Analysis of a ‘Citizen Science’ database …

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Background

‘Citizen Science’

- The term entered the Oxford English Dictionary in 2014 ...

citizen science *n.* scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions.

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  - a new term ... an established practice ...

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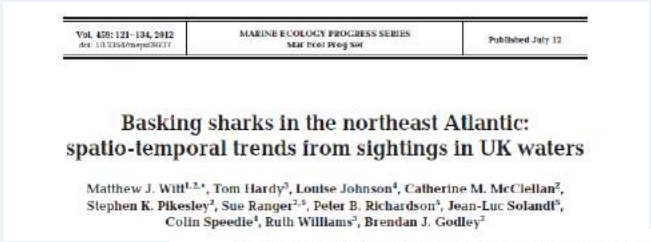
‘Citizen Science’

- The term entered the Oxford English Dictionary in 2014 ...
  - a new term ... an established practice ...
  - analysis at UoE ...
  - long-term citizen science datasets



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Basking sharks in the northeast Atlantic: spatio-temporal trends from sightings in UK waters

Matthew J. Witt[1,2,*], Tom Hardy[3], Louise Johnson[4], Catherine M. McClellan[2], Stephen K. Pikesley[2], Sue Ranger[2,5], Peter B. Richardson[5], Jean-Luc Solandt[5], Colin Speedie[4], Ruth Williams[3], Brendan J. Godley[2]

Journal of the Marine Biological Association of the United Kingdom, 2012, 92(8), 1809–1820. © Marine Biological Association of the United Kingdom, 2011

Cetacean sightings and strandings: evidence for spatial and temporal trends?

STEPHEN K. PIKESLEY[1], MATHEW J. WITT[1], TOM HARDY[2], JAN LOVERIDGE[2], JEFF LOVERIDGE[2], RUTH WILLIAMS[2] AND BRENDAN J. GODLEY[1]

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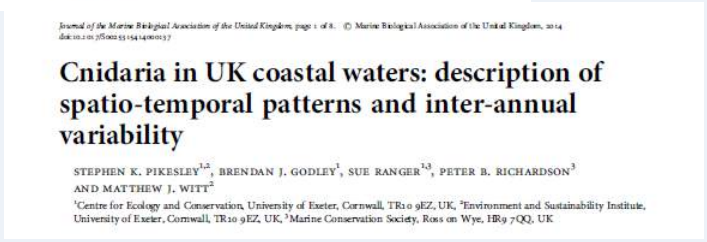

Journal of the Marine Biological Association of the United Kingdom, page 1 of 8. © Marine Biological Association of the United Kingdom, 2014

Cnidaria in UK coastal waters: description of spatio-temporal patterns and inter-annual variability

STEPHEN K. PIKESLEY[1,2], BRENDAN J. GODLEY[1], SUE RANGER[1,3], PETER B. RICHARDSON[3] AND MATTHEW J. WITT[2]

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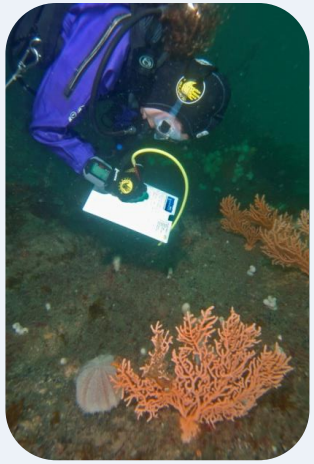
Background

‘Citizen Science’: present analysis

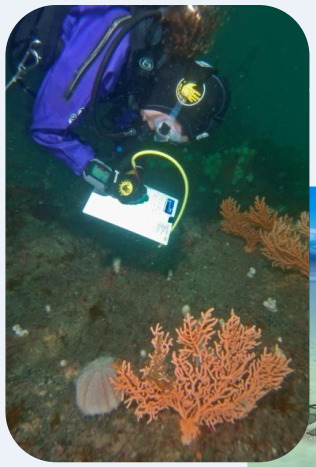
- A collaborative project
- Seasearch dive data
  - volunteer SCUBA survey program
  - 2001 – 2012

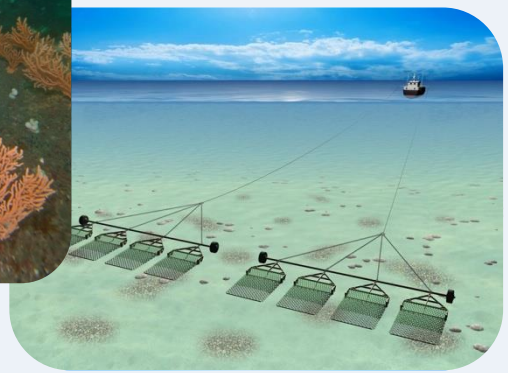


Background

‘Citizen Science’: present analysis

- A collaborative project
- Seasearch dive data
- Pink sea fans
  - slow growing, cold-water coral
  - nationally protected
  - representative of reef features
  - susceptible to physical impact
  - vulnerable to bottom-towed fishing gear (BTG)

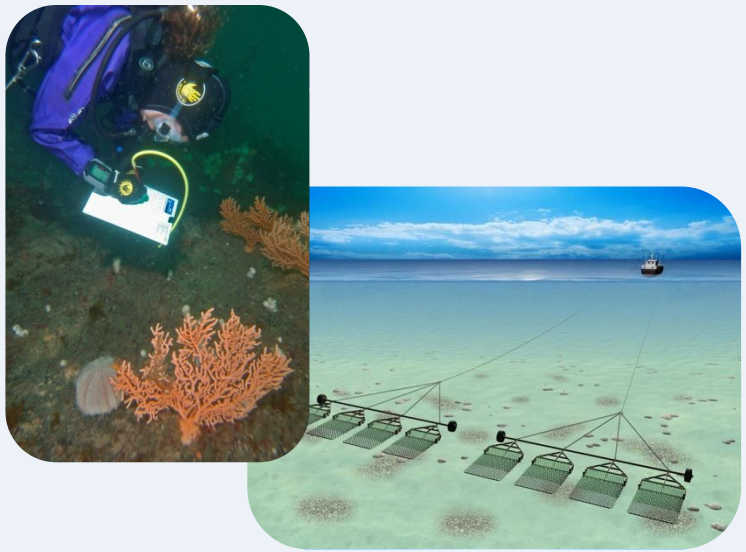




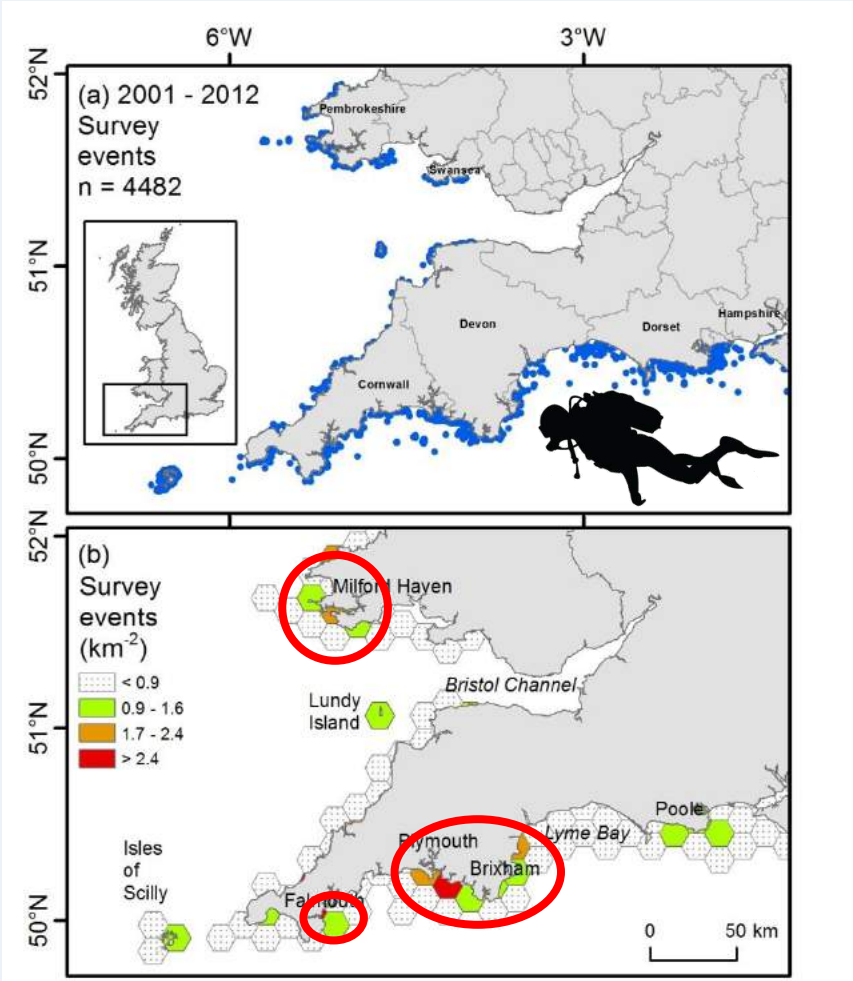
Background

‘Citizen Science’: present analysis

- A collaborative project
- Seasearch dive data
- Pink sea fans
- Investigate ...
  - distribution/abundance
  - threat from BTG
  - protection for PSF in southwest waters



Divers & PSF Distribution



(b) Dive density map: survey events summed by 200 km^2 hex grid, corrected for sea area

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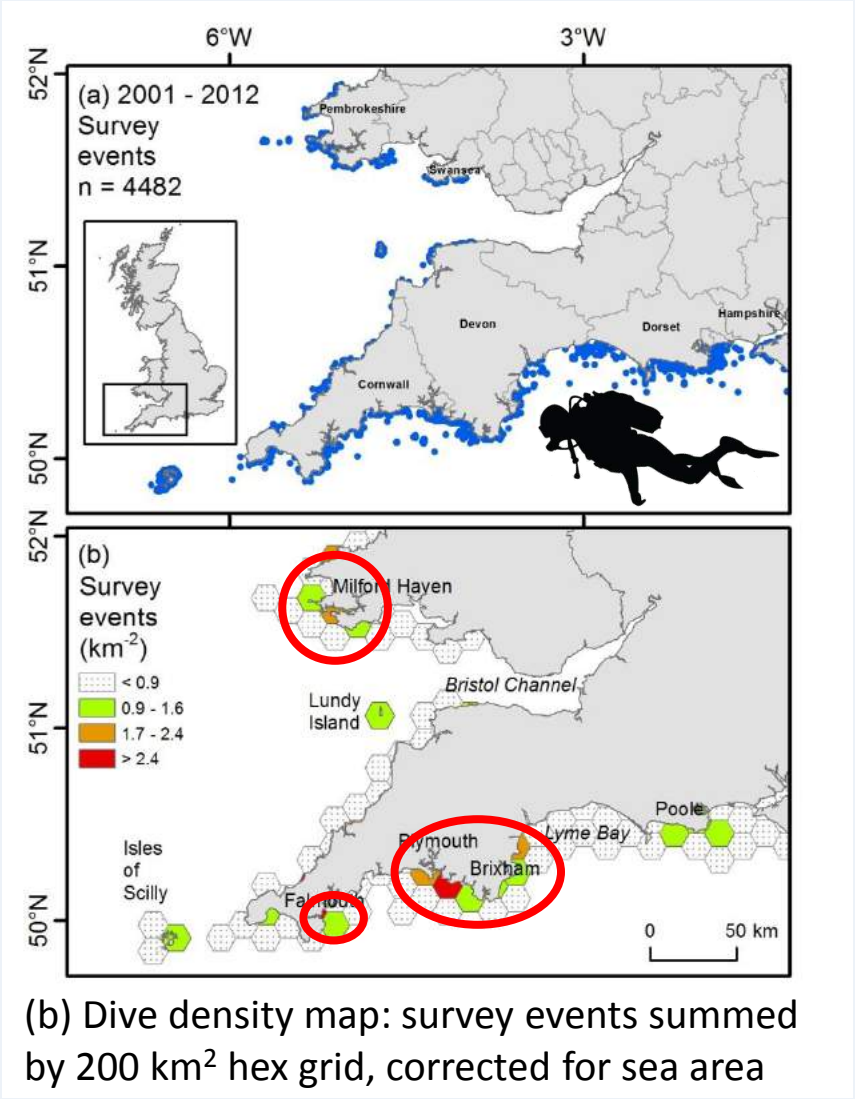
Divers & PSF Distribution



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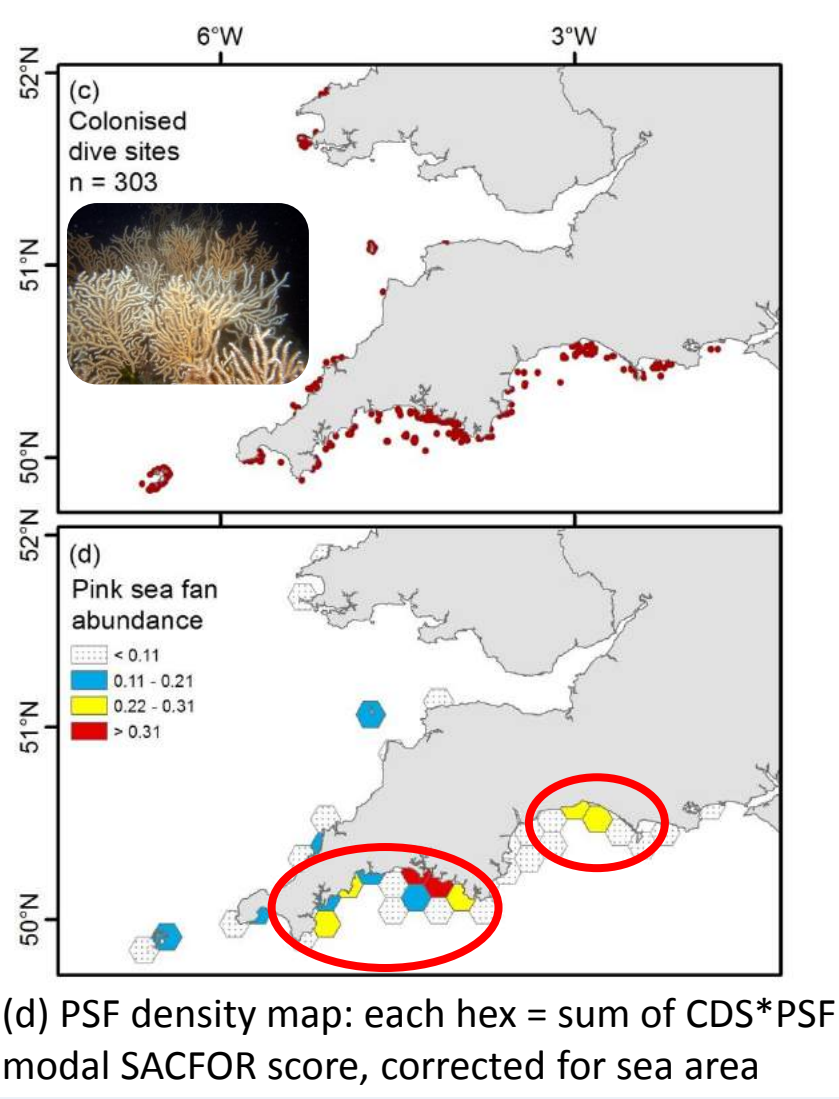

(d) PSF density map: each hex = sum of CDS*PSF modal SACFOR score, corrected for sea area

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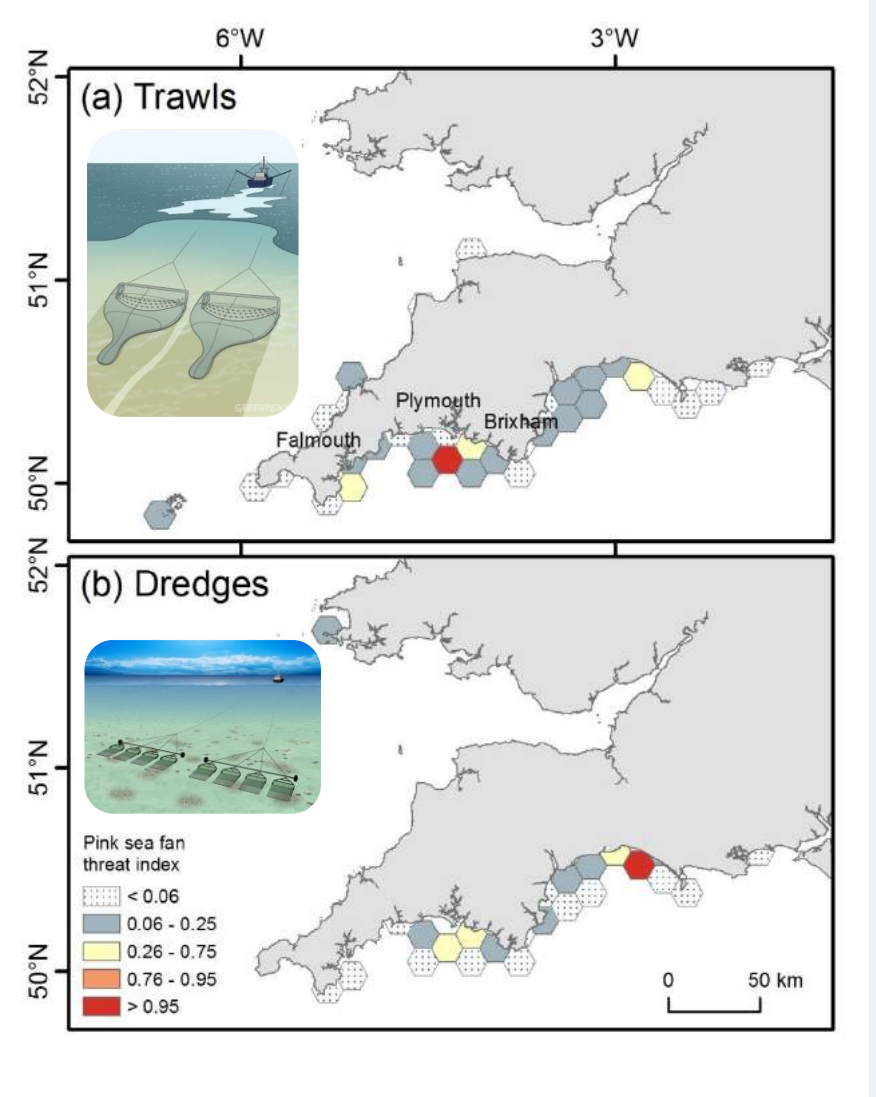
Threat

Historic sightings data for fishing activity UK inshore fleet 2007-2009
(Breen et al. 2015)

↓

Calculated PSF vs. fisheries threat index



Threat

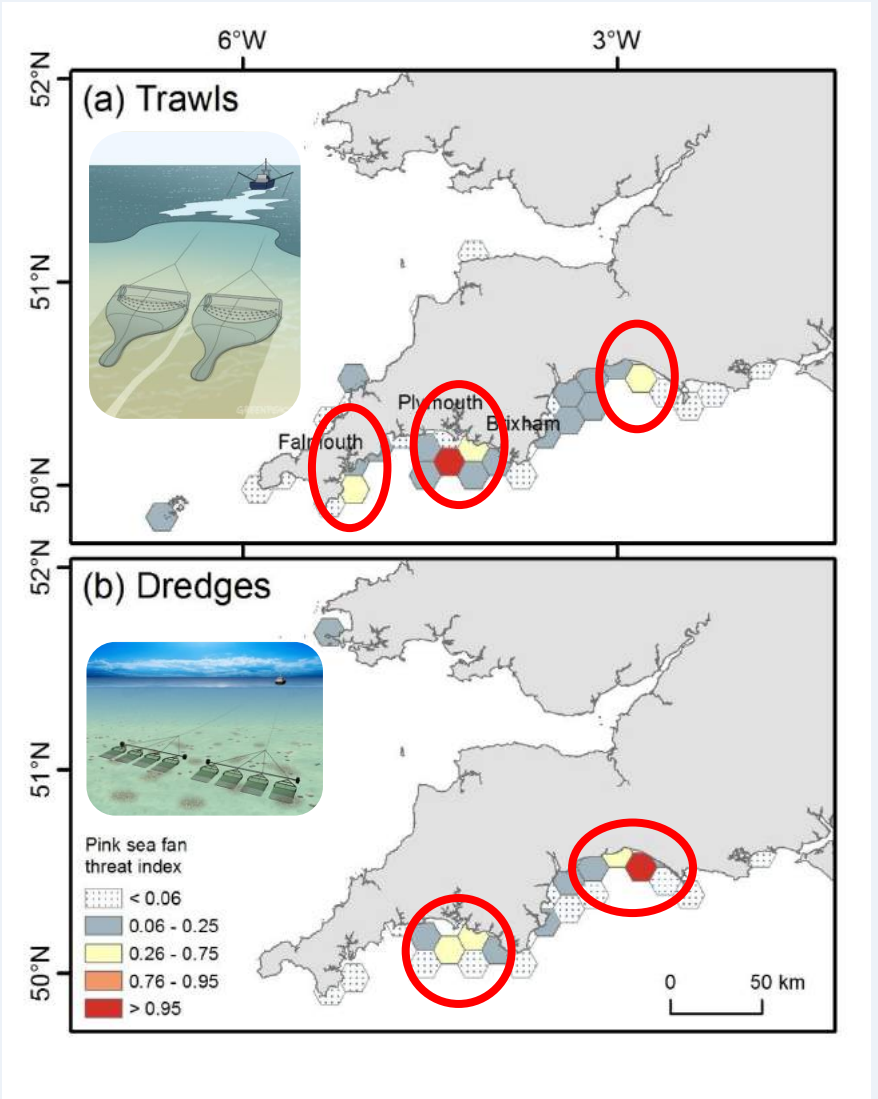
Historic sightings data for fishing activity UK inshore fleet 2007-2009 (Breen et al. 2015)

↓

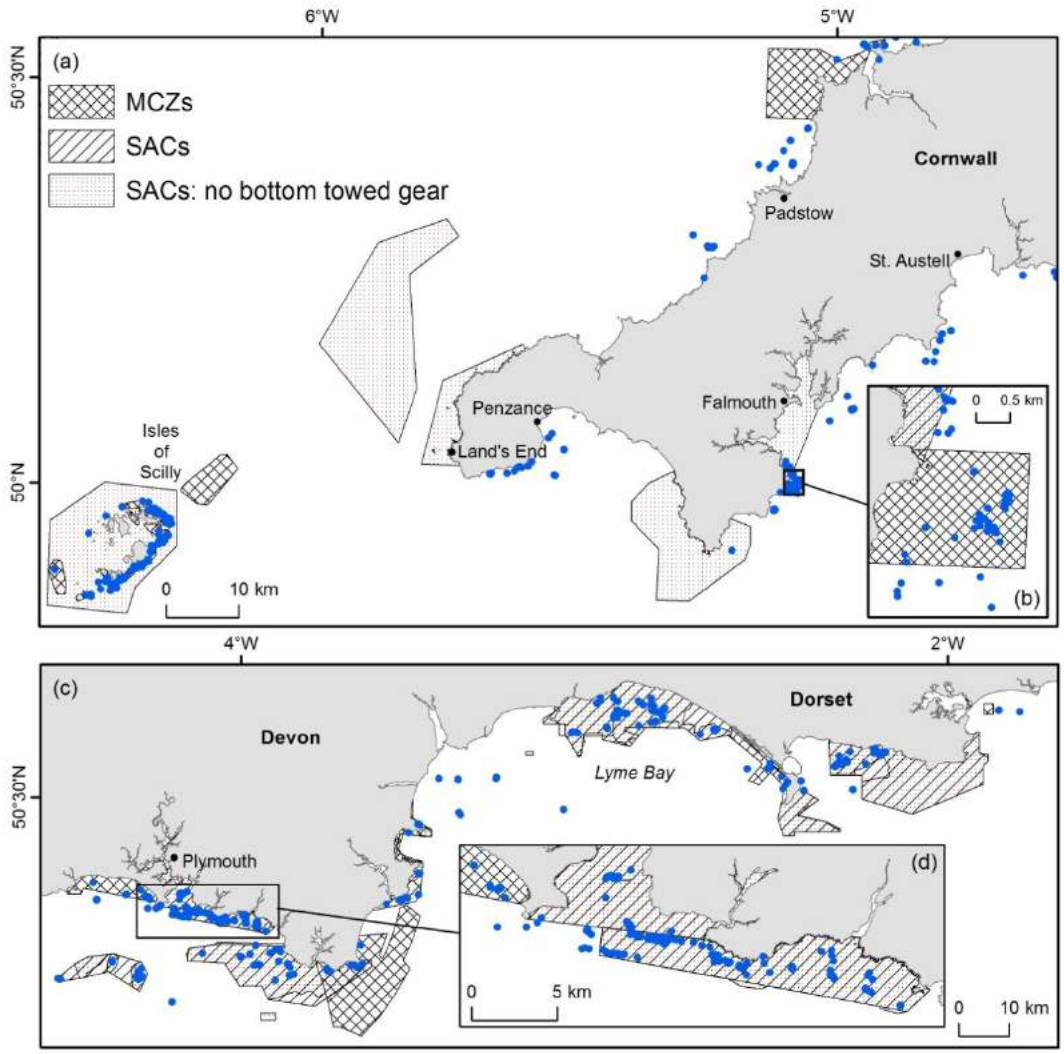
Calculated PSF vs. fisheries threat index

Moderate/high threat

- Trawls
  - Falmouth Bay (The Manacles)
  - Plymouth (inc. Eddystone Reef)
  - Lyme Bay
- Dredges
  - Plymouth
  - Lyme bay



Protection



- 60% of PSF colonies occurred within MPAs closed to BTG
- 5% within MPAs currently open to BTG
- 35% outside MPAs

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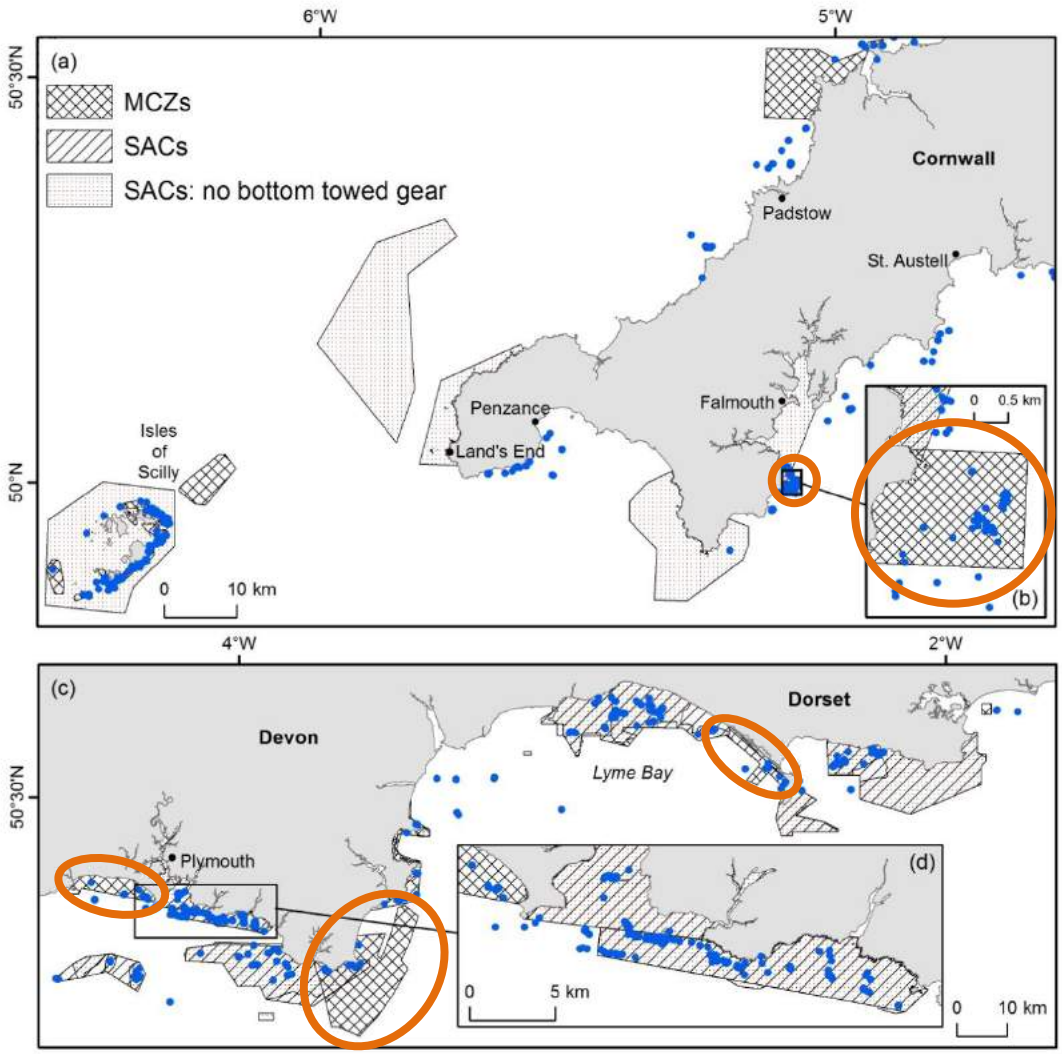
Protection



- 60% of PSF colonies occurred within MPAs closed to BTG
- **5% within MPAs currently open to BTG**
  - **The Manacles**
  - **Whitsand & Looe Bay**
  - **Skerries Bank**
  - **Chesil Beach & Stennis Ledges**

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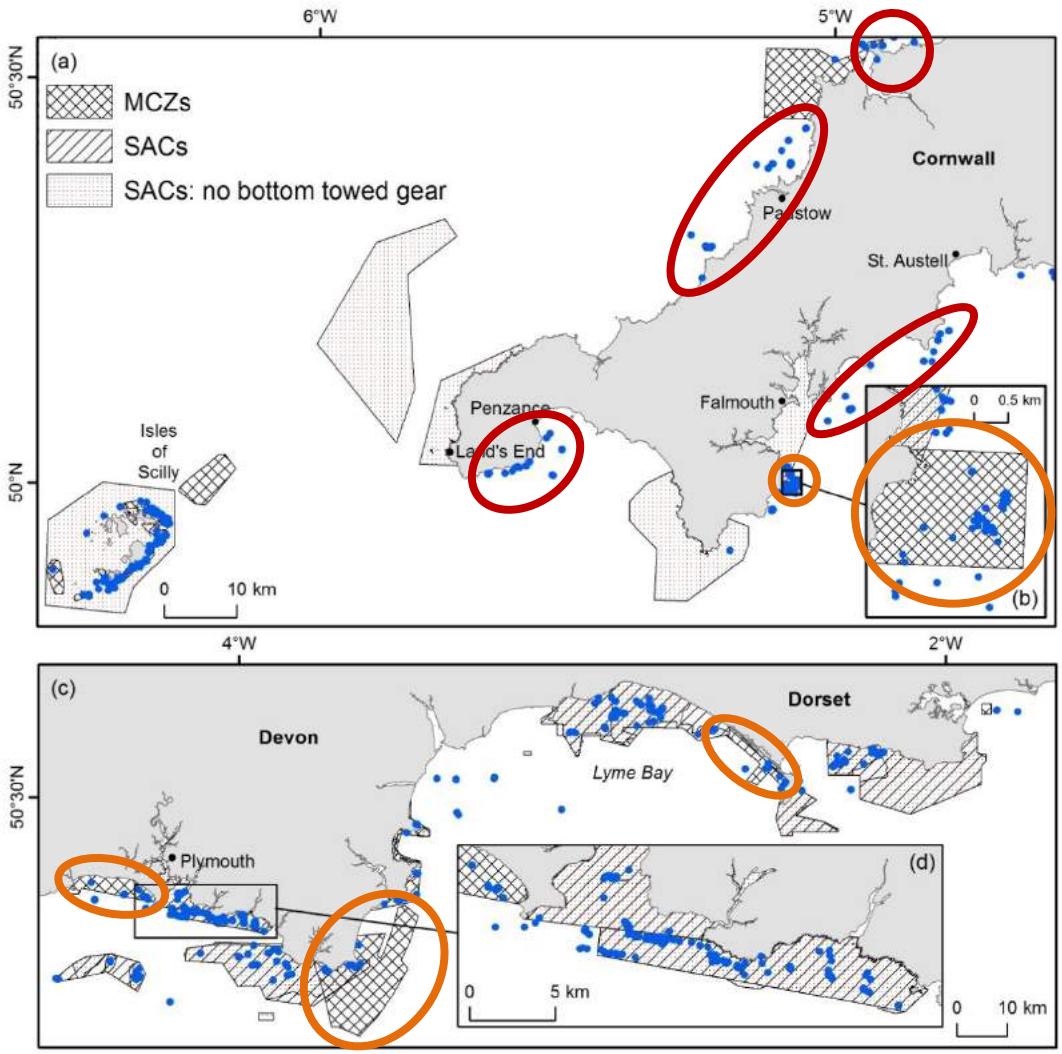

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- **5% within MPAs currently open to BTG**
  - **The Manacles**
  - **Whitsand & Looe Bay**
  - **Skerries Bank**
  - **Chesil Beach & Stennis Ledges**
- **35% outside MPAs**
  - **North & South of Padstow Bay MCZ**
  - **Land's End to Penzance**
  - **Falmouth to St. Austell Bay**

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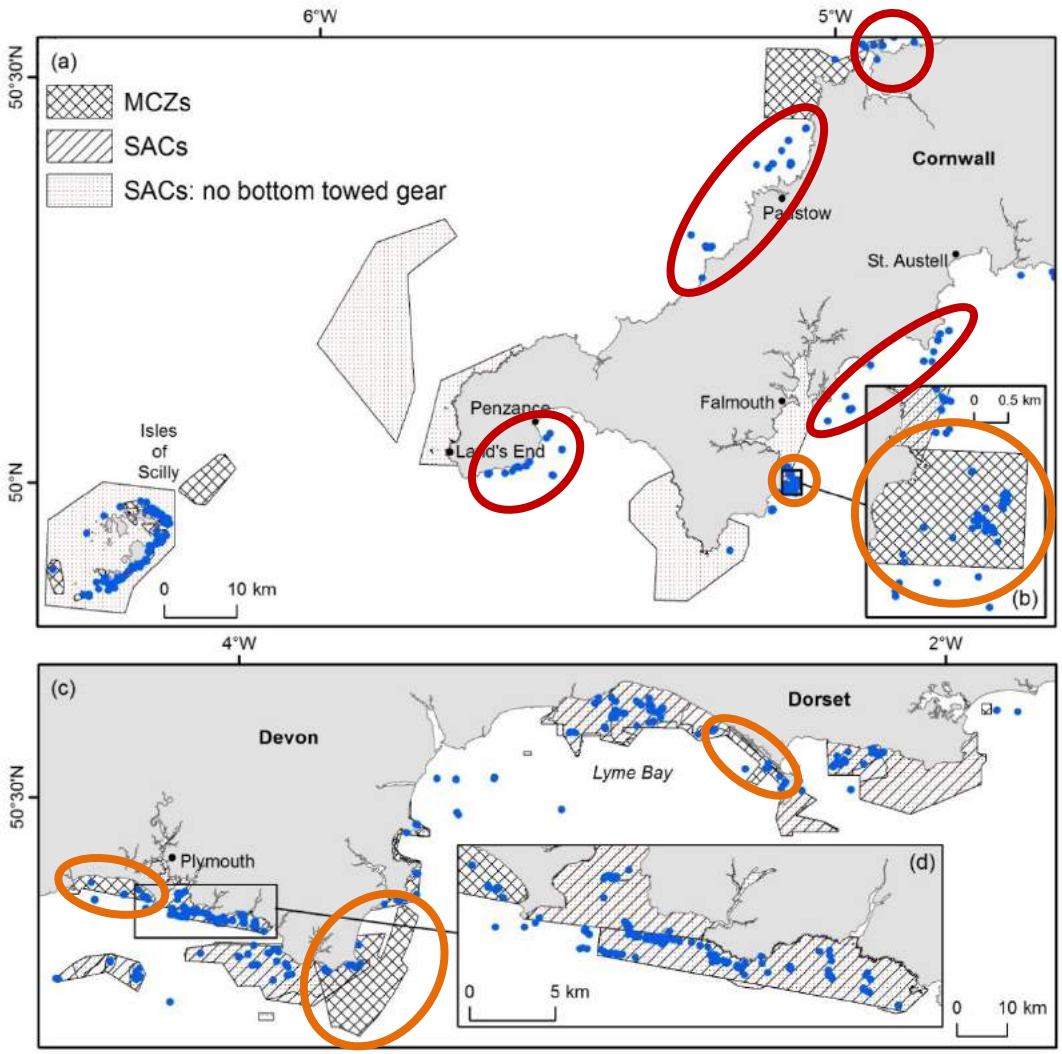
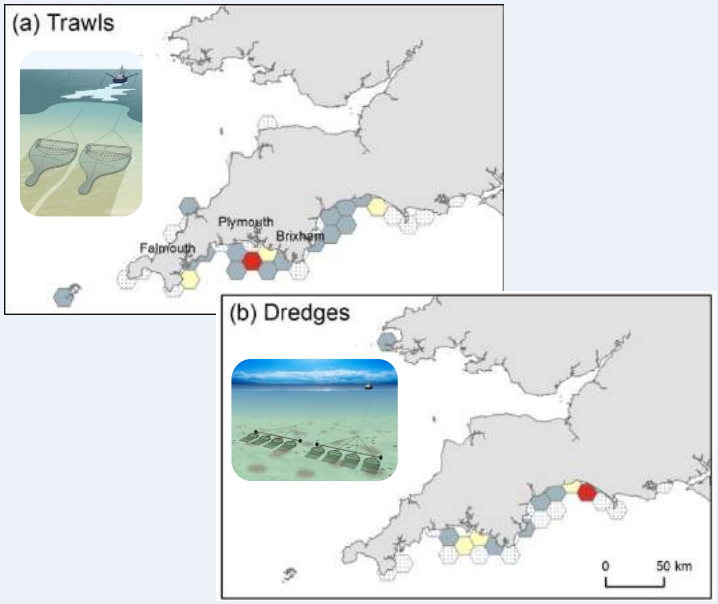
Protection



- 60% of PSF colonies occurred within MPAs closed to BTG
- **5% within MPAs currently open to BTG**
- **35% outside MPAs**
- Likely many of these colonies are at risk from BTG



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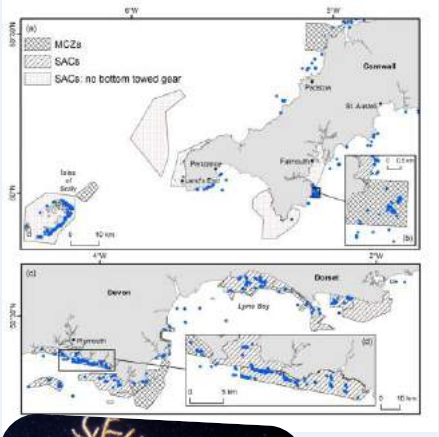
Summary

- PSF perspective:
  - Extant MPA network affords some protection to PSF & other benthic species
  - Areas of valuable host reef systems exist outside the MPA network ... & may be at risk from BTG
- 'Citizen Science' perspective:
  - Highlights the value of well organised citizen science data collection ... such as Seasearch
  - A potential resource to help inform evidence bases
  - Can provide large-scale (spatial and temporal) coverage ...

  ... that would otherwise be financially & logistically difficult to achieve



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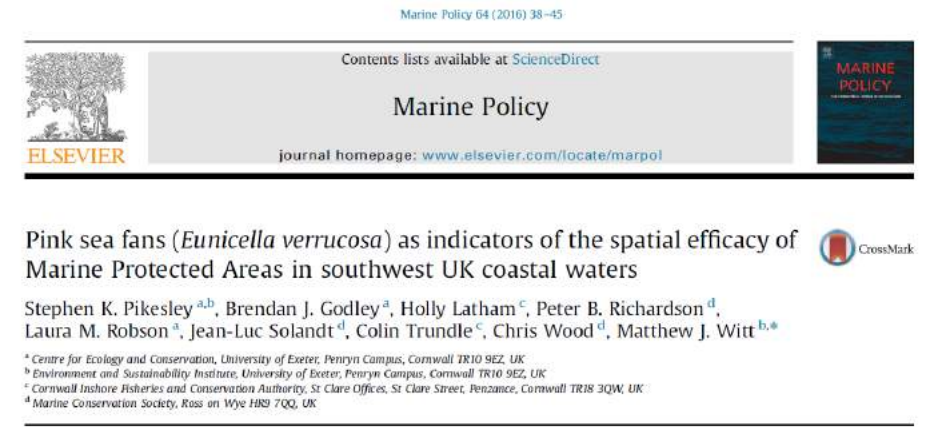
- University of Exeter
  - Dr Matthew Witt
  - Prof. Brendan Godley
  - Laura Robson
- Marine Conservation Society
  - Dr Jean-Luc Solandt
  - Dr Peter Richardson
- Seasearch
  - Chris Wood
- CIFCA
  - Colin Trundle
  - Holly Latham
- All Seasearch divers who generously contribute their time & data



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Pink sea fans (*Eunicella verrucosa*) as indicators of the spatial efficacy of Marine Protected Areas in southwest UK coastal waters

Stephen K. Pikesley [a,b], Brendan J. Godley [a], Holly Latham [c], Peter B. Richardson [d], Laura M. Robson [a], Jean-Luc Solandt [d], Colin Trundle [c], Chris Wood [d], Matthew J. Witt [b,*]

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Thank you...
Image: Chris Wood