

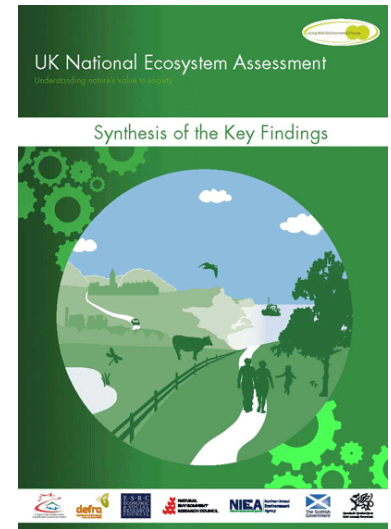
Valuing carbon sequestration in coastal margin habitats

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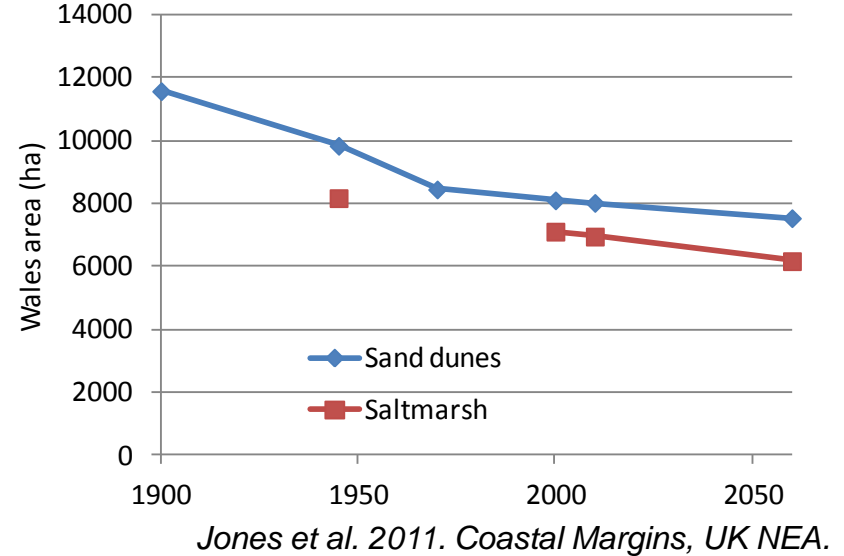
Why the coast is important to Wales

- 3 % of Wales' land area
- Seaside tourism accounted for 42% of all domestic tourism spend in Wales
- 100,000 direct and indirect jobs, nearly £5bn per annum income to businesses and a contribution of £1.5bn to Wales' GDP
- Sea defence by sand dunes is worth £54 – 199 million in Wales
- High rates of carbon sequestration

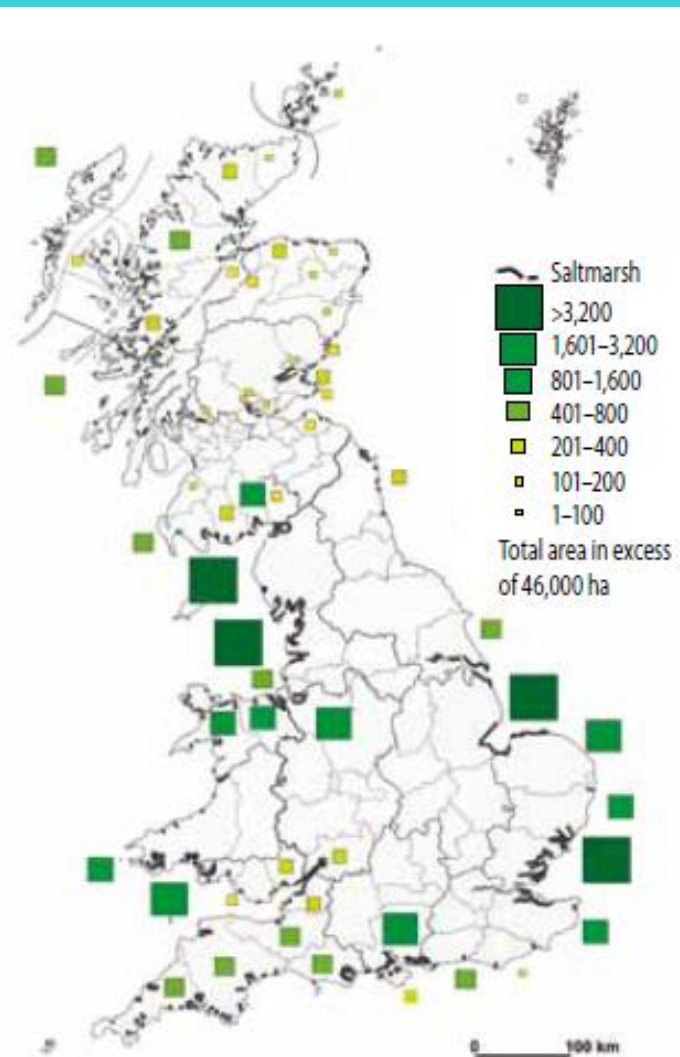
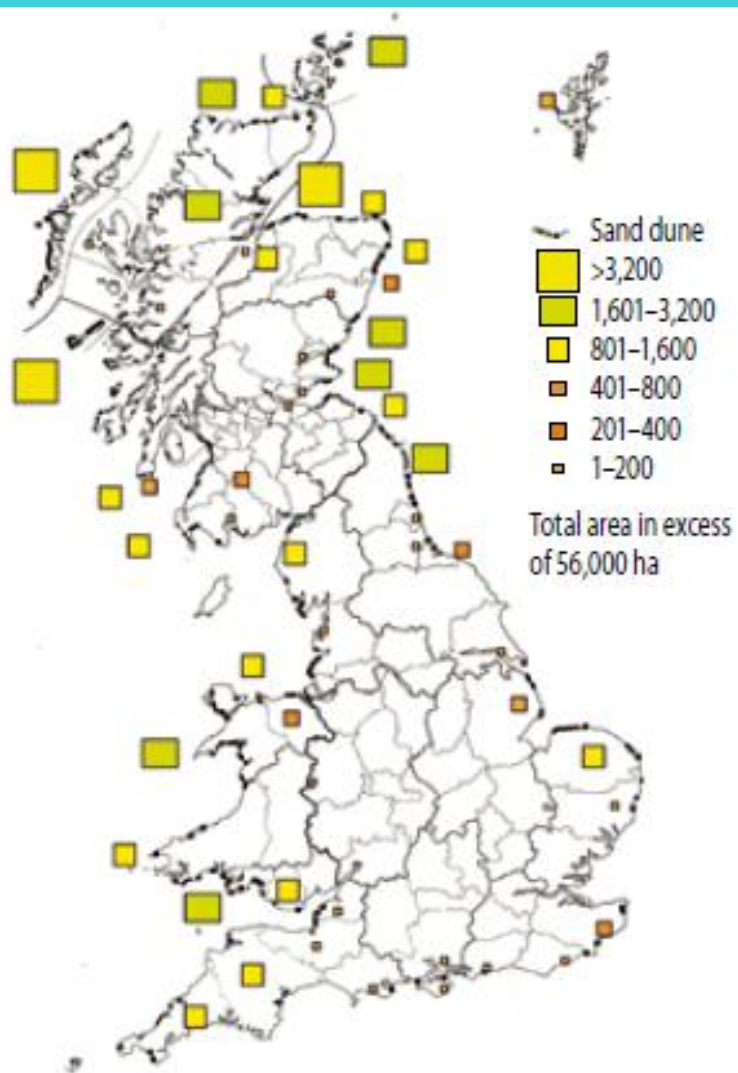


Habitat loss

- Coastal margin habitat has declined by 30% since 1900
- Previous losses were due to rapid coastal development (industry, housing, tourism, agricultural land claim)
- Most future losses will be due to sea level rise and further development



Distribution



Sand dune carbon stocks

Dunes:

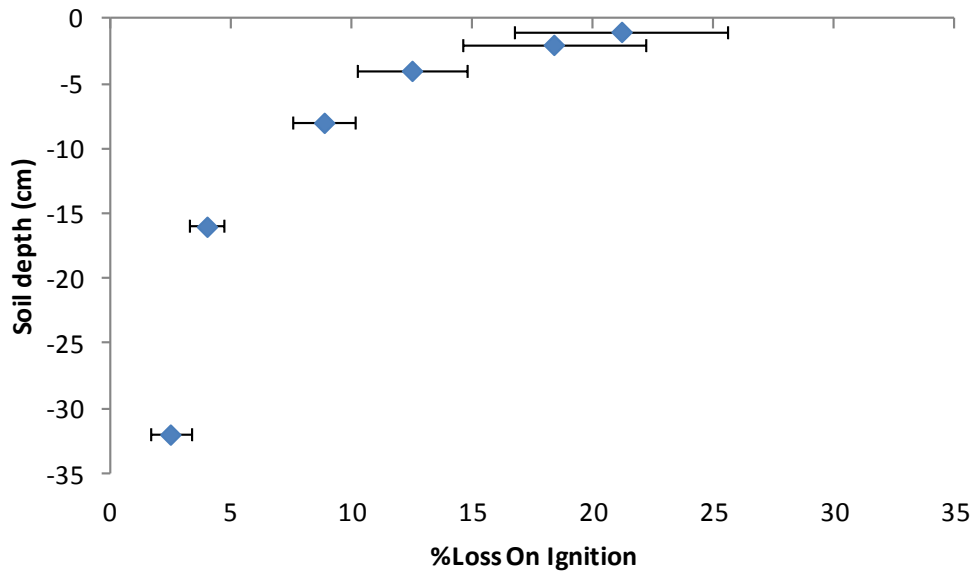
- ~15 sites
- Soil profile to 15 cm depth



Saltmarsh carbon stocks

Saltmarsh:

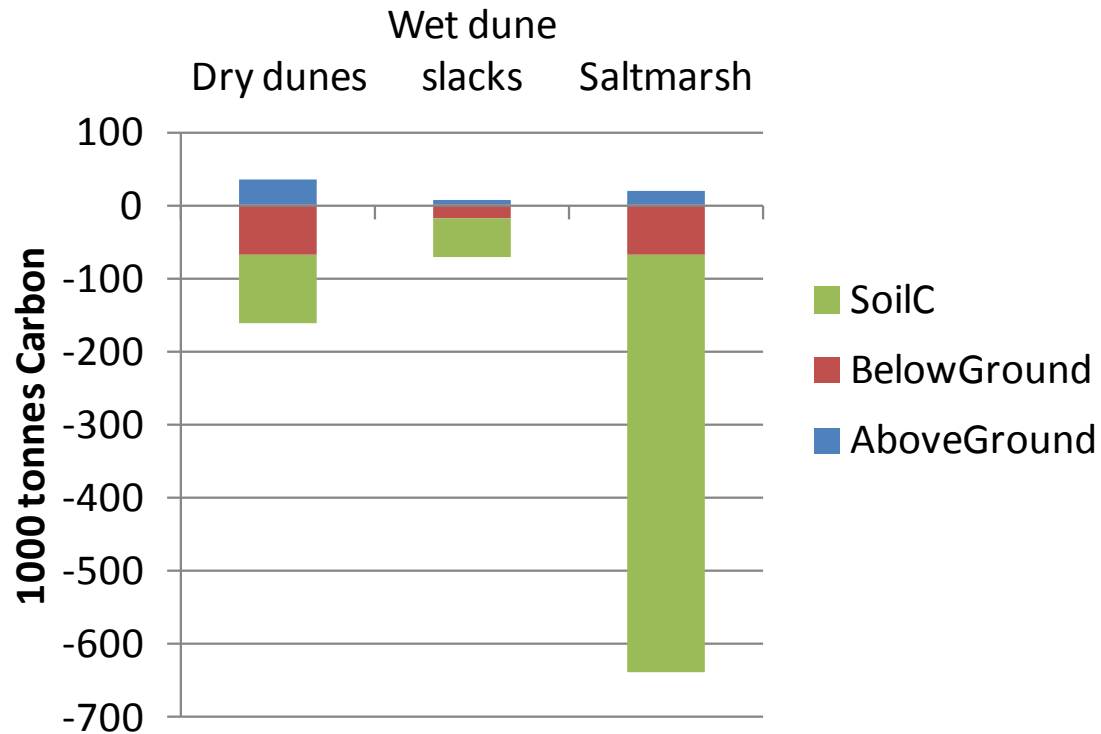
- 18 sites
- Soil profile to 30 cm depth
- Extrapolated to 50 (100) cm depth



Data: Matt Lundquist



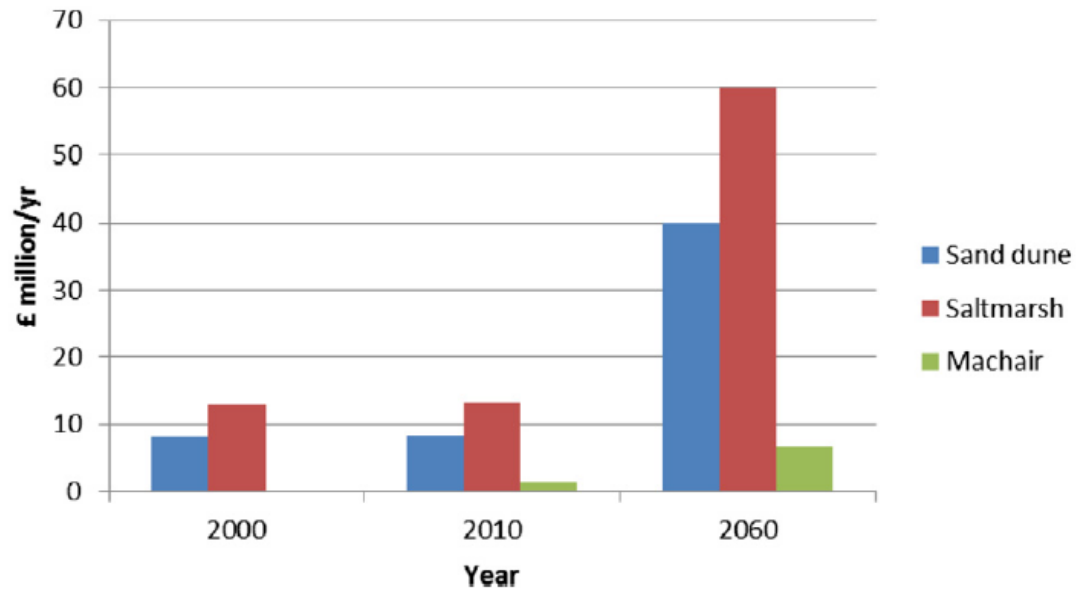
Carbon stocks in Wales' dunes and saltmarsh



Valuing coastal carbon (UK)

- Non-traded shadow price of Carbon £55 /t CO₂ (2010)
- Avoided damage cost

Value of annual CO₂ sequestration / yr



Dunes: 18.36 - 45.9 £/ha/yr

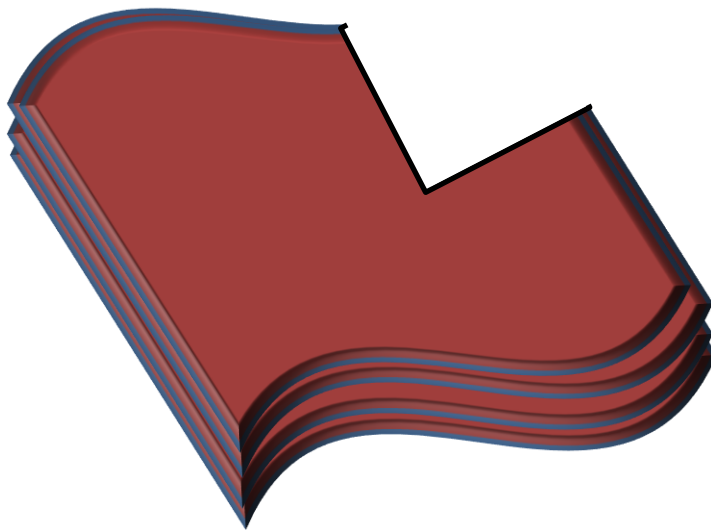
Saltmarsh: 34.56 - 118.26 £/ha/yr



The consequences of habitat loss

Scenario period 2000 - 2060

	Dunes	Saltmarsh
CO2 sequestered (t)	9,073,000	13,955,000
CO2 released (t)	1,433,000	4,027,000
Net CO2 stored (t)	7,640,000	9,929,000
Lost value due to habitat loss (£m)	£64m	£179m



Conclusions



- Dunes and saltmarsh sequester carbon at a high rate
- Habitat loss has implications for carbon storage
- This approach provides a methodology for valuing loss of both stocks and future sequestration potential
- BUT Carbon isn't the only service & we need to consider the trade-offs with biodiversity, tourism, etc.

Thank you

N.J. Beaumont et al. (2014) Estuarine, Coastal and Shelf Science 137, 32-40