GARDEN TIGER MOTH PROJECT

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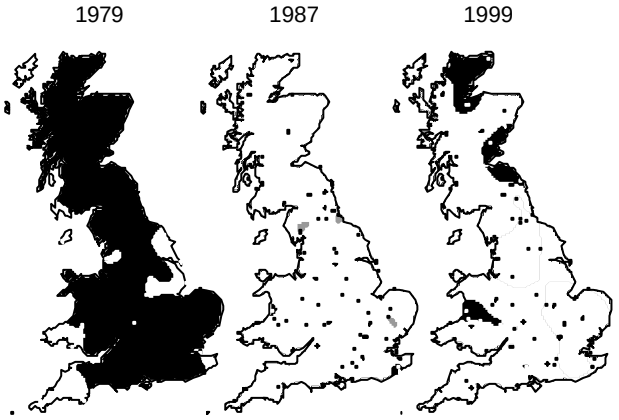
As many regular light-trappers have probably noticed, numbers of the garden tiger moth (*Arctia caja)* have been decreasing for more than 30 years, particularly in the southeast of England. Populations in the north of England and Scotland have fared better or even increased.

Rothamsted Insect Survey light-trap catches indicate that during the mid-1980's, when the decline was particularly rapid, the number of sites catching garden tigers didn't change, suggesting the loss was not due to loss of habitat. Overall, *A. caja* is being caught at 30% fewer sites that it was in the 1960's and even where it is being caught, the catches are 30% smaller. Throughout Britain, there appears to be a strong correlation between winter precipitation, spring temperature and garden tiger numbers the following summer. Wet winters and warm springs mean fewer adult moths.

As an offshoot of the *A. caja* study, we have started to examine trapping records of other species with large, hairy caterpillars. Disturbingly, we found many of the species we looked at have declined as seriously, or more so, than the garden tiger. The lackey (*Malacosoma neustria*) and the figure of eight (*Diloba caeruleocephala*), for example, have gone from being common to almost disappearing from RIS traps in the past 30 years.

Currently, we have moved from considering just how few garden tigers there are, to studying where they are found. We are particularly interested in how patterns of distribution have changed over time -- something only possible with a rich, long-term database such as the light-trap network provides.

This year, garden tiger research is also going 'high-tech' with the arrival of an Open University Ph.D. student, Sarah Anderson. Sarah is studying 'Conservation Genetics' of garden tigers. Her goal is to see how the changes in the distribution of *A. caja* has affected the genetics of local populations. This information will improve understanding of the genetics of rapidly changing populations such as threatened or invading species.



Representative maps showing changes in *Arctia caja* distribution patterns. Points are individual light-traps. Black areas are 'patches' or clusters of above-average abundance. Grey areas are 'gaps' or clusters of below-average abundance. White areas show an absence of spatial pattern of abundance. Shaded areas, therefore, show where garden tigers are *likely* to occur in very high or low numbers. In the 1970s, there were large gaps in the north, with well-defined patches in the south. In the1980s high- and low-abundance sites were randomly distributed and there was little spatial pattern. More recently, patches have formed in the north, and large gaps in the south, reversing the pattern of the 1970s.