SUPPLEMENT INFORMATION

to the manuscript

“**Bottom-up and top-down forces in plant-gall relationships: Testing the hypotheses of the resource concentration, associational resistance and host fitness reduction”**

*Supplement 1*

**Table S1 –** All sampled trees in the plots stablished at the Parque Estadual da Serra de Caldas Novas in November of 2017. Reproductive structures (presence of flower or fruit)

|  |  |  |  |
| --- | --- | --- | --- |
| **Plant species** | **Individual Basal area (cm²)** | **N**˚ **of trees** | **N**˚ **of tress Reproductive**  **Structures** |
| **(with galls)** |
| *Dalbergia miscolobium* | 11145 | 122(91) | 19 |
| *Aspidosperma tomentosum* | 3256 | 82(68) | 24 |
| *Kielmeyera grandiflora* | 5079 | 97(62) | 31 |
| *Eremanthus glomerulatus* | 1749 | 46(38) | 29 |
| *Ouratea spectabilis* | 2169 | 38(28) | 10 |
| *Qualea parviflora* | 2946 | 19(10) | 14 |
| *Kielmeyera coriacea* | 6564 | 105(9) | 51 |
| *Caryocar brasiliense* | 2343 | 13(5) | 7 |
| *Andira vermifuga* | 172 | 5(3) | 3 |
| *Myrtaceae sp1* | 467 | 12(3) | 7 |
| *Psidium myrsinites* | 1587 | 22(3) | 10 |
| *Leptolobium dasycarpum* | 2475 | 34(2) | 8 |
| *Aspidosperma macrocarpon* | 395 | 13(1) | 6 |
| *Dimorphandra mollis* | 1416 | 23(1) | 3 |
| *Eriotheca pubescens* | 292 | 3(1) | 0 |
| *Piptocarpha rotundifolia* | 3208 | 46(1) | 28 |
| *Qualea grandiflora* | 2753 | 20(1) | 13 |
| *Roupala montana* | 53 | 1(1) | 1 |
| *Styrax ferrugineus* | 1694 | 40(1) | 22 |
| *Curatella americana* | 118 | 2 | 0 |
| *Stryphnodendron adstringens* | 4108 | 79 | 25 |
| *Aegiphila verticillata* | 1022 | 11 | 7 |
| *Agonandra brasiliensis* | 54 | 2 | 0 |
| *Annona crassiflora* | 6302 | 64 | 17 |
| *Arecaceae sp1* | 38 | 1 | 0 |
| *Arecaceae sp2* | 441 | 11 | 0 |
| *Bowdichia virgilioides* | 2051 | 8 | 0 |
| *Brosimum gaudichaudii* | 338 | 11 | 7 |
| *Byrsonima coccolobifolia* | 434 | 10 | 7 |
| *Byrsonima pachyphylla* | 210 | 6 | 1 |
| *Byrsonima verbascifolia* | 206 | 3 | 2 |
| *Casearia sylvestris* | 209 | 4 | 2 |
| *Connarus suberosus* | 556 | 14 | 2 |
| *Davilla elliptica* | 48 | 2 | 2 |
| *Emmotum sp1* | 31 | 1 | 0 |
| *Enterolobium gummiferum* | 385 | 6 | 0 |
| *Eriotheca gracilipes* | 336 | 1 | 0 |
| *Erythroxylum suberosum* | 1175 | 26 | 23 |
| *Erythroxylum tortuosum* | 270 | 9 | 4 |
| *Erytroxylum sp1* | 85 | 3 | 1 |
| *Fabaceae sp1* | 35 | 1 | 0 |
| *Guarea sp1* | 22 | 1 | 0 |
| *Hancornia speciosa* | 82 | 2 | 0 |
| *Handroanthus ochraceus* | 531 | 10 | 3 |
| *Himatanthus obovatus* | 89 | 3 | 1 |
| *Hymenaea courbaril* | 267 | 3 | 0 |
| *Hymenaea stigonocarpa* | 360 | 4 | 2 |
| *Indetermined* | 71 | 4 | 1 |
| *Kielmeyera sp1* | 66 | 1 | 0 |
| *Lafoensia pacari* | 710 | 6 | 1 |
| *Lamiaceae sp1* | 216 | 3 | 2 |
| *Leptolobium elegans* | 21 | 1 | 0 |
| *Licania humilis* | 519 | 7 | 4 |
| *Machaerium opacum* | 3013 | 21 | 15 |
| *Miconia ferruginata* | 563 | 9 | 3 |
| *Myrsine coriacea* | 170 | 5 | 4 |
| *Myrtaceae sp1* | 148 | 2 | 1 |
| *Myrtaceae sp2* | 30 | 1 | 0 |
| *Palicourea rigida* | 403 | 13 | 9 |
| *Plathymenia reticulata* | 88 | 2 | 0 |
| *Plenckia populnea* | 119 | 3 | 2 |
| *Pouteria ramiflora* | 2165 | 18 | 1 |
| *Qualea multiflora* | 1431 | 19 | 16 |
| *Salvertia convaleiodora* | 111 | 1 | 1 |
| *Schefflera macrocarpa* | 443 | 6 | 0 |
| *Strychnos pseudoquina* | 662 | 13 | 0 |
| *Stryphnodendron polyphyllum* | 329 | 7 | 1 |
| *Tabebuia aurea* | 3744 | 46 | 1 |
| *Tocoyena formosa* | 349 | 11 | 10 |
| *Vochysia sp1* | 16 | 7 | 0 |

**Model testing the relations between plant community and galling insect abundance per individual**

**Table S2** - model selection with dredge function with only significant variables/interactions in all models with delta < 2 + null model. Gall abundance as response variable and host basal area per individual (indBA) and per plot (spBA), Non-host basal area per plot (nhBA) and Rarefied species richness (Srar) and their interaction as fixed variables, and species as random effect. Model adjustment using Poisson distribution. Model 11, 12 and 20 were selected as the best model and included in the results by parsimonious.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | **Intercept** | **NhBA** | **spBA** | **indBA** | **Srar** | **NhBA:SpBA** | **NhBA:Srar** | **SpBA:IndBA** | **spBA:Srar** | **indBA:Srar** | **df** | **AICc** | **delta** | **weight** |
| 11 | + |  | 0.644 |  | -0.256 |  |  |  |  |  | 7 | 1007.2 | 1.26 | 0.027 |
| 12 | + | -0.164 | 0.594 |  | -0.218 |  |  |  |  |  | 8 | 1007.2 | 1.198 | 0.028 |
| 20 | + | -0.249 | 0.688 |  |  | -0.212 |  |  |  |  | 8 | 1007.7 | 1.714 | 0.021 |
| 143 | + |  | 0.733 | -0.141 | -0.241 |  |  | 0.252 |  |  | 9 | 1006 | 0 | 0.051 |
| 76 | + | -0.161 | 0.568 |  | -0.228 |  | 0.143 |  |  |  | 9 | 1007 | 1.042 | 0.03 |
| 136 | + | -0.202 | 0.751 | -0.153 |  |  |  | 0.254 |  |  | 9 | 1007.1 | 1.178 | 0.028 |
| 28 | + | -0.201 | 0.625 |  | -0.171 | -0.155 |  |  |  |  | 9 | 1007.8 | 1.836 | 0.02 |
| 144 | + | -0.157 | 0.683 | -0.132 | -0.205 |  |  | 0.249 |  |  | 10 | 1006.1 | 0.145 | 0.047 |
| 152 | + | -0.236 | 0.768 | -0.133 |  | -0.187 |  | 0.243 |  |  | 10 | 1006.9 | 0.911 | 0.032 |
| 655 | + |  | 0.738 | -0.153 | -0.236 |  |  | 0.262 |  | 0.0338 | 10 | 1008 | 1.999 | 0.019 |
| 208 | + | -0.155 | 0.656 | -0.124 | -0.216 |  | 0.137 | 0.245 |  |  | 11 | 1006.2 | 0.212 | 0.045 |
| 160 | + | -0.19 | 0.707 | -0.122 | -0.166 | -0.133 |  | 0.242 |  |  | 11 | 1007.1 | 1.179 | 0.028 |
| 464 | + | -0.17 | 0.66 | -0.132 | -0.196 |  | 0.156 | 0.247 | 0.0746 |  | 12 | 1007.9 | 1.926 | 0.019 |
| 224 | + | -0.175 | 0.674 | -0.119 | -0.191 | -0.08 | 0.116 | 0.242 |  |  | 12 | 1007.9 | 1.988 | 0.019 |
| **Null model** | **+** |  |  |  |  |  |  |  |  |  | **5** | **1041.7** | **35.763** | **0** |

**Table S3** – Best models by AICc and parsimony using Gall infestation as response variable and host basal area per plot (spBA), Non-host basal area per plot (nhBA), rarefied species richness (Srar) and non-host basal area and host basal area interaction (NhBA:spBA ) as fixed variables, and species as random effect.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Fixed Effects** | **β Model 11** | **β Model 12** | **β Model 20** | **Std.Error**  **Model 11** | **Std.Error**  **Model 12** | **Std.Error**  **Model 20** | **p-value**  **Model 11** | **p-value**  **Model 12** | **p-value**  **Model 20** |
| NhBA | - | -0.16 | -0.24 | - | 0.11 | 0.11 | - | 0.143 | 0.025 |
| SpBA | 0.64 | 0.59 | 0.68 | 0.14 | 0.14 | 0.14 | 0.000 | 0.000 | 0.000 |
| NhBA:SpBA | - | - | -0.21 | - | - | 0.12 | - | - | 0.079 |
| Srar | -0.25 | -0.21 | - | 0.11 | 0.11 | - | 0.022 | 0.058 | - |

**Model testing the top-down force of galling insect in the host fitness**

**Table S4 -** Logistic model using reproductive activity as response variable, and Gall abundance as fixed variable, and species and plot as random effect.

|  |  |  |  |
| --- | --- | --- | --- |
| Fixed Effects: | Intercept | Std.Error | p-value |
| Scale(Gall abundance) | -0.276 | 0.116 | 0.0175 |