

# Vascular flora of the Legado das Águas, Reserva Votorantim, municipalities of Tapiraí, Miracatú and Juquiá, São Paulo, Brazil

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**Abstract:** We present a list of vascular plants found in Legado das Águas, Reserva Votorantim, a private reserve having an area of approximately 35,000 ha that spans the municipalities of Tapiraí, Miracatú, and Juquiá, in the state of São Paulo, Brazil. The reserve is part of a complex of state-protected areas including Alto Ribeira Touristic State Park, Intervalos State Park, Carlos Botelho State Park, Jurupará State Park, and Serra do Mar State Park. Together, these form an important and large area of continuous and well-preserved forest. Our study, which involved two main floristic surveys in March/April 2013 and April 2014, recorded 768 species, representing 131 families and 432 genera. The majority of species were angiosperms (619) representing 106 families and 370 genera. There were also two species of gymnosperms belonging to two genera in separate families; 147 species of ferns and lycophytes belonging to 23 families and 60 genera. In demonstrating the presence of almost 800 species of plants, of which 16 are threatened, our study highlights the importance of floristic surveys and the critical role of private protected areas in managing and preserving native flora.

**Key words:** Atlantic Forest biome; Serra do Mar; biodiversity; species list

## INTRODUCTION

The Brazilian Atlantic Forest biome is recognized as one of the five priority areas worldwide for conservation because of its high species richness, levels of endemic species, and loss of area due to anthropogenic activities (Myers et al. 2000; Mittermeier et al. 2004). While these 'hotspots' cover a mere 0.4% of the Earth's surface, they comprise about 20% of all plant species (Myers et al. 2000). However, this rich biodiversity is poorly documented even in national scientific collections (Giulietti et al. 2005). Although there are publications that focus on the state of current vegetation, authors disagree about the percentage of intact forest remaining, which may vary from 8% to 16% (Myers et al. 2000; Fundação SOS Mata Atlântica and INPE 2014; Ribeiro et al. 2009).

Historically the Atlantic Forest once covered more than 1,300,000 km<sup>2</sup> distributed through 17 states



**Figure 1.** Different habitats in the Reserva Votorantim. **A.** Riparian forest. **B.** Interior of the forest, along a trail. **C.** A road crossing the reserve. **D.** The forest edge.

along the coastal region of Brazil (Fundação S.O.S Mata Atlântica and INPE 2014). Although generally characterized as rainforest (Galindo-Leal and Câmara 2003), other authors emphasize both floristic and physiognomic heterogeneity due to climatic variation associated with broad ranges in latitude (ca. 27 degrees), longitude (from the coast to the interior), and altitude (sea level to ca. 2,700 m; Scarano 2002; Oliveira-Filho and Fontes 2000). Indeed, Atlantic Forest vegetation is diverse, characterized by trees up to 50 m high, numerous epiphytes, lianas, shrubs, ferns, and herbs, and with high rates of endemism (Mori et al. 1981).

Reportedly, 82% of the area of São Paulo state was once covered by Atlantic forest (Leitão-Filho 1994). Today, the remaining forests are mainly located in areas of rugged topography where anthropogenic activities are not widespread, such as the region of Serra do Mar (Leitão-Filho 1994). While numerous botanical studies have focused on the Atlantic Forest in São Paulo state (Salino and Almeida 2008; Lima et al. 2011), many of the extensive and important private areas have not been surveyed.

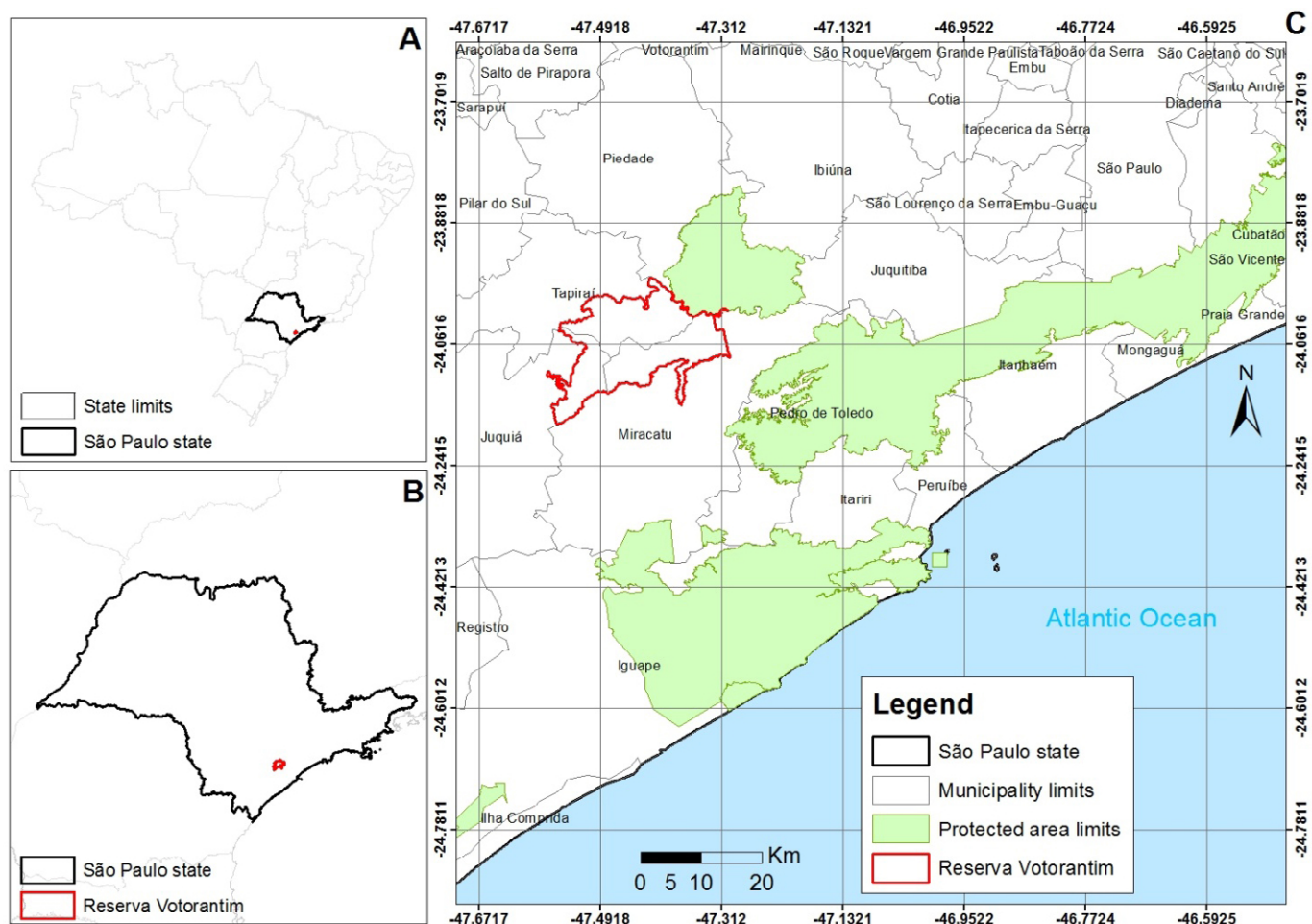
Thus, the main objective of our study is to document the vascular flora from Legado das Águas, Reserva Votorantim, hereafter called the Reserva Votorantim. We contributing botanical records to enhance information on biodiversity, plant life forms, species distribution; and compiling a species list of the Votorantim protected area for use by the three municipalities of Tapiraí, Miracatú, and Juquiá.

## MATERIALS AND METHODS

### Study site

The Reserva Votorantim covers an area of ca. 35,000 ha within the boundaries of the municipalities of Tapiraí, Miracatú and Juquiá (centroid at 24.03° S, 047.38° W, datum WGS84). The reserve consists of Atlantic Forest vegetation, mostly well preserved (Kronka et al. 2005; Figure 1), and was part of the original Atlantic Forest (Figure 2).

The climate of the region surrounding the Reserva Votorantim is classified as Cfa, subtropical and warm (Cepagri 2015) according to the classification of Köppen (1948). The soil is classified as Cambisol, which is



**Figure 2.** Location of the study area, Reserva Votorantim in Brazil (A) and São Paulo state (B). C. The Reserva Votorantim (red outline) and neighboring state parks (green).

characterized by the presence of an incipient or undeveloped B-horizon (IBGE 2007). Typically, the thickness of this subsoil horizon is between 10–50 cm, and 5% or more of its volume consists of the original rock, which is predominantly yellowish and reddish due to the segregation of iron oxides (IBGE 2007).

Today, the area is owned by the Votorantim Group, one of the largest industrial conglomerates in Latin America, a multi-industry company whose activities include mining, paper pulp production, steel manufacturing, and finance. The reserve was acquired by the Votorantim Group in two stages (1920 and 1950), for the purpose of harnessing water resources and energy. Since 2012, the area has been recognized as a nature reserve and conservation has become one of the company's primary goals. The Reserva Votorantim is the largest privately owned area of Atlantic Forest in Brazil. It increases the area of a complex of state-protected areas that include the Touristic State Park of Alto Ribeira, Intervalos State Park, Carlos Botelho State Park, Jurupará State Park, and Serra do Mar State Park. Together with Reserva Votorantim, these form an important and large area of continuous and well-preserved forest (Figure 2).

### Data collection

Our study consisted of two main periods of fieldwork. The first 15-day expedition took place between March and April 2013 during the Field Taxonomy Course headed Escola Superior de Agricultura – Luiz de Queiroz (ESALQ/USP), Universidade de São Paulo (IB/USP), and Universidade Estadual de Campinas (Unicamp). The second 15-day expedition was carried out in April 2014.

We extensively sampled along transects throughout the whole reserve in order to document and collect all vascular plant life forms, including ferns and lycophytes. We deposited the majority of our specimens in ESA, UEC, SPSE, BHCB, SPF and RB herbaria (acronyms according to Thiers 2016). The first set of duplicates was deposited in the ESA herbarium, available at INCT virtual herbarium (<http://inct.splink.org.br/>). In the case of specimens for species *Araucaria angustifolia* (Bertol.) Kuntze, no voucher specimens were collected due to challenges of collecting in the field, coupled with the ease of identifying the species visually.

### Data analysis

Species were identified by referring to expert literature and identification keys, comparing material

in herbaria, and consulting specialists. The classification of species follows APG III (2009) for angiosperms, Smith et al. (2008), with modifications proposed by Rothfels et al. (2012), for ferns, and Øllgaard (1992, 2012) for lycophytes. Species names used are those currently accepted by the List of Species of the Brazilian Flora (LSBF 2015), which also served as a criterion for doubtful circumscriptions. For current information on threatened species we followed the state and national lists of threatened flora (Estado de São Paulo 2004; CNCFLORA 2016).

## RESULTS

We recorded 768 species from the Reserva Votorantim, representing 131 families and 432 genera (Table 1; Table 2). Of these, 619 species were angiosperms (80.5%) and included 106 families and 370 genera. Two species were gymnosperms belonging to two genera in separate families (Table 1). There were 147 species (19.1%) of ferns and lycophytes representing 23 families and 60 genera (Table 2).

Out of the 106 families of angiosperms, the following 10 families represented 48% of the total number of

species sampled: Rubiaceae (47 species), Fabaceae (41 species), Orchidaceae (36 species), Asteraceae (31 species), Melastomataceae (30 species), Myrtaceae (29 species), Poaceae (26 species), Lauraceae (21 species), Piperaceae (21 species), and Cyperaceae (19 species). With 15 species each, *Piper* (Piperaceae) and *Psychotria* (Rubiaceae) were found to be the richest genera, followed by *Miconia* (Melastomataceae) with ten species; *Begonia* (Begoniaceae) with nine species, and *Ocotea* (Lauraceae) and *Eugenia* (Myrtaceae) with eight species each.

Nine of the angiosperms and one gymnosperm species are considered threatened (Estado de São Paulo 2004; CNCFLORA 2016; Table 1).

Of all ferns and lycophytes collected, Polypodiaceae were the most prevalent with 23 species, followed by Pteridaceae (18 species) and Dryopteridaceae (17 species). With 11 species, *Asplenium* (Aspleniaceae) was the richest genus among the ferns and lycophytes, followed by *Thelypteris* (Thelypteridaceae) (10 species), and *Blechnum* (Blechnaceae) and *Cyathea* (Cyatheaceae) (7 species each).

Six species of the ferns and lycophytes are considered threatened (Estado de São Paulo 2004; Table 2).

**Table 1.** Families and species of angiosperms and gymnosperms found in the Reserva Votorantim. Vouchers are represented by collector number (\* species observed but not collected are indicated by an asterisk). Species' status (EN, Endangered; VU, Vulnerable) follow Estado de São Paulo (2004) and CNCFLORA (2016).

| Family/Species  | Voucher       | Status | Family/Species  | Voucher       | Status |
|---|---------------|--------|---|---------------|--------|
| <b>Acanthaceae</b>                                      |               |        | <b>Araliaceae</b>                                     |               |        |
| <i>Aphelandra chamissoniana</i> Nees                    | 999 Kuntz     |        | <i>Anthurium sellowianum</i> Kunth                    | 1212 Polisel  |        |
| <i>Aphelandra ornata</i> (Nees) T.Anderson              | 1049 Colletta |        | <i>Monstera adansonii</i> Schott                      | 90 Virillo    |        |
| <i>Hygrophila costata</i> Nees                          | 980 Kuntz     |        | <i>Philodendron cordatum</i> Kunth ex Schott          | 901 Kuntz     |        |
| <i>Justicia carnea</i> Lindl.                           | 1166 Polisel  |        | <i>Philodendron ochrostemon</i> Schott                | 890 Kuntz     |        |
| <i>Mendoncia puberula</i> Mart.                         | 1054 Kuntz    |        | <i>Philodendron propinquum</i> Schott                 | 918 Kuntz     |        |
| <i>Mendoncia velloziana</i> Mart.                       | 1220 Polisel  |        | <i>Xanthosoma aureum</i> E.G.Gonç.                    | 1121 Colletta |        |
| <i>Staurogyne alba</i> Braz & R.Monteiro                | 973 Delfini   |        | <b>Araucariaceae</b>                                  |               |        |
| <i>Staurogyne sylvatica</i> Lindau ex Braz & R.Monteiro | 35016 Souza   |        | <i>Araucaria angustifolia</i> (Bertol.) Kuntze        | *             | EN     |
| <b>Amaranthaceae</b>                                    |               |        | <b>Arecaceae</b>                                      |               |        |
| <i>Celosia grandifolia</i> Moq.                         | 1007 Delfini  |        | <i>Astrocaryum aculeatissimum</i> (Schott) Burret     | 10 Bettinardi |        |
| <b>Anacardiaceae</b>                                    |               |        | <i>Bactris setosa</i> Mart.                           | 1916 Flores   |        |
| <i>Tapirira guianensis</i> Aubl.                        | 1155 Colletta |        | <i>Euterpe edulis</i> Mart.                           | 990 Kuntz     | VU     |
| <b>Annoaceae</b>  |               |        | <i>Geonoma elegans</i> Mart.                          | 1118 Colletta |        |
| <i>Annona cacans</i> Warm.                              | 1008 Colletta |        | <i>Geonoma pohliana</i> Mart.                         | 1125 Polisel  |        |
| <i>Annona dolabripetala</i> Raddi                       | 850 Delfini   |        | <i>Geonoma schottiana</i> Mart.                       | 1209 Polisel  |        |
| <i>Annona sylvatica</i> A.St.-Hil.                      | 1182 Polisel  |        | <i>Lytocaryum hoehnei</i> (Burret) Toledo             | 1137 Colletta |        |
| <i>Guatteria australis</i> A.St.-Hil.                   | 951 Kuntz     |        | <b>Asteraceae</b>                                     |               |        |
| <i>Xylopia brasiliensis</i> Spreng.                     | 1008 Kuntz    |        | <i>Achyrocline alata</i> (Kunth) DC.                  | 34956 Souza   |        |
| <b>Apiaceae</b>   |               |        | <i>Achyrocline vargasiana</i> DC.                     | 1147 Polisel  |        |
| <i>Centella asiatica</i> (L.) Urb.                      | 29 Virillo    |        | <i>Acmella uliginosa</i> (Sw.) Cass.                  | 870 Cabral    |        |
| <b>Apocynaceae</b>                                      |               |        | <i>Adenostemma brasilianum</i> (Pers.) Cass.          | 34979 Souza   |        |
| <i>Asclepias curassavica</i> L.                         | 1862 Flores   |        | <i>Ageratum conyzoides</i> L.                         | 989 Kuntz     |        |
| <i>Aspidosperma tomentosum</i> Mart.                    | 223 Virillo   |        | <i>Baccharis dracunculifolia</i> DC.                  | 66 Virillo    |        |
| <i>Aspidosperma olivaceum</i> Müll.Arg.                 | 141 Virillo   |        | <i>Baccharis microdonta</i> DC.                       | 60 Virillo    |        |
| <i>Malouetia cestroides</i> (Nees ex Mart.) Müll.Arg.   | 34924 Souza   |        | <i>Baccharis semiserrata</i> DC.                      | 1001 Kuntz    |        |
| <i>Mandevilla unifloris</i> (Vell.) K.Schum.            | 117 Virillo   |        | <i>Baccharis crispa</i> Spreng.                       | 65 Virillo    |        |
| <i>Peltastes peltatus</i> (Vell.) Woodson               | 119 Virillo   |        | <i>Bidens pilosa</i> L.                               | 986 Delfini   |        |
| <i>Prestonia coalita</i> (Vell.) Woodson                | 1048 Kuntz    |        | <i>Chaptalia nutans</i> (L.) Pol.                     | 13 Virillo    |        |
| <b>Aquifoliaceae</b>                                    |               |        | <i>Chromolaena laevigata</i> (Lam.) R.M.King & H.Rob. | 59 Virillo    |        |
| <i>Illex theezans</i> Mart. ex Reissek                  | 212 Virillo   |        | <i>Chromolaena squallida</i> (DC.) R.M.King & H.Rob.  | 61 Virillo    |        |
| <b>Araceae</b>  |               |        |   |               |        |
| <i>Anthurium gaudichaudianum</i> Kunth                  | 1821 Flores   |        |   |               |        |
| <i>Anthurium pentaphyllum</i> (Aubl.) G.Don             | 933 Kuntz     |        |   |               |        |

Continued

Table 1. Continued.

| Family/Species  | Voucher       | Status | Family/Species   | Voucher       | Status |
|---|---------------|--------|--|---------------|--------|
| <i>Conyza canadensis</i> (L.) Cronquist                       | 1880 Flores   |        | <i>Rhipsalis teres</i> (Vell.) Steud.                      | 1034 Kuntz    |        |
| <i>Cyrtocymura scorpioides</i> (Lam.) H.Rob.                  | 970 Delfini   |        | <b>Campanulaceae</b>                                       |               |        |
| <i>Eclipta prostrata</i> (L.) L.                              | 996 Delfini   |        | <i>Hippobroma longiflora</i> (L.) G.Don                    | 963 Delfini   |        |
| <i>Elephantopus mollis</i> Kunth                              | 39 Virillo    |        | <i>Siphocampylus convolvulaceus</i> (Cham.) G.Don          | 1010 Kuntz    |        |
| <i>Emilia fosbergii</i> Nicolson                              | 981 Delfini   |        | <i>Siphocampylus longipedunculatus</i> Pohl                | 924 Kuntz     |        |
| <i>Jaegeria hirta</i> (Lag.) Less.                            | 5 Virillo     |        | <b>Cannabaceae</b>   |               |        |
| <i>Jungia selowii</i> Less.                                   | 990 Delfini   |        | <i>Celtis iguanaea</i> (Jacq.) Sarg.                       | 1000 Kuntz    |        |
| <i>Leptostelma maximum</i> D.Don                              | 1012 Delfini  |        | <i>Trema micrantha</i> (L.) Blume                          | 840 Delfini   |        |
| <i>Mikania micrantha</i> Kunth                                | 1807 Flores   |        | <b>Cardiopteridaceae</b>                                   |               |        |
| <i>Mikania trinervis</i> Hook. & Arn.                         | 1012 Kuntz    |        | <i>Citronella paniculata</i> (Mart.) R.A.Howard            | 980 Colletta  |        |
| <i>Orthopappus angustifolius</i> (Sw.) Gleason                | 956 Delfini   |        | <b>Celastraceae</b>  |               |        |
| <i>Piptocarpha oblonga</i> (Gardner) Baker                    | 1190 Polisel  |        | <i>Maytenus aquifolia</i> Mart.                            | 35005 Souza   |        |
| <i>Pterocaulon alopecuroides</i> (Lam.) DC.                   | 919 Delfini   |        | <i>Maytenus obtusifolia</i> Mart.                          | 203 Virillo   |        |
| <i>Solidago chilensis</i> Meyen                               | 44 Virillo    |        | <i>Maytenus schumanniana</i> Loes.                         | 1038 Colletta |        |
| <i>Sphagnetica trilobata</i> (L.) Pruski                      | 951 Delfini   |        | <i>Salacia elliptica</i> (Mart. ex Schult.) G.Don          | 1046 Colletta |        |
| <i>Vernonanthura beyrichii</i> (Less.) H.Rob.                 | 937 Delfini   |        | <i>Salacia grandifolia</i> (Mart. ex Schult.) G.Don        | 931 Cabral    |        |
| <i>Vernonanthura divaricata</i> (Spreng.) H.Rob.              | 233 Virillo   |        | <b>Chrysobalanaceae</b>                                    |               |        |
| <i>Vernonanthura discolor</i> (Spreng.) H.Rob.                | 180 Virillo   |        | <i>Couepia grandiflora</i> (Mart. & Zucc.) Benth.          | 1101 Colletta |        |
| <b>Balsaminaceae</b>  |               |        | <i>Hirtella hebeclada</i> Moric. ex DC.                    | 1051 Colletta |        |
| <i>Impatiens walleriana</i> Hook. f.                          | 931 Delfini   |        | <i>Licania kunthiana</i> Hook.f.                           | 1102 Colletta |        |
| <b>Begoniaceae</b>  |               |        | <i>Parinari excelsa</i> Sabine                             | 992 Colletta  |        |
| <i>Begonia coccinea</i> Hook.                                 | 975 Delfini   | EN     | <b>Clethraceae</b>   |               |        |
| <i>Begonia convolvulacea</i> (Klotzsch) A.DC.                 | 110 Virillo   |        | <i>Clethra scabra</i> Pers.                                | 1069 Polisel  |        |
| <i>Begonia cucullata</i> Willd.                               | 1058 Kuntz    |        | <b>Clusiaceae</b>  |               |        |
| <i>Begonia digitata</i> Raddi                                 | 950 Delfini   |        | <i>Clusia criuva</i> Cambess.                              | 1000 Colletta |        |
| <i>Begonia fischeri</i> Schrank                               | 823 Delfini   |        | <i>Garcinia gardneriana</i> (Planch. & Triana) Zappi       | 1050 Colletta |        |
| <i>Begonia fruticosa</i> (Klotzsch) A.DC.                     | 861 Delfini   |        | <b>Combretaceae</b>  |               |        |
| <i>Begonia pulchella</i> Raddi                                | ESA 124797    |        | <i>Terminalia januariensis</i> DC.                         | 207 Virillo   |        |
| <i>Begonia radicans</i> Vell.                                 | 859 Delfini   |        | <b>Commelinaceae</b>                                       |               |        |
| <i>Begonia stenophylla</i> A.DC.                              | 896 Kuntz     |        | <i>Commelina diffusa</i> Burm.f.                           | 961 Delfini   |        |
| <b>Bignoniaceae</b>   |               |        | <i>Commelina obliqua</i> Vahl                              | 982 Kuntz     |        |
| <i>Adenocalymma hatschbachii</i> A.H.Gentry                   | 93 Virillo    |        | <i>Dichorisandra paranaensis</i> D.Maia et al.             | 983 Kuntz     |        |
| <i>Anemopaegma prostratum</i> DC.                             | 1076 Colletta |        | <i>Dichorisandra pubescens</i> Mart. ex Schult & Schult.f. | 825 Cabral    |        |
| <i>Handroanthus chrysotrichus</i> (Mart. ex DC.) Mattos       | 894 Delfini   |        | <i>Tradescantia zanoniana</i> (L.) Sw.                     | 873 Cabral    |        |
| <i>Handroanthus heptaphyllus</i> (Vell.) Mattos               | 1160 Colletta |        | <i>Tripogandra diuretica</i> (Mart.) Handlos               | 1135 Polisel  |        |
| <b>Boraginaceae</b>   |               |        | <b>Convolvulaceae</b>                                      |               |        |
| <i>Cordia sellowiana</i> Cham.                                | 1092 Colletta |        | <i>Ipomoea ramosissima</i> (Poir.) Choisy                  | 1025 Kuntz    |        |
| <i>Cordia silvestris</i> Fresen.                              | 39 Bettinardi |        | <i>Jacquemontia holosericea</i> (Weinm.) O'Donell          | 866 Delfini   |        |
| <i>Varronia polycephala</i> Lam.                              | 995 Delfini   |        | <i>Jacquemontia uleana</i> Hallier f.                      | 1806 Flores   |        |
| <i>Tournefortia bicolor</i> Sw.                               | 1060 Kuntz    |        | <i>Merremia dissecta</i> (Jacq.) Hallier f.                | 893 Kuntz     |        |
| <b>Bromeliaceae</b>   |               |        | <b>Costaceae</b>   |               |        |
| <i>Aechmea gracilis</i> Lindm.                                | 1022 Kuntz    |        | <i>Costus spiralis</i> (Jacq.) Roscoe                      | 947 Delfini   |        |
| <i>Canistropsis billbergioides</i> (Schult. & Schult.f.) Leme | 99 Virillo    |        | <b>Cucurbitaceae</b>                                       |               |        |
| <i>Canistropsis burchellii</i> (Baker) Leme                   | 916 Cabral    |        | <i>Fevillea passiflora</i> Vell.                           | 1219 Polisel  |        |
| <i>Nidularium innocentii</i> Lem.                             | 928 Cabral    |        | <i>Melothria pendula</i> L.                                | 1050 Kuntz    |        |
| <i>Nidularium procerum</i> Lindm.                             | 891 Kuntz     |        | <i>Wilbrandia hibiscoides</i> Silva Manso                  | 911 Cabral    |        |
| <i>Racinaea spiculosa</i> (Griseb.) M.A.Spencer & L.B.Sm.     | 1222 Polisel  |        | <b>Cunoniaceae</b>   |               |        |
| <i>Tillandsia stricta</i> Sol.                                | 930 Kuntz     |        | <i>Lamanonia ternata</i> Vell.                             | 896 Delfini   |        |
| <i>Tillandsia tenuifolia</i> L.                               | 926 Cabral    |        | <b>Cyclanthaceae</b>                                       |               |        |
| <i>Tillandsia usneoides</i> (L.) L.                           | 1223 Polisel  |        | <i>Asplundia polymera</i> (Hand.-Mazz.) Harling            | 904 Kuntz     |        |
| <i>Vriesea carinata</i> Wawra                                 | 821 Delfini   |        | <b>Cyperaceae</b>  |               |        |
| <i>Vriesea ensiformis</i> (Vell.) Beer                        | 854 Delfini   |        | <i>Becquerelia muricata</i> Nees                           | 1877 Flores   |        |
| <i>Vriesea incurvata</i> Gaudich.                             | 869 Delfini   |        | <i>Bulbostylis capillaris</i> (L.) C.B.Clarke              | 944 Delfini   |        |
| <i>Vriesea platynema</i> Gaudich.                             | 913 Kuntz     |        | <i>Cyperus distans</i> L.                                  | 2 Virillo     |        |
| <i>Vriesea rodigasiana</i> E.Morren                           | 907 Kuntz     |        | <i>Cyperus laxus</i> Lam.                                  | 999 Delfini   |        |
| <i>Vriesea scalaris</i> E.Morren                              | 91 Virillo    |        | <i>Cyperus luzulae</i> (L.) Retz.                          | 1107 Polisel  |        |
| <i>Vriesea unilateralis</i> (Baker) Mez                       | 922 Cabral    |        | <i>Cyperus meyenianus</i> Kunth                            | 1108 Polisel  |        |
| <i>Wittrockia cyathiformis</i> (Vell.) Leme                   | 923 Kuntz     |        | <i>Fimbristylis dichotoma</i> (L.) Vahl                    | 982 Delfini   |        |
| <b>Burseraceae</b>  |               |        | <i>Fimbristylis miliacea</i> (L.) Vahl                     | 988 Delfini   |        |
| <i>Protium heptaphyllum</i> (Aubl.) Marchand                  | ESA 124897    |        | <i>Hypolytrum schraderianum</i> Nees                       | 1118 Polisel  |        |
| <i>Protium kleinii</i> Cuatrec.                               | 1088 Colletta |        | <i>Pleurostachys distichophylla</i> (Boeckeler) C.B.Clarke | 950 Cabral    |        |
| <b>Cactaceae</b>  |               |        | <i>Pleurostachys gaudichaudii</i> Brongn.                  | 829 Cabral    |        |
| <i>Hatiora salicornioides</i> (Haw.) Britton & Rose           | 1195 Polisel  |        | <i>Pleurostachys urvillei</i> Brongn.                      | 827 Cabral    |        |
| <i>Lepismium houletianum</i> (Lem.) Barthlott                 | 1204 Polisel  |        | <i>Rhynchospora polyantha</i> Steud.                       | 858 Cabral    |        |
| <i>Rhipsalis cereuscula</i> Haw.                              | 1081 Colletta |        | <i>Rhynchospora pubera</i> (Vahl) Boeckeler                | 1868 Flores   |        |
| <i>Rhipsalis elliptica</i> G.Lindb. ex K.Schum.               | 1205 Polisel  |        | <i>Scleria distans</i> Poir.                               | 1011 Delfini  |        |
| <i>Rhipsalis pachyptera</i> Pfeiff.                           | 1822 Flores   |        | <i>Scleria hirtella</i> Sw.                                | 859 Cabral    |        |
| <i>Rhipsalis paradoxa</i> (Salm-Dyck ex Pfeiff.) Salm-Dyck    | 1201 Polisel  |        | <i>Scleria latifolia</i> Sw.                               | 822 Delfini   |        |

Continued

Table 1. Continued.

| Family/Species  | Voucher       | Status | Family/Species                                     | Voucher       | Status |
|---|---------------|--------|--|---------------|--------|
| <i>Scleria microcarpa</i> Nees ex Kunth                         | 1881 Flores   |        | <i>Zornia curvata</i> Mohlenbr.                    | 865 Cabral    |        |
| <i>Scleria gaertneri</i> Raddi                                  | 867 Delfini   |        | <b>Gentianaceae</b>                                |               |        |
| <b>Dilleniaceae</b>   |               |        | <i>Voyria aphylla</i> (Jacq.) Pers.                | 942 Delfini   |        |
| <i>Davilla rugosa</i> Poir.                                     | 35002 Souza   |        | <b>Gesneriaceae</b>                                |               |        |
| <i>Dolioscarpus dentatus</i> (Aubl.) Standl.                    | 864 Delfini   |        | <i>Besleria longimucronata</i> Hoehne              | 939 Delfini   |        |
| <b>Dioscoreaceae</b>  |               |        | <i>Codonanthe devosiana</i> Lem.                   | 906 Cabral    |        |
| <i>Dioscorea dodecaneura</i> Vell.                              | 1080 Colletta |        | <i>Nematanthus bradei</i> (Handro) Chautems        | 1051 Kuntz    |        |
| <b>Droseraceae</b>  |               |        | <i>Nematanthus fissus</i> (Vell.) L.E.Skog         | 895 Kuntz     |        |
| <i>Drosera communis</i> A.St.-Hil.                              | 930 Delfini   |        | <i>Nematanthus fritschii</i> Hoehne                | 858 Delfini   |        |
| <b>Elaeocarpaceae</b>   |               |        | <i>Nematanthus maculatus</i> (Fritsch) Wiehler     | 913 Cabral    |        |
| <i>Sloanea guianensis</i> (Aubl.) Benth.                        | 35011 Souza   |        | <i>Nematanthus striatus</i> (Handro) Chautems      | 1820 Flores   |        |
| <i>Sloanea hirsuta</i> (Schott) Planch. ex Benth.               | 1131 Colletta |        | <i>Nematanthus villosus</i> (Hanst.) Wiehler       | 908 Kuntz     |        |
| <b>Euphorbiaceae</b>  |               |        | <b>Gratiolaceae</b>                                |               |        |
| <i>Alchornea glandulosa</i> Poepp. & Endl.                      | 34959 Souza   |        | <i>Scoparia dulcis</i> L.                          | 979 Kuntz     |        |
| <i>Alchornea sidifolia</i> Müll.Arg.                            | 1064 Colletta |        | <i>Stemodia vandelloides</i> (Benth.) V.C.Souza    | 960 Delfini   |        |
| <i>Alchornea triplinervia</i> (Spreng.) Müll.Arg.               | 1028 Colletta |        | <b>Heliconiaceae</b>                               |               |        |
| <i>Aparisthium cordatum</i> (A.Juss.) Baill.                    | 34928 Souza   |        | <i>Heliconia farinosa</i> Raddi                    | 976 Colletta  |        |
| <i>Croton lundianus</i> (Didr.) Müll.Arg.                       | 928 Delfini   |        | <i>Heliconia spathocircinata</i> Aristeg.          | 841 Cabral    |        |
| <i>Dalechampia scandens</i> L.                                  | 1870 Flores   |        | <b>Humiriaceae</b>                                 |               |        |
| <i>Euphorbia hyssopifolia</i> L.                                | 932 Delfini   |        | <i>Vantanea compacta</i> (Schnizl.) Cuatrec.       | 217 Virillo   |        |
| <i>Hieronyma alchorneoides</i> Allemão                          | 192 Virillo   |        | <b>Hypoxidaceae</b>                                |               |        |
| <i>Manihot inflata</i> Mull. & Arg.                             | 1394 Colletta |        | <i>Hypoxis decumbens</i> L.                        | 14 Virillo    |        |
| <i>Maprounea guianensis</i> Aubl.                               | 1925 Flores   |        | <b>Iridaceae</b>                                   |               |        |
| <i>Pausandra morisiana</i> (Casar.) Radlk.                      | 885 Cabral    |        | <i>Sisyrinchium</i> sp.                            | 987 Kuntz     |        |
| <i>Sapium glandulosum</i> (L.) Morong                           | 1064 Polisel  |        | <b>Lacistemataceae</b>                             |               |        |
| <i>Tetrorchidium rubrivenium</i> Poepp.                         | 1071 Polisel  |        | <i>Lacistema hasslerianum</i> Chodat               | 1104 Polisel  |        |
| <b>Fabaceae</b>   |               |        | <b>Lamiaceae</b>                                   |               |        |
| <i>Albizia polycephala</i> (Benth.) Killip ex Record            | 945 Kuntz     |        | <i>Aegiphila integrifolia</i> (Jacq.) Moldenke     | 1074 Colletta |        |
| <i>Andira fraxinifolia</i> Benth.                               | 999 Colletta  |        | <i>Aegiphila obducta</i> Vell.                     | 1218 Polisel  |        |
| <i>Apuleia leiocarpa</i> (Vogel) J.F.Macbr.                     | 34902 Souza   | VU     | <i>Hyptis atrorubens</i> Poit.                     | 23 Virillo    |        |
| <i>Calliandra</i> sp.   | 85 Virillo    |        | <i>Hyptis lappulacea</i> Mart. ex Benth.           | 800 Delfini   |        |
| <i>Copaifera trapezifolia</i> Hayne                             | 979 Colletta  |        | <i>Hyptis sidifolia</i> (L'Hér.) Briq.             | 1215 Polisel  |        |
| <i>Crotalaria lanceolata</i> E.Mey.                             | 1146 Polisel  |        | <i>Marsypianthes chamaedrys</i> (Vahl) Kuntze      | 1139 Polisel  |        |
| <i>Dahlstedtia pinnata</i> (Benth.) Malme                       | 34917 Souza   |        | <i>Ocimum campechianum</i> Mill.                   | 975 Kuntz     |        |
| <i>Dalbergia frutescens</i> (Vell.) Britton                     | 821 Cabral    |        | <i>Peltodon radicans</i> Pohl                      | 30 Virillo    |        |
| <i>Desmodium adscendens</i> (Sw.) DC.                           | 6 Virillo     |        | <i>Salvia splendens</i> Sellow ex Roem. & Schult.  | 34986 Souza   |        |
| <i>Desmodium barbatum</i> (L.) Benth.                           | 985 Delfini   |        | <i>Scutellaria uliginosa</i> A.St.-Hil. ex Benth.  | 909 Delfini   |        |
| <i>Desmodium incanum</i> DC.                                    | 7 Virillo     |        | <i>Vitex sellowiana</i> Cham.                      | 991 Colletta  |        |
| <i>Desmodium uncinatum</i> (Jacq.) DC.                          | 1859 Flores   |        | <b>Lauraceae</b>                                   |               |        |
| <i>Hymenaea courbaril</i> L.                                    | 1133 Colletta |        | <i>Aiouea saligna</i> Meisn.                       | 900 Delfini   |        |
| <i>Hymenolobium janeirensis</i> Kuhlm.                          | 34929 Souza   |        | <i>Aniba firmula</i> (Nees & Mart.) Mez            | 34962 Souza   |        |
| <i>Inga capitata</i> Desv.                                      | 897 Delfini   |        | <i>Cinnamomum pseudoglaziovii</i> Lorea-Hern.      | 131 Virillo   |        |
| <i>Inga edulis</i> Mart.  | 1933 Flores   |        | <i>Cryptocarya aschersoniana</i> Mez               | 214 Virillo   |        |
| <i>Inga edwallii</i> (Harms) T.D.Penn.                          | 1087 Colletta |        | <i>Cryptocarya mandioccana</i> Meisn.              | 1037 Colletta |        |
| <i>Inga marginata</i> Willd.                                    | 827 Delfini   |        | <i>Cryptocarya saligna</i> Mez                     | 1152 Colletta |        |
| <i>Inga sellowiana</i> Benth.                                   | 1086 Colletta |        | <i>Cryptocarya moschata</i> Nees & Mart.           | 1804 Flores   |        |
| <i>Inga sessilis</i> (Vell.) Mart.                              | 843 Delfini   |        | <i>Endlicheria paniculata</i> (Spreng.) J.F.Macbr. | 1143 Colletta |        |
| <i>Machaerium cantarellianum</i> Hoehne                         | 898 Cabral    |        | <i>Nectandra leucantha</i> Nees                    | 123 Virillo   |        |
| <i>Machaerium hirtum</i> (Vell.) Stelfeld                       | 34975 Souza   |        | <i>Nectandra membranacea</i> (Sw.) Griseb.         | 34978 Souza   |        |
| <i>Machaerium nyctitans</i> (Vell.) Benth.                      | 1079 Colletta |        | <i>Nectandra oppositifolia</i> Nees                | 34909 Souza   |        |
| <i>Machaerium stipitatum</i> Vogel                              | ESA 125250    |        | <i>Nectandra psammophila</i> Nees                  | 227 Virillo   |        |
| <i>Machaerium villosum</i> Vogel                                | 1035 Colletta |        | <i>Ocotea aciphylla</i> (Nees & Mart.) Mez         | 1109 Colletta |        |
| <i>Mimosa pudica</i> L.   | 871 Cabral    |        | <i>Ocotea brachybotrya</i> (Meisn.) Mez            | 939 Kuntz     |        |
| <i>Mucuna urens</i> (L.) Medik.                                 | 104 Virillo   |        | <i>Ocotea daphnifolia</i> (Meisn.) Mez             | 7 Bettinardi  |        |
| <i>Ormosia arborea</i> (Vell.) Harms                            | 1435 Colletta |        | <i>Ocotea dispersa</i> (Nees & Mart.) Mez          | 833 Delfini   |        |
| <i>Phanera microstachya</i> (Raddi) L.P.Queiroz                 | 938a Cabral   |        | <i>Ocotea elegans</i> Mez                          | 898 Delfini   |        |
| <i>Phanera splendens</i> (Kunth) Vaz                            | 35028 Souza   |        | <i>Ocotea odorifera</i> (Vell.) Rohwer             | 1145 Colletta |        |
| <i>Piptadenia gonoacantha</i> (Mart.) J.F.Macbr.                | 34904 Souza   |        | <i>Ocotea teleiandra</i> (Meisn.) Mez              | 1097 Polisel  |        |
| <i>Piptadenia paniculata</i> Benth.                             | 55 Bettinardi |        | <i>Ocotea venulosa</i> (Nees) Baitello             | 1082 Colletta |        |
| <i>Pseudopiptadenia warmingii</i> (Benth.) G.P.Lewis & M.P.Lima | 66 Bettinardi |        | <i>Persea willdenovii</i> Kosterm.                 | 34949 Souza   |        |
| <i>Pterocarpus rohrii</i> Vahl                                  | 1144 Colletta |        | <b>Lecythidaceae</b>                               |               |        |
| <i>Schizolobium parahyba</i> (Vell.) Blake                      | ESA 125154    |        | <i>Cariniana estrellensis</i> (Raddi) Kuntze       | 56 Bettinardi |        |
| <i>Senna cernua</i> (Balb.) H.S.Irwin & Barneby                 | 25 Bettinardi |        | <b>Linderniaceae</b>                               |               |        |
| <i>Senna multijuga</i> (Rich.) H.S.Irwin & Barneby              | 838 Delfini   |        | <i>Lindernia crustacea</i> (L.) F.Muell.           | 866 Cabral    |        |
| <i>Tachigali denudata</i> (Vogel) Oliveira-Filho                | 1068 Kuntz    |        | <i>Lindernia diffusa</i> (L.) Wettst.              | 868 Cabral    |        |
| <i>Vatairea heteroptera</i> (Allemão) Ducke                     | 1007 Colletta |        | <i>Torenia thouarsii</i> (Cham. & Schltdl.) Kuntze | 1152 Polisel  |        |
| <i>Zollernia ilicifolia</i> (Brongn.) Vogel                     | 35004 Souza   |        | <b>Loganiaceae</b>                                 |               |        |
|   |               |        | <i>Spigelia beyrichiana</i> Cham. & Schltdl.       | 977 Kuntz     |        |

Continued

Table 1. Continued.

| Family/Species  | Voucher       | Status | Family/Species  | Voucher       | Status |
|---|---------------|--------|---|---------------|--------|
| <i>Spigelia flemmingiana</i> Cham. & Schtdl.                  | 1115 Colletta |        | <b>MONIMIACEAE</b>  |               |        |
| <i>Spigelia pusilla</i> Mart.                                 | 923 Delfini   |        | <i>Mollinedia schottiana</i> (Spreng.) Perkins                    | 1835 Flores   |        |
| <i>Strychnos acuta</i> Progel                                 | 1007 Kuntz    |        | <b>MORACEAE</b>   |               |        |
| <i>Strychnos trinervis</i> (Vell.) Mart.                      | 1930 Flores   |        | <i>Brosimum glaziovii</i> Taub.                                   | 1838 Flores   |        |
| <b>Loranthaceae</b>   |               |        | <i>Brosimum guianense</i> (Aubl.) Huber                           | 1036 Colletta |        |
| <i>Struthanthus flexicaulis</i> Mart.                         | 1035 Kuntz    |        | <i>Brosimum lactescens</i> (S.Moore) C.C.Berg                     | 1062 Colletta |        |
| <b>Lythraceae</b>   |               |        | <i>Dorstenia hirta</i> Desv.                                      | 913 Delfini   |        |
| <i>Cuphea calophylla</i> Cham. & Schtdl.                      | 869 Cabral    |        | <i>Ficus eximia</i> Schott  | 1138 Colletta |        |
| <b>Magnoliaceae</b>   |               |        | <i>Ficus gomelleira</i> Kunth                                     | 1012 Colletta |        |
| <i>Magnolia ovata</i> (A.St.-Hil.) Spreng                     | 34973 Souza   |        | <i>Ficus adhatodifolia</i> Schott ex Spreng.                      | 23 Bettinardi |        |
| <b>Malpighiaceae</b>  |               |        | <i>Ficus obtusiuscula</i> (Miq.) Miq.                             | 946 Kuntz     |        |
| <i>Bunchosia maritima</i> (Vell.) J.F.Macbr.                  | 897 Cabral    |        | <i>Ficus pulchella</i> Schott                                     | 183 Virillo   |        |
| <i>Nidenzuella glabra</i> (Spreng.) W.R.Anderson              | 1922 Flores   |        | <i>Sorocea bonplandii</i> (Baill.) W.C.Burger et al.              | 1839 Flores   |        |
| <i>Stigmaphyllon puberulum</i> Griseb.                        | 1191 Polisel  |        | <b>MYRISTICACEAE</b>  |               |        |
| <i>Stigmaphyllon tomentosum</i> A.Juss.                       | 35052 Souza   |        | <i>Virola bicuhyba</i> (Schott ex Spreng.) Warb.                  | 1057 Polisel  | EN     |
| <b>Malvaceae</b>  |               |        | <i>Virola gardneri</i> (A.DC.) Warb.                              | 1158 Colletta |        |
| <i>Ceiba speciosa</i> (A.St.-Hil.) Ravenna                    | 193 Virillo   |        | <b>MYRTACEAE</b>  |               |        |
| <i>Pavonia nemoralis</i> A.St.-Hil.                           | 36 Virillo    |        | <i>Calyptanthes concinna</i> DC.                                  | 1098 Colletta |        |
| <i>Pseudobombax</i> sp.                                       | 34974 Souza   |        | <i>Calyptanthes grandifolia</i> O.Berg                            | 1032 Colletta |        |
| <i>Sida planicaulis</i> Cav.                                  | 48 Virillo    |        | <i>Calyptanthes lanceolata</i> O.Berg                             | 34990 Souza   |        |
| <i>Sida rhombifolia</i> L.                                    | 984 Delfini   |        | <i>Calyptanthes lucida</i> Mart. ex DC.                           | 42 Bettinardi |        |
| <i>Spirotheca rivieri</i> (Decne.) Ulbr.                      | 995 Colletta  |        | <i>Calyptanthes strigipes</i> O.Berg                              | 224 Virillo   |        |
| <i>Triumfetta grandiflora</i> Vahl                            | 801 Delfini   |        | <i>Campomanesia phaea</i> (O.Berg) Landrum                        | 852 Delfini   |        |
| <b>MARANTHACEAE</b>   |               |        | <i>Campomanesia xanthocarpa</i> (Mart.) O.Berg                    | 1837 Flores   |        |
| <i>Stromanthe tonckat</i> (Aubl.) Eichler                     | 1005 Delfini  |        | <i>Eugenia brevistyla</i> D.Legrand                               | 35008 Souza   |        |
| <b>MARCGRAVIACEAE</b>   |               |        | <i>Eugenia cerasiflora</i> Miq.                                   | 202 Virillo   |        |
| <i>Marcgravia polyantha</i> Delpino                           | 927 Cabral    |        | <i>Eugenia cuprea</i> (O.Berg) Nied.                              | 936 Kuntz     |        |
| <b>MELASTOMATACEAE</b>  |               |        | <i>Eugenia malacantha</i> D.Legrand                               | 205 Virillo   | EN     |
| <i>Bertolonia mosenii</i> Cogn.                               | 1159 Polisel  |        | <i>Eugenia mosenii</i> (Kausel) Sobral                            | 983 Colletta  |        |
| <i>Clidemia hirta</i> (L.) D.Don                              | 1110 Polisel  |        | <i>Eugenia oblongata</i> O.Berg                                   | 1048 Colletta |        |
| <i>Leandra variabilis</i> Raddi                               | 34911 Souza   |        | <i>Eugenia pruinosa</i> D.Legrand                                 | 150 Virillo   | EN     |
| <i>Leandra melastomoides</i> Raddi                            | 34945 Souza   |        | <i>Eugenia supraaxillaris</i> Spring                              | 35037 Souza   |        |
| <i>Leandra refracta</i> Cogn.                                 | 1887 Flores   |        | <i>Marlierea eugeniopoides</i> (D.Legrand & Kausel) D.Legrand     | 6 Bettinardi  |        |
| <i>Leandra reversa</i> (DC.) Cogn.                            | 844 Cabral    |        | <i>Marlierea silvatica</i> (O.Berg) Kiaersk.                      | 152 Virillo   |        |
| <i>Meriania glabra</i> (DC.) Triana                           | 35043 Souza   |        | <i>Marlierea suaveolens</i> Cambess.                              | 1045 Colletta |        |
| <i>Miconia brunnea</i> DC.                                    | 895 Cabral    |        | <i>Marlierea tomentosa</i> Cambess.                               | 1085 Polisel  |        |
| <i>Miconia cabucu</i> Hoehne                                  | 1059 Polisel  |        | <i>Myrceugenia myrcioides</i> (Cambess.) O.Berg                   | 1186 Polisel  |        |
| <i>Miconia cinerascens</i> Miq.                               | 900 Cabral    |        | <i>Myrcia flagellaris</i> (D.Legrand) Sobral                      | 35026 Souza   |        |
| <i>Miconia cinnamomifolia</i> (DC.) Naudin                    | 1090 Polisel  |        | <i>Myrcia hatschbachii</i> D.Legrand                              | 1126 Colletta |        |
| <i>Miconia dodecandra</i> Cogn.                               | 22 Bettinardi |        | <i>Myrcia heringii</i> D.Legrand                                  | 1105 Colletta |        |
| <i>Miconia latecrenata</i> (DC.) Naudin                       | 170 Virillo   |        | <i>Myrcia pubipetala</i> Miq.                                     | 1921 Flores   |        |
| <i>Miconia leucocarpa</i> DC.                                 | 848 Delfini   |        | <i>Myrcia spectabilis</i> DC.                                     | 1156 Colletta |        |
| <i>Miconia paniculata</i> (DC.) Naudin                        | 1002 Kuntz    |        | <i>Myrcia splendens</i> (Sw.) DC.                                 | 1004 Colletta |        |
| <i>Miconia racemifera</i> (DC.) Triana                        | 1797 Flores   |        | <i>Plinia complanata</i> M.L.Kawas. & B.Holst                     | 35035 Souza   | EN     |
| <i>Miconia tristis</i> Spring                                 | 851 Delfini   |        | <i>Plinia pseudodichasiantha</i> (Kiaersk.) G.M.Barroso ex Sobral | 35024 Souza   |        |
| <i>Mouriri chamissoana</i> Cogn.                              | 1043 Colletta |        | <i>Psidium cattleianum</i> Sabine                                 | 34981 Souza   |        |
| <i>Ossaea angustifolia</i> (DC.) Triana                       | 836 Delfini   |        | <b>NYCTAGINACEAE</b>  |               |        |
| <i>Ossaea sanguinea</i> Cogn.                                 | 1019 Kuntz    |        | <i>Guapira nitida</i> (Mart. ex J.A.Schmidt) Lundell              | 228 Virillo   |        |
| <i>Pleiochiton blepharodes</i> (DC.) Reginato et al.          | 1816 Flores   |        | <i>Guapira opposita</i> (Vell.) Reitz                             | 1027 Colletta |        |
| <i>Pleiochiton ebracteatum</i> Triana                         | 1206 Polisel  |        | <i>Neea pendulina</i> Heimerl                                     | 38 Bettinardi |        |
| <i>Pleiochiton glaziovianum</i> Cogn.                         | 1202 Polisel  |        | <i>Neea schwackeana</i> Heimerl                                   | 34995 Souza   |        |
| <i>Pterolepis glomerata</i> (Rottb.) Miq.                     | 856 Cabral    |        | <b>OCHNACEAE</b>  |               |        |
| <i>Rhynchanthera hispida</i> Naudin                           | 998 Kuntz     |        | <i>Ouratea multiflora</i> (Pohl) Engl.                            | 35018 Souza   |        |
| <i>Salpinga margaritacea</i> (Naudin) Triana                  | 35041 Souza   |        | <i>Ouratea parviflora</i> (A.DC.) Baill.                          | 891 Cabral    |        |
| <i>Tibouchina clinopodifolia</i> Cogn.                        | 1001 Delfini  |        | <i>Sauvagesia erecta</i> L.                                       | 979 Delfini   |        |
| <i>Tibouchina fothergillae</i> (Schränk & Mart. ex DC.) Cogn. | 1903 Flores   |        | <b>OLACACEAE</b>  |               |        |
| <i>Tibouchina herbacea</i> (DC.) Cogn.                        | 62 Virillo    |        | <i>Heisteria silvianii</i> Schwacke                               | 1132 Colletta |        |
| <i>Tibouchina pulchra</i> Cogn.                               | 845 Delfini   |        | <i>Tetrastylidium grandifolium</i> (Baill.) Sleumer               | 1029 Colletta |        |
| <b>MELIACEAE</b>  |               |        | <b>OLEACEAE</b>   |               |        |
| <i>Cabralea canjerana</i> (Vell.) Mart.                       | 1802 Flores   |        | <i>Chionanthus filiformis</i> (Vell.) P.S.Green                   | 1124 Colletta |        |
| <i>Cedrela fissilis</i> Vell.                                 | 947 Kuntz     | VU     | <b>ONAGRACEAE</b>   |               |        |
| <i>Cedrela odorata</i> L.                                     | 1168 Colletta | VU     | <i>Ludwigia elegans</i> (Cambess.) H.Hara                         | 994 Delfini   |        |
| <i>Guarea macrophylla</i> Vahl                                | 1061 Polisel  |        | <i>Ludwigia octovalvis</i> (Jacq.) P.H.Raven                      | 967 Delfini   |        |
| <i>Trichilia elegans</i> A.Juss.                              | 28 Bettinardi |        | <b>ORCHIDACEAE</b>  |               |        |
| <b>MENISPERMACEAE</b>   |               |        | <i>Acianthera oligantha</i> (Barb.Rodr.) F.Barros                 | 120 Virillo   |        |
| <i>Cissampelos andromorpha</i> DC.                            | 883 Delfini   |        | <i>Aspidogyne longicornu</i> (Cogn.) Garay                        | 35017 Souza   |        |

Continued

Table 1. Continued.

| Family/Species  | Voucher       | Status | Family/Species   | Voucher       | Status |
|---|---------------|--------|--|---------------|--------|
| <i>Barbosella</i> sp.                                     | 1053 Kuntz    |        | <i>Piper rivinoides</i> Kunth  | 802 Delfini   |        |
| <i>Campylocentrum linearifolium</i> Schltr ex. Mansf.     | 906 Kuntz     |        | <i>Piper setebarranense</i> E.F.Guim. & L.H.P.Costa                          | 813 Delfini   |        |
| <i>Cleistes libonii</i> (Rchb.f.) Schltr.                 | 9 Virillo     |        | <i>Piper solmsianum</i> C.DC.  | 826 Delfini   |        |
| <i>Corymborkis flava</i> (Sw.) Kuntze                     | 995 Kuntz     |        | <i>Piper umbellatum</i> L.   | 57 Virillo    |        |
| <i>Cyrtopodium</i> sp.                                    | 1169 Colletta |        | <b>Plantaginaceae</b>  |               |        |
| <i>Dichaea cogniauxiana</i> Schltr.                       | 892 Kuntz     |        | <i>Plantago australis</i> Lam.   | 1144 Polisel  |        |
| <i>Dichaea pendula</i> (Aubl.) Cogn.                      | 930 Cabral    |        | <b>Poaceae</b>   |               |        |
| <i>Elleanthus brasiliensis</i> (Lindl.) Rchb.f.           | 901 Cabral    |        | <i>Andropogon bicornis</i> L.  | 974 Delfini   |        |
| <i>Epidendrum armeniacum</i> Lindl.                       | 98 Virillo    |        | <i>Cortaderia selloana</i> (Schult.) Asch.                                   | 1020 Colletta |        |
| <i>Epidendrum latilabre</i> Lindl.                        | 1197 Polisel  |        | <i>Digitaria bicornis</i> (Lam.) Roem. & Schult.                             | 992 Delfini   |        |
| <i>Epidendrum nocturnum</i> Jacq.                         | 900 Kuntz     |        | <i>Eragrostis leucosticta</i> Nees ex Döll                                   | 1014 Colletta |        |
| <i>Epidendrum ramosum</i> Jacq.                           | 1203 Polisel  |        | <i>Gymnopogon foliosus</i> (Willd.) Nees                                     | 1017 Delfini  |        |
| <i>Epidendrum strobiliferum</i> Rchb.f.                   | 121 Virillo   |        | <i>Ichnanthus tenuis</i> (J. Presl & C. Presl) Hitchc. & Chase               | 1127 Polisel  |        |
| <i>Epidendrum xanthinum</i> Lindl.                        | 942 Cabral    |        | <i>Lasiacis ligulata</i> Hitchc. & Chase                                     | 1018 Delfini  |        |
| <i>Eulophia alta</i> (L.) Fawc. & Rendle                  | 1854 Flores   |        | <i>Merostachys ternata</i> Nees  | 1413 Colletta |        |
| <i>Gomesa flexuosa</i> (Lodd.) M.W.Chase & N.H.Williams   | 876 Delfini   |        | <i>Olyra ecaudata</i> Döll   | 1155 Polisel  |        |
| <i>Habenaria josephensis</i> Barb.Rodr.                   | 921 Delfini   |        | <i>Olyra latifolia</i> L.  | 961 Kuntz     |        |
| <i>Habenaria parviflora</i> Lindl.                        | 1865 Flores   |        | <i>Oplismenus hirtellus</i> (L.) P.Beauv.                                    | 1004 Delfini  |        |
| <i>Heterotaxis brasiliensis</i> (Brieger & Illg) F.Barros | 928 Kuntz     |        | <i>Panicum sellowii</i> Nees   | 846 Cabral    |        |
| <i>Ligeophila juruenensis</i> (Hoehne) Garay              | 941 Delfini   |        | <i>Paspalum atratum</i> Swallen  | 1133 Polisel  |        |
| <i>Liparis nervosa</i> (Thumb.) Lindl.                    | 985 Kuntz     |        | <i>Paspalum commune</i> Lillo  | 864 Cabral    |        |
| <i>Maxillaria ochroleuca</i> Lodd. ex Lindl.              | 875 Delfini   |        | <i>Paspalum conjugatum</i> P.J.Bergius                                       | 967 Kuntz     |        |
| <i>Octomeria crassifolia</i> Lindl.                       | 1200 Polisel  |        | <i>Paspalum corcovadense</i> Raddi   | 969 Kuntz     |        |
| <i>Oeceoclades maculata</i> (Lindl.) Lindl.               | 925 Delfini   |        | <i>Paspalum nutans</i> Lam.  | 1 Virillo     |        |
| <i>Phymatidium falcifolium</i> Lindl.                     | 925 Cabral    |        | <i>Pharus lappulaceus</i> Aubl.  | 917 Delfini   |        |
| <i>Polystachya micrantha</i> Schltr.                      | 899 Kuntz     |        | <i>Pharus parvifolius</i> Nash   | 43 Virillo    |        |
| <i>Promenaea xanthina</i> Lindl.                          | 903 Cabral    |        | <i>Pseudechinolaena polystachya</i> (Kunth) Stapf                            | 940 Cabral    |        |
| <i>Prosthechea fragrans</i> (Sw.) W.E.Higgins             | 1198 Polisel  |        | <i>Rugloa pilosa</i> (Sw.) Zuloaga   | 34 Virillo    |        |
| <i>Prosthechea glumacea</i> (Lindl.) W.E.Higgins          | 926 Kuntz     |        | <i>Rugloa polygonata</i> (Schrad.) Zuloaga                                   | 910 Delfini   |        |
| <i>Prosthechea pygmaea</i> (Hook.) W.E.Higgins            | 862 Delfini   |        | <i>Saccharum asperum</i> (Nees) Steud.                                       | 1014 Delfini  |        |
| <i>Scaphyglottis modesta</i> (Rchb.f.) Schltr.            | 905 Kuntz     |        | <i>Sacciolepis vilvoidea</i> (Trin.) Chase                                   | 987 Delfini   |        |
| <i>Stelis hypnicola</i> (Lindl.) Pridgeon & M.W.Chase     | 1062 Kuntz    |        | <i>Setaria sulcata</i> Raddi   | 1020 Delfini  |        |
| <i>Xylobium variegatum</i> (Ruiz & Pav.) Garay & Dunst.   | 865 Delfini   |        | <i>Streptochaeta spicata</i> Schrad. ex Nees                                 | 920 Delfini   |        |
| <i>Zygostates cornuta</i> Lindl.                          | 116 Virillo   |        | <i>Trichantheum cyanescens</i> (Nees ex Trin.) Zuloaga & Morrone             | 952 Cabral    |        |
| <b>Oxalidaceae</b>  |               |        | <b>Podocarpaceae</b>   |               |        |
| <i>Oxalis cytisoides</i> Mart. ex Zucc.                   | 976 Delfini   |        | <i>Podocarpus sellowii</i> Klotzsch ex Endl.                                 | 1100 Colletta |        |
| <b>Passifloraceae</b>                                     |               |        | <b>Polygalaceae</b>  |               |        |
| <i>Passiflora capsularis</i> L.                           | 934 Kuntz     |        | <i>Bredemeyera floribunda</i> Willd.   | 1429 Colletta |        |
| <i>Passiflora mediterranea</i> Vell.                      | 1817 Flores   |        | <i>Caamembeca laureola</i> (A.St.-Hil. & Moq.) J.F.B.Pastore                 | 940 Delfini   |        |
| <b>Peraceae</b>   |               |        | <i>Diclidanthera laurifolia</i> Mart.  | 882 Cabral    |        |
| <i>Pera glabrata</i> (Schott) Poepp. ex Baill.            | 1001 Colletta |        | <i>Polygala paniculata</i> L.  | 10 Virillo    |        |
| <b>Phyllanthaceae</b>                                     |               |        | <b>Polygonaceae</b>  |               |        |
| <i>Hieronyma alchorneoides</i> Allemão                    | 1016 Colletta |        | <i>Coccoloba warmingii</i> Meisn.  | 935 Kuntz     |        |
| <i>Phyllanthus niruri</i> L.                              | 984 Kuntz     |        | <i>Ruprechtia laurifolia</i> (Cham. & Schltld.) A.C.Meyer                    | 1848 Flores   |        |
| <b>Phytolaccaceae</b>                                     |               |        | <b>Primulaceae</b>   |               |        |
| <i>Phytolacca dioica</i> L.                               | 819 Cabral    |        | <i>Ardisia guianensis</i> (Aubl.) Mez  | 1799 Flores   |        |
| <i>Phytolacca thyrsoiflora</i> Fenzl. ex J.A.Schmidt      | 33 Virillo    |        | <i>Myrsine coriacea</i> (Sw.) R.Br. ex Roem. & Schult.                       | 35019 Souza   |        |
| <b>Picramnaceae</b>                                       |               |        | <i>Myrsine hermodendrii</i> (Jung-Mend. & Bernacci) M.F.Freitas & Kin.-Gouv. | 35030 Souza   |        |
| <i>Picramnia ramiflora</i> Planch.                        | 60 Bettinardi |        | <i>Myrsine umbellata</i> Mart.   | 140 Virillo   |        |
| <i>Picramnia gardneri</i> Planch.                         | ESA 125015    |        | <i>Myrsine venosa</i> A.DC.  | 844 Delfini   |        |
| <b>Piperaceae</b>   |               |        | <i>Stylogyne Ihotzkyana</i> (A.DC.) Mez                                      | 893 Cabral    |        |
| <i>Manekia obtusa</i> (Miq.) Arias et al.                 | 881 Delfini   |        | <b>Proteaceae</b>  |               |        |
| <i>Peperomia circinnata</i> Link                          | 1208 Polisel  |        | <i>Euplassa legalis</i> (Vell.) I.M.Johnst.                                  | 1094 Colletta |        |
| <i>Peperomia corcovadensis</i> Gardner                    | 908 Cabral    |        | <i>Roupala montana</i> Aubl.   | 953 Kuntz     |        |
| <i>Peperomia subrubripica</i> C.DC.                       | 1199 Polisel  |        | <b>Quiinaceae</b>  |               |        |
| <i>Peperomia tetraphylla</i> (G.Forst.) Hook. & Arn.      | 1064 Kuntz    |        | <i>Quiina glazovii</i> Engl.   | 34915 Souza   |        |
| <i>Peperomia urocarpa</i> Fisch. & C.A.Mey.               | 898 Kuntz     |        | <b>Ranunculaceae</b>   |               |        |
| <i>Piper aduncum</i> L.                                   | 1403 Colletta |        | <i>Clematis</i> sp.  | 1065 Kuntz    |        |
| <i>Piper amplum</i> Kunth                                 | 34 Bettinardi |        | <b>Rosaceae</b>  |               |        |
| <i>Piper arboreum</i> Aubl.                               | 35955 Souza   |        | <i>Prunus myrtifolia</i> (L.) Urb.   | 44 Bettinardi |        |
| <i>Piper cernuum</i> Vell.                                | 804 Delfini   |        | <i>Rubus rosifolius</i> Sm.  | 56 Virillo    |        |
| <i>Piper chimonanthifolium</i> Kunth                      | ESA 125096    |        | <i>Rubus sellowii</i> Cham. & Schltld.                                       | 1059 Kuntz    |        |
| <i>Piper gaudichaudianum</i> Kunth                        | 1910 Flores   |        | <b>Rubiaceae</b>   |               |        |
| <i>Piper lanceolatum</i> Ruiz & Pav.                      | 810 Delfini   |        | <i>Aleisis floribunda</i> Schott   | 1135 Colletta |        |
| <i>Piper lepturum</i> Kunth                               | 156 Virillo   |        |  |               |        |
| <i>Piper Ihotzkyanum</i> Kunth                            | 1891 Flores   |        |  |               |        |
| <i>Piper malacophyllum</i> (C.Presl) C.DC.                | 1176 Polisel  |        |  |               |        |
| <i>Piper mollicomum</i> Kunth                             | 837 Delfini   |        |  |               |        |

Continued



Table 1. Continued.

| Family/Species   | Voucher       | Status | Family/Species  | Voucher       | Status |
|--|---------------|--------|---|---------------|--------|
| <i>Amaioua intermedia</i> Mart. ex Schult. & Schult.f.                   | 1 Bettinardi  |        | <b>Sapindaceae</b>  |               |        |
| <i>Bathysa australis</i> (A.St.-Hil.) K.Schum.                           | 1185 Polisel  |        | <i>Allophylus petiolulatus</i> Radlk.                         | 1015 Kuntz    |        |
| <i>Borreria schumannii</i> (Standl. ex Bacigalupo) E.L. Cabral & Sobrado | 843 Cabral    |        | <i>Cupania ludowigii</i> Somner & Ferrucci                    | 1941 Flores   |        |
| <i>Borreria latifolia</i> (Aubl.) K.Schum.                               | 877 Delfini   |        | <i>Cupania oblongifolia</i> Mart.                             | 34926 Souza   |        |
| <i>Borreria ocymifolia</i> (Roem. & Schult.) Bacigalupo & E.L.Cabral     | 816 Delfini   |        | <i>Matayba obovata</i> R. Coelho, Souza & Ferrucci            | 151 Virillo   |        |
| <i>Borreria palustris</i> (Cham. & Schltld.) Bacigalupo & E.L.Cabral     | 862 Cabral    |        | <i>Serjania meridionalis</i> Cambess.                         | 113 Virillo   |        |
| <i>Chomelia parvifolia</i> (Standl.) Govaerts                            | 982 Colletta  |        | <i>Serjania reticulata</i> Cambess.                           | 1040 Kuntz    |        |
| <i>Coccocypselum capitatum</i> (Graham) C.B.Costa & Mamede               | 824 Delfini   |        | <b>Sapotaceae</b>   |               |        |
| <i>Coccocypselum hasslerianum</i> Chodat                                 | 993 Kuntz     |        | <i>Chrysophyllum flexuosum</i> Mart.                          | 888 Cabral    |        |
| <i>Coccocypselum geophiloides</i> Wawra                                  | 946 Cabral    |        | <i>Chrysophyllum inornatum</i> Mart.                          | 1044 Colletta |        |
| <i>Coccocypselum lanceolatum</i> (Ruiz & Pav.) Pers.                     | 42 Virillo    |        | <i>Chrysophyllum viride</i> Mart. & Eichler                   | 126 Virillo   |        |
| <i>Coussarea contracta</i> (Walp.) Müll.Arg.                             | 1067 Colletta |        | <i>Diploon cuspidatum</i> (Hoehne) Cronquist                  | 1052 Colletta |        |
| <i>Diodia saponariifolia</i> (Cham. & Schltld.) K.Schum.                 | 959 Delfini   |        | <i>Ecclinusa ramiflora</i> Mart.                              | 1034 Colletta |        |
| <i>Emmeorhiza umbellata</i> (Spreng.) K.Schum.                           | 925 Kuntz     |        | <i>Micropholis crassipedicellata</i> (Mart. & Eichler) Pierre | 1134 Colletta |        |
| <i>Faramea multiflora</i> A.Rich. ex DC.                                 | 884 Cabral    |        | <i>Pouteria beaurepairei</i> (Glaz. & Raunk.) Baehni          | 975 Colletta  |        |
| <i>Faramea tetragona</i> Müll.Arg.                                       | 1163 Colletta |        | <i>Pouteria caimito</i> (Ruiz & Pav.) Radlk.                  | 1084 Colletta |        |
| <i>Ferdinandusa</i> sp.  | 35000 Souza   |        | <i>Pradosia lactescens</i> (Vell.) Radlk.                     | 201 Virillo   |        |
| <i>Galianthe brasiliensis</i> (Spreng.) E.L.Cabral & Bacigalupo          | 1000 Delfini  |        | <b>Schlegeliaceae</b>   |               |        |
| <i>Geophila repens</i> (L.) I.M.Johnst.                                  | 998 Delfini   |        | <i>Schlegelia parviflora</i> (Oerst.) Monach.                 | 1107 Colletta |        |
| <i>Manettia luteo-rubra</i> (Vell.) Benth.                               | 881 Cabral    |        | <b>Scrophulariaceae</b>                                       |               |        |
| <i>Manettia gracilis</i> Cham. & Schltld.                                | 1210 Polisel  |        | <i>Buddleja brachiata</i> Cham. & Schltld.                    | 34982 Souza   |        |
| <i>Margaritopsis cephalantha</i> (Müll.Arg.) C.M.Taylor                  | 1003 Kuntz    |        | <b>Solanaceae</b>   |               |        |
| <i>Margaritopsis cymuligera</i> (Müll.Arg.) C.M.Taylor                   | 8 Bettinardi  |        | <i>Acnistus arborescens</i> (L.) Schltld.                     | 1026 Kuntz    |        |
| <i>Palicourea marcgravii</i> A.St.-Hil.                                  | 883 Cabral    |        | <i>Athenea</i> sp.  | 64 Virillo    |        |
| <i>Posoqueria acutifolia</i> Mart.                                       | 20 Bettinardi |        | <i>Brunfelsia pauciflora</i> (Cham. & Schltld.) Benth.        | 879 Cabral    |        |
| <i>Posoqueria latifolia</i> (Rudge) Schult.                              | 1110 Colletta |        | <i>Brunfelsia uniflora</i> (Pohl) D.Don                       | 825 Delfini   |        |
| <i>Psychotria brachypoda</i> (Müll.Arg.) Britton                         | 838 Cabral    |        | <i>Capsicum recurvatum</i> (Witasek) Hunz.                    | 35055 Souza   |        |
| <i>Psychotria deflexa</i> DC.  | 1040 Colletta |        | <i>Cestrum bracteatum</i> Link & Otto                         | 814 Delfini   |        |
| <i>Psychotria forsteronioides</i> Müll.Arg.                              | 67 Virillo    |        | <i>Schwenckia</i> sp.   | 34906 Souza   |        |
| <i>Psychotria gracilentia</i> Müll.Arg.                                  | 833 Cabral    |        | <i>Solanum americanum</i> Mill.                               | 63 Virillo    |        |
| <i>Psychotria hastisepala</i> Müll.Arg.                                  | 880 Cabral    |        | <i>Solanum castaneum</i> Carvalho                             | 847 Delfini   |        |
| <i>Psychotria hoffmannseggiana</i> (Willd. ex Schult.) Müll.Arg.         | 54 Virillo    |        | <i>Solanum pseudoquina</i> A.St.-Hil.                         | 1451 Colletta |        |
| <i>Psychotria leiocarpa</i> Cham. & Schltld.                             | 1056 Colletta |        | <i>Solanum swartzianum</i> Roem. & Schult.                    | 846 Delfini   |        |
| <i>Psychotria leitana</i> C.M.Taylor                                     | 1139 Colletta |        | <b>Symplocaceae</b>   |               |        |
| <i>Psychotria mapouriioides</i> DC.                                      | 1150 Colletta |        | <i>Symplocos estrellensis</i> Casar.                          | 1148 Colletta |        |
| <i>Psychotria nemorosa</i> Gardner                                       | 74 Virillo    |        | <i>Symplocos falcata</i> Brand                                | 208 Virillo   |        |
| <i>Psychotria nuda</i> (Cham. & Schltld.) Wawra                          | 1047 Colletta |        | <i>Symplocos laxiflora</i> Benth.                             | 1360 Colletta |        |
| <i>Psychotria ruelliiifolia</i> (Cham. & Schltld.) Müll.Arg.             | 1075 Colletta |        | <b>Thymeliaceae</b>   |               |        |
| <i>Psychotria suterella</i> Müll.Arg.                                    | 81 Virillo    |        | <i>Daphnopsis schwackeana</i> Taub.                           | 1104 Colletta |        |
| <i>Psychotria tenerior</i> (Cham.) Müll.Arg.                             | 835 Cabral    |        | <b>Urticaceae</b>   |               |        |
| <i>Psychotria vellosiana</i> Benth.                                      | ESA 125254    |        | <i>Boehmeria caudata</i> Sw.                                  | 1179 Polisel  |        |
| <i>Rudgea coriacea</i> (Spreng.) K.Schum.                                | 1024 Colletta |        | <i>Boehmeria cylindrica</i> (L.) Sw.                          | 968 Delfini   |        |
| <i>Rudgea gardenioides</i> (Cham.) Müll.Arg.                             | 1130 Colletta |        | <i>Cecropia glaziovii</i> Sneath.                             | 1019 Colletta |        |
| <i>Rudgea jasmynoides</i> (Cham.) Müll.Arg.                              | 1057 Colletta |        | <i>Cecropia pachystachya</i> Trécul                           | 43 Bettinardi |        |
| <i>Rudgea recurva</i> Müll.Arg.  | 1004 Kuntz    |        | <i>Coussapoa microcarpa</i> (Schott) Rizzini                  | 886 Cabral    |        |
| <i>Sabicea villosa</i> Willd. ex Schult.                                 | 882 Delfini   |        | <i>Pilea pubescens</i> Liebm.                                 | 981 Kuntz     |        |
| <b>Rutaceae</b>  |               |        | <i>Pourouma acuminata</i> Mart. ex Miq.                       | 1055 Polisel  |        |
| <i>Esenbeckia grandiflora</i> Mart.                                      | 230 Virillo   |        | <i>Urera caracasana</i> (Jacq.) Griseb.                       | 1917 Flores   |        |
| <i>Zanthoxylum rhoifolium</i> Lam.                                       | 59 Bettinardi |        | <i>Urera nitida</i> (Vell.) P.Brack                           | 829 Delfini   |        |
| <b>Sabiaceae</b>   |               |        | <b>Verbenaceae</b>  |               |        |
| <i>Meliosma chartacea</i> Lombardi                                       | 984 Colletta  |        | <i>Citharexylum myrianthum</i> Cham.                          | 1077 Colletta |        |
| <i>Meliosma sellowii</i> Urb.  | 1006 Kuntz    |        | <i>Lantana trifolia</i> L.                                    | 948 Delfini   |        |
| <b>Salicaceae</b>  |               |        | <i>Stachytarpheta cayennensis</i> (Rich.) Vahl                | 997 Kuntz     |        |
| <i>Casearia decandra</i> Jacq.   | 34985 Souza   |        | <i>Verbena litoralis</i> Kunth                                | 953 Delfini   |        |
| <i>Casearia obliqua</i> Spreng.  | 1056 Polisel  |        | <b>Vitaceae</b>   |               |        |
| <i>Casearia sylvestris</i> Sw.   | 1851 Flores   |        | <i>Cissus paulliniifolia</i> Vell.                            | 1046 Kuntz    |        |
| <i>Prockia crucis</i> P.Brown ex L.                                      | 1187 Polisel  |        | <i>Cissus sulcicaulis</i> (Baker) Planch.                     | 102 Virillo   |        |
| <b>Santalaceae</b>   |               |        | <i>Cissus verticillata</i> (L.) Nicolson & C.E.Jarvis         | 873 Delfini   |        |
| <i>Phoradendron crassifolium</i> (Pohl ex DC.) Eichler                   | 1889 Flores   |        | <b>Vochysiaceae</b>   |               |        |
| <i>Phoradendron undulatum</i> (Pohl ex DC.) Eichler                      | 1193 Polisel  |        | <i>Callisthene fasciculata</i> Mart.                          | 956 Kuntz     |        |
|  |               |        | <b>Winteraceae</b>  |               |        |
|  |               |        | <i>Drimys brasiliensis</i> Miers                              | 1123 Colletta |        |
|  |               |        | <b>Xyridaceae</b>   |               |        |
|  |               |        | <i>Xyris laxifolia</i> Mart.                                  | 1853 Flores   |        |
|  |               |        | <b>Zingiberaceae</b>  |               |        |
|  |               |        | <i>Hedychium coronarium</i> J.Koenig                          | 854 Cabral    |        |
|  |               |        | <i>Zingiber officinale</i> Roscoe                             | 820 Delfini   |        |

**Table 2.** Families and species recorded for the ferns and lycophytes found in the Reserva Votorantim. Vouchers are represented by collector number. Species' status (VU, Vulnerable) follow Estado de São Paulo (2004).

| Family/Species  | Voucher      | Status | Family/Species   | Voucher      | Status |
|---|--------------|--------|--|--------------|--------|
| <b>Anemiaceae</b>   |              |        | <b>Hemidictyaceae</b>  |              |        |
| <i>Anemia blechnoides</i> J.Sm.   | 3219 Almeida |        | <i>Sticherus ferrugineus</i> (Desv.) J. Gonzales                 | 3251 Almeida |        |
| <i>Anemia phyllitidis</i> (L.) Sw.  | 15598 Salino |        | <i>Sticherus nigropaleaceus</i> (J.W. Sturm) Prado & Lellinger   | 15610 Salino |        |
| <i>Anemia raddiana</i> Link   | 15611 Salino |        | <b>Hymenophyllaceae</b>  |              |        |
| <b>Aspleniaceae</b>   |              |        | <i>Hemidictyum marginatum</i> (L.) C. Presl                      | 15668 Salino |        |
| <i>Asplenium alatum</i> Willd.  | 15662 Salino |        | <b>Hymenophyllaceae</b>  |              |        |
| <i>Asplenium austrobrasiliense</i> (Christ) Maxon                             | 3239 Almeida | VU     | <i>Didymoglossum ovale</i> E. Fourn.                             | 3244 Almeida |        |
| <i>Asplenium bradeanum</i> Handro   | 3262 Almeida | VU     | <i>Didymoglossum reptans</i> (Sw.) C. Presl                      | 15628 Salino |        |
| <i>Asplenium inaequilaterale</i> Willd.                                       | 3241 Almeida |        | <i>Hymenophyllum caudiculatum</i> Mart.                          | 15618 Salino |        |
| <i>Asplenium kunzeanum</i> Klotzsch ex Rosenst.                               | 3213 Almeida |        | <i>Hymenophyllum hirsutum</i> (L.) Sw.                           | 15664 Salino |        |
| <i>Asplenium mucronatum</i> C. Presl  | 3180 Almeida |        | <i>Hymenophyllum polyanthos</i> Sw.                              | 3201 Almeida |        |
| <i>Asplenium muellerianum</i> Rosenst.  | 3179 Almeida | VU     | <i>Polyphlebium angustatum</i> (Carmich.) Ebihara & Dubuisson    | 15606 Salino |        |
| <i>Asplenium pteropus</i> Kaulf.  | 15660 Salino |        | <i>Polyphlebium hymenophylloides</i> (Bosch) Ebihara & Dubuisson | 3209 Almeida |        |
| <i>Asplenium radicans</i> L.  | 3248 Almeida |        | <i>Trichomanes cristatum</i> Kaulf.                              | 3204 Almeida |        |
| <i>Asplenium scandicinum</i> Kaulf.   | 3217 Almeida |        | <i>Trichomanes elegans</i> Rich.                                 | 3196 Almeida |        |
| <i>Asplenium serratum</i> L.  | 3206 Almeida |        | <i>Trichomanes polypodioides</i> L.                              | 3182 Almeida |        |
| <i>Hymenasplenium laetum</i> (Sw.) L. Regalado & Prada                        | 15633 Salino |        | <i>Vandenboschia collarata</i> (Bosch.) Ebihara & K. Iwats.      | 3205 Almeida |        |
| <i>Hymenasplenium triquetrum</i> (N. Murak. & R.C. Moran) L. Regalado & Prada | 15659 Salino |        | <b>Lindsaeaceae</b>  |              |        |
| <b>Athyriaceae</b>  |              |        | <i>Lindsaea arcuata</i> Kunze                                    | 15601 Salino |        |
| <i>Deparia peterseni</i> (Kunze) Kato   | 15652 Salino |        | <i>Lindsaea lancea</i> (L.) Bedd.                                | 15622 Salino |        |
| <i>Diplazium ambiguum</i> Raddi   | 15607 Salino |        | <i>Lindsaea quadrangularis</i> Raddi var. <i>quadrangularis</i>  | 3235 Almeida |        |
| <i>Diplazium cristatum</i> (Desr.) Alston                                     | 15632 Salino |        | <b>Lomariopsidaceae</b>  |              |        |
| <b>Blechnaceae</b>  |              |        | <i>Lomariopsis marginata</i> (Schrad.) Kuhn                      | 15604 Salino |        |
| <i>Blechnum acutum</i> (Desv.) Mett.  | 3250 Almeida |        | <i>Nephrolepis brownii</i> (Desv.) Hovenkamp & Miyam.            | 3252 Almeida |        |
| <i>Blechnum austrobrasiliense</i> de la Sota                                  | 3231 Almeida |        | <i>Nephrolepis pectinata</i> (Willd.) Schott                     | 3249 Almeida |        |
| <i>Blechnum brasiliense</i> Desv.   | 15612 Salino |        | <i>Nephrolepis pendula</i> (Raddi) J.Sm.                         | 15667 Salino |        |
| <i>Blechnum cordatum</i> (Desv.) Hieron                                       | 3184 Almeida |        | <b>Lycopodiaceae</b>   |              |        |
| <i>Blechnum occidentale</i> L.  | 15657 Salino |        | <i>Lycopodium clavatum</i> L.                                    | 15671 Salino |        |
| <i>Blechnum polypodioides</i> Raddi   | 15603 Salino |        | <i>Palhinhaea cernua</i> (L.) Franco & Vasc.                     | 3177 Almeida |        |
| <i>Blechnum serrulatum</i> Rich.  | 3237 Almeida |        | <b>Lygodiaceae</b>   |              |        |
| <i>Salpichlaena volubilis</i> (Kaulf.) Hook.                                  | 3229 Almeida |        | <i>Lygodium volubile</i> Sw.                                     | 15678 Salino |        |
| <b>Cyatheaceae</b>  |              |        | <b>Maeattiaceae</b>  |              |        |
| <i>Alsophila setosa</i> Kaulf.  | 15669 Salino |        | <i>Danaea geniculata</i> Raddi                                   | 3232 Almeida |        |
| <i>Alsophila sternbergii</i> (Sternb.) Conant                                 | 3207 Almeida |        | <i>Danaea nodosa</i> (L.) Sm.                                    | 3211 Almeida |        |
| <i>Cyathea atrovirens</i> (Langsd. & Fisch.) Domin                            | 3189 Almeida |        | <i>Eupodium kauffussii</i> (J. Sm.) Hook.                        | 3212 Almeida |        |
| <i>Cyathea corcovadensis</i> (Raddi) Domin                                    | 15616 Salino |        | <b>Osmundaceae</b>   |              |        |
| <i>Cyathea delgadii</i> Sternb.   | 15609 Salino |        | <i>Osmunda regalis</i> L.  | 15655 Salino |        |
| <i>Cyathea hirsuta</i> C. Presl   | 15613 Salino |        | <b>Polypodiaceae</b>   |              |        |
| <i>Cyathea leucofolis</i> Domin   | 15630 Salino |        | <i>Alansmia reclinata</i> (Brack.) Moguel & M. Kessler           | 15620 Salino |        |
| <i>Cyathea phalerata</i> Mart.  | 3208 Almeida |        | <i>Campyloneurum acrocarpon</i> Fée                              | 15624 Salino |        |
| <i>Cyathea villosa</i> Willd.   | 3255 Almeida |        | <i>Campyloneurum decurrens</i> (Raddi) C. Presl                  | 15631 Salino |        |
| <b>Dennstaedtiaceae</b>   |              |        | <i>Campyloneurum lapathifolium</i> (Poir.) Ching                 | 15627 Salino |        |
| <i>Dennstaedtia cicutaria</i> (Sw.) T.Moore                                   | 3253 Almeida |        | <i>Campyloneurum nitidum</i> (Kaulf.) C. Presl                   | 3246 Almeida |        |
| <i>Dennstaedtia dissecta</i> (Sw.) T.Moore                                    | 15608 Salino |        | <i>Campyloneurum rigidum</i> (Aubl.) C. Presl                    | 15648 Salino |        |
| <i>Pteridium arachnoideum</i> (Kaulf.) Maxon                                  | 3236 Almeida |        | <i>Cochlidium serrulatum</i> (Sw.) L.E. Bishop                   | 3181 Almeida |        |
| <b>Dryopteridaceae</b>  |              |        | <i>Microgramma geminata</i> (Schrad.) A.F. Tryon & R.M. Tryon    | 3258 Almeida |        |
| <i>Ctenitis aspidioides</i> (C.Presl) Copel.                                  | 15646 Salino |        | <i>Microgramma percussa</i> (Cav.) de la Sota                    | 3176 Almeida |        |
| <i>Ctenitis pedicellata</i> (Christ) Copel.                                   | 15594 Salino |        | <i>Microgramma squamulosa</i> (Kaulf.) de la Sota                | 3245 Almeida |        |
| <i>Ctenitis submarginalis</i> (Langsd. & Fisch.) Ching                        | 15640 Salino |        | <i>Microgramma tecta</i> (Kaulf.) Alston                         | 3203 Almeida |        |
| <i>Didymochlaena truncatula</i> (Sw.) J.Sm.                                   | 15623 Salino |        | <i>Microgramma vacciniifolia</i> Langsd. & Fisch.                | 3216 Almeida |        |
| <i>Elaphoglossum glaziovii</i> (Fée) Brade                                    | 15593 Salino |        | <i>Niphidium crassifolium</i> (L.) Lellinger                     | 3247 Almeida |        |
| <i>Elaphoglossum iguapense</i> Brade  | 3256 Almeida | VU     | <i>Pecluma cnoophora</i> (Kunze) Salino & F.C. Assis             | 3183 Almeida |        |
| <i>Elaphoglossum lingua</i> (C.Presl) Brack.                                  | 15596 Salino |        | <i>Pecluma robusta</i> (Fée) M. Kessler & A.R. Sm.               | 3188 Almeida |        |
| <i>Elaphoglossum longifolium</i> (Jacq.) J. Sm.                               | 15619 Salino | VU     | <i>Pecluma truncorum</i> (Lindm.) M.G. Price                     | 15600 Salino |        |
| <i>Elaphoglossum luridum</i> (Fée) Christ                                     | 3224 Almeida |        | <i>Pleopeltis astrolepis</i> (Liebm.) Fourn.                     | 3202 Almeida |        |
| <i>Lastreopsis amplissima</i> (C.Presl) Tindale                               | 3223 Almeida |        | <i>Pleopeltis desvauxii</i> (Klotzsch) Salino                    | 3214 Almeida |        |
| <i>Megalastrum albidum</i> R.C.Moran et al.                                   | 15626 Salino |        | <i>Pleopeltis hirsutissima</i> (Raddi) de la Sota                | 3186 Almeida |        |
| <i>Mickelia scandens</i> (Raddi) R.C. Moran et al.                            | 3198 Almeida |        | <i>Pleopeltis pleopeltifolia</i> (Raddi) Alston                  | 3225 Almeida |        |
| <i>Offersia cervina</i> (L.) Kunze  | 3197 Almeida |        | <i>Serpocaulon catharinae</i> (Langsd. & Fisch.) A.R. Sm.        | 15654 Salino |        |
| <i>Polybotrya cylindrica</i> Kaulf.   | 3238 Almeida |        | <i>Serpocaulon fraxinifolium</i> (Jacq.) A.R. Sm.                | 3178 Almeida |        |
| <i>Polybotrya semipinnata</i> Fée   | 3228 Almeida |        | <i>Serpocaulon sehnenii</i> (Pic. Serm.) Labiak & Prado          | Almeida3221  |        |
| <i>Stigmatopteris caudata</i> (Raddi) C.Chr.                                  | 15625 Salino |        | <b>Pteridaceae</b>   |              |        |
| <i>Stigmatopteris heterocarpa</i> (Fée) Rosenst.                              | 3187 Almeida |        | <i>Adiantum curvatum</i> Kaulf.                                  | 3233 Almeida |        |
| <b>Gleicheniaceae</b>   |              |        |  |              |        |
| <i>Dicranopteris flexuosa</i> (Schrad.) Underw.                               | 15658 Salino |        |  |              |        |
| <i>Gleichenella pectinata</i> (Willd.) Ching                                  | 3192 Almeida |        |  |              |        |

Continued

Table 2. Continued.

| Family/Species                                    | Voucher      | Status | Family/Species  | Voucher      | Status |
|---|--------------|--------|---|--------------|--------|
| <i>Adiantum diogoanum</i> Glaziou ex Baker        | 3215 Almeida |        | <b>Selaginellaceae</b>                                      |              |        |
| <i>Adiantum incertum</i> Lindm.                   | 15653 Salino |        | <i>Selaginella</i> sp.                                      | 3260 Almeida |        |
| <i>Adiantum obliquum</i> Willd.                   | 15641 Salino |        | <i>Selaginella contigua</i> Baker                           | 3261 Almeida |        |
| <i>Adiantum pentadactylon</i> Langsd. & Fisch     | 3227 Almeida |        | <i>Selaginella flexuosa</i> Spring                          | 3199 Almeida |        |
| <i>Adiantum terminatum</i> Kunze ex Miq.          | 15677 Salino |        | <i>Selaginella macrostachya</i> (Spring) Spring             | 3200 Almeida |        |
| <i>Anetium citrifolium</i> (L.) Splitg.           | 3218 Almeida | VU     | <i>Selaginella valida</i> Alston                            | 15617 Salino |        |
| <i>Doryopteris majestosa</i> J.C. Yesilyurt       | 15642 Salino |        | <b>Tectariaceae</b>   |              |        |
| <i>Doryopteris pentagona</i> Raddi                | 15650 Salino |        | <i>Tectaria buchtienii</i> (Rosenst.) Maxon                 | 3210 Almeida |        |
| <i>Doryopteris sagittifolia</i> (Raddi) J.Sm.     | 3230 Almeida |        | <i>Tectaria pilosa</i> (Fée) R.C. Moran                     | 3222 Almeida |        |
| <i>Pityrogramma calomelanos</i> (L.) Link         | 3194 Almeida |        | <b>Thelypteridaceae</b>                                     |              |        |
| <i>Polytaenium lineatum</i> (Sw.) J.Sm.           | 15599 Salino |        | <i>Macrothelypteris torresiana</i> Gaudich.                 | 3234 Almeida |        |
| <i>Pteris angustata</i> (Fée) C.V. Morton         | 15663 Salino |        | <i>Thelypteris amambayensis</i> (Christ) Ponce              | 3191 Almeida |        |
| <i>Pteris brasiliense</i> Raddi                   | 15661 Salino |        | <i>Thelypteris decussata</i> (L.) Proctor                   | 15634 Salino |        |
| <i>Pteris decurrens</i> C. Presl                  | 15651 Salino |        | <i>Thelypteris dentata</i> (Forssk.) E.P.St. John           | 3242 Almeida |        |
| <i>Pteris vittata</i> L.                          | 15675 Salino |        | <i>Thelypteris lugubris</i> (Mett.) R.M. Tryon & A.F. Tryon | 15643 Salino |        |
| <i>Radiovittaria stipitata</i> (Kunze) E.H. Crane | 15649 Salino |        | <i>Thelypteris opposita</i> (Vahl) Ching                    | 3185 Almeida |        |
| <i>Vittaria lineata</i> (L.) Sm.                  | 3240 Almeida |        | <i>Thelypteris pachyrhachis</i> (Kunze ex Mett.) Ching      | 3195 Almeida |        |
| <b>Saccolomataceae</b>                            |              |        | <i>Thelypteris patens</i> (Sw.) Small                       | 3193 Almeida |        |
| <i>Saccoloma inaequale</i> (Kunze) Mett.          | 15615 Salino |        | <i>Thelypteris polypodioides</i> (Raddi) C.F. Reed          | 3254 Almeida |        |
| <b>Schizaeaceae</b>                               |              |        | <i>Thelypteris raddii</i> (Rosenst.) Ponce                  | 15605 Salino |        |
| <i>Schizaea elegans</i> (Vahl) Sw.                | 15676 Salino |        | <i>Thelypteris saxicola</i> (Sw.) C.F. Reed                 | 15679 Salino |        |

## DISCUSSION

The results of our study were largely consistent with those of several other floral studies in São Paulo state. For example, Mamede et al. (2001) found 756 vascular plant species in the Serra da Juréia, and Lima et al. (2011) found 1,143 species in Carlos Botelho State Park. However, whereas we found that Rubiaceae was the richest family in the Reserva Votorantim, other studies in São Paulo state showed Myrtaceae, Fabaceae, and Orchidaceae as predominant (Lima et al. 2011; Kortz 2014). This difference may be attributable to a bias in our sampling process, as certain specimens, mainly Myrtaceae and Fabaceae, were collected when sterile, and consequently we were unable to identify them to species.

*Euterpe edulis* Mart is widely exploited and traded by local people who remove the edible palm hearts, causing the death of the plant. Although this species is considered threatened (Estado de São Paulo 2004), we found in abundance. This is likely due to the restricted access, which leads to virtually no exploitation and emphasizes the importance of protecting large forest fragments. On the other hand, the presence of the threatened *Araucaria angustifolia* (Bertol.) Kuntze in the reserve is probably more recent according to historical reports; occurrences are possibly due to the nearby plantations of this species.

We also found a new record of the genus *Ferdinandusa* (Rubiaceae) for the state of São Paulo, and we cannot yet identify the specimen at species level. Although there is a specimen in the SPSF herbarium identified as *Ferdinandusa speciosa* (Pohl) Pohl, (SPSF 44152), it has not yet been determined by an expert in the Rubiaceae. Until now, nothing was published on the genus in São Paulo (Jung-Mendaçoli et al. 2007; Anunciação and Calió 2015). The southernmost limit for the genus was

believed to be in Minas Gerais and Mato Grosso do Sul (Anunciação and Calió 2015).

We collected many naturalized species in the reserve, including *Centella asiatica* (L.) Urb, *Asclepias curassavica* L., *Bidens pilosa* L., *Impatiens walleriana* Hook. F., *Desmodium adscendens* (Sw.) DC., *D. incanum* DC., *Hedychium coronarium* J. Koenig, and *Zingiber officinale* Roscoe. This attests to the history of human disturbances in the Reserva Votorantim. The area has several intersecting roads, most of which have been deactivated with the abandonment of adjoining buildings.

We found that the richness of ferns and lycophytes the Reserva Votorantim (147 species) was consistent with other studies in the state, e.g., Jacupiranga State Park (212 species; Salino and Almeida 2008) and Carlos Botelho State Park (123 species; Lima et al. 2011). According to Prado and Hirai (2011), the number of ferns and lycophytes that we found represents >25% of the total fern and lycophyte species in São Paulo state. The high number of ferns and lycophytes in the Reserva Votorantim is likely attributable to its size and preservation in conjunction with yearlong high humidity levels, which is important for reproduction of ferns and lycophytes.

In some cases, we were unable to identify sterile specimens to species due to the limits imposed by the timing of our fieldwork. We expect that future surveys done in other seasons and in unexplored areas will likely increase the number of species for many families, such as Myrtaceae and Orchidaceae, as new fertile specimens are collected and recorded.

Our study represents the first floristic survey in the municipalities of Tapiraí, Miracatu, and Juquiá. The presence of almost 800 plant species, including 16 threatened species, highlights the importance of



**Figure 3.** Some angiosperms from Reserva Votorantim. **A.** *Ferdinandusa* sp. **B.** *Monstera adansonii* Schott. **C.** *Hygrophila costata* Nees. **D.** *Astrocaryum aculeatissimum* (Schott) Burret.



**Figure 4.** Some ferns and lycophytes from Reserva Votorantim. **A.** *Alsophila sternbergii* (Sternb.) Conant. **B.** *Blechnum acutum* (Desv.) Mett. **C.** *Selaginella flexuosa* Spring. **D.** *Polybotrya cylindrica* Kaulf.

floristic surveys of this kind and also shows the critical role of privately owned protected areas in managing and preserving the native flora.

The results of our floristic survey of the Reserva Votorantim support the concept that the reserve increases greatly a complex of state parks that together form a large, mostly continuous, and well-preserved fragment of Atlantic Forest. Our list of species is the first step towards building the local biodiversity knowledge base. This may be used to ensure effective prioritization, planning and management of future conservation efforts to preserve the invaluable natural heritage of this region.

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