



## SPECIAL ANALYSIS

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# Influence of Migratory Butterflies on Butterfly Species Numbers

**In a good year, Z7 surveys register droves of migratory butterflies, enough to suspect that year-on-year differences in species numbers might above all be caused by migratory butterflies. However, looking at survey data from all angles shows the influence of migratory butterflies to be negligible.**

## Questions

Do migratory butterflies make a considerable contribution to mean butterfly species numbers? 2003 and 2009 were extremely good years for butterflies, with migratory butterflies conspicuously frequent to occur as well. We were wondering how strong an influence migratory butterflies have on species numbers year on year?

## Method

Migratory butterflies include the Clouded Yellow (*Colias croceus*), the Painted Lady (*Vanessa cardui*), the Red Admiral (*Vanessa atalanta*) and the Queen of Spain Fritillary (*Issoria lathonia*).

**Fig. 1: typical migratory butterflies**

Above left: Clouded Yellow, above right: Painted Lady, below left: Queen of Spain Fritillary, below right: Admiral



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We plotted mean species number trends per transect both including and excluding migratory butterflies, complemented by a separate curve illustrating mean species numbers of migratory butterflies only. Comparing these three graphs produces the following results:

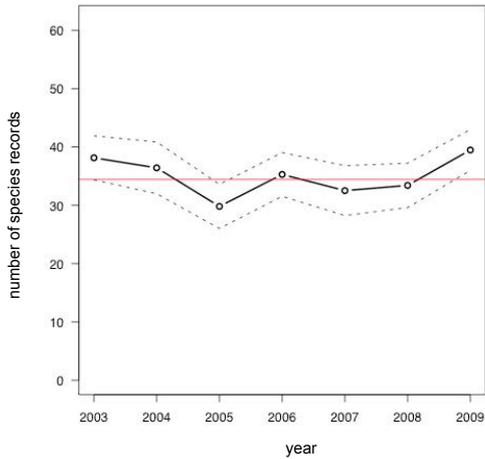
## Results

- While migratory butterflies increase the mean number of species, they do not change species number trends. The influence of autochthonous species is greater.
- Autochthonous species reached distinctly higher species numbers in the good years of 2003 and 2009 than in other years. Even though this effect was emulated by migratory butterflies, they were just as frequent in 2006.
- Differing yearly values appear to be the result of years being good or bad rather than of differing annual samples. Otherwise, years that share the same sampling areas with the following year would produce the

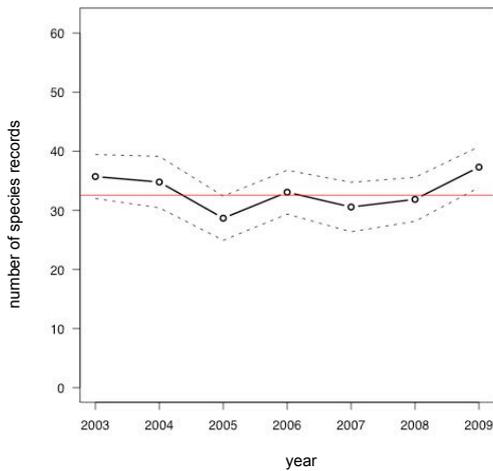
same species numbers. However, species numbers slightly declined from 2003 to 2004, while they strongly increased from 2008 to 2009, although the very same sampling areas were surveyed in 2003/2008 and 2004/2009 respectively.

- It seems that in good butterfly years, species that are usually rare become numerous enough to pass the detection limit and be identified by field workers.

**nationwide, all species, n = 476**



**nationwide, excluding migratory species, n = 476**



**nationwide, migratory species only, n = 448**

