The Rothamsted Insect Survey Light-Trap Network:
50 Years of Illuminating Science

Rothamsted Insect Survey Trapping Locations

Google

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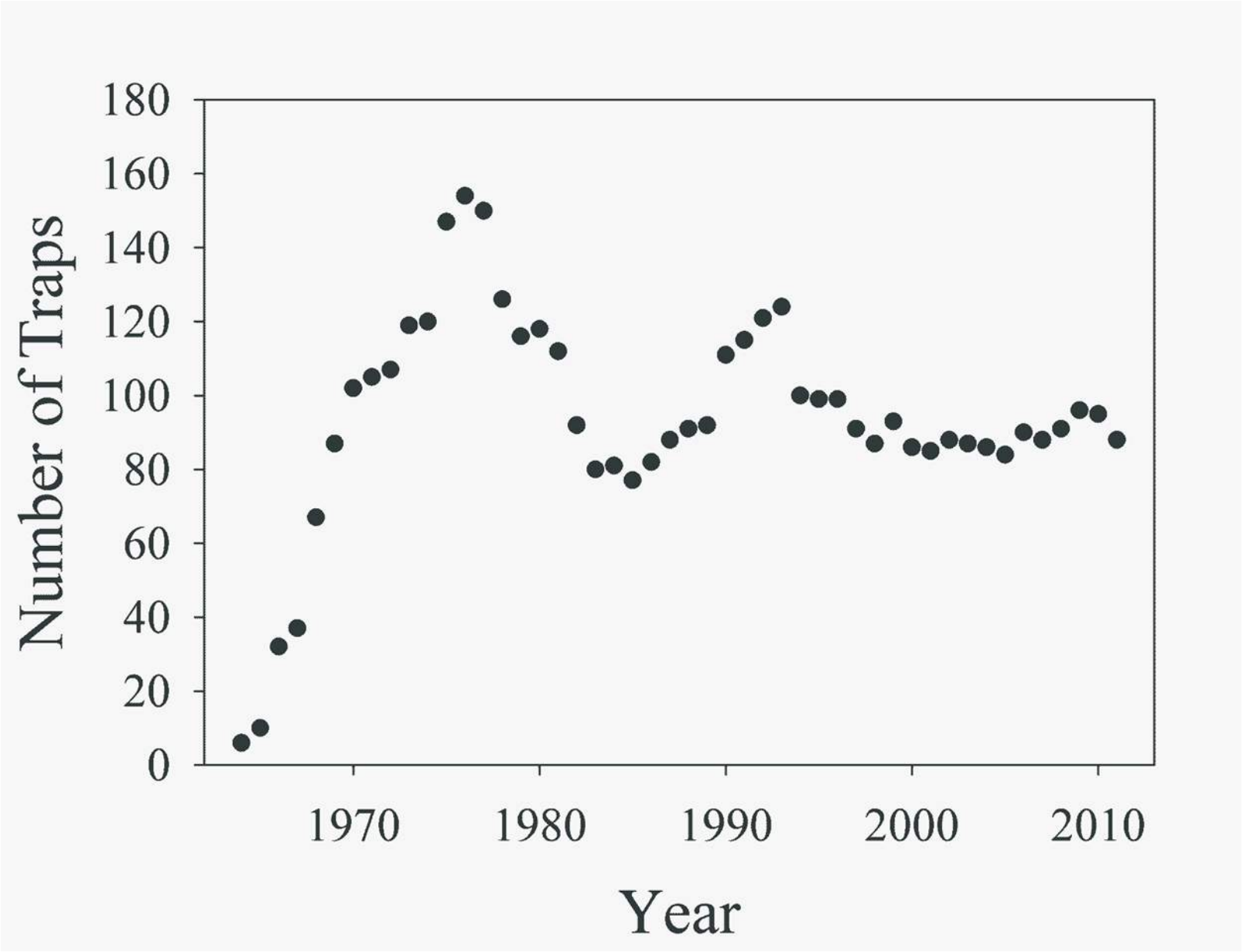
ROTHAMSTED RESEARCH



Headlines (to end of 2012)

- Data from **4,572,963** trap nights.
- **544** distinct light-traps.
- **12,243,842** individual moths caught
  - The maximum annual total catch is **629,868** which occurred in 1976, the next highest **442,003** in 1977 and then **373,025** in 1992
  - The highest daily count was **4,681** which was at Yarner Wood II on 28th June 1976
  - The maximum individual species count was **3,612** *Agrotis exclamationis* (Heart and Dart) at Yarner Wood II light trap on 28th June 1976.

letters to nature

Nature **303**, 801 - 804 (30 June 1983); doi:10.1038/303801a0

Behavioural dynamics

L. R. TAYLOR*, R. A. J. TAYLOR†, I. P. WOIWOD* & J. N. PERRY‡

*Entomology Department, Rothamsted Experimental Station, Harpenden, Herts AL5 2JQ, UK
†Entomology Department, Pennsylvania State University, University Park, Pennsylvania 16802, USA
‡Statistics Department, Rothamsted Experimental Station, Harpenden, Herts AL5 2JQ, UK

Journal of Animal Ecology 1993, **62**, 656–668

Spatial synchrony in the dynar populations

ILKKA HANSKI* and IAN P. WOIWOI
*Department of Zoology, University of Helsinki, P. Rautatiek
Centre for Population Biology, Imperial College at Silwood Pa
Farmland Ecology Group, Entomology and Nematology Dep
Harpenden, Hertfordshire AL5 2JQ, UK

Journal of Animal Ecology (1980) **49**, 209–224

TEMPORAL STABILITY AS A DENSITY-DEPENDENT SPECIES CHARACTERISTIC

By L. R. TAYLOR and I. P. WOIWOD

Rothamsted Experimental Station, Harpenden, Hertfordshire

MMARY

ults (N_t) of ninety-seven species of aphids and
er a period of at least 6 years, at eighteen and
itain and adjacent mainland Europe.
ere taken as a measure of the stability of the
($N_t \propto m_t$).
matic non-linear function of mean population
e whole area sampled (more than 2000 km^2).
ower function of mean population density over
ded that temporal stability is a power function
') over time at all places ($\log S_t^2 = \log a + b$

very large proportion of log temporal stability
rameter b is highly specific and therefore largely
l variables, including parasites, predators and
n sites.
density, stability is not a function of extrinsic
nd unsystematically in space and time, but is an
e species.

Appl. Statist. (1981),
30, *No.* 3, *pp.* 254–263

Taylor's Power Law for Dependence of Variance on Mean in Animal Populations

By J. N. PERRY

Department of Statistics, Rothamsted Experimental Station, Harpenden, Herts, U.K. AL5 2JQ

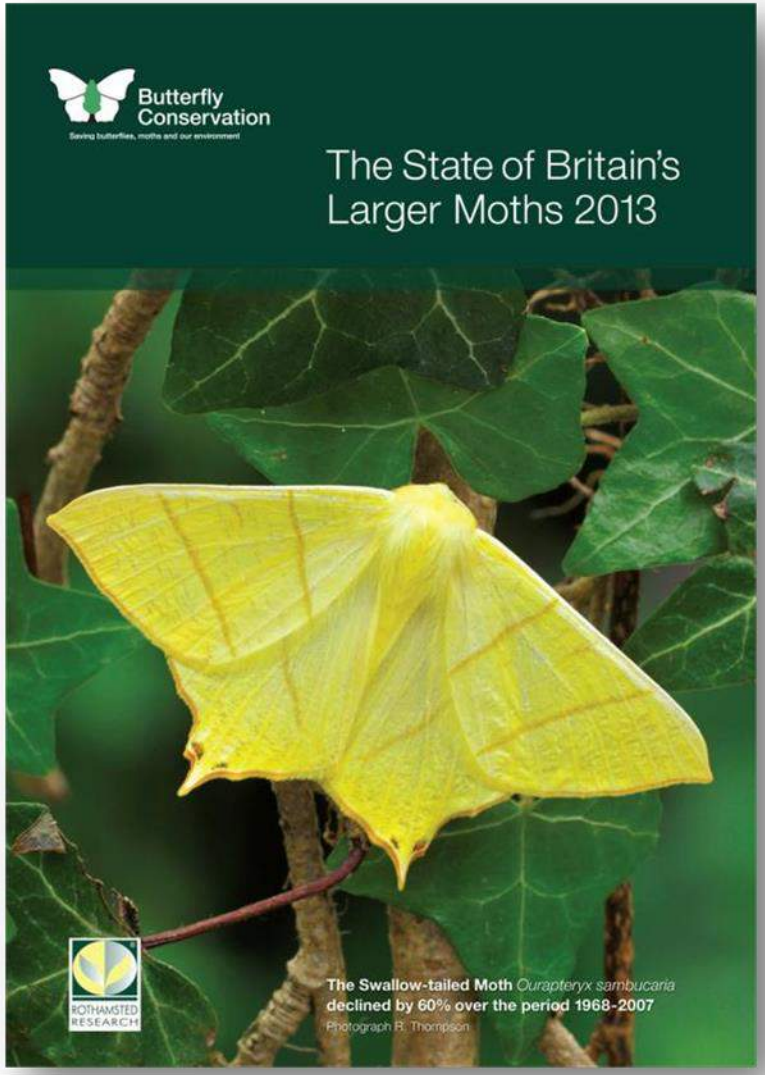
[Received July 1979. Final revision June 1981]

SUMMARY

Taylor (1961) suggested that population variance is proportional to a power of population mean for counts of animals sampled simultaneously at several sites. Three models which enable estimation of the exponent in this relationship are examined. Each is an empirical version of Taylor's law with population moments replaced by sample statistics. Some conditions are derived for satisfactory estimation when these models are used. Certain problems in estimation are examined; the practical severity of these vary between models. Methods of assessing these problems are developed for use with any data set, and the models are examined using these methods for a large set of moth data. The model of Taylor (1961) performed fairly well, and should prove satisfactory for use with similar sets of animal data.

as temporally dynamic and a mechanism is proposed that accounts for observed spatial behaviour.

2006



2013

Esmée Fairbairn FOUNDATION

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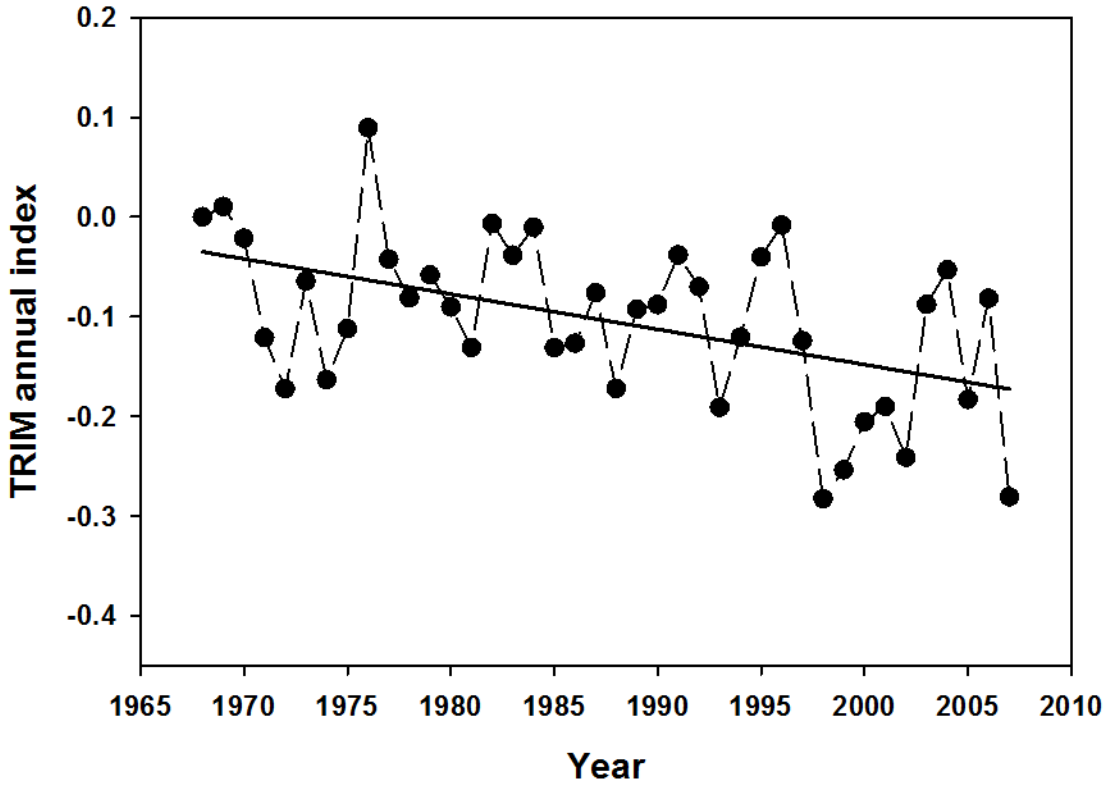
ROTHAMSTED RESEARCH

Long-term abundance trends:

- 40 year trends (1968-2007)
- overall macro-moth abundance (GB, north & south)
- 337 common & widespread moths
- Distribution data from Butterfly Conservation National Moth Recording Scheme

- total macro abundance decreased by **28%**



(t= 8.30, P<0.001)

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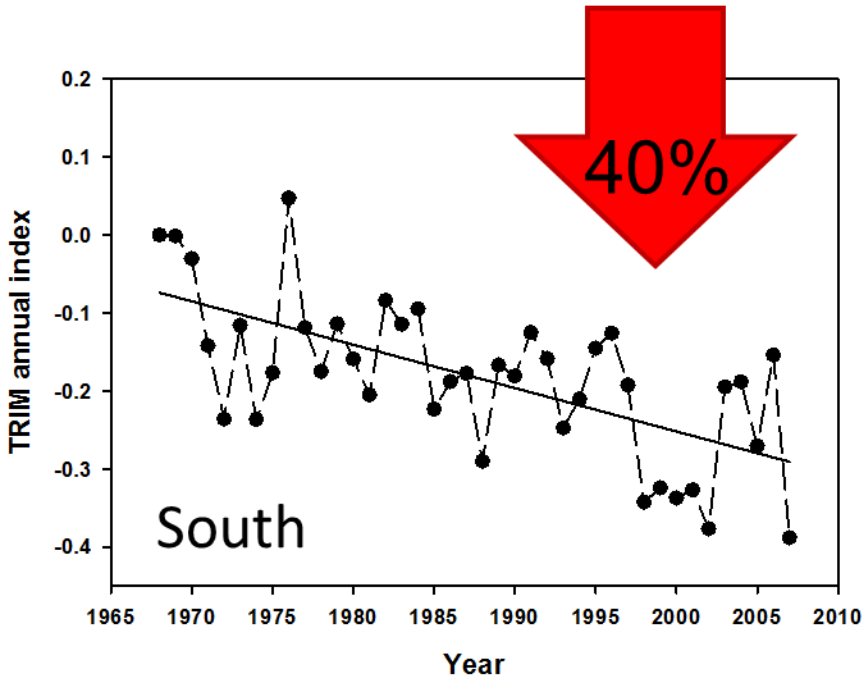
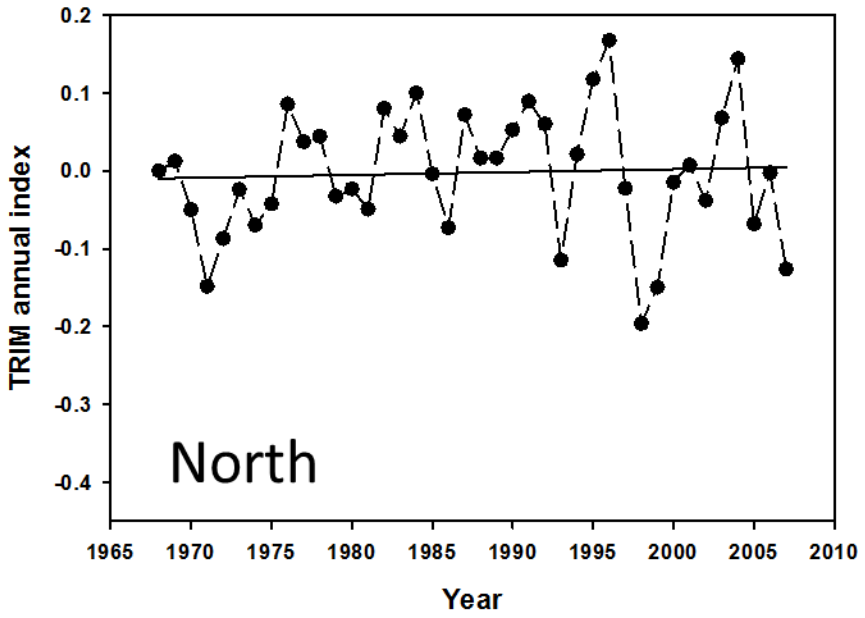
- abundance declines worse in southern GB
- no net change in the north



(t= 11.98, P<0.001)



(t= 0.54, P=0.50)

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ROTHAMSTED RESEARCH

The 337 common & widespread species:

- two thirds decreased in abundance
- 124 species (37%) decreased by >50%
- one third of species increased in abundance

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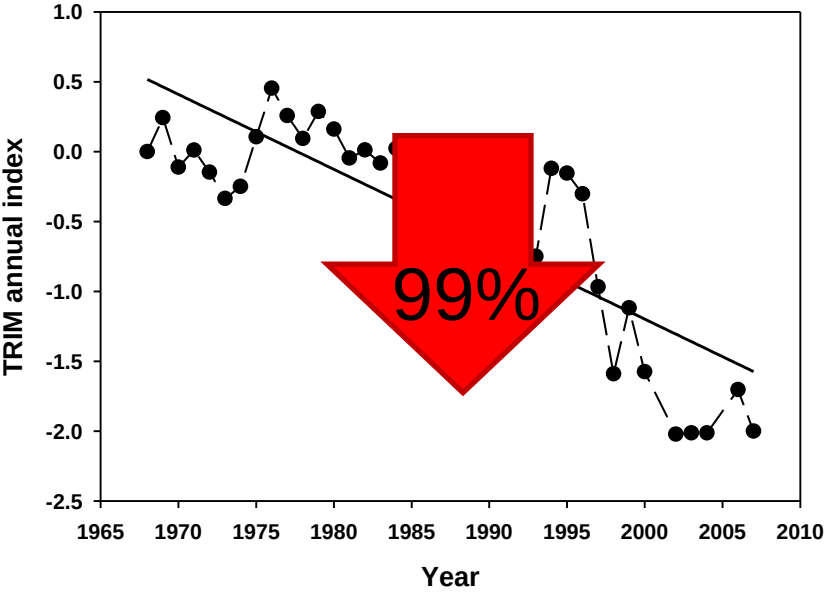
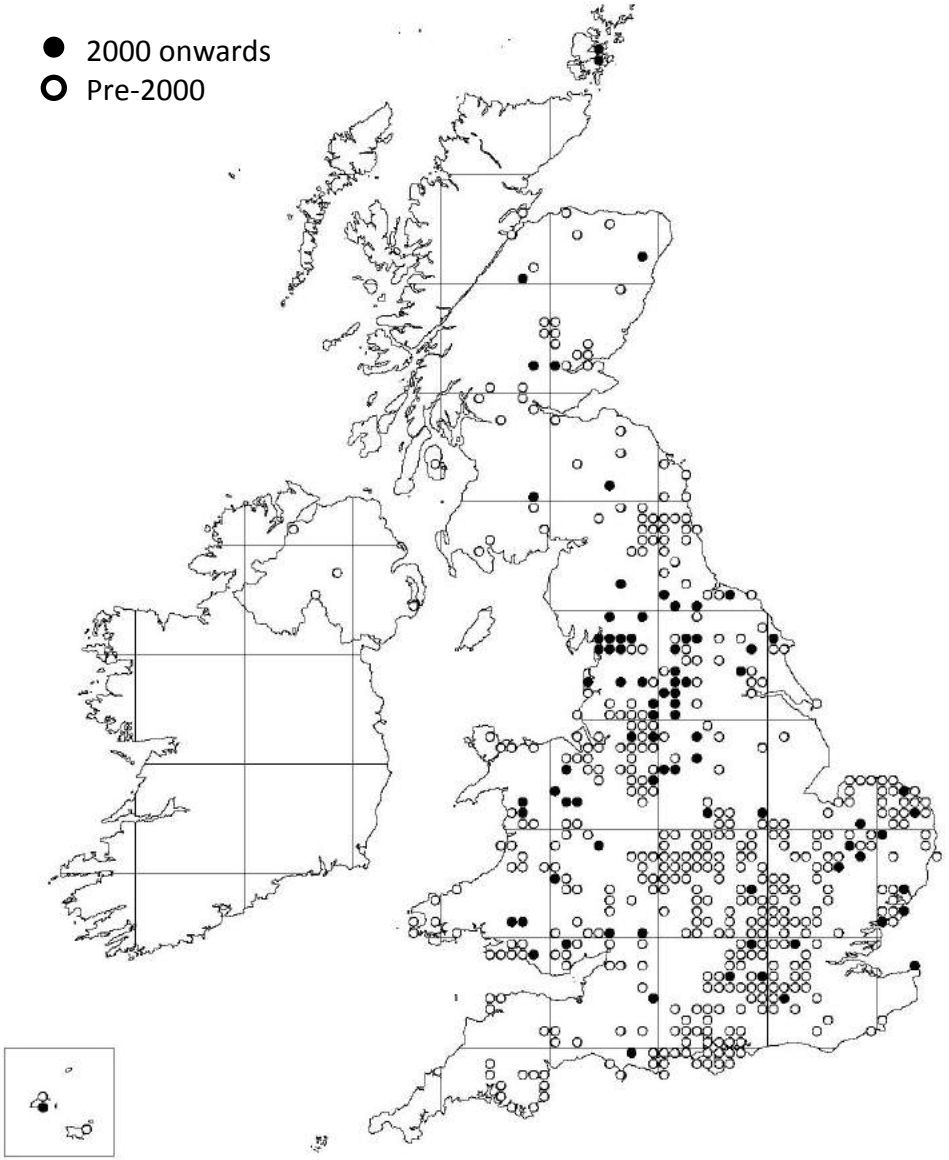
ROTHAMSTED RESEARCH





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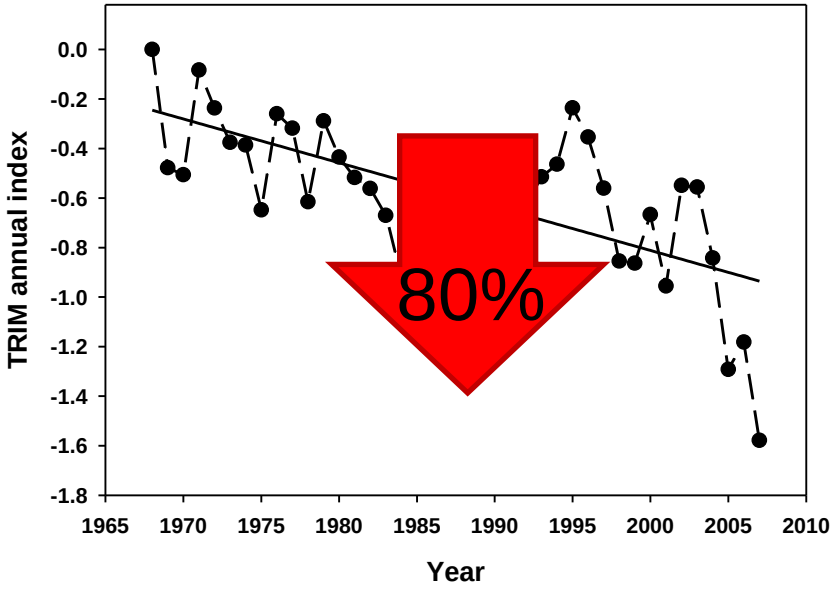

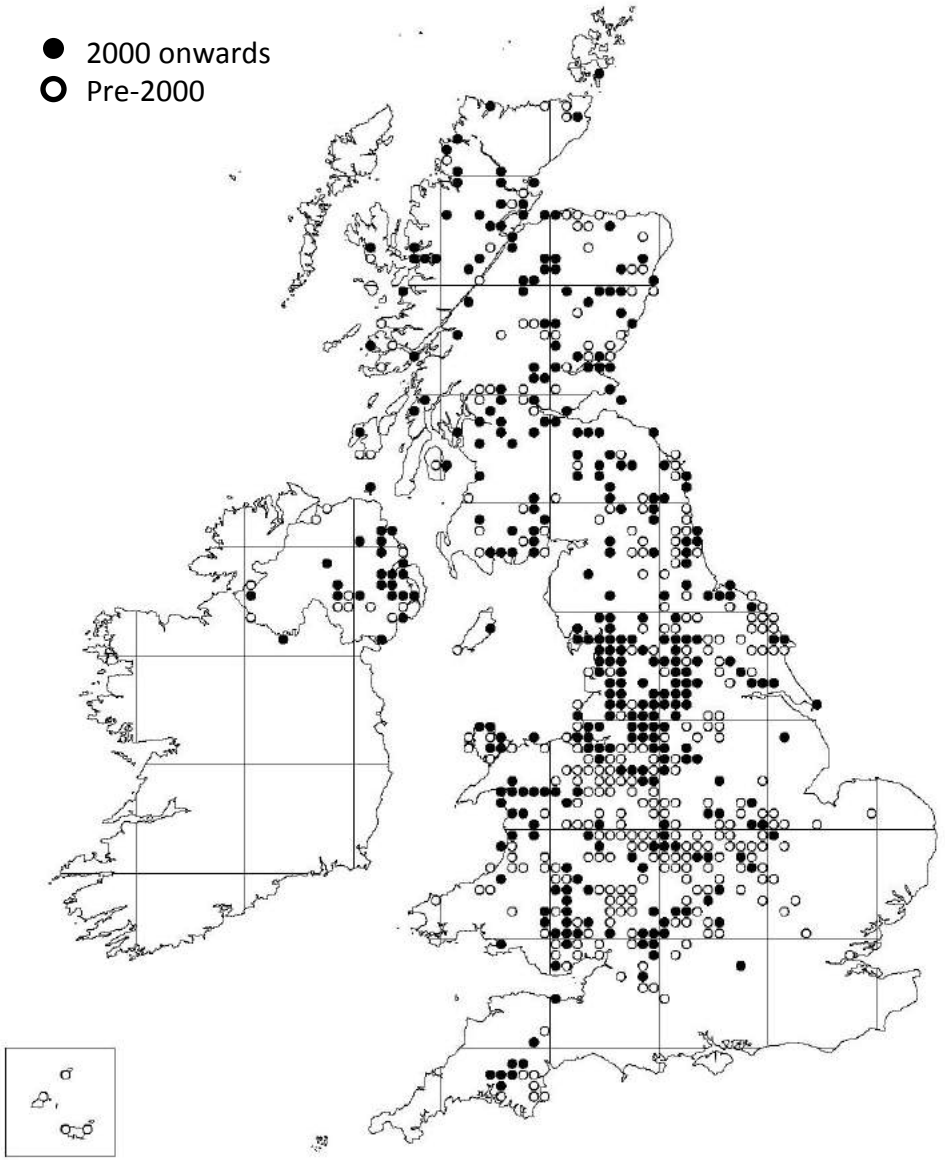

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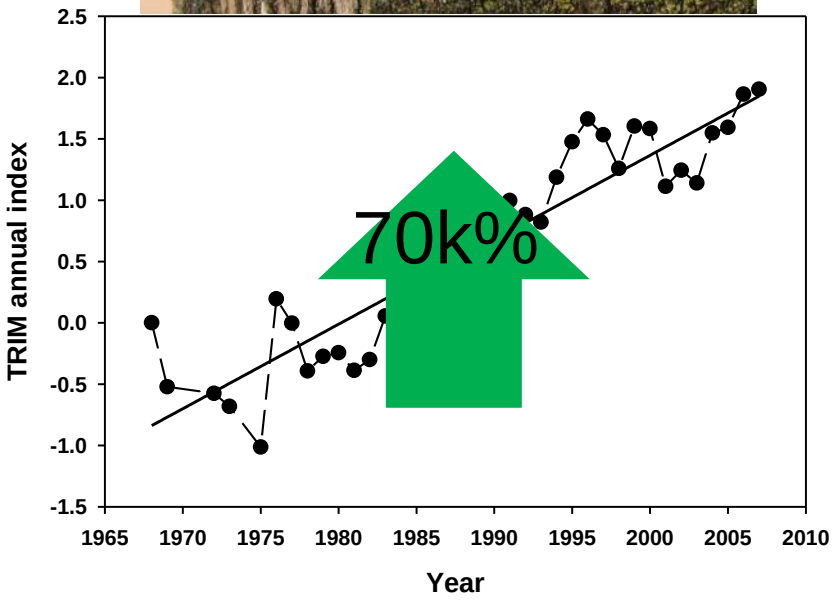
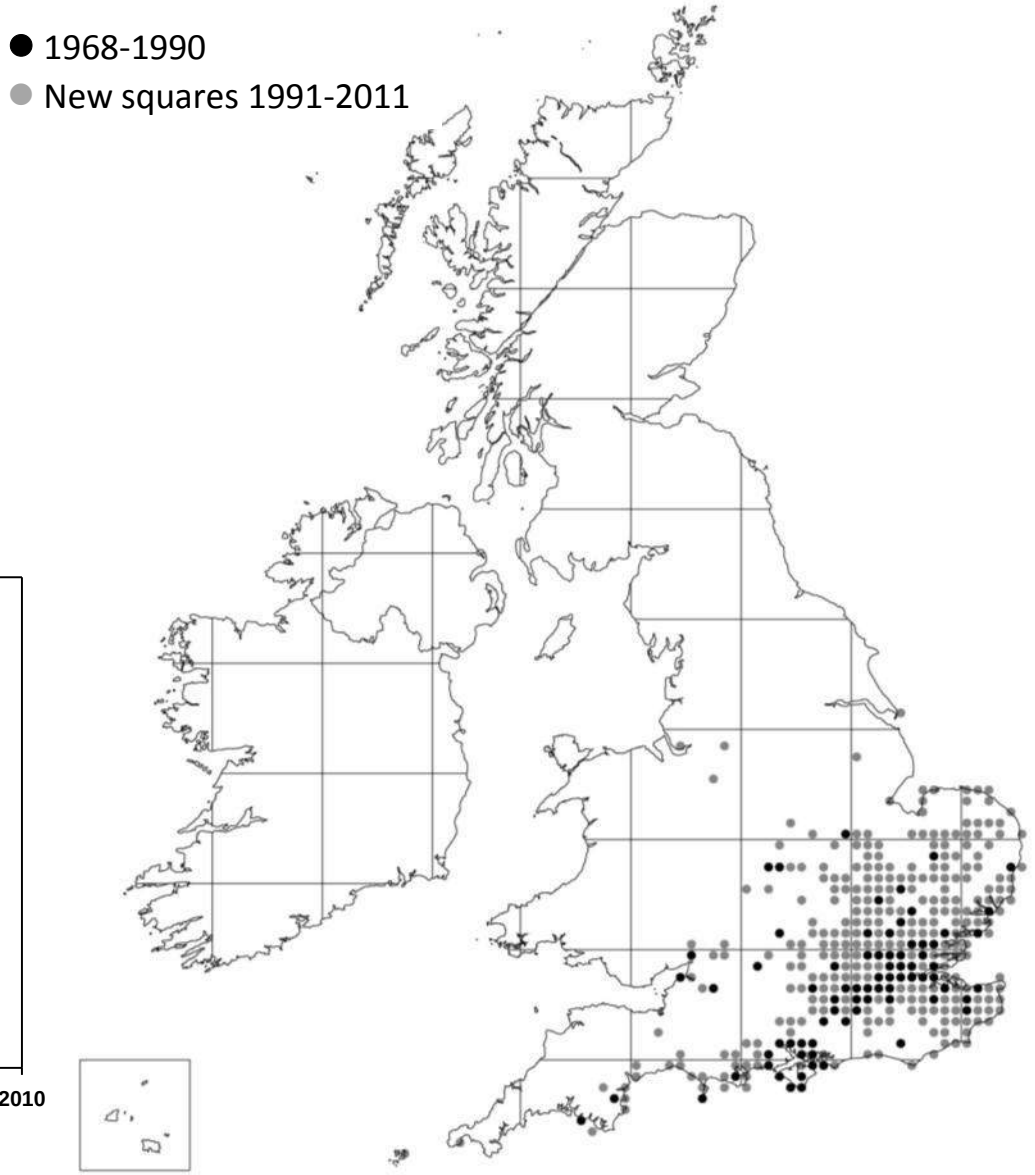
ROTHAMSTED RESEARCH





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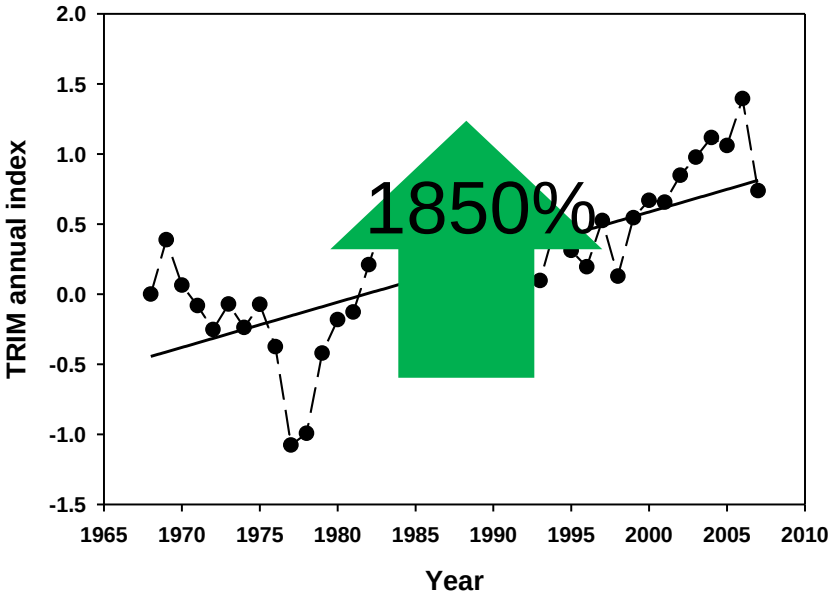
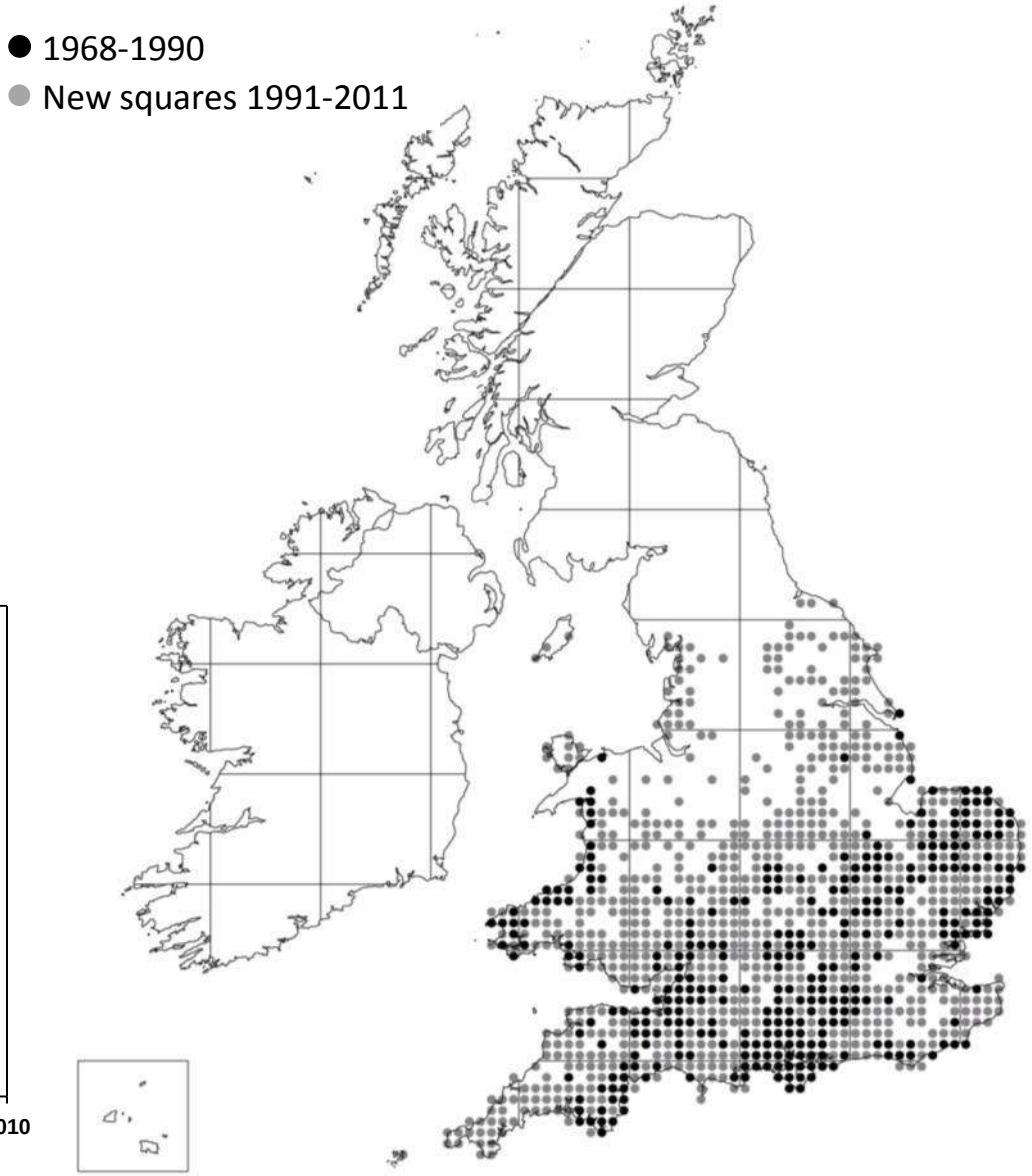
ROTHAMSTED RESEARCH





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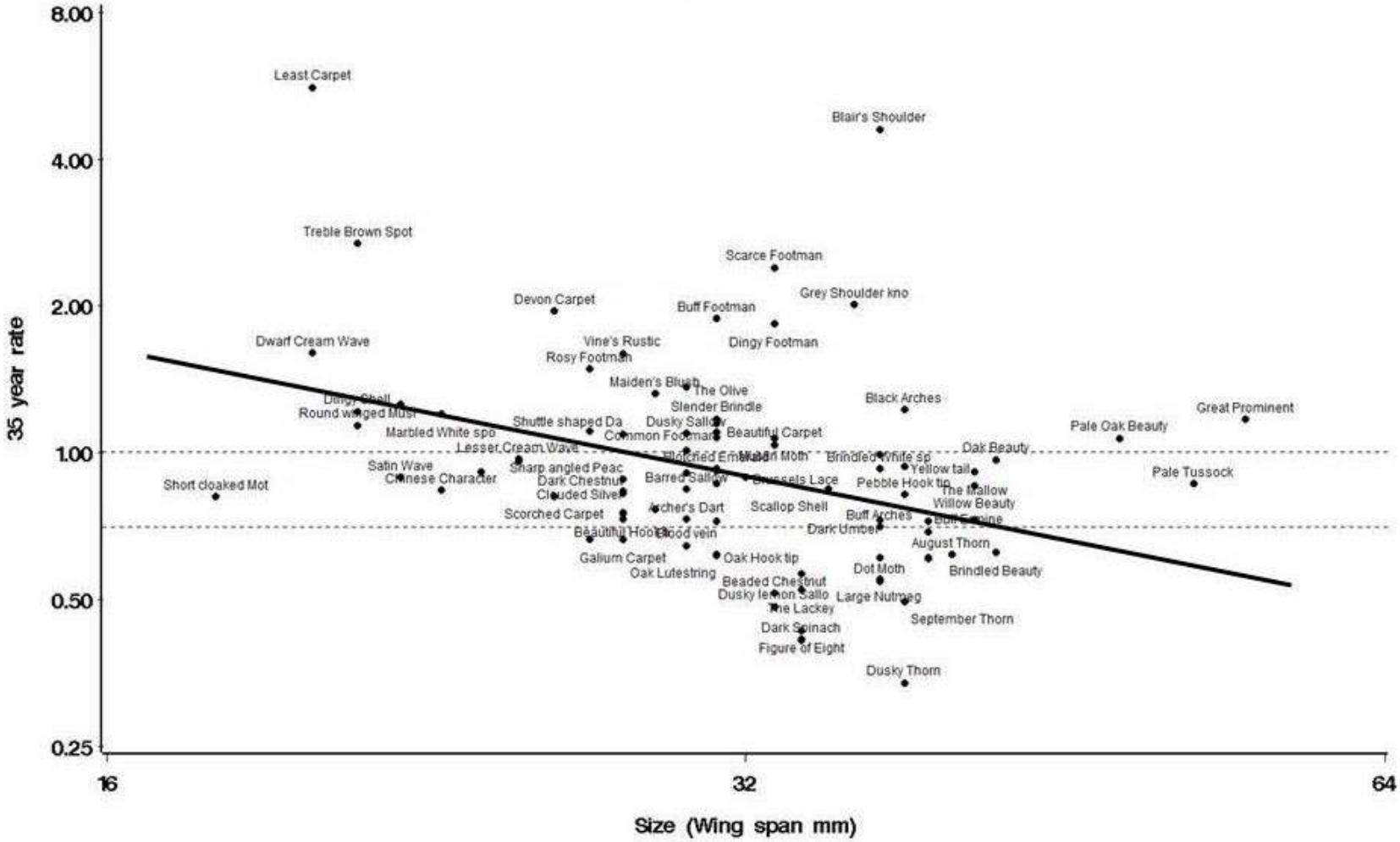
Ruth Feber, Paul J. Johnson, David Brooks, Chris Shortall, Martin Townsend,

Mark Parsons, Paul Verrier, Richard Harrington

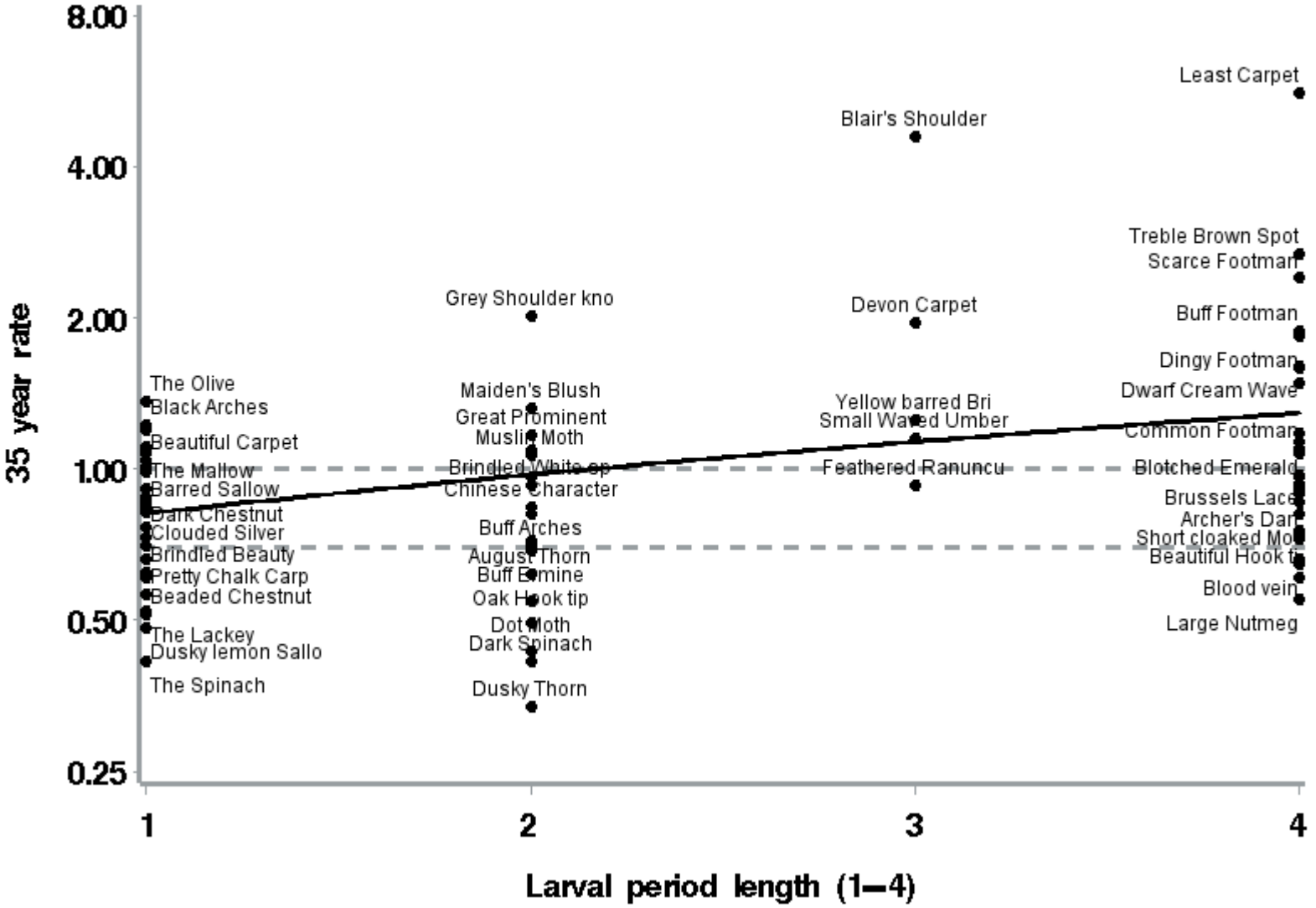
Of moths with restricted range, larger species are faring worse than smaller ones



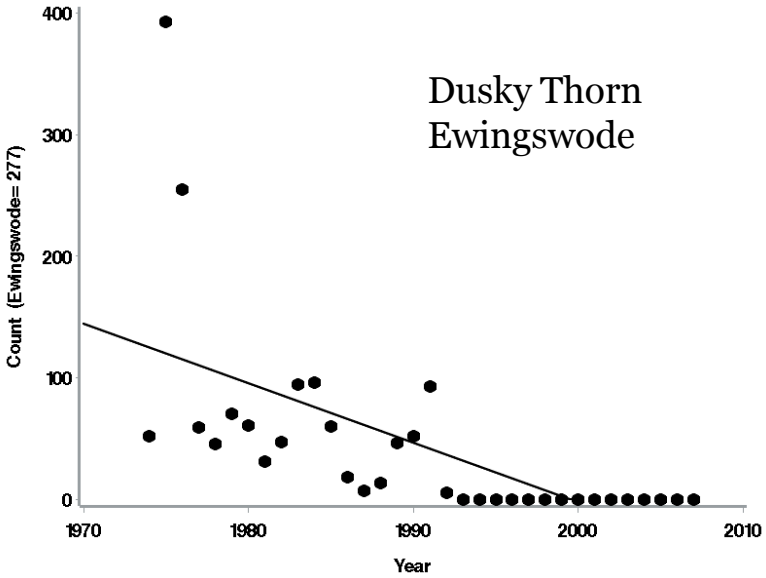
Great British Bioscience

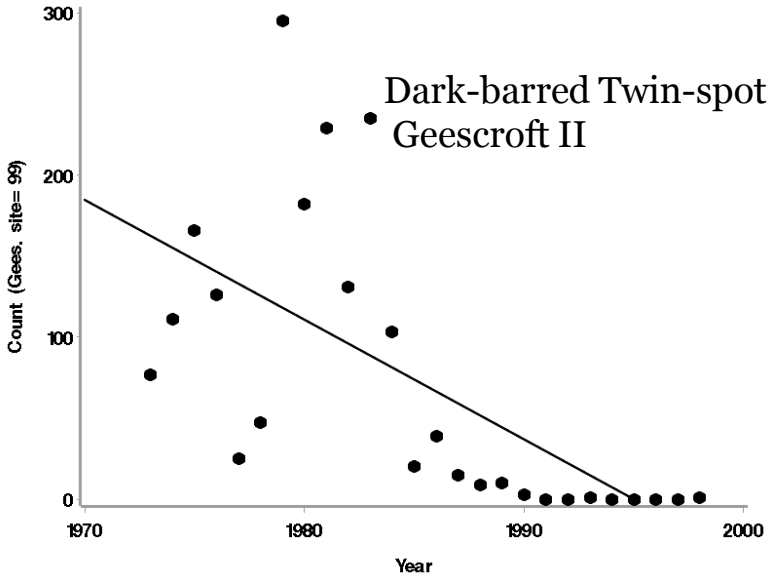
ROTHAMSTED RESEARCH

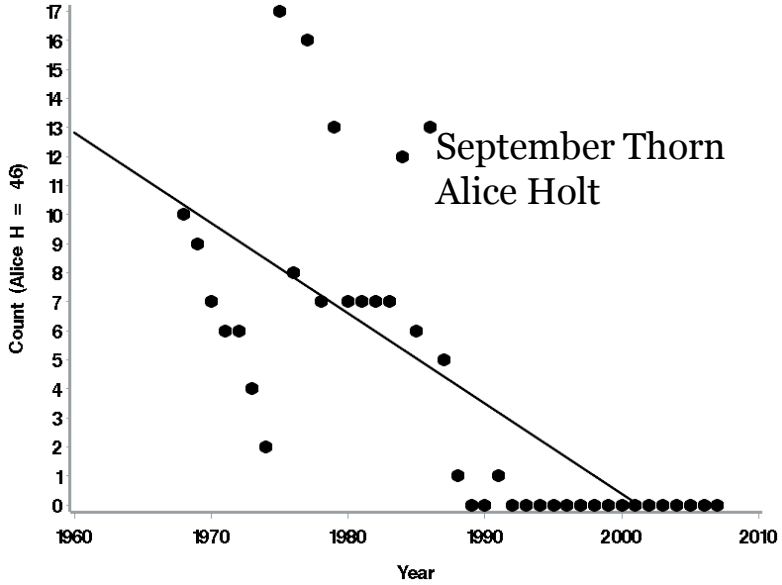
Restricted moths are doing worse if they have short larval periods

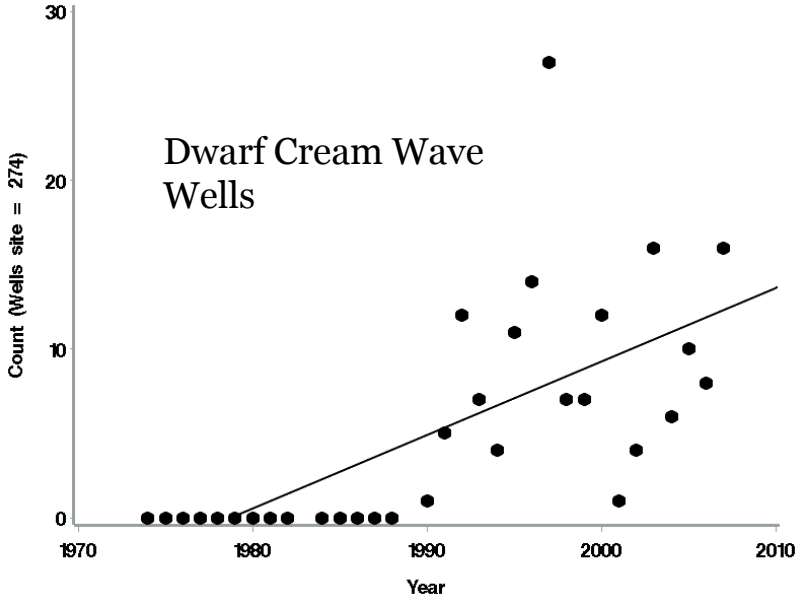


1990?









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ROTHAMSTED RESEARCH

Ian Sims, Peter Sutton, Peter Verdon & Caroline Willetts

- 6 years data (2006-2013)
- “At risk” moths
  - produce one generation per year (univoltine),
  - have ground-dwelling larvae feeding on grasses and/or other low plants,
  - overwinter as early instar larvae, and/or
  - pupate underground.

Smoky Wainscot *Mythimna impura* (Hübn.)

Common Wainscot *M. pallens* (Linn.)

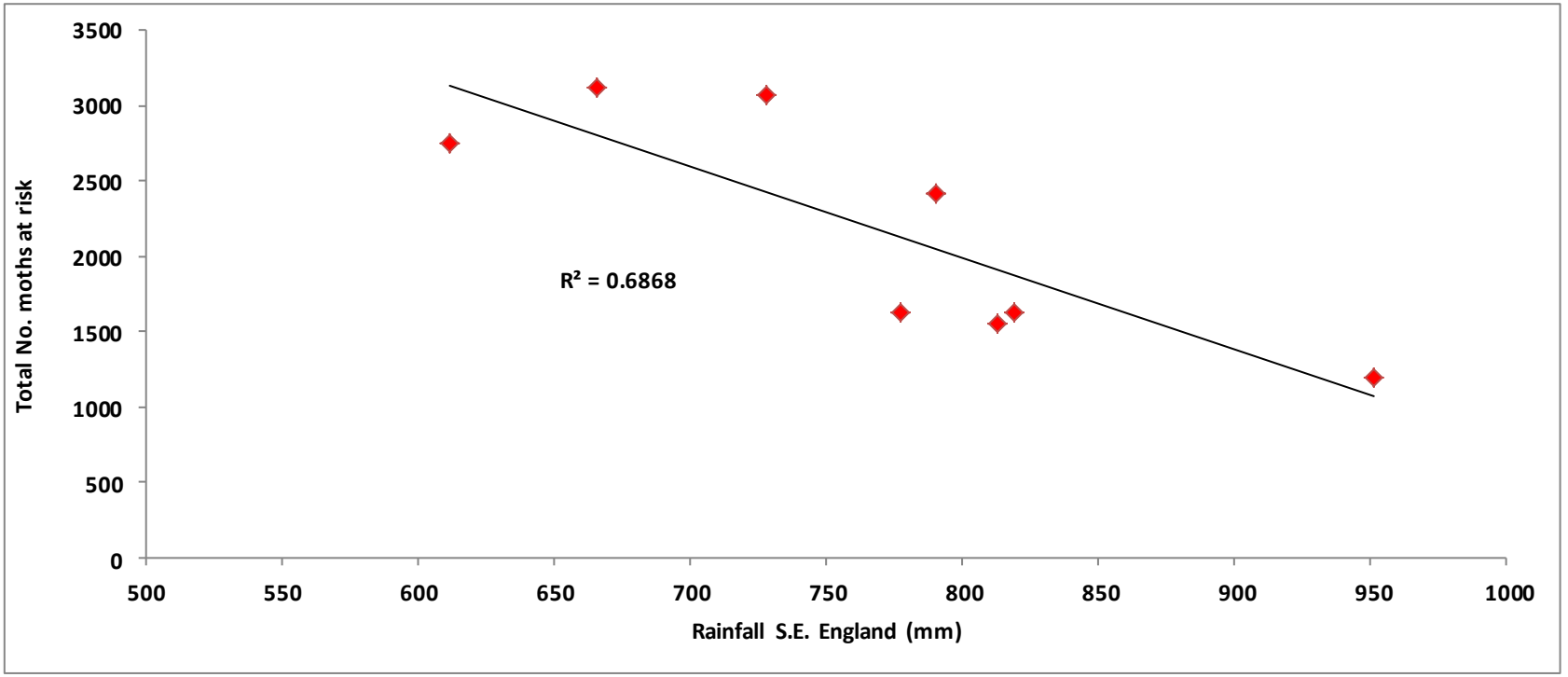
Middle-barred Minor *Oligia fasciuncula* (Haw.)

Flounced Rustic *Luperina testacea* ([D. & S.])

Straw Underwing *Thalpophila matura* (Hufn.)

Cloaked Minor *Mesoligia furuncula* ([D. & S.])

Square-spot Rustic *Xestia* xanthographa ([D. & S.])



Relationship between total annual rainfall and total number of “at-risk” moths

50 more years...

BBSRC bioscience for the future

ROTHAMSTED RESEARCH

Wheldrake – 600 species across taxa in less than two years

Posted on April 16, 2013

Julian Small

Rothamsted Trap no.644, at the Lower Derwent Valley National Nature Reserve office in Wheldrake, close to York, will have been running for two years in May. While obviously the priority has been recording every individual macro-moth to contribute to the core dataset of the light-trap scheme, I have been keen to record as much of the by-catch as possible – simply to see how many species actually come to light in our area. We recently passed 600 species recorded for the trap, broken down as follows;

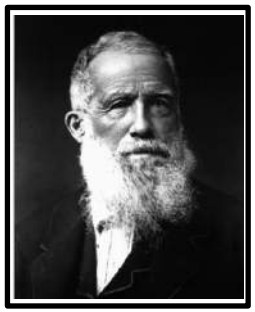
Macro-moths – 211 spp.; Micro-moths – 147 spp.; True Flies – 139 spp.; Caddisflies – 34 spp.; Beetles – 32 spp.; Bugs – 19 spp.; Lacewings and Scorpion Flies – 7 spp.; Hymenoptera – 4 spp.; Mayflies – 4 spp.; Barklice – 2 spp.; Spider – 1 sp.; Earwigs – 1 sp.

The true number of species in these 23 months will have been considerably greater, the limiting factors in identifying specimens being time, availability of keys and skill. Although, in excess of 17,200 individual insects have been identified, they probably represent only around a third of all the little beasties that have found themselves in the killing jar so far. The most diverse groups where relatively little effort has been applied to their identification so far are; parasitic wasps, fungus gnats and non-biting midges.

Thankyou

All our volunteers past and present

Lawes Agricultural Trust



Rothamsted Research

where knowledge grows

THE ROTHAMSTED INSECT SURVEY IS A BBSRC-SUPPORTED NATIONAL CAPABILITY

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