**Digital appendix 1**

Results of the circular statistics analysis of flowering patterns for eight tree species and the community of trees in Southwestern Colombia

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | Year | *Henriettea seemannii* | *Ocotea aurantiodora* | *Scheffllera morototoni* | *Lacistema aggregatum* | *Eugenia* cf. *egensis* | *Erythroxylum citrifolium* | *Miconia minutiflora* | *Miconia rubiginosa* | *Community* |
|
| Observations (N) | 2013 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | --- | 23 |
| 2014 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Mean angle | 2013 | 257.52 ° | 35.33 ° | 127.81 ° | 229.31 ° | 217.84 ° | 252.96 ° | 274.24 ° |   | 209.15 ° |
| 2014 | 250.98 ° | 35.84 ° | 135.77 ° | 240.20 ° | 128.42 ° | 254.92 ° | 333.10 ° | 267.74 ° | 230.63 ° |
| Mean date | 2013 | sep-19 | feb-05 | may-10 | aug-21 | aug-9 | sep-14 | oct-06 |   | aug-1 |
| 2014 | sep-12 | feb-06 | may-18 | sep-01 | may-11 | sep-16 | dec-4 | sep-29 | aug-22 |
| Angular estándar deviation | 2013 | 20.63 ° | 35.65 ° | 37.99 ° | 25.80 ° | 48.29 ° | 63.79 ° | 96.7 ° |   | 75.36 ° |
| 2014 | 53.85 ° | 52.31 ° | 32.50 ° | 28.68 ° | 88.32 ° | 66.60 ° | 75.21 ° | 123.78 ° | 93.43 ° |
| Length of the mean vector ( r ) | 2013 | 0.94 | 0.82 | 0.80 | 0.90 | 0.70 | 0.54 | 0.24 |   | 0.42 |
| 2014 | 0.64 | 0.66 | 0.85 | 0.88 | 0.31 | 0.51 | 0.42 | 0.1 | 0.27 |
| Rayleigh test (p) | 2013 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | --- | <0.001 |
| 2014 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.05 | <0.001 |

**Digital appendix 2**

Spearman’s correlation coefficients (Rs) between monthly reproductive phenophases of tree species and environmental factors in Southwestern Colombia

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Species** | **Bud flowers** | **Flowers** | **Unripe fruits** | **Ripe fruits** |
|  | *Henriettea seemannii* | -0.44 (1); -0.58 (2); -0.59 (3) | -0.48 (3) |   |   |
|  | *Ocotea aurantiodora* |   |   |   | 0.50 (3) |
| Rainfall | *Schefflera morototoni* |   | 0.65 (1); 0.74 (2); 0.57 (3) |  -0.56 (1); -0.42 (2) |   |
|  | *Erythroxylum citrifolium* | -0.56 (3) | -0.47 (3) |   |   |
|  | *Lacistema aggregatum* |   | -0.52 (1); -0.58 (2); -0.47 (3) |   |   |
|  | *Miconia rubiginosa* |  0.70 (2); 0.61 (3) |  0.67 (3) |  - 0.74 (1); -0.65 (2)  |   |
|  | *Henriettea seemannii* |  -0.43 (2) |   | -0.49 (2); 0.65 (3) |   |
|  | *Schefflera morototoni* |   | 0.63 (1); 0.63 (2); 0.56 (3) | -0.56 (1); -0.49 (2); -0.57 (3) |   |
| Relative humidity | *Erythroxylum citrifolium* |  -0.55 (1); -0.57 (2) ; -0.47 (3) |  -0.48 (2); -0.44 (3) |   |   |
|  | *Lacistema aggregatum* |   | -0.66 (1); -0.57 (2); -0.46 (3) |  -0.38 (2); -0.39 (3) | -0.39 (2); -0.51 (3) |
|  | *Miconia minutiflora* |  -0.45 (1) ; - 0.53 (2); -0.51 (3) |   | 0.44 (1); 0.41 (2); 0.45 (3) |   |
|   | *Miconia rubiginosa* |   |   | -0.77 (1); -0.61 (2); -0.50 (3) |   |
|  | *Henriettea seemannii* |   | 0.45 (2); 0.42 (3) |   |   |
|  | *Ocotea aurantiodora* |  -0.57 (2); -0.56 (3) |   |   |  - 0. 43 (2) |
| Temperature | *Schefflera morototoni* |   | -0.51 (1); -0.39 (2); -0.38 (3) | 0.51 (2); 0.48 (3) |   |
|  | *Erythroxylum citrifolium* |  0.47 (1); 0.59 (2); 0.52 (3) | 0.48 (2); 0.46 (3) |   |   |
|   | *Lacistema aggregatum* |  0.68 (2); 0.66 (3) | 0.62 (1) | 0.47 (2); 0.54 (3) |   |
|  | *Miconia rubiginosa* |   |   | 0.67 (1) |   |
|  | *Henriettea seemannii* | 0.68 (1); 0.72 (2); 0.69 (3) | 0.59 (2); 0.49 (3) | 0.54 (3) |   |
|  | *Schefflera morototoni* |   | -0.55 (2); -0.53 (3) | 0.60 (1); 0.67 (2); 0.63 (3) |   |
| Solar irradiance | *Erythroxylum citrifolium* | 0.54 (1); 0.59 (2); 0.58 (3) | 0.45 (2); 0.44 (3) |   |   |
|  | *Lacistema aggregatum* |   | 0.70 (1); 0.70 (2); 0.64 (3)  |   |   |
|  | *Miconia minutiflora* |   |   | -0.39 (2); -0.43 (3) |   |
|   | *Miconia rubiginosa* |   |   | 0.66 (2); 0.79 (3)  |   |
| (1) = one month time lag; (2) = two months time lag; (3) = three months time lag. |  |  |
| All correlation values with p < 0.001. |  |  |  |  |

**Digital appendix 3**

Results of the circular statistics analysis of the fruiting patterns for eight tree species and the community in Southwestern Colombia

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | Year | *Henriettea seemannii* | *Ocotea aurantiodora* | *Scheffllera morototoni* | *Lacistema aggregatum* | *Eugenia* cf. *egensis* | *Erythroxylum citrifolium* | *Miconia minutiflora* | *Miconia rubiginosa* | Community |
|
| Observations (N) | 2013 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | --- | 23 |
| 2014 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Mean angle | 2013 | 3.92 ° | 150.93 ° | 222.39 ° | 287.96 ° | 325.91 ° | 43.61° | 170.43 ° | --- | 290.50 ° |
| 2014 | 359.34 ° | 79.92 ° | 224.89 ° | 301.18 ° | 213.95 ° | 260.17° | 132.71 ° | 291.95 ° | 290.86 ° |
| Mean date | 2013 | jan-04 | jun-03 | aug-14 | oct-19 | nov-27 | feb-14 | jun-22 | --- | oct-22 |
| 2014 | dec-31 | mar-23 | aug-17 | nov-03 | aug-05 | sep-21 | may-15 | oct-24 | oct-22 |
| Angular estándar deviation | 2013 | 48.76 ° | 79.04 ° | 52.21 ° | 32.69 ° | 69.30 ° | 91.71° | 70.29 ° | --- | 120.60 ° |
| 2014 | 35.22 ° | 82.42 ° | 53.41 ° | 35.17 ° | 78.37 ° | 76.32° | 75.03 ° | 126.99 ° | 115.80 ° |
| Length of the mean vector ( r ) | 2013 | 0.70 | 0.39 | 0.66 | 0.85 | 0.48 | 0.28 | 0.47 | --- | 0.11 |
| 2014 | 0.83 | 0.36 | 0.65 | 0.83 | 0.39 | 0.41 | 0.42 | 0.09 | 0.13 |
| Rayleigh test (p) | 2013 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | --- | <0.05 |
| 2014 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | >0.05 | <0.05 |

**Digital appendix 4**

Phenological variables of flowering for eight tree species during two years of observations in Southwestern Colombia

|  |  |  |
| --- | --- | --- |
| Species | Year | Phenological variables |
| % | Total duration (months) | Mean duration | Mean first flowering | Mean flowering | Synchrony |
| ± SD | date ± SD | peak date ± SD | index |
| *Henriettea seemannii* | 1 | 100 | 2 | 1.2 ± 0.41 | 8.53 ± 1.81 | 9 ± 0 | 0.96 |
|  | 2 | 100 | 3 | 1.2 ± 0.56 | 7.53 ± 2.15 | 9.8 ± 0.56 | 0.72 |
|  |   |   |   |   |   |   |   |
| *Ocotea aurantiodora* | 1 | 93 | 1.5 | 1.08 ± 0.19 | 1.85 ± 0.80 | 1.23 ± 0.60 | 0.47 |
|  | 2 | 93 | 2 | 1.07 ± 0.27 | 3.21 ± 2.17 | 1.21 ± 0.49 | 0.59 |
|  |   |   |   |   |   |   |   |
| *Schefflera morototoni* | 1 | 100 | 2.5 | 1.93 ± 0.46 | 4.0 ± 0.38 | 5.0 ± 0 | 0.88 |
|  | 2 | 73 | 2.5 | 1.27 ± 0.51 | 4.71 ± 0.73 | 5.14 ± 0.36 | 0.76 |
|  |   |   |   |   |   |   |   |
| *Lacistema aggregatum* | 1 | 100 | 3.5 | 2.57 ± 0.50 | 7.0 ± 0.85 | 8.07 ± 0.26 | 0.82 |
|  | 2 | 73 | 4 | 2.54 ± 1.01 | 7.0 ± 1.26 | 8.63 ± 0.65 | 0.78 |
|  |   |   |   |   |   |   |   |
| *Eugenia cf. egensis* | 1 | 100 | 2 | 1.47 ± 0.52 | 8.60 ± 1.06 | 8.60 ± 1.06 | 0.72 |
|  | 2 | 73 | 2 | 1.27 ± 0.47 | 6.64 ± 2.73 | 6.64 ± 2.73 | 0.62 |
|  |   |   |   |   |   |   |   |
| *Erythroxylum citrifolium* | 1 | 60 | 2 | 1.44 ± 0.53 | 5.44 ± 3.0 | 8.56 ± 2.19 | 0.39 |
|  | 2 | 87 | 2 | 1.38 ± 0.42 | 4.54 ± 1.81 | 8.77 ± 2.17 | 0.58 |
|  |   |   |   |   |   |   |   |
| *Miconia minutiflora* | 1 | 93 | 4 | 2.39 ± 0.71 | 5.21 ± 1.72 | 4.14 ± 3.99 | 0.83 |
|   | 2 | 100 | 4 | 2.9 ± 0.97 | 4.86 ± 2.83 | 1.0 ± 0 | 0.83 |
|   |   |   |   |   |   |   |   |
| *Miconia rubiginosa* | 2 | 100 | 2 | 1.2 ± 0.41 | 4.4 ± 1.72 | 9.2 ± 2.31 | 0.72 |
| SD = Standard deviation. |   |   |   |   |   |   |   |

**Digital appendix 5**

Phenological variables of fruiting for eight tree species during two years of observations in Southwestern Colombia

|  |  |  |
| --- | --- | --- |
| Species | Year | Phenological variables |
| % | Total duration (months) | Mean duration | Mean first fruiting | Mean fruiting | Synchrony |
| ± SD | date ± SD | peak date ± SD | index |
| *Henriettea seemannii* | 1 | 100 | 3 | 2.5 ± 0.23 | 2.1 ± 0.27 | 8.8 ± 4.44 | 0.91 |
|  | 2 | 100 | 4.5 | 2.4 ± 0.89 | 9.7 ± 2.84 | 1.7 ± 2.84 | 0.77 |
|  |   |   |   |   |   |   |  |
| *Ocotea aurantiodora* | 1 | 67 | 7 | 3.7 ± 2.11 | 3.6 ± 0.97 | 5.1 ± 0.32 | 0.69 |
|  | 2 | 60 | 12 | 6.1 ± 4.69 | 2.5 ± 1.22 | 5.3 ± 3.39 | 0.7 |
|  |   |   |   |   |   |   |  |
| *Schefflera morototoni* | 1 | 100 | 6 | 4.6 ± 1.12 | 5.9 ± 0.46 | 7.0 ± 0.38 | 0.83 |
|  | 2 | 100 | 6 | 4.8 ± 0.72 | 5.1 ± 1.36 | 7.7 ± 0.46 | 0.85 |
|  |   |   |   |   |   |   |  |
| *Lacistema aggregatum* | 1 | 100 | 3.5 | 3.0 ± 0.38 | 7.5 ± 2.70 | 9.9 ± 0.35 | 0.85 |
|  | 2 | 73 | 4.5 | 3.4 ± 1.29 | 9.45 ± 1.04 | 10.18 ± 0.40 | 0.81 |
|  |   |   |   |   |   |   |  |
| *Eugenia cf. egensis* | 1 | 100 | 3 | 2.7 ± 0.41 | 4.5 ± 3.14 | 11.0 ± 0 | 0.75 |
|  | 2 | 73 | 2.5 | 2.0 ± 0.89 | 6.1 ± 2.39 | 7.0 ± 3.87 | 0.67 |
|  |   |   |   |   |   |   |  |
| *Erythroxylum citrifolium* | 1 | 67 | 1.5 | 1.1 ± 0.16 | 5.2 ± 3.19 | 3.1 ± 3.75 | 0.55 |
|  | 2 | 80 | 1 | 1.0 ± 0 | 7.0 ± 2.13 | 6.3 ± 3.23 | 0.65 |
|  |   |   |   |   |   |   |  |
| *Miconia rubiginosa* | 2 | 100 | 2.5 | 2.3 ± 0.24 | 2.6 ± 2.06 | 8.1 ± 2.55 | 0.76 |
|   |   |   |   |   |   |   |  |
| *Miconia minutiflora* | 1 | 93 | 2.5 | 1.9 ± 0.56 | 4.1 ± 0.27 | 5.79 ± 1.48 | 0.7 |
|  | 2 | 100 | 3 | 2.5 ± 0.35 | 3.3 ± 0.46 | 5.33 ± 1.29 | 0.8 |
| SD = Standard deviation. |   |   |   |   |   |   |   |