

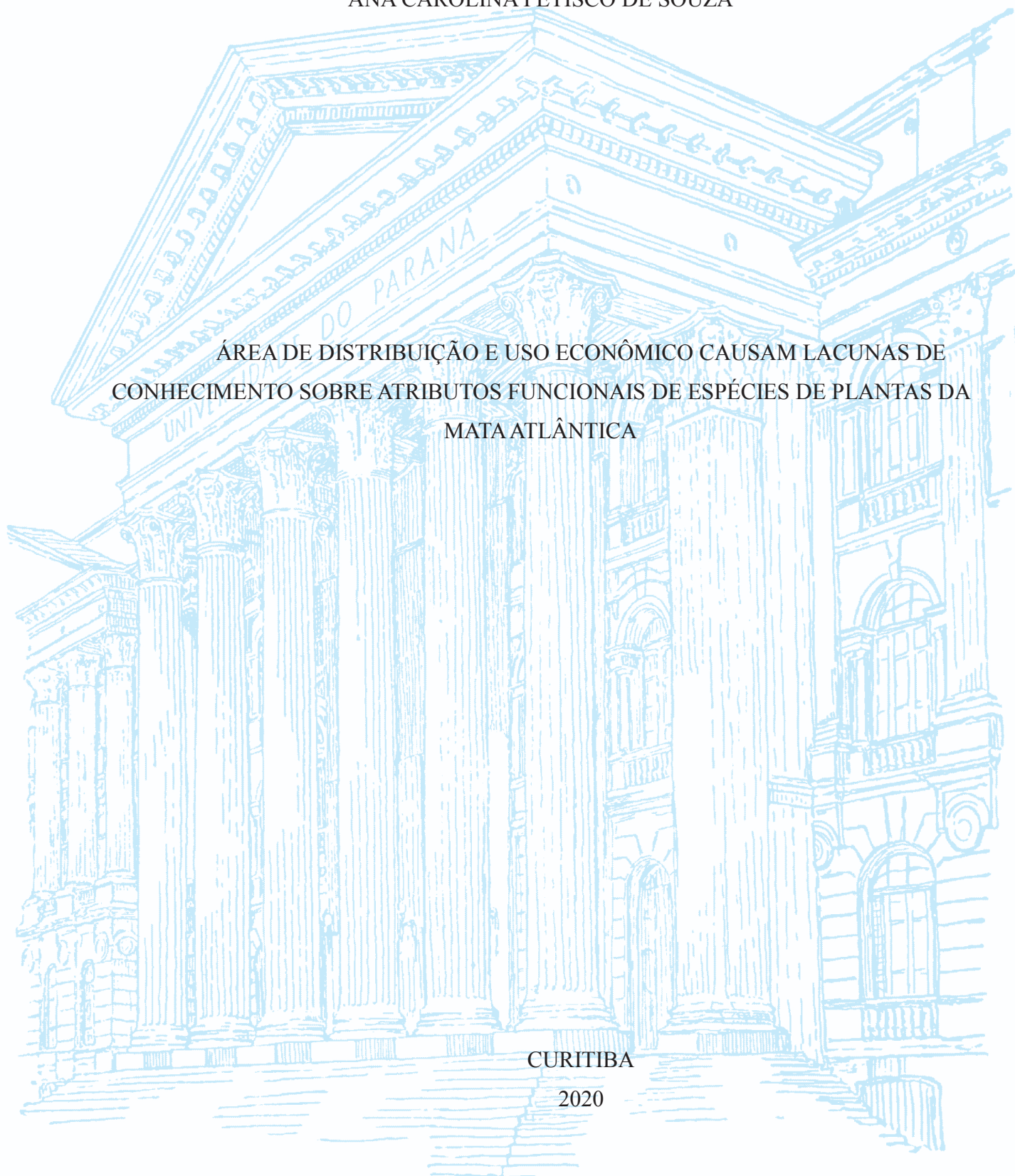
UNIVERSIDADE FEDERAL DO PARANÁ

ANA CAROLINA PETISCO DE SOUZA

ÁREA DE DISTRIBUIÇÃO E USO ECONÔMICO CAUSAM LACUNAS DE
CONHECIMENTO SOBRE ATRIBUTOS FUNCIONAIS DE ESPÉCIES DE PLANTAS DA
MATA ATLÂNTICA

CURITIBA

2020



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CONHECIMENTO SOBRE ATRIBUTOS FUNCIONAIS DE ESPÉCIES DA MATA
ATLÂNTICA

Dissertação apresentada ao Curso de Pós-Graduação em Ecologia e Conservação, Setor de Ciências Biológicas, da Universidade Federal do Paraná, como requisito parcial à obtenção do título de Mestre em Ecologia e Conservação.

Orientador: Prof. Dr. Marcos B. Carlucci
Coorientadora: Profa. Dra. Márcia Cristina M. Marques

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MARCOS BERGMANN CARLUCCI
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The love for all living creatures is the most noble attribute of man (Charles Darwin)

RESUMO

Lacunas de conhecimento da biodiversidade existem para diferentes domínios biológicos e são resultado de amostragens desiguais no tempo e no espaço, geralmente influenciadas por uma variedade de interesses humanos. As lacunas de atributos funcionais das espécies podem gerar incerteza nos parâmetros de diversidade funcional e dificultar a inferência das funções e serviços ecossistêmicos, dos quais o conhecimento pode ser útil nas práticas de conservação e restauração ecológica. Optamos por trabalhar com a Mata Atlântica, um bioma historicamente degradado e fragmentado, para preencher lacunas de atributos e entender onde e por que elas existem. Quantificamos as lacunas de atributos para quatro atributos funcionais de 2335 plantas lenhosas e avaliamos quais fatores determinam as lacunas de atributos na escala de espécies e na escala geográfica. Na escala de espécie, encontramos menores lacunas de atributos quanto maior o uso econômico da madeira e maior o tamanho da área de distribuição das espécies. Na escala geográfica, descobrimos que as lacunas são maiores na costa leste da Mata Atlântica. As lacunas foram menores próximo de centros urbanos e quanto maiores as médias de área de distribuição e uso econômico da madeira das espécies. No entanto, as lacunas foram maiores próximo a unidades de conservação. Os esforços para reduzir as lacunas em espécies de baixa distribuição geográfica e sem uso econômico da madeira podem avançar ainda mais os estudos orientados pela teoria e auxiliar a cumprir metas em prol do aumento de conhecimento disponível sobre a biodiversidade.

Palavras-chave: Atributos funcionais; Biodiversidade-funcionamento do ecossistema; Dados ausentes; Dispersão funcional; Dominância funcional; Lacunas de biodiversidade.

ABSTRACT

Biodiversity shortfalls are knowledge gaps that exist for different biological domains and are a result of unevenly sampling through time and space, usually biased by a variety of human interests. Gaps in species functional traits could add uncertainty in functional diversity parameters and hinder inference of ecosystem function and services processes, which knowledge can be useful in conservation and restoration practices. In order to fill trait gaps and understand where and why they exist, we chose to work with the Atlantic Forest, a historically degraded and fragmented biome. We quantified trait gaps for four functional traits of 2335 trees and evaluated which factors drive trait gap at the species and at the geographical level. At the species level, we found smaller trait gaps for wide-ranged and economically used species. At the geographical level, we found larger gaps at the eastern Atlantic Forest. Trait gaps were smaller near urban centers, and among species with higher mean range size and higher mean economical use of wood, and larger near protected areas. Efforts on reducing small-ranged and economically used species trait gaps can further advance theory-driven studies and improve knowledge coverage

Keywords: Biodiversity-ecosystem functioning; Biodiversity shortfall; Functional dispersion; Functional dominance; Functional traits; Missing data; Raunkiaeran shortfall.

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APRESENTAÇÃO

A presente dissertação foi redigida em formato de artigo a ser submetido à revista *Proceedings of the Royal Society B*, que tem amplo escopo de interesse na área de Ciências Biológicas, incluindo temas relevantes sobre a conservação da biodiversidade.

Investigamos as lacunas de conhecimento sobre a biodiversidade, como são causadas e quais seus possíveis efeitos em diferentes escalas ecológicas. As lacunas são a ausência de informações sobre a biodiversidade e são inerentes a estudos em qualquer escala espacial e temporal (CARDOSO et al., 2011; HORTAL et al., 2015). Estão presentes nos estudos taxonômicos, de distribuição, abundância de espécies, história evolutiva, interações bióticas, interações abióticas, de atributos funcionais e funções ecossistêmicas (HORTAL et al., 2015). São consequência direta das decisões tomadas pelos pesquisadores, como a escolha de coletar em determinado local e em determinado tempo, e/ou do financiamento seletivo de estudos de alguns domínios biológicos em detrimento de outros (OLIVEIRA et al., 2016; SANDEL et al., 2015; SCHMIDT-LEBUHN; KNERR; KESSLER, 2013; TROIA; MCMANAMAY, 2016). Por exemplo, algumas espécies podem ser mais pesquisadas que outras devido ao uso econômico da madeira (PADILHA; DE MARCO JÚNIOR, 2018) ou por ocorrerem próximo a centros urbanos e unidades de conservação (OLIVEIRA et al., 2016; RIBEIRO et al., 2016). A ausência ou a má qualidade de informações sobre a biodiversidade impactam diretamente parâmetros utilizados para avaliar padrões da biodiversidade (SANDEL et al., 2015; WALTHER; MOORE, 2005), como medidas de dispersão e dominância funcional. Além disso, as lacunas fragilizam o desenvolvimento de políticas voltadas à conservação e a restauração da biodiversidade, pois as práticas são prejudicadas pela ausência de robustez científica necessária para embasá-las (CARDOSO et al., 2011; TESSAROLO et al., 2017). Portanto, de modo a reduzir as lacunas é necessário entender onde elas existem e o porquê.

O preenchimento de lacunas é necessário devido às modificações de ecossistemas naturais causadas por ações antropogênicas, de modo que a velocidade das mudanças poderia ser maior que o tempo necessário para coletar e analisar dados biológicos no mesmo período de tempo. As informações perdidas, como consequência da perda da biodiversidade por influência humana, poderiam impedir a compreensão acerca das funções desempenhadas por ecossistemas nativos na regulação de fluxos de energia e na ciclagem de matéria orgânica (EISENHAUER et al., 2016; GRIME, 1997; HOOPER et al., 2005; MILLENNIUM ECOSYSTEM ASSESSMENT, 2005). As funções ecossistêmicas resultam da influência

direta e indireta da biodiversidade, mediadas por atributos funcionais, que são características fenotípicas, morfológicas e fisiológicas que podem determinar a aptidão ecológica e sinalizar estratégias ecológicas das espécies. Os métodos que integram em seu escopo a diversidade de atributos funcionais como meio para compreender a relação biodiversidade-ecossistema permitem identificar funções e serviços ecossistêmicos importantes para práticas de conservação e restauração (DITT et al., 2010; LAVOREL et al., 2011; REICHSTEIN et al., 2014; VIOLLE et al., 2014). A hipótese de razão da biomassa é uma das maneiras de compreender a relação biodiversidade-ecossistema por meio da dominância funcional, pois acredita-se que as principais funções são determinadas pelas espécies dominantes (GARNIER et al., 2004; GRIME, 1998). Outra maneira é por meio da complementariedade de nicho, quando então as funções ecossistêmicas seriam determinadas por espécies que usam de maneira diferente o mesmo espaço de nicho, algo medido por meio da dispersão funcional (CADOTTE, 2017; DOVRAT et al., 2019; TILMAN et al., 1997). No entanto, diferentes atributos funcionais, ligados a fatores espaciais, temporais e econômicos, influenciam amostragens e estudos de modo que algumas espécies são mais conhecidas que outras. A indisponibilidade de informações completas sobre atributos funcionais fragiliza as abordagens teórico-práticas que integram os aspectos da relação biodiversidade-ecossistema (CARDOSO et al., 2011; SANDEL et al., 2015).

A Mata Atlântica poderia ser beneficiada com estudos e ações que considerem a relação biodiversidade-ecossistema, pois é um *hotspot* de biodiversidade que sofre com a degradação e a fragmentação históricas (BANKS-LEITE et al., 2014; GARLINDO-LEAL; CÂMARA, 2003; RIBEIRO et al., 2009). Portanto, a disponibilidade de informações sobre atributos funcionais de espécies da Mata Atlântica poderia fortalecer abordagens que contemplem a relação biodiversidade-ecossistema. Assim, nosso objetivo foi responder às seguintes perguntas: Ao nível das espécies (1) qual é a extensão da lacuna de conhecimento dos atributos funcionais de espécies arborescentes de plantas na Mata Atlântica? (2) As lacunas no conhecimento dos atributos são influenciadas pelo uso econômico das espécies e por sua área de distribuição? Ao nível geográfico (3) ao longo da Mata Atlântica onde as lacunas de conhecimento dos atributos causam alta incerteza nas estimativas de dominância e dispersão funcional? (4) A distância dos centros urbanos e unidades de conservação, o uso econômico da madeira e a área de distribuição das espécies influenciam a presença de lacunas de atributos funcionais ao longo da Mata Atlântica?

Para responder às perguntas acima, foram selecionadas 2335 espécies de plantas lenhosas (exceto sub-arbustos), lianas, palmeiras e cactos. Foram escolhidos quatro atributos funcionais que correspondem às principais estratégias ecológicas das plantas para descrever essas espécies: área foliar específica, massa seca da semente, altura máxima e densidade da madeira. Realizamos a coleta de atributos funcionais em bancos de dados *online* e em livros, pois são materiais que disponibilizam informações confiáveis para diversas espécies. Além disso, coletamos informações de uso econômico da madeira em livros. Obtivemos a distribuição potencial das espécies ao longo da Mata Atlântica a partir de resultados de um trabalho prévio de modelagem de distribuição de espécies que definia áreas prioritárias para conservação e restauração em diferentes cenários climáticos. Ao nível de espécie, avaliamos a influência do uso econômico da madeira e da área de distribuição das espécies sobre a presença da lacuna utilizando modelos lineares generalizados com distribuição binomial.

Na escala geográfica, calculamos a dispersão e a dominância funcional ao longo da Mata Atlântica para cada atributo funcional e avaliamos onde as medidas funcionais possuíam maior incerteza de acordo com as lacunas dos atributos funcionais. Para avaliar a influência da distância de centros urbanos e de unidades de conservação, da área de distribuição média e do uso econômico da madeira médio das espécies coocorrentes, utilizamos um modelo linear generalizado com distribuição beta.

Ao nível de espécie, encontramos grande lacuna de atributos funcionais de espécies de plantas lenhosas da Mata Atlântica, e esta lacuna foi influenciada pelo uso econômico da madeira e pela área de distribuição das espécies. O viés de área de distribuição das espécies pode impactar o conhecimento sobre as funções desempenhadas por espécies raras. O viés de uso econômico da madeira pode fortalecer a conservação das espécies economicamente usadas, pois elevam as chances de existir disponibilidade de informações sobre atributos funcionais.

Ao nível geográfico, nosso estudo demonstrou que não houve influência da distância de centros urbanos e unidades de conservação, da área de distribuição e do uso econômico da madeira sobre as lacunas dos atributos funcionais. As lacunas se concentraram principalmente na costa leste da Mata Atlântica, produzindo maior incerteza sobre as medidas de dispersão e dominância funcional. Essa região encontra-se criticamente em débito de áreas para restauração da vegetação nativa e é fundamental que os atributos de suas espécies sejam coletados para que sirvam de instrumento para medidas de restauração. Por outro lado, as lacunas foram menores em áreas do sudoeste e centrais do nordeste e a maior presença de

informações de atributos funcionais para essas áreas poderiam ser benéficas para medidas de restauração.

Estamos nos aproximando da data limite proposta pela Aichi Biodiversity Targets no Convenção sobre Diversidade Biológica que tem como meta 19, o Plano Estratégico de Biodiversidade 2011-2020, que inclui a gestão do conhecimento referente, entre outros, à biodiversidade e funcionamento dos ecossistemas. Mesmo que bancos de dados possuam abrangência de informações, aqui mostramos que é necessário melhorar a cobertura de dados para espécies lenhosas da Mata Atlântica.

Justamente quando novas abordagens sobre as funções e os serviços ecossistêmicos desempenhados pela biodiversidade estão em destaque, o conhecimento de atributos funcionais torna-se indispensável para viabilizar práticas baseadas em funções e serviços ecossistêmicos. Isto é, no futuro, informações baseadas em atributos, como medidas de diversidade funcional, podem servir como *proxy* para prever as relações ecossistema-biodiversidade. Assim, seria possível reduzir custos e atrair a atenção dos tomadores de decisão e dos formuladores de políticas para a importância de desenvolvimento de ações de conservação de remanescentes de vegetação nativa ou mesmo para impulsionar a restauração de áreas criticamente em débito de áreas para restauração de vegetação nativa.

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MINDING THE GAP: RANGE SIZE AND ECONOMIC USE DRIVE TRAIT SHORTFALL IN THE ATLANTIC FOREST

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ABSTRACT

Biodiversity shortfalls are knowledge gaps that exist for different biological domains and are a result of unevenly sampling through time and space, usually biased by a variety of human interests. Gaps in species functional traits could add uncertainty in functional diversity parameters and hinder inference of ecosystem function and services processes, which knowledge can be useful in conservation and restoration practices. In order to fill trait gaps and understand where and why they exist, we chose to work with the Atlantic Forest, a historically degraded and fragmented biome. We quantified trait gaps for four functional traits of 2335 trees and evaluated which factors drive trait gap at the species and at the geographical level. At the species level, we found smaller trait gaps for wide-ranged and economically used species. At the geographical level, we found larger gaps at the Atlantic Forest east coast. Trait gaps were smaller near urban centers, and among species with higher mean range size and higher mean economical use of wood, and larger near protected areas. Efforts on reducing small-ranged and economically used species trait gaps can further advance theory-driven studies and improve knowledge coverage

Keywords: biodiversity-ecosystem functioning, biodiversity shortfall, functional dispersion, functional dominance, functional traits, missing data, Raunkiaeran shortfall

BACKGROUND

Biodiversity shortfalls are gaps between present and complete knowledge of nature, given that complete description of biodiversity in all its nuances is unachievable [1,2]. Shortfalls exist for different biological domains, such as taxonomy, distribution, species abundances, evolutionary history, biotic interactions, biotic-abiotic interactions, species traits, and ecological functions [1,2]. These knowledge gaps can be a result of uneven sampling efforts at the species level, when little or none is known about features of a particular species [1,2]. Also, knowledge gaps could be due to uneven sampling through time, such as at a particular season, or through space, such as at a particular geographical location [1]. The absence or poor quality of information at any scale could weaken the accuracy of parameters used to evaluate biodiversity patterns [1] and, thereby, the robustness of arguments used to increase public awareness concerning the importance of conservation policy development [3,4]. Hence, in order to minimize gaps and set grounds for biodiversity studies and conservation, it is necessary to recognize that biodiversity knowledge could be missing and drive efforts to assess where and why gaps exist [3,4].

Climate change, mass extinctions and changes in land use make it urgent to fill biodiversity gaps [5,6], as the speed of such changes could outpace the time and the possibility to increase the funding necessary to make feasible data collection and analyses in the long run period. The lack of information regarding lost biodiversity, as a consequence of human intervention, could hinder the knowledge about the functions of natural ecosystems in regulating energy fluxes and organic matter cycling [5,6]. Biodiversity might directly or indirectly mediate important ecosystem functions, such as nutrient cycling, water purification and primary productivity [7]. Moreover, ecosystem functions are important as services for human well-being, as in provision (*e.g.* food, water and fiber), regulation (*e.g.* climate, pests and floods), supporting (*e.g.* soil formation, nutrient cycling and pollination) and cultural value (*e.g.* aesthetic, enjoyment and spiritual fulfillment) [8,9]. All things considered, increasing knowledge about biodiversity and its relationship with ecosystems (*i.e.* biodiversity-ecosystem function – BEF) should further advance studies, enabling us to understand the consequences of the loss of ecosystem functions [10–12].

Ecosystem functions tend to be a result of ecological strategies of species that are determined by environmental harshness, disturbance regimes and resource availability

[13,14]. Ecological strategies can vary between acquisitive or conservative strategies or fast-slow growth that have direct effects on species fitness. The species performance at a given environmental condition is mainly regulated by functional traits, which are phenotypical, morphological or physiological features that affects species survival, growth and reproduction [15–17]. Functional traits might enable the identification of the species ecological strategies, which are a result of the balance between benefits of allocating resources in detriment of energetic costs [13,14,18–20].

The variability of traits within a community can be estimated through functional diversity measures [21], which can then be correlated with ecosystem functions, such as biomass production [22,23], soil properties [24] and water consumption by plants [23]. In addition, functional diversity measures can be used to clarify how biodiversity functionality is distributed throughout the geographical space [25,26] to predict ecosystem services *hotspots* [15,27], linking it to environmental changes, thereby guiding conservation priorities [28], and to predict and link restoration success [29]. The lack of information about functional traits could entangle BEF studies by producing uncertainties in functional diversity measures, thereby leading to incomplete knowledge about how strong is the influence of species in mediating ecosystem functions, which in turn may impair conservation policies [2,3]. Thus, filling functional trait gap (hereafter trait gap) is a fundamental step towards making BEF approaches executable, but first is necessary to investigate which factors produce these gaps.

Absence of traditional studies about diverse taxonomic groups, uneven spatial sampling effort, which also result in unevenly comparable time series data, and human interest are possible causes of trait gap (or Raunkiaeran shortfall) [1]. For instance, some species are better known as a consequence of their particular features of economical interest. When species economical value is known, such as the use of tree species wood, trait information is more likely available [30]. There might be also a bias caused by research concentration in protected areas and nearby accessible sites, as urban centers and highways [6,30–33]. In addition, evidence suggest that human interest in recording rare species might set aside widespread common species sampling [34], although there is also evidence that rare narrow range sized species could be underrepresented [35]. Hence, it is possible to conclude that reducing this kind of biases is necessary to maximize knowledge about species ecology, such as functional traits and associated trade-offs, providing foundation to further integrate it to ecosystem function and services. For example, one possible way to draw attention to gaps is to create “maps of ignorance” that incorporate spatially explicit estimates of uncertainties,

which can help to create agendas of spatial prioritization of sampling effort [1,36].

Megadiverse tropical countries might benefit from supporting investigations on which species functional trait gaps exist and from maps of ignorance that highlight where functional diversity measures are uncertain. In this study, we chose to work with the Brazilian Atlantic Forest, a recognized biodiversity hotspot [37], that suffers from historical degradation and fragmentation [38], with potential ecosystem services loss [39]. Hence, functional trait knowledge could strengthen BEF studies, and support conservation and restoration strategies for Atlantic Forest [40]. Therefore, we aim to answer the following questions: At the species level (1) what is the extent of trait gap of arborescent plant species in the Brazilian Atlantic Forest? (2) Are trait gaps biased by species economical use of wood and by the species range size? At the geographical level (3) where across the Atlantic Forest trait gaps cause high uncertainty in functional dominance and dispersion estimates? (4) Are economical use of wood, species range size, and distances from urban centers and protected areas drivers of trait gaps throughout the Atlantic Forest?

METHODS

Dataset

Species

In order to quantify trait gaps of Atlantic Forest plants we selected 2335 species varying from woody (except dwarf shrubs), palms and cacti compiled by Zwiener et al. (2017). The 2335 species were selected from summarized checklists of 300 localities across the Atlantic forest obtained in field inventories and georeferenced data from the electronic database SpeciesLink [41].

Functional traits

For the trait gathering, we focused on LHS (Leaf, Height and Seed) scheme traits, which synthesizes leading dimensions of plant ecological strategies [19,42]. Here these ecological strategy dimensions are represented as specific leaf area (SLA), maximum plant vegetative height (Hmax) and seed dry mass (SDM). Wood density (WD) is also relevant and may represent an additional plant strategy dimension, because it is related to plant resistance

to drought [43,44]. Functional traits indicate trade-offs and life history stages [20,45–47], in a way that species ecological strategies vary in gradients from slow to fast growth [46]. Specific leaf area tends to be positively correlated with photosynthetic rate, growth rate and primary productivity, but inversely correlated with leaf longevity [45,46,48]. Plant height is a good predictor of plant habitat and hence their light demands [19,46,49]. Denser woody stems are important to drought resistance, but it can slow hydraulic conductivity and growth rates [46,50]. Finally, seed mass is inversely correlated with seed output per square meter, but positively correlated with seedling survival and size due to larger nutritious reserve [46].

Online databases and literature (printed botanical books) are accessible and comprehensive data sources that encompass several species in the same material. Hence, we searched for SLA, Hmax, SDM and WD first in Botanical Information and Ecology Network (BIEN) [51], the Plant-Trait (TRY) [52], and Forest and Floristic Inventory of Santa Catarina [53] databases (more details in Appendix S1 and S2 in Supplementary Information). Then, we searched in the literature (Appendix S3 in Supplementary Information) for information of the species that did not present trait information on above-mentioned databases. We collected information on wood economical use only in the literature (Appendix S3 in Supplementary Information). The height of the plant's canopy at maturity was also compiled using the search tool of Re flora – Virtual Herbarium website [54].

Spatial data

We obtained the coordinates of each urban center in Brazil in the Instituto Brasileiro de Geografia e Estatística (IBGE– <https://ibge.gov.br/>). We obtained protect area polygons from the Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio – <https://icmbio.gov.br/>). Protected areas were further filtered to keep only those within the Atlantic Forest boundaries.

We obtained the species range size by using the potential geographical distribution generated by ecological niche modeling (ENM) using “MaxEnt” algorithm, based on climatic and edaphic variables, at the spatial resolution of 0,0833 ° in each grid cell in a previous study [41]. In the present study, we overlaid all the species distributions so each grid cell could represent plant operational communities. We also used the environmental suitability values from that study as a proxy for species abundance of each grid cell throughout the Atlantic Forest [55]. The ENM was performed only for species with more than 15 occurrence points,

which resulted in 2239 modeled species [41].

Data Analysis

Species level

We considered a trait gap the percentage of species with missing data for each studied trait. To assess if economical use and species range size are biasing the shortfalls we fitted a generalized linear model (GLM) with binomial distribution. We used the presence or absence of trait data for each species as a response variable and the species range size (continuous data) and economical use (binary data) as predictors variables. We performed models with all the possible combinations of predictors and selected the model that best explained the relationship between variables using the Akaike's information criterion (AIC). Therefore, we selected the model with the lowest AIC value regarding the $\Delta AIC_i \leq 2$ criteria [56].

Geographical level

At the community level, on one hand the contribution of dominant species may drive ecosystem functioning [22,23,57,58], as predicted by the biomass ratio hypothesis [57], which can be assessed by using the community weighted mean (CWM) approach [59] The CWM is the product of mean trait per community weighted by species abundance, which can be understood as the community functional dominance. On the other hand, between-species dissimilarities in resource use (i.e. niche complementarity) may also drive ecosystem functioning [60,61]. It is hypothesized that a nearly complete resources use will enhance ecosystem functions, such as primary productivity [62]. Ecosystem function promoted by niche complementarity can be measured by functional dispersion, which summarizes dissimilarities among cooccurring species [22,23,58,61]. To estimate the community functional dominance and dispersion we used the community weighted-mean [59] and the Rao's quadratic entropy (Q) [63]. Each of these analyses requires two matrices. The first matrix consists of species per traits, while the second of grid cells per species abundance. Here we used environmental suitability values from ENM as a proxy of abundance, assuming that both are correlated as previously shown for vertebrates, invertebrates and plants [55]. The

Rao's quadratic entropy is a measure of functional dissimilarities between species and higher values means a community more functionally diverse [63]. We used R statistical software [64] to perform the CWM with the "functcomp" function from the FD R package [65] and functional dispersion with the "rao.diversity" function from the SYNCSEA package [66].

Geographical bias

To understand where functional trait gap cause higher uncertainty on functional dominance and functional dispersion, we considered as a measure of trait gap at the geographical level the percentage of species in each grid cell with missing trait information (hereafter uncertainty degree). Then, we created two maps combining the uncertainty degree with functional dominance and with functional dispersion information for each raster cell using the "bivariate.map" function constructed (by Hidasi Neto; Available at <http://rfunctions.blogspot.com/2015/03/bivariate-maps-bivariatemap-function.html>).

In order to test which drivers leads to geographical bias on trait gaps we filtered the urban centers and protected areas within the Atlantic Forest. Then we calculated the geodistance of each grid cell to the nearest urban center and to the nearest protected area. We calculated mean species range size of each grid cell, and the mean economic use of each grid cell by accounting for the sum of species with economical use. Finally, we fitted a GLM with beta distribution using the proportion of presence or absence of traits at each grid cell as response variables and the mean species range and use, the distance from urban centers and distance from protected areas as predictors variables. Here, we selected the model with the lowest AIC value regarding the $\Delta AIC_i \leq 2$ as well. We performed GLM using the betareg function from "betareg" R package.

Data Deposition

Most of the data used here is available in BIEN and TRY databases. The additional data is now available in the TRY Plant Trait Database version 6, under the name of UFPR Atlantic Forest Tree Traits (UFPR_AFTT) [52].

RESULTS

Species Level

We found that trait gap (% of species with absent information for each trait) among Atlantic Forest tree species was 88% for seed dry mass, 85% for specific leaf area, 65% for wood density and less than 1% for maximum height (See Appendix 4 in Supplementary information for detailed gaps). Models performed using a combination of wood economical use and range size as predictor variables better explained gaps of specific leaf area (Figure 1a), seed dry mass (Figure 1b) and wood density (Figure 1c), where species with wide range size and wood economical use were better known (Table 1). For maximum height, all the models with different predictors combinations were within the $\Delta AIC_i \leq 2$ criteria, including the model with only the intercept. Therefore, none of our predictor variables explained maximum height trait gap (See Appendix 5 in Supplementary information for AIC tables).

Table 1: Generalized linear models (GLM) fitted values for specific leaf area (SLA), seed dry mass (SDM) and wood density (WD) at the species level.

	Estimate (β)	Standard Error	z value	P
SLA trait gap				
(Intercept)	2.966	1.12×10^{-1}	26.571	> 0.001
Range size	-3.06×10^{-6}	1.61×10^{-7}	-19.043	> 0.001
Economical use of wood	-9.21×10^{-1}	1.30×10^{-1}	-7.064	> 0.001
SDM trait gap				
(Intercept)	3.105	1.21×10^{-1}	25.582	> 0.001
Range size	-1.89×10^{-6}	1.56×10^{-7}	-12.164	> 0.001
Economical use of wood	-1.105	1.39×10^{-1}	-7.975	> 0.001
WD trait gap				
(Intercept)	2.002	8.56×10^{-2}	23.38	> 0.001
Range size	-2.08×10^{-6}	1.48×10^{-7}	-14.09	> 0.001
Economical use of wood	-2.61	1.25×10^{-1}	-20.9	> 0.001

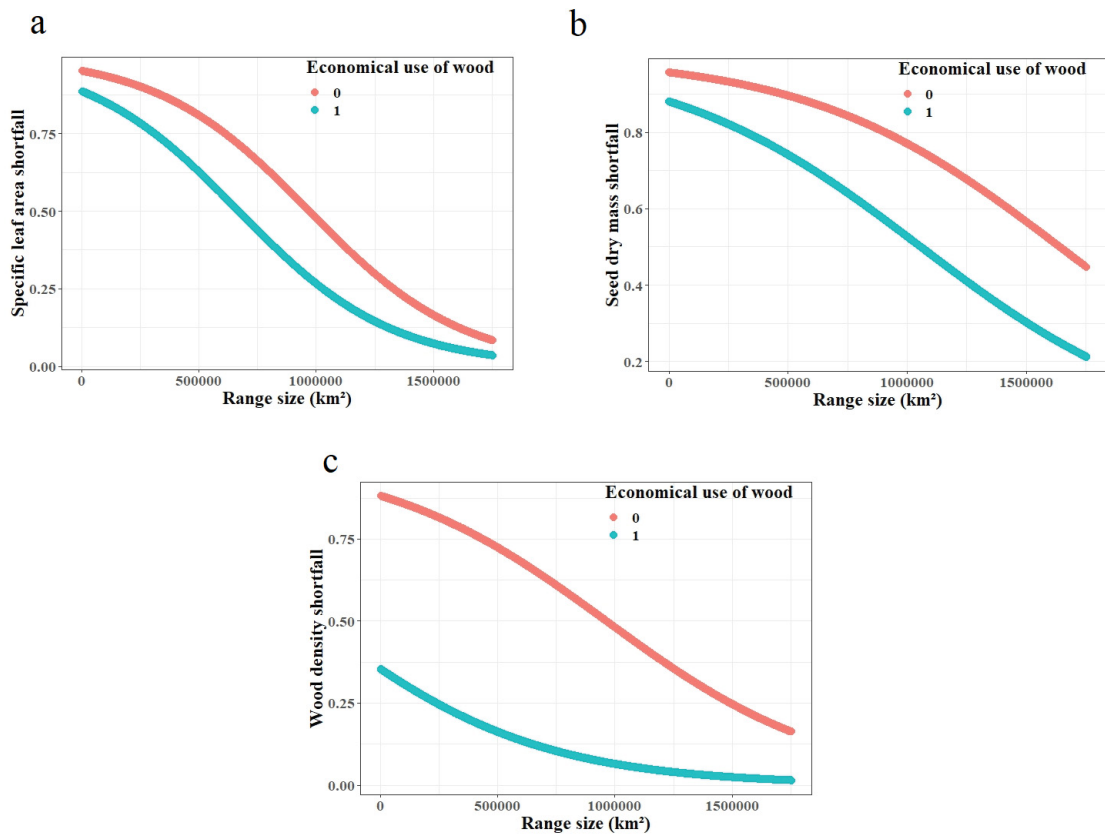


Figure 1: Trait gaps are biased towards economical use of wood and species range size for a) specific leaf area, b) seed dry mass and c) wood density.

Geographical Level

CWM of specific leaf area (hereafter, CWM_{SLA}) ranged from 83.25 to 225.04 $cm^2.g^{-1}$. The northeastern and the southeastern of the Atlantic Forest presented the lowest values of CWM_{SLA} , but also high uncertainty caused by shortfalls. This pattern was not true for the central region of the northeast, which shows high CWM_{SLA} and low uncertainty. The southern and southwestern regions of Atlantic Forest show high CWM_{SLA} , although the south, except for part of the Serra do Mar range, have high uncertainty that continuously decays towards the southwest (Figure 2 – a). The functional dispersion ranged from 0.17 to 0.42. From the northeastern to the southern Atlantic Forest, functional dispersion of SLA (hereafter Q_{SLA}) is low to high and is higher closer to dryer regions such as Cerrado and Caatinga. Q_{SLA} was high in the south (Figure 3 – a).

CWM of maximum height (hereafter, CWM_{Hmax}) ranged from 11.75 to 19.51 m and was homogeneous across the biome, with high dominance of trees around 15 m, except for

few points in the southern Atlantic Forest (Figure 2 – b). Functional dispersion of maximum height (hereafter $Q_{H_{\max}}$) ranged from 0.25 to 0.36 and was also homogeneous across the biome, with the most part of Atlantic Forest with functional dispersion around 0.31. The uncertainty degree for the $CWM_{H_{\max}}$ and the $Q_{H_{\max}}$ was low across the biome, reaching the maximum of 1.2% gaps on the eastern Atlantic Forest (Figure 3 – b).

CWM of seed dry mass (CWM_{SDM}) ranged from 0.089 to 3.92 g and was homogeneous from northeast towards the southeastern and the southern Atlantic Forest, with low CWM values (Figure 2 – c). The south region presents high CWM values, although the east part has higher uncertainty and the west part low uncertainty. The same pattern was observed for functional dispersion with Q_{SDM} values ranging from 0 to 0.19 (Figure 3 – c).

CWM of wood density (CWM_{WD}) ranged from 0.470 to 0.742 $g.cm^{-3}$ (Figure 2 – d). It is low in the southeast in the Atlantic rainforest and with a high associated uncertainty due to shortfalls when compared to the rest of the vegetation of the Atlantic Forest. In the northeast region, wood density CWM increases, although still associated with high uncertainty. Drier regions have higher CWM and also low uncertainty degree. The pattern observed for functional dispersion is opposite of the observed for species dominance, with high functional dispersion where wood density CWM is high, indicating higher niche complementarity. However, sites near the Cerrado and sites in the northeast differ from the wood density CWM. Wood density functional dispersion Q_{WD} values for wood density ranged from 0.30 to 0.42 (Figure 3 – d), with higher functional dispersion in the northeast and midwest, and lower in southeast and south.

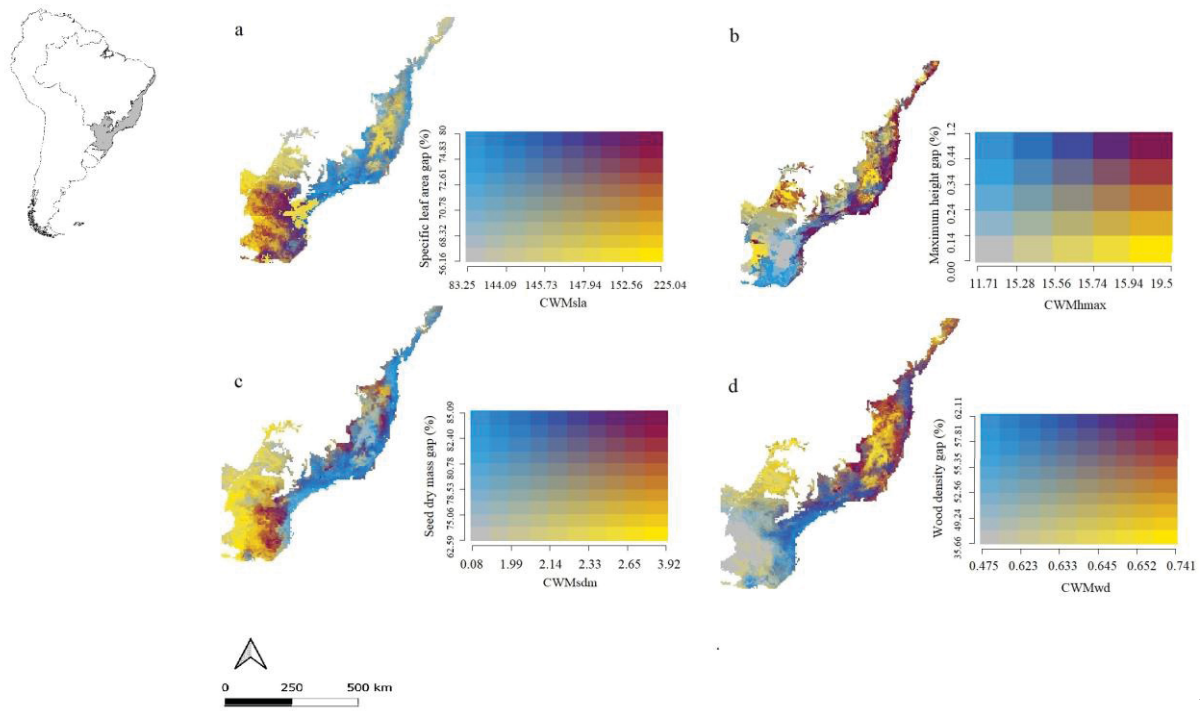
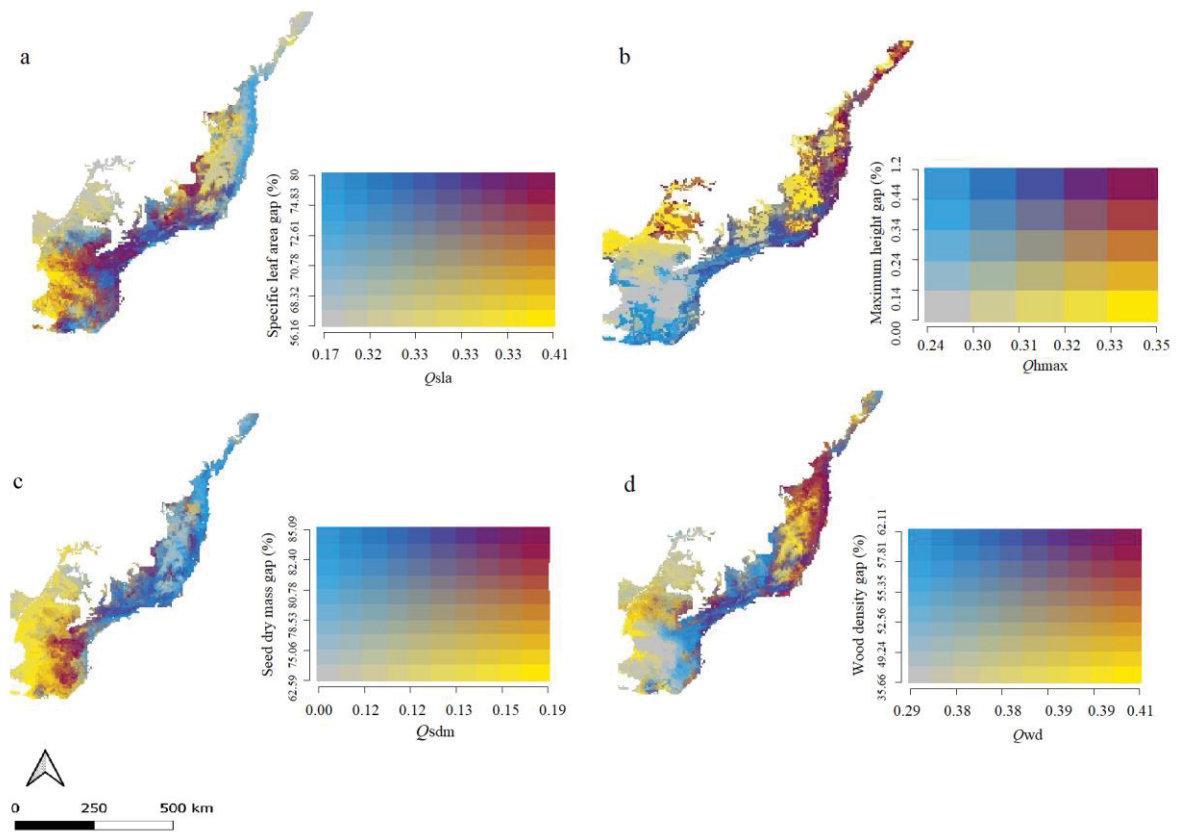


Figure 3:

Bivariate maps indicating functional dominance (CWM) with respective uncertainty (trait gap %) for a) specific leaf area; b) maximum height; c) seed dry mass and d) wood density



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Figure 5: Bivariate maps indicating functional dispersion (Q) with respective uncertainty (trait gap %) for a) specific leaf area; b) maximum height; c) seed dry mass and d) wood density

The AIC model selection showed models performed using a combination of mean wood economical use, mean range size, distance from protected areas and distance from urban centers as predictor variables better explained gaps (Table 2) for specific leaf area (Pseudo $R^2=0.83$), maximum height (Pseudo $R^2=0.2215$), seed dry mass (Pseudo $R^2=0.7987$) and wood density (Pseudo $R^2=0.8093$ - See Appendix 4 in Supplementary information for AIC tables). Trait gaps were higher with smaller mean economical use of wood, distance from protected areas, mean range size and higher distances from urban centers.

Table 2: Generalized linear models (GLM) fitted values for specific leaf area (SLA), seed dry mass (SDM) and wood density (WD) at the geographical level.

	Estimate	Standard Error	z value	P
SLA trait gap				
(Intercept)	1.947	4.97×10^{-3}	391.836	> 0.001
Distance from urban centers	5.82×10^{-2}	2.54×10^{-3}	22.922	> 0.001
Economical use of wood	-8.01×10^{-1}	9.34×10^{-3}	-85.779	> 0.001
Distance from protected areas	-1.57×10^{-2}	3.42×10^{-3}	-4.596	> 0.001

Range size	-1.61×10^{-6}	6.86×10^{-9}	-235.17	> 0.001
HMAX trait gap				
(Intercept)	-3.07	4.59×10^{-2}	-66.751	> 0.001
Distance from urban centers	2.05×10^{-1}	2.35×10^{-2}	8.705	> 0.001
Economical use of wood	-5.798	8.95×10^{-2}	-64.824	> 0.001
Distance from protected areas	-2.39×10^{-1}	3.45×10^{-2}	-6.936	> 0.001
Range size	-1.65×10^{-6}	6.77×10^{-8}	-24.37	> 0.001
SDM trait gap				
(Intercept)	2.740	6.85×10^{-3}	399.88	> 0.001
Distance from urban centers	4.89×10^{-2}	3.49×10^{-3}	14.01	> 0.001
Economical use of wood	-2.46	1.28×10^{-2}	-192.78	> 0.001
Distance from protected areas	-4.91×10^{-2}	4.60×10^{-3}	-10.67	> 0.001
Range size	-1.12×10^{-6}	9.30×10^{-9}	-120.50	> 0.001
WD trait gap				
(Intercept)	1.256	5.30×10^{-3}	236.81	> 0.001
Distance from urban centers	4.82×10^{-2}	2.73×10^{-3}	17.685	> 0.001
Economical use of wood	-2.052	9.96×10^{-3}	-206.14	> 0.001
Distance from protected areas	-1.89×10^{-2}	3.70×10^{-3}	-5.108	> 0.001
Range size	-8.12×10^{-7}	7.39×10^{-9}	-109.85	> 0.001

DISCUSSION

Functional trait gaps varied differently among functional traits, both at the species and at geographical level, which might indicate bias towards specific functional traits. For instance, at the species level, species are better-known in their maximum height, followed by wood density, specific leaf area and seed dry mass, respectively. At the geographical level, the western Atlantic Forest is better-known and the eastern is the less known. Uneven trait gap among species and among geographical areas directly impact trait-based studies.

Functional Trait Gaps At The Species Level

In this study, we showed a large trait gap for key functional traits among Atlantic Forest trees, and these gaps are biased towards small-ranged and non-economically used species. Bias of range size could lead to incomplete knowledge of important roles in ecosystem services, specially key roles played by rare species [67,68], which can maintain functions not insured by a combination of common wide distributed species traits [69]. Whilst economical use can strengthen arguments for conservation [70], it can also be a reason for biodiversity decline if economical used species are not managed sustainably [71].

We found that economical use of wood might indirectly strengthen conservation, as species with economical use of their wood are better known, even those with small range sizes compared to the non-economically used. Moreover, it is necessary to drive attention to trait gaps of non-used species in order to fill their gaps, making possible to infer their ecological strategies and relate it to ecosystem services. In addition, species with trait gaps may not be under spotlight, but can be in the future, as climate change could alter the type and strength of biodiversity-ecosystem relationship [72].

Functional Trait Gaps At The Geographical Level

Our study showed that species are better-known in communities closer to urban centers, with wide range sized species and species with economical use of wood, independently of traits. Although the number of records is usually higher near protected areas [6,33], here we show that communities closer to this areas are not better-known. Thus,

enhanced sampling effort near protected areas might not guarantee trait knowledge, once there could be a bias towards common wide ranged and economically used species that are not necessarily in communities inside or near protected areas, but rather near urban centers. Conversely, trait gap might be a case of protected areas historically sheltering rare species with specific habitat needs [73], and limited access to this areas coupled to low detectability could impair rare species sampling [74].

The unevenly sampled communities result in areas that have more unknown species than others, such as the eastern Atlantic Forest, which is in debt of 70 to 90% of area required to restore native vegetation under the new Brazilian Forest Code [40]. Moreover, if trait bias is restrained towards species that display specific functional traits values, such as in areas with low functional dispersion and high uncertainty degree, there could be underestimation of functional diversity measures [3]. For instance, if only species with certain functional trait values have been sampled in a community, we could interpret ecosystem function wrongly, by over – or underestimating processes such as biomass production. Thus, trait gaps might also constrain restoration practices under the biodiversity-ecosystem approaches in areas which species have trait gaps, since previous functional trait studies will be required for that matter. However, southwestern and northwestern Atlantic Forest restoration status is even more critical with over 90% of its area in debt for native vegetation restoration [40], and also where there is smaller trait gaps. In this way, restoration practices concerning biodiversity-ecosystem function would benefit from the trait knowledge availability of species that occur in southwestern and northwestern Atlantic Forest that will be useful in theory-driven restoration [24,75].

Future Directions

We are approaching the deadline proposed by the Aichi Biodiversity Targets in the Convention on Biological Diversity [76]. The Target 19 of the Strategic Plan for Biodiversity 2011-2020 includes knowledge improvement, sharing and transferring regarding, among others, biodiversity-ecosystem functioning. Even with the comprehensive coverage information presented by databases, here we show the necessity to improve data coverage of Atlantic Forest tree traits, a biodiversity *hotspot* providing ecosystem services for 148 million humans [77].

Whilst approaches on ecosystem-biodiversity function and services are under the spotlight, trait knowledge are indispensable to make them viable. If functional trait gaps are

reduced in the future, trait-based information, such as functional diversity measures, could be a shortcut to predict ecosystem-biodiversity relationships. Using trait-based information as a *proxy* of ecosystem function and services could lead to cost reductions on environmental management. If functional trait information is available, reinforce reasoning of the use of trait-based approaches as a low-cost method is therefore possible. That is, trait-based methods could attract attention of stakeholders and policymakers to the feasibility of native vegetation remnants conservation and of restoration on areas that are critically in debt.

CONCLUSION

We showed that functional trait gaps of the Atlantic Forest species are biased towards range size and economical use of wood. We also found no bias towards urban centers, protected areas, range size and economical use of wood at the geographical scale. The large functional trait gap found in this study illustrates the necessity to drive efforts on sampling the unknown species. Such active effort on reducing gaps can enable further studies on biodiversity-ecosystem function, that can be integrated as a valuable theory-driven tool for conservation and restoration practices.

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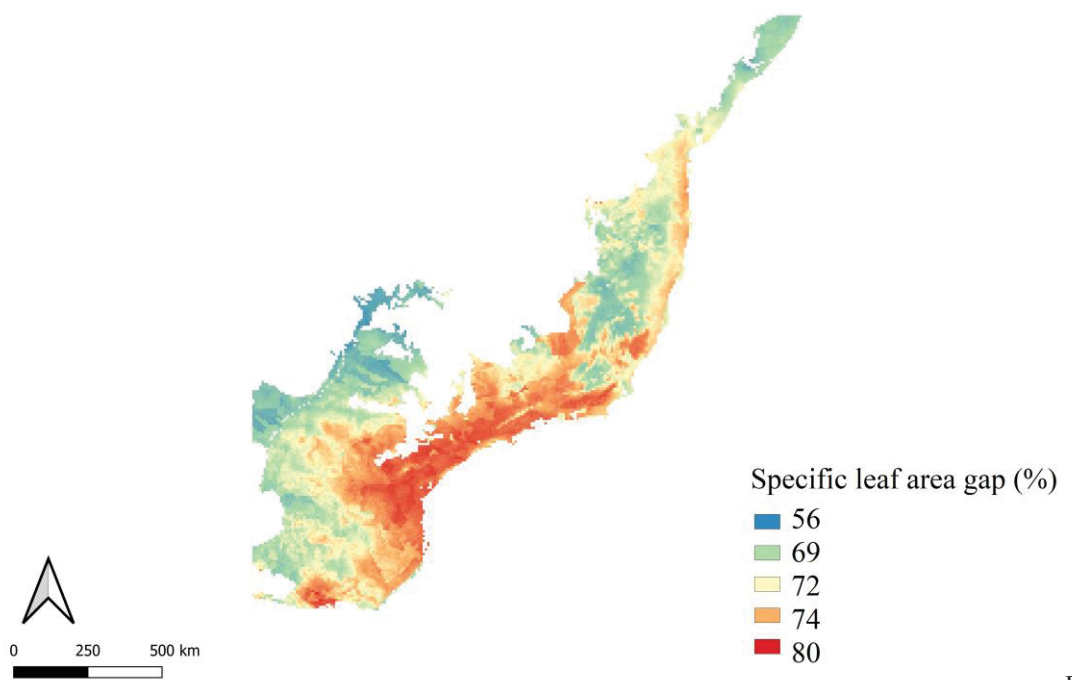
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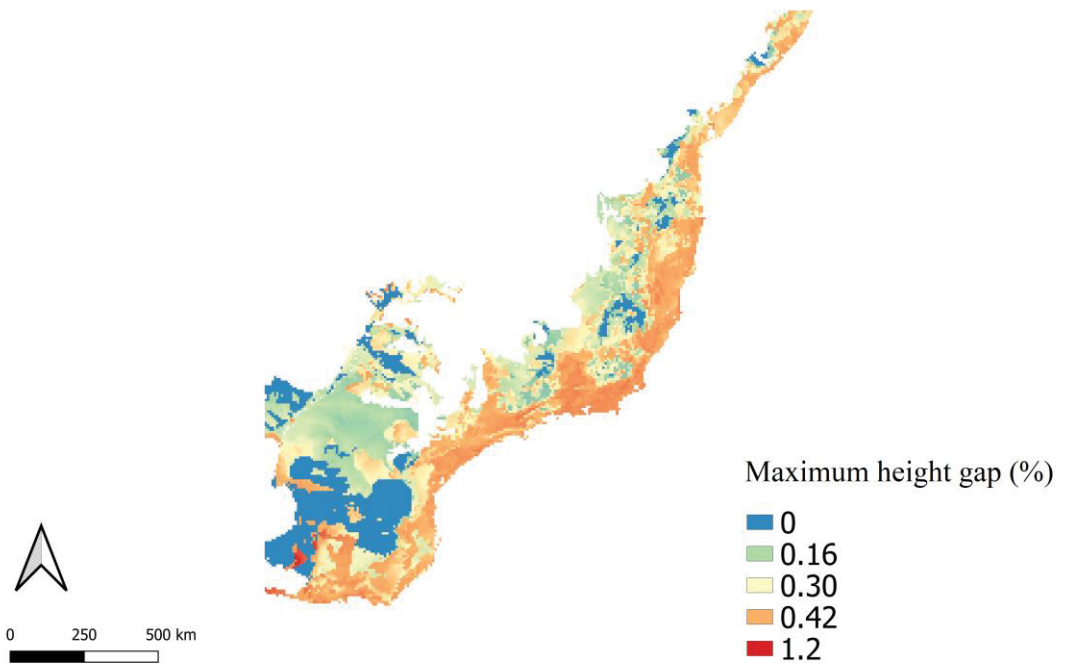
SUPPLEMENTARY MATERIAL***Supplementary Figures***

Trait gap at the geographical level for specific leaf area, maximum height, seed dry mass and wood density.

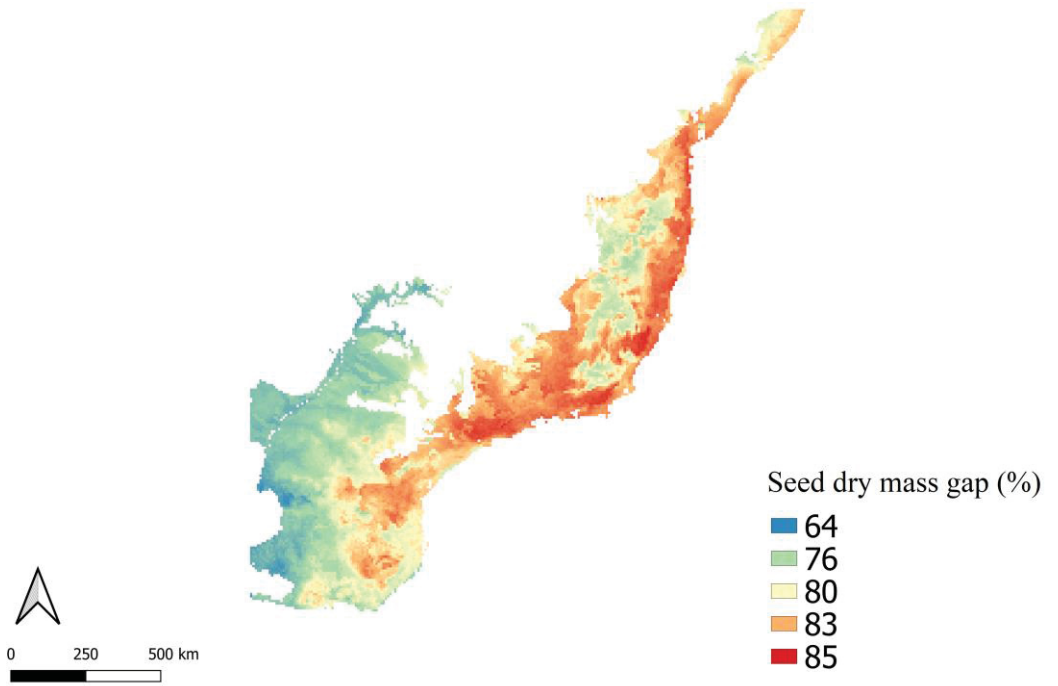


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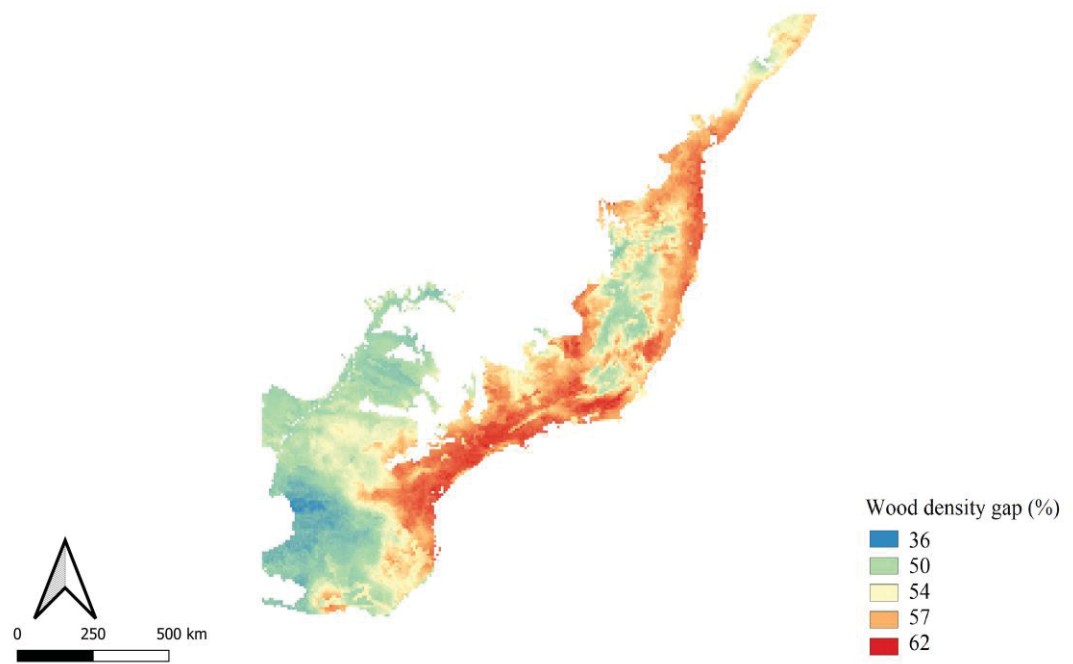
Figure S 1: Specific leaf area gap at the geographical level



FigureS 2: Maximum height gap at the geographical level.

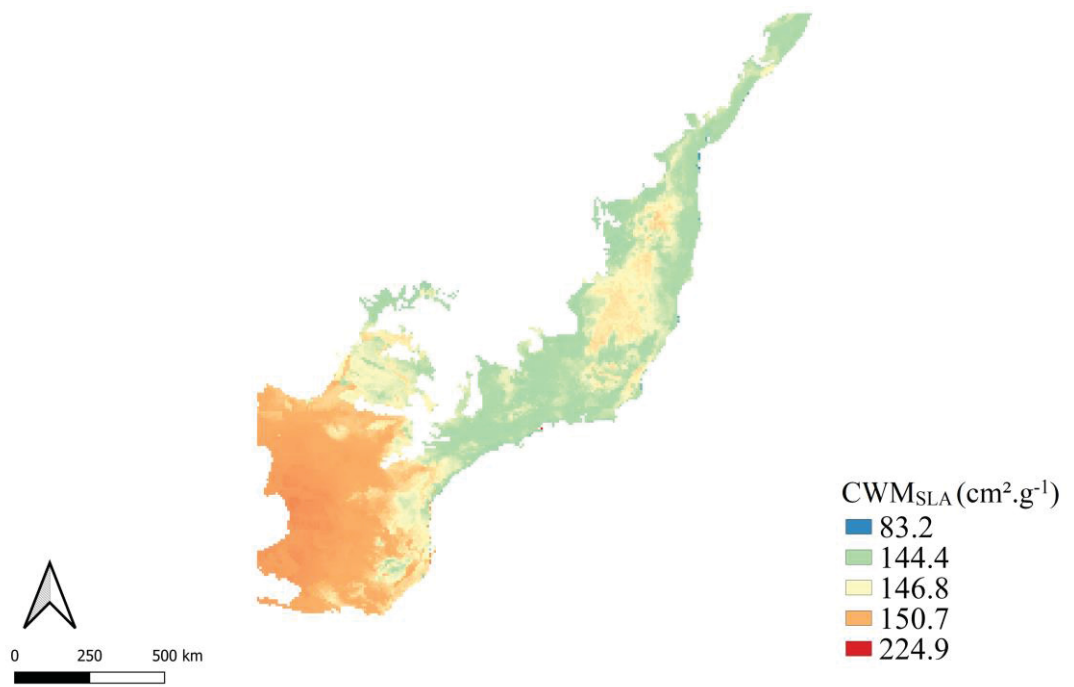


FigureS 3: Seed dry mass gap at the geographical level.

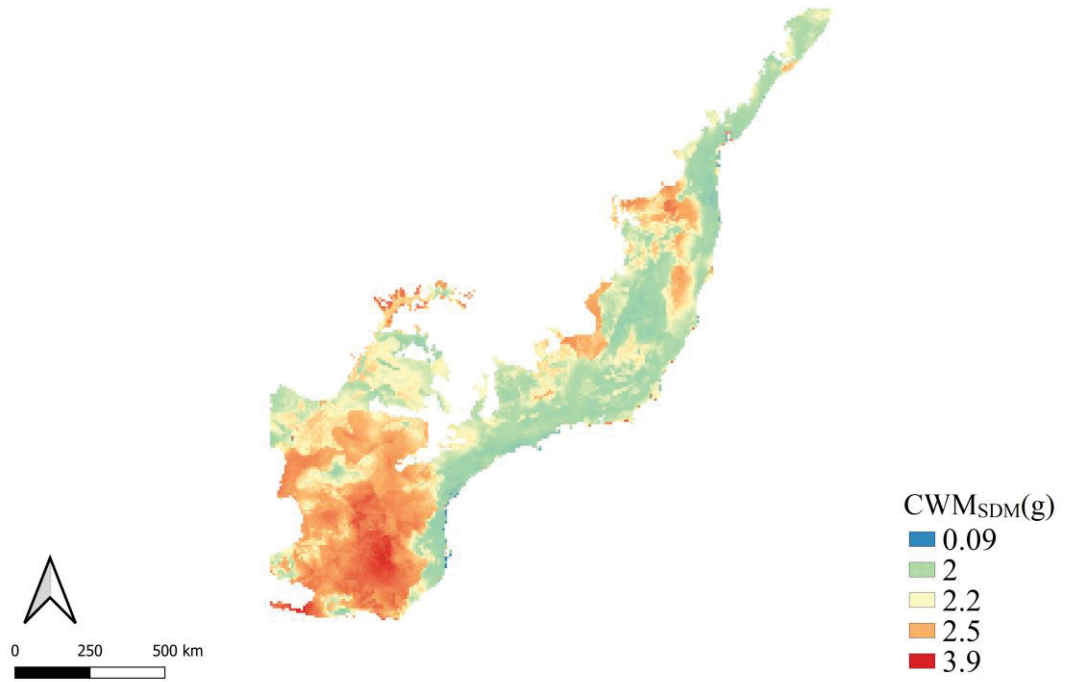


FigureS 4: Wood density gap at the geographical level.

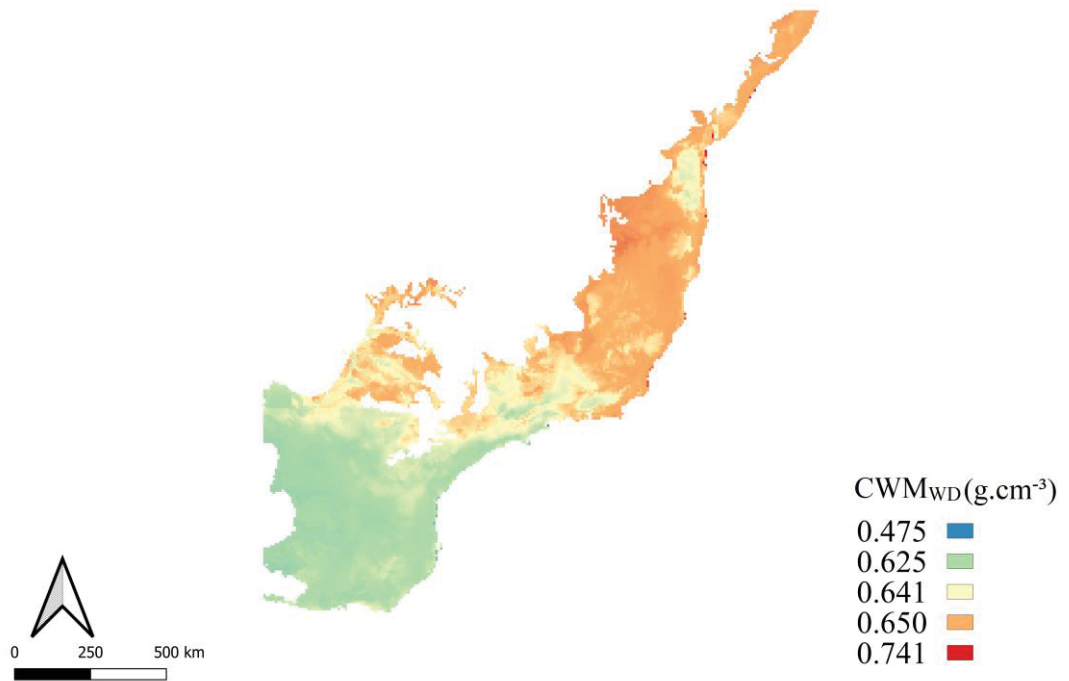
Functional dominance (CWM) for specific leaf area, maximum height, seed dry mass and wood density.



FigureS 5: Functional dominance of specific leaf area.



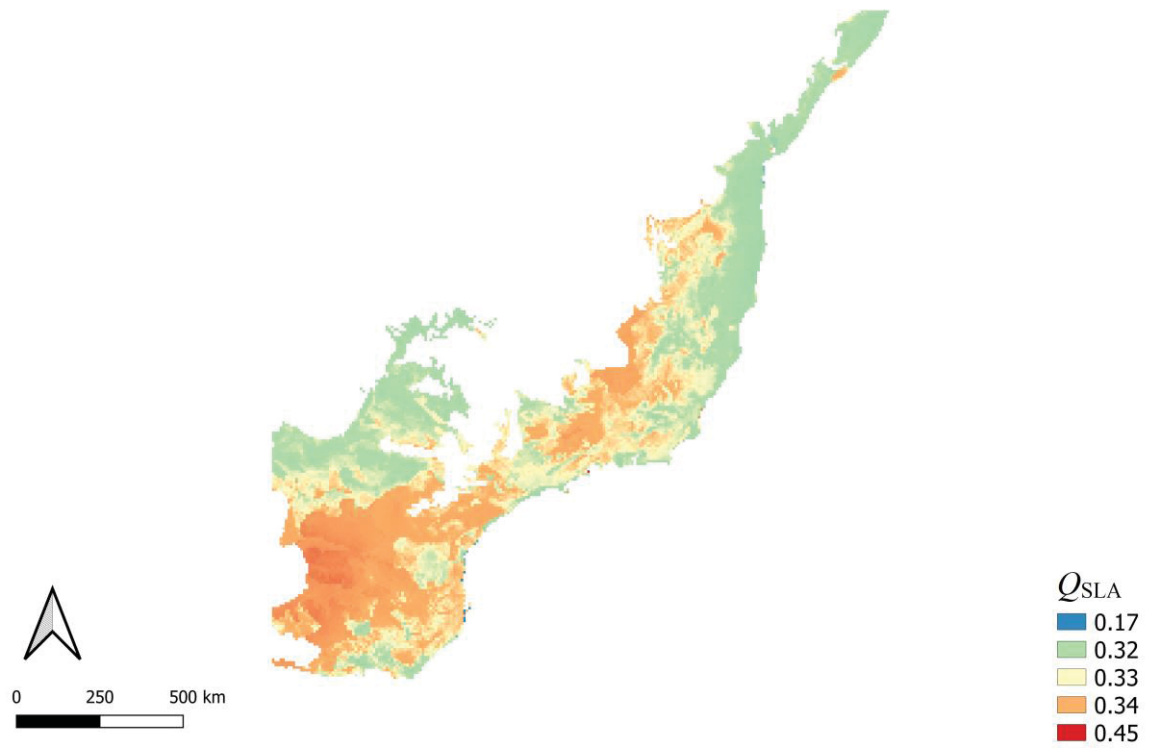
FigureS 6: Functional dominance of seed dry mass.



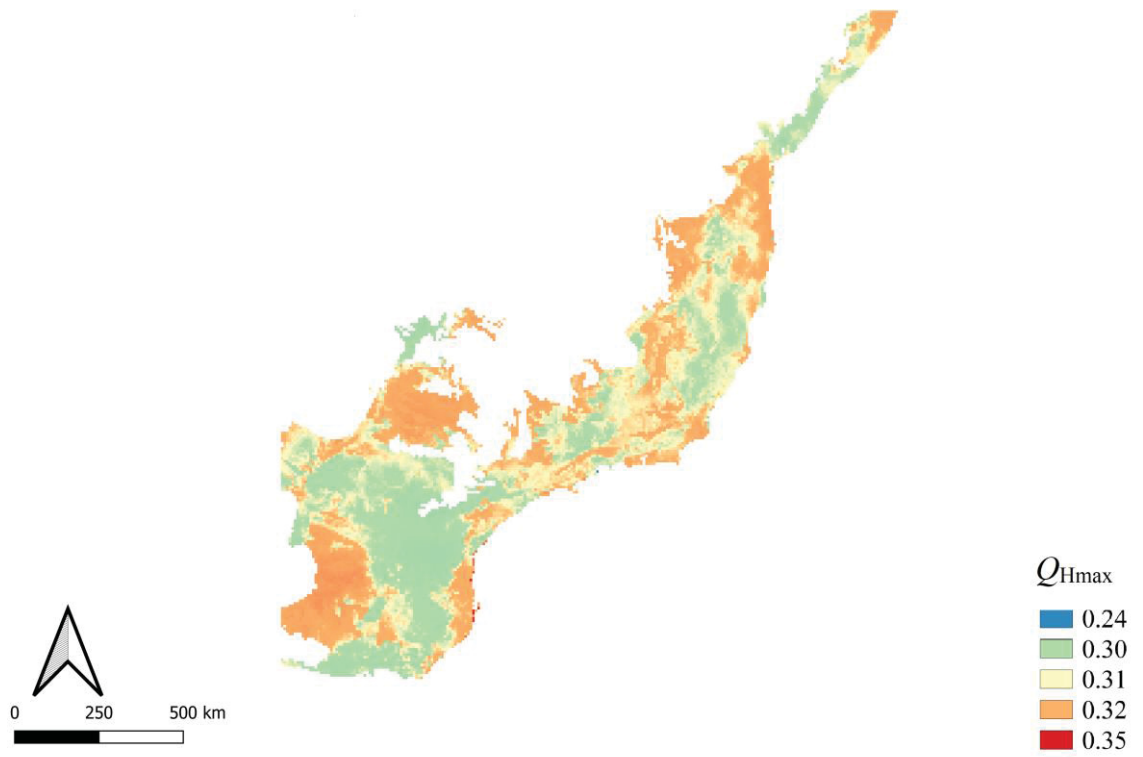
FigureS 7: Functional dominance of wood density.

Fig

Functional dispersion (Q) for specific leaf area, maximum height, seed dry mass and wood density.

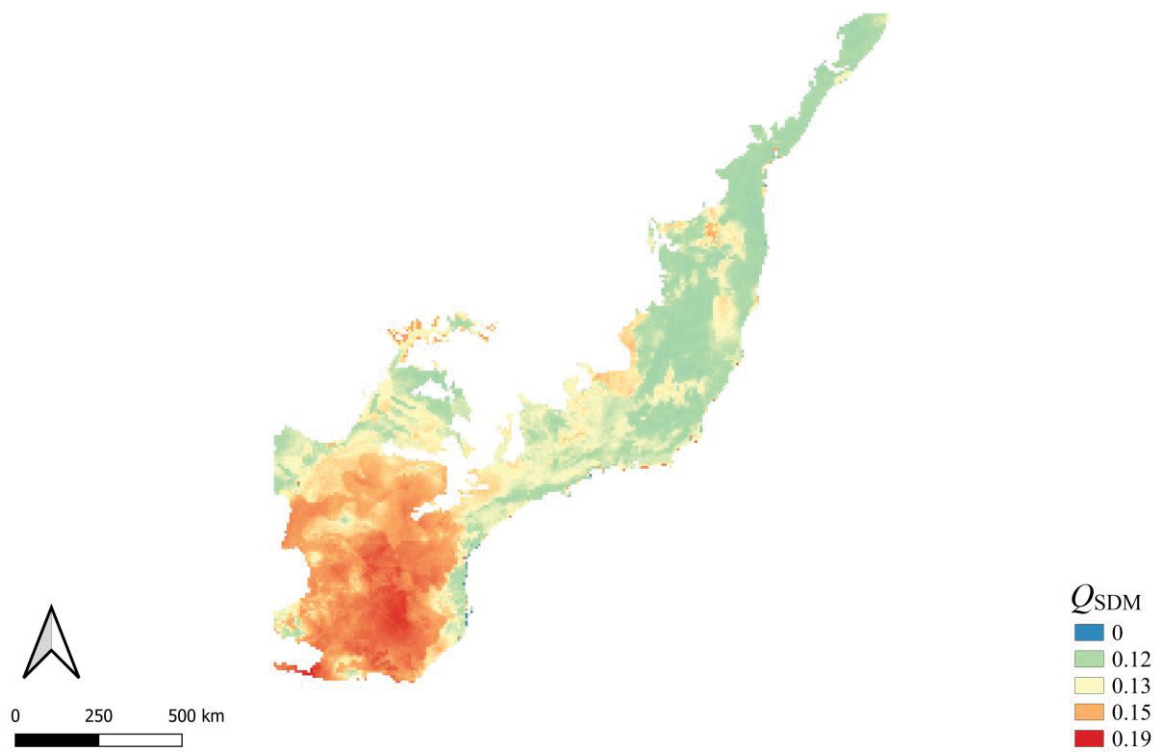


FigureS 8: Funcional dispersion of specific leaf area.

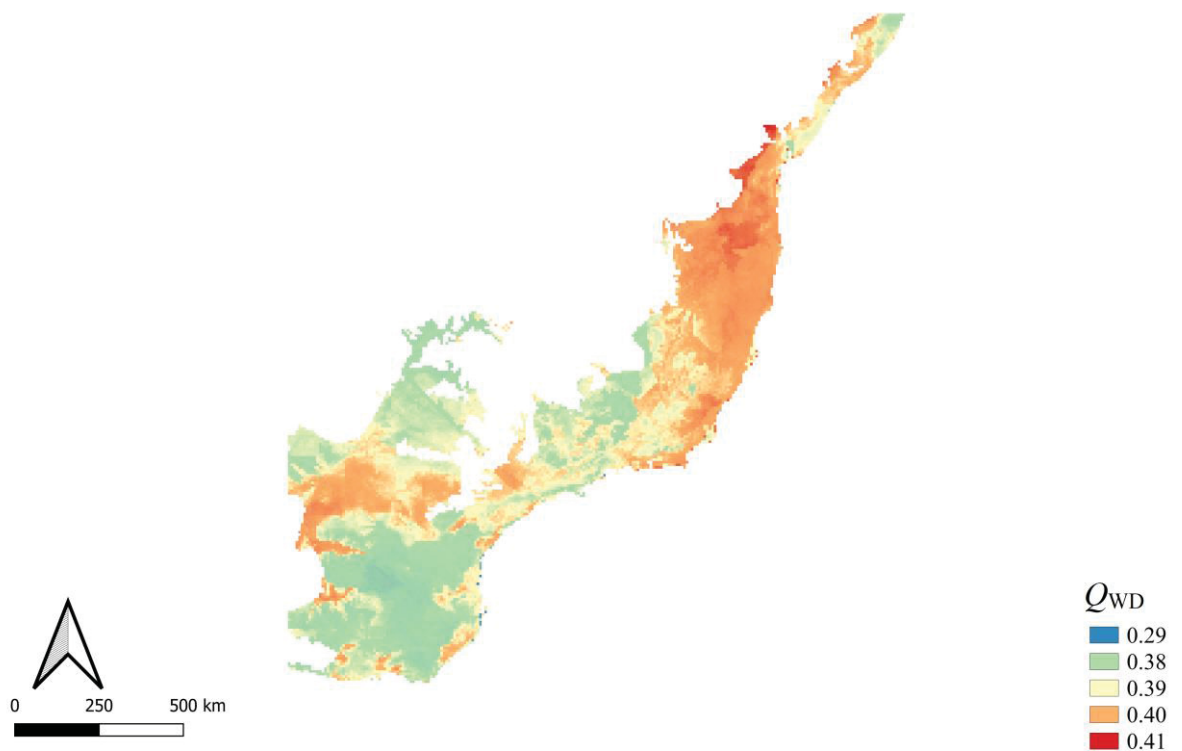


Fig

Figure 9: Functional dispersion of maximum height.



FigureS 10: Funcional dispersion of seed dry mass.



FigureS 11: Funcional dispersion of wood density.

Appendix S1

We assessed BIEN database through the Bien R package using the function “BIEN.trait.traitbyspecies”. When we used the search tool of *Reflora online herbarium* we obtained organized spreadsheets with all the exsicatas per species in rows, which contained characteristics of the collected individual, as height. We compiled the maximum height of an adult individual registers per species by report.

Appendix S2

Databases used from BIEN and TRY.

Table S21 Databases for specif leaf area, maximum height, seed dry mass and wood density in BIEN database

Authorship	Contact	Dataset
Lopez-Gonzalez G	G.Lopez-Gonzalez@leeds.ac.uk	http://datadryad.org/resource/doi:10.5061/dryad.234

Zanne, A.E., et. al	G.Lopez-Gonzalez@leeds.ac.uk	http://datadryad.org/repo/handle/10255/dryad.235
T.A. Easdale	easdalet@landcareresearch.co.nz	http://dx.doi.org/10.1016/j.ppees.2009.03.001
Ploton P	p.ploton@gmail.com	http://datadryad.org/resource/doi:10.5061/dryad.f2b52
Goodman RC	rosa.goodman@gmail.com	http://datadryad.org/resource/doi:10.5061/dryad.p281g
Paine CET	c.e.t.paine@stir.ac.uk	http://datadryad.org/resource/doi:10.5061/dryad.h9083
Bhaskar R	radika@gmail.com	http://datadryad.org/resource/doi:10.5061/dryad.6p9v5
Chacón E	edchacon@gmail.com	NA
Mascaro J	jmascaro@stanford.edu	http://datadryad.org/resource/doi:10.5061/dryad.rs7b0.2
Szefer P	szefer85@gmail.com	http://datadryad.org/resource/doi:10.5061/dryad.4b95c.2
Nathan Kraft	nkraft@biodiversity.ubc.ca	doi:10.1890/09-1672.1
Rasmann S	srasmann@gmail.com	http://datadryad.org/resource/doi:10.5061/dryad.8557
L. Poorter	lourens.poorter@wur.nl	doi: 10.1890/0012-9658(2006)87[1733:LTAGPO]2.0.CO;2
Maire V	vmaire@gmail.com	http://datadryad.org/resource/doi:10.5061/dryad.j42m7.2
L. Poorter	lourens.poorter@wur.nl	doi:10.1007/s00442-008-1131-x
Benjamin Blonder	bblonder@gmail.com	www.amjbot.org/content/suppl/2012/11/07/ajb.1200062.DC1/Blonder_AppS1A_observational_data.csv
Price CA	charles.price@uwa.edu.au	http://datadryad.org/resource/doi:10.5061/dryad.r3n45
Milla R	ruben.milla@gmail.com	http://datadryad.org/resource/doi:10.5061/dryad.dg85v
Michael Kleyer	michael.kleyer@uni-oldenburg.de	http://www.leda-traitbase.org/LEDAportal/
Charles Price	charles.price@uwa.edu.au	http://onlinelibrary.wiley.com/doi/10.1111/1365-2435.12298/supinfo
Grootemaat S	saskia.grootemaat@mq.edu.au	http://datadryad.org/resource/doi:10.5061/dryad.m41f1
Boyero L	luz.boyero@ehu.eus	http://datadryad.org/resource/doi:10.5061/dryad.jg8r0
Bufford JL	jbufford@hawaii.edu	http://datadryad.org/resource/doi:10.5061/dryad.b1v2c
Perez F	mperez@bio.puc.cl	http://datadryad.org/resource/doi:10.5061/dryad.d61jk
Dana Royer	droyer@wesleyan.edu	NA
Liu, K., Eastwood, R.J., Flynn, S., Turner, R.M., and Stuppy, W.H.	sid@kew.org	http://www.kew.org/data/sid
Letcher SG	susan.letcher@purchase.edu	http://datadryad.org/resource/doi:10.5061/dryad.d87v7
Kraft TS	thomas.s.kraft@dartmouth.edu	http://datadryad.org/resource/doi:10.5061/dryad.69ph0
Fricke EC	ecfricke@iastate.edu	http://datadryad.org/resource/doi:10.5061/dryad.90f03
Tim Killeen	NA	NA
Susan Letcher	SUSAN.LETCHER@purchase.edu	NA
Greg Reams	NA	NA
NA	NA	http://www.americanforests.org/resources/bigtrees/register.php
L. Poorter	lourens.poorter@wur.nl	doi: 10.1093/aob/mcn103

Saara J. DeWalt	sdewalt@rice.edu	NA
NA	NA	NA
Kleinschroth F	fritz.kln@gmail.com	http://datadryad.org/resource/doi:10.5061/ryad.51p4f
Thomas SC	sc.thomas@utoronto.ca	http://datadryad.org/resource/doi:10.5061/ryad.bs332
Osuri AM	moanand@gmail.com	http://datadryad.org/resource/doi:10.5061/ryad.7s7r1

Table S2 2Databases for specific leaf area, maximum height, seed dry mass and wood density in TRY database

Autorship	Dataset ID	Dataset
Higgins, Steve et. al	48	Dispersal Traits Database
Niinemets, Ülo et. al	87	Global Leaf Robustness and Physiology Database
Lloyd, Jon et. al	34	The RAINFOR Plant Trait Database
Wirth, Christian et. al	68	The Functional Ecology of Trees (FET) Database - Jena
Pillar, Valerio et. al	75	ECOQUA South American Plant Traits Database
Sosinski, Enio et. al	77	FAPESP Brazil Rainforest Database
Wright, S. Joseph et. al	112	Panama Plant Traits Database
Wright, Ian et. al	20	GLOPNET - Global Plant Trait Network Database
Wright, Ian et. al	64	Neotropic Plant Traits Database
Finegan, Bryan et. al	74	Costa Rica Rainforest Trees Database
Kattge, Jens et. al	67	Leaf Physiology Database
Domingues, Tomas et. al	255	LBA ECO Tapajos: Leaf Characteristics and Photosynthesis
Jackson, Robert et. al	240	Nutrient Resorption Efficiency Database
Jansen, Steven et. al	241	Xylem Functional Traits (XFT) Database
Craven, Dylan et. al	230	Panama Tree Traits
Powers, Jennifer et. al	263	Costa Rican Tropical Dry Forest Trees
Gonzalez-Melo, Andres et. al	267	Functional Traits for Restoration Ecology in the Colombian Amazon
Schweingruber, Fritz et. al	251	The Xylem/Phloem Database
Baraloto, Christopher et. al	269	The Bridge Database
Lenti, Felipe et. al	274	Crown Architecture Database
Atkin, Owen et. al	286	Global Respiration Database
Higuchi, Pedro et. al	305	Araucaria Forest Database
Holl, Karen et. al	306	Plant traits from Costa Rica
Mazzochini, Guilherme et. al	357	Functional traits of woody species in the Brazilian semi-arid region
Maire, Vincent et. al	342	Photosynthesis Traits Worldwide
Dias, Arildo et. al	368	Wood traits of trees and lianas from the Brazilian Atlantic Forest
Souza, Alexandre et. al	369	Traits and ecological strategies of 66 subtropical tree species in the Brazilian Atlantic Forest

Appendix S3

We used the following literature for functional trait compilation

1. Carvalho PER. 2003 *Espécies Arbóreas Brasileiras - Vol I*. Embrapa.
2. Carvalho PER. 2006 *Espécies Arbóreas Brasileiras - Vol II*. Embrapa.
3. Carvalho PER. 2008 *Espécies Arbóreas Brasileiras - Vol III*. Embrapa.
4. Carvalho PER. 2010 *Espécies Arbóreas Brasileiras - Vol IV*. See Embrapa.
5. Carvalho PER. 2014 *Espécies Arbóreas Brasileiras - Vol V*. Embrapa.
6. Lorenzi H. 2016 *Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Nativas do Brasil - Vol III*. 2nd edn. Instituto Plantatum.
7. Lorenzi H. 2002 *Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Nativas do Brasil - Vol II*. 2nd edn. Instituto Plantatum.
8. Lorenzi H. 2002 *Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Nativas do Brasil - Vol I*. 4th edn. Instituto Plantatum.
9. Durigan G, Baitello JB, Corrêa GAD, Siqueiza MF. 2004 *Plantas do Cerrado Paulista: Imagens de uma Paisagem Ameaçada*. Páginas & Letras Editora e Gráfica.
10. Backes. P, Irgang. B. 2002 *Árvores do Sul: Guia de Identificação & Interesse Ecológico*. 1st edn. Ed. Clube da Árvore.
11. Backes. P, Irgang. B. 2004 *Mata Atlântica: As Árvores e a Paisagem*. 1st edn. Editora Paisagem do Sul.
12. Paula JE, Alves JL de H. 2010 *922 Madeiras Nativas do Brasil*. 1st edn. Cinco Continentes.

Appendix S4

Table_S 3: Trait gaps for specific leaf area (SLA), maximum height (HMAX), seed dry mass (SDM) and wood density (WD) are signalized as "No" and presence of information is signalized as "Yes".

Species	SLA	HMAX	SDM	WD
<i>Abarema brachystachya</i>	No	Yes	No	Yes
<i>Abarema cochliacarpus</i>	No	Yes	No	No
<i>Abarema filamentosa</i>	No	Yes	No	No
<i>Abarema jupunba</i>	Yes	Yes	No	Yes

<i>Abarema langsdorffii</i>	No	No	No	No
<i>Abrus precatorius</i>	Yes	Yes	Yes	No
<i>Abutilon bedfordianum</i>	No	Yes	No	No
<i>Abutilon rufinerve</i>	No	Yes	No	No
<i>Acalypha gracilis</i>	No	Yes	No	No
<i>Acca sellowiana</i>	Yes	Yes	No	Yes
<i>Achatocarpus praecox</i>	No	Yes	No	No
<i>Acnistus arborescens</i>	No	Yes	Yes	No
<i>Acosmium lentiscifolium</i>	No	Yes	No	Yes
<i>Acrocomia aculeata</i>	No	Yes	No	No
<i>Actinostemon appendiculatus</i>	No	Yes	No	No
<i>Actinostemon concolor</i>	No	Yes	No	No
<i>Actinostemon klotzschii</i>	No	Yes	No	No
<i>Actinostemon verticillatus</i>	No	Yes	No	No
<i>Adenocalymma comosum</i>	No	Yes	No	No
<i>Adenophaedra megalophylla</i>	No	Yes	No	No
<i>Aegiphila brachiata</i>	No	Yes	No	No
<i>Aegiphila fluminensis</i>	No	Yes	No	No
<i>Aegiphila integrifolia</i>	Yes	Yes	No	Yes
<i>Aegiphila mediterranea</i>	No	Yes	No	No
<i>Aegiphila obducta</i>	No	Yes	No	No
<i>Aegiphila pernambucensis</i>	No	Yes	No	No
<i>Aegiphila verticillata</i>	No	Yes	No	No
<i>Aegiphila vitelliniflora</i>	No	Yes	No	No
<i>Agarista eucalyptoides</i>	No	Yes	No	Yes
<i>Agarista glaberrima</i>	No	Yes	No	No
<i>Agarista niederleinii</i>	No	Yes	No	No
<i>Agarista revoluta</i>	No	Yes	No	No
<i>Agonandra brasiliensis</i>	No	Yes	No	Yes
<i>Agonandra excelsa</i>	No	Yes	No	No
<i>Aiouea acarodomatifera</i>	No	Yes	No	No
<i>Aiouea saligna</i>	No	Yes	No	No
<i>Albertinia brasiliensis</i>	No	Yes	No	No
<i>Albizia edwallii</i>	No	Yes	No	Yes
<i>Albizia inundata</i>	No	Yes	No	Yes
<i>Albizia niopoides</i>	Yes	Yes	Yes	Yes
<i>Albizia pedicellaris</i>	Yes	Yes	No	Yes
<i>Albizia polycephala</i>	No	Yes	No	No
<i>Alchornea glandulosa</i>	Yes	Yes	Yes	Yes
<i>Alchornea sidifolia</i>	No	Yes	No	Yes

<i>Alchornea triplinervia</i>	Yes	Yes	Yes	Yes
<i>Algernonia leandrii</i>	No	Yes	No	No
<i>Alibertia edulis</i>	Yes	Yes	Yes	Yes
<i>Allagoptera arenaria</i>	No	Yes	No	No
<i>Allagoptera caudescens</i>	No	Yes	No	No
<i>Allamanda schottii</i>	No	Yes	No	No
<i>Allophylus edulis</i>	Yes	Yes	Yes	Yes
<i>Allophylus guaraniticus</i>	No	Yes	No	No
<i>Allophylus leucoclados</i>	No	Yes	No	No
<i>Allophylus petiolulatus</i>	No	Yes	Yes	Yes
<i>Allophylus puberulus</i>	No	Yes	No	No
<i>Allophylus semidentatus</i>	No	Yes	No	No
<i>Allophylus sericeus</i>	No	Yes	No	Yes
<i>Allophylus strictus</i>	No	Yes	No	No
<i>Almeidea caerulea</i>	No	Yes	No	No
<i>Almeidea rubra</i>	No	Yes	No	No
<i>Aloysia virgata</i>	No	Yes	Yes	No
<i>Alseis floribunda</i>	No	Yes	No	Yes
<i>Alseis involuta</i>	No	Yes	No	No
<i>Alseis pickelii</i>	No	Yes	No	No
<i>Alsophila capensis</i>	No	Yes	No	No
<i>Alsophila setosa</i>	No	Yes	No	No
<i>Alsophila sternbergii</i>	No	Yes	No	No
<i>Amaioua corymbosa</i>	Yes	Yes	Yes	No
<i>Amaioua guianensis</i>	Yes	Yes	No	Yes
<i>Amaioua intermedia</i>	Yes	Yes	No	Yes
<i>Amaioua pilosa</i>	No	Yes	No	No
<i>Amanoa guianensis</i>	Yes	Yes	No	Yes
<i>Amanoa oblongifolia</i>	No	Yes	No	Yes
<i>Amburana cearensis</i>	Yes	Yes	Yes	Yes
<i>Amorimia rigida</i>	No	Yes	No	No
<i>Amphilophium crucigerum</i>	No	Yes	No	No
<i>Amphirrhox longifolia</i>	Yes	Yes	No	Yes
<i>Anacardium occidentale</i>	Yes	Yes	Yes	Yes
<i>Anadenanthera colubrina</i>	No	Yes	Yes	Yes
<i>Anadenanthera peregrina</i>	No	Yes	No	Yes
<i>Anaxagorea dolichocarpa</i>	No	Yes	No	Yes
<i>Anaxagorea phaeocarpa</i>	Yes	Yes	No	No
<i>Andira anthelmia</i>	No	Yes	No	Yes
<i>Andira carvalhoi</i>	No	Yes	No	No

<i>Andira fraxinifolia</i>	No	Yes	No	Yes
<i>Andira humilis</i>	No	Yes	No	No
<i>Andira legalis</i>	No	Yes	No	Yes
<i>Andira nitida</i>	No	Yes	No	Yes
<i>Andira ormosioides</i>	No	Yes	No	No
<i>Andira surinamensis</i>	Yes	Yes	No	Yes
<i>Andira vermifuga</i>	No	Yes	No	No
<i>Andradaea floribunda</i>	No	Yes	No	No
<i>Angostura bracteata</i>	No	Yes	No	No
<i>Aniba canelilla</i>	No	Yes	No	Yes
<i>Aniba formula</i>	No	Yes	No	Yes
<i>Aniba heringeri</i>	No	Yes	No	No
<i>Aniba intermedia</i>	No	Yes	No	No
<i>Aniba viridis</i>	No	Yes	No	No
<i>Annona acutiflora</i>	No	Yes	No	No
<i>Annona bahiensis</i>	No	Yes	No	No
<i>Annona cacans</i>	No	Yes	No	Yes
<i>Annona crassiflora</i>	No	Yes	No	Yes
<i>Annona dolabripetala</i>	No	Yes	No	No
<i>Annona emarginata</i>	No	Yes	No	Yes
<i>Annona glabra</i>	Yes	Yes	Yes	Yes
<i>Annona maritima</i>	No	Yes	No	No
<i>Annona montana</i>	Yes	Yes	No	No
<i>Annona mucosa</i>	No	Yes	No	No
<i>Annona neosericea</i>	No	Yes	Yes	Yes
<i>Annona pickelii</i>	No	Yes	No	No
<i>Annona rugulosa</i>	No	Yes	No	Yes
<i>Annona salzmännii</i>	No	Yes	No	Yes
<i>Annona sylvatica</i>	No	Yes	No	No
<i>Anthodiscus amazonicus</i>	Yes	Yes	No	Yes
<i>Antonia ovata</i>	Yes	Yes	No	Yes
<i>Aparisthium cordatum</i>	Yes	Yes	No	Yes
<i>Apeiba albiflora</i>	No	Yes	No	Yes
<i>Apeiba tibourbou</i>	Yes	Yes	Yes	Yes
<i>Aptandra tubicina</i>	Yes	Yes	No	Yes
<i>Apuleia leiocarpa</i>	Yes	Yes	No	Yes
<i>Aralia warmingiana</i>	No	Yes	No	Yes
<i>Arapatiella psilophylla</i>	No	Yes	No	Yes
<i>Araucaria angustifolia</i>	Yes	Yes	Yes	Yes
<i>Ardisia guianensis</i>	Yes	Yes	No	Yes

<i>Asclepias curassavica</i>	Yes	Yes	No	No
<i>Aspidosperma australe</i>	No	Yes	No	Yes
<i>Aspidosperma cylindrocarpon</i>	Yes	Yes	Yes	Yes
<i>Aspidosperma desmanthum</i>	Yes	Yes	No	Yes
<i>Aspidosperma discolor</i>	No	Yes	No	Yes
<i>Aspidosperma dispernum</i>	No	Yes	No	No
<i>Aspidosperma illustre</i>	No	Yes	No	Yes
<i>Aspidosperma macrocarpon</i>	No	Yes	No	Yes
<i>Aspidosperma multiflorum</i>	No	Yes	No	No
<i>Aspidosperma olivaceum</i>	No	Yes	No	Yes
<i>Aspidosperma parvifolium</i>	Yes	Yes	No	Yes
<i>Aspidosperma polyneuron</i>	No	Yes	Yes	Yes
<i>Aspidosperma pyricollum</i>	No	Yes	No	Yes
<i>Aspidosperma pyriformium</i>	Yes	Yes	No	Yes
<i>Aspidosperma ramiflorum</i>	No	Yes	No	Yes
<i>Aspidosperma riedelii</i>	No	Yes	No	No
<i>Aspidosperma spruceanum</i>	Yes	Yes	Yes	Yes
<i>Aspidosperma subincanum</i>	No	Yes	No	Yes
<i>Aspidosperma tomentosum</i>	Yes	Yes	No	Yes
<i>Astraea lobata</i>	No	Yes	No	No
<i>Astrocaryum aculeatis</i> Yesum	No	Yes	No	No
<i>Astronium concinnum</i>	No	Yes	No	Yes
<i>Astronium fraxinifolium</i>	No	Yes	No	Yes
<i>Astronium graveolens</i>	Yes	Yes	Yes	Yes
<i>Ateleia glazioveana</i>	No	Yes	No	Yes
<i>Athenaea micrantha</i>	No	Yes	No	No
<i>Athenaea pogogena</i>	No	Yes	No	No
<i>Attalea funifera</i>	No	Yes	No	No
<i>Attalea humilis</i>	No	Yes	No	No
<i>Augusta longifolia</i>	No	Yes	No	No
<i>Aureliana fasciculata</i>	No	Yes	No	No
<i>Aureliana velutina</i>	No	Yes	No	No
<i>Austrocritonia velutina</i>	No	Yes	No	No
<i>Austroeupatorium inulaefolium</i>	No	Yes	No	No
<i>Averrhoidium gardnerianum</i>	No	Yes	No	No
<i>Azara uruguayensis</i>	No	Yes	No	No
<i>Baccharis calvescens</i>	No	Yes	No	No
<i>Baccharis caprariifolia</i>	No	Yes	No	No
<i>Baccharis dentata</i>	No	Yes	No	No
<i>Baccharis dracunculifolia</i>	No	Yes	No	No

<i>Baccharis elaeagnoides</i>	No	Yes	No	No
<i>Baccharis lateralis</i>	No	Yes	No	No
<i>Baccharis linearifolia</i>	No	Yes	No	No
<i>Baccharis oblongifolia</i>	No	Yes	No	No
<i>Baccharis oxyodonta</i>	No	Yes	No	No
<i>Baccharis patens</i>	No	Yes	No	No
<i>Baccharis platypoda</i>	No	Yes	No	No
<i>Baccharis semiserrata</i>	No	Yes	No	Yes
<i>Baccharis singularis</i>	No	Yes	No	No
<i>Baccharis tridentata</i>	No	Yes	No	No
<i>Baccharis vulneraria</i>	No	Yes	No	No
<i>Bactris acanthocarpa</i>	No	Yes	No	No
<i>Bactris bahiensis</i>	No	Yes	No	No
<i>Bactris caryotifolia</i>	No	Yes	No	No
<i>Bactris ferruginea</i>	No	Yes	No	No
<i>Bactris glassmanii</i>	No	Yes	No	No
<i>Bactris hirta</i>	No	Yes	No	No
<i>Bactris pickelii</i>	No	Yes	No	No
<i>Bactris setosa</i>	No	Yes	No	No
<i>Bactris vulgaris</i>	No	Yes	No	No
<i>Bagassa guianensis</i>	Yes	Yes	No	Yes
<i>Balfourodendron riedelianum</i>	No	Yes	Yes	Yes
<i>Banara brasiliensis</i>	No	Yes	No	No
<i>Banara guianensis</i>	No	Yes	No	Yes
<i>Banara parviflora</i>	No	Yes	No	No
<i>Banara serrata</i>	No	Yes	No	No
<i>Banara tomentosa</i>	No	Yes	No	Yes
<i>Barnebydendron riedelii</i>	No	Yes	No	No
<i>Basiloxydon brasiliensis</i>	No	Yes	No	No
<i>Bastardiopsis densiflora</i>	No	Yes	No	Yes
<i>Bathysa australis</i>	No	Yes	No	Yes
<i>Bathysa gymnocarpa</i>	No	Yes	No	No
<i>Bathysa mendoncae</i>	Yes	Yes	No	Yes
<i>Bathysa nicholsonii</i>	No	Yes	No	No
<i>Bathysa stipulata</i>	No	Yes	No	No
<i>Bauhinia acuruana</i>	No	Yes	No	No
<i>Bauhinia cheilantha</i>	No	Yes	No	Yes
<i>Bauhinia dumosa</i>	No	Yes	No	No
<i>Bauhinia forficata</i>	No	Yes	Yes	Yes
<i>Bauhinia fusconervis</i>	No	Yes	No	No

<i>Bauhinia integerrima</i>	No	Yes	No	No
<i>Bauhinia longifolia</i>	No	Yes	Yes	Yes
<i>Bauhinia membranacea</i>	No	Yes	No	No
<i>Bauhinia rufa</i>	Yes	Yes	No	No
<i>Bauhinia unguolata</i>	Yes	Yes	Yes	Yes
<i>Beilschmiedia emarginata</i>	No	Yes	No	Yes
<i>Beilschmiedia taubertiana</i>	No	Yes	No	No
<i>Berberis laurina</i>	No	Yes	No	No
<i>Bernardia pulchella</i>	No	Yes	No	No
<i>Bernardia scabra</i>	No	Yes	No	No
<i>Bernardinia fluminensis</i>	No	Yes	No	No
<i>Bixa arborea</i>	Yes	Yes	No	Yes
<i>Bixa orellana</i>	Yes	Yes	Yes	Yes
<i>Blanchetiodendron blanchetii</i>	No	Yes	No	No
<i>Blepharocalyx eggertii</i>	No	Yes	No	Yes
<i>Blepharocalyx salicifolius</i>	Yes	Yes	Yes	Yes
<i>Boehmeria caudata</i>	Yes	Yes	Yes	Yes
<i>Bonnetia stricta</i>	No	Yes	No	No
<i>Bougainvillea glabra</i>	No	Yes	No	No
<i>Bowdichia virgilioides</i>	Yes	Yes	No	Yes
<i>Brasiliopuntia brasiliensis</i>	No	Yes	No	No
<i>Bredemeyera brevifolia</i>	No	Yes	No	No
<i>Bredemeyera disperma</i>	No	Yes	No	No
<i>Bredemeyera floribunda</i>	No	Yes	No	No
<i>Bredemeyera laurifolia</i>	No	Yes	No	No
<i>Brodriguesia santosii</i>	No	Yes	No	No
<i>Brodiaea gaudichaudii</i>	No	Yes	No	Yes
<i>Brodiaea glaziovii</i>	No	Yes	No	No
<i>Brodiaea guianense</i>	Yes	Yes	Yes	Yes
<i>Brodiaea lactescens</i>	Yes	Yes	No	Yes
<i>Brodiaea rubescens</i>	Yes	Yes	No	Yes
<i>Brunfelsia brasiliensis</i>	No	Yes	No	No
<i>Brunfelsia clandestina</i>	No	Yes	No	No
<i>Brunfelsia hydrangeiformis</i>	No	Yes	No	No
<i>Brunfelsia pauciflora</i>	No	Yes	Yes	No
<i>Brunfelsia pilosa</i>	No	Yes	No	No
<i>Brunfelsia uniflora</i>	No	Yes	No	No
<i>Buchenavia grandis</i>	Yes	Yes	No	Yes
<i>Buchenavia hoehneana</i>	No	Yes	No	No
<i>Buchenavia kleinii</i>	No	Yes	No	No

<i>Buchenavia tetraphylla</i>	Yes	Yes	No	Yes
<i>Buchenavia tomentosa</i>	No	Yes	No	No
<i>Bunchosia glandulifera</i>	No	Yes	No	No
<i>Bunchosia maritima</i>	No	Yes	No	No
<i>Bunchosia pallescens</i>	No	Yes	No	No
<i>Butia capitata</i>	No	Yes	Yes	No
<i>Byrsonima alvimii</i>	No	Yes	No	No
<i>Byrsonima bahiana</i>	No	Yes	No	No
<i>Byrsonima blanchetiana</i>	No	Yes	No	No
<i>Byrsonima cacaophila</i>	No	Yes	No	No
<i>Byrsonima crassifolia</i>	Yes	Yes	Yes	Yes
<i>Byrsonima crispa</i>	Yes	Yes	No	Yes
<i>Byrsonima cydoniifolia</i>	No	Yes	No	No
<i>Byrsonima gardneriana</i>	No	Yes	No	No
<i>Byrsonima intermedia</i>	No	Yes	No	No
<i>Byrsonima japurensis</i>	No	Yes	No	Yes
<i>Byrsonima lancifolia</i>	No	Yes	No	Yes
<i>Byrsonima laxiflora</i>	No	Yes	No	No
<i>Byrsonima ligustrifolia</i>	Yes	Yes	No	Yes
<i>Byrsonima myricifolia</i>	No	Yes	No	No
<i>Byrsonima nitidifolia</i>	No	Yes	No	No
<i>Byrsonima salzmänniana</i>	No	Yes	No	No
<i>Byrsonima sericea</i>	No	Yes	No	Yes
<i>Byrsonima stipulacea</i>	No	Yes	No	Yes
<i>Byrsonima vacciniifolia</i>	No	Yes	No	No
<i>Byrsonima variabilis</i>	No	Yes	No	No
<i>Byrsonima verbascifolia</i>	No	Yes	No	Yes
<i>Cabralea canjerana</i>	Yes	Yes	Yes	Yes
<i>Caesalpinia echinata</i>	No	Yes	No	Yes
<i>Calliandra bella</i>	No	Yes	No	No
<i>Calliandra brevipes</i>	No	Yes	No	No
<i>Calliandra foliolosa</i>	No	Yes	No	No
<i>Calliandra harrisii</i>	No	Yes	No	No
<i>Calliandra parvifolia</i>	No	Yes	No	No
<i>Calliandra sessilis</i>	No	Yes	No	No
<i>Calliandra tweedii</i>	No	Yes	No	No
<i>Callisthene major</i>	No	Yes	No	Yes
<i>Callisthene minor</i>	No	Yes	No	No
<i>Calophyllum brasiliense</i>	Yes	Yes	Yes	Yes
<i>Calycolpus legrandii</i>	No	Yes	No	No

<i>Calyptranthes brasiliensis</i>	No	Yes	No	No
<i>Calyptranthes clusiifolia</i>	No	Yes	No	Yes
<i>Calyptranthes concinna</i>	Yes	Yes	No	Yes
<i>Calyptranthes lanceolata</i>	No	Yes	Yes	No
<i>Calyptranthes lucida</i>	Yes	Yes	No	Yes
<i>Calyptranthes pulchella</i>	No	Yes	No	No
<i>Calyptranthes rubella</i>	No	Yes	No	No
<i>Calyptranthes strigipes</i>	No	Yes	No	No
<i>Calyptranthes widgreniana</i>	No	Yes	No	No
<i>Campomanesia adamantium</i>	No	Yes	No	No
<i>Campomanesia aromatica</i>	Yes	Yes	No	No
<i>Campomanesia dichotoma</i>	No	Yes	No	Yes
<i>Campomanesia eugenioides</i>	No	Yes	No	Yes
<i>Campomanesia guaviroba</i>	Yes	Yes	No	Yes
<i>Campomanesia guazumifolia</i>	No	Yes	No	Yes
<i>Campomanesia ilhoensis</i>	No	Yes	No	No
<i>Campomanesia laurifolia</i>	No	Yes	No	Yes
<i>Campomanesia neriiflora</i>	No	Yes	No	Yes
<i>Campomanesia phaea</i>	No	Yes	No	No
<i>Campomanesia pubescens</i>	No	Yes	No	No
<i>Campomanesia reitziana</i>	No	Yes	No	Yes
<i>Campomanesia rufa</i>	No	Yes	No	Yes
<i>Campomanesia schlechtendaliana</i>	No	Yes	No	Yes
<i>Campomanesia velutina</i>	No	Yes	No	No
<i>Campomanesia xanthocarpa</i>	Yes	Yes	Yes	Yes
<i>Campuloclinium purpurascens</i>	No	Yes	No	No
<i>Capparidastrum frondosum</i>	Yes	Yes	Yes	No
<i>Capsicum annuum</i>	Yes	Yes	Yes	No
<i>Capsicum flexuosum</i>	No	Yes	No	No
<i>Capsicum parvifolium</i>	No	Yes	No	No
<i>Caraipa densifolia</i>	Yes	Yes	No	Yes
<i>Cariniana estrellensis</i>	Yes	Yes	Yes	Yes
<i>Cariniana legalis</i>	No	Yes	Yes	Yes
<i>Carpotroche brasiliensis</i>	No	Yes	No	No
<i>Caryocar edule</i>	No	Yes	No	Yes
<i>Casearia aculeata</i>	Yes	Yes	Yes	Yes
<i>Casearia arborea</i>	Yes	Yes	Yes	Yes
<i>Casearia bahiensis</i>	No	Yes	No	No
<i>Casearia commersoniana</i>	Yes	Yes	Yes	No
<i>Casearia decandra</i>	Yes	Yes	Yes	Yes

<i>Casearia gossypiosperma</i>	Yes	Yes	No	Yes
<i>Casearia grandiflora</i>	Yes	Yes	Yes	Yes
<i>Casearia javitensis</i>	Yes	Yes	No	Yes
<i>Casearia lasiophylla</i>	No	Yes	No	Yes
<i>Casearia mariquitensis</i>	No	Yes	No	No
<i>Casearia obliqua</i>	Yes	Yes	No	Yes
<i>Casearia oblongifolia</i>	No	Yes	No	No
<i>Casearia pauciflora</i>	No	Yes	No	No
<i>Casearia rupestris</i>	No	Yes	No	No
<i>Casearia selloana</i>	No	Yes	No	No
<i>Casearia sylvestris</i>	Yes	Yes	Yes	Yes
<i>Casearia ulmifolia</i>	Yes	Yes	No	No
<i>Cassia ferruginea</i>	No	Yes	No	Yes
<i>Cassia grandis</i>	No	Yes	Yes	No
<i>Cassia leptophylla</i>	No	Yes	No	No
<i>Cathedra acuminata</i>	Yes	Yes	No	No
<i>Cathedra bahiensis</i>	No	Yes	No	No
<i>Cavanillesia umbellata</i>	No	Yes	No	Yes
<i>Cecropia glaziovii</i>	No	Yes	Yes	Yes
<i>Cecropia hololeuca</i>	No	Yes	Yes	Yes
<i>Cecropia pachystachya</i>	No	Yes	Yes	Yes
<i>Cecropia palmata</i>	No	Yes	No	No
<i>Cedrela fissilis</i>	Yes	Yes	Yes	Yes
<i>Cedrela odorata</i>	Yes	Yes	Yes	Yes
<i>Ceiba erianthos</i>	No	Yes	No	Yes
<i>Ceiba glaziovii</i>	No	Yes	No	Yes
<i>Ceiba speciosa</i>	Yes	Yes	Yes	Yes
<i>Celtis ehrenbergiana</i>	No	Yes	Yes	Yes
<i>Celtis iguanaea</i>	Yes	Yes	Yes	Yes
<i>Centrolobium microchaete</i>	Yes	Yes	No	Yes
<i>Centrolobium robustum</i>	No	Yes	No	Yes
<i>Centrolobium sclerophyllum</i>	No	Yes	No	Yes
<i>Centrolobium tomentosum</i>	No	Yes	No	Yes
<i>Cephalanthus glabratus</i>	No	Yes	No	No
<i>Cereus fernambucensis</i>	No	Yes	No	No
<i>Cereus hildmannianus</i>	No	Yes	No	No
<i>Cereus jamacaru</i>	No	Yes	No	No
<i>Cestrum axillare</i>	No	Yes	No	No
<i>Cestrum bracteatum</i>	No	Yes	No	No
<i>Cestrum corymbosum</i>	No	Yes	No	No

<i>Cestrum intermedium</i>	No	Yes	No	No
<i>Cestrum retrofractum</i>	No	Yes	No	No
<i>Cestrum salzmannii</i>	No	Yes	No	No
<i>Cestrum schlechtendalii</i>	No	Yes	No	No
<i>Cestrum strigilatum</i>	No	Yes	No	No
<i>Chaetocarpus echinocarpus</i>	No	Yes	No	Yes
<i>Chaetocarpus myrsinites</i>	No	Yes	No	No
<i>Chamaecrista apoucouita</i>	No	Yes	No	Yes
<i>Chamaecrista bahiae</i>	No	Yes	No	No
<i>Chamaecrista duartei</i>	No	Yes	No	No
<i>Chamaecrista ensiformis</i>	No	Yes	No	No
<i>Chamaecrista ramosa</i>	No	Yes	No	No
<i>Cheiloclinium cognatum</i>	Yes	Yes	No	No
<i>Chiococca alba</i>	No	Yes	No	No
<i>Chionanthus crassifolius</i>	No	Yes	No	No
<i>Chionanthus filiformis</i>	No	Yes	No	No
<i>Chionanthus trichotomus</i>	No	Yes	No	No
<i>Chiropetalum tricoccum</i>	No	Yes	No	No
<i>Chloroleucon acacioides</i>	No	Yes	No	No
<i>Chloroleucon dumosum</i>	No	Yes	No	No
<i>Chloroleucon foliolosum</i>	No	Yes	No	No
<i>Chloroleucon tortum</i>	No	Yes	No	No
<i>Chomelia anisomeris</i>	No	Yes	No	No
<i>Chomelia brasiliana</i>	No	Yes	No	No
<i>Chomelia intercedens</i>	No	Yes	No	No
<i>Chomelia obtusa</i>	No	Yes	No	No
<i>Chomelia parvifolia</i>	No	Yes	No	No
<i>Chomelia pedunculosa</i>	No	Yes	No	No
<i>Chomelia pohliana</i>	No	Yes	No	No
<i>Chomelia pubescens</i>	No	Yes	No	No
<i>Chromolaena laevigata</i>	No	Yes	No	No
<i>Chromolaena maximilianii</i>	No	Yes	No	No
<i>Chromolaena odorata</i>	No	Yes	Yes	No
<i>Chrysobalanus icaco</i>	No	Yes	Yes	Yes
<i>Chrysophyllum flexuosum</i>	Yes	Yes	No	Yes
<i>Chrysophyllum gonocarpum</i>	No	Yes	Yes	Yes
<i>Chrysophyllum inornatum</i>	No	Yes	No	Yes
<i>Chrysophyllum lucentifolium</i>	No	Yes	No	Yes
<i>Chrysophyllum marginatum</i>	Yes	Yes	Yes	Yes
<i>Chrysophyllum rufum</i>	No	Yes	No	No

<i>Chrysophyllum splendens</i>	No	Yes	No	No
<i>Chrysophyllum viride</i>	No	Yes	Yes	No
<i>Cinnamodendron dinisii</i>	No	Yes	No	Yes
<i>Cinnamomum amoenum</i>	No	Yes	No	No
<i>Cinnamomum glaziovii</i>	No	Yes	No	No
<i>Cinnamomum pseudoglaziovii</i>	No	Yes	No	No
<i>Cinnamomum sellowianum</i>	No	Yes	No	No
<i>Cinnamomum stenophyllum</i>	No	Yes	No	No
<i>Cinnamomum triplinerve</i>	Yes	Yes	Yes	Yes
<i>Citharexylum myrianthum</i>	No	Yes	No	Yes
<i>Citharexylum solanaceum</i>	No	Yes	No	Yes
<i>Citronella gongonha</i>	No	Yes	No	Yes
<i>Citronella paniculata</i>	Yes	Yes	No	Yes
<i>Clarisia ilicifolia</i>	No	Yes	No	No
<i>Clarisia racemosa</i>	Yes	Yes	No	Yes
<i>Clavija spinosa</i>	No	Yes	No	No
<i>Clethra scabra</i>	Yes	Yes	No	Yes
<i>Clethra uleana</i>	No	Yes	No	No
<i>Clidemia biserrata</i>	No	Yes	No	No
<i>Clidemia capilliflora</i>	No	Yes	No	No
<i>Clidemia capitellata</i>	No	Yes	No	No
<i>Clidemia debilis</i>	No	Yes	No	No
<i>Clidemia hirta</i>	Yes	Yes	No	No
<i>Clidemia sericea</i>	Yes	Yes	No	No
<i>Clitoria fairchildiana</i>	No	Yes	No	No
<i>Clusia criuva</i>	Yes	Yes	No	Yes
<i>Clusia dardanoi</i>	No	Yes	No	No
<i>Clusia fluminensis</i>	No	Yes	No	No
<i>Clusia hilariana</i>	No	No	No	No
<i>Clusia hoffmannseggiana</i>	No	Yes	No	No
<i>Clusia lanceolata</i>	No	Yes	No	Yes
<i>Clusia melchiorii</i>	No	Yes	No	No
<i>Clusia nemorosa</i>	No	Yes	No	Yes
<i>Clusia panapanari</i>	No	Yes	Yes	No
<i>Clusia paralicola</i>	No	Yes	No	No
<i>Clusia spiritu-sanctensis</i>	No	Yes	No	No
<i>Cnidoscolus oligandrus</i>	No	Yes	No	No
<i>Cnidoscolus pubescens</i>	No	Yes	No	Yes
<i>Coccoloba alnifolia</i>	No	Yes	No	No
<i>Coccoloba declinata</i>	No	Yes	No	No

<i>Coccoloba densifrons</i>	Yes	Yes	No	Yes
<i>Coccoloba glaziovii</i>	No	Yes	No	No
<i>Coccoloba laevis</i>	No	Yes	No	No
<i>Coccoloba latifolia</i>	No	Yes	No	Yes
<i>Coccoloba marginata</i>	No	Yes	No	No
<i>Coccoloba mollis</i>	Yes	Yes	Yes	Yes
<i>Coccoloba oblonga</i>	No	Yes	No	No
<i>Coccoloba ramosis</i> Yesa	No	Yes	No	No
<i>Coccoloba scandens</i>	No	Yes	No	No
<i>Coccoloba warmingii</i>	No	Yes	No	No
<i>Cochlospermum regium</i>	No	Yes	No	No
<i>Cochlospermum vitifolium</i>	Yes	Yes	Yes	Yes
<i>Colubrina cordifolia</i>	No	Yes	No	No
<i>Colubrina glandulosa</i>	Yes	Yes	Yes	Yes
<i>Commiphora leptophloeos</i>	Yes	Yes	No	Yes
<i>Conchocarpus cuneifolius</i>	No	Yes	No	No
<i>Conchocarpus cyrtanthus</i>	No	Yes	No	No
<i>Conchocarpus diadematus</i>	No	Yes	No	No
<i>Conchocarpus heterophyllus</i>	No	Yes	No	No
<i>Conchocarpus insignis</i>	No	Yes	No	No
<i>Conchocarpus longifolius</i>	No	Yes	No	No
<i>Conchocarpus macrophyllus</i>	No	Yes	No	No
<i>Condalia buxifolia</i>	No	Yes	No	No
<i>Connarus blanchetii</i>	No	Yes	No	No
<i>Connarus deterrentus</i>	No	Yes	No	No
<i>Connarus nodosus</i>	No	Yes	No	No
<i>Connarus portosegurensis</i>	No	Yes	No	No
<i>Connarus regnellii</i>	No	Yes	No	No
<i>Connarus rostratus</i>	No	Yes	No	No
<i>Conocarpus erectus</i>	No	Yes	No	Yes
<i>Copaifera duckei</i>	Yes	Yes	No	Yes
<i>Copaifera langsdorffii</i>	No	Yes	Yes	Yes
<i>Copaifera lucens</i>	No	Yes	No	No
<i>Copaifera multijuga</i>	No	Yes	No	Yes
<i>Copaifera trapezifolia</i>	No	Yes	Yes	Yes
<i>Cordia aberrans</i>	No	Yes	No	No
<i>Cordia alliodora</i>	Yes	Yes	Yes	Yes
<i>Cordia americana</i>	No	Yes	Yes	Yes
<i>Cordia anabaptista</i>	No	Yes	No	No
<i>Cordia bicolor</i>	Yes	Yes	Yes	Yes

<i>Cordia ecalyculata</i>	No	Yes	No	Yes
<i>Cordia exaltata</i>	Yes	Yes	No	Yes
<i>Cordia lomitoloba</i>	No	Yes	No	Yes
<i>Cordia magnoliifolia</i>	No	Yes	No	Yes
<i>Cordia nodosa</i>	Yes	Yes	Yes	Yes
<i>Cordia rufescens</i>	No	Yes	No	No
<i>Cordia sellowiana</i>	Yes	Yes	No	No
<i>Cordia silvestris</i>	No	Yes	Yes	Yes
<i>Cordia superba</i>	No	Yes	Yes	No
<i>Cordia taguahyensis</i>	No	Yes	No	No
<i>Cordia toqueve</i>	No	Yes	Yes	No
<i>Cordia trachyphylla</i>	No	Yes	No	No
<i>Cordia trichoclada</i>	No	Yes	No	Yes
<i>Cordia trichotoma</i>	No	Yes	Yes	Yes
<i>Cordia concolor</i>	No	Yes	No	No
<i>Cordia elliptica</i>	No	Yes	No	No
<i>Cordia macrophylla</i>	Yes	Yes	No	Yes
<i>Cordia myrciifolia</i>	No	Yes	No	No
<i>Cordia obtusa</i>	No	Yes	No	No
<i>Cordia sessilis</i>	No	Yes	No	Yes
<i>Cordia spectabilis</i>	No	Yes	No	No
<i>Couepia grandiflora</i>	No	Yes	No	No
<i>Couepia impressa</i>	No	Yes	No	No
<i>Couepia rufa</i>	No	Yes	No	No
<i>Couepia schottii</i>	No	Yes	No	No
<i>Couepia uiti</i>	No	Yes	No	No
<i>Couepia venosa</i>	Yes	Yes	No	Yes
<i>Couma rigida</i>	No	Yes	No	No
<i>Couratari macrosperma</i>	No	Yes	No	Yes
<i>Coussapoa microcarpa</i>	No	Yes	No	Yes
<i>Coussapoa pachyphylla</i>	No	Yes	No	No
<i>Coussarea albescens</i>	No	Yes	No	No
<i>Coussarea contracta</i>	No	Yes	Yes	No
<i>Coussarea graciliflora</i>	No	Yes	No	No
<i>Coussarea hydrangeifolia</i>	No	Yes	No	Yes
<i>Coussarea ilheotica</i>	No	Yes	No	No
<i>Coussarea meridionalis</i>	No	Yes	No	No
<i>Coussarea nodosa</i>	No	Yes	No	No
<i>Coussarea platyphylla</i>	No	Yes	No	No
<i>Coutarea hexandra</i>	Yes	Yes	No	Yes

<i>Crateva tapia</i>	No	Yes	Yes	Yes
<i>Critoniopsis quinqueflora</i>	No	Yes	No	No
<i>Crotalaria vitellina</i>	No	Yes	Yes	No
<i>Croton astraeanus</i>	No	Yes	No	No
<i>Croton celtidifolius</i>	No	Yes	No	Yes
<i>Croton echinocarpus</i>	No	Yes	No	No
<i>Croton floribundus</i>	No	Yes	Yes	Yes
<i>Croton heliotropiifolius</i>	No	Yes	No	No
<i>Croton macrobothrys</i>	No	Yes	No	No
<i>Croton nepetifolius</i>	No	Yes	No	No
<i>Croton organensis</i>	No	Yes	No	No
<i>Croton piptocalyx</i>	No	Yes	Yes	No
<i>Croton polyandrus</i>	No	Yes	No	No
<i>Croton salutaris</i>	No	Yes	No	No
<i>Croton sellowii</i>	No	Yes	No	No
<i>Croton sincorensis</i>	No	Yes	No	No
<i>Croton sonderianus</i>	Yes	Yes	No	Yes
<i>Croton urticifolius</i>	No	Yes	No	No
<i>Croton urucurana</i>	No	Yes	Yes	Yes
<i>Cryptocarya aschersoniana</i>	Yes	Yes	No	Yes
<i>Cryptocarya mandioccana</i>	No	Yes	No	No
<i>Cryptocarya micrantha</i>	No	Yes	No	No
<i>Cryptocarya moschata</i>	No	Yes	Yes	No
<i>Cryptocarya saligna</i>	No	Yes	No	No
<i>Cupania bracteosa</i>	No	Yes	No	No
<i>Cupania emarginata</i>	No	Yes	No	No
<i>Cupania furfuracea</i>	No	Yes	No	No
<i>Cupania impressinervia</i>	No	Yes	No	No
<i>Cupania ludowigii</i>	No	Yes	No	No
<i>Cupania oblongifolia</i>	No	Yes	Yes	Yes
<i>Cupania paniculata</i>	No	Yes	No	No
<i>Cupania racemosa</i>	No	Yes	No	No
<i>Cupania rubiginosa</i>	No	Yes	No	No
<i>Cupania rugosa</i>	No	Yes	No	No
<i>Cupania scrobiculata</i>	Yes	Yes	No	Yes
<i>Cupania vernalis</i>	Yes	Yes	Yes	Yes
<i>Cupania zanthoxyloides</i>	No	Yes	No	No
<i>Curatella americana</i>	Yes	Yes	Yes	Yes
<i>Curitiba prismatica</i>	No	Yes	No	No
<i>Cyathea abbreviata</i>	No	Yes	No	No

<i>Cyathea atrovirens</i>	No	Yes	No	No
<i>Cyathea corcovadensis</i>	No	Yes	No	No
<i>Cyathea delgadii</i>	No	Yes	No	No
<i>Cyathea dichromatolepis</i>	No	Yes	No	No
<i>Cyathea gardneri</i>	No	Yes	No	No
<i>Cyathea glaziovii</i>	No	Yes	No	No
<i>Cyathea leucofolis</i>	No	Yes	No	No
<i>Cyathea microdonta</i>	No	Yes	No	No
<i>Cyathea phalerata</i>	No	Yes	No	No
<i>Cyathea praecincta</i>	No	Yes	No	No
<i>Cyathea villosa</i>	No	Yes	No	No
<i>Cybianthus amplus</i>	No	Yes	No	No
<i>Cybianthus brasiliensis</i>	No	Yes	No	No
<i>Cybianthus cuneifolius</i>	No	Yes	No	No
<i>Cybianthus densiflorus</i>	No	Yes	No	No
<i>Cybianthus detergens</i>	No	No	No	No
<i>Cybianthus fulvopulverulentus</i>	No	Yes	No	Yes
<i>Cybistax antisyphilitica</i>	No	Yes	No	Yes
<i>Cyclolobium brasiliense</i>	No	Yes	No	No
<i>Cymbopetalum brasiliense</i>	No	Yes	No	Yes
<i>Cynophalla flexuosa</i>	No	Yes	No	No
<i>Cynophalla hastata</i>	No	Yes	No	No
<i>Cyrtocarpa caatingae</i>	No	Yes	No	No
<i>Dahlstedtia pentaphylla</i>	No	Yes	No	No
<i>Dahlstedtia pinnata</i>	Yes	Yes	No	Yes
<i>Dalbergia brasiliensis</i>	No	Yes	No	Yes
<i>Dalbergia ecastaphyllum</i>	No	Yes	No	No
<i>Dalbergia foliolosa</i>	No	Yes	No	No
<i>Dalbergia frutescens</i>	No	Yes	No	Yes
<i>Dalbergia miscolobium</i>	Yes	Yes	Yes	No
<i>Dalbergia nigra</i>	No	Yes	No	Yes
<i>Dalbergia villosa</i>	No	Yes	No	No
<i>Daphnopsis brasiliensis</i>	No	Yes	No	Yes
<i>Daphnopsis coriacea</i>	No	Yes	No	No
<i>Daphnopsis fasciculata</i>	No	Yes	No	No
<i>Daphnopsis martii</i>	No	Yes	No	No
<i>Daphnopsis racemosa</i>	No	Yes	No	No
<i>Daphnopsis schwackeana</i>	No	Yes	No	No
<i>Daphnopsis sellowiana</i>	No	Yes	No	No
<i>Dasyphyllum brasiliense</i>	No	Yes	No	Yes

<i>Dasyphyllum flagellare</i>	No	Yes	No	No
<i>Dasyphyllum spinescens</i>	Yes	Yes	No	Yes
<i>Davilla kunthii</i>	No	Yes	No	No
<i>Davilla macrocarpa</i>	No	Yes	No	No
<i>Davilla rugosa</i>	Yes	Yes	No	No
<i>Deguelia costata</i>	No	Yes	No	No
<i>Dendropanax australis</i>	No	Yes	No	No
<i>Dendropanax bahiensis</i>	No	Yes	No	No
<i>Dendropanax cuneatus</i>	No	Yes	No	No
<i>Dendropanax monogynus</i>	No	Yes	No	No
<i>Dialium guianense</i>	Yes	Yes	Yes	Yes
<i>Diatenopteryx sorbifolia</i>	No	Yes	No	Yes
<i>Dicksonia sellowiana</i>	No	Yes	No	No
<i>Dictyoloma vandellianum</i>	No	Yes	No	No
<i>Dilodendron bipinnatum</i>	No	Yes	No	No
<i>Dimorphandra jorgei</i>	No	Yes	No	Yes
<i>Dimorphandra mollis</i>	No	Yes	No	No
<i>Diospyros artanthifolia</i>	Yes	Yes	No	No
<i>Diospyros brasiliensis</i>	No	Yes	No	Yes
<i>Diospyros capreifolia</i>	Yes	Yes	No	Yes
<i>Diospyros hispida</i>	No	Yes	No	Yes
<i>Diospyros inconstans</i>	No	Yes	No	Yes
<i>Diospyros sericea</i>	No	Yes	No	No
<i>Diploon cuspidatum</i>	Yes	Yes	Yes	Yes
<i>Diplostropis ferruginea</i>	No	Yes	No	No
<i>Diplostropis incexis</i>	No	Yes	No	Yes
<i>Diplostropis purpurea</i>	Yes	Yes	No	Yes
<i>Dipteryx odorata</i>	Yes	Yes	No	Yes
<i>Discophora guianensis</i>	Yes	Yes	No	Yes
<i>Dodonaea viscosa</i>	Yes	Yes	Yes	Yes
<i>Dolichandra unguiculata</i>	No	Yes	No	No
<i>Drimys angustifolia</i>	No	Yes	No	Yes
<i>Drimys brasiliensis</i>	No	Yes	No	Yes
<i>Drypetes sessiliflora</i>	No	Yes	No	No
<i>Duguetia bahiensis</i>	No	Yes	No	No
<i>Duguetia gardneriana</i>	No	Yes	No	No
<i>Duguetia lanceolata</i>	No	Yes	No	Yes
<i>Dulacia papillosa</i>	No	Yes	No	No
<i>Duranta vestita</i>	No	Yes	No	Yes
<i>Dysssochroma viridiflorum</i>	No	Yes	No	No

<i>Ecclinusa ramiflora</i>	Yes	Yes	No	Yes
<i>Emmotum affine</i>	No	Yes	No	Yes
<i>Emmotum nitens</i>	No	Yes	No	Yes
<i>Endlicheria glomerata</i>	No	Yes	No	No
<i>Endlicheria paniculata</i>	No	Yes	No	Yes
<i>Enterolobium contortisiliquum</i>	No	Yes	No	Yes
<i>Enterolobium timbouva</i>	No	Yes	No	Yes
<i>Eremanthus brasiliensis</i>	No	Yes	No	No
<i>Eremanthus crotonoides</i>	No	Yes	No	No
<i>Eremanthus erythropappus</i>	No	Yes	No	Yes
<i>Eremanthus glomerulatus</i>	No	Yes	No	No
<i>Eremanthus incanus</i>	No	Yes	No	No
<i>Eriotheca candolleana</i>	No	Yes	No	Yes
<i>Eriotheca globosa</i>	Yes	Yes	No	Yes
<i>Eriotheca gracilipes</i>	No	Yes	No	No
<i>Eriotheca macrophylla</i>	No	Yes	No	No
<i>Eriotheca obcordata</i>	No	Yes	No	No
<i>Eriotheca pentaphylla</i>	Yes	Yes	No	Yes
<i>Erythrina crista-galli</i>	No	Yes	Yes	Yes
<i>Erythrina falcata</i>	No	Yes	No	Yes
<i>Erythrina fusca</i>	Yes	Yes	Yes	Yes
<i>Erythrina poeppigiana</i>	Yes	Yes	Yes	Yes
<i>Erythrina speciosa</i>	No	Yes	No	No
<i>Erythrina velutina</i>	No	Yes	Yes	No
<i>Erythrina verna</i>	No	Yes	No	No
<i>Erythrochiton brasiliensis</i>	No	Yes	No	No
<i>Erythroxyllum affine</i>	No	Yes	No	No
<i>Erythroxyllum ambiguum</i>	No	Yes	No	No
<i>Erythroxyllum amplifolium</i>	No	Yes	No	No
<i>Erythroxyllum argentinum</i>	No	Yes	No	Yes
<i>Erythroxyllum campestre</i>	No	Yes	No	No
<i>Erythroxyllum citrifolium</i>	Yes	Yes	No	Yes
<i>Erythroxyllum columbinum</i>	No	Yes	No	No
<i>Erythroxyllum cuneifolium</i>	No	Yes	No	No
<i>Erythroxyllum cuspidifolium</i>	No	Yes	No	No
<i>Erythroxyllum deciduum</i>	No	Yes	No	Yes
<i>Erythroxyllum grandifolium</i>	No	Yes	No	No
<i>Erythroxyllum macrophyllum</i>	Yes	Yes	No	Yes
<i>Erythroxyllum martii</i>	No	Yes	No	No
<i>Erythroxyllum mikanii</i>	No	Yes	No	No

<i>Erythroxyllum mucronatum</i>	No	Yes	No	No
<i>Erythroxyllum ovalifolium</i>	No	Yes	No	No
<i>Erythroxyllum passerinum</i>	No	Yes	No	No
<i>Erythroxyllum paufferense</i>	No	Yes	No	No
<i>Erythroxyllum pelleterianum</i>	No	Yes	No	No
<i>Erythroxyllum pulchrum</i>	No	Yes	No	Yes
<i>Erythroxyllum revolutum</i>	No	Yes	No	No
<i>Erythroxyllum rimosum</i>	No	Yes	No	No
<i>Erythroxyllum Yezonis</i>	No	Yes	No	No
<i>Erythroxyllum squamatum</i>	Yes	Yes	No	Yes
<i>Erythroxyllum suberosum</i>	Yes	Yes	No	No
<i>Erythroxyllum subrotundum</i>	No	Yes	No	No
<i>Erythroxyllum subsessile</i>	No	Yes	No	No
<i>Erythroxyllum tenue</i>	No	Yes	No	No
<i>Erythroxyllum vacciniifolium</i>	No	Yes	No	No
<i>Escallonia bifida</i>	No	Yes	No	Yes
<i>Eschweilera alvimii</i>	No	Yes	No	No
<i>Eschweilera apiculata</i>	No	Yes	No	No
<i>Eschweilera ovata</i>	No	Yes	No	Yes
<i>Eschweilera tetrapetala</i>	No	Yes	No	No
<i>Esenbeckia febrifuga</i>	No	Yes	No	No
<i>Esenbeckia grandiflora</i>	No	Yes	No	Yes
<i>Esenbeckia leiocarpa</i>	No	Yes	No	Yes
<i>Eugenia acutata</i>	No	Yes	Yes	Yes
<i>Eugenia arenaria</i>	No	Yes	No	No
<i>Eugenia astringens</i>	No	Yes	No	No
<i>Eugenia aurata</i>	No	Yes	No	No
<i>Eugenia ayacuchoae</i>	No	Yes	No	No
<i>Eugenia bacopari</i>	No	Yes	No	No
<i>Eugenia bahiensis</i>	No	Yes	No	No
<i>Eugenia bimarginata</i>	No	Yes	No	No
<i>Eugenia bocainensis</i>	No	Yes	Yes	No
<i>Eugenia brasiliensis</i>	No	Yes	Yes	Yes
<i>Eugenia brevistyla</i>	No	Yes	Yes	No
<i>Eugenia bunchosifolia</i>	No	No	No	No
<i>Eugenia burkartiana</i>	No	Yes	No	No
<i>Eugenia candolleana</i>	No	Yes	No	Yes
<i>Eugenia capitulifera</i>	No	Yes	No	No
<i>Eugenia catharinae</i>	No	Yes	No	No
<i>Eugenia catharinensis</i>	No	Yes	No	No

<i>Eugenia cerasiflora</i>	No	Yes	No	Yes
<i>Eugenia cereja</i>	No	Yes	No	No
<i>Eugenia chlorophylla</i>	No	Yes	No	No
<i>Eugenia citrifolia</i>	No	Yes	No	Yes
<i>Eugenia copacabanensis</i>	No	Yes	No	No
<i>Eugenia cuprea</i>	No	Yes	Yes	No
<i>Eugenia dodonaeifolia</i>	No	Yes	No	No
<i>Eugenia dysenterica</i>	No	Yes	No	Yes
<i>Eugenia egensis</i>	Yes	Yes	No	No
<i>Eugenia excelsa</i>	No	Yes	No	No
<i>Eugenia flamingensis</i>	No	Yes	No	No
<i>Eugenia flavescens</i>	No	Yes	No	No
<i>Eugenia florida</i>	Yes	Yes	Yes	Yes
<i>Eugenia francavilleana</i>	No	Yes	No	No
<i>Eugenia fusca</i>	No	Yes	No	No
<i>Eugenia gemmiflora</i>	No	Yes	No	No
<i>Eugenia gracillima</i>	No	Yes	No	No
<i>Eugenia handroana</i>	No	Yes	Yes	No
<i>Eugenia handroi</i>	No	Yes	No	No
<i>Eugenia hiemalis</i>	No	Yes	No	No
<i>Eugenia hirta</i>	No	Yes	No	No
<i>Eugenia ilhensis</i>	No	Yes	No	No
<i>Eugenia involucrata</i>	No	Yes	Yes	No
<i>Eugenia itapemirimensis</i>	No	Yes	No	No
<i>Eugenia kleinii</i>	No	Yes	No	No
<i>Eugenia klotzschiana</i>	No	Yes	No	No
<i>Eugenia ligustrina</i>	No	Yes	No	Yes
<i>Eugenia longipedunculata</i>	No	Yes	No	No
<i>Eugenia luschnathiana</i>	No	Yes	Yes	No
<i>Eugenia macrosperma</i>	No	Yes	No	No
<i>Eugenia magnifica</i>	No	Yes	No	No
<i>Eugenia malacantha</i>	No	Yes	No	No
<i>Eugenia mansoi</i>	No	Yes	No	No
<i>Eugenia melanogyna</i>	No	Yes	Yes	No
<i>Eugenia modesta</i>	No	Yes	No	No
<i>Eugenia monosperma</i>	No	Yes	No	Yes
<i>Eugenia mosenii</i>	No	Yes	Yes	No
<i>Eugenia multicostata</i>	No	Yes	Yes	Yes
<i>Eugenia myrcianthes</i>	No	Yes	No	No
<i>Eugenia neoglomerata</i>	No	Yes	Yes	No

<i>Eugenia neomyrtifolia</i>	No	Yes	No	No
<i>Eugenia neoverrucosa</i>	No	Yes	Yes	No
<i>Eugenia nutans</i>	No	Yes	No	No
<i>Eugenia oblongata</i>	No	Yes	Yes	No
<i>Eugenia pisiformis</i>	No	Yes	No	No
<i>Eugenia platyphylla</i>	No	Yes	No	No
<i>Eugenia platysema</i>	No	Yes	No	No
<i>Eugenia pluriflora</i>	No	Yes	No	Yes
<i>Eugenia prasina</i>	No	Yes	No	No
<i>Eugenia pruinosa</i>	No	Yes	No	No
<i>Eugenia pruniformis</i>	No	Yes	No	No
<i>Eugenia puniceifolia</i>	No	Yes	Yes	No
<i>Eugenia pyriformis</i>	No	Yes	No	Yes
<i>Eugenia ramboi</i>	No	Yes	No	No
<i>Eugenia repanda</i>	No	Yes	No	No
<i>Eugenia rostrata</i>	No	Yes	No	No
<i>Eugenia rostrifolia</i>	No	Yes	No	Yes
<i>Eugenia schottiana</i>	No	Yes	No	No
<i>Eugenia selloi</i>	No	Yes	No	No
<i>Eugenia sonderiana</i>	No	Yes	No	Yes
<i>Eugenia speciosa</i>	No	Yes	No	Yes
<i>Eugenia sphenophylla</i>	No	Yes	No	No
<i>Eugenia splendens</i>	No	Yes	No	No
<i>Eugenia stictopetala</i>	No	Yes	No	No
<i>Eugenia stigmatica</i>	No	Yes	No	No
<i>Eugenia subavenia</i>	No	Yes	No	No
<i>Eugenia suberosa</i>	No	Yes	No	No
<i>Eugenia subterminalis</i>	No	Yes	No	No
<i>Eugenia sulcata</i>	No	Yes	No	Yes
<i>Eugenia supraaxillaris</i>	No	Yes	No	No
<i>Eugenia ternatifolia</i>	No	Yes	No	No
<i>Eugenia umbellata</i>	No	Yes	No	No
<i>Eugenia umbrosa</i>	No	Yes	No	No
<i>Eugenia uniflora</i>	Yes	Yes	Yes	Yes
<i>Eugenia uruguayensis</i>	Yes	Yes	No	No
<i>Eugenia vattimoana</i>	No	Yes	No	No
<i>Eugenia verticillata</i>	No	Yes	No	No
<i>Euplassa cantareirae</i>	No	Yes	No	Yes
<i>Euplassa legalis</i>	No	Yes	No	No
<i>Euterpe edulis</i>	Yes	Yes	Yes	No

<i>Exostyles godoyensis</i>	No	Yes	No	No
<i>Exostyles venusta</i>	No	Yes	No	No
<i>Faramea axilliflora</i>	No	Yes	No	No
<i>Faramea coerulea</i>	No	Yes	No	No
<i>Faramea corymbosa</i>	No	Yes	No	No
<i>Faramea hyacinthina</i>	No	Yes	No	No
<i>Faramea latifolia</i>	No	Yes	No	No
<i>Faramea martiana</i>	No	Yes	No	No
<i>Faramea monantha</i>	No	Yes	No	No
<i>Faramea montevidensis</i>	No	Yes	No	No
<i>Faramea multiflora</i>	Yes	Yes	No	No
<i>Faramea nigrescens</i>	No	Yes	No	No
<i>Faramea occidentalis</i>	Yes	Yes	Yes	Yes
<i>Faramea oligantha</i>	No	Yes	No	No
<i>Faramea pachyantha</i>	Yes	Yes	No	Yes
<i>Faramea truncata</i>	No	Yes	No	No
<i>Ferdinandusa elliptica</i>	No	Yes	No	Yes
<i>Ferdinandusa speciosa</i>	No	Yes	No	No
<i>Ficus adhatodifolia</i>	No	Yes	No	Yes
<i>Ficus calyptroceras</i>	No	Yes	No	No
<i>Ficus castelviana</i>	No	Yes	No	No
<i>Ficus cestrifolia</i>	No	Yes	No	No
<i>Ficus citrifolia</i>	Yes	Yes	Yes	Yes
<i>Ficus clusiifolia</i>	No	Yes	No	Yes
<i>Ficus cyclophylla</i>	No	Yes	No	No
<i>Ficus enormis</i>	No	Yes	No	Yes
<i>Ficus eximia</i>	No	Yes	No	Yes
<i>Ficus gomelleira</i>	No	Yes	Yes	Yes
<i>Ficus guaranitica</i>	No	Yes	No	No
<i>Ficus hirsuta</i>	No	Yes	No	Yes
<i>Ficus insipida</i>	Yes	Yes	Yes	Yes
<i>Ficus luschnathiana</i>	No	Yes	No	Yes
<i>Ficus mariae</i>	No	Yes	No	No
<i>Ficus maxima</i>	Yes	Yes	No	Yes
<i>Ficus mexiae</i>	No	Yes	No	Yes
<i>Ficus nymphaeifolia</i>	Yes	Yes	No	Yes
<i>Ficus obtusifolia</i>	Yes	Yes	Yes	Yes
<i>Ficus obtusiuscula</i>	No	Yes	No	No
<i>Ficus organensis</i>	No	Yes	No	Yes
<i>Ficus pertusa</i>	Yes	Yes	No	Yes

<i>Ficus pulchella</i>	No	Yes	No	No
<i>Ficus trigona</i>	Yes	Yes	No	No
<i>Ficus trigonata</i>	Yes	Yes	Yes	Yes
<i>Forsteronia leptocarpa</i>	No	Yes	No	No
<i>Forsteronia pubescens</i>	No	Yes	No	No
<i>Forsteronia rufa</i>	No	Yes	No	No
<i>Galipea jasminiflora</i>	No	Yes	No	No
<i>Galipea laxiflora</i>	No	Yes	No	No
<i>Gallesia integrifolia</i>	Yes	Yes	No	Yes
<i>Gamochaeta americana</i>	No	Yes	No	No
<i>Garcinia brasiliensis</i>	Yes	Yes	Yes	Yes
<i>Garcinia gardneriana</i>	No	Yes	Yes	Yes
<i>Garcinia macrophylla</i>	Yes	Yes	Yes	Yes
<i>Gaylussacia brasiliensis</i>	No	Yes	No	No
<i>Geissanthus ambiguus</i>	No	Yes	No	No
<i>Geissospermum laeve</i>	Yes	Yes	No	Yes
<i>Genipa americana</i>	Yes	Yes	Yes	Yes
<i>Geoffroea spinosa</i>	No	Yes	No	Yes
<i>Geonoma brevispatha</i>	No	Yes	No	No
<i>Geonoma gamiova</i>	No	Yes	No	No
<i>Geonoma pauciflora</i>	No	Yes	No	No
<i>Geonoma pohliana</i>	No	Yes	No	No
<i>Geonoma schottiana</i>	No	Yes	No	No
<i>Glycydendron amazonicum</i>	Yes	Yes	No	Yes
<i>Gochnatia oligocephala</i>	No	Yes	No	No
<i>Gochnatia paniculata</i>	No	Yes	No	No
<i>Gochnatia polymorpha</i>	No	Yes	No	Yes
<i>Gochnatia pulchra</i>	No	Yes	No	No
<i>Godmania dardanoi</i>	No	Yes	No	No
<i>Goniorrhachis marginata</i>	No	Yes	No	Yes
<i>Gorceixia decurrens</i>	No	Yes	No	No
<i>Grazielia serrata</i>	No	Yes	No	No
<i>Grazielodendron rio-docensis</i>	No	Yes	No	Yes
<i>Griselinia ruscifolia</i>	No	Yes	No	No
<i>Guapira areolata</i>	Yes	Yes	No	No
<i>Guapira graciliflora</i>	No	Yes	No	No
<i>Guapira hirsuta</i>	No	Yes	No	No
<i>Guapira laxiflora</i>	No	Yes	No	No
<i>Guapira nitida</i>	No	Yes	No	No
<i>Guapira noxia</i>	Yes	Yes	No	No

<i>Guapira obtusata</i>	No	Yes	No	No
<i>Guapira opposita</i>	Yes	Yes	Yes	Yes
<i>Guapira pernambucensis</i>	No	Yes	No	No
<i>Guapira tomentosa</i>	No	Yes	No	No
<i>Guapira venosa</i>	No	Yes	No	No
<i>Guarea blanchetii</i>	No	Yes	No	No
<i>Guarea guidonia</i>	Yes	Yes	Yes	Yes
<i>Guarea kunthiana</i>	Yes	Yes	No	Yes
<i>Guarea macrophylla</i>	Yes	Yes	No	Yes
<i>Guatteria australis</i>	Yes	Yes	Yes	No
<i>Guatteria campestris</i>	No	Yes	No	No
<i>Guatteria candolleana</i>	No	Yes	No	No
<i>Guatteria ferruginea</i>	No	Yes	No	No
<i>Guatteria macropus</i>	No	Yes	No	No
<i>Guatteria oligocarpa</i>	No	Yes	No	No
<i>Guatteria pogonopus</i>	No	Yes	No	No
<i>Guatteria pohliana</i>	No	Yes	No	No
<i>Guatteria schomburgkiana</i>	Yes	Yes	No	Yes
<i>Guatteria sellowiana</i>	No	Yes	No	No
<i>Guatteria villosa</i> Yesa	No	Yes	No	No
<i>Guazuma crinita</i>	No	Yes	No	Yes
<i>Guazuma ulmifolia</i>	Yes	Yes	Yes	Yes
<i>Guettarda angelica</i>	No	Yes	No	No
<i>Guettarda platyphylla</i>	No	Yes	No	No
<i>Guettarda platypoda</i>	No	Yes	No	No
<i>Guettarda pohliana</i>	No	Yes	No	No
<i>Guettarda sericea</i>	No	Yes	No	No
<i>Guettarda uruguensis</i>	No	Yes	Yes	Yes
<i>Guettarda viburnoides</i>	No	Yes	No	No
<i>Guilandina bonduc</i>	No	Yes	No	No
<i>Gustavia augusta</i>	Yes	Yes	No	Yes
<i>Gymnanthes gaudichaudii</i>	No	Yes	No	No
<i>Gymnanthes glabrata</i>	No	Yes	No	No
<i>Hamelia patens</i>	Yes	Yes	Yes	No
<i>Hancornia speciosa</i>	No	Yes	No	No
<i>Handroanthus albus</i>	No	Yes	No	Yes
<i>Handroanthus chrysotrichus</i>	No	Yes	No	Yes
<i>Handroanthus heptaphyllus</i>	No	Yes	No	Yes
<i>Handroanthus impetiginosus</i>	Yes	Yes	Yes	Yes
<i>Handroanthus ochraceus</i>	No	Yes	No	Yes

<i>Handroanthus pulcherrimus</i>	No	Yes	No	No
<i>Handroanthus serratifolius</i>	No	Yes	No	Yes
<i>Handroanthus umbellatus</i>	No	Yes	No	No
<i>Handroanthus vellosi</i>	No	Yes	No	Yes
<i>Harleyodendron unifoliolatum</i>	No	Yes	No	Yes
<i>Hedyosmum brasiliense</i>	No	Yes	No	Yes
<i>Heisteria perianthomega</i>	No	Yes	No	No
<i>Heisteria silvianii</i>	No	Yes	Yes	Yes
<i>Helicostylis tomentosa</i>	Yes	Yes	No	Yes
<i>Helicteres brevispira</i>	No	Yes	No	No
<i>Helicteres eichleri</i>	No	Yes	No	No
<i>Helicteres guazumifolia</i>	No	Yes	No	No
<i>Helicteres heptandra</i>	No	Yes	No	No
<i>Helicteres ovata</i>	No	Yes	No	No
<i>Helicteres pentandra</i>	No	Yes	No	No
<i>Helietta apiculata</i>	No	Yes	No	Yes
<i>Heliocarpus popayanensis</i>	Yes	Yes	Yes	Yes
<i>Hennecartia omphalandra</i>	No	Yes	No	Yes
<i>Henriettea glabra</i>	No	Yes	No	No
<i>Henriettea saldanhaei</i>	No	Yes	No	No
<i>Henriettea succosa</i>	No	Yes	No	No
<i>Heterocondylus alatus</i>	No	Yes	No	No
<i>Heterocondylus vitalbae</i>	Yes	Yes	No	No
<i>Hevea brasiliensis</i>	Yes	Yes	Yes	Yes
<i>Hieronyma alchorneoides</i>	Yes	Yes	Yes	Yes
<i>Hieronyma oblonga</i>	Yes	Yes	No	Yes
<i>Himatanthus articulatus</i>	Yes	Yes	No	Yes
<i>Himatanthus bracteatus</i>	No	Yes	No	Yes
<i>Himatanthus obovatus</i>	No	Yes	No	Yes
<i>Himatanthus phagedaenicus</i>	No	Yes	No	Yes
<i>Hirtella angustifolia</i>	No	Yes	No	No
<i>Hirtella bahiensis</i>	No	Yes	No	No
<i>Hirtella bicornis</i>	Yes	Yes	No	Yes
<i>Hirtella ciliata</i>	No	Yes	No	Yes
<i>Hirtella glandulosa</i>	Yes	Yes	No	Yes
<i>Hirtella gracilipes</i>	No	Yes	No	No
<i>Hirtella hebeclada</i>	Yes	Yes	No	Yes
<i>Hirtella martiana</i>	No	Yes	No	No
<i>Hirtella racemosa</i>	Yes	Yes	Yes	Yes
<i>Hirtella triandra</i>	Yes	Yes	Yes	Yes

<i>Holocalyx balansae</i>	No	Yes	No	Yes
<i>Hornschurchia bryotrophe</i>	No	Yes	No	No
<i>Hornschurchia myrtillus</i>	No	Yes	No	No
<i>Hortia brasiliana</i>	No	Yes	No	No
<i>Huberia ovalifolia</i>	No	Yes	No	No
<i>Humiria balsamifera</i>	Yes	Yes	No	Yes
<i>Humiriastrum dentatum</i>	No	Yes	No	Yes
<i>Humiriastrum glaziovii</i>	No	Yes	No	No
<i>Humiriastrum spiritu-sancti</i>	No	Yes	No	No
<i>Hydrogaster trinervis</i>	No	Yes	No	Yes
<i>Hymenaea aurea</i>	No	Yes	No	No
<i>Hymenaea courbaril</i>	Yes	Yes	Yes	Yes
<i>Hymenaea martiana</i>	No	Yes	No	Yes
<i>Hymenaea oblongifolia</i>	Yes	Yes	No	Yes
<i>Hymenaea rubriflora</i>	No	Yes	No	No
<i>Hymenaea stigonocarpa</i>	No	Yes	No	Yes
<i>Hymenolobium alagoanum</i>	No	Yes	No	No
<i>Hymenolobium janeirense</i>	No	Yes	No	No
<i>Hyptidendron asperrimum</i>	No	Yes	No	Yes
<i>Ilex brevicuspis</i>	Yes	Yes	No	Yes
<i>Ilex cerasifolia</i>	No	Yes	No	Yes
<i>Ilex chamaedryfolia</i>	No	Yes	No	No
<i>Ilex conocarpa</i>	No	Yes	No	No
<i>Ilex dumosa</i>	Yes	Yes	No	No
<i>Ilex integerrima</i>	No	Yes	No	No
<i>Ilex lundii</i>	No	Yes	No	No
<i>Ilex microdonta</i>	Yes	Yes	No	No
<i>Ilex paraguariensis</i>	Yes	Yes	No	Yes
<i>Ilex psammophila</i>	No	Yes	No	No
<i>Ilex pseudobuxus</i>	No	Yes	No	No
<i>Ilex taubertiana</i>	No	Yes	No	No
<i>Ilex theezans</i>	No	Yes	No	Yes
<i>Indigofera suffruticosa</i>	No	Yes	Yes	No
<i>Inga barbata</i>	No	Yes	No	No
<i>Inga blanchetiana</i>	No	Yes	No	No
<i>Inga bullata</i>	No	Yes	No	No
<i>Inga capitata</i>	Yes	Yes	No	Yes
<i>Inga cayennensis</i>	Yes	Yes	No	Yes
<i>Inga cylindrica</i>	Yes	Yes	No	Yes
<i>Inga edulis</i>	Yes	Yes	Yes	Yes

<i>Inga edwallii</i>	No	Yes	No	No
<i>Inga exfoliata</i>	No	Yes	No	No
<i>Inga flagelliformis</i>	No	Yes	No	No
<i>Inga gracilifolia</i>	Yes	Yes	No	No
<i>Inga grazielae</i>	No	Yes	No	No
<i>Inga heterophylla</i>	Yes	Yes	No	Yes
<i>Inga hispida</i>	No	Yes	No	No
<i>Inga ingoides</i>	No	Yes	No	Yes
<i>Inga laurina</i>	Yes	Yes	Yes	Yes
<i>Inga lenticellata</i>	No	Yes	No	No
<i>Inga lentiscifolia</i>	No	Yes	No	No
<i>Inga leptantha</i>	No	Yes	No	No
<i>Inga marginata</i>	Yes	Yes	Yes	Yes
<i>Inga maritima</i>	No	Yes	No	No
<i>Inga pleiogyna</i>	No	Yes	No	No
<i>Inga sellowiana</i>	No	Yes	No	No
<i>Inga sessilis</i>	Yes	Yes	No	Yes
<i>Inga striata</i>	Yes	Yes	No	Yes
<i>Inga subnuda</i>	Yes	Yes	No	Yes
<i>Inga tenuis</i>	No	Yes	No	No
<i>Inga thibaudiana</i>	Yes	Yes	Yes	Yes
<i>Inga vera</i>	Yes	Yes	No	Yes
<i>Inga virescens</i>	No	Yes	No	Yes
<i>Inga vulpina</i>	No	Yes	No	No
<i>Ixora brevifolia</i>	No	Yes	No	Yes
<i>Ixora gardneriana</i>	No	Yes	No	Yes
<i>Ixora muelleri</i>	No	Yes	No	No
<i>Ixora venulosa</i>	No	Yes	No	No
<i>Jacaranda bracteata</i>	No	Yes	No	No
<i>Jacaranda caroba</i>	No	Yes	No	No
<i>Jacaranda cuspidifolia</i>	No	Yes	No	No
<i>Jacaranda jasminoides</i>	No	Yes	No	No
<i>Jacaranda macrantha</i>	No	Yes	No	No
<i>Jacaranda micrantha</i>	No	Yes	No	Yes
<i>Jacaranda obovata</i>	No	Yes	No	No
<i>Jacaranda puberula</i>	Yes	Yes	No	Yes
<i>Jacaratia heptaphylla</i>	No	Yes	No	No
<i>Jacaratia spinosa</i>	Yes	Yes	Yes	Yes
<i>Jacquinia armillaris</i>	Yes	Yes	No	No
<i>Jatropha mollis</i> Yesa	No	Yes	No	No

<i>Jatropha mutabilis</i>	No	Yes	No	No
<i>Joannesia princeps</i>	No	Yes	No	Yes
<i>Jodina rhombifolia</i>	No	Yes	No	Yes
<i>Kaunia rufescens</i>	No	Yes	No	No
<i>Kielmeyera albopunctata</i>	No	Yes	No	No
<i>Kielmeyera coriacea</i>	Yes	Yes	No	No
<i>Kielmeyera lathrophyton</i>	No	Yes	No	Yes
<i>Kielmeyera membranacea</i>	No	Yes	No	No
<i>Kielmeyera neglecta</i>	No	Yes	No	No
<i>Kielmeyera petiolaris</i>	No	Yes	No	No
<i>Kielmeyera rubriflora</i>	No	Yes	No	Yes
<i>Kielmeyera rugosa</i>	No	Yes	No	No
<i>Lacistema aggregatum</i>	Yes	Yes	Yes	Yes
<i>Lacistema hasslerianum</i>	No	Yes	No	No
<i>Lacistema lucidum</i>	No	Yes	No	No
<i>Lacistema pubescens</i>	Yes	Yes	No	Yes
<i>Lacistema robustum</i>	No	Yes	No	No
<i>Lacmellea aculeata</i>	Yes	Yes	No	No
<i>Lacunaria crenata</i>	Yes	Yes	No	Yes
<i>Ladenbergia hexandra</i>	No	Yes	No	No
<i>Lafoensia glyptocarpa</i>	No	Yes	No	Yes
<i>Lafoensia pacari</i>	No	Yes	No	Yes
<i>Lafoensia vandelliana</i>	No	Yes	No	No
<i>Laguncularia racemosa</i>	No	Yes	No	Yes
<i>Lamanonia ternata</i>	No	Yes	No	Yes
<i>Lantana camara</i>	Yes	Yes	Yes	Yes
<i>Lantana fucata</i>	No	Yes	No	No
<i>Lantana radula</i>	No	Yes	No	No
<i>Lantana undulata</i>	No	Yes	No	No
<i>Laplacea fructicosa</i>	No	Yes	No	No
<i>Leandra acutiflora</i>	No	Yes	No	No
<i>Leandra aurea</i>	No	Yes	No	No
<i>Leandra australis</i>	No	Yes	No	No
<i>Leandra barbinervis</i>	No	Yes	No	No
<i>Leandra bergiana</i>	No	Yes	No	No
<i>Leandra carassana</i>	No	Yes	No	No
<i>Leandra clidemioides</i>	No	Yes	No	No
<i>Leandra cuneata</i>	No	Yes	No	No
<i>Leandra dubia</i>	No	Yes	No	No
<i>Leandra fragilis</i>	No	Yes	No	No

<i>Leandra gardneriana</i>	No	Yes	No	No
<i>Leandra glazioviana</i>	No	Yes	No	No
<i>Leandra ionopogon</i>	No	Yes	No	No
<i>Leandra laevigata</i>	No	Yes	No	No
<i>Leandra melastomoides</i>	No	Yes	No	No
<i>Leandra nianga</i>	No	Yes	No	No
<i>Leandra regnellii</i>	No	Yes	No	No
<i>Leandra reversa</i>	No	Yes	No	No
<i>Leandra rhamnifolia</i>	No	Yes	No	No
<i>Leandra rufescens</i>	No	Yes	No	No
<i>Leandra sericea</i>	No	Yes	No	No
<i>Leandra variabilis</i>	No	Yes	No	No
<i>Lecythis lanceolata</i>	No	Yes	No	Yes
<i>Lecythis lurida</i>	Yes	Yes	No	Yes
<i>Lecythis pisonis</i>	Yes	Yes	No	Yes
<i>Lepidaploa argyrotricha</i>	No	Yes	No	No
<i>Lepidaploa balansae</i>	No	Yes	No	No
<i>Lepidaploa chalybaea</i>	No	Yes	No	No
<i>Lepidaploa cotoneaster</i>	No	Yes	No	No
<i>Leptolobium bijugum</i>	No	Yes	No	No
<i>Leptolobium dasycarpum</i>	No	Yes	No	No
<i>Leptolobium elegans</i>	No	Yes	No	No
<i>Lessingianthus cataractarum</i>	No	Yes	No	No
<i>Lessingianthus macrophyllus</i>	No	Yes	No	No
<i>Leucochloron incuriale</i>	No	Yes	No	No
<i>Libidibia ferrea</i>	No	Yes	No	No
<i>Licania discolor</i>	No	Yes	No	Yes
<i>Licania heteromorpha</i>	Yes	Yes	Yes	Yes
<i>Licania hoehnei</i>	Yes	Yes	No	Yes
<i>Licania hypoleuca</i>	Yes	Yes	Yes	Yes
<i>Licania kunthiana</i>	Yes	Yes	No	Yes
<i>Licania leptostachya</i>	No	Yes	No	No
<i>Licania littoralis</i>	No	Yes	No	Yes
<i>Licania micrantha</i>	Yes	Yes	No	Yes
<i>Licania octandra</i>	Yes	Yes	No	Yes
<i>Licania rigida</i>	No	Yes	No	Yes
<i>Licania spicata</i>	No	Yes	No	No
<i>Licania tomentosa</i>	No	Yes	No	Yes
<i>Licaria armeniaca</i>	Yes	Yes	No	Yes
<i>Licaria bahiana</i>	No	Yes	No	No

<i>Licaria chrysophylla</i>	Yes	Yes	No	Yes
<i>Licaria guianensis</i>	Yes	Yes	No	Yes
<i>Lippia brasiliensis</i>	No	Yes	No	No
<i>Lithrea brasiliensis</i>	No	Yes	No	No
<i>Lithrea molleoides</i>	No	Yes	No	No
<i>Lonchocarpus campestris</i>	Yes	Yes	No	Yes
<i>Lonchocarpus cultratus</i>	No	Yes	No	No
<i>Lonchocarpus muehlbergianus</i>	No	Yes	No	Yes
<i>Lonchocarpus nitidus</i>	No	Yes	No	Yes
<i>Lonchocarpus sericeus</i>	Yes	Yes	Yes	Yes
<i>Lonchocarpus subglaucescens</i>	No	Yes	No	No
<i>Luehea candicans</i>	No	Yes	No	No
<i>Luehea cymulosa</i>	No	Yes	No	Yes
<i>Luehea divaricata</i>	Yes	Yes	No	Yes
<i>Luehea grandiflora</i>	No	Yes	No	No
<i>Luehea ochrophylla</i>	No	Yes	No	No
<i>Luehea paniculata</i>	No	Yes	No	Yes
<i>Luehea speciosa</i>	Yes	Yes	Yes	Yes
<i>Luetzelburgia guaissara</i>	No	Yes	No	No
<i>Mabea fistulifera</i>	No	Yes	No	No
<i>Mabea glaziovii</i>	No	Yes	No	No
<i>Mabea occidentalis</i>	Yes	Yes	Yes	Yes
<i>Mabea piriri</i>	Yes	Yes	No	Yes
<i>Machaerium acutifolium</i>	Yes	Yes	No	Yes
<i>Machaerium fulvovenosum</i>	No	Yes	No	Yes
<i>Machaerium hatschbachii</i>	No	Yes	No	No
<i>Machaerium incorruptibile</i>	No	Yes	No	Yes
<i>Machaerium nyctitans</i>	No	Yes	No	No
<i>Machaerium paraguariense</i>	No	Yes	No	Yes
<i>Machaerium pedicellatum</i>	No	Yes	No	No
<i>Machaerium punctatum</i>	No	Yes	No	No
<i>Machaerium salzmanni</i>	No	Yes	No	No
<i>Machaerium scleroxylon</i>	No	Yes	No	Yes
<i>Machaerium stipitatum</i>	No	Yes	No	Yes
<i>Machaerium villosum</i>	No	Yes	No	Yes
<i>Machaonia acuminata</i>	No	Yes	No	No
<i>Maclura tinctoria</i>	Yes	Yes	No	Yes
<i>Macoubea guianensis</i>	Yes	Yes	No	Yes
<i>Macrocarpaea obtusifolia</i>	No	Yes	No	No
<i>Macrolobium latifolium</i>	No	Yes	No	No

<i>Macrolobium rigidum</i>	No	Yes	No	No
<i>Macropeplus dentatus</i>	No	Yes	No	No
<i>Macropeplus ligustrinus</i>	No	Yes	No	No
<i>Macrothumia kuhlmannii</i>	No	Yes	No	No
<i>Macrotorus utriculatus</i>	No	Yes	No	No
<i>Magnolia ovata</i>	No	Yes	Yes	Yes
<i>Malouetia arborea</i>	No	Yes	No	No
<i>Manihot anomala</i>	No	Yes	No	No
<i>Manihot caerulea</i>	No	Yes	No	No
<i>Manihot carthaginensis</i>	No	Yes	No	No
<i>Manihot grahamii</i>	No	Yes	Yes	No
<i>Manihot pilosa</i>	No	Yes	No	No
<i>Manihot tripartita</i>	No	Yes	No	No
<i>Manilkara longifolia</i>	No	Yes	No	No
<i>Manilkara maxima</i>	No	Yes	No	No
<i>Manilkara rufula</i>	No	Yes	No	No
<i>Manilkara salzmannii</i>	No	Yes	No	Yes
<i>Manilkara subsericea</i>	No	Yes	No	Yes
<i>Maprounea brasiliensis</i>	No	Yes	No	No
<i>Maprounea guianensis</i>	Yes	Yes	No	Yes
<i>Margaritaria nobilis</i>	Yes	Yes	Yes	Yes
<i>Margaritopsis astrellantha</i>	No	Yes	No	No
<i>Margaritopsis cephalantha</i>	No	Yes	No	No
<i>Margaritopsis chaenotricha</i>	No	Yes	No	No
<i>Margaritopsis cymuligera</i>	No	Yes	No	No
<i>Marlierea clauseniana</i>	No	Yes	No	No
<i>Marlierea eugenioides</i>	No	Yes	No	No
<i>Marlierea eugeniopsoides</i>	No	Yes	Yes	No
<i>Marlierea excoriata</i>	No	Yes	No	No
<i>Marlierea laevigata</i>	No	Yes	No	No
<i>Marlierea neuwiedeaana</i>	No	Yes	No	No
<i>Marlierea obscura</i>	Yes	Yes	Yes	Yes
<i>Marlierea obversa</i>	No	Yes	No	No
<i>Marlierea racemosa</i>	No	Yes	No	No
<i>Marlierea regeliana</i>	No	Yes	No	No
<i>Marlierea reitzii</i>	No	Yes	No	No
<i>Marlierea silvatica</i>	No	Yes	No	Yes
<i>Marlierea suaveolens</i>	No	Yes	Yes	No
<i>Marlierea tomentosa</i>	Yes	Yes	Yes	Yes
<i>Martiodendron mediterraneum</i>	No	Yes	No	No

<i>Matayba arborescens</i>	Yes	Yes	No	Yes
<i>Matayba discolor</i>	No	Yes	No	Yes
<i>Matayba elaeagnoides</i>	Yes	Yes	Yes	Yes
<i>Matayba guianensis</i>	Yes	Yes	No	Yes
<i>Matayba inelegans</i>	Yes	Yes	No	Yes
<i>Matayba intermedia</i>	No	Yes	No	Yes
<i>Matayba juglandifolia</i>	No	Yes	No	No
<i>Matayba mollis</i>	No	Yes	No	No
<i>Mattfeldanthus andrade-limae</i>	No	Yes	No	No
<i>Mauritia flexuosa</i>	No	Yes	No	No
<i>Maytenus ardisiifolia</i>	No	Yes	No	No
<i>Maytenus boaria</i>	No	Yes	Yes	Yes
<i>Maytenus brasiliensis</i>	No	Yes	No	No
<i>Maytenus cassineformis</i>	No	Yes	No	No
<i>Maytenus cestrifolia</i>	No	Yes	No	No
<i>Maytenus communis</i>	No	Yes	No	No
<i>Maytenus dasyclada</i>	No	Yes	No	No
<i>Maytenus distichophylla</i>	No	Yes	No	No
<i>Maytenus erythroxyla</i>	No	Yes	No	No
<i>Maytenus evonymoides</i>	No	Yes	No	No
<i>Maytenus floribunda</i>	No	Yes	No	No
<i>Maytenus glaucescens</i>	No	Yes	No	No
<i>Maytenus gonoclada</i>	No	Yes	Yes	Yes
<i>Maytenus ilicifolia</i>	No	Yes	No	Yes
<i>Maytenus littoralis</i>	No	Yes	No	No
<i>Maytenus obtusifolia</i>	No	Yes	No	Yes
<i>Maytenus opaca</i>	No	Yes	No	No
<i>Maytenus patens</i>	No	Yes	No	No
<i>Maytenus rigida</i>	No	Yes	No	Yes
<i>Maytenus schumanniana</i>	No	Yes	No	No
<i>Melanopsidium nigrum</i>	No	Yes	No	No
<i>Melanoxylon brauna</i>	No	Yes	No	Yes
<i>Meliosma sellowii</i>	No	Yes	No	Yes
<i>Meriania calyptrata</i>	No	Yes	No	No
<i>Meriania clausenii</i>	No	Yes	No	No
<i>Meriania glabra</i>	No	Yes	No	No
<i>Meriania paniculata</i>	No	Yes	No	No
<i>Meriania tetramera</i>	No	Yes	No	No
<i>Mesocapparis lineata</i>	No	Yes	No	No
<i>Metrodorea maracasana</i>	No	Yes	No	No

<i>Metrodorea nigra</i>	No	Yes	No	No
<i>Metrodorea stipularis</i>	No	Yes	No	Yes
<i>Metternichia princeps</i>	No	Yes	No	Yes
<i>Miconia albicans</i>	Yes	Yes	Yes	No
<i>Miconia amacurensis</i>	No	Yes	No	No
<i>Miconia amoena</i>	No	Yes	No	No
<i>Miconia argyrophylla</i>	No	Yes	No	No
<i>Miconia brasiliensis</i>	No	Yes	No	No
<i>Miconia brevipes</i>	No	Yes	No	No
<i>Miconia brunnea</i>	No	Yes	No	No
<i>Miconia budlejoides</i>	No	Yes	No	No
<i>Miconia cabucu</i>	No	Yes	No	Yes
<i>Miconia calvescens</i>	Yes	Yes	No	Yes
<i>Miconia centrodesma</i>	Yes	Yes	No	No
<i>Miconia chamissois</i>	No	Yes	No	No
<i>Miconia chartacea</i>	Yes	Yes	No	No
<i>Miconia ciliata</i>	No	Yes	Yes	No
<i>Miconia cinerascens</i>	No	Yes	No	No
<i>Miconia cinnamomifolia</i>	No	Yes	No	Yes
<i>Miconia collatata</i>	No	Yes	No	No
<i>Miconia compressa</i>	No	Yes	No	No
<i>Miconia corallina</i>	No	Yes	No	No
<i>Miconia cubatanensis</i>	No	Yes	Yes	No
<i>Miconia cuspidata</i>	No	Yes	No	No
<i>Miconia discolor</i>	No	Yes	No	No
<i>Miconia dodecandra</i>	No	Yes	No	No
<i>Miconia eichleri</i>	No	Yes	No	No
<i>Miconia elegans</i>	No	Yes	No	No
<i>Miconia fasciculata</i>	No	Yes	No	No
<i>Miconia ferruginata</i>	Yes	Yes	No	No
<i>Miconia formosa</i>	No	Yes	No	No
<i>Miconia holosericea</i>	Yes	Yes	Yes	Yes
<i>Miconia hyemalis</i>	No	Yes	No	Yes
<i>Miconia hypoleuca</i>	No	Yes	No	No
<i>Miconia ibaguensis</i>	No	Yes	No	Yes
<i>Miconia inconspicua</i>	No	Yes	No	No
<i>Miconia jucunda</i>	No	Yes	No	No
<i>Miconia latecrenata</i>	No	Yes	No	No
<i>Miconia lepidota</i>	Yes	Yes	No	Yes
<i>Miconia ligustroides</i>	Yes	Yes	No	Yes

<i>Miconia longicuspis</i>	No	Yes	No	No
<i>Miconia macrothyrsa</i>	No	Yes	No	No
<i>Miconia minutiflora</i>	Yes	Yes	No	No
<i>Miconia mirabilis</i>	No	Yes	No	Yes
<i>Miconia nervosa</i>	Yes	Yes	No	No
<i>Miconia octopetala</i>	No	Yes	No	No
<i>Miconia paniculata</i>	No	Yes	No	No
<i>Miconia paucidens</i>	No	Yes	No	No
<i>Miconia pepericarpa</i>	No	Yes	No	No
<i>Miconia petropolitana</i>	No	Yes	No	No
<i>Miconia polyandra</i>	No	Yes	No	No
<i>Miconia prasina</i>	Yes	Yes	Yes	Yes
<i>Miconia pusilliflora</i>	No	Yes	No	No
<i>Miconia pyrifolia</i>	Yes	Yes	No	Yes
<i>Miconia rimalis</i>	No	Yes	No	No
<i>Miconia rubiginosa</i>	Yes	Yes	Yes	No
<i>Miconia ruficalyx</i>	No	Yes	No	No
<i>Miconia saldanhae</i>	No	Yes	No	No
<i>Miconia sclerophylla</i>	No	Yes	No	No
<i>Miconia sellowiana</i>	No	Yes	No	No
<i>Miconia serialis</i>	No	Yes	No	No
<i>Miconia serrulata</i>	No	Yes	No	No
<i>Miconia splendens</i>	No	Yes	No	Yes
<i>Miconia stenostachya</i>	No	Yes	No	No
<i>Miconia theizans</i>	No	Yes	No	No
<i>Miconia tomentosa</i>	Yes	Yes	Yes	Yes
<i>Miconia trianae</i>	No	Yes	No	No
<i>Miconia tristis</i>	No	Yes	No	No
<i>Miconia urophylla</i>	No	Yes	No	No
<i>Miconia valtheri</i>	No	Yes	No	Yes
<i>Micrandra elata</i>	Yes	Yes	No	Yes
<i>Micropholis crassipedicellata</i>	No	Yes	No	Yes
<i>Micropholis gardneriana</i>	No	Yes	No	No
<i>Micropholis gnaphalocladus</i>	No	Yes	No	No
<i>Micropholis guyanensis</i>	Yes	Yes	No	Yes
<i>Micropholis venulosa</i>	Yes	Yes	No	Yes
<i>Mimosa adenophylla</i>	No	Yes	No	No
<i>Mimosa arenosa</i>	Yes	Yes	Yes	Yes
<i>Mimosa artemisiana</i>	No	Yes	No	Yes
<i>Mimosa bimucronata</i>	No	Yes	No	Yes

<i>Mimosa caesalpinifolia</i>	No	Yes	No	No
<i>Mimosa furfuracea</i>	No	Yes	No	No
<i>Mimosa gemmulata</i>	No	Yes	No	No
<i>Mimosa pigra</i>	No	Yes	Yes	Yes
<i>Mimosa scabrella</i>	No	Yes	Yes	Yes
<i>Mimosa tenuiflora</i>	Yes	Yes	Yes	Yes
<i>Moldenhawera blanchetiana</i>	No	Yes	No	No
<i>Moldenhawera emarginata</i>	No	Yes	No	No
<i>Moldenhawera floribunda</i>	No	Yes	No	Yes
<i>Mollinedia argyrogyna</i>	No	Yes	No	No
<i>Mollinedia blumenaviana</i>	No	Yes	No	No
<i>Mollinedia boracensis</i>	No	Yes	No	No
<i>Mollinedia calodonta</i>	No	Yes	No	No
<i>Mollinedia clavigera</i>	No	Yes	No	No
<i>Mollinedia elegans</i>	No	Yes	No	No
<i>Mollinedia engleriana</i>	No	Yes	No	No
<i>Mollinedia fruticulosa</i>	No	Yes	No	No
<i>Mollinedia gilgiana</i>	No	Yes	No	No
<i>Mollinedia glabra</i>	No	Yes	No	No
<i>Mollinedia lanceolata</i>	No	Yes	No	No
<i>Mollinedia longifolia</i>	No	Yes	No	No
<i>Mollinedia oligantha</i>	No	Yes	No	No
<i>Mollinedia ovata</i>	No	Yes	No	No
<i>Mollinedia schottiana</i>	Yes	Yes	No	Yes
<i>Mollinedia triflora</i>	No	Yes	No	No
<i>Mollinedia uleana</i>	No	Yes	Yes	No
<i>Mollinedia widgrenii</i>	No	Yes	No	Yes
<i>Molopanthera paniculata</i>	No	Yes	No	No
<i>Monilicarpa brasiliana</i>	No	Yes	No	No
<i>Mouriri arborea</i>	No	Yes	No	No
<i>Mouriri chamissoana</i>	No	Yes	Yes	No
<i>Mouriri glazioviana</i>	No	Yes	No	Yes
<i>Myracrodruon urundeuva</i>	No	Yes	No	Yes
<i>Myrceugenia acutiflora</i>	No	Yes	No	No
<i>Myrceugenia alpigena</i>	No	Yes	No	No
<i>Myrceugenia bracteosa</i>	No	Yes	No	No
<i>Myrceugenia campestris</i>	No	Yes	No	No
<i>Myrceugenia cucullata</i>	No	Yes	No	No
<i>Myrceugenia euosma</i>	No	Yes	No	Yes
<i>Myrceugenia glaucescens</i>	No	Yes	No	No

<i>Myrceugenia kleinii</i>	No	Yes	No	No
<i>Myrceugenia mesomischa</i>	No	Yes	No	No
<i>Myrceugenia miersiana</i>	Yes	Yes	No	Yes
<i>Myrceugenia myrcioides</i>	No	Yes	No	Yes
<i>Myrceugenia myrtoides</i>	No	Yes	No	No
<i>Myrceugenia ovalifolia</i>	No	Yes	No	No
<i>Myrceugenia ovata</i>	Yes	Yes	No	No
<i>Myrceugenia oxysepala</i>	No	Yes	No	No
<i>Myrceugenia pilotantha</i>	No	Yes	No	No
<i>Myrceugenia reitzii</i>	No	Yes	No	No
<i>Myrceugenia rufescens</i>	No	Yes	No	No
<i>Myrcia aethusa</i>	No	Yes	No	No
<i>Myrcia amazonica</i>	No	Yes	No	Yes
<i>Myrcia anacardiifolia</i>	No	Yes	Yes	No
<i>Myrcia anceps</i>	No	Yes	No	No
<i>Myrcia bergiana</i>	No	Yes	No	No
<i>Myrcia bicolor</i>	No	Yes	No	No
<i>Myrcia brasiliensis</i>	Yes	Yes	No	No
<i>Myrcia cerqueiria</i>	No	Yes	No	No
<i>Myrcia citrifolia</i>	No	No	Yes	No
<i>Myrcia cordiifolia</i>	No	Yes	No	No
<i>Myrcia crocea</i>	No	Yes	No	No
<i>Myrcia dichrophylla</i>	No	Yes	No	No
<i>Myrcia eriocalyx</i>	No	Yes	No	No
<i>Myrcia eriopus</i>	No	Yes	No	No
<i>Myrcia eximia</i>	No	Yes	No	No
<i>Myrcia fenzlina</i>	No	Yes	No	No
<i>Myrcia flagellaris</i>	No	Yes	No	No
<i>Myrcia glabra</i>	No	Yes	No	No
<i>Myrcia grandifolia</i>	No	Yes	No	No
<i>Myrcia guianensis</i>	Yes	Yes	No	Yes
<i>Myrcia hartwegiana</i>	No	Yes	No	No
<i>Myrcia hatschbachii</i>	No	Yes	No	Yes
<i>Myrcia hebeptala</i>	No	Yes	No	No
<i>Myrcia heringii</i>	No	No	No	No
<i>Myrcia ilheosensis</i>	No	Yes	No	No
<i>Myrcia insularis</i>	No	Yes	No	No
<i>Myrcia lajeana</i>	No	Yes	No	No
<i>Myrcia laruotteana</i>	No	Yes	No	No
<i>Myrcia laxiflora</i>	No	Yes	No	No

<i>Myrcia mischophylla</i>	No	Yes	No	No
<i>Myrcia montana</i>	No	Yes	No	No
<i>Myrcia multiflora</i>	No	Yes	No	No
<i>Myrcia mutabilis</i>	No	Yes	No	No
<i>Myrcia neoblanchetiana</i>	No	Yes	No	No
<i>Myrcia neobullata</i>	No	Yes	No	No
<i>Myrcia oblongata</i>	No	Yes	No	No
<i>Myrcia obovata</i>	No	Yes	No	No
<i>Myrcia oligantha</i>	No	Yes	No	No
<i>Myrcia ovata</i>	No	Yes	No	No
<i>Myrcia palustris</i>	No	Yes	No	Yes
<i>Myrcia pubescens</i>	No	Yes	No	No
<i>Myrcia pubiflora</i>	No	Yes	No	No
<i>Myrcia pubipetala</i>	No	Yes	Yes	Yes
<i>Myrcia pulchra</i>	No	Yes	No	No
<i>Myrcia racemosa</i>	Yes	Yes	No	No
<i>Myrcia retorta</i>	No	Yes	No	No
<i>Myrcia rufipes</i>	No	Yes	No	No
<i>Myrcia rupicola</i>	No	Yes	No	No
<i>Myrcia selloi</i>	No	Yes	No	No
<i>Myrcia silvatica</i>	No	Yes	No	No
<i>Myrcia spectabilis</i>	No	Yes	No	Yes
<i>Myrcia splendens</i>	Yes	Yes	No	Yes
<i>Myrcia tenuivenosa</i>	No	Yes	No	No
<i>Myrcia thyrsoidea</i>	No	Yes	No	No
<i>Myrcia tijucensis</i>	No	Yes	No	No
<i>Myrcia tomentosa</i>	Yes	Yes	Yes	Yes
<i>Myrcia undulata</i>	No	Yes	No	No
<i>Myrcia variabilis</i>	No	Yes	No	No
<i>Myrcia venulosa</i>	No	Yes	No	No
<i>Myrcia vittoriana</i>	No	Yes	No	No
<i>Myrcianthes gigantea</i>	Yes	Yes	No	Yes
<i>Myrcianthes pungens</i>	Yes	Yes	Yes	Yes
<i>Myrciaria cuspidata</i>	No	Yes	No	Yes
<i>Myrciaria delicatula</i>	No	Yes	No	Yes
<i>Myrciaria disticha</i>	No	Yes	No	No
<i>Myrciaria ferruginea</i>	No	Yes	No	No
<i>Myrciaria floribunda</i>	Yes	Yes	No	Yes
<i>Myrciaria glanduliflora</i>	No	Yes	No	No
<i>Myrciaria glazioviana</i>	No	Yes	No	No

<i>Myrciaria glomerata</i>	No	Yes	No	No
<i>Myrciaria plinioides</i>	No	Yes	No	Yes
<i>Myrciaria strigipes</i>	No	Yes	No	No
<i>Myrciaria tenella</i>	No	Yes	No	No
<i>Myrocarpus fastigiatus</i>	No	Yes	No	Yes
<i>Myrocarpus frondosus</i>	Yes	Yes	No	Yes
<i>Myroxylon peruiferum</i>	No	Yes	Yes	Yes
<i>Myrrhinium atropurpureum</i>	Yes	Yes	No	Yes
<i>Myrsine altomontana</i>	No	Yes	No	No
<i>Myrsine balansae</i>	No	Yes	No	No
<i>Myrsine coriacea</i>	Yes	Yes	Yes	Yes
<i>Myrsine gardneriana</i>	No	Yes	No	No
<i>Myrsine guianensis</i>	No	Yes	No	No
<i>Myrsine hermogenesii</i>	No	Yes	No	No
<i>Myrsine laetevirens</i>	Yes	Yes	Yes	Yes
<i>Myrsine lancifolia</i>	No	Yes	No	No
<i>Myrsine lineata</i>	No	Yes	No	No
<i>Myrsine loefgrenii</i>	No	Yes	No	No
<i>Myrsine matensis</i>	No	Yes	No	No
<i>Myrsine monticola</i>	No	Yes	No	No
<i>Myrsine parvifolia</i>	No	Yes	No	No
<i>Myrsine parvula</i>	No	Yes	No	No
<i>Myrsine umbellata</i>	Yes	Yes	Yes	Yes
<i>Myrsine venosa</i>	No	Yes	No	No
<i>Myrsine villosis</i> Yesa	No	Yes	No	No
<i>Naucleopsis oblongifolia</i>	No	Yes	No	No
<i>Nectandra angustifolia</i>	No	Yes	No	Yes
<i>Nectandra barbellata</i>	No	Yes	No	No
<i>Nectandra cissiflora</i>	Yes	Yes	Yes	Yes
<i>Nectandra cuspidata</i>	Yes	Yes	No	Yes
<i>Nectandra globosa</i>	No	Yes	No	Yes
<i>Nectandra grandiflora</i>	No	Yes	No	Yes
<i>Nectandra lanceolata</i>	No	Yes	No	Yes
<i>Nectandra leucantha</i>	No	Yes	No	No
<i>Nectandra megapotamica</i>	Yes	Yes	Yes	Yes
<i>Nectandra membranacea</i>	Yes	Yes	No	Yes
<i>Nectandra nitidula</i>	No	Yes	No	Yes
<i>Nectandra oppositifolia</i>	Yes	Yes	No	Yes
<i>Nectandra psammophila</i>	No	Yes	No	No
<i>Nectandra puberula</i>	No	Yes	No	Yes

<i>Nectandra reticulata</i>	No	Yes	Yes	Yes
<i>Neea floribunda</i>	Yes	Yes	No	Yes
<i>Neea macrophylla</i>	Yes	Yes	No	No
<i>Neea parviflora</i>	No	Yes	No	No
<i>Neea schwackeana</i>	No	Yes	No	No
<i>Neocalyptrocalyx longifolium</i>	No	Yes	No	No
<i>Neocalyptrocalyx nectareus</i>	No	Yes	No	No
<i>Neomitranthes cordifolia</i>	No	Yes	No	No
<i>Neomitranthes glomerata</i>	No	Yes	Yes	No
<i>Neomitranthes obscura</i>	No	Yes	No	Yes
<i>Neomitranthes obtusa</i>	No	Yes	No	No
<i>Neomitranthes warmingiana</i>	No	Yes	No	No
<i>Neoptychocarpus apodanthus</i>	No	Yes	No	No
<i>Neoraputia alba</i>	No	Yes	No	Yes
<i>Neoraputia magnifica</i>	No	Yes	No	No
<i>Neoraputia trifoliata</i>	No	Yes	No	No
<i>Noticastrum calvatum</i>	No	Yes	No	No
<i>Noticastrum decumbens</i>	No	Yes	No	No
<i>Notopleura tapajozensis</i>	No	Yes	No	No
<i>Ocotea aciphylla</i>	Yes	Yes	No	Yes
<i>Ocotea acutifolia</i>	No	Yes	No	Yes
<i>Ocotea bicolor</i>	No	Yes	No	No
<i>Ocotea brachybotra</i>	No	Yes	No	No
<i>Ocotea canaliculata</i>	No	Yes	No	Yes
<i>Ocotea catharinensis</i>	No	Yes	No	Yes
<i>Ocotea cernua</i>	Yes	Yes	Yes	Yes
<i>Ocotea complicata</i>	No	No	No	No
<i>Ocotea corymbosa</i>	No	Yes	No	No
<i>Ocotea daphnifolia</i>	No	Yes	No	No
<i>Ocotea deflexa</i>	No	Yes	No	No
<i>Ocotea densiflora</i>	No	Yes	No	No
<i>Ocotea diospyrifolia</i>	No	Yes	No	Yes
<i>Ocotea dispersa</i>	Yes	Yes	Yes	Yes
<i>Ocotea divaricata</i>	No	Yes	No	No
<i>Ocotea duckei</i>	No	Yes	No	No
<i>Ocotea elegans</i>	No	Yes	No	Yes
<i>Ocotea floribunda</i>	Yes	Yes	No	Yes
<i>Ocotea gardneri</i>	No	Yes	No	No
<i>Ocotea glauca</i>	No	Yes	No	No
<i>Ocotea glaziovii</i>	No	Yes	No	No

<i>Ocotea glomerata</i>	No	Yes	No	Yes
<i>Ocotea indecora</i>	Yes	Yes	No	No
<i>Ocotea insignis</i>	No	Yes	No	No
<i>Ocotea lanata</i>	No	Yes	No	No
<i>Ocotea lancifolia</i>	No	Yes	No	No
<i>Ocotea laxa</i>	No	Yes	No	No
<i>Ocotea leucoxylon</i>	Yes	Yes	No	Yes
<i>Ocotea lobbii</i>	No	Yes	No	No
<i>Ocotea longifolia</i>	Yes	Yes	No	No
<i>Ocotea magnilimba</i>	No	Yes	No	No
<i>Ocotea mandioccana</i>	No	Yes	No	Yes
<i>Ocotea minarum</i>	No	Yes	No	Yes
<i>Ocotea montana</i>	No	Yes	No	No
<i>Ocotea nectandrifolia</i>	No	Yes	No	No
<i>Ocotea neesiana</i>	No	Yes	No	Yes
<i>Ocotea nitida</i>	No	Yes	No	No
<i>Ocotea notata</i>	No	Yes	No	No
<i>Ocotea nunesiana</i>	No	Yes	No	No
<i>Ocotea nutans</i>	No	Yes	No	No
<i>Ocotea odorifera</i>	No	Yes	No	Yes
<i>Ocotea oppositifolia</i>	No	Yes	No	No
<i>Ocotea paranapiacabensis</i>	No	Yes	No	No
<i>Ocotea pauciflora</i>	No	Yes	No	Yes
<i>Ocotea percurrens</i>	Yes	Yes	No	Yes
<i>Ocotea pomaderroides</i>	No	Yes	No	No
<i>Ocotea porosa</i>	No	Yes	No	Yes
<i>Ocotea puberula</i>	Yes	Yes	Yes	Yes
<i>Ocotea pulchella</i>	Yes	Yes	No	Yes
<i>Ocotea pulchra</i>	No	Yes	No	No
<i>Ocotea silvestris</i>	No	Yes	No	No
<i>Ocotea spectabilis</i>	No	Yes	No	No
<i>Ocotea spixiana</i>	No	Yes	No	Yes
<i>Ocotea tabacifolia</i>	No	Yes	No	No
<i>Ocotea teleiandra</i>	No	Yes	Yes	No
<i>Ocotea tenuiflora</i>	No	Yes	No	No
<i>Ocotea tristis</i>	No	Yes	No	No
<i>Ocotea vaccinioides</i>	No	Yes	No	No
<i>Ocotea velloziana</i>	No	Yes	No	No
<i>Ocotea velutina</i>	No	Yes	No	No
<i>Ocotea venulosa</i>	No	Yes	No	No

<i>Ocotea villosa</i>	No	Yes	No	No
<i>Opuntia ficus-indica</i>	No	Yes	Yes	No
<i>Oreopanax capitatus</i>	No	Yes	No	No
<i>Oreopanax fulvum</i>	No	Yes	No	Yes
<i>Ormosia arborea</i>	No	Yes	No	Yes
<i>Ormosia bahiensis</i>	No	Yes	No	No
<i>Ormosia fastigiata</i>	No	Yes	No	No
<i>Ossaea amygdaloides</i>	No	Yes	No	No
<i>Ossaea angustifolia</i>	No	Yes	No	No
<i>Ossaea confertiflora</i>	No	Yes	No	No
<i>Ossaea marginata</i>	No	Yes	No	No
<i>Ossaea sanguinea</i>	No	Yes	No	No
<i>Ouratea castaneifolia</i>	No	Yes	No	Yes
<i>Ouratea crassa</i>	No	Yes	No	No
<i>Ouratea cuspidata</i>	No	Yes	No	No
<i>Ouratea fieldingiana</i>	No	Yes	No	No
<i>Ouratea hexasperma</i>	Yes	Yes	No	No
<i>Ouratea multiflora</i>	No	Yes	No	No
<i>Ouratea parviflora</i>	Yes	Yes	No	Yes
<i>Ouratea salicifolia</i>	No	Yes	No	No
<i>Ouratea sellowii</i>	No	Yes	No	No
<i>Ouratea semiserrata</i>	No	Yes	No	No
<i>Ouratea vaccinioides</i>	No	Yes	No	No
<i>Oxandra nitida</i>	No	Yes	No	No
<i>Pachira aquatica</i>	Yes	Yes	Yes	Yes
<i>Pachira stenopetala</i>	No	Yes	No	No
<i>Pachystroma longifolium</i>	No	Yes	No	No
<i>Palicourea australis</i>	No	Yes	No	No
<i>Palicourea blanchetiana</i>	No	Yes	No	No
<i>Palicourea crocea</i>	No	Yes	No	Yes
<i>Palicourea croceoides</i>	No	Yes	No	No
<i>Palicourea guianensis</i>	Yes	Yes	Yes	Yes
<i>Palicourea macrobotrys</i>	No	Yes	No	No
<i>Palicourea marcgravii</i>	No	Yes	No	No
<i>Palicourea rigida</i>	No	Yes	No	No
<i>Palicourea tetraphylla</i>	No	Yes	No	No
<i>Panopsis rubescens</i>	Yes	Yes	No	Yes
<i>Paradrypeles ilicifolia</i>	No	Yes	No	No
<i>Paralychnophora santosii</i>	No	Yes	No	No
<i>Parapiptadenia pterosperma</i>	No	Yes	No	Yes

<i>Parapiptadenia rigida</i>	No	Yes	No	Yes
<i>Paratecoma peroba</i>	No	Yes	No	Yes
<i>Parinari excelsa</i>	Yes	Yes	Yes	Yes
<i>Parinari littoralis</i>	No	Yes	No	No
<i>Parinari obtusifolia</i>	No	Yes	No	No
<i>Parkia pendula</i>	No	Yes	Yes	Yes
<i>Pausandra morisiana</i>	Yes	Yes	No	Yes
<i>Pausandra trianae</i>	Yes	Yes	No	Yes
<i>Paypayrola blanchetiana</i>	No	Yes	No	No
<i>Paypayrola grandiflora</i>	No	Yes	No	Yes
<i>Peltastes peltatus</i>	No	Yes	No	No
<i>Peltogyne confertiflora</i>	No	Yes	No	Yes
<i>Peltogyne pauciflora</i>	No	Yes	No	No
<i>Peltogyne venosa</i>	Yes	Yes	No	Yes
<i>Peltophorum dubium</i>	No	Yes	No	Yes
<i>Pera anisotricha</i>	No	Yes	No	No
<i>Pera glabrata</i>	Yes	Yes	No	Yes
<i>Pera heteranthera</i>	No	Yes	No	Yes
<i>Pereskia grandifolia</i>	No	Yes	No	No
<i>Persea alba</i>	No	Yes	No	No
<i>Persea aurata</i>	No	Yes	No	No
<i>Persea caesia</i>	No	Yes	No	No
<i>Persea fulva</i>	No	Yes	No	No
<i>Persea major</i>	No	Yes	No	Yes
<i>Persea rufotomentosa</i>	No	Yes	No	No
<i>Persea splendens</i>	No	Yes	No	No
<i>Persea venosa</i>	No	Yes	No	Yes
<i>Persea willdenovii</i>	No	Yes	No	Yes
<i>Phyllanthus acuminatus</i>	No	Yes	No	No
<i>Phyllanthus juglandifolius</i>	No	Yes	No	No
<i>Phyllostemonodaphne geminiflora</i>	No	Yes	No	No
<i>Phytolacca dioica</i>	No	Yes	Yes	Yes
<i>Picramnia andrade-limae</i>	No	Yes	No	No
<i>Picramnia bahiensis</i>	No	Yes	No	No
<i>Picramnia ciliata</i>	No	Yes	No	No
<i>Picramnia excelsa</i>	No	Yes	No	No
<i>Picramnia gardneri</i>	No	Yes	No	No
<i>Picramnia glazioviana</i>	No	Yes	No	No
<i>Picramnia parvifolia</i>	No	Yes	No	No
<i>Picramnia ramiflora</i>	No	Yes	No	No

<i>Picramnia sellowii</i>	Yes	Yes	No	Yes
<i>Picrasma crenata</i>	No	Yes	No	Yes
<i>Pilocarpus microphyllus</i>	No	Yes	No	No
<i>Pilocarpus pauciflorus</i>	No	Yes	No	No
<i>Pilocarpus pennatifolius</i>	Yes	Yes	No	Yes
<i>Pilocarpus riedelianus</i>	No	Yes	No	No
<i>Pilocarpus spicatus</i>	No	Yes	No	No
<i>Pilosocereus arrabidaae</i>	No	Yes	No	No
<i>Pimenta pseudocaryophyllus</i>	No	Yes	No	Yes
<i>Piper aduncum</i>	Yes	Yes	No	Yes
<i>Piper amalago</i>	Yes	Yes	Yes	No
<i>Piper amplum</i>	No	Yes	No	No
<i>Piper anonifolium</i>	No	Yes	No	No
<i>Piper arboreum</i>	Yes	Yes	Yes	No
<i>Piper bowiei</i>	No	Yes	No	No
<i>Piper caldense</i>	No	Yes	No	No
<i>Piper cernuum</i>	No	Yes	No	No
<i>Piper corcovadensis</i>	No	Yes	No	No
<i>Piper crassinervium</i>	Yes	Yes	Yes	No
<i>Piper cuyabanum</i>	No	Yes	No	No
<i>Piper dilatatum</i>	No	Yes	Yes	No
<i>Piper divaricatum</i>	No	Yes	No	No
<i>Piper eucalyptophyllum</i>	No	Yes	No	No
<i>Piper gaudichaudianum</i>	No	Yes	No	No
<i>Piper glabratum</i>	No	Yes	No	No
<i>Piper hayneanum</i>	No	Yes	No	No
<i>Piper hispidum</i>	Yes	Yes	Yes	No
<i>Piper ilheusense</i>	No	Yes	No	No
<i>Piper lhotzkyanum</i>	No	Yes	No	No
<i>Piper malacophyllum</i>	No	Yes	No	No
<i>Piper marginatum</i>	No	Yes	Yes	No
<i>Piper miquelianum</i>	No	Yes	No	No
<i>Piper mollicomum</i>	No	Yes	No	No
<i>Piper mosenii</i>	No	Yes	No	No
<i>Piper obliquum</i>	No	Yes	No	No
<i>Piper ovatum</i>	No	Yes	No	No
<i>Piper richardiifolium</i>	No	Yes	No	No
<i>Piper tuberculatum</i>	No	Yes	Yes	No
<i>Piper umbellatum</i>	Yes	Yes	Yes	No
<i>Piper vicosanum</i>	No	Yes	No	No

<i>Piper viminifolium</i>	No	Yes	No	No
<i>Piper xylosteoides</i>	No	Yes	No	No
<i>Piptadenia gonoacantha</i>	No	Yes	No	Yes
<i>Piptadenia paniculata</i>	Yes	Yes	No	Yes
<i>Piptadenia stipulacea</i>	Yes	Yes	No	Yes
<i>Piptadenia trisperma</i>	No	Yes	No	No
<i>Piptadenia viridiflora</i>	No	Yes	No	Yes
<i>Piptocarpha angustifolia</i>	No	Yes	No	Yes
<i>Piptocarpha axillaris</i>	No	Yes	No	Yes
<i>Piptocarpha densifolia</i>	No	Yes	No	No
<i>Piptocarpha macropoda</i>	No	Yes	No	No
<i>Piptocarpha oblonga</i>	No	Yes	No	No
<i>Piptocarpha organensis</i>	No	Yes	No	No
<i>Piptocarpha regnellii</i>	No	Yes	No	No
<i>Piptocarpha rotundifolia</i>	Yes	Yes	No	Yes
<i>Piptocarpha sellowii</i>	No	Yes	No	No
<i>Pisonia ambigua</i>	No	Yes	No	Yes
<i>Pityrocarpa moniliformis</i>	No	Yes	No	Yes
<i>Plathymenia reticulata</i>	No	Yes	No	Yes
<i>Platycyamus regnellii</i>	No	Yes	No	Yes
<i>Platymiscium floribundum</i>	No	Yes	No	Yes
<i>Platymiscium pubescens</i>	No	Yes	No	No
<i>Platypodium elegans</i>	Yes	Yes	Yes	Yes
<i>Plenckia populnea</i>	No	Yes	No	No
<i>Plinia callosa</i>	No	Yes	No	No
<i>Plinia cauliflora</i>	No	Yes	No	No
<i>Plinia complanata</i>	No	Yes	Yes	No
<i>Plinia cordifolia</i>	No	Yes	No	No
<i>Plinia edulis</i>	No	Yes	No	Yes
<i>Plinia peruviana</i>	No	Yes	No	No
<i>Plinia pseudodichasiantha</i>	No	Yes	No	No
<i>Plinia rivularis</i>	Yes	Yes	No	Yes
<i>Pluchea sagittalis</i>	No	Yes	No	No
<i>Podocarpus lambertii</i>	Yes	Yes	No	Yes
<i>Podocarpus sellowii</i>	No	Yes	No	Yes
<i>Poecilanthe falcata</i>	No	Yes	No	No
<i>Poecilanthe parviflora</i>	No	Yes	No	Yes
<i>Poecilanthe ulei</i>	No	Yes	No	Yes
<i>Poepigia procera</i>	Yes	Yes	No	Yes
<i>Pogonophora schomburgkiana</i>	Yes	Yes	No	Yes

<i>Poincianella gardneriana</i>	No	Yes	No	No
<i>Poincianella pluviosa</i>	No	Yes	No	No
<i>Poincianella pyramidalis</i>	No	Yes	No	No
<i>Porcelia macrocarpa</i>	No	Yes	No	Yes
<i>Posoqueria acutifolia</i>	No	Yes	No	Yes
<i>Posoqueria latifolia</i>	Yes	Yes	Yes	Yes
<i>Posoqueria longiflora</i>	Yes	Yes	No	Yes
<i>Pourouma bicolor</i>	Yes	Yes	Yes	Yes
<i>Pourouma cecropiifolia</i>	Yes	Yes	No	Yes
<i>Pourouma guianensis</i>	Yes	Yes	Yes	Yes
<i>Pourouma mollis</i>	Yes	Yes	No	Yes
<i>Pourouma velutina</i>	No	Yes	No	No
<i>Pouteria bangii</i>	Yes	Yes	No	Yes
<i>Pouteria beaurepairei</i>	No	Yes	No	No
<i>Pouteria bilocularis</i>	Yes	Yes	No	Yes
<i>Pouteria bullata</i>	No	Yes	No	Yes
<i>Pouteria caimito</i>	Yes	Yes	No	Yes
<i>Pouteria cuspidata</i>	Yes	Yes	Yes	Yes
<i>Pouteria durlandii</i>	Yes	Yes	Yes	Yes
<i>Pouteria filipes</i>	Yes	Yes	No	Yes
<i>Pouteria gardneri</i>	No	Yes	No	Yes
<i>Pouteria gardneriana</i>	No	Yes	No	Yes
<i>Pouteria glomerata</i>	Yes	Yes	Yes	Yes
<i>Pouteria grandiflora</i>	No	Yes	No	Yes
<i>Pouteria guianensis</i>	Yes	Yes	Yes	Yes
<i>Pouteria macahensis</i>	No	Yes	No	No
<i>Pouteria macrophylla</i>	Yes	Yes	Yes	Yes
<i>Pouteria procera</i>	Yes	Yes	No	No
<i>Pouteria psammophila</i>	No	Yes	No	No
<i>Pouteria ramiflora</i>	No	Yes	No	No
<i>Pouteria reticulata</i>	Yes	Yes	Yes	Yes
<i>Pouteria torta</i>	Yes	Yes	No	Yes
<i>Pouteria venosa</i>	Yes	Yes	No	Yes
<i>Pradosia lactescens</i>	No	Yes	No	No
<i>Prockia crucis</i>	No	Yes	No	Yes
<i>Protium aracouchini</i>	Yes	Yes	No	Yes
<i>Protium bahianum</i>	No	Yes	No	No
<i>Protium brasiliense</i>	Yes	Yes	No	Yes
<i>Protium heptaphyllum</i>	Yes	Yes	No	Yes
<i>Protium icicariba</i>	No	Yes	No	No

<i>Protium kleinii</i>	No	Yes	No	Yes
<i>Protium ovatum</i>	No	Yes	No	No
<i>Protium sagotianum</i>	Yes	Yes	No	Yes
<i>Protium spruceanum</i>	Yes	Yes	No	Yes
<i>Protium warmingianum</i>	No	Yes	No	No
<i>Protium widgrenii</i>	No	Yes	Yes	No
<i>Prunus brasiliensis</i>	No	Yes	No	Yes
<i>Prunus myrtifolia</i>	Yes	Yes	No	Yes
<i>Prunus subcoriacea</i>	No	Yes	No	No
<i>Pseudobombax grandiflorum</i>	No	Yes	No	Yes
<i>Pseudobombax longiflorum</i>	No	Yes	No	No
<i>Pseudobombax marginatum</i>	No	Yes	No	Yes
<i>Pseudobombax tomentosum</i>	No	Yes	No	No
<i>Pseudolmedia macrophylla</i>	Yes	Yes	No	Yes
<i>Pseudopiptadenia bahiana</i>	No	Yes	No	No
<i>Pseudopiptadenia contorta</i>	No	Yes	No	Yes
<i>Pseudopiptadenia inaequalis</i>	No	Yes	No	No
<i>Pseudopiptadenia leptostachya</i>	No	Yes	No	No
<i>Pseudopiptadenia psilostachya</i>	Yes	Yes	No	Yes
<i>Pseudopiptadenia warmingii</i>	No	Yes	No	Yes
<i>Pseudoxandra bahiensis</i>	No	Yes	No	No
<i>Pseudoxandra spiritus-sancti</i>	No	Yes	No	No
<i>Psidium acutangulum</i>	No	Yes	Yes	Yes
<i>Psidium appendiculatum</i>	No	Yes	No	No
<i>Psidium brownianum</i>	No	Yes	No	No
<i>Psidium cattleianum</i>	Yes	Yes	No	Yes
<i>Psidium decussatum</i>	No	Yes	No	No
<i>Psidium firmum</i>	No	Yes	No	No
<i>Psidium grandifolium</i>	No	Yes	No	No
<i>Psidium longipetiolatum</i>	No	Yes	No	Yes
<i>Psidium myrsinites</i>	No	Yes	No	No
<i>Psidium myrtoides</i>	No	Yes	No	No
<i>Psidium nutans</i>	No	Yes	No	No
<i>Psidium oligospermum</i>	No	Yes	No	No
<i>Psidium ovale</i>	No	Yes	No	No
<i>Psidium rufum</i>	No	Yes	No	Yes
<i>Psidium sartorianum</i>	No	Yes	No	Yes
<i>Psychotria alba</i>	No	Yes	No	No
<i>Psychotria appendiculata</i>	No	Yes	No	No
<i>Psychotria bahiensis</i>	No	Yes	No	No

<i>Psychotria brachyceras</i>	No	Yes	No	No
<i>Psychotria brachypoda</i>	No	Yes	Yes	No
<i>Psychotria bracteocardia</i>	No	Yes	No	No
<i>Psychotria capitata</i>	No	Yes	No	No
<i>Psychotria carthagenensis</i>	Yes	Yes	Yes	Yes
<i>Psychotria colorata</i>	No	Yes	No	No
<i>Psychotria deflexa</i>	Yes	Yes	Yes	No
<i>Psychotria forsteronioides</i>	No	Yes	No	No
<i>Psychotria fractistipula</i>	No	Yes	No	No
<i>Psychotria glaziovii</i>	No	Yes	No	No
<i>Psychotria gracilentia</i>	No	Yes	Yes	No
<i>Psychotria hastisepala</i>	No	Yes	No	No
<i>Psychotria hoffmannseggiana</i>	No	Yes	Yes	No
<i>Psychotria iodotricha</i>	No	Yes	No	No
<i>Psychotria jambosoides</i>	No	Yes	No	No
<i>Psychotria laciniata</i>	No	Yes	No	No
<i>Psychotria leiocarpa</i>	No	Yes	No	No
<i>Psychotria leitana</i>	No	Yes	No	No
<i>Psychotria mapourioides</i>	No	Yes	Yes	No
<i>Psychotria myriantha</i>	No	Yes	No	No
<i>Psychotria nemorosa</i>	No	Yes	No	No
<i>Psychotria nuda</i>	Yes	Yes	No	Yes
<i>Psychotria officinalis</i>	Yes	Yes	No	No
<i>Psychotria patentinervia</i>	No	Yes	No	No
<i>Psychotria platypoda</i>	No	Yes	No	No
<i>Psychotria pleiocephala</i>	No	Yes	No	No
<i>Psychotria purpurascens</i>	No	Yes	No	No
<i>Psychotria racemosa</i>	Yes	Yes	Yes	No
<i>Psychotria ruelliifolia</i>	No	Yes	No	No
<i>Psychotria schlechtendaliana</i>	No	Yes	No	No
<i>Psychotria stachyoides</i>	No	Yes	No	No
<i>Psychotria subtriflora</i>	No	Yes	No	No
<i>Psychotria suterella</i>	No	Yes	Yes	Yes
<i>Psychotria tenerior</i>	No	Yes	No	No
<i>Psychotria tenuifolia</i>	Yes	Yes	Yes	No
<i>Psychotria vellosiana</i>	No	Yes	No	Yes
<i>Pterocarpus rohrii</i>	Yes	Yes	Yes	Yes
<i>Pterodon emarginatus</i>	Yes	Yes	No	Yes
<i>Pterogyne nitens</i>	No	Yes	No	Yes
<i>Qualea cordata</i>	No	Yes	No	No

<i>Qualea cryptantha</i>	No	Yes	No	No
<i>Qualea dichotoma</i>	Yes	Yes	No	No
<i>Qualea multiflora</i>	No	Yes	No	Yes
<i>Qualea selloi</i>	No	Yes	No	No
<i>Quararibea penduliflora</i>	No	Yes	No	No
<i>Quararibea turbinata</i>	Yes	Yes	No	Yes
<i>Quiina glaziovii</i>	No	Yes	Yes	No
<i>Quiina paraensis</i>	No	Yes	No	No
<i>Quillaja brasiliensis</i>	No	Yes	No	Yes
<i>Ramisia brasiliensis</i>	No	Yes	No	Yes
<i>Randia armata</i>	Yes	Yes	Yes	Yes
<i>Randia ferox</i>	No	Yes	No	Yes
<i>Rauia nodosa</i>	No	Yes	No	No
<i>Rauia resinosa</i>	No	Yes	No	No
<i>Raulinoreitzia leptophlebia</i>	No	Yes	No	No
<i>Rauvolfia bahiensis</i>	No	Yes	No	No
<i>Rauvolfia grandiflora</i>	No	Yes	No	No
<i>Rauvolfia ligustrina</i>	No	Yes	No	No
<i>Rauvolfia sellowii</i>	No	Yes	No	Yes
<i>Ravenia infelix</i>	No	Yes	No	No
<i>Remijia ferruginea</i>	No	Yes	No	No
<i>Rhamnidium elaeocarpum</i>	Yes	Yes	No	Yes
<i>Rhamnus sphaerosperma</i>	No	Yes	No	Yes
<i>Rhodostemonodaphne capixabensis</i>	No	Yes	No	No
<i>Rhodostemonodaphne macrocalyx</i>	No	Yes	No	No
<i>Richeria grandis</i>	Yes	Yes	No	Yes
<i>Rinorea bahiensis</i>	No	Yes	No	Yes
<i>Rinorea guianensis</i>	Yes	Yes	No	Yes
<i>Ronabea latifolia</i>	No	Yes	No	No
<i>Roucheria columbiana</i>	Yes	Yes	No	Yes
<i>Roupala conYesilis</i>	No	Yes	No	No
<i>Roupala montana</i>	Yes	Yes	No	Yes
<i>Roupala paulensis</i>	No	Yes	No	No
<i>Roupala rhombifolia</i>	No	Yes	No	No
<i>Rourea doniana</i>	No	Yes	No	No
<i>Rourea induta</i>	No	Yes	No	No
<i>Rourea martiana</i>	No	Yes	No	No
<i>Rubus brasiliensis</i>	No	Yes	No	No
<i>Rubus erythrocladus</i>	No	Yes	No	No
<i>Rubus sellowii</i>	No	Yes	No	No

<i>Rudgea coriacea</i>	No	Yes	No	No
<i>Rudgea coronata</i>	No	Yes	No	No
<i>Rudgea crassifolia</i>	No	Yes	No	No
<i>Rudgea gardenioides</i>	No	Yes	No	No
<i>Rudgea interrupta</i>	No	Yes	No	No
<i>Rudgea jacobinensis</i>	No	Yes	No	No
<i>Rudgea jasminoides</i>	No	Yes	Yes	No
<i>Rudgea parquioides</i>	No	Yes	No	No
<i>Rudgea recurva</i>	No	Yes	No	No
<i>Rudgea reticulata</i>	No	Yes	No	No
<i>Rudgea vellerea</i>	No	Yes	No	No
<i>Rudgea viburnoides</i>	No	Yes	No	Yes
<i>Ruprechtia laxiflora</i>	Yes	Yes	Yes	Yes
<i>Rustia formosa</i>	Yes	Yes	No	Yes
<i>Sacoglottis guianensis</i>	Yes	Yes	No	Yes
<i>Sacoglottis mattogrossensis</i>	Yes	Yes	No	Yes
<i>Salacia arborea</i>	No	No	No	No
<i>Salacia elliptica</i>	No	Yes	No	Yes
<i>Salacia grandifolia</i>	Yes	Yes	No	Yes
<i>Salix humboldtiana</i>	No	Yes	Yes	Yes
<i>Salzmannia nitida</i>	No	Yes	No	No
<i>Samanea inopinata</i>	No	Yes	No	No
<i>Samanea tubulosa</i>	No	Yes	No	Yes
<i>Sambucus australis</i>	No	Yes	No	No
<i>Sapindus saponaria</i>	Yes	Yes	Yes	Yes
<i>Sapium argutum</i>	No	Yes	No	No
<i>Sapium glandulosum</i>	Yes	Yes	Yes	Yes
<i>Sapium haematospermum</i>	No	Yes	Yes	Yes
<i>Sapium sellowianum</i>	No	Yes	No	No
<i>Sarcaulus brasiliensis</i>	Yes	Yes	No	Yes
<i>Savia dictyocarpa</i>	No	Yes	No	Yes
<i>Schefflera angustis</i> Yesa	Yes	Yes	No	Yes
<i>Schefflera calva</i>	Yes	Yes	No	Yes
<i>Schefflera macrocarpa</i>	Yes	Yes	No	Yes
<i>Schefflera morototoni</i>	Yes	Yes	Yes	Yes
<i>Schefflera selloi</i>	No	Yes	No	No
<i>Schefflera varisiana</i>	No	Yes	No	No
<i>Schefflera vinosa</i>	Yes	Yes	No	No
<i>Schinus engleri</i>	No	Yes	No	Yes
<i>Schinus polygamus</i>	No	Yes	No	Yes

<i>Schinus terebinthifolius</i>	Yes	Yes	No	No
<i>Schinus weinmannifolius</i>	No	Yes	No	No
<i>Schistostemon retusum</i>	No	Yes	No	Yes
<i>Schizocalyx cuspidatus</i>	No	Yes	No	No
<i>Schizolobium parahyba</i>	Yes	Yes	Yes	Yes
<i>Schoepfia brasiliensis</i>	No	Yes	No	No
<i>Schwartzia adamantium</i>	No	Yes	No	No
<i>Scutia arenicola</i>	No	Yes	No	No
<i>Scutia buxifolia</i>	Yes	Yes	No	Yes
<i>Sebastiania argutidens</i>	No	Yes	No	No
<i>Sebastiania brasiliensis</i>	Yes	Yes	No	Yes
<i>Sebastiania commersoniana</i>	Yes	Yes	No	Yes
<i>Sebastiania edwalliana</i>	No	Yes	No	No
<i>Sebastiania jacobinensis</i>	No	Yes	No	No
<i>Sebastiania schottiana</i>	No	Yes	No	No
<i>Sebastiania serrata</i>	No	Yes	No	No
<i>Seguiera americana</i>	No	Yes	No	No
<i>Seguiera langsdorffii</i>	No	Yes	No	Yes
<i>Senefeldera verticillata</i>	No	Yes	No	No
<i>Senegalia lacerans</i>	No	Yes	No	No
<i>Senegalia langsdorffii</i>	No	Yes	No	No
<i>Senegalia martiusiana</i>	No	Yes	No	No
<i>Senegalia monacantha</i>	No	Yes	No	No
<i>Senegalia piauiensis</i>	No	Yes	No	No
<i>Senegalia polyphylla</i>	No	Yes	No	Yes
<i>Senegalia recurva</i>	No	Yes	No	No
<i>Senegalia riparia</i>	No	Yes	No	No
<i>Senegalia tenuifolia</i>	No	Yes	No	Yes
<i>Senegalia tucumanensis</i>	No	Yes	No	Yes
<i>Senna affinis</i>	No	Yes	No	No
<i>Senna alata</i>	No	Yes	Yes	No
<i>Senna appendiculata</i>	No	Yes	No	No
<i>Senna aversiflora</i>	No	Yes	No	No
<i>Senna cana</i>	No	Yes	No	No
<i>Senna corymbosa</i>	No	Yes	Yes	No
<i>Senna georgica</i>	No	Yes	No	No
<i>Senna macranthera</i>	Yes	Yes	Yes	Yes
<i>Senna multijuga</i>	No	Yes	Yes	Yes
<i>Senna obtusifolia</i>	No	Yes	Yes	No
<i>Senna pendula</i>	No	Yes	No	No

<i>Senna pinheiroi</i>	No	Yes	No	No
<i>Senna quinquangulata</i>	No	Yes	No	No
<i>Senna rizzinii</i>	No	Yes	No	No
<i>Senna silvestris</i>	Yes	Yes	Yes	No
<i>Senna spectabilis</i>	No	Yes	Yes	Yes
<i>Senna splendida</i>	No	Yes	No	No
<i>Senna velutina</i>	No	Yes	No	No
<i>Sessea brasiliensis</i>	No	Yes	No	No
<i>Sessea regnellii</i>	No	Yes	No	Yes
<i>Sideroxylon obtusifolium</i>	No	Yes	Yes	Yes
<i>Yesaba cedron</i>	Yes	Yes	No	Yes
<i>Yesaba ferruginea</i>	No	Yes	No	No
<i>Yesaba floribunda</i>	No	Yes	No	No
<i>Yesaba guianensis</i>	No	Yes	No	No
<i>Yesarouba amara</i>	Yes	Yes	Yes	Yes
<i>Yesarouba versicolor</i>	No	Yes	No	Yes
<i>Yesira corumbensis</i>	No	Yes	No	No
<i>Yesira glaziovii</i>	No	Yes	No	No
<i>Yesira rubescens</i>	Yes	Yes	No	Yes
<i>Yesira sampaioana</i>	No	Yes	No	No
<i>Siparuna bifida</i>	No	Yes	No	No
<i>Siparuna brasiliensis</i>	No	Yes	No	No
<i>Siparuna cymosa</i>	No	Yes	No	No
<i>Siparuna glycycarpa</i>	No	Yes	No	Yes
<i>Siparuna guianensis</i>	Yes	Yes	Yes	No
<i>Siparuna reginae</i>	No	Yes	No	No
<i>Siphoneugena crassifolia</i>	No	Yes	No	No
<i>Siphoneugena densiflora</i>	No	Yes	No	Yes
<i>Siphoneugena dussii</i>	No	Yes	No	No
<i>Siphoneugena reitzii</i>	Yes	Yes	No	No
<i>Sloanea garckeana</i>	Yes	Yes	No	No
<i>Sloanea guianensis</i>	Yes	Yes	Yes	Yes
<i>Sloanea hirsuta</i>	No	Yes	No	Yes
<i>Sloanea lasiocoma</i>	No	Yes	No	Yes
<i>Sloanea obtusifolia</i>	Yes	Yes	No	No
<i>Solanum alatirameum</i>	No	Yes	No	No
<i>Solanum argenteum</i>	No	Yes	No	No
<i>Solanum asperum</i>	Yes	Yes	No	No
<i>Solanum asterophorum</i>	No	Yes	No	No
<i>Solanum atropurpureum</i>	No	Yes	No	No

<i>Solanum bullatum</i>	No	Yes	No	Yes
<i>Solanum caavurana</i>	No	Yes	No	No
<i>Solanum campaniforme</i>	No	Yes	No	No
<i>Solanum cernuum</i>	No	Yes	No	No
<i>Solanum cinnamomeum</i>	No	Yes	No	No
<i>Solanum compressum</i>	No	Yes	No	No
<i>Solanum concinnum</i>	No	Yes	No	No
<i>Solanum cordioides</i>	No	Yes	No	No
<i>Solanum corymbiflorum</i>	No	Yes	No	No
<i>Solanum crinitum</i>	No	Yes	No	Yes
<i>Solanum didymum</i>	No	Yes	No	No
<i>Solanum diploconos</i>	No	Yes	No	No
<i>Solanum evonymoides</i>	No	Yes	No	No
<i>Solanum granuloseprosum</i>	No	Yes	No	No
<i>Solanum hexandrum</i>	No	Yes	No	No
<i>Solanum insidiosum</i>	No	Yes	No	No
<i>Solanum latiflorum</i>	No	Yes	No	No
<i>Solanum leucodendron</i>	No	Yes	No	No
<i>Solanum martii</i>	No	Yes	No	No
<i>Solanum mauritianum</i>	No	Yes	Yes	Yes
<i>Solanum melissarum</i>	No	Yes	No	No
<i>Solanum pabstii</i>	Yes	Yes	No	No
<i>Solanum paludosum</i>	No	Yes	No	No
<i>Solanum paniculatum</i>	No	Yes	No	No
<i>Solanum paranense</i>	No	Yes	No	No
<i>Solanum polytrichum</i>	No	Yes	No	No
<i>Solanum pseudoquina</i>	Yes	Yes	No	Yes
<i>Solanum ramulosum</i>	No	Yes	No	No
<i>Solanum reflexiflorum</i>	No	Yes	No	No
<i>Solanum restingae</i>	No	Yes	No	No
<i>Solanum rhytidoandrum</i>	No	Yes	No	No
<i>Solanum robustum</i>	No	Yes	No	No
<i>Solanum rufescens</i>	No	Yes	No	No
<i>Solanum rugosum</i>	No	Yes	No	No
<i>Solanum sanctae-catharinae</i>	No	Yes	No	No
<i>Solanum schwackei</i>	No	Yes	No	No
<i>Solanum scuticum</i>	No	Yes	No	No
<i>Solanum sooretamum</i>	No	Yes	No	No
<i>Solanum stipulaceum</i>	No	Yes	No	No
<i>Solanum stipulatum</i>	No	Yes	No	No

<i>Solanum stramonifolium</i>	No	Yes	No	No
<i>Solanum swartzianum</i>	No	Yes	No	No
<i>Solanum sycocarpum</i>	No	Yes	No	No
<i>Solanum thomasiifolium</i>	No	Yes	No	No
<i>Solanum trachytrichium</i>	No	Yes	No	No
<i>Solanum variabile</i>	No	Yes	No	Yes
<i>Solanum vellozianum</i>	No	Yes	No	No
<i>Sophora tomentosa</i>	No	Yes	Yes	No
<i>Sorocea bonplandii</i>	Yes	Yes	Yes	Yes
<i>Sorocea guilleminiana</i>	No	Yes	No	No
<i>Sorocea hilarii</i>	No	Yes	No	No
<i>Sorocea jureiana</i>	No	Yes	No	No
<i>Sorocea muriculata</i>	Yes	Yes	No	No
<i>Sorocea racemosa</i>	No	Yes	No	No
<i>Sparattanthelium tupiniquinorum</i>	No	Yes	No	No
<i>Sparattosperma leucanthum</i>	No	Yes	No	Yes
<i>Spirotheca rivieri</i>	No	Yes	No	No
<i>Spondias mombin</i>	Yes	Yes	Yes	Yes
<i>Spondias tuberosa</i>	No	Yes	No	No
<i>Spondias venulosa</i>	No	Yes	No	Yes
<i>Stachyarrhena harleyi</i>	No	Yes	No	No
<i>Stephanopodium blanchetianum</i>	No	Yes	No	No
<i>Sterculia apetala</i>	Yes	Yes	Yes	Yes
<i>Sterculia excelsa</i>	No	Yes	No	Yes
<i>Sterculia striata</i>	No	Yes	No	Yes
<i>Stiffia chrysantha</i>	No	Yes	No	No
<i>Stillingia oppositifolia</i>	No	Yes	No	No
<i>Struchium sparganophorum</i>	No	Yes	No	No
<i>Strychnos bahiensis</i>	No	Yes	No	No
<i>Strychnos brasiliensis</i>	No	Yes	Yes	Yes
<i>Strychnos parvifolia</i>	No	Yes	No	No
<i>Strychnos pseudoquina</i>	No	Yes	No	No
<i>Strychnos trinervis</i>	No	Yes	No	No
<i>Stryphnodendron adstringens</i>	No	Yes	No	Yes
<i>Stryphnodendron polyphyllum</i>	No	Yes	No	No
<i>Stryphnodendron pulcherrimum</i>	No	Yes	No	Yes
<i>Stylogyne lhotzkyana</i>	No	Yes	No	No
<i>Stylogyne pauciflora</i>	No	Yes	No	No
<i>Styrax acuminatus</i>	No	Yes	No	No
<i>Styrax camporum</i>	Yes	Yes	No	No

<i>Styrax ferrugineus</i>	No	Yes	No	No
<i>Styrax glabratus</i>	No	No	No	No
<i>Styrax latifolius</i>	No	Yes	No	No
<i>Styrax leprosus</i>	No	Yes	No	Yes
<i>Styrax maninul</i>	No	Yes	No	No
<i>Styrax martii</i>	No	Yes	No	No
<i>Styrax pohlii</i>	No	Yes	No	No
<i>Swartzia acutifolia</i>	No	Yes	No	Yes
<i>Swartzia apetala</i>	No	Yes	No	No
<i>Swartzia dipetala</i>	No	Yes	No	No
<i>Swartzia flaemingii</i>	No	Yes	No	Yes
<i>Swartzia langsdorffii</i>	No	Yes	No	No
<i>Swartzia macrostachya</i>	No	Yes	No	Yes
<i>Swartzia multijuga</i>	Yes	Yes	No	No
<i>Swartzia myrtifolia</i>	No	Yes	No	Yes
<i>Swartzia oblata</i>	No	Yes	No	Yes
<i>Swartzia pickelii</i>	No	Yes	No	No
<i>Swartzia pilulifera</i>	No	Yes	No	No
<i>Swartzia polita</i>	No	Yes	No	No
<i>Swartzia polyphylla</i>	Yes	Yes	No	Yes
<i>Swartzia reticulata</i>	No	Yes	No	No
<i>Swartzia riedelii</i>	No	Yes	No	No
<i>Swartzia Yesplex</i>	Yes	Yes	Yes	Yes
<i>Sweetia fruticosa</i>	Yes	Yes	No	Yes
<i>Syagrus botryophora</i>	No	Yes	No	No
<i>Syagrus flexuosa</i>	No	Yes	No	No
<i>Syagrus oleracea</i>	No	Yes	Yes	No
<i>Syagrus pseudococos</i>	Yes	Yes	No	No
<i>Syagrus romanzoffiana</i>	No	Yes	Yes	Yes
<i>Syagrus schizophylla</i>	No	Yes	No	No
<i>Symphonia globulifera</i>	Yes	Yes	Yes	Yes
<i>Symphopappus casarettoi</i>	No	Yes	No	No
<i>Symphopappus itatiayensis</i>	No	Yes	No	No
<i>Symphopappus lymansmithii</i>	No	Yes	No	No
<i>Symplocos celastrinea</i>	No	Yes	No	No
<i>Symplocos corymboclados</i>	No	Yes	No	No
<i>Symplocos estrellensis</i>	No	Yes	No	No
<i>Symplocos glandulosomarginata</i>	No	Yes	No	No
<i>Symplocos guianensis</i>	No	Yes	No	No
<i>Symplocos laxiflora</i>	No	Yes	No	No

<i>Symplocos nitens</i>	No	Yes	No	No
<i>Symplocos nitidiflora</i>	No	Yes	No	No
<i>Symplocos oblongifolia</i>	No	Yes	No	No
<i>Symplocos pubescens</i>	No	Yes	No	No
<i>Symplocos tenuifolia</i>	No	Yes	No	No
<i>Symplocos tetrandra</i>	Yes	Yes	No	No
<i>Symplocos trachycarpus</i>	No	Yes	No	No
<i>Symplocos uniflora</i>	No	Yes	No	Yes
<i>Tabebuia aurea</i>	Yes	Yes	Yes	Yes
<i>Tabebuia cassinoides</i>	No	Yes	No	Yes
<i>Tabebuia elliptica</i>	No	Yes	No	Yes
<i>Tabebuia obtusifolia</i>	No	Yes	No	No
<i>Tabebuia roseoalba</i>	No	Yes	No	No
<i>Tabebuia stenocalyx</i>	No	Yes	No	Yes
<i>Tabernaemontana catharinensis</i>	Yes	Yes	No	Yes
<i>Tabernaemontana flavicans</i>	No	Yes	No	Yes
<i>Tabernaemontana hystrix</i>	No	Yes	No	No
<i>Tabernaemontana laeta</i>	Yes	Yes	No	Yes
<i>Tabernaemontana linkii</i>	No	Yes	No	No
<i>Tabernaemontana rupicola</i>	No	Yes	No	No
<i>Tabernaemontana salzmännii</i>	No	Yes	No	Yes
<i>Tachigali aurea</i>	No	Yes	No	No
<i>Tachigali densiflora</i>	No	Yes	No	No
<i>Tachigali denudata</i>	Yes	Yes	No	Yes
<i>Tachigali multijuga</i>	No	Yes	No	Yes
<i>Tachigali paratyensis</i>	No	Yes	No	No
<i>Tachigali pilgeriana</i>	No	Yes	No	No
<i>Tachigali rugosa</i>	Yes	Yes	No	Yes
<i>Talisia cerasina</i>	Yes	Yes	No	No
<i>Talisia cupularis</i>	Yes	Yes	No	No
<i>Talisia esculenta</i>	No	Yes	No	Yes
<i>Talisia macrophylla</i>	No	Yes	No	Yes
<i>Tapirira guianensis</i>	Yes	Yes	Yes	Yes
<i>Tapirira obtusa</i>	Yes	Yes	No	Yes
<i>Tapura amazonica</i>	Yes	Yes	No	No
<i>Tephrosia candida</i>	No	Yes	Yes	No
<i>Terminalia argentea</i>	No	Yes	No	Yes
<i>Terminalia dichotoma</i>	No	Yes	No	Yes
<i>Terminalia fagifolia</i>	No	Yes	No	Yes
<i>Terminalia glabrescens</i>	No	Yes	No	No

<i>Terminalia januarensis</i>	Yes	Yes	No	No
<i>Terminalia mameluco</i>	No	Yes	No	No
<i>Terminalia phaeocarpa</i>	No	Yes	No	No
<i>Terminalia triflora</i>	Yes	Yes	Yes	Yes
<i>Ternstroemia alnifolia</i>	No	Yes	No	No
<i>Ternstroemia brasiliensis</i>	No	Yes	No	Yes
<i>Tetracera breyniana</i>	No	Yes	No	No
<i>Tetragastris catuaba</i>	No	Yes	No	No
<i>Tetrastylidium grandifolium</i>	No	Yes	Yes	No
<i>Tetrorchidium rubrivenium</i>	Yes	Yes	Yes	Yes
<i>Thyrsodium spruceanum</i>	Yes	Yes	No	Yes
<i>Tibouchina arborea</i>	No	Yes	No	Yes
<i>Tibouchina candolleana</i>	No	Yes	No	Yes
<i>Tibouchina clavata</i>	No	Yes	No	No
<i>Tibouchina elegans</i>	No	Yes	No	No
<i>Tibouchina estrellensis</i>	No	Yes	No	No
<i>Tibouchina fissinervia</i>	No	Yes	No	No
<i>Tibouchina fothergillae</i>	No	Yes	No	No
<i>Tibouchina granulosa</i>	No	Yes	No	No
<i>Tibouchina heteromalla</i>	No	Yes	No	No
<i>Tibouchina maximiliana</i>	No	Yes	No	No
<i>Tibouchina mosenii</i>	No	Yes	No	No
<i>Tibouchina mutabilis</i>	No	Yes	No	Yes
<i>Tibouchina pulchra</i>	No	Yes	No	No
<i>Tibouchina regnellii</i>	No	Yes	No	No
<i>Tibouchina reitzii</i>	No	Yes	No	No
<i>Tibouchina sellowiana</i>	No	Yes	No	Yes
<i>Tibouchina semidecandra</i>	No	Yes	No	No
<i>Tibouchina stenocarpa</i>	Yes	Yes	No	No
<i>Tibouchina trichopoda</i>	No	Yes	No	No
<i>Tibouchina urvilleana</i>	No	Yes	No	No
<i>Tithonia diversifolia</i>	No	Yes	No	No
<i>Tocoyena brasiliensis</i>	No	Yes	No	No
<i>Tocoyena bullata</i>	No	Yes	No	No
<i>Tocoyena formosa</i>	Yes	Yes	No	No
<i>Tocoyena sellowiana</i>	No	Yes	No	No
<i>Tontelea attenuata</i>	No	Yes	No	No
<i>Tournefortia bicolor</i>	No	Yes	Yes	No
<i>Tournefortia candidula</i>	No	Yes	No	No
<i>Tournefortia paniculata</i>	No	Yes	No	No

<i>Tournefortia rubicunda</i>	No	Yes	No	No
<i>Tovomita brasiliensis</i>	No	Yes	No	No
<i>Tovomita brevistaminea</i>	No	Yes	No	No
<i>Tovomita mangle</i>	No	Yes	No	No
<i>Tovomitopsis paniculata</i>	No	Yes	No	No
<i>Tovomitopsis saldanhae</i>	No	Yes	No	No
<i>Trema micrantha</i>	Yes	Yes	Yes	Yes
<i>Trembleya parviflora</i>	No	Yes	No	No
<i>Trichilia casaretti</i>	No	Yes	No	Yes
<i>Trichilia catigua</i>	No	Yes	No	Yes
<i>Trichilia claussenii</i>	No	Yes	No	No
<i>Trichilia elegans</i>	No	Yes	No	No
<i>Trichilia emarginata</i>	No	Yes	No	No
<i>Trichilia hirta</i>	No	Yes	No	Yes
<i>Trichilia lepidota</i>	No	Yes	No	Yes
<i>Trichilia martiana</i>	Yes	Yes	No	Yes
<i>Trichilia pallens</i>	No	Yes	No	No
<i>Trichilia pallida</i>	Yes	Yes	Yes	Yes
<i>Trichilia pleeana</i>	Yes	Yes	No	Yes
<i>Trichilia pseudostipularis</i>	No	Yes	No	No
<i>Trichilia quadrijuga</i>	Yes	Yes	No	Yes
<i>Trichilia ramalhoi</i>	No	Yes	No	No
<i>Trichilia silvatica</i>	No	Yes	No	Yes
<i>Triplaris americana</i>	Yes	Yes	No	Yes
<i>Triplaris gardneriana</i>	No	Yes	No	Yes
<i>Triplaris weigeltiana</i>	No	Yes	No	Yes
<i>Trixis antimenorrhoea</i>	No	Yes	No	No
<i>Trixis divaricata</i>	No	Yes	No	No
<i>Trixis praestans</i>	No	Yes	No	No
<i>Unonopsis bahiensis</i>	No	Yes	No	No
<i>Unonopsis guatterioides</i>	Yes	Yes	No	Yes
<i>Unonopsis stipitata</i>	No	Yes	No	Yes
<i>Urbanodendron verrucosum</i>	No	Yes	No	No
<i>Urera aurantiaca</i>	No	Yes	No	No
<i>Urera baccifera</i>	Yes	Yes	Yes	Yes
<i>Urera caracasana</i>	Yes	Yes	Yes	Yes
<i>Urera nitida</i>	No	Yes	No	No
<i>Vachellia farnesiana</i>	No	Yes	No	No
<i>Vantanea compacta</i>	No	Yes	No	Yes
<i>Vantanea obovata</i>	No	Yes	No	No

<i>Varronia curassavica</i>	No	Yes	No	No
<i>Varronia leucocephala</i>	No	Yes	No	No
<i>Varronia multispicata</i>	No	Yes	No	No
<i>Varronia polycephala</i>	No	Yes	No	No
<i>Varronia tarodaea</i>	No	Yes	No	No
<i>Vassobia breviflora</i>	Yes	Yes	Yes	Yes
<i>Vatairea heteroptera</i>	No	Yes	No	No
<i>Vatairea macrocarpa</i>	No	Yes	No	Yes
<i>Vataireopsis araroba</i>	No	Yes	No	Yes
<i>Verbenoxylum reitzii</i>	No	Yes	No	No
<i>Verbesina macrophylla</i>	No	Yes	No	No
<i>Vernonanthura beyrichii</i>	No	Yes	No	No
<i>Vernonanthura brasiliana</i>	No	Yes	No	No
<i>Vernonanthura discolor</i>	No	Yes	No	Yes
<i>Vernonanthura divaricata</i>	No	Yes	No	No
<i>Vernonanthura ferruginea</i>	No	Yes	No	No
<i>Vernonanthura petiolaris</i>	No	Yes	No	No
<i>Vernonanthura phosphorica</i>	No	Yes	No	No
<i>Vernonanthura puberula</i>	No	Yes	No	Yes
<i>Vernonanthura subverticillata</i>	No	Yes	No	No
<i>Vernonanthura tweedieana</i>	No	Yes	No	No
<i>Vernonanthura vinhae</i>	No	Yes	No	No
<i>Vernonia rubriramea</i>	No	Yes	No	No
<i>Virola bicuhyba</i>	Yes	Yes	Yes	Yes
<i>Virola gardneri</i>	No	Yes	Yes	Yes
<i>Virola officinalis</i>	No	Yes	No	No
<i>Virola sebifera</i>	Yes	Yes	Yes	Yes
<i>Vismia baccifera</i>	Yes	Yes	Yes	Yes
<i>Vismia brasiliensis</i>	No	Yes	No	Yes
<i>Vismia guianensis</i>	No	Yes	No	Yes
<i>Vismia latifolia</i>	No	Yes	No	Yes
<i>Vismia macrophylla</i>	Yes	Yes	Yes	Yes
<i>Vismia magnoliifolia</i>	No	No	No	No
<i>Vismia martiana</i>	No	Yes	No	No
<i>Vitex capitata</i>	No	Yes	Yes	No
<i>Vitex cymosa</i>	No	Yes	Yes	Yes
<i>Vitex megapotamica</i>	No	Yes	No	Yes
<i>Vitex orinocensis</i>	No	Yes	No	Yes
<i>Vitex polygama</i>	No	Yes	No	No
<i>Vitex rufescens</i>	No	Yes	No	No

<i>Vitex sellowiana</i>	No	Yes	No	Yes
<i>Vitex triflora</i>	Yes	Yes	No	Yes
<i>Vochysia bifalcata</i>	No	Yes	No	Yes
<i>Vochysia emarginata</i>	No	Yes	No	No
<i>Vochysia laurifolia</i>	No	Yes	No	No
<i>Vochysia magnifica</i>	No	Yes	No	Yes
<i>Vochysia oppugnata</i>	No	Yes	No	No
<i>Vochysia rectiflora</i>	No	Yes	No	No
<i>Vochysia riedeliana</i>	No	Yes	No	No
<i>Vochysia thyrsoidea</i>	No	Yes	No	Yes
<i>Vochysia tucanorum</i>	No	Yes	No	Yes
<i>Waltheria cinerescens</i>	No	Yes	No	No
<i>Weinmannia humilis</i>	No	Yes	No	No
<i>Weinmannia paulliniifolia</i>	No	Yes	No	Yes
<i>Weinmannia pinnata</i>	Yes	Yes	No	No
<i>Wunderlichia mirabilis</i>	No	Yes	No	No
<i>Ximenia americana</i>	Yes	Yes	Yes	Yes
<i>Xylopia aromatica</i>	Yes	Yes	Yes	Yes
<i>Xylopia brasiliensis</i>	No	Yes	No	Yes
<i>Xylopia emarginata</i>	No	Yes	No	Yes
<i>Xylopia frutescens</i>	Yes	Yes	Yes	Yes
<i>Xylopia laevigata</i>	No	Yes	No	No
<i>Xylopia langsdorfiana</i>	No	Yes	No	No
<i>Xylopia nitida</i>	Yes	Yes	No	Yes
<i>Xylopia ochrantha</i>	No	Yes	No	No
<i>Xylopia sericea</i>	Yes	Yes	No	Yes
<i>Xylosma ciliatifolia</i>	No	Yes	No	Yes
<i>Xylosma glaberrimum</i>	No	Yes	No	No
<i>Xylosma prockia</i>	No	Yes	No	No
<i>Xylosma pseudosalzmannii</i>	No	Yes	No	No
<i>Xylosma tweedianum</i>	No	No	No	No
<i>Xylosma venosa</i>	No	Yes	No	No
<i>Zanthoxylum acuminatum</i>	Yes	Yes	No	Yes
<i>Zanthoxylum caribaeum</i>	No	Yes	Yes	Yes
<i>Zanthoxylum fagara</i>	Yes	Yes	Yes	Yes
<i>Zanthoxylum gardneri</i>	No	Yes	No	No
<i>Zanthoxylum kleinii</i>	No	Yes	No	No
<i>Zanthoxylum monogynum</i>	No	Yes	No	Yes
<i>Zanthoxylum petiolare</i>	No	Yes	No	No
<i>Zanthoxylum rhoifolium</i>	Yes	Yes	Yes	Yes

<i>Zanthoxylum riedelianum</i>	No	Yes	No	Yes
<i>Zanthoxylum syncarpum</i>	No	Yes	No	No
<i>Zanthoxylum tingoassuiba</i>	No	Yes	No	No
<i>Zeyheria tuberculosa</i>	No	Yes	No	Yes
<i>Ziziphus joazeiro</i>	No	Yes	No	No
<i>Ziziphus platyphylla</i>	No	Yes	No	No
<i>Ziziphus undulata</i>	No	Yes	No	No
<i>Zollernia glabra</i>	No	Yes	No	No
<i>Zollernia ilicifolia</i>	Yes	Yes	No	Yes
<i>Zollernia modesta</i>	No	Yes	No	No
<i>Zollernia paraensis</i>	No	Yes	No	Yes
<i>Zygia latifolia</i>	No	Yes	No	Yes

Appendix S5

Species level

Trait gaps at the species level were investigated in relation to range size and economical use of wood in different combination. Here model selection was performed with minimum AIC values within $\Delta AIC \leq 2$. Models were generated with general linear models (GLM) using binomial distribution.

Table_S 4: Specific leaf area gap at the species level models with different variable combinations, Akaike's (AIC) values, degrees of freedom (df) and ΔAIC_i .

Variables	df	AIC	ΔAIC_i
range size + economical use of wood	3	1700.9	0
range size	2	1747.9	46.9
economical use of wood	2	2148.7	447.8
Only the intercept	1	2212.5	511.5

Table_S 5: Maximum height gap at the species level models with different variable combinations, Akaike's (AIC) values, degrees of freedom (df) and ΔAIC_i .

Variables	df	AIC	ΔAIC_i
range size	2	139.3	0
range size + economical use of wood	3	140.1	0.85
Only the intercept	1	140.9	1.61

economical use of wood	2	141.2	1.88
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Table_S 6: Seed dry mass gap at the species level models with different variable combinations, Akaike's (AIC) values, degrees of freedom (df) and ΔAIC_i .

Variables	df	AIC	ΔAIC_i
range size + economical use of wood	3	1474.5	0
range size	2	1534.2	59.6
economical use of wood	2	1617.5	142.9
Only the intercept	1	1689.6	215.1

Table_S 7: Wood density gap at the species level models with different variable combinations, Akaike's (AIC) values, degrees of freedom (df) and ΔAIC_i .

Variables	df	AIC	ΔAIC_i
range size + economical use of wood	3	2144.5	0
economical use of wood	2	2364.5	220.0
range size	2	2676.9	532.3
Only the intercept	1	2919.8	775.3

Geographical level

Trait gaps at the geographical level were investigated in relation to mean range size, mean economical use of wood, distance from urban centers and distance from protected areas in different combinations. Here model selection was performed with minimum AIC values within $\Delta AIC \leq 2$. Models were generated with general linear models (GLM) using beta distribution.

Table_S 8: Specific leaf area gap at the geographical level models with different variable combinations, Akaike's (AIC) values, degrees of freedom (df) and ΔAIC_i

Variables	df	AIC	ΔAIC_i
range size + economical use of wood + distance from protected areas + distance from urban centers	6	-73964.8	0
distance from urban centers + economical use of wood + range size	5	-73945.7	19.1
distance from protected areas + range size + economical use of wood	5	-73443.9	520.9

range size + economical use of wood	4	-73441.9	522.8
distance from urban centers + distance from protected areas + range size	5	-68190.4	5774.4
distance from protected areas + range size	4	-67966.9	5997.9
distance from urban centers + economical use of wood	4	-67230.0	6734.8
range size	3	-67127.8	6836.9
distance from protected areas + distance from urban centers + economical use of wood	5	-52125.1	21839.7
distance from urban centers + distance from protected areas	4	-52058.3	21906.5
distance from protected areas + economical use of wood	4	-51907.4	22057.4
distance from protected areas	3	-51845.6	22119.2
distance from urban centers + economical use of wood	4	-50633.0	23331.8
distance from urban centers	3	-50206.7	23758.1
economical use of wood	3	-50124.1	23840.7
only the intercept	2	-49652.6	24312.2

Table_S 9: Maximum height gap at the geographical level models with different variable combinations, Akaike's (AIC) values, degrees of freedom (df) and ΔAIC_i

Variables	df	AIC	ΔAIC_i
range size + economical use of wood + distance from protected areas + distance from urban centers	6	-136510.3	0
distance from urban centers + economical use of wood + range size	5	-136466.3	44.0
distance from protected areas + range size + economical use of wood	5	-136443.2	67.2
range size + economical use of wood	4	-136410.4	99.9
distance from protected areas + distance from urban centers + economical use of wood	5	-135857.9	652.4
distance from protected areas + economical use of wood	4	-135852.7	657.6
economical use of wood	3	-135567.6	942.7
distance from urban centers + economical use of wood	4	-135566.0	944.3

distance from urban centers + distance from protected areas	4	-132402.3	4108.0
distance from urban centers + distance from protected areas + range size	5	-132400.5	4109.8
distance from protected areas	3	-132399.6	4110.7
distance from protected areas + range size	4	-132398.5	4111.8
range size	3	-131472.7	5037.6
distance from urban centers + economical use of wood	4	-131471.7	5038.6
distance from urban centers	3	-131433.5	5076.8
only the intercept	2	-131429.9	5080.5

Table_S 10: Seed dry mass gap at the geographical level models with different variable combinations, Akaike's (AIC) values, degrees of freedom (df) and ΔAIC_i

Variables	df	AIC	ΔAIC_i
range size + economical use of wood + distance from protected areas + distance from urban centers	6	-70928.7	0
distance from urban centers + economical use of wood + range size	5	-70818.6	110.1
distance from protected areas + range size + economical use of wood	5	-70732.4	196.2
range size + economical use of wood	4	-70653.4	275.3
distance from protected areas + distance from urban centers + economical use of wood	5	-61235.2	9693.4
distance from protected areas + economical use of wood	4	-61143.3	9785.4
distance from urban centers + economical use of wood	4	-59894.7	11033.9
economical use of wood	3	-59600.7	11328.0
distance from urban centers + distance from protected areas + range size	5	-53269.0	17659.7
distance from protected areas + range size	4	-53265.0	17663.6
distance from urban centers + distance from protected areas	4	-52205.7	18722.9
distance from protected areas	3	-52181.3	18747.4
distance from urban centers + economical use of wood	4	-51328.6	19600.0
range size	3	-51310.8	19617.9

distance from urban centers	3	-49515.2	21413.5
only the intercept	2	-49232.9	21695.7

Table_S 11: Wood density gap at the geographical level models with different variable combinations, Akaike's (AIC) values, degrees of freedom (df) and ΔAIC_i

Variables	df	AIC	ΔAIC_i
range size + economical use of wood + distance from protected areas + distance from urban centers	6	-66972.7	0
distance from urban centers + economical use of wood + range size	5	-66665.0	307.6
distance from protected areas + range size + economical use of wood	5	-66665.0	307.6
range size + economical use of wood	4	-66657.9	314.8
distance from protected areas + distance from urban centers + economical use of wood	5	-58338.0	8634.6
distance from protected areas + economical use of wood	4	-58302.0	8670.64512
distance from urban centers + economical use of wood	4	-57311.2	9661.47259
economical use of wood	3	-57145.0	9827.7
distance from urban centers + distance from protected areas + range size	5	-47693.3	19279.4
distance from protected areas + range size	4	-47688.5	19284.2
distance from urban centers + distance from protected areas	4	-47059.5	19913.1
distance from protected areas	3	-47051.1	19921.60042
distance from urban centers + economical use of wood	4	-45870.0	21102.74201
range size	3	-45856.8	21115.9
distance from urban centers	3	-44651.11568	22321.6
only the intercept	2	-44462.1	22510.6