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Dissertação de Mestrado

Limitantes Climáticos de Espécies Arbóreas Através do Gradiente Tropical-Subtropical em Florestas da Mata Atlântica

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Dedicatória

Ao Vicente,

Sonhar é verbo, é seguir, é pensar, é inspirar

Inspire-se em construir um mundo melhor!

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Resumo

Por que algumas espécies são amplamente distribuídas enquanto outras possuem estreita amplitude de distribuição? Essa questão há muito tempo tem motivado ecólogos a tentar entender as distribuições das abundâncias das espécies e como essas distribuições estão ligadas às tolerâncias das espécies. Espera-se que, em comunidades de plantas, a composição e a abundância das espécies variem de acordo com as tolerâncias individuais para diferentes condições climáticas, resultando em um menor número de espécies fisiologicamente tolerantes a condições mais estressantes e amplamente distribuídas no gradiente climático. Essa ideia é predita pela hipótese da tolerância fisiológica. A Mata Atlântica possui grande variação latitudinal e altitudinal, capturando gradientes relacionados com precipitação e temperatura, sendo assim uma ótima área de estudo para avaliar limites climáticos de espécies arbóreas. Uma maneira para classificar as tolerâncias das espécies e também identificar sob quais condições as espécies alcançam maior abundância (afiliação) é mapear suas distribuições através de gradientes climáticos, utilizando inventários florísticos. Diante desse contexto, nesta dissertação objetivamos investigar as amplitudes da distribuição de espécies arbóreas na Mata Atlântica ao longo de gradientes de temperatura e precipitação, bem como suas afiliações climáticas. Utilizamos dados de comunidades florestais do banco de dados TreeCo para obter dados de ocorrência e abundância de espécies arbóreas através do gradiente da Mata Atlântica (622 comunidades). Para as 2001 espécies analisadas neste trabalho, calculamos as amplitudes de ocorrência e o índice de afiliação em relação à temperatura média e à sazonalidade da precipitação. Identificamos que, como esperado pela hipótese da tolerância fisiológica, espécies que conseguem tolerar temperaturas mais frias são distribuídas ao longo de um amplo gradiente de temperatura, enquanto algumas espécies se restringem a locais com temperaturas mais quentes. Em relação à sazonalidade de precipitação, identificamos espécies amplamente distribuídas, ou seja de locais com menor sazonalidade até locais com maior sazonalidade, e espécies restritas a locais com maior sazonalidade, não seguindo o padrão da hipótese da tolerância fisiológica. Considerando as espécies significativamente afiliadas à temperatura e à sazonalidade da precipitação, verificamos que suas distribuições ótimas no gradiente climático tem associação ao padrão espacial biogeográfico da Mata Atlântica, onde se destacam dois blocos florestais predominantes: um grupo temperado sul e um grupo tropical norte.

Palavras chave: Gradientes climáticos, comunidades florestais, tolerância de espécies.

Abstract

Why some species are widely distributed while others are concentrated into narrow amplitudes? For a long time, this question has motivated ecologists to investigate the distributions of species abundances and how they are linked to species tolerances. In plant communities, it is expected a variation in species composition and abundances according to individual species tolerances to different climatic conditions, resulting in a smaller number of species physiologically tolerant to more stressful conditions and widely distributed in the climatic gradient. This idea is predicted by the physiological tolerance hypothesis. The Atlantic Forest has a marked latitudinal and altitudinal range, capturing climatic gradients related to precipitation and temperature, which thus represent a great study area to evaluate tree species climatic limits. One way to classify species tolerances and identify under what conditions the species reach greater abundance (affiliation) is mapping species distributions across climatic gradients by using many floristic inventories. Under this perspective, the aim of this dissertation was to investigate the distribution ranges of tree species in the Atlantic Domain along temperature and precipitation gradients, and their climatic affiliations. We used forest communities data from the TreeCo database to obtain occurrence and abundance of tree species through the Atlantic Forest gradient (622 communities). For the 2001 species analyzed in this work, we calculated the ranges of occurrence and the affiliation index for mean temperature and precipitation seasonality. As expected by the physiological tolerance hypothesis, we found that species that tolerate lower temperatures are distributed across a wider temperature gradient, while some species are restricted to milder temperatures. Regarding the precipitation seasonality, we identified widely distributed species, i.e. from lower to greater precipitation seasonality, and species restricted to sites with greater seasonality, not following the physiological tolerance hypothesis. Considering the species significantly affiliated to temperature and/or to precipitation seasonality, we verified that their optimal distributions along the climatic gradients were associated with the biogeographic pattern of the Atlantic Forest, in which two forest blocks stand out: a temperate south group and a tropical northern group.

Key words: Climatic gradients, forest communities, species tolerance.

Sumário

Introdução Geral

Por que algumas espécies são amplamente distribuídas enquanto outras possuem estreita amplitude de distribuição? Quais são os "gatilhos" ambientais que tornam algumas espécies raras em certos ambientes e abundantes em outros? Essas questões há muito tempo têm motivado ecólogos a tentar entender os padrões de distribuição das abundâncias das espécies. Ainda em 1859, no livro "A origem das espécies", Darwin reservou dois capítulos de seu livro para explorar os mistérios que envolvem a distribuição dos seres orgânicos na face da Terra:

> "...o naturalista, ao viajar, por exemplo, do norte para o sul, não deixa de se impressionar pela maneira com que grupos sucessivos de seres especificamente distintos, embora intimamente relacionados, tomam lugar uns dos outros."

Gradientes florísticos e forças que atuam sobre esses gradientes têm sido o foco de muitos trabalhos em todo mundo (Pyke et al. 2001; Ramesh et al. 2010; Gonçalves & Souza 2014). Alguns desses estudos têm revelado que fatores ambientais podem estar positivamente ou negativamente influenciando a presença de espécies (Karst et al. 2005; Jones et al. 2006; Jones et al. 2008; Baltzer and Davies 2012; Esquivel-Muelbert et al. 2016; Condit et al. 2013). Outros trabalhos indicam que a composição florística depende de processos bióticos e abióticos, como limitações de dispersão e interações biológicas (Hubbell 2001; Dalling et al. 2002; Wyatt & Silman 2004; Nettesheim et al. 2014; Baltzer & Davies, 2012).

Além disso, a relação entre espécies e variáveis ambientais pode ser o resultado de uma longa história evolutiva, isto é, a fitogeografia exercendo influência sobre a expansão e a retração da vegetação em resposta aos eventos paleoclimáticos (Webb et al. 2002), que resulta em "pool" regional de espécies onde a competição e filtros ambientais determinam a composição das comunidades locais. Adicionalmente, mesmo que muitos estudos associam os padrões de distribuição de espécies a múltiplas variáveis ambientais, esses fatores não explicam

toda variação observada na composição de espécies (Rezende et al.2015). A variação não explicada nos padrões de distribuição das espécies pode ser devido a fatores ambientais não conhecidos, fatores históricos e fatores fisiológicos.

Comunidades de plantas são esperadas a se desenvolverem de modo que suas abundâncias e composição são fortemente determinadas pelas características ambientais locais. Alguns estudos em regiões tropicais observaram que a diversidade de árvores muda consideravelmente como consequência da variação da disponibilidade de água (Brenes-Arguedas, Roddy, Coley, & Kursar 2011, Fauset et al. 2012). Condit et al. (2013) avaliaram se a vegetação na Floresta Tropical é moldada pelo clima e solo, para isso os autores combinaram observações da química do solo, intensidade da estação da seca, e inventários de árvores para revelar como a distribuição das espécies de árvores variam através de fatores ambientais. Os resultados demonstraram que a intensidade da estação seca e o fósforo do solo são preditores fortemente relacionados com a distribuição das espécies. Essa abordagem parece ser importante para o entendimento dos limites de distribuição das espécies de árvores e pode ajudar a elucidar futuras alterações na composição das espécies florestais diante de mudanças climáticas. Outro estudo que examinou como as condições do solo afetam a estrutura e a diversidade de florestas úmidas e secas da Bolívia (Peña-Carlos et al., 2012), relata que, ao contrário das expectativas dos pesquisadores, eles descobriram que a fertilidade do solo desempenha um papel mais importante na floresta seca do que na floresta úmida; além disso, a diversidade diminuiu com a fertilidade do solo, provavelmente porque as espécies tolerantes à sombra aumentaram em abundância à medida que a fertilidade do solo aumentou.

Padrões de abundância das espécies pode variar ao longo de condições bióticas ou abióticas. Portanto, variáveis ambientais relevantes que determinam os padrões de distribuição de espécies em escalas mais amplas ou mais estreitas podem nos ajudar a entender as preferências de nicho e os padrões de montagem da comunidade. Alguns trabalhos adicionam

a questão da afinidade das espécies a uma condição climática ótima baseada nos dados de abundância e padrões de amplitudes de distribuição. Por exemplo, Esquivel-Muelbert et al. (2016) investigaram como a precipitação influencia a distribuição e riqueza de espécies arbóreas em áreas no norte da América do Sul e América Central, quantificando as afiliações das espécies para precipitação, a fim de acessar a sensibilidade das espécies ao estresse hídrico. Os pesquisadores encontraram relações evidentes na distribuição das espécies de árvores ao longo do gradiente de precipitação e observaram, também, que espécies tolerantes à seca ocorrem ao longo de todo o gradiente de precipitação (tamanho de nicho mais amplo), inclusive em áreas muito úmidas (3000-5000 mm de pluviosidade média anual), ao contrário de espécies com afinidade a ambientes úmidos, que ocorrem em uma faixa mais estreita do gradiente (Esquivel-Muelbert et al. 2016). O aumento do estresse hídrico pode, portanto, ter profundas consequências na distribuição de espécies com afiliação a condições mais úmidas (Esquivel-Muelbert et al. 2017).

Percebe-se que vêm aumentando o número de estudos que visam compreender a relação entre distribuição de espécies vegetais a variáveis ambientais, porém muitos desses estudos foram realizados na porção tropical (Oliveira-Filho & Fontes 2000; Pyke et al. 2001; Parmentier et al. 2005; Toledo et al. 2012; Esquivel-Muelbert et al. 2016). Apenas recentemente trabalhos vêm sendo conduzidos na porção subtropical (Bergamin et al. 2012, Gonçalves and Souza 2014, Oliveira-Filho et al. 2014, Rezende et al. 2015, 2016, Neves et al. 2017). Apesar disso, o conhecimento sobre a contribuição de fatores climáticos que controlam a ocorrência e variação da composição florística em toda a América do Sul, especialmente no Domínio Atlântico, é essencial para a conservação. Através de uma grande escala latitudinal, a estrutura da vegetação possivelmente é influenciada, não só pelos diferentes regimes de pluviosidade, mas também pelo gradiente de temperatura (Oliveira-Filho et al. 2015). A temperatura exerce um papel fundamental na regulação dos processos biológicos, podendo afetar negativamente as taxas

fisiológicas dos organismos, distribuições e interações das espécies (Allen et al. 2006). Visto que a Mata Atlântica possui um característico padrão latitudinal de riqueza de espécies, com maior riqueza na região tropical, e que esse padrão parece estar relacionado às diferentes condições de temperatura (menores temperaturas em direção ao sul) (Oliveira-Filho et al. 2014) e aos diferentes regimes de chuvas (mais regulares ao longo da costa do que no interior do continente), faz com que essas variáveis sejam boas preditoras em modelos de distribuição de espécies vegetais nessa região.

O bioma Mata Atlântica detém o segundo maior conjunto de florestas brasileiras (Rezende, 2015) e ocupa um vasto território. Além disso, é importante ressaltar que o conceito *sensu latíssimo* do Domínio Atlântico (Rodal et al. 2006) ultrapassa os limites geográficos dos Domínios Atlânticos para incluir os Domínios vizinhos como um componente do domínio fitogeográfico. O Domínio Atlântico, portanto, possui uma marcante amplitude de gradiente latitudinal e altitudinal, capturando gradientes climáticos relacionados com pluviosidade anual (aproximadamente 800-4000 mm) e temperatura média anual (temperatura anual de 15-25 ºC), que resulta em uma grande variação fisionômica e florística (Oliveira-Filho & Fontes 2000; Oliveira-Filho et al. 2006), e em uma alta alfa e beta diversidade de espécies, muitas vezes maior do que áreas da Floresta Tropical Amazônica (Colombo & Joly 2010). Originalmente, a Mata Atlântica cobria uma área de aproximadamente 150 milhões de ha, estendendo-se dos estados do Rio Grande do Norte ao Rio Grande do Sul, ao longo da costa brasileira (Fiaschi et al., 2009). Atualmente, se mantém apenas alguns fragmentos de mata nativa (aproximadamente 7,5%) e desses fragmentos 83% são menores do que 100 ha (Ribeiro et al. 2009). Então, adicionado ao fato de existirem apenas alguns remanescentes florestais conservados e devido aos altos níveis de endemismo que a Mata Atlântica abriga, esse bioma é considerado como um dos 33 *hotspots* de conservação da biodiversidade no mundo (Myers et al., 2000).

Além disso, espera-se que as mudanças climáticas projetadas exerçam impactos negativos sobre os organismos. Em relação aos organismos sésseis como plantas, extremos climáticos podem causar danos fisiológicos, reduzir regeneração, diminuir os limites de ocorrência através do aumento da mortalidade (Honnay et al., 2002), resultando em mudanças nas distribuições e nas abundâncias das espécies (Loyola et al. 2012). Nessa perspectiva, é essencial entender como o clima está influenciando a distribuição atual das plantas da Floresta Atlântica, bem como as amplitudes de ocorrência das espécies e suas afiliações para temperatura e pluviosidade para a partir disso, predizer como as árvores responderão a potenciais mudanças climáticas.

Com base no que foi exposto acima, essa dissertação visa investigar a variação na distribuição de espécies arbóreas na Floresta Atlântica, ao longo do gradiente de temperatura e precipitação, considerando as afinidades climáticas das espécies.

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Capítulo 1

Climatic limits of Atlantic Domain tree species regarding their abundances along temperature and precipitation variation

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Abstract

Temperature and precipitation seasonality are determinant of species distributions and may influence the presence of species according to species tolerance, idea postulated by the physiological tolerance hypothesis. The hypothesis implies that the species distribution ranges are defined by their ability to stand climate extremes either in terms of water-availability or temperature. One way to classify their distributions range and under what climatic conditions the species has a greater abundance (affiliation value), is mapping species distributions across climatic gradients using floristic inventories from many locations. Here, we use an extensive database of forest inventories to investigate the range distribution of tree species in the Brazilian Atlantic Forest, along climatic gradients of annual mean temperature and precipitation seasonality. We identify that species able to tolerate colder temperatures have a wide range and that species able to tolerate greater precipitation seasonality have a narrow range of distribution. Our results suggest that the physiological tolerance hypothesis has applicability in the Atlantic Domain concerning the temperature gradient. To precipitation seasonality, contrary to the tolerance hypothesis, there are species with a restricted range in places with greater seasonality. The species significantly affiliated to temperature and precipitation seasonality have their distributions associated with the biogeographic pattern of the Atlantic Forest, in which two forest blocks stand out: a temperate south group and a tropical northern group.

Key words: Biogeography**,** Tolerance, Temperature, Precipitation Seasonality, Tree communities

Introduction

Species composition of tropical and subtropical forests may be substantially altered by climate changes and human impacts. Shifts in drought and rain regimes, and increased temperature can result in distinct changes in vegetation (Raymundo et al., 2019), but future climate of tropical and subtropical regions remains with a high degree of uncertainty (Marengo, 2014). Thus the understanding of how current climate is associated to the actual distribution of tree species, as occurrence range and optimal niche across temperature and rainfall gradients, is essential to better predict community assembly and species distribution responses to future climatic changes along tropical-subtropical regions, such as this of the Brazilian Atlantic Forest.

Well- known macroecological diversity patterns of the Brazilian Atlantic forest suggest that tree communities in hotter and wetter forests tend to have a greater number of species than colder and drier forests (Colombo and Joly, 2010; Esquivel-Muelbert et al., 2016; Myers et al., 2000; Oliveira-Filho and Fontes, 2000; Oliveira-Filho et al., 2013). This implies that temperature and precipitation have been recognized as main determinants of plant species distributions as they may influence positively or negatively the species presence according to some of their characteristics (Baltzer and Davies, 2012; Condit et al., 2013; Esquivel-Muelbert et al., 2016; Jones et al., 2008, 2006; Karst et al., 2005). Thus species richness in a particular area would be limited and proportional to the number of species from a regional pool that can tolerate such local limiting conditions. This idea is predicted by the 'physiological tolerance hypothesis' (Currie et al., 2004), which postulates that richness varies according to the tolerances of individual species to different sets of climatic conditions, resulting in more species being physiological tolerant and surviving better under warm and wet conditions than on cold or dry conditions.

The Brazilian Atlantic Forest holds the second largest set of Brazilian forests (Rezende et al., 2015) and occupies a vast territory across tropical and subtropical latitudes. This latitudinal range together with a great altitudinal variation in many regions is associated to a high geomorphological and climatic heterogeneity, capturing climatic gradients related to precipitation and temperature (Oliveira-Filho and Fontes, 2000). The vegetation of the Atlantic Forest is very diversified with complex origins. The Atlantic forests are separated from the Amazonian forests by an area of open-canopy formations, called the diagonal of open formations (Prado and Gibbs, 1993), disrupting the connection between the two larger rainforest regions in South America (Fiaschi and Pirani, 2009). The diagonal works as a corridor of seasonal and open formations that includes the semiarid Caatinga (northeastern Brazil), the Cerrado (central Brazil) and the Chaco of Paraguay-Argentina-Bolivia (Prado and Gibbs, 1993). An abrupt transition to the semiarid Caatinga occurs in northeastern Brazil where a strip of coastal rainforests is bordered by a narrow belt of seasonal semi-deciduous forests. The Cerrado transition to the coastal rainforests involves a much larger extent of semi-deciduous forests in southeastern Brazil that becomes increasingly wider toward the south and integrates a complex mosaic with savannas. In the subtropical region, large extents of Araucaria Forest in the plateaus separate the coastal rainforests and the western semi-deciduous forests (Oliveira Filho and Fontes, 2000).

The main variation in species composition across the whole Atlantic Forest reveals two main forest blocks, whose limits are coincident with the Rio Doce valley (northern Espírito Santo state), that represent different and gradual floristic transitions from the north towards the south, largely predicted by climate and spatial factors (Eisenlohr and Oliveira-Filho, 2015; Neves et al., 2017; Oliveira-Filho and Fontes, 2000; Rezende et al., 2018). The northern Atlantic forest ranges from Rio Grande do Norte to northern Espírito Santo states, and comprises a narrow strip of forest bounded to the west by the Caatinga domain. Two centers of

endemism are recognized in the northern (Pernambuco and Bahia), as well as some floristic influence from the Amazonian forests, due to historical connections through the Cenozoic (Mori et al., 1981). Some evidences are provided by the occurrence of several genera in the northern block and the Amazonian forests that are lacking in the southern Atlantic forests such as *Lacmellea*, *Glycydendron*, *Gustavia* (Fiaschi and Pirani, 2009). The southern part of the Atlantic domain ranges from Espírito Santo to southern Santa Catarina, and includes a large western extension of seasonally dry forests in southeastern Brazil and Araucaria Forest (Oliveira-Filho and Fontes, 2000). Instead of sharing a high number of taxa with Amazonia, the southern block is influenced by elements of other regions, for example Andean-centered taxa, such *Myrceugenia*, *Fuchsia*, *Clethra* (Fiaschi and Pirani, 2009). Yet, the current distribution of the Atlantic forests is a consequence of its past climatic fluctuations (Carnaval and Moritz 2008, Werneck, 2011), which led to the expansion and retraction of distinct vegetation types (Behling, 1997). During the Last Glacial Maximum, a large stable area of the Atlantic Forest in the north (coincident with the Pernambuco and Bahia refuges) remained, whereas in the southern Brazil only small patches were predicted to occur (Costa et al. 2018). As temperature and humidity have increased, the Atlantic forests expanded from the refuges to constitute more continuous forests. The main factor determining the north-south floristic differentiation is the mean temperature, while both temperature and rainfall regimes influence the internal variation within these blocks (Oliveira-Filho and Ratter, 1995).

Temperature extremes can represent a physiological challenge to plants (Ding et al., 2019). Cold acclimation of plants relies on adjusting metabolic processes (essentially photosynthesis and respiration) and on avoiding lethal freezing. However, heat tolerances involve changes in lipid composition of the membranes and increased production of heat shock proteins, however these mechanisms are not sufficient to enable them to cope with temperatures above 45 °C (Araújo et al., 2013). Additionally, it is expected that tolerances to low

temperatures are highly labile and lability is driven by natural selection, so species exposed to low temperatures should have a tendency for greater tolerance to cold, while species not exposed to low temperatures should not (hypothesis of conservatism of physiological tolerances to heat) (Araújo et al., 2013). Besides temperature, water-stress is also an important physiological challenge for tree species. Sustained periods of severe loss of hydraulic conductivity for example are strongly related to tree mortality by drought (McDowell et al., 2018), as observed for the Amazonian region (Engelbrecht et al., 2007, Esquivel-Muelbert et al., 2017). Much less species are thus able to occur on drier regions and it has been observed a reduction in tree richness toward dry sites in Amazonian tropical forests (Esquivel-Muelbert et al., 2016). If such species richness patterns associated to warm-cold or to moist-dry gradients are driven by physiological tolerances of species, we expect species that occurs in extreme gradients (for example, under low temperatures and/or dry conditions) to be a tolerant subset of species, less diverse then those distributed along higher temperatures and wet environments. Moreover, species that are cold and/or dry tolerant should have wider distribution range than those species restricted to hotter temperatures and/or wet environments. This would lead to a nested pattern of species occurrence. Also, the nested pattern may be a consequence of the Atlantic Forest biogeographic history. From where it is noticeable a greater richness located at the center of the forest in warmer locations (higher rate of speciation). In contrast to the species occurring in the southern regions, where they did not have enough time to expand to the north. Alternatively, climatic extremes (i.e., cold and hot) can equally be limiting for species occurrence or abundance, then resulting in a pattern of variation in tree metacommunities with a substantial species turnover over temperature and precipitation gradients.

Here we use an extensive tree communities database based on the abundance of trees on communities to investigate the distribution variation of tree species in the Atlantic Forest and neighboring forest formations, also called the Atlantic Domain (Neves et al., 2017), along with

temperature and precipitation seasonality gradients to estimate climatic affinities of tree species. Precisely, we 1) evaluated the occurrence range of tree species across climatic gradients of temperature and precipitation seasonality; and 2) quantified the affiliations of the species for temperature and precipitation concerning abundance values along their distribution range to access climatic sensitivities of the species and to infer how temperature and/or precipitation might restrict the occurrence and/or abundance of the species. Our main hypothesis is that species affiliated to low temperatures are species with origins from outside the equatorial region, adapted to colder conditions but having broader distribution ranges along the temperature axis (niche amplitude) – a pattern predicted by the physiological tolerance hypothesis. Similarly, species affiliated to higher temperatures will have narrow distribution ranges on the temperature axis and this can be supported by the idea that most Atlantic tree species evolved in tropical environments and should present better performance at higher temperatures (Araújo et al., 2013) (hypothesis of conservatism of physiological tolerance to the heat). Moreover, cold tolerant species will compose a subset of species that can also tolerate warmer conditions (nested pattern in the whole temperature amplitude). Considering the affiliation and distribution range for precipitation seasonality conditions, we have similar hypotheses, i.e. we expect a subset of drought-tolerant species (nested pattern) widely diffused along the observed gradient (broad distribution range).

Methods

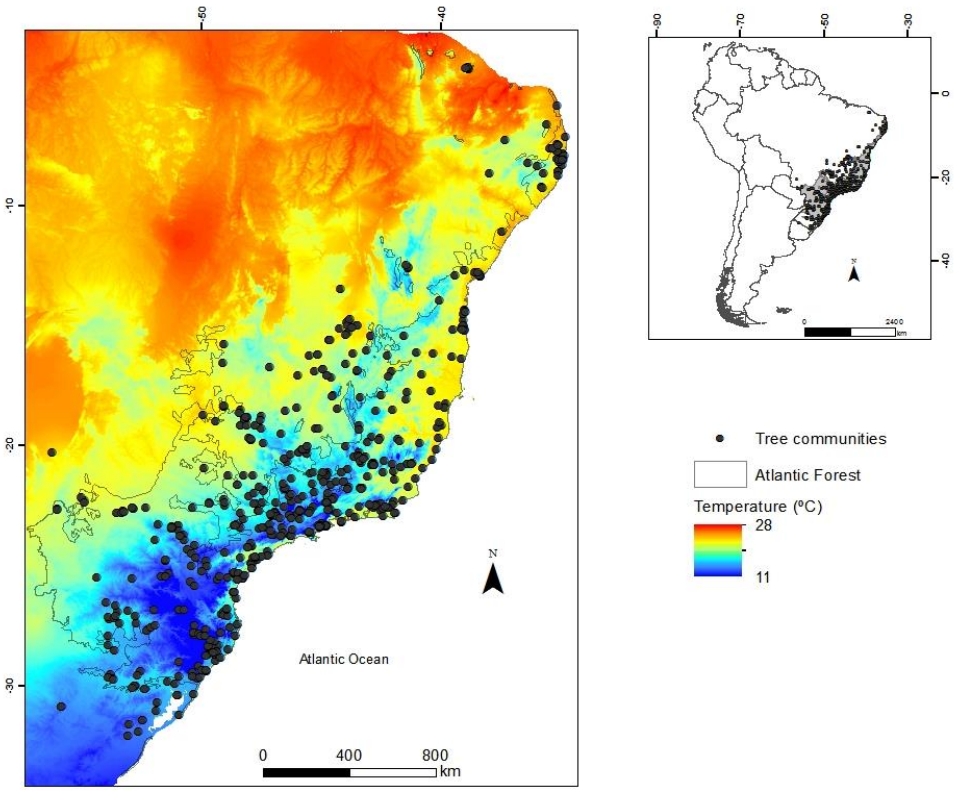
Study area and tree community data set

The Atlantic Domain is one of the five phytogeographical domains in Brazil and occurs primarily along the Atlantic coast. The concept of Atlantic Domain adopted here (Oliveira-Filho et al., 2006) surpasses the geographical limits of the Atlantic Forest to include neighboring formation as a secondary component of the landscape. Consequently, the Atlantic Domain

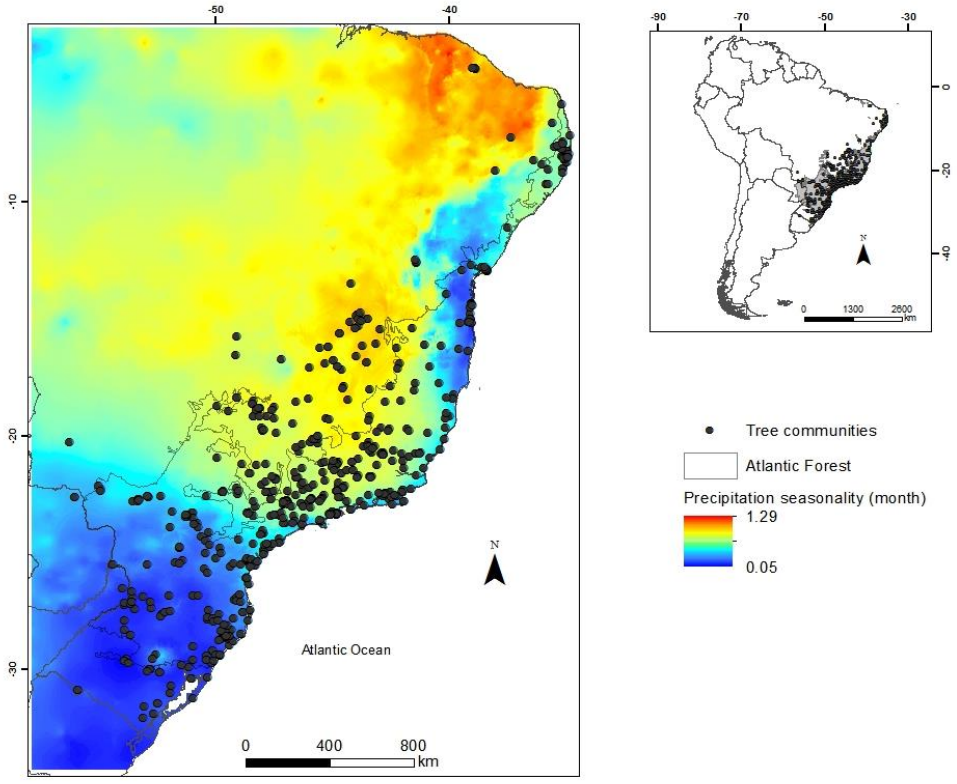
capture rainfall gradients (approximately means of 800-4000 mm) and temperature gradients (annual mean of 15-25ºC), which result in a large variation in terms of forest structure and composition (Oliveira-Filho et al., 2006; Oliveira-Filho and Fontes 2000) with high alpha diversity (Colombo and Joly, 2010) and beta diversity of tree species (Bergamin et al., 2017).

We used data of species abundance across several sites (individuals/ha in each community) compelled by the TreeCo database (de Lima et al., 2015), combines data from tree communities surveys from literature, distributed from south to north of the Atlantic Forest plus forest intrusions into the neighboring Caatinga, Cerrado and Pampa biomes (Atlantic Domain). Each site is associated with geographic coordinates, which allowed us to obtain temperature and precipitation seasonality information from each sample community. We included only studies measuring trees and palms with stem diameter at breast height (DBH) $\geq$ 4.8 cm and with a total community effort of at least 1 ha. The dataset includes 622 communities and 2001 species with at least three occurrences (i.e. only species occurring in at least three communities were included in the further analyses). The TreeCo database provide a representative sample of tree communities and species across precipitation (Fig. 1a) and temperature gradients (Fig. 1b).

(a)


-50
-40
-10
-20
-30
Atlantic Ocean
N
0
400
800
km
-90
-70
-50
-30
0
-20
-40
0
2400
km
Tree communities
Atlantic Forest
Temperature (ºC)
28
11

(b)


-50
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Atlantic Ocean
N
0
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800
km
-90
-70
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-30
0
-20
-40
0
1300
2600
km
Tree communities
Atlantic Forest
Precipitation seasonality (month)
1.29
0.05

Fig. 1: Tree community surveys (622) along the Atlantic Domain showing the overall pattern of mean annual temperature (a) and precipitation seasonality (b) gradients on the spatial limits of the Brazilian Atlantic Forest (black line and the gray area in the small map).

Climatic gradients

To investigate the effects of temperature and precipitation on the distribution range of tree species we used precipitation seasonality and annual mean temperature. Precipitation seasonality (PS) represents a measure of the variation in monthly precipitation totals throughout the year. This index is the ratio of the standard deviation (SD) of the monthly total precipitation (PPT) to the mean monthly total precipitation (i.e. the coefficient of variation) and is expressed as a percentage or proportion:

$$PS = SD \times (PPT1\ , \dots, PPT12\ )\ /\ 1 + (Anuual\ PPT/12)$$

As water availability can strongly affect species distributions, this index provides an estimation of precipitation variability where larger percentages represent greater variability of precipitation along the year, which may represent sites under higher water-stress. The annual mean temperature is the average temperature of each month over twelve months. The precipitation seasonality and annual mean temperature data were extracted at a 100 x 100 m² resolution layer from the Alvares et al. (2015, 2013b).

Analyses

Species distribution along the climatic gradients (niche breadth)

According to the physiological tolerance hypothesis, species that are more tolerant to drier conditions or to lower temperatures would have larger climatic range size. We used Kendall's τ coefficient of correlation to explore analytically the relationship between species precipitation and temperature range and extreme climatic values at which the species occurs. If the physiological tolerance hypothesis is prevalent, the precipitation and temperature range size will be negatively correlated with higher precipitation seasonality and lower temperature

conditions where each species occur and not correlated with wetter conditions and higher temperatures where each species occur.

Affiliation index (niche optimal)

Species abundance varies along environmental conditions tending to be higher in those areas where the optimal niche condition for that species is found in terms of environmental characteristics and resource availability (Dallas et al., 2017; McGill and Collins, 2003; Murphy et al., 2006). One way to investigate macroecological patterns of trees and classify their tolerances and distribution ranges is mapping species distribution across climatic gradients by using tree community surveys from many locations. We describe the preference of each species to the temperature and precipitation condition by generating affiliation values, or center of gravity (CG). The affiliation index is a manner to access the species optimal climatic condition based on abundance data and distribution range patterns. In other words, affiliation helps us understand the sensitivity of the species to environmental variables and under which conditions the species achieves greater abundance (optimal niche), but without explicitly considering the potential influence of biotic variables. This index was calculated by integrating the data of annual mean temperature and the precipitation seasonality together with data from species abundance in each community as in Esquivel-Muelbert et al. (2016) (see also Chen et al., 2009). This center of gravity should indicate the optimum condition for the species (niche optimal). The precipitation seasonality center of gravity (PCG, Eq.2) and temperature center of gravity (TCG, Eq.3) are calculated as the mean of the climate variable where the species is present weighted by the relative abundance of the species in the corresponding community (site):

$$PCG = \frac{\sum_1^n P * Ra}{\sum_1^n Ra} \quad \textbf{(Eq. 2)}$$

$$TCG = \frac{\sum_1^n T * Ra}{\sum_1^n Ra}$$

(Eq. 3)

Where: n= number of communities; P= precipitation; T= temperature; Ra= relative abundance based on the number of individuals/ha.

The resulting specie-level affiliation values are in proportion, in case of precipitation seasonality and Celsius degrees for temperature.

We tested the null hypothesis of no influence of precipitation and temperature on the distribution of each species by calculating the probability of an observed affiliation value being higher or lower than an affiliation generated by randomly shuffling the climatic variables records among the communities, following Manly (1997). We (1) generated 999 null CG values for each taxon by shuffling the precipitation and temperature values among the communities, and (2) calculated the probability of the observed CG being higher than the CG calculated using random values of precipitation and temperature. This process generated a distribution of two-tailed P values where a small value (<0.025) indicates that the specie is significantly dry-affiliated and low-temperature-affiliated. Generalist specie, not affiliated to any particular condition, may have CG values indistinguishable from random (probability between 0.025 and 0.975). Wet-affiliated and high-temperature-affiliated specie have a high proportion (>0.975) of random values lower than the observed CG (Fig. A1).

We also calculated the proportions of significant affiliated species to understand whether the climatic parameters are influencing these values of affiliation or if these values would be the same if climatic conditions were randomly distributed. To verify that these proportions were not merely a consequence of the number of assessed species, we created null metacommunities with the same number of species and calculated the probability of finding the same proportion of significant values of PCG and TCG as found in the observed data. The null metacommunities were generated by randomizing the abundances of species among

communities while maintaining species total frequency using package *vegan* in the R (Oksanen et al., 2017). After the generation of CG for each null community, their corresponding significance values were estimated following the procedures described above. This procedure was repeated 999 times resulting in 999 proportions of significant PCG and TCG values. Finally, we calculated the chance of the observed proportion of significant PCG and TCG being equal to the proportions calculated for random communities with the same structure, following Manly (1997).

Metacommunity structure (nested or turnover)

We test whether the species distribution along the precipitation and temperature gradients follows a turnover or nested pattern using the approach of Leibold and Mikkelson (2002). To perform this analysis we first sorted the tree communities within the metacommunity matrix by their climatic condition. Next, we accessed the turnover by counting the number of times a species replaces another between two climatologically adjacent sites and then comparing this value to the average number of replacements found when randomly sorting the matrix 1000 times. Hence, a turnover structure is observed when the number of replacements occurred is greater than the number produced by chance. Otherwise, a nested pattern is observed when the number of replacements is not greater than the one given by chance (Presley et al., 2010). This analysis was conducted applying the function 'turnover' from the R package '*metacom'* (Dallas, 2014).

Results

Our results demonstrated that the species distribution follows a nested pattern along both the annual mean temperature gradient and the precipitation seasonality gradient (Table 1). That is, the number of times a species replaced another one across the temperature and precipitation seasonality gradients was significantly lower than expected by chance along the

metacommunity structure. Annual mean temperature and precipitation seasonality were weakly correlated (r= 0.17).

Analyzing the species distribution ranges, we saw species able to tolerate colder temperatures (in the extreme left of the gradient) distributed over wide temperature ranges, as predicted by the physiological tolerance hypothesis (Fig. 2a). This pattern was confirmed by the high negative correlation between the temperature range and the coldest condition each species occurs (Kendall's τ = -0.67, p-value < 0.001). The positive correlation value of temperature range and the hottest condition of occurrence was much lower (Kendall's τ = 0.13, p-value < 0.001). For the precipitation seasonality gradient, we observed many species widely distributed along the gradient and a minor set of the species able to tolerate greater precipitation seasonality (> 0.6 of seasonality) with a considerably lower range of distribution (Fig. 2b), which contradicts the physiological tolerance hypothesis. By analyzing the correlations between species distribution range regarding the precipitation seasonality gradient and both extremes of occurrences, we saw similar strengths for both sides, being negative with the more severe seasonality condition of each species occurrence (Kendall's τ = -0.48, p-value < 0.001) and positive with the less seasonality condition (Kendall's τ = 0.42, p-value < 0.001).

Table 1: Observed and expected turnover of species along each of the gradients, the annual mean temperature and the precipitation seasonality. P-values test the null hypothesis that replacements of species along the environmental gradients do not differ from random expectations considering α=0.05. The observed turnover was significantly lower than expected, suggesting a nested pattern of species distribution along the gradients (Presley et al., 2010).

Climatic Gradients	Observed Turnover	Expected Turnover	p
Annual Mean Temperature	48503850	178751100	<0.001
Precipitation Seasonality	94769710	4691997000	<0.001

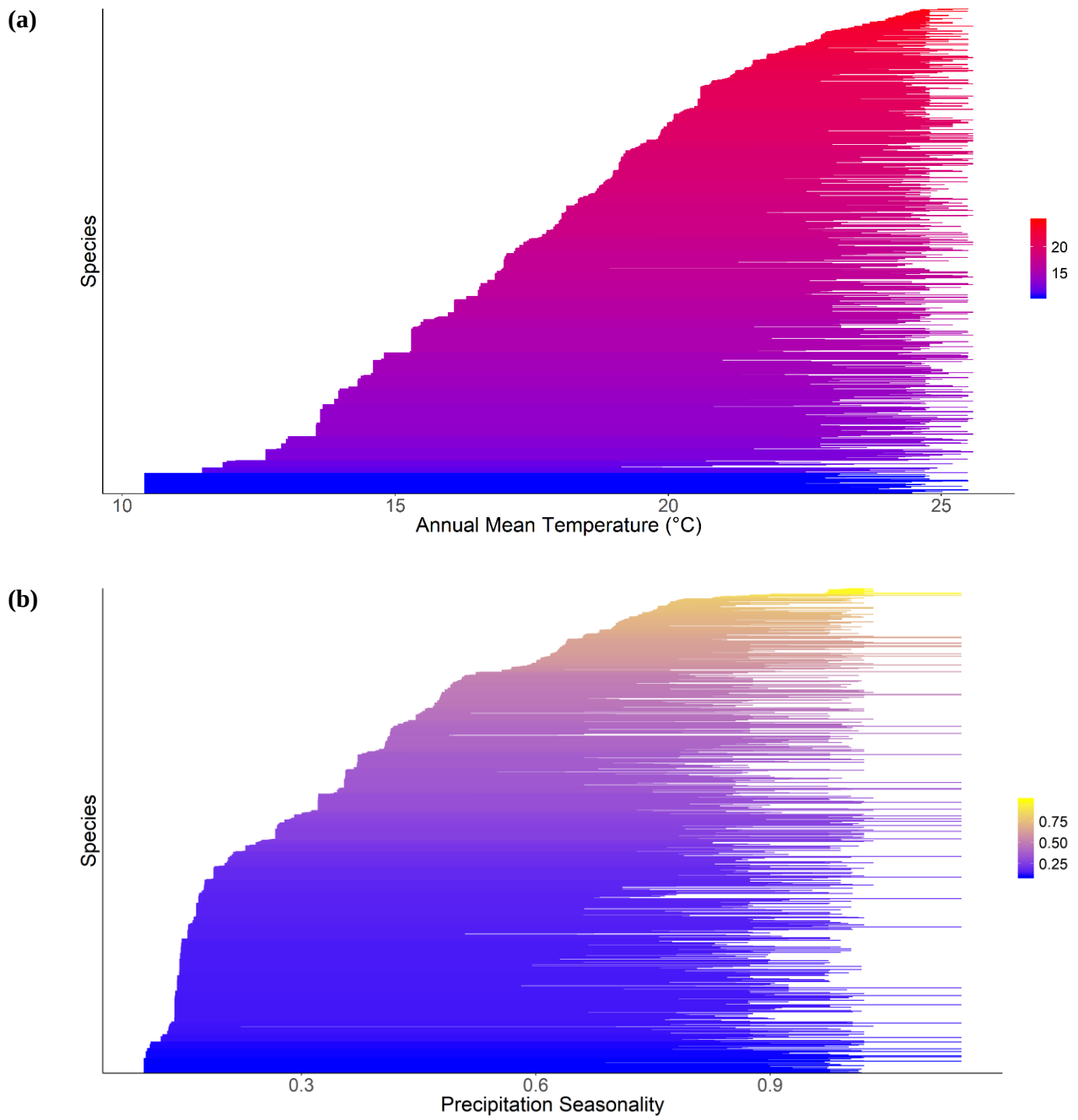
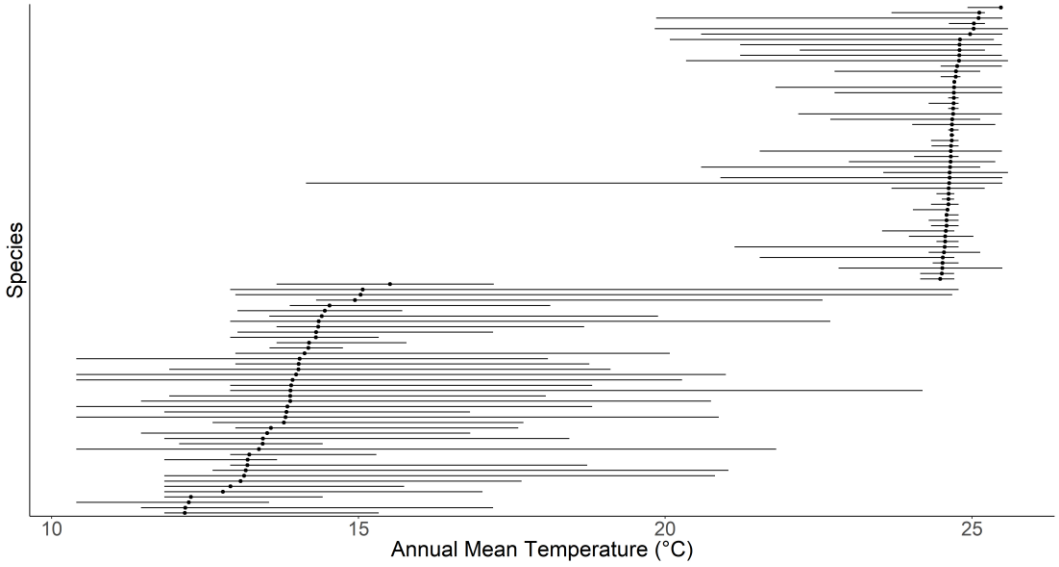


Fig. 2: We visually explore the influence of precipitation seasonality and temperature on species distributions by we plotting species precipitation and temperature ranges. These are graphs of the range of precipitation conditions in which each species occurs, where we can visually inspect the variation of either temperature or precipitation ranges among the studied species. The x-axes represent the environmental gradients from lower to higher values of each species occurrences and the species are in the y-axes (lines). (a) Temperature range to each species, the species that occurs in low temperatures are blue and following up to red, which are species that only occur in warmer temperatures. (b) Precipitation seasonality range to each species, the

species that occurs in low seasonality are blue and the color gradient follows up to yellow, which are species that occurs in greater precipitation seasonality.

For the 2001 species analyzed in the Atlantic Domain, we found 96 species significantly affiliated to some optimal temperature (Table A.1), 44 species being affiliated to lower temperatures and 52 affiliated to higher temperatures (Fig. 3a). For the precipitation seasonality gradient, we found 104 species significantly affiliated to specific precipitation seasonality (Table A.2), being 53 species affiliated to larger values of seasonality and 51 species affiliated to smaller seasonality (Fig. 3b).

(a)



(b)

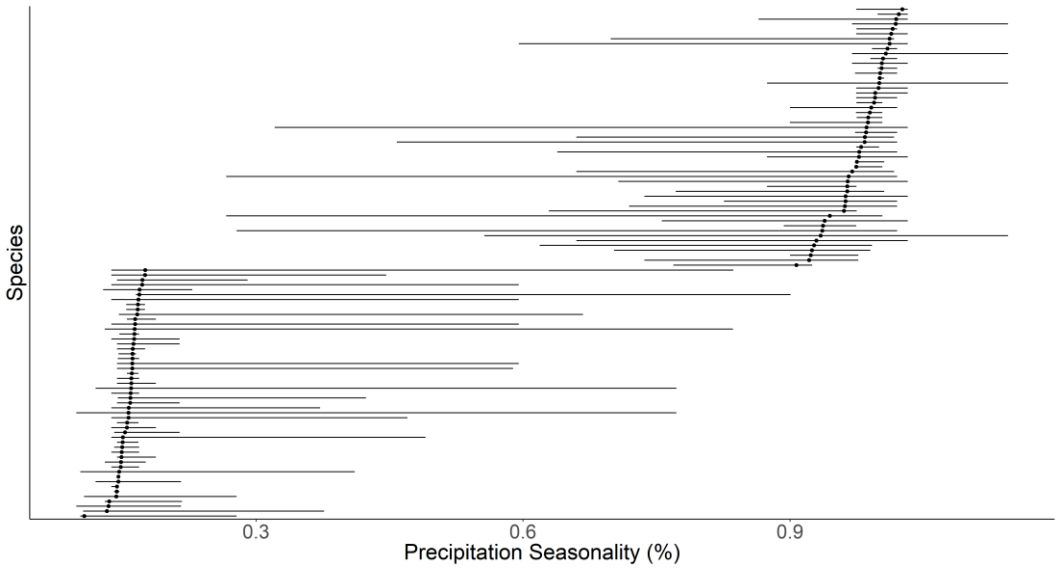
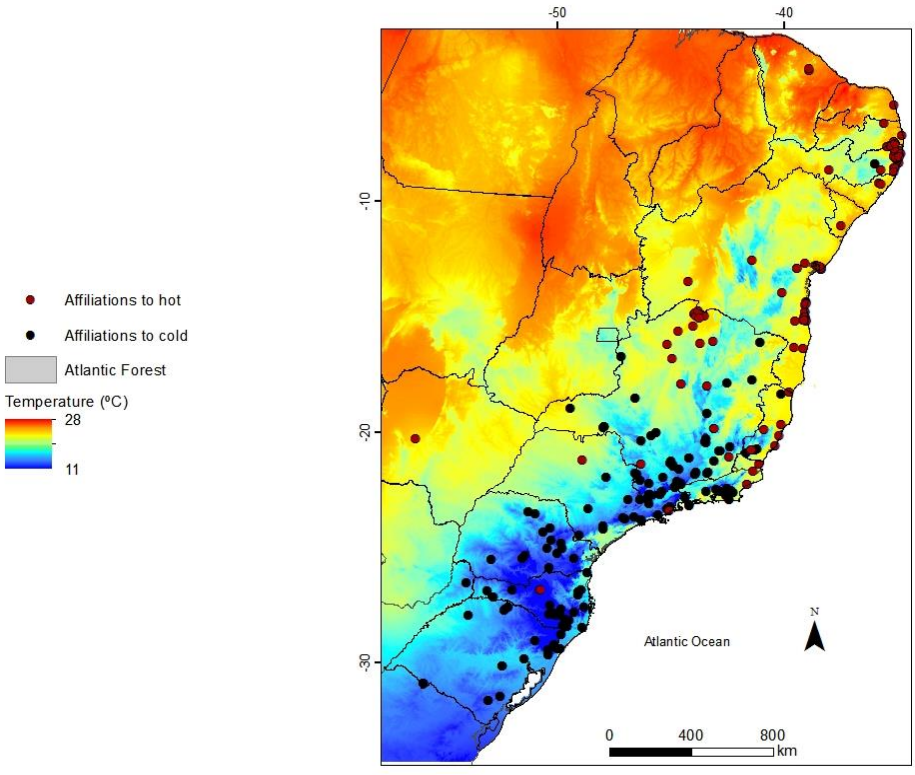


Fig. 3: Species that had significant affiliation for annual mean temperature (a) and precipitation seasonality (b) with their respective optimal (points) and breadth (lines) values.

Observing the spatial distribution of species optimal niches (species that presented significant affiliation values), we detected cold-affiliated species occurring mainly at higher latitudes, but with some occurrences in smaller latitudes, probably on higher altitude plateaus (Fig. 4a). On the other hand, the higher seasonality-affiliated species have an occurrence pattern mainly in the center and northern portion of the Atlantic Domain, on regions with high seasonality, whereas species affiliated to lesser seasonality have their optimal occurrence predominantly in the subtropical region and along the coast of the Atlantic Forest (Fig. 4b).

(a)



(b)

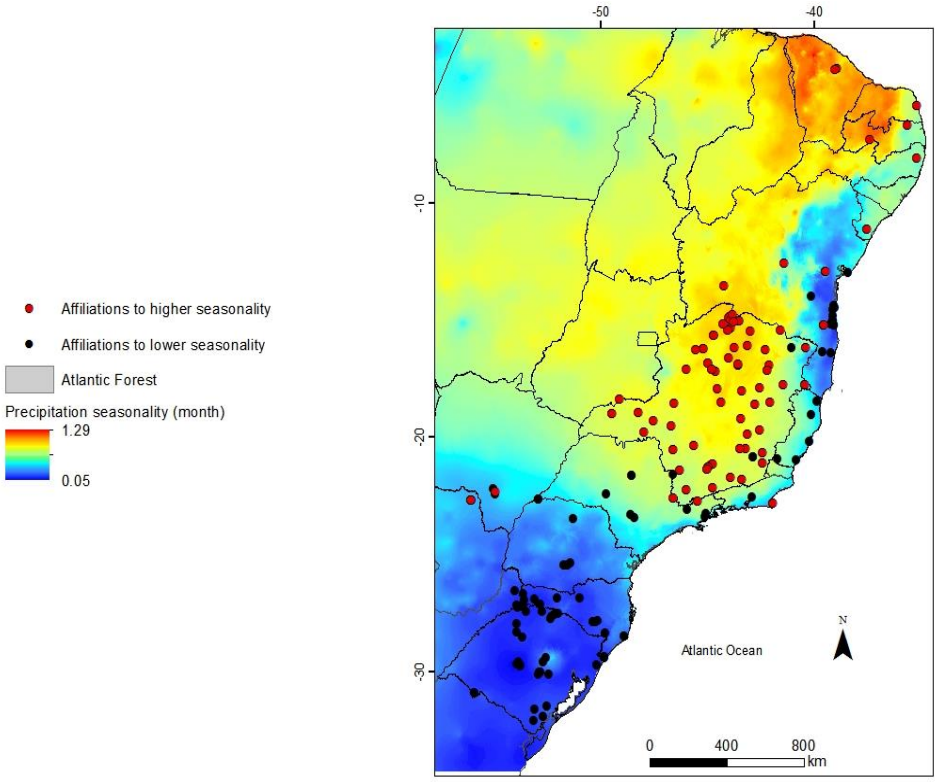


Fig. 4: (a) Map with optimal species occurrence of significantly affiliated to cold (black points) and hot (red points). (b) Optimal species occurrence of significantly affiliated to higher seasonality (red points) and to lower seasonality (black points).

Discussion

Our results demonstrate the influence of temperature and precipitation gradients on the abundance and distribution of tree species along the forests associated to the Atlantic Domain. We found species tolerance patterns consistent with the biogeographical history of the Atlantic forests and confirmed that cold-tolerant species are widely distributed along the environmental gradient, being a subset of species that tolerate broad amplitude of temperature conditions. We also identified two sets of species tolerant to higher precipitation seasonality: one set widely distributed along the precipitation gradient and another set of species with a more restricted amplitude, specialized to higher seasonality conditions. These second group are species with higher abundances in forest intrusions within the neighboring Caatinga and Cerrado biomes.

The Atlantic Domain is described as a complex of several vegetation types, including rainforests and peripheral vegetation types (seasonal semi-deciduous forests and open

vegetation types). The rainforest habitat limits are undoubtedly influenced by environmental restrictions that operate at the boundaries of the Atlantic Domain (Scarano, 2009). However, there are many species that occur in this naturally transitional and super diverse biome and their climatic limits are not well understood. Here we analyzed the influence of two main factors limiting the occurrence and distribution abundance of tree species over the Atlantic Domain, precipitation seasonality, which is associated to drought stress, and low temperature tolerance. Dry forests replace rain forests where rainfall regimes are less regular over the year with clear periods of seasonal drought. Low temperature is associated with high latitudinal and/or high elevation regions, where forests may be cloudy or form the Araucaria Forest type. Our species tolerance analysis and the affiliation index confirmed the leading role of these both limiting factors on trees distribution along the Atlantic domain.

According to the limits of species occurrence along the temperature gradient, it was possible to observe cold-tolerant species occurring widely in the temperature gradient, while some of the species with narrower ranges are restricted to warmer conditions (Fig. 2a). Nowadays, the north-south temperature gradient is considered the major driver of floristic differentiation between tropical and subtropical/temperate habitats of the Atlantic domain where cold-tolerant species predominate (Neves et al., 2017), being a good predictor of tree species distribution. In the subtropical region, the temperature is more restrictive than the rainfall to the species distribution as precipitation regime is more regular through the year. A floristic differentiation is observed in southern forests and a possible explanation is the occurrence of species with distinct lineages origins that evolve physiological tolerances to cold conditions (Oliveira- Filho et al., 2013; Rezende et al., 2017, 2015). The overall South American flora includes a group of lineages with temperate affinities and another group of Neotropical elements, which are primarily found in northern regions (Eisenlohr and Oliveira-Filho, 2015). This approach converges with the proposed ‘austral conservatism hypotheses’

(Segovia and Armesto, 2015), which assumes that the temperate South America flora contains lineages that have diversified outside of the tropics and retained their ancestral preference for temperate conditions, which in turn may explain the physiological tolerance of cold-tolerant species.

The tolerance range of the species to the precipitation seasonality gradient showed some species being widely distributed along the observed conditions, which can be considered generalist species, whereas other species occurring preferentially under conditions of higher seasonality (Fig. 2b). This pattern suggests that such species not only withstand climate constraints but also are specialist to dry conditions – the set of species affiliated to high-precipitation seasonality. The flora of seasonal forests is a fraction of the richer rainforest that are able to withstand relatively longer dry seasons, characterizing the nested structure of the metacommunity studied. Such species can withstand climate constraints and exhibit variations in their ecological strategies across the Atlantic seasonal forests (Eisenlohr and Oliveira-Filho, 2015). These species have conservative strategies to survive in stressful environments, such as when trees decrease their metabolism in order to decrease energy investment, losing leaves for example, resulting in dormancy in dry season periods.

The affiliation index is expected to be associated to the optimal niche of the species. We found that the occurrence patterns of species significantly affiliated to temperature (Fig. 3a) and precipitation seasonality (Fig. 3b) follow floristic contrasts between two main blocks within the Atlantic Domain: a southern and a northern sector (see Fig. 4). Considering that in the southern part of our study area there are elements of Austral-Antarctic origin (more adapted to cold conditions), where during the climatic fluctuations they remained in small patches in the south (Costa et al., 2018). Differently to the northern portion, it had the great refuge (Bahia / Pernambuco) during the climatic fluctuations, with more tropical elements (more adapted to the heat). The existence of two main ancestral groups is recognized and has profound influences in

the tree species composition for sectors of the Atlantic Domain. The southern temperate group evolved on the subcontinent during the breakup of the Gondwanan Province and the northern tropical group arrived via Laurasia migrations (Pennington and Dick, 2004). The very clear pattern observed with our results suggests that current temperature and precipitation seasonality conditions might still be reflecting the influence of such factors on the evolution and speciation of tree species in the Atlantic Domain.

The Gondwanan component has a contribution into the subtropical portion and montane forests studied here, where a prevalence of cold-affiliated species was observed (Fig. 4a). Many cold-affiliated genera are mostly found in high altitudes in southeastern Brazil such as *Drimys*, *Podocarpus*, *Ilex*, and *Miconia* (Rambo, 1951). They are also considered diagnostic species of Neotropical cloud forests (Oliveira-Filho and Fontes 2000), where low temperatures and occasional frosts are important factors limiting species distribution toward both higher elevations and latitudes, on places with predominantly low precipitation seasonality conditions (Fig. 4b). Since the Pliocene, periods of global climatic cooling and drying have favored the expansion of the 'diagonal of open formations' from the northwest to the Atlantic coast and the southern regions, where we found most species affiliated to higher precipitation seasonality. The occurrence of the species affiliated to higher seasonality (Fig. 4b) are consistent with the coastland-hinterland dichotomy (Oliveira-Filho and Fontes, 2000), where is observed a strong floristic separation between coastal (no dry season and high annual rainfall) and hinterland (with clear dry season periods and low annual rainfall). Such species had their optimal niches under conditions of forest enclaves within the Cerrado biome, where the dry season is severe and mean temperatures are high (Fig. A.2), reinforcing the idea of rainforests and semi-deciduous forests forming a continuum of tree species distribution determined by rainfall regimes (Oliveira-Filho et al., 2006).

Climate change scenarios for the 21st century project an increase in rainfall irregularities in South America, and longer dry periods with occasional days of torrential rains in the Amazon and Southeast of Brazil until the end of the century (IPCC, 2012). A higher frequency of intense long dry periods is also projected for the Northeast of Brazil. It is likely that there will be an increase in temperature throughout South America, and the vulnerable areas are notably the Amazon and the Northeast of the Atlantic Forest due to the association with dry periods (IPCC, 2012). The projections further indicate an increase in extremes of heat to all Brazilian regions, and a reduction in frost frequency mainly in Southeast, South and Midwest regions (Marengo, 2014). Although the Atlantic Forest biome is probably one of the South American regions with the most significant number of protected area (Tabarelli et al., 2005), some studies show that it will not be effective in the face of climate changes (Loyola et al., 2012). The primary reason for such is that climate changes may be causing shifts in species distribution and/or species abundance and there is a time-delayed response of tree communities (long-lived organisms) (Bowler et al., 2017).

The factors involved in species persistence facing global changes are related to tolerance to climatic stresses and temporal climatic niche shift (acclimation and/or phenotypic plasticity) (Bertrand, 2018). Therefore, tree species distribution might substantially change in the long-term forest dynamics with a potential loss or steady decrease in the abundance of cold-tolerant species and lower seasonality-tolerant species respectively on forests at the south and the north of the Atlantic Domain. In addition, an increased occurrence and abundance of generalist species is expected, resulting in a biotic homogenization of biodiversity (Zwiener et al. 2018) along the Atlantic forests, predominantly composed by species with broad climatic tolerances and no specific optimal conditions within the considered gradients. We observed that the temperature and precipitation seasonality conditions under which many species had their optimal niches (greatest abundance – affiliation values) are concentrated at the edge of the

gradient. Thus heat-affiliated species (Fig. 3a) and lower seasonality affiliated species (Fig. 3b) might be under threat if warmer and drier conditions will increase over the Atlantic domain region. Specifically, heat-affiliated species are closer to their physiological upper thermal limits, and the most of the species affiliated to smaller precipitation seasonality have small precipitation range (small niche breadth), which can indicate a higher potential vulnerability with an increase in temperature and frequency/severity of dry seasons. Most tree species of the Atlantic Domain were restricted to areas with lower precipitation seasonality (less than 0.6%), which confirm their widespread low tolerance to dry conditions. In the same way, much more species occur in hotter conditions if compared to fewer species that tolerate cold conditions, but this small set of species have broad amplitude ranges, which might indicate that these species can shift their distribution to acclimatize.

We conclude that our results are relevant to infer that southern Atlantic forests might are working as refuge for cold-affiliated species, since they can tolerate warmer conditions but their abundance is higher in communities under lower-temperature conditions. Thus, species composition and diversity of southern Atlantic forests might be at risk with increasing temperature in the future. Increasing droughts might affect most tree species, as the majority of studied species was not associated with high precipitation seasonality conditions, leading to changes in forest diversity patterns. Moreover, as species affiliated to warm and species affiliated to low-precipitation seasonality have greater abundance at the edge of the gradient, even small shifts in temperature (hotter means) and in seasonality (drier conditions) might deeply affect their distribution and/or abundance patterns. Additionally, in the face of climate change we consider it essential to maintain or increase forest corridors to facilitate species migrations in order to allow them to acclimatize and evolve.

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Considerações Finais

Neste trabalho, as afinidades e os limites climáticos foram demonstrados a nível de espécie para as árvores do Domínio Atlântico. Com os nossos resultados, esperamos avançar no conhecimento em relação aos padrões de ocorrência das espécies arbóreas e o nicho ótimo das mesmas (aqui calculado pelo índice de afiliação) e como esses padrões estão ligados com a história biogeográfica desse bioma super diverso.

A Mata Atlântica é um dos biomas mais diversos do mundo e é considerada *hotspot* da biodiversidade, sendo um importante domínio fitogeográfico com alta variabilidade na vegetação e no clima. A Mata Atlântica inclui habitats marginais, isto é, enclaves de florestas em outros "Domínios": Caatinga, Cerrado e Pampa. Por isso, quando nos referimos a esse bioma incluindo os habitats marginais, utilizamos o termo Domínio Atlântico. Como os enclaves das florestas se extendem por todos esses domínios, as restrições ambientais estão certamente operando nos limites do Domínio Atlântico. Dentre os fatores ambientais que operam sob o Domínio Atlântico, consideramos que os principais são temperatura e sazonalidade da precipitação.

A temperatura é um fator importante que influencia a distribuição de árvores, sendo que temperaturas mais frias exercem um efeito estressante em espécies arbóreas. Desta maneira, observa-se um gradiente norte-sul de riqueza de espécies, em que há maior riqueza de espécies em latitudes menores, onde há médias de temperaturas mais altas, e uma menor riqueza de espécies em direção ao sul, onde as médias de temperaturas são mais baixas. Pensando que as espécies que conseguem ocorrer em temperaturas mais frias devam ser fisiologicamente tolerantes a essas condições, acredita-se que essas espécies sejam capazes de ocorrer em todo gradiente de temperatura, seguindo a hipótese da tolerância fisiológica. Através dos nossos resultados confirmamos essa hipótese, em que demonstramos que as espécies que ocorrem em

habitats com temperaturas médias mais baixas são amplamente distribuídas no gradiente, conseguindo ter uma amplitude de ocorrência de até 15°C.

Secas sazonais representados por alta sazonalidade de precipitação são o principal fator que impulsiona as diferenças na composição de espécies nas seções tropicais e equatoriais do Domínio Atlântico. Ao analisar as amplitudes de ocorrência das espécies para a sazonalidade da precipitação, percebemos espécies ocorrendo amplamente no gradiente, enquanto outras ocorrendo apenas em locais com alta sazonalidade. Consideramos que essas espécies que ocorrem em locais com perídos de secas, sejam especialistas e que exibam características ecológicas que as permitam sobreviver em longas estações de seca, por exemplo a perda de folhas.

Em relação aos índices de afiliação, encontramos que espécies significativamente afiliadas à temperatura e à sazonalidade da precipitação, possuem padrão de ocorrência que evidencia a existência de dois blocos de floresta no Domínio Atlântico. Esses dois blocos são o resultado de dois principais grupos ancestrais que possuem profundas influências na composíção e nas tolerâncias das espécies do Domínio Atlântico. O grupo temperado, evoluiu ao sul do continente resultando em floras que se diversificaram fora dos trópicos, mantendo sua preferência ancestral por condições temperadas, explicando, assim, a tolerância fisiológica e a afiliação ao frio. O grupo tropical, evoluiu na região equatorial onde encontramos, principalmente, as espécies filiadas a maior sazonalidade de precipitação e afiliadas ao calor. Os pontos de ocorrência das espécies significativamente afiliadas à sazonalidade de precipitação segue a dicotomia entre a região litorânea e a região continental, sendo que a região litorânea possui chuvas regulares e sem períodos de seca.

Estudos como este são importantes para a compreensão dos padrões de ocorrência das espécies e como esses padrões refletem os limites de tolerância das espécies arbóreas. O índice

de afiliação pode ser uma ferramenta interessante para investigar sob quais condições climáticas a espécie obtém maior abundância, refletindo o seu nicho ótimo. Além disso, através desse índice conseguimos vizualizar como os padrões de distribuição de espécies afiliadas estão relaciodos com a história biogegráfica das mesmas. Por último, acreditamos que esse trabalho pode fornecer informações importantes acerca de quais espécies possivelmente são climatologicamente vulneráveis diante de mudanças climáticas.

Supplementary Material

Appendix 1- Testing values of temperature and precipitation seasonality

For each taxon we tested the null hypothesis that the observed values of temperature and precipitation seasonality affiliation (TCG and PCG) would not differ from TCG and PCG values calculated when the communities are placed randomly along the temperature and precipitation seasonality gradient. We (1) generated 999 null TCG and PCG values for each taxon by shuffling the temperature/precipitation values among the communities, and (2) calculated the probability of the observed TCG/ PCG being higher than the TCG/ PCG calculated using random values of temperature and precipitation, following Manly (1997). This process generated a distribution of two-tailed P values where a small value (<0.025) indicates that the taxon is significantly cold- affiliated and lesser seasonality-affiliated. Generalist taxa, not affiliated to any particular temperature and precipitation condition, may have TCG and PCG values indistinguishable from random (probability between 0.025 and 0.975). Heat-affiliated and higher seasonality-affiliated taxa have a high proportion (>0.975) of random values lower than the observed TCG/ PCG (Fig. A.1).

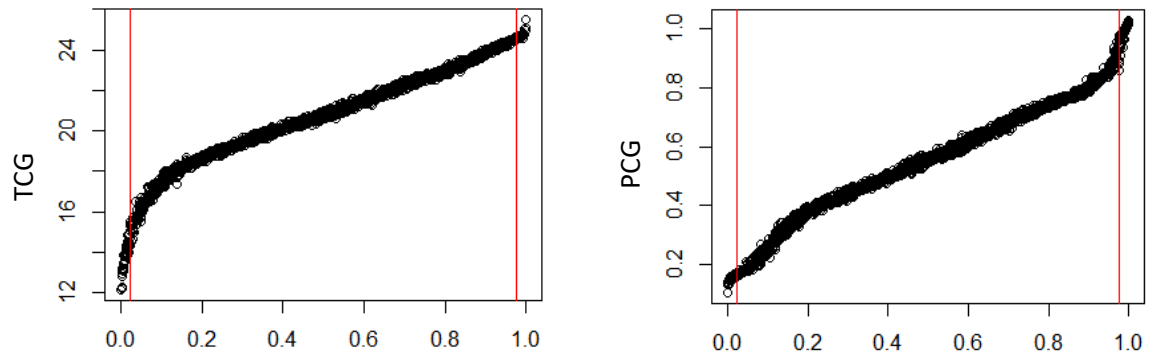

Fig. A1: Temperature centre of gravity (TCG) and seasonality precipitation centre of gravity (PCG) and their probability of happening by chance for each tree species in the Atlantic Forest.

Observed TCG / PCG (y-axes) plotted against the probability of random TCG / PCG values being lower than observed value (x-axes). Red vertical lines represent 5% confidence limits.

Appendix 2- Species significantly affiliated to temperature and precipitation seasonality

Table A.1: List of species significantly affiliated to temperatures. Where: Min. Temperature = minimum temperature each specie occur; max. temperature= maximum temperature; range= temperature amplitude (max.temperature - min.temperature); TCG= affiliations values of mean temperature; p= affiliation index significance (2-tail p-value).

Species	Max. Temperature	Min. Temperature	Range	TCG	P_value
Abarema filamentosa	24.78	24.06	0.73	24.65	0.99
Acca sellowiana	16.82	11.84	4.98	13.83	0.01
Agarista eucalyptoides	18.09	10.40	7.69	14.04	0.02
Anacardium occidentale	25.50	22.83	2.67	24.52	0.96
Annona salzmannii	25.38	24.03	1.36	24.68	0.98
Apeiba albiflora	24.78	24.57	0.22	24.59	0.98
Attalea burretiana	24.78	24.36	0.42	24.52	0.97
Attalea funifera	24.78	24.33	0.45	24.67	0.99
Aureliana fasciculata	22.69	12.91	9.78	14.35	0.01
Bactris ferruginea	25.49	21.54	3.95	24.66	0.99
Berberis laurina	13.67	11.84	1.84	13.19	0.01
Brosimum rubescens	25.59	23.55	2.03	24.64	0.98
Calyptranthes glazioviana	24.71	24.16	0.55	24.51	0.97
Campomanesia dichotoma	25.50	20.59	4.91	24.97	0.99
Caraipa densifolia	25.14	24.30	0.84	24.55	0.98
Chaetocarpus myrsinites	25.14	22.69	2.44	24.68	0.99
Chamaecrista bahiae	25.50	19.85	5.65	25.11	1.00
Cinnamomum stenophyllum	18.13	13.88	4.25	14.53	0.03
Cordia sagotii	24.78	24.34	0.44	24.66	0.98
Drimys angustifolia	14.42	11.84	2.58	12.27	0.01
Drimys brasiliensis	20.99	10.40	10.59	13.99	0.02
Erythroxylum passerinum	25.50	22.76	2.74	24.71	0.99
Eschweilera complanata	24.72	24.71	0.01	24.71	0.99
Eugenia flamingensis	24.72	21.54	3.17	24.53	0.98
Eugenia pauciflora	24.71	24.64	0.08	24.67	0.98
Euplassa itatiaiae	15.72	13.03	2.68	14.46	0.02
Geoffroea spinosa	25.21	23.69	1.52	24.62	0.98
Guettarda platypoda	25.50	24.93	0.57	25.48	1.00
Gustavia augusta	25.59	19.83	5.76	25.03	1.00
Handroanthus catarinensis	17.69	12.62	5.07	13.79	0.01
Ilex microdonta	20.81	11.84	8.97	13.14	0.00
Ilex taubertiana	18.81	12.91	5.90	13.90	0.01
Inga aptera	24.78	24.33	0.45	24.62	0.98

Species	Max. Temperature	Min. Temperature	Range	TCG	P_value
Inga blanchetiana	25.38	23.00	2.39	24.65	0.98
Inga cayennensis	25.14	22.76	2.37	24.74	0.99
Licania tomentosa	25.36	20.08	5.28	24.81	1.00
Lonchocarpus sericeus	25.21	22.19	3.02	24.80	1.00
Macoubea guianensis	24.71	23.54	1.18	24.58	0.98
Macropeplus dentatus	16.83	11.46	5.37	13.51	0.01
Matayba sylvatica	24.71	24.51	0.20	24.62	0.99
Maytenus boaria	15.33	11.84	3.50	12.17	0.00
Maytenus obtusifolia	25.50	20.90	4.60	24.64	0.98
Maytenus rigida	25.21	23.69	1.52	25.12	1.00
Miconia castaneiflora	13.54	10.40	3.14	12.24	0.00
Miconia ibaguensis	20.08	13.00	7.08	14.12	0.02
Miconia tomentosa	24.81	24.49	0.32	24.74	0.99
Moquiniastrum oligocephalum	24.78	24.30	0.48	24.59	0.98
Myrceugenia alpigena	14.42	12.08	2.34	13.44	0.01
Myrceugenia brevipedicellata	18.73	12.91	5.82	13.19	0.01
Myrceugenia euosma	17.02	11.84	5.18	12.79	0.00
Myrceugenia miersiana	20.88	10.40	10.47	13.81	0.01
Myrceugenia ovalifolia	17.61	13.00	4.61	13.58	0.01
Myrceugenia oxysepala	15.75	11.84	3.91	12.91	0.01
Myrceugenia rufescens	17.19	11.46	5.74	12.18	0.00
Myrcia hartwegiana	18.05	11.92	6.14	13.89	0.01
Myrcia micropetala	24.72	24.42	0.29	24.62	0.98
Myrcia oligantha	14.75	13.55	1.19	14.18	0.02
Ocotea lancifolia	24.78	12.91	11.87	15.07	0.03
Ouratea conduplicata	24.78	24.42	0.36	24.57	0.98
Ouratea floribunda	20.75	11.46	9.29	13.89	0.01
Pachira aquatica	25.49	24.49	1.00	24.76	0.99
Parkia pendula	25.49	21.22	4.27	24.80	0.99
Piptocarpha regnellii	17.19	13.03	4.16	14.31	0.02
Piranhea securinega	24.62	24.04	0.58	24.60	0.98
Pleroma arboreum	22.57	14.31	8.26	14.94	0.02
Pleroma candolleana	24.68	13.00	11.68	15.04	0.03
Plinia callosa	24.78	24.62	0.17	24.70	0.99
Podocarpus lambertii	15.33	12.91	2.42	14.31	0.02
Pradosia longipedicellata	24.72	24.16	0.56	24.49	0.97
Protium sagotianum	25.49	21.80	3.69	24.71	0.99
Rhamnus sphaerosperma	20.28	10.40	9.87	13.93	0.01
Schinus polygama	19.11	11.92	7.19	14.02	0.02
Schistostemon retusum	24.78	24.62	0.17	24.67	0.99
Siphoneugena reitzii	21.03	12.62	8.41	13.16	0.00
Solanum campaniforme	24.20	12.91	11.28	13.89	0.02
Solanum compressum	18.44	11.84	6.60	13.44	0.01
Solanum concinnum	19.89	13.55	6.34	14.41	0.01
Solanum paranense	17.66	11.84	5.82	13.08	0.00
Solanum variabile	18.68	13.67	5.01	14.35	0.02

Species	Max. Temperature	Min. Temperature	Range	TCG	P_value
Sparattanthelium botocudorum	24.78	24.62	0.17	24.71	0.99
Syagrus coronata	24.78	21.13	3.65	24.56	0.98
Syagrus schizophylla	24.78	24.30	0.48	24.70	0.99
Symphyopappus itatiayensis	15.78	13.67	2.12	14.20	0.01
Symplocos falcata	18.81	10.40	8.41	13.84	0.01
Symplocos insignis	21.81	10.40	11.41	13.38	0.00
Syzygium cumini	25.49	22.17	3.32	24.70	0.98
Tabernaemontana flavicans	25.02	23.97	1.05	24.57	0.98
Tachigali densiflora	25.59	20.34	5.25	24.79	0.99
Terminalia dichotoma	24.78	24.33	0.45	24.59	0.97
Tetragastris catuaba	25.14	20.59	4.55	24.65	0.99
Triplaris weigeltiana	25.21	24.63	0.59	25.03	1.00
Vernonanthura ferruginea	15.29	12.91	2.38	13.22	0.01
Vernonanthura petiolaris	18.77	13.00	5.77	14.03	0.01
Xylopia frutescens	25.49	21.22	4.27	24.79	0.99
Zanthoxylum kleinii	17.21	13.67	3.54	15.51	0.04
Ziziphus joazeiro	25.50	14.15	11.35	24.63	0.99

Appendix 3- Table A.2: List of species significantly affiliated to precipitation seasonality. Where: Min. Seasonality = minimum precipitation seasonality each specie occur; max. seasonality= maximum precipitation seasonality; range= precipitation seasonality amplitude (max.seasonality - min.seasonality); PCG= affiliations values for precipitation seasonality; p= affiliation index significance (2-tail p-value).

Species	Max. Seasonality	Min. Seasonality	Range	PCG	P value
Albizia inundata	1.03	0.71	0.33	0.96	0.99
Andira marauensis	0.17	0.14	0.03	0.15	0.01
Annona bahiensis	0.17	0.15	0.02	0.16	0.02
Annona leptopetala	1.03	0.74	0.30	0.96	0.98
Arapatiella psilophylla	0.29	0.14	0.15	0.17	0.02
Ateleia glazioveana	0.77	0.12	0.65	0.16	0.01
Attalea funifera	0.19	0.14	0.04	0.15	0.01
Balfourodendron molle	1.00	0.90	0.10	0.99	0.99
Barnebya harleyi	1.03	1.00	0.03	1.02	1.00
Bauhinia membranacea	0.98	0.63	0.35	0.96	0.98
Butia capitata	0.90	0.16	0.74	0.17	0.02
Callisthene fasciculata	0.99	0.70	0.29	0.92	0.98
Calyptranthes glazioviana	0.21	0.14	0.07	0.16	0.01
Calyptranthes tricona	0.23	0.13	0.10	0.17	0.02
Campomanesia sessiliflora	1.02	0.64	0.38	0.98	0.99

Species	Max. Seasonality	Min. Seasonality	Range	PCG	P value
Cavanillesia umbellata	1.02	0.27	0.75	0.97	0.98
Chamaecrista duartei	0.21	0.14	0.07	0.16	0.02
Chloroleucon dumosum	1.14	0.87	0.27	1.00	0.99
Cnidoscolus bahianus	1.02	0.97	0.05	1.00	0.99
Coccoloba schwackeana	1.02	0.99	0.03	1.01	0.99
Cochlospermum vitifolium	1.02	0.83	0.19	0.96	0.98
Combretum duarteanum	1.02	0.46	0.56	0.98	0.98
Commiphora leptophloeos	1.14	0.56	0.59	0.93	0.98
Cordia incognita	1.03	0.97	0.06	1.03	1.00
Croton argyrophylloides	1.03	0.87	0.16	0.98	0.99
Dalbergia cearensis	1.02	0.97	0.05	1.02	1.00
Diptychandra aurantiaca	1.01	1.00	0.01	1.00	0.99
Emmotum affine	0.37	0.14	0.23	0.16	0.01
Erythroxylum myrsinites	0.22	0.10	0.12	0.13	0.00
Eschweilera complanata	0.14	0.14	0.01	0.14	0.00
Eugenia dysenterica	0.99	0.62	0.37	0.93	0.98
Eugenia flamingensis	0.47	0.14	0.33	0.16	0.02
Eugenia itacarensis	0.45	0.14	0.31	0.18	0.02
Eugenia longifolia	0.17	0.15	0.02	0.16	0.01
Eugenia pauciflora	0.15	0.14	0.00	0.15	0.00
Faramea torquata	0.17	0.14	0.02	0.16	0.02
Fridericia bahiensis	1.03	0.97	0.06	1.01	1.00
Galipea ciliata	1.03	0.86	0.17	1.02	1.00
Guarea blanchetii	0.60	0.14	0.46	0.16	0.02
Handroanthus selachidentatus	1.03	0.60	0.44	1.01	1.00
Handroanthus spongiosus	1.03	0.97	0.06	1.00	0.99
Harleyodendron unifoliolatum	0.17	0.14	0.03	0.16	0.02
Helietta apiculata	0.77	0.10	0.67	0.16	0.01
Inga aptera	0.19	0.14	0.04	0.16	0.01
Licania littoralis	0.60	0.14	0.45	0.16	0.01
Licaria guianensis	0.67	0.15	0.52	0.17	0.02
Lonchocarpus nitidus	0.22	0.12	0.10	0.15	0.01
Luetzelburgia andrade-limae	1.02	0.99	0.03	1.00	1.00
Luetzelburgia auriculata	1.01	0.77	0.23	0.96	0.98
Mabea glaziovii	0.21	0.14	0.07	0.15	0.01
Machaerium amplum	0.92	0.77	0.16	0.91	0.98
Macoubea guianensis	0.42	0.14	0.28	0.16	0.01
Manihot anomala	1.03	0.76	0.28	0.94	0.98
Manihot caerulescens	1.02	0.97	0.05	0.99	0.99
Manilkara longifolia	0.59	0.14	0.44	0.16	0.02
Marlierea verticillaris	0.17	0.15	0.01	0.16	0.02
Matayba sylvatica	0.15	0.14	0.01	0.14	0.00
Miconia lurida	0.17	0.14	0.02	0.16	0.02
Mouriri elliptica	0.98	0.90	0.08	0.92	0.98
Mouriri pusa	1.02	0.90	0.12	0.99	0.99
Myrcia micropetala	0.17	0.14	0.03	0.15	0.01

Species	Max. Seasonality	Min. Seasonality	Range	PCG	P value
Neea hirsuta	0.60	0.14	0.46	0.17	0.02
Ocotea acutifolia	0.84	0.13	0.71	0.16	0.02
Ocotea percurrens	0.19	0.14	0.05	0.15	0.01
Ouratea conduplicata	0.17	0.14	0.03	0.15	0.01
Parinari alvimii	0.18	0.14	0.03	0.16	0.01
Pereskia stenantha	1.02	0.97	0.05	1.00	0.99
Piptadenia viridiflora	1.14	0.97	0.18	1.01	1.00
Piranhea securinega	1.00	0.97	0.03	0.97	0.98
Pisonia zapallo	0.28	0.11	0.17	0.14	0.00
Plinia callosa	0.17	0.14	0.02	0.16	0.01
Poecilanthe grandiflora	1.01	0.97	0.03	0.98	0.98
Poecilanthe ulei	1.03	0.97	0.06	1.00	0.99
Poincianella bracteosa	0.97	0.87	0.10	0.96	0.99
Poincianella pluviosa	1.03	0.32	0.71	0.99	0.98
Poincianella pyramidalis	1.02	0.66	0.36	0.97	0.98
Pourouma mollis	0.49	0.14	0.35	0.15	0.02
Pouteria salicifolia	0.22	0.13	0.09	0.14	0.00
Pradosia longipedicellata	0.21	0.14	0.08	0.16	0.02
Pterocarpus zehntneri	1.00	0.97	0.03	0.99	0.98
Ptilochaeta bahiensis	1.03	0.97	0.06	1.00	1.00
Qualea parviflora	0.98	0.74	0.24	0.92	0.98
Quillaja brasiliensis	0.41	0.10	0.31	0.15	0.01
Rhamnidium molle	1.14	0.97	0.18	1.02	1.00
Ruprechtia apetala	1.00	0.27	0.74	0.94	0.98
Schaefferia argentinensis	0.28	0.10	0.18	0.11	0.00
Schinopsis brasiliensis	1.02	0.72	0.30	0.96	0.98
Schinus lentiscifolia	0.18	0.13	0.05	0.15	0.01
Schistostemon retusum	0.17	0.14	0.02	0.15	0.01
Senegalia bahiensis	1.00	0.98	0.03	0.99	0.99
Senegalia martii	1.00	0.97	0.03	0.99	0.98
Senegalia tucumanensis	0.38	0.11	0.27	0.13	0.00
Simira gardneriana	0.84	0.14	0.70	0.18	0.02
Spondias tuberosa	1.02	0.66	0.36	0.98	0.99
Stephanopodium magnifolium	0.18	0.15	0.02	0.17	0.02
Tabebuia aurea	1.02	0.28	0.74	0.94	0.98
Tabebuia reticulata	1.02	0.70	0.32	1.01	1.00
Terminalia dichotoma	0.19	0.15	0.03	0.16	0.02
Terminalia fagifolia	1.03	0.66	0.37	0.93	0.98
Trischidium molle	1.00	0.97	0.03	0.98	0.99
Vachellia farnesiana	0.97	0.89	0.08	0.94	0.98
Virola officinalis	0.60	0.14	0.46	0.17	0.02
Zanthoxylum stelligerum	1.02	1.00	0.02	1.00	0.99
Zollernia magnifica	0.18	0.15	0.02	0.17	0.01

Appendix 4- Relating significantly affiliated species

By relating the species significantly affiliated to temperature with the species significantly affiliated to the precipitation seasonality, we first observed just few species significant to two conditions: hot and high seasonality precipitation. Moreover, among the significantly hotter-affiliated species, most species have moderate values to precipitation seasonality (no more than 0.75), whereas significant lower-precipitation seasonality species had two optimal mean temperatures: around 18ºC and close to 25ºC. We also see a group specialized in dry environments (higher precipitation seasonality), which optimal temperatures are also high (22-25ºC). Cold-affiliated species are either restricted to environments with very low precipitation seasonality (<0.25) or to moderate seasonality (0.6-0.75) (Fig. A.2).

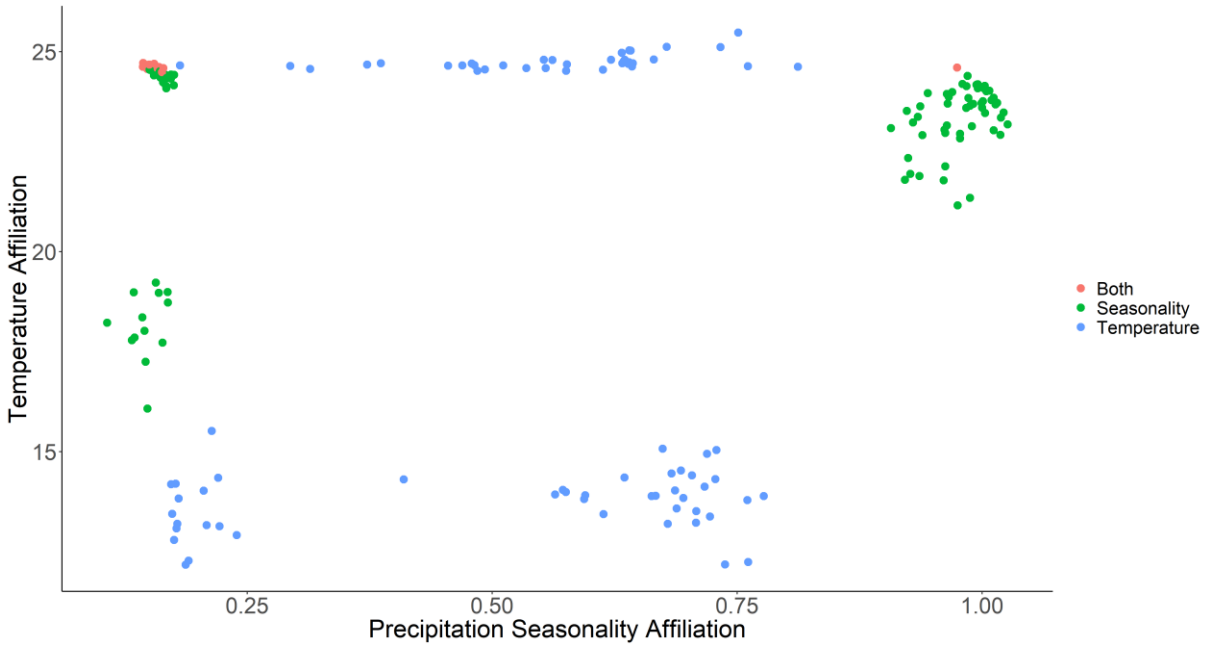

Fig. A.2: Relation of both environmental conditions, showing species significantly affiliated to temperature and to precipitation seasonality with their respective values. Green points represent the species affiliated to precipitation seasonality, blue points represent the species affiliated to temperature, and in red species that are both affiliated to temperature and to seasonality.

Appendix 5- Table A.3: List of species used in this study. Where: Max. Temp.= maximum temperature; Min. Temp.= minimum temperature; Range Temp.= temperature amplitude (Max. Temp. – Min. Temp); TCG= affiliations values for temperature; p= affiliation index

significance (2-tail p-value); Max. seasonality= maximum precipitation seasonality; Min. Seasonality = minimum precipitation seasonality each specie occur; Range Seaso.= precipitation seasonality amplitude (Max.Seaso. - Min.Seaso.); PCG= affiliations values for precipitation seasonality; p= affiliation index significance (2-tail p-value).

Species	Max. Temp.	Min.Temp.	Range Temp.	TCG	P value	Max. Seaso.	Min. Seaso.	Range Seaso.	PCG	P value
Abarema brachystachya	23.34	18.13	5.21	22.53	0.77	0.83	0.38	0.44	0.46	0.34
Abarema cochliacarpos	25.38	21.52	3.87	24.32	0.95	0.78	0.18	0.60	0.52	0.44
Abarema filamentosa	24.78	24.06	0.73	24.65	0.98	0.51	0.14	0.37	0.18	0.04
Abarema jupunba	24.51	21.22	3.29	22.57	0.74	0.92	0.14	0.78	0.70	0.72
Abarema langsdorffii	21.65	16.98	4.67	18.74	0.21	0.77	0.15	0.62	0.41	0.23
Abarema limae	22.90	22.79	0.10	22.81	0.77	0.58	0.57	0.01	0.58	0.54
Acanthocladus pulcherrimus	24.40	22.79	1.61	22.98	0.80	0.63	0.53	0.10	0.55	0.48
Acca sellowiana	16.82	11.84	4.98	13.83	0.01	0.22	0.13	0.09	0.18	0.05
Achatocarpus praecox	22.56	17.99	4.56	20.18	0.39	0.37	0.13	0.24	0.27	0.12
Acnistus arborescens	22.69	15.46	7.23	20.34	0.43	1.14	0.14	1.01	0.70	0.72
Acosmium lentiscifolium	24.35	20.79	3.56	23.03	0.81	1.03	0.32	0.71	0.70	0.72
Acrocomia aculeata	24.72	19.21	5.51	22.39	0.71	0.98	0.28	0.70	0.51	0.43
Actinostemon concepcionis	22.87	17.90	4.97	20.07	0.39	0.76	0.57	0.19	0.62	0.62
Actinostemon concolor	24.62	15.75	8.87	18.60	0.20	1.00	0.10	0.90	0.26	0.11
Actinostemon klotzschii	23.52	17.69	5.83	21.30	0.57	0.88	0.32	0.56	0.65	0.66
Actinostemon verticillatus	24.40	19.09	5.31	22.66	0.75	0.87	0.19	0.69	0.49	0.39
Adenocalymma subsessilifolium	22.62	21.40	1.22	22.12	0.66	0.68	0.51	0.18	0.57	0.51
Aegiphila brachiata	20.08	17.00	3.07	18.03	0.14	0.85	0.17	0.68	0.28	0.12
Aegiphila integrifolia	24.47	10.40	14.07	19.37	0.30	1.00	0.15	0.86	0.49	0.38
Aegiphila mediterranea	21.57	18.67	2.91	20.22	0.42	0.43	0.27	0.16	0.36	0.17
Aegiphila obducta	22.04	14.31	7.73	17.45	0.10	0.87	0.63	0.24	0.71	0.75
Aegiphila verticillata	24.45	13.96	10.49	20.01	0.39	1.00	0.49	0.51	0.80	0.89
Agarista eucalyptoides	18.09	10.40	7.69	14.04	0.02	0.77	0.21	0.57	0.57	0.49
Agonandra brasiliensis	24.07	19.33	4.74	21.90	0.65	0.98	0.50	0.48	0.77	0.84
Agonandra excelsa	23.27	10.40	12.86	19.85	0.36	0.95	0.17	0.78	0.69	0.72
Aiouea acarodomatifera	19.33	13.96	5.38	16.49	0.06	0.68	0.21	0.47	0.51	0.40
Aiouea saligna	22.79	10.40	12.39	16.93	0.07	0.86	0.11	0.76	0.41	0.26
Aiouea trinervis	20.02	19.18	0.84	19.35	0.30	0.87	0.77	0.10	0.79	0.89
Albizia edwallii	22.36	15.46	6.90	19.62	0.33	0.76	0.13	0.62	0.34	0.17
Albizia inundata	24.45	18.73	5.72	23.70	0.90	1.03	0.71	0.33	0.96	0.99
Albizia niopoides	24.72	14.79	9.93	21.69	0.62	1.02	0.10	0.92	0.61	0.59
Albizia pedicellaris	25.49	18.84	6.65	22.97	0.81	0.78	0.14	0.64	0.49	0.38
Albizia polycephala	25.21	14.79	10.42	21.29	0.58	1.14	0.27	0.88	0.69	0.74
Alchornea glandulosa	23.52	15.29	8.23	19.74	0.36	0.87	0.19	0.69	0.57	0.53
Alchornea sidifolia	22.57	13.96	8.61	17.81	0.12	0.84	0.12	0.72	0.62	0.61
Alchornea triplinervia	24.40	12.62	11.77	18.47	0.18	0.86	0.10	0.76	0.48	0.39
Algernonia leandrii	22.93	21.81	1.12	22.42	0.73	0.53	0.35	0.17	0.49	0.40
Algernonia obovata	23.29	22.67	0.62	22.98	0.80	0.53	0.37	0.16	0.42	0.25

Algernonia riedelii	22.62	22.04	0.59	22.12	0.67	0.64	0.51	0.12	0.62	0.59
Alibertia edulis	24.07	13.62	10.45	21.92	0.67	0.99	0.72	0.27	0.85	0.95
Allagoptera caudescens	24.78	19.09	5.69	23.86	0.89	0.57	0.14	0.43	0.39	0.20
Allophylus edulis	25.49	13.67	11.81	18.84	0.21	1.01	0.10	0.92	0.34	0.18
Allophylus guaraniticus	20.71	13.67	7.05	17.68	0.12	0.65	0.11	0.54	0.20	0.06
Allophylus membranifolius	24.03	19.49	4.54	22.13	0.69	0.75	0.17	0.58	0.38	0.18
Allophylus petiolulatus	23.94	13.96	9.99	20.29	0.42	0.92	0.20	0.71	0.58	0.53
Allophylus puberulus	25.50	17.66	7.84	23.38	0.84	1.14	0.13	1.01	0.59	0.57
Allophylus racemosus	24.07	13.62	10.45	20.18	0.42	1.02	0.43	0.58	0.79	0.88
Allophylus semidentatus	24.70	17.92	6.77	20.07	0.38	0.97	0.61	0.36	0.71	0.74
Almeidea coerulea	24.62	18.75	5.87	20.25	0.42	0.70	0.15	0.54	0.58	0.55
Almeidea rubra	24.35	20.66	3.68	22.56	0.73	0.73	0.32	0.41	0.44	0.30
Aloysia virgata	24.62	14.79	9.83	20.25	0.42	1.01	0.13	0.87	0.68	0.71
Alseis floribunda	25.59	16.07	9.52	21.81	0.64	1.01	0.15	0.85	0.52	0.45
Alseis involuta	23.64	22.52	1.12	22.73	0.77	0.58	0.32	0.26	0.41	0.25
Alseis pickelii	25.50	21.40	4.10	22.92	0.81	0.75	0.19	0.56	0.62	0.60
Alsophila setosa	21.21	12.91	8.29	17.35	0.11	0.75	0.11	0.65	0.29	0.10
Alsophila sternbergii	23.01	14.31	8.70	20.83	0.52	0.77	0.36	0.42	0.47	0.39
Amaioua glomerulata	25.38	18.34	7.04	22.20	0.70	0.86	0.77	0.09	0.78	0.89
Amaioua guianensis	25.02	14.31	10.71	19.51	0.30	0.90	0.15	0.75	0.69	0.72
Amaioua intermedia	24.47	14.59	9.88	20.13	0.40	0.92	0.21	0.71	0.57	0.51
Amaioua pilosa	24.71	24.30	0.42	24.53	0.98	0.51	0.14	0.36	0.18	0.04
Amanoa guianensis	24.78	15.29	9.49	24.34	0.94	0.76	0.14	0.61	0.17	0.03
Amburana cearensis	25.21	19.98	5.24	23.97	0.91	1.14	0.62	0.53	0.83	0.94
Ampelocera glabra	23.52	21.40	2.12	21.81	0.65	0.72	0.27	0.45	0.34	0.16
Amphirrhox longifolia	25.49	18.84	6.65	21.18	0.55	0.65	0.17	0.49	0.44	0.28
Anacardium occidentale	25.50	22.83	2.67	24.52	0.96	0.89	0.29	0.61	0.58	0.56
Anadenanthera colubrina	25.21	14.31	10.90	20.97	0.54	1.03	0.25	0.78	0.74	0.78
Anadenanthera peregrina	24.07	17.45	6.63	23.05	0.82	0.98	0.28	0.70	0.89	0.97
Anaxagorea dolichocarpa	24.81	19.86	4.96	23.15	0.81	0.79	0.14	0.65	0.50	0.40
Anaxagorea silvatica	20.29	19.49	0.80	19.94	0.36	0.85	0.84	0.01	0.85	0.95
Andira anthelmia	23.52	16.98	6.53	21.20	0.52	0.86	0.34	0.52	0.41	0.23
Andira fraxinifolia	25.38	16.07	9.31	21.52	0.57	0.98	0.15	0.82	0.51	0.43
Andira legalis	24.62	19.46	5.15	23.54	0.86	0.80	0.17	0.63	0.34	0.15
Andira marauensis	24.71	24.42	0.29	24.58	0.97	0.17	0.14	0.03	0.15	0.01
Andira nitida	25.49	21.54	3.95	24.32	0.94	0.66	0.17	0.49	0.55	0.47
Andira ormosioides	23.82	18.13	5.69	20.61	0.45	0.87	0.37	0.50	0.70	0.72
Andira vermifuga	24.30	18.13	6.17	20.23	0.43	0.98	0.29	0.69	0.77	0.84
Andradea floribunda	23.34	18.99	4.36	22.16	0.69	0.77	0.27	0.50	0.59	0.56
Aniba firmula	23.52	13.96	9.56	20.56	0.47	0.89	0.18	0.72	0.56	0.52
Aniba heringeri	21.32	14.55	6.77	19.28	0.29	0.82	0.70	0.12	0.78	0.88
Aniba intermedia	24.78	13.62	11.16	21.80	0.63	0.87	0.15	0.73	0.45	0.31
Aniba viridis	22.79	16.69	6.11	20.37	0.42	0.63	0.45	0.18	0.50	0.42
Annona acutiflora	23.41	21.40	2.02	23.18	0.80	0.68	0.41	0.28	0.45	0.32
Annona bahiensis	24.78	24.41	0.38	24.53	0.98	0.17	0.15	0.02	0.16	0.02
Annona cacans	24.47	10.40	14.07	19.15	0.30	0.97	0.14	0.83	0.64	0.65
Annona crassiflora	23.08	14.15	8.93	22.00	0.67	0.91	0.16	0.74	0.72	0.76
Annona dolabripetala	24.30	12.62	11.67	20.49	0.44	0.90	0.29	0.61	0.65	0.67

Annona emarginata	23.01	12.91	10.09	18.13	0.14	0.91	0.16	0.75	0.66	0.68
Annona glabra	25.49	16.86	8.63	22.38	0.70	0.77	0.23	0.54	0.59	0.55
Annona leptopetala	24.30	20.38	3.91	22.97	0.81	1.03	0.74	0.30	0.96	0.98
Annona montana	24.73	22.87	1.86	23.67	0.89	0.97	0.63	0.34	0.74	0.77
Annona mucosa	24.30	18.34	5.96	20.22	0.40	0.98	0.41	0.56	0.81	0.91
Annona neosalicifolia	21.44	15.46	5.98	18.81	0.20	0.76	0.10	0.66	0.17	0.03
Annona neosericea	23.11	13.54	9.57	19.76	0.32	0.84	0.18	0.67	0.46	0.35
Annona pickelii	25.38	20.53	4.85	22.30	0.70	0.78	0.45	0.33	0.56	0.52
Annona rugulosa	19.37	13.55	5.82	16.21	0.04	0.71	0.10	0.60	0.30	0.12
Annona salzmannii	25.38	24.03	1.36	24.68	0.99	0.78	0.14	0.64	0.37	0.19
Annona sylvatica	24.35	12.62	11.72	19.14	0.26	1.00	0.13	0.87	0.67	0.68
Annona xylopiifolia	22.54	13.62	8.92	17.33	0.11	0.75	0.60	0.15	0.71	0.74
Antonia ovata	22.87	15.29	7.58	22.39	0.73	0.91	0.56	0.35	0.72	0.75
Aparisthmium cordatum	24.78	18.13	6.66	20.90	0.52	0.87	0.14	0.73	0.58	0.57
Apeiba albiflora	24.78	24.57	0.22	24.59	0.98	0.63	0.17	0.46	0.53	0.45
Apeiba tibourbou	25.49	18.13	7.36	23.23	0.83	0.92	0.29	0.63	0.72	0.75
Aptandra tubicina	24.78	19.81	4.98	23.94	0.90	0.87	0.14	0.73	0.18	0.05
Apuleia leiocarpa	25.38	13.96	11.43	20.38	0.47	1.02	0.10	0.91	0.67	0.67
Aralia warmingiana	24.62	17.69	6.93	21.59	0.59	1.03	0.13	0.90	0.88	0.97
Arapatiella psilophylla	24.78	23.97	0.81	24.42	0.96	0.29	0.14	0.15	0.17	0.02
Araucaria angustifolia	19.89	11.84	8.05	15.34	0.03	0.83	0.12	0.71	0.29	0.13
Artocarpus heterophyllus	25.59	20.78	4.81	22.99	0.82	0.81	0.27	0.54	0.54	0.46
Aspidosperma australe	23.03	13.62	9.40	18.73	0.22	0.87	0.13	0.75	0.52	0.44
Aspidosperma compactinervium	21.80	21.17	0.63	21.51	0.58	0.47	0.47	0.00	0.47	0.35
Aspidosperma cuspa	24.45	21.11	3.34	21.56	0.60	1.00	0.78	0.22	0.84	0.95
Aspidosperma cylindrocarpon	24.20	15.72	8.48	21.40	0.60	0.99	0.35	0.64	0.71	0.75
Aspidosperma desmanthum	24.62	19.85	4.76	22.33	0.69	0.62	0.17	0.45	0.43	0.26
Aspidosperma discolor	25.49	17.45	8.04	22.07	0.68	0.91	0.15	0.76	0.63	0.63
Aspidosperma dispermum	24.07	16.30	7.78	21.88	0.64	0.97	0.57	0.40	0.85	0.94
Aspidosperma illustre	24.79	16.54	8.25	20.80	0.52	0.87	0.49	0.38	0.73	0.78
Aspidosperma macrocarpon	24.72	20.23	4.49	22.27	0.71	0.98	0.48	0.49	0.83	0.92
Aspidosperma multiflorum	24.30	20.48	3.83	22.43	0.72	1.02	0.77	0.25	0.89	0.96
Aspidosperma olivaceum	22.80	12.62	10.18	16.73	0.08	0.90	0.18	0.72	0.69	0.70
Aspidosperma parvifolium	24.79	12.62	12.16	18.69	0.21	1.00	0.13	0.87	0.57	0.51
Aspidosperma polyneuron	24.30	15.29	9.01	20.61	0.48	1.00	0.21	0.80	0.60	0.56
Aspidosperma pyricollum	25.50	19.98	5.52	22.96	0.80	0.75	0.37	0.38	0.50	0.39
Aspidosperma pyrifolium	24.62	19.13	5.49	20.94	0.52	1.14	0.62	0.53	0.82	0.91
Aspidosperma ramiflorum	22.69	18.58	4.12	19.96	0.39	0.98	0.23	0.75	0.66	0.67
Aspidosperma spruceanum	25.49	13.62	11.86	21.47	0.59	0.98	0.14	0.83	0.54	0.46
Aspidosperma subincanum	24.72	16.54	8.18	21.59	0.62	1.01	0.29	0.72	0.84	0.93
Aspidosperma tomentosum	24.72	17.19	7.53	20.65	0.50	0.98	0.20	0.77	0.65	0.66
Astrocaryum aculeatissimum	23.94	18.04	5.90	22.26	0.72	0.81	0.32	0.49	0.55	0.50
Astronium concinnum	24.40	20.53	3.86	22.94	0.80	0.78	0.15	0.63	0.54	0.45
Astronium fraxinifolium	25.21	19.05	6.16	22.33	0.70	0.99	0.28	0.71	0.69	0.69
Astronium graveolens	23.94	13.99	9.96	21.09	0.52	0.90	0.21	0.69	0.62	0.59
Astronium nelson-rosae	22.87	20.20	2.68	20.66	0.48	0.89	0.78	0.11	0.84	0.93
Ateleia glazioveana	19.93	15.31	4.61	18.97	0.23	0.77	0.12	0.65	0.16	0.01

Attalea burretiana	24.78	24.36	0.42	24.52	0.97	0.50	0.48	0.02	0.49	0.38
Attalea dubia	22.79	18.00	4.80	21.16	0.55	0.77	0.31	0.46	0.47	0.34
Attalea funifera	24.78	24.33	0.45	24.67	0.98	0.19	0.14	0.04	0.15	0.01
Attalea oleifera	24.35	19.60	4.74	22.53	0.75	0.86	0.60	0.26	0.65	0.68
Attalea phalerata	22.71	21.48	1.23	22.15	0.66	0.86	0.83	0.03	0.84	0.95
Aureliana fasciculata	22.69	12.91	9.78	14.35	0.02	0.70	0.24	0.46	0.64	0.62
Austrocritonia velutina	19.39	13.62	5.76	16.78	0.07	0.77	0.70	0.07	0.75	0.83
Baccharis lateralis	18.13	13.88	4.25	16.33	0.07	0.83	0.47	0.36	0.73	0.78
Baccharis oreophila	16.82	13.03	3.79	15.35	0.03	0.75	0.36	0.39	0.45	0.33
Baccharis semiserrata	16.86	13.00	3.86	14.36	0.01	0.70	0.18	0.53	0.59	0.57
Baccharis serrulata	20.02	11.46	8.56	15.50	0.04	0.87	0.68	0.19	0.74	0.78
Bactris ferruginea	25.49	21.54	3.95	24.66	0.98	0.66	0.17	0.50	0.51	0.40
Bactris setosa	23.14	16.07	7.07	19.58	0.33	0.67	0.25	0.42	0.41	0.25
Balfourodendron molle	24.30	20.99	3.32	23.65	0.89	1.00	0.90	0.10	0.99	0.99
Balfourodendron riedelianum	24.72	17.02	7.70	20.63	0.46	0.77	0.12	0.65	0.45	0.30
Banara brasiliensis	24.30	19.13	5.17	20.36	0.44	0.68	0.37	0.31	0.63	0.62
Banara guianensis	24.47	21.22	3.25	22.09	0.69	0.92	0.83	0.10	0.86	0.96
Banara parviflora	21.17	15.42	5.76	17.44	0.10	0.78	0.14	0.65	0.19	0.06
Banara serrata	20.26	18.54	1.72	19.94	0.34	0.77	0.71	0.05	0.72	0.73
Banara tomentosa	20.59	14.37	6.22	17.19	0.08	0.37	0.10	0.28	0.20	0.06
Barnebya harleyi	24.21	23.04	1.16	23.48	0.87	1.03	1.00	0.03	1.02	1.00
Barnebydendron riedelii	22.90	19.85	3.04	21.28	0.55	0.62	0.57	0.05	0.60	0.57
Basiloxylon brasiliensis	24.79	19.91	4.87	23.61	0.88	0.92	0.37	0.55	0.62	0.60
Bastardiopsis densiflora	22.30	13.54	8.76	20.47	0.46	0.79	0.28	0.51	0.55	0.49
Bathysa australis	23.27	15.29	7.97	19.53	0.31	0.91	0.15	0.76	0.45	0.31
Bathysa gymnocarpa	22.69	19.09	3.60	20.74	0.51	0.80	0.52	0.27	0.57	0.54
Bathysa mendoncaei	24.33	14.59	9.75	21.80	0.64	0.97	0.19	0.79	0.46	0.35
Bathysa nicholsonii	24.64	17.17	7.46	19.62	0.32	0.87	0.15	0.73	0.75	0.82
Bathysa stipulata	23.01	16.07	6.93	19.07	0.25	0.83	0.36	0.47	0.49	0.38
Bauhinia acuruana	24.47	23.34	1.13	24.18	0.94	1.02	0.62	0.40	0.64	0.67
Bauhinia brevipes	24.20	19.33	4.86	19.95	0.35	0.99	0.58	0.41	0.63	0.62
Bauhinia cheilantha	25.21	21.69	3.53	23.73	0.88	1.01	0.63	0.38	0.88	0.95
Bauhinia forficata	25.21	15.46	9.75	20.26	0.43	1.02	0.12	0.90	0.66	0.69
Bauhinia longifolia	24.35	15.51	8.84	19.76	0.34	0.91	0.19	0.72	0.70	0.73
Bauhinia membranacea	25.50	20.79	4.71	21.78	0.64	0.98	0.63	0.35	0.96	0.98
Bauhinia pulchella	20.34	18.13	2.21	19.95	0.41	0.88	0.83	0.05	0.86	0.96
Bauhinia rufa	24.07	18.13	5.94	21.09	0.56	1.01	0.57	0.44	0.84	0.94
Bauhinia ungulata	24.62	18.34	6.27	21.89	0.64	0.98	0.17	0.81	0.83	0.92
Beilschmiedia angustifolia	22.54	19.09	3.44	20.46	0.47	0.85	0.35	0.50	0.62	0.63
Beilschmiedia emarginata	21.96	16.98	4.98	18.45	0.19	0.77	0.37	0.40	0.63	0.60
Beilschmiedia linharensis	24.72	22.80	1.92	24.21	0.94	0.58	0.14	0.44	0.24	0.09
Beilschmiedia taubertiana	24.21	13.62	10.58	17.95	0.12	1.00	0.75	0.25	0.81	0.90
Berberis laurina	13.67	11.84	1.84	13.19	0.01	0.18	0.17	0.01	0.18	0.04
Bixa arborea	24.06	21.81	2.25	22.70	0.75	0.80	0.29	0.51	0.64	0.65
Bixa orellana	24.47	21.67	2.80	22.28	0.70	0.78	0.62	0.16	0.74	0.78
Blanchetiodendron blanchetii	24.04	19.83	4.21	21.63	0.61	1.00	0.71	0.30	0.87	0.96
Blepharocalyx salicifolius	24.33	10.40	13.93	18.13	0.15	0.98	0.10	0.88	0.40	0.21
Boehmeria caudata	21.81	15.29	6.52	18.90	0.23	0.79	0.11	0.69	0.36	0.16

Bonnetia stricta	22.76	22.03	0.74	22.58	0.79	0.57	0.44	0.14	0.52	0.43
Bougainvillea glabra	24.45	18.99	5.46	22.13	0.67	1.02	0.36	0.66	0.57	0.51
Bougainvillea praecox	24.35	20.79	3.56	22.97	0.81	1.02	0.64	0.38	0.83	0.93
Bougainvillea spectabilis	21.57	18.71	2.87	20.93	0.55	0.43	0.28	0.15	0.39	0.21
Bowdichia virgilioides	25.59	18.05	7.54	23.20	0.84	1.14	0.29	0.86	0.66	0.69
Brasiliopuntia brasiliensis	23.41	22.52	0.89	23.03	0.80	0.57	0.32	0.25	0.42	0.26
Brosimum conduru	24.70	21.80	2.90	24.14	0.93	0.67	0.61	0.07	0.63	0.60
Brosimum gaudichaudii	24.81	17.41	7.41	22.89	0.77	1.01	0.35	0.66	0.77	0.86
Brosimum glaucum	23.94	20.09	3.85	21.83	0.63	0.67	0.32	0.35	0.56	0.51
Brosimum glaziovii	23.82	17.00	6.82	19.94	0.38	0.86	0.16	0.70	0.61	0.58
Brosimum guianense	25.59	18.13	7.46	22.88	0.80	0.87	0.14	0.73	0.60	0.55
Brosimum lactescens	23.40	17.04	6.36	20.02	0.36	0.87	0.14	0.73	0.39	0.22
Brosimum rubescens	25.59	23.55	2.03	24.64	0.99	0.66	0.14	0.52	0.29	0.12
Brunfelsia pilosa	17.66	14.15	3.51	16.95	0.08	0.21	0.16	0.05	0.21	0.07
Brunfelsia uniflora	24.93	18.69	6.24	21.24	0.56	0.83	0.63	0.20	0.74	0.79
Buchenavia hoehneana	24.35	18.65	5.69	22.14	0.69	0.78	0.64	0.14	0.69	0.71
Buchenavia kleinii	23.01	16.69	6.32	20.56	0.49	0.63	0.23	0.40	0.38	0.21
Buchenavia tetraphylla	25.50	19.13	6.37	22.00	0.65	0.87	0.15	0.72	0.68	0.70
Buchenavia tomentosa	24.62	15.29	9.32	20.60	0.50	0.99	0.17	0.83	0.82	0.93
Bunchosia maritima	21.21	18.37	2.83	19.61	0.33	0.60	0.25	0.35	0.43	0.27
Bunchosia pallescens	21.38	18.73	2.65	20.33	0.46	0.76	0.27	0.49	0.48	0.36
Butia capitata	22.36	18.98	3.38	18.99	0.26	0.90	0.16	0.74	0.17	0.02
Byrsonima cacaophila	23.40	20.59	2.81	22.09	0.67	0.60	0.27	0.33	0.45	0.32
Byrsonima coccolobifolia	23.08	21.37	1.71	22.69	0.74	0.98	0.79	0.19	0.84	0.94
Byrsonima crassifolia	24.07	15.29	8.78	20.09	0.40	0.97	0.70	0.27	0.80	0.91
Byrsonima crispa	24.33	19.13	5.20	20.76	0.49	0.83	0.19	0.64	0.73	0.79
Byrsonima intermedia	24.04	21.37	2.67	22.03	0.71	1.00	0.47	0.53	0.84	0.94
Byrsonima japurensis	24.62	14.59	10.03	16.98	0.09	0.66	0.17	0.50	0.55	0.48
Byrsonima laxiflora	23.34	10.40	12.94	19.38	0.27	0.90	0.62	0.28	0.74	0.77
Byrsonima ligustrifolia	23.14	13.88	9.26	19.94	0.38	0.78	0.14	0.64	0.34	0.16
Byrsonima myricifolia	20.88	15.97	4.91	17.67	0.11	0.79	0.36	0.43	0.55	0.50
Byrsonima pachyphylla	23.08	16.83	6.26	21.30	0.57	0.98	0.71	0.26	0.87	0.96
Byrsonima sericea	25.59	19.22	6.37	23.79	0.89	0.98	0.17	0.81	0.63	0.64
Byrsonima stipulacea	24.62	15.97	8.65	21.44	0.61	0.86	0.17	0.69	0.57	0.51
Byrsonima verbascifolia	21.96	16.30	5.66	19.73	0.32	0.99	0.60	0.39	0.77	0.87
Cabralea canjerana	24.70	10.40	14.30	17.54	0.12	1.02	0.10	0.92	0.51	0.43
Calliandra foliolosa	24.21	16.99	7.22	20.05	0.43	1.02	0.13	0.89	0.47	0.36
Calliandra tweedii	22.36	16.82	5.54	19.42	0.31	0.73	0.11	0.63	0.38	0.20
Callisthene fasciculata	24.20	13.55	10.64	22.34	0.70	0.99	0.70	0.29	0.92	0.98
Callisthene major	24.71	16.56	8.15	20.07	0.39	1.02	0.14	0.87	0.67	0.69
Callisthene minor	23.22	13.62	9.59	20.67	0.48	0.91	0.73	0.17	0.76	0.82
Calophyllum brasiliense	23.54	17.77	5.77	20.85	0.51	0.89	0.30	0.59	0.59	0.55
Calyptranthes brasiliensis	25.02	10.40	14.62	18.04	0.15	0.84	0.37	0.47	0.68	0.71
Calyptranthes clusiifolia	24.71	10.40	14.31	19.22	0.27	0.90	0.14	0.75	0.73	0.77
Calyptranthes concinna	23.14	12.91	10.23	17.75	0.11	0.84	0.10	0.75	0.43	0.31
Calyptranthes fusiformis	21.17	16.07	5.10	17.05	0.08	0.49	0.36	0.13	0.41	0.29
Calyptranthes glazioviana	24.71	24.16	0.55	24.51	0.97	0.21	0.14	0.07	0.16	0.01
Calyptranthes grandiflora	24.71	18.28	6.43	23.85	0.89	0.78	0.14	0.63	0.19	0.06

Calyptranthes grandifolia	25.02	13.03	11.99	18.86	0.23	0.89	0.14	0.75	0.45	0.30
Calyptranthes lanceolata	22.57	18.00	4.57	21.38	0.56	0.56	0.37	0.19	0.47	0.32
Calyptranthes lucida	24.40	13.55	10.85	19.37	0.32	0.86	0.14	0.72	0.41	0.26
Calyptranthes maritima	23.01	17.27	5.73	19.72	0.32	0.48	0.41	0.07	0.46	0.34
Calyptranthes rubella	22.32	20.80	1.51	21.70	0.63	0.44	0.35	0.10	0.41	0.27
Calyptranthes strigipes	23.01	13.88	9.12	20.56	0.48	0.70	0.21	0.50	0.41	0.27
Calyptranthes tricona	19.93	18.22	1.71	18.73	0.22	0.23	0.13	0.10	0.17	0.02
Calyptranthes widgreniana	21.44	10.40	11.03	16.30	0.05	0.87	0.66	0.21	0.73	0.78
Campomanesia aromatica	24.47	21.22	3.25	23.07	0.79	0.92	0.37	0.55	0.75	0.80
Campomanesia dichotoma	25.50	20.59	4.91	24.97	1.00	0.87	0.17	0.71	0.63	0.63
Campomanesia espiritosantensis	23.40	22.80	0.60	23.30	0.84	0.58	0.48	0.10	0.50	0.40
Campomanesia eugenioides	22.87	15.97	6.90	19.36	0.26	1.14	0.38	0.77	0.65	0.69
Campomanesia guaviroba	23.52	13.54	9.98	19.63	0.33	0.98	0.14	0.83	0.50	0.38
Campomanesia guazumifolia	24.71	14.32	10.39	19.65	0.34	0.99	0.12	0.87	0.47	0.33
Campomanesia laurifolia	24.64	14.59	10.05	23.08	0.81	0.88	0.15	0.73	0.36	0.18
Campomanesia lineatifolia	23.29	18.73	4.56	20.09	0.41	0.71	0.48	0.23	0.65	0.67
Campomanesia lundiana	19.87	15.29	4.58	18.40	0.18	0.86	0.76	0.10	0.78	0.87
Campomanesia neriiflora	23.14	17.19	5.94	21.29	0.57	0.70	0.37	0.33	0.47	0.36
Campomanesia phaea	21.90	16.07	5.82	18.10	0.16	0.84	0.36	0.48	0.60	0.55
Campomanesia pubescens	18.34	16.30	2.05	16.90	0.09	0.77	0.50	0.27	0.55	0.50
Campomanesia reitziana	21.29	17.90	3.39	18.69	0.19	0.61	0.27	0.34	0.38	0.21
Campomanesia schlechtendaliana	23.01	18.00	5.01	21.95	0.65	0.52	0.42	0.10	0.44	0.25
Campomanesia sessiliflora	24.35	13.99	10.36	22.94	0.78	1.02	0.64	0.38	0.98	0.99
Campomanesia velutina	24.04	16.54	7.50	21.70	0.62	1.00	0.75	0.25	0.84	0.93
Campomanesia xanthocarpa	25.49	13.00	12.49	20.66	0.49	1.00	0.10	0.90	0.42	0.23
Capsicum campylopodium	22.04	13.96	8.08	15.42	0.04	0.80	0.63	0.17	0.70	0.75
Caraipa densifolia	25.14	24.30	0.84	24.55	0.98	0.62	0.51	0.11	0.61	0.59
Cardiopetalum calophyllum	22.87	20.20	2.68	21.47	0.61	0.90	0.70	0.20	0.82	0.91
Carica papaya	24.20	19.26	4.94	20.98	0.53	0.99	0.27	0.72	0.74	0.80
Cariniana estrellensis	24.35	13.62	10.72	20.28	0.42	0.97	0.20	0.77	0.63	0.64
Cariniana legalis	25.21	18.13	7.08	20.53	0.51	1.02	0.27	0.75	0.69	0.69
Carpotroche brasiliensis	24.81	13.62	11.19	21.84	0.67	0.87	0.14	0.73	0.57	0.51
Caryocar brasiliense	24.20	18.05	6.15	21.41	0.59	0.99	0.70	0.29	0.87	0.95
Caryocar edule	24.66	20.59	4.08	23.43	0.86	0.78	0.15	0.64	0.33	0.16
Caryodendron janeirense	23.40	22.04	1.36	23.00	0.81	0.63	0.35	0.27	0.44	0.32
Casearia aculeata	23.03	18.99	4.04	19.88	0.37	1.14	0.35	0.80	0.75	0.81
Casearia arborea	25.49	11.46	14.03	20.35	0.42	1.00	0.14	0.86	0.71	0.76
Casearia bahiensis	24.78	20.59	4.20	24.32	0.95	0.60	0.14	0.46	0.19	0.06
Casearia commersoniana	24.78	16.54	8.25	24.04	0.93	0.83	0.14	0.69	0.26	0.10
Casearia decandra	24.51	13.00	11.51	17.78	0.13	1.01	0.10	0.92	0.41	0.28
Casearia gossypiosperma	24.72	13.88	10.84	20.64	0.45	1.02	0.27	0.75	0.61	0.59
Casearia grandiflora	21.20	20.59	0.61	20.61	0.47	0.85	0.78	0.07	0.84	0.93
Casearia javitensis	25.59	20.09	5.49	23.71	0.89	0.84	0.17	0.67	0.58	0.55
Casearia lasiophylla	24.07	13.54	10.53	18.77	0.21	0.97	0.20	0.77	0.69	0.70
Casearia mariquitensis	23.27	18.28	4.99	21.62	0.62	0.86	0.46	0.40	0.84	0.93
Casearia melliodora	22.11	14.31	7.80	17.50	0.10	0.78	0.27	0.52	0.56	0.48
Casearia obliqua	22.93	13.54	9.39	18.29	0.16	0.87	0.13	0.75	0.50	0.38

Casearia oblongifolia	24.64	13.55	11.09	23.98	0.91	0.70	0.15	0.55	0.22	0.09
Casearia pauciflora	22.54	15.97	6.57	17.31	0.10	0.85	0.35	0.50	0.70	0.74
Casearia rupestris	23.94	18.84	5.10	22.34	0.72	0.99	0.43	0.56	0.84	0.93
Casearia selloana	24.35	20.26	4.08	23.93	0.91	1.03	0.48	0.55	0.90	0.98
Casearia sylvestris	25.21	13.00	12.22	19.32	0.30	0.98	0.10	0.88	0.43	0.29
Casearia ulmifolia	23.64	13.54	10.09	19.56	0.34	0.87	0.41	0.46	0.77	0.85
Cassia ferruginea	24.70	13.99	10.71	19.01	0.24	1.14	0.15	0.99	0.72	0.75
Cassia grandis	25.06	18.81	6.25	24.36	0.96	0.70	0.62	0.08	0.63	0.61
Cassia leptophylla	18.73	16.97	1.76	18.09	0.14	0.41	0.26	0.14	0.35	0.18
Cathedra rubricaulis	23.41	22.62	0.80	23.04	0.82	0.58	0.37	0.21	0.40	0.23
Cavanillesia umbellata	24.62	18.13	6.49	23.87	0.92	1.02	0.27	0.75	0.97	0.98
Cecropia glaziovii	25.49	14.79	10.69	20.50	0.46	0.86	0.14	0.72	0.57	0.51
Cecropia hololeuca	25.59	14.59	11.00	19.65	0.37	0.84	0.27	0.58	0.71	0.71
Cecropia pachystachya	25.59	15.29	10.30	22.12	0.70	1.02	0.16	0.86	0.58	0.56
Cecropia palmata	24.93	21.22	3.71	23.02	0.81	0.92	0.64	0.29	0.75	0.83
Cedrela fissilis	24.72	13.55	11.17	18.98	0.23	1.02	0.10	0.92	0.46	0.34
Cedrela odorata	24.79	15.97	8.82	19.71	0.31	1.14	0.19	0.96	0.65	0.65
Ceiba erianthos	24.35	19.09	5.25	23.21	0.84	0.64	0.32	0.32	0.50	0.39
Ceiba glaziovii	23.15	19.98	3.17	22.43	0.71	1.14	0.66	0.48	0.80	0.91
Ceiba pubiflora	24.72	23.58	1.14	24.50	0.96	1.02	0.48	0.54	0.78	0.88
Ceiba speciosa	23.16	15.51	7.65	19.74	0.34	1.01	0.13	0.87	0.67	0.67
Celtis brasiliensis	24.45	13.67	10.78	20.07	0.36	1.02	0.16	0.86	0.70	0.74
Celtis iguanaea	24.35	14.15	10.20	20.66	0.50	1.01	0.10	0.92	0.56	0.49
Centrolobium microchaete	24.33	20.23	4.11	21.44	0.60	1.00	0.19	0.82	0.42	0.26
Centrolobium robustum	21.52	18.95	2.57	20.34	0.43	0.72	0.23	0.49	0.45	0.32
Centrolobium sclerophyllum	24.21	21.52	2.69	23.23	0.84	1.02	0.46	0.56	0.68	0.68
Centrolobium tomentosum	24.45	14.79	9.66	19.77	0.33	1.02	0.27	0.75	0.63	0.64
Cereus hildmannianus	22.36	16.56	5.80	17.65	0.12	0.71	0.18	0.53	0.25	0.12
Cereus jamacaru	24.35	19.98	4.37	23.03	0.81	1.14	0.64	0.51	0.89	0.96
Cestrum axillare	24.47	10.40	14.07	16.65	0.07	0.90	0.42	0.48	0.58	0.55
Cestrum bracteatum	21.28	14.55	6.73	18.31	0.16	0.77	0.21	0.56	0.53	0.46
Cestrum intermedium	21.57	14.37	7.20	16.63	0.06	0.86	0.11	0.76	0.34	0.15
Cestrum schlechtendalii	22.04	14.31	7.73	19.60	0.32	0.83	0.37	0.46	0.71	0.76
Cestrum strigilatum	21.57	15.42	6.16	19.27	0.33	0.64	0.16	0.48	0.42	0.29
Chaetocarpus echinocarpus	24.78	19.81	4.97	23.30	0.83	0.87	0.45	0.43	0.55	0.46
Chaetocarpus myrsinites	25.14	22.69	2.44	24.68	0.99	0.66	0.44	0.22	0.58	0.53
Chamaecrista bahiae	25.50	19.85	5.65	25.11	1.00	0.78	0.49	0.29	0.73	0.78
Chamaecrista duartei	24.78	24.16	0.63	24.49	0.97	0.21	0.14	0.07	0.16	0.02
Chamaecrista ensiformis	25.02	21.80	3.23	23.25	0.83	0.66	0.15	0.51	0.54	0.46
Cheiloclinium cognatum	24.33	15.29	9.04	21.01	0.52	0.98	0.15	0.82	0.76	0.85
Chionanthus crassifolius	19.81	16.83	2.98	18.39	0.17	0.87	0.48	0.39	0.65	0.67
Chionanthus filiformis	22.62	13.88	8.74	19.13	0.26	0.91	0.15	0.76	0.44	0.29
Chionanthus micranthus	23.41	17.88	5.53	21.25	0.54	0.71	0.41	0.30	0.51	0.41
Chionanthus trichotomus	21.32	14.55	6.77	19.29	0.30	0.82	0.14	0.68	0.69	0.70
Chloroleucon dumosum	24.30	19.98	4.33	23.60	0.88	1.14	0.87	0.27	1.00	0.99
Chloroleucon foliolosum	24.30	17.17	7.13	22.53	0.74	1.03	0.66	0.37	0.92	0.97
Chloroleucon tortum	24.30	20.70	3.61	22.63	0.75	1.02	0.73	0.29	0.95	0.97
Chomelia anisomeris	24.78	24.34	0.44	24.48	0.98	0.50	0.48	0.03	0.50	0.40

Chomelia brasiliana	21.17	13.54	7.63	16.41	0.05	0.77	0.42	0.35	0.73	0.78
Chomelia obtusa	24.70	16.56	8.14	19.46	0.29	0.97	0.10	0.88	0.21	0.07
Chomelia parvifolia	21.03	16.98	4.05	18.87	0.22	0.61	0.45	0.16	0.50	0.40
Chomelia pedunculosa	21.17	17.27	3.90	19.94	0.36	0.49	0.47	0.02	0.48	0.35
Chomelia pohliana	22.07	16.07	5.99	17.73	0.12	0.90	0.36	0.54	0.54	0.47
Chomelia pubescens	23.52	20.09	3.42	22.23	0.68	0.67	0.49	0.17	0.58	0.56
Chomelia ribesioides	22.22	18.37	3.85	20.81	0.51	0.86	0.60	0.26	0.76	0.83
Chomelia sericea	23.94	15.29	8.64	20.36	0.43	1.01	0.68	0.33	0.78	0.87
Christiana macrodon	21.42	20.50	0.92	21.24	0.56	0.76	0.59	0.17	0.70	0.71
Chrysophyllum flexuosum	24.62	16.07	8.54	21.71	0.61	0.87	0.17	0.71	0.50	0.44
Chrysophyllum gonocarpum	24.78	12.62	12.16	20.48	0.46	0.98	0.10	0.88	0.50	0.39
Chrysophyllum inornatum	21.80	13.88	7.92	20.01	0.41	0.70	0.14	0.56	0.31	0.14
Chrysophyllum januariense	23.41	22.56	0.86	22.93	0.79	0.49	0.32	0.17	0.39	0.19
Chrysophyllum lucentifolium	24.78	19.18	5.61	22.95	0.81	0.77	0.17	0.61	0.46	0.35
Chrysophyllum marginatum	22.80	13.62	9.18	19.37	0.30	0.98	0.10	0.88	0.42	0.25
Chrysophyllum rufum	24.78	20.53	4.25	23.45	0.85	0.66	0.45	0.21	0.52	0.45
Chrysophyllum splendens	25.49	20.59	4.90	23.60	0.86	0.68	0.14	0.54	0.35	0.17
Chrysophyllum viride	23.01	14.37	8.63	18.30	0.17	0.78	0.14	0.64	0.37	0.17
Cinnamodendron dinisii	24.21	14.15	10.06	16.81	0.06	1.00	0.13	0.86	0.27	0.11
Cinnamomum amoenum	18.98	11.84	7.14	16.58	0.07	0.29	0.14	0.16	0.19	0.05
Cinnamomum hirsutum	18.81	16.98	1.83	18.00	0.10	0.86	0.47	0.39	0.73	0.79
Cinnamomum pseudoglaziovii	22.78	14.37	8.40	17.23	0.07	0.86	0.14	0.73	0.39	0.21
Cinnamomum sellowianum	20.71	13.55	7.17	15.43	0.03	0.71	0.20	0.50	0.52	0.43
Cinnamomum stenophyllum	18.13	13.88	4.25	14.53	0.02	0.83	0.48	0.35	0.69	0.70
Cinnamomum triplinerve	24.70	10.40	14.30	18.01	0.15	0.86	0.28	0.59	0.70	0.75
Citharexylum montevidense	19.23	16.82	2.42	18.33	0.15	0.22	0.10	0.12	0.20	0.06
Citharexylum myrianthum	23.01	16.83	6.18	18.89	0.26	0.81	0.16	0.65	0.48	0.39
Citharexylum solanaceum	19.11	15.44	3.67	17.16	0.09	0.21	0.17	0.04	0.19	0.05
Citronella gongonha	20.83	13.67	7.15	17.86	0.13	0.87	0.16	0.71	0.50	0.41
Citronella paniculata	23.82	10.40	13.42	18.44	0.18	0.87	0.10	0.77	0.55	0.48
Citrus reticulata	21.52	19.93	1.59	20.77	0.50	0.72	0.14	0.58	0.55	0.49
Citrus X aurantium	23.03	17.90	5.13	21.29	0.57	0.68	0.10	0.58	0.38	0.19
Citrus X limon	22.90	17.17	5.72	20.18	0.40	0.90	0.19	0.71	0.61	0.59
Clarisia ilicifolia	24.33	18.99	5.35	20.84	0.50	0.99	0.19	0.80	0.64	0.65
Clarisia racemosa	24.70	20.47	4.23	23.43	0.86	0.71	0.14	0.57	0.49	0.40
Clethra scabra	23.14	10.40	12.74	17.36	0.09	0.87	0.14	0.74	0.57	0.51
Clusia criuva	23.14	15.29	7.85	21.02	0.51	0.85	0.18	0.68	0.39	0.23
Clusia nemorosa	25.49	18.13	7.36	22.60	0.78	0.92	0.17	0.76	0.71	0.76
Clusia organensis	22.11	16.51	5.60	18.83	0.24	0.83	0.66	0.16	0.79	0.88
Cnidoscolus bahianus	24.62	23.69	0.93	24.09	0.93	1.02	0.97	0.05	1.00	0.99
Cnidoscolus oligandrus	24.62	19.91	4.71	22.50	0.75	1.01	0.27	0.74	0.77	0.85
Coccoloba alnifolia	25.38	17.77	7.62	22.51	0.72	0.97	0.19	0.79	0.63	0.60
Coccoloba arborescens	22.69	17.90	4.80	20.54	0.47	0.64	0.50	0.13	0.59	0.57
Coccoloba cordata	20.22	18.86	1.36	19.42	0.27	0.60	0.19	0.41	0.35	0.16
Coccoloba declinata	24.78	20.10	4.69	22.85	0.78	0.97	0.15	0.82	0.44	0.31
Coccoloba glaziovii	24.33	16.07	8.26	19.33	0.28	0.71	0.19	0.53	0.52	0.44
Coccoloba latifolia	25.02	18.00	7.03	22.46	0.72	0.66	0.49	0.17	0.64	0.62
Coccoloba mollis	25.36	17.92	7.43	23.43	0.87	1.00	0.48	0.52	0.76	0.83

Coccoloba parimensis	24.78	22.24	2.55	24.17	0.93	0.63	0.17	0.46	0.42	0.26
Coccoloba schwackeana	24.30	21.13	3.17	23.79	0.89	1.02	0.99	0.03	1.01	0.99
Coccoloba striata	22.87	18.04	4.83	20.43	0.45	0.62	0.49	0.12	0.55	0.48
Coccoloba warmingii	24.20	16.98	7.21	19.44	0.31	0.99	0.23	0.76	0.70	0.73
Cochlospermum vitifolium	24.30	21.13	3.17	22.13	0.68	1.02	0.83	0.19	0.96	0.98
Coffea arabica	21.40	18.34	3.06	19.87	0.37	0.77	0.68	0.09	0.73	0.78
Colubrina glandulosa	25.49	17.45	8.04	20.03	0.38	0.92	0.20	0.72	0.72	0.74
Colubrina retusa	22.57	22.36	0.21	22.46	0.73	0.42	0.41	0.01	0.41	0.26
Combretum duarteanum	24.30	21.13	3.17	23.59	0.87	1.02	0.46	0.56	0.98	0.98
Combretum leprosum	24.72	21.69	3.04	23.42	0.86	1.02	0.48	0.54	0.95	0.97
Commiphora leptophloeos	24.62	19.98	4.64	23.37	0.86	1.14	0.56	0.59	0.93	0.98
Connarus detersus	23.40	21.96	1.44	22.34	0.71	0.64	0.49	0.15	0.61	0.58
Connarus perrottetii	21.81	19.81	2.00	20.84	0.55	0.87	0.71	0.17	0.76	0.85
Connarus regnellii	24.21	14.79	9.41	18.44	0.17	1.00	0.42	0.58	0.73	0.76
Connarus suberosus	22.83	16.54	6.29	17.43	0.10	0.90	0.83	0.07	0.84	0.94
Copaifera langsdorffii	24.70	16.30	8.40	19.84	0.37	0.98	0.17	0.81	0.73	0.79
Copaifera lucens	24.78	19.09	5.69	22.61	0.77	0.68	0.15	0.53	0.46	0.35
Copaifera multijuga	24.64	24.16	0.48	24.36	0.95	0.21	0.15	0.07	0.18	0.03
Copaifera trapezifolia	24.71	16.83	7.89	19.79	0.36	0.81	0.14	0.66	0.53	0.48
Cordia alliodora	25.14	21.11	4.02	22.72	0.76	0.87	0.27	0.61	0.76	0.86
Cordia americana	23.16	16.95	6.21	18.93	0.23	0.76	0.10	0.66	0.21	0.06
Cordia anabaptista	23.64	20.59	3.05	23.09	0.80	0.83	0.41	0.41	0.47	0.35
Cordia ecalyculata	24.78	13.55	11.24	20.00	0.41	1.02	0.10	0.91	0.44	0.32
Cordia gardneri	23.52	19.31	4.21	21.22	0.54	0.78	0.52	0.26	0.71	0.75
Cordia glabrata	24.72	18.05	6.67	23.60	0.87	1.02	0.48	0.54	0.83	0.92
Cordia incognita	24.20	23.04	1.15	23.18	0.85	1.03	0.97	0.06	1.03	1.00
Cordia magnoliifolia	24.64	17.17	7.46	22.84	0.77	0.77	0.15	0.63	0.30	0.13
Cordia nodosa	25.49	18.96	6.52	22.48	0.71	0.87	0.15	0.72	0.59	0.58
Cordia rufescens	21.22	18.71	2.52	19.82	0.39	0.83	0.27	0.56	0.32	0.14
Cordia sagotii	24.78	24.34	0.44	24.66	0.99	0.50	0.48	0.03	0.48	0.36
Cordia sellowiana	25.49	12.62	12.86	19.82	0.36	0.90	0.16	0.74	0.65	0.64
Cordia silvestris	24.46	16.69	7.77	21.29	0.57	0.80	0.15	0.65	0.40	0.23
Cordia superba	25.50	13.62	11.87	21.95	0.66	1.02	0.29	0.73	0.70	0.74
Cordia taguahyensis	24.79	15.29	9.49	22.18	0.67	0.78	0.14	0.65	0.45	0.33
Cordia toqueve	24.78	18.34	6.44	23.22	0.85	0.78	0.17	0.61	0.60	0.58
Cordia trachyphylla	24.78	20.53	4.25	22.45	0.72	0.78	0.17	0.61	0.40	0.21
Cordia trichoclada	24.62	13.62	10.99	19.61	0.34	0.98	0.17	0.81	0.61	0.61
Cordia trichotoma	25.36	13.62	11.73	20.44	0.43	1.14	0.10	1.04	0.59	0.56
Cordiera concolor	23.64	12.91	10.73	19.46	0.29	0.93	0.18	0.75	0.63	0.62
Cordiera elliptica	24.03	13.62	10.40	18.73	0.24	0.98	0.15	0.82	0.73	0.77
Cordiera macrophylla	22.02	18.28	3.75	21.59	0.63	0.91	0.73	0.18	0.83	0.91
Cordiera myrciifolia	24.71	16.07	8.64	21.41	0.55	0.76	0.14	0.62	0.33	0.13
Cordiera sessilis	25.50	10.40	15.10	20.91	0.53	0.98	0.48	0.49	0.81	0.91
Cordiera vinosa	24.20	16.83	7.37	18.65	0.19	0.99	0.77	0.22	0.80	0.89
Cordyline spectabilis	21.28	16.98	4.29	18.32	0.17	0.71	0.24	0.47	0.31	0.16
Couepia belemii	24.71	23.97	0.74	24.39	0.94	0.21	0.14	0.07	0.17	0.03
Couepia bondarii	24.62	23.97	0.64	24.09	0.93	0.19	0.17	0.02	0.18	0.03
Couepia impressa	24.78	20.59	4.20	22.77	0.79	0.60	0.14	0.46	0.38	0.19

Couepia monteclarensis	22.78	15.29	7.49	21.73	0.61	0.90	0.70	0.20	0.79	0.88
Couepia rufa	25.02	21.80	3.23	23.42	0.87	0.78	0.61	0.18	0.68	0.66
Couepia schottii	23.82	22.67	1.15	22.92	0.78	0.57	0.37	0.20	0.41	0.24
Couepia venosa	23.14	16.51	6.63	20.50	0.45	0.66	0.41	0.25	0.47	0.36
Couratari asterotricha	24.06	20.09	3.96	22.77	0.78	0.72	0.29	0.43	0.55	0.47
Couratari macrosperma	23.64	21.52	2.12	22.27	0.70	0.72	0.41	0.31	0.62	0.61
Couratari pyramidata	22.52	15.97	6.56	20.66	0.49	0.75	0.49	0.26	0.57	0.53
Coussapoa curranii	23.40	20.66	2.73	21.90	0.66	0.78	0.27	0.52	0.67	0.66
Coussapoa microcarpa	24.72	14.59	10.13	19.83	0.36	0.87	0.14	0.73	0.38	0.19
Coussapoa pachyphylla	24.78	20.59	4.20	24.15	0.94	0.60	0.14	0.45	0.17	0.03
Coussarea accedens	23.01	19.49	3.51	21.83	0.63	0.49	0.41	0.08	0.45	0.32
Coussarea contracta	24.81	14.59	10.23	18.75	0.21	0.92	0.12	0.80	0.28	0.10
Coussarea graciliflora	24.78	18.84	5.95	23.09	0.82	0.59	0.14	0.45	0.36	0.17
Coussarea hydrangeifolia	23.58	18.13	5.46	21.87	0.66	0.92	0.36	0.57	0.79	0.87
Coussarea meridionalis	23.11	17.35	5.76	22.13	0.70	0.64	0.35	0.28	0.45	0.33
Coussarea nodosa	25.14	18.34	6.79	21.51	0.59	0.77	0.35	0.41	0.50	0.44
Coussarea platyphylla	22.60	22.30	0.31	22.57	0.74	0.42	0.41	0.01	0.42	0.26
Coussarea verticillata	21.90	16.54	5.36	18.65	0.20	0.86	0.71	0.14	0.78	0.89
Coutarea hexandra	23.82	13.54	10.28	19.73	0.35	0.98	0.14	0.84	0.73	0.80
Crateva tapia	25.21	22.87	2.34	23.78	0.90	0.64	0.41	0.23	0.54	0.48
Crepidospermum atlanticum	23.82	18.99	4.84	21.94	0.66	0.91	0.37	0.53	0.63	0.64
Critoniopsis quinqueflora	18.81	16.07	2.74	16.48	0.06	0.49	0.36	0.13	0.38	0.19
Critoniopsis stellata	19.09	16.51	2.58	17.28	0.11	0.66	0.52	0.14	0.65	0.65
Croton argyrophylloides	24.30	22.32	1.99	22.83	0.79	1.03	0.87	0.16	0.98	0.99
Croton celtidifolius	22.80	13.03	9.77	16.64	0.07	0.87	0.42	0.46	0.76	0.84
Croton echinocarpus	22.11	13.55	8.56	16.12	0.04	0.84	0.70	0.14	0.74	0.81
Croton floribundus	22.78	14.79	7.98	19.58	0.30	0.88	0.27	0.61	0.61	0.59
Croton hemiargyreus	19.39	19.18	0.21	19.19	0.28	0.77	0.77	0.00	0.77	0.86
Croton macrobothrys	24.72	14.59	10.13	18.58	0.19	0.77	0.14	0.63	0.38	0.21
Croton organensis	18.73	13.96	4.77	14.50	0.02	0.78	0.60	0.18	0.73	0.78
Croton piptocalyx	24.70	10.40	14.30	17.66	0.11	0.79	0.17	0.62	0.68	0.72
Croton priscus	19.54	19.08	0.45	19.40	0.28	0.77	0.66	0.11	0.74	0.79
Croton salutaris	21.29	15.97	5.32	19.20	0.28	0.87	0.61	0.26	0.74	0.79
Croton urucurana	23.18	12.91	10.27	20.89	0.52	0.90	0.23	0.67	0.71	0.74
Cryptocarya aschersoniana	23.64	10.40	13.23	18.62	0.19	0.93	0.13	0.80	0.69	0.70
Cryptocarya mandioccana	23.01	17.00	6.00	20.27	0.44	0.61	0.24	0.37	0.46	0.33
Cryptocarya micrantha	22.59	16.51	6.07	20.92	0.51	0.77	0.51	0.26	0.58	0.54
Cryptocarya moschata	23.40	14.59	8.81	19.14	0.27	0.77	0.12	0.65	0.42	0.26
Cryptocarya saligna	23.40	13.96	9.44	19.20	0.27	0.79	0.35	0.44	0.48	0.37
Cupania bracteosa	24.36	21.54	2.82	24.19	0.94	0.51	0.27	0.24	0.50	0.41
Cupania concolor	21.65	16.69	4.96	19.57	0.34	0.63	0.37	0.26	0.43	0.29
Cupania emarginata	23.51	15.29	8.22	20.44	0.45	0.84	0.41	0.43	0.64	0.64
Cupania furfuracea	23.01	14.59	8.42	21.65	0.60	0.97	0.35	0.62	0.54	0.47
Cupania impressinervia	25.49	19.13	6.36	24.43	0.96	0.78	0.61	0.17	0.64	0.66
Cupania ludowigii	22.13	14.55	7.58	19.40	0.34	0.88	0.63	0.25	0.77	0.85
Cupania oblongifolia	25.59	13.54	12.05	20.81	0.50	0.92	0.14	0.78	0.54	0.48
Cupania paniculata	22.80	13.54	9.26	19.09	0.25	0.86	0.45	0.41	0.68	0.70
Cupania racemosa	25.59	13.62	11.96	22.88	0.78	0.87	0.17	0.71	0.61	0.58

Cupania rugosa	24.78	20.09	4.69	24.07	0.92	0.67	0.14	0.53	0.44	0.29
Cupania scrobiculata	23.82	22.80	1.02	23.49	0.85	0.58	0.37	0.21	0.49	0.40
Cupania tenuivalvis	22.78	19.18	3.60	19.67	0.33	0.98	0.36	0.62	0.76	0.83
Cupania vernalis	24.93	12.62	12.31	18.46	0.20	0.98	0.10	0.88	0.40	0.23
Cupania zanthoxyloides	24.47	14.31	10.16	20.49	0.49	0.86	0.41	0.44	0.66	0.67
Curatella americana	24.78	19.78	5.00	23.06	0.81	1.02	0.48	0.54	0.73	0.79
Curitiba prismatica	17.69	16.97	0.72	17.20	0.07	0.30	0.26	0.04	0.27	0.12
Cyathea atrovirens	22.79	12.62	10.17	20.53	0.49	0.76	0.13	0.63	0.36	0.16
Cyathea corcovadensis	24.71	14.31	10.40	19.28	0.29	0.83	0.14	0.69	0.43	0.27
Cyathea delgadii	22.54	14.31	8.23	17.29	0.10	0.81	0.18	0.63	0.42	0.24
Cyathea dichromatolepis	19.49	14.31	5.18	17.43	0.12	0.75	0.36	0.39	0.49	0.39
Cyathea gardneri	17.92	14.31	3.61	15.29	0.03	0.77	0.75	0.02	0.75	0.83
Cyathea leucofolis	22.09	20.81	1.28	21.09	0.56	0.41	0.37	0.04	0.38	0.20
Cyathea phalerata	23.14	10.40	12.74	18.16	0.15	0.83	0.20	0.63	0.42	0.27
Cybianthus cuneifolius	20.88	13.99	6.89	18.07	0.13	0.79	0.45	0.34	0.61	0.60
Cybianthus peruvianus	22.52	15.72	6.81	21.01	0.53	0.86	0.21	0.65	0.41	0.25
Cybistax antisyphilitica	24.20	12.62	11.57	20.63	0.51	0.99	0.18	0.81	0.65	0.66
Cyclolobium brasiliense	23.28	18.84	4.44	21.71	0.62	0.91	0.43	0.48	0.79	0.88
Cymbopetalum brasiliense	24.81	15.97	8.85	21.01	0.51	0.87	0.62	0.25	0.74	0.82
Cynophalla flexuosa	25.21	19.98	5.24	23.82	0.90	1.14	0.32	0.82	0.65	0.67
Cynophalla hastata	25.50	22.52	2.98	22.63	0.76	0.75	0.32	0.43	0.33	0.15
Cyrtocarpa caatingae	24.62	20.53	4.09	22.94	0.80	1.03	0.45	0.59	0.77	0.86
Dahlstedtia floribunda	22.30	16.99	5.31	19.10	0.26	0.68	0.21	0.48	0.43	0.30
Dahlstedtia muehlbergiana	22.53	15.29	7.24	19.82	0.34	0.87	0.14	0.73	0.61	0.58
Dahlstedtia pentaphylla	22.10	18.09	4.01	20.53	0.48	0.50	0.21	0.30	0.37	0.21
Dahlstedtia pinnata	23.14	16.69	6.45	20.44	0.45	0.71	0.13	0.58	0.46	0.33
Dalbergia brasiliensis	21.29	16.30	4.99	18.36	0.18	0.90	0.24	0.66	0.43	0.30
Dalbergia cearensis	24.30	23.69	0.61	23.72	0.89	1.02	0.97	0.05	1.02	1.00
Dalbergia elegans	23.64	19.91	3.72	23.38	0.86	0.86	0.41	0.45	0.48	0.35
Dalbergia foliolosa	24.78	13.55	11.24	18.33	0.16	1.00	0.17	0.84	0.69	0.73
Dalbergia frutescens	24.78	14.37	10.41	19.22	0.29	1.02	0.10	0.92	0.38	0.19
Dalbergia glaziovii	24.30	13.88	10.42	16.99	0.08	1.00	0.32	0.68	0.60	0.63
Dalbergia miscolobium	22.53	16.30	6.24	19.92	0.39	0.84	0.41	0.44	0.76	0.86
Dalbergia nigra	24.12	14.79	9.32	20.38	0.44	0.97	0.29	0.68	0.77	0.85
Dalbergia villosa	24.21	12.62	11.59	18.32	0.18	1.01	0.46	0.55	0.81	0.91
Daphnopsis brasiliensis	23.86	10.40	13.45	16.34	0.06	1.02	0.50	0.52	0.75	0.81
Daphnopsis coriacea	23.41	10.40	13.01	21.00	0.52	0.77	0.41	0.36	0.50	0.39
Daphnopsis fasciculata	23.28	10.40	12.88	17.95	0.13	0.91	0.14	0.77	0.70	0.74
Daphnopsis martii	22.60	14.31	8.29	18.72	0.20	0.78	0.52	0.26	0.62	0.60
Daphnopsis racemosa	24.47	15.26	9.21	20.22	0.41	0.92	0.10	0.83	0.38	0.16
Daphnopsis schwackeana	22.52	16.07	6.45	18.74	0.21	0.49	0.36	0.13	0.43	0.27
Dasyphyllum brasiliense	23.22	10.40	12.81	15.81	0.04	0.98	0.17	0.80	0.51	0.42
Dasyphyllum spinescens	19.17	12.62	6.54	16.43	0.06	0.76	0.10	0.66	0.24	0.08
Deguelia costata	24.45	19.14	5.31	22.56	0.75	1.01	0.41	0.60	0.80	0.89
Deguelia hatschbachii	22.11	17.69	4.42	18.93	0.23	0.79	0.71	0.08	0.72	0.79
Delonix regia	25.49	19.21	6.28	23.53	0.87	0.78	0.65	0.13	0.70	0.74
Dendropanax arboreus	24.70	22.24	2.46	22.60	0.75	0.63	0.62	0.01	0.63	0.61
Dendropanax brasiliensis	24.33	19.85	4.48	20.26	0.43	0.62	0.19	0.43	0.57	0.53

Dendropanax cuneatus	23.51	16.69	6.83	20.34	0.44	0.89	0.21	0.69	0.64	0.64
Dendropanax monogynus	22.79	17.76	5.03	20.52	0.49	0.53	0.35	0.17	0.46	0.34
Dialium guianense	25.49	19.60	5.89	24.31	0.95	0.79	0.14	0.65	0.56	0.53
Diatenopteryx sorbifolia	23.16	15.44	7.72	20.31	0.45	0.83	0.12	0.71	0.43	0.29
Dicksonia sellowiana	19.14	11.84	7.30	14.95	0.03	0.83	0.12	0.71	0.30	0.13
Dictyoloma vandellianum	24.06	10.40	13.65	20.76	0.51	0.88	0.29	0.59	0.63	0.61
Dilodendron bipinnatum	24.33	18.44	5.89	21.46	0.58	1.02	0.19	0.83	0.84	0.95
Dimorphandra exaltata	22.11	19.09	3.02	20.33	0.42	0.78	0.45	0.34	0.74	0.79
Dimorphandra jorgei	24.33	20.29	4.05	23.34	0.86	0.84	0.19	0.66	0.44	0.29
Dimorphandra mollis	24.21	19.78	4.43	21.27	0.58	1.00	0.78	0.22	0.86	0.94
Diospyros brasiliensis	24.93	22.10	2.83	23.11	0.83	0.64	0.46	0.18	0.49	0.41
Diospyros capreifolia	24.72	20.59	4.13	24.03	0.91	0.60	0.14	0.46	0.25	0.12
Diospyros hispida	23.58	16.56	7.02	21.79	0.61	1.01	0.27	0.73	0.85	0.95
Diospyros inconstans	22.11	15.29	6.82	18.85	0.24	0.91	0.10	0.81	0.40	0.22
Diospyros sericea	23.38	18.13	5.25	22.12	0.68	0.91	0.56	0.36	0.75	0.79
Diploon cuspidatum	25.02	14.59	10.44	21.49	0.58	0.68	0.14	0.55	0.42	0.26
Diplotropis ferruginea	23.94	19.81	4.13	21.14	0.54	0.97	0.45	0.53	0.79	0.89
Diplotropis incexis	24.78	19.60	5.18	22.24	0.71	0.67	0.17	0.50	0.56	0.50
Dipteryx alata	24.72	18.99	5.74	23.11	0.82	0.92	0.48	0.44	0.78	0.88
Dipteryx odorata	24.81	21.80	3.02	24.05	0.91	0.64	0.61	0.04	0.63	0.64
Diptychandra aurantiaca	24.30	22.82	1.48	23.76	0.88	1.01	1.00	0.01	1.00	0.99
Discophora guianensis	24.78	20.59	4.20	24.48	0.97	0.63	0.14	0.49	0.17	0.03
Dodonaea viscosa	19.96	16.95	3.01	18.90	0.25	0.68	0.16	0.51	0.18	0.06
Drimys angustifolia	14.42	11.84	2.58	12.27	0.01	0.20	0.14	0.07	0.19	0.06
Drimys brasiliensis	20.99	10.40	10.59	13.99	0.01	0.83	0.14	0.70	0.58	0.51
Drypetes sessiliflora	24.78	17.92	6.86	23.64	0.88	0.80	0.14	0.66	0.22	0.09
Duguetia bahiensis	24.78	23.40	1.39	24.26	0.94	0.49	0.17	0.33	0.25	0.10
Duguetia lanceolata	24.20	15.29	8.90	20.03	0.41	0.99	0.16	0.83	0.69	0.68
Duguetia pohliana	22.93	22.57	0.37	22.69	0.77	0.57	0.51	0.06	0.53	0.47
Duguetia riedeliana	22.93	22.32	0.62	22.50	0.73	0.87	0.32	0.55	0.46	0.32
Dulacia singularis	23.41	22.52	0.89	22.81	0.78	0.48	0.32	0.16	0.36	0.19
Duranta vestita	18.05	13.67	4.38	16.15	0.06	0.75	0.18	0.57	0.41	0.24
Duroia saccifera	23.58	20.38	3.20	21.21	0.55	0.92	0.74	0.19	0.90	0.96
Duroia valesca	24.62	18.99	5.63	21.42	0.60	0.77	0.17	0.60	0.53	0.46
Ecclinusa ramiflora	24.78	16.07	8.71	22.52	0.75	0.88	0.14	0.74	0.37	0.18
Elvasia tricarpellata	24.71	20.59	4.12	24.27	0.95	0.60	0.14	0.45	0.18	0.03
Emmotum affine	24.72	23.82	0.89	24.48	0.97	0.37	0.14	0.23	0.16	0.01
Emmotum nitens	23.94	19.81	4.13	21.62	0.62	0.90	0.32	0.58	0.77	0.84
Endlicheria glomerata	22.62	14.32	8.30	18.40	0.16	0.87	0.35	0.52	0.65	0.66
Endlicheria paniculata	25.36	13.00	12.36	19.68	0.32	0.91	0.14	0.77	0.51	0.43
Enterolobium contortisiliquum	25.21	17.49	7.72	21.75	0.65	1.02	0.10	0.92	0.70	0.73
Enterolobium gummiferum	23.58	19.14	4.45	21.92	0.63	0.98	0.70	0.27	0.87	0.95
Enterolobium monjollo	22.11	19.46	2.65	21.63	0.61	0.84	0.71	0.12	0.78	0.86
Ephedranthus dimerus	24.33	20.47	3.86	22.20	0.68	0.78	0.19	0.60	0.57	0.53
Eremanthus erythropappus	23.27	12.62	10.64	16.11	0.05	0.98	0.46	0.52	0.76	0.83
Eremanthus glomerulatus	18.98	13.62	5.36	15.66	0.05	0.81	0.75	0.06	0.77	0.84
Eremanthus incanus	20.62	13.62	6.99	20.56	0.48	0.87	0.75	0.12	0.86	0.96
Eriobotrya japonica	21.29	16.98	4.31	18.84	0.22	0.78	0.17	0.61	0.56	0.48

Eriotheca candolleana	24.04	16.51	7.53	20.23	0.42	1.00	0.41	0.59	0.77	0.84
Eriotheca globosa	24.71	18.13	6.58	23.94	0.91	0.83	0.14	0.68	0.22	0.08
Eriotheca gracilipes	25.49	21.74	3.75	23.52	0.87	0.91	0.56	0.35	0.72	0.76
Eriotheca macrophylla	25.38	19.13	6.25	23.03	0.81	0.88	0.14	0.74	0.37	0.17
Eriotheca pentaphylla	23.41	16.07	7.34	21.52	0.60	0.64	0.35	0.29	0.44	0.29
Eriotheca pubescens	22.83	18.13	4.70	21.16	0.54	0.98	0.70	0.27	0.90	0.96
Erythrina crista-galli	22.36	18.58	3.78	18.96	0.25	0.42	0.17	0.25	0.21	0.08
Erythrina falcata	24.30	14.32	9.99	18.91	0.24	1.00	0.11	0.90	0.52	0.42
Erythrina velutina	25.21	19.98	5.24	24.22	0.93	1.14	0.63	0.51	0.83	0.92
Erythrina verna	21.52	18.99	2.53	20.37	0.46	0.77	0.68	0.09	0.73	0.78
Erythroxylum affine	24.79	20.53	4.25	24.15	0.92	0.92	0.45	0.48	0.74	0.81
Erythroxylum ambiguum	21.80	16.54	5.27	17.89	0.13	0.98	0.47	0.51	0.70	0.72
Erythroxylum argentinum	19.33	16.98	2.35	18.28	0.20	0.58	0.11	0.48	0.21	0.08
Erythroxylum citrifolium	25.49	16.51	8.98	21.24	0.57	0.98	0.18	0.80	0.77	0.83
Erythroxylum cuneifolium	24.45	15.26	9.19	21.92	0.63	1.00	0.14	0.86	0.81	0.92
Erythroxylum cuspidifolium	24.62	14.59	10.03	21.15	0.56	0.78	0.14	0.64	0.41	0.25
Erythroxylum daphnites	24.21	18.31	5.90	20.77	0.47	1.00	0.61	0.38	0.78	0.87
Erythroxylum deciduum	24.62	13.88	10.74	18.81	0.22	0.97	0.10	0.87	0.44	0.30
Erythroxylum mucronatum	24.68	19.98	4.70	21.66	0.61	1.14	0.48	0.67	0.85	0.94
Erythroxylum myrsinites	19.23	18.22	1.02	18.98	0.26	0.22	0.10	0.12	0.13	0.00
Erythroxylum passerinum	25.50	22.76	2.74	24.71	1.00	0.75	0.56	0.19	0.63	0.61
Erythroxylum pelleterianum	24.93	13.96	10.98	19.64	0.35	1.01	0.64	0.37	0.77	0.86
Erythroxylum plowmanii	23.29	20.09	3.20	20.29	0.44	0.67	0.45	0.22	0.58	0.55
Erythroxylum pulchrum	23.52	19.09	4.43	21.60	0.63	0.87	0.32	0.55	0.55	0.49
Erythroxylum squamatum	25.59	20.59	5.00	24.30	0.95	0.83	0.15	0.68	0.57	0.50
Erythroxylum suberosum	21.96	19.22	2.74	20.57	0.47	0.98	0.74	0.24	0.82	0.91
Erythroxylum subrotundum	22.32	20.53	1.78	22.12	0.70	0.87	0.45	0.43	0.83	0.92
Erythroxylum tortuosum	23.08	16.30	6.79	20.87	0.50	0.84	0.62	0.22	0.71	0.77
Erythroxylum umbu	22.32	21.19	1.12	21.64	0.60	0.85	0.38	0.46	0.40	0.24
Erythroxylum vacciniifolium	20.81	19.00	1.81	20.60	0.45	0.35	0.14	0.21	0.32	0.16
Escallonia bifida	18.95	11.84	7.12	15.55	0.04	0.75	0.15	0.59	0.35	0.17
Eschweilera alvimii	24.62	21.80	2.82	23.96	0.91	0.63	0.15	0.47	0.29	0.10
Eschweilera complanata	24.72	24.71	0.01	24.71	1.00	0.14	0.14	0.01	0.14	0.00
Eschweilera mattos-silvae	24.62	23.97	0.64	24.12	0.93	0.18	0.17	0.01	0.17	0.03
Eschweilera ovata	25.59	21.80	3.79	24.51	0.97	0.78	0.14	0.64	0.52	0.46
Esenbeckia febrifuga	22.36	16.86	5.50	19.94	0.37	0.86	0.27	0.59	0.54	0.48
Esenbeckia grandiflora	24.78	14.31	10.47	18.77	0.22	0.92	0.16	0.77	0.39	0.18
Esenbeckia leiocarpa	24.62	17.95	6.66	19.43	0.29	0.78	0.15	0.62	0.68	0.72
Eugenia acutata	22.80	13.96	8.85	19.29	0.28	0.97	0.45	0.52	0.75	0.81
Eugenia adenantha	21.67	16.83	4.84	19.41	0.30	0.88	0.45	0.43	0.77	0.87
Eugenia astringens	25.50	17.19	8.30	22.73	0.78	0.76	0.14	0.61	0.42	0.27
Eugenia aurata	23.58	13.62	9.96	20.10	0.40	0.98	0.60	0.38	0.84	0.94
Eugenia bacopari	20.10	15.29	4.81	18.01	0.14	0.31	0.15	0.17	0.22	0.07
Eugenia bahiensis	24.71	19.86	4.85	22.37	0.71	0.49	0.14	0.35	0.37	0.21
Eugenia batingabranca	24.33	17.27	7.06	20.27	0.42	0.72	0.19	0.53	0.47	0.33
Eugenia beaurepairiana	24.33	16.98	7.35	19.54	0.30	0.78	0.15	0.64	0.30	0.14
Eugenia brasiliensis	24.70	13.88	10.82	19.89	0.35	0.85	0.18	0.68	0.54	0.44
Eugenia brevistyla	23.01	17.76	5.24	21.11	0.56	0.78	0.21	0.57	0.42	0.25

Eugenia bunchosiifolia	23.14	20.09	3.04	22.49	0.74	0.67	0.41	0.26	0.43	0.28
Eugenia burkartiana	21.65	15.29	6.36	18.29	0.16	0.75	0.13	0.63	0.38	0.22
Eugenia candolleana	24.33	17.00	7.33	21.86	0.64	0.61	0.19	0.42	0.34	0.16
Eugenia capitulifera	21.21	16.98	4.22	18.60	0.20	0.52	0.47	0.05	0.49	0.40
Eugenia catharinae	21.24	15.75	5.49	18.37	0.17	0.40	0.18	0.22	0.28	0.11
Eugenia catharinensis	22.14	18.95	3.19	20.06	0.41	0.46	0.21	0.24	0.37	0.18
Eugenia cerasiflora	24.79	15.29	9.49	20.15	0.39	0.92	0.14	0.78	0.56	0.53
Eugenia cereja	23.01	16.98	6.02	21.40	0.58	0.52	0.21	0.30	0.41	0.24
Eugenia copacabanensis	22.67	17.35	5.33	20.45	0.45	0.52	0.32	0.20	0.43	0.29
Eugenia decussata	24.64	20.78	3.86	24.30	0.93	0.57	0.15	0.42	0.18	0.04
Eugenia dodonaeifolia	22.11	10.40	11.71	17.21	0.09	0.84	0.30	0.54	0.65	0.67
Eugenia dysenterica	24.47	20.75	3.72	21.94	0.69	0.99	0.62	0.37	0.93	0.98
Eugenia egensis	22.56	15.51	7.05	19.96	0.35	0.87	0.42	0.46	0.59	0.56
Eugenia excelsa	25.50	15.72	9.78	21.97	0.66	0.90	0.19	0.71	0.56	0.48
Eugenia expansa	22.69	16.51	6.18	19.80	0.38	0.66	0.35	0.31	0.52	0.45
Eugenia flamingensis	24.72	21.54	3.17	24.53	0.98	0.47	0.14	0.33	0.16	0.02
Eugenia florida	24.45	10.40	14.05	20.44	0.47	1.00	0.14	0.86	0.72	0.76
Eugenia francavilleana	22.90	15.29	7.60	19.36	0.28	0.89	0.60	0.29	0.68	0.70
Eugenia fusca	24.71	20.08	4.64	23.18	0.84	0.85	0.14	0.71	0.33	0.15
Eugenia handroana	23.34	10.40	12.94	18.85	0.23	0.88	0.16	0.72	0.55	0.47
Eugenia handroi	21.57	12.82	8.75	19.43	0.29	0.43	0.15	0.29	0.32	0.13
Eugenia hiemalis	23.64	13.62	10.01	18.75	0.23	0.93	0.10	0.83	0.40	0.21
Eugenia involucrata	23.22	13.00	10.22	18.31	0.16	0.91	0.10	0.81	0.46	0.34
Eugenia itacarensis	24.72	20.53	4.18	24.16	0.93	0.45	0.14	0.31	0.18	0.02
Eugenia itapemirimensis	24.72	20.09	4.62	24.29	0.94	0.67	0.14	0.53	0.18	0.06
Eugenia kleinii	21.17	17.90	3.28	19.21	0.25	0.61	0.21	0.40	0.26	0.10
Eugenia lambertiana	22.11	19.82	2.29	20.75	0.50	0.87	0.63	0.25	0.84	0.94
Eugenia leptoclada	20.88	17.00	3.87	19.02	0.25	0.79	0.48	0.31	0.75	0.81
Eugenia ligustrina	24.71	13.55	11.16	21.65	0.63	1.14	0.14	1.00	0.67	0.67
Eugenia longifolia	24.66	23.55	1.11	24.42	0.96	0.17	0.15	0.02	0.16	0.01
Eugenia longipedunculata	21.44	13.55	7.89	19.07	0.26	0.77	0.26	0.52	0.57	0.54
Eugenia macahensis	22.62	19.09	3.53	21.95	0.65	0.63	0.51	0.12	0.52	0.47
Eugenia magnibracteolata	23.01	21.03	1.97	22.67	0.77	0.48	0.41	0.07	0.42	0.27
Eugenia magnifica	24.03	14.59	9.44	20.19	0.40	0.60	0.17	0.43	0.36	0.18
Eugenia malacantha	20.99	15.29	5.70	17.56	0.12	0.80	0.36	0.44	0.57	0.53
Eugenia mandioccensis	23.97	21.54	2.43	22.88	0.79	0.64	0.15	0.48	0.32	0.12
Eugenia mansoi	20.95	16.93	4.02	18.95	0.25	0.78	0.13	0.65	0.47	0.35
Eugenia melanogyna	23.29	18.00	5.30	20.42	0.46	0.71	0.23	0.49	0.43	0.27
Eugenia modesta	22.52	20.49	2.03	21.55	0.64	0.73	0.32	0.41	0.49	0.40
Eugenia monosperma	23.41	19.41	4.00	22.73	0.78	0.71	0.32	0.39	0.43	0.28
Eugenia moschata	24.40	21.22	3.17	22.58	0.75	0.87	0.15	0.72	0.78	0.88
Eugenia mosenii	23.01	16.07	6.93	20.72	0.48	0.52	0.36	0.16	0.46	0.33
Eugenia multicostata	23.01	15.46	7.55	19.12	0.27	0.48	0.14	0.34	0.28	0.13
Eugenia myrcianthes	23.16	18.53	4.63	19.96	0.41	1.03	0.18	0.86	0.29	0.14
Eugenia myrciariifolia	21.96	18.05	3.91	19.60	0.32	0.91	0.71	0.19	0.74	0.78
Eugenia neoglomerata	23.40	15.97	7.43	20.10	0.39	0.75	0.35	0.40	0.48	0.36
Eugenia neomyrtifolia	23.22	12.62	10.60	19.72	0.36	0.95	0.18	0.78	0.80	0.89
Eugenia neotristis	20.81	20.79	0.02	20.81	0.50	0.35	0.34	0.00	0.34	0.18

Eugenia neoverrucosa	21.57	15.29	6.28	18.82	0.23	0.79	0.21	0.58	0.37	0.19
Eugenia oblongata	23.01	16.69	6.32	21.47	0.59	0.72	0.37	0.35	0.46	0.35
Eugenia pauciflora	24.71	24.64	0.08	24.67	0.99	0.15	0.14	0.00	0.15	0.00
Eugenia pisiformis	24.64	14.59	10.05	22.04	0.65	0.72	0.15	0.57	0.51	0.42
Eugenia platyphylla	23.64	21.54	2.09	23.01	0.80	0.58	0.27	0.31	0.43	0.27
Eugenia platysema	23.40	17.61	5.79	21.83	0.66	0.67	0.18	0.49	0.45	0.32
Eugenia plicata	23.01	21.17	1.83	22.22	0.68	0.47	0.41	0.06	0.42	0.27
Eugenia pluriflora	22.07	12.91	9.16	18.45	0.19	0.86	0.14	0.72	0.34	0.15
Eugenia prasina	24.72	16.07	8.64	20.83	0.53	1.01	0.14	0.87	0.45	0.32
Eugenia pruinosa	24.33	16.98	7.35	19.74	0.35	0.71	0.19	0.53	0.39	0.20
Eugenia pruniformis	23.97	19.86	4.12	22.80	0.78	0.76	0.15	0.60	0.33	0.17
Eugenia puberula	23.01	13.88	9.12	21.03	0.52	0.70	0.36	0.35	0.46	0.33
Eugenia punicifolia	25.02	15.29	9.73	22.01	0.67	0.98	0.32	0.66	0.57	0.50
Eugenia pyriformis	25.50	14.37	11.13	18.91	0.23	0.81	0.12	0.69	0.54	0.46
Eugenia ramboi	21.57	15.46	6.11	18.80	0.23	0.69	0.10	0.59	0.23	0.08
Eugenia repanda	23.18	15.78	7.40	21.24	0.57	0.90	0.18	0.73	0.38	0.21
Eugenia rostrata	24.71	19.09	5.62	23.25	0.84	0.62	0.14	0.47	0.27	0.12
Eugenia rostrifolia	22.36	15.46	6.90	17.79	0.11	0.42	0.10	0.33	0.18	0.04
Eugenia schottiana	24.47	21.22	3.25	23.00	0.79	0.92	0.32	0.60	0.57	0.52
Eugenia sonderiana	22.30	15.29	7.00	18.97	0.26	0.87	0.41	0.47	0.76	0.83
Eugenia speciosa	25.50	14.79	10.70	22.76	0.77	0.77	0.17	0.60	0.59	0.56
Eugenia stigmatosa	22.80	16.07	6.73	21.16	0.56	0.64	0.22	0.42	0.40	0.25
Eugenia subavenia	23.01	14.59	8.42	19.11	0.25	0.75	0.35	0.40	0.45	0.31
Eugenia subterminalis	24.71	14.42	10.29	18.26	0.15	0.84	0.14	0.70	0.31	0.14
Eugenia sulcata	23.94	19.09	4.85	22.37	0.74	0.63	0.32	0.31	0.44	0.30
Eugenia supraaxillaris	22.62	16.51	6.11	19.97	0.39	0.66	0.45	0.21	0.52	0.46
Eugenia umbellata	24.33	13.55	10.79	18.47	0.17	0.84	0.19	0.66	0.71	0.73
Eugenia umbrosa	24.71	18.99	5.72	22.51	0.73	0.80	0.51	0.30	0.74	0.81
Eugenia uniflora	24.34	14.37	9.97	18.93	0.28	0.97	0.10	0.88	0.27	0.14
Eugenia uruguayensis	19.93	12.82	7.11	18.34	0.17	0.32	0.10	0.23	0.19	0.05
Eugenia vattimoana	22.10	17.45	4.66	20.30	0.44	0.86	0.50	0.36	0.72	0.76
Eugenia verticillata	23.14	15.46	7.68	18.39	0.19	0.55	0.12	0.43	0.24	0.10
Eugenia villaenovae	22.59	19.09	3.49	22.32	0.72	0.59	0.52	0.07	0.57	0.54
Eugenia viridiflora	24.66	15.51	9.15	24.10	0.93	0.66	0.14	0.52	0.18	0.04
Eugenia widgrenii	19.14	13.62	5.51	17.69	0.11	0.83	0.70	0.12	0.74	0.79
Euplassa cantareirae	23.14	17.00	6.14	22.50	0.73	0.61	0.23	0.38	0.42	0.23
Euplassa hoehnei	20.77	16.07	4.69	16.78	0.08	0.47	0.36	0.11	0.38	0.18
Euplassa inaequalis	22.02	16.83	5.20	21.22	0.56	0.87	0.77	0.10	0.83	0.94
Euplassa incana	22.83	16.30	6.53	20.45	0.45	0.89	0.75	0.14	0.83	0.94
Euplassa itatiaiae	15.72	13.03	2.68	14.46	0.02	0.77	0.66	0.11	0.68	0.70
Euplassa legalis	23.14	10.40	12.74	22.20	0.70	0.86	0.41	0.45	0.46	0.35
Euplassa organensis	22.11	10.40	11.71	15.36	0.03	0.80	0.75	0.05	0.76	0.83
Euplassa rufa	22.11	18.69	3.42	19.75	0.34	0.86	0.77	0.09	0.80	0.91
Euterpe edulis	24.78	14.59	10.20	19.81	0.33	0.79	0.14	0.65	0.43	0.29
Exellodendron gracile	23.82	23.40	0.42	23.57	0.87	0.52	0.37	0.15	0.48	0.37
Exostyles venusta	24.78	20.59	4.20	23.22	0.80	0.60	0.14	0.45	0.36	0.18
Faramea bahiensis	24.78	23.82	0.96	24.06	0.91	0.37	0.17	0.20	0.32	0.15
Faramea hyacinthina	21.32	17.92	3.40	19.63	0.37	0.86	0.45	0.41	0.77	0.85

Faramea latifolia	22.09	13.88	8.20	19.78	0.34	0.98	0.42	0.56	0.83	0.94
Faramea martiana	24.64	18.98	5.66	21.03	0.55	0.76	0.15	0.61	0.18	0.05
Faramea montevidensis	22.17	16.83	5.34	19.14	0.27	0.63	0.10	0.53	0.25	0.10
Faramea multiflora	24.81	17.92	6.89	22.23	0.71	0.88	0.51	0.37	0.57	0.55
Faramea nigrescens	21.07	13.55	7.52	20.48	0.43	0.86	0.60	0.26	0.65	0.66
Faramea pachyantha	23.14	18.04	5.10	21.65	0.62	0.63	0.40	0.23	0.46	0.36
Faramea picinguabae	23.01	18.04	4.96	21.68	0.64	0.49	0.41	0.08	0.46	0.35
Faramea porophylla	18.05	17.21	0.85	17.90	0.11	0.63	0.25	0.38	0.26	0.11
Faramea tetragona	18.99	16.07	2.91	16.51	0.07	0.77	0.36	0.41	0.42	0.25
Faramea torquata	24.71	24.42	0.29	24.49	0.96	0.17	0.14	0.02	0.16	0.02
Ferdinandusa elliptica	23.08	15.29	7.79	22.07	0.67	0.91	0.76	0.15	0.87	0.95
Ficus adhatodifolia	24.78	17.51	7.27	19.86	0.36	0.80	0.14	0.65	0.37	0.19
Ficus americana	25.02	21.22	3.80	23.04	0.81	0.92	0.66	0.26	0.81	0.92
Ficus arpazusa	24.36	19.54	4.82	22.35	0.70	0.69	0.48	0.21	0.55	0.49
Ficus castellviana	21.90	19.14	2.76	20.67	0.49	0.79	0.70	0.09	0.76	0.83
Ficus cestrifolia	24.07	17.75	6.32	19.23	0.26	0.97	0.14	0.83	0.22	0.07
Ficus citrifolia	21.90	17.02	4.87	19.50	0.32	0.87	0.14	0.73	0.47	0.36
Ficus clusiifolia	23.54	20.20	3.34	22.49	0.73	0.89	0.41	0.49	0.54	0.50
Ficus cyclophylla	23.41	19.45	3.97	22.82	0.77	0.77	0.41	0.36	0.47	0.37
Ficus enormis	24.20	14.31	9.89	18.62	0.21	0.99	0.14	0.85	0.61	0.61
Ficus eximia	22.54	18.68	3.86	20.03	0.38	0.81	0.14	0.66	0.65	0.66
Ficus gomelleira	24.78	18.42	6.36	23.07	0.83	0.91	0.17	0.75	0.48	0.35
Ficus guaranitica	23.03	18.02	5.01	20.46	0.45	0.89	0.13	0.76	0.48	0.39
Ficus hirsuta	23.41	19.59	3.82	20.55	0.45	0.77	0.32	0.45	0.65	0.65
Ficus insipida	23.14	17.45	5.70	20.05	0.38	0.86	0.16	0.70	0.53	0.44
Ficus lagoensis	20.82	18.81	2.01	20.64	0.49	0.59	0.49	0.11	0.58	0.55
Ficus luschnathiana	23.01	14.79	8.21	17.99	0.13	0.81	0.10	0.71	0.30	0.13
Ficus mariae	24.36	20.53	3.82	23.74	0.89	0.73	0.45	0.28	0.51	0.43
Ficus mexiae	24.70	15.72	8.98	18.71	0.20	0.83	0.27	0.56	0.76	0.86
Ficus obtusifolia	23.29	17.17	6.12	20.11	0.39	1.14	0.42	0.73	0.90	0.95
Ficus obtusiuscula	22.90	19.13	3.77	21.31	0.57	0.89	0.41	0.49	0.61	0.62
Ficus organensis	24.07	16.83	7.24	18.89	0.23	0.97	0.14	0.83	0.25	0.10
Ficus pertusa	25.50	13.96	11.54	22.75	0.79	0.98	0.68	0.30	0.76	0.85
Ficus pulchella	23.14	20.77	2.37	22.67	0.75	0.64	0.35	0.28	0.46	0.34
Ficus trigona	24.04	18.69	5.35	21.10	0.54	1.00	0.41	0.60	0.75	0.81
Ficus trigonata	23.18	19.84	3.34	21.01	0.53	0.90	0.79	0.11	0.79	0.90
Fridericia bahiensis	24.30	21.13	3.17	23.68	0.87	1.03	0.97	0.06	1.01	1.00
Galipea ciliata	24.30	19.91	4.39	23.35	0.84	1.03	0.86	0.17	1.02	1.00
Galipea jasminiflora	24.72	16.54	8.18	19.93	0.39	1.00	0.14	0.87	0.76	0.81
Galipea laxiflora	22.90	20.78	2.12	20.97	0.53	0.64	0.57	0.07	0.58	0.53
Gallesia integrifolia	24.30	15.29	9.01	21.35	0.58	0.98	0.27	0.71	0.50	0.41
Garcinia brasiliensis	24.46	20.53	3.92	23.38	0.84	0.48	0.15	0.33	0.36	0.17
Garcinia gardneriana	25.02	14.59	10.44	20.77	0.49	0.92	0.14	0.78	0.39	0.21
Garcinia macrophylla	24.81	21.80	3.02	23.56	0.87	0.64	0.15	0.49	0.38	0.23
Geissanthus ambiguus	22.80	18.44	4.36	20.72	0.48	0.89	0.36	0.54	0.76	0.81
Geissospermum laeve	23.82	21.81	2.01	22.77	0.78	0.64	0.35	0.28	0.51	0.41
Genipa americana	25.21	19.18	6.03	22.42	0.72	0.97	0.29	0.68	0.69	0.72
Genipa infundibuliformis	23.14	19.21	3.93	22.36	0.71	0.87	0.41	0.46	0.50	0.38

Geoffroea spinosa	25.21	23.69	1.52	24.62	0.98	1.02	0.63	0.39	0.81	0.90
Gleditsia amorphoides	19.59	18.44	1.15	18.88	0.24	0.77	0.13	0.64	0.37	0.17
Glycydendron amazonicum	24.78	20.59	4.20	23.27	0.85	0.60	0.17	0.43	0.29	0.14
Goniorrhachis marginata	24.62	19.91	4.71	23.62	0.88	1.02	0.27	0.75	0.84	0.92
Grazielodendron rio-docensis	23.52	22.87	0.65	22.98	0.81	0.57	0.49	0.08	0.55	0.49
Guapira areolata	24.33	16.98	7.35	21.04	0.53	0.92	0.19	0.73	0.73	0.76
Guapira graciliflora	24.33	16.83	7.51	20.08	0.40	1.00	0.19	0.82	0.76	0.83
Guapira hirsuta	24.79	15.29	9.49	20.71	0.51	1.02	0.14	0.87	0.61	0.60
Guapira laxa	25.50	21.80	3.70	24.46	0.97	0.87	0.61	0.27	0.66	0.66
Guapira nitida	25.02	16.07	8.95	21.42	0.59	0.68	0.15	0.53	0.57	0.54
Guapira noxia	25.38	16.83	8.56	22.73	0.77	1.00	0.32	0.68	0.61	0.60
Guapira obtusata	24.33	23.15	1.18	23.23	0.84	0.95	0.19	0.77	0.63	0.64
Guapira opposita	25.38	10.40	14.98	20.29	0.41	1.02	0.14	0.88	0.46	0.36
Guapira tomentosa	24.47	14.79	9.67	21.78	0.66	1.14	0.29	0.85	0.72	0.77
Guapira venosa	23.00	18.04	4.95	19.67	0.34	0.84	0.27	0.57	0.61	0.59
Guarea blanchetii	24.78	20.59	4.20	24.23	0.95	0.60	0.14	0.46	0.16	0.02
Guarea guidonia	24.81	16.86	7.96	21.36	0.58	0.91	0.15	0.76	0.61	0.59
Guarea kunthiana	25.02	15.29	9.73	21.02	0.53	0.91	0.17	0.75	0.51	0.45
Guarea macrophylla	24.81	14.59	10.23	20.13	0.40	0.87	0.11	0.77	0.46	0.33
Guarea pendula	23.40	18.99	4.41	22.05	0.68	0.80	0.49	0.31	0.59	0.54
Guatteria australis	24.33	10.40	13.93	17.94	0.11	0.90	0.15	0.75	0.58	0.58
Guatteria campestris	23.52	19.09	4.42	22.02	0.66	0.73	0.49	0.24	0.60	0.57
Guatteria candolleana	23.55	14.59	8.97	22.28	0.72	0.60	0.15	0.45	0.45	0.30
Guatteria ferruginea	22.60	22.04	0.56	22.51	0.74	0.63	0.41	0.22	0.43	0.28
Guatteria latifolia	22.69	14.31	8.38	18.78	0.21	0.85	0.51	0.35	0.73	0.77
Guatteria oligocarpa	24.72	20.59	4.13	23.76	0.88	0.60	0.14	0.46	0.28	0.12
Guatteria pogonopus	25.59	13.54	12.05	23.88	0.91	0.78	0.19	0.60	0.63	0.62
Guatteria schomburgkiana	25.38	19.39	5.99	22.44	0.70	0.78	0.64	0.14	0.77	0.85
Guatteria sellowiana	23.94	14.31	9.63	19.31	0.28	0.86	0.32	0.54	0.68	0.71
Guatteria villosissima	21.90	15.29	6.60	18.09	0.15	0.88	0.70	0.18	0.77	0.87
Guazuma crinita	23.64	22.19	1.44	23.36	0.83	0.62	0.32	0.30	0.43	0.29
Guazuma ulmifolia	24.93	13.62	11.31	21.46	0.60	1.02	0.14	0.88	0.72	0.73
Guettarda angelica	24.47	21.22	3.25	22.55	0.75	1.00	0.29	0.71	0.77	0.84
Guettarda platypoda	25.50	24.93	0.57	25.48	1.00	0.78	0.64	0.14	0.75	0.80
Guettarda pohliana	22.02	18.84	3.19	21.60	0.60	0.85	0.43	0.41	0.73	0.76
Guettarda sericea	21.40	19.39	2.01	19.44	0.30	0.77	0.68	0.09	0.77	0.85
Guettarda uruguensis	23.08	14.79	8.29	18.36	0.15	0.79	0.10	0.69	0.26	0.11
Guettarda viburnoides	25.49	14.79	10.69	20.13	0.39	0.98	0.27	0.71	0.75	0.82
Guibourtia chodatiana	23.18	17.77	5.42	22.08	0.68	0.90	0.28	0.62	0.58	0.55
Gustavia augusta	25.59	19.83	5.76	25.03	1.00	0.73	0.61	0.12	0.64	0.63
Gymnanthes edwalliana	22.53	14.79	7.74	17.89	0.13	0.71	0.41	0.30	0.67	0.69
Gymnanthes klotzschiana	21.44	13.54	7.89	18.12	0.17	0.90	0.10	0.80	0.32	0.12
Gymnanthes nervosa	22.56	22.19	0.36	22.55	0.74	0.62	0.32	0.30	0.32	0.15
Gymnanthes schottiana	19.93	16.56	3.37	17.69	0.09	0.77	0.13	0.64	0.23	0.09
Gymnanthes serrata	21.72	17.85	3.87	19.15	0.28	0.79	0.16	0.62	0.31	0.14
Hancornia speciosa	22.83	20.23	2.60	21.11	0.56	0.89	0.84	0.06	0.85	0.96
Handroanthus albus	24.07	13.96	10.12	17.52	0.10	0.97	0.16	0.81	0.46	0.34
Handroanthus bureavii	23.58	14.59	9.00	22.76	0.76	0.97	0.60	0.37	0.89	0.97

Handroanthus catarinensis	17.69	12.62	5.07	13.79	0.01	0.77	0.75	0.02	0.76	0.84
Handroanthus chrysotrichus	24.79	15.97	8.82	23.28	0.84	1.02	0.25	0.77	0.87	0.95
Handroanthus heptaphyllus	24.49	13.55	10.94	20.65	0.49	1.00	0.10	0.90	0.50	0.40
Handroanthus impetiginosus	25.38	15.29	10.09	23.66	0.89	1.14	0.10	1.04	0.83	0.92
Handroanthus ochraceus	24.72	18.77	5.95	22.01	0.69	1.01	0.48	0.53	0.83	0.93
Handroanthus pulcherrimus	18.78	18.53	0.25	18.66	0.19	0.18	0.18	0.00	0.18	0.04
Handroanthus riodocensis	23.82	20.08	3.75	22.14	0.70	0.85	0.37	0.48	0.65	0.66
Handroanthus selachidentatus	24.21	20.59	3.62	23.03	0.81	1.03	0.60	0.44	1.01	1.00
Handroanthus serratifolius	25.50	15.29	10.21	23.30	0.84	1.00	0.14	0.87	0.63	0.62
Handroanthus spongiosus	24.30	23.04	1.26	24.18	0.94	1.03	0.97	0.06	1.00	0.99
Handroanthus umbellatus	22.93	17.61	5.33	19.99	0.36	0.84	0.14	0.70	0.61	0.60
Handroanthus vellosoi	23.27	14.55	8.72	21.14	0.56	0.98	0.36	0.62	0.75	0.81
Harleyodendron unifoliolatum	24.72	24.03	0.69	24.47	0.96	0.17	0.14	0.03	0.16	0.02
Hedyosmum brasiliense	22.78	14.59	8.19	18.87	0.21	0.83	0.36	0.47	0.54	0.48
Heisteria blanchetiana	24.78	20.53	4.25	24.00	0.92	0.92	0.15	0.77	0.24	0.08
Heisteria citrifolia	24.66	20.38	4.28	23.50	0.85	0.90	0.15	0.76	0.38	0.18
Heisteria ovata	24.62	18.04	6.57	20.76	0.48	0.90	0.17	0.73	0.83	0.91
Heisteria perianthomega	24.78	19.91	4.87	23.94	0.92	0.92	0.14	0.78	0.25	0.08
Heisteria silvianii	24.35	10.40	13.94	19.16	0.24	0.91	0.18	0.74	0.55	0.48
Helicostylis tomentosa	25.59	19.81	5.78	23.73	0.88	0.87	0.14	0.73	0.41	0.25
Helicteres ovata	19.74	19.10	0.64	19.45	0.32	0.84	0.77	0.06	0.81	0.90
Helietta apiculata	23.16	16.86	6.31	19.22	0.28	0.77	0.10	0.67	0.16	0.01
Heliocarpus popayanensis	22.26	17.69	4.57	19.56	0.32	0.77	0.13	0.64	0.50	0.43
Hennecartia omphalandra	19.53	15.46	4.08	17.38	0.08	0.28	0.13	0.16	0.18	0.03
Henriettea glabra	22.52	16.51	6.01	19.56	0.34	0.66	0.24	0.42	0.43	0.28
Henriettea succosa	25.14	22.62	2.51	24.42	0.97	0.66	0.14	0.52	0.44	0.34
Heterocondylus alatus	19.30	13.55	5.75	15.44	0.03	0.77	0.64	0.14	0.71	0.73
Himatanthus bracteatus	25.49	16.30	9.19	24.08	0.93	0.87	0.14	0.73	0.52	0.42
Hirtella angustifolia	24.71	22.57	2.15	23.94	0.91	0.57	0.14	0.42	0.29	0.11
Hirtella bahiensis	24.78	20.59	4.20	23.86	0.91	0.60	0.14	0.45	0.25	0.10
Hirtella glandulosa	24.78	18.99	5.80	21.57	0.60	0.91	0.48	0.43	0.76	0.84
Hirtella gracilipes	24.78	18.13	6.66	21.90	0.67	0.91	0.17	0.74	0.82	0.92
Hirtella hebeclada	23.40	16.98	6.41	19.36	0.30	0.90	0.14	0.75	0.35	0.16
Hirtella insignis	23.94	20.59	3.36	23.22	0.82	0.60	0.32	0.27	0.41	0.23
Hirtella racemosa	24.30	20.62	3.67	21.30	0.60	0.85	0.51	0.34	0.78	0.90
Hirtella triandra	23.55	20.59	2.97	22.56	0.74	0.78	0.15	0.63	0.30	0.15
Holocalyx balansae	23.16	17.99	5.17	20.20	0.41	0.79	0.12	0.67	0.56	0.47
Hortia brasiliana	25.02	14.32	10.71	20.96	0.55	0.87	0.15	0.72	0.66	0.68
Hovenia dulcis	18.93	16.98	1.95	17.61	0.11	0.34	0.12	0.22	0.24	0.09
Huberia glazioviana	18.34	18.04	0.30	18.28	0.16	0.77	0.64	0.13	0.74	0.77
Huberia laurina	19.81	13.96	5.85	16.74	0.08	0.84	0.64	0.20	0.75	0.82
Humiriastrum dentatum	23.51	16.69	6.83	22.53	0.76	0.78	0.38	0.40	0.52	0.45
Humiriastrum glaziovii	20.88	16.07	4.80	18.90	0.23	0.86	0.36	0.50	0.75	0.81
Hydrogaster trinervis	24.78	22.87	1.92	24.15	0.93	0.63	0.14	0.49	0.27	0.11
Hyeronima alchorneoides	24.81	14.59	10.23	20.00	0.37	0.92	0.14	0.78	0.39	0.20
Hyeronima oblonga	24.78	18.34	6.44	22.68	0.77	0.83	0.17	0.66	0.51	0.44
Hymenaea aurea	24.42	22.93	1.49	24.20	0.95	0.53	0.17	0.36	0.21	0.08
Hymenaea courbaril	25.50	13.96	11.54	22.11	0.67	0.99	0.36	0.64	0.75	0.82

Hymenaea martiana	24.72	19.83	4.89	23.30	0.86	0.91	0.48	0.42	0.84	0.94
Hymenaea stigonocarpa	24.72	19.83	4.89	22.13	0.70	0.99	0.41	0.58	0.74	0.77
Hymenolobium janeirense	24.33	18.04	6.29	20.70	0.49	0.88	0.19	0.69	0.67	0.69
Hyptidendron asperrimum	21.52	15.29	6.22	18.28	0.16	0.88	0.72	0.16	0.79	0.88
Ilex affinis	23.18	10.40	12.78	18.19	0.15	0.90	0.70	0.20	0.78	0.88
Ilex brasiliensis	20.86	16.56	4.30	19.12	0.27	0.71	0.27	0.44	0.61	0.58
Ilex brevicuspis	23.64	10.40	13.23	16.35	0.06	0.93	0.10	0.83	0.34	0.14
Ilex cerasifolia	24.12	13.62	10.49	19.64	0.33	0.97	0.66	0.31	0.81	0.91
Ilex conocarpa	21.37	13.62	7.75	18.41	0.19	0.98	0.68	0.30	0.78	0.87
Ilex dumosa	23.14	11.46	11.69	19.69	0.34	0.77	0.10	0.67	0.35	0.18
Ilex integerrima	23.14	14.59	8.56	21.86	0.61	0.64	0.35	0.29	0.40	0.25
Ilex microdonta	20.81	11.84	8.97	13.14	0.00	0.71	0.12	0.59	0.22	0.08
Ilex paraguariensis	23.16	10.40	12.76	15.62	0.03	0.87	0.12	0.75	0.35	0.14
Ilex pseudobuxus	23.14	13.55	9.59	21.53	0.60	0.71	0.14	0.56	0.42	0.23
Ilex sapotifolia	24.47	10.40	14.07	19.50	0.29	0.92	0.68	0.24	0.80	0.89
Ilex taubertiana	18.81	12.91	5.90	13.90	0.01	0.71	0.14	0.57	0.60	0.54
Ilex theezans	24.33	12.62	11.71	20.55	0.46	0.87	0.14	0.73	0.40	0.25
Inga alba	21.74	19.45	2.29	20.14	0.41	0.81	0.77	0.04	0.78	0.87
Inga aptera	24.78	24.33	0.45	24.62	0.98	0.19	0.14	0.04	0.16	0.01
Inga barbata	18.34	16.51	1.83	17.80	0.11	0.77	0.64	0.13	0.67	0.67
Inga blanchetiana	25.38	23.00	2.39	24.65	0.98	0.78	0.17	0.61	0.47	0.32
Inga bullata	22.14	20.77	1.37	21.58	0.59	0.51	0.45	0.06	0.47	0.36
Inga capitata	25.59	17.35	8.24	22.61	0.74	0.90	0.14	0.76	0.50	0.40
Inga cayennensis	25.14	22.76	2.37	24.74	1.00	0.66	0.56	0.10	0.63	0.64
Inga cylindrica	24.33	13.54	10.79	20.62	0.47	1.01	0.19	0.82	0.80	0.90
Inga edulis	25.49	18.04	7.44	21.63	0.63	0.81	0.27	0.54	0.49	0.36
Inga flagelliformis	24.81	18.65	6.16	23.68	0.88	0.85	0.19	0.66	0.56	0.48
Inga hispida	23.94	18.04	5.90	22.70	0.75	0.72	0.32	0.40	0.48	0.36
Inga ingoides	24.47	13.54	10.93	20.99	0.53	0.95	0.15	0.80	0.80	0.89
Inga lanceifolia	22.59	14.59	8.00	17.76	0.11	0.83	0.37	0.46	0.51	0.43
Inga laurina	25.49	16.86	8.63	22.14	0.69	0.92	0.17	0.76	0.61	0.59
Inga lenticellata	23.27	14.59	8.68	20.74	0.49	0.87	0.43	0.44	0.53	0.46
Inga lentiscifolia	22.86	13.67	9.19	15.41	0.03	0.45	0.16	0.29	0.19	0.06
Inga leptantha	22.87	19.46	3.40	21.90	0.68	0.84	0.51	0.33	0.64	0.65
Inga marginata	25.36	13.96	11.40	19.74	0.33	0.90	0.11	0.79	0.39	0.23
Inga platyptera	21.90	12.62	9.27	18.16	0.15	0.87	0.64	0.24	0.74	0.80
Inga schinifolia	22.27	19.11	3.16	20.14	0.41	0.64	0.47	0.17	0.54	0.45
Inga sellowiana	19.89	16.98	2.90	18.64	0.22	0.61	0.21	0.40	0.41	0.21
Inga sessilis	25.36	13.55	11.81	19.53	0.32	0.98	0.14	0.83	0.58	0.52
Inga striata	24.72	15.75	8.97	20.23	0.45	0.91	0.14	0.77	0.53	0.44
Inga subnuda	24.81	15.51	9.30	22.74	0.77	0.77	0.17	0.60	0.48	0.37
Inga tenuis	24.33	19.09	5.24	22.63	0.75	0.63	0.18	0.45	0.34	0.18
Inga thibaudiana	25.59	19.60	5.99	23.38	0.85	0.87	0.17	0.71	0.60	0.59
Inga vera	24.47	12.62	11.85	20.75	0.51	1.02	0.10	0.92	0.67	0.67
Inga virescens	20.60	14.37	6.23	14.88	0.02	0.37	0.13	0.24	0.19	0.06
Inga vulpina	23.27	16.93	6.34	19.13	0.25	0.87	0.46	0.42	0.65	0.67
Ixora brevifolia	24.21	15.29	8.92	19.57	0.29	1.00	0.49	0.51	0.79	0.89
Ixora burchelliana	21.21	18.00	3.21	20.32	0.42	0.52	0.45	0.07	0.48	0.38

Ixora gardneriana	23.01	16.07	6.93	19.12	0.24	0.86	0.36	0.51	0.67	0.66
Ixora venulosa	23.00	16.56	6.44	20.57	0.48	0.77	0.27	0.50	0.51	0.41
Jacaranda bracteata	22.69	22.32	0.38	22.51	0.75	0.54	0.44	0.10	0.47	0.34
Jacaranda brasiliana	24.47	21.13	3.34	22.01	0.67	0.99	0.78	0.21	0.85	0.95
Jacaranda cuspidifolia	22.87	13.62	9.25	18.24	0.17	0.89	0.71	0.19	0.76	0.82
Jacaranda macrantha	24.78	12.62	12.16	19.79	0.37	0.99	0.17	0.83	0.75	0.82
Jacaranda micrantha	22.57	13.62	8.94	18.87	0.23	0.84	0.11	0.74	0.44	0.32
Jacaranda montana	21.21	17.27	3.93	17.70	0.12	0.48	0.47	0.01	0.47	0.34
Jacaranda obovata	24.71	24.30	0.41	24.47	0.97	0.51	0.14	0.37	0.41	0.26
Jacaranda puberula	23.82	12.62	11.20	18.89	0.22	0.88	0.12	0.76	0.42	0.25
Jacaratia heptaphylla	24.78	17.89	6.89	22.30	0.72	0.83	0.14	0.69	0.40	0.25
Jacaratia spinosa	24.47	16.98	7.49	20.33	0.43	0.92	0.13	0.80	0.54	0.48
Jatropha mollissima	24.93	19.98	4.96	23.78	0.91	1.14	0.64	0.51	0.91	0.97
Joannesia princeps	23.94	19.91	4.04	22.70	0.74	0.89	0.32	0.57	0.58	0.53
Kielmeyera albopunctata	23.82	16.54	7.28	22.62	0.75	0.83	0.37	0.46	0.52	0.45
Kielmeyera coriacea	22.83	16.30	6.53	20.71	0.50	0.98	0.74	0.24	0.86	0.94
Kielmeyera decipiens	23.14	23.14	0.00	23.14	0.81	0.41	0.41	0.00	0.41	0.25
Kielmeyera excelsa	22.87	22.19	0.67	22.51	0.73	0.62	0.56	0.06	0.59	0.59
Kielmeyera lathrophyton	22.11	17.92	4.19	19.33	0.30	0.88	0.64	0.24	0.78	0.88
Kielmeyera neglecta	24.36	20.59	3.77	24.22	0.94	0.60	0.50	0.10	0.51	0.43
Kielmeyera petiolaris	21.90	20.08	1.82	20.93	0.53	0.98	0.78	0.19	0.86	0.94
Kielmeyera rubriflora	24.35	15.29	9.05	21.39	0.60	0.88	0.64	0.24	0.80	0.90
Lacistema aggregatum	24.62	20.09	4.52	22.99	0.81	0.89	0.17	0.73	0.48	0.39
Lacistema hasslerianum	23.64	16.69	6.95	20.75	0.48	0.93	0.36	0.57	0.77	0.86
Lacistema lucidum	22.79	13.88	8.91	21.87	0.67	0.70	0.45	0.25	0.47	0.37
Lacistema pubescens	24.06	18.02	6.04	20.48	0.47	0.87	0.29	0.58	0.69	0.73
Lacistema robustum	25.14	18.13	7.01	21.80	0.65	0.87	0.14	0.74	0.57	0.53
Lacmellea aculeata	24.71	20.59	4.12	24.00	0.92	0.60	0.14	0.45	0.18	0.05
Ladenbergia hexandra	22.79	17.92	4.87	19.13	0.26	0.77	0.46	0.31	0.76	0.86
Lafoensia glyptocarpa	19.21	12.62	6.59	16.71	0.06	0.77	0.66	0.11	0.77	0.87
Lafoensia pacari	22.32	12.62	9.69	19.53	0.31	0.99	0.25	0.74	0.64	0.64
Lafoensia vandelliana	24.62	13.00	11.62	18.24	0.15	1.00	0.40	0.60	0.77	0.87
Lamanonia grandistipularis	20.08	13.62	6.45	17.18	0.06	0.86	0.68	0.17	0.76	0.84
Lamanonia ternata	24.64	10.40	14.23	17.42	0.10	0.89	0.12	0.77	0.52	0.45
Laplacea fruticosa	22.79	12.91	9.88	18.68	0.19	0.88	0.14	0.74	0.55	0.46
Leandra acutiflora	21.17	15.29	5.88	20.16	0.42	0.86	0.47	0.39	0.62	0.61
Leandra melastomoides	19.73	14.74	4.99	16.92	0.07	0.77	0.75	0.02	0.76	0.85
Leandra variabilis	22.52	11.46	11.07	18.01	0.14	0.76	0.15	0.61	0.39	0.20
Lecythis lanceolata	25.21	20.09	5.12	23.51	0.84	0.89	0.14	0.75	0.41	0.25
Lecythis lurida	24.78	19.18	5.61	23.27	0.83	0.80	0.14	0.66	0.40	0.21
Lecythis pisonis	25.49	18.96	6.52	24.11	0.92	0.87	0.14	0.73	0.48	0.37
Leptolobium dasycarpum	24.20	19.78	4.42	21.38	0.59	0.99	0.72	0.27	0.89	0.96
Leptolobium elegans	22.83	19.22	3.61	20.05	0.38	0.89	0.59	0.30	0.69	0.72
Leucaena leucocephala	24.47	20.54	3.93	21.32	0.57	0.78	0.62	0.16	0.73	0.76
Leucochloron incuriale	24.07	13.54	10.53	18.28	0.15	1.01	0.27	0.74	0.74	0.79
Leucochloron limae	24.35	23.69	0.66	24.26	0.96	1.02	0.64	0.38	0.70	0.74
Libidibia ferrea	25.21	19.21	6.00	23.90	0.89	0.87	0.32	0.55	0.63	0.60
Licania apetala	23.58	20.08	3.51	22.30	0.69	0.92	0.41	0.52	0.87	0.95

Licania arianeae	23.82	22.62	1.20	23.47	0.87	0.52	0.37	0.15	0.50	0.42
Licania belemii	24.78	20.59	4.20	24.23	0.95	0.60	0.14	0.45	0.19	0.05
Licania hoehnei	24.78	17.27	7.51	21.30	0.57	0.91	0.14	0.77	0.39	0.21
Licania humilis	23.52	20.57	2.95	21.56	0.60	0.79	0.52	0.27	0.74	0.80
Licania hypoleuca	24.72	20.59	4.13	23.71	0.90	0.63	0.14	0.49	0.29	0.14
Licania kunthiana	24.30	15.29	9.01	21.48	0.60	0.89	0.18	0.72	0.64	0.63
Licania lamentanda	24.66	20.59	4.08	23.95	0.91	0.60	0.15	0.45	0.21	0.08
Licania littoralis	24.71	20.59	4.13	24.41	0.96	0.60	0.14	0.45	0.16	0.01
Licania micrantha	24.78	24.33	0.45	24.48	0.97	0.19	0.17	0.02	0.18	0.06
Licania naviculistipula	24.78	21.54	3.24	22.89	0.77	0.27	0.17	0.10	0.23	0.08
Licania octandra	25.38	17.19	8.19	22.01	0.64	0.91	0.14	0.78	0.60	0.58
Licania salzmannii	24.64	23.40	1.24	24.44	0.96	0.49	0.15	0.34	0.18	0.03
Licania spicata	22.13	14.59	7.55	18.02	0.13	0.78	0.60	0.18	0.71	0.76
Licania tomentosa	25.36	20.08	5.28	24.81	0.99	0.85	0.63	0.22	0.67	0.66
Licaria armeniaca	22.78	16.07	6.70	20.74	0.49	0.84	0.15	0.70	0.53	0.43
Licaria bahiana	24.72	18.65	6.06	23.73	0.91	0.76	0.14	0.63	0.26	0.10
Licaria guianensis	24.64	20.09	4.54	24.42	0.97	0.67	0.15	0.52	0.17	0.02
Lithraea brasiliensis	19.35	13.67	5.68	16.54	0.05	0.32	0.13	0.19	0.20	0.05
Lithraea molleoides	23.16	14.79	8.37	18.95	0.22	0.99	0.10	0.89	0.49	0.37
Lonchocarpus cultratus	25.36	14.79	10.56	20.72	0.49	1.00	0.14	0.86	0.52	0.41
Lonchocarpus nitidus	19.23	15.51	3.71	18.02	0.13	0.22	0.12	0.10	0.15	0.01
Lonchocarpus sericeus	25.21	22.19	3.02	24.80	1.00	1.02	0.48	0.54	0.62	0.61
Ludwigia elegans	22.78	16.83	5.95	19.44	0.32	0.81	0.77	0.03	0.79	0.89
Luehea candicans	24.07	14.79	9.28	20.88	0.54	1.01	0.35	0.66	0.72	0.76
Luehea conwentzii	22.93	22.32	0.62	22.62	0.74	0.57	0.32	0.25	0.54	0.45
Luehea cymulosa	24.66	21.54	3.12	23.57	0.87	0.27	0.14	0.13	0.18	0.05
Luehea divaricata	24.71	14.75	9.96	19.18	0.29	0.99	0.10	0.89	0.38	0.21
Luehea grandiflora	24.78	16.54	8.25	20.36	0.42	0.91	0.17	0.74	0.75	0.80
Luehea ochrophylla	25.50	21.80	3.70	24.52	0.98	0.78	0.37	0.41	0.65	0.65
Luehea paniculata	25.02	18.31	6.72	22.29	0.69	1.00	0.63	0.37	0.72	0.75
Luetzelburgia andrade-limae	24.21	23.69	0.52	24.01	0.91	1.02	0.99	0.03	1.00	1.00
Luetzelburgia auriculata	24.62	20.48	4.14	23.15	0.83	1.01	0.77	0.23	0.96	0.98
Luetzelburgia guaissara	21.57	18.31	3.27	19.71	0.34	0.70	0.27	0.43	0.51	0.41
Mabea fistulifera	22.78	18.54	4.24	20.13	0.39	0.88	0.49	0.39	0.76	0.82
Mabea glaziovii	24.71	24.16	0.55	24.52	0.97	0.21	0.14	0.07	0.15	0.01
Mabea piriri	25.49	17.76	7.73	22.64	0.77	0.77	0.15	0.61	0.51	0.42
Mabea pohliana	21.81	18.05	3.76	19.82	0.34	0.87	0.71	0.17	0.83	0.92
Machaerium aculeatum	25.59	16.56	9.03	21.17	0.55	0.98	0.17	0.81	0.60	0.57
Machaerium acutifolium	24.35	17.17	7.17	22.42	0.74	1.03	0.64	0.39	0.92	0.97
Machaerium amplum	23.58	17.77	5.82	23.09	0.84	0.92	0.77	0.16	0.91	0.98
Machaerium brasiliense	23.94	13.55	10.39	19.81	0.36	1.01	0.18	0.83	0.72	0.72
Machaerium debile	22.80	16.83	5.98	20.33	0.44	0.88	0.49	0.38	0.81	0.91
Machaerium floridum	23.69	18.34	5.35	20.61	0.52	1.02	0.60	0.43	0.80	0.91
Machaerium fulvovenosum	24.07	13.55	10.53	22.50	0.74	1.02	0.37	0.65	0.63	0.61
Machaerium hatschbachii	21.57	18.67	2.91	20.31	0.39	0.43	0.27	0.16	0.39	0.19
Machaerium hirtum	24.79	16.93	7.86	20.98	0.50	1.01	0.14	0.87	0.74	0.80
Machaerium incorruptibile	22.93	22.19	0.74	22.73	0.77	0.62	0.32	0.30	0.49	0.39
Machaerium lanceolatum	21.42	17.19	4.23	19.07	0.26	0.81	0.48	0.33	0.75	0.81

Machaerium legale	21.40	17.89	3.51	18.76	0.19	0.77	0.63	0.14	0.67	0.66
Machaerium leucopterum	22.56	21.40	1.16	22.47	0.72	0.68	0.32	0.36	0.34	0.18
Machaerium nyctitans	24.20	13.54	10.65	18.90	0.24	0.99	0.26	0.73	0.70	0.73
Machaerium opacum	23.08	17.35	5.73	20.09	0.41	0.99	0.71	0.28	0.83	0.92
Machaerium ovalifolium	23.82	22.79	1.03	23.48	0.86	0.58	0.37	0.21	0.48	0.36
Machaerium paraguariense	23.16	15.33	7.83	19.11	0.24	0.85	0.10	0.76	0.34	0.17
Machaerium pedicellatum	22.87	20.54	2.32	22.03	0.68	0.98	0.32	0.65	0.59	0.55
Machaerium punctatum	24.45	19.81	4.64	21.27	0.55	1.00	0.46	0.54	0.92	0.97
Machaerium scleroxylon	23.94	17.69	6.24	19.55	0.30	1.02	0.30	0.72	0.68	0.70
Machaerium stipitatum	24.45	13.62	10.83	19.95	0.39	1.00	0.10	0.90	0.60	0.59
Machaerium uncinatum	22.62	17.95	4.67	21.36	0.59	0.62	0.37	0.25	0.41	0.24
Machaerium villosum	24.62	13.54	11.08	18.88	0.22	1.02	0.48	0.54	0.74	0.80
Machaonia acuminata	23.94	20.34	3.59	22.23	0.71	0.97	0.41	0.56	0.54	0.44
Maclura tinctoria	24.21	14.79	9.41	20.35	0.42	1.02	0.11	0.91	0.71	0.73
Macoubea guianensis	24.71	23.54	1.18	24.58	0.98	0.42	0.14	0.28	0.16	0.01
Macrolobium latifolium	24.78	20.59	4.20	23.87	0.91	0.60	0.14	0.46	0.23	0.07
Macropeplus dentatus	16.83	11.46	5.37	13.51	0.01	0.77	0.68	0.09	0.71	0.71
Macropeplus ligustrinus	20.29	16.51	3.78	19.05	0.25	0.84	0.43	0.41	0.58	0.55
Macrothumia kuhlmannii	24.62	18.81	5.81	22.32	0.73	0.84	0.15	0.69	0.46	0.34
Macrotorus utriculatus	22.62	21.17	1.44	21.87	0.62	0.64	0.35	0.28	0.50	0.40
Magnolia ovata	23.01	15.29	7.71	20.12	0.42	0.83	0.14	0.69	0.60	0.56
Magonia pubescens	24.20	18.99	5.21	21.89	0.65	0.99	0.74	0.26	0.94	0.97
Malouetia cestroides	23.01	15.29	7.71	21.00	0.53	0.86	0.35	0.50	0.51	0.42
Mangifera indica	25.59	19.21	6.38	22.59	0.73	0.98	0.41	0.57	0.68	0.68
Manihot anomala	24.45	15.29	9.16	22.91	0.79	1.03	0.76	0.28	0.94	0.98
Manihot caerulescens	24.62	23.69	0.93	24.39	0.95	1.02	0.97	0.05	0.99	0.99
Manihot carthagenensis	24.47	19.98	4.50	22.48	0.71	1.14	0.66	0.48	0.85	0.95
Manihot grahamii	21.90	17.17	4.72	18.37	0.16	0.86	0.13	0.73	0.48	0.36
Manihot pilosa	21.44	15.97	5.47	19.06	0.26	0.80	0.75	0.05	0.77	0.86
Manilkara longifolia	24.78	21.54	3.24	24.51	0.97	0.59	0.14	0.44	0.16	0.02
Manilkara maxima	24.71	23.97	0.74	24.31	0.95	0.21	0.14	0.07	0.17	0.03
Manilkara rufula	24.47	19.13	5.34	20.25	0.40	0.92	0.60	0.33	0.73	0.77
Manilkara salzmannii	25.50	20.53	4.96	23.45	0.87	0.87	0.14	0.73	0.56	0.51
Manilkara subsericea	23.82	19.09	4.73	22.21	0.71	0.52	0.35	0.18	0.43	0.25
Maprounea brasiliensis	21.12	19.98	1.14	20.23	0.42	0.76	0.38	0.38	0.40	0.23
Maprounea guianensis	25.36	16.54	8.82	20.29	0.46	0.97	0.34	0.63	0.78	0.86
Margaritaria nobilis	25.02	17.04	7.98	22.07	0.66	1.00	0.15	0.86	0.47	0.35
Margaritopsis cephalantha	19.81	17.90	1.91	18.52	0.19	0.87	0.61	0.26	0.75	0.81
Margaritopsis cymuligera	22.52	18.58	3.95	20.11	0.40	0.47	0.23	0.24	0.39	0.21
Marlierea clausseniana	24.71	22.79	1.92	24.22	0.94	0.58	0.14	0.44	0.21	0.07
Marlierea eugenioides	24.78	22.03	2.76	23.38	0.86	0.57	0.17	0.41	0.35	0.17
Marlierea eugeniopsoides	22.17	17.98	4.20	19.39	0.30	0.52	0.14	0.38	0.29	0.11
Marlierea excoriata	24.71	10.40	14.31	19.97	0.35	0.86	0.14	0.71	0.47	0.34
Marlierea laevigata	21.90	13.96	7.94	17.52	0.09	0.90	0.68	0.22	0.77	0.84
Marlierea obscura	23.82	16.07	7.75	21.33	0.58	0.83	0.21	0.62	0.42	0.26
Marlierea racemosa	24.66	13.54	11.12	19.12	0.26	0.99	0.15	0.84	0.71	0.74
Marlierea regeliana	24.42	18.69	5.73	21.50	0.60	0.77	0.17	0.60	0.39	0.21
Marlierea reitzii	21.32	16.98	4.34	20.99	0.53	0.52	0.35	0.17	0.38	0.20

Marlierea silvatica	23.29	16.07	7.22	19.28	0.29	0.64	0.19	0.45	0.33	0.15
Marlierea suaveolens	22.52	16.51	6.01	19.38	0.28	0.66	0.20	0.46	0.49	0.41
Marlierea teuscheriana	22.11	19.18	2.93	19.71	0.31	0.78	0.77	0.01	0.77	0.87
Marlierea verticillaris	24.78	24.40	0.39	24.47	0.97	0.17	0.15	0.01	0.16	0.02
Matayba discolor	24.46	23.29	1.17	23.54	0.86	0.48	0.15	0.33	0.45	0.30
Matayba elaeagnoides	24.06	14.15	9.91	18.71	0.21	0.89	0.10	0.80	0.38	0.20
Matayba guianensis	24.81	14.59	10.23	19.46	0.30	0.97	0.14	0.83	0.62	0.59
Matayba intermedia	23.01	16.98	6.02	20.13	0.38	0.55	0.14	0.41	0.32	0.14
Matayba juglandifolia	22.87	15.29	7.58	19.19	0.27	0.87	0.11	0.77	0.56	0.49
Matayba mollis	20.23	15.29	4.94	18.97	0.26	0.86	0.76	0.10	0.83	0.92
Matayba obovata	22.27	16.07	6.20	18.19	0.15	0.55	0.22	0.34	0.41	0.24
Matayba sylvatica	24.71	24.51	0.20	24.62	0.98	0.15	0.14	0.01	0.14	0.00
Maytenus aquifolia	24.45	13.62	10.83	18.71	0.20	1.00	0.11	0.89	0.54	0.49
Maytenus ardisiaefolia	24.33	19.86	4.47	21.18	0.57	0.68	0.19	0.49	0.38	0.18
Maytenus boaria	15.33	11.84	3.50	12.17	0.00	0.21	0.17	0.04	0.19	0.05
Maytenus brasiliensis	24.33	16.51	7.82	21.46	0.58	0.68	0.19	0.49	0.55	0.47
Maytenus cestrifolia	23.52	20.09	3.42	22.44	0.73	0.67	0.48	0.19	0.57	0.52
Maytenus communis	22.86	13.54	9.31	19.62	0.31	0.84	0.32	0.52	0.70	0.74
Maytenus dasyclada	19.23	15.33	3.90	18.09	0.14	0.20	0.14	0.06	0.19	0.06
Maytenus distichophylla	25.21	19.98	5.24	23.97	0.91	1.14	0.17	0.98	0.60	0.57
Maytenus erythroxyla	25.02	19.13	5.89	20.59	0.49	0.83	0.64	0.19	0.71	0.75
Maytenus evonymoides	22.11	10.40	11.71	16.52	0.06	0.87	0.13	0.74	0.63	0.60
Maytenus floribunda	22.07	18.34	3.73	20.59	0.46	0.98	0.68	0.29	0.83	0.92
Maytenus glaucescens	22.19	16.83	5.36	17.66	0.11	0.62	0.19	0.43	0.24	0.10
Maytenus gonoclada	24.35	10.40	13.94	18.72	0.18	0.98	0.15	0.83	0.59	0.52
Maytenus ilicifolia	24.70	13.67	11.03	19.60	0.31	0.81	0.11	0.70	0.45	0.30
Maytenus littoralis	23.14	17.27	5.87	23.08	0.81	0.49	0.41	0.08	0.41	0.23
Maytenus obtusifolia	25.50	20.90	4.60	24.64	0.99	0.92	0.41	0.52	0.76	0.85
Maytenus rigida	25.21	23.69	1.52	25.12	1.00	1.02	0.63	0.39	0.68	0.71
Maytenus samydaeformis	23.40	22.57	0.83	22.73	0.79	0.57	0.49	0.08	0.55	0.47
Maytenus schumanniana	23.01	17.00	6.00	20.67	0.48	0.83	0.23	0.59	0.47	0.37
Maytenus ubatubensis	22.79	19.49	3.30	22.47	0.72	0.49	0.40	0.09	0.43	0.27
Melanopsidium nigrum	23.52	19.85	3.67	21.67	0.62	0.68	0.32	0.36	0.52	0.45
Melanoxylon brauna	24.72	18.13	6.59	22.42	0.73	1.00	0.14	0.87	0.55	0.48
Melia azedarach	22.30	19.11	3.19	21.09	0.51	0.66	0.17	0.49	0.38	0.22
Melicoccus oliviformis	22.90	22.19	0.70	22.69	0.74	0.62	0.32	0.30	0.46	0.33
Meliosma itatiaiae	19.18	16.54	2.64	18.70	0.22	0.83	0.64	0.19	0.71	0.75
Meliosma sellowii	22.52	10.40	12.12	17.30	0.08	0.87	0.14	0.74	0.41	0.25
Meriania calyptrata	22.52	19.49	3.03	20.10	0.43	0.49	0.45	0.03	0.48	0.39
Meriania claussenii	18.34	15.29	3.05	16.33	0.05	0.77	0.52	0.25	0.69	0.73
Meriania paniculata	22.54	14.59	7.95	17.27	0.10	0.60	0.35	0.25	0.53	0.46
Metrodorea nigra	24.43	14.15	10.29	21.04	0.53	1.00	0.15	0.85	0.64	0.65
Metrodorea stipularis	23.38	17.41	5.97	19.49	0.29	0.91	0.41	0.51	0.76	0.82
Metternichia princeps	22.93	19.09	3.84	22.85	0.80	0.54	0.45	0.08	0.46	0.33
Miconia affinis	24.47	20.59	3.88	22.08	0.68	0.92	0.75	0.18	0.85	0.94
Miconia albicans	25.49	13.62	11.86	22.66	0.74	0.99	0.42	0.57	0.74	0.80
Miconia amacurensis	24.70	21.22	3.48	22.40	0.70	0.83	0.61	0.22	0.69	0.72
Miconia argyrophylla	21.90	15.29	6.60	19.78	0.37	0.81	0.70	0.11	0.77	0.88

Miconia atlantica	17.76	17.27	0.49	17.35	0.10	0.53	0.47	0.06	0.48	0.38
Miconia brasiliensis	22.54	14.59	7.95	18.34	0.17	0.77	0.35	0.41	0.48	0.37
Miconia brunnea	20.99	14.74	6.25	17.49	0.10	0.83	0.66	0.17	0.76	0.84
Miconia budlejoides	22.10	13.88	8.22	18.02	0.13	0.85	0.23	0.62	0.55	0.48
Miconia cabucu	22.52	16.07	6.45	18.41	0.19	0.63	0.18	0.45	0.32	0.15
Miconia calvescens	24.46	16.69	7.77	22.23	0.70	0.85	0.15	0.70	0.57	0.53
Miconia castaneiflora	13.54	10.40	3.14	12.24	0.00	0.77	0.76	0.01	0.76	0.84
Miconia chamissois	20.86	19.57	1.29	20.76	0.50	0.77	0.59	0.18	0.63	0.60
Miconia chartacea	22.03	13.62	8.40	17.74	0.11	0.87	0.21	0.67	0.71	0.75
Miconia cinerascens	22.18	11.46	10.72	14.68	0.03	0.86	0.16	0.70	0.66	0.63
Miconia cinnamomifolia	24.06	14.31	9.75	19.54	0.30	0.87	0.20	0.67	0.54	0.48
Miconia collatata	22.26	21.38	0.88	21.45	0.59	0.76	0.41	0.35	0.69	0.73
Miconia corallina	20.57	10.40	10.17	15.76	0.05	0.76	0.76	0.00	0.76	0.85
Miconia cubatanensis	22.32	13.62	8.69	18.81	0.22	0.87	0.18	0.70	0.46	0.35
Miconia cuspidata	20.59	17.89	2.70	18.56	0.19	0.85	0.63	0.22	0.68	0.71
Miconia discolor	22.30	16.07	6.23	20.37	0.42	0.83	0.21	0.62	0.50	0.40
Miconia dodecandra	24.36	20.77	3.59	21.82	0.62	0.66	0.38	0.28	0.45	0.33
Miconia eichleri	19.89	15.29	4.59	18.71	0.22	0.76	0.21	0.54	0.33	0.16
Miconia eugenioides	21.20	21.04	0.16	21.06	0.54	0.76	0.76	0.00	0.76	0.83
Miconia fasciculata	19.98	14.31	5.67	16.47	0.05	0.75	0.38	0.36	0.60	0.62
Miconia holosericea	24.73	19.09	5.64	22.90	0.77	0.71	0.47	0.24	0.56	0.52
Miconia hyemalis	18.99	14.42	4.57	17.30	0.10	0.77	0.14	0.63	0.23	0.09
Miconia hypoleuca	25.02	12.62	12.40	24.11	0.94	0.76	0.14	0.62	0.37	0.19
Miconia ibaguensis	20.08	13.00	7.08	14.12	0.02	0.85	0.70	0.15	0.72	0.79
Miconia inconspicua	19.11	16.98	2.13	18.70	0.20	0.77	0.47	0.29	0.68	0.69
Miconia latecrenata	22.83	10.40	12.43	19.07	0.26	0.89	0.22	0.68	0.76	0.84
Miconia lepidota	24.63	19.21	5.41	21.20	0.56	0.78	0.32	0.46	0.67	0.69
Miconia ligustroides	25.49	13.54	11.94	19.60	0.30	0.77	0.17	0.60	0.48	0.35
Miconia lurida	24.71	24.03	0.69	24.35	0.96	0.17	0.14	0.02	0.16	0.02
Miconia minutiflora	25.59	13.88	11.71	22.59	0.77	0.87	0.48	0.40	0.61	0.61
Miconia mirabilis	24.78	20.59	4.20	24.15	0.95	0.89	0.14	0.75	0.18	0.05
Miconia octopetala	24.62	16.51	8.11	18.75	0.25	0.66	0.17	0.50	0.55	0.48
Miconia paniculata	24.33	14.59	9.75	16.87	0.07	0.76	0.19	0.57	0.59	0.57
Miconia pepericarpa	20.27	15.29	4.98	18.99	0.26	0.81	0.73	0.08	0.77	0.86
Miconia petropolitana	21.65	16.56	5.09	19.49	0.31	0.52	0.12	0.39	0.45	0.32
Miconia prasina	25.59	16.83	8.76	23.80	0.88	0.92	0.14	0.78	0.54	0.47
Miconia pusilliflora	23.14	10.40	12.74	15.30	0.04	0.83	0.13	0.70	0.57	0.51
Miconia pyrifolia	24.72	15.29	9.42	23.58	0.89	0.77	0.14	0.63	0.24	0.09
Miconia rimalis	23.82	15.29	8.53	20.02	0.36	0.85	0.37	0.48	0.62	0.61
Miconia sellowiana	21.52	10.40	11.11	15.36	0.03	0.84	0.17	0.68	0.69	0.70
Miconia splendens	24.46	10.40	14.06	23.32	0.83	0.76	0.15	0.61	0.21	0.07
Miconia theizans	20.29	14.31	5.98	15.55	0.04	0.84	0.31	0.53	0.72	0.76
Miconia tomentosa	24.81	24.49	0.32	24.74	0.99	0.64	0.63	0.01	0.64	0.63
Miconia trianae	21.90	17.77	4.13	18.38	0.17	0.98	0.73	0.25	0.78	0.88
Miconia tristis	22.52	13.62	8.90	18.47	0.18	0.84	0.21	0.63	0.61	0.60
Miconia urophylla	21.90	13.54	8.35	17.62	0.12	0.85	0.75	0.10	0.77	0.85
Miconia valtheri	22.10	17.19	4.91	18.23	0.18	0.52	0.47	0.05	0.49	0.41
Miconia willdenowii	20.47	14.59	5.88	18.38	0.16	0.77	0.60	0.17	0.73	0.77

Micrandra elata	24.04	18.73	5.31	21.70	0.61	1.00	0.37	0.63	0.72	0.75
Micropholis compta	25.49	19.09	6.39	23.15	0.80	0.65	0.15	0.50	0.29	0.14
Micropholis crassipedicellata	24.78	14.59	10.20	21.72	0.64	0.76	0.14	0.61	0.38	0.22
Micropholis gardneriana	24.81	13.96	10.86	21.08	0.51	0.90	0.14	0.75	0.63	0.60
Micropholis guyanensis	24.66	20.59	4.08	24.07	0.91	0.60	0.14	0.45	0.18	0.06
Micropholis venulosa	24.72	19.18	5.54	21.80	0.64	0.98	0.14	0.84	0.68	0.68
Mimosa bimucronata	22.78	18.94	3.83	19.27	0.29	0.54	0.10	0.44	0.19	0.06
Mimosa caesalpiniifolia	24.49	19.91	4.58	22.46	0.75	0.92	0.45	0.48	0.83	0.92
Mimosa scabrella	17.66	11.84	5.82	14.87	0.03	0.75	0.16	0.59	0.20	0.08
Mimosa tenuiflora	24.47	21.13	3.34	23.65	0.87	1.03	0.29	0.75	0.78	0.88
Moldenhawera blanchetiana	24.64	20.59	4.05	24.30	0.95	0.60	0.15	0.45	0.18	0.05
Moldenhawera papillanthera	23.52	22.79	0.72	23.49	0.87	0.58	0.49	0.09	0.50	0.41
Moldenhawera polysperma	22.62	19.09	3.52	20.46	0.45	0.63	0.51	0.12	0.56	0.48
Mollinedia acutissima	20.66	16.51	4.15	16.86	0.08	0.73	0.48	0.25	0.66	0.65
Mollinedia argyrogyna	22.62	13.54	9.08	17.96	0.13	0.88	0.47	0.41	0.65	0.63
Mollinedia blumenaviana	21.65	17.19	4.46	18.02	0.14	0.77	0.30	0.47	0.48	0.38
Mollinedia boracensis	22.52	16.69	5.83	19.61	0.33	0.63	0.41	0.22	0.46	0.32
Mollinedia clavigera	21.57	10.40	11.17	17.21	0.10	0.81	0.21	0.60	0.39	0.21
Mollinedia elegans	23.01	15.31	7.69	18.07	0.14	0.83	0.15	0.67	0.52	0.44
Mollinedia engleriana	23.01	14.59	8.42	19.28	0.26	0.75	0.42	0.33	0.48	0.36
Mollinedia gilgiana	22.09	16.51	5.57	17.63	0.11	0.66	0.41	0.25	0.58	0.53
Mollinedia glabra	23.41	17.27	6.14	20.38	0.46	0.71	0.41	0.31	0.57	0.51
Mollinedia lamprophylla	23.01	19.09	3.91	22.13	0.69	0.52	0.41	0.11	0.44	0.28
Mollinedia longifolia	22.54	15.97	6.57	17.40	0.10	0.75	0.35	0.40	0.72	0.72
Mollinedia marqueteana	24.78	22.79	1.99	23.69	0.88	0.58	0.17	0.41	0.42	0.28
Mollinedia oligantha	23.01	16.98	6.02	19.17	0.26	0.61	0.35	0.25	0.49	0.39
Mollinedia ovata	23.01	17.27	5.73	20.94	0.54	0.62	0.35	0.26	0.48	0.37
Mollinedia pachysandra	21.65	16.69	4.96	19.16	0.28	0.63	0.47	0.16	0.50	0.42
Mollinedia puberula	22.40	14.59	7.81	19.62	0.33	0.64	0.49	0.15	0.59	0.55
Mollinedia salicifolia	19.09	16.51	2.58	17.22	0.09	0.66	0.48	0.18	0.54	0.46
Mollinedia schottiana	23.14	13.55	9.59	20.39	0.45	0.85	0.14	0.71	0.37	0.17
Mollinedia triflora	22.11	13.62	8.49	18.06	0.13	0.86	0.14	0.71	0.42	0.26
Mollinedia uleana	23.01	16.07	6.93	19.34	0.27	0.86	0.21	0.66	0.47	0.38
Mollinedia widgrenii	22.69	13.55	9.14	19.26	0.28	0.88	0.41	0.47	0.73	0.77
Molopanthera paniculata	23.94	20.29	3.66	21.71	0.59	0.84	0.32	0.52	0.59	0.55
Monilicarpa brasiliana	23.40	22.56	0.84	22.94	0.82	0.57	0.32	0.25	0.46	0.33
Moquinia racemosa	20.02	15.29	4.72	18.11	0.14	0.87	0.76	0.12	0.82	0.93
Moquiniastrum oligocephalum	24.78	24.30	0.48	24.59	0.97	0.62	0.48	0.14	0.55	0.50
Moquiniastrum paniculatum	19.30	16.86	2.44	18.46	0.19	0.77	0.50	0.27	0.69	0.74
Moquiniastrum polymorphum	24.20	13.62	10.57	19.22	0.28	0.99	0.10	0.89	0.43	0.29
Mouriri arborea	23.82	20.09	3.73	22.39	0.72	0.67	0.37	0.30	0.53	0.43
Mouriri chamissoana	22.52	16.07	6.45	18.79	0.23	0.86	0.21	0.65	0.41	0.27
Mouriri elliptica	23.64	21.37	2.26	23.52	0.85	0.98	0.90	0.08	0.92	0.98
Mouriri glazioviana	23.82	15.29	8.53	19.98	0.39	0.98	0.37	0.60	0.79	0.89
Mouriri pusa	24.30	23.18	1.12	23.69	0.88	1.02	0.90	0.12	0.99	0.99
Mouriri regeliana	24.71	20.59	4.13	24.21	0.94	0.60	0.14	0.45	0.17	0.03
Muellera campestris	24.21	15.46	8.75	19.05	0.24	1.02	0.13	0.89	0.30	0.13

Muellera montana	24.62	19.91	4.71	24.19	0.94	1.02	0.64	0.38	0.87	0.96
Muellera virgilioides	22.56	20.99	1.57	22.48	0.71	0.90	0.32	0.58	0.34	0.18
Myracrodruon urundeuva	25.21	19.20	6.02	21.89	0.64	1.14	0.35	0.80	0.89	0.96
Myrceugenia acutiflora	19.37	16.93	2.44	18.14	0.15	0.75	0.23	0.52	0.47	0.34
Myrceugenia alpigena	14.42	12.08	2.34	13.44	0.01	0.75	0.14	0.61	0.61	0.62
Myrceugenia bracteosa	16.93	10.40	6.53	15.06	0.03	0.76	0.70	0.06	0.74	0.79
Myrceugenia brevipedicellata	18.73	12.91	5.82	13.19	0.00	0.71	0.41	0.30	0.68	0.70
Myrceugenia campestris	22.27	16.69	5.58	19.05	0.25	0.64	0.22	0.42	0.50	0.40
Myrceugenia euosma	17.02	11.84	5.18	12.79	0.00	0.21	0.14	0.08	0.18	0.04
Myrceugenia glaucescens	19.93	11.92	8.01	15.86	0.04	0.70	0.10	0.60	0.25	0.09
Myrceugenia kleinii	21.21	17.35	3.86	18.94	0.24	0.52	0.47	0.05	0.49	0.39
Myrceugenia miersiana	20.88	10.40	10.47	13.81	0.01	0.83	0.12	0.71	0.59	0.58
Myrceugenia myrcioides	22.90	11.84	11.06	16.71	0.08	0.90	0.10	0.80	0.47	0.36
Myrceugenia ovalifolia	17.61	13.00	4.61	13.58	0.01	0.70	0.18	0.53	0.69	0.70
Myrceugenia ovata	22.36	11.84	10.52	16.39	0.05	0.75	0.17	0.57	0.57	0.53
Myrceugenia oxysepala	15.75	11.84	3.91	12.91	0.00	0.70	0.14	0.57	0.24	0.10
Myrceugenia pilotantha	21.96	11.92	10.05	17.04	0.09	0.66	0.18	0.48	0.55	0.46
Myrceugenia reitzii	21.80	18.09	3.71	19.88	0.36	0.47	0.21	0.26	0.31	0.13
Myrceugenia rufescens	17.19	11.46	5.74	12.18	0.00	0.76	0.47	0.29	0.74	0.79
Myrceugenia scutellata	17.89	13.03	4.86	15.37	0.03	0.69	0.63	0.06	0.67	0.66
Myrceugenia seriatoramosa	18.81	16.83	1.99	18.14	0.14	0.77	0.49	0.28	0.58	0.55
Myrcia aethusa	22.52	13.88	8.64	19.28	0.29	0.78	0.15	0.63	0.35	0.15
Myrcia amazonica	22.80	12.62	10.18	17.07	0.07	0.88	0.40	0.48	0.76	0.82
Myrcia amplexicaulis	23.97	21.81	2.16	22.93	0.80	0.51	0.15	0.35	0.31	0.15
Myrcia anacardiifolia	22.17	16.98	5.19	20.38	0.44	0.75	0.23	0.52	0.45	0.32
Myrcia anceps	22.62	15.29	7.33	21.53	0.62	0.86	0.47	0.39	0.64	0.64
Myrcia bergiana	24.78	22.69	2.09	24.34	0.95	0.44	0.14	0.29	0.20	0.08
Myrcia brasiliensis	23.51	16.07	7.44	21.35	0.57	0.85	0.14	0.70	0.34	0.15
Myrcia costeira	22.32	19.00	3.32	20.33	0.44	0.45	0.14	0.31	0.30	0.13
Myrcia crocea	24.33	15.29	9.04	22.26	0.68	0.87	0.19	0.68	0.61	0.58
Myrcia diaphana	18.99	16.83	2.16	17.57	0.10	0.77	0.30	0.47	0.35	0.19
Myrcia eriocalyx	19.31	15.72	3.59	17.70	0.13	0.77	0.75	0.02	0.77	0.84
Myrcia eximia	25.02	20.53	4.49	23.27	0.82	0.66	0.14	0.52	0.25	0.10
Myrcia fenzliana	20.99	14.55	6.44	18.52	0.20	0.84	0.66	0.18	0.76	0.83
Myrcia flagellaris	22.11	16.07	6.03	21.08	0.55	0.50	0.31	0.19	0.43	0.26
Myrcia follii	23.52	22.79	0.72	23.15	0.83	0.58	0.49	0.09	0.54	0.44
Myrcia glabra	22.79	15.26	7.53	18.37	0.17	0.84	0.15	0.69	0.25	0.12
Myrcia guianensis	25.02	10.40	14.62	16.86	0.08	1.00	0.16	0.84	0.39	0.21
Myrcia hartwegiana	18.05	11.92	6.14	13.89	0.02	0.77	0.14	0.63	0.66	0.68
Myrcia hatschbachii	19.41	14.37	5.04	15.97	0.03	0.52	0.18	0.34	0.24	0.09
Myrcia hebepetala	24.21	13.62	10.58	18.95	0.23	1.00	0.13	0.86	0.65	0.64
Myrcia heringii	22.17	18.00	4.18	22.15	0.68	0.52	0.45	0.06	0.46	0.32
Myrcia hexasticha	22.79	21.28	1.51	21.40	0.59	0.54	0.40	0.14	0.40	0.24
Myrcia ilheosensis	24.30	21.08	3.22	22.10	0.70	0.51	0.17	0.34	0.40	0.23
Myrcia insigniflora	23.01	19.49	3.51	21.82	0.64	0.73	0.35	0.37	0.45	0.32
Myrcia insularis	23.14	16.07	7.07	20.95	0.51	0.41	0.36	0.06	0.39	0.22
Myrcia isaiana	23.82	19.13	4.69	21.36	0.57	0.68	0.37	0.31	0.41	0.25
Myrcia laruotteana	22.11	13.03	9.08	16.12	0.05	0.86	0.20	0.66	0.72	0.75

Myrcia lineata	23.82	16.51	7.31	19.22	0.29	0.66	0.37	0.29	0.57	0.54
Myrcia macrocarpa	22.17	18.81	3.36	19.90	0.35	0.85	0.43	0.42	0.48	0.38
Myrcia micropetala	24.72	24.42	0.29	24.62	0.98	0.17	0.14	0.03	0.15	0.01
Myrcia mischophylla	20.34	19.87	0.47	20.25	0.42	0.88	0.84	0.04	0.87	0.96
Myrcia multiflora	25.50	10.40	15.10	20.14	0.40	0.92	0.10	0.82	0.46	0.34
Myrcia neoblanchetiana	23.01	17.35	5.66	22.45	0.71	0.63	0.41	0.22	0.50	0.40
Myrcia neodimorpha	22.87	21.52	1.35	22.28	0.72	0.72	0.51	0.22	0.59	0.55
Myrcia neoglabra	24.78	15.29	9.49	23.90	0.90	0.78	0.14	0.65	0.25	0.10
Myrcia nobilis	23.04	15.29	7.75	20.33	0.43	1.03	0.76	0.28	0.90	0.96
Myrcia oblongata	19.55	15.26	4.29	16.18	0.05	0.77	0.10	0.67	0.24	0.08
Myrcia obovata	24.47	12.62	11.85	16.82	0.08	0.90	0.62	0.28	0.77	0.86
Myrcia obversa	24.78	21.52	3.27	23.69	0.89	0.72	0.17	0.55	0.43	0.27
Myrcia oligantha	14.75	13.55	1.19	14.18	0.02	0.71	0.13	0.58	0.17	0.03
Myrcia ovata	22.69	13.96	8.74	21.76	0.62	0.68	0.32	0.36	0.41	0.24
Myrcia palustris	22.32	11.84	10.48	17.40	0.09	0.44	0.10	0.34	0.23	0.08
Myrcia pubiflora	24.03	18.34	5.69	22.48	0.74	0.77	0.17	0.60	0.30	0.12
Myrcia pubipetala	24.64	16.07	8.56	19.29	0.29	0.67	0.14	0.53	0.31	0.12
Myrcia pulchra	22.83	10.40	12.43	16.40	0.07	0.89	0.21	0.69	0.54	0.48
Myrcia racemosa	25.02	19.09	5.93	22.04	0.70	0.66	0.14	0.52	0.40	0.22
Myrcia retorta	22.36	10.40	11.96	15.13	0.03	0.91	0.14	0.77	0.62	0.64
Myrcia rufipes	22.11	16.09	6.02	16.26	0.06	0.83	0.78	0.05	0.83	0.93
Myrcia selloi	22.52	13.88	8.64	20.06	0.39	0.73	0.11	0.63	0.50	0.42
Myrcia spectabilis	24.46	16.07	8.39	19.91	0.38	0.66	0.15	0.52	0.40	0.23
Myrcia splendens	25.49	10.40	15.08	18.50	0.20	0.98	0.14	0.84	0.65	0.67
Myrcia strigipes	24.72	16.07	8.64	21.88	0.65	0.64	0.14	0.50	0.35	0.15
Myrcia sucrei	23.82	22.93	0.89	23.50	0.86	0.53	0.37	0.16	0.46	0.31
Myrcia sylvatica	25.59	19.13	6.46	22.99	0.81	1.14	0.48	0.67	0.65	0.64
Myrcia tenuivenosa	22.04	14.59	7.45	19.62	0.36	0.73	0.37	0.36	0.48	0.38
Myrcia tijucensis	23.01	14.59	8.42	18.58	0.20	0.71	0.14	0.57	0.31	0.17
Myrcia tomentosa	24.81	12.62	12.19	19.98	0.40	1.14	0.35	0.79	0.78	0.88
Myrcia undulata	19.55	15.29	4.26	16.29	0.04	0.71	0.21	0.50	0.31	0.13
Myrcia vauthiereana	20.08	18.13	1.95	19.83	0.35	0.87	0.83	0.05	0.85	0.95
Myrcia venulosa	24.07	10.40	13.67	17.03	0.08	0.98	0.27	0.70	0.75	0.81
Myrcia vittoriana	24.72	21.52	3.20	23.83	0.89	0.72	0.14	0.58	0.33	0.17
Myrcianthes gigantea	19.11	13.67	5.44	17.27	0.09	0.71	0.14	0.57	0.22	0.08
Myrcianthes pungens	23.16	15.42	7.75	19.03	0.24	0.97	0.10	0.88	0.28	0.13
Myrciaria cuspidata	22.82	16.56	6.27	18.13	0.14	1.01	0.18	0.83	0.26	0.10
Myrciaria delicatula	23.40	11.84	11.56	18.08	0.13	0.71	0.17	0.54	0.36	0.17
Myrciaria floribunda	24.78	12.62	12.16	19.98	0.35	1.14	0.14	1.01	0.55	0.50
Myrciaria glanduliflora	20.79	20.62	0.16	20.67	0.50	0.97	0.84	0.14	0.87	0.95
Myrciaria glazioviana	22.87	20.08	2.79	21.47	0.62	0.85	0.32	0.53	0.58	0.55
Myrciaria glomerata	22.17	19.31	2.86	19.61	0.33	0.77	0.77	0.00	0.77	0.85
Myrciaria guaquiea	22.93	20.53	2.40	21.23	0.58	0.68	0.45	0.24	0.53	0.45
Myrciaria pilosa	22.78	19.87	2.91	22.42	0.70	0.86	0.71	0.14	0.80	0.91
Myrciaria plinioides	20.27	17.04	3.23	18.03	0.16	0.77	0.15	0.62	0.18	0.04
Myrciaria tenella	25.36	12.62	12.74	19.37	0.30	0.98	0.10	0.88	0.48	0.36
Myrocarpus fastigiatus	22.52	15.29	7.23	21.35	0.62	0.77	0.32	0.45	0.45	0.29
Myrocarpus frondosus	23.40	15.51	7.89	19.15	0.27	0.84	0.10	0.73	0.35	0.18

Myroxylon peruiferum	23.40	14.79	8.60	20.44	0.46	1.14	0.28	0.87	0.69	0.70
Myrrhinium atropurpureum	19.23	11.84	7.40	15.95	0.05	0.32	0.10	0.23	0.25	0.11
Myrsine balansae	19.21	18.62	0.59	18.75	0.21	0.69	0.13	0.56	0.43	0.28
Myrsine coriacea	24.06	10.40	13.65	17.75	0.12	0.98	0.10	0.88	0.43	0.30
Myrsine gardneriana	22.09	10.40	11.68	16.49	0.07	0.84	0.16	0.68	0.61	0.60
Myrsine guianensis	25.38	13.99	11.40	20.18	0.42	0.98	0.14	0.84	0.59	0.54
Myrsine hermogenesii	22.52	15.29	7.23	18.69	0.19	0.61	0.18	0.43	0.36	0.18
Myrsine laetevirens	20.55	16.95	3.59	17.13	0.09	0.35	0.14	0.21	0.22	0.08
Myrsine lancifolia	21.32	13.55	7.77	18.17	0.14	0.82	0.27	0.55	0.71	0.73
Myrsine leuconeura	21.32	17.35	3.97	17.89	0.11	0.85	0.48	0.37	0.71	0.74
Myrsine lineata	22.11	10.40	11.71	15.78	0.05	0.80	0.66	0.13	0.72	0.74
Myrsine loefgrenii	20.78	15.46	5.32	18.47	0.19	0.69	0.10	0.59	0.18	0.05
Myrsine parvifolia	23.29	18.73	4.56	19.99	0.38	0.48	0.27	0.21	0.29	0.14
Myrsine parvula	19.37	14.42	4.95	17.70	0.12	0.52	0.10	0.43	0.19	0.05
Myrsine rubra	22.69	21.19	1.50	21.36	0.60	0.44	0.39	0.04	0.40	0.24
Myrsine umbellata	24.78	10.40	14.38	17.09	0.10	0.92	0.10	0.82	0.57	0.49
Myrsine venosa	23.14	13.62	9.52	20.89	0.51	0.84	0.30	0.53	0.41	0.23
Naucleopsis oblongifolia	24.33	17.92	6.41	20.47	0.47	0.87	0.19	0.68	0.71	0.77
Nectandra angustifolia	22.60	18.73	3.87	22.41	0.73	0.77	0.41	0.37	0.42	0.28
Nectandra barbellata	18.81	16.98	1.83	17.14	0.09	0.49	0.47	0.01	0.48	0.38
Nectandra cissiflora	24.06	13.96	10.10	21.57	0.60	0.91	0.29	0.62	0.66	0.64
Nectandra cuspidata	25.49	19.59	5.90	22.43	0.75	0.92	0.41	0.51	0.61	0.56
Nectandra grandiflora	23.22	11.46	11.76	17.76	0.12	0.91	0.17	0.73	0.57	0.52
Nectandra hihua	22.36	18.54	3.82	19.30	0.32	0.78	0.41	0.37	0.66	0.66
Nectandra lanceolata	23.51	12.91	10.60	18.90	0.22	0.86	0.10	0.76	0.52	0.43
Nectandra leucantha	22.62	14.59	8.04	19.88	0.36	0.65	0.31	0.34	0.40	0.23
Nectandra megapotamica	23.22	13.62	9.59	19.02	0.24	0.91	0.10	0.81	0.38	0.19
Nectandra membranacea	24.66	12.62	12.04	20.01	0.36	0.90	0.15	0.76	0.49	0.38
Nectandra nitidula	23.22	12.62	10.60	17.67	0.12	0.91	0.45	0.45	0.72	0.77
Nectandra oppositifolia	23.14	13.88	9.26	19.79	0.38	0.87	0.14	0.73	0.60	0.59
Nectandra psammophila	24.33	22.10	2.23	22.71	0.77	0.50	0.19	0.32	0.43	0.30
Nectandra puberula	22.59	13.62	8.96	20.94	0.52	0.83	0.35	0.47	0.52	0.44
Nectandra reticulata	22.60	15.29	7.31	20.66	0.47	0.81	0.38	0.42	0.64	0.64
Nectandra venulosa	22.17	15.29	6.88	21.38	0.58	0.80	0.76	0.04	0.77	0.82
Neea floribunda	24.62	20.53	4.08	24.19	0.93	0.49	0.17	0.33	0.20	0.07
Neea hermaphrodita	22.22	20.59	1.63	21.03	0.55	0.86	0.78	0.08	0.83	0.93
Neea hirsuta	24.72	20.59	4.13	24.32	0.95	0.60	0.14	0.46	0.17	0.02
Neea parviflora	22.13	19.18	2.96	21.14	0.57	0.78	0.77	0.01	0.78	0.87
Neea verticillata	24.78	21.80	2.99	24.51	0.97	0.61	0.17	0.44	0.21	0.06
Neocalyptrocalyx nectareus	24.79	20.53	4.25	24.33	0.95	0.63	0.45	0.18	0.60	0.59
Neomitranthes amblymitra	19.86	14.59	5.27	16.76	0.08	0.60	0.36	0.24	0.43	0.28
Neomitranthes cordifolia	20.79	18.98	1.81	19.51	0.32	0.35	0.16	0.19	0.23	0.08
Neomitranthes gemballae	18.42	17.61	0.82	17.87	0.14	0.25	0.16	0.09	0.21	0.08
Neomitranthes glomerata	23.01	16.07	6.93	20.30	0.44	0.73	0.23	0.50	0.48	0.38
Neomitranthes langsdorffii	23.40	22.67	0.73	22.91	0.78	0.57	0.37	0.20	0.44	0.30
Neomitranthes obscura	24.71	22.36	2.35	23.52	0.86	0.42	0.14	0.28	0.28	0.09
Neomitranthes sctictophylla	23.82	20.59	3.24	22.27	0.69	0.60	0.37	0.22	0.50	0.41
Neomitranthes warmingiana	22.52	17.88	4.64	19.93	0.40	0.71	0.37	0.34	0.43	0.28

Neoraputia alba	23.82	20.53	3.29	22.68	0.77	0.78	0.37	0.41	0.58	0.55
Neoraputia magnifica	24.62	21.96	2.65	22.53	0.76	0.64	0.17	0.47	0.55	0.48
Ocotea aciphylla	24.71	14.31	10.40	20.60	0.49	0.90	0.14	0.76	0.57	0.55
Ocotea acutifolia	19.80	17.63	2.17	17.72	0.13	0.84	0.13	0.71	0.16	0.02
Ocotea aniboides	22.60	21.81	0.79	22.25	0.68	0.63	0.51	0.12	0.56	0.51
Ocotea argentea	23.82	21.52	2.30	23.30	0.84	0.72	0.37	0.35	0.47	0.33
Ocotea beulahiae	20.25	18.75	1.50	19.14	0.26	0.70	0.59	0.11	0.69	0.72
Ocotea bicolor	23.27	12.62	10.64	16.03	0.05	0.87	0.24	0.63	0.60	0.60
Ocotea brachybotrya	24.49	13.00	11.50	17.07	0.07	0.87	0.36	0.52	0.67	0.69
Ocotea canaliculata	25.38	19.60	5.78	24.38	0.96	0.78	0.14	0.64	0.27	0.11
Ocotea catharinensis	21.29	16.98	4.30	18.39	0.19	0.77	0.14	0.62	0.37	0.17
Ocotea cernua	23.40	20.53	2.86	21.16	0.55	0.60	0.45	0.15	0.48	0.37
Ocotea complicata	24.71	20.53	4.18	23.85	0.91	0.60	0.14	0.45	0.22	0.07
Ocotea confertiflora	23.94	22.79	1.15	23.32	0.86	0.58	0.32	0.26	0.49	0.38
Ocotea corymbosa	24.71	10.40	14.31	19.24	0.28	0.98	0.14	0.83	0.72	0.78
Ocotea daphnifolia	24.64	14.59	10.05	20.10	0.40	0.99	0.15	0.84	0.42	0.26
Ocotea diospyrifolia	22.90	10.40	12.49	19.28	0.28	0.90	0.13	0.77	0.51	0.43
Ocotea dispersa	23.14	13.55	9.58	19.49	0.33	0.83	0.23	0.60	0.54	0.48
Ocotea divaricata	24.46	15.29	9.17	20.37	0.46	0.83	0.15	0.68	0.52	0.46
Ocotea elegans	23.82	13.62	10.20	18.44	0.18	0.87	0.16	0.71	0.44	0.32
Ocotea fasciculata	22.59	22.04	0.55	22.37	0.70	0.63	0.57	0.06	0.59	0.56
Ocotea glauca	24.64	20.09	4.54	24.12	0.93	0.67	0.14	0.53	0.20	0.06
Ocotea glaziovii	23.94	12.62	11.32	19.03	0.23	0.86	0.21	0.65	0.58	0.57
Ocotea glomerata	25.59	15.29	10.30	23.49	0.86	0.92	0.48	0.45	0.63	0.66
Ocotea indecora	24.33	11.46	12.88	19.21	0.28	0.84	0.12	0.72	0.43	0.28
Ocotea lanata	22.79	15.29	7.50	18.60	0.20	0.77	0.21	0.56	0.63	0.62
Ocotea lancifolia	24.78	12.91	11.87	15.07	0.03	0.87	0.16	0.71	0.67	0.71
Ocotea laxa	22.79	12.62	10.17	18.99	0.24	0.84	0.20	0.64	0.59	0.56
Ocotea leucoxylon	24.66	17.35	7.32	22.77	0.78	0.64	0.15	0.49	0.53	0.44
Ocotea limae	25.49	19.60	5.89	24.26	0.95	0.66	0.63	0.03	0.64	0.62
Ocotea lobbii	23.41	21.32	2.09	22.83	0.79	0.44	0.40	0.04	0.41	0.25
Ocotea longifolia	25.49	15.97	9.52	21.64	0.61	0.83	0.58	0.25	0.65	0.67
Ocotea mandioccana	19.75	15.29	4.46	17.53	0.10	0.83	0.21	0.62	0.49	0.41
Ocotea minarum	22.87	10.40	12.47	18.63	0.20	0.86	0.59	0.27	0.70	0.74
Ocotea mosenii	23.40	16.54	6.86	21.02	0.52	0.83	0.46	0.37	0.58	0.58
Ocotea nectandrifolia	19.75	16.98	2.76	18.17	0.14	0.65	0.24	0.41	0.56	0.52
Ocotea nitida	24.72	20.09	4.62	23.98	0.92	0.84	0.14	0.71	0.24	0.09
Ocotea notata	25.49	16.83	8.66	24.04	0.90	0.78	0.42	0.36	0.58	0.56
Ocotea nutans	22.69	13.03	9.66	17.94	0.12	0.83	0.25	0.58	0.35	0.14
Ocotea odorifera	24.70	11.46	13.24	18.28	0.18	1.00	0.12	0.88	0.62	0.61
Ocotea paranapiacabensis	22.52	16.07	6.45	17.02	0.07	0.47	0.36	0.11	0.37	0.20
Ocotea percurrens	24.72	23.55	1.16	24.40	0.95	0.19	0.14	0.05	0.15	0.01
Ocotea pomaderroides	20.34	13.96	6.39	18.53	0.18	0.88	0.68	0.20	0.82	0.92
Ocotea porosa	21.46	13.88	7.58	15.82	0.04	0.70	0.14	0.56	0.21	0.08
Ocotea puberula	24.71	13.03	11.68	17.95	0.15	0.88	0.10	0.78	0.36	0.19
Ocotea pulchella	24.07	11.46	12.62	19.52	0.32	0.97	0.10	0.87	0.35	0.16
Ocotea pulchra	20.79	18.00	2.79	18.41	0.16	0.52	0.21	0.31	0.27	0.10
Ocotea silvestris	22.93	14.31	8.62	19.06	0.26	0.83	0.14	0.69	0.39	0.22

Ocotea spectabilis	23.64	20.59	3.05	23.08	0.81	0.60	0.41	0.18	0.48	0.35
Ocotea spixiana	23.27	19.14	4.13	20.65	0.49	0.87	0.46	0.42	0.81	0.90
Ocotea tabacifolia	22.52	18.00	4.53	20.21	0.43	0.52	0.45	0.06	0.48	0.39
Ocotea teleiandra	23.40	16.07	7.33	19.94	0.40	0.77	0.20	0.57	0.44	0.28
Ocotea tristis	20.80	13.62	7.18	20.18	0.41	0.86	0.35	0.51	0.49	0.37
Ocotea urbaniana	19.37	17.04	2.33	18.37	0.16	0.61	0.15	0.46	0.22	0.08
Ocotea vaccinioides	19.86	13.03	6.83	18.35	0.17	0.87	0.37	0.50	0.51	0.44
Ocotea velloziana	24.33	12.62	11.71	20.65	0.49	0.86	0.19	0.67	0.60	0.58
Ocotea velutina	23.82	17.77	6.06	20.12	0.39	0.85	0.37	0.48	0.72	0.75
Ocotea venulosa	22.79	16.98	5.81	21.84	0.64	0.52	0.45	0.07	0.46	0.34
Ocotea villosa	21.90	18.65	3.24	19.69	0.36	0.85	0.52	0.33	0.80	0.91
Ophthalmoblapton pedunculare	24.64	20.59	4.05	24.11	0.92	0.60	0.15	0.45	0.20	0.05
Oreopanax capitatus	24.47	15.97	8.51	21.47	0.61	0.92	0.41	0.51	0.57	0.51
Oreopanax fulvus	25.21	11.84	13.37	15.82	0.04	0.63	0.17	0.46	0.24	0.09
Ormosia arborea	23.64	13.54	10.09	20.42	0.45	0.98	0.16	0.82	0.55	0.46
Ormosia fastigiata	23.08	13.62	9.46	19.90	0.35	0.82	0.37	0.45	0.67	0.68
Ormosia minor	22.59	17.35	5.24	19.17	0.26	0.57	0.48	0.09	0.52	0.45
Ormosia nitida	23.82	23.40	0.42	23.57	0.88	0.49	0.37	0.12	0.44	0.29
Ouratea castaneifolia	25.02	12.62	12.40	21.30	0.58	0.98	0.62	0.35	0.72	0.75
Ouratea conduplicata	24.78	24.42	0.36	24.57	0.99	0.17	0.14	0.03	0.15	0.01
Ouratea cuspidata	23.52	19.14	4.38	20.01	0.39	0.70	0.37	0.33	0.60	0.61
Ouratea floribunda	20.75	11.46	9.29	13.89	0.01	0.87	0.72	0.16	0.78	0.88
Ouratea gigantophylla	24.62	23.55	1.06	23.70	0.89	0.51	0.15	0.36	0.18	0.04
Ouratea hexasperma	25.59	13.62	11.96	23.39	0.85	1.02	0.61	0.41	0.66	0.70
Ouratea multiflora	22.10	16.07	6.03	19.32	0.27	0.50	0.36	0.15	0.48	0.39
Ouratea parviflora	23.01	14.79	8.21	19.70	0.34	0.84	0.14	0.69	0.48	0.38
Ouratea polygyna	25.02	13.62	11.40	19.90	0.35	0.87	0.66	0.21	0.77	0.84
Ouratea semiserrata	22.11	10.40	11.71	17.20	0.08	0.90	0.59	0.31	0.78	0.89
Ouratea spectabilis	21.90	17.69	4.21	20.17	0.42	0.85	0.72	0.13	0.84	0.94
Oxandra martiana	23.40	18.34	5.06	20.45	0.43	0.77	0.37	0.40	0.70	0.75
Oxandra nitida	23.82	20.09	3.73	22.85	0.77	0.73	0.32	0.41	0.42	0.27
Pachira aquatica	25.49	24.49	1.00	24.76	1.00	0.65	0.63	0.03	0.63	0.64
Pachira endecaphylla	23.82	17.69	6.13	21.91	0.66	0.80	0.32	0.48	0.51	0.41
Pachira glabra	24.71	19.21	5.50	21.06	0.56	0.66	0.14	0.52	0.53	0.43
Pachystroma longifolium	23.64	17.04	6.60	20.67	0.49	0.98	0.14	0.83	0.39	0.20
Palicourea forsteronioides	19.81	19.14	0.67	19.44	0.29	0.87	0.70	0.17	0.76	0.82
Palicourea guianensis	24.62	12.62	11.99	15.36	0.03	0.85	0.17	0.69	0.74	0.81
Palicourea jungiana	21.17	14.79	6.38	18.62	0.19	0.66	0.20	0.46	0.28	0.11
Paradrypetes ilicifolia	22.90	20.47	2.42	21.82	0.64	0.78	0.57	0.21	0.73	0.77
Parapiptadenia pterosperma	23.64	20.59	3.05	22.36	0.69	0.72	0.32	0.40	0.57	0.53
Parapiptadenia rigida	23.16	16.93	6.23	19.53	0.30	0.71	0.10	0.61	0.33	0.15
Paratecoma peroba	23.64	20.02	3.62	22.04	0.67	0.87	0.41	0.46	0.64	0.63
Parinari alvimii	24.78	23.97	0.81	24.44	0.98	0.18	0.14	0.03	0.16	0.01
Parinari excelsa	23.82	17.19	6.63	20.85	0.49	0.67	0.35	0.32	0.48	0.38
Parkia pendula	25.49	21.22	4.27	24.80	1.00	0.83	0.14	0.69	0.55	0.49
Paubrasilia echinata	25.49	19.21	6.28	23.44	0.85	0.66	0.27	0.40	0.49	0.39
Pausandra morisiana	24.62	18.02	6.60	22.36	0.70	0.77	0.16	0.61	0.37	0.17
Paypayrola blanchetiana	25.02	21.80	3.23	24.09	0.93	0.66	0.14	0.52	0.30	0.13

Peltogyne angustiflora	23.40	19.09	4.30	21.66	0.63	0.77	0.49	0.28	0.60	0.57
Peltogyne confertiflora	24.71	20.53	4.18	23.90	0.90	0.45	0.14	0.30	0.20	0.06
Peltogyne discolor	22.93	22.52	0.41	22.55	0.75	0.53	0.32	0.21	0.33	0.14
Peltogyne pauciflora	24.62	21.54	3.07	23.75	0.88	0.70	0.15	0.55	0.23	0.07
Peltophorum dubium	24.79	17.41	7.38	21.62	0.58	1.14	0.12	1.03	0.53	0.45
Pera anisotricha	22.11	18.96	3.15	21.27	0.56	0.85	0.71	0.15	0.78	0.89
Pera glabrata	25.59	12.62	12.96	20.97	0.55	0.91	0.14	0.77	0.52	0.45
Pera heteranthera	23.82	19.09	4.73	22.12	0.69	0.78	0.37	0.41	0.59	0.56
Pereskia grandifolia	24.20	22.52	1.67	23.52	0.86	1.02	0.32	0.70	0.72	0.78
Pereskia stenantha	24.30	23.69	0.61	24.08	0.92	1.02	0.97	0.05	1.00	0.99
Peritassa flaviflora	22.78	18.99	3.79	21.08	0.56	0.80	0.47	0.33	0.70	0.72
Persea americana	22.40	18.44	3.96	21.66	0.63	0.81	0.49	0.31	0.55	0.47
Persea fulva	19.84	17.77	2.07	18.73	0.20	0.81	0.77	0.04	0.80	0.88
Persea major	20.02	12.62	7.39	17.30	0.09	0.87	0.18	0.70	0.50	0.36
Persea rufotomentosa	22.78	14.74	8.04	18.04	0.15	0.87	0.70	0.17	0.77	0.87
Persea venosa	22.17	14.31	7.86	19.47	0.31	0.80	0.24	0.56	0.56	0.47
Persea willdenovii	23.27	11.46	11.81	18.66	0.21	0.91	0.16	0.74	0.72	0.78
Philyra brasiliensis	22.90	18.89	4.01	22.54	0.72	0.69	0.32	0.37	0.34	0.17
Phyllanthus acuminatus	24.35	18.54	5.81	20.55	0.49	1.00	0.42	0.59	0.76	0.83
Phyllostemonodaphne geminiflora	24.64	13.00	11.64	21.32	0.60	0.83	0.15	0.68	0.38	0.22
Phytolacca dioica	23.16	17.00	6.16	19.48	0.31	0.61	0.10	0.51	0.27	0.10
Picramnia ciliata	23.14	17.45	5.69	21.05	0.54	0.86	0.41	0.45	0.56	0.48
Picramnia gardneri	22.52	12.91	9.61	16.51	0.06	0.83	0.32	0.50	0.61	0.58
Picramnia glazioviana	24.62	13.55	11.06	19.88	0.40	0.87	0.17	0.71	0.68	0.70
Picramnia parvifolia	22.11	12.91	9.20	16.08	0.05	0.78	0.17	0.61	0.55	0.47
Picramnia ramiflora	22.90	18.13	4.77	20.82	0.49	0.89	0.28	0.61	0.44	0.31
Picramnia sellowii	23.52	15.29	8.23	20.56	0.48	0.83	0.41	0.42	0.64	0.64
Picrasma crenata	24.63	15.29	9.34	19.83	0.33	0.87	0.12	0.75	0.64	0.62
Pilocarpus giganteus	24.62	18.96	5.65	21.33	0.58	0.81	0.17	0.64	0.72	0.77
Pilocarpus pauciflorus	21.80	16.56	5.25	17.91	0.13	0.79	0.27	0.52	0.34	0.17
Pilocarpus pennatifolius	22.78	15.46	7.32	18.46	0.18	0.59	0.10	0.49	0.19	0.05
Pilocarpus riedelianus	24.78	20.53	4.25	23.82	0.89	0.61	0.17	0.44	0.21	0.07
Pilocarpus spicatus	22.69	21.23	1.47	22.36	0.70	0.87	0.32	0.55	0.77	0.84
Pimenta pseudocaryophyllus	22.32	10.40	11.91	14.94	0.03	0.87	0.18	0.70	0.71	0.75
Piper aduncum	22.52	15.29	7.23	19.23	0.28	0.78	0.11	0.68	0.29	0.13
Piper amalago	23.18	18.37	4.81	20.69	0.48	0.90	0.31	0.59	0.73	0.79
Piper arboreum	23.38	15.29	8.09	21.59	0.63	0.91	0.23	0.69	0.80	0.90
Piper cernuum	23.28	15.29	7.99	20.00	0.38	0.91	0.21	0.69	0.65	0.68
Piper gaudichaudianum	22.79	16.51	6.28	19.03	0.26	0.74	0.13	0.61	0.35	0.17
Piper glabratum	21.57	19.12	2.45	20.96	0.50	0.78	0.43	0.35	0.74	0.79
Piper tuberculatum	22.60	22.30	0.31	22.52	0.75	0.42	0.41	0.01	0.41	0.25
Piptadenia gonoacantha	23.94	17.17	6.76	19.70	0.32	1.01	0.23	0.79	0.71	0.75
Piptadenia paniculata	24.33	16.07	8.26	20.34	0.43	0.77	0.19	0.58	0.59	0.57
Piptadenia stipulacea	25.21	19.98	5.23	23.24	0.87	1.14	0.63	0.51	0.77	0.86
Piptadenia viridiflora	24.45	19.98	4.47	24.02	0.92	1.14	0.97	0.18	1.01	1.00
Piptocarpha angustifolia	18.93	13.67	5.26	15.52	0.03	0.70	0.12	0.58	0.28	0.13
Piptocarpha axillaris	23.27	10.40	12.86	16.32	0.05	0.87	0.14	0.74	0.65	0.68
Piptocarpha macropoda	22.57	10.40	12.16	17.24	0.09	0.90	0.27	0.63	0.74	0.81

Piptocarpha regnellii	17.19	13.03	4.16	14.31	0.02	0.75	0.47	0.28	0.73	0.77
Piptocarpha sellowii	20.83	17.76	3.06	19.67	0.33	0.72	0.31	0.41	0.57	0.50
Piranhea securinega	24.62	24.04	0.58	24.60	0.97	1.00	0.97	0.03	0.97	0.98
Pisonia aculeata	20.71	13.88	6.83	18.83	0.22	0.70	0.35	0.35	0.46	0.29
Pisonia ambigua	24.33	15.46	8.87	19.19	0.24	0.92	0.10	0.81	0.43	0.29
Pisonia zapallo	19.23	17.02	2.21	18.35	0.16	0.28	0.11	0.17	0.14	0.00
Pityrocarpa moniliformis	24.45	21.54	2.91	23.69	0.89	1.02	0.27	0.75	0.86	0.95
Plathymenia reticulata	25.49	19.46	6.02	22.73	0.78	1.02	0.27	0.75	0.76	0.82
Platycyamus regnellii	24.12	17.17	6.94	19.76	0.34	0.97	0.27	0.71	0.76	0.83
Platymiscium floribundum	24.47	13.96	10.52	21.31	0.57	1.03	0.20	0.83	0.66	0.63
Platymiscium pubescens	24.35	18.99	5.36	23.05	0.79	1.02	0.64	0.38	0.88	0.96
Platypodium elegans	24.21	18.05	6.16	20.12	0.36	1.02	0.42	0.60	0.76	0.84
Plenckia populnea	22.90	16.30	6.60	21.06	0.54	0.89	0.74	0.16	0.85	0.95
Pleroma arboreum	22.57	14.31	8.26	14.94	0.03	0.76	0.48	0.28	0.72	0.77
Pleroma candolleana	24.68	13.00	11.68	15.04	0.03	0.89	0.48	0.41	0.73	0.79
Pleroma fissinervia	22.03	13.03	9.00	18.63	0.22	0.77	0.57	0.19	0.64	0.62
Pleroma granulosum	22.62	16.54	6.09	20.47	0.45	0.84	0.35	0.49	0.63	0.62
Pleroma mutabilis	24.47	15.97	8.50	18.40	0.19	0.75	0.24	0.51	0.50	0.40
Pleroma stenocarpa	22.79	17.77	5.03	19.06	0.25	0.81	0.46	0.35	0.72	0.78
Pleroma trichopoda	22.18	20.80	1.37	22.06	0.67	0.44	0.35	0.09	0.39	0.23
Plinia callosa	24.78	24.62	0.17	24.70	0.99	0.17	0.14	0.02	0.16	0.01
Plinia cauliflora	24.40	13.99	10.42	20.20	0.42	0.97	0.42	0.55	0.69	0.71
Plinia complanata	22.10	18.00	4.11	20.75	0.51	0.52	0.41	0.10	0.48	0.37
Plinia edulis	23.01	18.98	4.03	21.41	0.58	0.63	0.16	0.47	0.50	0.41
Plinia grandifolia	24.33	19.58	4.75	20.83	0.50	0.84	0.19	0.65	0.67	0.71
Plinia peruviana	22.30	17.03	5.27	18.67	0.21	0.85	0.23	0.62	0.35	0.17
Plinia pseudodichasiantha	21.21	18.00	3.21	18.69	0.20	0.52	0.21	0.32	0.36	0.18
Plinia renatiana	23.82	22.90	0.93	23.19	0.83	0.57	0.37	0.20	0.51	0.44
Plinia rivularis	25.50	16.56	8.94	20.54	0.47	0.77	0.10	0.67	0.25	0.09
Podocarpus lambertii	15.33	12.91	2.42	14.31	0.02	0.75	0.13	0.62	0.41	0.24
Podocarpus sellowii	22.79	13.96	8.84	16.09	0.05	0.83	0.24	0.58	0.68	0.69
Poecilanthe falcata	24.07	19.98	4.10	23.06	0.80	1.14	0.32	0.82	0.60	0.59
Poecilanthe grandiflora	22.82	20.79	2.04	21.15	0.56	1.01	0.97	0.03	0.98	0.98
Poecilanthe parviflora	22.30	18.67	3.63	20.64	0.49	0.71	0.14	0.57	0.54	0.45
Poecilanthe ulei	24.30	23.04	1.26	23.71	0.88	1.03	0.97	0.06	1.00	0.99
Poeppigia procera	24.21	15.97	8.24	19.40	0.29	1.03	0.57	0.46	0.79	0.87
Pogonophora schomburgkiana	25.59	19.09	6.49	24.20	0.94	0.87	0.14	0.74	0.51	0.46
Poincianella bracteosa	24.12	22.32	1.80	23.94	0.89	0.97	0.87	0.10	0.96	0.99
Poincianella pluviosa	24.62	18.65	5.97	23.84	0.90	1.03	0.32	0.71	0.99	0.98
Poincianella pyramidalis	24.62	15.29	9.33	23.99	0.91	1.02	0.66	0.36	0.97	0.98
Pombalia bigibbosa	21.57	18.11	3.47	20.50	0.46	0.43	0.12	0.31	0.33	0.16
Porcelia macrocarpa	22.93	20.28	2.66	22.04	0.67	0.79	0.27	0.52	0.42	0.24
Posoqueria acutifolia	20.66	14.59	6.08	18.32	0.16	0.73	0.49	0.24	0.56	0.50
Posoqueria latifolia	24.70	14.59	10.11	19.30	0.29	0.87	0.14	0.73	0.42	0.25
Posoqueria longiflora	22.69	19.87	2.83	22.01	0.66	0.86	0.44	0.42	0.60	0.55
Pourouma guianensis	24.81	14.32	10.50	22.00	0.67	0.86	0.14	0.72	0.47	0.34
Pourouma mollis	24.72	23.40	1.32	24.55	0.98	0.49	0.14	0.35	0.15	0.02
Pourouma velutina	24.78	20.59	4.20	24.24	0.95	0.60	0.14	0.46	0.18	0.03

Pouteria bangii	25.49	19.81	5.68	23.63	0.88	0.87	0.14	0.73	0.50	0.43
Pouteria bapeba	24.33	19.09	5.24	21.52	0.61	0.62	0.19	0.43	0.44	0.31
Pouteria beaurepairei	22.79	17.69	5.10	21.50	0.61	0.57	0.30	0.27	0.42	0.27
Pouteria bilocularis	24.78	23.55	1.23	24.09	0.93	0.19	0.15	0.03	0.17	0.03
Pouteria bullata	23.82	16.07	7.75	18.53	0.19	0.55	0.36	0.19	0.49	0.39
Pouteria butyrocarpa	23.94	21.54	2.40	22.92	0.77	0.32	0.15	0.17	0.22	0.07
Pouteria caimito	24.71	13.96	10.75	20.20	0.40	0.90	0.14	0.75	0.53	0.46
Pouteria coelomatica	23.82	22.79	1.03	23.40	0.85	0.58	0.37	0.21	0.43	0.29
Pouteria cuspidata	24.78	20.59	4.20	23.93	0.90	0.60	0.17	0.43	0.24	0.09
Pouteria durlandii	22.60	18.42	4.18	19.97	0.37	0.64	0.35	0.28	0.59	0.55
Pouteria filipes	23.40	21.96	1.44	22.66	0.73	0.64	0.49	0.15	0.58	0.52
Pouteria gardneri	25.38	15.29	10.09	22.46	0.70	1.00	0.17	0.84	0.70	0.73
Pouteria gardneriana	24.71	15.31	9.39	20.20	0.43	1.01	0.17	0.84	0.48	0.37
Pouteria glomerata	24.40	19.09	5.31	22.46	0.74	0.75	0.41	0.34	0.49	0.40
Pouteria grandiflora	25.59	19.89	5.70	23.87	0.90	0.78	0.14	0.64	0.56	0.51
Pouteria guianensis	24.78	15.29	9.49	22.62	0.75	0.88	0.15	0.73	0.44	0.31
Pouteria macahensis	24.62	22.87	1.75	24.22	0.95	0.57	0.17	0.40	0.25	0.11
Pouteria macrophylla	24.28	18.81	5.47	22.59	0.75	0.83	0.27	0.56	0.58	0.51
Pouteria pachycalyx	25.36	22.79	2.56	23.58	0.88	0.64	0.41	0.23	0.50	0.41
Pouteria procera	24.03	20.53	3.49	23.30	0.83	0.45	0.17	0.28	0.21	0.07
Pouteria psammophila	23.52	18.04	5.48	21.64	0.63	0.58	0.32	0.26	0.45	0.33
Pouteria ramiflora	24.71	20.29	4.42	22.99	0.79	0.98	0.48	0.50	0.61	0.57
Pouteria reticulata	24.78	18.02	6.77	23.49	0.85	0.67	0.14	0.53	0.27	0.09
Pouteria salicifolia	19.93	17.02	2.91	17.85	0.12	0.22	0.13	0.09	0.14	0.00
Pouteria torta	24.33	19.87	4.46	21.60	0.64	1.00	0.19	0.82	0.69	0.73
Pouteria venosa	23.52	18.04	5.48	21.28	0.55	0.77	0.23	0.54	0.43	0.28
Pradosia kuhlmannii	23.55	19.86	3.70	23.08	0.83	0.37	0.15	0.22	0.23	0.09
Pradosia lactescens	25.49	17.00	8.48	23.14	0.82	0.79	0.14	0.65	0.35	0.15
Pradosia longipedicellata	24.72	24.16	0.56	24.49	0.97	0.21	0.14	0.08	0.16	0.02
Prockia crucis	22.32	18.68	3.64	19.90	0.38	1.14	0.27	0.88	0.68	0.72
Protium aracouchini	25.59	19.85	5.73	23.93	0.91	0.67	0.15	0.52	0.46	0.34
Protium brasiliense	22.78	18.86	3.92	21.25	0.57	0.85	0.44	0.42	0.75	0.82
Protium heptaphyllum	25.59	14.74	10.85	22.50	0.73	0.92	0.14	0.79	0.64	0.62
Protium icicariba	24.78	22.69	2.09	23.60	0.86	0.48	0.14	0.34	0.29	0.13
Protium kleinii	22.59	17.04	5.55	19.08	0.27	0.63	0.15	0.48	0.25	0.10
Protium sagotianum	25.49	21.80	3.69	24.71	0.99	0.65	0.61	0.05	0.64	0.64
Protium spruceanum	24.36	17.69	6.67	20.02	0.40	0.91	0.46	0.45	0.71	0.76
Protium warmingianum	24.78	18.97	5.81	21.68	0.63	0.87	0.14	0.73	0.50	0.42
Protium widgrenii	22.54	15.29	7.25	19.11	0.25	0.86	0.35	0.50	0.77	0.85
Prunus brasiliensis	20.10	13.88	6.22	17.73	0.12	0.84	0.20	0.63	0.39	0.20
Prunus myrtifolia	24.70	10.40	14.30	17.26	0.09	0.92	0.10	0.82	0.55	0.49
Prunus subcoriacea	18.11	12.82	5.28	15.69	0.04	0.28	0.17	0.10	0.24	0.08
Pseudima frutescens	23.82	22.79	1.03	23.12	0.82	0.58	0.37	0.21	0.53	0.48
Pseudobombax grandiflorum	24.20	16.98	7.21	20.87	0.49	0.99	0.15	0.84	0.53	0.48
Pseudobombax longiflorum	23.58	13.62	9.96	19.49	0.30	0.99	0.70	0.30	0.79	0.90
Pseudobombax marginatum	24.62	21.81	2.81	23.62	0.87	1.00	0.71	0.30	0.89	0.96
Pseudobombax tomentosum	24.30	20.20	4.10	22.12	0.67	1.02	0.46	0.56	0.80	0.90
Pseudolmedia laevigata	22.87	13.62	9.24	21.09	0.58	0.89	0.57	0.32	0.79	0.88

Pseudopiptadenia bahiana	24.33	21.54	2.79	22.55	0.73	0.46	0.19	0.27	0.36	0.19
Pseudopiptadenia contorta	24.41	18.34	6.07	21.49	0.61	1.00	0.16	0.84	0.63	0.63
Pseudopiptadenia inaequalis	22.69	14.59	8.10	20.19	0.38	0.68	0.52	0.16	0.61	0.58
Pseudopiptadenia leptostachya	24.35	15.51	8.84	20.39	0.44	0.85	0.43	0.42	0.64	0.63
Pseudopiptadenia warmingii	23.01	18.13	4.88	20.59	0.49	0.84	0.37	0.47	0.64	0.65
Pseudoxandra bahiensis	24.71	20.59	4.12	24.41	0.95	0.60	0.14	0.45	0.18	0.03
Psidium cattleianum	23.14	15.29	7.85	19.97	0.39	0.86	0.10	0.77	0.40	0.22
Psidium guajava	24.47	15.29	9.18	20.90	0.50	0.92	0.17	0.75	0.73	0.79
Psidium guineense	24.68	16.12	8.55	21.64	0.60	0.95	0.41	0.55	0.83	0.92
Psidium longipetiolatum	19.04	15.29	3.75	18.34	0.16	0.21	0.16	0.05	0.17	0.03
Psidium myrtoides	22.44	18.00	4.44	20.14	0.43	0.98	0.45	0.53	0.80	0.90
Psidium ovale	18.67	15.31	3.35	16.69	0.06	0.34	0.17	0.17	0.27	0.10
Psidium rufum	23.40	10.40	13.00	18.62	0.17	0.86	0.48	0.39	0.72	0.76
Psidium salutare	23.08	16.83	6.26	22.09	0.67	0.98	0.74	0.24	0.81	0.90
Psidium sartorianum	24.78	16.86	7.93	21.82	0.65	0.98	0.41	0.57	0.71	0.75
Psychotria alba	19.89	18.95	0.94	19.49	0.30	0.23	0.21	0.02	0.22	0.08
Psychotria carthagenensis	25.49	16.83	8.66	21.71	0.64	0.92	0.15	0.77	0.47	0.36
Psychotria deflexa	21.29	16.83	4.47	19.64	0.37	0.78	0.68	0.10	0.69	0.72
Psychotria fluminensis	23.14	21.17	1.96	23.05	0.81	0.47	0.41	0.06	0.41	0.27
Psychotria glaziovii	22.69	16.98	5.71	20.45	0.44	0.64	0.37	0.27	0.55	0.49
Psychotria hastisepala	22.69	18.69	4.00	21.78	0.61	0.88	0.50	0.37	0.65	0.68
Psychotria laciniata	22.14	16.86	5.28	18.26	0.17	0.50	0.45	0.05	0.49	0.40
Psychotria leiocarpa	22.69	16.51	6.18	19.12	0.26	0.88	0.12	0.76	0.25	0.12
Psychotria mapourioides	24.62	18.54	6.08	21.88	0.65	0.71	0.14	0.57	0.46	0.34
Psychotria nemorosa	22.10	16.51	5.59	18.24	0.15	0.66	0.24	0.42	0.54	0.48
Psychotria nuda	23.14	16.07	7.07	20.64	0.49	0.83	0.20	0.63	0.39	0.22
Psychotria pubigera	21.57	16.51	5.06	19.71	0.34	0.66	0.38	0.28	0.44	0.30
Psychotria rhytidocarpa	19.57	19.18	0.39	19.36	0.29	0.77	0.77	0.00	0.77	0.87
Psychotria stenocalyx	20.29	18.73	1.56	18.80	0.19	0.84	0.27	0.57	0.29	0.12
Psychotria suterella	22.14	13.00	9.14	17.14	0.07	0.87	0.14	0.73	0.43	0.28
Psychotria trichophora	22.69	22.04	0.65	22.44	0.71	0.64	0.59	0.04	0.62	0.60
Psychotria vellosiana	24.70	10.40	14.30	15.77	0.04	0.87	0.15	0.73	0.65	0.68
Pterocarpus rohrii	25.50	15.29	10.21	21.96	0.70	0.90	0.15	0.75	0.55	0.50
Pterocarpus zehntneri	24.30	23.94	0.37	24.17	0.93	1.00	0.97	0.03	0.99	0.98
Pterodon emarginatus	24.35	20.11	4.23	22.48	0.72	1.00	0.19	0.82	0.85	0.94
Pterodon pubescens	22.36	20.48	1.89	21.01	0.55	0.84	0.42	0.42	0.73	0.77
Pterogyne nitens	24.30	19.53	4.77	21.78	0.63	1.02	0.28	0.74	0.78	0.87
Ptilochaeta bahiensis	24.45	22.82	1.62	23.46	0.85	1.03	0.97	0.06	1.00	1.00
Qualea cordata	24.07	12.62	11.45	19.47	0.30	0.97	0.27	0.70	0.77	0.86
Qualea cryptantha	22.76	18.81	3.95	22.04	0.65	0.70	0.56	0.14	0.59	0.54
Qualea dichotoma	23.22	16.30	6.92	22.08	0.69	0.91	0.64	0.27	0.85	0.94
Qualea gestasiana	20.66	18.34	2.32	19.34	0.31	0.86	0.73	0.13	0.81	0.89
Qualea glaziovii	19.86	14.59	5.27	19.12	0.22	0.61	0.37	0.24	0.41	0.24
Qualea grandiflora	23.94	19.31	4.63	21.62	0.62	0.99	0.74	0.26	0.91	0.96
Qualea megalocarpa	23.52	20.08	3.44	22.13	0.68	0.85	0.49	0.36	0.64	0.63
Qualea multiflora	23.82	17.41	6.41	20.38	0.47	0.98	0.37	0.60	0.78	0.87
Qualea parviflora	23.08	19.87	3.21	21.79	0.64	0.98	0.74	0.24	0.92	0.98
Qualea selloi	20.08	16.98	3.09	18.72	0.20	0.87	0.47	0.40	0.71	0.75

Quararibea penduliflora	23.82	21.54	2.28	22.58	0.73	0.58	0.27	0.31	0.40	0.24
Quararibea turbinata	25.49	16.07	9.42	22.28	0.68	0.84	0.17	0.67	0.50	0.41
Quiina glaziovii	24.64	14.59	10.05	20.39	0.46	0.86	0.15	0.71	0.40	0.22
Quiina magallano-gomesii	21.17	15.29	5.88	18.45	0.18	0.83	0.47	0.36	0.61	0.61
Quillaja brasiliensis	22.30	13.67	8.62	17.25	0.10	0.41	0.10	0.31	0.15	0.01
Ramisia brasiliensis	24.35	20.09	4.25	22.33	0.69	0.72	0.27	0.45	0.61	0.61
Randia armata	25.21	17.19	8.02	22.77	0.79	1.14	0.10	1.05	0.52	0.42
Randia ferox	23.34	17.49	5.85	19.10	0.27	0.77	0.10	0.67	0.22	0.09
Rauia nodosa	24.62	23.29	1.32	24.42	0.96	0.49	0.15	0.34	0.19	0.06
Rauvolfia bahiensis	24.33	20.59	3.75	22.49	0.72	0.60	0.15	0.44	0.32	0.14
Rauvolfia grandiflora	25.02	21.52	3.51	22.28	0.69	0.72	0.17	0.56	0.58	0.55
Rauvolfia mattfeldiana	23.82	22.90	0.93	23.43	0.85	0.57	0.37	0.20	0.41	0.25
Rauvolfia sellowii	21.28	18.11	3.17	19.67	0.35	0.87	0.13	0.74	0.62	0.63
Rhamnidium elaeocarpum	23.58	17.17	6.41	21.07	0.54	0.98	0.23	0.75	0.76	0.84
Rhamnidium glabrum	23.64	20.09	3.54	21.47	0.60	0.67	0.41	0.25	0.58	0.55
Rhamnidium molle	24.07	19.98	4.10	22.92	0.78	1.14	0.97	0.18	1.02	1.00
Rhamnus sphaerosperma	20.28	10.40	9.87	13.93	0.01	0.83	0.14	0.69	0.56	0.52
Rhodostemonodaphne capixabensis	23.54	23.29	0.24	23.43	0.87	0.48	0.41	0.07	0.45	0.30
Rhodostemonodaphne macrocalyx	24.71	12.91	11.80	19.43	0.29	0.78	0.14	0.64	0.54	0.49
Richeria grandis	25.14	16.98	8.15	23.81	0.90	0.83	0.24	0.59	0.59	0.57
Ricinus communis	21.29	19.30	1.99	19.80	0.37	0.78	0.67	0.11	0.70	0.72
Rinorea bahiensis	23.94	22.79	1.15	23.40	0.86	0.58	0.32	0.26	0.48	0.36
Rinorea guianensis	25.14	21.81	3.32	23.48	0.85	0.64	0.14	0.50	0.36	0.18
Rinorea laevigata	22.86	22.52	0.34	22.56	0.74	0.45	0.32	0.13	0.33	0.14
Ronabea latifolia	24.51	19.45	5.06	23.99	0.93	0.77	0.14	0.63	0.26	0.10
Roupala longepetiolata	23.69	11.46	12.23	15.71	0.04	1.02	0.40	0.62	0.68	0.67
Roupala montana	24.79	10.40	14.38	16.79	0.07	0.98	0.14	0.84	0.58	0.55
Roupala paulensis	22.09	14.79	7.29	20.37	0.43	1.14	0.41	0.73	0.59	0.56
Roupala sculpta	22.57	17.89	4.68	20.59	0.48	0.63	0.49	0.14	0.58	0.54
Rourea induta	24.04	21.03	3.01	22.63	0.74	1.00	0.79	0.22	0.82	0.93
Rudgea coriacea	22.79	20.80	1.99	21.17	0.57	0.46	0.35	0.11	0.38	0.21
Rudgea gardenioides	18.99	16.98	2.00	18.16	0.14	0.77	0.47	0.29	0.61	0.56
Rudgea jasminoides	23.16	10.40	12.76	18.67	0.19	0.90	0.13	0.76	0.42	0.27
Rudgea minor	24.51	21.07	3.44	21.87	0.62	0.76	0.14	0.62	0.62	0.61
Rudgea recurva	22.69	15.97	6.73	20.72	0.47	0.75	0.20	0.55	0.33	0.17
Rudgea sessilis	19.45	14.32	5.13	17.09	0.08	0.77	0.70	0.08	0.74	0.78
Rudgea vellerea	23.01	17.35	5.66	21.62	0.60	0.53	0.41	0.12	0.45	0.29
Rudgea viburnoides	22.83	17.77	5.06	19.87	0.35	0.98	0.72	0.26	0.80	0.92
Ruprechtia apetala	24.30	20.99	3.32	23.96	0.92	1.00	0.27	0.74	0.94	0.98
Ruprechtia laurifolia	23.29	22.90	0.40	23.26	0.83	0.57	0.48	0.09	0.48	0.37
Ruprechtia laxiflora	24.45	14.37	10.08	20.34	0.41	1.02	0.10	0.92	0.46	0.34
Ruprechtia lundii	22.67	22.52	0.15	22.55	0.75	0.37	0.32	0.05	0.33	0.15
Rustia formosa	23.14	18.84	4.30	21.67	0.60	0.64	0.35	0.28	0.44	0.30
Sacoglottis guianensis	24.71	17.69	7.02	23.44	0.88	0.90	0.14	0.75	0.33	0.15
Sacoglottis mattogrossensis	25.38	18.99	6.40	23.64	0.88	0.90	0.19	0.71	0.63	0.63
Salacia elliptica	23.58	14.59	9.00	20.48	0.47	0.98	0.41	0.56	0.82	0.92
Salacia grandifolia	23.01	16.07	6.93	20.40	0.44	0.64	0.36	0.28	0.47	0.35

Salacia mosenii	22.09	21.57	0.52	21.87	0.63	0.43	0.41	0.02	0.42	0.26
Salix humboldtiana	23.27	18.34	4.93	19.01	0.23	0.86	0.10	0.76	0.65	0.66
Samanea tubulosa	24.93	23.16	1.77	24.30	0.96	0.64	0.28	0.36	0.51	0.41
Sambucus australis	22.17	15.51	6.66	18.99	0.25	0.77	0.11	0.67	0.28	0.11
Sapindus saponaria	25.21	19.59	5.62	23.17	0.81	0.77	0.41	0.36	0.51	0.45
Sapium glandulosum	25.36	12.62	12.74	17.78	0.13	1.14	0.10	1.04	0.53	0.47
Sapium haematospermum	24.07	13.96	10.12	16.10	0.04	0.97	0.68	0.29	0.77	0.85
Sapium obovatum	22.32	20.79	1.53	22.03	0.68	1.01	0.50	0.51	0.88	0.96
Sarcaulus brasiliensis	24.81	18.73	6.09	21.89	0.69	0.84	0.27	0.58	0.50	0.41
Savia dictyocarpa	24.12	17.90	6.22	20.40	0.46	0.97	0.41	0.57	0.66	0.65
Schaefferia argentinensis	18.22	18.11	0.12	18.22	0.14	0.28	0.10	0.18	0.11	0.00
Schefflera angustissima	23.14	13.88	9.26	19.90	0.36	0.77	0.18	0.60	0.44	0.29
Schefflera calva	23.11	10.40	12.71	16.23	0.05	0.86	0.19	0.66	0.67	0.72
Schefflera longipetiolata	22.69	13.00	9.70	16.85	0.08	0.84	0.35	0.48	0.73	0.77
Schefflera macrocarpa	23.22	18.77	4.45	21.59	0.60	0.98	0.73	0.24	0.84	0.92
Schefflera morototoni	25.59	13.62	11.96	22.66	0.75	0.97	0.11	0.86	0.56	0.50
Schinopsis brasiliensis	24.45	20.75	3.70	23.04	0.81	1.02	0.72	0.30	0.96	0.98
Schinus lentiscifolia	17.63	13.67	3.96	16.08	0.05	0.18	0.13	0.05	0.15	0.01
Schinus molle	19.11	15.78	3.33	16.92	0.07	0.22	0.13	0.09	0.21	0.08
Schinus polygama	19.11	11.92	7.19	14.02	0.02	0.70	0.13	0.57	0.21	0.06
Schinus terebinthifolia	23.54	13.67	9.86	17.96	0.14	0.98	0.10	0.88	0.51	0.42
Schistostemon retusum	24.78	24.62	0.17	24.67	0.99	0.17	0.14	0.02	0.15	0.01
Schizocalyx cuspidatus	22.93	16.51	6.42	19.76	0.34	0.87	0.27	0.61	0.74	0.80
Schizolobium parahyba	22.30	18.54	3.76	19.46	0.32	0.78	0.23	0.55	0.43	0.30
Schoepfia brasiliensis	25.14	14.55	10.59	22.51	0.74	0.97	0.15	0.82	0.56	0.49
Scutia buxifolia	19.23	13.67	5.55	16.34	0.06	0.32	0.13	0.19	0.18	0.04
Sebastiania brasiliensis	23.03	13.99	9.04	18.60	0.18	0.98	0.10	0.88	0.39	0.20
Seguieria aculeata	22.36	14.37	7.99	18.84	0.19	0.71	0.11	0.60	0.24	0.09
Seguieria americana	22.86	16.98	5.87	19.15	0.28	0.77	0.13	0.65	0.61	0.60
Seguieria langsdorffii	22.69	13.54	9.15	18.81	0.23	0.87	0.16	0.71	0.68	0.71
Senefeldera verticillata	24.43	16.86	7.58	21.99	0.67	0.81	0.15	0.65	0.57	0.53
Senegalia bahiensis	24.04	21.13	2.91	21.34	0.57	1.00	0.98	0.03	0.99	0.99
Senegalia kallunkiae	22.87	21.52	1.35	21.61	0.62	0.72	0.57	0.15	0.71	0.74
Senegalia langsdorffii	24.30	18.89	5.42	21.69	0.65	1.00	0.69	0.32	0.85	0.94
Senegalia martii	24.30	20.79	3.52	23.13	0.82	1.00	0.97	0.03	0.99	0.98
Senegalia polyphylla	25.21	16.83	8.38	21.62	0.61	1.14	0.21	0.94	0.78	0.87
Senegalia riparia	24.30	14.79	9.50	22.00	0.68	1.00	0.66	0.34	0.89	0.96
Senegalia tenuifolia	25.21	17.21	8.01	23.28	0.83	1.01	0.27	0.74	0.74	0.80
Senegalia tucumanensis	20.71	15.51	5.20	17.79	0.13	0.38	0.11	0.27	0.13	0.00
Senna macranthera	24.47	14.59	9.88	19.46	0.30	1.14	0.27	0.88	0.76	0.83
Senna multijuga	24.20	15.97	8.23	20.21	0.42	0.99	0.18	0.81	0.68	0.70
Senna silvestris	22.22	20.23	1.99	21.08	0.52	0.98	0.38	0.60	0.61	0.58
Senna spectabilis	25.21	18.37	6.84	22.67	0.78	1.02	0.60	0.42	0.87	0.97
Sessea brasiliensis	22.17	14.59	7.58	17.94	0.13	0.77	0.28	0.49	0.60	0.59
Sideroxylon obtusifolium	24.45	18.05	6.40	21.08	0.51	1.00	0.18	0.83	0.52	0.44
Simaba cedron	24.62	19.83	4.78	24.12	0.92	0.73	0.15	0.59	0.32	0.15
Simaba floribunda	25.50	22.52	2.98	23.73	0.87	0.75	0.15	0.60	0.47	0.37
Simaba subcymosa	23.64	19.85	3.78	22.45	0.73	0.62	0.41	0.20	0.52	0.41

Simarouba amara	25.59	19.09	6.49	23.71	0.90	0.98	0.14	0.84	0.55	0.49
Simarouba versicolor	24.49	20.34	4.15	21.48	0.61	0.97	0.63	0.34	0.80	0.90
Simira corumbensis	21.28	20.26	1.01	20.66	0.50	0.71	0.36	0.35	0.41	0.24
Simira gardneriana	24.72	20.23	4.49	24.42	0.94	0.84	0.14	0.70	0.18	0.02
Simira glaziovii	23.82	14.59	9.23	21.76	0.62	0.75	0.27	0.49	0.58	0.51
Simira grazielae	23.40	22.79	0.61	22.92	0.77	0.58	0.49	0.09	0.56	0.48
Simira hexandra	23.32	23.28	0.04	23.28	0.83	0.91	0.91	0.00	0.91	0.97
Simira pikia	22.04	17.41	4.63	20.63	0.47	0.83	0.47	0.36	0.64	0.66
Simira sampaioana	24.62	18.77	5.85	21.55	0.60	1.00	0.32	0.68	0.81	0.91
Simira viridiflora	22.90	17.76	5.13	20.46	0.47	0.86	0.27	0.59	0.56	0.51
Siparuna brasiliensis	24.28	13.62	10.65	20.76	0.50	0.91	0.35	0.55	0.69	0.73
Siparuna guianensis	25.59	17.35	8.24	20.76	0.52	0.91	0.14	0.77	0.71	0.76
Siparuna reginae	24.33	18.13	6.20	21.08	0.56	0.87	0.19	0.69	0.70	0.70
Siphoneugena crassifolia	21.81	10.40	11.41	14.50	0.03	0.90	0.64	0.26	0.75	0.82
Siphoneugena densiflora	22.87	10.40	12.47	16.54	0.06	0.90	0.49	0.41	0.76	0.84
Siphoneugena guilfoyleiana	22.32	21.19	1.12	22.09	0.68	0.44	0.38	0.06	0.41	0.23
Siphoneugena kiaerskoviana	21.38	13.54	7.84	16.79	0.06	0.86	0.60	0.26	0.77	0.85
Siphoneugena kuhlmannii	19.73	15.29	4.44	18.73	0.19	0.77	0.71	0.07	0.75	0.81
Siphoneugena reitzii	21.03	12.62	8.41	13.16	0.01	0.90	0.14	0.76	0.21	0.07
Sloanea eichleri	23.52	19.89	3.63	22.46	0.73	0.77	0.49	0.28	0.56	0.53
Sloanea garckeana	25.38	14.59	10.79	23.44	0.85	0.84	0.14	0.70	0.33	0.16
Sloanea guianensis	25.49	13.00	12.49	20.86	0.50	0.88	0.15	0.72	0.39	0.24
Sloanea hirsuta	24.71	10.40	14.31	18.56	0.18	0.87	0.14	0.74	0.49	0.41
Sloanea lasiocoma	20.82	15.31	5.50	17.43	0.09	0.77	0.17	0.60	0.36	0.18
Sloanea obtusifolia	24.81	17.19	7.62	23.39	0.85	0.67	0.17	0.51	0.48	0.37
Sloanea pubescens	24.81	20.53	4.28	23.46	0.84	0.64	0.15	0.49	0.24	0.09
Solanum argenteum	21.72	16.51	5.21	20.42	0.42	0.79	0.21	0.58	0.46	0.34
Solanum bullatum	22.83	11.46	11.37	16.53	0.05	0.89	0.42	0.47	0.66	0.68
Solanum caavurana	22.69	18.81	3.89	20.96	0.53	0.83	0.36	0.47	0.60	0.61
Solanum campaniforme	24.20	12.91	11.28	13.89	0.01	0.99	0.23	0.76	0.67	0.65
Solanum cernuum	20.25	18.28	1.97	19.20	0.27	0.86	0.75	0.11	0.79	0.90
Solanum cinnamomeum	19.39	13.00	6.39	17.01	0.07	0.77	0.36	0.41	0.63	0.62
Solanum compressum	18.44	11.84	6.60	13.44	0.01	0.18	0.14	0.03	0.17	0.04
Solanum concinnum	19.89	13.55	6.34	14.41	0.02	0.77	0.70	0.07	0.70	0.74
Solanum granulosoleprosum	24.20	13.62	10.57	18.50	0.18	0.99	0.13	0.86	0.63	0.64
Solanum lepidotum	18.73	14.31	4.42	15.40	0.04	0.75	0.71	0.04	0.75	0.80
Solanum leucodendron	20.57	11.46	9.11	17.37	0.11	0.83	0.52	0.30	0.74	0.79
Solanum mauritianum	22.30	13.55	8.74	15.80	0.04	0.71	0.14	0.57	0.32	0.14
Solanum melissarum	22.80	18.81	3.99	21.76	0.61	0.58	0.27	0.31	0.42	0.28
Solanum pabstii	15.46	11.92	3.54	14.66	0.02	0.21	0.14	0.07	0.19	0.05
Solanum paranense	17.66	11.84	5.82	13.08	0.01	0.19	0.17	0.01	0.18	0.05
Solanum pseudoquina	23.82	10.40	13.42	17.36	0.09	0.89	0.14	0.76	0.64	0.65
Solanum rufescens	22.09	16.07	6.01	19.25	0.28	0.86	0.36	0.51	0.60	0.57
Solanum sanctae-catharinae	20.68	12.08	8.60	17.25	0.08	0.71	0.10	0.61	0.28	0.13
Solanum swartzianum	24.78	11.46	13.33	18.18	0.16	0.87	0.15	0.73	0.66	0.67
Solanum variabile	18.68	13.67	5.01	14.35	0.02	0.70	0.18	0.53	0.22	0.08
Solanum vellozianum	22.69	17.27	5.42	21.12	0.55	0.62	0.47	0.15	0.57	0.51
Sorocea bonplandii	23.16	13.54	9.62	18.80	0.22	0.86	0.10	0.76	0.36	0.17

Sorocea guilleminiana	24.78	15.29	9.49	21.37	0.58	0.86	0.14	0.72	0.56	0.52
Sorocea hilarii	25.59	19.18	6.41	23.13	0.82	0.77	0.15	0.62	0.51	0.44
Sorocea jureiana	23.14	22.09	1.06	22.25	0.67	0.46	0.41	0.05	0.42	0.30
Sparattanthelium botocudorum	24.78	24.62	0.17	24.71	0.99	0.63	0.17	0.46	0.39	0.20
Sparattosperma leucanthum	24.35	16.54	7.81	20.18	0.40	1.02	0.29	0.73	0.71	0.77
Spirotheca rivieri	21.21	18.82	2.38	19.82	0.36	0.73	0.23	0.50	0.39	0.19
Spondias macrocarpa	25.21	21.54	3.67	22.96	0.82	1.01	0.27	0.75	0.68	0.66
Spondias mombin	25.59	21.25	4.34	24.35	0.95	1.01	0.41	0.60	0.67	0.69
Spondias tuberosa	24.62	20.38	4.24	24.14	0.93	1.02	0.66	0.36	0.98	0.99
Spondias venulosa	24.30	20.47	3.83	22.65	0.76	1.02	0.32	0.70	0.43	0.27
Stephanopodium blanchetianum	24.78	17.35	7.44	23.25	0.85	0.87	0.15	0.72	0.30	0.14
Stephanopodium engleri	24.30	19.81	4.49	20.23	0.40	1.00	0.86	0.14	0.88	0.96
Stephanopodium estrellense	23.01	17.27	5.73	20.99	0.53	0.47	0.35	0.12	0.41	0.23
Stephanopodium magnifolium	24.62	23.55	1.06	24.15	0.93	0.18	0.15	0.02	0.17	0.02
Stephanopodium organense	21.17	14.59	6.59	16.74	0.08	0.66	0.47	0.19	0.62	0.60
Sterculia apetala	24.72	22.52	2.20	22.92	0.78	1.01	0.32	0.69	0.54	0.49
Sterculia curiosa	24.78	20.11	4.67	23.69	0.91	0.71	0.15	0.56	0.36	0.18
Sterculia striata	25.49	17.69	7.80	21.13	0.54	0.99	0.65	0.34	0.84	0.93
Strychnos brasiliensis	22.83	13.00	9.83	18.72	0.21	0.89	0.10	0.79	0.36	0.17
Strychnos pseudoquina	24.04	20.27	3.77	20.71	0.49	1.00	0.73	0.27	0.80	0.89
Stryphnodendron adstringens	23.08	18.05	5.04	20.93	0.50	0.98	0.58	0.39	0.80	0.89
Stryphnodendron guianense	24.47	19.39	5.08	21.71	0.65	0.92	0.77	0.16	0.82	0.91
Stryphnodendron polyphyllum	24.33	18.13	6.20	20.21	0.43	0.87	0.19	0.69	0.73	0.78
Stryphnodendron pulcherrimum	25.49	19.60	5.89	23.78	0.91	0.78	0.14	0.64	0.53	0.47
Stylogyne lhotzkyana	23.01	17.76	5.24	21.26	0.57	0.79	0.41	0.37	0.48	0.36
Stylogyne pauciflora	19.37	16.98	2.38	18.69	0.20	0.49	0.23	0.26	0.30	0.12
Styrax acuminatus	22.10	15.26	6.84	19.03	0.26	0.77	0.13	0.64	0.46	0.34
Styrax camporum	22.87	13.99	8.89	20.12	0.39	0.90	0.38	0.52	0.75	0.81
Styrax ferrugineus	23.08	19.10	3.98	21.91	0.65	0.98	0.70	0.27	0.80	0.90
Styrax glabratus	22.79	19.08	3.71	21.58	0.63	0.69	0.35	0.34	0.46	0.36
Styrax latifolius	22.80	13.96	8.84	19.30	0.30	0.90	0.58	0.32	0.82	0.92
Styrax leprosus	21.03	11.84	9.19	16.92	0.07	0.90	0.10	0.80	0.24	0.11
Styrax pohlii	22.78	12.91	9.87	20.06	0.38	0.88	0.50	0.38	0.70	0.73
Swartzia acutifolia	24.62	15.51	9.11	21.82	0.62	0.86	0.17	0.70	0.50	0.41
Swartzia apetala	24.78	19.81	4.97	22.68	0.77	0.87	0.15	0.72	0.53	0.48
Swartzia flaemingii	24.78	18.34	6.44	23.05	0.81	0.97	0.14	0.83	0.40	0.23
Swartzia langsdorffii	22.87	14.15	8.72	20.34	0.43	0.57	0.16	0.41	0.42	0.28
Swartzia macrostachya	24.41	18.34	6.07	20.60	0.48	0.98	0.16	0.81	0.54	0.49
Swartzia myrtifolia	24.62	15.29	9.32	20.32	0.44	0.88	0.17	0.71	0.70	0.73
Swartzia oblata	24.35	18.69	5.66	21.50	0.58	0.87	0.35	0.52	0.60	0.58
Swartzia pickelii	25.49	19.60	5.89	23.67	0.89	0.65	0.62	0.03	0.63	0.62
Swartzia reticulata	24.62	23.97	0.64	24.26	0.95	0.18	0.17	0.01	0.17	0.03
Swartzia simplex	24.78	20.53	4.25	22.87	0.78	0.63	0.14	0.48	0.36	0.18
Swartzia submarginata	22.14	18.73	3.41	18.86	0.23	0.50	0.41	0.10	0.41	0.24
Sweetia fruticosa	24.45	19.40	5.05	21.83	0.64	1.02	0.28	0.74	0.77	0.86

Syagrus botryophora	24.78	20.53	4.25	23.68	0.91	0.62	0.14	0.48	0.33	0.16
Syagrus cearensis	24.30	23.15	1.15	23.36	0.85	1.02	0.66	0.36	0.74	0.80
Syagrus coronata	24.78	21.13	3.65	24.56	0.97	0.99	0.48	0.52	0.49	0.39
Syagrus flexuosa	22.76	17.77	5.00	21.04	0.56	0.77	0.56	0.22	0.64	0.63
Syagrus oleracea	24.04	18.37	5.67	20.67	0.49	1.14	0.59	0.55	0.71	0.73
Syagrus pseudococos	23.14	18.04	5.10	22.31	0.72	0.79	0.40	0.39	0.44	0.29
Syagrus romanzoffiana	23.16	15.31	7.85	19.36	0.30	0.87	0.10	0.77	0.45	0.30
Syagrus schizophylla	24.78	24.30	0.48	24.70	0.99	0.51	0.48	0.03	0.48	0.36
Symphonia globulifera	25.36	21.80	3.56	23.76	0.89	0.66	0.14	0.51	0.53	0.46
Symphyopappus itatiayensis	15.78	13.67	2.12	14.20	0.02	0.18	0.18	0.01	0.18	0.04
Symplocos celastrinea	22.11	10.40	11.70	15.97	0.05	0.90	0.27	0.63	0.71	0.77
Symplocos estrellensis	22.79	13.55	9.25	19.02	0.26	0.77	0.38	0.39	0.51	0.45
Symplocos falcata	18.81	10.40	8.41	13.84	0.01	0.83	0.49	0.34	0.70	0.71
Symplocos insignis	21.81	10.40	11.41	13.38	0.01	0.84	0.68	0.16	0.72	0.76
Symplocos laxiflora	22.14	16.07	6.06	19.24	0.28	0.68	0.36	0.32	0.46	0.36
Symplocos nitens	21.22	13.65	7.57	20.44	0.48	0.83	0.45	0.38	0.57	0.53
Symplocos oblongifolia	20.38	13.62	6.76	18.44	0.17	0.85	0.19	0.67	0.60	0.59
Symplocos pubescens	21.32	12.62	8.70	17.04	0.08	0.86	0.41	0.46	0.75	0.80
Symplocos revoluta	20.83	13.99	6.84	17.70	0.12	0.88	0.47	0.40	0.63	0.58
Symplocos tenuifolia	20.83	15.29	5.54	18.44	0.19	0.71	0.18	0.54	0.44	0.31
Symplocos tetrandra	22.02	11.84	10.19	16.33	0.06	0.85	0.10	0.74	0.26	0.10
Symplocos trachycarpos	22.17	19.37	2.81	21.57	0.62	0.50	0.25	0.26	0.43	0.28
Symplocos uniflora	20.22	13.62	6.60	16.65	0.07	0.75	0.10	0.65	0.31	0.12
Syzygium cumini	25.49	22.17	3.32	24.70	0.99	0.77	0.62	0.15	0.64	0.64
Syzygium jambos	23.22	17.35	5.87	20.03	0.39	0.91	0.35	0.56	0.72	0.77
Tabebuia aurea	24.20	21.13	3.06	21.89	0.65	1.02	0.28	0.74	0.94	0.98
Tabebuia cassinoides	24.51	20.59	3.92	22.08	0.69	0.63	0.14	0.49	0.40	0.25
Tabebuia elliptica	25.38	20.59	4.80	24.17	0.94	0.78	0.14	0.64	0.27	0.09
Tabebuia obtusifolia	23.94	20.08	3.87	22.30	0.70	0.85	0.32	0.53	0.53	0.45
Tabebuia reticulata	24.30	21.81	2.49	23.85	0.91	1.02	0.70	0.32	1.01	1.00
Tabebuia roseoalba	25.50	14.79	10.70	22.55	0.74	1.03	0.27	0.77	0.84	0.95
Tabebuia stenocalyx	24.78	19.86	4.93	22.04	0.66	0.64	0.17	0.47	0.45	0.32
Tabernaemontana catharinensis	23.16	17.02	6.14	21.30	0.54	0.77	0.12	0.65	0.47	0.37
Tabernaemontana flavicans	25.02	23.97	1.05	24.57	0.97	0.66	0.17	0.50	0.31	0.14
Tabernaemontana hystrix	22.65	17.19	5.46	21.10	0.54	0.86	0.23	0.63	0.64	0.66
Tabernaemontana laeta	23.29	13.96	9.34	19.75	0.34	0.86	0.27	0.60	0.64	0.64
Tabernaemontana salzmannii	25.02	20.59	4.44	24.25	0.95	0.66	0.14	0.52	0.29	0.12
Tabernaemontana solanifolia	24.30	21.69	2.61	23.60	0.88	1.01	0.51	0.50	0.66	0.69
Tachigali aurea	24.72	13.96	10.77	19.74	0.35	0.99	0.48	0.51	0.79	0.87
Tachigali densiflora	25.59	20.34	5.25	24.79	1.00	0.88	0.15	0.72	0.56	0.51
Tachigali denudata	23.14	16.07	7.07	19.89	0.37	0.90	0.36	0.54	0.69	0.72
Tachigali multijuga	22.09	18.89	3.20	20.81	0.50	0.77	0.41	0.36	0.53	0.46
Tachigali paratyensis	24.33	18.04	6.29	21.05	0.56	1.02	0.19	0.83	0.51	0.41
Tachigali pilgeriana	24.20	18.04	6.15	22.75	0.78	0.99	0.49	0.50	0.54	0.46
Tachigali rugosa	24.30	12.62	11.67	18.71	0.20	0.87	0.45	0.43	0.76	0.83
Tachigali subvelutina	23.08	20.99	2.09	21.91	0.65	0.84	0.79	0.05	0.83	0.93
Tachigali vulgaris	22.87	20.09	2.78	21.42	0.58	0.85	0.45	0.40	0.78	0.87
Talisia cerasina	24.78	19.85	4.93	23.40	0.84	0.63	0.17	0.46	0.29	0.11

Talisia coriacea	23.40	22.67	0.73	22.92	0.79	0.57	0.37	0.20	0.52	0.47
Talisia esculenta	25.49	15.29	10.20	23.61	0.88	1.02	0.14	0.88	0.83	0.92
Talisia macrophylla	24.64	21.54	3.10	24.37	0.94	0.51	0.15	0.36	0.20	0.06
Talisia retusa	25.02	15.29	9.73	23.84	0.89	0.76	0.63	0.13	0.64	0.63
Tapirira guianensis	25.59	13.96	11.63	21.97	0.66	0.98	0.14	0.84	0.60	0.59
Tapirira obtusa	22.87	15.72	7.16	19.40	0.30	0.90	0.48	0.42	0.77	0.85
Tapura amazonica	22.02	16.83	5.20	21.85	0.61	0.85	0.77	0.07	0.84	0.95
Terminalia argentea	24.79	18.69	6.10	21.24	0.57	1.01	0.42	0.59	0.79	0.86
Terminalia australis	19.93	17.02	2.91	19.30	0.27	0.19	0.14	0.05	0.17	0.03
Terminalia dichotoma	24.78	24.33	0.45	24.59	0.98	0.19	0.15	0.03	0.16	0.02
Terminalia fagifolia	24.30	16.83	7.48	23.23	0.83	1.03	0.66	0.37	0.93	0.98
Terminalia glabrescens	24.33	17.77	6.57	20.80	0.55	0.98	0.19	0.79	0.78	0.87
Terminalia januariensis	23.01	16.51	6.49	21.77	0.63	0.83	0.32	0.51	0.46	0.34
Terminalia mameluco	24.79	18.99	5.80	22.34	0.70	0.77	0.27	0.51	0.59	0.56
Terminalia phaeocarpa	22.71	19.50	3.21	21.16	0.55	0.97	0.71	0.26	0.82	0.90
Terminalia triflora	22.53	17.41	5.12	20.19	0.40	0.74	0.31	0.43	0.60	0.57
Ternstroemia brasiliensis	23.51	13.00	10.52	21.72	0.61	0.86	0.34	0.51	0.43	0.30
Tetragastris catuaba	25.14	20.59	4.55	24.65	0.99	0.66	0.14	0.52	0.46	0.32
Tetrastylidium grandifolium	24.62	13.88	10.74	21.22	0.54	0.87	0.17	0.71	0.43	0.27
Tetrorchidium parvulum	19.10	14.31	4.79	15.68	0.04	0.80	0.48	0.32	0.74	0.78
Tetrorchidium rubrivenium	23.14	15.51	7.63	18.73	0.23	0.79	0.13	0.66	0.31	0.13
Thyrsodium spruceanum	25.59	19.60	5.99	23.84	0.90	0.92	0.14	0.79	0.59	0.58
Tibouchina estrellensis	23.14	10.40	12.74	17.41	0.10	0.88	0.41	0.47	0.69	0.72
Tibouchina pulchra	23.14	14.31	8.83	18.63	0.17	0.75	0.31	0.44	0.49	0.40
Tibouchina sellowiana	21.41	13.88	7.53	17.53	0.10	0.88	0.21	0.67	0.55	0.54
Tocoyena brasiliensis	23.00	22.11	0.89	22.78	0.78	0.78	0.63	0.15	0.69	0.72
Tocoyena formosa	24.49	18.05	6.44	19.94	0.36	1.02	0.63	0.39	0.81	0.90
Tocoyena sellowiana	20.66	18.34	2.32	19.16	0.30	0.77	0.23	0.54	0.57	0.52
Tontelea leptophylla	21.65	16.51	5.14	19.61	0.32	0.85	0.45	0.41	0.67	0.67
Toulicia laevigata	24.12	15.29	8.82	19.78	0.33	0.97	0.51	0.47	0.80	0.89
Toulicia patentinervis	23.64	22.79	0.84	23.53	0.87	0.58	0.41	0.17	0.47	0.34
Tovomita brevistaminea	25.49	21.80	3.69	23.54	0.86	0.65	0.18	0.48	0.57	0.52
Tovomita choisyana	24.71	23.97	0.74	24.45	0.97	0.51	0.14	0.37	0.20	0.06
Tovomita fructipendula	25.14	18.69	6.45	21.23	0.57	0.81	0.44	0.37	0.67	0.68
Tovomita glazioviana	22.62	14.59	8.03	18.89	0.24	0.77	0.51	0.27	0.67	0.69
Tovomita leucantha	21.90	19.87	2.03	20.88	0.51	0.86	0.72	0.14	0.76	0.82
Tovomita mangle	25.02	20.59	4.44	23.10	0.80	0.66	0.14	0.52	0.53	0.45
Tovomitopsis paniculata	22.62	13.54	9.08	18.20	0.15	0.77	0.35	0.41	0.58	0.53
Tovomitopsis saldanhae	22.11	14.59	7.52	18.58	0.21	0.85	0.52	0.33	0.76	0.83
Trattinnickia ferruginea	24.06	18.97	5.09	22.80	0.78	0.91	0.29	0.62	0.74	0.81
Trema micrantha	24.47	14.79	9.67	19.83	0.37	1.14	0.11	1.04	0.56	0.52
Trembleya parviflora	19.22	15.29	3.92	18.07	0.14	0.83	0.76	0.08	0.79	0.88
Trichilia casaretti	24.71	15.29	9.42	21.11	0.56	0.90	0.14	0.76	0.55	0.48
Trichilia catigua	24.30	16.83	7.48	20.62	0.50	1.00	0.10	0.91	0.61	0.57
Trichilia clausseni	23.16	15.46	7.70	19.45	0.32	1.01	0.11	0.91	0.46	0.32
Trichilia elegans	24.72	13.62	11.10	19.48	0.31	0.97	0.10	0.87	0.33	0.15
Trichilia emarginata	24.35	16.83	7.52	20.15	0.40	0.87	0.63	0.24	0.79	0.88
Trichilia hirta	24.68	18.34	6.34	20.98	0.56	1.00	0.41	0.59	0.73	0.79

Trichilia lepidota	25.38	13.96	11.43	20.60	0.48	0.87	0.14	0.73	0.55	0.48
Trichilia magnifoliola	20.23	15.29	4.94	18.70	0.20	0.84	0.76	0.08	0.77	0.86
Trichilia martiana	22.93	19.86	3.08	21.96	0.66	0.79	0.27	0.52	0.39	0.20
Trichilia pallens	24.72	13.96	10.76	21.21	0.57	0.98	0.14	0.84	0.58	0.57
Trichilia pallida	23.38	13.96	9.43	20.27	0.40	0.91	0.30	0.61	0.68	0.69
Trichilia pseudostipularis	24.78	21.40	3.39	22.69	0.77	0.68	0.17	0.51	0.50	0.38
Trichilia quadrijuga	24.78	22.76	2.02	22.88	0.78	0.58	0.17	0.41	0.54	0.45
Trichilia ramalhoi	24.78	19.85	4.93	23.24	0.82	0.83	0.14	0.68	0.33	0.13
Trichilia silvatica	24.70	17.00	7.69	20.95	0.52	0.78	0.12	0.66	0.56	0.47
Trichilia tetrapetala	24.33	21.52	2.82	23.11	0.83	0.72	0.19	0.53	0.46	0.35
Trigoniodendron spiritusanctense	23.82	20.09	3.73	22.53	0.73	0.68	0.37	0.31	0.57	0.52
Trigynaea oblongifolia	21.17	18.04	3.13	20.15	0.43	0.73	0.47	0.26	0.64	0.65
Triplaris americana	23.22	19.21	4.01	22.39	0.71	0.91	0.41	0.50	0.43	0.32
Triplaris gardneriana	24.62	18.73	5.89	23.38	0.84	1.01	0.62	0.38	0.92	0.97
Triplaris weigeltiana	25.21	24.63	0.59	25.03	1.00	0.64	0.63	0.01	0.64	0.62
Tripterodendron filicifolium	23.52	20.88	2.64	21.82	0.63	0.79	0.47	0.32	0.67	0.71
Trischidium molle	24.45	24.12	0.33	24.19	0.94	1.00	0.97	0.03	0.98	0.99
Unonopsis guatterioides	22.80	18.81	4.00	21.71	0.63	0.87	0.36	0.52	0.63	0.64
Unonopsis riedeliana	21.96	19.09	2.87	20.19	0.42	0.87	0.52	0.35	0.60	0.56
Urbanodendron bahiense	22.59	19.09	3.49	21.00	0.52	0.85	0.35	0.50	0.64	0.62
Urbanodendron verrucosum	22.87	16.83	6.04	21.03	0.53	0.86	0.51	0.35	0.78	0.85
Urera baccifera	24.79	13.67	11.12	19.57	0.31	0.98	0.11	0.87	0.58	0.51
Urera caracasana	21.54	20.55	1.00	21.21	0.55	0.78	0.27	0.51	0.68	0.70
Vachellia farnesiana	24.12	22.83	1.29	23.63	0.87	0.97	0.89	0.08	0.94	0.98
Vantanea compacta	22.17	11.46	10.72	19.57	0.31	0.76	0.20	0.56	0.43	0.29
Vasconcellea quercifolia	24.21	17.49	6.72	19.65	0.35	1.00	0.20	0.80	0.68	0.69
Vatairea heteroptera	23.82	18.99	4.84	22.16	0.69	0.79	0.37	0.42	0.57	0.54
Vatairea macrocarpa	24.72	20.59	4.13	23.19	0.82	0.98	0.48	0.49	0.74	0.78
Vataireopsis araroba	24.49	20.09	4.40	23.00	0.79	0.73	0.19	0.54	0.40	0.21
Vernonanthura discolor	22.79	11.84	10.95	16.63	0.07	0.87	0.13	0.74	0.45	0.34
Vernonanthura divaricata	24.62	11.46	13.16	18.92	0.24	0.98	0.14	0.83	0.70	0.73
Vernonanthura ferruginea	15.29	12.91	2.38	13.22	0.01	0.76	0.70	0.06	0.71	0.74
Vernonanthura petiolaris	18.77	13.00	5.77	14.03	0.01	0.75	0.27	0.48	0.69	0.71
Vernonanthura puberula	22.52	12.91	9.61	17.98	0.13	0.70	0.18	0.53	0.43	0.28
Virola bicuhyba	24.62	16.83	7.79	19.96	0.40	0.87	0.14	0.73	0.42	0.26
Virola gardneri	24.81	18.44	6.37	22.72	0.79	0.78	0.14	0.65	0.52	0.47
Virola officinalis	24.78	20.53	4.25	24.34	0.95	0.60	0.14	0.46	0.17	0.02
Virola sebifera	23.08	19.20	3.89	20.94	0.51	0.90	0.72	0.18	0.82	0.90
Vismia brasiliensis	23.54	14.74	8.80	18.87	0.24	0.90	0.42	0.48	0.79	0.86
Vismia guianensis	25.49	18.34	7.15	22.70	0.75	0.92	0.15	0.78	0.66	0.69
Vismia magnoliifolia	20.29	18.13	2.16	19.82	0.34	0.86	0.70	0.15	0.78	0.86
Vismia martiana	23.64	18.97	4.66	20.37	0.45	0.79	0.41	0.38	0.70	0.75
Vismia micrantha	19.51	18.96	0.55	19.30	0.28	0.84	0.64	0.20	0.78	0.87
Vitex cymosa	24.72	13.62	11.10	18.03	0.14	0.92	0.34	0.58	0.65	0.65
Vitex megapotamica	23.82	10.40	13.42	18.37	0.17	0.97	0.10	0.88	0.36	0.16
Vitex orinocensis	24.62	20.59	4.03	23.18	0.83	0.60	0.17	0.43	0.28	0.12
Vitex polygama	24.30	13.54	10.76	20.13	0.42	1.02	0.37	0.65	0.73	0.78
Vitex rufescens	24.93	19.13	5.80	23.08	0.82	0.87	0.37	0.51	0.56	0.50

Vitex sellowiana	23.14	15.29	7.85	18.97	0.25	0.83	0.41	0.42	0.76	0.83
Vitex triflora	24.68	22.32	2.36	22.66	0.77	0.87	0.63	0.25	0.84	0.93
Vochysia bifalcata	22.59	16.69	5.90	20.22	0.42	0.78	0.35	0.42	0.41	0.23
Vochysia cinnamomea	23.58	15.29	8.29	20.56	0.48	0.98	0.73	0.25	0.88	0.97
Vochysia laurifolia	23.55	19.11	4.44	20.84	0.49	0.67	0.15	0.51	0.56	0.51
Vochysia lucida	24.78	24.16	0.62	24.47	0.96	0.51	0.14	0.37	0.39	0.22
Vochysia magnifica	21.32	12.62	8.70	17.56	0.12	0.87	0.30	0.57	0.75	0.80
Vochysia oppugnata	22.54	14.59	7.95	20.26	0.42	0.78	0.35	0.42	0.53	0.43
Vochysia rectiflora	18.34	18.04	0.30	18.32	0.14	0.77	0.64	0.13	0.76	0.85
Vochysia riedeliana	24.36	23.55	0.81	24.01	0.92	0.50	0.15	0.35	0.24	0.10
Vochysia saldanhana	18.04	14.59	3.46	15.52	0.04	0.66	0.60	0.06	0.62	0.59
Vochysia schwackeana	20.11	18.28	1.84	18.88	0.23	0.78	0.64	0.14	0.73	0.79
Vochysia thyrsoidea	24.47	16.09	8.38	21.20	0.57	0.98	0.62	0.36	0.67	0.70
Vochysia tucanorum	23.16	12.62	10.54	18.69	0.20	0.88	0.27	0.61	0.69	0.73
Weinmannia paulliniifolia	22.32	11.46	10.86	18.34	0.18	0.77	0.13	0.64	0.39	0.20
Ximenia americana	25.50	20.02	5.48	22.23	0.68	1.00	0.35	0.65	0.75	0.81
Xylopia aromatica	23.08	15.29	7.79	21.88	0.64	0.91	0.63	0.28	0.84	0.92
Xylopia brasiliensis	22.80	17.00	5.80	19.33	0.27	0.98	0.16	0.82	0.67	0.70
Xylopia emarginata	22.83	19.14	3.69	20.89	0.53	0.89	0.62	0.28	0.63	0.64
Xylopia frutescens	25.49	21.22	4.27	24.79	1.00	0.83	0.32	0.50	0.64	0.66
Xylopia laevigata	24.71	20.59	4.12	23.69	0.89	0.63	0.14	0.49	0.36	0.17
Xylopia langsdorfiana	22.79	16.07	6.72	21.44	0.61	0.72	0.36	0.36	0.46	0.34
Xylopia ochrantha	25.14	22.69	2.44	23.99	0.91	0.61	0.17	0.44	0.33	0.16
Xylopia sericea	24.78	15.29	9.49	20.54	0.47	0.99	0.42	0.57	0.74	0.82
Xylosma ciliatifolia	25.21	13.00	12.22	18.16	0.14	1.02	0.16	0.86	0.55	0.49
Xylosma glaberrima	22.57	16.07	6.50	21.13	0.56	0.52	0.34	0.18	0.41	0.27
Xylosma prockia	24.93	11.46	13.47	18.24	0.15	0.97	0.13	0.84	0.73	0.76
Xylosma pseudosalzmanii	21.42	14.75	6.67	17.81	0.11	0.76	0.11	0.65	0.29	0.13
Xylosma tweediana	20.82	13.67	7.15	18.06	0.12	0.74	0.10	0.64	0.23	0.09
Xylosma venosa	22.57	14.42	8.15	21.13	0.53	0.75	0.14	0.61	0.46	0.34
Zanthoxylum acuminatum	24.78	18.89	5.90	20.40	0.44	0.76	0.17	0.59	0.62	0.60
Zanthoxylum caribaeum	24.36	13.96	10.40	19.15	0.27	1.01	0.13	0.87	0.61	0.54
Zanthoxylum fagara	23.01	10.40	12.60	18.70	0.20	0.87	0.10	0.77	0.50	0.38
Zanthoxylum kleinii	17.21	13.67	3.54	15.51	0.04	0.29	0.18	0.12	0.21	0.07
Zanthoxylum monogynum	24.40	12.62	11.78	20.29	0.45	0.91	0.36	0.55	0.68	0.70
Zanthoxylum nemorale	24.78	21.54	3.24	24.16	0.93	0.27	0.17	0.10	0.18	0.05
Zanthoxylum petiolare	24.70	16.96	7.73	20.02	0.41	1.02	0.11	0.91	0.38	0.19
Zanthoxylum rhoifolium	25.02	12.62	12.40	19.50	0.31	1.14	0.10	1.04	0.52	0.42
Zanthoxylum riedelianum	24.07	13.96	10.12	20.52	0.50	0.99	0.20	0.79	0.72	0.77
Zanthoxylum stelligerum	24.30	23.69	0.62	24.14	0.94	1.02	1.00	0.02	1.00	0.99
Zanthoxylum tingoassuiba	24.62	19.33	5.28	22.92	0.80	0.97	0.17	0.81	0.63	0.62
Zeyheria tuberculosa	23.69	18.73	4.96	21.07	0.52	1.02	0.39	0.63	0.74	0.78
Ziziphus glaziovii	23.52	20.09	3.43	22.73	0.75	0.67	0.32	0.35	0.56	0.55
Ziziphus joazeiro	25.50	14.15	11.35	24.63	0.98	1.01	0.16	0.85	0.64	0.61
Ziziphus platyphylla	24.34	21.40	2.94	22.88	0.81	0.78	0.50	0.28	0.57	0.52
Zollernia glabra	23.52	19.81	3.71	22.94	0.80	0.87	0.32	0.55	0.45	0.30
Zollernia ilicifolia	25.50	16.07	9.43	21.05	0.53	0.98	0.17	0.81	0.56	0.52
Zollernia magnifica	24.62	23.55	1.06	24.08	0.94	0.18	0.15	0.02	0.17	0.01

Zollernia modesta	24.78	20.09	4.69	23.46	0.87	0.67	0.17	0.50	0.25	0.10
Zygia latifolia	24.45	18.04	6.41	22.38	0.70	1.00	0.41	0.59	0.43	0.30