

## ECOLOGY

# Defaunation precipitates the extinction of evolutionarily distinct interactions in the Anthropocene

Carine Emer<sup>1\*</sup>, Mauro Galetti<sup>1</sup>, Marco A. Pizo<sup>2</sup>, Pedro Jordano<sup>3</sup>, Miguel Verdú<sup>4</sup>

Species on Earth are interconnected with each other through ecological interactions. Defaunation can erode those connections, yet we lack evolutionary predictions about the consequences of losing interactions in human-modified ecosystems. We quantified the fate of the evolutionary history of avian–seed dispersal interactions across tropical forest fragments by combining the evolutionary distinctness of the pairwise-partner species, a proxy to their unique functional features. Both large-seeded plant and large-bodied bird species showed the highest evolutionary distinctness. We estimate a loss of  $3.5$  to  $4.7 \times 10^4$  million years of cumulative evolutionary history of interactions due to defaunation. Bird-driven local extinctions mainly erode the most evolutionarily distinct interactions. However, the persistence of less evolutionarily distinct bird species in defaunated areas exerts a phylogenetic rescue effect through seed dispersal of evolutionarily distinct plant species.

## INTRODUCTION

Biotic interactions form the backbone of biological diversity while delivering the unique ecological functions essential for human and nonhuman well-being (1, 2). Their fate is defined by both the contemporary ecological correlates and the evolutionary trajectories of the interacting species (3, 4). Thus, human activities known to affect species interactions within ecological time frames may likewise affect the evolutionary history of the interaction partners. Among them, defaunation, the worldwide pervasive human-induced extinction of animal populations or entire species, substantially affects large-bodied organisms that often perform interactions whose ecological function cannot be easily replaced by smaller-sized species (5). If these species are highly evolutionarily distinct (e.g., unique lineages in the Tree of Life and those with fewer extant relatives and a longer evolutionary history), then they may harbor greater amounts of evolutionary information than expected by species number alone (6, 7). Aimed at measuring this importance, “evolutionary distinctness” (hereafter ED) estimates the contribution of a given species to the total evolutionary history of its clade while measuring its isolation in the phylogenetic tree (8, 9). We propose to expand this concept by characterizing ecological interactions according to their ED, i.e., how species with different ED values interact with each other (Fig. 1). Thus, we can assess how the contemporary fast-paced defaunation has eroded the evolutionary history embedded in these interactions. Here, we coin the term “evolutionary distinctness of the interaction” (EDi) to refer to the combined ED that both interacting partner species convey to a given interaction, irrespective of how long they have been interacting with one another.

Species interactions entail millions of years of reciprocal effects and a vast amount of the genetic and ecological information that characterize their unique and irreplaceable contribution to support the Earth’s biodiversity (10, 11). Mutualism rarely evolves as a process

in which partners have joint, reciprocal evolutionary trajectories involving cospeciation with congruent phylogenetic branching (12, 13). Instead, species with rather different evolutionary trajectories tend to interact in contemporary habitats, showing a marked asymmetry of ED (e.g., the pollination of a basal clade angiosperm species by an insect from a recent clade). For example, the ages of nectar-feeding and fruit-eating bird and mammal families and their core plant families are consistently skewed toward older plant taxa, evidencing that most animal families are younger than their partner plant families (11). In the specific case of tropical forests, avian seed dispersal is mediated by multiple species, with generalized interactions established by the consumption of fruits that do not necessarily require specialized traits (11, 12). Yet, generalist partner species hold distinct evolutionary histories that meet in contemporary time, forming interactions that combine all the evolutionary information that the interacting actors carry.

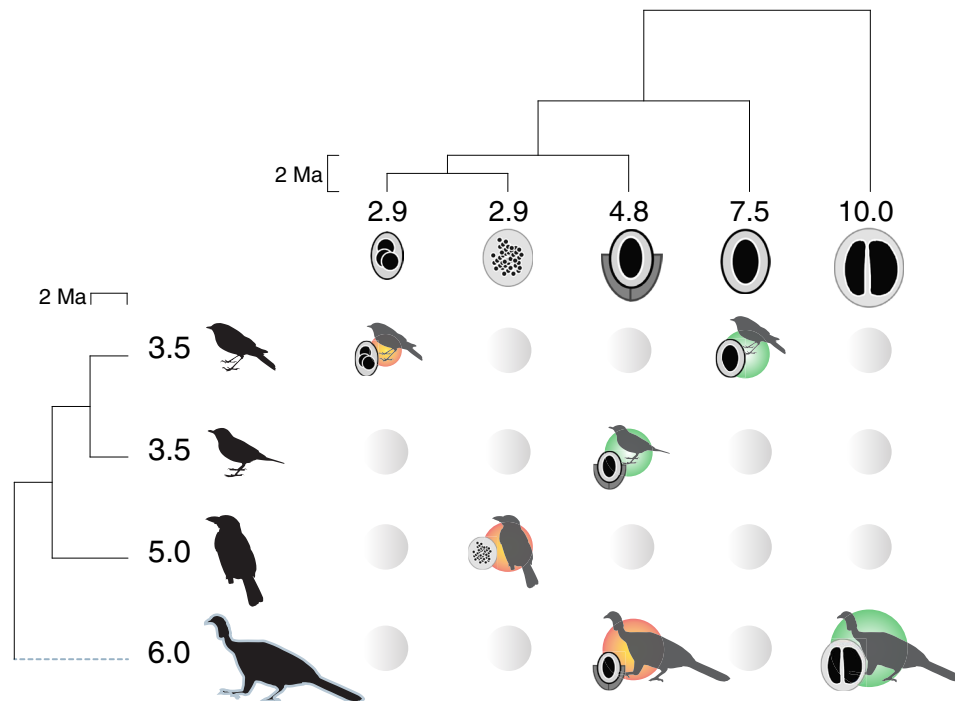
Because large-bodied animals and large-seeded plants tend to be evolutionarily distinct species owing to both their old age and isolation in the Tree of Life (14, 15), their interactions involve high values of EDi while accounting for the largest amounts of evolutionary history. Therefore, defaunation, by reducing the populations of large-bodied bird species (5) and, consequently, the probability of interactions with large-seeded plant species, would likely extirpate the most evolutionarily distinct interactions. In contrast, lower EDi values are expected for interactions involving small-bodied bird and small-seeded plant species, which conform to be the persisting interactions in fragmented landscapes (16). Thus, both locally extinct and persisting interactions would be characterized by relatively symmetric EDi (i.e., high-ED animal–high-ED plant species for locally extinct and low-ED animal–low-ED plant species for persistent interactions). Otherwise, when the interacting partners have highly divergent ED (e.g., low-ED animal–high-ED plant species), an asymmetric EDi emerges, with unexplored outcomes on the eco-evolutionary functions that support current ecosystems (10). Therefore, defaunation, by selectively pruning species from the Tree of Life (17, 18), is causing the extirpation of interactions with distinct combinations of evolutionary history, with consequences that may go well beyond the current ecological time (19, 20).

We quantify the signature of defaunation in the ED of plant–frugivore interactions in fragmented tropical forests by combining field and

Copyright © 2019  
The Authors, some  
rights reserved;  
exclusive licensee  
American Association  
for the Advancement  
of Science. No claim to  
original U.S. Government  
Works. Distributed  
under a Creative  
Commons Attribution  
NonCommercial  
License 4.0 (CC BY-NC).

<sup>1</sup>Instituto de Biociências, Departamento de Ecologia, Universidade Estadual Paulista, CP 199, 13506-900 Rio Claro, SP, Brazil. <sup>2</sup>Instituto de Biociências, Departamento de Zoologia, Universidade Estadual Paulista, CP 199, 13506-900 Rio Claro, SP, Brazil. <sup>3</sup>Integrative Ecology Group, Estación Biológica de Doñana–Consejo Superior de Investigaciones Científicas (EBD-CSIC), Av. Américo Vespucio 26, E-41092 Sevilla, Spain. <sup>4</sup>Centro de Investigaciones sobre Desertificación (CSIC-UVEG-GV), Apdo Oficial, E-46113 Valencia, Spain.

\*Corresponding author. Email: c.emer09@gmail.com



**Fig. 1. The EDi is a combination of the ED of the interacting species that can be used to characterize the evolutionary history of the seed dispersal interactions.** The ED of each species, calculated by equally dividing the phylogenetic distance of a branch among its daughter branches, is shown at the tips of the phylogenies. The size of the bird and plant fruit silhouettes is proportional to their ED. The ED magnitude of a bird–seed dispersal interaction ranges from very high when distinct plants are dispersed by distinct birds to very low when the opposite is true. The asymmetry can be bird-skewed, when a bird disperses a plant with lower distinctness than its own (orange circles), or plant-skewed otherwise (green circles). Defaunation is expected to have stronger impacts on interactions that involve bird species with a high ED (dashed line, highlighted bird silhouette).

phylogenetic data of the plant and bird species involved in seed dispersal. Here, we take a step forward by considering the effects of defaunation not only on species but also on the current distribution of the EDi of bird–seed dispersal interactions. We compiled 21 studies on seed dispersal by birds in which defaunation was estimated as the difference between the sum of all bird body masses at the regional landscape scale and the summed body masses of the birds that occur at the local, within-fragment scale. As shown in table S1, the studies were carried out in the Atlantic Forest of South America (21), a biodiversity hot spot (22) that has been drastically reduced to ~12% of its original cover in the past few centuries (23). The studied sites vary from small fragments of 0.66 ha to large forest remnants up to 42,000 ha along a disturbance gradient from semipristine-protected areas to secondary forests and restored plantations.

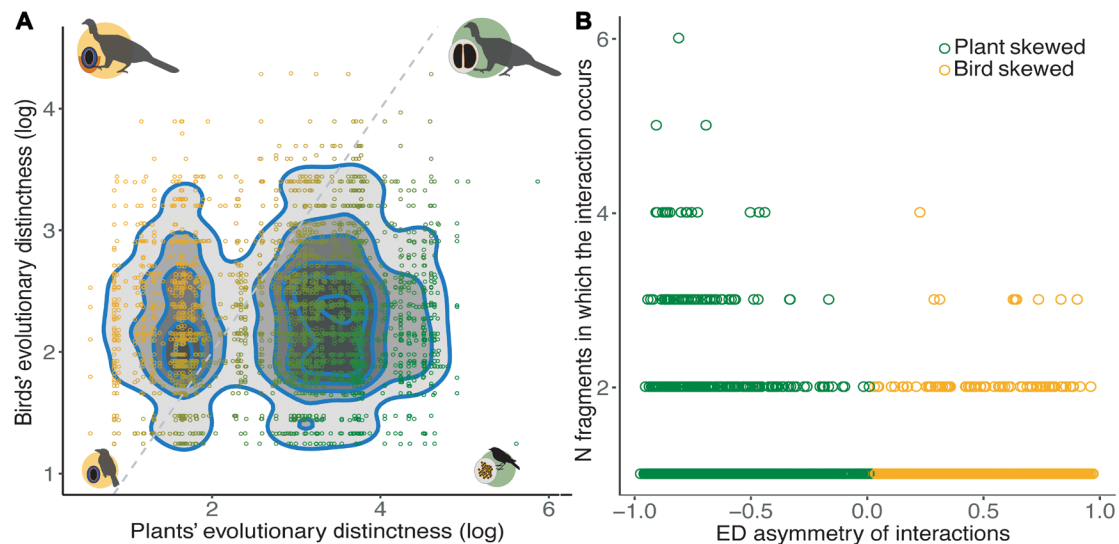
## RESULTS

We found that defaunation caused the loss of interactions involving unique lineages of bird and plant species that have faced millions of years of hazards but may not be able to survive human disturbance in the Anthropocene (figs. S1 and S2). The loss of bird clades tends to concentrate on larger-bodied species, which are also the most evolutionarily distinct ( $r = 0.21$ ,  $t = 2.78$ ,  $P = 0.007$ ; fig. S3 and table S2). These include large- and medium-bodied birds, such as guans [e.g., *Pipile jacutinga* (Cracidae): mean weight, 1250 g; mean ED, 28.99 million years (Ma)] and motmots [e.g., *Baryphthengus ruficapillus* (Momotidae): mean weight, 142 g; mean ED, 71.54 Ma] that are

essential to the dispersal of large-seeded plant species with the highest ED, such as palms [e.g., *Euterpe edulis* (Arecaceae): mean seed diameter, 12 mm; mean ED, 98.70 Ma] and nutmegs [e.g., *Virola bichuhyba* (Myristicaceae): mean seed diameter, 16 mm; mean ED, 36.26 Ma] mostly found in less disturbed forests and rarely on disturbed sites. Likewise, the ED of plant species is associated with a larger seed diameter ( $r = 0.38$ ,  $t = 5.84$ ,  $P = 0.001$ ; fig. S3 and table S3). These two effects in combination indicate that interactions involving plant and animal lineages with high ED are selectively lost in more disturbed sites (figs. S1 and S2 and table S4).

Seed dispersal interactions in the Atlantic Forest show significantly asymmetric EDi values, mostly skewed toward plant species although bird-skewed interactions are also present (Fig. 2A and table S4). Bird-plant associations present in a higher number of fragments followed the same trend (Fig. 2B), indicating that most of the persisting interactions involve less evolutionarily distinct bird species dispersing more evolutionarily distinct plants. In contrast, bird-skewed asymmetries, i.e., bird species with a higher ED that disperse plant species with lower ED, often occur in a single or very few fragments (Fig. 2B), revealing their inability to persist in defaunated landscapes.

We observed that the cumulative EDi (i.e., the total EDi per fragment) decreases with increasing defaunation (slope,  $-5.44 \pm 2.09$ ,  $t = -2.63$ ,  $P = 0.02$ ; Fig. 3) even when fragment area (fig. S4) and interaction richness (fig. S5) are controlled for. Seed dispersal interactions vanishing in the Anthropocene represent a loss of evolutionary history that can be estimated by the cumulative EDi lost along the gradient



**Fig. 2. Asymmetries in the ED of seed dispersal by birds in the Atlantic Forest.** (A) A density plot showing asymmetries in ED between bird and plant species partners in seed dispersal interactions. Each dot represents a single-interaction event, and the intensity of the gray-shaded areas increases with the concentration of the most common asymmetries. Bird-skewed interactions (orange dots) occur when more evolutionarily distinct bird species disperse less evolutionarily distinct plant species; plant-skewed interactions (green dots) occur when more evolutionarily distinct plant species are dispersed by less evolutionarily distinct bird species. Plant-skewed interactions are twice the number of bird-skewed interactions (bird-skewed, 871; plant-skewed, 1797;  $P < 0.001$ , binomial test). (B) The frequency of the ED asymmetries of seed dispersal interactions in different forest fragments. Results from a generalized linear model indicate that plant-skewed asymmetries occur in a larger number of fragments (slope,  $-0.09 \pm 0.04$ ,  $z = -2.46$ ;  $P = 0.01$ ) and thus are significantly more persistent in the fragmented landscape. The colors of the dots follow the description for plant- and bird-skewed asymmetries, as in (A).

of defaunation, i.e.,  $3.5$  to  $4.7 \times 10^4$  Ma of cumulative evolutionary time (Fig. 3). The magnitude of EDi lost in the defaunated fragments of the Atlantic Forest is similar to the marked loss of avian and bees' evolutionary history devastated by agricultural practices worldwide (24, 25), and it is intensified in very small fragments. Furthermore, we identified that the most pristine and less defaunated forests, which are located within State Parks, harbor more cumulative EDi than expected from their interaction richness (fig. S5). On the other hand, all other fragments but two are currently supporting less EDi than expected by the local pool of species performing seed dispersal interactions. These findings show that, while the less defaunated sites within protected areas harbor interactions with irreplaceable evolutionary information and unique ecological functions, defaunation pervasively vanishes evolutionary history from forest fragments.

Although overall seed dispersal interactions are drastically lost with small increases in defaunation, the different combinations of bird and plant species' ED respond differently to this scenario (Fig. 4 and fig. S6). Interactions with bird-skewed ED values (i.e., higher ED of the avian partner, yellow lines in Fig. 4) are the first to vanish, resulting in the loss of more than 50% of interactions, with increases as small as 6% in the defaunation index. This reduction of EDi is more severe when both interacting partners are highly evolutionarily distinct (EDi from 32 to 381 Ma).

## DISCUSSION

Our findings show that the extirpated bird–seed dispersal interactions tend to include unique species that contain an irreplaceable set of genetic information that may not survive the challenges imposed by contemporary human-driven disturbances. The impoverishment of EDi in the remnants of the Atlantic Forest translates into non-

random local extinctions of ecosystem functions related to seed dispersal by birds, such as the dispersal of large-seeded plant species. The loss of ecological functions due to reduced phylogenetic diversity in mutualistic systems has also been reported recently for agricultural landscapes in which pollination service and crop production are highly affected by the loss of highly evolutionarily distinct bee species (25). Furthermore, because the Atlantic Forest biome is mostly composed of highly defaunated small fragments (23) and because higher EDi values are restricted to a few relatively pristine and large areas, the restoration of evolutionary history would be extremely difficult with the current rates of local extinction (26). However, the reintroduction of species with higher ED can be a way forward to recover the EDi of lost interactions (27). Four of our study sites, for example, are composed of restored forests (table S1) that, similar to the highly defaunated fragments, hold low EDi values (Fig. 3), because large-seeded plant species are poorly represented in the pool of species used for restoration (28). Thus, including highly evolutionarily distinct plant species in active restoration initiatives would maximize the potential for the restoration of EDi at local and regional levels.

Overall, the loss of bird–seed dispersal interactions with plant-skewed EDi is smaller than that of bird-skewed interactions, which are the first to vanish with defaunation (Fig. 3). The fact that many plant species can be dispersed by bird species with a lower ED, which are often habitat and diet generalists (16, 29), allows them to persist longer in the defaunated areas. In this scenario, plant-skewed interactions involving small-bodied, low-ED bird species dispersing large-seeded, high-ED plant species may occur only occasionally. Thus, rare events of propagule movement are important to maintain viable populations across the fragmented landscape (30). Yet, persisting interactions with plant-skewed EDi values such as the common seed dispersal of *Schinus terebinthifolia* (ED, 24.5 Ma) by

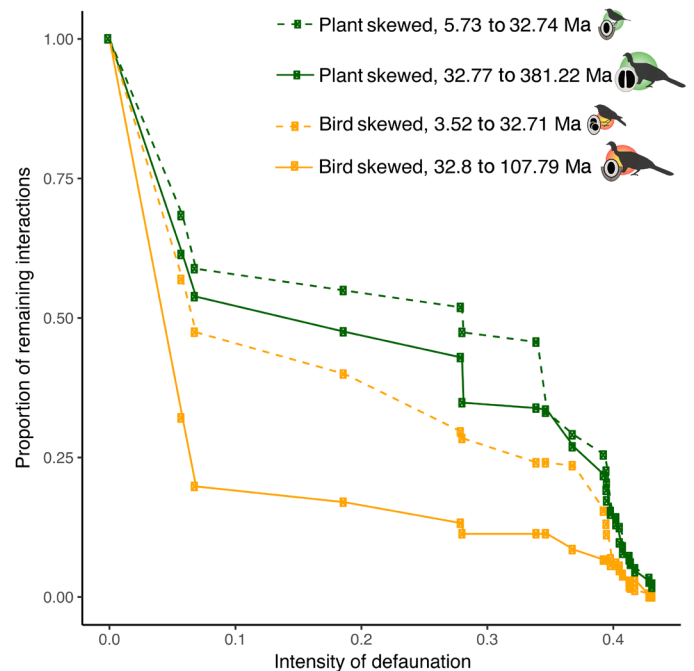


**Fig. 3. The EDi promoted by bird-mediated seed dispersal decreases sharply along a gradient of defaunation.** The cumulative EDi that a fragment carries corresponds to the sum of the EDi values of all interactions recorded in that fragment, here, the sum of the EDi values of all seed dispersal interactions by birds. The most pristine area is the top-left circle (1), which is the largest remnant of the Atlantic Forest and also the least defaunated fragment, used here as the baseline to illustrate the position of a “pristine” forest. The top-shaded facet of the graph represents the amount of cumulative EDi lost from the most pristine area to the second least disturbed fragment (2), while the bottom-shaded facet indicates the amount of cumulative EDi lost from the pristine area to the most disturbed fragment (16). Areas (identified by numbers within circles) are presented in a decreasing order of fragment area, according to a detailed description of each site in table S1. Larger fragments tend to be less disturbed, therefore harboring forests closer to the most pristine, best-preserved extreme.

*Turdus rufiventris* (ED, 6.2 Ma) or of *Trema micrantha* (ED, 41.2 Ma) by *Dacnis cayana* (ED, 7.1 Ma) may be more stable in the environmental changes seen in the Anthropocene (31).

Our results suggest that the loss of evolutionary history of plant species in the Atlantic Forest is minimized by the rescuing effect performed by bird species with limited ED dispersing unique plant species. The rescuer bird species represent clades of small-bodied, generalist bird species able to thrive in human-modified environments, which functionally “help” some plant species to persist. The functional role of rescuer species includes the dispersal of plant species whose primary seed dispersers have been already lost (20) or functionally extinct because of overhunting, for instance (32). The large seeds of a keystone, highly evolutionarily distinct tropical palm, *E. edulis*, have rapidly evolved toward smaller sizes in populations in which its main large-bodied, evolutionarily distinct seed disperser, *P. jacutinga*, has been locally extinct (33). The response of *E. edulis* to defaunation may increase its probability of being phylogenetically rescued by less distinct, small-bodied bird species.

Yet, rescue effects cannot functionally replace lost interactions. The phenotypic and microevolutionary changes observed in plants that lost their primary large-bodied seed dispersers (33, 34) also indicate that, although small birds can still disperse the smaller



**Fig. 4. Defaunation leads to an impoverishment of seed dispersal interactions and their associated asymmetries in the EDi.** The proportion of interactions remaining in each fragment significantly decreases with defaunation, and this pattern is maintained when controlling for fragment area (fig. S5). The four types of bird–seed dispersal interaction asymmetries showed a similar trend in losing ED, but the loss was faster for bird-skewed interactions while plant-skewed interactions persisted longer in the gradient of defaunation. The 50th percentile was used as the threshold to define low and high EDi values. The defaunation index is scaled according to the lowest value among all fragments, which corresponds to the largest area and less defaunated remnant of the Atlantic Forest, used here as a baseline value to illustrate the position of a pristine forest. Continuous lines indicate high ED; dashed lines indicate low ED. The four types of asymmetry correspond to different combinations of EDi, as follows: Plant skewed, low ED (minimum EDi, 5.73 Ma; maximum EDi, 32.74 Ma); plant skewed, high ED (32.77 to 381.22 Ma); bird skewed, low ED (3.52 to 32.71 Ma); bird skewed, high ED (32.8 to 107.79 Ma).

seeds, they do not functionally replace the effectiveness of the seed dispersal service provided by the vanished large-bodied frugivores. Therefore, the rescue effect cannot recover the extinction of the unique evolutionary histories of the interactions affected by defaunation. Moreover, the predominance of plant-skewed asymmetries in the Atlantic Forest may be a reflection of the extinction debt of interactions [sensu (19)]. Such a debt means that plants, which have longer life spans than birds, may persist for decades after the interaction has disappeared.

Given the scenario of increasing defaunation in human-altered fragmented landscapes, a marked reshaping of the Tree of Life may be occurring in the Anthropocene. Large-bodied frugivores have been hypothesized to reduce speciation rates of large-fruited plants as a consequence of high gene flow associated with long-distance dispersal ranges, while small-fruited plants tend to speciate more owing to restricted dispersal by small-bodied frugivores (35). Therefore, the phylogenetic rescue effect promoted by the persistence of plant-skewed, low-ED interactions would favor higher rates of speciation in small-seeded plant species, which could affect the functioning of tropical forests. Furthermore, local assemblages facing

larger losses of EDi can be expected to be less resilient to disturbance owing to the impoverishment of the functional diversity concomitantly occurring with the loss of phylogenetic history of the partner species (10, 36). This impoverishment is likely to change the niche space occupied by the local assemblage of interacting species (37). New empty niches may create opportunities for the establishment of exotic species (38) and trigger changes in biogeochemical cycles such as CO<sub>2</sub> storage by large-seeded plants dispersed by large-bodied frugivores (39). The resultant Anthropocene landscape will most likely consist of a metacommunity of evolutionarily impoverished fragments, phylogenetically structured by the defaunation of specific clades (40). Our approach can be easily extended to other ecological systems from which similar results are expected on the basis of the loss of specific functional groups, such as the global decline of bee pollinators (6, 25). From a conservation point of view, our results show that we are losing unique evolutionary histories of interactions that cannot be replaced by contemporaneous species. However, these losses may be lessened by a few persisting interactions performed by less evolutionarily distinct bird species rescuing the more evolutionarily distinct plant species from the verge of extinction.

## MATERIALS AND METHODS

### Study area

The Atlantic Forest is a tropical hot spot of biodiversity (22), highly threatened by human activities (such as logging, habitat conversion to commercial monocultures, and increasing urbanization), that has drastically reduced its original cover to ~12% (23). The remaining landscape constitutes a complex mosaic formed mainly by small fragments (<50 ha, ~80% of the remaining area) and clusters of close neighboring fragments (<200 m apart) (23). These fragments function as a metanetwork of interactions connected by small generalist bird species dispersing small-seeded plant species, while large-bodied bird species able to disperse large-seeded plant species are constrained to a few pristine, large area fragments (16).

### Dataset

We used the Atlantic-Frugivory dataset, the largest dataset available for tropical plant-frugivore interactions (21), to test how much evolutionary history of bird-seed dispersal interactions is being lost because of the contemporaneous defaunation. Bird and plant species present in the Atlantic-Frugivory dataset comprise our regional pool of species, which was used to build the correspondent phylogenies and to calculate the defaunation index (see details in the next subsections). From that regional pool, we selected 21 studies of bird-seed dispersal interactions sampled in fragments of the Brazilian Atlantic Forest (table S1). The studied fragments vary from 0.66 to 42,000 ha in a gradient of disturbance from semipristine-protected areas to secondary forests, degraded fragments and restored plantations. The studied fragments were distributed among different vegetation types of the biome, including Ombrophilous and Semideciduous forest, Araucaria Forest, rupestrian, and dry vegetation. Our dataset includes all studies with available information designed to collect fruit-eating bird interactions at the community level in the Atlantic Forest (21); yet, they did not necessarily record effective seed dispersal. We carefully checked the dataset and removed any interaction that would not characterize seed dispersal events. Methods to record interactions varied among studies, including direct bird observations and fecal sampling; only community-level studies with at least

12 months of sampling were included in the analyses. We further added available information to each study site based on field observations and expert knowledge about tropical avian seed dispersal.

## Phylogenetic trees

### Birds

Given the list of species at the regional pool (21), we obtained 100 phylogenetic trees inferred from the BirdTree.org online database using the “Stage2 MayrParSho Ericson” source tree as birds’ master phylogeny (available at <http://birdtree.org/methods/>). Trees’ topology is resolved with a combination of genetic and taxonomic information and dated with a relaxed molecular clock [see (6, 41) for details]. A few species that were identified at genus level in the field (i.e., *Elaenia* sp., *Myiarchus* sp., *Patagioenas* sp., *Penelope* sp., and *Turdus* sp.) therefore could not be found in the master phylogeny. We randomly grafted these species in their correspondent clades using the “add.species.to.genus” function in the phytools package version 0.6-00 in R (42).

### Plants

Given the list of plant species at the regional pool (21), we used the megaphylogeny of trees (43) with the “S.PhyloMaker” function (41) to obtain the initial plant tree. The initial tree was based on “scenario 1” in which missing genera and/or species are added as basal polytomies within their higher taxonomic level (44). Then, we simultaneously resolved the polytomies and adjusted the branch lengths using an evolutionary birth-death model with the help of “PolytomyResolver” function (45) and BEAST version 1.5.4 (46). Markov Chain Monte Carlo analyses were run for 10<sup>6</sup> iterations, and trees were sampled every 10<sup>3</sup> iterations. After discarding the 25% first trees, we randomly selected 100 trees for subsequent analyses.

## ED of bird-seed dispersal interactions

The ED of a given species quantifies how isolated it is in its own phylogenetic tree and the amount of unique evolutionary history that it embodies (8, 9). Similarly, the amount of evolutionary history that an interaction holds can be estimated by the combination of the ED of the interacting partner species. Therefore, the EDi combines the isolation and unique evolutionary history of the partner species in their correspondent phylogenetic trees. We calculated EDi as follows.

First, we calculated the ED for all plant and bird species based on the correspondent phylogenetic trees that we built for the regional pool of species of the Atlantic Forest (see above). ED was estimated using the equal splits metric available in the “evol.distinct” function in the picante package for R (47). Equal splits metric equally divides the phylogenetic distance represented by a branch by the number of lineages originating from the node directly below it (8). It gives higher values of ED for species placed in clades in which the path length is shared among a lower number of species and is considered a robust metric to capture phylogenetic diversity (9). Then, we obtained the mean ED for each bird (EDb) and plant species (EDp) calculated over 100 solved trees and used it as a proxy for its ED. Last, to quantify the EDi, we summed the ED of the interacting bird (EDb) and plant species (EDp) such as  $EDi = EDb + EDp$ .

## Statistical analyses

To test whether more evolutionarily distinct bird and plant species were associated with larger body mass and seed diameter, respectively, we used nonparametric Spearman correlation tests (48).

The extremely large sample size caused an overfit of any modeling attempt to assess the form of these relationships, so we resorted to use nonparametric Spearman correlation tests to highlight any non-random associations between traits and ED.

Asymmetries in EDi were calculated as the difference between the ED values of both interacting partners. Bird-skewed asymmetries correspond to interactions in which the bird species has higher ED than the partner plant species, and plant-skewed asymmetries correspond to interactions in which the plant species brings more ED than the partner bird species. We apply a binomial test to estimate which type of asymmetry (bird skewed or plant skewed) is significantly more predominant among the 2668 unique combinations of bird and plant species interactions found in our communities. Then, we used a generalized linear mixed-effects model in the lme4 package (49) to test which type of EDi asymmetry is more persistent in the fragmented landscape. In this model, we fit the number of fragments in which the interaction occurs as a response variable against the asymmetry value of EDi as the independent variable. Bird species and plant species were used as random factors to control for pseudoreplication, given that a single species can perform more than one interaction. We fit the model with a Poisson distribution.

To understand the amount of the cumulative EDi of bird–seed dispersal interactions lost in the gradient of defaunation across tropical forest fragments, we fitted three different linear models. We started by quantifying the cumulative EDi in each fragment by summing up the EDi values of all bird–seed dispersal interactions recorded per fragment. Defaunation was estimated as the difference between the sum of all bird body masses at the regional landscape scale [considering all frugivore bird species present in the Atlantic-Frugivory database (21) as a proxy for the regional pool of species] and the summed body masses of the birds that occur in each fragment. For the first model, we simply used the cumulative EDi as the response variable fitted against the defaunation index to test for the absolute loss of EDi as defaunation increases. For the second model, we used the same approach while controlling for fragment area. We tested for the correlation between fragment area and defaunation using a Pearson correlation test. Then, we used the residuals of a linear regression of defaunation index on fragment area as the independent variable fitted against the cumulative EDi. Last, we used a null model to test whether the cumulative EDi per fragment was significantly different from that expected by the number of bird–seed dispersal interactions recorded in each community. We created an  $a_{mn}$  matrix in which  $m$  and  $n$  correspond to the study site and the bird–seed dispersal interactions, respectively. The  $a_{mn}$  element of the matrix is filled according to the presence of an interaction  $n$  in site  $m$  quantified by the corresponding EDi. Therefore, the marginal total of  $m$  corresponds to its observed cumulative EDi. We applied the “shuffle.web” method within the “nullmodel” function in the bipartite package (50), which relocates the  $a_{mn}$  element within the matrix while maintaining its dimensionality, i.e., constraining the number of sites and interactions while shuffling the EDi among them. We obtained the mean and SD of the EDi per site over 100 simulations and calculated the corresponding  $z$  score based on the observed cumulative EDi. The  $z$  scores were fitted against the defaunation index in a linear model. Positive  $z$  scores indicate that the site holds more cumulative EDi than expected by the number of bird–plant interactions recorded in that area. On the other hand, negative  $z$  scores indicate that the site holds less cumulative EDi

than expected by the number of interactions that it encompasses. Statistical analyses were performed in R version 3.4.3 (51).

## SUPPLEMENTARY MATERIALS

Supplementary material for this article is available at <http://advances.sciencemag.org/cgi/content/full/5/6/eaav6699/DC1>

Fig. S1. Distribution of the ED of the frugivore bird species in the gradient of defaunation across the fragments of the Atlantic Forest.

Fig. S2. Distribution of the ED of the bird-dispersed plant species in the gradient of defaunation across the fragments of the Atlantic Forest.

Fig. S3. Correlation between the ED and the traits of the species involved in seed dispersal interactions in the Atlantic Forest.

Fig. S4. Defaunation leads to a significant impoverishment of the cumulative EDi performed by bird seed dispersal across forest fragments.

Fig. S5. EDi promoted by bird seed dispersal decreases sharply along a gradient of defaunation.

Fig. S6. Defaunation leads to an impoverishment of seed dispersal interactions and their associated asymmetric relationships of EDi.

Table S1. Description of the dataset used in this study.

Table S2. Traits of the bird species recorded in the studied communities of the Atlantic Forest.

Table S3. Traits of the plant species recorded in the studied communities of the Atlantic Forest.

Table S4. The bird–seed dispersal interactions recorded in the studied sites of the Atlantic Forest, followed by their EDi and correspondent asymmetry.

References (52–76)

## REFERENCES AND NOTES

- G. M. Mace, J. L. Gittleman, A. Purvis, Preserving the tree of life. *Science* **300**, 1707–1709 (2003).
- B. J. Cardinale, J. E. Duffy, A. Gonzalez, D. U. Hooper, C. Perrings, P. Venail, A. Narwani, G. M. Mace, D. Tilman, D. A. Wardle, A. P. Kinzig, G. C. Daily, M. Loreau, J. B. Grace, A. Larigauderie, D. S. Srivastava, S. Naeem, Biodiversity loss and its impact on humanity. *Nature* **486**, 59–67 (2012).
- G. E. Hutchinson, *The Ecological Theatre and the Evolutionary Play* (Yale Univ. Press, 1965).
- C. C. Labandeira, The history of associations between plants and animals, in *Plant-Animal Interactions: An Evolutionary Approach*, C. M. Herrera, O. Pellmyr, Eds. (Blackwell Scientific, 2002).
- R. Dirzo, H. S. Young, M. Galetti, G. Ceballos, N. J. B. Isaac, B. Collen, Defaunation in the Anthropocene. *Science* **345**, 401–406 (2014).
- W. Jetz, G. H. Thomas, J. B. Joy, D. W. Redding, K. Hartmann, A. O. Mooers, Global distribution and conservation of evolutionary distinctness in birds. *Curr. Biol.* **24**, 919–930 (2014).
- W. Sechrest, T. M. Brooks, G. A. B. da Fonseca, W. R. Konstant, R. A. Mittermeier, A. Purvis, J. L. Gittleman, Hotspots and the conservation of evolutionary history. *Proc. Natl. Acad. Sci. U.S.A.* **99**, 2067–2071 (2002).
- D. W. Redding, A. Ø. Mooers, Incorporating evolutionary measures into conservation prioritization. *Conserv. Biol.* **20**, 1670–1678 (2006).
- D. W. Redding, K. Hartmann, A. Mimoto, D. Bokal, M. DeVos, A. Ø. Mooers, Evolutionarily distinctive species often capture more phylogenetic diversity than expected. *J. Theor. Biol.* **251**, 606–615 (2008).
- D. S. Srivastava, M. W. Cadotte, A. M. MacDonald, R. G. Marushia, N. Mirotchnick, Phylogenetic diversity and the functioning of ecosystems. *Ecol. Lett.* **15**, 637–648 (2012).
- T. H. Fleming, W. J. Kress, *The Ornaments of Life: Co Evolution and Conservation in the Tropics* (University of Chicago Press, 2013).
- P. R. Guimarães Jr., P. Jordano, J. N. Thompson, Evolution and coevolution in mutualistic networks. *Ecol. Lett.* **14**, 877–885 (2011).
- L. C. Ponisio, L. K. M'Gonigle, Coevolution leaves a weak signal on ecological networks. *Ecosphere* **8**, e01798 (2017).
- N. J. B. Isaac, S. T. Turvey, B. Collen, C. Waterman, E. M. Baillie, Mammals on the EDGE: Conservation priorities based on threat and phylogeny. *PLOS ONE* **2**, e296 (2007).
- J. Igea, E. F. Miller, A. S. T. Papadopoulos, A. J. Tanentzap, Seed size and its rate of evolution correlate with species diversification across angiosperms. *PLOS Biol.* **15**, e2002792 (2017).
- C. Emer, M. Galetti, M. A. Pizo, P. R. Guimarães Jr., A. Piratelli, S. Moraes, P. Jordano, Seed-dispersal interactions in fragmented landscapes: A meta-network approach. *Ecol. Lett.* **21**, 484–493 (2018).
- A. Purvis, P.-M. Agapow, J. L. Gittleman, G. M. Mace, Nonrandom extinction and the loss of evolutionary history. *Science* **288**, 328–330 (2000).
- E. L. Rezende, J. E. Lavabre, P. R. Guimarães Jr., P. Jordano, J. Bascompte, Non-random coextinctions in phylogenetically structured mutualistic networks. *Nature* **448**, 925–928 (2007).

19. A. Valiente-Banuet, M. A. Aizen, J. M. Alcántara, J. Arroyo, A. Cocucci, M. Galetti, M. B. Garcia, J. M. Gómez, P. Jordano, R. Medel, L. Navarro, J. R. Obeso, R. Oviedo, N. Ramírez, P. J. Rey, A. Traveset, M. Verdú, R. Zamora, Beyond species loss: The extinction of ecological interactions in a changing world. *Funct. Ecol.* **29**, 299–307 (2014).
20. M. Galetti, M. Moleón, P. Jordano, M. M. Pires, P. R. Guimarães Jr., T. Pape, E. Nichols, D. Hansen, J. M. Olesen, M. Munk, J. S. de Mattos, A. H. Schweiger, N. Owen-Smith, C. N. Johnson, R. J. Marquis, J.-C. Svenning, Ecological and evolutionary legacy of megafauna extinctions. *Biol. Rev.* **93**, 845–862 (2017).
21. C. Bello, M. Galetti, D. Montan, M. A. Pizo, T. C. Mariguela, L. Culot, F. Bufalo, F. Labacca, F. Pedrosa, R. Constantini, C. Emer, W. R. Silva, F. R. da Silva, O. Ovaskainen, P. Jordano, Atlantic frugivory: A plant-frugivore interaction data set for the Atlantic Forest. *Ecology* **98**, 1729 (2017).
22. N. Myers, R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca, J. Kent, Biodiversity hotspots for conservation priorities. *Nature* **403**, 853–858 (2000).
23. M. C. Ribeiro, J. P. Metzger, A. C. Martensen, F. J. Ponzoni, M. M. Hirota, The Brazilian Atlantic Forest: How much is left, and how is the remaining forest distributed? Implications for conservation. *Biol. Conserv.* **142**, 1141–1153 (2009).
24. L. O. Frishkoff, D. S. Karp, L. K. M'Gonigle, C. D. Mendenhall, J. Zook, C. Kremen, E. A. Hadly, G. C. Daily, Loss of avian phylogenetic diversity in neotropical agricultural systems. *Science* **345**, 1343–1346 (2014).
25. H. Grab, M. G. Branstetter, N. Amon, K. R. Urban-Mead, M. G. Park, J. Gibbs, E. J. Blitzer, K. Poveda, G. Loeb, B. N. Danforth, Agriculturally dominated landscapes reduce bee phylogenetic diversity and pollination services. *Science* **363**, 282–284 (2019).
26. R. Canale, C. A. Peres, C. E. Guidorizzi, C. A. F. Gatto, M. C. Kierulff, Pervasive defaunation of forest remnants in a tropical biodiversity hotspot. *PLOS ONE* **7**, e41671 (2012).
27. C. Thévenin, M. Mouchet, A. Robert, C. Kerbiriou, F. Sarrazin, Reintroductions of birds and mammals involve evolutionarily distinct species at the regional scale. *Proc. Natl. Acad. Sci. U.S.A.* **115**, 3404–3409 (2018).
28. P. H. S. Brancalion, C. Bello, R. L. Chazdon, M. Galetti, P. Jordano, R. A. F. Lima, A. Medina, M. A. Pizo, J. L. Reid, Maximizing biodiversity conservation and carbon stocking in restored tropical forests. *Conserv. Lett.* **11**, e12454 (2018).
29. M. A. Pizo, Frugivory by birds in degraded areas of Brazil in *Seed-Dispersal: Theory and Its Application in a Changing World*, A. J. Dennis, E. W. Schupp, R. J. Green, D. W. Westcott, Eds. (CABI International, Wallingford, UK, 2007), pp. 615–627.
30. C. García, L. Borda-de-Agua, Extended dispersal kernels in a changing world: Insights from statistics of extremes. *J. Ecol.* **105**, 63–74 (2017).
31. H. Toju, M. Yamamichi, P. R. Guimarães Jr., J. M. Olesen, A. Mougi, T. Yoshida, J. N. Thompson, Species-rich networks and eco-evolutionary synthesis at the metacommunity level. *Nat. Ecol. Evol.* **1**, 0024 (2017).
32. H. S. Young, D. J. McCauley, M. Galetti, R. Dirzo, Patterns, causes and consequences of Anthropocene defaunation. *Annu. Rev. Ecol. Syst.* **47**, 333–358 (2016).
33. M. Galetti, R. Guevara, M. C. Côrtes, R. Fadini, S. V. Matter, A. B. Leite, F. Labacca, T. Ribeiro, C. S. Carvalho, R. G. Collevatti, M. M. Pires, P. R. Guimarães Jr., P. H. Brancalion, M. C. Ribeiro, P. Jordano, Functional extinction of birds drives rapid evolutionary changes in seed size. *Science* **340**, 1086–1090 (2013).
34. C. S. Carvalho, M. Galetti, R. G. Colevatti, P. Jordano, Defaunation leads to microevolutionary changes in a tropical palm. *Sci. Rep.* **6**, 31957 (2016).
35. R. E. Onstein, W. J. Baker, T. L. P. Couvreur, S. Faurby, J.-C. Svenning, W. D. Kissling, Frugivory-related traits promote speciation of tropical palms. *Nat. Ecol. Evol.* **1**, 1903–1911 (2017).
36. M. W. Cadotte, R. Dinnage, D. Tilman, Phylogenetic diversity promotes ecosystem stability. *Ecology* **93**, S223–S233 (2012).
37. R. S. Vitória, J. Vizentin-Bugoni, L. D. S. Duarte, Evolutionary history as a driver of ecological networks: A case study of plant-hummingbird interactions. *Oikos* **127**, 561–569 (2018).
38. A. Traveset, D. M. Richardson, Mutualistic interactions and biological invasions. *Annu. Rev. Ecol. Syst.* **45**, 89–113 (2014).
39. C. Bello, M. Galetti, M. A. Pizo, L. F. S. Magnago, M. F. Rocha, R. A. F. Lima, C. A. Peres, O. Ovaskainen, P. Jordano, Defaunation affects carbon storage in tropical forests. *Sci. Adv.* **1**, e1501105 (2015).
40. M. A. Aizen, G. Gleiser, M. Sabatino, L. J. Gilarranz, J. Bascompte, M. Verdú, The phylogenetic structure of plant-pollinator networks increases with habitat size and isolation. *Ecol. Lett.* **29**, 29–36 (2015).
41. W. Jetz, G. H. Thomas, J. B. Joy, K. Hartmann, A. Ø. Mooers, The global diversity of birds in space and time. *Nature* **491**, 444–448 (2012).
42. L. J. Revell, phytools: An R package for phylogenetic comparative biology (and other things). *Methods Ecol. Evol.* **3**, 217–223 (2012).
43. A. E. Zanne, D. C. Tank, W. K. Cornwell, J. M. Eastman, S. A. Smith, R. G. FitzJohn, D. J. McGlinn, B. C. O'Meara, A. T. Moles, P. B. Reich, D. L. Royer, D. E. Soltis, P. F. Stevens, M. Westoby, I. J. Wright, L. Aarssen, R. I. Bertin, A. Calaminus, R. Govaerts, F. Hemmings, M. R. Leishman, J. Oleksyn, P. S. Soltis, N. G. Swenson, L. Warman, J. M. Beaulieu, Three keys to the radiation of angiosperms into freezing environments. *Nature* **506**, 89–92 (2014).
44. H. Qian, Y. Jin, An updated megaphylogeny of plants, a tool for generating plant phylogenies and an analysis of phylogenetic community structure. *J. Plant Ecol.* **9**, 233–239 (2016).
45. T. S. Kuhn, A. Ø. Mooers, G. H. Thomas, A simple polytomy resolver for dated phylogenies. *Methods Ecol. Evol.* **2**, 427–436 (2011).
46. A. J. Drummond, M. A. Suchard, D. Xie, A. Rambaut, Bayesian phylogenetics with BEAUti and the BEAST 1.7. *Mol. Biol. Evol.* **29**, 1969–1973 (2012).
47. S. W. Kembel, P. D. Cowan, M. R. Helmus, W. K. Cornwell, H. Morlon, D. D. Ackerly, S. P. Blomberg, C. O. Webb, Picante: R tools for integrating phylogenies and ecology. *Bioinformatics* **26**, 1463–1464 (2010).
48. P. Legendre, L. Legendre, *Numerical Ecology* (Elsevier Science, ed. 2, 1998).
49. D. Bates, M. Mächler, B. Bolker, S. Walker, Fitting linear mixed-effects models using lme4. *J. Stat. Softw.* **67**, 1–48 (2015).
50. C. F. Dormann, F. Jochen, N. Blüthgen, B. Gruber, Indices, graphs and null models: Analyzing bipartite ecological networks. *The Open Ecol. J.* **2**, 7–24 (2009).
51. R Development Core Team, R: A language and environment for statistical computing. (2014).
52. W. R. Silva, P. de Marco, E. Hasui, V. S. M. Gomes, Patterns of fruit-frugivores interactions in two Atlantic Forest bird communities of South-eastern Brazil: Implications for conservation, in *Seed Dispersal and Frugivory: Ecology, Evolution and Conservation*, D. J. Levey, W. R. Silva, M. Galetti, Eds. (CABI International, 2002), pp. 423–435.
53. S. B. M. Rodrigues, Rede de interações entre aves frugívoras e plantas em uma área de Mata Atlântica no sudeste do Brasil, Master thesis, UFSCAR, Sorocaba, BR (2015).
54. R. Parrini, J. F. Pacheco, F. Mallet-Rodrigues, Frugivoria em *Tangara desmaresti* (Passeriformes: Thraupidae) na Floresta Atlântica do Parque Nacional da Serra dos Órgãos e adjacências, Estado do Rio de Janeiro, sudeste do Brasil. *Atualidades Ornitológicas* **142**, 10–13 (2008).
55. R. Parrini, J. F. Pacheco, L. Haefeli, Observação de aves se alimentando dos frutos de *Miconia sellowiana* (Melastomataceae) na Floresta Atlântica Alto-Montana do Parque Nacional da Serra dos Órgãos e do Parque Nacional do Itatiaia, região sudeste do Brasil. *Atualidades Ornitológicas* **146**, 4–7 (2009).
56. R. Parrini, J. F. Pacheco, Frugivoria por aves em seis espécies arbóreas do gênero *Miconia* (Melastomataceae) na Mata Atlântica do Parque Nacional da Serra dos Órgãos, Região Sudeste do Brasil. *Atualidades Ornitológicas* **159**, 51–58 (2011a).
57. R. Parrini, J. F. Pacheco, Frugivoria por aves em *Alchornea triplinervia* (Euphorbiaceae) na Mata Atlântica do Parque Estadual dos Três Picos, Estado do Rio de Janeiro, Brasil. *Atualidades Ornitológicas* **162**, 33–41 (2011).
58. R. Parrini, J. F. Pacheco, Aspectos da frugivoria por aves em *Cupania oblongifolia* (Sapindaceae) na Mata Atlântica do Parque Nacional da Serra dos Órgãos, Estado do Rio de Janeiro, Brasil. *Atualidades Ornitológicas* **178**, 55–62 (2014).
59. R. Parrini, *Quatro estações, história natural das aves na Mata Atlântica: Uma abordagem trófica* (Technical Books, 2015).
60. R. Parrini, C. S. Pardo, J. F. Pacheco, Conhecendo as plantas cujos frutos e recursos florais são consumidos pelas aves na Mata Atlântica do Parque Nacional da Serra dos Órgãos. *Atualidades Ornitológicas* **199**, 38–136 (2017).
61. V. S. M. Gomes, Variação espacial e dieta de aves terrestres na Restinga de Jurubatiba, RJ. PhD Thesis, UFRJ, Rio de Janeiro, BR (2006).
62. E. R. Castro, Fenologia reprodutiva do palmito *Euterpe edulis* (Arecaceae) e sua influência na abundância de aves frugívoras na Floresta Atlântica. PhD Thesis, UNESP Rio Claro, BR (2015).
63. A. Scherer, F. Maraschin-Silva, L. R. M. Baptista, Padrões de interações mutualísticas entre espécies arbóreas e aves frugívoras em uma comunidade de Restinga no Parque Estadual de Itapuã, RS, Brasil. *Acta Bot. Bras.* **21**, 203–212 (2007).
64. J. M. S. Correia, Utilização de espécies frutíferas da Mata Atlântica na alimentação da avifauna da Reserva Biológica de Poços das Antas, RJ. MSc Dissertation, UNB Brasília, BR (1997).
65. M. A. Manhães, Dieta de Traupíneos (Passeriformes, Emberizidae) no Parque Estadual do Ibitipoca, Minas Gerais, Brasil. *Iheringia* **93**, 59–73 (2003).
66. M. M. A. de Oliveira, Frugivoria por aves em um fragmento de floresta de restinga no Estado do Espírito Santo, Brasil, PhD Thesis, UNICAMP, Campinas, BR (1999).
67. K. J. F. Alves, Composição da avifauna e frugivoria por aves em um mosaico sucessional na Mata Atlântica. MSc Dissertation, UNESP Rio Claro, BR (2008).
68. R. F. Fadini, P. de Marco Jr., Interações entre aves frugívoras e plantas em um fragmento de Mata Atlântica de Minas Gerais. *Ararajuba* **12**, 97–103 (2004).
69. A. Kindel, Interações entre plantas ornitócoricas e aves frugívoras na Estação Ecológica de Aracuri, Muitos Capões, RS. MSc Dissertation, UFRGS Porto Alegre, BR (1996).
70. M. Galetti, M. A. Pizo, Fruit eating birds in a forest fragment in southeastern Brazil. *Ararajuba* **4**, 71–79 (1996).
71. M. A. Pizo, Frugivory and habitat use by fruit-eating birds in a fragmented landscape of southeast Brazil. *Ornitol. Neotrop.* **15**, 117–126 (2004).

72. S. Athiê. Composição da avifauna e frugivoria por aves em um mosaico de vegetação secundária em Rio Claro, região centro-leste do estado de São Paulo, MSc Dissertation, UFSCar São Carlos, BR (2009).
73. F. R. da Silva, D. Montoya, R. Furtado, J. Memmott, M. A. Pizo, R. R. Rodrigues, The restoration of tropical seed dispersal networks. *Restor. Ecol.* **23**, 852–860 (2015).
74. E. Hasui, O papel das aves frugívoras na dispersão de sementes em um fragmento de floresta semidecídua secundária em São Paulo, SP. MSc Dissertation, USP São Paulo, BR (1994).
75. V. Robinson, Índice de importância das aves como dispersoras de sementes para uma comunidade vegetal reflorestada em Piracicaba, BSc Dissertation, UNESP, Rio Claro, BR (2015).
76. R. F. de M. Silva, Interações entre plantas e aves frugívoras no campus da Universidade Federal do Rio de Janeiro, BSc Dissertation, UFRJ Rio de Janeiro, BR (2011).

**Acknowledgments:** We thank V. B. Zipparro for plant taxonomy updates and S. Timotéo, M. A. Mello, and N. Villar for invaluable suggestions to an early draft of this manuscript. **Funding:** Our study was supported by the São Paulo Research Foundation (FAPESP: 2014/01986-0, 2015/15172-7, 2016/18355-8, and 2017/25605-3). M.A.P. and M.G. received fellowships from the Brazilian Council of Scientific and Technological Development (CNPq). P.J. was supported

by the Severo Ochoa Excellence Award (SEV-2012-0262), grant CGL2017-82847P, and the Science Without Borders Program (CNPq, PVE-401258/2012). M.V. was supported by the Ecometas excellence network (CGL2016-81706-REDT). **Author contributions:** C.E., M.G., P.J., and M.V. designed the study. M.G., P.J., and M.A.P. collected part of the data. C.E. wrote the first draft of the manuscript. All authors contributed to the discussion and reviewed the final text. **Competing interests:** The authors declare that they have no competing interests. **Data and materials availability:** All data needed to evaluate the conclusions in the paper are present in the paper and/or the Supplementary Materials. Raw data are available at [https://github.com/LEEClab/Atlantic\\_series](https://github.com/LEEClab/Atlantic_series) and at [https://github.com/carineemer/Phylogenies\\_Seed\\_Dispersal](https://github.com/carineemer/Phylogenies_Seed_Dispersal).

Submitted 9 October 2018

Accepted 10 May 2019

Published 19 June 2019

10.1126/sciadv.aav6699

**Citation:** C. Emer, M. Galetti, M. A. Pizo, P. Jordano, M. Verdú, Defaunation precipitates the extinction of evolutionarily distinct interactions in the Anthropocene. *Sci. Adv.* **5**, eaav6699 (2019).



## Defaunation precipitates the extinction of evolutionarily distinct interactions in the Anthropocene

Carine Emer, Mauro Galetti, Marco A. Pizo, Pedro Jordano and Miguel Verdú

*Sci Adv* 5 (6), eaav6699.  
DOI: 10.1126/sciadv.aav6699

ARTICLE TOOLS	<a href="http://advances.sciencemag.org/content/5/6/eaav6699">http://advances.sciencemag.org/content/5/6/eaav6699</a>
SUPPLEMENTARY MATERIALS	<a href="http://advances.sciencemag.org/content/suppl/2019/06/17/5.6.eaav6699.DC1">http://advances.sciencemag.org/content/suppl/2019/06/17/5.6.eaav6699.DC1</a>
REFERENCES	This article cites 57 articles, 9 of which you can access for free <a href="http://advances.sciencemag.org/content/5/6/eaav6699#BIBL">http://advances.sciencemag.org/content/5/6/eaav6699#BIBL</a>
PERMISSIONS	<a href="http://www.sciencemag.org/help/reprints-and-permissions">http://www.sciencemag.org/help/reprints-and-permissions</a>

Use of this article is subject to the [Terms of Service](#)

---

*Science Advances* (ISSN 2375-2548) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science Advances* is a registered trademark of AAAS.

## Supplementary Materials for

### **Defaunation precipitates the extinction of evolutionarily distinct interactions in the Anthropocene**

Carine Emer\*, Mauro Galetti, Marco A. Pizo, Pedro Jordano, Miguel Verdú,

\*Corresponding author. Email: c.emer09@gmail.com

Published 19 June 2019, *Sci. Adv.* **5**, eaav6699 (2019)

DOI: 10.1126/sciadv.aav6699

#### **This PDF file includes:**

Fig. S1. Distribution of the ED of the frugivore bird species in the gradient of defaunation across the fragments of the Atlantic Forest.

Fig. S2. Distribution of the ED of the bird-dispersed plant species in the gradient of defaunation across the fragments of the Atlantic Forest.

Fig. S3. Correlation between the ED and the traits of the species involved in seed dispersal interactions in the Atlantic Forest.

Fig. S4. Defaunation leads to a significant impoverishment of the cumulative EDi performed by bird seed dispersal across forest fragments.

Fig. S5. EDi promoted by bird seed dispersal decreases sharply along a gradient of defaunation.

Fig. S6. Defaunation leads to an impoverishment of seed dispersal interactions and their associated asymmetric relationships of EDi.

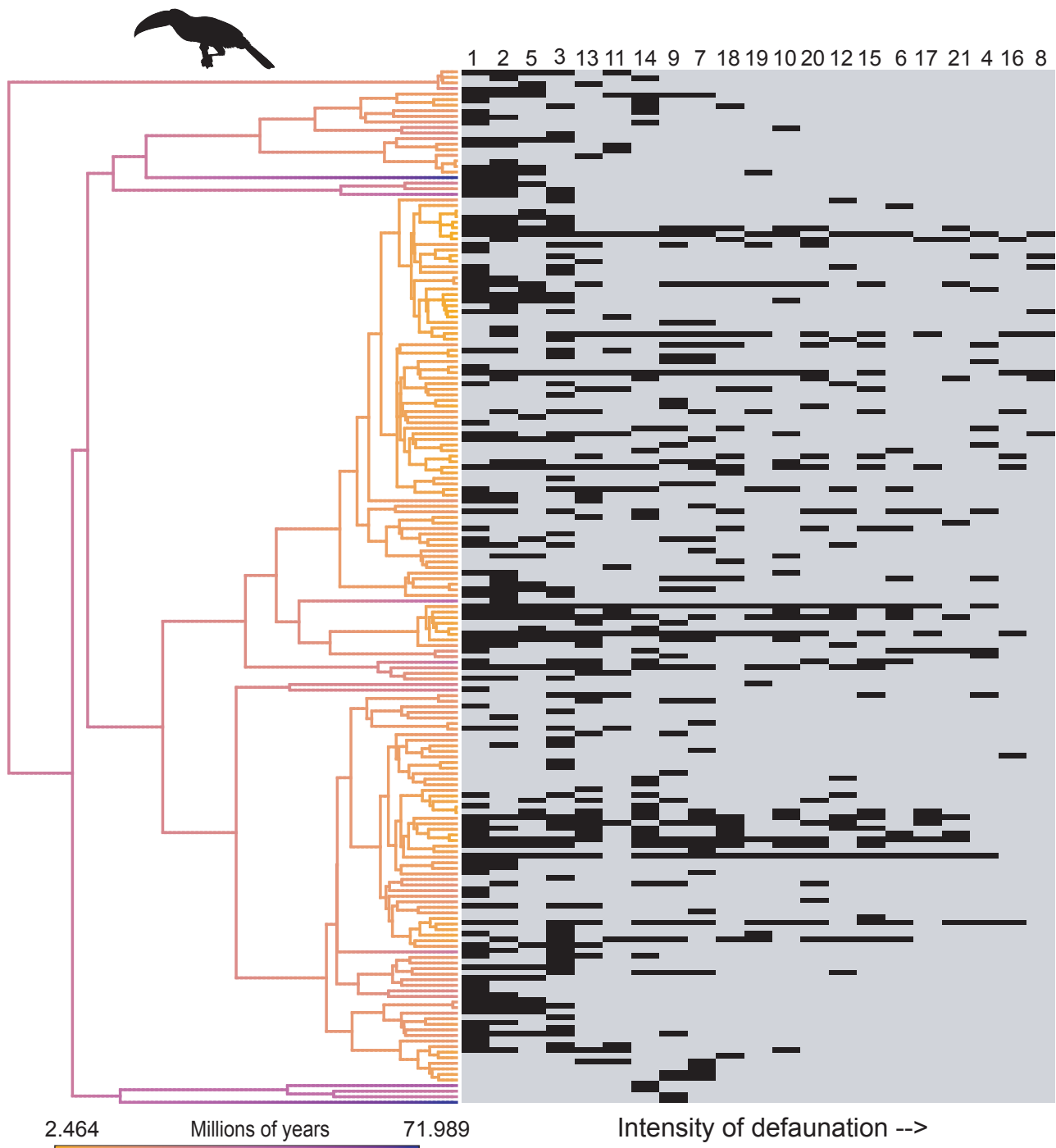
Table S1. Description of the dataset used in this study.

Table S2. Traits of the bird species recorded in the studied communities of the Atlantic Forest.

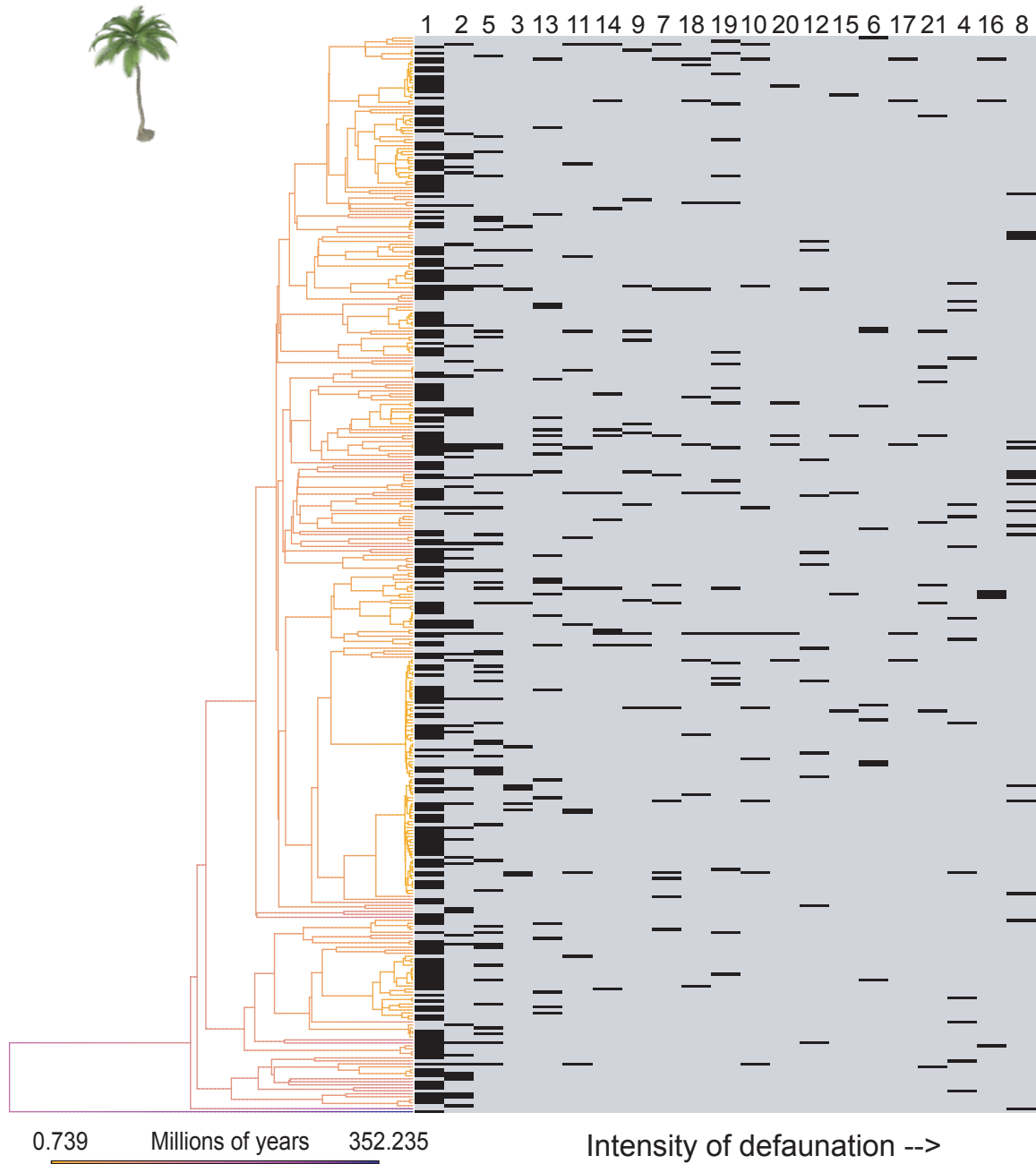
Table S3. Traits of the plant species recorded in the studied communities of the Atlantic Forest.

Table S4. The bird–seed dispersal interactions recorded in the studied sites of the Atlantic Forest, followed by their EDi and correspondent asymmetry.

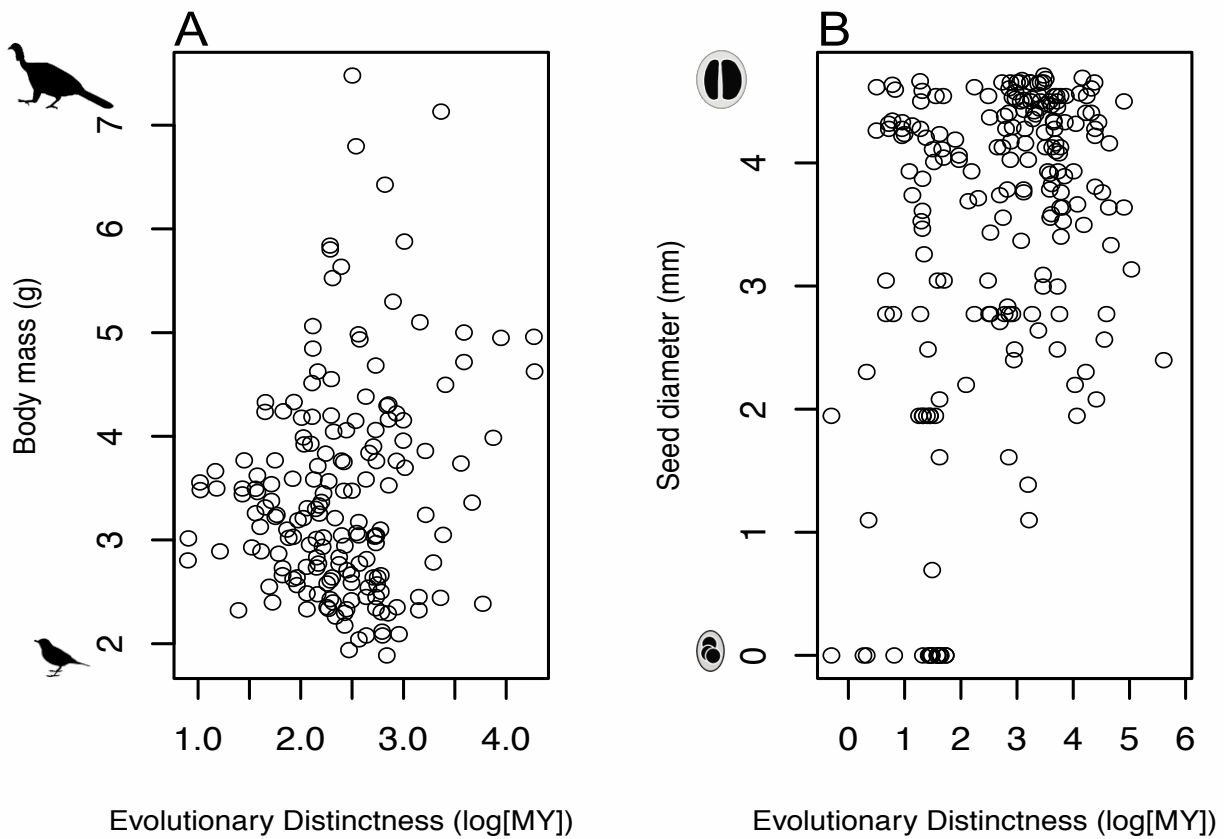
References (52–76)



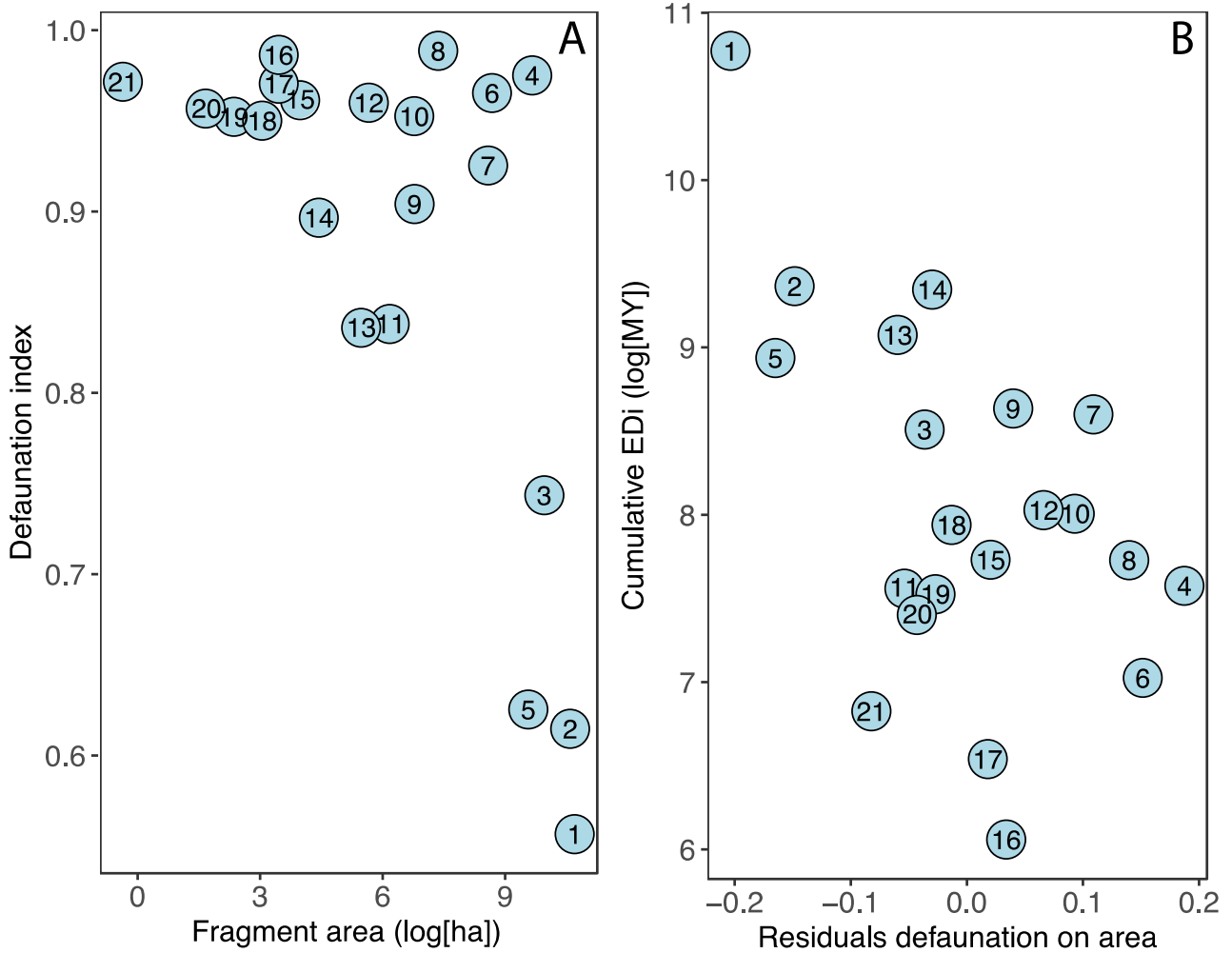
**Fig. S1. Distribution of the ED of the frugivore bird species in the gradient of defaunation across the fragments of the Atlantic Forest.** The left pane represents the ED of the bird species mapped in their correspondent phylogenetic tree. The right pane indicates in which fragment (columns in grey) a given bird species, and its corresponding ED, was recorded (black rectangles).



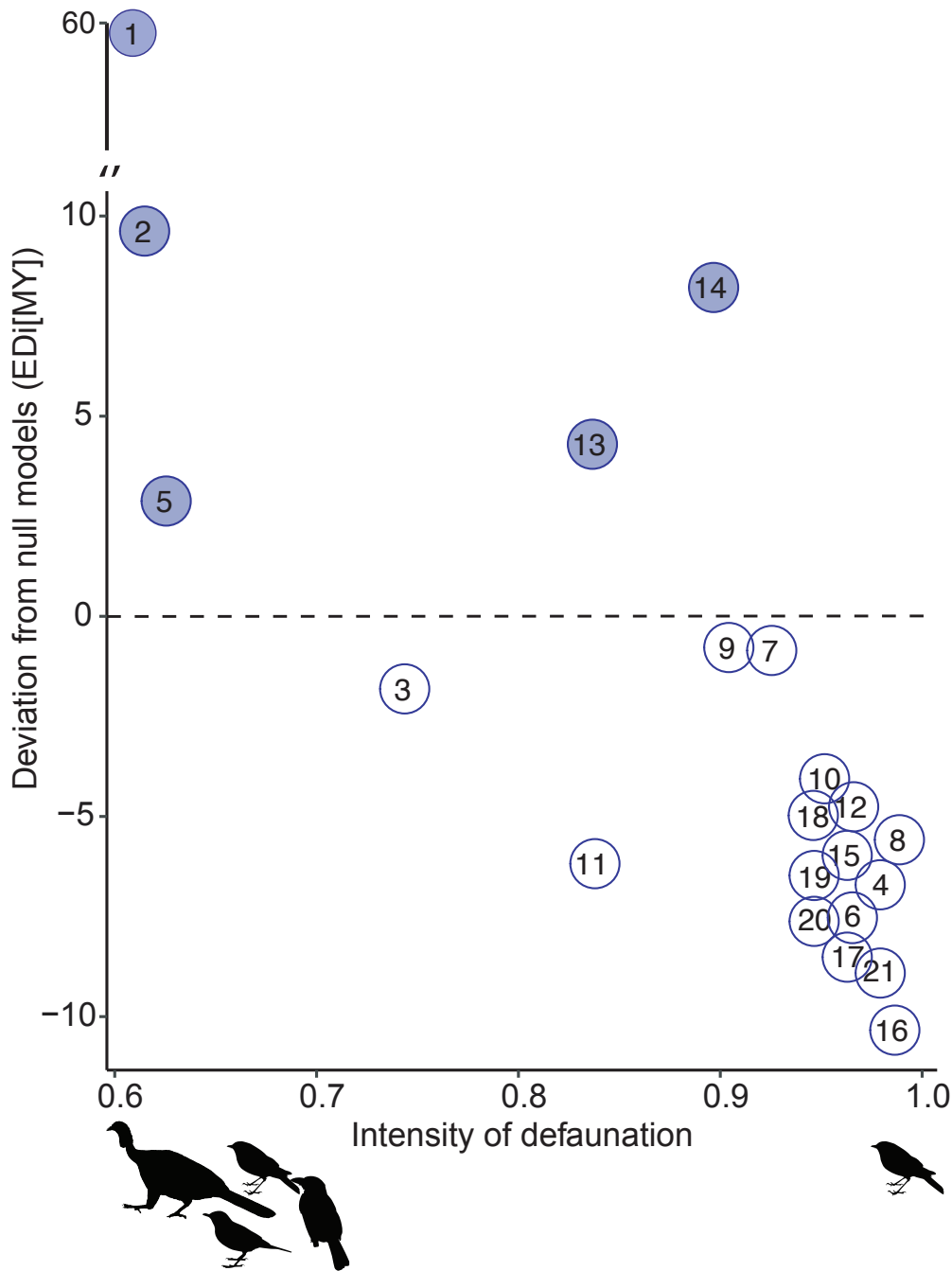
**Fig. S2. Distribution of the ED of the bird-dispersed plant species in the gradient of defaunation across the fragments of the Atlantic Forest.** The left pane represents the ED of the plant species mapped in their correspondent phylogenetic tree. The right pane indicates in which fragment (columns) a given plant species, and its corresponding ED, was recorded.



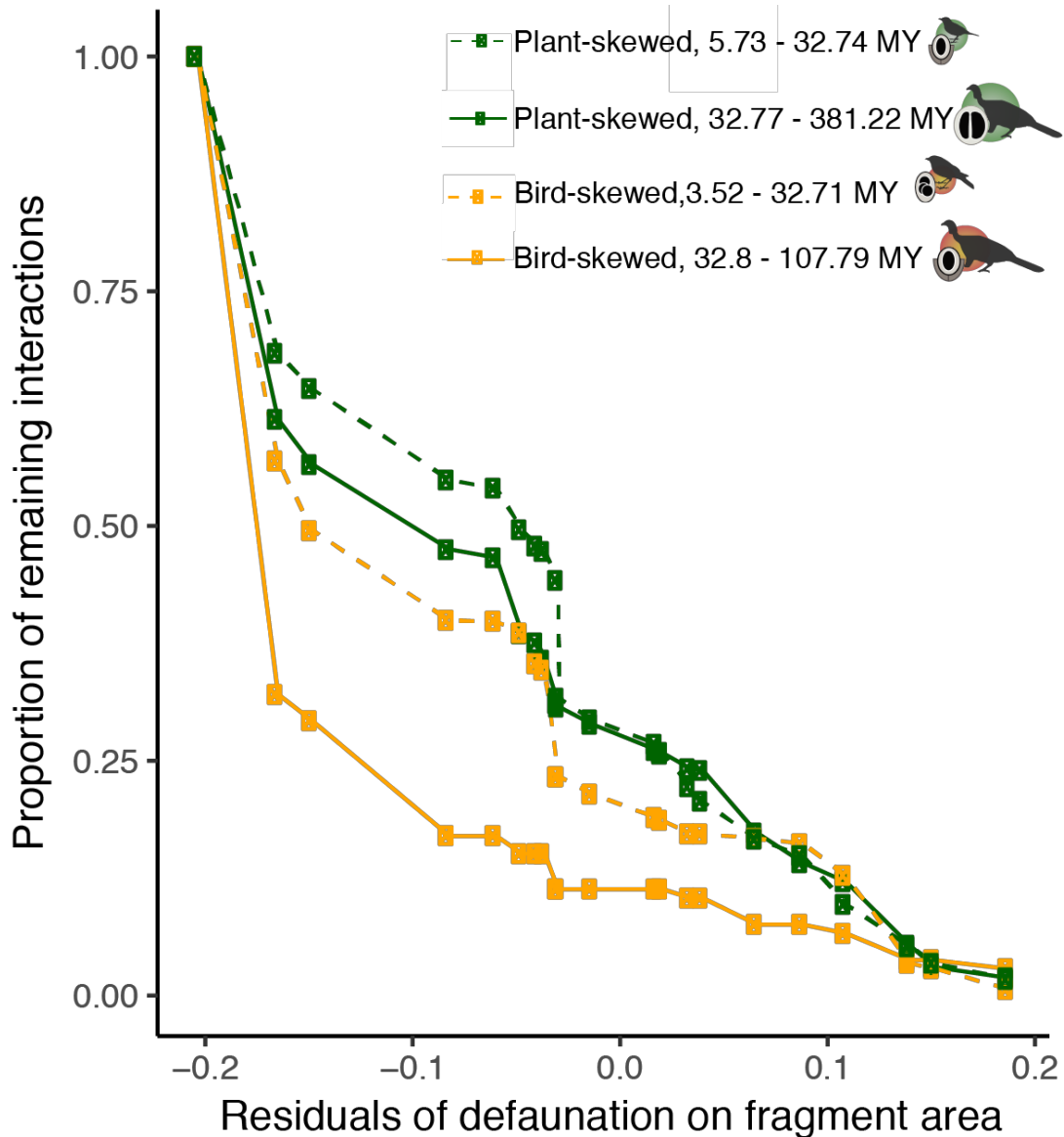
**Fig. S3. Correlation between the ED and the traits of the species involved in seed dispersal interactions in the Atlantic Forest.** ED is positively associated to increasing body mass of the frugivore bird species ( $r = 0.21$ ,  $t = 0.28$ ,  $p = 0.007$ ; **A**) and the seed diameter of the bird-dispersed plant species ( $r = 0.38$ ,  $t = 5.84$ ,  $p = 0.001$ ; **B**).



**Fig. S4. Defaunation leads to a significant impoverishment of the cumulative EDi performed by bird seed dispersal across forest fragments.** The sum of EDi each fragment support decreases drastically with defaunation, here estimated by the magnitude of the downsizing in body masses of all frugivorous bird species recorded in each local fragment in comparison to the regional pool of frugivorous bird species. Given that defaunation is negatively correlated with the area of the fragment ( $r = -0.63$ ,  $p < 0.001$ ; A), we tested whether this correlation would influence the patterns seen with the defaunation index by removing the area effects on EDi using the residuals of a linear regression of defaunation index on fragment area as the independent variable fitted against EDi (B). We found that the total EDi each fragment harbors decreases significantly with increasing defaunation even when the area of the fragment is taking into account (slope =  $-5.44 \pm 2.09$ ,  $t = -2.63$ ,  $p = 0.02$ ; B) Numbers within circles are in a decreasing order of fragment area, according to the full description of each site in Table S1. Larger area fragments tend to be less disturbed therefore holding more pristine forests.



**Fig. S5. EDi promoted by bird seed dispersal decreases sharply along a gradient of defaunation.** The cumulative EDi a fragment carries corresponds to the sum of the EDIs of all interactions recorded in that fragment, here the sum of the EDIs of all seed-dispersal interactions by birds. The y-axis represents the z-scores of EDi's when controlled by null models that consider the bird-seed dispersal interaction richness in each fragment. Therefore, fragments with positive z-scores (shaded points above the zero line) are fragments that hold higher EDi than expected by the interaction richness it holds. Contrarily, negative z-scores are those fragments that carry less EDi than expected by its interaction richness. The most pristine area is the top-left circle (1), which is the largest remnant of the Atlantic Forest and also the least defaunated fragment, used here as the baseline to illustrate the position of a “pristine” forest. Numbers within circles are presented in a decreasing order of fragment area, according to the description of each site in Table S1. Larger fragments tend to be less disturbed, therefore harbouring forests closer to the most “pristine”, best preserved extreme.



**Fig. S6. Defaunation leads to an impoverishment of seed dispersal interactions and their associated asymmetric relationships of EDi.** The proportion of interactions remaining in each fragment drops drastically as defaunation increases, and this pattern is maintained when controlled for fragment area by using the residuals of a linear regression of defaunation on fragment area as the independent variable. The four types of bird-seed dispersal interaction asymmetries showed similar trend on losing EDi with defaunation, but the loss is faster for bird-skewed interactions while plant-skewed interactions persist longer in the gradient of defaunation. The percentile 50 was used as a threshold to define low and high EDi's, which corresponds to different combinations of asymmetry as follows: Plant-skewed, low ED (min EDi = 5.73 MY; max EDi = 32.74 MY); Plant-skewed, high ED (32.77-381.22 MY); Bird-skewed, low ED (3.52 -32.71 MY); Bird-skewed, high ED (32.8 - 107.79 MY).



**Table S1.** Description of the dataset used in this study. All studies were carried out in the domain of the Atlantic Forest. Defaunation is estimated as the difference between the sum of the body mass of all frugivorous bird species at the regional level (using the Atlantic Frugivory dataset as a baseline, 21) and the sum of body mass of frugivorous bird species recorded in each study site (local community). PE = State Park. PARNA = National Park. Rebio = Biological Reserve. Latitude and longitude coordinates are given in decimal degrees (WGS84). Sample focus is defined as: P = plant oriented, interactions based on focal observations; A = animal oriented, interactions based on diet analysis (e.g., faeces sampling). The raw data for the full dataset can be found on GitHub ([https://github.com/carineemer/Phylogenies\\_Seed\\_Dispersal](https://github.com/carineemer/Phylogenies_Seed_Dispersal)) and on the Atlantic-Frugivory database (21).

ID	Ref*	Study site	Forest type	Latitude	Longitude	Area (ha)	N plant species	N bird species	N interactions	Defaunation index	Sample focus
1	52	PE Intervalas	Ombrophilous	-24.316965	-48.387175	42000	226	94	1124	0.557	PA
2	53	PE Carlos Botelho	Ombrophilous	-24.131389	-47.949167	37644	61	78	286	0.615	PA
3	54-60	PARNA S. Órgãos	Ombrophilous	-22.4956	-43.0736	20000	12	76	195	0.744	PA
4	61	PARNA Jurubatiba	Restinga	-22.2047	-41.5005	14867	15	15	41	0.975	A
5	62	PE Ilha do Cardoso	Ombrophilous	-25.127786	-47.957463	13500	52	45	185	0.626	P
6	63	Reserva Itapua	Restinga	-30.3808	-51.0081	5556	10	17	43	0.965	PA
7	64	Rebio Poço Antas	Ombrophilous	-22.53629	-42.277658	5052	13	43	181	0.926	P
8	65	PE Ibitipoca	Rupestrian	-21.709	-43.884	1488	19	8	42	0.989	A
9	66	Reserva Comboios	Restinga	-19.774	-40.0432	833	13	43	122	0.904	P
10	67	PE Ilha Anchieta	Ombrophilous	-23.548369	-45.062541	828	10	25	104	0.958	P
11	68	fragment MG	Semideciduous	-20.802611	-42.858746	380	15	26	64	0.838	P
12	69	Araucaria Forest	Araucaria Forest	-28.223141	-51.166857	272	13	21	54	0.96	P
13	70	Mata Sta Genebra	Semideciduous	-22.818101	-47.113757	250	26	44	155	0.837	P
14	71	Itatiba	Semideciduous	-22.943263	-46.749949	80	13	41	108	0.897	PA
15	72	fragment RC	Semideciduous	-22.480979	-47.592293	44	5	24	62	0.963	P
16	73	restored 57	Restored forest	-22.671644	-47.204638	30	6	9	15	0.986	PA
17	73	restored 15	Restored forest	-22.825234	-47.427761	30	5	12	20	0.971	PA
18	73	restored 25	Restored forest	-22.568342	-47.504987	20	13	27	88	0.95	PA
19	74	fragment SP	Semideciduous	-23.545856	-46.721177	10	22	19	59	0.952	P
20	75	restored 8	Restored forest	-22.708708	-47.610207	6	6	26	48	0.956	P
21	76	fragment RJ	Semideciduous	-22.767379	-43.694394	0.66	11	13	26	0.971	P

\*Numbers correspond to the references listed in the main text.

**Table S2. Traits of the bird species recorded in the studied communities of the Atlantic Forest.**  
ED = Evolutionary distinctness of the species, estimated in millions of years (MY) and averaged across 100 solved trees. Species are sorted in a decreasing order of ED.

<b>Bird species</b>	<b>Body mass (g)</b>	<b>ED (MY)</b>	<b>Fragments present</b>
<i>Piaya cayana</i>	102.00	71.99	1
<i>Baryphthengus ruficapillus</i>	142.5	71.54	2
<i>Guira guira</i>	141.00	51.93	1
<i>Trogon rufus</i>	53.80	48.17	3
<i>Troglodytes aedon</i>	10.86	43.50	1
<i>Cyclarhis gujanensis</i>	28.80	39.18	7
<i>Crotophaga major</i>	148.50	36.21	1
<i>Crotophaga ani</i>	111.73	36.21	1
<i>Oxyruncus cristatus</i>	42.00	35.16	3
<i>Trogon viridis</i>	89.70	30.23	3
<i>Thamnophilus caerulescens</i>	21.10	29.56	1
<i>Pipile jacutinga</i>	1250.00	28.99	3
<i>Cranioleuca pallida</i>	11.50	28.82	1
<i>Vireo olivaceus</i>	16.17	26.87	12
<i>Schiffornis virescens</i>	25.60	24.95	2
<i>Laniisoma elegans</i>	47.40	24.86	1
<i>Selenidera maculirostris</i>	164.00	23.57	4
<i>Picumnus cirratus</i>	10.20	23.33	1
<i>Picumnus nebulosus</i>	11.60	23.33	1
<i>Veniliornis spilogaster</i>	40.30	20.38	2
<i>Pyroderus scutatus</i>	357.00	20.26	3
<i>Mimus saturninus</i>	63.70	20.05	6
<i>Mimus gilvus</i>	52.35	20.05	2
<i>Conopias trivirgatus</i>	NA	19.91	1
<i>Camptostoma obsoletum</i>	8.10	19.23	4
<i>Myiopagis caniceps</i>	10.50	18.83	1
<i>Tityra inquisitor</i>	43.10	18.77	1
<i>Tityra cayana</i>	68.10	18.77	3
<i>Procnias nudicollis</i>	200.00	18.15	5
<i>Habia rubica</i>	34.00	17.41	3
<i>Carpornis cucullata</i>	74.20	17.38	4
<i>Carpornis melanocephala</i>	64.20	17.38	3
<i>Myiophobus fasciatus</i>	9.90	17.30	2
<i>Trogon surrucura</i>	73.30	17.14	3
<i>Serpophaga subcristata</i>	6.60	17.09	1
<i>Ramphastos toco</i>	618.00	16.78	1
<i>Phyllomyias griseocapilla</i>	8.00	16.39	1
<i>Phylloscartes ventralis</i>	8.30	16.31	1
<i>Phylloscartes oustaleti</i>	10.00	16.18	1
<i>Tolmomyias flaviventris</i>	12.20	16.12	3
<i>Tolmomyias sulphurescens</i>	14.30	16.12	5
<i>Legatus leucophaeus</i>	22.20	16.06	2

<i>Neopelma aurifrons</i>	140.00	15.62	1
<i>Geothlypis aequinoctialis</i>	13.10	15.54	1
<i>Pachyramphus viridis</i>	21.00	15.43	1
<i>Pachyramphus validus</i>	43.00	15.43	4
<i>Hylophilus amaurocephalus</i>	11.59	15.40	2
<i>Pachyramphus polychopterus</i>	20.80	15.37	5
<i>Pachyramphus castaneus</i>	19.50	15.37	4
<i>Hylophilus poicilotis</i>	10.40	15.36	3
<i>Melanerpes flavifrons</i>	58.00	15.33	2
<i>Melanerpes candidus</i>	108.00	15.33	2
<i>Zonotrichia capensis</i>	20.75	15.12	10
<i>Turdus subalaris</i>	49.50	14.99	4
<i>Chlorophonia cyanea</i>	14.00	14.98	2
<i>Phibalura flavirostris</i>	46.50	14.37	2
<i>Ilicura militaris</i>	12.70	14.28	3
<i>Manacus manacus</i>	16.70	14.03	3
<i>Phylloscartes sylviolus</i>	8.00	14.00	1
<i>Contopus cinereus</i>	11.60	13.98	1
<i>Icterus cayanensis</i>	36.00	13.95	5
<i>Tijuca atra</i>	80.00	13.92	1
<i>Celeus flavescens</i>	139.00	13.12	7
<i>Nemosia pileata</i>	16.00	13.07	6
<i>Capsiempis flaveola</i>	7.70	13.01	1
<i>Elaenia obscura</i>	23.90	13.01	4
<i>Fluvicola nengeta</i>	21.00	12.98	1
<i>Pteroglossus bailloni</i>	146.00	12.96	3
<i>Satrapa icterophrys</i>	21.50	12.73	1
<i>Penelope superciliaris</i>	895.00	12.66	2
<i>Pitangus sulphuratus</i>	63.33	12.60	18
<i>Penelope obscura</i>	1770.00	12.21	5
<i>Sirystes sibilator</i>	32.30	12.17	1
<i>Mionectes rufiventris</i>	13.30	12.11	4
<i>Mionectes oleagineus</i>	11.23	12.11	1
<i>Euphonia pectoralis</i>	14.40	12.06	3
<i>Parula pitaiayumi</i>	6.95	11.82	3
<i>Euphonia violacea</i>	15.00	11.60	6
<i>Phyllomyias fasciatus</i>	10.30	11.55	4
<i>Turdus amaurochalinus</i>	57.90	11.52	18
<i>Euphonia chalybea</i>	19.00	11.36	3
<i>Volatinia jacarina</i>	9.95	11.35	4
<i>Conirostrum speciosum</i>	8.80	11.33	7
<i>Attila phoenicurus</i>	32.30	11.24	2
<i>Attila rufus</i>	42.60	11.24	2
<i>Pipraeidea melanonota</i>	21.00	11.01	6
<i>Myiodynastes maculatus</i>	43.20	11.01	13
<i>Psarocolius decumanus</i>	280.00	10.96	1
<i>Haplospiza unicolor</i>	15.90	10.74	1

<i>Sicalis flaveola</i>	17.00	10.74	1
<i>Machaeropterus regulus</i>	9.60	10.37	1
<i>Arremon taciturnus</i>	24.80	10.32	1
<i>Xolmis velatus</i>	NA	10.18	2
<i>Xolmis cinereus</i>	57.10	10.18	1
<i>Euphonia chlorotica</i>	11.00	10.12	6
<i>Pteroglossus aracari</i>	251.00	10.07	1
<i>Cyanerpes cyaneus</i>	14.00	10.04	3
<i>Lipaugus lanioides</i>	94.80	9.95	2
<i>Megarynchus pitangua</i>	66.70	9.93	10
<i>Ramphastos sp</i>	NA	9.87	1
<i>Cnemotriccus fuscatus</i>	13.60	9.85	1
<i>Lathrotriccus euleri</i>	11.35	9.85	2
<i>Ramphastos dicolorus</i>	331.00	9.85	4
<i>Ramphastos vitellinus</i>	343.50	9.83	3
<i>Euphonia sp</i>	NA	9.81	2
<i>Stephanophorus diadematus</i>	35.40	9.70	4
<i>Coereba flaveola</i>	10.34	9.68	12
<i>Basileuterus flaveolus</i>	13.20	9.55	1
<i>Basileuterus culicivorus</i>	10.50	9.55	1
<i>Saltator maximus</i>	46.20	9.42	2
<i>Orchesticus abeillei</i>	31.50	9.22	2
<i>Antilophia galeata</i>	20.60	9.20	1
<i>Tachyphonus cristatus</i>	18.80	9.14	5
<i>Tersina viridis</i>	29.00	9.03	5
<i>Penelope sp</i>	NA	8.85	2
<i>Myiozetetes similis</i>	28.00	8.85	11
<i>Myiozetetes cayanensis</i>	25.90	8.85	1
<i>Orthogonys chloricterus</i>	16.00	8.77	2
<i>Cacicus haemorrhous</i>	102.00	8.72	4
<i>Cacicus chrysopterus</i>	41.00	8.72	4
<i>Poospiza thoracica</i>	11.90	8.71	1
<i>Thlypopsis sordida</i>	17.00	8.63	5
<i>Knipolegus cyanirostris</i>	15.40	8.62	1
<i>Knipolegus nigerrimus</i>	20.30	8.62	1
<i>Empidonomus varius</i>	27.10	8.55	8
<i>Thraupis bonariensis</i>	36.00	8.40	1
<i>Colaptes campestris</i>	158.00	8.31	2
<i>Colaptes melanochloros</i>	127.27	8.31	3
<i>Gnorimopsar chopi</i>	65.90	8.26	1
<i>Pseudoleistes guirahuro</i>	91.20	8.26	2
<i>Saltator maxillosus</i>	50.80	8.15	1
<i>Poospiza lateralis</i>	19.20	8.06	3
<i>Elaenia sp</i>	NA	7.97	11
<i>Elaenia spectabilis</i>	27.30	7.87	1
<i>Pipra rubrocapilla</i>	12.00	7.85	2
<i>Pipra pipra</i>	10.30	7.85	2

<i>Sporophila leucoptera</i>	15.50	7.82	1
<i>Saltator fuliginosus</i>	50.50	7.64	3
<i>Turdus albicollis</i>	54.00	7.59	8
<i>Elaenia flavogaster</i>	24.80	7.58	15
<i>Turdus flavipes</i>	65.33	7.46	8
<i>Trichothraupis melanops</i>	24.30	7.19	7
<i>Dacnis nigripes</i>	14.00	7.12	1
<i>Dacnis cayana</i>	13.00	7.12	16
<i>Cissopis leverianus</i>	76.00	6.92	1
<i>Tangara cyanoptera</i>	20.70	6.87	1
<i>Elaenia parvirostris</i>	13.80	6.86	1
<i>Myiarchus tyrannulus</i>	36.25	6.83	4
<i>Turdus sp</i>	NA	6.70	2
<i>Tangara mexicana</i>	20.50	6.57	2
<i>Tangara peruviana</i>	22.20	6.47	3
<i>Turdus rufiventris</i>	69.50	6.23	14
<i>Coryphospingus cucullatus</i>	14.30	6.19	2
<i>Coryphospingus pileatus</i>	15.30	6.19	2
<i>Elaenia mesoleuca</i>	17.60	5.96	3
<i>Chiroxiphia caudata</i>	25.60	5.85	6
<i>Myiarchus swainsoni</i>	25.10	5.77	4
<i>Saltator similis</i>	43.30	5.75	9
<i>Hemithraupis ruficapilla</i>	11.00	5.61	4
<i>Tachyphonus rufus</i>	34.40	5.55	1
<i>Tachyphonus coronatus</i>	29.30	5.55	14
<i>Hemithraupis flavicollis</i>	12.80	5.44	3
<i>Turdus fumigatus</i>	75.85	5.24	2
<i>Myiarchus ferox</i>	27.50	5.23	7
<i>Turdus leucomelas</i>	69.10	5.22	16
<i>Thraupis sp</i>	NA	5.10	1
<i>Tangara cayana</i>	18.00	5.02	14
<i>Tangara preciosa</i>	22.80	4.98	2
<i>Myiarchus sp</i>	NA	4.97	2
<i>Tyrannus savana</i>	31.90	4.84	6
<i>Tyrannus melancholicus</i>	37.40	4.84	16
<i>Ramphocelus bresilius</i>	32.90	4.76	5
<i>Ramphocelus carbo</i>	26.00	4.76	5
<i>Tangara sp</i>	NA	4.69	1
<i>Tangara seledon</i>	18.70	4.59	4
<i>Thraupis cyanoptera</i>	43.30	4.26	4
<i>Schistochlamys ruficapillus</i>	31.20	4.19	3
<i>Schistochlamys melanopsis</i>	33.00	4.19	1
<i>Sporophila caerulescens</i>	10.20	4.03	2
<i>Tangara cyanocephala</i>	18.00	3.37	5
<i>Thraupis ornata</i>	33.00	3.26	3
<i>Thraupis palmarum</i>	39.00	3.22	10
<i>Thraupis sayaca</i>	32.50	2.78	16

<i>Thraupis episcopus</i>	35.00	2.77	6
<i>Tangara desmaresti</i>	20.40	2.47	4
<i>Tangara cyanoventris</i>	16.50	2.46	1

---

**Table S3. Traits of the plant species recorded in the studied communities of the Atlantic Forest.**

ED = Evolutionary distinctness of the species, estimated in million of years (MY) averaged across 100 solved trees. Species are sorted in a decreasing order of ED.

<b>Plant species</b>	<b>Seed diameter (mm)</b>	<b>ED (MY)</b>	<b>Fragments present</b>
<i>Podocarpus sellowii</i>	NA	352.23	1
<i>Hedyosmum brasiliense</i>	1.50	273.14	1
<i>Meliosma sellowii</i>	11.6	153.69	1
<i>Cinnamodendron dinisii</i>	7.00	134.60	4
<i>Drimys brasiliensis</i>	2.00	134.60	1
<i>Dichorisandra thyrsoiflora</i>	NA	120.28	1
<i>Hedychium coronarium</i>	NA	113.58	1
<i>Momordica charantia</i>	NA	110.30	1
<i>Smilax elastica</i>	NA	108.04	1
<i>Smilax rufescens</i>	NA	108.04	1
<i>Abuta selleana</i>	13.20	106.80	1
<i>Cissampelos andromorpha</i>	NA	106.80	1
<i>Humiria balsamifera</i>	4.10	103.70	1
<i>Fuchsia regia</i>	NA	102.89	1
<i>Hyeronima alchorneoides</i>	2.0	102.73	3
<i>Cassytha filiformis</i>	NA	101.35	1
<i>Euterpe edulis</i>	12.00	98.70	5
<i>Philodendron appendiculatum</i>	NA	97.44	2
<i>Margaritaria nobilis</i>	1.75	95.07	1
<i>Heisteria perianthomega</i>	NA	92.26	1
<i>Costus spiralis</i>	NA	91.96	1
<i>Samanea tubulosa</i>	NA	91.90	1
<i>Pera glabrata</i>	2.60	91.62	3
<i>Chamissoa altissima</i>	NA	90.34	1
<i>Scutia buxifolia</i>	NA	89.66	1
<i>Ilex affinis</i>	5.50	85.51	1
<i>Cissus paulliniifolia</i>	NA	82.78	1
<i>Vismia brasiliensis</i>	1.10	82.46	1
<i>Merostachys sp</i>	NA	81.26	1
<i>Dendropanax cuneatus</i>	2.90	80.53	1
<i>Sapium glandulosum</i>	5.00	80.45	1
<i>Tetrorchidium rubrivenium</i>	4.50	80.45	1
<i>Quiina glaziovii</i>	9.00	79.72	3
<i>Melastomataceae sp</i>	NA	76.37	1
<i>Sloanea guianensis</i>	6.00	75.38	2
<i>Sloanea hirsuta</i>	8.50	75.38	2
<i>Cybianthus peruvianus</i>	NA	74.46	1
<i>Anthurium scandens</i>	NA	71.55	2
<i>Magnolia ovata</i>	8.00	69.38	1
<i>Michelia champaca</i>	NA	69.38	1
<i>Casearia decandra</i>	6.00	68.33	2
<i>Casearia sylvestris</i>	1.30	68.33	7

<i>Garcinia gardneriana</i>	14.80	65.91	1
<i>Tournefortia sp</i>	NA	64.29	1
<i>Sorocea bonplandii</i>	9.80	64.25	2
<i>Aechmea nudicaulis</i>	NA	63.58	1
<i>Aureliana fasciculata</i>	NA	62.42	1
<i>Tapirira guianensis</i>	8.15	61.33	1
<i>Cissus striata</i>	NA	60.78	1
<i>Maclura tinctoria</i>	2.10	58.86	2
<i>Schwartzia brasiliensis</i>	1.00	58.30	1
<i>Prunus myrtifolia</i>	5.40	57.13	2
<i>Prunus sellowii</i>	NA	57.13	1
<i>Coussapoa microcarpa</i>	1.20	56.42	2
<i>Phytolacca dioica</i>	3.00	55.01	1
<i>Henriettea saldanhae</i>	NA	54.22	1
<i>Piper corintoanum</i>	NA	53.86	1
<i>Davilla rugosa</i>	NA	52.64	1
<i>Heteropsis oblongifolia</i>	NA	52.04	1
<i>Monstera adansonii</i>	NA	51.68	1
<i>Heteropsis rigidifolia</i>	NA	51.57	1
<i>Codonanthe cordifolia</i>	NA	50.33	1
<i>Piper sp</i>	NA	49.90	2
<i>Peplonia organensis</i>	NA	48.19	1
<i>Cryptocarya moschata</i>	8.00	47.82	2
<i>Styrax leprosus</i>	5.50	47.09	1
<i>Loranthaceae sp</i>	NA	46.89	1
<i>Cryptocarya aschersoniana</i>	22.00	46.67	1
<i>Cryptocarya mandioccana</i>	15.00	45.55	1
<i>Urera baccifera</i>	2.00	45.09	2
<i>Urera sp</i>	NA	45.09	1
<i>Rubus brasiliensis</i>	NA	44.80	1
<i>Rubus sp</i>	NA	44.13	1
<i>Cordia sellowiana</i>	13.31	43.86	1
<i>Curatella americana</i>	2.60	43.84	1
<i>Galium hypocarpium</i>	NA	43.70	1
<i>Cordia ecalyculata</i>	8.00	43.57	2
<i>Cordia silvestris</i>	4.00	43.43	2
<i>Schefflera angustissima</i>	2.00	43.27	2
<i>Varronia curassavica</i>	NA	42.92	1
<i>Myriopus paniculatus</i>	NA	42.82	1
<i>Pourouma guianensis</i>	10.00	42.72	2
<i>Annona neosericea</i>	3.70	42.49	3
<i>Rubus rosifolius</i>	NA	42.38	2
<i>Rubus urticifolius</i>	NA	42.38	2
<i>Myrcia sp</i>	NA	42.26	1
<i>Ouratea polygyna</i>	NA	41.89	1
<i>Ouratea vaccinioides</i>	NA	41.89	1
<i>Zanthoxylum hyemale</i>	3.00	41.59	1



<i>Neomitranthes glomerata</i>	11.00	41.31	3
<i>Celtis iguanaea</i>	6.50	41.20	1
<i>Trema micrantha</i>	1.70	41.20	7
<i>Aegiphila integrifolia</i>	7.00	41.04	5
<i>Piper aduncum</i>	NA	41.03	2
<i>Piper dilatatum</i>	NA	41.03	1
<i>Myrrhinium atropurpureum</i>	NA	40.89	1
<i>Maytenus littoralis</i>	8.00	40.56	1
<i>Guapira opposita</i>	3.84	40.10	6
<i>Schaefferia argentinensis</i>	NA	39.94	1
<i>Alchornea triplinervia</i>	4.10	39.83	5
<i>Alchornea glandulosa</i>	5.00	39.08	3
<i>Maytenus brasiliensis</i>	8.00	39.07	1
<i>Maytenus gonoclada</i>	5.70	38.58	3
<i>Citharexylum myrianthum</i>	5.50	38.57	7
<i>Tabernaemontana catharinensis</i>	NA	38.51	1
<i>Maytenus sp</i>	NA	38.43	2
<i>Myrtaceae sp</i>	NA	38.00	1
<i>Alchornea sidifolia</i>	4.00	37.60	1
<i>Byrsonima ligustrifolia</i>	NA	37.38	1
<i>Viola gardneri</i>	20.00	37.26	1
<i>Erythroxylum pulchrum</i>	6.54	37.03	1
<i>Syagrus romanzoffiana</i>	16.60	36.95	1
<i>Cordia myrciifolia</i>	NA	36.75	1
<i>Viola bicuhyba</i>	16.00	36.26	3
<i>Chiococca alba</i>	NA	36.24	1
<i>Coussarea contracta</i>	22.43	36.13	1
<i>Ilex theezans</i>	2.70	35.95	1
<i>Maytenus aquifolia</i>	7.00	35.91	2
<i>Erythroxylum gonocladum</i>	NA	35.35	1
<i>Margaritopsis astrellantha</i>	3.00	34.77	1
<i>Byrsonima variabilis</i>	NA	34.46	1
<i>Marcgravia polyantha</i>	NA	34.03	1
<i>Norantea brasiliensis</i>	NA	34.03	1
<i>Cupania emarginata</i>	6.61	33.85	1
<i>Cupania oblongifolia</i>	9.70	33.44	5
<i>Erythroxylum argentinum</i>	4.00	33.36	1
<i>Erythroxylum ambiguum</i>	NA	33.26	1
<i>Erythroxylum deciduum</i>	4.70	32.85	1
<i>Byrsonima cydoniifolia</i>	NA	32.72	1
<i>Erythroxylum ovalifolium</i>	Na	32.46	1
<i>Inga marginata</i>	9.00	32.21	1
<i>Copaifera langsdorffii</i>	11.00	31.92	1
<i>Copaifera trapezifolia</i>	11.53	31.92	2
<i>Cabrlea canjerana</i>	9.00	30.58	3
<i>Guatteria australis</i>	7.00	30.53	2
<i>Symplocos uniflora</i>	6.40	29.88	4

<i>Symplocos</i> sp	NA	29.65	1
<i>Gaylussacia brasiliensis</i>	1.79	29.37	1
<i>Vitex megapotamica</i>	8.90	29.23	1
<i>Vitex polygama</i>	8.10	29.23	1
<i>Gaylussacia pulchra</i>	NA	28.55	1
<i>Mollinedia schottiana</i>	5.90	27.93	2
<i>Symplocos tetrandra</i>	NA	27.57	1
<i>Geonoma gamiova</i>	6.10	27.21	2
<i>Symplocos glandulosomarginata</i>	NA	26.77	1
<i>Geonoma elegans</i>	NA	26.75	1
<i>Geonoma pauciflora</i>	5.73	26.57	2
<i>Protium icicariba</i>	NA	26.50	1
<i>Diploon</i> sp	NA	26.40	1
<i>Mollinedia</i> sp	NA	26.37	1
<i>Chrysophyllum viride</i>	10.00	26.31	1
<i>Protium heptaphyllum</i>	7.50	26.24	4
<i>Symplocos estrellensis</i>	NA	26.14	1
<i>Symplocos pubescens</i>	NA	26.12	1
<i>Clusia organensis</i>	NA	25.73	1
<i>Chrysophyllum flexuosum</i>	7.00	25.67	2
<i>Mollinedia triflora</i>	9.00	25.34	1
<i>Protium widgrenii</i>	9.00	25.31	1
<i>Opuntia monacantha</i>	NA	25.10	1
<i>Cecropia pachystachya</i>	0.61	24.87	7
<i>Lithraea molleoides</i>	NA	24.51	1
<i>Schinus terebinthifolia</i>	3.50	24.51	10
<i>Cecropia glaziovii</i>	0.62	24.44	6
<i>Pereskia aculeata</i>	NA	24.40	1
<i>Pilosocereus arrabidae</i>	NA	23.94	1
<i>Xylopia brasiliensis</i>	4.10	23.31	2
<i>Xylopia sericea</i>	5.00	23.09	1
<i>Xylopia langsdorfiana</i>	6.12	22.76	1
<i>Cupania vernalis</i>	7.40	22.65	2
<i>Zanthoxylum rhoifolium</i>	2.60	22.59	1
<i>Zanthoxylum riedelianum</i>	2.70	22.59	1
<i>Mollinedia boracensis</i>	NA	22.35	1
<i>Persea alba</i>	9.60	21.92	1
<i>Persea major</i>	NA	21.63	1
<i>Chomelia parvifolia</i>	NA	21.61	1
<i>Guettarda viburnoides</i>	13.3	21.61	1
<i>Persea willdenovii</i>	7.00	21.44	2
<i>Myrsine coriacea</i>	NA	21.22	6
<i>Coccocypselum geophiloides</i>	NA	21.20	1
<i>Coccocypselum hasslerianum</i>	NA	21.20	1
<i>Mollinedia uleana</i>	9.00	21.17	1
<i>Ficus</i> sp	NA	20.64	2
<i>Nectandra megapotamica</i>	9.00	20.09	2

<i>Ficus glabra</i>	NA	20.03	1
<i>Myrsine lancifolia</i>	NA	19.77	1
<i>Matayba elaeagnoides</i>	7.50	19.57	1
<i>Matayba guianensis</i>	8.26	19.57	1
<i>Ficus insipida</i>	1.70	19.23	2
<i>Phoradendron sp</i>	NA	19.00	2
<i>Ilex brevicuspis</i>	1.50	18.97	2
<i>Myrsine sp</i>	NA	18.74	1
<i>Genipa americana</i>	5.20	18.59	1
<i>Ocotea dispersa</i>	7.70	18.53	1
<i>Ficus enormis</i>	10.00	18.49	2
<i>Myrsine parvifolia</i>	NA	18.05	1
<i>Myrsine venosa</i>	4.20	17.99	1
<i>Phoradendron piperoides</i>	NA	17.93	1
<i>Aiouea saligna</i>	9.00	17.88	1
<i>Myrsine umbellata</i>	3.50	17.84	5
<i>Guarea kunthiana</i>	10.00	17.49	1
<i>Ocotea catharinensis</i>	8.50	17.48	1
<i>Ficus hirsuta</i>	NA	17.43	1
<i>Ficus organensis</i>	0.70	17.34	1
<i>Ocotea corymbosa</i>	6.00	17.31	2
<i>Ocotea sp</i>	NA	17.08	1
<i>Ocotea bicolor</i>	10.30	16.98	1
<i>Cestrum mariquitense</i>	2.70	16.89	4
<i>Cestrum schlechtendalii</i>	NA	16.70	1
<i>Myrsine gardneriana</i>	NA	16.60	1
<i>Trichilia catigua</i>	5.00	16.52	1
<i>Inga edulis</i>	5.84	16.13	2
<i>Inga laurina</i>	10.00	16.13	1
<i>Ocotea teleiandra</i>	16.00	15.65	1
<i>Ocotea notata</i>	4.00	15.49	1
<i>Trichilia clausseni</i>	9.00	15.39	3
<i>Ixora venulosa</i>	NA	14.81	1
<i>Clusia criuva</i>	1.80	14.80	4
<i>Clusia hilariana</i>	2.50	14.80	2
<i>Lantana sp</i>	NA	14.27	1
<i>Ixora gardneriana</i>	4.00	14.19	1
<i>Ixora burchelliana</i>	NA	14.16	1
<i>Lantana camara</i>	NA	13.68	2
<i>Nectandra grandiflora</i>	10.00	12.52	1
<i>Ocotea odorifera</i>	13.65	12.51	1
<i>Allophylus edulis</i>	5.74	12.37	3
<i>Lantana pohliana</i>	NA	12.33	1
<i>Nectandra membranacea</i>	10.00	12.23	2
<i>Alibertia sp</i>	NA	12.22	1
<i>Nectandra reticulata</i>	8.00	12.07	1
<i>Struthanthus concinnus</i>	NA	12.04	1

<i>Nectandra lanceolata</i>	11.40	11.99	1
<i>Struthanthus martianus</i>	NA	11.99	2
<i>Psittacanthus</i> sp	NA	11.42	1
<i>Struthanthus</i> sp	NA	11.36	1
<i>Ilex microdonta</i>	NA	10.08	1
<i>Ilex pseudobuxus</i>	2.47	10.08	1
<i>Acnistus arborescens</i>	NA	9.95	1
<i>Vassobia breviflora</i>	NA	9.95	1
<i>Guarea guidonia</i>	10.00	9.41	2
<i>Guarea macrophylla</i>	8.60	9.41	5
<i>Psychotria nuda</i>	NA	9.14	1
<i>Psychotria vellosiana</i>	NA	9.11	2
<i>Psychotria suterella</i>	3.00	8.95	2
<i>Psychotria</i> sp	NA	8.94	1
<i>Psychotria mapourioides</i>	NA	8.83	2
<i>Psychotria sessilis</i>	NA	8.71	1
<i>Psychotria forsteronioides</i>	NA	8.62	1
<i>Psychotria leiocarpa</i>	2.30	8.45	1
<i>Ficus eximia</i>	1.20	8.12	1
<i>Rudgea jasminoides</i>	NA	7.64	3
<i>Rudgea recurva</i>	NA	7.64	1
<i>Amaioua guianensis</i>	3.50	7.15	1
<i>Amaioua intermedia</i>	3.61	7.15	1
<i>Myrcia tomentosa</i>	4.30	6.70	1
<i>Psychotria gracilentia</i>	NA	6.14	1
<i>Rhipsalis camposportoana</i>	NA	6.02	1
<i>Rhipsalis elliptica</i>	NA	6.00	1
<i>Rhipsalis teres</i>	NA	5.75	1
<i>Solanum americanum</i>	NA	5.72	1
<i>Miconia valtheri</i>	0.30	5.66	1
<i>Myrcia palustris</i>	0.30	5.64	1
<i>Myrcia spectabilis</i>	11.40	5.48	3
<i>Rhipsalis</i> sp	NA	5.45	2
<i>Myrciaria cuspidata</i>	3.60	5.44	1
<i>Myrceugenia myrcioides</i>	8.00	5.40	1
<i>Rhipsalis paradoxa</i>	NA	5.34	1
<i>Myrcia oblongata</i>	NA	5.30	1
<i>Myrcia pulchra</i>	3.90	5.30	1
<i>Myrcia pubipetala</i>	0.30	5.17	2
<i>Miconia theizans</i>	0.30	5.12	1
<i>Miconia inconspicua</i>	0.30	5.09	1
<i>Myrcia ferruginea</i>	4.60	5.06	1
<i>Ficus luschnathiana</i>	0.70	5.06	2
<i>Ficus pertusa</i>	1.10	5.06	1
<i>Miconia paniculata</i>	0.30	4.91	1
<i>Miconia rubiginosa</i>	0.30	4.89	1
<i>Myrcia strigipes</i>	11.40	4.89	1

<i>Miconia tentaculifera</i>	0.30	4.86	1
<i>Myrcia anacardiifolia</i>	8.00	4.74	2
<i>Miconia albicans</i>	1.00	4.69	3
<i>Miconia</i> sp	NA	4.60	1
<i>Myrcia hartwegiana</i>	3.46	4.58	1
<i>Myrcia ilheosensis</i>	3.90	4.48	2
<i>Leandra aurea</i>	0.40	4.44	1
<i>Miconia latecrenata</i>	0.30	4.41	1
<i>Miconia discolor</i>	0.30	4.37	2
<i>Ossaea</i> sp	NA	4.35	1
<i>Miconia chartacea</i>	0.30	4.33	2
<i>Leandra regnellii</i>	NA	4.29	1
<i>Miconia budlejoides</i>	1.00	4.27	3
<i>Miconia brasiliensis</i>	1.00	4.26	1
<i>Leandra australis</i>	NA	4.25	2
<i>Miconia racemifera</i>	0.30	4.23	2
<i>Leandra acutiflora</i>	NA	4.22	1
<i>Eugenia uruguayensis</i>	NA	4.22	1
<i>Miconia tristis</i>	0.30	4.18	3
<i>Miconia pusilliflora</i>	1.70	4.12	3
<i>Solanum inodorum</i>	NA	4.06	1
<i>Leandra variabilis</i>	1.00	4.04	1
<i>Eugenia brasiliensis</i>	4.45	3.99	2
<i>Leandra laevigata</i>	NA	3.97	1
<i>Leandra</i> sp	NA	3.95	1
<i>Leandra sabiaensis</i>	NA	3.89	1
<i>Leandra refracta</i>	NA	3.88	1
<i>Endlicheria paniculata</i>	12.50	3.84	2
<i>Solanum didymum</i>	NA	3.83	1
<i>Solanum myrianthum</i>	NA	3.81	1
<i>Eugenia astringens</i>	NA	3.80	2
<i>Leandra xanthocoma</i>	NA	3.79	1
<i>Leandra pilonensis</i>	1.00	3.77	1
<i>Miconia elegans</i>	0.30	3.76	1
<i>Leandra melastomoides</i>	1.00	3.75	1
<i>Solanum bullatum</i>	NA	3.74	1
<i>Eugenia melanogyna</i>	21.00	3.74	1
<i>Ossaea amygdaloides</i>	NA	3.74	1
<i>Eugenia mosenii</i>	19.00	3.73	2
<i>Eugenia neoglomerata</i>	14.46	3.73	2
<i>Solanum variabile</i>	NA	3.72	1
<i>Eugenia handroi</i>	8.34	3.72	1
<i>Solanum swartzianum</i>	NA	3.70	1
<i>Eugenia hiemalis</i>	NA	3.66	1
<i>Eugenia oblongata</i>	15.00	3.66	1
<i>Eugenia involucrata</i>	7.00	3.63	1
<i>Eugenia</i> sp	NA	3.61	1

<i>Nectandra cuspidata</i>	10.00	3.60	1
<i>Ocotea puberula</i>	5.00	3.60	1
<i>Eugenia expansa</i>	9.40	3.58	1
<i>Leandra barbinervis</i>	1.00	3.51	1
<i>Solanum rufescens</i>	NA	3.50	1
<i>Solanum granulosoleprosum</i>	NA	3.47	1
<i>Psidium cattleianum</i>	2.50	3.12	2
<i>Siphoneugena densiflora</i>	5.30	3.12	1
<i>Solanum argenteum</i>	3.00	2.96	1
<i>Solanum mauritianum</i>	NA	2.96	2
<i>Myrcia splendens</i>	4.60	2.71	4
<i>Paullinia weinmanniifolia</i>	NA	2.62	1
<i>Plinia cauliflora</i>	5.50	2.61	2
<i>Calyptranthes concinna</i>	5.00	2.59	2
<i>Myrciaria floribunda</i>	4.50	2.59	1
<i>Paullinia rhomboidea</i>	NA	2.50	1
<i>Paullinia uloptera</i>	NA	2.44	1
<i>Paullinia sp</i>	NA	2.37	2
<i>Marlierea obscura</i>	8.40	2.30	3
<i>Marlierea reitzii</i>	NA	2.28	1
<i>Miconia sellowiana</i>	0.30	2.26	2
<i>Marlierea suaveolens</i>	10.00	2.22	1
<i>Myrcia brasiliensis</i>	5.70	2.19	1
<i>Myrcia hebeptala</i>	8.80	2.19	2
<i>Ocotea pulchella</i>	5.00	2.05	3
<i>Ocotea spixiana</i>	5.40	2.05	1
<i>Eugenia cerasiflora</i>	10.00	1.95	1
<i>Eugenia uniflora</i>	11.40	1.95	4
<i>Campomanesia guaviroba</i>	8.60	1.65	1
<i>Campomanesia xanthocarpa</i>	4.90	1.65	1
<i>Miconia prasina</i>	0.61	1.43	1
<i>Miconia cabucu</i>	1.30	1.38	2
<i>Miconia cubatanensis</i>	0.30	1.38	2
<i>Miconia cinnamomifolia</i>	0.30	1.31	6
<i>Miconia ligustroides</i>	1.00	0.74	1
<i>Miconia minutiflora</i>	0.30	0.74	1

---

**Table S4. The bird–seed dispersal interactions recorded in the studied sites of the Atlantic Forest, followed by their EDi and correspondent asymmetry.** EDi = Evolutionary distinctness of the interaction, estimated by the sum of the ED of the interacting partners (see Table S2 and S3 for plant and bird species ED) in millions of years (MY). Asymmetries refer to the difference between partners ED. ‘Plant skewed’ asymmetries correspond to interactions in which plant species are more distinct than their partner seed disperser while ‘Bird-skewed’ asymmetries correspond to the opposite. Interactions are sorted in a decreasing order of ED.

<b>Bird-plant interaction</b>	<b>EDi (MY)</b>	<b>Asymmetry</b>	<b>Asymmetry magnitude</b>	<b>Asymmetry skewness</b>	<b>N fragments present</b>
<i>Pipile jacutinga Podocarpus sellowii</i>	381.22	-0.918	high	Plant-skewed	1
<i>Tangara desmaresti Hedyosmum brasiliense</i>	275.61	-0.991	high	Plant-skewed	1
<i>Pipile jacutinga Meliosma sellowii</i>	182.67	-0.811	high	Plant-skewed	1
<i>Baryphthengus ruficapillus Euterpe edulis</i>	170.24	-0.275	high	Plant-skewed	2
<i>Pipile jacutinga Cinnamodendron dinisii</i>	163.58	-0.785	high	Plant-skewed	2
<i>Pyroderus scutatus Cinnamodendron dinisii</i>	154.86	-0.849	high	Plant-skewed	2
<i>Procnias nudicollis Cinnamodendron dinisii</i>	152.74	-0.865	high	Plant-skewed	1
<i>Carpornis cucullata Drimys brasiliensis</i>	151.98	-0.871	high	Plant-skewed	1
<i>Trogon rufus Philodendron appendiculatum</i>	145.61	-0.506	high	Plant-skewed	1
<i>Ramphastos vitellinus Cinnamodendron dinisii</i>	144.43	-0.927	high	Plant-skewed	1
<i>Stephanophorus diadematus Drimys brasiliensis</i>	144.30	-0.928	high	Plant-skewed	1
<i>Tangara preciosa Cinnamodendron dinisii</i>	139.58	-0.963	high	Plant-skewed	1
<i>Thraupis cyanoptera Drimys brasiliensis</i>	138.86	-0.968	high	Plant-skewed	1
<i>Oxyruncus cristatus Euterpe edulis</i>	133.86	-0.644	high	Plant-skewed	1
<i>Pipile jacutinga Hyeronima alchorneoides</i>	131.72	-0.718	high	Plant-skewed	1
<i>Trogon viridis Euterpe edulis</i>	128.93	-0.694	high	Plant-skewed	3
<i>Mimus gilvus Smilax rufescens</i>	128.08	-0.814	high	Plant-skewed	1
<i>Pipile jacutinga Euterpe edulis</i>	127.69	-0.706	high	Plant-skewed	3
<i>Pyroderus scutatus Abuta seloana</i>	127.06	-0.810	high	Plant-skewed	1
<i>Selenidera maculirostris Hyeronima alchorneoides</i>	126.30	-0.771	high	Plant-skewed	1
<i>Tachyphonus coronatus Dichorisandra</i>	125.83	-0.954	high	Plant-skewed	1

*thyrsiflora*

<i>Carpornis cucullata Smilax elastica</i>	125.41	-0.839	high	Plant-skewed	1
<i>Selenidera maculirostris Euterpe edulis</i>	122.27	-0.761	high	Plant-skewed	3
<i>Tityra cayana Hyeronima alchorneoides</i>	121.50	-0.817	high	Plant-skewed	1
<i>Selenidera maculirostris Philodendron appendiculatum</i>	121.02	-0.758	high	Plant-skewed	1
<i>Carpornis cucullata Fuchsia regia</i>	120.27	-0.831	high	Plant-skewed	1
<i>Guira guira Casearia sylvestris</i>	120.26	-0.240	high	Plant-skewed	1
<i>Tachyphonus coronatus Hedychium coronarium</i>	119.13	-0.951	high	Plant-skewed	1
<i>Pyroderus scutatus Euterpe edulis</i>	118.96	-0.795	high	Plant-skewed	3
<i>Vireo olivaceus Pera glabrata</i>	118.49	-0.707	high	Plant-skewed	1
<i>Melanerpes flavifrons Hyeronima alchorneoides</i>	118.06	-0.851	high	Plant-skewed	1
<i>Myiodynastes maculatus Cissampelos andromorpha</i>	117.80	-0.897	high	Plant-skewed	1
<i>Tityra cayana Euterpe edulis</i>	117.47	-0.810	high	Plant-skewed	2
<i>Procnias nudicollis Euterpe edulis</i>	116.85	-0.816	high	Plant-skewed	3
<i>Pitangus sulphuratus Humiria balsamifera</i>	116.31	-0.878	high	Plant-skewed	1
<i>Carpornis cucullata Euterpe edulis</i>	116.08	-0.824	high	Plant-skewed	2
<i>Carpornis melanocephala Euterpe edulis</i>	116.08	-0.824	high	Plant-skewed	1
<i>Tachyphonus coronatus Momordica charantia</i>	115.85	-0.950	high	Plant-skewed	1
<i>Trogon surrucura Euterpe edulis</i>	115.84	-0.826	high	Plant-skewed	1
<i>Pteroglossus bailloni Hyeronima alchorneoides</i>	115.69	-0.874	high	Plant-skewed	1
<i>Cacicus haemorrhous Abuta seloana</i>	115.52	-0.918	high	Plant-skewed	1
<i>Euphonia pectoralis Fuchsia regia</i>	114.95	-0.883	high	Plant-skewed	1
<i>Mionectes rufiventris Hyeronima alchorneoides</i>	114.84	-0.882	high	Plant-skewed	1
<i>Tangara peruviana Smilax rufescens</i>	114.50	-0.940	high	Plant-skewed	1
<i>Turdus albicollis Cissampelos andromorpha</i>	114.38	-0.929	high	Plant-skewed	1
<i>Trichothraupis melanops Cissampelos andromorpha</i>	113.99	-0.933	high	Plant-skewed	1



<i>Turdus rufiventris Cissampelos andromorpha</i>	113.03	-0.942	high	Plant-skewed	1
<i>Lipaugus lanioides Hyeronima alchorneoides</i>	112.68	-0.903	high	Plant-skewed	1
<i>Chiroxiphia caudate Cissampelos andromorpha</i>	112.65	-0.945	high	Plant-skewed	1
<i>Ramphastos vitellinus Hyeronima alchorneoides</i>	112.57	-0.904	high	Plant-skewed	1
<i>Stephanophorus diadematus Hyeronima alchorneoides</i>	112.43	-0.906	high	Plant-skewed	1
<i>Tachyphonus coronatus Cissampelos andromorpha</i>	112.35	-0.948	high	Plant-skewed	1
<i>Mimus saturninus Heisteria perianthomega</i>	112.31	-0.783	high	Plant-skewed	1
<i>Celeus flavescens Euterpe edulis</i>	111.83	-0.867	high	Plant-skewed	1
<i>Tersina viridis Hyeronima alchorneoides</i>	111.76	-0.912	high	Plant-skewed	1
<i>Pteroglossus bailloni Euterpe edulis</i>	111.66	-0.869	high	Plant-skewed	1
<i>Pitangus sulphuratus Euterpe edulis</i>	111.30	-0.872	high	Plant-skewed	1
<i>Penelope obscura Euterpe edulis</i>	110.91	-0.876	high	Plant-skewed	3
<i>Camptostoma obsoletum Pera glabrata</i>	110.85	-0.790	high	Plant-skewed	1
<i>Turdus albicollis Fuchsia regia</i>	110.47	-0.926	high	Plant-skewed	1
<i>Turdus albicollis Hyeronima alchorneoides</i>	110.32	-0.926	high	Plant-skewed	2
<i>Euphonia violacea Euterpe edulis</i>	110.30	-0.882	high	Plant-skewed	1
<i>Turdus amaurochalinus Euterpe edulis</i>	110.23	-0.883	high	Plant-skewed	2
<i>Turdus flavipes Hyeronima alchorneoides</i>	110.19	-0.927	high	Plant-skewed	1
<i>Trichothraupis melanops Hyeronima alchorneoides</i>	109.92	-0.930	high	Plant-skewed	1
<i>Dacnis cayana Hyeronima alchorneoides</i>	109.85	-0.931	high	Plant-skewed	1
<i>Myiodynastes maculatus Euterpe edulis</i>	109.71	-0.888	high	Plant-skewed	1
<i>Turdus rufiventris Hyeronima alchorneoides</i>	108.97	-0.939	high	Plant-skewed	1
<i>Myiophobus fasciatus Pera glabrata</i>	108.92	-0.811	high	Plant-skewed	1
<i>Pteroglossus aracari Euterpe edulis</i>	108.78	-0.898	high	Plant-skewed	1
<i>Chiroxiphia caudate Fuchsia regia</i>	108.74	-0.943	high	Plant-skewed	1
<i>Pipile jacutinga Quiina glaziovii</i>	108.70	-0.636	high	Plant-skewed	1
<i>Lipaugus lanioides Euterpe edulis</i>	108.65	-0.899	high	Plant-skewed	1

<i>Ramphastos dicolorus Euterpe edulis</i>	108.55	-0.900	high	Plant-skewed	3
<i>Ramphastos vitellinus Euterpe edulis</i>	108.54	-0.900	high	Plant-skewed	3
<i>Tachyphonus coronatus Fuchsia regia</i>	108.44	-0.946	high	Plant-skewed	1
<i>Hemithraupis ruficapilla Hyeronima alchorneoides</i>	108.35	-0.945	high	Plant-skewed	1
<i>Tangara peruviana Cassytha filiformis</i>	107.82	-0.936	high	Plant-skewed	1
<i>Baryphthengus ruficapillus Virola bicuhyba</i>	107.79	0.493	high	Bird-skewed	2
<i>Habia rubica Chamissoa altissima</i>	107.75	-0.807	high	Plant-skewed	1
<i>Cyclarhis gujanensis Casearia sylvestris</i>	107.52	-0.427	high	Plant-skewed	2
<i>Orthogonys chloricterus Euterpe edulis</i>	107.47	-0.911	high	Plant-skewed	2
<i>Cacicus haemorrhous Euterpe edulis</i>	107.43	-0.912	high	Plant-skewed	1
<i>Vireo olivaceus Dendropanax cuneatus</i>	107.40	-0.666	high	Plant-skewed	1
<i>Vireo olivaceus Sapium glandulosum</i>	107.32	-0.666	high	Plant-skewed	1
<i>Thraupis cyanoptera Fuchsia regia</i>	107.15	-0.959	high	Plant-skewed	1
<i>Tolmomyias flaviventris Chamissoa altissima</i>	106.46	-0.822	high	Plant-skewed	1
<i>Tolmomyias sulphurescens Chamissoa altissima</i>	106.46	-0.822	high	Plant-skewed	1
<i>Turdus albicollis Euterpe edulis</i>	106.29	-0.923	high	Plant-skewed	5
<i>Turdus flavipes Euterpe edulis</i>	106.16	-0.924	high	Plant-skewed	4
<i>Hylophilus amaurocephalus Chamissoa altissima</i>	105.74	-0.830	high	Plant-skewed	1
<i>Thraupis sayaca Fuchsia regia</i>	105.67	-0.973	high	Plant-skewed	1
<i>Manacus manacus Pera glabrata</i>	105.65	-0.847	high	Plant-skewed	1
<i>Schistochlamys ruficapillus Cassytha filiformis</i>	105.54	-0.959	high	Plant-skewed	1
<i>Turdus subalaris Chamissoa altissima</i>	105.33	-0.834	high	Plant-skewed	1
<i>Tangara desmaresti Hyeronima alchorneoides</i>	105.21	-0.976	high	Plant-skewed	1
<i>Turdus rufiventris Euterpe edulis</i>	104.94	-0.937	high	Plant-skewed	3
<i>Ramphastos vitellinus Margaritaria nobilis</i>	104.90	-0.897	high	Plant-skewed	1
<i>Zonotrichia capensis Scutia buxifolia</i>	104.78	-0.831	high	Plant-skewed	1
<i>Trichothraupis melanops Philodendron appendiculatum</i>	104.63	-0.926	high	Plant-skewed	1

<i>Trogon rufus Coussapoa microcarpa</i>	104.59	-0.146	high	Plant-skewed	1
<i>Saltator similis Euterpe edulis</i>	104.45	-0.942	high	Plant-skewed	1
<i>Manacus manacus Chamissoa altissima</i>	104.37	-0.845	high	Plant-skewed	1
<i>Tachyphonus coronatus Euterpe edulis</i>	104.26	-0.944	high	Plant-skewed	2
<i>Turdus leucomelas Euterpe edulis</i>	103.92	-0.947	high	Plant-skewed	3
<i>Sirystes sibilator Pera glabrata</i>	103.79	-0.867	high	Plant-skewed	1
<i>Tangara sp Euterpe edulis</i>	103.39	-0.953	high	Plant-skewed	1
<i>Elaenia obscura Chamissoa altissima</i>	103.34	-0.856	high	Plant-skewed	1
<i>Tangara seledon Euterpe edulis</i>	103.29	-0.954	high	Plant-skewed	2
<i>Selenidera maculirostris Quiina glaziovii</i>	103.29	-0.704	high	Plant-skewed	1
<i>Attila rufus Costus spiralis</i>	103.20	-0.878	high	Plant-skewed	1
<i>Vireo olivaceus Sloanea hirsuta</i>	102.25	-0.644	high	Plant-skewed	1
<i>Tangara cyanocephala Euterpe edulis</i>	102.07	-0.966	high	Plant-skewed	1
<i>Phyllomyias fasciatus Chamissoa altissima</i>	101.89	-0.872	high	Plant-skewed	1
<i>Turdus amaurochalinus Chamissoa altissima</i>	101.86	-0.872	high	Plant-skewed	1
<i>Conirostrum speciosum Chamissoa altissima</i>	101.67	-0.875	high	Plant-skewed	1
<i>Cyanerpes cyaneus Pera glabrata</i>	101.66	-0.890	high	Plant-skewed	1
<i>Myiodynastes maculatus Chamissoa altissima</i>	101.35	-0.878	high	Plant-skewed	1
<i>Coereba flaveola Pera glabrata</i>	101.30	-0.894	high	Plant-skewed	1
<i>Cacicus haemorrhous Pera glabrata</i>	100.34	-0.905	high	Plant-skewed	1
<i>Megarynchus pitangua Chamissoa altissima</i>	100.27	-0.890	high	Plant-skewed	1
<i>Pipra pipra Pera glabrata</i>	99.47	-0.914	high	Plant-skewed	1
<i>Stephanophorus diadematus Scutia buxifolia</i>	99.35	-0.892	high	Plant-skewed	1
<i>Tityra inquisitor Tetrorchidium rubrivenium</i>	99.22	-0.767	high	Plant-skewed	1
<i>Tityra cayana Tetrorchidium rubrivenium</i>	99.22	-0.767	high	Plant-skewed	1
<i>Tityra cayana Sapium glandulosum</i>	99.22	-0.767	high	Plant-skewed	1
<i>Thlypopsis sordida Chamissoa altissima</i>	98.97	-0.904	high	Plant-skewed	1
<i>Selenidera maculirostris Sloanea guianensis</i>	98.95	-0.687	high	Plant-skewed	1
<i>Trichothraupis melanops Pera glabrata</i>	98.81	-0.922	high	Plant-skewed	1
<i>Dacnis cayana Pera glabrata</i>	98.74	-0.922	high	Plant-skewed	2
<i>Pseudoleistes girahuro Chamissoa altissima</i>	98.59	-0.909	high	Plant-skewed	1

<i>Cacicus chrysopterus Scutia buxifolia</i>	98.38	-0.903	high	Plant-skewed	1
<i>Saltator fuliginosus Chamissoa altissima</i>	97.98	-0.915	high	Plant-skewed	1
<i>Elaenia flavogaster Chamissoa altissima</i>	97.91	-0.916	high	Plant-skewed	1
<i>Myiophobus fasciatus Dendropanax cuneatus</i>	97.83	-0.785	high	Plant-skewed	1
<i>Coryphospingus pileatus Pera glabrata</i>	97.81	-0.932	high	Plant-skewed	1
<i>Turdus flavipes Chamissoa altissima</i>	97.80	-0.917	high	Plant-skewed	1
<i>Poospiza lateralis Scutia buxifolia</i>	97.71	-0.910	high	Plant-skewed	1
<i>Elaenia sp Scutia buxifolia</i>	97.63	-0.911	high	Plant-skewed	1
<i>Trogon surrucura Tetrorchidium rubrivenium</i>	97.59	-0.787	high	Plant-skewed	1
<i>Trogon surrucura Sapium glandulosum</i>	97.59	-0.787	high	Plant-skewed	1
<i>Trichothraupis melanops Chamissoa altissima</i>	97.53	-0.920	high	Plant-skewed	1
<i>Chiroxiphia caudate Pera glabrata</i>	97.47	-0.936	high	Plant-skewed	1
<i>Dacnis cayana Chamissoa altissima</i>	97.46	-0.921	high	Plant-skewed	1
<i>Saltator similis Pera glabrata</i>	97.37	-0.937	high	Plant-skewed	1
<i>Tachyphonus coronatus Pera glabrata</i>	97.17	-0.939	high	Plant-skewed	1
<i>Myiarchus tyrannulus Chamissoa altissima</i>	97.17	-0.924	high	Plant-skewed	1
<i>Hemithraupis flavicollis Pera glabrata</i>	97.06	-0.941	high	Plant-skewed	1
<i>Chiroxiphia caudate Chamissoa altissima</i>	96.19	-0.935	high	Plant-skewed	1
<i>Saltator similis Chamissoa altissima</i>	96.09	-0.936	high	Plant-skewed	1
<i>Baryphthengus ruficapillus Cecropia glaziovii</i>	95.97	0.658	high	Bird-skewed	1
<i>Tachyphonus coronatus Chamissoa altissima</i>	95.89	-0.939	high	Plant-skewed	1
<i>Pachyramphus validus Tetrorchidium rubrivenium</i>	95.88	-0.808	high	Plant-skewed	1
<i>Pteroglossus bailloni Cissus paulliniifolia</i>	95.74	-0.843	high	Plant-skewed	1
<i>Turdus fumigatus Chamissoa altissima</i>	95.58	-0.942	high	Plant-skewed	1
<i>Saltator similis Scutia buxifolia</i>	95.41	-0.936	high	Plant-skewed	1
<i>Tangara cayana Chamissoa altissima</i>	95.36	-0.944	high	Plant-skewed	1
<i>Stephanophorus diadematus Ilex affinis</i>	95.21	-0.887	high	Plant-skewed	1
<i>Vireo olivaceus Casearia sylvestris</i>	95.20	-0.607	high	Plant-skewed	2
<i>Pipile jacutinga Garcinia gardneriana</i>	94.89	-0.560	high	Plant-skewed	1
<i>Thraupis episcopus Samanea tubulosa</i>	94.67	-0.970	high	Plant-skewed	1

<i>Tangara preciosa Scutia buxifolia</i>	94.63	-0.944	high	Plant-skewed	1
<i>Manacus manacus Dendropanax cuneatus</i>	94.56	-0.826	high	Plant-skewed	1
<i>Schistochlamys melanopis Chamissoa altissima</i>	94.53	-0.954	high	Plant-skewed	1
<i>Thraupis sayaca Pera glabrata</i>	94.40	-0.970	high	Plant-skewed	2
<i>Tityra cayana Sloanea guianensis</i>	94.15	-0.751	high	Plant-skewed	1
<i>Tangara desmaresti Pera glabrata</i>	94.09	-0.973	high	Plant-skewed	1
<i>Habia rubica Melastomataceae sp</i>	93.78	-0.772	high	Plant-skewed	1
<i>Schiffornis virescens Casearia decandra</i>	93.28	-0.635	high	Plant-skewed	1
<i>Pipile jacutinga Sorocea bonplandii</i>	93.24	-0.549	high	Plant-skewed	1
<i>Thraupis sayaca Chamissoa altissima</i>	93.12	-0.969	high	Plant-skewed	1
<i>Pitangus sulphuratus Sapium glandulosum</i>	93.05	-0.843	high	Plant-skewed	1
<i>Habia rubica Sloanea guianensis</i>	92.79	-0.769	high	Plant-skewed	1
<i>Mionectes rufiventris Tetrorchidium rubrivenium</i>	92.56	-0.850	high	Plant-skewed	1
<i>Thraupis sayaca Scutia buxifolia</i>	92.44	-0.969	high	Plant-skewed	1
<i>Stephanophorus diadematus Vismia brasiliensis</i>	92.16	-0.882	high	Plant-skewed	1
<i>Penelope obscura Quiina glaziovii</i>	91.93	-0.847	high	Plant-skewed	1
<i>Myiodynastes maculatus Sapium glandulosum</i>	91.46	-0.863	high	Plant-skewed	1
<i>Pachyramphus castaneus Sloanea guianensis</i>	90.75	-0.796	high	Plant-skewed	1
<i>Trogon rufus Rubus rosifolius</i>	90.55	0.120	high	Bird-skewed	1
<i>Zonotrichia capensis Sloanea hirsuta</i>	90.50	-0.799	high	Plant-skewed	1
<i>Turdus subalaris Sloanea hirsuta</i>	90.37	-0.801	high	Plant-skewed	1
<i>Pipile jacutinga Tapirira guianensis</i>	90.31	-0.527	high	Plant-skewed	1
<i>Piaya cayana Myrsine umbellata</i>	89.83	0.752	high	Bird-skewed	1
<i>Dacnis cayana Vismia brasiliensis</i>	89.58	-0.914	high	Plant-skewed	1
<i>Ramphastos vitellinus Quiina glaziovii</i>	89.55	-0.877	high	Plant-skewed	1
<i>Cacicus haemorrhous Tetrorchidium rubrivenium</i>	89.17	-0.892	high	Plant-skewed	1
<i>Cacicus chrysopterus Tetrorchidium rubrivenium</i>	89.17	-0.892	high	Plant-skewed	1

<i>Empidonomus varius Sapium glandulosum</i>	89.00	-0.894	high	Plant-skewed	1
<i>Turdus flavipes Merostachys sp</i>	88.72	-0.908	high	Plant-skewed	1
<i>Euphonia pectoralis Melastomataceae sp</i>	88.43	-0.842	high	Plant-skewed	1
<i>Pteroglossus bailloni Sloanea guianensis</i>	88.34	-0.828	high	Plant-skewed	1
<i>Turdus albicollis Tetrorchidium rubrivenium</i>	88.03	-0.906	high	Plant-skewed	1
<i>Trogon rufus Alchornea triplinervia</i>	88.00	0.173	high	Bird-skewed	1
<i>Turdus flavipes Tetrorchidium rubrivenium</i>	87.91	-0.907	high	Plant-skewed	1
<i>Turdus flavipes Sapium glandulosum</i>	87.91	-0.907	high	Plant-skewed	1
<i>Celeus flavescens Cybianthus peruvianus</i>	87.58	-0.824	high	Plant-skewed	1
<i>Camptostoma obsoletum Casearia sylvestris</i>	87.56	-0.719	high	Plant-skewed	1
<i>Tangara cayana Vismia brasiliensis</i>	87.49	-0.939	high	Plant-skewed	1
<i>Euphonia pectoralis Sloanea guianensis</i>	87.44	-0.840	high	Plant-skewed	1
<i>Turdus amaurochalinus Sloanea hirsuta</i>	86.90	-0.847	high	Plant-skewed	1
<i>Turdus rufiventris Dendropanax cuneatus</i>	86.77	-0.923	high	Plant-skewed	1
<i>Trogon rufus Maytenus gonoclada</i>	86.75	0.199	high	Bird-skewed	1
<i>Turdus rufiventris Sapium glandulosum</i>	86.68	-0.923	high	Plant-skewed	1
<i>Trogon viridis Coussapoa microcarpa</i>	86.65	-0.464	high	Plant-skewed	1
<i>Schistochlamys ruficapillus Vismia brasiliensis</i>	86.65	-0.949	high	Plant-skewed	1
<i>Attila rufus Sloanea guianensis</i>	86.62	-0.851	high	Plant-skewed	1
<i>Chiroxiphia caudate Dendropanax cuneatus</i>	86.39	-0.927	high	Plant-skewed	1
<i>Lipaugus lanioides Melastomataceae sp</i>	86.31	-0.870	high	Plant-skewed	1
<i>Saltator similis Dendropanax cuneatus</i>	86.28	-0.929	high	Plant-skewed	1
<i>Myiarchus swainsoni Sapium glandulosum</i>	86.22	-0.928	high	Plant-skewed	1
<i>Myiarchus swainsoni Tetrorchidium rubrivenium</i>	86.22	-0.928	high	Plant-skewed	1
<i>Hemithraupis ruficapilla Tetrorchidium rubrivenium</i>	86.06	-0.930	high	Plant-skewed	1
<i>Pipile jacutinga Coussapoa microcarpa</i>	85.41	-0.486	high	Plant-skewed	1
<i>Tyrannus melancholicus Sapium glandulosum</i>	85.29	-0.940	high	Plant-skewed	1
<i>Euphonia sp Sloanea guianensis</i>	85.19	-0.870	high	Plant-skewed	1
<i>Orthogonyx chloricterus Melastomataceae sp</i>	85.14	-0.885	high	Plant-skewed	1

<i>Melanerpes flavifrons Michelia champaca</i>	84.71	-0.779	high	Plant-skewed	1
<i>Tachyphonus cristatus Sloanea guianensis</i>	84.52	-0.879	high	Plant-skewed	1
<i>Tolmomyias sulphurescens Casearia sylvestris</i>	84.45	-0.764	high	Plant-skewed	1
<i>Orthogonyx chloricterus Sloanea guianensis</i>	84.15	-0.884	high	Plant-skewed	1
<i>Cacicus chrysopterus Sloanea hirsuta</i>	84.10	-0.884	high	Plant-skewed	2
<i>Pipile jacutinga Phytolacca dioica</i>	84.00	-0.473	high	Plant-skewed	1
<i>Baryphthengus ruficapillus Nectandra membranacea</i>	83.76	0.829	high	Bird-skewed	1
<i>Thraupis ornate Tetrorchidium rubrivenium</i>	83.71	-0.959	high	Plant-skewed	1
<i>Mimus gilvus Aechmea nudicaulis</i>	83.63	-0.685	high	Plant-skewed	1
<i>Euphonia pectoralis Anthurium scandens</i>	83.62	-0.831	high	Plant-skewed	1
<i>Zonotrichia capensis Casearia sylvestris</i>	83.45	-0.779	high	Plant-skewed	1
<i>Manacus manacus Magnolia ovata</i>	83.41	-0.798	high	Plant-skewed	1
<i>Cissopis leverianus Melastomataceae sp</i>	83.28	-0.909	high	Plant-skewed	1
<i>Euphonia violacea Anthurium scandens</i>	83.16	-0.838	high	Plant-skewed	1
<i>Saltator fuliginosus Sloanea guianensis</i>	83.02	-0.899	high	Plant-skewed	1
<i>Turdus albicollis Sloanea hirsuta</i>	82.96	-0.899	high	Plant-skewed	1
<i>Turdus flavipes Sloanea guianensis</i>	82.84	-0.901	high	Plant-skewed	1
<i>Dacnis cayana Sloanea guianensis</i>	82.50	-0.906	high	Plant-skewed	1
<i>Dacnis cayana Sloanea hirsuta</i>	82.50	-0.906	high	Plant-skewed	1
<i>Procnias nudicollis Sorocea bonplandii</i>	82.40	-0.718	high	Plant-skewed	1
<i>Cissopis leverianus Sloanea hirsuta</i>	82.30	-0.908	high	Plant-skewed	1
<i>Chiroxiphia caudate Melastomataceae sp</i>	82.22	-0.923	high	Plant-skewed	1
<i>Pitangus sulphuratus Magnolia ovata</i>	81.98	-0.818	high	Plant-skewed	1
<i>Turdus rufiventris Sloanea hirsuta</i>	81.61	-0.917	high	Plant-skewed	1
<i>Pyroderus scutatus Tapirira guianensis</i>	81.59	-0.670	high	Plant-skewed	1
<i>Cyclarhis gujanensis Rubus urticifolius</i>	81.56	-0.075	high	Plant-skewed	1
<i>Celeus flavescens Casearia sylvestris</i>	81.46	-0.808	high	Plant-skewed	1
<i>Nemosia pileata Casearia sylvestris</i>	81.41	-0.809	high	Plant-skewed	1
<i>Myiarchus swainsoni Sloanea hirsuta</i>	81.15	-0.923	high	Plant-skewed	1
<i>Saltator similis Sloanea hirsuta</i>	81.13	-0.924	high	Plant-skewed	1

<i>Tangara seledon Melastomataceae sp</i>	80.96	-0.940	high	Plant-skewed	1
<i>Pitangus sulphuratus Casearia sylvestris</i>	80.94	-0.816	high	Plant-skewed	2
<i>Tachyphonus coronatus Sloanea guianensis</i>	80.93	-0.926	high	Plant-skewed	1
<i>Turdus amaurochalinus Magnolia ovata</i>	80.91	-0.834	high	Plant-skewed	1
<i>Cyclarhis gujanensis Zanthoxylum fagara</i>	80.78	-0.058	high	Plant-skewed	1
<i>Thraupis cyanoptera Melastomataceae sp</i>	80.63	-0.944	high	Plant-skewed	1
<i>Turdus leucomelas Sloanea guianensis</i>	80.60	-0.931	high	Plant-skewed	1
<i>Penelope obscura Casearia sylvestris</i>	80.55	-0.821	high	Plant-skewed	1
<i>Mionectes rufiventris Casearia sylvestris</i>	80.44	-0.823	high	Plant-skewed	1
<i>Tangara cayana Sloanea guianensis</i>	80.40	-0.933	high	Plant-skewed	1
<i>Cyclarhis gujanensis Trema micrantha</i>	80.38	-0.049	high	Plant-skewed	1
<i>Tangara preciosa Sloanea hirsuta</i>	80.36	-0.934	high	Plant-skewed	1
<i>Tangara sp Sloanea guianensis</i>	80.07	-0.938	high	Plant-skewed	1
<i>Selenidera maculirostris Coussapoa microcarpa</i>	80.00	-0.582	high	Plant-skewed	1
<i>Tangara seledon Sloanea guianensis</i>	79.97	-0.939	high	Plant-skewed	1
<i>Turdus amaurochalinus Casearia sylvestris</i>	79.86	-0.831	high	Plant-skewed	1
<i>Tangara cyanocephala Melastomataceae sp</i>	79.73	-0.956	high	Plant-skewed	1
<i>Volatinia jacarina Casearia sylvestris</i>	79.68	-0.834	high	Plant-skewed	1
<i>Thraupis cyanoptera Sloanea guianensis</i>	79.64	-0.943	high	Plant-skewed	1
<i>Myiodynastes maculatus Casearia sylvestris</i>	79.34	-0.839	high	Plant-skewed	3
<i>Cyclarhis gujanensis Guapira opposita</i>	79.28	-0.023	high	Plant-skewed	1
<i>Cyclarhis gujanensis Alchornea triplinervia</i>	79.01	-0.016	high	Plant-skewed	1
<i>Tangara desmaresti Melastomataceae sp</i>	78.84	-0.968	high	Plant-skewed	1
<i>Trogon rufus Cabralea canjerana</i>	78.75	0.365	high	Bird-skewed	1
<i>Tangara cyanocephala Sloanea guianensis</i>	78.75	-0.955	high	Plant-skewed	1
<i>Thraupis ornate Sloanea hirsuta</i>	78.64	-0.957	high	Plant-skewed	1
<i>Crotophaga ani Rubus urticifolius</i>	78.59	-0.146	high	Plant-skewed	1
<i>Xolmis cinereus Casearia sylvestris</i>	78.51	-0.851	high	Plant-skewed	1
<i>Xolmis velatus Casearia sylvestris</i>	78.51	-0.851	high	Plant-skewed	1
<i>Mimus gilvus Schwartzia brasiliensis</i>	78.35	-0.656	high	Plant-skewed	1
<i>Coereba flaveola Casearia sylvestris</i>	78.01	-0.858	high	Plant-skewed	1



<i>Tersina viridis</i> <i>Casearia sylvestris</i>	77.36	-0.868	high	Plant-skewed	1
<i>Myiozetetes similis</i> <i>Casearia sylvestris</i>	77.18	-0.871	high	Plant-skewed	2
<i>Thlypopsis sordida</i> <i>Casearia sylvestris</i>	76.97	-0.874	high	Plant-skewed	1
<i>Elaenia flavogaster</i> <i>Magnolia ovata</i>	76.96	-0.891	high	Plant-skewed	1
<i>Empidonomus varius</i> <i>Casearia sylvestris</i>	76.89	-0.875	high	Plant-skewed	1
<i>Pitangus sulphuratus</i> <i>Sorocea bonplandii</i>	76.86	-0.804	high	Plant-skewed	1
<i>Colaptes campestris</i> <i>Casearia sylvestris</i>	76.65	-0.878	high	Plant-skewed	1
<i>Pseudoleistes guirahuro</i> <i>Casearia sylvestris</i>	76.59	-0.879	high	Plant-skewed	1
<i>Dacnis cayana</i> <i>Magnolia ovata</i>	76.50	-0.897	high	Plant-skewed	1
<i>Oxyruncus cristatus</i> <i>Trema micrantha</i>	76.36	-0.147	high	Plant-skewed	1
<i>Elaenia sp</i> <i>Casearia sylvestris</i>	76.31	-0.883	high	Plant-skewed	3
<i>Turdus albicollis</i> <i>Casearia sylvestris</i>	75.92	-0.889	high	Plant-skewed	2
<i>Elaenia flavogaster</i> <i>Casearia sylvestris</i>	75.91	-0.889	high	Plant-skewed	2
<i>Euphonia violacea</i> <i>Tournefortia sp</i>	75.89	-0.820	high	Plant-skewed	1
<i>Euphonia violacea</i> <i>Sorocea bonplandii</i>	75.86	-0.819	high	Plant-skewed	1
<i>Turdus flavipes</i> <i>Casearia sylvestris</i>	75.79	-0.891	high	Plant-skewed	1
<i>Turdus amaurochalinus</i> <i>Sorocea bonplandii</i>	75.78	-0.821	high	Plant-skewed	1
<i>Selenidera maculirostris</i> <i>Heteropsis oblongifolia</i>	75.61	-0.547	high	Plant-skewed	1
<i>Trichothraupis melanops</i> <i>Casearia sylvestris</i>	75.52	-0.895	high	Plant-skewed	2
<i>Trichothraupis melanops</i> <i>Casearia decandra</i>	75.52	-0.895	high	Plant-skewed	1
<i>Dacnis cayana</i> <i>Casearia sylvestris</i>	75.45	-0.896	high	Plant-skewed	4
<i>Tityra cayana</i> <i>Coussapoa microcarpa</i>	75.19	-0.667	high	Plant-skewed	1
<i>Oxyruncus cristatus</i> <i>Alchornea triplinervia</i>	74.99	-0.117	high	Plant-skewed	1
<i>Turdus rufiventris</i> <i>Casearia sylvestris</i>	74.57	-0.909	high	Plant-skewed	2
<i>Pipile jacutinga</i> <i>Cryptocarya mandioccana</i>	74.54	-0.364	high	Plant-skewed	1
<i>Coryphospingus cucullatus</i> <i>Casearia sylvestris</i>	74.52	-0.909	high	Plant-skewed	1
<i>Trogon viridis</i> <i>Rubus sp</i>	74.36	-0.315	high	Plant-skewed	1
<i>Tyrannus melancholicus</i> <i>Magnolia ovata</i>	74.23	-0.930	high	Plant-skewed	1
<i>Megarynchus pitangua</i> <i>Sorocea bonplandii</i>	74.19	-0.845	high	Plant-skewed	1
<i>Ramphocelus carbo</i> <i>Magnolia ovata</i>	74.14	-0.931	high	Plant-skewed	1

<i>Saltator similis Casearia sylvestris</i>	74.08	-0.916	high	Plant-skewed	2
<i>Hemithraupis ruficapilla Casearia sylvestris</i>	73.95	-0.918	high	Plant-skewed	1
<i>Tachyphonus coronatus Casearia sylvestris</i>	73.89	-0.919	high	Plant-skewed	4
<i>Euphonia chlorotica Aechmea nudicaulis</i>	73.70	-0.841	high	Plant-skewed	1
<i>Oxyruncus cristatus Tabernaemontana catharinensis</i>	73.67	-0.087	high	Plant-skewed	1
<i>Myiarchus ferox Casearia sylvestris</i>	73.57	-0.923	high	Plant-skewed	1
<i>Turdus leucomelas Casearia sylvestris</i>	73.56	-0.924	high	Plant-skewed	2
<i>Tangara cayana Casearia sylvestris</i>	73.36	-0.926	high	Plant-skewed	2
<i>Tangara preciosa Casearia decandra</i>	73.31	-0.927	high	Plant-skewed	1
<i>Myiarchus sp Casearia sylvestris</i>	73.30	-0.927	high	Plant-skewed	1
<i>Tyrannus savana Casearia sylvestris</i>	73.18	-0.929	high	Plant-skewed	1
<i>Tyrannus melancholicus Casearia sylvestris</i>	73.18	-0.929	high	Plant-skewed	1
<i>Ramphocelus carbo Casearia sylvestris</i>	73.09	-0.930	high	Plant-skewed	1
<i>Cacicus haemorrhous Sorocea bonplandii</i>	72.98	-0.864	high	Plant-skewed	1
<i>Pipile jacutinga Curatella americana</i>	72.83	-0.339	high	Plant-skewed	1
<i>Trogon viridis Rubus urticifolius</i>	72.61	-0.287	high	Plant-skewed	1
<i>Trogon viridis Rubus rosifolius</i>	72.61	-0.287	high	Plant-skewed	1
<i>Thraupis cyanoptera Casearia decandra</i>	72.60	-0.938	high	Plant-skewed	1
<i>Pipile jacutinga Cordia silvestris</i>	72.41	-0.333	high	Plant-skewed	2
<i>Stephanophorus diadematus Aureliana fasciculata</i>	72.11	-0.845	high	Plant-skewed	1
<i>Cyclarhis gujanensis Erythroxylum deciduum</i>	72.03	0.162	high	Bird-skewed	1
<i>Turdus flavipes Sorocea bonplandii</i>	71.71	-0.884	high	Plant-skewed	1
<i>Pipile jacutinga Pourouma guianensis</i>	71.71	-0.322	high	Plant-skewed	1
<i>Trogon viridis Neomitranthes glomerata</i>	71.54	-0.268	high	Plant-skewed	1
<i>Pipile jacutinga Annona neosericea</i>	71.47	-0.318	high	Plant-skewed	1
<i>Selenidera maculirostris Cryptocarya moschata</i>	71.39	-0.507	high	Plant-skewed	1
<i>Lipaugus lanioides Tapirira guianensis</i>	71.27	-0.838	high	Plant-skewed	1
<i>Ramphastos dicolorus Tapirira guianensis</i>	71.17	-0.839	high	Plant-skewed	1
<i>Thraupis sayaca Casearia sylvestris</i>	71.11	-0.959	high	Plant-skewed	3

<i>Thraupis episcopus Casearia sylvestris</i>	71.10	-0.959	high	Plant-skewed	1
<i>Tangara mexicana Sorocea bonplandii</i>	70.82	-0.898	high	Plant-skewed	1
<i>Trogon rufus Cupania vernalis</i>	70.82	0.530	high	Bird-skewed	1
<i>Tangara cyanoventris Casearia sylvestris</i>	70.80	-0.964	high	Plant-skewed	1
<i>Selenidera maculirostris Cryptocarya aschersoniana</i>	70.25	-0.495	high	Plant-skewed	1
<i>Vireo olivaceus Schefflera angustissima</i>	70.14	-0.379	high	Plant-skewed	1
<i>Pteroglossus bailloni Prunus myrtifolia</i>	70.09	-0.773	high	Plant-skewed	1
<i>Trogon viridis Alchornea triplinervia</i>	70.06	-0.241	high	Plant-skewed	1
<i>Hemithraupis ruficapilla Tournefortia sp</i>	69.90	-0.913	high	Plant-skewed	1
<i>Myiodynastes maculatus Maclura tinctoria</i>	69.87	-0.813	high	Plant-skewed	1
<i>Vireo olivaceus Varronia curassavica</i>	69.79	-0.374	high	Plant-skewed	1
<i>Cyclarhis gujanensis Cabralea canjerana</i>	69.77	0.219	high	Bird-skewed	1
<i>Turdus fumigatus Sorocea bonplandii</i>	69.49	-0.918	high	Plant-skewed	1
<i>Pteroglossus bailloni Coussapoa microcarpa</i>	69.38	-0.770	high	Plant-skewed	1
<i>Trogon viridis Alchornea glandulosa</i>	69.31	-0.226	high	Plant-skewed	1
<i>Habia rubica Monstera adansonii</i>	69.09	-0.663	high	Plant-skewed	1
<i>Cyclarhis gujanensis Symplocos uniflora</i>	69.06	0.237	high	Bird-skewed	1
<i>Elaenia sp Cissus striata</i>	68.76	-0.869	high	Plant-skewed	1
<i>Turdus rufiventris Aureliana fasciculata</i>	68.65	-0.900	high	Plant-skewed	1
<i>Penelope obscura Coussapoa microcarpa</i>	68.64	-0.784	high	Plant-skewed	1
<i>Euphonia pectoralis Coussapoa microcarpa</i>	68.49	-0.786	high	Plant-skewed	1
<i>Vireo olivaceus Zanthoxylum fagara</i>	68.46	-0.354	high	Plant-skewed	1
<i>Manacus manacus Henriettea saldanhae</i>	68.25	-0.741	high	Plant-skewed	1
<i>Trogon viridis Myrtaceae sp</i>	68.23	-0.204	high	Plant-skewed	1
<i>Vireo olivaceus Trema micrantha</i>	68.07	-0.348	high	Plant-skewed	3
<i>Euphonia violacea Coussapoa microcarpa</i>	68.03	-0.794	high	Plant-skewed	1
<i>Vireo olivaceus Aegiphila integrifolia</i>	67.91	-0.345	high	Plant-skewed	2
<i>Tangara cyanocephala Tournefortia sp</i>	67.66	-0.948	high	Plant-skewed	1
<i>Pipile jacutinga Citharexylum myrianthum</i>	67.55	-0.248	high	Plant-skewed	1
<i>Myiodynastes maculatus Coussapoa</i>	67.43	-0.805	high	Plant-skewed	1

*microcarpa*

<i>Schiffornis virescens Rubus rosifolius</i>	67.33	-0.411	high	Plant-skewed	1
<i>Euphonia pectoralis Phytolacca dioica</i>	67.08	-0.781	high	Plant-skewed	1
<i>Thraupis sayaca Sorocea bonplandii</i>	67.04	-0.957	high	Plant-skewed	1
<i>Selenidera maculirostris Cordia silvestris</i>	67.00	-0.457	high	Plant-skewed	1
<i>Ramphastos dicolorus Prunus myrtifolia</i>	66.98	-0.828	high	Plant-skewed	1
<i>Selenidera maculirostris Schefflera angustissima</i>	66.84	-0.455	high	Plant-skewed	1
<i>Vireo olivaceus Alchornea triplinervia</i>	66.70	-0.325	high	Plant-skewed	1
<i>Trogon viridis Virola bicuhyba</i>	66.49	-0.166	high	Plant-skewed	2
<i>Pipile jacutinga Byrsonima ligustrifolia</i>	66.37	-0.225	high	Plant-skewed	1
<i>Lipaugus lanioides Coussapoa microcarpa</i>	66.37	-0.824	high	Plant-skewed	1
<i>Ramphastos dicolorus Coussapoa microcarpa</i>	66.27	-0.825	high	Plant-skewed	1
<i>Pipile jacutinga Virola gardneri</i>	66.24	-0.222	high	Plant-skewed	1
<i>Selenidera maculirostris Annona neosericea</i>	66.06	-0.445	high	Plant-skewed	1
<i>Vireo olivaceus Alchornea glandulosa</i>	65.94	-0.312	high	Plant-skewed	1
<i>Euphonia violacea Henriettea saldanhae</i>	65.82	-0.786	high	Plant-skewed	1
<i>Pyroderus scutatus Cryptocarya mandioccana</i>	65.81	-0.555	high	Plant-skewed	1
<i>Oxyruncus cristatus Cabralea canjerana</i>	65.74	0.130	high	Bird-skewed	1
<i>Orchesticus abeillei Coussapoa microcarpa</i>	65.65	-0.837	high	Plant-skewed	1
<i>Selenidera maculirostris Ouratea vaccinioides</i>	65.47	-0.437	high	Plant-skewed	1
<i>Euphonia violacea Piper corintoanum</i>	65.46	-0.785	high	Plant-skewed	1
<i>Vireo olivaceus Citharexylum myrianthum</i>	65.44	-0.303	high	Plant-skewed	1
<i>Cyclarhis gujanensis Protium heptaphyllum</i>	65.42	0.330	high	Bird-skewed	1
<i>Pipile jacutinga Virola bicuhyba</i>	65.24	-0.201	high	Plant-skewed	2
<i>Orthogonys chloricterus Coussapoa microcarpa</i>	65.19	-0.845	high	Plant-skewed	1
<i>Cacicus haemorrhous Coussapoa microcarpa</i>	65.15	-0.845	high	Plant-skewed	1
<i>Ramphastos dicolorus Phytolacca dioica</i>	64.86	-0.821	high	Plant-skewed	1
<i>Ramphastos vitellinus Phytolacca dioica</i>	64.85	-0.821	high	Plant-skewed	1
<i>Selenidera maculirostris Trema micrantha</i>	64.77	-0.428	high	Plant-skewed	1
<i>Vireo olivaceus Alchornea sidifolia</i>	64.46	-0.285	high	Plant-skewed	1

<i>Picumnus cirratus Aegiphila integrifolia</i>	64.37	-0.432	high	Plant-skewed	1
<i>Turdus albicollis Coussapoa microcarpa</i>	64.01	-0.866	high	Plant-skewed	1
<i>Turdus flavipes Coussapoa microcarpa</i>	63.88	-0.868	high	Plant-skewed	1
<i>Selenidera maculirostris Guapira opposita</i>	63.67	-0.412	high	Plant-skewed	1
<i>Saltator maximus Henriettea saldanhae</i>	63.64	-0.826	high	Plant-skewed	1
<i>Trichothraupis melanops Coussapoa microcarpa</i>	63.61	-0.873	high	Plant-skewed	1
<i>Empidonomus varius Phytolacca dioica</i>	63.57	-0.845	high	Plant-skewed	1
<i>Dacnis cayana Coussapoa microcarpa</i>	63.54	-0.874	high	Plant-skewed	1
<i>Turdus rufiventris Prunus myrtifolia</i>	63.36	-0.891	high	Plant-skewed	1
<i>Turdus rufiventris Prunus sellowii</i>	63.36	-0.891	high	Plant-skewed	1
<i>Mimus gilvus Varronia curassavica</i>	62.97	-0.533	high	Plant-skewed	1
<i>Saltator similis Prunus myrtifolia</i>	62.88	-0.899	high	Plant-skewed	1
<i>Turdus rufiventris Coussapoa microcarpa</i>	62.66	-0.890	high	Plant-skewed	1
<i>Selenidera maculirostris Alchornea glandulosa</i>	62.65	-0.397	high	Plant-skewed	1
<i>Selenidera maculirostris Maytenus brasiliensis</i>	62.64	-0.397	high	Plant-skewed	1
<i>Habia rubica Urera baccifera</i>	62.49	-0.614	high	Plant-skewed	1
<i>Pipile jacutinga Cupania oblongifolia</i>	62.43	-0.133	high	Plant-skewed	1
<i>Euphonia pectoralis Codonanthe cordifolia</i>	62.39	-0.760	high	Plant-skewed	1
<i>Chiroxiphia caudate Coussapoa microcarpa</i>	62.28	-0.896	high	Plant-skewed	1
<i>Selenidera maculirostris Maytenus gonoclada</i>	62.15	-0.389	high	Plant-skewed	1
<i>Camptostoma obsoletum Varronia curassavica</i>	62.15	-0.552	high	Plant-skewed	1
<i>Selenidera maculirostris Citharexylum myrianthum</i>	62.14	-0.389	high	Plant-skewed	1
<i>Turdus subalaris Styryx leprosus</i>	62.08	-0.682	high	Plant-skewed	1
<i>Hemithraupis ruficapilla Coussapoa microcarpa</i>	62.04	-0.901	high	Plant-skewed	1
<i>Tachyphonus coronatus Coussapoa microcarpa</i>	61.98	-0.902	high	Plant-skewed	1
<i>Pipile jacutinga Byrsonima cydoniifolia</i>	61.71	-0.114	high	Plant-skewed	1
<i>Thraupis sayaca Maclura tinctoria</i>	61.64	-0.953	high	Plant-skewed	2
<i>Trogon surrucura Rubus sp</i>	61.27	-0.612	high	Plant-skewed	1
<i>Turdus rufiventris Phytolacca dioica</i>	61.25	-0.887	high	Plant-skewed	1

<i>Tangara seledon Coussapoa microcarpa</i>	61.01	-0.919	high	Plant-skewed	1
<i>Selenidera maculirostris Virola gardneri</i>	60.83	-0.367	high	Plant-skewed	1
<i>Crotophaga ani Schinus terebinthifolia</i>	60.72	0.323	high	Bird-skewed	1
<i>Carpornis cucullata Schefflera angustissima</i>	60.65	-0.598	high	Plant-skewed	1
<i>Cyclarhis gujanensis Persea willdenovii</i>	60.62	0.453	high	Bird-skewed	1
<i>Camptostoma obsoletum Trema micrantha</i>	60.43	-0.533	high	Plant-skewed	1
<i>Trogon rufus Alibertia sp</i>	60.39	0.746	high	Bird-skewed	1
<i>Myiophobus fasciatus Varronia curassavica</i>	60.22	-0.597	high	Plant-skewed	1
<i>Penelope obscura Cryptocarya moschata</i>	60.03	-0.745	high	Plant-skewed	1
<i>Tityra cayana Trema micrantha</i>	59.97	-0.545	high	Plant-skewed	1
<i>Trogon viridis Symplocos sp</i>	59.88	0.019	high	Bird-skewed	1
<i>Selenidera maculirostris Virola bicuhyba</i>	59.83	-0.350	high	Plant-skewed	3
<i>Tangara cyanocephala Coussapoa microcarpa</i>	59.79	-0.940	high	Plant-skewed	1
<i>Habia rubica Rubus rosifolius</i>	59.79	-0.589	high	Plant-skewed	1
<i>Dacnis cayana Davilla rugosa</i>	59.76	-0.865	high	Plant-skewed	1
<i>Carpornis cucullata Rubus urticifolius</i>	59.76	-0.590	high	Plant-skewed	1
<i>Vireo olivaceus Erythroxylum deciduum</i>	59.72	-0.182	high	Plant-skewed	1
<i>Chiroxiphia caudate Piper corintoanum</i>	59.71	-0.891	high	Plant-skewed	1
<i>Selenidera maculirostris Coussarea contracta</i>	59.70	-0.348	high	Plant-skewed	1
<i>Thraupis ornate Coussapoa microcarpa</i>	59.68	-0.942	high	Plant-skewed	1
<i>Trogon sarrucura Rubus rosifolius</i>	59.52	-0.596	high	Plant-skewed	1
<i>Selenidera maculirostris Maytenus aquifolia</i>	59.48	-0.344	high	Plant-skewed	1
<i>Tachyphonus coronatus Piper corintoanum</i>	59.41	-0.897	high	Plant-skewed	1
<i>Thraupis cyanoptera Phytolacca dioica</i>	59.28	-0.923	high	Plant-skewed	1
<i>Manacus manacus Urera baccifera</i>	59.12	-0.689	high	Plant-skewed	1
<i>Tolmomyias flaviventris Varronia curassavica</i>	59.04	-0.624	high	Plant-skewed	1
<i>Mionectes rufiventris Loranthaceae sp</i>	59.00	-0.742	high	Plant-skewed	1
<i>Conopias trivirgatus Alchornea glandulosa</i>	58.99	-0.490	high	Plant-skewed	1
<i>Tangara desmaresti Coussapoa microcarpa</i>	58.90	-0.956	high	Plant-skewed	1
<i>Pyroderus scutatus Maytenus gonoclada</i>	58.84	-0.475	high	Plant-skewed	1
<i>Pyroderus scutatus Citharexylum myrianthum</i>	58.83	-0.475	high	Plant-skewed	1

<i>Trichothraupis melanops Heteropsis rigidifolia</i>	58.76	-0.861	high	Plant-skewed	1
<i>Carpornis cucullata Neomitranthes glomerata</i>	58.69	-0.579	high	Plant-skewed	1
<i>Pipile jacutinga Symplocos sp</i>	58.63	-0.022	high	Plant-skewed	1
<i>Habia rubica Trema micrantha</i>	58.61	-0.577	high	Plant-skewed	1
<i>Tityra cayana Alchornea triplinervia</i>	58.60	-0.529	high	Plant-skewed	1
<i>Elaenia mesoleuca Davilla rugosa</i>	58.59	-0.887	high	Plant-skewed	1
<i>Carpornis cucullata Trema micrantha</i>	58.58	-0.578	high	Plant-skewed	1
<i>Selenidera maculirostris Margaritopsis astrellantha</i>	58.34	-0.322	high	Plant-skewed	1
<i>Serpophaga subcristata Trema micrantha</i>	58.29	-0.585	high	Plant-skewed	1
<i>Pachyramphus polychopterus Varronia curassavica</i>	58.28	-0.642	high	Plant-skewed	1
<i>Procnias nudicollis Guapira opposita</i>	58.25	-0.547	high	Plant-skewed	1
<i>Cyclarhis gujanensis Ilex brevicuspis</i>	58.15	0.516	high	Bird-skewed	1
<i>Stephanophorus diadematus Peplonia organensis</i>	57.89	-0.799	high	Plant-skewed	1
<i>Tityra cayana Alchornea glandulosa</i>	57.84	-0.520	high	Plant-skewed	1
<i>Ramphastos dicolorus Cryptocarya moschata</i>	57.67	-0.794	high	Plant-skewed	1
<i>Ramphastos vitellinus Cryptocarya moschata</i>	57.65	-0.794	high	Plant-skewed	1
<i>Selenidera maculirostris Marcgravia polyantha</i>	57.60	-0.307	high	Plant-skewed	1
<i>Pyroderus scutatus Virola gardneri</i>	57.52	-0.456	high	Plant-skewed	1
<i>Carpornis cucullata Guapira opposita</i>	57.48	-0.567	high	Plant-skewed	1
<i>Vireo olivaceus Cabralea canjerana</i>	57.45	-0.121	high	Plant-skewed	2
<i>Tolmomyias sulphurescens Trema micrantha</i>	57.32	-0.609	high	Plant-skewed	1
<i>Carpornis cucullata Alchornea triplinervia</i>	57.21	-0.564	high	Plant-skewed	1
<i>Euphonia pectoralis Urera baccifera</i>	57.15	-0.732	high	Plant-skewed	1
<i>Trogon sarrucura Alchornea triplinervia</i>	56.97	-0.570	high	Plant-skewed	2
<i>Geothlypis aequinoctialis Trema micrantha</i>	56.74	-0.623	high	Plant-skewed	1
<i>Pachyramphus validus Trema micrantha</i>	56.63	-0.625	high	Plant-skewed	1
<i>Pachyramphus castaneus Trema micrantha</i>	56.57	-0.627	high	Plant-skewed	1
<i>Pyroderus scutatus Virola bicuhyba</i>	56.52	-0.441	high	Plant-skewed	1

<i>Trogon viridis</i> <i>Protium heptaphyllum</i>	56.47	0.132	high	Bird-skewed	1
<i>Hylophilus amaurocephalus</i> <i>Aegiphila integrifolia</i>	56.44	-0.625	high	Plant-skewed	1
<i>Oxyruncus cristatus</i> <i>Myrsine coriacea</i>	56.38	0.397	high	Bird-skewed	1
<i>Zonotrichia capensis</i> <i>Trema micrantha</i>	56.32	-0.633	high	Plant-skewed	1
<i>Phyllomyias griseocapilla</i> <i>Alchornea triplinervia</i>	56.22	-0.589	high	Plant-skewed	1
<i>Trogon surrucura</i> <i>Alchornea glandulosa</i>	56.21	-0.561	high	Plant-skewed	1
<i>Phylloscartes ventralis</i> <i>Alchornea triplinervia</i>	56.14	-0.590	high	Plant-skewed	1
<i>Pipraeidea melanonota</i> <i>Urera baccifera</i>	56.10	-0.756	high	Plant-skewed	1
<i>Nemosia pileata</i> <i>Varronia curassavica</i>	55.99	-0.695	high	Plant-skewed	1
<i>Carpornis cucullata</i> <i>Maytenus gonoclada</i>	55.96	-0.550	high	Plant-skewed	2
<i>Tolmomyias sulphurescens</i> <i>Alchornea triplinervia</i>	55.95	-0.595	high	Plant-skewed	1
<i>Carpornis melanocephala</i> <i>Citharexylum myrianthum</i>	55.95	-0.549	high	Plant-skewed	1
<i>Manacus manacus</i> <i>Ouratea polygyna</i>	55.92	-0.665	high	Plant-skewed	1
<i>Carpornis cucullata</i> <i>Tabernaemontana catharinensis</i>	55.89	-0.549	high	Plant-skewed	1
<i>Chlorophonia cyanea</i> <i>Myrrhinium atropurpureum</i>	55.86	-0.634	high	Plant-skewed	1
<i>Cacicus chrysopterus</i> <i>Styrax leprosus</i>	55.82	-0.815	high	Plant-skewed	1
<i>Carpornis melanocephala</i> <i>Maytenus sp</i>	55.81	-0.548	high	Plant-skewed	1
<i>Carpornis cucullata</i> <i>Maytenus sp</i>	55.81	-0.548	high	Plant-skewed	1
<i>Satrapa icterophrys</i> <i>Varronia curassavica</i>	55.65	-0.703	high	Plant-skewed	1
<i>Schiffornis virescens</i> <i>Cabralea canjerana</i>	55.53	-0.184	high	Plant-skewed	1
<i>Tachyphonus coronatus</i> <i>Piper sp</i>	55.45	-0.889	high	Plant-skewed	2
<i>Elaenia obscura</i> <i>Rubus urticifolius</i>	55.38	-0.693	high	Plant-skewed	1
<i>Pachyramphus viridis</i> <i>Alchornea triplinervia</i>	55.26	-0.613	high	Plant-skewed	1
<i>Manacus manacus</i> <i>Trema micrantha</i>	55.23	-0.659	high	Plant-skewed	2
<i>Pachyramphus polychopterus</i> <i>Alchornea triplinervia</i>	55.20	-0.614	high	Plant-skewed	1



<i>Pachyramphus castaneus Alchornea triplinervia</i>	55.20	-0.614	high	Plant-skewed	1
<i>Hylophilus poicilotis Alchornea triplinervia</i>	55.19	-0.614	high	Plant-skewed	2
<i>Icterus cayanensis Trema micrantha</i>	55.15	-0.661	high	Plant-skewed	1
<i>Trogon sarrucura Myrtaceae sp</i>	55.14	-0.549	high	Plant-skewed	1
<i>Trogon viridis Cecropia pachystachya</i>	55.10	0.177	high	Bird-skewed	1
<i>Manacus manacus Aegiphila integrifolia</i>	55.07	-0.658	high	Plant-skewed	1
<i>Tityra cayana Virola bicuhyba</i>	55.02	-0.482	high	Plant-skewed	1
<i>Coereba flaveola Urera baccifera</i>	54.77	-0.785	high	Plant-skewed	1
<i>Turdus albicollis Styrox leprosus</i>	54.68	-0.839	high	Plant-skewed	1
<i>Trogon viridis Cecropia glaziovii</i>	54.67	0.192	high	Bird-skewed	1
<i>Legatus leucophaeus Citharexylum myrianthum</i>	54.62	-0.584	high	Plant-skewed	1
<i>Penelope obscura Rubus urticifolius</i>	54.59	-0.712	high	Plant-skewed	1
<i>Cyclarhis gujanensis Trichilia clauseni</i>	54.58	0.607	high	Bird-skewed	1
<i>Euphonia violacea Varronia curassavica</i>	54.52	-0.730	high	Plant-skewed	1
<i>Pachyramphus validus Alchornea glandulosa</i>	54.51	-0.605	high	Plant-skewed	1
<i>Procnias nudicollis Virola bicuhyba</i>	54.40	-0.500	high	Plant-skewed	2
<i>Pipile jacutinga Protium widgrenii</i>	54.29	0.127	high	Bird-skewed	1
<i>Nemosia pileata Trema micrantha</i>	54.27	-0.683	high	Plant-skewed	1
<i>Volatinia jacarina Varronia curassavica</i>	54.27	-0.736	high	Plant-skewed	1
<i>Trogon rufus Rhipsalis camposportoana</i>	54.19	0.875	high	Bird-skewed	1
<i>Pteroglossus bailloni Trema micrantha</i>	54.16	-0.685	high	Plant-skewed	1
<i>Selenidera maculirostris Cabralea canjerana</i>	54.16	-0.229	high	Plant-skewed	1
<i>Ilicura militaris Alchornea triplinervia</i>	54.11	-0.642	high	Plant-skewed	1
<i>Procnias nudicollis Ilex theezans</i>	54.09	-0.495	high	Plant-skewed	1
<i>Thamnophilus caeruleus Schinus terebinthifolia</i>	54.07	0.171	high	Bird-skewed	1
<i>Mionectes rufiventris Ouratea vaccinioides</i>	54.00	-0.711	high	Plant-skewed	1
<i>Pipraeidea melanonota Varronia curassavica</i>	53.93	-0.743	high	Plant-skewed	1
<i>Pipile jacutinga Cecropia pachystachya</i>	53.85	0.142	high	Bird-skewed	1
<i>Myiodynastes maculatus Myriopus paniculatus</i>	53.83	-0.743	high	Plant-skewed	1
<i>Stephanophorus diadematus Rubus sp</i>	53.83	-0.780	high	Plant-skewed	1

<i>Cacicus haemorrhous Urera baccifera</i>	53.81	-0.806	high	Plant-skewed	1
<i>Pitangus sulphuratus Trema micrantha</i>	53.80	-0.694	high	Plant-skewed	1
<i>Pitangus sulphuratus Aegiphila integrifolia</i>	53.65	-0.693	high	Plant-skewed	1
<i>Penelope obscura Neomitranthes glomerata</i>	53.52	-0.704	high	Plant-skewed	1
<i>Pteroglossus bailloni Maytenus littoralis</i>	53.52	-0.681	high	Plant-skewed	1
<i>Mimus saturninus Cupania oblongifolia</i>	53.49	-0.401	high	Plant-skewed	1
<i>Selenidera maculirostris Symplocos uniflora</i>	53.45	-0.211	high	Plant-skewed	1
<i>Pipile jacutinga Cecropia glaziovii</i>	53.42	0.157	high	Bird-skewed	2
<i>Penelope obscura Celtis iguanaea</i>	53.41	-0.704	high	Plant-skewed	1
<i>Trogon surrucura Virola bicuhyba</i>	53.39	-0.527	high	Plant-skewed	1
<i>Mionectes rufiventris Trema micrantha</i>	53.31	-0.706	high	Plant-skewed	1
<i>Mionectes oleaginous Trema micrantha</i>	53.31	-0.706	high	Plant-skewed	1
<i>Euphonia pectoralis Trema micrantha</i>	53.26	-0.707	high	Plant-skewed	1
<i>Penelope obscura Piper aduncum</i>	53.24	-0.702	high	Plant-skewed	1
<i>Veniliornis spilogaster Erythroxylum deciduum</i>	53.23	-0.379	high	Plant-skewed	1
<i>Lipaugus lanioides Schefflera angustissima</i>	53.21	-0.770	high	Plant-skewed	1
<i>Mionectes oleaginous Aegiphila integrifolia</i>	53.15	-0.705	high	Plant-skewed	1
<i>Oxyruncus cristatus Myrsine umbellata</i>	53.00	0.492	high	Bird-skewed	1
<i>Cyanerpes cyaneus Varronia curassavica</i>	52.96	-0.766	high	Plant-skewed	1
<i>Mimus saturninus Erythroxylum deciduum</i>	52.90	-0.390	high	Plant-skewed	1
<i>Trogon viridis Cupania vernalis</i>	52.88	0.251	high	Bird-skewed	1
<i>Pteroglossus bailloni Alchornea triplinervia</i>	52.79	-0.675	high	Plant-skewed	1
<i>Phyllomyias fasciatus Trema micrantha</i>	52.75	-0.720	high	Plant-skewed	1
<i>Turdus amaurochalinus Trema micrantha</i>	52.73	-0.720	high	Plant-skewed	2
<i>Pitangus sulphuratus Guapira opposita</i>	52.70	-0.686	high	Plant-skewed	3
<i>Coereba flaveola Varronia curassavica</i>	52.60	-0.774	high	Plant-skewed	1
<i>Manacus manacus Citharexylum myrianthum</i>	52.60	-0.636	high	Plant-skewed	1
<i>Turdus amaurochalinus Aegiphila integrifolia</i>	52.57	-0.719	high	Plant-skewed	2
<i>Icterus cayanensis Citharexylum myrianthum</i>	52.52	-0.638	high	Plant-skewed	1
<i>Mimus gilvus Erythroxylum ovalifolium</i>	52.50	-0.382	high	Plant-skewed	1
<i>Pitangus sulphuratus Alchornea triplinervia</i>	52.43	-0.684	high	Plant-skewed	1

<i>Myiozetetes similis Cordia ecalyculata</i>	52.41	-0.797	high	Plant-skewed	1
<i>Trogon rufus Miconia tristis</i>	52.34	0.913	high	Bird-skewed	1
<i>Saltator maximus Varronia curassavica</i>	52.34	-0.781	high	Plant-skewed	1
<i>Ramphastos vitellinus Annona neosericea</i>	52.32	-0.769	high	Plant-skewed	1
<i>Megarynchus pitangua Rubus urticifolius</i>	52.31	-0.766	high	Plant-skewed	1
<i>Pipile jacutinga Xylopia brasiliensis</i>	52.30	0.196	high	Bird-skewed	1
<i>Trogon rufus Miconia pusilliflora</i>	52.29	0.914	high	Bird-skewed	1
<i>Trichothraupis melanops Urera baccifera</i>	52.28	-0.840	high	Plant-skewed	2
<i>Myiodynastes maculatus Trema micrantha</i>	52.21	-0.733	high	Plant-skewed	2
<i>Oxyruncus cristatus Ocotea bicolor</i>	52.14	0.517	high	Bird-skewed	1
<i>Camptostoma obsoletum Erythroxylum deciduum</i>	52.08	-0.415	high	Plant-skewed	1
<i>Stephanophorus diadematus Rubus urticifolius</i>	52.08	-0.771	high	Plant-skewed	1
<i>Tangara preciosa Styraax leprosus</i>	52.07	-0.894	high	Plant-skewed	1
<i>Myiodynastes maculatus Aegiphila integrifolia</i>	52.05	-0.732	high	Plant-skewed	1
<i>Pteroglossus bailloni Alchornea glandulosa</i>	52.03	-0.668	high	Plant-skewed	1
<i>Mionectes rufiventris Alchornea triplinervia</i>	51.94	-0.696	high	Plant-skewed	1
<i>Trogon rufus Ossaea amygdaloides</i>	51.90	0.922	high	Bird-skewed	1
<i>Myiozetetes similis Varronia curassavica</i>	51.76	-0.794	high	Plant-skewed	1
<i>Euphonia violacea Guapira opposita</i>	51.70	-0.711	high	Plant-skewed	1
<i>Trogon viridis Persea willdenovii</i>	51.67	0.291	high	Bird-skewed	1
<i>Nemosia pileata Citharexylum myrianthum</i>	51.64	-0.661	high	Plant-skewed	1
<i>Cacicus haemorrhous Varronia curassavica</i>	51.64	-0.797	high	Plant-skewed	1
<i>Pipile jacutinga Cupania vernalis</i>	51.64	0.218	high	Bird-skewed	1
<i>Turdus amaurochalinus Guapira opposita</i>	51.63	-0.713	high	Plant-skewed	3
<i>Procnias nudicollis Cupania oblongifolia</i>	51.59	-0.457	high	Plant-skewed	1
<i>Melanerpes flavifrons Virola bicuhyba</i>	51.59	-0.577	high	Plant-skewed	1
<i>Antilophia galeata Rubus rosifolius</i>	51.58	-0.783	high	Plant-skewed	1
<i>Fluvicola nengeta Citharexylum myrianthum</i>	51.55	-0.663	high	Plant-skewed	1
<i>Pteroglossus bailloni Maytenus gonoclada</i>	51.54	-0.664	high	Plant-skewed	1
<i>Arremon taciturnus Trema micrantha</i>	51.52	-0.749	high	Plant-skewed	1

<i>Orthogonys chloricterus Pourouma guianensis</i>	51.49	-0.795	high	Plant-skewed	1
<i>Turdus amaurochalinus Alchornea triplinervia</i>	51.35	-0.711	high	Plant-skewed	1
<i>Turdus subalaris Virola bicuhyba</i>	51.25	-0.587	high	Plant-skewed	1
<i>Penelope superciliaris Maytenus gonoclada</i>	51.24	-0.672	high	Plant-skewed	1
<i>Penelope sp Rubus urticifolius</i>	51.23	-0.791	high	Plant-skewed	1
<i>Mionectes rufiventris Alchornea glandulosa</i>	51.18	-0.690	high	Plant-skewed	1
<i>Pitangus sulphuratus Citharexylum myrianthum</i>	51.17	-0.673	high	Plant-skewed	3
<i>Lipaugus lanioides Trema micrantha</i>	51.15	-0.759	high	Plant-skewed	1
<i>Ramphastos vitellinus Neomitranthes glomerata</i>	51.14	-0.762	high	Plant-skewed	1
<i>Megarynchus pitangua Trema micrantha</i>	51.13	-0.759	high	Plant-skewed	1
<i>Pitangus sulphuratus Tabernaemontana catharinensis</i>	51.11	-0.673	high	Plant-skewed	1
<i>Cacicus haemorrhous Rubus rosifolius</i>	51.10	-0.794	high	Plant-skewed	1
<i>Cnemotriccus fuscatus Trema micrantha</i>	51.05	-0.761	high	Plant-skewed	1
<i>Cissopis leverianus Rubus sp</i>	51.05	-0.843	high	Plant-skewed	1
<i>Turdus rufiventris Rubus brasiliensis</i>	51.03	-0.861	high	Plant-skewed	1
<i>Turdus albicollis Cordia silvestris</i>	51.01	-0.825	high	Plant-skewed	1
<i>Crotophaga major Clusia hilariana</i>	51.01	0.591	high	Bird-skewed	1
<i>Megarynchus pitangua Aegiphila integrifolia</i>	50.98	-0.758	high	Plant-skewed	2
<i>Pipile jacutinga Persea alba</i>	50.90	0.244	high	Bird-skewed	1
<i>Elaenia sp Varronia curassavica</i>	50.89	-0.814	high	Plant-skewed	1
<i>Cnemotriccus fuscatus Aegiphila integrifolia</i>	50.89	-0.760	high	Plant-skewed	1
<i>Ramphastos dicolorus Aegiphila integrifolia</i>	50.89	-0.760	high	Plant-skewed	1
<i>Coereba flaveola Trema micrantha</i>	50.88	-0.765	high	Plant-skewed	1
<i>Trogon viridis Ficus sp</i>	50.87	0.317	high	Bird-skewed	1
<i>Turdus albicollis Schefflera angustissima</i>	50.85	-0.825	high	Plant-skewed	2
<i>Pyroderus scutatus Cabralea canjerana</i>	50.84	-0.338	high	Plant-skewed	1
<i>Pipraeidea melanonota Alchornea triplinervia</i>	50.84	-0.724	high	Plant-skewed	1
<i>Myiodynastes maculatus Alchornea triplinervia</i>	50.84	-0.724	high	Plant-skewed	2

<i>Selenidera maculirostris Geonoma gamiova</i>	50.79	-0.134	high	Plant-skewed	1
<i>Sporophila leucoptera Varronia curassavica</i>	50.74	-0.818	high	Plant-skewed	1
<i>Coereba flaveola Aegiphila integrifolia</i>	50.72	-0.764	high	Plant-skewed	2
<i>Tachyphonus coronatus Urera baccifera</i>	50.64	-0.877	high	Plant-skewed	2
<i>Saltator maximus Trema micrantha</i>	50.62	-0.771	high	Plant-skewed	1
<i>Pipile jacutinga Chomelia parvifolia</i>	50.60	0.254	high	Bird-skewed	1
<i>Elaenia flavogaster Varronia curassavica</i>	50.49	-0.823	high	Plant-skewed	1
<i>Elaenia sp Annona neosericea</i>	50.46	-0.812	high	Plant-skewed	1
<i>Saltator maximus Aegiphila integrifolia</i>	50.46	-0.770	high	Plant-skewed	1
<i>Parula pitayumi Citharexylum myrianthum</i>	50.39	-0.693	high	Plant-skewed	1
<i>Trogon rufus Myrcia brasiliensis</i>	50.35	0.955	high	Bird-skewed	1
<i>Selenidera maculirostris Symplocos glandulosomarginata</i>	50.34	-0.119	high	Plant-skewed	1
<i>Selenidera maculirostris Geonoma elegans</i>	50.33	-0.119	high	Plant-skewed	1
<i>Turdus flavipes Myriopus paniculatus</i>	50.28	-0.826	high	Plant-skewed	1
<i>Trogon viridis Ficus glabra</i>	50.26	0.337	high	Bird-skewed	1
<i>Tersina viridis Trema micrantha</i>	50.23	-0.781	high	Plant-skewed	1
<i>Thlypopsis sordida Zanthoxylum fagara</i>	50.23	-0.792	high	Plant-skewed	1
<i>Pipile jacutinga Myrsine coriacea</i>	50.20	0.268	high	Bird-skewed	1
<i>Pitangus sulphuratus Alchornea sidifolia</i>	50.20	-0.665	high	Plant-skewed	1
<i>Tachyphonus cristatus Aegiphila integrifolia</i>	50.18	-0.777	high	Plant-skewed	1
<i>Euphonia violacea Citharexylum myrianthum</i>	50.17	-0.699	high	Plant-skewed	1
<i>Cyanerpes cyaneus Guapira opposita</i>	50.14	-0.750	high	Plant-skewed	1
<i>Turdus amaurochalinus Citharexylum myrianthum</i>	50.09	-0.701	high	Plant-skewed	2
<i>Pipraeidea melanonota Alchornea glandulosa</i>	50.09	-0.718	high	Plant-skewed	1
<i>Myiodynastes maculatus Alchornea glandulosa</i>	50.08	-0.718	high	Plant-skewed	1
<i>Myiozetetes similis Trema micrantha</i>	50.05	-0.785	high	Plant-skewed	3
<i>Dacnis cayana Varronia curassavica</i>	50.04	-0.834	high	Plant-skewed	1
<i>Selenidera maculirostris Diploon sp</i>	49.97	-0.107	high	Plant-skewed	1
<i>Oxyruncus cristatus Clusia criuva</i>	49.96	0.579	high	Bird-skewed	1

<i>Vireo olivaceus</i> <i>Xylopia sericea</i>	49.96	0.141	high	Bird-skewed	1
<i>Elaenia flavogaster</i> <i>Rubus urticifolius</i>	49.95	-0.821	high	Plant-skewed	1
<i>Manacus manacus</i> <i>Maytenus aquifolia</i>	49.94	-0.609	high	Plant-skewed	1
<i>Conirostrum speciosum</i> <i>Citharexylum myrianthum</i>	49.90	-0.706	high	Plant-skewed	1
<i>Myiozetetes similis</i> <i>Aegiphila integrifolia</i>	49.89	-0.784	high	Plant-skewed	2
<i>Saltator similis</i> <i>Rubus sp</i>	49.88	-0.870	high	Plant-skewed	1
<i>Thraupis sayaca</i> <i>Styrax leprosus</i>	49.87	-0.941	high	Plant-skewed	1
<i>Cyanerpes cyaneus</i> <i>Alchornea triplinervia</i>	49.87	-0.748	high	Plant-skewed	1
<i>Turdus albicollis</i> <i>Myrcia sp</i>	49.85	-0.821	high	Plant-skewed	1
<i>Ramphocelus carbo</i> <i>Urera baccifera</i>	49.84	-0.894	high	Plant-skewed	1
<i>Thlypopsis sordida</i> <i>Trema micrantha</i>	49.83	-0.790	high	Plant-skewed	1
<i>Turdus rufiventris</i> <i>Cordia ecalyculata</i>	49.80	-0.857	high	Plant-skewed	1
<i>Coereba flaveola</i> <i>Guapira opposita</i>	49.78	-0.759	high	Plant-skewed	1
<i>Cacicus haemorrhous</i> <i>Aegiphila integrifolia</i>	49.77	-0.787	high	Plant-skewed	1
<i>Myiarchus tyrannulus</i> <i>Varronia curassavica</i>	49.75	-0.841	high	Plant-skewed	1
<i>Tachyphonus coronatus</i> <i>Rubus sp</i>	49.68	-0.874	high	Plant-skewed	1
<i>Lathrotriccus euleri</i> <i>Alchornea triplinervia</i>	49.68	-0.753	high	Plant-skewed	1
<i>Myiodynastes maculatus</i> <i>Citharexylum myrianthum</i>	49.58	-0.715	high	Plant-skewed	3
<i>Trichothraupis melanops</i> <i>Rubus rosifolius</i>	49.57	-0.830	high	Plant-skewed	1
<i>Trichothraupis melanops</i> <i>Rubus urticifolius</i>	49.57	-0.830	high	Plant-skewed	1
<i>Vireo olivaceus</i> <i>Cupania vernalis</i>	49.52	0.157	high	Bird-skewed	2
<i>Saltator maximus</i> <i>Guapira opposita</i>	49.52	-0.765	high	Plant-skewed	1
<i>Legatus leucophaeus</i> <i>Cupania oblongifolia</i>	49.50	-0.520	high	Plant-skewed	1
<i>Tangara mexicana</i> <i>Varronia curassavica</i>	49.49	-0.847	high	Plant-skewed	1
<i>Gnorimopsar chopi</i> <i>Trema micrantha</i>	49.46	-0.800	high	Plant-skewed	1
<i>Vireo olivaceus</i> <i>Zanthoxylum riedelianum</i>	49.45	0.159	high	Bird-skewed	1
<i>Tityra inquisitor</i> <i>Cabrlea canjerana</i>	49.35	-0.386	high	Plant-skewed	1
<i>Tityra cayana</i> <i>Cabrlea canjerana</i>	49.35	-0.386	high	Plant-skewed	1
<i>Tachyphonus coronatus</i> <i>Galium hypocarpium</i>	49.25	-0.873	high	Plant-skewed	1

<i>Pteroglossus bailloni</i> <i>Virola bicuhyba</i>	49.21	-0.643	high	Plant-skewed	1
<i>Elaenia sp</i> <i>Trema micrantha</i>	49.18	-0.806	high	Plant-skewed	1
<i>Chiroxiphia caudate</i> <i>Schefflera angustissima</i>	49.12	-0.865	high	Plant-skewed	1
<i>Pipile jacutinga</i> <i>Nectandra megapotamica</i>	49.08	0.307	high	Bird-skewed	1
<i>Turdus rufiventris</i> <i>Myriopus paniculatus</i>	49.06	-0.854	high	Plant-skewed	1
<i>Celeus flavescens</i> <i>Maytenus aquifolia</i>	49.04	-0.635	high	Plant-skewed	1
<i>Lipaugus lanioides</i> <i>Alchornea glandulosa</i>	49.02	-0.745	high	Plant-skewed	1
<i>Megarynchus pitangua</i> <i>Alchornea glandulosa</i>	49.01	-0.746	high	Plant-skewed	1
<i>Penelope obscura</i> <i>Cordia myrciifolia</i>	48.96	-0.668	high	Plant-skewed	1
<i>Pipra rubrocapilla</i> <i>Aegiphila integrifolia</i>	48.89	-0.809	high	Plant-skewed	1
<i>Selenidera maculirostris</i> <i>Protium widgrenii</i>	48.88	-0.069	high	Plant-skewed	1
<i>Pachyramphus validus</i> <i>Cupania oblongifolia</i>	48.87	-0.539	high	Plant-skewed	1
<i>Pitangus sulphuratus</i> <i>Chiococca alba</i>	48.84	-0.652	high	Plant-skewed	1
<i>Cacicus haemorrhous</i> <i>Guapira opposita</i>	48.83	-0.782	high	Plant-skewed	1
<i>Turdus leucomelas</i> <i>Cordia ecalyculata</i>	48.79	-0.880	high	Plant-skewed	1
<i>Elaenia flavogaster</i> <i>Trema micrantha</i>	48.78	-0.816	high	Plant-skewed	4
<i>Procnias nudicollis</i> <i>Cabrlea canjerana</i>	48.73	-0.407	high	Plant-skewed	1
<i>Dacnis cayana</i> <i>Zanthoxylum fagara</i>	48.72	-0.829	high	Plant-skewed	1
<i>Ramphastos toco</i> <i>Copaifera langsdorffii</i>	48.70	-0.474	high	Plant-skewed	1
<i>Chiroxiphia caudate</i> <i>Myriopus paniculatus</i>	48.68	-0.863	high	Plant-skewed	1
<i>Turdus albicollis</i> <i>Aegiphila integrifolia</i>	48.63	-0.815	high	Plant-skewed	1
<i>Elaenia flavogaster</i> <i>Aegiphila integrifolia</i>	48.62	-0.815	high	Plant-skewed	1
<i>Turdus rufiventris</i> <i>Rubus urticifolius</i>	48.61	-0.853	high	Plant-skewed	2
<i>Turdus rufiventris</i> <i>Rubus rosifolius</i>	48.61	-0.853	high	Plant-skewed	1
<i>Penelope superciliaris</i> <i>Ilex theezans</i>	48.61	-0.648	high	Plant-skewed	1
<i>Cacicus haemorrhous</i> <i>Alchornea triplinervia</i>	48.55	-0.781	high	Plant-skewed	1
<i>Pipile jacutinga</i> <i>Matayba elaeagnoides</i>	48.55	0.325	high	Bird-skewed	1
<i>Megarynchus pitangua</i> <i>Citharexylum myrianthum</i>	48.50	-0.742	high	Plant-skewed	3
<i>Tangara cyanocephala</i> <i>Urera sp</i>	48.45	-0.925	high	Plant-skewed	1
<i>Knipolegus nigerrimus</i> <i>Alchornea triplinervia</i>	48.45	-0.784	high	Plant-skewed	1

<i>Selenidera maculirostris Cecropia pachystachya</i>	48.44	-0.052	high	Plant-skewed	1
<i>Hemithraupis ruficapilla Myriopus paniculatus</i>	48.44	-0.869	high	Plant-skewed	1
<i>Ramphastos dicolorus Maytenus gonoclada</i>	48.43	-0.745	high	Plant-skewed	1
<i>Ramphastos dicolorus Citharexylum myrianthum</i>	48.42	-0.745	high	Plant-skewed	1
<i>Ramphastos vitellinus Citharexylum myrianthum</i>	48.40	-0.745	high	Plant-skewed	1
<i>Trichothraupis melanops Trema micrantha</i>	48.39	-0.825	high	Plant-skewed	2
<i>Empidonomus varius Alchornea triplinervia</i>	48.38	-0.785	high	Plant-skewed	1
<i>Lipaugus lanioides Maytenus sp</i>	48.38	-0.741	high	Plant-skewed	1
<i>Penelope obscura Coussarea contracta</i>	48.34	-0.662	high	Plant-skewed	1
<i>Dacnis cayana Trema micrantha</i>	48.32	-0.827	high	Plant-skewed	6
<i>Pachyramphus validus Erythroxylum deciduum</i>	48.28	-0.530	high	Plant-skewed	1
<i>Coereba flaveola Citharexylum myrianthum</i>	48.25	-0.749	high	Plant-skewed	1
<i>Chiroxiphia caudate Rubus rosifolius</i>	48.23	-0.862	high	Plant-skewed	1
<i>Pachyramphus polychopterus Erythroxylum deciduum</i>	48.22	-0.532	high	Plant-skewed	1
<i>Melanerpes candidus Erythroxylum deciduum</i>	48.18	-0.533	high	Plant-skewed	1
<i>Dacnis cayana Aegiphila integrifolia</i>	48.16	-0.827	high	Plant-skewed	3
<i>Vireo olivaceus Myrsine coriacea</i>	48.08	0.210	high	Bird-skewed	4
<i>Myiarchus tyrannulus Trema micrantha</i>	48.03	-0.834	high	Plant-skewed	1
<i>Procnias nudicollis Symplocos uniflora</i>	48.02	-0.393	high	Plant-skewed	1
<i>Selenidera maculirostris Cecropia glaziovii</i>	48.01	-0.035	high	Plant-skewed	1
<i>Saltator maximus Citharexylum myrianthum</i>	47.99	-0.756	high	Plant-skewed	1
<i>Zonotrichia capensis Erythroxylum deciduum</i>	47.97	-0.540	high	Plant-skewed	1
<i>Carpornis melanocephala Cabralea canjerana</i>	47.96	-0.432	high	Plant-skewed	1
<i>Carpornis cucullata Cabralea canjerana</i>	47.96	-0.432	high	Plant-skewed	1
<i>Myiodynastes maculatus Syagrus romanzoffiana</i>	47.96	-0.702	high	Plant-skewed	1
<i>Pipra rubrocapilla Guapira opposita</i>	47.95	-0.804	high	Plant-skewed	1
<i>Cissopis leverianus Piper dilatatum</i>	47.94	-0.831	high	Plant-skewed	1



<i>Cissopis leverianus Piper aduncum</i>	47.94	-0.831	high	Plant-skewed	1
<i>Tachyphonus rufus Rubus rosifolius</i>	47.93	-0.869	high	Plant-skewed	1
<i>Tachyphonus coronatus Rubus rosifolius</i>	47.93	-0.869	high	Plant-skewed	2
<i>Tachyphonus coronatus Rubus urticifolius</i>	47.93	-0.869	high	Plant-skewed	2
<i>Orthogonys chloricterus Alchornea glandulosa</i>	47.85	-0.776	high	Plant-skewed	1
<i>Cacicus haemorrhous Alchornea glandulosa</i>	47.80	-0.777	high	Plant-skewed	1
<i>Cacicus chrysopterus Alchornea glandulosa</i>	47.80	-0.777	high	Plant-skewed	1
<i>Antilophia galeata Citharexylum myrianthum</i>	47.77	-0.761	high	Plant-skewed	1
<i>Trogon surrucura Cabralea canjerana</i>	47.72	-0.440	high	Plant-skewed	1
<i>Turdus albicollis Guapira opposita</i>	47.69	-0.811	high	Plant-skewed	3
<i>Ramphocelus bresilius Varronia curassavica</i>	47.68	-0.889	high	Plant-skewed	1
<i>Elaenia flavogaster Guapira opposita</i>	47.68	-0.811	high	Plant-skewed	1
<i>Troglodytes aedon Miconia tristis</i>	47.67	0.904	high	Bird-skewed	1
<i>Tangara mexicana Aegiphila integrifolia</i>	47.61	-0.840	high	Plant-skewed	1
<i>Turdus leucomelas Rubus urticifolius</i>	47.60	-0.877	high	Plant-skewed	1
<i>Turdus leucomelas Rubus rosifolius</i>	47.60	-0.877	high	Plant-skewed	1
<i>Turdus flavipes Guapira opposita</i>	47.56	-0.814	high	Plant-skewed	2
<i>Thraupis cyanoptera Schefflera angustissima</i>	47.53	-0.901	high	Plant-skewed	1
<i>Pipile jacutinga Ficus enormis</i>	47.48	0.362	high	Bird-skewed	1
<i>Turdus amaurochalinus Ilex theezans</i>	47.47	-0.679	high	Plant-skewed	1
<i>Turdus rufiventris Trema micrantha</i>	47.43	-0.849	high	Plant-skewed	1
<i>Turdus albicollis Alchornea triplinervia</i>	47.41	-0.810	high	Plant-skewed	3
<i>Myiozetetes similis Citharexylum myrianthum</i>	47.41	-0.771	high	Plant-skewed	2
<i>Tangara cayana Rubus rosifolius</i>	47.40	-0.881	high	Plant-skewed	1
<i>Oxyruncus cristatus Nectandra membranacea</i>	47.38	0.652	high	Bird-skewed	1
<i>Orthogonys chloricterus Citharexylum myrianthum</i>	47.34	-0.773	high	Plant-skewed	1
<i>Turdus flavipes Alchornea triplinervia</i>	47.29	-0.813	high	Plant-skewed	2
<i>Coereba flaveola Alchornea sidifolia</i>	47.28	-0.742	high	Plant-skewed	1
<i>Turdus rufiventris Aegiphila integrifolia</i>	47.28	-0.848	high	Plant-skewed	3
<i>Dacnis cayana Guapira opposita</i>	47.22	-0.822	high	Plant-skewed	1

<i>Celeus flavescens Marcgravia polyantha</i>	47.16	-0.614	high	Plant-skewed	1
<i>Oxyruncus cristatus Struthanthus martianus</i>	47.15	0.659	high	Bird-skewed	1
<i>Ramphocelus carbo Rubus rosifolius</i>	47.14	-0.888	high	Plant-skewed	1
<i>Ramphastos vitellinus Virola gardneri</i>	47.09	-0.736	high	Plant-skewed	1
<i>Thraupis cyanoptera Myriopus paniculatus</i>	47.08	-0.900	high	Plant-skewed	1
<i>Chiroxiphia caudata Trema micrantha</i>	47.06	-0.858	high	Plant-skewed	2
<i>Pyroderus scutatus Symplocos glandulosomarginata</i>	47.03	-0.243	high	Plant-skewed	1
<i>Trichothraupis melanops Alchornea triplinervia</i>	47.02	-0.819	high	Plant-skewed	1
<i>Pipile jacutinga Myrsine venosa</i>	46.98	0.379	high	Bird-skewed	1
<i>Myiarchus swainsoni Trema micrantha</i>	46.97	-0.860	high	Plant-skewed	1
<i>Saltator similis Trema micrantha</i>	46.95	-0.860	high	Plant-skewed	2
<i>Dacnis cayana Alchornea triplinervia</i>	46.95	-0.821	high	Plant-skewed	2
<i>Sporophila caerulescens Varronia curassavica</i>	46.95	-0.906	high	Plant-skewed	1
<i>Chiroxiphia caudate Aegiphila integrifolia</i>	46.90	-0.857	high	Plant-skewed	1
<i>Chiroxiphia caudate Piper dilatatum</i>	46.88	-0.857	high	Plant-skewed	1
<i>Pipile jacutinga Myrsine umbellata</i>	46.83	0.384	high	Bird-skewed	1
<i>Hemithraupis ruficapilla Trema micrantha</i>	46.81	-0.864	high	Plant-skewed	1
<i>Saltator similis Aegiphila integrifolia</i>	46.79	-0.860	high	Plant-skewed	1
<i>Orthogonys chloricterus Myrtaceae sp</i>	46.77	-0.769	high	Plant-skewed	1
<i>Tachyphonus coronatus Trema micrantha</i>	46.75	-0.865	high	Plant-skewed	3
<i>Tangara mexicana Guapira opposita</i>	46.67	-0.836	high	Plant-skewed	1
<i>Turdus albicollis Alchornea glandulosa</i>	46.66	-0.806	high	Plant-skewed	1
<i>Thraupis sayaca Cordia sellowiana</i>	46.64	-0.937	high	Plant-skewed	1
<i>Thraupis cyanoptera Rubus urticifolius</i>	46.64	-0.899	high	Plant-skewed	1
<i>Legatus leucophaeus Cabralea canjerana</i>	46.64	-0.475	high	Plant-skewed	1
<i>Vireo olivaceus Myrsine lancifolia</i>	46.64	0.264	high	Bird-skewed	1
<i>Tangara cayana Zanthoxylum fagara</i>	46.62	-0.879	high	Plant-skewed	1
<i>Tachyphonus coronatus Aegiphila integrifolia</i>	46.60	-0.865	high	Plant-skewed	2
<i>Tachyphonus coronatus Piper dilatatum</i>	46.58	-0.865	high	Plant-skewed	1
<i>Tachyphonus coronatus Piper aduncum</i>	46.58	-0.865	high	Plant-skewed	1

<i>Pyroderus scutatus Chrysophyllum viride</i>	46.57	-0.230	high	Plant-skewed	1
<i>Elaenia sp Citharexylum myrianthum</i>	46.54	-0.793	high	Plant-skewed	1
<i>Turdus flavipes Alchornea glandulosa</i>	46.53	-0.809	high	Plant-skewed	1
<i>Nemosia pileata Cupania oblongifolia</i>	46.52	-0.609	high	Plant-skewed	1
<i>Pipile jacutinga Ocotea catharinensis</i>	46.47	0.397	high	Bird-skewed	1
<i>Pitangus sulphuratus Cupania emarginata</i>	46.46	-0.628	high	Plant-skewed	1
<i>Myiarchus ferox Trema micrantha</i>	46.43	-0.873	high	Plant-skewed	1
<i>Turdus leucomelas Trema micrantha</i>	46.42	-0.873	high	Plant-skewed	1
<i>Pteroglossus bailloni Cupania oblongifolia</i>	46.40	-0.613	high	Plant-skewed	1
<i>Turdus rufiventris Guapira opposita</i>	46.33	-0.845	high	Plant-skewed	1
<i>Coryphospingus cucullatus Guapira opposita</i>	46.29	-0.846	high	Plant-skewed	1
<i>Myiarchus ferox Aegiphila integrifolia</i>	46.28	-0.873	high	Plant-skewed	2
<i>Turdus leucomelas Aegiphila integrifolia</i>	46.27	-0.873	high	Plant-skewed	2
<i>Thlypopsis sordida Alchornea sidifolia</i>	46.23	-0.770	high	Plant-skewed	1
<i>Tangara cayana Trema micrantha</i>	46.22	-0.878	high	Plant-skewed	2
<i>Lipaugus lanioides Virola bicuhyba</i>	46.20	-0.726	high	Plant-skewed	1
<i>Dacnis cayana Alchornea glandulosa</i>	46.20	-0.818	high	Plant-skewed	1
<i>Turdus albicollis Maytenus gonoclada</i>	46.17	-0.803	high	Plant-skewed	3
<i>Selenidera maculirostris Zanthoxylum rhoifolium</i>	46.16	0.042	high	Bird-skewed	1
<i>Turdus albicollis Citharexylum myrianthum</i>	46.15	-0.803	high	Plant-skewed	1
<i>Elaenia flavogaster Citharexylum myrianthum</i>	46.14	-0.804	high	Plant-skewed	3
<i>Thraupis palmarum Varronia curassavica</i>	46.14	-0.925	high	Plant-skewed	1
<i>Ramphastos sp Virola bicuhyba</i>	46.13	-0.728	high	Plant-skewed	1
<i>Ramphastos dicolorus Virola bicuhyba</i>	46.10	-0.728	high	Plant-skewed	2
<i>Ramphastos vitellinus Virola bicuhyba</i>	46.09	-0.729	high	Plant-skewed	3
<i>Tangara cayana Aegiphila integrifolia</i>	46.07	-0.878	high	Plant-skewed	1
<i>Turdus rufiventris Alchornea triplinervia</i>	46.06	-0.843	high	Plant-skewed	2
<i>Tyrannus savana Trema micrantha</i>	46.04	-0.882	high	Plant-skewed	1
<i>Tyrannus melancholicus Trema micrantha</i>	46.04	-0.882	high	Plant-skewed	4
<i>Pitangus sulphuratus Cupania oblongifolia</i>	46.04	-0.623	high	Plant-skewed	2

<i>Turdus albicollis</i> <i>Maytenus</i> sp	46.02	-0.803	high	Plant-skewed	1
<i>Pachyramphus validus</i> <i>Cabralea canjerana</i>	46.01	-0.495	high	Plant-skewed	2
<i>Cissopis leverianus</i> <i>Alchornea glandulosa</i>	45.99	-0.823	high	Plant-skewed	1
<i>Celeus flavescens</i> <i>Erythroxylum deciduum</i>	45.97	-0.600	high	Plant-skewed	1
<i>Pipile jacutinga</i> <i>Ocotea bicolor</i>	45.97	0.414	high	Bird-skewed	1
<i>Ramphocelus bresilius</i> <i>Trema micrantha</i>	45.96	-0.884	high	Plant-skewed	1
<i>Ramphocelus carbo</i> <i>Trema micrantha</i>	45.96	-0.884	high	Plant-skewed	2
<i>Chiroxiphia caudate</i> <i>Guapira opposita</i>	45.96	-0.854	high	Plant-skewed	1
<i>Melanerpes flavifrons</i> <i>Cabralea canjerana</i>	45.91	-0.499	high	Plant-skewed	1
<i>Tyrannus melancholicus</i> <i>Aegiphila integrifolia</i>	45.89	-0.882	high	Plant-skewed	1
<i>Tangara preciosa</i> <i>Myrrhinium atropurpureum</i>	45.86	-0.878	high	Plant-skewed	1
<i>Vireo olivaceus</i> <i>Ilex brevicuspis</i>	45.83	0.294	high	Bird-skewed	1
<i>Ramphocelus bresilius</i> <i>Aegiphila integrifolia</i>	45.80	-0.884	high	Plant-skewed	2
<i>Tangara seledon</i> <i>Trema micrantha</i>	45.79	-0.889	high	Plant-skewed	1
<i>Elaenia mesoleuca</i> <i>Alchornea triplinervia</i>	45.79	-0.850	high	Plant-skewed	1
<i>Thraupis sayaca</i> <i>Varronia curassavica</i>	45.70	-0.935	high	Plant-skewed	1
<i>Dacnis cayana</i> <i>Citharexylum myrianthum</i>	45.69	-0.815	high	Plant-skewed	1
<i>Chiroxiphia caudate</i> <i>Alchornea triplinervia</i>	45.68	-0.853	high	Plant-skewed	2
<i>Vireo olivaceus</i> <i>Myrsine</i> sp	45.61	0.302	high	Bird-skewed	1
<i>Myiarchus swainsoni</i> <i>Alchornea triplinervia</i>	45.60	-0.855	high	Plant-skewed	1
<i>Saltator similis</i> <i>Alchornea triplinervia</i>	45.58	-0.856	high	Plant-skewed	2
<i>Hemithraupis flavicollis</i> <i>Guapira opposita</i>	45.54	-0.864	high	Plant-skewed	1
<i>Thraupis cyanoptera</i> <i>Trema micrantha</i>	45.46	-0.897	high	Plant-skewed	1
<i>Pitangus sulphuratus</i> <i>Erythroxylum deciduum</i>	45.45	-0.616	high	Plant-skewed	1
<i>Tachyphonus coronatus</i> <i>Alchornea triplinervia</i>	45.38	-0.861	high	Plant-skewed	2
<i>Turdus rufiventris</i> <i>Alchornea glandulosa</i>	45.31	-0.840	high	Plant-skewed	1
<i>Tersina viridis</i> <i>Virola bicuhyba</i>	45.29	-0.751	high	Plant-skewed	1
<i>Sporophila caerulescens</i> <i>Trema micrantha</i>	45.23	-0.902	high	Plant-skewed	1
<i>Elaenia flavogaster</i> <i>Alchornea sidifolia</i>	45.17	-0.799	high	Plant-skewed	1
<i>Thraupis sayaca</i> <i>Rubus rosifolius</i>	45.16	-0.934	high	Plant-skewed	1
<i>Thraupis episcopus</i> <i>Rubus rosifolius</i>	45.15	-0.935	high	Plant-skewed	1

<i>Mimus saturninus Opuntia monacantha</i>	45.15	-0.201	high	Plant-skewed	1
<i>Pitangus sulphuratus Erythroxylum ovalifolium</i>	45.06	-0.612	high	Plant-skewed	1
<i>Thraupis sayaca Myrcia sp</i>	45.05	-0.934	high	Plant-skewed	1
<i>Celeus flavescens Copaifera trapezifolia</i>	45.04	-0.589	high	Plant-skewed	1
<i>Selenidera maculirostris Persea willdenovii</i>	45.01	0.090	high	Bird-skewed	1
<i>Zonotrichia capensis Symplocos uniflora</i>	45.00	-0.494	high	Plant-skewed	1
<i>Turdus amaurochalinus Cupania oblongifolia</i>	44.97	-0.655	high	Plant-skewed	2
<i>Carpornis cucullata Symplocos tetrandra</i>	44.95	-0.370	high	Plant-skewed	1
<i>Tyrannus melancholicus Guapira opposita</i>	44.94	-0.879	high	Plant-skewed	2
<i>Chiroxiphia caudate Alchornea glandulosa</i>	44.93	-0.850	high	Plant-skewed	1
<i>Tangara preciosa Schaefferia argentinensis</i>	44.92	-0.875	high	Plant-skewed	1
<i>Turdus amaurochalinus Erythroxylum argentinum</i>	44.88	-0.654	high	Plant-skewed	1
<i>Pteroglossus bailloni Copaifera trapezifolia</i>	44.87	-0.594	high	Plant-skewed	1
<i>Ramphocelus bresilius Guapira opposita</i>	44.86	-0.881	high	Plant-skewed	1
<i>Saltator similis Alchornea glandulosa</i>	44.83	-0.853	high	Plant-skewed	1
<i>Turdus rufiventris Citharexylum myrianthum</i>	44.80	-0.838	high	Plant-skewed	2
<i>Selenidera maculirostris Mollinedia uleana</i>	44.74	0.102	high	Bird-skewed	1
<i>Dacnis cayana Alchornea sidifolia</i>	44.72	-0.811	high	Plant-skewed	1
<i>Vireo olivaceus Myrsine umbellata</i>	44.71	0.336	high	Bird-skewed	2
<i>Hemithraupis ruficapilla Alchornea glandulosa</i>	44.69	-0.856	high	Plant-skewed	1
<i>Tyrannus melancholicus Alchornea triplinervia</i>	44.67	-0.878	high	Plant-skewed	1
<i>Pipile jacutinga Ocotea teleiandra</i>	44.64	0.460	high	Bird-skewed	1
<i>Tachyphonus coronatus Alchornea glandulosa</i>	44.63	-0.858	high	Plant-skewed	1
<i>Habia rubica Geonoma gamiova</i>	44.62	-0.360	high	Plant-skewed	1
<i>Manacus manacus Cabralea canjerana</i>	44.61	-0.541	high	Plant-skewed	1
<i>Carpornis cucullata Geonoma gamiova</i>	44.59	-0.361	high	Plant-skewed	1
<i>Ramphocelus bresilius Alchornea triplinervia</i>	44.59	-0.881	high	Plant-skewed	1
<i>Tangara cyanocephala Trema micrantha</i>	44.57	-0.918	high	Plant-skewed	1
<i>Mimus saturninus Schinus terebinthifolia</i>	44.56	-0.182	high	Plant-skewed	3
<i>Picumnus nebulous Myrsine coriacea</i>	44.55	0.091	high	Bird-skewed	1

<i>Thraupis ornate Trema micrantha</i>	44.46	-0.921	high	Plant-skewed	1
<i>Pipraeidea melanonota Cupania oblongifolia</i>	44.45	-0.671	high	Plant-skewed	1
<i>Myiodynastes maculatus Cupania oblongifolia</i>	44.45	-0.671	high	Plant-skewed	2
<i>Chiroxiphia caudate Maytenus gonoclada</i>	44.44	-0.848	high	Plant-skewed	1
<i>Chiroxiphia caudate Citharexylum myrianthum</i>	44.42	-0.848	high	Plant-skewed	1
<i>Thraupis palmarum Trema micrantha</i>	44.42	-0.922	high	Plant-skewed	2
<i>Penelope obscura Inga marginata</i>	44.42	-0.621	high	Plant-skewed	1
<i>Psarocolius decumanus Cupania oblongifolia</i>	44.40	-0.672	high	Plant-skewed	1
<i>Procnias nudicollis Protium heptaphyllum</i>	44.38	-0.308	high	Plant-skewed	1
<i>Turdus amaurochalinus Erythroxylum deciduum</i>	44.37	-0.649	high	Plant-skewed	1
<i>Thraupis cyanopectera Guapira opposita</i>	44.36	-0.894	high	Plant-skewed	1
<i>Saltator similis Citharexylum myrianthum</i>	44.32	-0.851	high	Plant-skewed	1
<i>Thraupis ornate Piper dilatatum</i>	44.29	-0.921	high	Plant-skewed	1
<i>Thraupis palmarum Aegiphila integrifolia</i>	44.26	-0.922	high	Plant-skewed	1
<i>Volatinia jacarina Erythroxylum deciduum</i>	44.20	-0.654	high	Plant-skewed	1
<i>Carpornis cucullata Symplocos glandulosomarginata</i>	44.15	-0.351	high	Plant-skewed	1
<i>Thraupis cyanopectera Alchornea triplinervia</i>	44.09	-0.893	high	Plant-skewed	1
<i>Mimus gilvus Ptilinopus arrabidae</i>	43.99	-0.163	high	Plant-skewed	1
<i>Thraupis sayaca Trema micrantha</i>	43.98	-0.932	high	Plant-skewed	2
<i>Thraupis episcopus Trema micrantha</i>	43.97	-0.933	high	Plant-skewed	2
<i>Carpornis cucullata Geonoma pauciflora</i>	43.95	-0.346	high	Plant-skewed	1
<i>Tyrannus melancholicus Alchornea glandulosa</i>	43.92	-0.876	high	Plant-skewed	1
<i>Myiodynastes maculatus Erythroxylum deciduum</i>	43.86	-0.665	high	Plant-skewed	1
<i>Chiroxiphia caudate Myrtaceae sp</i>	43.85	-0.846	high	Plant-skewed	1
<i>Turdus albicollis Virola bicuhyba</i>	43.84	-0.791	high	Plant-skewed	2
<i>Turdus rufiventris Alchornea sidifolia</i>	43.83	-0.834	high	Plant-skewed	1
<i>Thraupis sayaca Aegiphila integrifolia</i>	43.82	-0.932	high	Plant-skewed	2
<i>Myiarchus ferox Citharexylum myrianthum</i>	43.80	-0.864	high	Plant-skewed	3

<i>Turdus leucomelas Citharexylum myrianthum</i>	43.79	-0.865	high	Plant-skewed	4
<i>Megarynchus pitangua Cupania emarginata</i>	43.79	-0.707	high	Plant-skewed	1
<i>Turdus flavipes Virola bicuhyba</i>	43.71	-0.794	high	Plant-skewed	3
<i>Tangara desmaresti Trema micrantha</i>	43.67	-0.940	high	Plant-skewed	1
<i>Tangara seledon Alchornea glandulosa</i>	43.67	-0.883	high	Plant-skewed	1
<i>Tangara cayana Citharexylum myrianthum</i>	43.59	-0.870	high	Plant-skewed	1
<i>Euphonia chlorotica Cupania oblongifolia</i>	43.56	-0.697	high	Plant-skewed	1
<i>Pteroglossus bailloni Cabralea canjerana</i>	43.54	-0.576	high	Plant-skewed	1
<i>Turdus albicollis Ilex theezans</i>	43.53	-0.789	high	Plant-skewed	1
<i>Carpornis cucullata Symplocos estrellensis</i>	43.52	-0.335	high	Plant-skewed	1
<i>Tyrannus melancholicus Citharexylum myrianthum</i>	43.41	-0.874	high	Plant-skewed	4
<i>Turdus flavipes Ilex theezans</i>	43.40	-0.793	high	Plant-skewed	1
<i>Lipaugus lanioides Cupania oblongifolia</i>	43.39	-0.703	high	Plant-skewed	1
<i>Megarynchus pitangua Cupania oblongifolia</i>	43.38	-0.703	high	Plant-skewed	2
<i>Trogon surrucura Protium heptaphyllum</i>	43.37	-0.347	high	Plant-skewed	1
<i>Thraupis ornate Guapira opposita</i>	43.36	-0.919	high	Plant-skewed	1
<i>Saltator similis Alchornea sidifolia</i>	43.35	-0.847	high	Plant-skewed	1
<i>Ramphocelus bresilius Citharexylum myrianthum</i>	43.33	-0.877	high	Plant-skewed	1
<i>Ramphocelus carbo Citharexylum myrianthum</i>	43.33	-0.877	high	Plant-skewed	2
<i>Ramphastos dicolorus Cupania oblongifolia</i>	43.29	-0.706	high	Plant-skewed	1
<i>Tityra cayana Schinus terebinthifolia</i>	43.27	-0.234	high	Plant-skewed	1
<i>Turdus rufiventris Erythroxylum pulchrum</i>	43.27	-0.832	high	Plant-skewed	1
<i>Schistochlamys ruficapillus Alchornea glandulosa</i>	43.26	-0.893	high	Plant-skewed	1
<i>Orchesticus abeillei Marcgravia polyantha</i>	43.25	-0.729	high	Plant-skewed	1
<i>Tityra cayana Cecropia glaziovii</i>	43.20	-0.232	high	Plant-skewed	1
<i>Pitangus sulphuratus Cabralea canjerana</i>	43.19	-0.588	high	Plant-skewed	2
<i>Icterus cayanensis Vitex megapotamica</i>	43.19	-0.523	high	Plant-skewed	1
<i>Ramphastos dicolorus Erythroxylum ambiguum</i>	43.11	-0.704	high	Plant-skewed	1

<i>Thraupis ornate Alchornea triplinervia</i>	43.09	-0.918	high	Plant-skewed	1
<i>Carpornis melanocephala Chrysophyllum flexuosum</i>	43.05	-0.323	high	Plant-skewed	1
<i>Veniliornis spilogaster Cupania vernalis</i>	43.04	-0.100	high	Plant-skewed	1
<i>Xolmis velatus Erythroxylum deciduum</i>	43.03	-0.690	high	Plant-skewed	1
<i>Thraupis sayaca Guapira opposita</i>	42.88	-0.931	high	Plant-skewed	2
<i>Thraupis cyanoptera Maytenus gonoclada</i>	42.84	-0.890	high	Plant-skewed	1
<i>Turdus leucomelas Alchornea sidifolia</i>	42.82	-0.861	high	Plant-skewed	1
<i>Orthogonys chloricterus Norantea brasiliensis</i>	42.80	-0.742	high	Plant-skewed	1
<i>Cacicus haemorrhous Marcgravia polyantha</i>	42.76	-0.744	high	Plant-skewed	1
<i>Mionectes rufiventris Cabralea canjerana</i>	42.69	-0.604	high	Plant-skewed	1
<i>Orchesticus abeillei Cupania oblongifolia</i>	42.66	-0.724	high	Plant-skewed	1
<i>Tangara cayana Alchornea sidifolia</i>	42.62	-0.866	high	Plant-skewed	1
<i>Cacicus haemorrhous Cupania emarginata</i>	42.58	-0.742	high	Plant-skewed	1
<i>Turdus rufiventris Virola bicuhyba</i>	42.49	-0.828	high	Plant-skewed	1
<i>Tangara cyanocephala Alchornea glandulosa</i>	42.44	-0.914	high	Plant-skewed	1
<i>Tyrannus melancholicus Alchornea sidifolia</i>	42.44	-0.871	high	Plant-skewed	1
<i>Thraupis ornate Alchornea glandulosa</i>	42.34	-0.917	high	Plant-skewed	1
<i>Selenidera maculirostris Myrsine sp</i>	42.32	0.205	high	Bird-skewed	1
<i>Tangara desmaresti Alchornea triplinervia</i>	42.30	-0.938	high	Plant-skewed	2
<i>Myiozetetes similis Cupania oblongifolia</i>	42.29	-0.735	high	Plant-skewed	2
<i>Myiozetetes cayanensis Cupania oblongifolia</i>	42.29	-0.735	high	Plant-skewed	1
<i>Thraupis cyanoptera Myrtaceae sp</i>	42.26	-0.888	high	Plant-skewed	1
<i>Vireo olivaceus Trichilia clauseni</i>	42.26	0.427	high	Bird-skewed	2
<i>Turdus rufiventris Ilex theezans</i>	42.18	-0.827	high	Plant-skewed	1
<i>Cacicus haemorrhous Cupania oblongifolia</i>	42.17	-0.739	high	Plant-skewed	1
<i>Penelope obscura Symplocos uniflora</i>	42.09	-0.591	high	Plant-skewed	1
<i>Tityra cayana Xylopia brasiliensis</i>	42.08	-0.195	high	Plant-skewed	1
<i>Empidonomus varius Cupania oblongifolia</i>	41.99	-0.744	high	Plant-skewed	1
<i>Camptostoma obsoletum Cupania vernalis</i>	41.88	-0.151	high	Plant-skewed	1
<i>Tersina viridis Erythroxylum deciduum</i>	41.88	-0.725	high	Plant-skewed	1



<i>Lipaugus lanioides Copaifera trapezifolia</i>	41.86	-0.688	high	Plant-skewed	1
<i>Thraupis sayaca Alchornea glandulosa</i>	41.86	-0.929	high	Plant-skewed	1
<i>Pitangus sulphuratus Vitex megapotamica</i>	41.84	-0.569	high	Plant-skewed	1
<i>Attila phoenicurus Cabralea canjerana</i>	41.83	-0.632	high	Plant-skewed	1
<i>Attila rufus Cabralea canjerana</i>	41.83	-0.632	high	Plant-skewed	1
<i>Ramphastos dicolorus Copaifera trapezifolia</i>	41.76	-0.691	high	Plant-skewed	1
<i>Ramphastos vitellinus Copaifera trapezifolia</i>	41.75	-0.692	high	Plant-skewed	1
<i>Pyroderus scutatus Persea willdenovii</i>	41.70	-0.055	high	Plant-skewed	1
<i>Myiozetetes similis Erythroxylum deciduum</i>	41.69	-0.731	high	Plant-skewed	1
<i>Vireo olivaceus Clusia criuva</i>	41.67	0.449	high	Bird-skewed	2
<i>Zonotrichia capensis Protium icicariba</i>	41.62	-0.429	high	Plant-skewed	1
<i>Turdus albicollis Marcgravia polyantha</i>	41.62	-0.777	high	Plant-skewed	1
<i>Pipraeidea melanonota Cabralea canjerana</i>	41.60	-0.640	high	Plant-skewed	1
<i>Myiodynastes maculatus Cabralea canjerana</i>	41.59	-0.640	high	Plant-skewed	2
<i>Trogon sarrucura Cecropia glaziovii</i>	41.57	-0.299	high	Plant-skewed	1
<i>Pipile jacutinga Nectandra grandiflora</i>	41.51	0.568	high	Bird-skewed	1
<i>Turdus flavipes Marcgravia polyantha</i>	41.49	-0.781	high	Plant-skewed	1
<i>Turdus leucomelas Virola bicuhyba</i>	41.48	-0.856	high	Plant-skewed	1
<i>Tityra cayana Cupania vernalis</i>	41.42	-0.172	high	Plant-skewed	1
<i>Empidonomus varius Erythroxylum deciduum</i>	41.40	-0.740	high	Plant-skewed	1
<i>Pipile jacutinga Allophylus edulis</i>	41.35	0.573	high	Bird-skewed	1
<i>Thraupis episcopus Maytenus gonoclada</i>	41.35	-0.928	high	Plant-skewed	1
<i>Thraupis sayaca Citharexylum myrianthum</i>	41.35	-0.928	high	Plant-skewed	2
<i>Thraupis episcopus Citharexylum myrianthum</i>	41.34	-0.928	high	Plant-skewed	1
<i>Trichothraupis melanops Marcgravia polyantha</i>	41.22	-0.789	high	Plant-skewed	1
<i>Pipile jacutinga Nectandra membranacea</i>	41.21	0.578	high	Bird-skewed	1
<i>Colaptes campestris Erythroxylum deciduum</i>	41.16	-0.747	high	Plant-skewed	1
<i>Colaptes melanochloros Erythroxylum deciduum</i>	41.16	-0.747	high	Plant-skewed	1
<i>Phibalura flavirostris Symplocos</i>	41.14	-0.463	high	Plant-skewed	1

*glandulosomarginata*

<i>Tyrannus melancholicus Chiococca alba</i>	41.09	-0.866	high	Plant-skewed	1
<i>Turdus albicollis Cupania oblongifolia</i>	41.03	-0.773	high	Plant-skewed	2
<i>Elaenia flavogaster Cupania oblongifolia</i>	41.02	-0.773	high	Plant-skewed	1
<i>Ramphocelus bresilius Chiococca alba</i>	41.00	-0.869	high	Plant-skewed	1
<i>Turdus flavipes Cupania oblongifolia</i>	40.90	-0.777	high	Plant-skewed	1
<i>Elaenia sp Erythroxylum deciduum</i>	40.82	-0.757	high	Plant-skewed	1
<i>Procnias nudicollis Cupania vernalis</i>	40.80	-0.199	high	Plant-skewed	1
<i>Turdus amaurochalinus Vitex megapotamica</i>	40.76	-0.606	high	Plant-skewed	1
<i>Habia rubica Xylopia brasiliensis</i>	40.72	-0.253	high	Plant-skewed	1
<i>Dacnis cayana Cupania oblongifolia</i>	40.56	-0.787	high	Plant-skewed	1
<i>Megarynchus pitangua Cabralea canjerana</i>	40.52	-0.675	high	Plant-skewed	2
<i>Camptostoma obsoletum Myrsine coriacea</i>	40.45	-0.094	high	Plant-skewed	1
<i>Ramphastos dicolorus Cabralea canjerana</i>	40.43	-0.678	high	Plant-skewed	1
<i>Elaenia flavogaster Erythroxylum deciduum</i>	40.42	-0.769	high	Plant-skewed	1
<i>Thraupis sayaca Alchornea sidifolia</i>	40.38	-0.926	high	Plant-skewed	1
<i>Pyroderus scutatus Nectandra megapotamica</i>	40.36	0.008	high	Bird-skewed	1
<i>Manacus manacus Protium heptaphyllum</i>	40.27	-0.465	high	Plant-skewed	1
<i>Thraupis palmarum Syagrus romanzoffiana</i>	40.17	-0.913	high	Plant-skewed	1
<i>Habia rubica Cupania vernalis</i>	40.06	-0.231	high	Plant-skewed	1
<i>Elaenia flavogaster Erythroxylum ovalifolium</i>	40.03	-0.767	high	Plant-skewed	1
<i>Zonotrichia capensis Cecropia pachystachya</i>	39.99	-0.392	high	Plant-skewed	1
<i>Tityra cayana Myrsine coriacea</i>	39.98	-0.116	high	Plant-skewed	1
<i>Dacnis cayana Erythroxylum deciduum</i>	39.97	-0.783	high	Plant-skewed	1
<i>Chiroxiphia caudate Marcgravia polyantha</i>	39.89	-0.828	high	Plant-skewed	1
<i>Thraupis episcopus Erythroxylum pulchrum</i>	39.80	-0.925	high	Plant-skewed	1
<i>Melanerpes flavifrons Cecropia glaziovii</i>	39.77	-0.373	high	Plant-skewed	1
<i>Melanerpes candidus Cecropia glaziovii</i>	39.77	-0.373	high	Plant-skewed	1
<i>Schiffornis virescens Clusia criuva</i>	39.75	0.407	high	Bird-skewed	1
<i>Pteroglossus bailloni Symplocos glandulosomarginata</i>	39.73	-0.516	high	Plant-skewed	1

<i>Ramphastos dicolorus Symplocos uniflora</i>	39.72	-0.670	high	Plant-skewed	1
<i>Ramphastos vitellinus Symplocos uniflora</i>	39.71	-0.671	high	Plant-skewed	1
<i>Conopias trivirgatus Myrsine lancifolia</i>	39.68	0.007	high	Bird-skewed	1
<i>Turdus rufiventris Cupania oblongifolia</i>	39.67	-0.814	high	Plant-skewed	2
<i>Zonotrichia capensis Schinus terebinthifolia</i>	39.63	-0.383	high	Plant-skewed	2
<i>Zonotrichia capensis Lithraea molleoides</i>	39.63	-0.383	high	Plant-skewed	1
<i>Procnias nudicollis Persea willdenovii</i>	39.59	-0.154	high	Plant-skewed	1
<i>Stephanophorus diadematus Symplocos uniflora</i>	39.58	-0.675	high	Plant-skewed	1
<i>Oxyruncus cristatus Miconia latecrenata</i>	39.57	0.875	high	Bird-skewed	1
<i>Schistochlamys ruficapillus Erythroxylum gonocladum</i>	39.54	-0.882	high	Plant-skewed	1
<i>Turdus rufiventris Erythroxylum ambiguum</i>	39.50	-0.813	high	Plant-skewed	1
<i>Ramphastos dicolorus Symplocos sp</i>	39.49	-0.668	high	Plant-skewed	1
<i>Myiozetetes similis Cabralea canjerana</i>	39.43	-0.711	high	Plant-skewed	1
<i>Penelope obscura Geonoma gamiova</i>	39.43	-0.551	high	Plant-skewed	1
<i>Celeus flavescens Protium heptaphyllum</i>	39.36	-0.500	high	Plant-skewed	1
<i>Euphonia chlorotica Vitex megapotamica</i>	39.35	-0.654	high	Plant-skewed	1
<i>Mionectes rufiventris Geonoma gamiova</i>	39.32	-0.555	high	Plant-skewed	1
<i>Cacicus haemorrhous Cabralea canjerana</i>	39.31	-0.715	high	Plant-skewed	1
<i>Cacicus chrysopterus Cabralea canjerana</i>	39.31	-0.715	high	Plant-skewed	1
<i>Pyroderus scutatus Ilex brevicuspis</i>	39.23	0.064	high	Bird-skewed	1
<i>Tolmomyias flaviventris Xylopi sericea</i>	39.21	-0.302	high	Plant-skewed	1
<i>Empidonomus varius Cabralea canjerana</i>	39.14	-0.720	high	Plant-skewed	2
<i>Chiroxiphia caudate Erythroxylum ambiguum</i>	39.12	-0.824	high	Plant-skewed	1
<i>Turdus rufiventris Erythroxylum deciduum</i>	39.08	-0.810	high	Plant-skewed	1
<i>Ramphastos dicolorus Vitex polygama</i>	39.08	-0.663	high	Plant-skewed	1
<i>Stephanophorus diadematus Gaylussacia brasiliensis</i>	39.07	-0.670	high	Plant-skewed	1
<i>Trogon viridis Psychotria mapourioides</i>	39.06	0.708	high	Bird-skewed	1
<i>Zonotrichia capensis Ptilosocereus arrabidae</i>	39.06	-0.368	high	Plant-skewed	1

<i>Penelope obscura Symplocos glandulosomarginata</i>	38.98	-0.544	high	Plant-skewed	1
<i>Manacus manacus Cecropia pachystachya</i>	38.90	-0.436	high	Plant-skewed	1
<i>Pitangus sulphuratus Protium heptaphyllum</i>	38.84	-0.520	high	Plant-skewed	1
<i>Carpornis cucullata Persea willdenovii</i>	38.82	-0.189	high	Plant-skewed	1
<i>Icterus cayanensis Cecropia pachystachya</i>	38.82	-0.439	high	Plant-skewed	1
<i>Mimus saturninus Myrsine sp</i>	38.79	0.065	high	Bird-skewed	1
<i>Procnias nudicollis Ficus sp</i>	38.79	-0.121	high	Plant-skewed	1
<i>Pachyramphus validus Xylopia brasiliensis</i>	38.74	-0.338	high	Plant-skewed	1
<i>Tyrannus melancholicus Cupania emarginata</i>	38.70	-0.857	high	Plant-skewed	1
<i>Turdus leucomelas Cupania oblongifolia</i>	38.66	-0.844	high	Plant-skewed	2
<i>Schistochlamys ruficapillus Byrsonima variabilis</i>	38.65	-0.878	high	Plant-skewed	1
<i>Coryphospingus pileatus Erythroxylum ovalifolium</i>	38.64	-0.809	high	Plant-skewed	1
<i>Myiarchus swainsoni Erythroxylum deciduum</i>	38.62	-0.824	high	Plant-skewed	1
<i>Myiopagis caniceps Myrsine lancifolia</i>	38.60	-0.047	high	Plant-skewed	1
<i>Cacicus chrysopterus Symplocos uniflora</i>	38.60	-0.708	high	Plant-skewed	1
<i>Saltator similis Erythroxylum deciduum</i>	38.60	-0.825	high	Plant-skewed	1
<i>Carpornis cucullata Myrsine coriacea</i>	38.60	-0.181	high	Plant-skewed	1
<i>Tityra inquisitor Myrsine lancifolia</i>	38.54	-0.051	high	Plant-skewed	1
<i>Penelope sp Symplocos sp</i>	38.50	-0.701	high	Plant-skewed	1
<i>Turdus leucomelas Erythroxylum ambiguum</i>	38.48	-0.843	high	Plant-skewed	1
<i>Pachyramphus polychopterus Xylopia sericea</i>	38.46	-0.335	high	Plant-skewed	1
<i>Pipile jacutinga Guarea macrophylla</i>	38.39	0.675	high	Bird-skewed	1
<i>Selenidera maculirostris Clusia criuva</i>	38.38	0.372	high	Bird-skewed	1
<i>Tityra cayana Matayba guianensis</i>	38.33	-0.041	high	Plant-skewed	1
<i>Thraupis cyanoptera Marcgravia polyantha</i>	38.29	-0.875	high	Plant-skewed	1
<i>Tyrannus melancholicus Cupania oblongifolia</i>	38.29	-0.855	high	Plant-skewed	2
<i>Stephanophorus diadematus Gaylussacia pulchra</i>	38.25	-0.660	high	Plant-skewed	1
<i>Procnias nudicollis Nectandra megapotamica</i>	38.24	-0.097	high	Plant-skewed	1

<i>Saltator fuliginosus Cabralea canjerana</i>	38.22	-0.750	high	Plant-skewed	1
<i>Ramphocelus bresilius Cupania oblongifolia</i>	38.20	-0.858	high	Plant-skewed	1
<i>Turdus albicollis Cabralea canjerana</i>	38.17	-0.752	high	Plant-skewed	2
<i>Pyroderus scutatus Myrsine umbellata</i>	38.11	0.119	high	Bird-skewed	1
<i>Mimus gilvus Myrsine parvifolia</i>	38.09	0.100	high	Bird-skewed	1
<i>Pachyramphus validus Cupania vernalis</i>	38.08	-0.319	high	Plant-skewed	1
<i>Myiarchus ferox Erythroxylum deciduum</i>	38.08	-0.841	high	Plant-skewed	1
<i>Turdus leucomelas Erythroxylum deciduum</i>	38.07	-0.841	high	Plant-skewed	1
<i>Chiroxiphia caudate Inga marginata</i>	38.06	-0.818	high	Plant-skewed	1
<i>Turdus flavipes Cabralea canjerana</i>	38.04	-0.756	high	Plant-skewed	1
<i>Carpornis cucullata Ficus sp</i>	38.02	-0.158	high	Plant-skewed	1
<i>Hylophilus poicilotis Cupania vernalis</i>	38.01	-0.322	high	Plant-skewed	1
<i>Celeus flavescens Cecropia pachystachya</i>	37.99	-0.472	high	Plant-skewed	1
<i>Nemosia pileata Cecropia pachystachya</i>	37.94	-0.474	high	Plant-skewed	1
<i>Poospiza lateralis Symplocos uniflora</i>	37.93	-0.730	high	Plant-skewed	1
<i>Tangara cayana Erythroxylum deciduum</i>	37.87	-0.847	high	Plant-skewed	1
<i>Oxyruncus cristatus Myrcia splendens</i>	37.87	0.923	high	Bird-skewed	1
<i>Elaenia sp Symplocos uniflora</i>	37.85	-0.733	high	Plant-skewed	2
<i>Volatinia jacarina Protium icicariba</i>	37.85	-0.572	high	Plant-skewed	1
<i>Euphonia violacea Protium heptaphyllum</i>	37.84	-0.558	high	Plant-skewed	1
<i>Pteroglossus bailloni Cecropia pachystachya</i>	37.82	-0.479	high	Plant-skewed	1
<i>Myiarchus sp Erythroxylum deciduum</i>	37.82	-0.849	high	Plant-skewed	1
<i>Trogon surrucura Ficus sp</i>	37.78	-0.170	high	Plant-skewed	1
<i>Turdus amaurochalinus Protium heptaphyllum</i>	37.76	-0.561	high	Plant-skewed	1
<i>Procnias nudicollis Matayba elaeagnoides</i>	37.71	-0.073	high	Plant-skewed	1
<i>Dacnis cayana Cabralea canjerana</i>	37.70	-0.767	high	Plant-skewed	2
<i>Tyrannus savana Erythroxylum deciduum</i>	37.69	-0.853	high	Plant-skewed	1
<i>Tyrannus melancholicus Erythroxylum deciduum</i>	37.69	-0.853	high	Plant-skewed	1
<i>Celeus flavescens Cecropia glaziovii</i>	37.56	-0.463	high	Plant-skewed	1
<i>Phylloscartes ventralis Myrsine coriacea</i>	37.53	-0.231	high	Plant-skewed	1

<i>Elaenia obscura Schinus terebinthifolia</i>	37.51	-0.469	high	Plant-skewed	1
<i>Cissopis leverianus Cabralea canjerana</i>	37.50	-0.774	high	Plant-skewed	1
<i>Carpornis cucullata Nectandra megapotamica</i>	37.47	-0.135	high	Plant-skewed	1
<i>Pitangus sulphuratus Cecropia pachystachya</i>	37.47	-0.493	high	Plant-skewed	2
<i>Turdus albicollis Symplocos uniflora</i>	37.46	-0.746	high	Plant-skewed	2
<i>Elaenia flavogaster Symplocos uniflora</i>	37.45	-0.746	high	Plant-skewed	1
<i>Pteroglossus bailloni Cecropia glaziovii</i>	37.39	-0.470	high	Plant-skewed	2
<i>Mimus saturninus Ficus organensis</i>	37.39	0.135	high	Bird-skewed	1
<i>Trogon viridis Amaioua intermedia</i>	37.38	0.763	high	Bird-skewed	1
<i>Turdus flavipes Symplocos uniflora</i>	37.33	-0.750	high	Plant-skewed	1
<i>Turdus albicollis Symplocos sp</i>	37.23	-0.744	high	Plant-skewed	1
<i>Carpornis cucullata Myrsine lancifolia</i>	37.15	-0.121	high	Plant-skewed	1
<i>Manacus manacus Xylopia sericea</i>	37.12	-0.392	high	Plant-skewed	1
<i>Pitangus sulphuratus Schinus terebinthifolia</i>	37.11	-0.486	high	Plant-skewed	3
<i>Camptostoma obsoletum Myrsine umbellata</i>	37.07	0.072	high	Bird-skewed	1
<i>Ramphastos dicolorus Geonoma gamiova</i>	37.06	-0.638	high	Plant-skewed	1
<i>Pitangus sulphuratus Cecropia glaziovii</i>	37.04	-0.484	high	Plant-skewed	1
<i>Carpornis melanocephala Matayba elaeagnoides</i>	36.95	-0.112	high	Plant-skewed	1
<i>Neopelma aurifrons Coccocypselum hasslerianum</i>	36.82	-0.263	high	Plant-skewed	1
<i>Turdus albicollis Vitex megapotamica</i>	36.82	-0.741	high	Plant-skewed	1
<i>Turdus rufiventris Cabralea canjerana</i>	36.82	-0.796	high	Plant-skewed	1
<i>Thraupis ornate Cupania oblongifolia</i>	36.70	-0.903	high	Plant-skewed	1
<i>Thraupis palmarum Cupania oblongifolia</i>	36.66	-0.904	high	Plant-skewed	1
<i>Penelope obscura Cecropia glaziovii</i>	36.65	-0.500	high	Plant-skewed	1
<i>Euphonia chlorotica Protium icicariba</i>	36.62	-0.618	high	Plant-skewed	1
<i>Ramphastos dicolorus Symplocos glandulosomarginata</i>	36.62	-0.632	high	Plant-skewed	1
<i>Pachyramphus polychopterus Myrsine coriacea</i>	36.58	-0.276	high	Plant-skewed	2
<i>Hylophilus poicilotis Myrsine coriacea</i>	36.58	-0.276	high	Plant-skewed	1

<i>Melanerpes flavifrons Myrsine coriacea</i>	36.55	-0.277	high	Plant-skewed	1
<i>Cyanerpes cyaneus Protium icariba</i>	36.54	-0.621	high	Plant-skewed	1
<i>Euphonia pectoralis Cecropia glaziovii</i>	36.50	-0.506	high	Plant-skewed	1
<i>Stephanophorus diadematus Symplocos glandulosomarginata</i>	36.47	-0.638	high	Plant-skewed	1
<i>Euphonia violacea Cecropia pachystachya</i>	36.47	-0.533	high	Plant-skewed	1
<i>Chiroxiphia caudate Cabralea canjerana</i>	36.44	-0.809	high	Plant-skewed	2
<i>Turdus amaurochalinus Cecropia pachystachya</i>	36.39	-0.537	high	Plant-skewed	1
<i>Chiroxiphia caudate Guatteria australis</i>	36.39	-0.808	high	Plant-skewed	1
<i>Euphonia chlorotica Protium heptaphyllum</i>	36.36	-0.614	high	Plant-skewed	1
<i>Zonotrichia capensis Myrsine coriacea</i>	36.34	-0.287	high	Plant-skewed	2
<i>Saltator similis Cabralea canjerana</i>	36.33	-0.812	high	Plant-skewed	2
<i>Parula pitiayumi Schinus terebinthifolia</i>	36.33	-0.518	high	Plant-skewed	2
<i>Lipaugus lanioides Mollinedia sp</i>	36.32	-0.623	high	Plant-skewed	1
<i>Vireo olivaceus Guarea guidonia</i>	36.28	0.650	high	Bird-skewed	1
<i>Cyanerpes cyaneus Protium heptaphyllum</i>	36.27	-0.617	high	Plant-skewed	1
<i>Pteroglossus bailloni Xylopi brasiliensis</i>	36.27	-0.444	high	Plant-skewed	1
<i>Thraupis sayaca Cupania oblongifolia</i>	36.22	-0.917	high	Plant-skewed	1
<i>Volatinia jacarina Cecropia pachystachya</i>	36.22	-0.544	high	Plant-skewed	1
<i>Turdus subalaris Myrsine coriacea</i>	36.21	-0.294	high	Plant-skewed	1
<i>Turdus rufiventris Symplocos uniflora</i>	36.11	-0.791	high	Plant-skewed	1
<i>Euphonia violacea Schinus terebinthifolia</i>	36.11	-0.527	high	Plant-skewed	2
<i>Trogon sarrucura Ilex brevicuspis</i>	36.10	-0.096	high	Plant-skewed	1
<i>Selenidera maculirostris Ocotea odorifera</i>	36.08	0.469	high	Bird-skewed	1
<i>Euphonia violacea Cecropia glaziovii</i>	36.04	-0.525	high	Plant-skewed	1
<i>Turdus amaurochalinus Schinus terebinthifolia</i>	36.03	-0.530	high	Plant-skewed	2
<i>Phylloscartes oustaleti Myrsine lancifolia</i>	35.95	-0.181	high	Plant-skewed	1
<i>Coereba flaveola Protium heptaphyllum</i>	35.92	-0.631	high	Plant-skewed	1
<i>Pitangus sulphuratus Xylopi brasiliensis</i>	35.92	-0.459	high	Plant-skewed	1
<i>Tangara desmaresti Cupania oblongifolia</i>	35.92	-0.926	high	Plant-skewed	1
<i>Trogon viridis Miconia valtheri</i>	35.89	0.813	high	Bird-skewed	1

<i>Turdus rufiventris Symplocos sp</i>	35.88	-0.790	high	Plant-skewed	1
<i>Volatinia jacarina Schinus terebinthifolia</i>	35.86	-0.537	high	Plant-skewed	1
<i>Elaenia mesoleuca Symplocos uniflora</i>	35.83	-0.801	high	Plant-skewed	1
<i>Myiarchus ferox Cabralea canjerana</i>	35.82	-0.829	high	Plant-skewed	1
<i>Turdus leucomelas Cabralea canjerana</i>	35.81	-0.829	high	Plant-skewed	1
<i>Trogon viridis Myrcia spectabilis</i>	35.71	0.819	high	Bird-skewed	1
<i>Saltator maximus Protium heptaphyllum</i>	35.66	-0.641	high	Plant-skewed	1
<i>Thraupis sayaca Erythroxylum deciduum</i>	35.63	-0.915	high	Plant-skewed	1
<i>Saltator similis Symplocos uniflora</i>	35.63	-0.807	high	Plant-skewed	1
<i>Phibalura flavirostris Myrsine coriacea</i>	35.59	-0.323	high	Plant-skewed	1
<i>Myiarchus sp Cabralea canjerana</i>	35.56	-0.837	high	Plant-skewed	1
<i>Mimus gilvus Ocotea notata</i>	35.54	0.227	high	Bird-skewed	1
<i>Myiodynastes maculatus Schinus terebinthifolia</i>	35.52	-0.551	high	Plant-skewed	1
<i>Turdus albicollis Mollinedia schottiana</i>	35.51	-0.728	high	Plant-skewed	2
<i>Ramphastos vitellinus Chrysophyllum flexuosum</i>	35.50	-0.617	high	Plant-skewed	1
<i>Ilicura militaris Myrsine coriacea</i>	35.49	-0.327	high	Plant-skewed	1
<i>Turdus rufiventris Vitex megapotamica</i>	35.47	-0.787	high	Plant-skewed	1
<i>Tyrannus savana Cabralea canjerana</i>	35.43	-0.842	high	Plant-skewed	1
<i>Tyrannus melancholicus Cabralea canjerana</i>	35.43	-0.842	high	Plant-skewed	1
<i>Trogon viridis Myrcia pubipetala</i>	35.40	0.829	high	Bird-skewed	1
<i>Euphonia pectoralis Xylopiya brasiliensis</i>	35.38	-0.483	high	Plant-skewed	1
<i>Carpornis cucullata Myrsine venosa</i>	35.37	-0.034	high	Plant-skewed	1
<i>Volatinia jacarina Pilosocereus arrabidae</i>	35.29	-0.526	high	Plant-skewed	1
<i>Trogon viridis Ficus luschnathiana</i>	35.29	0.833	high	Bird-skewed	1
<i>Lipaugus lanioides Mollinedia triflora</i>	35.28	-0.607	high	Plant-skewed	1
<i>Lipaugus lanioides Protium widgrenii</i>	35.25	-0.607	high	Plant-skewed	1
<i>Manacus manacus Myrsine coriacea</i>	35.25	-0.339	high	Plant-skewed	1
<i>Carpornis cucullata Myrsine umbellata</i>	35.22	-0.026	high	Plant-skewed	1
<i>Mionectes oleaginous Xylopiya sericea</i>	35.20	-0.476	high	Plant-skewed	1



<i>Contopus cinereus Myrsine coriacea</i>	35.19	-0.341	high	Plant-skewed	1
<i>Turdus albicollis Symplocos tetrandra</i>	35.16	-0.725	high	Plant-skewed	1
<i>Ramphastos vitellinus Protium widgrenii</i>	35.14	-0.611	high	Plant-skewed	1
<i>Pachyramphus castaneus Myrsine lancifolia</i>	35.14	-0.223	high	Plant-skewed	1
<i>Hylophilus poicilotis Myrsine lancifolia</i>	35.13	-0.223	high	Plant-skewed	1
<i>Melanerpes flavifrons Myrsine lancifolia</i>	35.10	-0.225	high	Plant-skewed	1
<i>Pachyramphus validus Matayba guianensis</i>	35.00	-0.211	high	Plant-skewed	1
<i>Euphonia chlorotica Cecropia pachystachya</i>	34.99	-0.593	high	Plant-skewed	1
<i>Cacicus haemorrhous Protium heptaphyllum</i>	34.96	-0.667	high	Plant-skewed	1
<i>Tangara preciosa Symplocos uniflora</i>	34.85	-0.833	high	Plant-skewed	1
<i>Mimus gilvus Clusia hilariana</i>	34.85	0.262	high	Bird-skewed	1
<i>Turdus albicollis Geonoma gamiova</i>	34.80	-0.721	high	Plant-skewed	2
<i>Ramphastos vitellinus Cecropia pachystachya</i>	34.70	-0.605	high	Plant-skewed	1
<i>Coereba flaveola Cecropia pachystachya</i>	34.55	-0.611	high	Plant-skewed	3
<i>Basileuterus flaveolus Cecropia pachystachya</i>	34.42	-0.616	high	Plant-skewed	1
<i>Lipaugus lanioides Cecropia glaziovii</i>	34.38	-0.593	high	Plant-skewed	1
<i>Turdus albicollis Symplocos glandulosomarginata</i>	34.36	-0.717	high	Plant-skewed	1
<i>Elaenia flavogaster Symplocos glandulosomarginata</i>	34.35	-0.717	high	Plant-skewed	1
<i>Celeus flavescens Myrsine coriacea</i>	34.34	-0.381	high	Plant-skewed	2
<i>Myiodynastes maculatus Xylopia brasiliensis</i>	34.32	-0.528	high	Plant-skewed	1
<i>Turdus amaurochalinus Xylopia langsdorfiana</i>	34.28	-0.494	high	Plant-skewed	1
<i>Ramphastos dicolorus Cecropia glaziovii</i>	34.28	-0.597	high	Plant-skewed	2
<i>Trogon viridisLeandra variabilis</i>	34.27	0.866	high	Bird-skewed	1
<i>Ramphastos vitellinus Cecropia glaziovii</i>	34.27	-0.598	high	Plant-skewed	1
<i>Pitangus sulphuratus Persea major</i>	34.23	-0.417	high	Plant-skewed	1
<i>Elaenia obscura Myrsine coriacea</i>	34.22	-0.387	high	Plant-skewed	1
<i>Stephanophorus diadematus Schinus terebinthifolia</i>	34.21	-0.604	high	Plant-skewed	1
<i>Coereba flaveola Schinus terebinthifolia</i>	34.19	-0.605	high	Plant-skewed	2

<i>Pteroglossus bailloni Myrsine coriacea</i>	34.17	-0.389	high	Plant-skewed	1
<i>Stephanophorus diadematus Cecropia glaziovii</i>	34.13	-0.603	high	Plant-skewed	1
<i>Coereba flaveola Cecropia glaziovii</i>	34.12	-0.604	high	Plant-skewed	1
<i>Pipra pipra Protium heptaphyllum</i>	34.08	-0.701	high	Plant-skewed	1
<i>Tyrannus melancholicus Vitex megapotamica</i>	34.08	-0.834	high	Plant-skewed	1
<i>Pipile jacutinga Miconia inconspicua</i>	34.07	0.824	high	Bird-skewed	1
<i>Antilophia galeata Cecropia pachystachya</i>	34.07	-0.630	high	Plant-skewed	1
<i>Euphonia chlorotica Pilosocereus arrabidaei</i>	34.06	-0.577	high	Plant-skewed	1
<i>Schiffornis virescens Psychotria vellosiana</i>	34.06	0.635	high	Bird-skewed	1
<i>Ilicura militaris Myrsine lancifolia</i>	34.05	-0.278	high	Plant-skewed	1
<i>Pipile jacutinga Ficus pertusa</i>	34.05	0.825	high	Bird-skewed	1
<i>Pipile jacutinga Ficus luschnathiana</i>	34.05	0.825	high	Bird-skewed	1
<i>Camptostoma obsoletum Clusia criuva</i>	34.03	0.230	high	Bird-skewed	1
<i>Tachyphonus cristatus Cecropia pachystachya</i>	34.01	-0.632	high	Plant-skewed	1
<i>Trogon viridis Eugenia mosenii</i>	33.96	0.877	high	Bird-skewed	1
<i>Tersina viridis Cecropia pachystachya</i>	33.90	-0.637	high	Plant-skewed	1
<i>Attila rufus Cupania vernalis</i>	33.90	-0.504	high	Plant-skewed	1
<i>Schiffornis virescens Psychotria suterella</i>	33.90	0.641	high	Bird-skewed	1
<i>Zonotrichia capensis Myrsine sp</i>	33.87	-0.193	high	Plant-skewed	1
<i>Pitangus sulphuratus Myrsine coriacea</i>	33.82	-0.406	high	Plant-skewed	2
<i>Chiroxiphia caudate Mollinedia schottiana</i>	33.78	-0.790	high	Plant-skewed	1
<i>Myiozetetes similis Cecropia pachystachya</i>	33.71	-0.644	high	Plant-skewed	3
<i>Antilophia galeata Schinus terebinthifolia</i>	33.71	-0.624	high	Plant-skewed	1
<i>Turdus flavipes Protium heptaphyllum</i>	33.69	-0.716	high	Plant-skewed	2
<i>Myiodynastes maculatus Cupania vernalis</i>	33.66	-0.514	high	Plant-skewed	1
<i>Penelope obscura Persea willdenovii</i>	33.65	-0.430	high	Plant-skewed	1
<i>Attila rufus Mollinedia boracensis</i>	33.59	-0.497	high	Plant-skewed	1
<i>Tangara cayana Gaylussacia pulchra</i>	33.57	-0.824	high	Plant-skewed	1
<i>Schistochlamys ruficapillus Gaylussacia brasiliensis</i>	33.56	-0.857	high	Plant-skewed	1
<i>Icterus cayanensis Matayba guianensis</i>	33.52	-0.287	high	Plant-skewed	1

<i>Thlypopsis sordida</i> <i>Cecropia pachystachya</i>	33.50	-0.653	high	Plant-skewed	1
<i>Penelope obscura</i> <i>Myrsine coriacea</i>	33.43	-0.424	high	Plant-skewed	1
<i>Penelope obscura</i> <i>Coccocypselum hasslerianum</i>	33.41	-0.424	high	Plant-skewed	1
<i>Dacnis cayana</i> <i>Protium heptaphyllum</i>	33.36	-0.729	high	Plant-skewed	1
<i>Myiozetetes similis</i> <i>Schinus terebinthifolia</i>	33.35	-0.639	high	Plant-skewed	3
<i>Mionectes rufiventris</i> <i>Myrsine coriacea</i>	33.32	-0.429	high	Plant-skewed	1
<i>Mionectes oleaginous</i> <i>Myrsine coriacea</i>	33.32	-0.429	high	Plant-skewed	1
<i>Euphonia pectoralis</i> <i>Myrsine coriacea</i>	33.28	-0.431	high	Plant-skewed	1
<i>Lipaugus lanioides</i> <i>Xylopia brasiliensis</i>	33.26	-0.573	high	Plant-skewed	1
<i>Cacicus haemorrhous</i> <i>Schinus terebinthifolia</i>	33.23	-0.644	high	Plant-skewed	1
<i>Orthogonys chloricterus</i> <i>Cecropia glaziovii</i>	33.21	-0.641	high	Plant-skewed	1
<i>Melanerpes flavifrons</i> <i>Myrsine umbellata</i>	33.17	-0.141	high	Plant-skewed	1
<i>Cacicus haemorrhous</i> <i>Cecropia glaziovii</i>	33.16	-0.643	high	Plant-skewed	1
<i>Cyanerpes cyaneus</i> <i>Xylopia sericea</i>	33.13	-0.565	high	Plant-skewed	1
<i>Carpornis cucullata</i> <i>Ocotea teleiandra</i>	33.03	0.099	high	Bird-skewed	1
<i>Tangara desmaresti</i> <i>Guatteria australis</i>	33.01	-0.919	high	Plant-skewed	1
<i>Pteroglossus bailloni</i> <i>Ficus glabra</i>	32.99	-0.353	high	Plant-skewed	1
<i>Pipile jacutinga</i> <i>Eugenia brasiliensis</i>	32.97	0.863	high	Bird-skewed	1
<i>Conirostrum speciosum</i> <i>Guettarda viburnoides</i>	32.94	-0.476	high	Plant-skewed	1
<i>Turdus sp</i> <i>Protium heptaphyllum</i>	32.93	-0.745	high	Plant-skewed	1
<i>Dacnis cayana</i> <i>Clusia organensis</i>	32.85	-0.723	high	Plant-skewed	1
<i>Pipile jacutinga</i> <i>Endlicheria paniculata</i>	32.83	0.867	high	Bird-skewed	1
<i>Euphonia violacea</i> <i>Myrsine coriacea</i>	32.82	-0.453	high	Plant-skewed	1
<i>Tangara mexicana</i> <i>Protium heptaphyllum</i>	32.81	-0.750	high	Plant-skewed	1
<i>Habia rubica</i> <i>Trichilia clauseni</i>	32.80	0.116	high	Bird-skewed	1
<i>Coereba flaveola</i> <i>Xylopia sericea</i>	32.77	-0.581	high	Plant-skewed	1
<i>Turdus amaurochalinus</i> <i>Myrsine coriacea</i>	32.74	-0.457	low	Plant-skewed	4
<i>Elaenia mesoleuca</i> <i>Symplocos glandulosomarginata</i>	32.73	-0.778	low	Plant-skewed	1
<i>Selenidera maculirostris</i> <i>Psychotria nuda</i>	32.71	0.612	low	Bird-skewed	1
<i>Euphonia pectoralis</i> <i>Ficus sp</i>	32.71	-0.416	low	Plant-skewed	1

<i>Pitangus sulphuratus Nectandra megapotamica</i>	32.70	-0.373	low	Plant-skewed	1
<i>Coryphospingus pileatus Protium icicariba</i>	32.69	-0.767	low	Plant-skewed	1
<i>Chiroxiphia caudate Symplocos glandulosomarginata</i>	32.63	-0.781	low	Plant-skewed	1
<i>Pipile jacutinga Eugenia involucrata</i>	32.62	0.875	low	Bird-skewed	1
<i>Lipaugus lanioides Cupania vernalis</i>	32.60	-0.561	low	Plant-skewed	1
<i>Trogon viridis Paullinia sp</i>	32.60	0.922	low	Bird-skewed	1
<i>Megarynchus pitangua Cupania vernalis</i>	32.59	-0.562	low	Plant-skewed	1
<i>Conirostrum speciosum Myrsine coriacea</i>	32.55	-0.466	low	Plant-skewed	1
<i>Myiarchus swainsoni Symplocos glandulosomarginata</i>	32.54	-0.784	low	Plant-skewed	1
<i>Orchesticus abeillei Xylopia brasiliensis</i>	32.54	-0.604	low	Plant-skewed	1
<i>Pteroglossus bailloni Matayba elaeagnoides</i>	32.53	-0.338	low	Plant-skewed	1
<i>Saltator maximus Xylopia sericea</i>	32.51	-0.592	low	Plant-skewed	1
<i>Pyroderus scutatus Nectandra membranacea</i>	32.49	0.397	low	Bird-skewed	1
<i>Elaenia sp Schinus terebinthifolia</i>	32.48	-0.675	low	Plant-skewed	2
<i>Turdus rufiventris Protium heptaphyllum</i>	32.47	-0.762	low	Plant-skewed	2
<i>Zonotrichia capensis Ficus organensis</i>	32.46	-0.128	low	Plant-skewed	1
<i>Elaenia flavogaster Cecropia pachystachya</i>	32.44	-0.695	low	Plant-skewed	1
<i>Coryphospingus cucullatus Protium heptaphyllum</i>	32.42	-0.764	low	Plant-skewed	1
<i>Chiroxiphia caudate Geonoma pauciflora</i>	32.42	-0.780	low	Plant-skewed	1
<i>Selenidera maculirostris Psychotria mapourioides</i>	32.41	0.625	low	Bird-skewed	1
<i>Ilicura militaris Myrsine venosa</i>	32.27	-0.207	low	Plant-skewed	1
<i>Euphonia violacea Ficus sp</i>	32.24	-0.438	low	Plant-skewed	1
<i>Myiodynastes maculatus Myrsine coriacea</i>	32.22	-0.481	low	Plant-skewed	4
<i>Turdus albicollis Schinus terebinthifolia</i>	32.09	-0.691	low	Plant-skewed	1
<i>Chiroxiphia caudate Protium heptaphyllum</i>	32.09	-0.777	low	Plant-skewed	1
<i>Orthogonys chloricterus Xylopia brasiliensis</i>	32.09	-0.624	low	Plant-skewed	1

<i>Elaenia flavogaster Schinus terebinthifolia</i>	32.08	-0.691	low	Plant-skewed	2
<i>Trichothraupis melanops Cecropia pachystachya</i>	32.06	-0.711	low	Plant-skewed	1
<i>Cacicus haemorrhous Xylopia brasiliensis</i>	32.04	-0.626	low	Plant-skewed	1
<i>Turdus albicollis Cecropia glaziovii</i>	32.02	-0.690	low	Plant-skewed	1
<i>Thraupis sayaca Vitex polygama</i>	32.01	-0.905	low	Plant-skewed	1
<i>Thraupis sayaca Vitex megapotamica</i>	32.01	-0.905	low	Plant-skewed	1
<i>Euphonia chalybea Ficus sp</i>	32.00	-0.450	low	Plant-skewed	1
<i>Chiroxiphia caudate Symplocos estrellensis</i>	31.99	-0.776	low	Plant-skewed	1
<i>Saltator similis Protium heptaphyllum</i>	31.99	-0.781	low	Plant-skewed	2
<i>Dacnis cayana Cecropia pachystachya</i>	31.99	-0.714	low	Plant-skewed	2
<i>Penelope obscura Myrsine lancifolia</i>	31.98	-0.382	low	Plant-skewed	1
<i>Elaenia obscura Ilex brevicuspis</i>	31.97	-0.314	low	Plant-skewed	1
<i>Trogon sarrucura Clusia criuva</i>	31.94	0.136	low	Bird-skewed	1
<i>Vireo olivaceus Myrcia ferruginea</i>	31.93	0.812	low	Bird-skewed	1
<i>Mionectes rufiventris Myrsine lancifolia</i>	31.88	-0.388	low	Plant-skewed	1
<i>Celeus flavescens Myrsine sp</i>	31.87	-0.300	low	Plant-skewed	1
<i>Tangara desmaresti Gaylussacia brasiliensis</i>	31.85	-0.916	low	Plant-skewed	1
<i>Pitangus sulphuratus Ficus insipida</i>	31.84	-0.345	low	Plant-skewed	1
<i>Cacicus haemorrhous Xylopia sericea</i>	31.82	-0.622	low	Plant-skewed	1
<i>Tachyphonus coronatus Protium heptaphyllum</i>	31.79	-0.788	low	Plant-skewed	1
<i>Trichothraupis melanops Schinus terebinthifolia</i>	31.70	-0.707	low	Plant-skewed	1
<i>Tachyphonus coronatus Symplocos pubescens</i>	31.68	-0.787	low	Plant-skewed	1
<i>Dacnis cayana Schinus terebinthifolia</i>	31.63	-0.709	low	Plant-skewed	5
<i>Trichothraupis melanops Cecropia glaziovii</i>	31.63	-0.706	low	Plant-skewed	1
<i>Trogon viridis Miconia cabucu</i>	31.61	0.954	low	Bird-skewed	1
<i>Tolmomyias sulphurescens Ocotea notata</i>	31.61	0.039	low	Bird-skewed	1
<i>Carpornis cucullata Ixora gardneriana</i>	31.57	0.183	low	Bird-skewed	1
<i>Turdus fumigatus Protium heptaphyllum</i>	31.48	-0.800	low	Plant-skewed	1
<i>Myiarchus ferox Protium heptaphyllum</i>	31.47	-0.801	low	Plant-skewed	1

<i>Turdus leucomelas Protium heptaphyllum</i>	31.46	-0.801	low	Plant-skewed	2
<i>Cissopis leverianus Schinus terebinthifolia</i>	31.42	-0.718	low	Plant-skewed	1
<i>Xolmis velatus Myrsine coriacea</i>	31.40	-0.520	low	Plant-skewed	1
<i>Cacicus haemorrhous Cupania vernalis</i>	31.38	-0.615	low	Plant-skewed	1
<i>Tangara seledon Symplocos glandulosomarginata</i>	31.36	-0.829	low	Plant-skewed	1
<i>Cissopis leverianus Cecropia glaziovii</i>	31.35	-0.717	low	Plant-skewed	1
<i>Pitangus sulphuratus Myrsine sp</i>	31.35	-0.328	low	Plant-skewed	1
<i>Ramphastos dicolorus Persea willdenovii</i>	31.29	-0.541	low	Plant-skewed	1
<i>Pipile jacutinga Marlierea reitzii</i>	31.27	0.921	low	Bird-skewed	1
<i>Tangara cayana Protium heptaphyllum</i>	31.26	-0.809	low	Plant-skewed	2
<i>Selenidera maculirostris Rudgea recurva</i>	31.22	0.676	low	Bird-skewed	1
<i>Selenidera maculirostris Rudgea jasminoides</i>	31.22	0.676	low	Bird-skewed	1
<i>Penelope obscura Ilex brevicuspis</i>	31.18	-0.356	low	Plant-skewed	1
<i>Lipaugus lanioides Myrsine coriacea</i>	31.16	-0.531	low	Plant-skewed	1
<i>Megarynchus pitangua Myrsine coriacea</i>	31.15	-0.532	low	Plant-skewed	1
<i>Tityra cayana Allophylus edulis</i>	31.13	0.341	low	Bird-skewed	1
<i>Manacus manacus Ocotea sp</i>	31.11	-0.179	low	Plant-skewed	1
<i>Turdus rufiventris Cecropia pachystachya</i>	31.10	-0.749	low	Plant-skewed	1
<i>Schiffornis virescens Psychotria gracilentia</i>	31.09	0.754	low	Bird-skewed	1
<i>Tangara mexicana Schinus terebinthifolia</i>	31.08	-0.732	low	Plant-skewed	1
<i>Euphonia pectoralis Phoradendron sp</i>	31.07	-0.365	low	Plant-skewed	1
<i>Lathrotriccus euleri Myrsine coriacea</i>	31.07	-0.536	low	Plant-skewed	1
<i>Ramphastos dicolorus Myrsine coriacea</i>	31.06	-0.536	low	Plant-skewed	1
<i>Vireo olivaceus Miconia tristis</i>	31.04	0.845	low	Bird-skewed	1
<i>Thraupis cyanoptera Symplocos glandulosomarginata</i>	31.03	-0.841	low	Plant-skewed	1
<i>Tangara desmaresti Gaylussacia pulchra</i>	31.02	-0.913	low	Plant-skewed	1
<i>Tityra cayana Nectandra membranacea</i>	30.99	0.349	low	Bird-skewed	1
<i>Vireo olivaceus Miconia pusilliflora</i>	30.99	0.847	low	Bird-skewed	1
<i>Tangara peruviana Schinus terebinthifolia</i>	30.97	-0.736	low	Plant-skewed	1

<i>Celeus flavescens Myrsine umbellata</i>	30.97	-0.265	low	Plant-skewed	1
<i>Pipra pipra Xylopia sericea</i>	30.94	-0.660	low	Plant-skewed	1
<i>Tolmomyias flaviventris Clusia hilariana</i>	30.92	0.082	low	Bird-skewed	1
<i>Stephanophorus diadematus Myrsine coriacea</i>	30.91	-0.543	low	Plant-skewed	2
<i>Turdus albicollis Xylopia brasiliensis</i>	30.90	-0.675	low	Plant-skewed	1
<i>Mionectes rufiventris Myrsine sp</i>	30.85	-0.354	low	Plant-skewed	1
<i>Myiodynastes maculatus Myrsine lancifolia</i>	30.78	-0.443	low	Plant-skewed	1
<i>Cranioleuca pallida Eugenia cerasiflora</i>	30.78	0.932	low	Bird-skewed	1
<i>Turdus flavipes Xylopia brasiliensis</i>	30.77	-0.680	low	Plant-skewed	1
<i>Turdus amaurochalinus Ficus insipida</i>	30.76	-0.401	low	Plant-skewed	1
<i>Turdus rufiventris Schinus terebinthifolia</i>	30.74	-0.746	low	Plant-skewed	4
<i>Selenidera maculirostris Amaioua intermedia</i>	30.73	0.697	low	Bird-skewed	1
<i>Selenidera maculirostris Amaioua guianensis</i>	30.73	0.697	low	Bird-skewed	1
<i>Chiroxiphia caudate Cecropia pachystachya</i>	30.72	-0.765	low	Plant-skewed	1
<i>Penelope obscura Ficus enormis</i>	30.71	-0.340	low	Plant-skewed	1
<i>Turdus rufiventris Cecropia glaziovii</i>	30.67	-0.745	low	Plant-skewed	1
<i>Saltator maximus Myrsine coriacea</i>	30.64	-0.556	low	Plant-skewed	1
<i>Pipile jacutinga Campomanesia xanthocarpa</i>	30.63	0.943	low	Bird-skewed	1
<i>Schiffornis virescens Miconia valtheri</i>	30.61	0.773	low	Bird-skewed	1
<i>Lipaugus lanioides Ficus sp</i>	30.59	-0.518	low	Plant-skewed	1
<i>Myiodynastes maculatus Matayba guianensis</i>	30.58	-0.437	low	Plant-skewed	1
<i>Thraupis cyanoptera Protium heptaphyllum</i>	30.50	-0.838	low	Plant-skewed	1
<i>Turdus amaurochalinus Ilex brevicuspis</i>	30.49	-0.392	low	Plant-skewed	1
<i>Pitangus sulphuratus Myrsine umbellata</i>	30.45	-0.294	low	Plant-skewed	1
<i>Orchesticus abeillei Myrsine coriacea</i>	30.44	-0.565	low	Plant-skewed	1
<i>Tachyphonus coronatus Cecropia pachystachya</i>	30.42	-0.777	low	Plant-skewed	2
<i>Procnias nudicollis Nectandra membranacea</i>	30.37	0.326	low	Bird-skewed	2
<i>Pipile jacutinga Miconia cabucu</i>	30.37	0.952	low	Bird-skewed	1
<i>Chiroxiphia caudate Schinus terebinthifolia</i>	30.36	-0.761	low	Plant-skewed	1
<i>Turdus albicollis Xylopia langsdorfiana</i>	30.35	-0.667	low	Plant-skewed	1
<i>Chiroxiphia caudate Cecropia glaziovii</i>	30.29	-0.760	low	Plant-skewed	2

<i>Myiozetetes similis Persea willdenovii</i>	30.29	-0.587	low	Plant-skewed	1
<i>Saltator similis Schinus terebinthifolia</i>	30.26	-0.765	low	Plant-skewed	1
<i>Chiroxiphia caudate Pereskia aculeata</i>	30.26	-0.760	low	Plant-skewed	1
<i>Turdus albicollis Cupania vernalis</i>	30.24	-0.665	low	Plant-skewed	1
<i>Dacnis cayana Xylopia sericea</i>	30.21	-0.692	low	Plant-skewed	1
<i>Penelope obscura Myrsine venosa</i>	30.21	-0.321	low	Plant-skewed	1
<i>Pachyramphus castaneus Clusia criuva</i>	30.17	0.037	low	Bird-skewed	1
<i>Saltator similis Pereskia aculeata</i>	30.15	-0.764	low	Plant-skewed	1
<i>Tangara cyanocephala Symplocos glandulosomarginata</i>	30.14	-0.874	low	Plant-skewed	1
<i>Coryphospingus pileatus Pilosocereus arrabidae</i>	30.13	-0.742	low	Plant-skewed	1
<i>Turdus flavipes Cupania vernalis</i>	30.11	-0.671	low	Plant-skewed	1
<i>Euphonia violacea Ficus enormis</i>	30.10	-0.373	low	Plant-skewed	1
<i>Turdus leucomelas Cecropia pachystachya</i>	30.09	-0.790	low	Plant-skewed	4
<i>Tachyphonus coronatus Schinus terebinthifolia</i>	30.06	-0.773	low	Plant-skewed	3
<i>Myiozetetes similis Myrsine coriacea</i>	30.06	-0.583	low	Plant-skewed	3
<i>Hemithraupis ruficapilla Cecropia glaziovii</i>	30.05	-0.770	low	Plant-skewed	1
<i>Lipaugus lanioides Nectandra megapotamica</i>	30.04	-0.505	low	Plant-skewed	1
<i>Thraupis ornate Symplocos glandulosomarginata</i>	30.03	-0.878	low	Plant-skewed	1
<i>Tachyphonus coronatus Cecropia glaziovii</i>	29.99	-0.773	low	Plant-skewed	2
<i>Penelope superciliaris Ocotea corymbosa</i>	29.97	-0.269	low	Plant-skewed	1
<i>Tachyphonus coronatus Pereskia aculeata</i>	29.96	-0.772	low	Plant-skewed	1
<i>Mionectes rufiventris Myrsine umbellata</i>	29.95	-0.322	low	Plant-skewed	1
<i>Pitangus sulphuratus Ficus organensis</i>	29.94	-0.273	low	Plant-skewed	1
<i>Cacicus haemorrhous Myrsine coriacea</i>	29.94	-0.589	low	Plant-skewed	2
<i>Cacicus chrysopterus Myrsine coriacea</i>	29.94	-0.589	low	Plant-skewed	3
<i>Zonotrichia capensis Clusia criuva</i>	29.92	0.021	low	Bird-skewed	1
<i>Zonotrichia capensis Clusia hilariana</i>	29.92	0.021	low	Bird-skewed	1
<i>Pitangus sulphuratus Ocotea corymbosa</i>	29.91	-0.272	low	Plant-skewed	1



<i>Euphonia pectoralis Myrsine umbellata</i>	29.91	-0.324	low	Plant-skewed	1
<i>Carpornis cucullata Ocotea odorifera</i>	29.89	0.280	low	Bird-skewed	1
<i>Tangara cayana Cecropia pachystachya</i>	29.89	-0.798	low	Plant-skewed	1
<i>Euphonia chalybea Ficus enormis</i>	29.85	-0.386	low	Plant-skewed	1
<i>Habia rubica Allophylus edulis</i>	29.78	0.290	low	Bird-skewed	1
<i>Empidonomus varius Myrsine coriacea</i>	29.77	-0.597	low	Plant-skewed	1
<i>Myiodynastes maculatus Myrsine sp</i>	29.75	-0.413	low	Plant-skewed	1
<i>Myiarchus ferox Schinus terebinthifolia</i>	29.74	-0.787	low	Plant-skewed	1
<i>Turdus leucomelas Schinus terebinthifolia</i>	29.73	-0.787	low	Plant-skewed	3
<i>Lipaugus lanioides Myrsine lancifolia</i>	29.72	-0.497	low	Plant-skewed	1
<i>Tyrannus melancholicus Cecropia pachystachya</i>	29.71	-0.805	low	Plant-skewed	1
<i>Pitangus sulphuratus Ocotea sp</i>	29.68	-0.262	low	Plant-skewed	1
<i>Ramphocelus bresilius Cecropia pachystachya</i>	29.63	-0.809	low	Plant-skewed	1
<i>Ramphocelus carbo Cecropia pachystachya</i>	29.63	-0.809	low	Plant-skewed	3
<i>Vireo olivaceus Myrcia splendens</i>	29.58	0.899	low	Bird-skewed	1
<i>Turdus amaurochalinus Myrsine parvifolia</i>	29.57	-0.361	low	Plant-skewed	1
<i>Tangara cayana Schinus terebinthifolia</i>	29.53	-0.795	low	Plant-skewed	4
<i>Colaptes campestris Myrsine coriacea</i>	29.53	-0.608	low	Plant-skewed	1
<i>Colaptes melanochloros Myrsine coriacea</i>	29.53	-0.608	low	Plant-skewed	2
<i>Euphonia violacea Phoradendron piperoides</i>	29.53	-0.353	low	Plant-skewed	1
<i>Trogon surrucura Allophylus edulis</i>	29.50	0.278	low	Bird-skewed	1
<i>Thraupis ornate Protium heptaphyllum</i>	29.50	-0.876	low	Plant-skewed	1
<i>Pitangus sulphuratus Cestrum mariquitense</i>	29.49	-0.254	low	Plant-skewed	1
<i>Tangara cayana Cecropia glaziovii</i>	29.46	-0.794	low	Plant-skewed	1
<i>Thraupis palmarum Protium heptaphyllum</i>	29.45	-0.877	low	Plant-skewed	1
<i>Euphonia violacea Myrsine umbellata</i>	29.45	-0.350	low	Plant-skewed	1
<i>Orthogonys chloricterus Ficus sp</i>	29.41	-0.575	low	Plant-skewed	1
<i>Ramphastos vitellinus Matayba elaeagnoides</i>	29.40	-0.497	low	Plant-skewed	1
<i>Turdus amaurochalinus Myrsine umbellata</i>	29.37	-0.354	low	Plant-skewed	2
<i>Cacicus haemorrhous Ficus sp</i>	29.37	-0.577	low	Plant-skewed	1
<i>Schiffornis virescens Miconia latecrenata</i>	29.36	0.823	low	Bird-skewed	1

<i>Tyrannus melancholicus Schinus terebinthifolia</i>	29.35	-0.802	low	Plant-skewed	1
<i>Schiffornis virescens Miconia discolor</i>	29.32	0.825	low	Bird-skewed	1
<i>Ramphocelus bresilius Schinus terebinthifolia</i>	29.27	-0.806	low	Plant-skewed	1
<i>Ramphocelus carbo Schinus terebinthifolia</i>	29.27	-0.806	low	Plant-skewed	1
<i>Tangara desmaresti Symplocos glandulosomarginata</i>	29.25	-0.908	low	Plant-skewed	1
<i>Ramphocelus bresilius Cecropia glaziovii</i>	29.20	-0.805	low	Plant-skewed	1
<i>Elaenia sp Myrsine coriacea</i>	29.19	-0.624	low	Plant-skewed	2
<i>Schiffornis virescens Miconia racemifera</i>	29.17	0.831	low	Bird-skewed	1
<i>Schiffornis virescens Leandra acutiflora</i>	29.17	0.831	low	Bird-skewed	1
<i>Schiffornis virescens Miconia tristis</i>	29.12	0.833	low	Bird-skewed	1
<i>Tangara seledon Schinus terebinthifolia</i>	29.10	-0.813	low	Plant-skewed	1
<i>Pyroderus scutatus Psychotria mapourioides</i>	29.10	0.564	low	Bird-skewed	1
<i>Attila phoenicurus Myrsine umbellata</i>	29.09	-0.370	low	Plant-skewed	1
<i>Schiffornis virescens Miconia pusilliflora</i>	29.07	0.835	low	Bird-skewed	1
<i>Pipra rubrocapilla Myrsine coriacea</i>	29.06	-0.630	low	Plant-skewed	1
<i>Pipra pipra Myrsine coriacea</i>	29.06	-0.630	low	Plant-skewed	1
<i>Selenidera maculirostris Myrcia spectabilis</i>	29.05	0.767	low	Bird-skewed	2
<i>Euphonia violacea Ficus hirsuta</i>	29.03	-0.334	low	Plant-skewed	1
<i>Tangara seledon Cecropia glaziovii</i>	29.03	-0.812	low	Plant-skewed	1
<i>Turdus albicollis Persea willdenovii</i>	29.03	-0.646	low	Plant-skewed	1
<i>Thraupis sayaca Protium heptaphyllum</i>	29.02	-0.894	low	Plant-skewed	2
<i>Schiffornis virescens Leandra variabilis</i>	28.99	0.838	low	Bird-skewed	1
<i>Laniisoma elegans Miconia pusilliflora</i>	28.98	0.834	low	Bird-skewed	1
<i>Schiffornis virescens Leandra laevigata</i>	28.92	0.841	low	Bird-skewed	1
<i>Turdus rufiventris Cupania vernalis</i>	28.89	-0.725	low	Plant-skewed	1
<i>Selenidera maculirostris Myrcia pulchra</i>	28.87	0.775	low	Bird-skewed	1
<i>Turdus amaurochalinus Ficus organensis</i>	28.86	-0.335	low	Plant-skewed	1
<i>Myiodynastes maculatus Myrsine umbellata</i>	28.85	-0.383	low	Plant-skewed	2
<i>Manacus manacus Ixora venulosa</i>	28.84	-0.053	low	Plant-skewed	1
<i>Euphonia sp Phoradendron sp</i>	28.82	-0.484	low	Plant-skewed	1

<i>Turdus albicollis</i> <i>Myrsine coriacea</i>	28.80	-0.642	low	Plant-skewed	3
<i>Carpornis cucullata</i> <i>Psittacanthus sp</i>	28.80	0.343	low	Bird-skewed	1
<i>Elaenia flavogaster</i> <i>Myrsine coriacea</i>	28.79	-0.643	low	Plant-skewed	2
<i>Thraupis cyanoptera</i> <i>Schinus terebinthifolia</i>	28.77	-0.826	low	Plant-skewed	1
<i>Selenidera maculirostris</i> <i>Myrcia pubipetala</i>	28.74	0.781	low	Bird-skewed	1
<i>Pitangus sulphuratus</i> <i>Inga laurina</i>	28.73	-0.219	low	Plant-skewed	1
<i>Schiffornis virescens</i> <i>Leandra pilonensis</i>	28.72	0.849	low	Bird-skewed	1
<i>Mionectes rufiventris</i> <i>Myrsine gardneriana</i>	28.71	-0.271	low	Plant-skewed	1
<i>Thraupis cyanoptera</i> <i>Cecropia glaziovii</i>	28.70	-0.826	low	Plant-skewed	1
<i>Schiffornis virescens</i> <i>Ossaea amygdaloides</i>	28.68	0.850	low	Bird-skewed	1
<i>Turdus flavipes</i> <i>Myrsine coriacea</i>	28.67	-0.649	low	Plant-skewed	1
<i>Stephanophorus diadematus</i> <i>Ilex brevicuspis</i>	28.66	-0.489	low	Plant-skewed	2
<i>Tachyphonus coronatus</i> <i>Xylopi sericea</i>	28.65	-0.759	low	Plant-skewed	1
<i>Selenidera maculirostris</i> <i>Ficus luschnathiana</i>	28.63	0.785	low	Bird-skewed	1
<i>Schistochlamys ruficapillus</i> <i>Cecropia glaziovii</i>	28.62	-0.829	low	Plant-skewed	1
<i>Elaenia mesoleuca</i> <i>Cupania vernalis</i>	28.61	-0.737	low	Plant-skewed	1
<i>Turdus amaurochalinus</i> <i>Ocotea sp</i>	28.61	-0.325	low	Plant-skewed	1
<i>Nemosia pileata</i> <i>Ocotea notata</i>	28.56	-0.156	low	Plant-skewed	1
<i>Orthogonys chloricterus</i> <i>Myrsine lancifolia</i>	28.54	-0.556	low	Plant-skewed	1
<i>Hemithraupis flavicollis</i> <i>Xylopi sericea</i>	28.53	-0.765	low	Plant-skewed	1
<i>Chiroxiphia caudate</i> <i>Cupania vernalis</i>	28.51	-0.742	low	Plant-skewed	1
<i>Cacicus haemorrhous</i> <i>Myrsine lancifolia</i>	28.49	-0.559	low	Plant-skewed	1
<i>Lipaugus lanioides</i> <i>Ocotea dispersa</i>	28.47	-0.463	low	Plant-skewed	1
<i>Stephanophorus diadematus</i> <i>Myrsine sp</i>	28.44	-0.483	low	Plant-skewed	1
<i>Lipaugus lanioides</i> <i>Ficus enormis</i>	28.44	-0.462	low	Plant-skewed	1
<i>Trichothraupis melanops</i> <i>Coccocypselum geophiloides</i>	28.39	-0.661	low	Plant-skewed	1
<i>Ramphastos dicolorus</i> <i>Ficus enormis</i>	28.34	-0.468	low	Plant-skewed	1
<i>Dacnis cayana</i> <i>Myrsine coriacea</i>	28.34	-0.664	low	Plant-skewed	3
<i>Myiarchus ferox</i> <i>Xylopi sericea</i>	28.32	-0.773	low	Plant-skewed	1
<i>Empidonomus varius</i> <i>Myrsine lancifolia</i>	28.32	-0.567	low	Plant-skewed	1

<i>Hemithraupis ruficapilla Cupania vernalis</i>	28.27	-0.752	low	Plant-skewed	1
<i>Turdus albicollis Ficus sp</i>	28.23	-0.633	low	Plant-skewed	1
<i>Tachyphonus coronatus Cupania vernalis</i>	28.21	-0.755	low	Plant-skewed	1
<i>Chiroxiphia caudate Mollinedia boracensis</i>	28.20	-0.738	low	Plant-skewed	1
<i>Tangara desmaresti Clusia organensis</i>	28.20	-0.904	low	Plant-skewed	1
<i>Vireo olivaceus Miconia cinnamomifolia</i>	28.18	0.951	low	Bird-skewed	1
<i>Tyrannus melancholicus Xylopia brasiliensis</i>	28.16	-0.792	low	Plant-skewed	1
<i>Cissopis leverianus Myrsine coriacea</i>	28.13	-0.674	low	Plant-skewed	1
<i>Turdus flavipes Ficus sp</i>	28.10	-0.639	low	Plant-skewed	1
<i>Thraupis palmarum Cecropia pachystachya</i>	28.08	-0.871	low	Plant-skewed	3
<i>Elaenia parvirostris Myrsine coriacea</i>	28.08	-0.677	low	Plant-skewed	1
<i>Euphonia chlorotica Phoradendron piperoides</i>	28.05	-0.436	low	Plant-skewed	1
<i>Pitangus sulphuratus Trichilia clauseni</i>	27.99	-0.181	low	Plant-skewed	1
<i>Celeus flavescens Clusia criuva</i>	27.93	-0.113	low	Plant-skewed	2
<i>Cyanerpes cyaneus Myrsine umbellata</i>	27.88	-0.437	low	Plant-skewed	1
<i>Tangara cyanocephala Schinus terebinthifolia</i>	27.88	-0.863	low	Plant-skewed	3
<i>Ramphocelus bresilius Xylopia sericea</i>	27.85	-0.794	low	Plant-skewed	1
<i>Ramphastos dicolorus Myrsine venosa</i>	27.84	-0.453	low	Plant-skewed	1
<i>Selenidera maculirostris Miconia budlejoides</i>	27.84	0.819	low	Bird-skewed	1
<i>Attila rufus Myrsine gardneriana</i>	27.84	-0.323	low	Plant-skewed	1
<i>Tangara cyanocephala Cecropia glaziovii</i>	27.80	-0.862	low	Plant-skewed	1
<i>Selenidera maculirostris Miconia racemifera</i>	27.80	0.821	low	Bird-skewed	1
<i>Thraupis ornate Schinus terebinthifolia</i>	27.77	-0.867	low	Plant-skewed	1
<i>Dacnis cayana Ficus sp</i>	27.76	-0.655	low	Plant-skewed	1
<i>Thraupis palmarum Schinus terebinthifolia</i>	27.73	-0.869	low	Plant-skewed	2
<i>Pipraeidea melanonota Cestrum schlechtendalii</i>	27.71	-0.341	low	Plant-skewed	1
<i>Thraupis ornate Cecropia glaziovii</i>	27.70	-0.867	low	Plant-skewed	1
<i>Lathrotriccus eulerei Myrsine umbellata</i>	27.69	-0.448	low	Plant-skewed	1
<i>Ramphastos dicolorus Myrsine umbellata</i>	27.69	-0.448	low	Plant-skewed	1
<i>Cacicus chrysopterus Ilex brevicuspis</i>	27.69	-0.540	low	Plant-skewed	1

<i>Turdus rufiventris Persea willdenovii</i>	27.67	-0.709	low	Plant-skewed	1
<i>Schiffornis virescens Myrcia splendens</i>	27.66	0.891	low	Bird-skewed	1
<i>Thraupis sayaca Cecropia pachystachya</i>	27.65	-0.888	low	Plant-skewed	2
<i>Thraupis episcopus Cecropia pachystachya</i>	27.64	-0.889	low	Plant-skewed	3
<i>Thraupis cyanoptera Xylopiya brasiliensis</i>	27.58	-0.817	low	Plant-skewed	1
<i>Turdus leucomelas Mollinedia boracensis</i>	27.57	-0.766	low	Plant-skewed	1
<i>Stephanophorus diadematus Myrsine umbellata</i>	27.54	-0.457	low	Plant-skewed	1
<i>Carpornis cucullata Ilex microdonta</i>	27.45	0.420	low	Bird-skewed	1
<i>Turdus rufiventris Myrsine coriacea</i>	27.45	-0.706	low	Plant-skewed	3
<i>Pitangus sulphuratus Clusia criuva</i>	27.41	-0.149	low	Plant-skewed	1
<i>Hylophilus poicilotis Struthanthus concinnus</i>	27.40	0.216	low	Bird-skewed	1
<i>Saltator similis Guettarda viburnoides</i>	27.37	-0.734	low	Plant-skewed	1
<i>Pachyramphus castaneus Struthanthus martianus</i>	27.35	0.220	low	Bird-skewed	1
<i>Selenidera maculirostris Eugenia handroi</i>	27.29	0.842	low	Bird-skewed	1
<i>Thraupis sayaca Schinus terebinthifolia</i>	27.29	-0.887	low	Plant-skewed	4
<i>Thraupis episcopus Schinus terebinthifolia</i>	27.28	-0.887	low	Plant-skewed	3
<i>Saltator maximus Myrsine umbellata</i>	27.26	-0.472	low	Plant-skewed	1
<i>Tangara seledon Cupania vernalis</i>	27.24	-0.797	low	Plant-skewed	1
<i>Selenidera maculirostris Eugenia oblongata</i>	27.23	0.845	low	Bird-skewed	1
<i>Turdus flavipes Myrsine lancifolia</i>	27.23	-0.623	low	Plant-skewed	1
<i>Thraupis sayaca Cecropia glaziovii</i>	27.22	-0.886	low	Plant-skewed	4
<i>Elaenia mesoleuca Myrsine coriacea</i>	27.17	-0.719	low	Plant-skewed	2
<i>Selenidera maculirostris Eugenia expansa</i>	27.15	0.848	low	Bird-skewed	1
<i>Chiroxiphia caudate Myrsine coriacea</i>	27.07	-0.724	low	Plant-skewed	1
<i>Colaptes campestris Myrsine sp</i>	27.06	-0.556	low	Plant-skewed	1
<i>Turdus amaurochalinus Ocotea notata</i>	27.01	-0.256	low	Plant-skewed	1
<i>Myiarchus swainsoni Myrsine coriacea</i>	26.99	-0.728	low	Plant-skewed	2
<i>Saltator similis Myrsine coriacea</i>	26.97	-0.729	low	Plant-skewed	1
<i>Turdus amaurochalinus Trichilia clauseni</i>	26.92	-0.251	low	Plant-skewed	1

<i>Thraupis cyanoptera Cupania vernalis</i>	26.92	-0.812	low	Plant-skewed	1
<i>Tangara desmaresti Cecropia glaziovii</i>	26.91	-0.899	low	Plant-skewed	1
<i>Tangara cyanoventris Cecropia glaziovii</i>	26.90	-0.899	low	Plant-skewed	1
<i>Dacnis cayana Myrsine lancifolia</i>	26.89	-0.640	low	Plant-skewed	1
<i>Tachyphonus coronatus Myrsine coriacea</i>	26.77	-0.738	low	Plant-skewed	2
<i>Conirostrum speciosum Trichilia clauseni</i>	26.72	-0.264	low	Plant-skewed	1
<i>Selenidera maculirostris Psidium cattleianum</i>	26.69	0.868	low	Bird-skewed	1
<i>Selenidera maculirostris Siphoneugena densiflora</i>	26.69	0.868	low	Bird-skewed	1
<i>Myiozetetes similis Myrsine umbellata</i>	26.69	-0.504	low	Plant-skewed	3
<i>Turdus leucomelas Persea willdenovii</i>	26.66	-0.756	low	Plant-skewed	1
<i>Tangara cayana Guettarda viburnoides</i>	26.64	-0.768	low	Plant-skewed	1
<i>Turdus albicollis Ilex brevicuspis</i>	26.55	-0.600	low	Plant-skewed	1
<i>Chiroxiphia caudate Ficus sp</i>	26.50	-0.716	low	Plant-skewed	1
<i>Carpornis cucullata Psychotria vellosiana</i>	26.49	0.476	low	Bird-skewed	1
<i>Tyrannus melancholicus Persea major</i>	26.47	-0.776	low	Plant-skewed	1
<i>Myiarchus ferox Myrsine coriacea</i>	26.45	-0.753	low	Plant-skewed	1
<i>Turdus leucomelas Myrsine coriacea</i>	26.44	-0.754	low	Plant-skewed	3
<i>Turdus flavipes Ilex brevicuspis</i>	26.42	-0.607	low	Plant-skewed	1
<i>Myiodynastes maculatus Trichilia clauseni</i>	26.40	-0.285	low	Plant-skewed	1
<i>Empidonomus varius Myrsine umbellata</i>	26.40	-0.521	low	Plant-skewed	1
<i>Turdus amaurochalinus Ixora venulosa</i>	26.33	-0.222	low	Plant-skewed	1
<i>Turdus amaurochalinus Clusia criuva</i>	26.33	-0.222	low	Plant-skewed	1
<i>Carpornis melanocephala Psychotria suterella</i>	26.33	0.485	low	Bird-skewed	2
<i>Ilicura militaris Struthanthus concinnus</i>	26.32	0.157	low	Bird-skewed	1
<i>Thraupis palmarum Xylopia sericea</i>	26.31	-0.861	low	Plant-skewed	1
<i>Stephanophorus diadematus Myrsine gardneriana</i>	26.30	-0.416	low	Plant-skewed	1
<i>Selenidera maculirostris Myrcia splendens</i>	26.28	0.885	low	Bird-skewed	1
<i>Tyrannus melancholicus Persea willdenovii</i>	26.28	-0.774	low	Plant-skewed	1
<i>Tangara cayana Myrsine coriacea</i>	26.24	-0.763	low	Plant-skewed	3

<i>Euphonia pectoralis Ixora burchelliana</i>	26.22	-0.148	low	Plant-skewed	1
<i>Pteroglossus aracari Inga edulis</i>	26.20	-0.375	low	Plant-skewed	1
<i>Tangara preciosa Myrsine coriacea</i>	26.19	-0.765	low	Plant-skewed	2
<i>Antilophia galeata Cestrum mariquitense</i>	26.09	-0.455	low	Plant-skewed	1
<i>Trogon surrucura Psychotria suterella</i>	26.08	0.478	low	Bird-skewed	1
<i>Tyrannus savana Myrsine coriacea</i>	26.06	-0.772	low	Plant-skewed	1
<i>Tyrannus melancholicus Myrsine coriacea</i>	26.06	-0.772	low	Plant-skewed	4
<i>Tangara cyanocephala Cupania vernalis</i>	26.02	-0.851	low	Plant-skewed	1
<i>Turdus rufiventris Myrsine lancifolia</i>	26.00	-0.685	low	Plant-skewed	1
<i>Ramphocelus bresilius Myrsine coriacea</i>	25.98	-0.776	low	Plant-skewed	1
<i>Ramphocelus carbo Myrsine coriacea</i>	25.98	-0.776	low	Plant-skewed	1
<i>Ramphastos vitellinus Inga edulis</i>	25.96	-0.390	low	Plant-skewed	1
<i>Thraupis sayaca Xylopia sericea</i>	25.87	-0.880	low	Plant-skewed	1
<i>Dacnis nigripes Myrsine sp</i>	25.87	-0.620	low	Plant-skewed	1
<i>Elaenia sp Myrsine umbellata</i>	25.82	-0.553	low	Plant-skewed	1
<i>Myiodynastes maculatus Clusia criuva</i>	25.81	-0.256	low	Plant-skewed	1
<i>Tangara seledon Myrsine coriacea</i>	25.81	-0.784	low	Plant-skewed	2
<i>Turdus rufiventris Matayba guianensis</i>	25.80	-0.681	low	Plant-skewed	1
<i>Euphonia violacea Ixora burchelliana</i>	25.76	-0.181	low	Plant-skewed	1
<i>Selenidera maculirostris Myrcia brasiliensis</i>	25.76	0.907	low	Bird-skewed	1
<i>Thraupis bonariensis Ficus organensis</i>	25.74	-0.516	low	Plant-skewed	1
<i>Tangara cyanocephala Mollinedia boracensis</i>	25.72	-0.849	low	Plant-skewed	1
<i>Cacicus haemorrhous Ocotea bicolor</i>	25.71	-0.486	low	Plant-skewed	1
<i>Chiroxiphia caudate Myrsine lancifolia</i>	25.62	-0.704	low	Plant-skewed	1
<i>Selenidera maculirostris Ocotea spixiana</i>	25.62	0.913	low	Bird-skewed	1
<i>Elaenia flavogaster Myrsine parvifolia</i>	25.62	-0.580	low	Plant-skewed	1
<i>Myiarchus swainsoni Myrsine lancifolia</i>	25.54	-0.708	low	Plant-skewed	1
<i>Cyanerpes cyaneus Ocotea notata</i>	25.53	-0.352	low	Plant-skewed	1
<i>Saltator similis Myrsine lancifolia</i>	25.52	-0.709	low	Plant-skewed	1
<i>Thraupis cyanopectera Myrsine coriacea</i>	25.48	-0.799	low	Plant-skewed	1
<i>Legatus leucophaeus Guarea guidonia</i>	25.47	0.414	low	Bird-skewed	1

<i>Turdus albicollis Aiouea saligna</i>	25.46	-0.576	low	Plant-skewed	1
<i>Turdus albicollis Myrsine umbellata</i>	25.43	-0.575	low	Plant-skewed	2
<i>Elaenia flavogaster Myrsine umbellata</i>	25.42	-0.575	low	Plant-skewed	1
<i>Hemithraupis ruficapilla Myrsine lancifolia</i>	25.38	-0.716	low	Plant-skewed	1
<i>Tangara cyanoptera Ficus enormis</i>	25.36	-0.629	low	Plant-skewed	1
<i>Stephanophorus diadematus Ocotea teleiandra</i>	25.35	-0.380	low	Plant-skewed	1
<i>Tachyphonus coronatus Myrsine lancifolia</i>	25.32	-0.719	low	Plant-skewed	1
<i>Saltator similis Matayba guianensis</i>	25.32	-0.706	low	Plant-skewed	1
<i>Turdus leucomelas Nectandra megapotamica</i>	25.32	-0.740	low	Plant-skewed	1
<i>Turdus flavipes Myrsine umbellata</i>	25.30	-0.582	low	Plant-skewed	2
<i>Tangara seledon Ficus sp</i>	25.23	-0.778	low	Plant-skewed	2
<i>Selenidera maculirostris Campomanesia guaviroba</i>	25.22	0.930	low	Bird-skewed	1
<i>Turdus rufiventris Ilex brevicuspis</i>	25.20	-0.671	low	Plant-skewed	2
<i>Tangara desmaresti Cupania vernalis</i>	25.13	-0.891	low	Plant-skewed	1
<i>Tachyphonus coronatus Matayba guianensis</i>	25.12	-0.716	low	Plant-skewed	1
<i>Coereba flaveola Trichilia clausseni</i>	25.07	-0.371	low	Plant-skewed	1
<i>Pteroglossus bailloni Nectandra reticulata</i>	25.03	0.069	low	Bird-skewed	1
<i>Carpornis cucullata Rudgea jasminoides</i>	25.02	0.560	low	Bird-skewed	1
<i>Turdus rufiventris Myrsine sp</i>	24.98	-0.667	low	Plant-skewed	1
<i>Dacnis cayana Myrsine umbellata</i>	24.97	-0.601	low	Plant-skewed	3
<i>Turdus albicollis Ficus organensis</i>	24.92	-0.563	low	Plant-skewed	1
<i>Thraupis cyanoptera Ficus sp</i>	24.90	-0.794	low	Plant-skewed	1
<i>Selenidera maculirostris Miconia cinnamomifolia</i>	24.88	0.945	low	Bird-skewed	2
<i>Cyanerpes cyaneus Clusia hilariana</i>	24.84	-0.322	low	Plant-skewed	2
<i>Penelope obscura Nectandra grandiflora</i>	24.73	-0.025	low	Plant-skewed	1
<i>Turdus rufiventris Ficus enormis</i>	24.73	-0.663	low	Plant-skewed	1
<i>Saltator similis Ilex brevicuspis</i>	24.72	-0.697	low	Plant-skewed	1
<i>Elaenia mesoleuca Myrsine sp</i>	24.70	-0.682	low	Plant-skewed	1
<i>Pitangus sulphuratus Struthanthus martianus</i>	24.59	0.049	low	Bird-skewed	1



<i>Tangara cyanocephala</i> <i>Myrsine coriacea</i>	24.58	-0.841	low	Plant-skewed	2
<i>Penelope obscura</i> <i>Allophylus edulis</i>	24.58	-0.012	low	Plant-skewed	1
<i>Turdus albicollis</i> <i>Ocotea bicolor</i>	24.57	-0.553	low	Plant-skewed	1
<i>Dacnis cayana</i> <i>Ficus hirsuta</i>	24.55	-0.591	low	Plant-skewed	1
<i>Tachyphonus coronatus</i> <i>Ilex brevicuspis</i>	24.52	-0.707	low	Plant-skewed	1
<i>Tangara peruviana</i> <i>Myrsine parvifolia</i>	24.51	-0.642	low	Plant-skewed	1
<i>Trichothraupis melanops</i> <i>Ocotea corymbosa</i>	24.50	-0.585	low	Plant-skewed	1
<i>Thraupis ornate</i> <i>Myrsine coriacea</i>	24.48	-0.846	low	Plant-skewed	2
<i>Turdus flavipes</i> <i>Ocotea bicolor</i>	24.44	-0.561	low	Plant-skewed	1
<i>Thraupis palmarum</i> <i>Myrsine coriacea</i>	24.44	-0.848	low	Plant-skewed	3
<i>Tangara mexicana</i> <i>Myrsine umbellata</i>	24.41	-0.632	low	Plant-skewed	1
<i>Thraupis sayaca</i> <i>Guettarda viburnoides</i>	24.40	-0.871	low	Plant-skewed	1
<i>Tangara seledon</i> <i>Myrsine lancifolia</i>	24.36	-0.768	low	Plant-skewed	1
<i>Hemithraupis ruficapilla</i> <i>Myrsine sp</i>	24.36	-0.701	low	Plant-skewed	1
<i>Trichothraupis melanops</i> <i>Ocotea sp</i>	24.27	-0.579	low	Plant-skewed	1
<i>Myiozetetes similis</i> <i>Trichilia clauseni</i>	24.24	-0.425	low	Plant-skewed	1
<i>Saltator maximus</i> <i>Clusia hilariana</i>	24.22	-0.364	low	Plant-skewed	1
<i>Penelope obscura</i> <i>Nectandra lanceolata</i>	24.20	0.018	low	Bird-skewed	1
<i>Turdus leucomelas</i> <i>Ilex brevicuspis</i>	24.19	-0.725	low	Plant-skewed	1
<i>Turdus albicollis</i> <i>Myrsine gardneriana</i>	24.18	-0.543	low	Plant-skewed	1
<i>Mionectes rufiventris</i> <i>Struthanthus concinnus</i>	24.15	0.005	low	Bird-skewed	1
<i>Mionectes rufiventris</i> <i>Struthanthus martianus</i>	24.09	0.010	low	Bird-skewed	1
<i>Turdus rufiventris</i> <i>Myrsine umbellata</i>	24.08	-0.651	low	Plant-skewed	2
<i>Tachyphonus coronatus</i> <i>Ficus enormis</i>	24.05	-0.700	low	Plant-skewed	1
<i>Thraupis cyanoptera</i> <i>Myrsine lancifolia</i>	24.03	-0.784	low	Plant-skewed	1
<i>Thlyopsis sordida</i> <i>Trichilia clauseni</i>	24.03	-0.439	low	Plant-skewed	2
<i>Tangara cyanocephala</i> <i>Ficus sp</i>	24.01	-0.837	low	Plant-skewed	1
<i>Thraupis sayaca</i> <i>Myrsine coriacea</i>	24.00	-0.869	low	Plant-skewed	2
<i>Tangara mexicana</i> <i>Ficus hirsuta</i>	24.00	-0.623	low	Plant-skewed	1
<i>Thraupis episcopus</i> <i>Myrsine coriacea</i>	23.99	-0.869	low	Plant-skewed	1
<i>Turdus leucomelas</i> <i>Myrsine sp</i>	23.97	-0.721	low	Plant-skewed	1

<i>Empidonomus varius Trichilia clauseni</i>	23.95	-0.444	low	Plant-skewed	1
<i>Tangara preciosa Ilex brevicuspis</i>	23.94	-0.738	low	Plant-skewed	1
<i>Euphonia violacea Lantana pohliana</i>	23.93	-0.059	low	Plant-skewed	1
<i>Thraupis palmarum Ficus sp</i>	23.86	-0.844	low	Plant-skewed	1
<i>Tityra cayana Miconia inconspicua</i>	23.85	0.729	low	Bird-skewed	1
<i>Mimus gilvus Eugenia astringens</i>	23.84	0.811	low	Bird-skewed	1
<i>Mimus saturninus Ossaea amygdaloides</i>	23.78	0.814	low	Bird-skewed	1
<i>Myiarchus sp Myrsine sp</i>	23.72	-0.735	low	Plant-skewed	1
<i>Chiroxiphia caudate Myrsine umbellata</i>	23.70	-0.672	low	Plant-skewed	2
<i>Tangara desmaresti Myrsine coriacea</i>	23.69	-0.883	low	Plant-skewed	2
<i>Myiozetetes similis Clusia criuva</i>	23.65	-0.402	low	Plant-skewed	1
<i>Saltator similis Myrsine umbellata</i>	23.60	-0.678	low	Plant-skewed	1
<i>Euphonia violacea Struthanthus martianus</i>	23.59	-0.032	low	Plant-skewed	1
<i>Tyrannus savana Myrsine sp</i>	23.59	-0.742	low	Plant-skewed	1
<i>Turdus rufiventris Ficus organensis</i>	23.57	-0.641	low	Plant-skewed	1
<i>Habia rubica Psychotria gracilentia</i>	23.55	0.647	low	Bird-skewed	1
<i>Cacicus haemorrhous Clusia criuva</i>	23.53	-0.411	low	Plant-skewed	2
<i>Cacicus haemorrhous Clusia hilariana</i>	23.53	-0.411	low	Plant-skewed	1
<i>Coryphospingus cucullatus Ficus organensis</i>	23.53	-0.643	low	Plant-skewed	1
<i>Hemithraupis ruficapilla Myrsine umbellata</i>	23.46	-0.685	low	Plant-skewed	1
<i>Manacus manacus Guarea guidonia</i>	23.44	0.329	low	Bird-skewed	1
<i>Habia rubica Rhipsalis camposportoana</i>	23.43	0.654	low	Bird-skewed	1
<i>Camptostoma obsoletum Miconia tristis</i>	23.40	0.783	low	Bird-skewed	1
<i>Tachyphonus coronatus Myrsine umbellata</i>	23.40	-0.689	low	Plant-skewed	2
<i>Ilicura militaris Psychotria vellosiana</i>	23.38	0.362	low	Bird-skewed	1
<i>Myiodynastes maculatus Allophylus edulis</i>	23.37	-0.110	low	Plant-skewed	1
<i>Elaenia sp Trichilia clauseni</i>	23.37	-0.482	low	Plant-skewed	1
<i>Empidonomus varius Clusia criuva</i>	23.36	-0.422	low	Plant-skewed	1
<i>Tangara seledon Myrsine sp</i>	23.33	-0.755	low	Plant-skewed	1
<i>Turdus albicollis Ocotea teleiandra</i>	23.24	-0.515	low	Plant-skewed	1
<i>Thraupis cyanoptera Ilex brevicuspis</i>	23.23	-0.775	low	Plant-skewed	1

<i>Phibalura flavirostris Psychotria mapourioides</i>	23.21	0.385	low	Bird-skewed	1
<i>Procnias nudicollis Ficus luschnathiana</i>	23.21	0.721	low	Bird-skewed	1
<i>Manacus manacus Psychotria vellosiana</i>	23.14	0.351	low	Bird-skewed	1
<i>Tangara cyanocephala Myrsine lancifolia</i>	23.14	-0.830	low	Plant-skewed	1
<i>Carpornis cucullata Rhipsalis teres</i>	23.13	0.669	low	Bird-skewed	1
<i>Saltator similis Ficus organensis</i>	23.09	-0.668	low	Plant-skewed	1
<i>Tangara seledon Ficus enormis</i>	23.08	-0.752	low	Plant-skewed	1
<i>Habia rubica Miconia valtheri</i>	23.07	0.675	low	Bird-skewed	1
<i>Turdus leucomelas Myrsine umbellata</i>	23.07	-0.707	low	Plant-skewed	3
<i>Elaenia flavogaster Ocotea notata</i>	23.06	-0.511	low	Plant-skewed	1
<i>Carpornis cucullata Miconia valtheri</i>	23.04	0.674	low	Bird-skewed	1
<i>Pteroglossus bailloni Ilex microdonta</i>	23.03	0.222	low	Bird-skewed	1
<i>Thraupis ornate Myrsine lancifolia</i>	23.03	-0.835	low	Plant-skewed	1
<i>Elaenia flavogaster Trichilia clauseni</i>	22.97	-0.508	low	Plant-skewed	2
<i>Chiroxiphia caudate Ocotea sp</i>	22.94	-0.657	low	Plant-skewed	1
<i>Tangara cyanocephala Matayba guianensis</i>	22.93	-0.828	low	Plant-skewed	1
<i>Phyllomyias fasciatus Struthanthus sp</i>	22.91	0.016	low	Bird-skewed	1
<i>Tangara cayana Myrsine umbellata</i>	22.87	-0.719	low	Plant-skewed	1
<i>Carpornis cucullata Myrcia spectabilis</i>	22.86	0.685	low	Bird-skewed	2
<i>Carpornis melanocephala Myrcia spectabilis</i>	22.86	0.685	low	Bird-skewed	2
<i>Turdus leucomelas Guarea kunthiana</i>	22.71	-0.701	low	Plant-skewed	1
<i>Tyrannus melancholicus Myrsine umbellata</i>	22.69	-0.729	low	Plant-skewed	1
<i>Carpornis melanocephala Myrcia pulchra</i>	22.68	0.695	low	Bird-skewed	1
<i>Mimus gilvus Paullinia weinmanniifolia</i>	22.67	0.869	low	Bird-skewed	1
<i>Pipra pipra Clusia hilariana</i>	22.65	-0.470	low	Plant-skewed	1
<i>Procnias nudicollis Myrcia ilheosensis</i>	22.63	0.753	low	Bird-skewed	1
<i>Ramphocelus bresilius Myrsine umbellata</i>	22.60	-0.733	low	Plant-skewed	1
<i>Trichothraupis melanops Trichilia clauseni</i>	22.58	-0.533	low	Plant-skewed	1
<i>Pyroderus scutatus Marlierea obscura</i>	22.56	0.887	low	Bird-skewed	1
<i>Carpornis melanocephala Myrcia pubipetala</i>	22.55	0.703	low	Bird-skewed	1
<i>Carpornis cucullata Myrcia pubipetala</i>	22.55	0.703	low	Bird-skewed	1

<i>Pyroderus scutatus Marlierea reitzii</i>	22.54	0.887	low	Bird-skewed	1
<i>Celeus flavescens Guarea guidonia</i>	22.53	0.283	low	Bird-skewed	1
<i>Dacnis cayana Trichilia claussenii</i>	22.51	-0.537	low	Plant-skewed	2
<i>Nemosia pileata Guarea guidonia</i>	22.48	0.280	low	Bird-skewed	1
<i>Procnias nudicollis Miconia chartacea</i>	22.47	0.762	low	Bird-skewed	1
<i>Habia rubica Ficus luschnathiana</i>	22.47	0.709	low	Bird-skewed	1
<i>Pyroderus scutatus Myrcia brasiliensis</i>	22.45	0.892	low	Bird-skewed	1
<i>Carpornis cucullata Ficus luschnathiana</i>	22.44	0.709	low	Bird-skewed	1
<i>Tangara seledon Myrsine umbellata</i>	22.43	-0.743	low	Plant-skewed	1
<i>Turdus albicollis Clusia criuva</i>	22.39	-0.488	low	Plant-skewed	1
<i>Tityra cayana Ocotea puberula</i>	22.37	0.808	low	Bird-skewed	1
<i>Thraupis ornate Ilex brevicuspis</i>	22.22	-0.828	low	Plant-skewed	1
<i>Ramphastos dicolorus Allophylus edulis</i>	22.21	-0.204	low	Plant-skewed	1
<i>Trogon surrucura Ficus luschnathiana</i>	22.20	0.705	low	Bird-skewed	1
<i>Lipaugus lanioides Alibertia sp</i>	22.16	-0.186	low	Plant-skewed	1
<i>Penelope obscura Vassobia breviflora</i>	22.16	0.185	low	Bird-skewed	1
<i>Tyrannus melancholicus Ocotea corymbosa</i>	22.16	-0.720	low	Plant-skewed	1
<i>Carpornis melanocephala Myrcia anacardiifolia</i>	22.12	0.727	low	Bird-skewed	2
<i>Carpornis cucullata Myrcia anacardiifolia</i>	22.12	0.727	low	Bird-skewed	2
<i>Turdus leucomelas Cestrum mariquitense</i>	22.11	-0.691	low	Plant-skewed	2
<i>Tangara cyanocephala Myrsine sp</i>	22.11	-0.820	low	Plant-skewed	1
<i>Mimus saturninus Ocotea pulchella</i>	22.10	0.898	low	Bird-skewed	1
<i>Ramphastos dicolorus Nectandra membranacea</i>	22.07	-0.195	low	Plant-skewed	1
<i>Pteroglossus aracari Nectandra lanceolata</i>	22.07	-0.160	low	Plant-skewed	1
<i>Pteroglossus bailloni Psychotria vellosiana</i>	22.07	0.297	low	Bird-skewed	1
<i>Ramphastos vitellinus Nectandra membranacea</i>	22.06	-0.196	low	Plant-skewed	1
<i>Thraupis sayaca Ficus insipida</i>	22.01	-0.855	low	Plant-skewed	1
<i>Pitangus sulphuratus Guarea guidonia</i>	22.01	0.253	low	Bird-skewed	2
<i>Thraupis ornate Myrsine sp</i>	22.00	-0.826	low	Plant-skewed	1

<i>Carpornis melanocephala Miconia sp</i>	21.98	0.735	low	Bird-skewed	1
<i>Thraupis palmarum Myrsine sp</i>	21.96	-0.828	low	Plant-skewed	1
<i>Procnias nudicollis Eugenia astringens</i>	21.94	0.791	low	Bird-skewed	1
<i>Dacnis cayana Clusia criuva</i>	21.93	-0.519	low	Plant-skewed	4
<i>Dacnis cayana Clusia hilariana</i>	21.93	-0.519	low	Plant-skewed	1
<i>Pyroderus scutatus Campomanesia xanthocarpa</i>	21.91	0.919	low	Bird-skewed	1
<i>Tangara cyanocephala Ficus enormis</i>	21.86	-0.818	low	Plant-skewed	1
<i>Habia rubica Miconia discolor</i>	21.78	0.749	low	Bird-skewed	1
<i>Turdus albicollis Ixora gardneriana</i>	21.78	-0.466	low	Plant-skewed	1
<i>Thraupis ornate Ficus enormis</i>	21.75	-0.824	low	Plant-skewed	1
<i>Thraupis sayaca Ilex brevicuspis</i>	21.75	-0.853	low	Plant-skewed	1
<i>Turdus leucomelas Trichilia catigua</i>	21.74	-0.684	low	Plant-skewed	1
<i>Thraupis palmarum Ficus enormis</i>	21.71	-0.826	low	Plant-skewed	1
<i>Carpornis cucullata Miconia chartacea</i>	21.71	0.751	low	Bird-skewed	1
<i>Carpornis cucullata Leandra regnellii</i>	21.67	0.753	low	Bird-skewed	1
<i>Habia rubica Leandra australis</i>	21.66	0.756	low	Bird-skewed	1
<i>Ramphocelus carbo Cestrum mariquitense</i>	21.65	-0.718	low	Plant-skewed	1
<i>Carpornis cucullata Miconia budlejoides</i>	21.65	0.754	low	Bird-skewed	1
<i>Habia rubica Miconia racemifera</i>	21.64	0.757	low	Bird-skewed	1
<i>Habia rubica Leandra acutiflora</i>	21.63	0.757	low	Bird-skewed	1
<i>Carpornis cucullata Leandra australis</i>	21.63	0.755	low	Bird-skewed	1
<i>Turdus amaurochalinus Ilex pseudobuxus</i>	21.60	0.126	low	Bird-skewed	1
<i>Habia rubica Miconia pusilliflora</i>	21.53	0.763	low	Bird-skewed	1
<i>Mionectes oleaginous Guarea guidonia</i>	21.51	0.223	low	Bird-skewed	1
<i>Carpornis cucullata Miconia pusilliflora</i>	21.50	0.763	low	Bird-skewed	1
<i>Turdus sp Clusia criuva</i>	21.50	-0.548	low	Plant-skewed	1
<i>Tityra cayana Myrcia splendens</i>	21.48	0.855	low	Bird-skewed	1
<i>Tangara desmaresti Phoradendron sp</i>	21.48	-0.870	low	Plant-skewed	1
<i>Turdus amaurochalinus Acnistus arborescens</i>	21.48	0.137	low	Bird-skewed	1
<i>Habia rubica Leandra variabilis</i>	21.45	0.768	low	Bird-skewed	1

<i>Carpornis cucullata Leandra variabilis</i>	21.42	0.767	low	Bird-skewed	1
<i>Trogon sarrucura Miconia budlejoides</i>	21.41	0.751	low	Bird-skewed	1
<i>Pteroglossus bailloni Psychotria leiocarpa</i>	21.40	0.348	low	Bird-skewed	1
<i>Thraupis episcopus Genipa americana</i>	21.36	-0.851	low	Plant-skewed	1
<i>Mimus gilvus Miconia cinnamomifolia</i>	21.36	0.935	low	Bird-skewed	1
<i>Carpornis cucullata Leandra sp</i>	21.33	0.773	low	Bird-skewed	1
<i>Habia rubica Leandra refracta</i>	21.29	0.777	low	Bird-skewed	1
<i>Conirostrum speciosum Acnistus arborescens</i>	21.28	0.122	low	Bird-skewed	1
<i>Ramphocelus carbo Trichilia catigua</i>	21.27	-0.712	low	Plant-skewed	1
<i>Thraupis episcopus Ficus enormis</i>	21.27	-0.850	low	Plant-skewed	1
<i>Chiroxiphia caudate Trichilia clauseni</i>	21.25	-0.620	low	Plant-skewed	1
<i>Tangara cyanocephala Myrsine umbellata</i>	21.21	-0.811	low	Plant-skewed	2
<i>Euphonia pectoralis Psychotria vellosiana</i>	21.17	0.245	low	Bird-skewed	1
<i>Penelope obscura Psychotria suterella</i>	21.16	0.267	low	Bird-skewed	1
<i>Habia rubica Leandra melastomoides</i>	21.16	0.785	low	Bird-skewed	1
<i>Carpornis cucullata Leandra pilonensis</i>	21.15	0.783	low	Bird-skewed	1
<i>Habia rubica Ossaea amygdaloides</i>	21.15	0.785	low	Bird-skewed	1
<i>Saltator similis Trichilia clauseni</i>	21.14	-0.626	low	Plant-skewed	1
<i>Carpornis cucullata Eugenia melanogyna</i>	21.12	0.785	low	Bird-skewed	1
<i>Carpornis melanocephala Eugenia mosenii</i>	21.11	0.785	low	Bird-skewed	2
<i>Carpornis cucullata Eugenia mosenii</i>	21.11	0.785	low	Bird-skewed	1
<i>Carpornis melanocephala Eugenia neoglomerata</i>	21.11	0.786	low	Bird-skewed	2
<i>Thraupis ornate Myrsine umbellata</i>	21.10	-0.817	low	Plant-skewed	2
<i>Pteroglossus bailloni Ficus eximia</i>	21.08	0.373	low	Bird-skewed	1
<i>Thraupis palmarum Myrsine umbellata</i>	21.06	-0.820	low	Plant-skewed	1
<i>Turdus rufiventris Clusia criuva</i>	21.04	-0.579	low	Plant-skewed	1
<i>Coryphospingus pileatus Clusia hilariana</i>	20.99	-0.582	low	Plant-skewed	1
<i>Carpornis cucullata Nectandra cuspidata</i>	20.98	0.793	low	Bird-skewed	1
<i>Cacicus haemorrhous Nectandra membranacea</i>	20.95	-0.286	low	Plant-skewed	1
<i>Tachyphonus coronatus Trichilia clauseni</i>	20.95	-0.639	low	Plant-skewed	2

<i>Turdus amaurochalinus Guarea guidonia</i>	20.93	0.184	low	Bird-skewed	1
<i>Procnias nudicollis Myrcia splendens</i>	20.86	0.851	low	Bird-skewed	1
<i>Dacnis cayana Lantana camara</i>	20.80	-0.479	low	Plant-skewed	1
<i>Trogon surrucura Ocotea puberula</i>	20.74	0.790	low	Bird-skewed	1
<i>Chiroxiphia caudate Ixora venulosa</i>	20.66	-0.605	low	Plant-skewed	1
<i>Chiroxiphia caudate Clusia criuva</i>	20.66	-0.605	low	Plant-skewed	1
<i>Thraupis sayaca Myrsine umbellata</i>	20.63	-0.844	low	Plant-skewed	2
<i>Myiarchus ferox Trichilia claussoni</i>	20.62	-0.660	low	Plant-skewed	1
<i>Thraupis episcopus Myrsine umbellata</i>	20.61	-0.845	low	Plant-skewed	1
<i>Turdus leucomelas Trichilia claussoni</i>	20.61	-0.661	low	Plant-skewed	2
<i>Myiarchus swainsoni Clusia criuva</i>	20.58	-0.610	low	Plant-skewed	1
<i>Saltator similis Ixora venulosa</i>	20.56	-0.612	low	Plant-skewed	1
<i>Carpornis cucullata Siphoneugena densiflora</i>	20.50	0.820	low	Bird-skewed	1
<i>Myiodynastes maculatus Guarea guidonia</i>	20.42	0.145	low	Bird-skewed	1
<i>Tangara cayana Trichilia claussoni</i>	20.42	-0.674	low	Plant-skewed	2
<i>Tachyphonus coronatus Clusia criuva</i>	20.36	-0.625	low	Plant-skewed	1
<i>Procnias nudicollis Myrcia brasiliensis</i>	20.33	0.879	low	Bird-skewed	1
<i>Tangara desmaresti Myrsine umbellata</i>	20.32	-0.861	low	Plant-skewed	1
<i>Tyrannus melancholicus Trichilia claussoni</i>	20.24	-0.685	low	Plant-skewed	1
<i>Ramphocelus carbo Trichilia claussoni</i>	20.15	-0.691	low	Plant-skewed	2
<i>Thraupis sayaca Ficus organensis</i>	20.12	-0.840	low	Plant-skewed	1
<i>Pteroglossus bailloni Amaioua intermedia</i>	20.11	0.448	low	Bird-skewed	1
<i>Carpornis cucullata Myrcia splendens</i>	20.09	0.844	low	Bird-skewed	1
<i>Turdus subalaris Miconia inconspicua</i>	20.08	0.661	low	Bird-skewed	1
<i>Myiarchus ferox Clusia criuva</i>	20.04	-0.647	low	Plant-skewed	2
<i>Turdus albicollis Allophylus edulis</i>	19.95	-0.387	low	Plant-skewed	1
<i>Ramphastos dicolorus Ilex microdonta</i>	19.92	-0.023	low	Plant-skewed	1
<i>Trogon surrucura Myrcia splendens</i>	19.85	0.842	low	Bird-skewed	1
<i>Turdus albicollis Nectandra membranacea</i>	19.81	-0.380	low	Plant-skewed	2
<i>Tangara desmaresti Ocotea corymbosa</i>	19.79	-0.857	low	Plant-skewed	1
<i>Machaeropterus regulus Guarea guidonia</i>	19.77	0.092	low	Bird-skewed	1

<i>Stephanophorus diadematus Ilex microdonta</i>	19.77	-0.037	low	Plant-skewed	1
<i>Carpornis cucullata Paullinia sp</i>	19.75	0.864	low	Bird-skewed	1
<i>Turdus flavipes Nectandra membranacea</i>	19.68	-0.390	low	Plant-skewed	1
<i>Carpornis melanocephala Marlierea obscura</i>	19.68	0.868	low	Bird-skewed	2
<i>Thraupis sayaca Cestrum mariquitense</i>	19.67	-0.835	low	Plant-skewed	1
<i>Stephanophorus diadematus Vassobia breviflora</i>	19.65	-0.025	low	Plant-skewed	1
<i>Tyrannus melancholicus Clusia criuva</i>	19.65	-0.673	low	Plant-skewed	3
<i>Carpornis cucullata Miconia sellowiana</i>	19.64	0.870	low	Bird-skewed	2
<i>Coereba flaveola Acnistus arborescens</i>	19.63	-0.027	low	Plant-skewed	1
<i>Carpornis melanocephala Marlierea suaveolens</i>	19.60	0.872	low	Bird-skewed	1
<i>Turdus albicollis Nectandra lanceolata</i>	19.58	-0.367	low	Plant-skewed	1
<i>Carpornis cucullata Myrcia hebeptala</i>	19.57	0.874	low	Bird-skewed	1
<i>Ramphocelus bresilius Clusia criuva</i>	19.56	-0.679	low	Plant-skewed	1
<i>Melanerpes flavifrons Miconia tristis</i>	19.51	0.728	low	Bird-skewed	1
<i>Hylophilus poicilotis Miconia pusilliflora</i>	19.48	0.732	low	Bird-skewed	1
<i>Dacnis cayana Lantana pohliana</i>	19.45	-0.423	low	Plant-skewed	1
<i>Carpornis cucullata Ocotea pulchella</i>	19.43	0.882	low	Bird-skewed	1
<i>Carpornis cucullata Ocotea spixiana</i>	19.43	0.882	low	Bird-skewed	1
<i>Ilicura militaris Miconia theizans</i>	19.40	0.641	low	Bird-skewed	1
<i>Tangara seledon Clusia criuva</i>	19.39	-0.690	low	Plant-skewed	1
<i>Megarynchus pitangua Guarea guidonia</i>	19.34	0.053	low	Bird-skewed	1
<i>Ilicura militaris Ficus luschnathiana</i>	19.34	0.646	low	Bird-skewed	1
<i>Zonotrichia capensis Miconia tristis</i>	19.30	0.724	low	Bird-skewed	1
<i>Thraupis episcopus Trichilia catigua</i>	19.29	-0.832	low	Plant-skewed	1
<i>Cnemotriccus fuscatus Guarea guidonia</i>	19.26	0.045	low	Bird-skewed	1
<i>Tachyphonus coronatus Lantana camara</i>	19.23	-0.594	low	Plant-skewed	1
<i>Ilicura militaris Miconia tentaculifera</i>	19.14	0.659	low	Bird-skewed	1
<i>Chlorophonia cyanea Miconia pusilliflora</i>	19.10	0.725	low	Bird-skewed	1
<i>Coereba flaveola Guarea guidonia</i>	19.09	0.028	low	Bird-skewed	2
<i>Trogon surrucura Eugenia uniflora</i>	19.09	0.886	low	Bird-skewed	1



<i>Pachyramphus validus Ocotea puberula</i>	19.03	0.767	low	Bird-skewed	1
<i>Ramphocelus bresilius Lantana sp</i>	19.02	-0.666	low	Plant-skewed	1
<i>Ramphastos dicolorus Psychotria vellosiana</i>	18.95	0.075	low	Bird-skewed	1
<i>Tangara mexicana Lantana pohliana</i>	18.90	-0.467	low	Plant-skewed	1
<i>Thraupis episcopus Inga laurina</i>	18.90	-0.828	low	Plant-skewed	1
<i>Manacus manacus Miconia tentaculifera</i>	18.89	0.653	low	Bird-skewed	1
<i>Saltator maximus Guarea guidonia</i>	18.83	0.001	low	Bird-skewed	1
<i>Myiozetetes similis Acnistus arborescens</i>	18.80	-0.111	low	Plant-skewed	1
<i>Lipaugus lanioides Psychotria mapourioides</i>	18.78	0.112	low	Bird-skewed	1
<i>Carpornis cucullata Miconia cubatanensis</i>	18.76	0.920	low	Bird-skewed	1
<i>Tangara seledon Ixora burchelliana</i>	18.75	-0.676	low	Plant-skewed	1
<i>Manacus manacus Miconia albicans</i>	18.72	0.666	low	Bird-skewed	1
<i>Ramphastos vitellinus Psychotria mapourioides</i>	18.67	0.102	low	Bird-skewed	1
<i>Ilicura militaris Miconia discolor</i>	18.65	0.694	low	Bird-skewed	1
<i>Ilicura militaris Miconia chartacea</i>	18.60	0.697	low	Bird-skewed	1
<i>Turdus rufiventris Allophylus edulis</i>	18.60	-0.496	low	Plant-skewed	1
<i>Zonotrichia capensis Solanum granulosoleprosum</i>	18.59	0.770	low	Bird-skewed	1
<i>Thlypopsis sordida Acnistus arborescens</i>	18.58	-0.132	low	Plant-skewed	1
<i>Ilicura militaris Miconia budlejoides</i>	18.55	0.701	low	Bird-skewed	1
<i>Phibalura flavirostris Miconia pusilliflora</i>	18.49	0.713	low	Bird-skewed	1
<i>Ilicura militaris Miconia tristis</i>	18.45	0.708	low	Bird-skewed	1
<i>Thraupis cyanoptera Ixora burchelliana</i>	18.42	-0.699	low	Plant-skewed	1
<i>Ilicura militaris Miconia pusilliflora</i>	18.40	0.711	low	Bird-skewed	1
<i>Ilicura militaris Leandra variabilis</i>	18.32	0.717	low	Bird-skewed	1
<i>Thraupis sayaca Ocotea notata</i>	18.27	-0.820	low	Plant-skewed	1
<i>Myiozetetes similis Guarea guidonia</i>	18.25	-0.060	low	Plant-skewed	1
<i>Tijuca atra Miconia chartacea</i>	18.25	0.689	low	Bird-skewed	1
<i>Ilicura militaris Leandra laevigata</i>	18.25	0.722	low	Bird-skewed	1
<i>Pitangus sulphuratus Myrcia palustris</i>	18.24	0.553	low	Bird-skewed	1
<i>Ilicura militaris Leandra sp</i>	18.23	0.723	low	Bird-skewed	1

<i>Turdus rufiventris Nectandra lanceolata</i>	18.22	-0.480	low	Plant-skewed	1
<i>Chiroxiphia caudate Allophylus edulis</i>	18.22	-0.527	low	Plant-skewed	2
<i>Turdus rufiventris Struthanthus martianus</i>	18.22	-0.480	low	Plant-skewed	2
<i>Thraupis sayaca Trichilia clauseni</i>	18.17	-0.819	low	Plant-skewed	1
<i>Phylloscartes sylviolus Miconia tristis</i>	18.17	0.702	low	Bird-skewed	1
<i>Tangara cyanocephala Clusia criuva</i>	18.17	-0.773	low	Plant-skewed	2
<i>Ilicura militaris Leandra sabiaensis</i>	18.16	0.728	low	Bird-skewed	1
<i>Stephanophorus diadematus Psychotria leiocarpa</i>	18.14	0.129	low	Bird-skewed	1
<i>Cacicus haemorrhous Guarea guidonia</i>	18.13	-0.073	low	Plant-skewed	1
<i>Euphonia pectoralis Rhipsalis camposportoana</i>	18.09	0.501	low	Bird-skewed	1
<i>Chiroxiphia caudate Nectandra membranacea</i>	18.08	-0.521	low	Plant-skewed	1
<i>Thraupis ornate Clusia criuva</i>	18.06	-0.780	low	Plant-skewed	1
<i>Euphonia pectoralis Rhipsalis elliptica</i>	18.06	0.503	low	Bird-skewed	1
<i>Penelope superciliaris Myrcia pulchra</i>	17.96	0.582	low	Bird-skewed	1
<i>Icterus cayanensis Eugenia brasiliensis</i>	17.94	0.714	low	Bird-skewed	1
<i>Elaenia sp Acnistus arborescens</i>	17.92	-0.199	low	Plant-skewed	1
<i>Tachyphonus coronatus Allophylus edulis</i>	17.92	-0.551	low	Plant-skewed	2
<i>Chiroxiphia caudate Struthanthus martianus</i>	17.84	-0.512	low	Plant-skewed	1
<i>Penelope superciliaris Myrcia pubipetala</i>	17.83	0.592	low	Bird-skewed	1
<i>Elaenia spectabilis Acnistus arborescens</i>	17.82	-0.209	low	Plant-skewed	1
<i>Euphonia pectoralis Rhipsalis teres</i>	17.82	0.523	low	Bird-skewed	1
<i>Saltator similis Struthanthus concinnus</i>	17.79	-0.522	low	Plant-skewed	1
<i>Nemosia pileata Miconia albicans</i>	17.77	0.641	low	Bird-skewed	1
<i>Mionectes rufiventris Miconia valtheri</i>	17.76	0.533	low	Bird-skewed	1
<i>Euphonia pectoralis Miconia valtheri</i>	17.72	0.531	low	Bird-skewed	1
<i>Phyllomyias griseocapilla Miconia cinnamomifolia</i>	17.70	0.920	low	Bird-skewed	1
<i>Turdus albicollis Ilex pseudobuxus</i>	17.66	-0.247	low	Plant-skewed	1
<i>Thraupis episcopus Clusia criuva</i>	17.57	-0.813	low	Plant-skewed	1
<i>Turdus flavipes Ilex pseudobuxus</i>	17.53	-0.260	low	Plant-skewed	1

<i>Elaenia flavogaster Acnistus arborescens</i>	17.53	-0.239	low	Plant-skewed	1
<i>Euphonia pectoralis Rhipsalis sp</i>	17.51	0.548	low	Bird-skewed	2
<i>Tolmomyias sulphurescens Miconia cinnamomifolia</i>	17.43	0.919	low	Bird-skewed	1
<i>Celeus flavescens Miconia budlejoides</i>	17.39	0.675	low	Bird-skewed	1
<i>Penelope obscura Myrcia pubipetala</i>	17.38	0.577	low	Bird-skewed	1
<i>Zonotrichia capensis Miconia sellowiana</i>	17.38	0.851	low	Bird-skewed	1
<i>Elaenia obscura Miconia chartacea</i>	17.33	0.667	low	Bird-skewed	1
<i>Pteroglossus bailloni Miconia discolor</i>	17.33	0.663	low	Bird-skewed	1
<i>Pitangus sulphuratus Miconia albicans</i>	17.29	0.628	low	Bird-skewed	1
<i>Tangara desmaresti Clusia criuva</i>	17.28	-0.833	low	Plant-skewed	1
<i>Penelope obscura Ficus luschnathiana</i>	17.27	0.586	low	Bird-skewed	1
<i>Pipra pipra Guarea guidonia</i>	17.26	-0.166	low	Plant-skewed	1
<i>Chlorophonia cyanea Miconia sellowiana</i>	17.23	0.849	low	Bird-skewed	1
<i>Mionectes rufiventris Miconia theizans</i>	17.23	0.577	low	Bird-skewed	1
<i>Pteroglossus bailloni Miconia budlejoides</i>	17.23	0.671	low	Bird-skewed	1
<i>Turdus leucomelas Nectandra lanceolata</i>	17.21	-0.564	low	Plant-skewed	1
<i>Euphonia pectoralis Miconia theizans</i>	17.19	0.575	low	Bird-skewed	1
<i>Pteroglossus bailloni Miconia racemifera</i>	17.18	0.674	low	Bird-skewed	1
<i>Penelope superciliaris Myrcia ilheosensis</i>	17.14	0.646	low	Bird-skewed	1
<i>Euphonia pectoralis Ficus luschnathiana</i>	17.12	0.581	low	Bird-skewed	1
<i>Lipaugus lanioides Amaioua intermedia</i>	17.10	0.281	low	Bird-skewed	1
<i>Lipaugus lanioides Amaioua guianensis</i>	17.10	0.281	low	Bird-skewed	1
<i>Dacnis cayana Acnistus arborescens</i>	17.07	-0.284	low	Plant-skewed	1
<i>Euphonia violacea Rhipsalis sp</i>	17.05	0.530	low	Bird-skewed	1
<i>Pteroglossus bailloni Leandra variabilis</i>	17.00	0.688	low	Bird-skewed	1
<i>Turdus albicollis Guarea macrophylla</i>	16.99	-0.194	low	Plant-skewed	1
<i>Elaenia flavogaster Guarea guidonia</i>	16.98	-0.195	low	Plant-skewed	1
<i>Turdus amaurochalinus Myrciaria cuspidata</i>	16.97	0.528	low	Bird-skewed	1
<i>Euphonia violacea Rhipsalis paradoxa</i>	16.94	0.540	low	Bird-skewed	1
<i>Thraupis sayaca Ixora burchelliana</i>	16.94	-0.804	low	Plant-skewed	1

<i>Cissopis leverianus Vassobia breviflora</i>	16.87	-0.305	low	Plant-skewed	1
<i>Pitangus sulphuratus Eugenia uruguayensis</i>	16.82	0.665	low	Bird-skewed	1
<i>Elaenia obscura Eugenia astringens</i>	16.80	0.708	low	Bird-skewed	1
<i>Manacus manacus Myrcia splendens</i>	16.74	0.807	low	Bird-skewed	1
<i>Turdus albicollis Psychotria nuda</i>	16.73	-0.170	low	Plant-skewed	1
<i>Turdus albicollis Psychotria vellosiana</i>	16.69	-0.167	low	Plant-skewed	1
<i>Saltator fuliginosus Psychotria suterella</i>	16.58	-0.146	low	Plant-skewed	1
<i>Icterus cayanensis Plinia cauliflora</i>	16.56	0.813	low	Bird-skewed	1
<i>Penelope obscura Miconia chartacea</i>	16.54	0.646	low	Bird-skewed	1
<i>Turdus albicollis Psychotria suterella</i>	16.53	-0.152	low	Plant-skewed	1
<i>Dacnis cayana Guarea guidonia</i>	16.53	-0.243	low	Plant-skewed	1
<i>Manacus manacus Paullinia rhomboidea</i>	16.53	0.822	low	Bird-skewed	1
<i>Turdus albicollis Psychotria sp</i>	16.52	-0.151	low	Plant-skewed	1
<i>Thraupis cyanoptera Nectandra membranacea</i>	16.49	-0.651	low	Plant-skewed	1
<i>Euphonia pectoralis Miconia latecrenata</i>	16.47	0.634	low	Bird-skewed	1
<i>Orthogonys chloricterus Rudgea jasminoides</i>	16.41	0.128	low	Bird-skewed	1
<i>Pitangus sulphuratus Eugenia astringens</i>	16.40	0.699	low	Bird-skewed	1
<i>Mionectes rufiventris Miconia budlejoides</i>	16.38	0.647	low	Bird-skewed	1
<i>Mionectes rufiventris Miconia racemifera</i>	16.33	0.651	low	Bird-skewed	2
<i>Euphonia pectoralis Leandra australis</i>	16.31	0.648	low	Bird-skewed	1
<i>Trichothraupis melanops Psychotria vellosiana</i>	16.30	-0.210	low	Plant-skewed	1
<i>Euphonia violacea Miconia albicans</i>	16.29	0.596	low	Bird-skewed	1
<i>Mionectes rufiventris Miconia tristis</i>	16.28	0.655	low	Bird-skewed	1
<i>Volatinia jacarina Miconia rubiginosa</i>	16.24	0.569	low	Bird-skewed	1
<i>Manacus manacus Myrcia hebeptala</i>	16.22	0.844	low	Bird-skewed	1
<i>Turdus amaurochalinus Miconia albicans</i>	16.22	0.593	low	Bird-skewed	1
<i>Turdus albicollis Palicourea forsteronioides</i>	16.21	-0.120	low	Plant-skewed	1
<i>Euphonia pectoralis Miconia pusilliflora</i>	16.18	0.658	low	Bird-skewed	1
<i>Tijuca atra Miconia sellowiana</i>	16.18	0.838	low	Bird-skewed	1
<i>Euphonia pectoralis Leandra variabilis</i>	16.11	0.665	low	Bird-skewed	1
<i>Myiodynastes maculatus Ficus luschnathiana</i>	16.07	0.540	low	Bird-skewed	1

<i>Parula pitiayumi Miconia racemifera</i>	16.05	0.643	low	Bird-skewed	1
<i>Nemosia pileata Solanum mauritianum</i>	16.03	0.774	low	Bird-skewed	1
<i>Euphonia pectoralis Leandra sp</i>	16.01	0.673	low	Bird-skewed	1
<i>Penelope obscura Leandra melastomoides</i>	15.96	0.693	low	Bird-skewed	1
<i>Penelope obscura Solanum bullatum</i>	15.95	0.694	low	Bird-skewed	1
<i>Penelope obscura Eugenia melanogyna</i>	15.95	0.694	low	Bird-skewed	1
<i>Euphonia pectoralis Leandra sabiaensis</i>	15.95	0.678	low	Bird-skewed	1
<i>Euphonia pectoralis Leandra refracta</i>	15.95	0.678	low	Bird-skewed	1
<i>Penelope obscura Eugenia mosenii</i>	15.95	0.694	low	Bird-skewed	1
<i>Penelope obscura Solanum variabile</i>	15.93	0.695	low	Bird-skewed	1
<i>Orthogonys chloricterus Amaioua intermedia</i>	15.92	0.184	low	Bird-skewed	1
<i>Pteroglossus bailloni Solanum mauritianum</i>	15.92	0.772	low	Bird-skewed	1
<i>Haplospiza unicolor Miconia theizans</i>	15.86	0.523	low	Bird-skewed	1
<i>Turdus amaurochalinus Miconia chartacea</i>	15.85	0.625	low	Bird-skewed	1
<i>Celeus flavescens Myrcia splendens</i>	15.84	0.793	low	Bird-skewed	1
<i>Euphonia pectoralis Leandra pilonensis</i>	15.83	0.688	low	Bird-skewed	1
<i>Penelope obscura Nectandra cuspidata</i>	15.81	0.705	low	Bird-skewed	1
<i>Trichothraupis melanops Palicourea forsteronioides</i>	15.81	-0.166	low	Plant-skewed	1
<i>Euphonia pectoralis Ossaea amygdaloides</i>	15.80	0.690	low	Bird-skewed	1
<i>Nemosia pileata Myrcia splendens</i>	15.79	0.793	low	Bird-skewed	1
<i>Turdus amaurochalinus Eugenia uruguayensis</i>	15.74	0.634	low	Bird-skewed	1
<i>Tangara cyanocephala Allophylus edulis</i>	15.73	-0.728	low	Plant-skewed	2
<i>Turdus amaurochalinus Miconia tristis</i>	15.70	0.638	low	Bird-skewed	1
<i>Nemosia pileata Plinia cauliflora</i>	15.68	0.800	low	Bird-skewed	1
<i>Turdus amaurochalinus Miconia pusilliflora</i>	15.65	0.642	low	Bird-skewed	2
<i>Turdus rufiventris Guarea macrophylla</i>	15.64	-0.337	low	Plant-skewed	1
<i>Tachyphonus coronatus Ilex microdonta</i>	15.63	-0.449	low	Plant-skewed	1
<i>Thraupis ornate Allophylus edulis</i>	15.63	-0.736	low	Plant-skewed	1
<i>Parula pitiayumi Eugenia astringens</i>	15.62	0.679	low	Bird-skewed	1
<i>Lipaugus lanioides Miconia valtheri</i>	15.60	0.431	low	Bird-skewed	1

<i>Celeus flavescens Paullinia uloptera</i>	15.56	0.814	low	Bird-skewed	1
<i>Turdus amaurochalinus Eugenia brasiliensis</i>	15.51	0.654	low	Bird-skewed	1
<i>Conirostrum speciosum Miconia tristis</i>	15.51	0.632	low	Bird-skewed	1
<i>Tachyphonus coronatus Acnistus arborescens</i>	15.50	-0.442	low	Plant-skewed	1
<i>Tachyphonus coronatus Vassobia breviflora</i>	15.50	-0.442	low	Plant-skewed	1
<i>Thraupis ornate Nectandra membranacea</i>	15.49	-0.733	low	Plant-skewed	1
<i>Euphonia chalybea Miconia pusilliflora</i>	15.48	0.637	low	Bird-skewed	1
<i>Manacus manacus Miconia prasina</i>	15.46	0.898	low	Bird-skewed	1
<i>Attila phoenicurus Miconia tristis</i>	15.42	0.629	low	Bird-skewed	1
<i>Turdus rufiventris Psychotria vellosiana</i>	15.34	-0.316	low	Plant-skewed	1
<i>Manacus manacus Miconia cinnamomifolia</i>	15.34	0.907	low	Bird-skewed	1
<i>Penelope obscura Psidium cattleianum</i>	15.33	0.745	low	Bird-skewed	1
<i>Thlypopsis sordida Myrcia tomentosa</i>	15.33	0.224	low	Bird-skewed	1
<i>Turdus amaurochalinus Eugenia astringens</i>	15.32	0.671	low	Bird-skewed	1
<i>Pitangus sulphuratus Myrcia splendens</i>	15.31	0.785	low	Bird-skewed	1
<i>Chiroxiphia caudate Guarea macrophylla</i>	15.26	-0.378	low	Plant-skewed	2
<i>Euphonia sp Rhipsalis sp</i>	15.26	0.445	low	Bird-skewed	1
<i>Turdus albicollis Rudgea jasminoides</i>	15.23	-0.008	low	Plant-skewed	2
<i>Myiodynastes maculatus Miconia tristis</i>	15.18	0.621	low	Bird-skewed	1
<i>Thraupis sayaca Allophylus edulis</i>	15.15	-0.775	low	Plant-skewed	1
<i>Pteroglossus bailloni Myrcia brasiliensis</i>	15.15	0.831	low	Bird-skewed	1
<i>Conirostrum speciosum Solanum myrianthum</i>	15.14	0.664	low	Bird-skewed	1
<i>Pipraeidea melanonota Miconia pusilliflora</i>	15.13	0.626	low	Bird-skewed	1
<i>Stephanophorus diadematus Myrceugenia myrcioides</i>	15.10	0.443	low	Bird-skewed	1
<i>Elaenia mesoleuca Psychotria vellosiana</i>	15.06	-0.346	low	Plant-skewed	1
<i>Lipaugus lanioides Ficus luschnathiana</i>	15.01	0.491	low	Bird-skewed	1
<i>Stephanophorus diadematus Myrcia oblongata</i>	15.00	0.453	low	Bird-skewed	1
<i>Ramphastos vitellinus Myrcia pubipetala</i>	15.00	0.475	low	Bird-skewed	1
<i>Tangara cayana Acnistus arborescens</i>	14.97	-0.495	low	Plant-skewed	1
<i>Chiroxiphia caudate Psychotria vellosiana</i>	14.96	-0.357	low	Plant-skewed	2

<i>Penelope obscura Myrcia splendens</i>	14.93	0.778	low	Bird-skewed	1
<i>Ramphastos dicolorus Ficus luschnathiana</i>	14.91	0.486	low	Bird-skewed	1
<i>Haplospiza unicolor Miconia pusilliflora</i>	14.86	0.616	low	Bird-skewed	1
<i>Volatinia jacarina Solanum granulosoleprosum</i>	14.82	0.694	low	Bird-skewed	1
<i>Mionectes rufiventris Myrcia splendens</i>	14.82	0.776	low	Bird-skewed	1
<i>Chiroxiphia caudate Psychotria suterella</i>	14.80	-0.346	low	Plant-skewed	1
<i>Tachyphonus cristatus Miconia valtheri</i>	14.80	0.381	low	Bird-skewed	1
<i>Tyrannus melancholicus Acnistus arborescens</i>	14.79	-0.513	low	Plant-skewed	1
<i>Stephanophorus diadematus Ficus luschnathiana</i>	14.76	0.478	low	Bird-skewed	1
<i>Coereba flaveola Myrcia ferruginea</i>	14.74	0.477	low	Bird-skewed	1
<i>Coereba flaveola Ficus luschnathiana</i>	14.74	0.477	low	Bird-skewed	1
<i>Turdus albicollis Amaioua intermedia</i>	14.74	0.057	low	Bird-skewed	1
<i>Ramphastos vitellinus Myrcia strigipes</i>	14.72	0.503	low	Bird-skewed	1
<i>Ramphocelus carbo Acnistus arborescens</i>	14.71	-0.522	low	Plant-skewed	1
<i>Tachyphonus coronatus Psychotria vellosiana</i>	14.66	-0.390	low	Plant-skewed	1
<i>Pitangus sulphuratus Ocotea pulchella</i>	14.65	0.837	low	Bird-skewed	2
<i>Myiarchus ferox Guarea guidonia</i>	14.64	-0.444	low	Plant-skewed	1
<i>Turdus leucomelas Guarea macrophylla</i>	14.63	-0.445	low	Plant-skewed	1
<i>Turdus flavipes Amaioua intermedia</i>	14.61	0.041	low	Bird-skewed	1
<i>Myiodynastes maculatus Ocotea puberula</i>	14.61	0.673	low	Bird-skewed	1
<i>Pitangus sulphuratus Eugenia cerasiflora</i>	14.56	0.845	low	Bird-skewed	1
<i>Sicalis flaveola Eugenia astringens</i>	14.54	0.646	low	Bird-skewed	1
<i>Tachyphonus coronatus Psychotria suterella</i>	14.50	-0.379	low	Plant-skewed	1
<i>Penelope obscura Marlierea reitzii</i>	14.49	0.813	low	Bird-skewed	1
<i>Tangara desmaresti Struthanthus martianus</i>	14.46	-0.794	low	Plant-skewed	1
<i>Celeus flavescens Miconia cinnamomifolia</i>	14.43	0.900	low	Bird-skewed	1
<i>Euphonia pectoralis Paullinia sp</i>	14.43	0.804	low	Bird-skewed	1
<i>Orthogonys chloricterus Miconia valtheri</i>	14.43	0.355	low	Bird-skewed	1
<i>Basileuterus culicivorus Miconia tentaculifera</i>	14.42	0.491	low	Bird-skewed	1
<i>Penelope obscura Myrcia brasiliensis</i>	14.40	0.821	low	Bird-skewed	1

<i>Penelope obscura Myrcia hebeptala</i>	14.40	0.821	low	Bird-skewed	1
<i>Cacicus haemorrhous Miconia valtheri</i>	14.38	0.351	low	Bird-skewed	1
<i>Pteroglossus bailloni Miconia cabucu</i>	14.34	0.893	low	Bird-skewed	1
<i>Thraupis cyanoptera Ilex microdonta</i>	14.34	-0.577	low	Plant-skewed	1
<i>Turdus leucomelas Psychotria vellosiana</i>	14.33	-0.427	low	Plant-skewed	1
<i>Capsiempis flaveola Miconia cinnamomifolia</i>	14.32	0.899	low	Bird-skewed	1
<i>Elaenia obscura Miconia cinnamomifolia</i>	14.31	0.899	low	Bird-skewed	1
<i>Chiroxiphia caudate Psychotria leiocarpa</i>	14.30	-0.307	low	Plant-skewed	1
<i>Euphonia chlorotica Miconia tristis</i>	14.29	0.587	low	Bird-skewed	1
<i>Pteroglossus bailloni Miconia cinnamomifolia</i>	14.27	0.899	low	Bird-skewed	2
<i>Tyrannus savana Guarea guidonia</i>	14.25	-0.485	low	Plant-skewed	1
<i>Tyrannus melancholicus Guarea guidonia</i>	14.25	-0.485	low	Plant-skewed	2
<i>Euphonia pectoralis Myrcia brasiliensis</i>	14.25	0.819	low	Bird-skewed	1
<i>Lipaugus lanioides Miconia budlejoides</i>	14.21	0.571	low	Bird-skewed	1
<i>Lipaugus lanioides Miconia racemifera</i>	14.17	0.575	low	Bird-skewed	1
<i>Ramphocelus bresilius Guarea guidonia</i>	14.17	-0.494	low	Plant-skewed	1
<i>Saltator maximus Miconia albicans</i>	14.11	0.502	low	Bird-skewed	1
<i>Antilophia galeata Miconia rubiginosa</i>	14.09	0.469	low	Bird-skewed	1
<i>Stephanophorus diadematus Miconia chartacea</i>	14.02	0.554	low	Bird-skewed	2
<i>Ramphastos dicolorus Miconia tristis</i>	14.02	0.576	low	Bird-skewed	1
<i>Lipaugus lanioides Leandra variabilis</i>	13.99	0.594	low	Bird-skewed	1
<i>Pipraeidea melanonota Solanum mauritianum</i>	13.97	0.731	low	Bird-skewed	1
<i>Stephanophorus diadematus Miconia budlejoides</i>	13.97	0.560	low	Bird-skewed	1
<i>Pitangus sulphuratus Miconia cinnamomifolia</i>	13.91	0.896	low	Bird-skewed	1
<i>Euphonia violacea Marlierea obscura</i>	13.90	0.802	low	Bird-skewed	1
<i>Penelope obscura Campomanesia xanthocarpa</i>	13.86	0.865	low	Bird-skewed	1
<i>Coereba flaveola Miconia tristis</i>	13.86	0.569	low	Bird-skewed	1
<i>Tachyphonus cristatus Miconia albicans</i>	13.83	0.487	low	Bird-skewed	1
<i>Stephanophorus diadematus Miconia</i>	13.82	0.575	low	Bird-skewed	2



*pusilliflora*

<i>Phyllomyias fasciatus Miconia sellowiana</i>	13.81	0.804	low	Bird-skewed	1
<i>Cacicus haemorrhous Ficus luschnathiana</i>	13.78	0.420	low	Bird-skewed	1
<i>Turdus amaurochalinus Miconia sellowiana</i>	13.78	0.804	low	Bird-skewed	1
<i>Stephanophorus diadematus Solanum inodorum</i>	13.75	0.582	low	Bird-skewed	1
<i>Myiozetetes similis Miconia rubiginosa</i>	13.73	0.447	low	Bird-skewed	1
<i>Myiodynastes maculatus Myrcia splendens</i>	13.72	0.754	low	Bird-skewed	1
<i>Tangara seledon Psychotria vellosiana</i>	13.70	-0.496	low	Plant-skewed	1
<i>Lipaugus lanioides Solanum swartzianum</i>	13.65	0.628	low	Bird-skewed	1
<i>Cacicus haemorrhous Miconia paniculata</i>	13.64	0.437	low	Bird-skewed	1
<i>Elaenia sp Myrcia palustris</i>	13.61	0.293	low	Bird-skewed	1
<i>Turdus amaurochalinus Ocotea pulchella</i>	13.57	0.822	low	Bird-skewed	2
<i>Lipaugus lanioides Eugenia sp</i>	13.56	0.637	low	Bird-skewed	1
<i>Tachyphonus cristatus Miconia latecrenata</i>	13.55	0.517	low	Bird-skewed	1
<i>Myiozetetes similis Miconia albicans</i>	13.54	0.470	low	Bird-skewed	2
<i>Megarynchus pitangua Ocotea puberula</i>	13.53	0.638	low	Bird-skewed	1
<i>Stephanophorus diadematus Solanum didymum</i>	13.53	0.605	low	Bird-skewed	1
<i>Thlypopsis sordida Miconia rubiginosa</i>	13.52	0.434	low	Bird-skewed	1
<i>Penelope obscura Miconia cinnamomifolia</i>	13.52	0.893	low	Bird-skewed	1
<i>Chiroxiphia caudate Rudgea jasminoides</i>	13.50	-0.234	low	Plant-skewed	1
<i>Orchesticus abeillei Miconia budlejoides</i>	13.49	0.537	low	Bird-skewed	1
<i>Turdus flavipes Rhipsalis camposportoana</i>	13.48	0.192	low	Bird-skewed	1
<i>Turdus amaurochalinus Eugenia uniflora</i>	13.48	0.831	low	Bird-skewed	1
<i>Empidonomus varius Miconia rubiginosa</i>	13.44	0.428	low	Bird-skewed	1
<i>Stephanophorus diadematus Ossaea amygdaloides</i>	13.43	0.615	low	Bird-skewed	1
<i>Stephanophorus diadematus Solanum variabile</i>	13.42	0.616	low	Bird-skewed	1
<i>Cacicus haemorrhous Miconia albicans</i>	13.42	0.462	low	Bird-skewed	1
<i>Saltator similis Rudgea jasminoides</i>	13.40	-0.248	low	Plant-skewed	1

<i>Euphonia pectoralis Miconia cinnamomifolia</i>	13.37	0.892	low	Bird-skewed	1
<i>Thraupis cyanoptera Psychotria vellosiana</i>	13.37	-0.532	low	Plant-skewed	1
<i>Tachyphonus cristatus Miconia racemifera</i>	13.36	0.538	low	Bird-skewed	1
<i>Thraupis ornate Ilex microdonta</i>	13.33	-0.677	low	Plant-skewed	1
<i>Trichothraupis melanops Psychotria gracilentia</i>	13.33	0.146	low	Bird-skewed	1
<i>Pipraeidea melanonota Miconia sellowiana</i>	13.27	0.795	low	Bird-skewed	1
<i>Orchesticus abeillei Leandra variabilis</i>	13.26	0.562	low	Bird-skewed	1
<i>Turdus albicollis Miconia valtheri</i>	13.24	0.254	low	Bird-skewed	1
<i>Tersina viridis Miconia tristis</i>	13.21	0.538	low	Bird-skewed	1
<i>Orthogonys chloricterus Miconia latecrenata</i>	13.18	0.497	low	Bird-skewed	1
<i>Tachyphonus cristatus Leandra sp</i>	13.09	0.568	low	Bird-skewed	1
<i>Turdus albicollis Myrcia spectabilis</i>	13.07	0.277	low	Bird-skewed	2
<i>Myiodynastes maculatus Ocotea pulchella</i>	13.06	0.814	low	Bird-skewed	1
<i>Orthogonys chloricterus Miconia budlejoides</i>	13.04	0.513	low	Bird-skewed	1
<i>Euphonia violacea Miconia prasina</i>	13.03	0.877	low	Bird-skewed	1
<i>Orthogonys chloricterus Miconia brasiliensis</i>	13.03	0.514	low	Bird-skewed	1
<i>Chiroxiphia caudate Amaioua intermedia</i>	13.01	-0.182	low	Plant-skewed	1
<i>Turdus amaurochalinus Miconia prasina</i>	12.96	0.876	low	Bird-skewed	1
<i>Ramphastos vitellinus Psidium cattleianum</i>	12.95	0.683	low	Bird-skewed	1
<i>Trichothraupis melanops Rhipsalis teres</i>	12.94	0.200	low	Bird-skewed	1
<i>Trichothraupis melanops Solanum americanum</i>	12.91	0.204	low	Bird-skewed	1
<i>Euphonia violacea Miconia cinnamomifolia</i>	12.91	0.887	low	Bird-skewed	1
<i>Orthogonys chloricterus Miconia pusilliflora</i>	12.89	0.530	low	Bird-skewed	1
<i>Turdus albicollis Myrcia pulchra</i>	12.88	0.301	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia valtheri</i>	12.85	0.213	low	Bird-skewed	1
<i>Cacicus chrysopterus Miconia pusilliflora</i>	12.85	0.528	low	Bird-skewed	1
<i>Turdus amaurochalinus Miconia cinnamomifolia</i>	12.83	0.886	low	Bird-skewed	3
<i>Turdus flavipes Myrcia pulchra</i>	12.76	0.289	low	Bird-skewed	1
<i>Turdus albicollis Myrcia pubipetala</i>	12.75	0.319	low	Bird-skewed	2
<i>Cyanerpes cyaneus Myrcia splendens</i>	12.75	0.730	low	Bird-skewed	1

<i>Thraupis sayaca Acnistus arborescens</i>	12.73	-0.721	low	Plant-skewed	1
<i>Empidonomus varius Miconia tristis</i>	12.73	0.512	low	Bird-skewed	1
<i>Orthogonys chloricterus Leandra sp</i>	12.72	0.550	low	Bird-skewed	1
<i>Thraupis cyanoptera Psychotria leiocarpa</i>	12.71	-0.495	low	Plant-skewed	1
<i>Turdus albicollis Miconia theizans</i>	12.71	0.325	low	Bird-skewed	1
<i>Stephanophorus diadematus Solanum mauritianum</i>	12.66	0.695	low	Bird-skewed	1
<i>Turdus albicollis Myrcia ferruginea</i>	12.65	0.333	low	Bird-skewed	1
<i>Turdus albicollis Ficus luschnathiana</i>	12.65	0.333	low	Bird-skewed	1
<i>Myiozetetes similis Eugenia astringens</i>	12.64	0.571	low	Bird-skewed	1
<i>Conirostrum speciosum Miconia cinnamomifolia</i>	12.64	0.885	low	Bird-skewed	1
<i>Thlypopsis sordida Eugenia brasiliensis</i>	12.62	0.538	low	Bird-skewed	1
<i>Cissopis leverianus Miconia valtheri</i>	12.57	0.182	low	Bird-skewed	1
<i>Ramphastos dicolorus Myrcia splendens</i>	12.56	0.725	low	Bird-skewed	1
<i>Tangara desmaresti Ilex microdonta</i>	12.55	-0.754	low	Plant-skewed	1
<i>Pipra rubrocapilla Miconia albicans</i>	12.54	0.402	low	Bird-skewed	1
<i>Turdus flavipes Ficus luschnathiana</i>	12.52	0.321	low	Bird-skewed	1
<i>Saltator maxillosus Miconia chartacea</i>	12.47	0.469	low	Bird-skewed	1
<i>Saltator similis Myrcia tomentosa</i>	12.45	-0.141	low	Plant-skewed	1
<i>Coereba flaveola Myrcia splendens</i>	12.39	0.720	low	Bird-skewed	3
<i>Turdus albicollis Myrcia anacardiifolia</i>	12.33	0.375	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia theizans</i>	12.31	0.288	low	Bird-skewed	1
<i>Coereba flaveola Plinia cauliflora</i>	12.29	0.731	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia inconspicua</i>	12.28	0.293	low	Bird-skewed	1
<i>Turdus albicollis Miconia albicans</i>	12.28	0.381	low	Bird-skewed	1
<i>Elaenia flavogaster Miconia albicans</i>	12.27	0.381	low	Bird-skewed	1
<i>Saltator maxillosus Miconia pusilliflora</i>	12.27	0.494	low	Bird-skewed	1
<i>Turdus amaurochalinus Miconia ligustroides</i>	12.26	0.936	low	Bird-skewed	1
<i>Tangara cyanocephala Psychotria mapourioides</i>	12.20	-0.619	low	Plant-skewed	1

<i>Turdus albicollis Miconia sp</i>	12.19	0.394	low	Bird-skewed	1
<i>Dacnis cayana Myrcia ferruginea</i>	12.18	0.289	low	Bird-skewed	1
<i>Thraupis episcopus Guarea guidonia</i>	12.18	-0.706	low	Plant-skewed	1
<i>Elaenia sp Miconia tristis</i>	12.15	0.476	low	Bird-skewed	1
<i>Turdus flavipes Miconia albicans</i>	12.15	0.371	low	Bird-skewed	1
<i>Lipaugus lanioides Myrcia brasiliensis</i>	12.13	0.780	low	Bird-skewed	1
<i>Saltator maximus Myrcia splendens</i>	12.13	0.712	low	Bird-skewed	2
<i>Thraupis ornate Psychotria mapourioides</i>	12.09	-0.631	low	Plant-skewed	1
<i>Tangara cyanocephala Psychotria sessilis</i>	12.07	-0.613	low	Plant-skewed	1
<i>Turdus albicollis Myrcia ilheosensis</i>	12.06	0.410	low	Bird-skewed	2
<i>Trichothraupis melanops Miconia tentaculifera</i>	12.06	0.324	low	Bird-skewed	1
<i>Ramphastos dicolorus Myrcia brasiliensis</i>	12.03	0.778	low	Bird-skewed	1
<i>Dacnis cayana Miconia rubiginosa</i>	12.01	0.313	low	Bird-skewed	1
<i>Poospiza lateralis Leandra sp</i>	12.00	0.510	low	Bird-skewed	1
<i>Chiroxiphia caudate Psychotria gracilentia</i>	11.99	-0.046	low	Plant-skewed	1
<i>Tangara cyanocephala Palicourea forsteronioides</i>	11.99	-0.609	low	Plant-skewed	1
<i>Dacnis cayana Miconia tentaculifera</i>	11.98	0.317	low	Bird-skewed	1
<i>Stephanophorus diadematus Miconia sellowiana</i>	11.96	0.767	low	Bird-skewed	1
<i>Ramphastos dicolorus Ocotea spixiana</i>	11.90	0.792	low	Bird-skewed	1
<i>Turdus rufiventris Miconia valtheri</i>	11.89	0.092	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia albicans</i>	11.88	0.347	low	Bird-skewed	1
<i>Ramphastos vitellinus Ocotea pulchella</i>	11.88	0.792	low	Bird-skewed	1
<i>Turdus rufiventris Myrcia palustris</i>	11.87	0.096	low	Bird-skewed	1
<i>Turdus albicollis Miconia budlejoides</i>	11.85	0.437	low	Bird-skewed	1
<i>Tachyphonus cristatus Myrcia splendens</i>	11.85	0.703	low	Bird-skewed	1
<i>Dacnis cayana Miconia albicans</i>	11.81	0.341	low	Bird-skewed	2
<i>Turdus albicollis Miconia racemifera</i>	11.81	0.443	low	Bird-skewed	2
<i>Turdus albicollis Leandra acutiflora</i>	11.81	0.443	low	Bird-skewed	1
<i>Machaeropterus regulus Miconia prasina</i>	11.80	0.862	low	Bird-skewed	1

<i>Turdus flavipes Miconia chartacea</i>	11.78	0.420	low	Bird-skewed	1
<i>Turdus albicollis Miconia tristis</i>	11.76	0.450	low	Bird-skewed	1
<i>Elaenia flavogaster Miconia tristis</i>	11.75	0.449	low	Bird-skewed	1
<i>Tangara cayana Myrcia tomentosa</i>	11.72	-0.250	low	Plant-skewed	1
<i>Turdus albicollis Miconia pusilliflora</i>	11.71	0.457	low	Bird-skewed	1
<i>Tachyphonus coronatus Psychotria gracilentia</i>	11.69	-0.095	low	Plant-skewed	1
<i>Turdus flavipes Miconia racemifera</i>	11.68	0.433	low	Bird-skewed	1
<i>Turdus rufiventris Myrciaria cuspidata</i>	11.68	0.127	low	Bird-skewed	1
<i>Machaeropterus regulus Miconia cinnamomifolia</i>	11.67	0.874	low	Bird-skewed	1
<i>Turdus rufiventris Myrceugenia myrcioides</i>	11.63	0.134	low	Bird-skewed	1
<i>Turdus flavipes Miconia tristis</i>	11.63	0.440	low	Bird-skewed	1
<i>Turdus albicollis Leandra variabilis</i>	11.63	0.467	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia latecrenata</i>	11.60	0.387	low	Bird-skewed	1
<i>Turdus flavipes Miconia pusilliflora</i>	11.58	0.447	low	Bird-skewed	2
<i>Chiroxiphia caudate Solanum americanum</i>	11.58	0.023	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia discolor</i>	11.56	0.392	low	Bird-skewed	1
<i>Myiozetetes similis Myrcia splendens</i>	11.56	0.693	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia chartacea</i>	11.52	0.398	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia valtheri</i>	11.51	0.034	low	Bird-skewed	1
<i>Ramphastos dicolorus Campomanesia guaviroba</i>	11.50	0.832	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra regnellii</i>	11.49	0.403	low	Bird-skewed	1
<i>Ramphastos vitellinus Campomanesia guaviroba</i>	11.49	0.832	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia budlejoides</i>	11.46	0.406	low	Bird-skewed	2
<i>Trichothraupis melanops Miconia brasiliensis</i>	11.45	0.407	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra australis</i>	11.44	0.409	low	Bird-skewed	1
<i>Cacicus haemorrhous Myrcia splendens</i>	11.44	0.689	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia racemifera</i>	11.42	0.412	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra acutiflora</i>	11.42	0.413	low	Bird-skewed	1

<i>Dacnis cayana Miconia budlejoides</i>	11.39	0.401	low	Bird-skewed	1
<i>Pteroglossus aracari Miconia cinnamomifolia</i>	11.38	0.870	low	Bird-skewed	1
<i>Turdus albicollis Eugenia astringens</i>	11.38	0.499	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia tristis</i>	11.37	0.419	low	Bird-skewed	2
<i>Turdus rufiventris Miconia theizans</i>	11.36	0.178	low	Bird-skewed	1
<i>Turdus albicollis Leandra pilonensis</i>	11.35	0.503	low	Bird-skewed	1
<i>Dacnis cayana Miconia racemifera</i>	11.35	0.407	low	Bird-skewed	1
<i>Lipaugus lanioides Miconia cabucu</i>	11.33	0.861	low	Bird-skewed	1
<i>Turdus rufiventris Miconia inconspicua</i>	11.32	0.184	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia pusilliflora</i>	11.31	0.427	low	Bird-skewed	2
<i>Turdus rufiventris Myrcia ferruginea</i>	11.30	0.188	low	Bird-skewed	1
<i>Dacnis cayana Miconia tristis</i>	11.30	0.414	low	Bird-skewed	1
<i>Turdus rufiventris Ficus luschnathiana</i>	11.29	0.188	low	Bird-skewed	1
<i>Hemithraupis ruficapilla Miconia valtheri</i>	11.27	-0.008	low	Plant-skewed	1
<i>Turdus flavipes Eugenia astringens</i>	11.25	0.491	low	Bird-skewed	1
<i>Dacnis cayana Miconia pusilliflora</i>	11.24	0.421	low	Bird-skewed	1
<i>Megarynchus pitangua Miconia cinnamomifolia</i>	11.24	0.868	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra variabilis</i>	11.23	0.438	low	Bird-skewed	1
<i>Ramphastos dicolorus Miconia cabucu</i>	11.23	0.859	low	Bird-skewed	1
<i>Cissopis leverianus Leandra regnellii</i>	11.21	0.379	low	Bird-skewed	1
<i>Cissopis leverianus Miconia budlejoides</i>	11.19	0.383	low	Bird-skewed	1
<i>Turdus albicollis Ocotea puberula</i>	11.19	0.525	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra laevigata</i>	11.16	0.448	low	Bird-skewed	1
<i>Cnemotriccus fuscatus Miconia cinnamomifolia</i>	11.16	0.867	low	Bird-skewed	1
<i>Cissopis leverianus Miconia racemifera</i>	11.14	0.389	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra sp</i>	11.14	0.451	low	Bird-skewed	1
<i>Saltator fuliginosus Solanum rufescens</i>	11.14	0.541	low	Bird-skewed	1
<i>Tangara cyanoptera Miconia racemifera</i>	11.09	0.385	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra refracta</i>	11.07	0.460	low	Bird-skewed	1
<i>Orthogonys chloricterus Marlierea obscura</i>	11.07	0.738	low	Bird-skewed	1

<i>Tangara cyanoptera Miconia tristis</i>	11.04	0.392	low	Bird-skewed	1
<i>Chiroxiphia caudate Myrcia pubipetala</i>	11.02	0.117	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia theizans</i>	10.98	0.125	low	Bird-skewed	1
<i>Poospiza thoracica Miconia sellowiana</i>	10.96	0.741	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra pilonensis</i>	10.96	0.476	low	Bird-skewed	1
<i>Cissopis leverianus Leandra variabilis</i>	10.96	0.416	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra melastomoides</i>	10.94	0.479	low	Bird-skewed	1
<i>Trichothraupis melanops Ossaea amygdaloides</i>	10.93	0.481	low	Bird-skewed	1
<i>Chiroxiphia caudate Ficus luschnathiana</i>	10.91	0.136	low	Bird-skewed	2
<i>Knipolegus cyanirostris Miconia sellowiana</i>	10.88	0.738	low	Bird-skewed	1
<i>Knipolegus nigerrimus Miconia sellowiana</i>	10.88	0.738	low	Bird-skewed	1
<i>Saltator similis Miconia theizans</i>	10.87	0.109	low	Bird-skewed	1
<i>Saltator maximus Miconia prasina</i>	10.85	0.848	low	Bird-skewed	1
<i>Saltator similis Myrcia ferruginea</i>	10.81	0.120	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia paniculata</i>	10.77	0.161	low	Bird-skewed	1
<i>Cissopis leverianus Solanum didymum</i>	10.75	0.446	low	Bird-skewed	1
<i>Tangara seledon Psychotria gracilentia</i>	10.73	-0.252	low	Plant-skewed	1
<i>Saltator maximus Miconia cinnamomifolia</i>	10.73	0.861	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia tentaculifera</i>	10.72	0.169	low	Bird-skewed	1
<i>Trichothraupis melanops Leandra barbinervis</i>	10.70	0.512	low	Bird-skewed	1
<i>Elaenia sp Myrcia splendens</i>	10.69	0.660	low	Bird-skewed	1
<i>Myiarchus tyrannulus Eugenia astringens</i>	10.63	0.444	low	Bird-skewed	1
<i>Tachyphonus coronatus Myrcia ferruginea</i>	10.62	0.088	low	Bird-skewed	1
<i>Saltator similis Miconia tentaculifera</i>	10.62	0.154	low	Bird-skewed	1
<i>Tachyphonus coronatus Ficus luschnathiana</i>	10.61	0.089	low	Bird-skewed	1
<i>Saltator fuliginosus Solanum mauritianum</i>	10.60	0.612	low	Bird-skewed	1
<i>Chiroxiphia caudate Myrcia anacardiifolia</i>	10.60	0.190	low	Bird-skewed	1
<i>Thlypopsis sordida Eugenia cerasiflora</i>	10.59	0.774	low	Bird-skewed	1
<i>Elaenia sp Calyptranthes concinna</i>	10.57	0.675	low	Bird-skewed	1
<i>Turdus rufiventris Miconia chartacea</i>	10.56	0.306	low	Bird-skewed	1

<i>Pipra pipra Myrcia splendens</i>	10.56	0.654	low	Bird-skewed	1
<i>Turdus sp Eugenia astringens</i>	10.49	0.433	low	Bird-skewed	1
<i>Turdus rufiventris Miconia racemifera</i>	10.46	0.322	low	Bird-skewed	1
<i>Turdus rufiventris Eugenia uruguayensis</i>	10.45	0.324	low	Bird-skewed	1
<i>Tachyphonus cristatus Miconia cinnamomifolia</i>	10.45	0.857	low	Bird-skewed	2
<i>Saltator similis Miconia albicans</i>	10.44	0.184	low	Bird-skewed	1
<i>Tachyphonus coronatus Miconia rubiginosa</i>	10.44	0.120	low	Bird-skewed	1
<i>Coereba flaveola Miconia ligustroides</i>	10.42	0.924	low	Bird-skewed	1
<i>Tachyphonus coronatus Miconia tentaculifera</i>	10.42	0.124	low	Bird-skewed	1
<i>Turdus rufiventris Miconia tristis</i>	10.41	0.330	low	Bird-skewed	2
<i>Saltator maxillosus Miconia sellowiana</i>	10.40	0.723	low	Bird-skewed	1
<i>Turdus rufiventris Miconia pusilliflora</i>	10.35	0.339	low	Bird-skewed	2
<i>Poospiza lateralis Miconia sellowiana</i>	10.31	0.720	low	Bird-skewed	1
<i>Turdus albicollis Myrcia splendens</i>	10.30	0.642	low	Bird-skewed	2
<i>Myiarchus ferox Myrcia ferruginea</i>	10.29	0.032	low	Bird-skewed	1
<i>Turdus rufiventris Solanum inodorum</i>	10.29	0.349	low	Bird-skewed	1
<i>Elaenia flavogaster Myrcia splendens</i>	10.29	0.642	low	Bird-skewed	1
<i>Tyrannus savana Myrciaria cuspidata</i>	10.29	-0.110	low	Plant-skewed	1
<i>Myiozetetes similis Miconia prasina</i>	10.28	0.838	low	Bird-skewed	1
<i>Turdus rufiventris Leandra variabilis</i>	10.27	0.352	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia latecrenata</i>	10.26	0.247	low	Bird-skewed	1
<i>Tangara peruviana Eugenia astringens</i>	10.26	0.413	low	Bird-skewed	1
<i>Tangara seledon Miconia valtheri</i>	10.25	-0.189	low	Plant-skewed	1
<i>Tachyphonus coronatus Miconia albicans</i>	10.25	0.155	low	Bird-skewed	2
<i>Chiroxiphia caudate Miconia discolor</i>	10.23	0.253	low	Bird-skewed	2
<i>Turdus rufiventris Leandra laevigata</i>	10.20	0.363	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia chartacea</i>	10.18	0.261	low	Bird-skewed	1
<i>Turdus albicollis Calypttranthes concinna</i>	10.18	0.658	low	Bird-skewed	1
<i>Turdus flavipes Myrcia splendens</i>	10.17	0.636	low	Bird-skewed	1
<i>Myiozetetes similis Miconia cinnamomifolia</i>	10.15	0.852	low	Bird-skewed	1
<i>Chiroxiphia caudate Leandra regnellii</i>	10.15	0.266	low	Bird-skewed	1



<i>Hemithraupis flavicollis Miconia albicans</i>	10.13	0.137	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia budlejoides</i>	10.12	0.271	low	Bird-skewed	3
<i>Chiroxiphia caudate Miconia brasiliensis</i>	10.12	0.272	low	Bird-skewed	1
<i>Turdus leucomelas Miconia rubiginosa</i>	10.11	0.064	low	Bird-skewed	1
<i>Cacicus haemorrhous Miconia cabucu</i>	10.11	0.841	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia racemifera</i>	10.08	0.278	low	Bird-skewed	2
<i>Turdus rufiventris Endlicheria paniculata</i>	10.08	0.384	low	Bird-skewed	1
<i>Tangara seledon Myrcia spectabilis</i>	10.07	-0.163	low	Plant-skewed	1
<i>Cissopis leverianus Psidium cattleianum</i>	10.04	0.549	low	Bird-skewed	1
<i>Cacicus haemorrhous Miconia cinnamomifolia</i>	10.03	0.850	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia tristis</i>	10.03	0.287	low	Bird-skewed	2
<i>Turdus rufiventris Eugenia astringens</i>	10.03	0.391	low	Bird-skewed	1
<i>Elaenia sp Ocotea pulchella</i>	10.02	0.743	low	Bird-skewed	1
<i>Hemithraupis ruficapilla Miconia latecrenata</i>	10.02	0.214	low	Bird-skewed	1
<i>Turdus albicollis Paullinia uloptera</i>	10.02	0.679	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia pusilliflora</i>	9.98	0.296	low	Bird-skewed	2
<i>Turdus rufiventris Ossaea amygdaloides</i>	9.97	0.401	low	Bird-skewed	1
<i>Tachyphonus coronatus Miconia latecrenata</i>	9.96	0.206	low	Bird-skewed	1
<i>Thlypopsis sordida Miconia cinnamomifolia</i>	9.94	0.848	low	Bird-skewed	1
<i>Saltator similis Miconia tristis</i>	9.93	0.274	low	Bird-skewed	1
<i>Myiarchus ferox Miconia albicans</i>	9.92	0.103	low	Bird-skewed	1
<i>Turdus leucomelas Miconia albicans</i>	9.91	0.101	low	Bird-skewed	1
<i>Tangara cayana Miconia rubiginosa</i>	9.91	0.027	low	Bird-skewed	1
<i>Chiroxiphia caudate Solanum inodorum</i>	9.91	0.307	low	Bird-skewed	1
<i>Tachyphonus coronatus Ossaea sp</i>	9.91	0.217	low	Bird-skewed	1
<i>Chiroxiphia caudate Leandra variabilis</i>	9.90	0.310	low	Bird-skewed	1
<i>Turdus flavipes Paullinia uloptera</i>	9.89	0.673	low	Bird-skewed	1
<i>Turdus rufiventris Eugenia hiemalis</i>	9.89	0.413	low	Bird-skewed	1
<i>Turdus albicollis Marlierea obscura</i>	9.88	0.697	low	Bird-skewed	1
<i>Hemithraupis ruficapilla Miconia brasiliensis</i>	9.88	0.240	low	Bird-skewed	1
<i>Saltator similis Miconia pusilliflora</i>	9.87	0.284	low	Bird-skewed	1

<i>Turdus albicollis Miconia sellowiana</i>	9.84	0.702	low	Bird-skewed	1
<i>Hemithraupis ruficapilla Miconia racemifera</i>	9.84	0.247	low	Bird-skewed	1
<i>Dacnis cayana Myrcia splendens</i>	9.83	0.619	low	Bird-skewed	3
<i>Turdus rufiventris Ocotea puberula</i>	9.83	0.422	low	Bird-skewed	1
<i>Elaenia flavogaster Miconia sellowiana</i>	9.83	0.702	low	Bird-skewed	1
<i>Chiroxiphia caudate Leandra laevigata</i>	9.82	0.322	low	Bird-skewed	1
<i>Tachyphonus coronatus Miconia budlejoides</i>	9.82	0.231	low	Bird-skewed	1
<i>Ramphocelus bresilius Myrcia ferruginea</i>	9.82	-0.060	low	Plant-skewed	1
<i>Saltator similis Solanum inodorum</i>	9.81	0.295	low	Bird-skewed	1
<i>Tachyphonus coronatus Leandra australis</i>	9.80	0.235	low	Bird-skewed	1
<i>Saltator similis Leandra variabilis</i>	9.79	0.297	low	Bird-skewed	1
<i>Hemithraupis ruficapilla Miconia tristis</i>	9.79	0.256	low	Bird-skewed	2
<i>Tachyphonus coronatus Miconia racemifera</i>	9.78	0.239	low	Bird-skewed	2
<i>Tachyphonus coronatus Leandra acutiflora</i>	9.78	0.239	low	Bird-skewed	1
<i>Elaenia flavogaster Myrcia hebepectata</i>	9.76	0.711	low	Bird-skewed	1
<i>Chiroxiphia caudate Leandra sabiaensis</i>	9.74	0.336	low	Bird-skewed	1
<i>Chiroxiphia caudate Leandra refracta</i>	9.74	0.337	low	Bird-skewed	1
<i>Hemithraupis ruficapilla Miconia pusilliflora</i>	9.73	0.266	low	Bird-skewed	1
<i>Tyrannus melancholicus Miconia rubiginosa</i>	9.73	-0.009	low	Plant-skewed	1
<i>Dacnis cayana Plinia cauliflora</i>	9.73	0.634	low	Bird-skewed	1
<i>Tachyphonus coronatus Miconia tristis</i>	9.73	0.248	low	Bird-skewed	2
<i>Tangara cayana Miconia albicans</i>	9.72	0.066	low	Bird-skewed	1
<i>Turdus flavipes Miconia sellowiana</i>	9.71	0.697	low	Bird-skewed	1
<i>Saltator similis Leandra sp</i>	9.70	0.313	low	Bird-skewed	1
<i>Tachyphonus coronatus Miconia pusilliflora</i>	9.68	0.258	low	Bird-skewed	2
<i>Tangara seledon Ficus luschnathiana</i>	9.65	-0.093	low	Plant-skewed	1
<i>Ramphocelus carbo Miconia rubiginosa</i>	9.65	-0.027	low	Plant-skewed	1
<i>Turdus albicollis Ocotea pulchella</i>	9.64	0.730	low	Bird-skewed	2
<i>Elaenia flavogaster Ocotea pulchella</i>	9.63	0.729	low	Bird-skewed	1
<i>Chiroxiphia caudate Miconia elegans</i>	9.62	0.357	low	Bird-skewed	1
<i>Tachyphonus coronatus Leandra variabilis</i>	9.60	0.272	low	Bird-skewed	1

<i>Chiroxiphia caudate Ossaea amygdaloides</i>	9.59	0.362	low	Bird-skewed	1
<i>Tangara preciosa Myrcia hartwegiana</i>	9.56	0.080	low	Bird-skewed	1
<i>Tyrannus melancholicus Miconia albicans</i>	9.54	0.031	low	Bird-skewed	1
<i>Tachyphonus coronatus Leandra laevigata</i>	9.52	0.285	low	Bird-skewed	1
<i>Turdus flavipes Ocotea pulchella</i>	9.51	0.725	low	Bird-skewed	1
<i>Tangara cyanocephala Psychotria gracilentia</i>	9.51	-0.452	low	Plant-skewed	1
<i>Turdus leucomelas Miconia budlejoides</i>	9.49	0.183	low	Bird-skewed	1
<i>Saltator similis Ossaea amygdaloides</i>	9.49	0.350	low	Bird-skewed	1
<i>Thraupis sayaca Myrcia tomentosa</i>	9.48	-0.585	low	Plant-skewed	1
<i>Saltator similis Solanum variable</i>	9.47	0.353	low	Bird-skewed	1
<i>Tangara cayana Leandra aurea</i>	9.46	0.116	low	Bird-skewed	1
<i>Chiroxiphia caudate Ocotea puberula</i>	9.45	0.385	low	Bird-skewed	1
<i>Ramphocelus bresilius Miconia albicans</i>	9.45	0.014	low	Bird-skewed	2
<i>Trichothraupis melanops Miconia sellowiana</i>	9.45	0.686	low	Bird-skewed	1
<i>Tachyphonus coronatus Leandra sabiaensis</i>	9.44	0.300	low	Bird-skewed	1
<i>Tachyphonus coronatus Leandra refracta</i>	9.44	0.301	low	Bird-skewed	1
<i>Thraupis cyanoptera Myrcia pubipetala</i>	9.43	-0.175	low	Plant-skewed	1
<i>Turdus leucomelas Miconia tristis</i>	9.40	0.200	low	Bird-skewed	1
<i>Dacnis cayana Miconia sellowiana</i>	9.38	0.683	low	Bird-skewed	1
<i>Tachyphonus coronatus Eugenia astringens</i>	9.35	0.316	low	Bird-skewed	1
<i>Tangara cayana Miconia chartacea</i>	9.35	0.139	low	Bird-skewed	2
<i>Thraupis cyanoptera Ficus luschnathiana</i>	9.32	-0.158	low	Plant-skewed	1
<i>Dacnis cayana Myrcia hebeptala</i>	9.31	0.693	low	Bird-skewed	1
<i>Tachyphonus coronatus Leandra melastomoides</i>	9.30	0.325	low	Bird-skewed	1
<i>Tangara cayana Miconia budlejoides</i>	9.29	0.150	low	Bird-skewed	1
<i>Tachyphonus coronatus Ossaea amygdaloides</i>	9.29	0.327	low	Bird-skewed	1
<i>Elaenia sp Miconia cinnamomifolia</i>	9.28	0.836	low	Bird-skewed	1
<i>Pipra rubrocapilla Miconia prasina</i>	9.28	0.817	low	Bird-skewed	1
<i>Pipra pipra Miconia prasina</i>	9.28	0.817	low	Bird-skewed	1
<i>Saltator similis Solanum rufescens</i>	9.25	0.391	low	Bird-skewed	1

<i>Turdus leucomelas Eugenia brasiliensis</i>	9.21	0.237	low	Bird-skewed	1
<i>Tangara cayana Miconia tristis</i>	9.20	0.169	low	Bird-skewed	1
<i>Pipra rubrocapilla Miconia cinnamomifolia</i>	9.15	0.833	low	Bird-skewed	1
<i>Pipra pipra Miconia cinnamomifolia</i>	9.15	0.833	low	Bird-skewed	1
<i>Dacnis cayana Eugenia uniflora</i>	9.07	0.726	low	Bird-skewed	1
<i>Tangara cyanocephala Miconia valtheri</i>	9.02	-0.405	low	Plant-skewed	1
<i>Tyrannus melancholicus Miconia tristis</i>	9.02	0.138	low	Bird-skewed	1
<i>Turdus leucomelas Eugenia astringens</i>	9.02	0.273	low	Bird-skewed	1
<i>Tangara seledon Miconia latecrenata</i>	9.00	0.039	low	Bird-skewed	1
<i>Turdus albicollis Miconia cubatanensis</i>	8.97	0.818	low	Bird-skewed	1
<i>Turdus rufiventris Myrcia splendens</i>	8.95	0.565	low	Bird-skewed	2
<i>Thraupis sp Eugenia astringens</i>	8.90	0.256	low	Bird-skewed	1
<i>Turdus albicollis Miconia cinnamomifolia</i>	8.89	0.828	low	Bird-skewed	1
<i>Turdus flavipes Miconia prasina</i>	8.89	0.808	low	Bird-skewed	1
<i>Tangara seledon Miconia budlejoides</i>	8.86	0.070	low	Bird-skewed	1
<i>Turdus flavipes Miconia cubatanensis</i>	8.84	0.814	low	Bird-skewed	1
<i>Turdus flavipes Miconia cabucu</i>	8.84	0.814	low	Bird-skewed	1
<i>Tangara cyanooptera Eugenia uniflora</i>	8.82	0.716	low	Bird-skewed	1
<i>Tangara seledon Miconia racemifera</i>	8.82	0.079	low	Bird-skewed	1
<i>Turdus flavipes Miconia cinnamomifolia</i>	8.76	0.825	low	Bird-skewed	1
<i>Tangara seledon Miconia tristis</i>	8.76	0.090	low	Bird-skewed	1
<i>Ramphocelus carbo Eugenia brasiliensis</i>	8.74	0.163	low	Bird-skewed	1
<i>Saltator similis Solanum argenteum</i>	8.71	0.485	low	Bird-skewed	1
<i>Tangara seledon Miconia pusilliflora</i>	8.71	0.102	low	Bird-skewed	2
<i>Turdus leucomelas Solanum granulosoleprosum</i>	8.70	0.335	low	Bird-skewed	1
<i>Schistochlamys ruficapillus Leandra aurea</i>	8.63	-0.057	low	Plant-skewed	1
<i>Thraupis cyanooptera Miconia chartacea</i>	8.59	-0.015	low	Plant-skewed	1
<i>Ramphocelus bresilius Eugenia astringens</i>	8.56	0.202	low	Bird-skewed	1
<i>Dacnis cayana Miconia prasina</i>	8.55	0.799	low	Bird-skewed	1
<i>Elaenia mesoleuca Myrciaria floribunda</i>	8.55	0.564	low	Bird-skewed	1

<i>Tangara seledon Leandra sp</i>	8.54	0.140	low	Bird-skewed	1
<i>Thraupis cyanoptera Miconia budlejoides</i>	8.53	-0.001	low	Plant-skewed	1
<i>Schistochlamys ruficapillus Miconia chartacea</i>	8.51	-0.032	low	Plant-skewed	2
<i>Tachyphonus coronatus Solanum mauritianum</i>	8.51	0.467	low	Bird-skewed	1
<i>Dacnis cayana Miconia cabucu</i>	8.51	0.806	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia cinnamomifolia</i>	8.50	0.818	low	Bird-skewed	2
<i>Tangara cayana Solanum granulosoleprosum</i>	8.50	0.308	low	Bird-skewed	1
<i>Turdus rufiventris Miconia sellowiana</i>	8.49	0.638	low	Bird-skewed	1
<i>Tangara cyanocephala Miconia theizans</i>	8.49	-0.343	low	Plant-skewed	1
<i>Myiarchus swainsoni Myrcia splendens</i>	8.48	0.530	low	Bird-skewed	1
<i>Saltator similis Myrcia splendens</i>	8.46	0.528	low	Bird-skewed	1
<i>Tangara cyanocephala Miconia inconspicua</i>	8.45	-0.338	low	Plant-skewed	1
<i>Tyrannus melancholicus Nectandra cuspidata</i>	8.44	0.257	low	Bird-skewed	1
<i>Thraupis cyanoptera Miconia tristis</i>	8.44	0.020	low	Bird-skewed	1
<i>Tangara cyanocephala Myrcia ferruginea</i>	8.43	-0.335	low	Plant-skewed	1
<i>Dacnis cayana Miconia cinnamomifolia</i>	8.43	0.816	low	Bird-skewed	3
<i>Tangara cyanocephala Ficus luschnathiana</i>	8.43	-0.335	low	Plant-skewed	1
<i>Thraupis ornate Myrcia pubipetala</i>	8.43	-0.369	low	Plant-skewed	1
<i>Turdus rufiventris Myrcia brasiliensis</i>	8.42	0.649	low	Bird-skewed	1
<i>Thraupis sayaca Myrcia palustris</i>	8.42	-0.507	low	Plant-skewed	1
<i>Thraupis cyanoptera Miconia pusilliflora</i>	8.38	0.033	low	Bird-skewed	2
<i>Thraupis ornate Miconia theizans</i>	8.38	-0.364	low	Plant-skewed	1
<i>Tangara seledon Leandra pilonensis</i>	8.36	0.179	low	Bird-skewed	1
<i>Thraupis cyanoptera Solanum inodorum</i>	8.32	0.048	low	Bird-skewed	1
<i>Turdus rufiventris Ocotea pulchella</i>	8.28	0.671	low	Bird-skewed	2
<i>Tachyphonus coronatus Myrcia splendens</i>	8.27	0.512	low	Bird-skewed	1
<i>Thraupis sayaca Myrcia spectabilis</i>	8.26	-0.493	low	Plant-skewed	1
<i>Elaenia mesoleuca Miconia sellowiana</i>	8.21	0.621	low	Bird-skewed	1
<i>Turdus rufiventris Eugenia cerasiflora</i>	8.19	0.687	low	Bird-skewed	1
<i>Tachyphonus coronatus Plinia cauliflora</i>	8.16	0.530	low	Bird-skewed	1

<i>Tangara desmaresti Miconia valtheri</i>	8.13	-0.563	low	Plant-skewed	1
<i>Thraupis sayaca Myrcia oblongata</i>	8.08	-0.476	low	Plant-skewed	1
<i>Tangara cyanocephala Miconia albicans</i>	8.06	-0.283	low	Plant-skewed	1
<i>Thraupis cyanoptera Eugenia astringens</i>	8.06	0.109	low	Bird-skewed	1
<i>Thraupis cyanoptera Leandra xanthocoma</i>	8.06	0.110	low	Bird-skewed	1
<i>Chiroxiphia caudate Myrcia hebeptala</i>	8.04	0.626	low	Bird-skewed	1
<i>Saltator similis Miconia sellowiana</i>	8.01	0.607	low	Bird-skewed	1
<i>Tangara mexicana Miconia prasina</i>	8.00	0.782	low	Bird-skewed	1
<i>Thraupis cyanoptera Eugenia melanogyna</i>	8.00	0.123	low	Bird-skewed	1
<i>Turdus leucomelas Myrcia splendens</i>	7.93	0.481	low	Bird-skewed	1
<i>Trichothraupis melanops Miconia minutiflora</i>	7.93	0.897	low	Bird-skewed	1
<i>Thraupis palmarum Miconia albicans</i>	7.91	-0.314	low	Plant-skewed	1
<i>Tangara mexicana Miconia cinnamomifolia</i>	7.88	0.801	low	Bird-skewed	1
<i>Thraupis sayaca Myrcia ferruginea</i>	7.84	-0.451	low	Plant-skewed	1
<i>Turdus leucomelas Plinia cauliflora</i>	7.83	0.500	low	Bird-skewed	1
<i>Tachyphonus coronatus Miconia sellowiana</i>	7.81	0.593	low	Bird-skewed	1
<i>Tangara cyanocephala Miconia latecrenata</i>	7.78	-0.236	low	Plant-skewed	1
<i>Tachyphonus coronatus Myrcia hebeptala</i>	7.74	0.606	low	Bird-skewed	1
<i>Ramphocelus carbo Solanum mauritianum</i>	7.72	0.378	low	Bird-skewed	1
<i>Tangara seledon Siphoneugena densiflora</i>	7.71	0.320	low	Bird-skewed	1
<i>Thraupis episcopus Miconia rubiginosa</i>	7.66	-0.433	low	Plant-skewed	1
<i>Tangara cyanocephala Miconia budlejoides</i>	7.64	-0.211	low	Plant-skewed	1
<i>Tangara cayana Plinia cauliflora</i>	7.63	0.481	low	Bird-skewed	1
<i>Tangara cyanocephala Miconia brasiliensis</i>	7.63	-0.210	low	Plant-skewed	1
<i>Tangara cyanocephala Leandra australis</i>	7.62	-0.208	low	Plant-skewed	1
<i>Tangara desmaresti Miconia theizans</i>	7.60	-0.517	low	Plant-skewed	1
<i>Tangara cyanocephala Miconia racemifera</i>	7.59	-0.203	low	Plant-skewed	2
<i>Thraupis ornate Miconia chartacea</i>	7.59	-0.247	low	Plant-skewed	1
<i>Tangara preciosa Calyptranthes concinna</i>	7.57	0.479	low	Bird-skewed	1
<i>Tyrannus melancholicus Myrcia splendens</i>	7.56	0.440	low	Bird-skewed	1
<i>Tangara cyanocephala Miconia tristis</i>	7.54	-0.194	low	Plant-skewed	1

<i>Turdus rufiventris</i> <i>Miconia cinnamomifolia</i>	7.54	0.790	low	Bird-skewed	2
<i>Tangara desmaresti</i> <i>Ficus luschnathiana</i>	7.53	-0.511	low	Plant-skewed	1
<i>Thraupis ornate</i> <i>Miconia budlejoides</i>	7.53	-0.236	low	Plant-skewed	1
<i>Thraupis ornate</i> <i>Miconia brasiliensis</i>	7.52	-0.236	low	Plant-skewed	1
<i>Tangara cyanocephala</i> <i>Miconia pusilliflora</i>	7.49	-0.183	low	Plant-skewed	2
<i>Thraupis ornate</i> <i>Miconia racemifera</i>	7.49	-0.229	low	Plant-skewed	1
<i>Thraupis sayaca</i> <i>Miconia albicans</i>	7.47	-0.407	low	Plant-skewed	2
<i>Ramphocelus bresilius</i> <i>Myrcia splendens</i>	7.47	0.430	low	Bird-skewed	2
<i>Thraupis ornate</i> <i>Miconia tristis</i>	7.43	-0.219	low	Plant-skewed	2
<i>Tangara cyanocephala</i> <i>Leandra variabilis</i>	7.41	-0.167	low	Plant-skewed	1
<i>Thraupis palmarum</i> <i>Miconia tristis</i>	7.39	-0.229	low	Plant-skewed	1
<i>Thraupis ornate</i> <i>Miconia pusilliflora</i>	7.38	-0.209	low	Plant-skewed	2
<i>Ramphocelus carbo</i> <i>Plinia cauliflora</i>	7.37	0.452	low	Bird-skewed	1
<i>Tangara cyanoventris</i> <i>Miconia tentaculifera</i>	7.33	-0.493	low	Plant-skewed	1
<i>Tangara cyanocephala</i> <i>Leandra sp</i>	7.32	-0.147	low	Plant-skewed	1
<i>Tangara cayana</i> <i>Miconia sellowiana</i>	7.28	0.550	low	Bird-skewed	1
<i>Chiroxiphia caudate</i> <i>Miconia cabucu</i>	7.24	0.764	low	Bird-skewed	1
<i>Chiroxiphia caudate</i> <i>Miconia cubatanensis</i>	7.24	0.764	low	Bird-skewed	1
<i>Thraupis cyanopectus</i> <i>Solanum mauritianum</i>	7.22	0.306	low	Bird-skewed	1
<i>Turdus leucomelas</i> <i>Eugenia uniflora</i>	7.17	0.626	low	Bird-skewed	3
<i>Tangara desmaresti</i> <i>Miconia albicans</i>	7.17	-0.473	low	Plant-skewed	1
<i>Chiroxiphia caudate</i> <i>Miconia cinnamomifolia</i>	7.16	0.777	low	Bird-skewed	2
<i>Tangara cyanocephala</i> <i>Ossaea amygdaloides</i>	7.10	-0.099	low	Plant-skewed	1
<i>Saltator similis</i> <i>Miconia cinnamomifolia</i>	7.06	0.773	low	Bird-skewed	1
<i>Thraupis palmarum</i> <i>Eugenia astringens</i>	7.01	-0.152	low	Plant-skewed	1
<i>Tachyphonus coronatus</i> <i>Miconia prasina</i>	6.99	0.742	low	Bird-skewed	1
<i>Thraupis cyanopectus</i> <i>Myrcia splendens</i>	6.98	0.364	low	Bird-skewed	1
<i>Thraupis episcopus</i> <i>Miconia tristis</i>	6.95	-0.336	low	Plant-skewed	1
<i>Hemithraupis ruficapilla</i> <i>Miconia cinnamomifolia</i>	6.92	0.767	low	Bird-skewed	1
<i>Tangara desmaresti</i> <i>Leandra aurea</i>	6.91	-0.443	low	Plant-skewed	1

<i>Tyrannus melancholicus Ocotea pulchella</i>	6.89	0.577	low	Bird-skewed	1
<i>Tangara desmaresti Miconia latecrenata</i>	6.88	-0.439	low	Plant-skewed	1
<i>Tachyphonus coronatus Miconia cinnamomifolia</i>	6.86	0.764	low	Bird-skewed	2
<i>Tangara desmaresti Miconia chartacea</i>	6.80	-0.428	low	Plant-skewed	2
<i>Thraupis episcopus Eugenia brasiliensis</i>	6.76	-0.305	low	Plant-skewed	1
<i>Hemithraupis flavicollis Miconia cinnamomifolia</i>	6.75	0.759	low	Bird-skewed	1
<i>Tangara desmaresti Miconia budlejoides</i>	6.74	-0.420	low	Plant-skewed	2
<i>Tangara desmaresti Leandra australis</i>	6.72	-0.418	low	Plant-skewed	1
<i>Ramphocelus carbo Eugenia uniflora</i>	6.71	0.590	low	Bird-skewed	2
<i>Tangara desmaresti Miconia racemifera</i>	6.70	-0.415	low	Plant-skewed	1
<i>Myiarchus ferox Miconia prasina</i>	6.66	0.726	low	Bird-skewed	1
<i>Tangara desmaresti Miconia tristis</i>	6.65	-0.407	low	Plant-skewed	2
<i>Tangara desmaresti Miconia pusilliflora</i>	6.60	-0.400	low	Plant-skewed	2
<i>Thraupis sayaca Solanum myrianthum</i>	6.59	-0.269	low	Plant-skewed	1
<i>Thraupis sayaca Eugenia astringens</i>	6.58	-0.267	low	Plant-skewed	1
<i>Thraupis sayaca Miconia elegans</i>	6.55	-0.261	low	Plant-skewed	1
<i>Turdus leucomelas Miconia cinnamomifolia</i>	6.53	0.749	low	Bird-skewed	2
<i>Thraupis cyanoptera Miconia sellowiana</i>	6.52	0.470	low	Bird-skewed	1
<i>Tangara desmaresti Leandra variabilis</i>	6.52	-0.388	low	Plant-skewed	1
<i>Thraupis cyanoptera Myrcia hebeptala</i>	6.45	0.487	low	Bird-skewed	1
<i>Tangara desmaresti Leandra sp</i>	6.42	-0.373	low	Plant-skewed	1
<i>Tangara cayana Miconia cinnamomifolia</i>	6.33	0.740	low	Bird-skewed	2
<i>Tyrannus melancholicus Miconia prasina</i>	6.28	0.704	low	Bird-skewed	1
<i>Thraupis episcopus Solanum granulosoleprosum</i>	6.24	-0.203	low	Plant-skewed	1
<i>Tangara desmaresti Leandra pilonensis</i>	6.24	-0.343	low	Plant-skewed	1
<i>Ramphocelus bresilius Miconia prasina</i>	6.19	0.699	low	Bird-skewed	1
<i>Tyrannus melancholicus Miconia cinnamomifolia</i>	6.15	0.730	low	Bird-skewed	1



<i>Tangara cyanocephala Myrcia splendens</i>	6.08	0.194	low	Bird-skewed	2
<i>Ramphocelus bresilius Miconia cinnamomifolia</i>	6.07	0.725	low	Bird-skewed	1
<i>Tangara seledon Miconia cabucu</i>	5.97	0.698	low	Bird-skewed	1
<i>Thraupis ornate Myrcia splendens</i>	5.97	0.168	low	Bird-skewed	1
<i>Thraupis palmarum Myrcia splendens</i>	5.93	0.157	low	Bird-skewed	2
<i>Thraupis sayaca Psidium cattleianum</i>	5.90	-0.109	low	Plant-skewed	1
<i>Tangara seledon Miconia cinnamomifolia</i>	5.90	0.715	low	Bird-skewed	2
<i>Tangara cayana Miconia ligustroides</i>	5.76	0.853	low	Bird-skewed	1
<i>Thraupis episcopus Solanum mauritianum</i>	5.73	-0.064	low	Plant-skewed	1
<i>Thraupis cyanoptera Miconia cabucu</i>	5.65	0.675	low	Bird-skewed	1
<i>Thraupis cyanoptera Miconia cinnamomifolia</i>	5.57	0.693	low	Bird-skewed	2
<i>Thraupis ornate Miconia sellowiana</i>	5.52	0.307	low	Bird-skewed	2
<i>Thraupis sayaca Myrcia splendens</i>	5.49	0.025	low	Bird-skewed	1
<i>Thraupis sayaca Plinia cauliflora</i>	5.39	0.062	low	Bird-skewed	1
<i>Thraupis episcopus Plinia cauliflora</i>	5.38	0.058	low	Bird-skewed	1
<i>Thraupis sayaca Marlierea obscura</i>	5.08	0.173	low	Bird-skewed	1
<i>Thraupis sayaca Miconia sellowiana</i>	5.04	0.188	low	Bird-skewed	1
<i>Thraupis sayaca Ocotea pulchella</i>	4.83	0.263	low	Bird-skewed	1
<i>Tangara cyanocephala Miconia cabucu</i>	4.75	0.589	low	Bird-skewed	1
<i>Tangara cyanocephala Miconia cubatanensis</i>	4.75	0.589	low	Bird-skewed	1
<i>Thraupis sayaca Eugenia cerasiflora</i>	4.73	0.298	low	Bird-skewed	1
<i>Tangara desmaresti Miconia sellowiana</i>	4.73	0.087	low	Bird-skewed	2
<i>Thraupis episcopus Eugenia uniflora</i>	4.72	0.295	low	Bird-skewed	3
<i>Tangara cyanocephala Miconia cinnamomifolia</i>	4.67	0.611	low	Bird-skewed	3
<i>Thraupis palmarum Miconia prasina</i>	4.65	0.555	low	Bird-skewed	1
<i>Thraupis ornate Miconia cinnamomifolia</i>	4.57	0.599	low	Bird-skewed	2
<i>Thraupis palmarum Miconia cinnamomifolia</i>	4.53	0.594	low	Bird-skewed	1
<i>Thraupis sayaca Miconia prasina</i>	4.21	0.485	low	Bird-skewed	1
<i>Thraupis sayaca Miconia cinnamomifolia</i>	4.09	0.530	low	Bird-skewed	2
<i>Tangara desmaresti Miconia cinnamomifolia</i>	3.78	0.471	low	Bird-skewed	2
<i>Tangara cyanoventris Miconia cinnamomifolia</i>	3.77	0.469	low	Bird-skewed	1

*Thraupis sayaca Miconia ligustroides*

3.52

0.734

low

Bird-skewed

1

---