Supplementary Materials for

Emergent properties of species-habitat networks in an insular forest landscape

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Fig. S1. Normalised degree at the site-level for each taxon. Taxa included: (A) medium-large mammals, (B) small non-volant mammals, (C) lizards, (D) understorey birds, (E) frogs, (F) dung beetles, (G) orchid bees, (H) trees and (I) all groups combined. Bars are colour-coded according to forest patch area ($\log_{10} x$; ha).
Fig. S2.

**Nestedness contribution at the site-level for each taxon.** Taxa included: (A) medium-large mammals, (B) small non-volant mammals, (C) lizards, (D) understorey birds, (E) frogs, (F) dung beetles, (G) orchid bees, (H) trees, and (I) all groups combined. Bars are colour-coded according to forest area ($\log_{10}$ ha).
Fig. S3.

**Normalized degree at the species-level for each taxon.** Taxa included: (A) medium-large mammals, (B) small non-volant mammals, (C) lizards, (D) understorey birds, (E) frogs, (F) dung beetles, (G) orchid bees, and (H) trees. Bars are colour-coded according to each species size. Species body size is defined as adult body mass for medium-large mammals, small mammals and birds; body length for lizards, dung beetles and orchid bees; body height for frogs; and seed mass for trees (Table S3).
Fig. S4.

Relationship between network properties at the species-level with the relativized species body size for each taxon. Network properties included (A) species normalised degree and (B) species nestedness contribution. Species body size is defined as body mass for medium-large mammals, small non-volant mammals and understorey birds, to body length for lizards, dung beetles and orchid bees, to body height for frogs, and to seed mass for trees (see Table S3 for a description of each species trait). Lines represent the adjusted models. Each taxonomic group is represented by the same icon, and corresponding boxplot are coloured as in Fig. 1.
Fig. S5.

**Nestedness contribution at the species-level for each taxon.** Taxa included: (A) medium-large mammals, (B) small non-volant mammals, (C) lizards, (D) understorey birds, (E) frogs, (F) dung beetles, (G) orchid bees, and (H) trees. Bars are colour-coded according to each species size. Species body size is defined as body mass for medium-large mammals, small mammals and birds, to body length for lizards, dung beetles and orchid bees, to body height for frogs and to seed mass for trees (Table S3).
### Table S1.

Sampling units allocated per survey site per taxon. For medium-large mammals (LM), sampling units correspond to the number of camera-traps deployed per sampling site (each camera operated twice for 30 consecutive days), for small non-volant mammals (SM) is the number of both live and pitfall-traps (each trap operated twice for 16 consecutive nights), for lizards (Liz) is the number of pitfall-traps (each trap operated twice for 16 consecutive days), for understorey birds is the number of mist-nets (each net operated twice for 2 consecutive days), for frogs is the number of acoustic recorder devices (each recorded operated once for 48 hours), for orchid bees (OB) is the number of scent trap-arrays (each trap operated twice for 3 consecutive days), and for trees (T) is the number of 0.25-ha vegetation plots surveyed.

| Site code | Geographic coordinates | Area (ha) | Sampling units per site |
|-----------|------------------------|----------|-------------------------|
|           | Latitude               | Longitude| LM | SM | Liz | Birds | Frogs | DB | OB | T |
| Is1       | 01° 50' 00.2'' S       | 59° 25' 14.2'' W | 1.5 | 2  | 9   | 1     | 16   | 10 | 1  | 1 |
| Is2       | 01° 35' 05.2'' S       | 59° 52' 18.6'' W | 2.2 | 2  | 18  | 2     | 16   | 10 | 1  | 1 |
| Is3       | 01° 46' 26.2'' S       | 59° 41' 32.2'' W | 3.3 | 2  | 18  | 2     | 16   | 10 | 1  | 1 |
| Is4       | 01° 49' 48.0'' S       | 59° 37' 57.3'' W | 3.5 | 2  | 18  | 2     | 16   | 10 | 1  | 1 |
| Is5       | 01° 45' 58.3'' S       | 59° 21' 49.2'' W | 5.9 | 2  | 18  | 2     | 16   | 10 | 1  | 1 |
| Is6       | 01° 35' 16.7'' S       | 59° 50' 09.4'' W | 9.2 | 2  | 18  | 2     | 16   | 10 | 1  | 1 |
| Is7       | 01° 45' 41.8'' S       | 59° 40' 42.3'' W | 12.4 | 2  | 27  | 3     | 16   | 10 | 1  | 2 |
| Is8       | 01° 29' 15.9'' S       | 59° 47' 13.9'' W | 17.5 | 2  | 27  | 3     | 16   | 10 | 1  | 2 |
| Is9       | 01° 47' 29.3'' S       | 59° 26' 51.2'' W | 21.2 | 2  | 27  | 3     | 16   | 10 | 1  | 2 |
| Is10      | 01° 50' 30.5'' S       | 59° 21' 06.0'' W | 32.8 | 2  | 27  | 3     | 16   | 10 | 1  | 2 |
| Is11      | 01° 29' 58.0'' S       | 59° 49' 24.6'' W | 53.2 | 2  | 54  | 6     | 16   | 2   | 10 | 1 |
| Is12      | 01° 40' 55.9'' S       | 59° 39' 12.1'' W | 70.8 | 4  | 54  | 6     | 16   | 2   | 10 | 1 |
| Is13      | 01° 41' 47.0'' S       | 59° 37' 09.2'' W | 77.9 | 4  | 54  | 6     | 16   | 2   | 10 | 1 |
| Is14      | 01° 33' 28.1'' S       | 59° 53' 50.0'' W | 97.4 | 4  | 54  | 6     | 16   | 3   | 10 | 1 |
| Is15      | 01° 49' 52.2'' S       | 59° 41' 23.5'' W | 110.0 | 6  | 54  | 6     | 16   | 3   | 10 | 1 |
| Is16      | 01° 44' 20.3'' S       | 59° 26' 28.1'' W | 193.0 | 8  | 81  | 9     | 16   | 3   | 10 | 1 |
| Is17      | 01° 42' 06.4'' S       | 59° 47' 26.0'' W | 218.7 | 6  | 81  | 9     | 16   | 3   | 10 | 1 |
| Is18      | 01° 45' 09.1'' S       | 59° 44' 58.7'' W | 484.0 | 10 | 81  | 9     | 16   | 4   | 10 | 1 |
| Is19      | 01° 43' 47.6'' S       | 59° 41' 28.7'' W | 627.5 | 10 | 108 | 12    | 16   | 5   | 10 | 2 |
| Is20      | 01° 39' 27.6'' S       | 59° 50' 12.7'' W | 669.9 | 10 | 108 | 12    | 16   | 7   | 10 | 2 |
| Is21      | 01° 30' 45.3'' S       | 59° 52' 08.8'' W | 744.8 | 10 | 108 | 12    | 16   | 4   | 10 | 2 |
| Is22      | 01° 47' 30.9'' S       | 59° 30' 45.8'' W | 1459.7 | 10 | 108 | 12    | 16   | 4   | 10 | 2 |
| CF1       | 01° 50' 20.7'' S       | 59° 42' 23.1'' W | ∞    | 15 | 162 | 18    | 16   | 5   | 10 | 3 |
| CF2       | 01° 47' 38.8'' S       | 59° 14' 51.8'' W | ∞    | 15 | 270 | 12    | 32   | 10  | 10 | 3 |
| CF3       | 01° 25' 46.9'' S       | 59° 54' 59.4'' W | ∞    | 15 | 162 | 18    | 16   | 4   | 10 | 3 |
Table S2.
Landscape, patch and local habitat quality variables describing 22 forest islands within the Balbina Hydroelectric Reservoir archipelagic landscape and three continuous forest sites in mainland areas within the reservoir vicinities. The overall range, mean and standard deviation (SD) are provided for each variable. Because patch and landscape variables could not always be obtained for continuous forest sites (CFs), we assigned values to closely approximate each real value, as indicated below. As such, range values do not include the three CFs.

| Name (code name)                          | Variable description                                                                 | Range (mean ± SD)          |
|-------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------|
| **Landscape scale**                       |                                                                                      |                             |
| Proportion of water (%Water)              | Percentage of open-water within a 500 m-buffer surrounding each focal island (CF = 0%) | 43.4 – 100% (67.5 ± 14.2)   |
| **Patch scale**                           |                                                                                      |                             |
| Forest area (Area)                        | Forest area of each focal island (excluding bare ground) \((\log_{10}x; CF = 14,596 \text{ ha})\). | 1.5 – 1,460 ha (224 ± 356)   |
| Island shape (Shape)                      | Total perimeter length of each focal island divided by the total island area (CF = 0.592). | 0.000 – 0.040 (0.013 ± 0.009) |
| Distance (Dist)                           | Euclidean distance from the closest edge of each island to the nearest neighbouring mainland forest site (CF = 0 m). | 44 – 11,872 m (4,173 ± 3,375) |
| **Habitat scale**                         |                                                                                      |                             |
| Burn severity (Burn)                      | Burn severity was estimated from floristic surveys based on 0.25 ha plots established and inventoried at all surveyed sites. For this, the field team defined four different categories of burn severity, varying from 0 (no evidence of burn within the plot) to 3 (≥60% of the plot affected by burn, based on the number of charred trees and char height marks on the trees). The categories 1 and 2 refer to 1 to up to 30% and 30-60% of the burned area, respectively (38). | 0 – 3 (1.68 ± 0.85)          |
| Proportion of closed-canopy forest (%Closed-canopy) | Percentage of closed-canopy forest within each forest site. | 30.1 – 99.4% (77.87 ± 16.48) |
Table S3.

Description of species traits for each taxon used to predict network properties at the species-level.

| Taxonomic group | Species trait        | Description                                                                                                                                                                                                 | Source |
|-----------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Medium-large mammals | Body mass            | Adult body mass (kg)                                                                                                                                                                                        | (69)   |
|                  | Group size           | Number of individuals foraging within a social group                                                                                                                                                       |        |
|                  | Home range size      | Area required (ha) for an animal to forage and travel on a regular basis                                                                                                                                     | (46)   |
|                  | Trophic level        | Dietary energy levels within trophic modes for each species, ranging from 0 (folivore) to 6 (carnivore).                                                                                                   | (46)   |
| Small non-volant mammals | Body mass            | Average body mass obtained from individuals recorded in the field (g).                                                                                                                                   | Field  |
|                  | Trophic level        | Sum of the proportional food consumption in each diet category weighted by an energetic score: (1) foliage and other plant material, (2) fruit and nectar, (3) seed, (4) invertebrate, (5) vertebrate, including carrion. For example, a species relying entirely on invertebrates is assigned a value 4, and a species relying on 50% fruits and 50% invertebrates is assigned a value 3. | (69)   |
|                  | Locomotion habit     | Preferred vertical forest strata used: terrestrial, scansorial and arboreal.                                                                                                                               | (69)   |
|                  | Non-forest matrix tolerance | Ratio between the capture rate in the open-habitat matrix (pasture and secondary forest) and in continuous primary forest, using data extracted from (70) at a landscape ~100 km from Balbina [for details see (50)]. This trait was considered here as previously observed to be an important predictor of small mammal responses to habitat loss and insular fragmentation (50). | (70)   |
| Lizards          | Thermoregulation mode| Species strategy to regulate body temperature: heliophile (higher body temperature and regulated by direct exposure to sun light) and heliophobe (lower body temperature regulated by avoiding direct sun light). | Compiled in (51) |
|                  | Habitat type used    | Preferred habitat used: clearings and forest edges; terra firme forest (i.e. typical Amazonian closed-canopy forest that is never seasonally inundated); and, creeks and swamps.                                      | Compiled in (51) |
|                  | Body length          | Expressed as the maximum snout-vent length (SVL) corresponding to the tip of snout to the cloaca (cm)                                                                                                         | Compiled in (51) |
|                  | Range of prey size   | Spectrum of consumed arthropod prey size considering the following size classes: 0mm – <20mm, 20mm – <60mm, 60mm – <140mm and >140mm                                                                                 | Compiled in (51) |
| Understorey birds | Degree of forest dependency | Does not normally occurs in forests (0) and low (1), medium (2) and high forest dependency (3).                                                                                                           | (71)   |
|                  | Body mass            | Species mean body mass (g)                                                                                                                                                                                   | (69)   |
|                  | Trophic level        | Sum of the proportional food consumption in each diet category weighted by an energetic score: (1) foliage and other plant material, (2) fruit and nectar, (3) seed, (4) invertebrate, (5) vertebrate, including carrion. For example, a species relying | (69)   |
entirely on invertebrates is assigned a value 4, and a species relying on 50% fruits and 50% invertebrates is assigned a value 3.

### Frogs

| Attribute               | Description                                                                 | Reference |
|-------------------------|-----------------------------------------------------------------------------|-----------|
| Reproductive mode       | Defined by a combination of attributes including oviposition site and egg and spawning features. We used the 28 known modes identified for frog species throughout Brazil. | (72)      |
| Diversity of habitats   | Number of habitats used.                                                    | (73)      |
| Body height             | Species body height (mm).                                                   | (73)      |

### Dung beetles

| Attribute               | Description                                                                 | Reference |
|-------------------------|-----------------------------------------------------------------------------|-----------|
| Body size               | Small (< 10 mm long) or large (> 10 mm long).                               |           |
| Dung relocation behaviour | Resource relocation behaviour (dwellers, rollers, tunnellers)              | (74, 75, 76) |
| Diet                    | Three dietary modes: Coprophage, necrophage or generalist.                  |           |

### Orchid bees

| Attribute               | Description                                                                 | Reference |
|-------------------------|-----------------------------------------------------------------------------|-----------|
| Body length             | Average body length (mm) obtained from individuals recorded in the field. | Vouchers in this study |
| Body width              | Average body width (mm) obtained from individuals recorded in the field.   | Vouchers in this study |
| Wing length             | Average wing length (mm) obtained from individuals recorded in the field.  | Vouchers in this study |

### Trees

| Attribute               | Description                                                                 | Reference |
|-------------------------|-----------------------------------------------------------------------------|-----------|
| Wood density            | Species-specific wood density (g/cm³) measurements obtained for 67.3% of the 368 tree species and 100% of the 189 genera included in the analysis. For those species for which species level data were lacking, we used the mean genus-level WD value from Guianan Shield sites or, if those were unavailable, from any lowland Amazonian site. | Vouchers in this study and data compiled in (38) |
| Seed mass               | Dry seed mass (eight classes on a log scale: [1] 105 – 104 g, [2] 104 – 103 g … [8] ≥ 100 g). | Compiled in (38) |
| Vertical stratum        | Sub-canopy, canopy, and emergent species.                                   | Compiled in (38) |
| Seed dispersal mode     | Vertebrate-dispersed or abiotically dispersed.                              | Compiled in (38) |
| Seedling regeneration mode | Short-lived pioneer, long-lived pioneer and old-growth species.         | Compiled in (38) |
Table S4.
Network properties obtained at the landscape-level – connectance, modularity, nestedness and robustness – for each of the eight taxonomic group (medium-large mammals, small mammals, lizards, birds, frogs, dung beetles, orchid bees and trees) and all groups combined. For each property of each species-habitat network, we indicate the observed and corresponding $z$-values obtained from null models. Statistical significance is given by $-2 > z$-value $> 2$, highlighted in bold (see the main text for a description of the null models applied for each network property).

| Taxa | C | M | Nestedness | R \text{largest to smallest} | R \text{smallest to largest} | R \text{random} |
|------|---|---|-------------|-----------------|-----------------|----------------|
|      | Obs. | $z$ | Obs. | $z$ | Obs. | $z$ | Obs. | $z$ | Obs. | $z$ |
| ML   | 0.474 | 0.340 | 0.168 | 5.995 | 87.511 | 8.163 | 0.609 | 5.845 | 0.970 | -0.604 | 0.934 | -1.771 |
| SM   | 0.358 | -0.544 | 0.232 | 2.618 | 65.075 | 3.064 | 0.638 | -3.957 | 0.956 | 0.768 | 0.895 | -0.544 |
| Liz  | 0.426 | -0.680 | 0.205 | 1.813 | 78.437 | 4.656 | 0.697 | -1.800 | 0.909 | -0.277 | 0.921 | 0.350 |
| Bird | 0.170 | -4.227 | 0.286 | 5.830 | 39.496 | -0.285 | 0.466 | -2.565 | 0.817 | 0.400 | 0.723 | -0.181 |
| Frog | 0.266 | -1.708 | 0.218 | -0.498 | 55.132 | 2.249 | 0.600 | -2.269 | 0.863 | 1.342 | 0.807 | 0.409 |
| DB   | 0.177 | -1.846 | 0.390 | 3.338 | 38.990 | -0.037 | 0.489 | -0.326 | 0.835 | 0.940 | 0.728 | 0.888 |
| OB   | 0.332 | -0.946 | 0.273 | 6.780 | 62.154 | 4.771 | 0.757 | -0.576 | 0.843 | -0.208 | 0.857 | 0.400 |
| Tree | 0.285 | -4.433 | 0.151 | 1.435 | 49.148 | 2.477 | 0.647 | -2.696 | 0.864 | 2.249 | 0.823 | 1.743 |
| All  | 0.270 | -7.194 | 0.161 | 4.795 | 48.344 | 2.498 | 0.599 | -6.586 | 0.863 | 3.077 | 0.810 | 1.172 |
Table S5.
Average model results explaining normalised degree at the site-level according to landscape, patch and habitat quality related variables – forest area (Area), distance to continuous forest (Dist), proportion of closed-canopy forest (%Closed-canopy) and burn severity (Burn) for each taxonomic group and all groups combined. Model averaging was performed considering all possible combinations of the four explanatory variables in addition to the interaction terms between Area and Dist and Area and Burn, either of which was retained only when significantly predicting normalised degree. Linear models were applied to medium-large mammals, small mammals, lizards, frogs, trees and all groups combined. Generalized linear models were fitted with a Gaussian distribution with a ‘log’ link function were applied to birds. To account for spatial autocorrelation, the orchid bee data were fitted with a Generalized Least Squares with a spatial Gaussian correlation structure including the geographic coordinates of each site (latitude and longitude). Statistically significant P-values are highlighted in bold.

| Taxonomic group | Model Parameters | Estimate | Std. Error | Adjust. SE | z-value | P-value | 2.5% CI | 97.5% CI |
|-----------------|------------------|----------|------------|-----------|---------|---------|--------|--------|
| Medium-large mammals | Intercept | 0.502 | 0.016 | 0.017 | 29.672 | <0.001 | 0.469 | 0.535 |
|                  | Burn           | 0.022 | 0.022 | 0.023 | 0.970 | 0.332 | 0.535 | 0.067 |
|                  | Area           | 0.330 | 0.018 | 0.019 | 17.386 | <0.001 | 0.293 | 0.367 |
|                  | Area * Burn    | 0.046 | 0.014 | 0.015 | 3.170 | 0.002 | 0.018 | 0.074 |
|                  | Dist           | -0.015 | 0.016 | 0.017 | 0.909 | 0.363 | 0.446 | -0.048 |
|                  | %Closed-canopy | -0.015 | 0.018 | 0.019 | 0.763 | 0.466 | 0.015 | 0.023 |
| Small mammals    | Intercept      | 0.349 | 0.029 | 0.030 | 11.700 | <0.001 | 0.291 | 0.408 |
|                  | Burn           | 0.071 | 0.039 | 0.040 | 1.749 | 0.080 | 0.020 | 0.150 |
|                  | Area           | 0.188 | 0.034 | 0.035 | 5.346 | 0.000 | 0.119 | 0.257 |
|                  | Dist           | -0.027 | 0.036 | 0.038 | 0.714 | 0.475 | 0.705 | 0.047 |
|                  | Area * Dist    | -0.067 | 0.032 | 0.034 | 1.795 | 0.048 | 0.013 | 0.001 |
|                  | %Closed-canopy | 0.022 | 0.033 | 0.034 | 0.634 | 0.526 | 0.045 | 0.089 |
| Lizards          | Intercept      | 0.466 | 0.033 | 0.034 | 13.619 | <0.0001 | 0.399 | 0.533 |
|                  | %Closed-canopy | 0.071 | 0.028 | 0.029 | 2.412 | 0.016 | 0.013 | 0.128 |
|                  | Dist           | 0.054 | 0.032 | 0.034 | 1.595 | 0.111 | 0.115 | 0.121 |
|                  | Area           | 0.184 | 0.036 | 0.038 | 4.821 | <0.0001 | 0.109 | 0.258 |
|                  | Area * Dist    | 0.098 | 0.030 | 0.032 | 3.050 | 0.002 | 0.035 | 0.162 |
|                  | Burn           | 0.002 | 0.051 | 0.053 | 0.037 | 0.971 | 0.102 | 0.106 |
| Birds            | Intercept      | -2.002 | 0.122 | 0.128 | 15.617 | <0.001 | -2.253 | -1.751 |
|                  | %Closed-canopy | 0.252 | 0.103 | 0.109 | 2.305 | 0.021 | 0.038 | 0.466 |
|                  | Burn           | 0.287 | 0.113 | 0.119 | 2.420 | 0.016 | 0.055 | 0.520 |
|                  | Area           | 0.717 | 0.154 | 0.160 | 4.475 | <0.001 | 0.403 | 1.031 |
|                  | Dist           | -0.168 | 0.118 | 0.125 | 1.342 | 0.180 | -0.413 | 0.077 |
| Frogs            | Intercept      | 0.266 | 0.021 | 0.023 | 11.774 | <0.001 | 0.222 | 0.311 |
|                  | Area           | 0.105 | 0.027 | 0.029 | 3.656 | <0.001 | 0.049 | 0.162 |
|                  | Burn           | 0.035 | 0.030 | 0.032 | 1.076 | 0.282 | -0.028 | 0.098 |
|                  | Dist           | 0.028 | 0.025 | 0.027 | 1.023 | 0.306 | -0.025 | 0.080 |
|                  | %Closed-canopy | 0.008 | 0.027 | 0.029 | 0.281 | 0.779 | -0.048 | 0.064 |
| Dung beetles     | Intercept      | -2.598 | 0.185 | 0.196 | 13.221 | <0.001 | -2.983 | -2.213 |
|                  | %Closed-canopy | 0.891 | 0.160 | 0.170 | 5.230 | <0.001 | 0.557 | 1.225 |
|                  | Burn           | 0.276 | 0.166 | 0.176 | 1.570 | 0.116 | -0.069 | 0.621 |
|                  | Area           | 1.174 | 0.216 | 0.228 | 5.156 | <0.001 | 0.728 | 1.620 |
|                          | Intercept | Area | Burn | Dist | %Closed-canopy |
|--------------------------|-----------|------|------|------|----------------|
| **Orchid bees**          | 0.318     | 0.079| 0.042| -0.001| 0.014          |
|                          | 0.031     | 0.028| 0.032| 0.170| 0.028          |
|                          | 0.032     | 0.030| 0.033| 0.180| 0.029          |
|                          | 9.792     | 2.681| 1.253| 0.004| 0.465          |
|                          | <0.001    | 0.007| 0.210| 0.997| 0.642          |
|                          | 0.254     | 0.021| −0.022| −0.354| −0.044         |
|                          | 0.382     | 0.137| 0.067| 0.353| 0.071          |
| **Trees**                | 0.301     | −0.008| 0.115| 0.010| 0.008          |
|                          | 0.009     | 0.012| 0.010| 0.010| 0.010          |
|                          | 0.010     | 0.013| 0.011| 0.011| 0.011          |
|                          | 0.100     | 0.590| 0.555| 0.004| 0.732          |
|                          | 30.291    | 10.505| 5.595| 1.212| 0.464          |
|                          | <0.001    | <0.001| 0.094| 0.269| 0.464          |
|                          | 0.282     | 0.137| 0.043| 0.071| 0.030          |
| **All groups**           | 0.279     | 0.008| 0.126| 0.002| 0.018          |
|                          | 0.009     | 0.013| 0.009| 0.008| 0.011          |
| COMPANIES                | 0.009     | 0.014| 0.007| 0.008| 0.011          |
|                          | 31.192    | 2.610| 1.661| 0.269| 0.788          |
|                          | <0.001    | 0.097| 0.097| 0.788| 0.144          |
|                          | 0.261     | 0.034| 0.144| −0.014| 0.019         |
|                          | 0.296     | 0.035| 0.144| 0.019|              |
Table S6.

Average model results explaining nestedness contribution at the site-level according to landscape, patch and habitat quality related variables – forest area (Area), distance to continuous forest (Dist), proportion of closed-canopy forest (%Closed-canopy) and burn severity (Burn) for each taxonomic group and all groups combined. Model averaging was performed considering all possible combinations of the five explanatory variables in addition to the interaction terms between Area and Dist and Area and Burn, either of which was retained only when significantly predicting nestedness contribution. Linear models were applied to medium-large mammals, small mammals, lizards, frogs, dung beetles, orchid bees and trees. Generalised linear models were fitted with a Gaussian distribution with a ‘log’ link function were applied to all groups combined. To account for spatial autocorrelation, the nestedness contribution of birds (log₁₀ x) was fitted with a Generalized Least Squares with a spatial Gaussian correlation structure including each site geographic coordinates (latitude and longitude). Statistically significant P-values are highlighted in bold.

| Taxa | Model Parameters | Estimate | Std. Error | Adjust. SE | z-value | p-value | 2.5% | 97.5% |
|------|------------------|----------|------------|------------|---------|---------|------|------|
| Medium-large mammals | Intercept | 2.251 | 0.093 | 0.099 | 22.803 | <0.001 | 2.058 | 2.445 |
| | Area | -0.270 | 0.114 | 0.120 | 2.261 | 0.024 | -0.505 | -0.036 |
| | Burn | -0.110 | 0.145 | 0.151 | 0.724 | 0.469 | -0.406 | 0.187 |
| | Dist | -0.068 | 0.118 | 0.124 | 0.551 | 0.582 | -0.312 | 0.175 |
| | %Closed-canopy | -0.057 | 0.116 | 0.123 | 0.467 | 0.641 | -0.297 | 0.183 |
| Small non-volant mammals | Intercept | 1.290 | 0.120 | 0.127 | 10.144 | <0.001 | 1.041 | 1.539 |
| | Area | 0.458 | 0.147 | 0.155 | 2.960 | 0.003 | 0.155 | 0.761 |
| | Burn | 0.167 | 0.177 | 0.186 | 0.899 | 0.369 | -0.198 | 0.532 |
| | Dist | 0.066 | 0.149 | 0.158 | 0.422 | 0.673 | -0.243 | 0.376 |
| | %Closed-canopy | 0.056 | 0.151 | 0.159 | 0.352 | 0.725 | -0.256 | 0.368 |
| Lizards | Intercept | 1.038 | 0.118 | 0.125 | 8.332 | <0.001 | 0.794 | 1.283 |
| | Burn | 0.250 | 0.141 | 0.149 | 1.678 | 0.093 | -0.042 | 0.542 |
| | Area | -0.159 | 0.153 | 0.160 | 0.990 | 0.322 | -0.472 | 0.155 |
| | Dist | -0.071 | 0.145 | 0.152 | 0.469 | 0.639 | -0.369 | 0.227 |
| | %Closed-canopy | 0.026 | 0.163 | 0.170 | 0.152 | 0.879 | -0.307 | 0.359 |
| Understorey birds | Intercept | 0.294 | 0.055 | 0.058 | 5.063 | <0.001 | 0.180 | 0.408 |
| | Area | 0.183 | 0.054 | 0.057 | 3.209 | 0.001 | 0.071 | 0.295 |
| | Burn | 0.087 | 0.063 | 0.066 | 1.306 | 0.191 | -0.043 | 0.217 |
| | Dist | 0.024 | 0.057 | 0.060 | 0.391 | 0.696 | -0.095 | 0.142 |
| | %Closed-canopy | 0.069 | 0.054 | 0.056 | 1.231 | 0.218 | -0.041 | 0.179 |
| Frogs | Intercept | 1.672 | 0.143 | 0.151 | 11.064 | <0.001 | 1.376 | 1.968 |
| | Area | 0.410 | 0.173 | 0.181 | 2.259 | 0.024 | 0.054 | 0.766 |
| | Dist | 0.213 | 0.175 | 0.184 | 1.156 | 0.248 | -0.148 | 0.573 |
| | %Closed-canopy | -0.108 | 0.170 | 0.180 | 0.599 | 0.549 | -0.460 | 0.245 |
| | Burn | -0.040 | 0.225 | 0.235 | 0.169 | 0.866 | -0.501 | 0.421 |
| Dung beetles | Intercept | 0.619 | 0.177 | 0.187 | 3.305 | 0.001 | 0.252 | 0.986 |
| | Dist | -0.368 | 0.214 | 0.225 | 1.633 | 0.102 | -0.810 | 0.074 |
| | Area | 0.739 | 0.232 | 0.243 | 3.039 | 0.002 | 0.262 | 1.216 |
| | %Closed-canopy | 0.322 | 0.203 | 0.215 | 1.498 | 0.134 | -0.099 | 0.742 |
| | Burn | -0.015 | 0.302 | 0.316 | 0.047 | 0.963 | -0.634 | 0.605 |
| Orchid bees | Intercept | 1.402 | 0.124 | 0.131 | 10.725 | <0.001 | 1.145 | 1.658 |
| | Area | 0.098 | 0.147 | 0.155 | 0.637 | 0.524 | -0.204 | 0.401 |
|                     | Intercept | Area | Burn | Area * Burn | %Closed-canopy | Burn | Dist | %Closed-canopy | Area | Burn | Dist |
|---------------------|-----------|------|------|-------------|----------------|------|------|----------------|------|------|------|
| **Trees**           | 4.816     | 1.030| -0.060| 0.309       | 0.213           | 0.180| -0.004| 0.037           | 0.091| 0.020| -0.004|
|                     | 0.178     | 0.189| 0.266| 0.151       | 0.181           | 0.176| -0.004| 0.016           | 0.016| 0.020| 0.017|
|                     | 0.186     | 0.199| 0.278| 0.160       | 0.191           | 0.187| -0.004| 0.017           | 0.017| 0.021| 0.018|
|                     | 25.911    | 5.174| 0.217| 1.932       | 1.112           | 0.965| -0.004| 2.181           | 5.339| 0.956| 0.211|
|                     | <0.001    | <0.001| 0.829| 0.053       | 0.266           | 0.335| -0.004| 0.029           | <0.001| 0.339| 0.833|
|                     | 4.452     | 0.640| -0.605| -0.004     | -0.162          | -0.186| -0.004| -0.232          | 0.058 | 0.039 | -0.038|
|                     | 5.180     | 1.420| 0.484| 0.622       | 0.588           | 0.546| -0.004| -0.259          | 0.125 | 0.062 | 0.031|
| **All taxa**        |           |      |      |             |                 |      |      |                |      |      |      |
| **Intercept**       | -0.232    | 0.037| 0.091| 0.020       | -0.004          | 0.004| 0.037| 0.013           | 0.016| 0.020| 0.017|
| **Area**            |           |      |      |             |                 |      |      | 16.875          |      |      | 2.181|
| **Burn**            |           |      |      |             |                 |      |      | 0.014           |      |      | 0.017|
| **Area * Burn**     |           |      |      |             |                 |      |      | 5.339           |      |      | 5.339|
| **%Closed-canopy**  |           |      |      |             |                 |      |      | <0.001          |      |      | <0.001|
| **Burn**            |           |      |      |             |                 |      |      | 0.004           |      |      | 0.029|
| **Dist**            |           |      |      |             |                 |      |      | -0.259          |      |      | -0.038|
|                     |           |      |      |             |                 |      |      | -0.205          |      |      | 0.031|
|                     |           |      |      |             |                 |      |      | 0.379           |      |      | 0.062|
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