

Supplementary material – File S1

Manuscript submitted to PeerJ: “Fungal diversity in shade-coffee plantations in Soconusco, Mexico”

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Table S1. Bark sample ID, origin, number of raw sequences, number of filtered and denoised sequences for all taxa and Fungi. Samples were obtained from four microsites on coffee bushes and shade trees in two shade-coffee plantations in Soconusco, Chiapas, Mexico.

| SampleID | Plant type | Microsite | Raw sequences | All taxa | Fungi |
|----------|------------|------------|---------------|----------|---------|
| BOP1 | coffee | Twig | 214,165 | 106,772 | 38,975 |
| BOP6 | coffee | Branch | 164,729 | 78,131 | 30,054 |
| BOP11 | coffee | Trunk high | 193,103 | 103,311 | 89,072 |
| BOP16 | coffee | Trunk low | 256,570 | 131,900 | 88,364 |
| BOP22 | coffee | Twig | 183,399 | 81,562 | 17,974 |
| BOP27 | coffee | Branch | 171,632 | 84,479 | 50,748 |
| BOP32 | coffee | Trunk high | 211,255 | 102,650 | 87,843 |
| BOP37 | coffee | Trunk low | 192,074 | 97,132 | 71,492 |
| BOP43 | tree | Twig | 182,587 | 93,745 | 18,624 |
| BOP48 | tree | Branch | 170,527 | 94,852 | 34,055 |
| BOP53 | tree | Trunk high | 195,042 | 103,919 | 59,785 |
| BOP58 | tree | Trunk low | 205,733 | 111,434 | 35,800 |
| BOP66 | coffee | Twig | 186,238 | 96,382 | 94,364 |
| BOP69 | coffee | Branch | 175,926 | 86,234 | 48,725 |
| BOP74 | coffee | Trunk high | 204,217 | 123,395 | 112,248 |
| BOP79 | coffee | Trunk low | 179,709 | 93,804 | 79,128 |
| BOP87 | coffee | Twig | 202,014 | 99,874 | 39,368 |
| BOP90 | coffee | Branch | 220,739 | 117,218 | 94,007 |
| BOP95 | coffee | Trunk high | 189,933 | 86,382 | 25,499 |
| BOP100 | coffee | Trunk low | 207,257 | 111,815 | 82,300 |
| BOP109 | tree | Twig | 170,471 | 57,023 | 20,002 |
| BOP111 | tree | Branch | 180,391 | 60,856 | 24,825 |
| BOP116 | tree | Trunk high | 192,161 | 77,240 | 55,215 |
| BOP121 | tree | Trunk low | 162,061 | 48,608 | 16,387 |
| HOP1 | coffee | Twig | 195,562 | 82,646 | 9,260 |
| HOP6 | coffee | Branch | 185,895 | 88,435 | 56,024 |
| HOP11 | coffee | Trunk high | 222,286 | 120,780 | 67,214 |
| HOP16 | coffee | Trunk low | 223,224 | 140,012 | 128,158 |
| HOP23 | coffee | Twig | 234,696 | 119,920 | 117,590 |
| HOP27 | coffee | Branch | 142,544 | 51,828 | 32,812 |
| HOP32 | coffee | Trunk high | 195,345 | 89,824 | 18,607 |
| HOP37 | coffee | Trunk low | 184,532 | 91,906 | 45,672 |
| HOP47 | tree | Twig | 207,448 | 71,385 | 35,766 |
| HOP48 | tree | Branch | 225,203 | 79,503 | 45,926 |
| HOP53 | tree | Trunk high | 210,404 | 87,201 | 79,237 |
| HOP58 | tree | Trunk low | 186,010 | 98,152 | 80,549 |
| HOP64 | coffee | Twig | 191,824 | 90,763 | 37,672 |

| | | | | | |
|--------|--------|------------|---------|---------|---------|
| HOP69 | coffee | Branch | 177,532 | 84,093 | 57,604 |
| HOP74 | coffee | Trunk high | 185,834 | 77,152 | 59,008 |
| HOP79 | coffee | Trunk low | 185,130 | 90,359 | 61,595 |
| HOP85 | coffee | Twig | 187,831 | 59,789 | 12,478 |
| HOP90 | coffee | Branch | 220,986 | 123,865 | 106,949 |
| HOP95 | coffee | Trunk high | 212,014 | 87,394 | 36,610 |
| HOP100 | coffee | Trunk low | 249,566 | 92,746 | 20,501 |
| HOP106 | tree | Twig | 192,019 | 43,161 | 15,722 |
| HOP111 | tree | Branch | 191,657 | 55,069 | 31,743 |
| HOP118 | tree | Trunk high | 179,614 | 34,492 | 2,884 |
| HOP121 | tree | Trunk low | 144,026 | 9,357 | 5,269 |

Prefix BOP = Benito Juárez El Plan; Prefix HOP = Los Hermanitos

Table S2. Taxonomic classification of top ten most abundant taxa, obtained with the BLAST tool implemented in QIIME2 view, detected in bark samples of coffee bushes and shade trees in two coffee plantations in Soconusco region, Chiapas, Mexico.

| Taxon | Classification (Kingdom; Family) | Sequence counts | Number of samples | Identity (%) | Bit score |
|--|----------------------------------|-----------------|-------------------|--------------|-----------|
| <i>Coffea arabica</i> | Viridiplantae; Rubiaceae | 801,210 | 27 | 100 | 435 |
| <i>Coffea canephora</i> | Viridiplantae; Rubiaceae | 281,064 | 8 | 100 | 435 |
| <i>Viburnum hartwegii</i> | Viridiplantae; Adoxaceae | 250,446 | 6 | 99.58 | 429 |
| <i>Frangula purshiana</i> | Viridiplantae; Rhamnaceae | 124,286 | 4 | 98.75 | 420 |
| <i>Trogia</i> aff. <i>furcata</i> | Fungi; Tricholomataceae | 122,201 | 2 | 97.08 | 398 |
| <i>Xanthoparmelia</i> aff. <i>hottentota</i> | Fungi; Parmeliaceae | 78,020 | 4 | 75.53 | 118 |
| <i>Phyllopsora confusa</i> | Fungi; Ramalinaceae | 60,983 | 2 | 95.79 | 415 |
| <i>Inga alata</i> | Viridiplantae; Fabaceae | 56,409 | 4 | 99.17 | 426 |
| Uncultured Fungi | Fungi | 53,804 | 3 | 79.02 | 176 |
| <i>Guarea glabra</i> | Viridiplantae; Meliaceae | 49,160 | 3 | 98.33 | 413 |

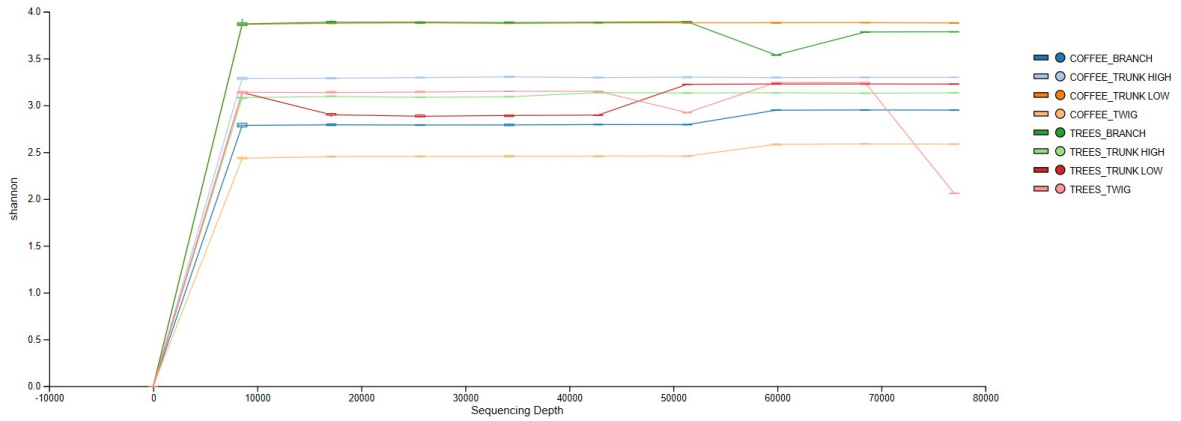


Figure S1. Alpha rarefaction plot, calculated with QIIME2, for all bark samples included in each treatment and grouped according to plant type (coffee bush, shade tree) and plant microsite (branch, trunk high, trunk low, twig).

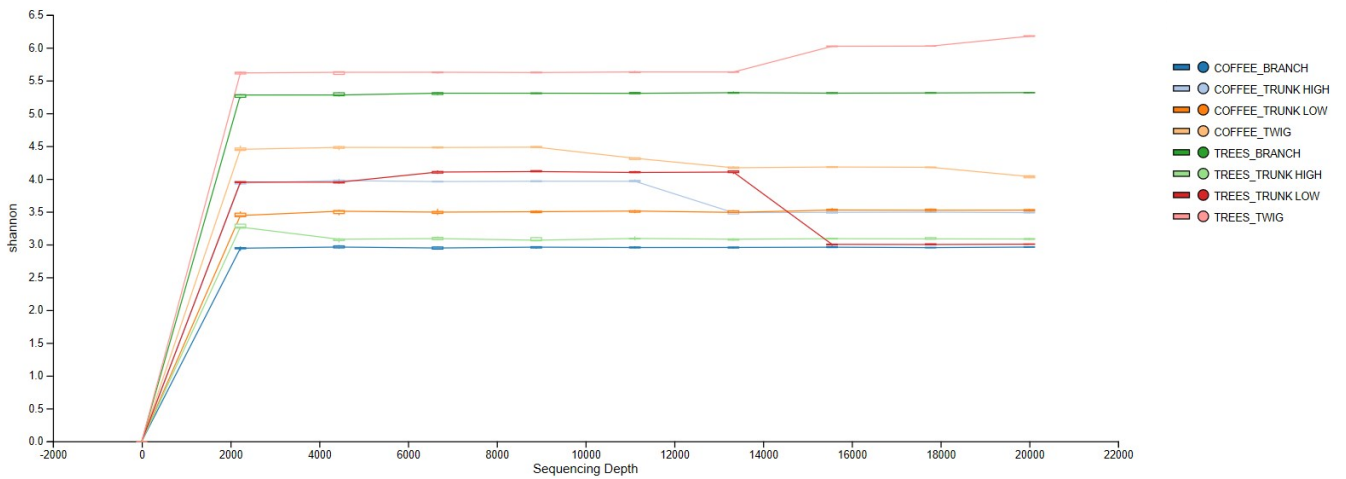
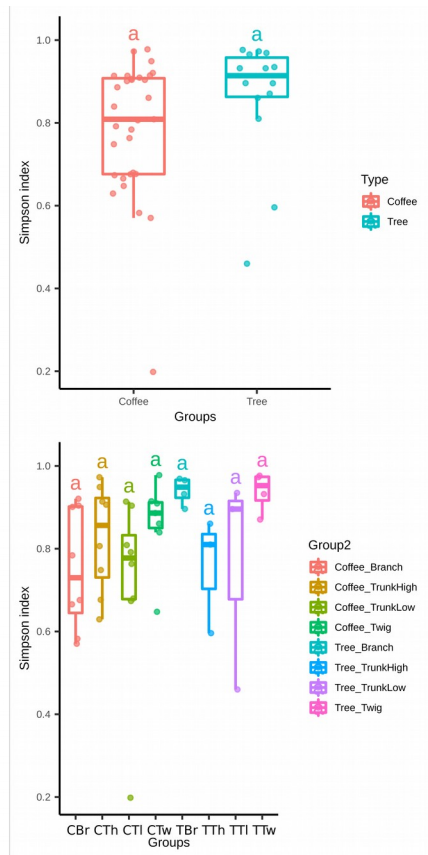
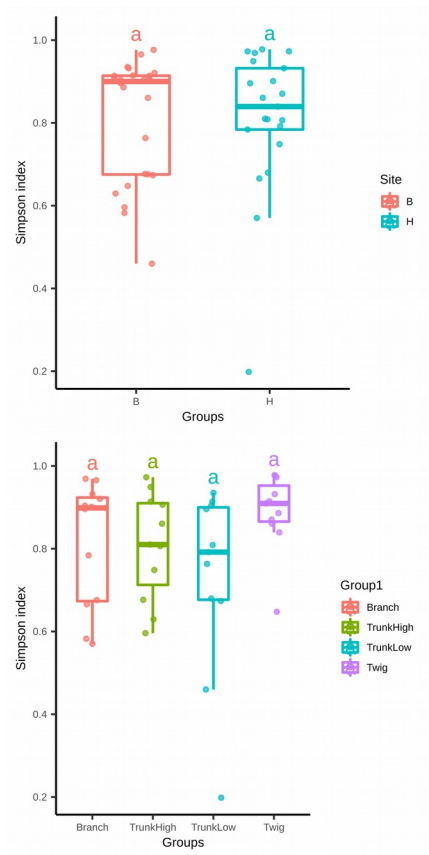
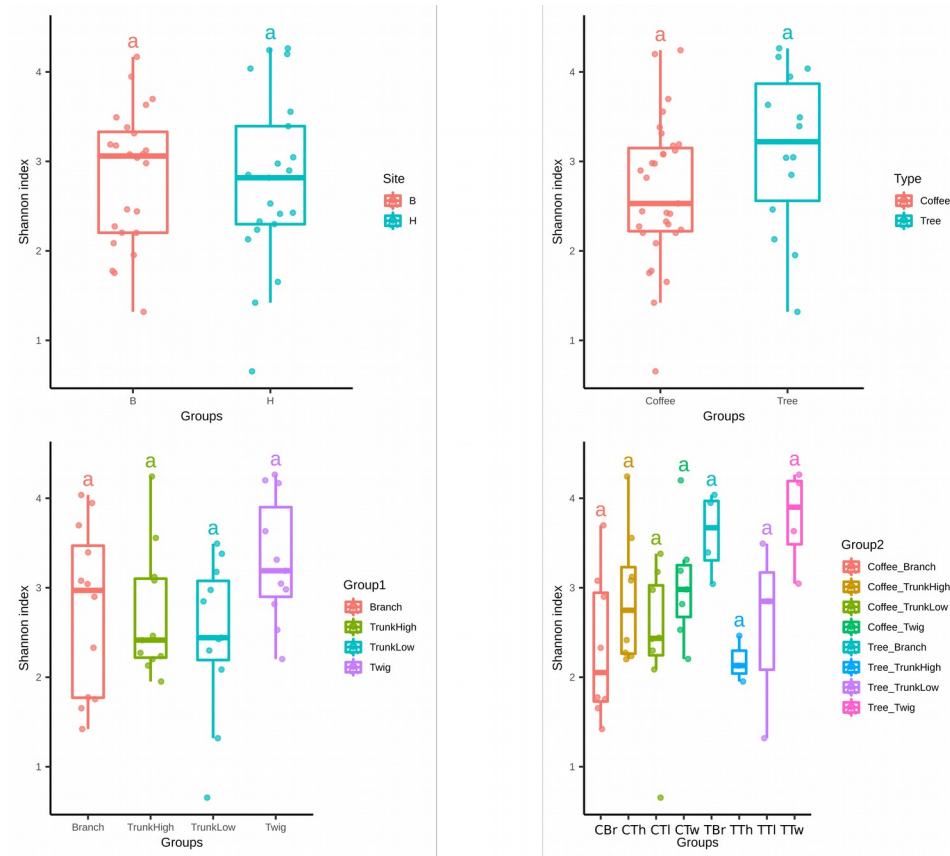


Figure S2. Alpha rarefaction plot, calculated with QIIME2, for bark samples grouped according to plant type (coffee bush, shade tree) and plant microsite (branch, trunk high, trunk low, twig), and including only sequences classified as Fungi.



a



b

Figure S3. Boxplots of Simpson (a) and Shannon (b) indices with rarefaction at 12,408 reads (lowest number of reads per sample after removing reads with less than 10,000 reads), according to collection site (B: Benito Juárez El Plan, H: Hermanitos), plant type, sampled plant part and microsite (CTw: coffee twig; CTh: coffee trunk high; CTl: coffee trunk low; CBr: coffee branch; TTw: tree twig; TTh: tree trunk high; TTl: tree trunk low; TBr: tree branch)

a

| | |
|-------------------------------|-----------|
| method name | PERMANOVA |
| test statistic name | pseudo-F |
| sample size | 38 |
| number of groups | 2 |
| test statistic | 2.51249 |
| p-value | 0.004 |
| q-value | 0.004 |
| number of permutations | 999 |

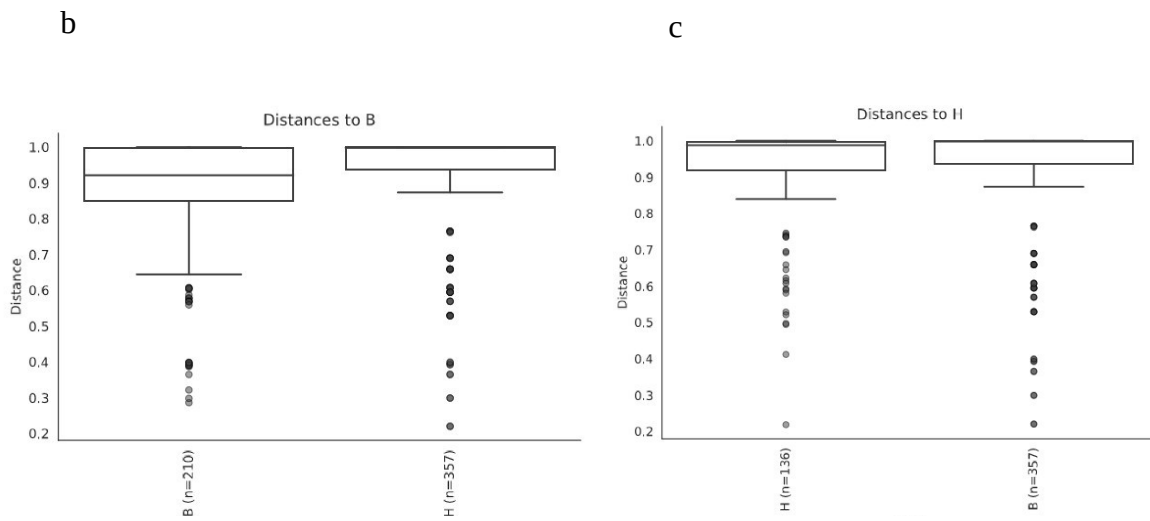


Figure S4. Group significance associations per site using Bray-Curtis distance, calculated with QIIME2, based on the dataset including all taxa detected in bark samples of coffee bushes and shade trees in two coffee plantations in Soconusco region, Chiapas, Mexico. a) Details for PERMANOVA test; b) Distances to sample group ‘site B’; c) Distances to sample group ‘site H’. B= Benito Juárez El Plan; H = Los Hermanitos.

a

| | |
|-------------------------------|-----------|
| method name | PERMANOVA |
| test statistic name | pseudo-F |
| sample size | 38 |
| number of groups | 2 |
| test statistic | 4.05991 |
| p-value | 0.001 |
| q-value | 0.001 |
| number of permutations | 999 |

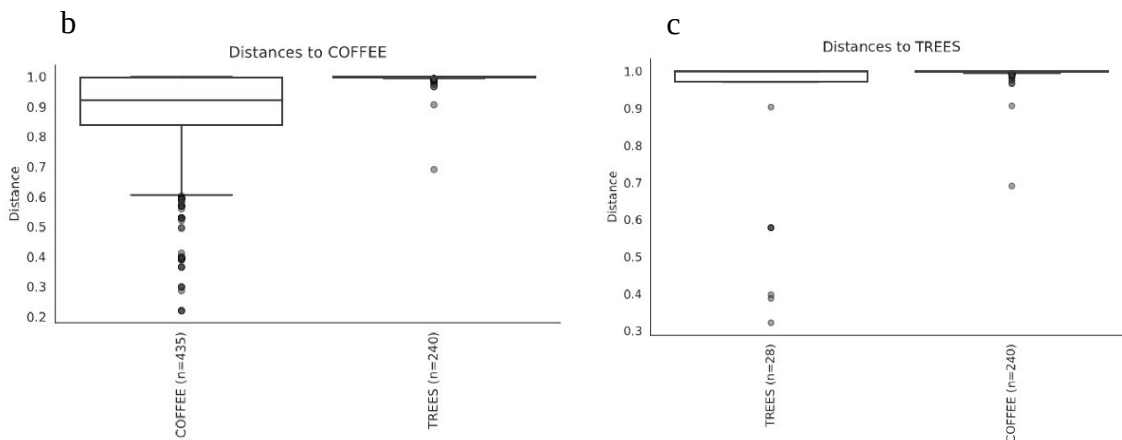


Figure S5. Group significance associations per plant type using Bray-Curtis distance based on the dataset including all taxa detected in bark samples of coffee bushes and shade trees in two coffee plantations in Soconusco region, Chiapas, Mexico. a) Details for PERMANOVA test; b) Distances to sample group ‘coffee bushes’; c) Distances to sample group ‘shade trees’. Calculated with QIIME2.

a

| | |
|-------------------------------|-----------|
| method name | PERMANOVA |
| test statistic name | pseudo-F |
| sample size | 37 |
| number of groups | 2 |
| test statistic | 1.64432 |
| p-value | 0.001 |
| q-value | 0.001 |
| number of permutations | 999 |

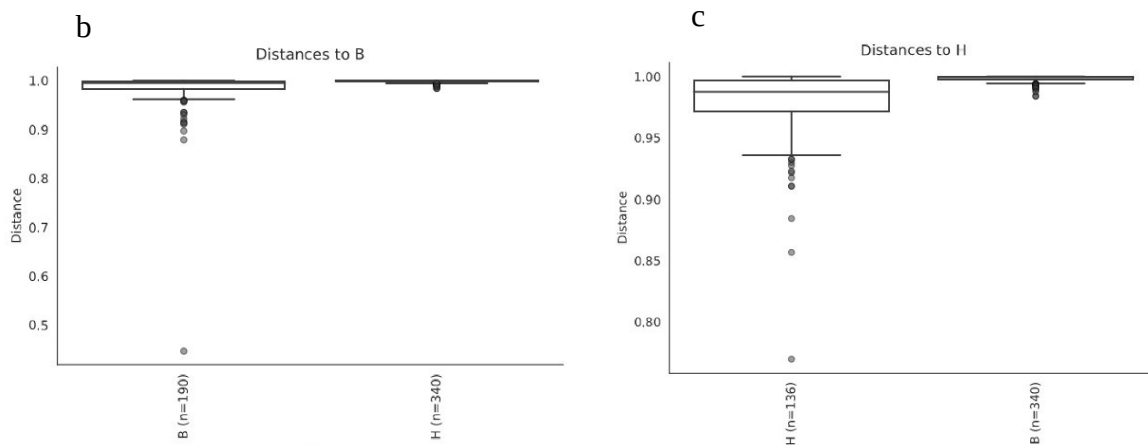


Figure S6. Group significance associations per site using Bray-Curtis distance based on only Fungi detected in bark samples of coffee bushes and shade trees in two coffee plantations in Soconusco region, Chiapas, Mexico. a) Details for PERMANOVA test; b) Distances to sample group ‘site B’; c) Distances to sample group ‘site H’. B= Benito Juárez El Plan; H = Los Hermanitos. Calculated with QIIME2.