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Table S1: Number of monitoring sites classified as urban and rural, where ALL represents both UKBMS and WCBS sites.

| Region            | Urban | Rural |     |     |
|-------------------|-------|-------|-----|-----|
|                   | All   | UKBMS | WCBS| All | UKBMS | WCBS |
| England           | 391   | 267   | 124 | 2833| 1728  | 1105  |
| Scotland          | 26    | 21    | 5   | 436 | 235   | 201   |
| Wales             | 21    | 17    | 4   | 311 | 190   | 121   |
| Northern Ireland  | 4     | 4     | 79  | 37  | 42    |
| Channel Isles     |       |       | 40  | 39  | 1     |
| Isle of Man       | 3     | 2     | 1   |     |       |
Table S2: Summary of urban and rural sites per species (minimum, mean and total for 1995-2014), where FP denotes the flight period as in Table S1.

| Species            | Urban | Rural |
|--------------------|-------|-------|
|                    | FP    | Min.  | Mean | Total | Min.  | Mean | Total |
| Dingy Skipper U    | 6     | 15.3  | 43   | 104   | 236.7 | 549  |
| Essex Skipper U    | 5     | 35.6  | 125  | 69    | 254.4 | 811  |
| Gatekeeper U       | 20    | 83.8  | 312  | 229   | 689.0 | 2379 |
| Green Hairstreak U | 8     | 22.6  | 65   | 113   | 268.6 | 649  |
| Grizzled Skipper U | 6     | 11.6  | 30   | 90    | 189.3 | 393  |
| Large Skipper U    | 20    | 68.5  | 239  | 233   | 602.1 | 1848 |
| Marbled White U    | 10    | 41.0  | 137  | 147   | 380.0 | 1129 |
| Meadow Brown U     | 22    | 91.9  | 341  | 266   | 826.5 | 2962 |
| Orange-tip U       | 18    | 71.5  | 252  | 240   | 588.9 | 1684 |
| Purple Hairstreak U| 6     | 25.7  | 78   | 106   | 226.2 | 535  |
| Ringlet U          | 13    | 66.4  | 259  | 207   | 681.5 | 2465 |
| Small Skipper U    | 13    | 61.5  | 244  | 199   | 566.1 | 1993 |
| Brimstone B        | 19    | 68.2  | 235  | 217   | 542.8 | 1652 |
| Brown Argus B      | 11    | 34.7  | 108  | 123   | 335.8 | 939  |
| Common Blue B      | 22    | 82.8  | 291  | 259   | 700.5 | 2228 |
| Green-veined White B| 20  | 88.4  | 335  | 263   | 790.0 | 2780 |
| Holly Blue B       | 16    | 75.0  | 264  | 178   | 545.6 | 1562 |
| Large White B      | 21    | 95.0  | 365  | 260   | 803.6 | 2835 |
| Small White B      | 21    | 95.0  | 368  | 253   | 798.8 | 2849 |
| Wall B             | 8     | 18.1  | 49   | 153   | 328.1 | 900  |
| Comma M            | 17    | 81.5  | 304  | 213   | 659.1 | 2160 |
| Painted Lady M     | 19    | 75.3  | 253  | 230   | 688.5 | 2044 |
| Peacock M          | 21    | 88.5  | 337  | 251   | 783.0 | 2757 |
| Red Admiral M      | 20    | 86.2  | 320  | 264   | 769.9 | 2640 |
| Small Copper M     | 21    | 70.2  | 239  | 246   | 638.0 | 1972 |
| Small Tortoiseshell M| 21 | 83.7  | 318  | 265   | 767.4 | 2738 |
| Small Heath M      | 15    | 50.6  | 176  | 216   | 545.4 | 1701 |
| Speckled Wood M    | 20    | 86.5  | 336  | 230   | 725.3 | 2528 |
Table S3: Pearson’s product moment correlation coefficients (in ascending order) between the urban and rural indices of abundance for each species for 1995-2014 and 1980-2014. Significant correlations are indicated by * ($p < 0.05$) and ** ($p < 0.01$).

| Species                  | 1995- | 1980-  |
|--------------------------|-------|--------|
| Orange-tip               | 0.24  |        |
| Dingy Skipper            | 0.34  |        |
| Green Hairstreak         | 0.38  |        |
| Small Copper             | 0.47  | * 0.55 |
| Ringlet                  | 0.50  | *      |
| Speckled Wood            | 0.56  | *      |
| Grizzled Skipper         | 0.57  | **     |
| Brown Argus              | 0.61  | **     |
| Comma                    | 0.61  | ** 0.43 |
| Purple Hairstreak        | 0.62  | **     |
| Small Heath              | 0.62  | ** 0.36 |
| Green-veined White       | 0.67  | ** 0.74 |
| Holly Blue               | 0.74  | **     |
| Essex Skipper            | 0.74  | **     |
| Wall                     | 0.77  | ** 0.85 |
| Marbled White            | 0.83  | **     |
| Large Skipper            | 0.84  | ** 0.69 |
| Small Skipper            | 0.84  | ** 0.86 |
| Small Tortoiseshell      | 0.85  | ** 0.82 |
| Meadow Brown             | 0.86  | ** 0.45 |
| Peacock                  | 0.88  | ** 0.61 |
| Gatekeeper               | 0.89  | **     |
| Small White              | 0.89  | ** 0.62 |
| Common Blue              | 0.89  | ** 0.73 |
| Large White              | 0.89  | ** 0.60 |
| Brimstone                | 0.89  | **     |
| Red Admiral              | 0.92  | ** 0.45 |
| Painted Lady             | 0.97  | ** 0.87 |
Figure S1: Urban areas within the UK (orange) defined by the UMZ2000 classification for the year 2000.
Figure S2: GAI indices of relative abundance for selected species at urban (brown) and rural (green) sites, from 1995-2014.
Figure S2: GAI indices of relative abundance for selected species at urban (brown) and rural (green) sites, from 1995-2014.
Figure S3: GAI indices of relative abundance for selected species at urban (brown) and rural (green) sites, from 1980-2014.
Figure S4: Comparison of the mean number of urban sites across years per species and the width of the confidence interval for the urban trend (1995-2014). Species codes represent species common names (Table 1).
Figure S5: Urban (brown) and rural (green) composite indices for 1995-2014 for univoltine (a), bivoltine (b), multivoltine (c) and specialist (d) species. Shaded bars represent 95% confidence intervals from bootstrapping.
Figure S6: Annual estimates of the mean flight date, $\mu_1$, for univoltine and bivoltine (first brood) species at urban (brown) and rural (green) sites, from 1995-2014.
Figure S6: Annual estimates of the mean flight date, $\mu_1$, for univoltine and bivoltine (first brood) species at urban (brown) and rural (green) sites, from 1995-2014.
Figure S7: Annual estimates of $\sigma$, representing the length of the flight period, for univoltine and bivoltine species at urban (brown) and rural (green) sites, from 1995-2014.
Figure S7: Annual estimates of $\sigma$, representing the length of the flight period, for univoltine and bivoltine species at urban (brown) and rural (green) sites, from 1995-2014.
Figure S8: Annual estimates of the difference in mean flight date of the two broods for each bivoltine species at urban (brown) and rural (green) sites, from 1995-2014.
Figure S9: Annual estimates of the weighting, \( w \), of the two broods for each bivoltine species at urban (brown) and rural (green) sites, from 1995-2014.