ARG UK

Patsy Wood Trust

Clark Bradbury Charitable Trust

Ten Years of Making the Adder Count

John Baker & Emma Gardner

NATURAL ENGLAND

amphibian and reptile conservation

habitat aid

ARG-UK DERBYSHIRE

Herpetologic

Adder Status

- COOKE, A.S. & ARNOLD, H.R., 1982. National changes in the status of the commoner British amphibians and reptiles before 1974, British Journal of Herpetology 6, 206-207.
- COOKE, A.S. & SCORGIE, H.R.A., 1983. The Status of the commoner amphibians and reptiles in Britain. Focus on Nature Conservation, No. 3. NCC.
- HILTON-BROWN, D. & OLDHAM, R.S., 1991. The status of the widespread amphibians and reptiles in Britain, 1990, and changes during the 1980s. Focus on Nature Conservation, No. 131. NCC.
- GLEED-OWEN, C. & LANGHAM., S., 2012. The Adder Status Project – a conservation condition assessment of the adder (*Vipera berus*) in England, with recommendations for future monitoring and conservation policy. ARC.
- NARRS.

Prompts for *Make the Adder Count*

Common themes

- Declining status – and increasing concerns.
- Expert opinion – or lack of quantitative data.

An observation

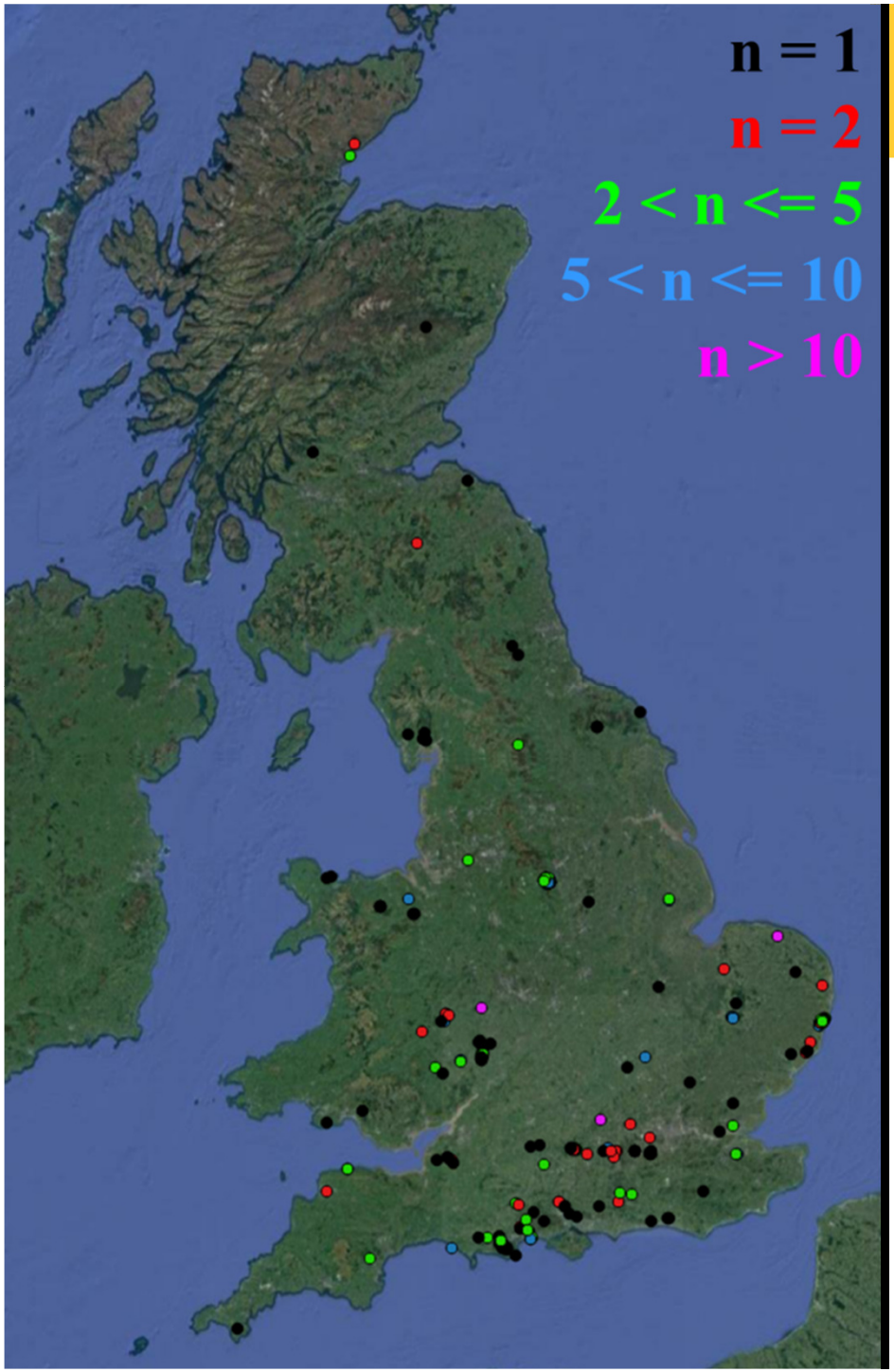
- There was a small core of ‘adder-watchers’.

Focus on hibernation sites

- Repeatedly used
- Populations often concentrated
- Present for many months
- Snakes (males at least) relatively easy to survey

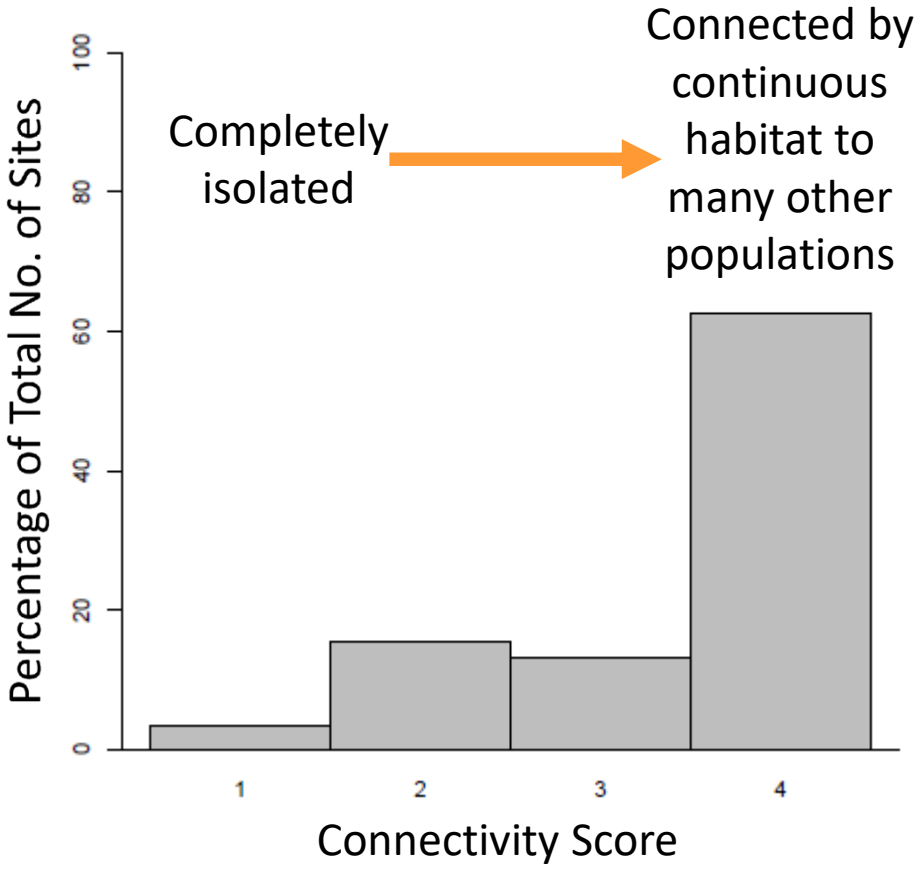
Make the Adder Count - Aims

- Collect quantitative data
- Standardise observations
- Investigate potential of approach
- Focus attention on (and locate) adder hibernacula
- Raise profile of adder

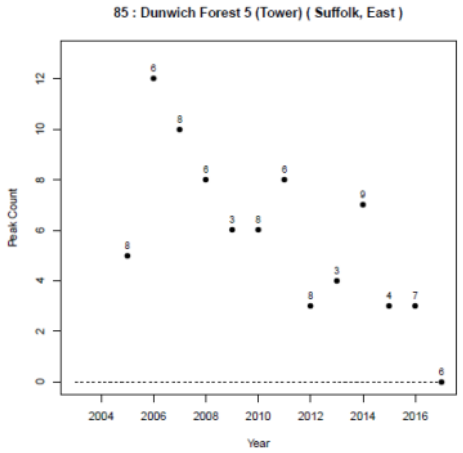


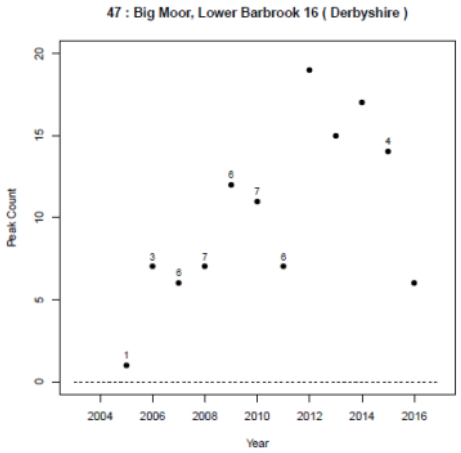
Survey Sites

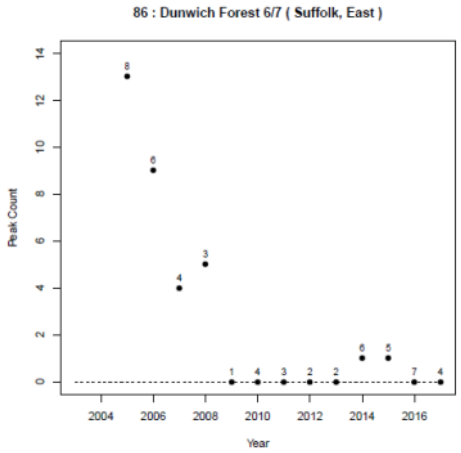
- 260 sites
- 181 surveyors
- Wide variation in length of timeseries per site

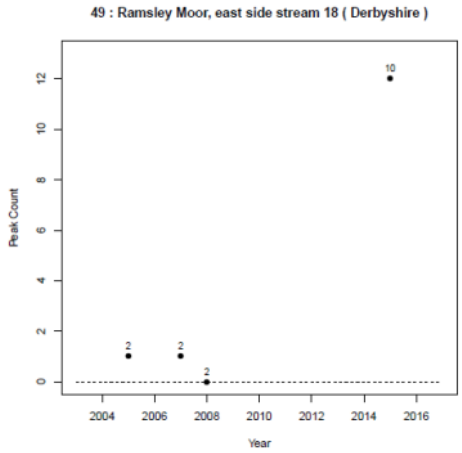


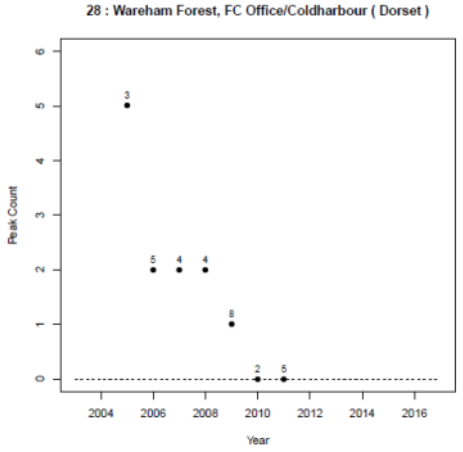
Timeseries

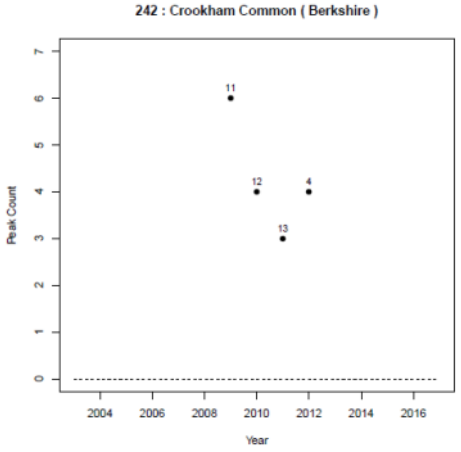

85 : Dunwich Forest 5 (Tower) (Suffolk, East)
Peak Count
Year

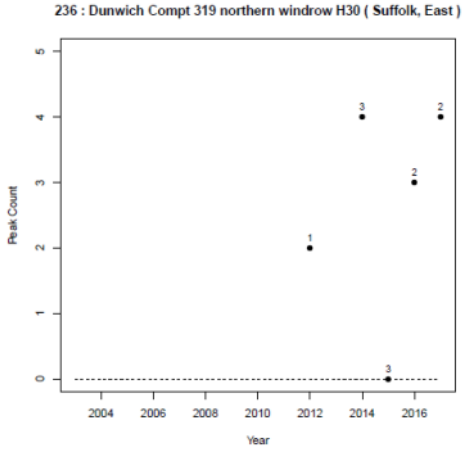

47 : Big Moor, Lower Barbrook 16 (Derbyshire)
Peak Count
Year

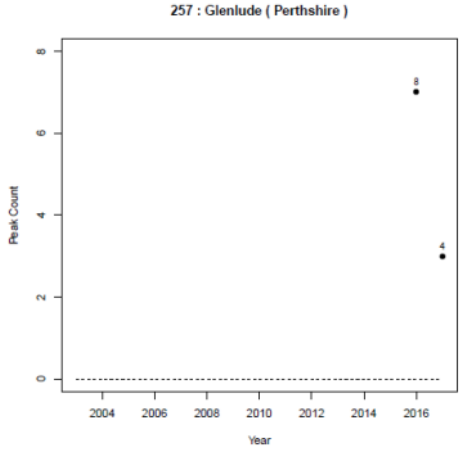

86 : Dunwich Forest 6/7 (Suffolk, East)
Peak Count
Year


49 : Ramsley Moor, east side stream 18 (Derbyshire)
Peak Count
Year

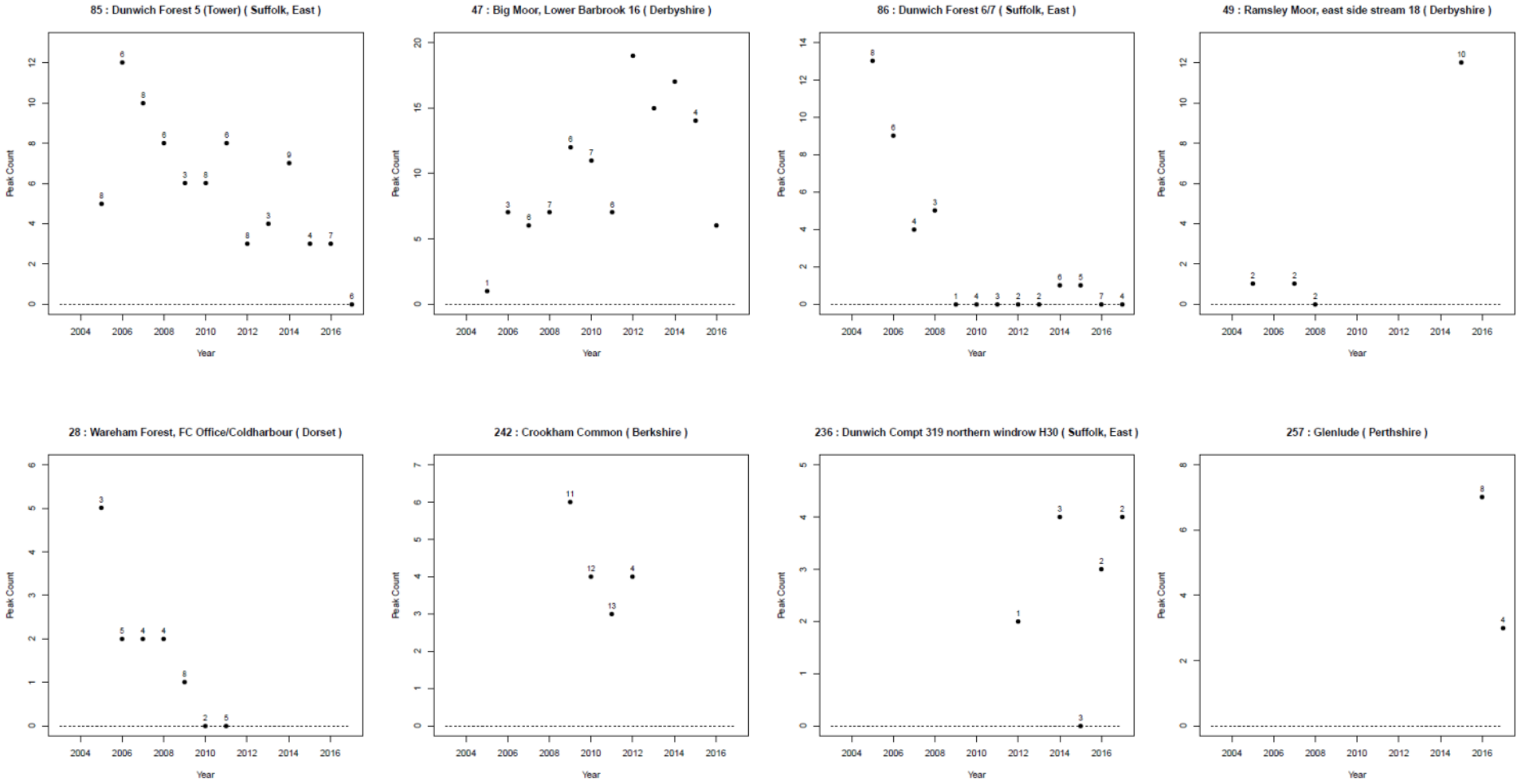

28 : Wareham Forest, FC Office/Coldharbour (Dorset)
Peak Count
Year


242 : Crookham Common (Berkshire)
Peak Count
Year


236 : Dunwich Compt 319 northern windrow H30 (Suffolk, East)
Peak Count
Year


257 : Glenlude (Perthshire)
Peak Count
Year

Timeseries



Aim: derive average **population trends** across sites

Population Trends

Small Populations

- Defined as sites with mean peak count $\bar{p}_i \leq 10$

Large Populations

- Defined as sites with mean peak count $10 < \bar{p}_i \leq 25$

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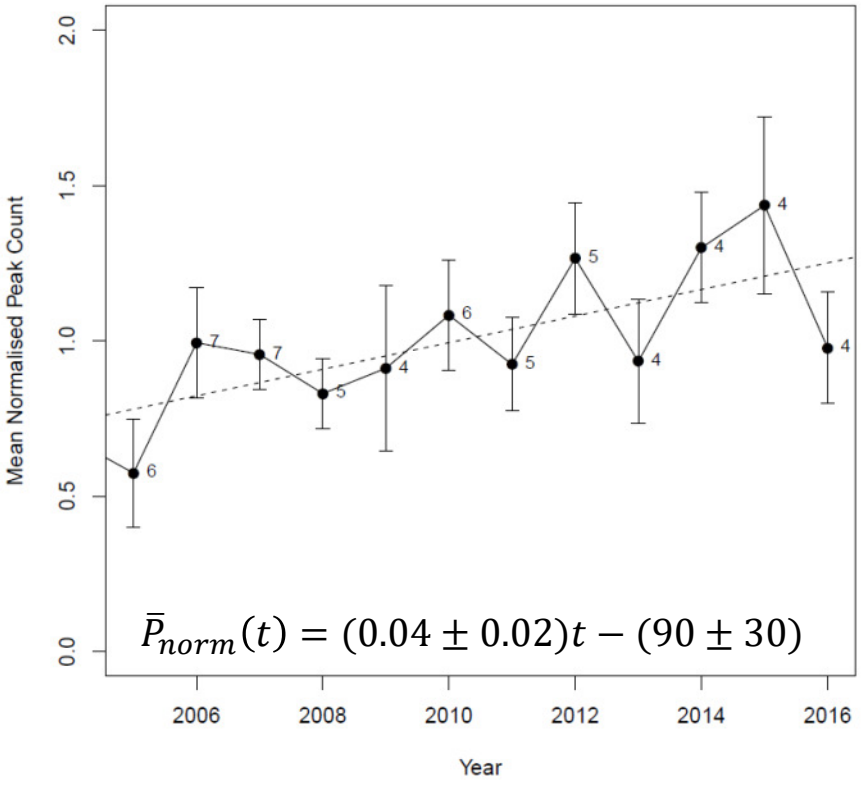
Large Populations

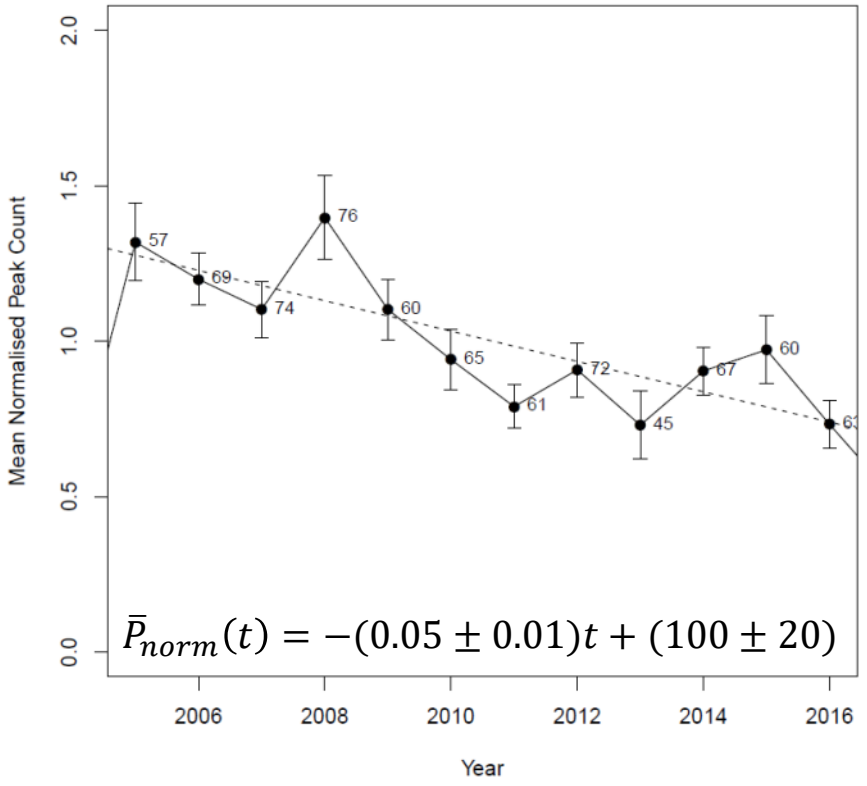
- Defined as sites with mean peak count $10 < \bar{p}_i \leq 25$
- 9 sites with $\geq$ 3yrs of data
- Mean normalised peak count shows **significant increase** (P<0.05).



Population Trends

Small Populations

- Defined as sites with mean peak count $\bar{p}_i \leq 10$
- 117 sites with ≥ 3yrs of data.
- Mean normalised peak count shows **significant decline** (P<0.01).
- 12/117 = 10% sites potentially died out.



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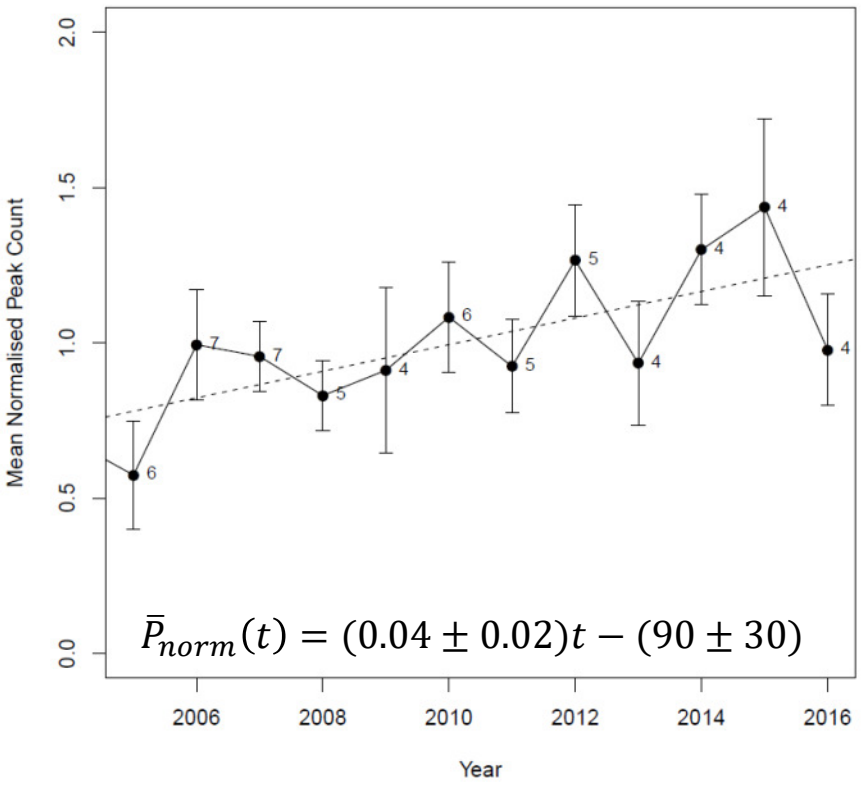

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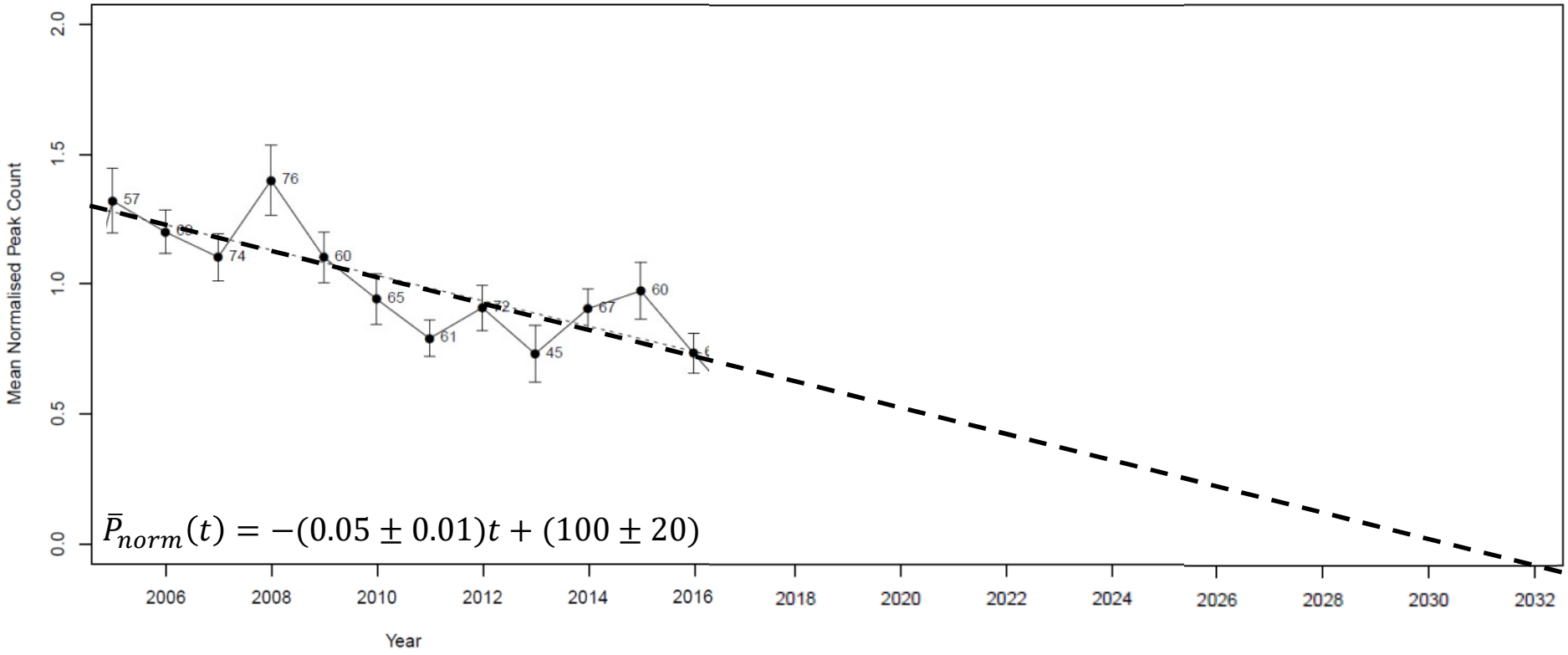

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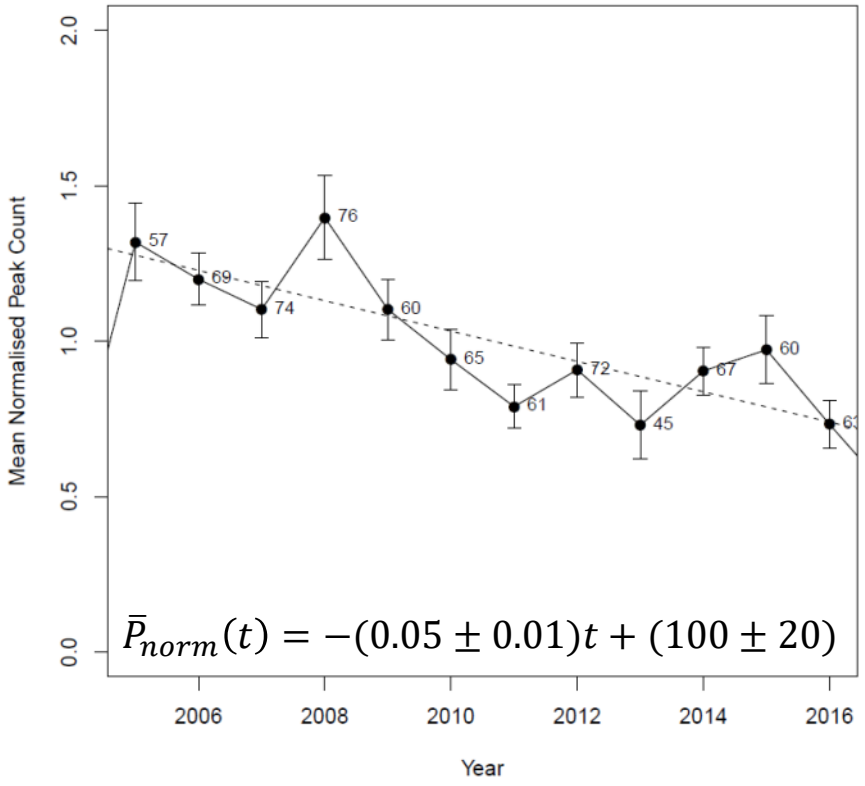

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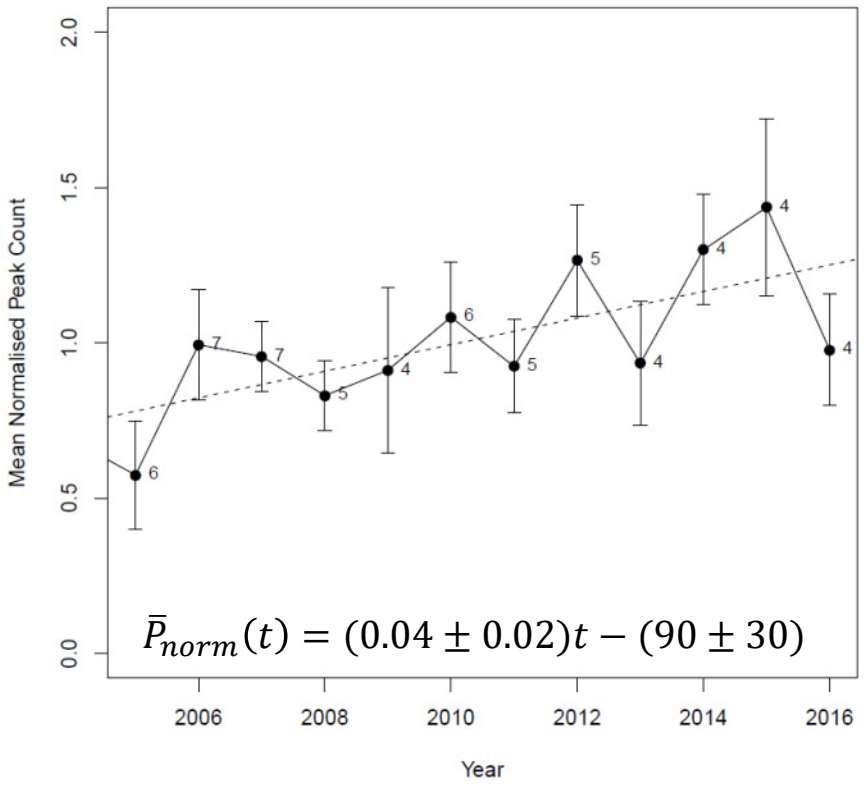

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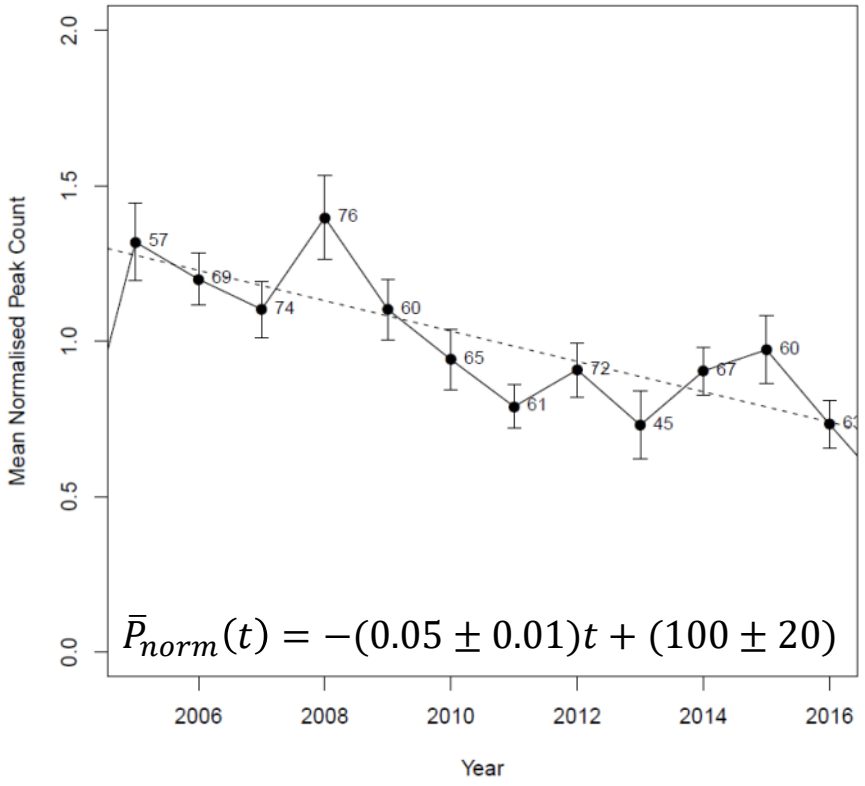

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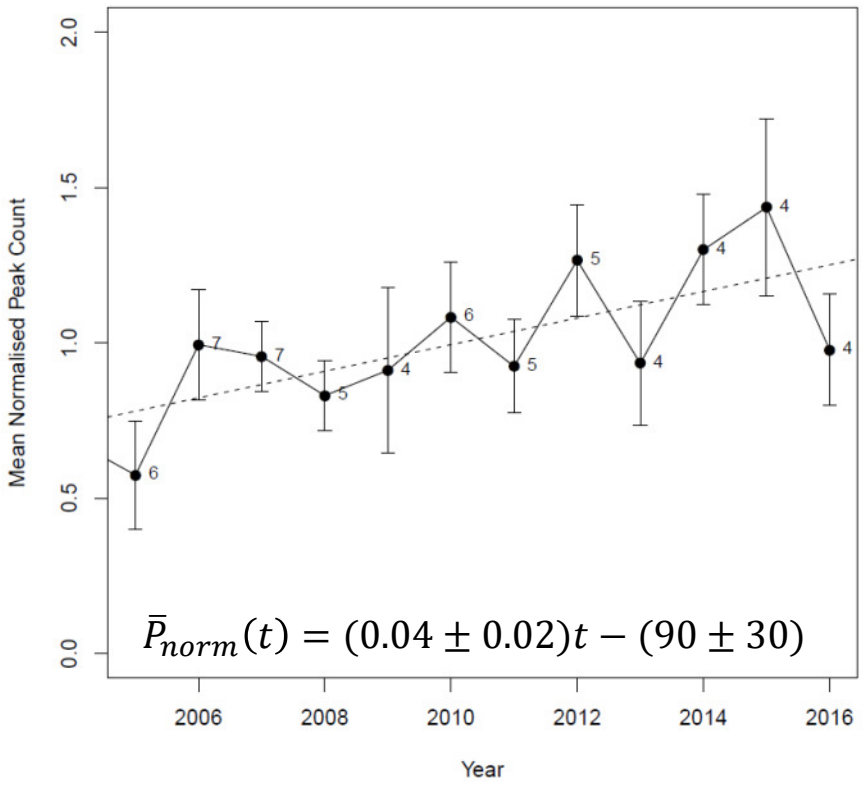


Key Factors Affecting Adder Populations

PP = Public Pressure through Disturbance

HM = Habitat Management

HF = Habitat Fragmentation

NS = Neglect/Succession

PE = Persecution

FI = Fire

PR = Predation

FO = Forestry Operations

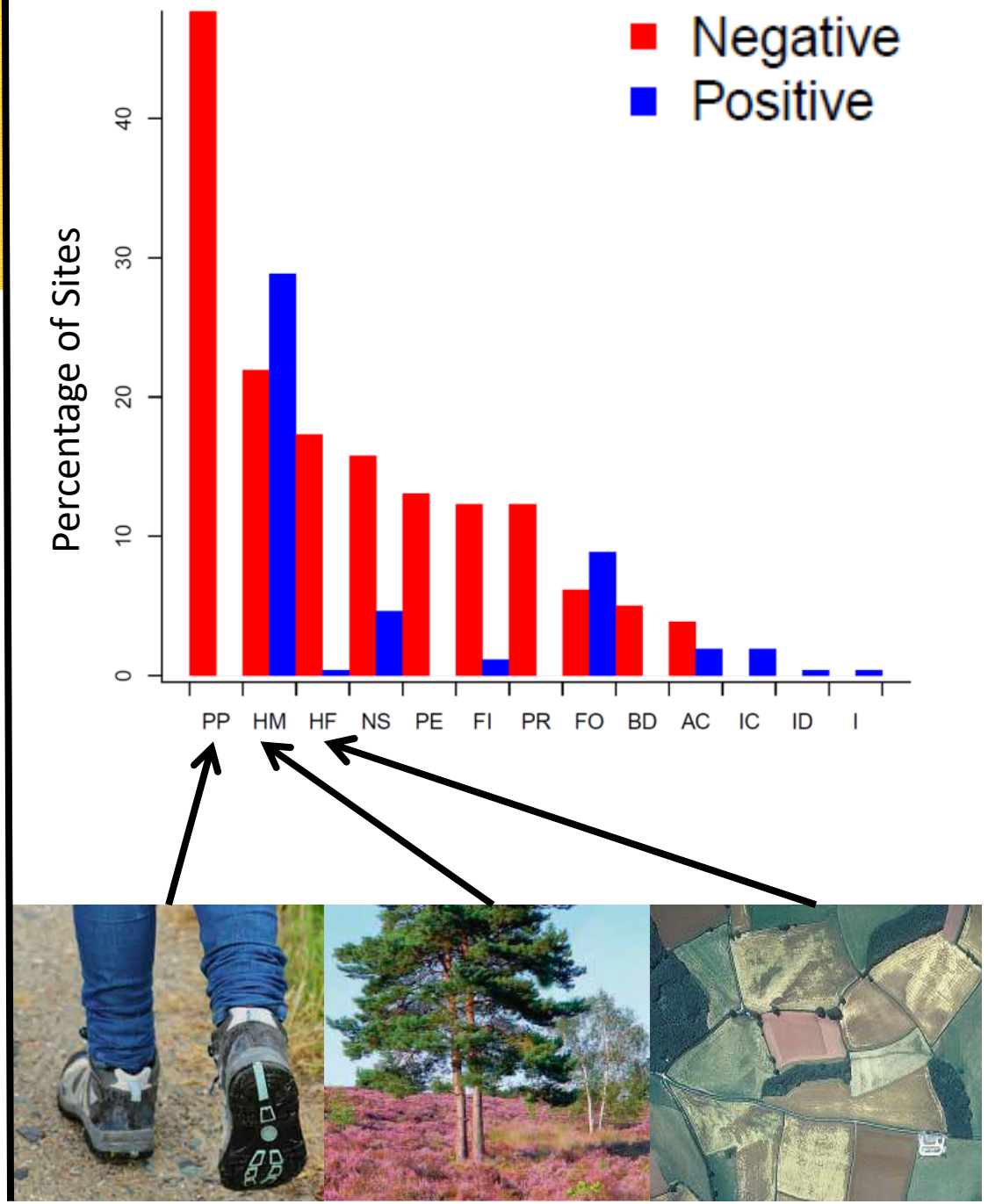
BD = Building Development

AC = Agricultural Changes

IC = Introduction for Conservation

ID = Introduction for Development Mitigation

I = Introduction (not specified)

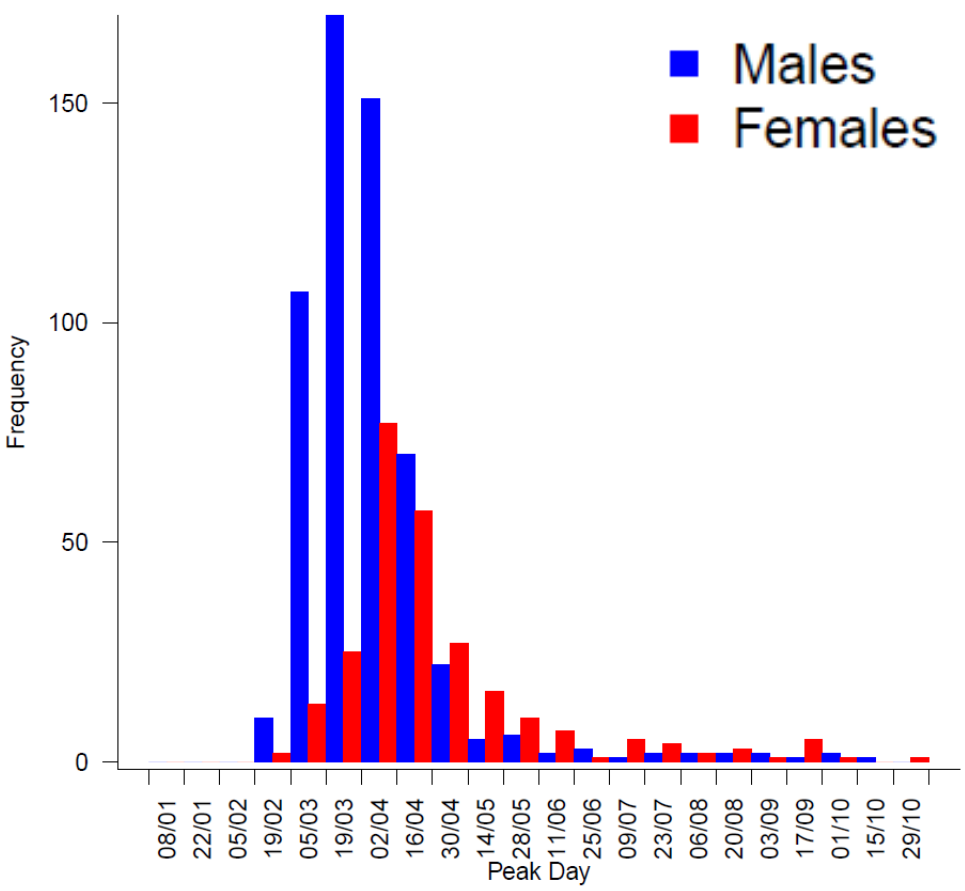


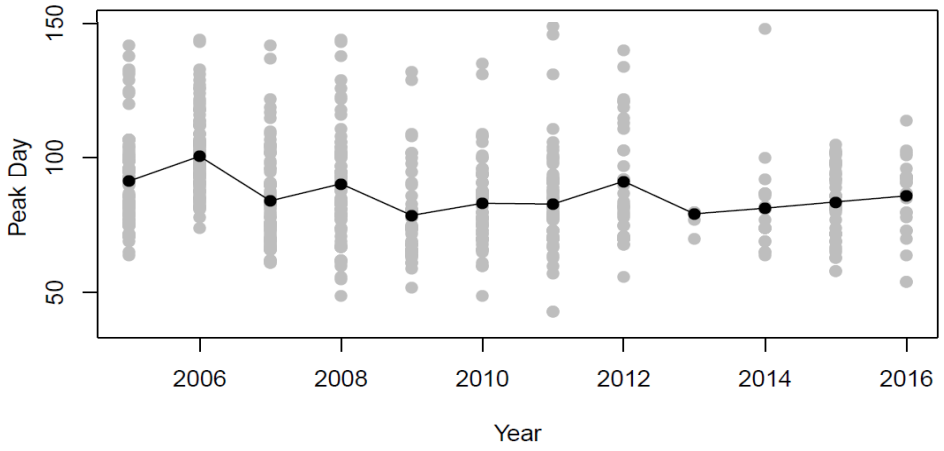
Negative Factors (%)

	1983 C&S	1991 HB&O	2004 ENRR	2017 Current
PP	14	19	25	48
HM	5*	N/A	12	22
HF	N/A	N/A	N/A	17
NS	N/A	6	14	16
PE	19	6	17	13
FI	16	6	12	12
PR	0	N/A	9	12
FO	14	19	10	6
BD	8	6	10	5
AC	19	16	4	4

Beyond Population Trends: Behaviour & Phenology

- Investigate differences in **emergence timing**.
- Males peak **fortnight earlier** than females
- **Inter-annual variation** in date of peak count:
  - Response to **weather**?
  - Potential to adapt to **climate change**

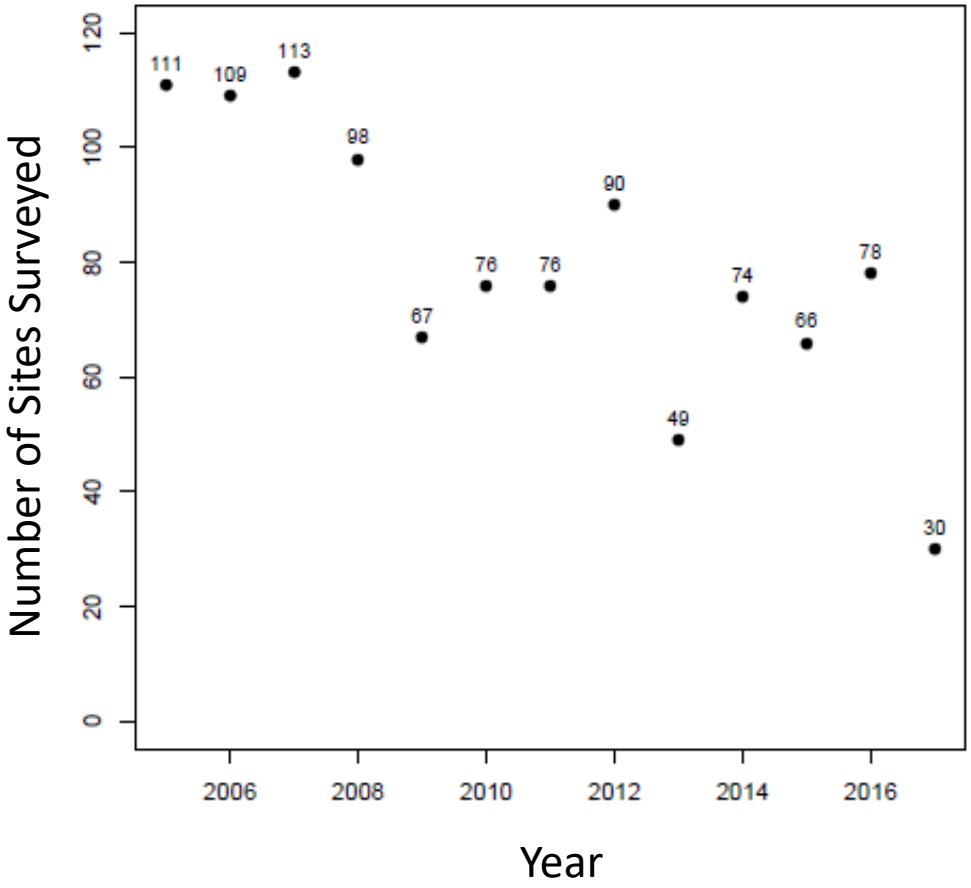




MTAC Going Forward

Huge **THANK YOU** to all surveyors who have contributed data!

- **Please keep surveying** and sending in results



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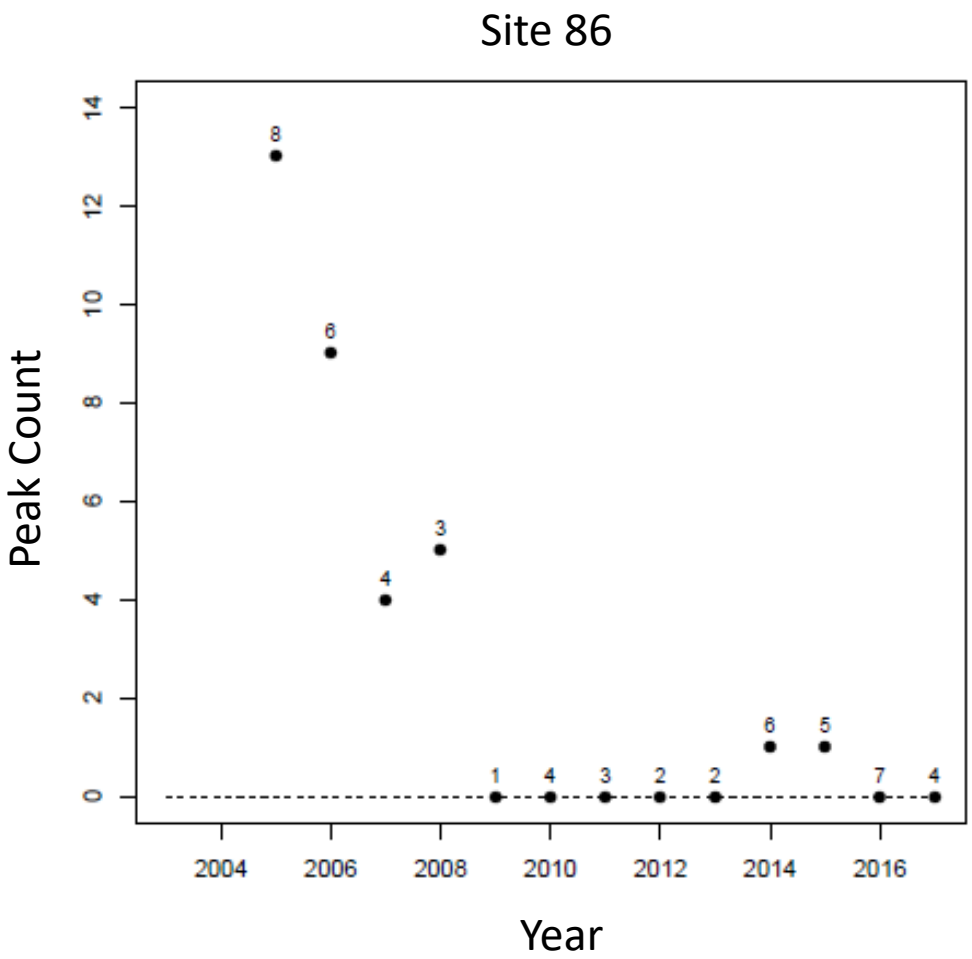
- Reporting **zero counts** is really important



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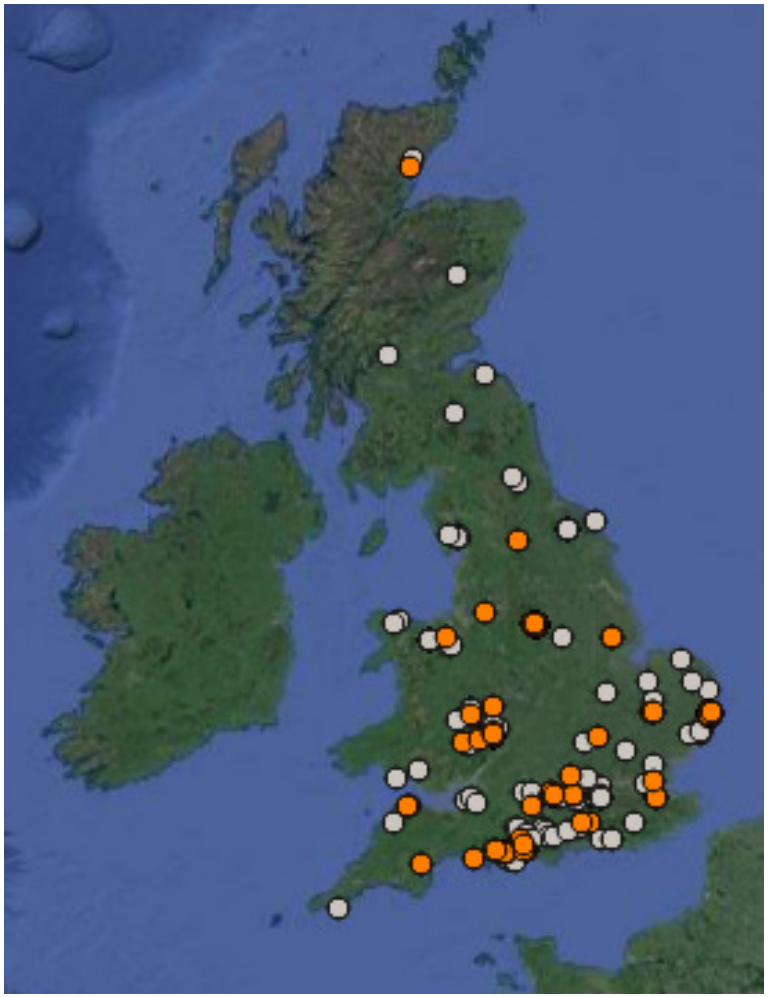
- Reporting **zero counts** is really important
- Expand **geographical range** of survey



Conclusions

MTAC data confirm expert opinion (ENRR 546):

- **Small populations** more prone to declines
- Most populations are small

Perceived threats:

- **Public pressure (disturbance)** most common threat
- **Habitat management** largest positive factor but negative impacts persist.

Going forward:

- Shown methodology can yield useful data
- Provides **database of hibernacula** locations (essential information for habitat management)
- **Improve geographical coverage**

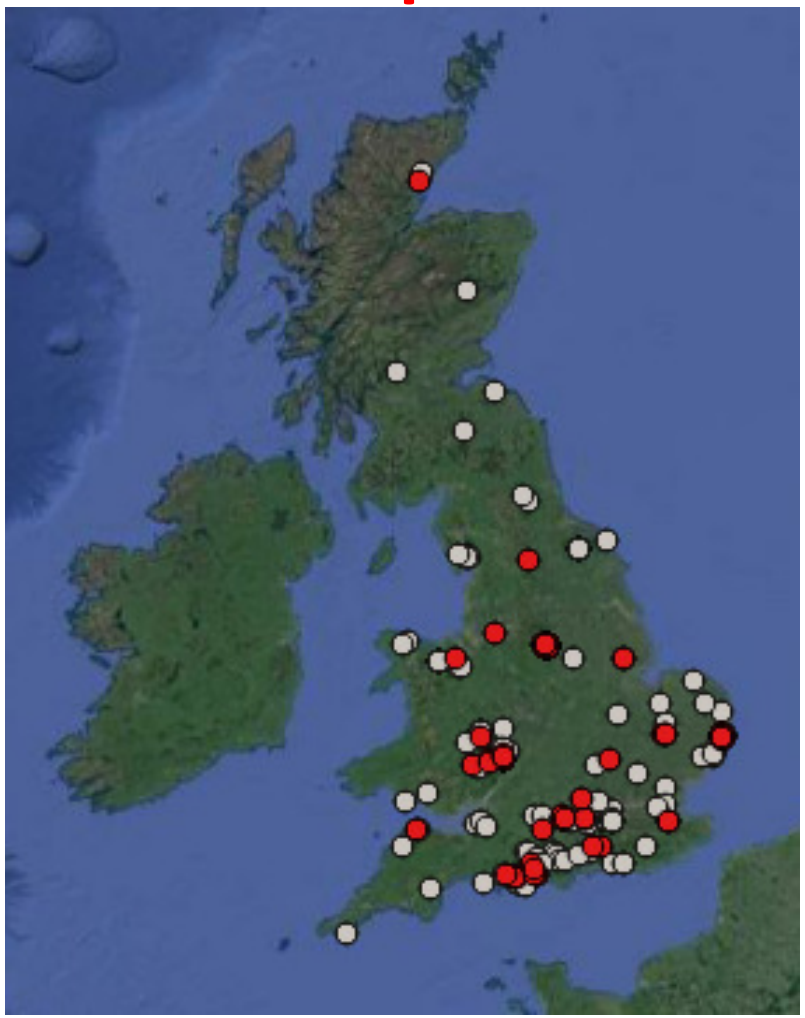
www.recordpool.org.uk/make-the-adder-count

Thank you to all MTAC's surveyors!

Nigel Agar, Alan Anderson, Tommy Armstrong, Steve Babbs, John Baker, Axel Barlow, Marcus Barlow, Alan Barrett, Richard Bazley, Frank Bell, Paul Benson, Richard Birch, Nick Blacker, Bill Blake, Stephen Block, Frank Bowles, James Boyd, Mark Bradfield, Scot Bradley, David Bradley, Ian Bradley, Lee Brady, Eleanor Bremner, Giles Brockman, Mick Brummage, Nick Burfield, John Butter, John Campbell, Anthony Cannon, Lucy Cash, Kathy & John, Karl Charters, Don Clark, Phil Conopo, Mark Conway, Rachel Cook, Arnold Cooke, Jon Cranfield, Stuart Croft, Sue Crookes, Simon Crump, Nick Davis, Phil Davison, Bernard Dawson, Selwyn Dennis, John Dickson, Jack Douglas, Philip Drury, Laurent Duvergi, Glyn Eamus, Graham Ella, Barry Embling, Jane Evans, Jonathan Fane, Clive Flindall, Laurie Forsyth, Jim Foster, John Fraser, Alf Gapper, Hadyn Garlic, Dave Garner, Chris Gleed-Owen, Bernard Goillon, Ken Green, Louise Gregory, John Grundy, Jim Gunn, Peter Hallet, Nigel Hand, Stewart Hardie, Martin Hartup, Rebecca Haworth, Gordon Haycock, Matthew Hayward, Pete Hill, Dan Hoare, Kerry Holmes, Alan Hyde, Colin Jacobs, Bob Johnson, Arthur Jollands, Glyn Jones, Angie Julian, DJ Law, Adam Long, Dave Mackay, Paul Malcolm, Dave Mallon, Lee Malpass, Helen Markwell, Simon Mason, Rennie Mason, Gareth Matthes, Lindsay McCrae, Alistair McGregor, Kathy Meakin, Helen Metcalfe, Adrian Middleton, George Millins, Simon Mole, Chris Monk, Simon Munnery, Tony Murphy, Sarah Murray, Nicola Murray, Dave and Marion Nesbitt, John Newton, David Norfolk, Dave Odell, John Osbourne, Dave Page, Kev Palmer, Lisa Parker, Tom Parkin, Susie Pearson, Lizzy Peat, Graham Pettingale, Tony Phelps, Marcus and Susan Philips, Adrian Podmore, Anne Porter, Gary Powell, Karen Purvis, Sue Raven, Mark Rawlins, Rob Raynor, David Redgrove, Brian Redman, Jo Richards, David Rous, Mark Ruff, Johnny Scott, Peter Scott, Jon Seller, Ian Shale, Sylvia Sheldon, Dave Showler, Alf Simpson, Christopher Slack, Linda Smith, Rob Smith, Paul Smith, Damian Smith, Ian Spalding, Jenny Spencer, Paul Stevens, Jim Stewart, Lisa Stitt, Peter Stronach, Kevin Sunderland, Des Sussex, Duncan Sweeting, Mike Swindells, Dave Tamarind, Stuart Taylor, Michael Taylor, Nigel Taylor, Dave Thomas, Mike Thompson, Ian Tomlinson, Simon Townson, Mandy Tulloch, Chris Turner, Dougal Urquhart, Hetty Wakeford, Natalie Walker, Graham Walters, Tony Walton, Robin Ward, David Wareham, Mark Warn, Dan Watson, Andy Welling, Brett Westwood, Liz Wild, Paul Wilkinson, Joanne Wilkinson, Jonathan Willet, Andrew Woodhouse, Wolfgang Wüster.

Site Distributions

Small Populations



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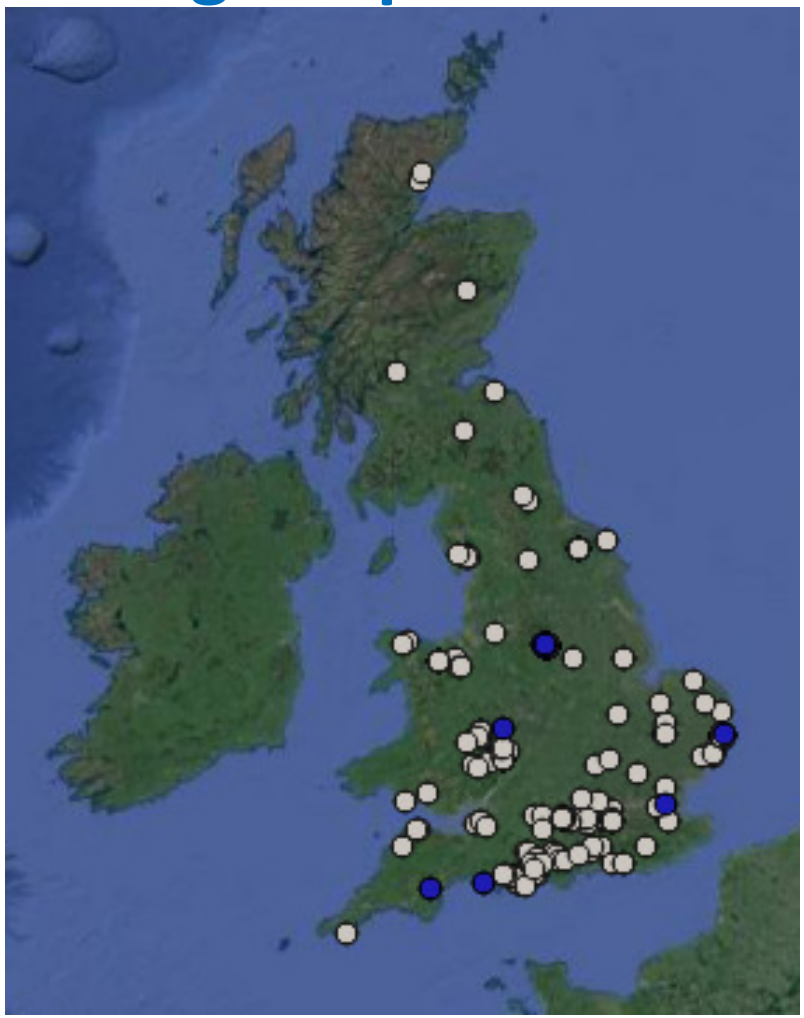
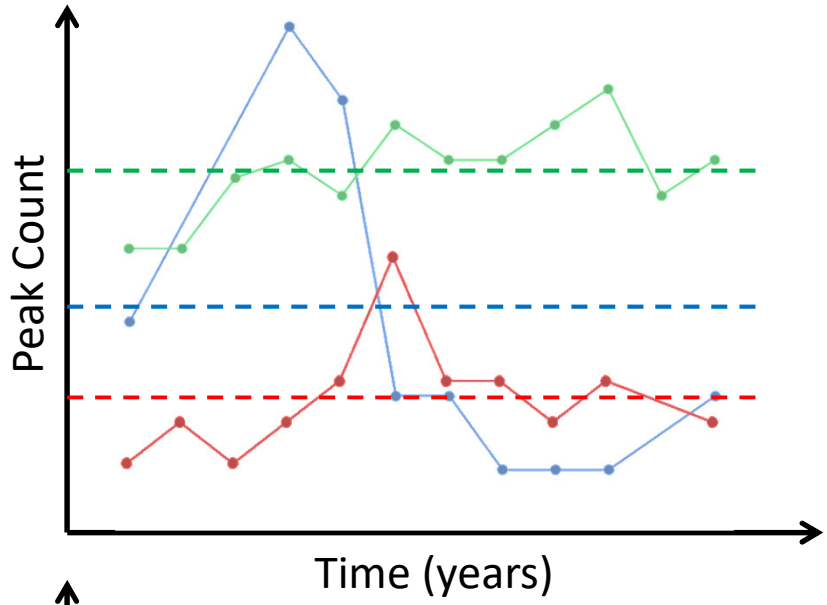
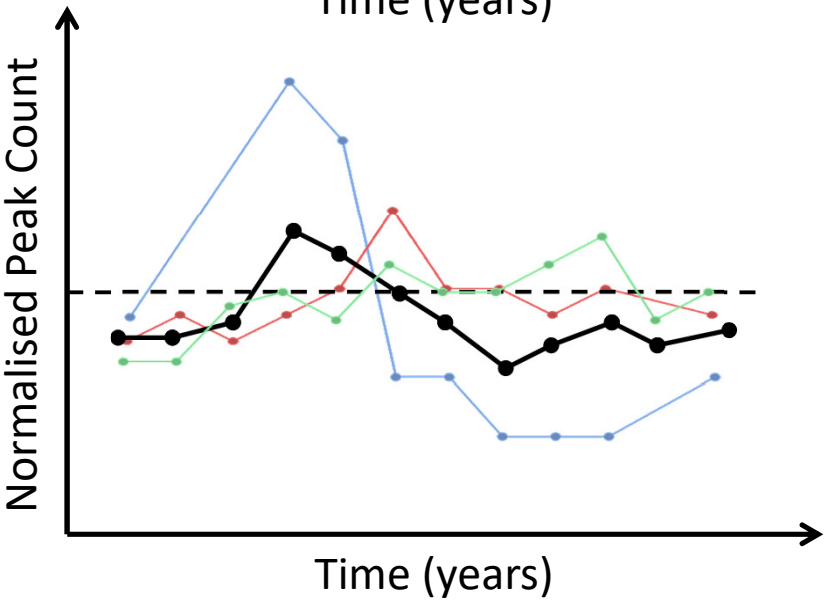


Population Trends





1. For each site, j, population size each year is represented the **peak count** ($p_j(t)$), ie. by maximum no. of adders recorded on any one visit that year.

2. For each site, calculate **mean peak count across all years** ($\bar{p}_j$) .

3. For each site, calculate **normalised peak count** per year as:

$$p_{norm,j}(t) = p_j(t)/\bar{p}_j$$

4. For each year, calculate **mean normalised peak count** across all sites surveyed that year as:

$$\bar{P}_{norm}(t) = \sum_j p_{norm,j}(t)/N_j$$