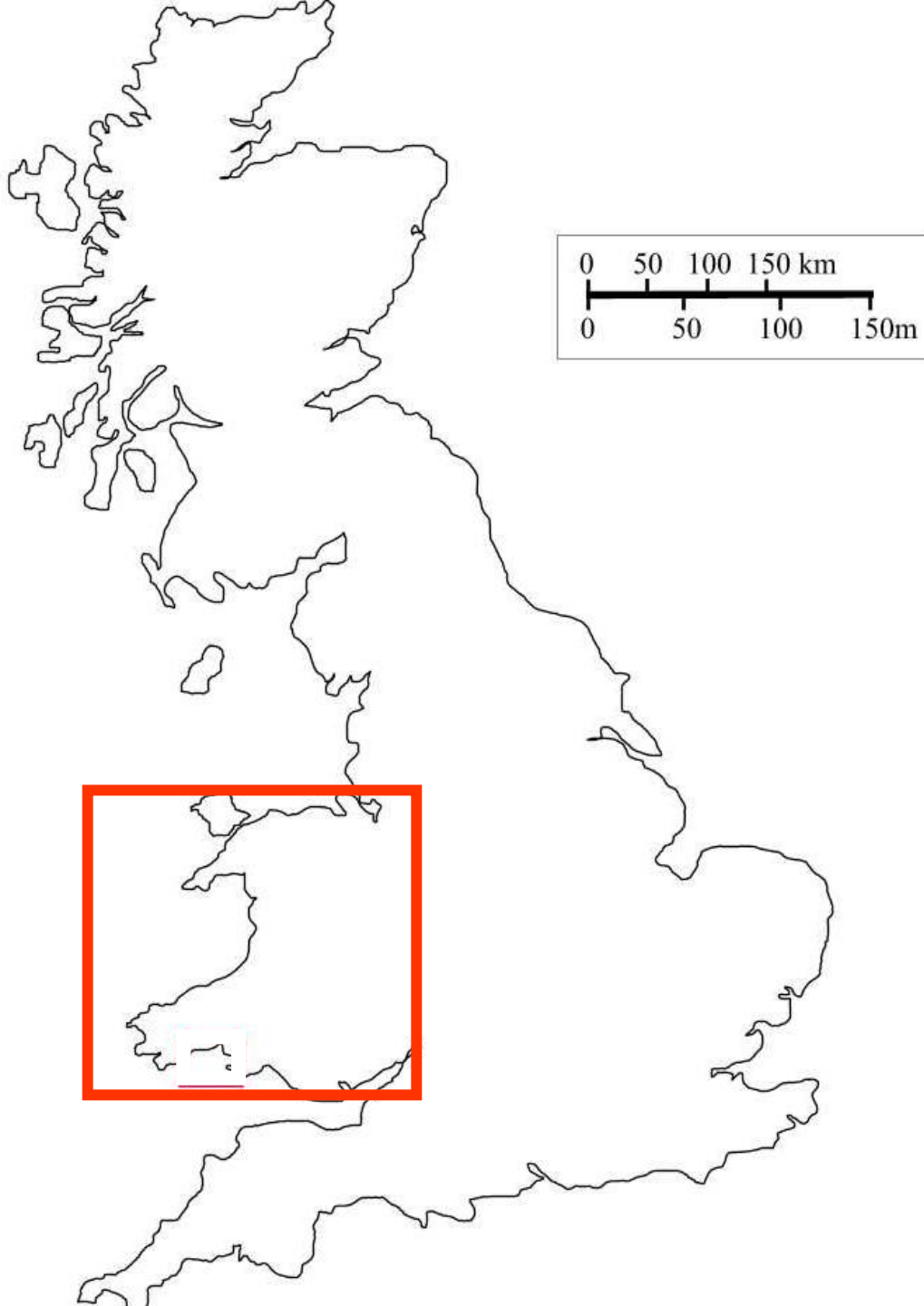


Delivering monitoring in MPAs

Bill Sanderson

Senior Marine Monitoring Ecologist
Arweinydd y Tim Monitro Morol





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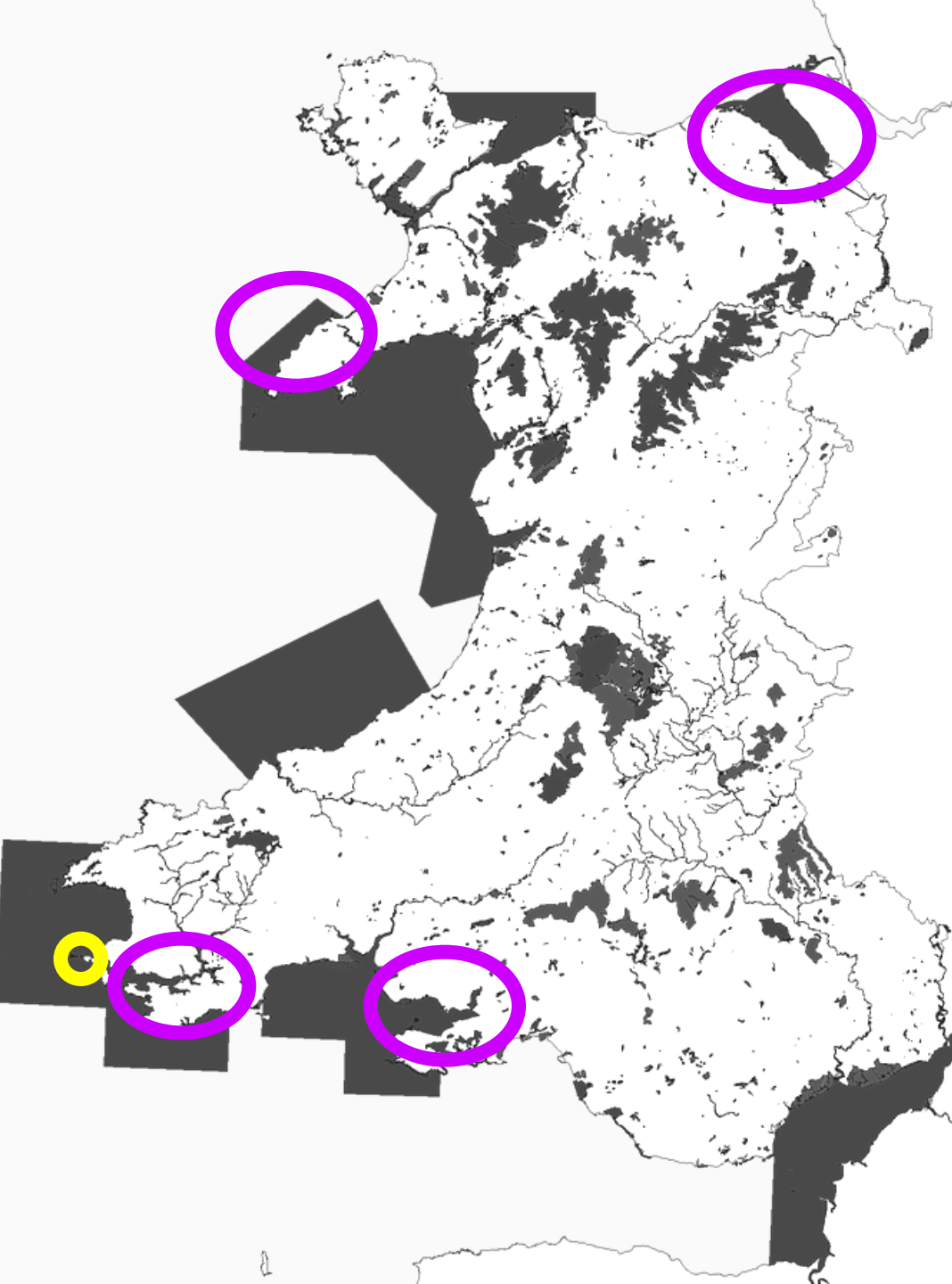
Welsh MPAs

- 8 Special Areas of Conservation
- 1 fully marine SPA (+4)
- > 0.5 million ha
- Pembrokeshire Marine 200k ha
- 1 Marine Nature Reserve



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Establishing good monitoring is the
cornerstone of adaptive management

.....and therefore MPA success



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- Without monitoring:
 - we don't know whether management is working;
 - MPA
 - MPA network
 - Regional Sea
 - Ecosystems
 - National Sea
 - we don't know if important habitats and species are in favourable condition
....or even if they are still there!
 - We are unable to demonstrate benefits



Minister Davidson (Environment)
in Bangor this year

“We believe very strongly in the Welsh Assembly Government in **strengthening our evidence base**, in using science expertise to help us meet the current environmental challenges in the context of sustainable development. “

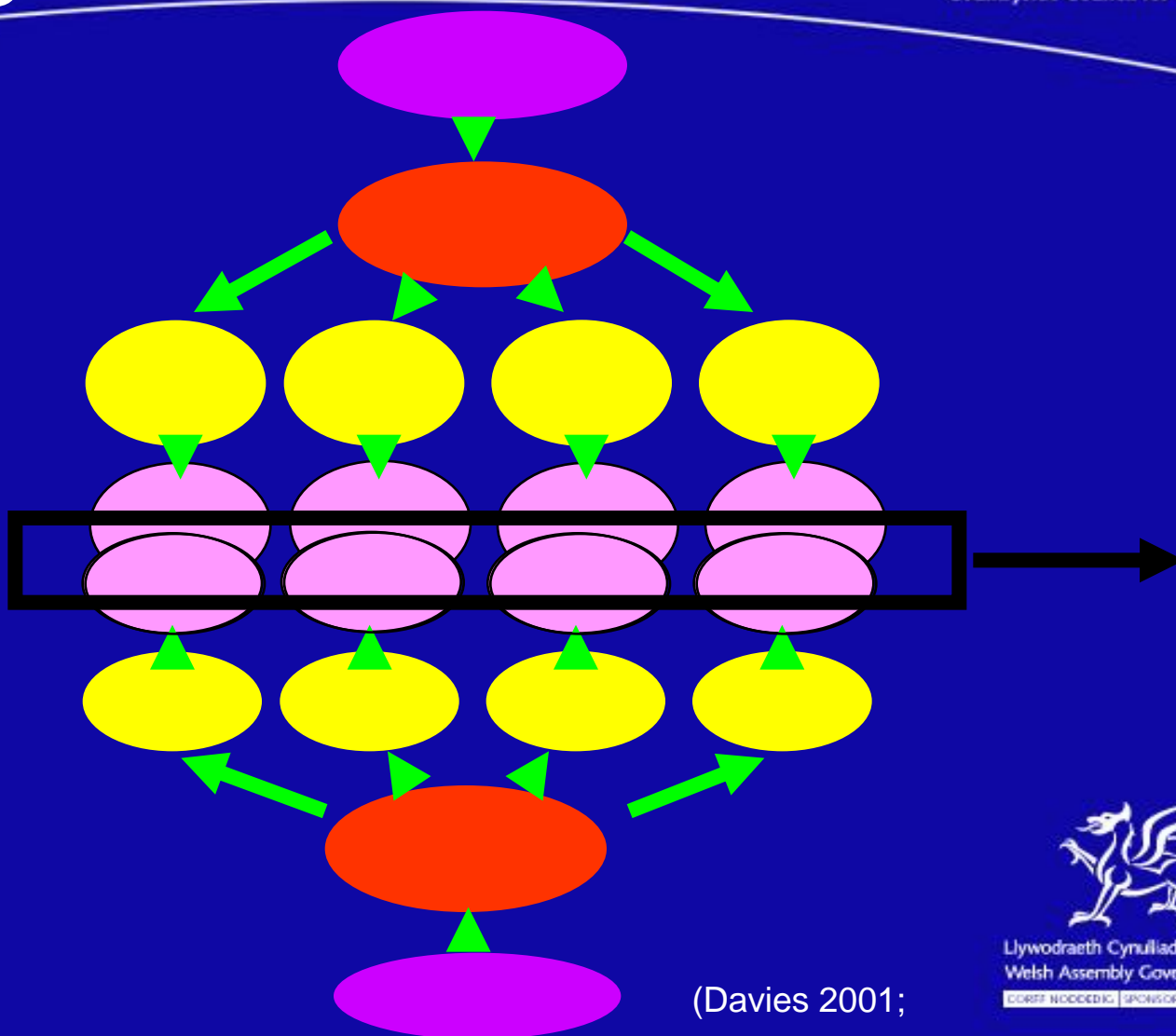


Dolphin (Peter Evans)

“The collection of **long term data sets** is a particularly important part of the provision of **credible and objective evidence** to support the development of management[and]..... key indicators for the various environmental pressures. “

- Relevant
- Credible and objective
- Long-term

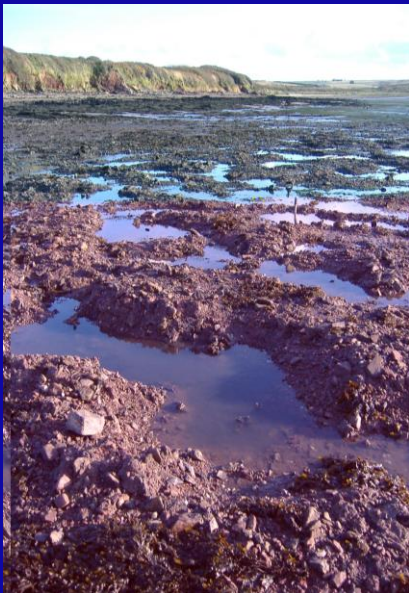
Relevant performance indicators



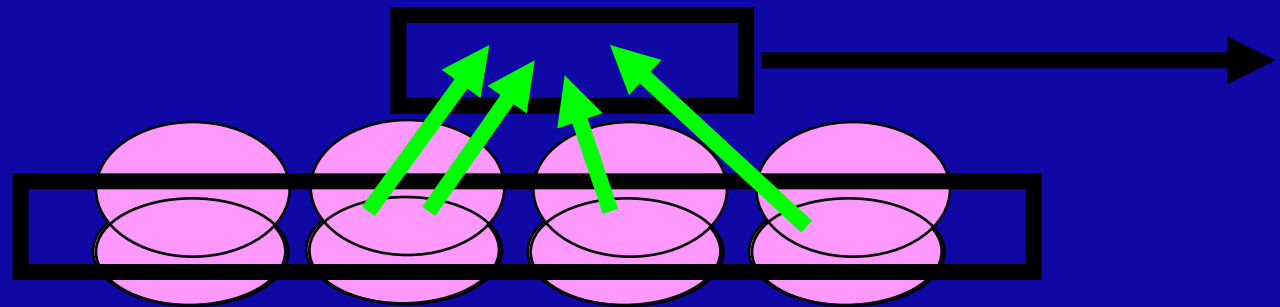
(Davies 2001;
Pomeroy, Parks & Watson 2004)



Threat-based performance indicators



Bait digging – Gann Flats (Aethne Cook)



We can choose the Performance Indicators that tell us most about threats



Sargassum muticum (Monica Jones)



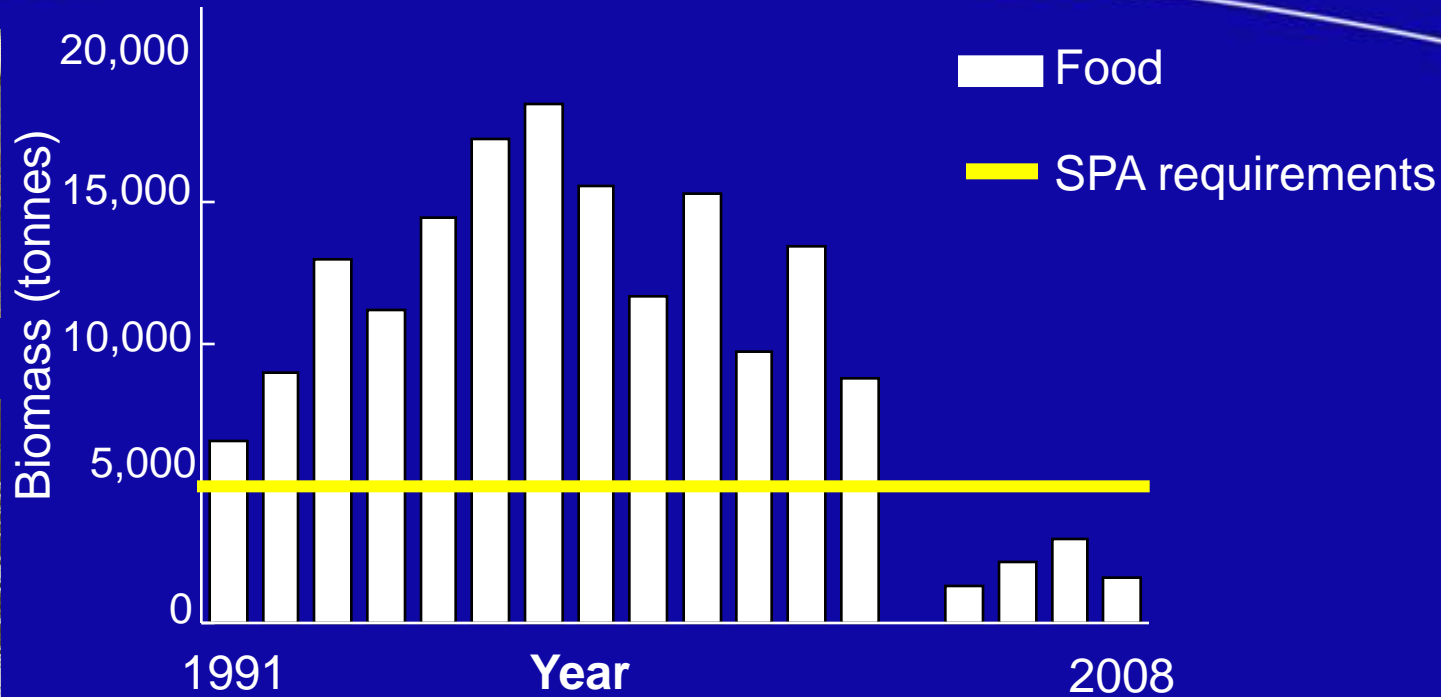
Algal mats – Cosheston Pill (Chris Uttley)



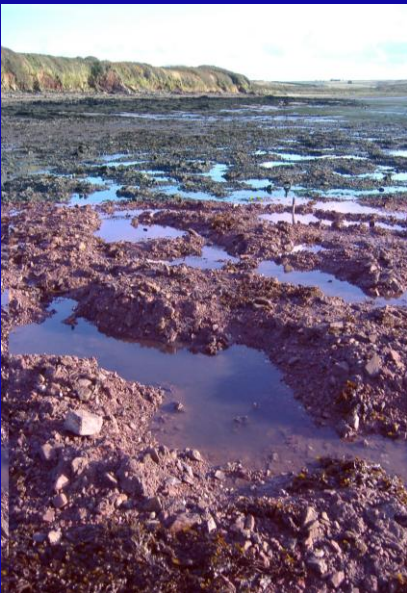
Threat-based performance indicators



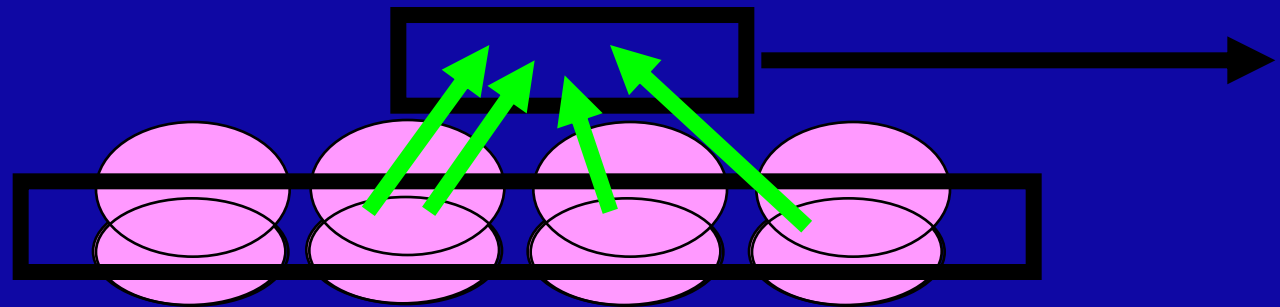
Dead cockles © Andy Woolmer



Threat-based performance indicators



Bait digging – Gann Flats (© Aethne Cook)



- Are threat-based approaches the answer?
- We need insurance against ignorance
 - We don't know all the threats
 - Balance between surveillance and threat monitoring

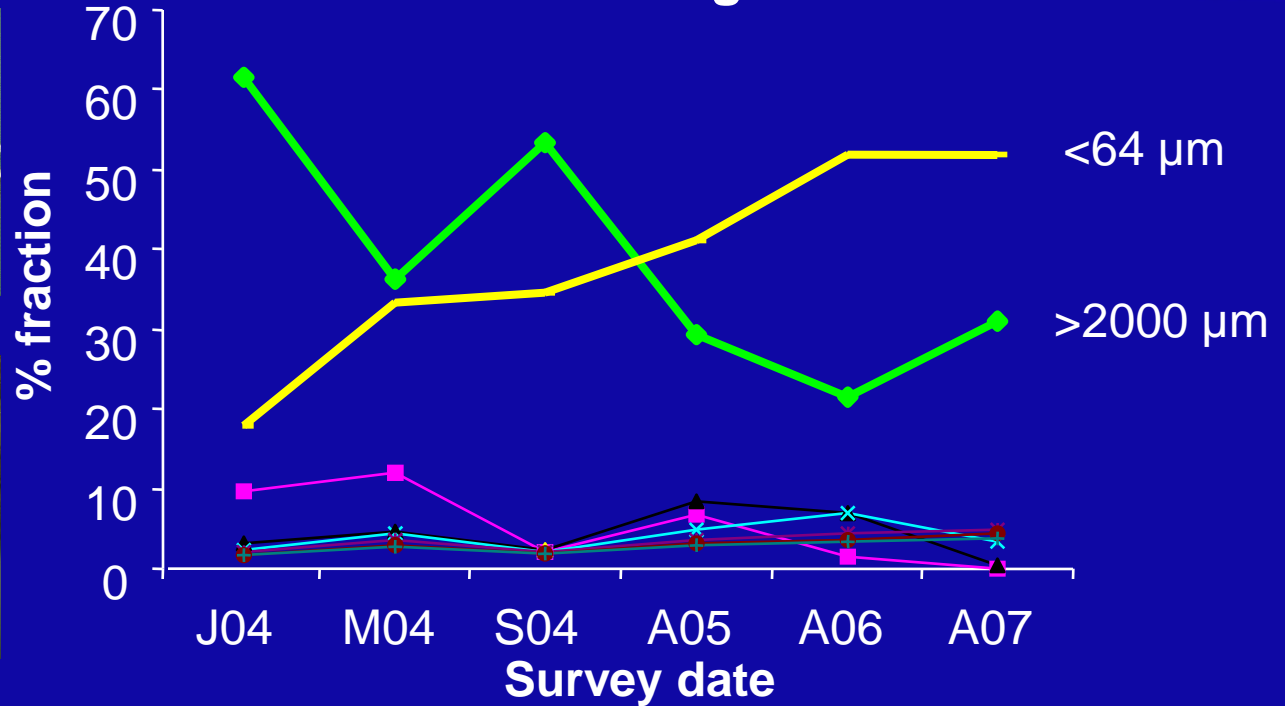


How much do we know?



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Particle size - change with time



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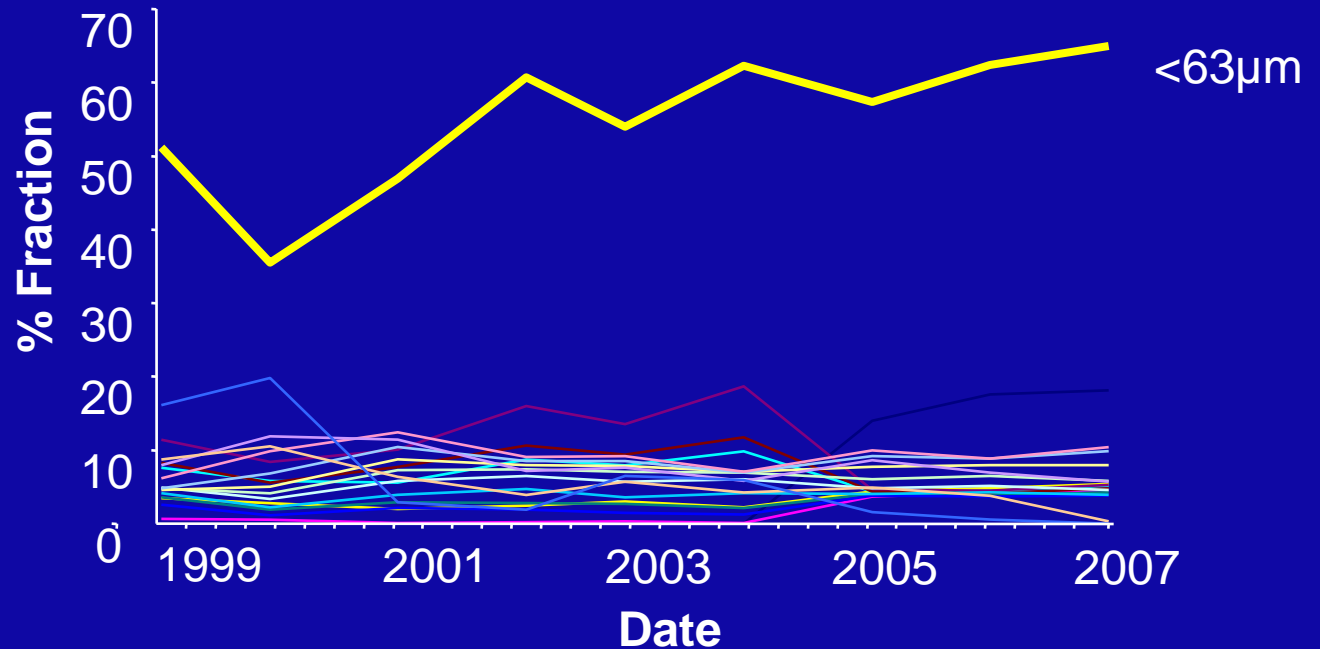
(M. Camplin unpublished)

How much do we know?



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- CSEMP



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(Camplin unpublished)

How much do we know?

Scientific knowledge

- Primary literature focus on novelty
- Describing inherent temporal variability is dull
- Accessible habitats
- Impacts in stable habitats (change detection)
- Long-term studies are rare

Familiarity

- As well as scientific knowledge we also lack familiarity
- We don't walk dog fish

- We don't know what 'normal' looks like for a lot of habitats and species?



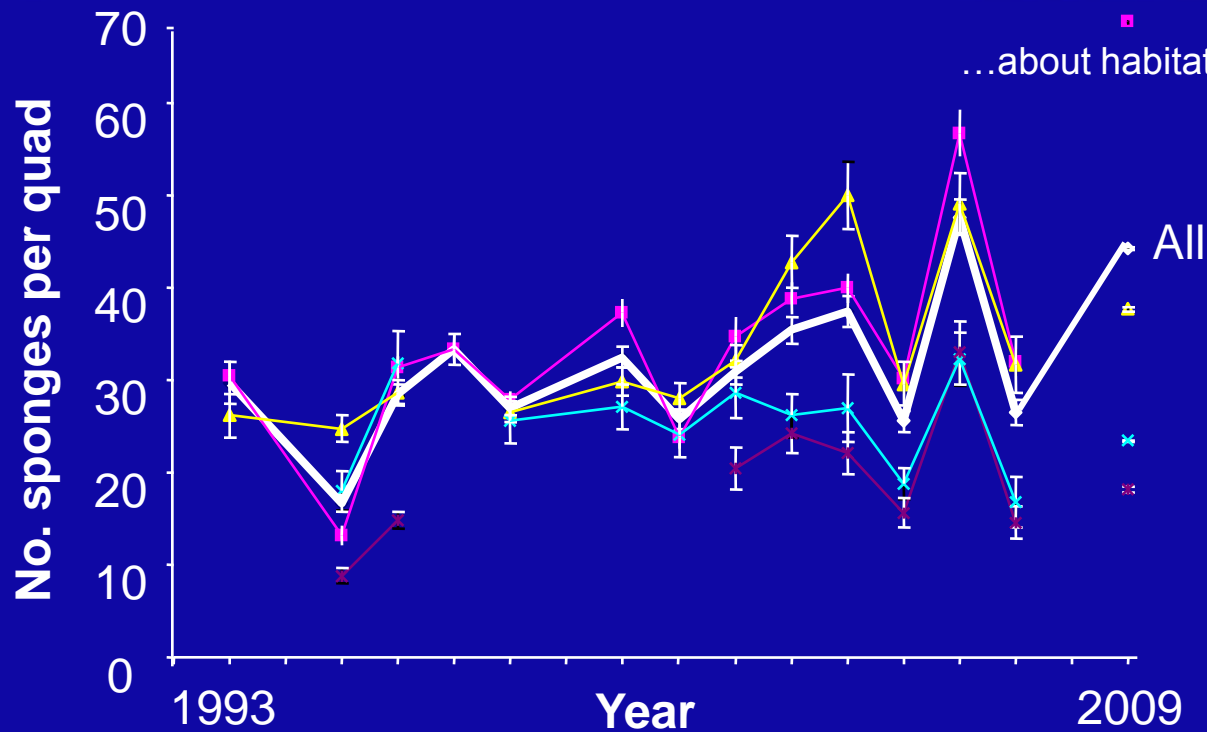
Heather fields at Freshfield
(© Laurence Scales, www.allertonoak.com)



How much do we know?



Sponges (© Mark Burton)



Credible and objective



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Scoter (Banks)



Unless monitoring is conducted with an appropriate scientific standard:

- little credibility in assertions about condition;
- our ability to affect management by partners is compromised

~£17m on monitoring fish stocks but ~£1m pa on biodiversity (UKMMAS)

In Wales

- we have £1 for every 1.4ha of SAC
 - One person for every 86,103ha
- So.....we are resource constrained



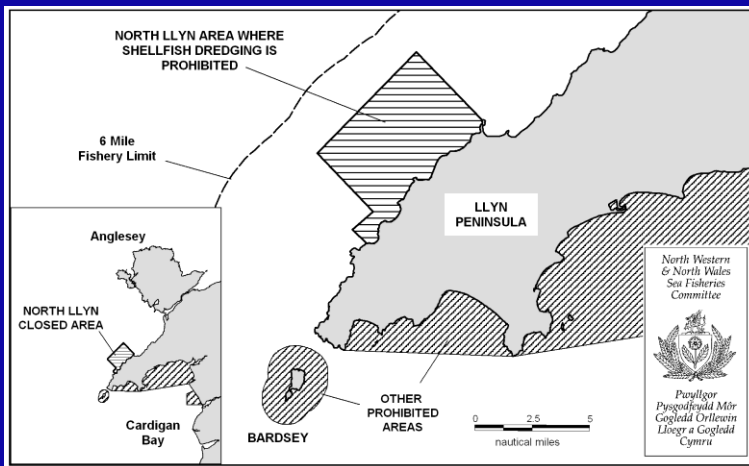
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Evidence vs proof



We shouldn't always expect proof to the standard of a theoretical ecologist

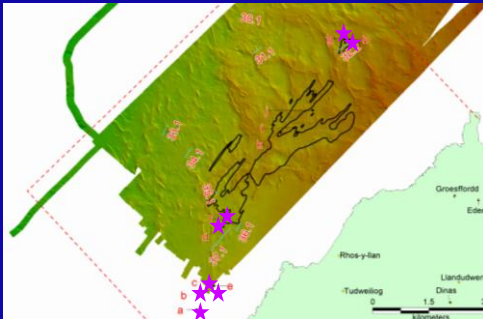
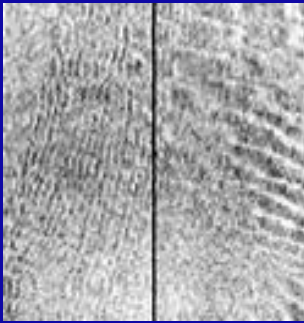
- Routine monitoring of horse mussel reef
- Vulnerable
- Side scan sonar



Evidence vs proof

Evidence:

- Side scan sonar
- Vessel sightings
- Images



- Sea Fisheries Committee investigated
- Boarded vessel fishing in protected area
- Prosecuted



Long-term

- Resources
 - Covered..... but large /multiuse sites are difficult
- Rate of change in drivers
 - New directives, objectives, initiatives
- Institutional change
 - Monitoring has to compete with shorter-term priorities
 - Organisations merging and move – data loss





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Needs to be:

- Relevant –
 - representative
 - partly threat-based
 - balanced to insure against ignorance
- Credible and objective –
 - good science and
 - appropriate cost effective evidence
- Sustained
 - Monitoring is not just for Christmas.....