Long-term trends in the occupancy of ants revealed through use of multi-sourced datasets

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**Table S5: Species suitability for modelling**

Calculations of two metrics used to determine whether there is sufficient data to warrant occupancy modelling for each species in the two largest datasets individually and the combined dataset. The two metrics were the number of records of the focal species in the 10 % best recorded decades (90th percentile) and the proportion of total recording visits within the dataset that resulted in non-detections for the focal species, determined to be the best at describing suitability according to Pocock et al. 2019. Species were determined to be suitable for occupancy modelling if either 1) the proportion of visits with non-detection of the focal species was < 0.958 and the 90th percentile number of detections within a decade was ≥ 29 or 2) if the proportion of visits with non-detection of the focal species was ≥ 0.958 and the 90th percentile number of detections within a decade was ≥ 9.5.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NHM Denmark | | |  | NHM Aarhus | | |  | all data sets combined | | |
| Species | 90% detections | prop. non-detection | suitable? |  | 90% detections | prop. non-detection | suitable? |  | 90% detections | prop. non-detection | suitable? |
| *Camponotus herculeanus* | 6.4 | 0.976 | no |  | 1 | 0.991 | no |  | 8.3 | 0.984 | no |
| *Camponotus ligniperda* | 2 | 0.995 | no |  |  |  | no |  | 2.6 | 0.997 | no |
| *Formica cinerea* | 12.4 | 0.961 | yes |  |  |  | no |  | 17.2 | 0.974 | yes |
| *Formica clara* |  |  | no |  |  |  | no |  | 4 | 0.998 | no |
| *Formica cunicularia* | 8.6 | 0.984 | no |  |  |  | no |  | 8.6 | 0.992 | no |
| *Formica exsecta* | 11.2 | 0.969 | yes |  | 1 | 0.987 | no |  | 19.5 | 0.970 | yes |
| *Formica foreli* |  |  | no |  |  |  | no |  | 3 | 0.999 | no |
| *Formica forsslundi* | 1 | 0.998 | no |  |  |  | no |  | 1 | 0.999 | no |
| *Formica fusca* | 43 | 0.859 | yes |  | 13 | 0.847 | no |  | 77.3 | 0.856 | yes |
| *Formica gagatoides* |  |  | no |  | 1 | 0.991 | no |  | 1 | 0.999 | no |
| *Formica lugubris* | 1 | 0.999 | no |  |  |  | no |  | 1 | 0.999 | no |
| *Formica picea* | 7.4 | 0.979 | no |  |  |  | no |  | 20.9 | 0.972 | yes |
| *Formica polyctena* | 20.4 | 0.921 | no |  |  |  | no |  | 23.3 | 0.947 | no |
| *Formica pratensis* | 10.6 | 0.966 | yes |  | 1.9 | 0.987 | no |  | 13.2 | 0.975 | yes |
| *Formica pressilabris* | 11 | 0.969 | yes |  | 1 | 0.996 | no |  | 12 | 0.978 | yes |
| *Formica rufa* | 36.3 | 0.888 | yes |  | 21 | 0.790 | no |  | 63 | 0.892 | yes |
| *Formica rufibarbis* | 30.6 | 0.907 | yes |  | 1 | 0.991 | no |  | 28.9 | 0.944 | no |
| *Formica sanguinea* | 19.8 | 0.928 | no |  | 1 | 0.991 | no |  | 32.6 | 0.947 | yes |
| *Formica truncorum* | 12 | 0.973 | yes |  | 1 | 0.991 | no |  | 11.5 | 0.983 | yes |
| *Formica uralensis* | 10.8 | 0.980 | no |  | 1 | 0.996 | no |  | 18.6 | 0.982 | yes |
| *Formicoxenus nitidulus* | 6.6 | 0.985 | no |  | 1 | 0.996 | no |  | 6.8 | 0.991 | no |
| *Harpagoxenus sublaevis* | 3.9 | 0.995 | no |  |  |  | no |  | 5.9 | 0.996 | no |
| *Hypoponera punctatissima* | 3.8 | 0.992 | no |  |  |  | no |  | 5.5 | 0.994 | no |
| *Lasius alienus* |  |  | no |  |  |  | no |  | 2 | 0.999 | no |
| *Lasius brunneus* | 3.6 | 0.995 | no |  | 1 | 0.996 | no |  | 3.2 | 0.997 | no |
| *Lasius flavus* | 16 | 0.948 | no |  | 5.4 | 0.934 | no |  | 32.2 | 0.937 | yes |
| *Lasius fuliginosus* | 14.4 | 0.946 | no |  | 4 | 0.952 | no |  | 18 | 0.957 | no |
| *Lasius meridionalis* | 10.6 | 0.973 | yes |  |  |  | no |  | 10.2 | 0.984 | yes |
| *Lasius mixtus* | 2.5 | 0.992 | no |  |  |  | no |  | 2.5 | 0.995 | no |
| *Lasius niger* | 40 | 0.863 | yes |  | 11.5 | 0.856 | no |  | 81 | 0.798 | yes |
| *Lasius platythorax* |  |  | no |  |  |  | no |  | 42 | 0.984 | yes |
| *Lasius psammophilus* |  |  | no |  |  |  | no |  | 10 | 0.996 | no |
| *Lasius umbratus* | 10.6 | 0.957 | no |  | 3 | 0.948 | no |  | 13 | 0.968 | yes |
| *Leptothorax acervorum* | 21.2 | 0.937 | no |  | 2.6 | 0.978 | no |  | 40.8 | 0.932 | yes |
| *Leptothorax muscorum* | 1 | 0.999 | no |  |  |  | no |  | 2 | 0.999 | no |
| *Myrmecina graminicola* |  |  | no |  | 1 | 0.996 | no |  | 1 | 1.000 | no |
| *Myrmica lobicornis* | 13 | 0.973 | no |  |  |  | no |  | 12.6 | 0.981 | yes |
| *Myrmica rubra* | 30.7 | 0.892 | yes |  | 15.5 | 0.795 | no |  | 42.8 | 0.896 | yes |
| *Myrmica ruginodis* | 27.2 | 0.908 | no |  | 38.8 | 0.594 | yes |  | 76.4 | 0.877 | yes |
| *Myrmica rugulosa* | 16.6 | 0.953 | no |  | 4.6 | 0.930 | no |  | 18.1 | 0.962 | yes |
| *Myrmica sabuleti* | 33.9 | 0.932 | yes |  | 1 | 0.996 | no |  | 33.3 | 0.957 | yes |
| *Myrmica scabrinodis* | 33.2 | 0.920 | yes |  | 5.5 | 0.891 | no |  | 37 | 0.930 | yes |
| *Myrmica schencki* | 15 | 0.971 | yes |  | 1 | 0.996 | no |  | 14.4 | 0.982 | yes |
| *Myrmica specioides* | 1 | 0.998 | no |  |  |  | no |  | 1 | 0.999 | no |
| *Myrmica sulcinodis* | 3.2 | 0.993 | no |  | 1 | 0.996 | no |  | 8 | 0.993 | no |
| *Stenamma debile* or *S. westwoodii* |  |  | no |  | 1 | 0.996 | no |  | 1 | 1.000 | no |
| *Temnothorax interruptus* | 2.6 | 0.996 | no |  |  |  | no |  | 2.6 | 0.998 | no |
| *Temnothorax nylanderi* | 1 | 0.999 | no |  |  |  | no |  | 1 | 0.999 | no |
| *Temnothorax parvulus* |  |  | no |  |  |  | no |  | 1 | 1.000 | no |
| *Temnothorax tuberum* | 1.8 | 0.997 | no |  |  |  | no |  | 1.8 | 0.998 | no |
| *Tetramorium atratulum* | 1 | 0.999 | no |  |  |  | no |  | 1 | 1.000 | no |
| *Tetramorium caespitum* | 14 | 0.943 | no |  | 3.6 | 0.969 | no |  | 30 | 0.940 | yes |
| Suitable species |  |  | 14 |  |  |  | 1 |  |  |  | 24 |