
Well 2 (bare peat face bank)	+5	-38
Well 3 (vegetated area)	-1	-7
Well 4 (vegetated besides road)	+2	-1.3



# Water Quality results



Sampling parameters (mg/L)	sample well 1	sample well 2	sample well 3	sample well 4
Total Nitrogen as N	1.10	1.58	0.664	2.54
Nitrate as N	< 0.1	< 0.1	< 0.1	< 0.1
Total Phosphorus as P	0.05	0.05	0.05	0.05
Ammonium as NH <sub>4</sub> -N	0.309	0.807	0.052	1.52
Dissolved organic carbon	24.3	21.1	9.13	20.1

Sampling depth (cm)	Sample location 1 (TOC) %	Sample location 2 (TOC) %	Sample location 3 (TOC) %
0-10	50	49	65
10-20	52	42	55
20-30	29	46	29
30-40	41	47	35
40-50	52	52	31

# (Initial results: vegetation and beetles)

## Carbon Connects - low scoring peatland



## Comparison-high scoring, intact peatland



- Vegetation: fewer species (sedges; Ling heather; bare peat surfaces; lower cover of individual species particularly Sphagnum mosses)
- Beetle richness: Carbon Connects site has greater abundance of species which prefer disturbed ground

# Site Emissions Tool (SET)

- **Developed: VHL University: Netherlands**  
(dr. Jasper van Belle; dr. Emiel Elferink)
- Quantifies CO<sub>2</sub>; CH<sub>4</sub> and N<sub>2</sub>O in pre-rewetting and post-rewetting:  
vegetation and water tables; land management practices;



**General site data**

Site name ⓘ Oughterard Galway

Total area (ha) ⓘ 9 ha

Coordinates ⓘ N E

Elevation ⓘ 45 m Above Sea Level

Soil type ⓘ Sedge peat

Peat thickness ⓘ 200 cm

Year rewetting started ⓘ 2020

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**Baseline: groundwater and vegetation**

Median groundwater level in summer ⓘ -25 cm

Vegetation class ⓘ U1: Moist bare peat

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**Rewetting: groundwater and vegetation**

Median groundwater level in summer ⓘ -5 cm

Vegetation class ⓘ U12: Wet small sedges with mosses

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**Baseline: fertilizer use**

<https://www.nweurope.eu/projects/project-search/cconnects-carbon-connects/>

## SET results

Parameters	Pre-rewetting scenario (baseline)
Average water table depth below peat surface (cm)	+9
Vegetation	Sedges with mosses
CO <sub>2</sub> (t/CO <sub>2</sub> equ/year)	-17.9
N <sub>2</sub> O (t/CO <sub>2</sub> equ/year)	+21
CH <sub>4</sub> (tCO <sub>2</sub> equ/year)	+42.5
<b>Total GWP (t CO<sub>2</sub> equ/year) for 9 hectares site</b>	<b>+46</b>

**Note:** The GWP is +5.11 tonnes CO<sub>2</sub> equivalent/ha/yr;  
Site currently CH<sub>4</sub> and N<sub>2</sub>O source and CO<sub>2</sub> sink as per modelled predictions;

# Acknowledgements

- European Regional Development Fund (ERDF)
- Private landowner in Ireland
- Freshwater Pearl Mussel Project
- Institute of Technology (IT), Sligo

