

Public-participation butterfly surveys in Scotland

Heather Young

In May 1997, Butterfly Conservation distributed 5,000 postcards featuring a male Orange-tip butterfly throughout Scotland, with a request for members of the public, should they see one, to fill in details of where, when and how many, and return the card by post to their Scottish office in Stirling. The main aims of the survey were to promote awareness and recording of butterflies across Scotland, and to provide data on the apparent spread of this species in recent years. An encouraging response generated many new records for Orange-tip, with sightings from several west coast islands, as well as almost the length and breadth of the mainland.

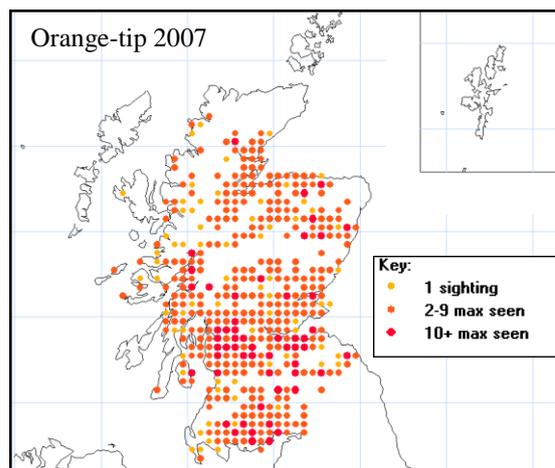
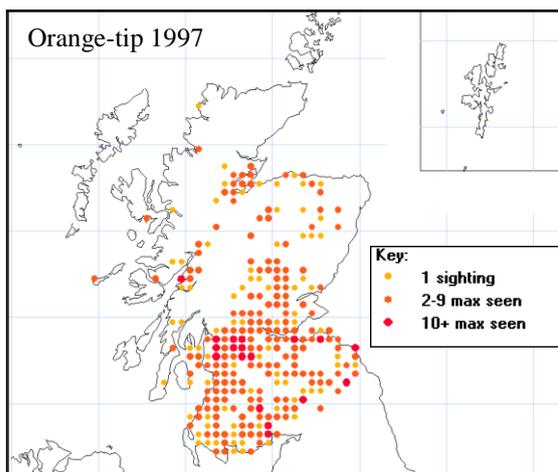
The exercise was repeated for the Orange-tip in 2007, and followed up by surveys for the Peacock in 2008, and Small Tortoiseshell in 2009. The latter two also incorporated an online recording form, enabling people to quickly and easily report a sighting, while streamlining the data entry process.

All three surveys were well supported by the public, generating over 1,500 Orange-tip, almost 2,000 Peacock, and close to 900 Small Tortoiseshell records. Cards and e-mails continue to arrive at the office, and the Small Tortoiseshell online recording will continue throughout 2010.

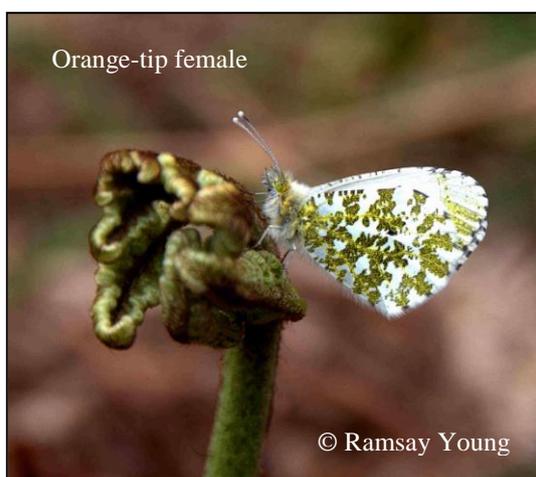
Orange-tip (*Anthocharis cardamines*)

The Orange-tip was chosen for the first of the postcard surveys because the male, with bright orange tips to its wings, is unmistakable in the field. Relatively widespread in the mid-19th century in Scotland, the Orange-tip had suffered a decline, reducing its range to the Borders and the Grampian/Strathspey areas. Recovery during the latter part of the 1900s, possibly responding to global warming, has seen a rapid recolonisation of much of the country, and this butterfly is once again a common sight in many areas.





A comparison of the Orange-tip distribution maps for 1997 and 2007 (above) shows how quickly this species has expanded its range, particularly in the Highlands, and also increased in abundance in many areas.



The female Orange-tip lacks the distinctive colouration of the male, but nevertheless can be easily separated from the other white butterflies by the attractive marbled pattern on the undersides of the wings.

Adult Orange-tips are usually on the wing from early April to the end of June, and eggs are laid at the base of the flowerheads of Cuckooflower, or Lady's Smock (*Cardamine pratensis*), Garlic Mustard (*Alliaria petiolata*) or other wild crucifers. The larva feeds on the developing seedpods, and can be relatively easy to find in June and July, before pupating and overwintering as a chrysalis.

Peacock (*Inachis io*)

Until the mid-1990s, this colourful butterfly was a relatively rare sight over much of Scotland. Populations existed in Argyll and Dumfries & Galloway, but it was not until several large influxes during the last few years of the 20th Century, probably of migrants from England, and immigrants from the continent, that breeding populations were established in other areas.



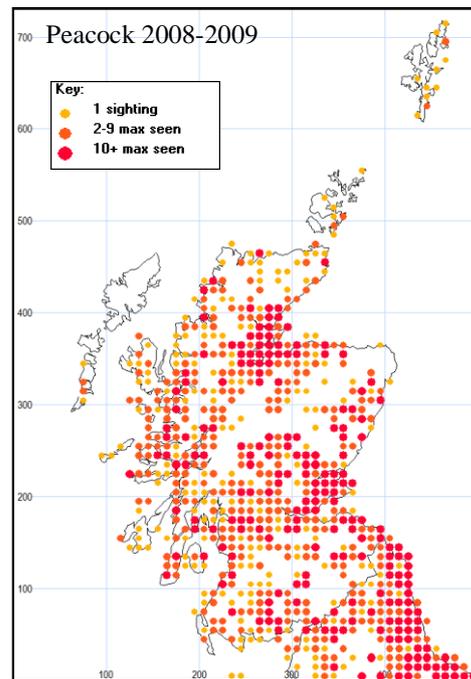
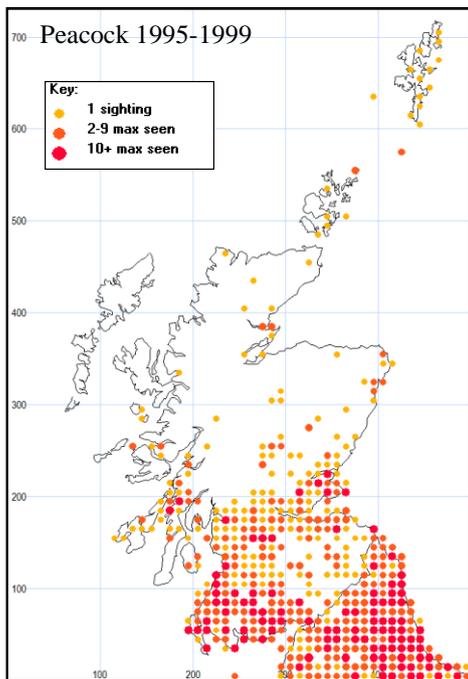
Adult Peacock butterflies hibernate during the winter, emerging in early spring to feed and reproduce. Eggs are laid in batches on the young leaves of Common Nettle (*Urtica dioica*) growing in large patches in sunny positions. The gregarious larvae have become a familiar sight in many areas during



Peacock caterpillars © Ramsay Young

June, as they feed communally at the tops of the nettle plants, before dispersing to pupate.

New adults emerge after a few weeks, and are often seen in large numbers on rotting fruit as well as nectar plants as they build up fat reserves for overwintering.



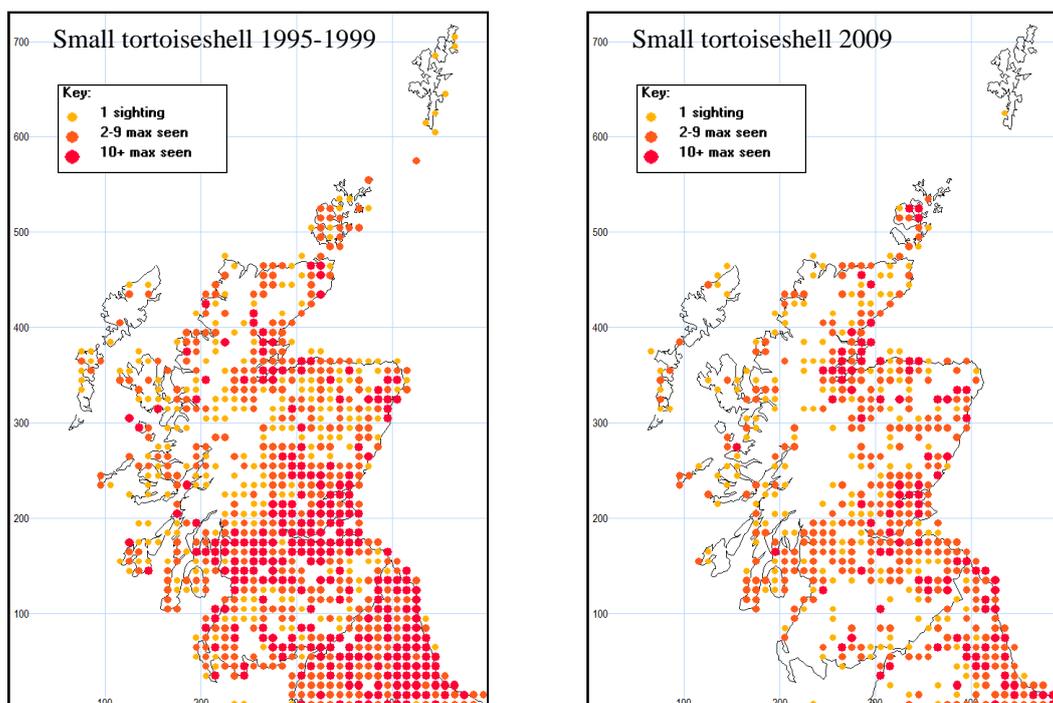
The records returned during the postcard and online survey of 2008 and 2009 confirmed that the Peacock is now found just about anywhere on the Scottish mainland, and indeed on most of the islands as well.

Small Tortoiseshell (*Aglais urticae*)

Like the Peacock, Small Tortoiseshell butterflies overwinter as hibernating adults, emerging in the Spring to mate and lay eggs, again in batches on the young leaves of Common Nettle. The young larvae are similarly gregarious, and when fully grown, disperse to finish feeding and pupate, with new adults appearing from July onwards.



Concern has been growing in recent years about the spread of a Continental parasitoid, the Tachinid fly *Sturmia bella*, which is now found across much of the southern half of Britain. The fly lays its eggs on nettle leaves, these are ingested by the butterfly larva, and the developing grubs feed internally on the caterpillar, eventually killing it. While observed declines in Small Tortoiseshell populations cannot be directly attributed to *Sturmia bella* infestation, research is ongoing to establish the extent of the problem in the United Kingdom.



Records received for Small Tortoiseshell during 2009 suggest that there is some contraction in range, particularly in the west of Scotland. However, it is known that this butterfly exhibits large annual fluctuations in abundance at monitored sites, and the areas with fewer records are also less populated by humans, and could simply reflect our own distribution.

It is clearly important that we continue to gather information on the status of this well-known, and much-loved, butterfly in Scotland, so if you see one during 2010, please remember to send in your record, either by postcard, the online form on the web-site, or by e-mail to Butterfly Conservation Scotland.

Key References:

- Asher, J. et al. (2001). *The Millennium Atlas of Butterflies in Britain and Ireland*. Oxford University Press, Oxford.
- Sutcliffe, R. (2009). Recent changes in the distribution of some Scottish butterflies and the arrival of new species in Scotland. *The Glasgow Naturalist* **25** (2): 5-12.