**Supplementary Material**

**Table S1**. Rank of general linear regression models explaining variation in Herring Gull colony trends between Operation Seafarer (1969) and Seabird 2000 (1998–2002) by proxies of the availability of different foraging habitats using Akaike’s Information Criterion corrected for small sample size (AICc). k is the number of variables included, wi is the Akaike weight, and ∆AICc is the AICc difference. Top-supported models (∆AICc < 2) are shown in bold.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables included within model | k | AICc | ∆AICc | wi |
| **Wave Fetch** | **2** | **140.5** | **0.00** | **0.291** |
| **Wave Fetch, Fishery CPUE** | **3** | **141.6** | **1.11** | **0.167** |
| **Farmland, Wave Fetch** | **3** | **142.0** | **1.56** | **0.133** |
| **Farmland, Wave Fetch, Fishery CPUE** | **4** | **142.2** | **1.70** | **0.124** |
| Wave Fetch, Built-up | 3 | 142.7 | 2.25 | 0.094 |
| Farmland, Wave Fetch, Built-up, Fishery CPUE | 5 | 143.4 | 2.92 | 0.067 |
| Farmland, Wave Fetch, Built-up | 4 | 143.5 | 3.06 | 0.063 |
| Wave Fetch, Built-up, Fishery CPUE | 4 | 143.8 | 3.33 | 0.055 |
| Fishery CPUE | 2 | 151.4 | 10.97 | 0.001 |
| Intercept only | 1 | 152.1 | 11.68 | 0.001 |
| Farmland, Fishery CPUE | 3 | 152.6 | 12.11 | 0.001 |
| Built-up, Fishery CPUE | 3 | 152.6 | 12.13 | 0.001 |
| Built-up | 2 | 153.8 | 13.35 | 0.000 |
| Farmland | 2 | 154.2 | 13.76 | 0.000 |
| Farmland, Built-up, Fishery CPUE | 4 | 154.7 | 14.29 | 0.000 |
| Farmland, Built-up | 3 | 156.0 | 15.52 | 0.000 |

**Table S2.** Final model-averaged parameter estimates with standard error and 95% confidence intervals. Effects are model-averaged slope estimates derived from the models in Table 1, ranked by relative importance of each habitat variable to explain variation in changes in Herring Gull colony size between Operation Seafarer (1969) and Seabird 2000 (1998–2002).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Effect | SE | 95% Confidence Intervals | Relative importance1 |
| Lower | Upper |
| Intercept |  0.3017 |  |  |  |  |
| Wave Fetch | -0.0008 | 0.0002 | -0.0012 | -0.0004 | 0.994 |
| Farmland |  0.0001 | 0.0001 | -0.0001 |  0.0002 | 0.388 |
| Fishery CPUE |  0.0002 | 0.0001 | -0.0002 |  0.0003 | 0.170 |

1 Relative importance refers to the sum of all model weights in which a given parameter occurs.