**Additional file 9:** Sensitivity analysis of the effect of multiple case studies per primary study

To assess the robustness of the main results (for abundance and species richness best models), we ran the meta analyses with a random selection of one case per primary study. We repeated this random sampling 1000 times to get the distribution of predicted effect sizes and compared them to our results.

The table below shows the results obtained with the complete datasets and the effect sizes and 95 % distribution from the 1000 models ran with a random sample of one case per primary study.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | **Estimates from complete datasets** | **Results from 1000 simulations** |
|  |  |  | d | Lower CI | Upper CI | Mean | 95 % distribution |
| Abundance |  |  |  |   |  |  |
|  | Highways |  |  |  |   |  |  |
|  |  | Omnivore | 0.1 | -0.22 | 0.43 | 0.16 | -0.23 | 0.71 |
|  |  | Pollinators | 0.21 | -0.36 | 0.78 | 0.3 | -0.64 | 1.11 |
|  |  | Primary consumers | 0.24 | -0.08 | 0.57 | 0.61 | -0.11 | 1.49 |
|  |  | Secundary consumers | 0.7 | -0.23 | 0.38 | -0.1 | -0.91 | 0.53 |
|  | Non-highway roads |  |  |  |   |  |  |
|  |  | Pollinators | **0.64** | **0.13** | **1.14** | **0.55** | **0.35** | **0.85** |
|  |  | Primary consumers | **0.68** | **0.37** | **0.99** | **0.67** | **0.23** | **1.19** |
|  | Waterways |  |  |  |   |  |  |
|  |  | Pollinators | **-0.89** | **-1.76** | **-0.01** | **-0.92** | **-1.01** | **-0.83** |
|  |  | Primary consumers | -0.08 | -0.5 | 0.33 | 0 | -1.36 | 1.52 |
|  | Pipelines / Power lines |  |  |  |   |  |  |
|  |  | Pollinators | -0.2 | -0.52 | 0.12 | -0.31 | -0.9 | 0.17 |
|  |  |  |  |  |  |   |  |  |
| Species richness |  |  |  |   |  |  |
|  | Highways | 0.19 | -0.26 | 0.64 | **0.23** | **0.04** | **0.4** |
|  | Non-highway roads | **0.72** | **0.33** | **1.11** | **0.73** | **0.22** | **1.07** |
|  | Waterways | -0.05 | -0.72 | 0.63 | 0.06 | -0.72 | 1.22 |
|  | Pipelines / Power lines | 0.72 | -0.3 | 1.75 | \_\* | \_\* | \_\* |
|  | Railways | -0.66 | -1.53 | 0.21 | -0.47 | -1.02 | 0.15 |

\*For the species richness of pipelines / power lines verges, the three study cases came from three different primary studies, thus the sensitivity analysis was unrelevant.