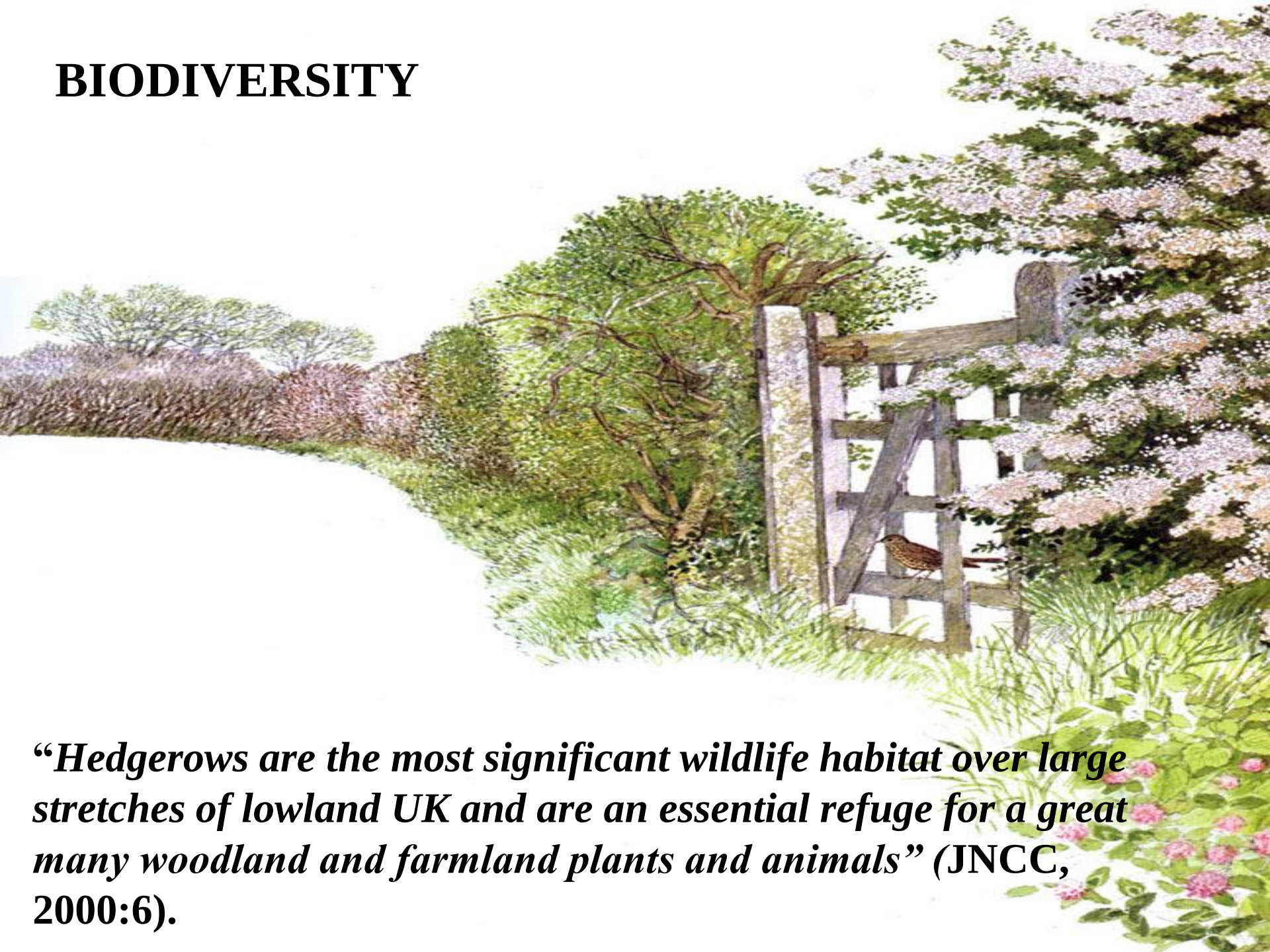




HABITAT SCIENCE: HEDGEROWS

BIODIVERSITY



“Hedgerows are the most significant wildlife habitat over large stretches of lowland UK and are an essential refuge for a great many woodland and farmland plants and animals” (JNCC, 2000:6).

Hedgerows

- ★ Complete ecosystem
- ★ Size and structure varies
- ★ Single species hedgerows
- ★ Ancient hedgerows
- ★ Species rich hedgerows





*“Modern technology owes
ecology an apology”*

(Eddison, 2001:8)

Biodiversity Action Plan Species



Tithe Maps

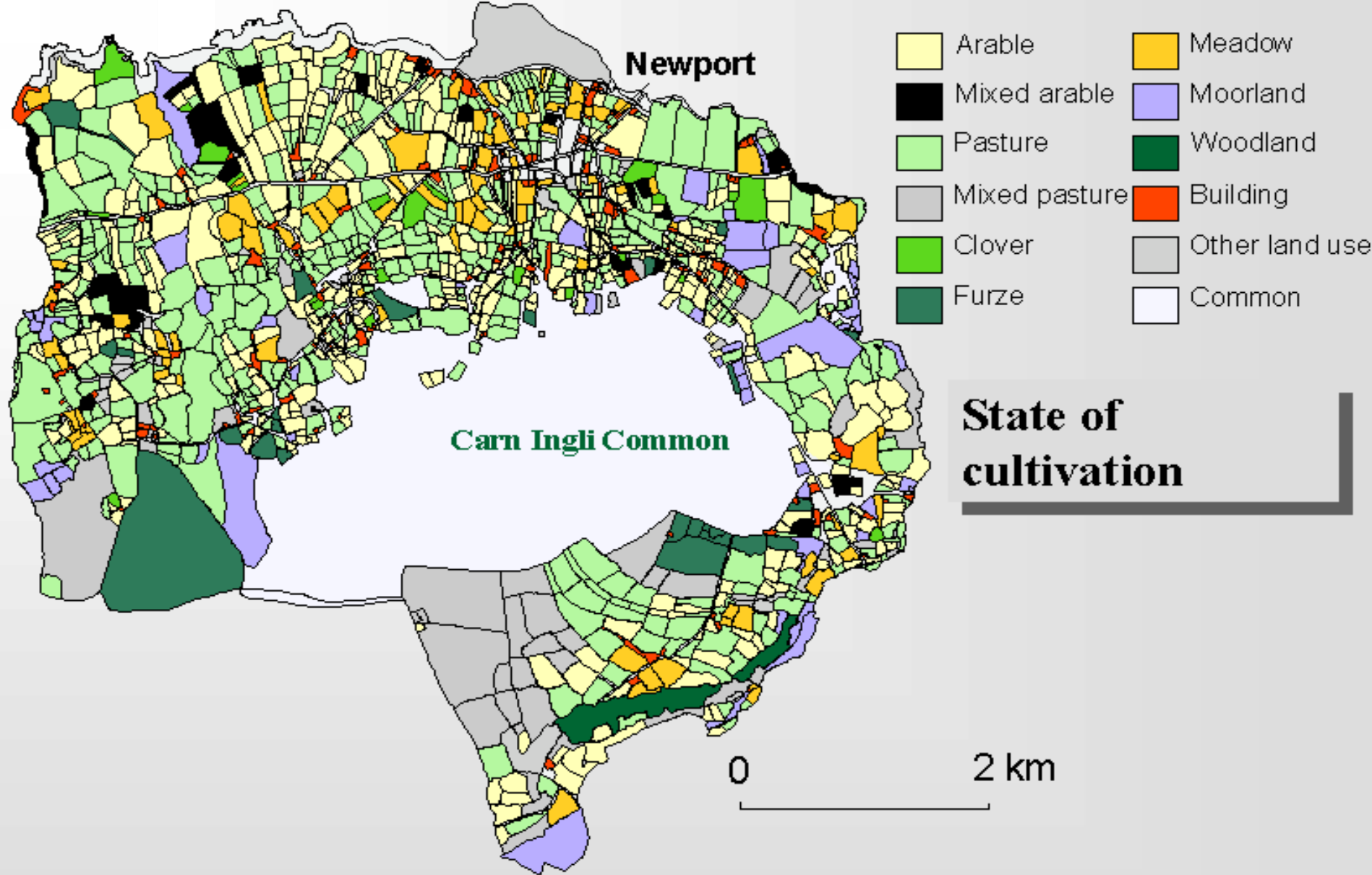
- ★ Bronze Age & Roman times
- ★ Increase in planting 19th century
- ★ History of field patterns
- ★ Changes of land-use



Important Hedgerows

- ★ Marks a pre-1850 parish
- ★ Township boundary
- ★ Includes at least 7 woody species in 30m
- ★ Associated with:
 - Archaeological site
 - Ditch
 - Bank or wall





Tithe Map of Newport, 1845

(Pearson & Collier, 2001)

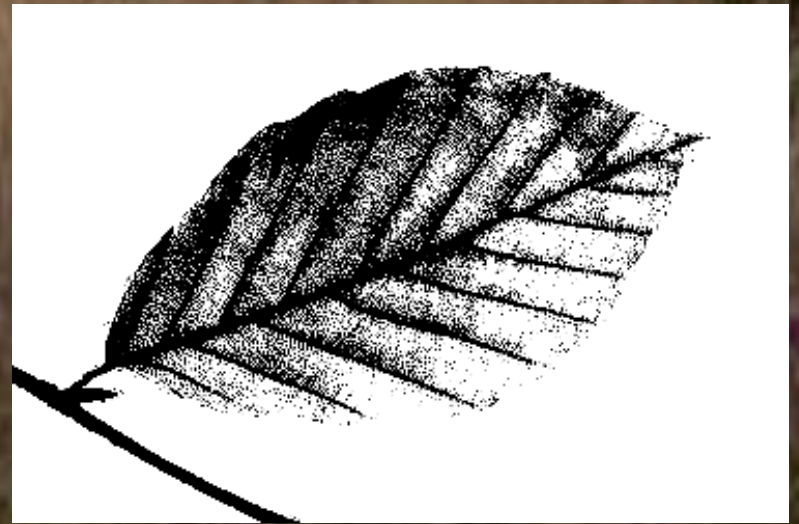
Hedgerow Management

- ★ Livestock enclosure
- ★ Define boundaries
- ★ Rare in Europe
- ★ Agricultural mechanisation – demise



Hedgerow Management

- ★ 1997 legal protection-
Hedgerow Regulations
- ★ Planting under the
Countryside Stewardship Scheme
- ★ Management of
existing hedges



Hedgerow Regulations 1997

- ★ **Illegal to remove without permission**
- ★ **Prohibition orders within 6 wks**
- ★ **Local planning authority**
- ★ **Unlimited fine & replacement**

Biodiversity

- ★ Estimated 0.5 million km in England and Wales – 42% ($\approx 154,000$ km) are ancient or species rich
- ★ Since 1984 – 25% loss in Wales
- ★ Neglect and removal



(Carmarthenshire Council, 2007)

Loss of Hedgerows

- ✱ Neglect – no cutting or laying
- ✱ Loss of hedgerow trees
- ✱ Use of herbicides, fertilisers and pesticides
- ✱ Increased stocking rate
- ✱ Careless encouragement



(Museum of Wales, 2004)

BENEFITS

- ★ Habitat in itself
- ★ Wildlife corridor
- ★ Aesthetics
- ★ Wind break



(English Heritage, 2003)

Managing Hedgerows for wildlife

- ★ **Variation**
- ★ **Management – trimming/cutting**
- ★ **Seasonality**
- ★ **Hedge junctions**
- ★ **Gap up**
- ★ **Agri-environmental schemes : 1st Mar – 31st July**
- ★ **Fence livestock**
- ★ **Grass buffer strips – Agri-environmental grants**
- ★ **Avoid fertiliser drift**
- ★ **Avoid close cultivating**

Improve Hedge Biodiversity

- ★ Thicker
- ★ Trees
- ★ Large variety
- ★ Wide separation
- ★ Understorey
- ★ Artificial habitats

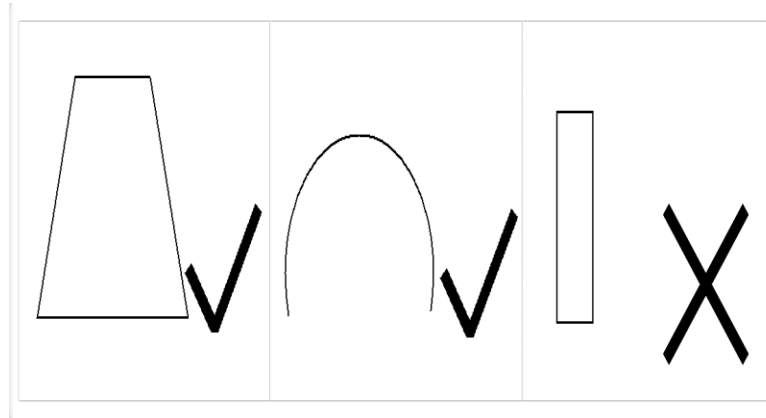


(JNCC, 2000)



Species Variation

- ★ Structure attracts different species
- ★ Thick down to the base – blackbirds, robins and wrens
- ★ Tall trees – owls and sparrowhawks
- ★ Grassy areas and brambles – small mammals – barn owls



(JNCC, 2000)



•Grass Buffer

•Effects of flailing



Long-term Management

★ Hedge Laying

- Traditional
- Neat, stock-proof barriers
- Method dependent on stock and climate
- Pleachers
- Angled
- 15-20 years





Stanley Anderson





Long-term Management

★ Coppicing

- Cut to ground level
- Regrowth from base
- Angled
- Willow, hazel, alder and hawthorn



Carmarthenshire

- ★ One of the most complex networks in Wales
- ★ Wildlife rich
- ★ LBAP – Hedgerow Action Plan
- ★ Planted on a bank
- ★ Wych elm *Ulnus glabra* – white hairstreak butterfly *Satyrrium alba*



(Follett, 2005)



Elm *Ulnus procera* and Laburnham *Labernum anagyroides*



(Fenwick, 2004)



(Fenwick, 2004; Mitchell, 2004)

Carmarthenshire Hedgerow trees and shrubs

(Baker, 2004; Fenwick, 2004; Stables, 2004)



Gower Hedgerows

- ★ Max Hooper – species diversity of a hedge related to its age and the manner in which it was created (Pollard *et al.*, 1974)
- ★ While older hedges tend to be more species rich, the converse is not necessarily true!



(Fenwick, 2004)



Hedge Management in Gower

- ★ Planting and repairs
- ★ Hazel *Corylus avellana*
- ★ Gorse *Ulex europaeus*
- ★ Holly *Ilex aquifolium*
- ★ Assart vs enclosure



(Crellin, 2004; Fenwick, 2004)



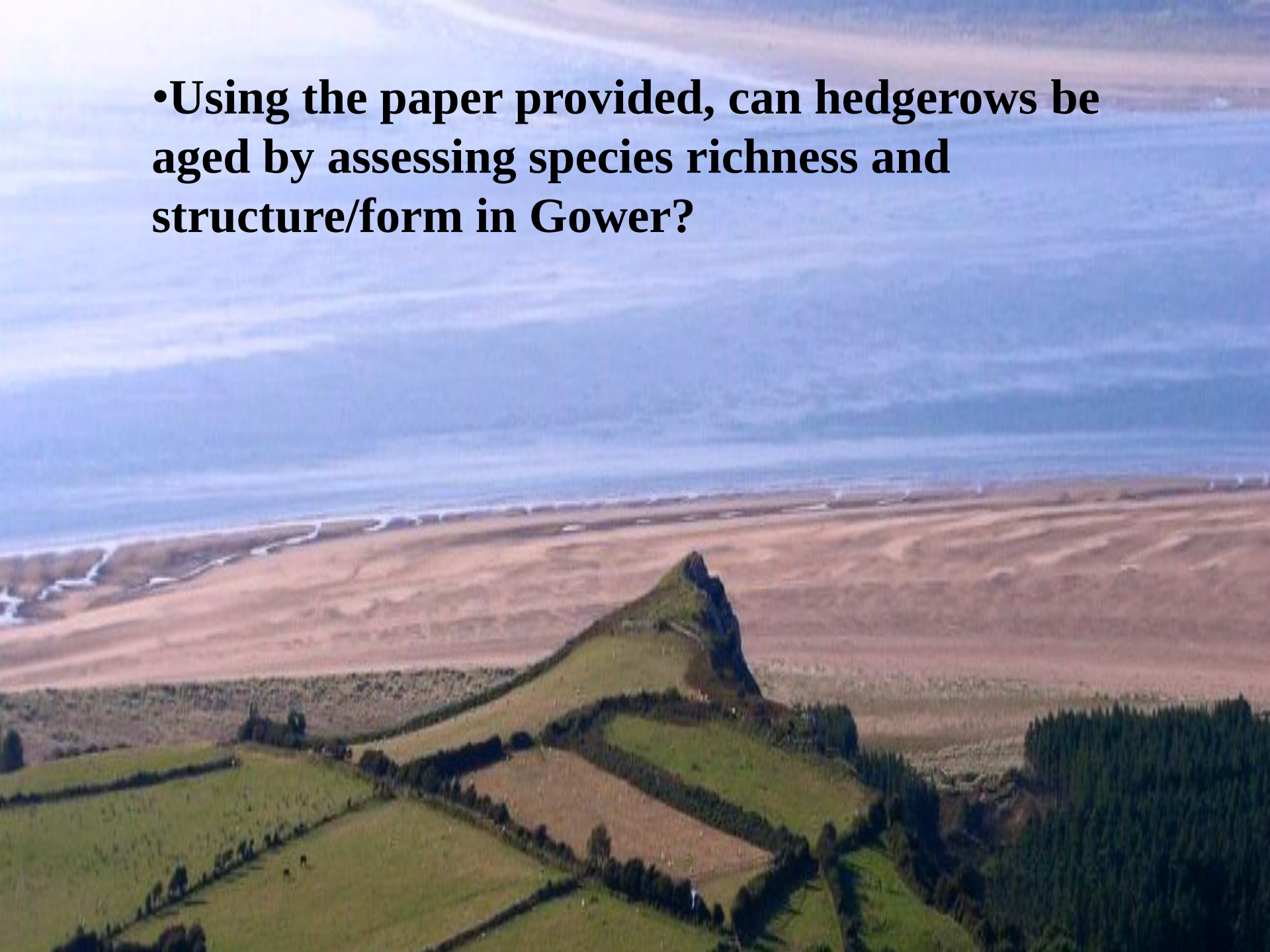
Assart Hedges in Gower



(Davidson ,2003; Fenwick, 2004; Calow, 2007)



•Using the paper provided, can hedgerows be aged by assessing species richness and structure/form in Gower?



Gower Hedgerows

- ★ Recent hedgerows – Elder *Sambucus nigra* and Dog-rose *Rosa canina*
- ★ Species richness in lane hedges – origins in woodland
- ★ Diversity affected by vehicles



(Fenwick, 2004)



Gower Hedgerows

- ★ Slow colonisers
such as Dogwood
Cornus sanguinea
- ★ More prevalent
along lanes
- ★ Roadside hedges –
anomalous results
when Hooper's
Rule is applied



(Mitchell, 2001)



Gower banks and ditches

- ★ Areas of steep gradient – opportunistic species
- ★ More diversity if accompanied by ditch
- ★ Age?

(Jones, 2006)



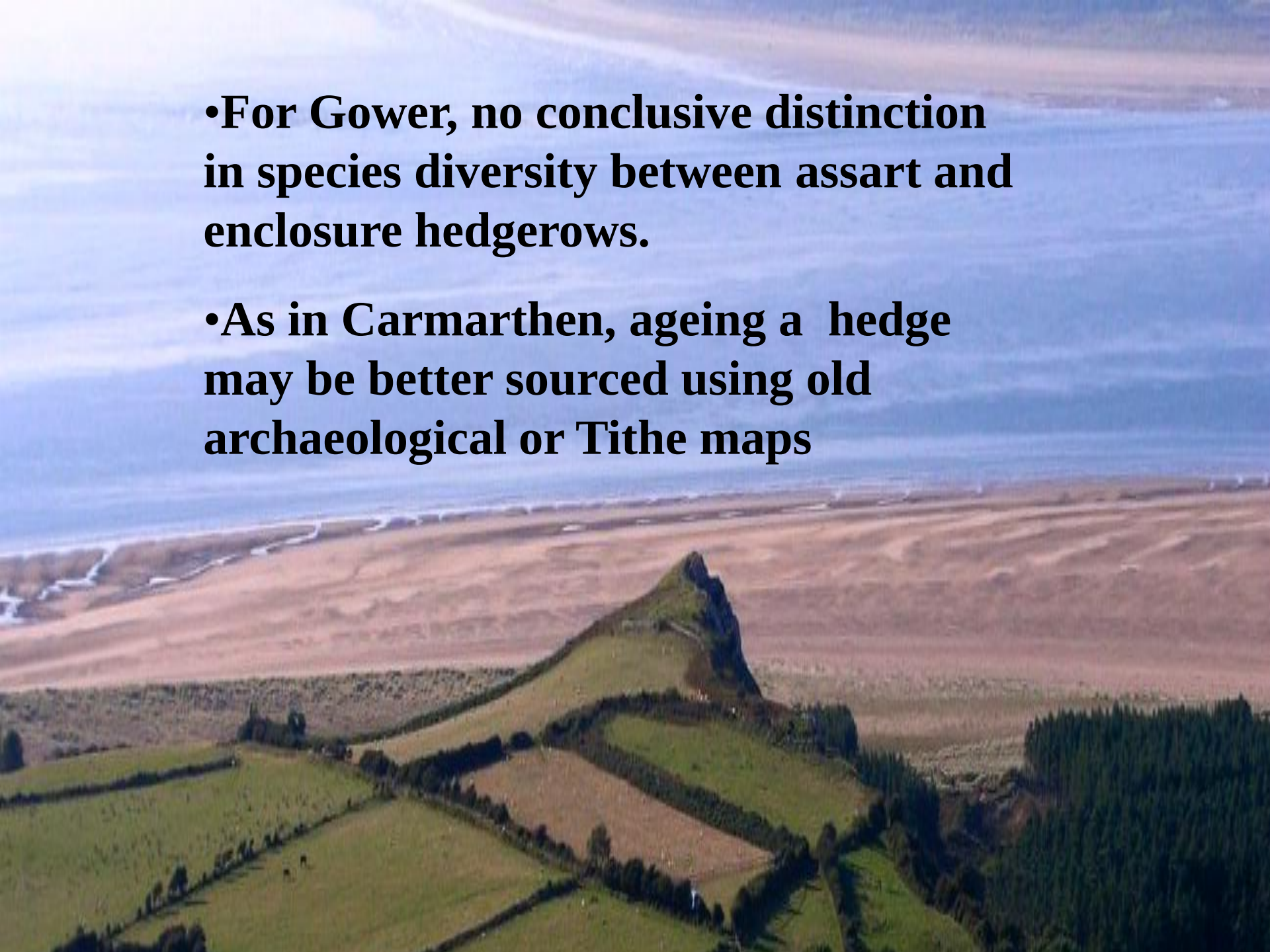
“Under favourable conditions, the analysis of species diversity can provide supporting data for historical models but it does not offer a ‘fast-track’ solution to chronological problems of landscape change”

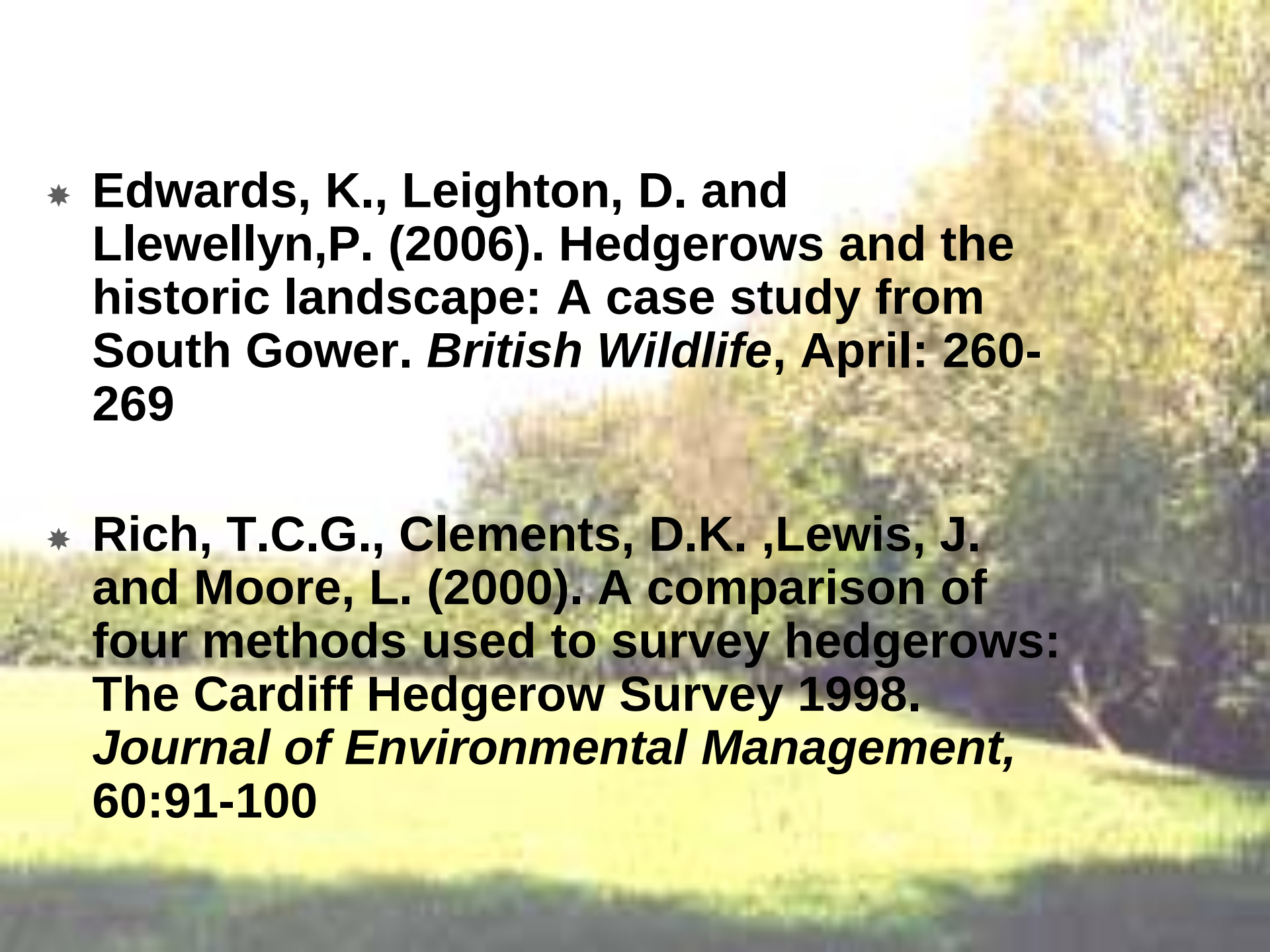
(Edwards et al., 2006:269)



•For Gower, no conclusive distinction in species diversity between assart and enclosure hedgerows.

•As in Carmarthen, ageing a hedge may be better sourced using old archaeological or Tithe maps



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- ★ **Edwards, K., Leighton, D. and Llewellyn, P. (2006). Hedgerows and the historic landscape: A case study from South Gower. *British Wildlife*, April: 260-269**
 - ★ **Rich, T.C.G., Clements, D.K., Lewis, J. and Moore, L. (2000). A comparison of four methods used to survey hedgerows: The Cardiff Hedgerow Survey 1998. *Journal of Environmental Management*, 60:91-100**