



Changing Garden Wildlife¹

Steve Head

The ecology of Britain has changed considerably in the last 60 years, with declines in almost all groups of plants and animals examined. The most recent summary is The State of Nature Report 2013², compiled by a large consortium of conservation organisations.

The report assessed the population or distribution trends of 3,148 species for which data are available. Of these, 60% have declined over the last 50 years and 31% have declined strongly. Farmland birds declined by 50% from 1970-2000, and farmland butterflies by 32%. Declines were found in 60% of woodland species and 57% from wetland and freshwater habitats.

The species studied represent only 5% of the 59,000 or so terrestrial and freshwater species in the UK and the report's additional focus on rare (generally specialist) red-data-book species increases the perception of major loss, but there is little doubt that the trend for most common species has also been downhill.

The declines in wildlife have been attributed to several factors:

- Intensification of post-war farming, and the decline of mixed farming, loss of hedgerows and ponds
- Intensive use of herbicides and pesticides in arable agriculture
- Loss of 97% of diverse flower-rich grassland by fertilisation, reseeded, over- or under-grazing and the switch from hay to silage
- Replacement of mixed woodland with largely conifer planting
- Decline in woodland management
- Urbanisation and the loss of countryside to buildings, roads and other developments
- Increased direct and indirect pollution by nutrients, especially nitrates
- Fragmentation of habitats preventing easy migration between populations
- Increased human (and dog) disturbance in open countryside
- Drainage of lowland wetlands and upland mires and bogs
- Impacts of some alien species, e.g. grey squirrels and water plants, and new tree diseases
- Climate change - still hard to prove, but increasingly apparent from changes in timing of leaf break and breeding periods, and species distribution changes.

The State of Nature Report showed a decline in urban species as well as those of the wider countryside. The urban species they were able to analyse dropped by 59%, and 35% of the species declined strongly. Numbers of characteristic urban birds such as swifts and house sparrow have plummeted - sparrows by more than two thirds since the 1970s. The report

noted however, that for amphibians such as frogs, toads and newts, ponds in gardens may be becoming refuges as habitats elsewhere decline. There is evidence that song thrushes and blackbirds may now be largely restricted to the urban environment (especially urban woodland and scrub) in eastern England, where despite farmland occupying 67% of the sample area, no song thrushes were recorded on farmland³. This of course is less a mark of the quality of gardens than a measure of habitat decline in the countryside.

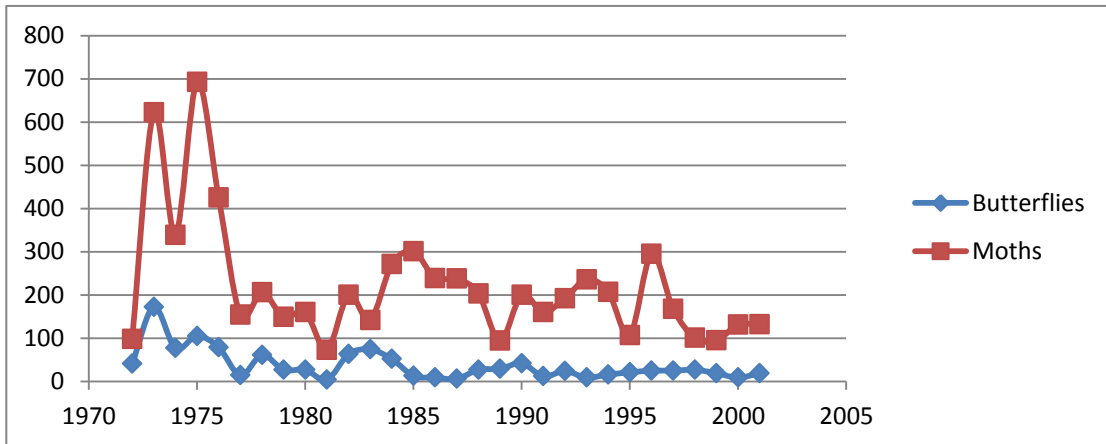
While many established species populations have declined, a few have greatly increased in numbers and range, including the collared dove and the comma butterfly. New species have also become established in Britain. Many plants have been brought in by horticulturalists, and most have behaved perfectly well, although a few notorious species - *Rhododendron ponticum*, Himalayan balsam and Japanese knotweed - have become significant problems for conservationists, and the latter has become a major threat to the integrity of whole buildings. The issue of native and non-native species is highly controversial and discussed in some detail elsewhere on the website. Other species have apparently arrived without human intervention, and over 27 species of moth have colonised the UK since as recently as 2000, many feeding on non-native plants⁴. As climate change continues, we can confidently expect more mobile species to find their way here, and some, like the tree bumblebee which arrived from Europe in 2001 and has rapidly spread, may come to use our gardens.

We have a few national schemes that monitor garden wildlife. Garden birds are tracked by the BTO Garden Birdwatch and the RSPB Big Garden Birdwatch, butterflies by Butterfly Conservation's Garden Butterfly Survey and the Big Butterfly Count. For birds, a review presented by Mike Toms of the BTO at the November 2010 Wildlife Gardening Forum Conference showed the following changes for birds that occur in gardens:

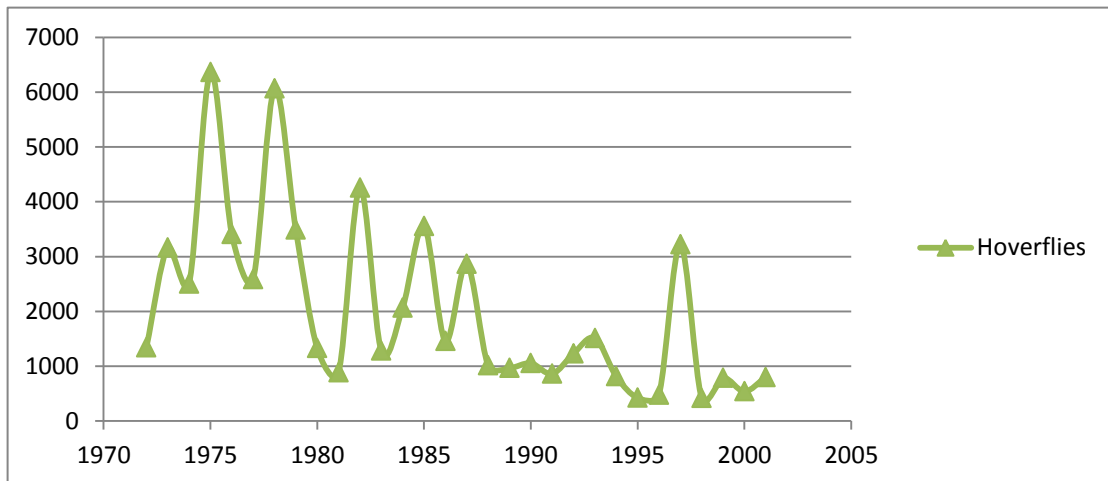
Winners:		Losers:	
Collared Dove	+403%	Blackbird	-13%
Woodpigeon	+124%	Dunnock	-30%
Jackdaw	+119%	House Martin	-41%
Great Tit	+90%	Song Thrush	-48%
Long-tailed Tit	+89%	Mistle Thrush	-48%
Goldfinch	+81%	Bullfinch	-49%
Robin	+52%	House Sparrow	-67%
Chaffinch	+34%	Starling	-76%
Blue Tit	+21%	Spotted Flycatcher	-85%
Greenfinch	+10%	Lesser Redpoll	-90%

Perhaps the most detailed records of changes in garden wildlife were collected by Jennifer Owen in her Leicester garden, from 1972 to 2001⁵. She used a malaise trap, which is a sizable tent-like structure made of fine netting, that traps flying insects. Very large numbers can be caught this way, including bewildering numbers of flies, which Owen mostly did not count, except for hoverflies where she recorded 60,736 individuals over the 30 year period, giving an idea of the amount of work she put in.

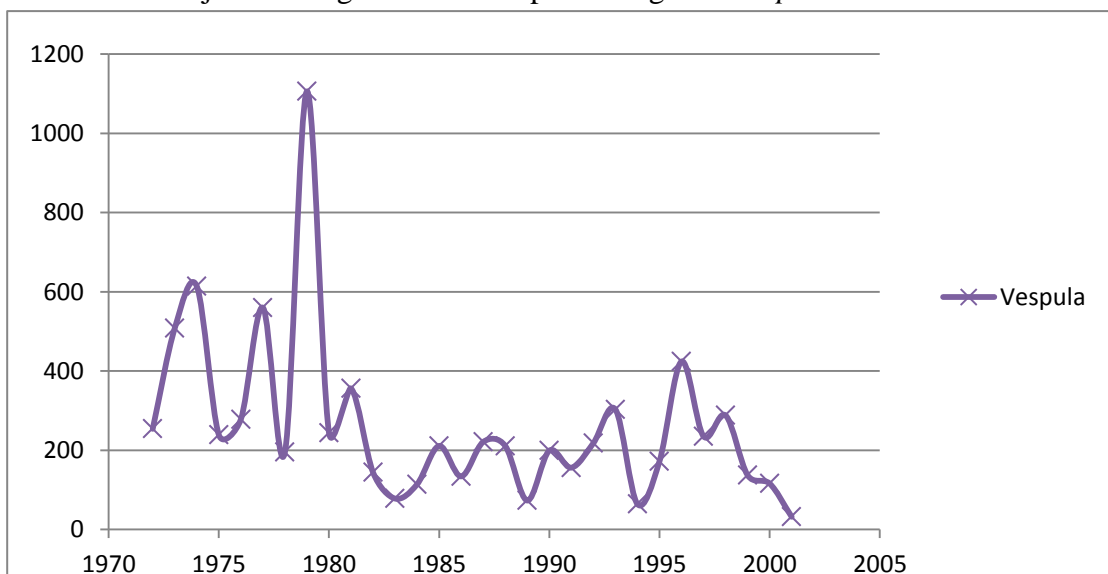
The following graphs plotted from her data show changes over time for some common insect groups.



The large number of butterflies and moths caught in the early 1970's declined into the 1980s and remained low. This trend was seen for nearly all the groups studied, such as hoverflies

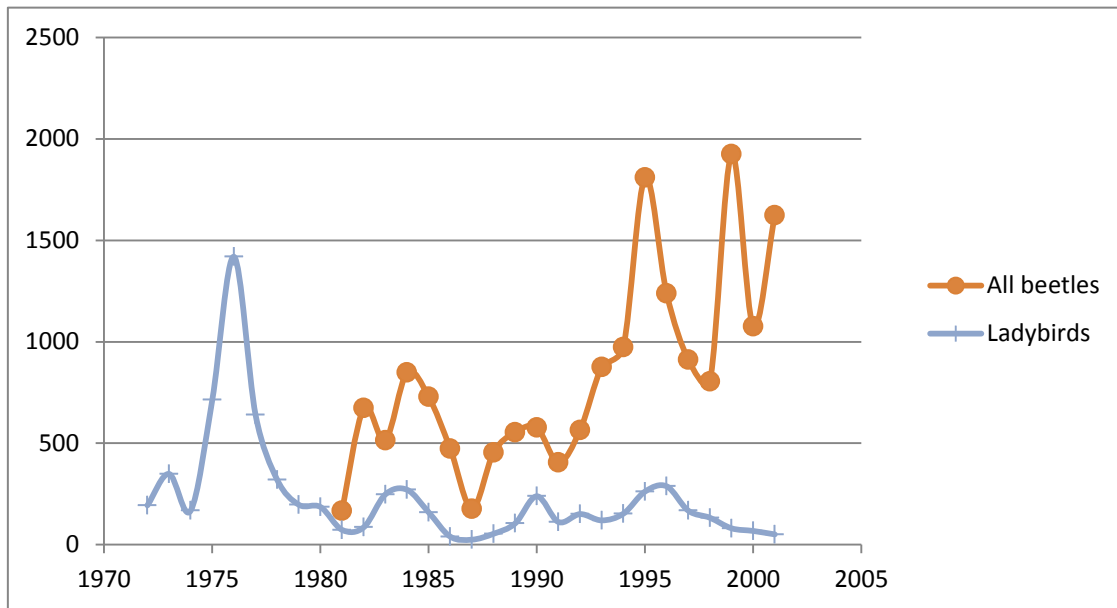


and the familiar jam-raiding common wasps of the genus *Vespula*.



The

beetles (and solitary wasps) bucked the trend however - except for ladybirds:



Looking at the graphs, the most obvious thing to note is how much variation there was from year to year. Since these insects were counted in a single garden, this may be due to random effects in a small area, but we are all familiar with how insect numbers (we particularly notice wasps) differ from year to year, largely as a result of good or bad summers. However, different groups responded differently in different years, so the hoverflies did very well in 1978 for example, when wasps, moths and ladybirds were low.

The overall decline from the good years of the 1970's matches that of wildlife in the wider countryside, and may be due to the same causes, since garden populations of mobile insects are presumably not isolated from those of the surrounding countryside. Owen noted that in the case of her own garden, many hectares of nearby farmland had been developed and built on during the period, and the farms that remained were more mechanised and reliant on agrochemicals. She hypothesised that the beetles, an extraordinarily versatile group, may have become more abundant by occupying niches no longer fully employed by the other declining groups.

With the certainty of changes in our weather coming this century from climate change, and the apparently unstoppable decline of wider countryside habitats under pressure for housing and food, we are likely to see further changes, and not always negative, in our garden wildlife. The existing surveys, and Jennifer Owen's unique 30 year study, show that we need to keep monitoring garden wildlife change, and that this has to be done quantitatively and frequently enough to allow for annual fluctuations. It is a shame that garden wildlife populations are not sheltered from the declines in the countryside, but this does mean that Britain's huge numbers of gardeners could become very useful monitors of abundance changes, as part of a wide "Citizen Science" network.

¹ Reviewed by Ken Thompson

² www.wildlifetrusts.org/publications#state-of-nature

³ Mason, C.F. 2000. Thrushes now largely restricted to the built environment in eastern England. *Diversity and Distributions* 6:189-194

⁴ Parsons, M. 2010. The changing moth and butterfly fauna of Britain - the first decade of the twenty-first century (2000-2009) *Entomologist's Record and Journal of Variation* 122: 13–22.

⁵ Owen, J. (2010) *Wildlife of a Garden: A Thirty-Year Study*. Royal Horticultural Society, London.