List of Angiosperm species of the riparian vegetation of the Apodi-Mossoró river, Rio Grande do Norte, Brazil

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ABSTRACT: This article describes the riparian vegetation of a river in the Rio Grande do Norte state for the first time. This is a seasonal river in the semi-arid region of the Caatinga biome. The study is based on data from herbarium collections and new expeditions from July 2007 to October 2008. Two hundred and forty seven taxa were recorded and of these, 116 are herbs and three of which are epiphytes, 25 sub-shrubs, 77 shrubs or trees, 26 lianas, one parasite, and two palms. This list of species of riparian vegetation in the river Apodi-Mossoró was compared with only two available lists from rivers in the northeast with similar environmental characteristics and showed a low similarity. This study points to the need for preservation of the species and remnants of riparian vegetation of the river Apodi-Mossoró and to increase efforts in the study of this vegetation type.

INTRODUCTION

The Apodi – Mossoró river basin, with an area of 14,268 km² (corresponding to 26.8% of the estimated area of the Rio Grande do Norte State), occurs in the Caatinga biome where the climate is very hot and semi-arid (SEMARH 1998), BSh’ according to Köppen classification, being surrounded by the Araripe mountains and Borborema plateau (Rocha et al. 2009). The source and mouth of the river Apodi Mossoró are in the Rio Grande do Norte and it has 618 dams (Henry-Silva 2010), with a total water volume of 469,714,600m³ (SEMARH 2012).

The course of the river was the main route of Portuguese penetration into the interior of Rio Grande do Norte in the eighteenth century and its margins were already used for the establishment of corrals and gardens (Monteiro 2002). Currently, the major activities that interfere directly in the river are irrigated fruit growing, family agriculture, salt production, mineral exploration and oil production, which environmental and economic impacts focus entirely on the river basin (Rocha et al. 2009). Logging of riparian vegetation is also intense and is documented below.

With early deforestation and salinization of large areas downstream, little is left of the original riparian flora of the temporary rivers in the semi-arid Northeast and is curious to note that the descriptions of these vegetation types are contradictory. For Ab’Sáber (1999a, b; 2001) these “matinhas beiradeiras” of the northeastern rivers may be called “forests of craiba” (Tabebuia aurea (Silva Manso) Benth. and Hook. F. ex Moore). Andrade-Lima (1981) on the other hand characterizes them a palm forest, where the dominant taxa are Copernicia prunifera (Mill.) H.E. Moore, Licinia rigida Benth. and Geofroea spinosa Jacq., and he does not mention craiba. The descriptions of Ab’Sáber and Andrade Lima refer only to dominant taxa, and the riparian northeastern forests have been misinterpreted in that they contain a small number of species.

Complete lists of species of the riparian forests of Rio Grande do Norte were not found. The work of Tavares et al. (1975), although referring to the vegetation of the Piranhas-Açu basin, did not focus on the riparian vegetation. For other northeastern states knowledge of riparian vegetation is also rare. Noteworthy are the work of Nascimento et al. (2003), along the São Francisco river, and Lacerda et al. (2005), expanded by Lacerda and Barbosa (2006) for Taperoá river basin in Paraiba. In Pernambuco, there are studies on riparian vegetation of the river Pajeú (Souza and Rodal 2010), and an ethnobotanical study on the riparian vegetation of the river Navio, both in the Floresta municipality (Fernández et al. 2006).

This study was conducted primarily to list the richness of Angiosperm taxa of the riparian vegetation of the Apodi-Mossoró river and discuss general aspects of this vegetation type, providing subsidies for its restoration and management.

MATERIALS AND METHODS

Figure 1 shows the river Apodi-Mossoró, which source is in the Serra dos Minhuns, Tigre de Gma district, in the municipality of Luís Gomes (06°22’08.8” S, 38°28’54.6” W) in the western region of Rio Grande do Norte, passing through the municipalities of Luís Gomes, Pau dos Ferros, Rafael Fernandes, Riacho de Santana, Apodi, Felipe Guerra, Governador Dix-Sept Rosado, Mossoró and empties between Areia Branca and Grossos (04°56’ S, 37°09’ W) into the Atlantic ocean.

The vegetation of the mountainous municipality of Luís Gomes consists mainly of semi-deciduous forest and, in this region, the climate is Aw’ according to the Köppen classification, characterized by a tropical rainy climate with dry summer (SEMARH 1998). Even with the anthropic pressure of small farmers, this is the area along which the river is better preserved.
The southern half of the basin consists of a Depression, a relief with predominantly flat plateau and Planaltos Residuais, which surfaces are delimited by erosional scarps with flat tops and sedimentary origin. The north-central portion of the basin is characterized by karst surface and in the far north, there is the coastal strip, according to data from SEMARH (1998) which presents more detail.

The floristic survey was based on the analysis of specimens deposited in the MOSS herbarium (acronym available in Thiers 2012) and new collections undertaken. Samples were collected monthly and some every two weeks, during the period from July 2007 to October 2008 (see Figure 1): 1) in the region of springs, in the municipality of Luís Gomes, 2) in preserved fragments in the municipality of Felipe Guerra, representing the middle portion of the river, and 3) in Mossoró, with estuarine characteristics. Additional collections were made in Governor Dix-Sept Rosado, Apodi, Riacho de Santana and Areia Branca.

The herbarium analysis showed species that were not found in the systematic field collection points. These species were then relocated based on the label information and with the aid of local informants.

The collections were made randomly within the area or directed by local informants. We sampled only fertile material, however a few tree species were only found sterile and their names were included in the list presented in Table 1. We included species occurring in small grassland patches and aquatic herbs, associated with riparian forests.

Identifications were made using literature, by comparison in the herbaria and sending material to specialists. The vouchers were incorporated into the MOSS herbarium and duplicates distributed to EAC, UFRN and others. Popular names were provided by local informants. Information provided by the riverside communities was the main source for determining the location of endangered species. The scientific names are in accordance to the list of species in the flora of Brazil (Forzza et al. 2012).

We compared the similarity of the tree and shrub flora of the river Apodi-Mossoró with lists published in Lacerda et al. (2005) and Souza and Rodal (2010), due to their geographic proximity and similarities in environmental factors. Table 1 presents the environmental characteristics of the regions occupied by the rivers whose floristic lists were used in this comparison. The unidentified taxa were considered exclusive or distinct. Sub-shrubs from Apodi Mossoró river vegetation were included in the comparison if those species were considered shrubs or trees in the other two published lists. The similarity between the flora of these areas was based on Sørensen index (Mueller-Dombois and Ellenberg 1974).

**Results and Discussion**

A total of 247 taxa were recorded in the Apodi-Mossoró riparian vegetation (Table 2), which represents the largest number of species records occurring along rivers in the Northeast. Of the species found, 116 are terrestrial or aquatic herbs and three epiphytes, 25 sub-shrubs, 77 shrubs or trees, 26 lianas, one parasite and two palm trees.

**Non arboreal taxa:** 119 species were found from this stratum (Table 1), represented in 28 families and 74 genera. Some taxa are illustrated in Figure 2. The Poaceae and Cyperaceae account for 41% of the herbaceous flora found in the riparian vegetation of this river. This large number of herbs is also due to sampling species from temporary ponds and associated pioneer taxa.

The families with the largest number of species were Poaceae (33 species), Cyperaceae (25 species), Asteraceae (14 species), Fabaceae (nine species) and Verbenaceae (five species).

The most diverse genera were *Cyperus* (14 species), followed by *Eragrostis* Wolf, *Paspalum* L. and *Ludwigia* L. with four species each. *Tillandsia* Wilbr., *Eleocharis* R. Br, *Panicum* L., *Spermacoce* L. and *Lippia* L. had three species each and all other genera were represented by one or two species.

The species *Tarenaya spinosa* (Jacq.) Raf., *Cyperus compressus* L., *Croton heliotropifolius* Kunth., *Chloris barbata* Sw., *Apalanthe granatensis* (Bonpl.) Planch., *Echinochloa colona* (L.) Link, *Heteranthera seubertiana*

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**Table 1. Characteristics of the river basins used in the similarity studies.**

| RIVER          | LATITUDE       | LONGITUDE       | CLIMATE | GEOLOGY | HIDROLOGY |
|----------------|----------------|-----------------|---------|---------|-----------|
| Apodi-Mossoró  | 06°22’0.88” and 04°56’ | 38°28’54.6” and 37°09’ | BSw’    | Cristalino | Seasonal |
| Pajeú          | 07°16’20” and 08°56’01” | 36°59’00” and 38°57’45” | BSw’    | Cristalino | Seasonal |
| Taperoã        | 06°51’31” and 07°34’21” | 36°0’55” and 37°13’9”  | BSw’    | Cristalino | Seasonal |
Solms and *Eleocharis geniculata* (L.) Roem. and Schult. were recorded in all the collecting areas.

Araújo *et al.* (2005) compared the herbaceous diversity in flat, rocky and riparian microhabitats in the Caatinga biome. The richness, diversity and uniqueness of the herbaceous species in riparian habitat were higher than the others. The similarity between the occurrence of non-arboreal taxa from this study compared to the list of Araújo *et al.* (2005) is extremely low. The species that occurred in both lists are *Bomarea edulis* (Tussac.) Herb. (under *B. saltilloides* (Mart.) Benth. and Hook), *Dalechampia cf. scandens* L., *Heliotropium angiospermum* Murray, *Herissantia crispa* (L.) Briziky, *Panicum trichoides* Sw., *Panicum venezuelae* Hack, *Ruellia asperula* (Mart. and Nees) Lindau and *Tragia volubilis*. *Dactylolotenum aegyptium* (L.) P. Beauv. and *Enteropogon mollis* (Nees) Clayton appear in the list of Araújo *et al.* (2005), but are not related to the riparian habitat. The low similarity of the herbaceous layer between the Apodi-Mossoró and Olaria stream may be related to the heterogeneity of the riparian vegetation of the northeastern rivers (discussed below in greater detail), but also due to differences between the phytogeographic subzones occupied by rivers.

The three phytogeographic subzones of the Northeast are called “Zona da Mata”, “Agreste” and “Sertão”. According to Barbosa *et al.* (2006), the Zona da Mata extends from the coast in a strip of approximately 100km wide and has humid tropical climate, fertile soil and occupied by Atlantic rainforest. The Agreste is a transition area between the more humid Zona da Mata and the semi-arid Sertão. Araújo *et al.* (2005) worked in an area of the Olaria stream located in the Agreste, called dry tropical forest by the authors. Works that deal with the distribution pattern of taxa in Pernambuco show that species richness varies between the subzones, with exclusive taxa occurring in each subzone. The Agreste has higher richness of taxa and exclusive species, when compared with the Sertão. Among others, the work of Barros *et al.* (1988) and Abreu *et al.* (2008) illustrate this distribution pattern by analysis of distant taxonomic groups, such as *Pteridophytes* and *Oxalis* L. (Oxalidaceae) respectively, with the higher number of taxa in the Agreste than in the Sertão and emphasize the occurrence of exclusive species, characteristic of each subzone.

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The time of year can also be the cause of low similarity, since Araújo *et al.* (2005) sampled only those species that occurred in the rainy season, with no data collected during the dry season. *Eragrostis hypnoides* (Lam.) Britton, for example, was only found in the dry season, occurring in the shrinking lake margins, which was also observed by Ferreira *et al.* (2009). Reis *et al.* (2006) and Lima *et al.* (2007) showed that due to variations in total rainfall between years, characteristic of northeastern climate, the herbaceous community structure can be changed and many populations can show drastic reductions in size, even disappearing completely from the area. Lima *et al.* (2007) evaluating the phenological differences between microhabitats in an area of caatinga, concluded that spatial variations in the microhabitats conditions associated with interannual variations in total rainfall may change the flowering period and recruitment of herbaceous plants. They also showed that a short time series may not be sufficient to describe the plasticity that exists within populations and infer the geographical distribution of some herbaceous species of the caatinga.

We sampled 30 species of lianas belonging to 25 genera, 14 families with one undetermined species. The families Fabaceae (seven species), Cucurbitaceae (five species) and Sapindaceae (four species) showed the highest species richness, accounting for 50% of the liana species found. Moreover, ten families (37%) were represented by a single liana species. The genera of higher species richness were *Luffa Mill., Cardiospermum L.* and *Paulinia* L., with two species each, and the remaining 20 genera (74%) had only one. Remarkably, 18 (66%) of the 27 species found occurred only in the Luís Gomes region, where the river sources were found. As previously mentioned, the source of the Apodi-Mossoró river is located in the Serra dos Minhuns, which has semi-deciduous vegetation. The occurrence of a significant number of lianas in a semi-deciduous vegetation was reported for the Rio Grande do Norte State (Oliveira *et al.* 2012), but there are several reports for the São Paulo State (Udulutsch *et al.* 2004;
some tree and shrub species of Apodi-Mossoró River, Rio Grande do Norte, Brazil. Fabaceae: A. Erythrina velutina Willd. Sapindaceae: B. Sapindus saponaria L. Fruits; Apocynaceae: C. Cryptostegia grandiflora R. Br., invasive species; Capparaceae: D. Crataeva tapia L.; Polygonaceae: E. Triboloris gardneriana Weidl. Fruits; Chrysobalanaceae: F. Licania rigida Benth. Roots; Fabaceae: G. Albizia inundata (Mart.) Barneby and J.W.Grimm; Arecales: H. Syagrus caereensis Noblick.

Figure 3. Some tree and shrub species of Apodi-Mossoró River, Rio Grande do Norte, Brazil. Fabaceae: A. Erythrina velutina Willd. Sapindaceae: B. Sapindus saponaria L. Fruits; Apocynaceae: C. Cryptostegia grandiflora R. Br., invasive species; Capparaceae: D. Crataeva tapia L.; Polygonaceae: E. Triboloris gardneriana Weidl. Fruits; Chrysobalanaceae: F. Licania rigida Benth. Roots; Fabaceae: G. Albizia inundata (Mart.) Barneby and J.W.Grimm; Arecales: H. Syagrus caereensis Noblick.

This table shows that the number of unique tree taxa, or those quoted in only one of the three surveys is high. There are 18 species cited for Taperoá which did not occur in the other two areas, six were unique to the river Pajeú and 40 to the Apodi Mossoró river. The Sørensen index shows a low similarity between the tree-shrub flora of the river areas and Taperoá river shares more species in common with the Apodi Mossoró river (Table 3).

The large number of exclusive species in the riparian vegetation of the Apodi-Mossoró is probably due to sampling along the entire length of the river, which did not occur in the other two surveys. Thus, species occurring in the mangrove penetrated into the riparian vegetation, as is the case Laguncularia racemosa (L.) C.F.Gaertn., Avicennia spp. and Lycium martii Sendtn. collected in Mossoró, site with a strong estuarine influence. The same occurs in the region of springs in Luiz Gomes, which was surrounded by semi deciduous forest species, as is the case Myrciaria tenella (DC.) O.Berg (Pereira et al. 2002) and Thiloa glaucocarpa (Mart.) Eichler, Copaifera sp. among others. Figure 4 illustrates the various environments found in this work.

The description given by Ab’Sáber (2001) of a riparian vegetation of seasonal rivers in the Northeast, being dominated by “craiba” (Tabebuia aurea), could not be applied in any of the remaining sections of the river Apodi-Mossoró at least not today. No records of “craiba” were found along the Apodi-Mossoró river.

The rarity of “craiba” may be due to human influence. There are indications of a more frequent occurrence of this species, such as the name of a municipality in the watershed Apodi-Mossoró as Caraúbas, which is an obvious reference to “craiba” which is also called “caraúba” (Braga1976). Another interesting fact that can aid the discussion, is that “craiba” showed higher use value in the study by Ferraz et al. (2006) in a creek in Pernambuco. However, according to these authors, the current use by the local population is not consistently associated with positive or negative impacts on the conservation of the species.

In Andrade-Lima (1982) characterization there is no reference to “craibeira” and the riparian vegetation of the Rio Grande do Norte, Ceará and Piauí seasonal rivers is a “forest of palms” with predominantly Copernicia prunifera, Licania rigida (Figure 3F) and Geoffroea spinosa. Interestingly, none of the dominant species considered by Ab’Sáber (2001) or Andrade Lima (1982) were found in the list of species shared between the three areas.

The lack of “craiba” in the riparian vegetation of Apodi Mossoró today could be explained by human action, but the lack of “carnauba” in the Tapená river (Lacerda et al. 2005; Lacerda and Barbosa 2006) is more complicated and seems to demonstrate that the riparian vegetation of the Northeast rivers is extremely heterogeneous and that the descriptions of Andrade-Lima and Ab’Sáber are not conflicting, but refer to different distinct contexts. The description given by Andrade-Lima (1981) demonstrates better the vegetation more frequently found in the small remnants along the Apodi-Mossoró river: great proliferation of “carnauba” and “oíticas” of considerable richness.
size and the frequent presence of “marizeiro” or “umarizeiro”.

Ab’Sáber (1999b) refers to “ariscos” which are grassy fields with groups of “carnaúbas”. Formations that approach this description can be found in the Mossoró municipality, except for the presence of “craibeira”, as mentioned in the previous paragraph. In these formations, Cyperus articulatus L. (Cyperaceae), locally known as “junco”, covers the areas flooded and Paspalum vaginatum Sw. (Poaceae), surround the “junco ponds” in the drier portions of these wetlands. At the edges of these areas, the “joaímeiro” (Zizyphus joazeiro) is very frequent.

In addition to differences in the composition of riparian vegetation between the rivers of the Northeast, there is a floristic heterogeneity of riparian forests conditioned by ecotonal nature of the border, which is occupied by more than one type of vegetation or distinct physiognomic formations, as emphasized by Rodrigues and Nave (2001). The fragments of the riparian vegetation studied along the Apodi-Mossoró river were shown to be heterogeneous in physiognomic and floristic terms.

According to Fernandes (2005), the influence of mountain forests in the composition of the riparian vegetation of the rivers of northeast is broad, since species have originated from the adjacent mountains. Similar proposition was made and substantiated by Oliveira Filho and Ratter (2001) to explain the extraordinary richness of the riparian vegetation of the Cerrado, and they suggest that elements of riparian vegetation were “imported” from neighboring forest formations.

In the municipality of Felipe Guerra, there are limestone outcrops along the river margins, covered by an open caatinga, where the herbaceous layer is conspicuous, with frequent occurrence of “pereiro” (Aspidosperma pyrifolium), “macambira” (Bromelia laciniosa Mart. ex Schult. f.) and “cactus” (Cereus jamacaru DC.). Pithecoseris pacourinoides Mart. ex. DC. is a conspicuous element, found exclusively in these formations.

Besides eliminating the riparian vegetation as a whole, selective pressure on certain species is also likely to occur. Species considered typical and frequent (Andrade-Lima 1981), as Geoffraea spinosa, the popular “umarizeiro”, have reduced populations today, even though the cooked fruit is well appreciated by riverine communities. Sapium saponaria L. is also represented by a few individuals, located in Apodi.

Only two individuals of Vitex gardneriana Schauer, popularly called “jarimataia” and Trichilia hirta L., “barandão”, were relocated and could be prioritized in recuperation programs to maintain these taxa in riparian vegetation of the Apodi-Mossoró river or at least in Apodi. The distribution of these species seems never to have been continuous along the length of the river, since the previous collection records are concentrated only in Apodi and communities of the source regions apparently did not know these species. According to reports from the riverside community of Apodi, stems from “jarimataia” and “barandão” are extracted to manufacture tool handles and fence posts.

Besides the removal of the riparian vegetation of the Apodi-Mossoró river; biological invasion by exotic species is common. The “algarroba” (Prosopis juliflora (Sw.) DC.) mixed with the native pioneer “jurema preta” (Mimosa tenuiflora (Willd.) Poir.), forms large tracts of vegetation along the river, especially in Mossoró. Another concern is the invasion by “unha-de-cão” (Cryptostegia grandiflora R.Br., Figure 3C), a species endemic to Madagascar and naturalized in tropical regions of the world (Vieira et al. 2004), which forms dense, impenetrable forests in floodplains. To a lesser extent, we observed the invasion of riparian vegetation by Parkinsonia aculeata L., whose impact in areas of the Northeast has been documented (Fabricante 2009).

The results of this study point to a small similarity between areas of riparian vegetation, as reported for other regions (Rodrigues and Nave 2001), but the small number of available studies do not provide a comprehensive view of the distribution of species in the seasonal rivers of semi-arid region of Brazil.

**Figure 4.** A. Riparian vegetation of a secondary river to Mossoró river, called Riacho do Rela, in Luiz Gomes, Rio Grande do Norte, Brazil; B. Seasonal lake, surrounded by riparian vegetation, with an abundance of Albizia insundata (Mart.) Barneby and J.W. Gremes and Copernicia prunifera (Mill.) H.E. Moore; C and D. Riparian vegetation of the main Mossoró spring source, Luiz Gomes municipality, C. dry season; D. rainy season; E. Perennial spring source in Luiz Gomes; F. Temporary lake in the rainy season, surrounded by Paspalum vaginatum Sw.; G and H. Apodi-Mossoró river in the municipality of Felipe Guerra, showing the intense logging.
TABLE 2. Species list of the riparian vegetation of Apodi-Mossoró river, RN, organized in alphabetical order by family, with common names, habit, and voucher. RCO = Regina Célia de Oliveira; ASS = Anádia Stéphanie da Silva, Ribeiro = André Rodolfo de Oliveira Ribeiro and Cunha = E.M. (colector name unavailable) Cunha.

| SPECIES             | COMMON NAME                  | HABIT     | VOUCHER |
|---------------------|------------------------------|-----------|---------|
| **Acanthaceae**     |                              |           |         |
| Justicia aequilabris (Nees) Lindau | -                | Shrub    | RCO 2213|
| Justicia sp.        | -                            | Shrub     | RCO 2140|
| Ruellia asperula (Mart. and Nees) Lindau | -                | Sub-shrub | ASS 2   |
| Ruellia paniculata L. | -                            | Sub-shrub | RCO 2239|
| **Alismataceae**    |                              |           |         |
| Echinodorus subalatus (Mart.) Griseb. | -                | Herb     | RCO 2169|
| Hydrocleys martii Seub. | -                            | Herb     | RCO 2303|
| **Alstroemeriaceae** |                              |           |         |
| Bomarea edulis (Tussac) Herb. | -                | Liana    | RCO 2212|
| **Amaranthaceae**   |                              |           |         |
| Alternanthera brasiliana (L.) Kuntze | -                | Herb     | RCO 2167|
| Alternanthera tenella Colla | -                | Herb     | RCO 2111|
| sp.1                | -                            | Herb      | RCO 1957|
| **Anacardiaceae**   |                              |           |         |
| Myracrodruon urundeuva Allemão | aroreira do sertão | Tree     | No voucher|
| Spondias mombin L.  | -                            | Tree      | No voucher|
| **Apocynaceae**     |                              |           |         |
| Aspidosperma pyrifolium Mart. | Pèreiro           | Tree     | RCO 2132|
| Cryptostegia grandiflora R. Br. | unha-de-cão       | Liana    | Cunha 12|
| Odontadenia puncticulosa (Rich.) Pulle | Liana   | Liana    | No voucher|
| Oxypetalum sp.      | -                            | Liana     | RCO 1939|
| **Arecaceae**       |                              |           |         |
| Copernicia prunifera (Mill) H.E. Moore | Carnaíba       | Palm     | No voucher|
| Syagrus cerearum Noblick | côco-católe    | Palm     | RCO 2247|
| **Asteraceae**      |                              |           |         |
| Acanthus spinosus hispidum DC. | -                | Sub-shrub | RCO 2192|
| Acmeilla brachyglottis Cass. (citada só para Bahia na lista do Brasil) | -                | Herb     | RCO 2168|
| Ageratum conyzaoides L. | -                            | Sub-shrub | RCO 2172|
| Bidens riparia Kunth | -                            | Herb      | RCO 2130|
| Brickellia diffusa (Vahl) A.Gray | cabelo-de-cão     | Herb     | RCO 2309|
| Centratherum punctatum Cass. | -                | Sub-shrub | RCO 2241|
| Melanthera nivea (L.) Small | -                | Sub-shrub | RCO 1941|
| Mikania cordifolia (L.) Willd. | cesto-de-velho    | Liana    | RCO 1949|
| Pectis brevipedunculata Sch.Bip. | Alecrim          | Herb     | RCO 2184|
| Pithecoseris pacourinoides Mart. ex. DC. | -                | Herb     | RCO 1924|
| Porophyllum ruderalae (Jacq.) Cass. | cravo-de-urubu   | Herb     | RCO 2183|
| Spilanthes sp.      | -                            | Herb      | RCO 1953|
| Wedelia sp.         | -                            | Herb      | RCO 2123|
| sp.1                | -                            | Sub-shrub | RCO 1938|
| sp.2                | -                            | Sub-shrub | RCO 2316|
| **Bixaceae**        |                              |           |         |
| Cochlospermum vitifolium (Willd.) Spreng. | Pacote          | Tree     | RCO 2307|
| **Boraginaceae**    |                              |           |         |
| Euploca procumbens (Mill.) Diane and Hilger | -                | Herb     | ASS 51  |
| Euploca ternata (Vahl) J.L.M.Melo and J.Semir | -                | Herb     | RCO 2122|
| Heliotropium angiospermum Murray | -                | Sub-shrub | RCO 2127|
| Heliotropium sp.    | -                            | Herb      | RCO 1821|
| **Bromeliaceae**    |                              |           |         |
| Tillandsia recurvata (L.) L. | -                | Epiphyte | RCO 2200|
| Tillandsia streptocarpa Baker | -                | Epiphyte | RCO 2201|
| Tillandsia tricholepis Baker | -                | Epiphyte | RCO 2202|
| **Burseraceae**     |                              |           |         |
| Commiphora leptophloeas (Mart.) J.B.Gillet | -                | Tree     | No voucher|
| **Cactaceae**       |                              |           |         |
| Cereus jamacaru DC. | -                            | Tree      | No voucher|
| **Capparaceae**     |                              |           |         |
| Crataeva tapia L.   | Trapiá                      | Tree     | ASS 43  |
| SPECIES                                      | COMMON NAME      | HABIT         | VOUCHER |
|---------------------------------------------|------------------|---------------|---------|
| Cynophalla flexuosa (L.) J.Presl.           | feijão-bravo     | Tree          | ASS 48  |
| **Cleomaceae**                              |                  |               |         |
| Tarenaya spinosa (Jacq.) Raf.               | Mussambê         | Herb         | ASS 31  |
| **Combretaceae**                            |                  |               |         |
| Combretum leprosum Mart.                    | Mofumbo          | Tree/Shrub    | RCO 2137|
| Combretum lanceolatum Pohl ex Eichler       | mofumbo-do-rio   | Shrub        | RCO 2329|
| Laguncularia racemosa (L.) C.F.Gaertn.      | Mangue           | Tree         | Ribeiro 86|
| Thiloa glauocarpa (Mart.) Eichler           | -                | Shrub        | No voucher|
| **Commelinaceae**                           |                  |               |         |
| Tradescantia zanonia (L.) Sw.               | -                | Herb         | RCO 2211|
| **Convolvulaceae**                          |                  |               |         |
| sp.1                                        | -                | Liana        | RCO 2189|
| **Chrysobalanaceae**                        |                  |               |         |
| Licania rigida Benth.                       | Óticica          | Tree         | RCO 2242|
| **Curculiaceae**                            |                  |               |         |
| Luffa cylindrica M.Roem.                    | Bucheira         | Liana        | ASS 23  |
| Luffa operculata (L.) Cogn.                 | -                | Liana        | ASS 45  |
| Momordica charantia L.                      | melôo-são-caetano| Liana        | ASS 27  |
| Rytidostyliis amazonica (Mart. ex Cogn.) Kuntze | -            | Liana        | RCO 2190|
| sp.1                                        | -                | Liana        | RCO 2191|
| **Cyperaceae**                              |                  |               |         |
| Cyperus aggregatus (Willd.) Endl.           | -                | Herb         | RCO 2223|
| Cyperus articulatus L.                      | -                | Herb         | ASS 3    |
| Cyperus compressus L.                       | -                | Herb         | RCO 2110|
| Cyperus cuspidatus Kunth                    | -                | Herb         | Ribeiro 199|
| Cyperus distans L.f.                        | -                | Herb         | RCO 2222|
| Cyperus enterianus Boeck.                   | -                | Herb         | RCO 2224|
| Cyperus esculentus L.                       | -                | Herb         | Ribeiro 170|
| Cyperus iria L.                             | -                | Herb         | Ribeiro 172|
| Cyperus laxas Lam.                          | -                | Herb         | Ribeiro 4 |
| Cyperus ligularis L.                        | capim-navalha    | Herb         | Ribeiro 19 |
| Cyperus odoratus L.                         | -                | Herb         | RCO 2235|
| Cyperus rotundus L.                         | -                | Herb         | Ribeiro 95 |
| Cyperus squarrosus L.                       | -                | Herb         | Ribeiro 181|
| Cyperus surinamensis Rottb.                 | -                | Herb         | RCO 2234|
| Eleocharis geniculata (L.) Roem. and Schult.| -                | Herb         | Ribeiro 6 |
| Eleocharis minima Kunth                     | -                | Herb         | RCO 2253|
| Eleocharis mutata (L.) Roem. and Schult.    | -                | Herb         | Ribeiro 5 |
| Fimbristylis cymosa R. Br.                  | -                | Herb         | Ribeiro 7 |
| Fimbristylis dichotoma (L.) Vahl            | -                | Herb         | Ribeiro 154|
| Lipocarpha micrantha (Vahl) G.C.Tucker      | -                | Herb         | Ribeiro 184|
| Pycreus fugax (Liebm.) C. D. Adams          | -                | Herb         | Ribeiro 167|
| Pycreus macrostachyos (Lam.) J.Raynal       | -                | Herb         | Ribeiro 171|
| Pycreus polystachyos (Rottb.) P.Beauv.      | -                | Herb         | Ribeiro 112|
| Rhynchospora contracta (Nees) J.Raynal      | barba-de-bode    | Herb         | Ribeiro 2 |
| Scleria reticulatis Michx.                  | -                | Herb         | Ribeiro 180|
| **Euphorbiaceae**                           |                  |               |         |
| Cnidoscolus quercifolius Pohl                | Faveleira        | Tree         | RCO 2152|
| Croton heliotropifolius Kühn.               | Velame           | Sub-shrub    | ASS 36  |
| Croton sonderianus Müll. Arg.               | Marmelein        | Tree         | RCO 1968|
| Croton s.p.                                 | -                | Herb         | ASS 50  |
| Dalechampia cf. scandens L.                 | -                | Liana        | RCO 2171|
| Euphorbia s.p.                              | -                | Herb         | RCO 2151|
| Jatropha gossypifolia L.                    | pinhão-roxo      | Sub-shrub    | ASS 24  |
| Jatropha mollissima (Pohl.) Baill.           | Pinhão           | Tree         | ASS 35  |
| Manihot carthaginensis subsp. glaziovii (Müll.Arg.) Allem | -          | Tree         | No voucher|
| Trogio volubilis L.                         | -                | Liana        | RCO 1933|
| sp.1                                        | -                | Shrub        | RCO 2217|
| **Eriocaulaceae**                           |                  |               |         |
| sp.1                                        | -                | Herb         | RCO 2251|

Table 2. Continued.
| SPECIES               | COMMON NAME                     | HABIT      | VOUCHER |
|----------------------|---------------------------------|------------|---------|
| **Erythroxylaceae**  |                                 |            |         |
| Erythroxylaceae sp.  |                                 | Tree       | ASS 46  |
| **Fabaceae**         |                                 |            |         |
| Albizia inunda (Mart.) Barneby and J.W.Gremes | - | Tree | ASS 55  |
| Amburana carensis (Allemão) A.C.Sm. | - | Tree | No voucher |
| Anadenanthera colubrina (Vell.) Brenan | angico | Tree | RCO 2229 |
| Anadenanthera colubrina var. cebil (Griseb.) Altschul | angico-branco | Tree | RCO 2305 |
| Anadenanthera sp.    | angico-preto | Tree | RCO 2336 |
| Arachis dardani Krapov and W.C.Greg. | mundubim-de-carçará | Herb | RCO 2188 |
| Bauhinia cheilantha (Bong.) Steud. | capa-bode | Shrub | RCO 2193 |
| Bauhinia pulchella Benth. | mororó-da-serra | Tree | ARD 11 |
| Bauhinia sp.         | Mororó | Shrub | RCO 2182 |
| Centrosema brasilianum (L.) Benth. | xibiu-de-negra | Liana | ARD 194 |
| Chaetocalyx scandens (L.) Urb. | - | Liana | RCO 2226 |
| Chamaecrista duckeana (P. Bezerra and Afr. Fernandes) H.S. Irwin and Barneby | - | Sub-shrub | RCO 2165 |
| Chloroleucon dumosum (Benth.) G. P. Lewis | Arapiraca | Tree | RCO 1963 |
| Copaifera sp.        | pau-d’óleo | Tree | ASS 16  |
| Cratylia argentea (Desv.) Kuntze | - | Liana | RCO 1945 |
| Crotalaria retusa L. | guizo-de-cascavel | Herb | ASS 26  |
| Dioclea grandiflora Mart. ex Benth. | Mucuná | Liana | RCO 1944 |
| Erythrina velutina Willd. | Mulungu | Tree | RCO 1967 |
| Geoffroea spinosa Jacq. | Marizheiro | Tree | ASS 34  |
| Inga edulis Mart.    | - | Tree | RCO 2132 |
| Libidibia ferrea (= Caesalpinia ferrea Mart. ex Tul. var. ferrea) | Juca | Tree | RCO 1940 |
| Lonchocarpus sericeus (Poir.) Kunth ex DC. | Ingazeira | Tree | ASS 53  |
| Machaerium vestitum Vogel | Violeta | Tree | ASS 19  |
| Macroptilium lathyroides (L.) Urb. | - | Herb | RCO 2219 |
| Mimosa invisa Mart. ex Colla | - | Liana | RCO 2227 |
| Mimosa modesta Mart. | - | Sub-shrub | RCO 2206 |
| Mimosa paraiba Barneby | - | Tree | RCO 2207 |
| Mimosa sensitiva L.  | - | Liana | RCO 2187 |
| Mimosa tenuiflora (Willd.) Poir. | jurem-a-preta | Tree | RCO2303b |
| Parkinsonia aculeata L. | - | Tree | ASS 22  |
| Piptadenia stipulacea (Benth.) Ducke | jurem-a-branca | Tree | RCO 1948 |
| Piptadenia viridiflora (Kunth.) Benth. | - | Tree | ASS 1   |
| Pithecellobium diversifolium Benth. | Espinheiro | Tree | RCO 2349 |
| Pithecellobium dulce (Roxb.) Benth. | Carolina | Tree | ASS 5   |
| Poinciana bracteosa (Tul.) L.P. Queiroz | Catingueira | Tree | RCO 1964 |
| Poinciana pyramidalis (Tul.) L.P. Queiroz | Catingueira | Tree | RCO 2139 |
| Prosopis juliflora (Sw.) DC. | - | Tree | No voucher |
| Rhychnochloa minima (L.) DC. | - | Liana | RCO 1814 |
| Sesbania exasperata Kunth | - | Sub-shrub | ASS 30  |
| Senna martiana (Benth.) H.S. Irwin and Barneby | flor-de-são-jáo | Tree/Shrub | RCO 2138 |
| Senna spectabilis (DC.) H.S. Irwin and Barneby | Canafístula | Tree/Shrub | RCO 1947 |
| Senna rizzinii H.S. Irwin and Barneby | - | Tree | RCO 1823 |
| Stylosanthes sp.     | - | Herb | RCO 2121 |
| Tephrosia purpurea (L.) Pers. | - | Sub-shrub | RCO 2327 |
| Vachellia farnesiana (L.) Wight and Arn. | Corno | Shrub | RCO 1946 |
| sp.1                 | - | Herb | ASS 39  |

**Gentianaceae**

Schultesia doniana Progel | Sub-shrub | RCO 1954 |

**Gesneriaceae**

Sphaerorrhiza sarmentiana (Gardner ex Hook.) Roalson and Boggan | - | Herb | RCO 2209 |

**Hydrocharitaceae**

Apalante graminensis (Bonpl.) Planch. | - | Herb | RCO 2113 |

**Hydrooleaceae**

Hydrolea spinosa L. | - | Sub-shrub | RCO 1950 |

**Lamiaceae**

Marsypianthes cf. chamaedrys (Vahl) Kuntze | - | Herb | RCO 2142 |

Vitex gardneriana Schauer | Jarimataia | Tree | RCO 2332 |
| SPECIES | COMMON NAME | HABIT | VOUCHER |
|---------|-------------|-------|---------|
| sp. | - | Sub-shrub | RCO 2252 |
| sp. | - | Herb | RCO 2112 |
| **Lythraceae** | | | |
| Cuphea campestris Koehne | - | Herb | RCO 2136 |
| **Malpighiaceae** | | | |
| Heteropterys sp. | - | Liana | RCO 1966 |
| Stigmaphyllon paralias A. Juss. | buquê-de-noiva | Shrub | RCO 2173 |
| **Malvaceae** | | | |
| Guazuma ulmifolia Lam. | - | Tree | ASS 54 |
| Herissantia crispo (L.) Brizicky | - | Sub-shrub | RCO 2144 |
| Herissantia tiubae (K. Schum.) Brizicky | - | Herb | RCO 2311 |
| Sida ciliaris | - | Sub-shrub | RCO 2175 |
| Sida sp. | - | Herb | ASS 33 |
| sp.1 | - | Sub-shrub | RCO 1958 |
| **Marantaceae** | | | |
| Thalia geniculata L. | - | Herb | RCO 2160 |
| **Meliaceae** | | | |
| Trichilia hirta L. | - | Tree | RCO 2324 |
| **Moraceae** | barandão | Tree | RCO 2218 |
| Ficus guianensis Desv. ex Ham. | gameleira | Tree | RCO 2218 |
| **Myrtaceae** | | | |
| Myrciaria tenella (DC.) O.Berg | goiabinha | Tree | ASS 13 |
| **Nyctaginaceae** | | | |
| Boerhavia sp. | pega-pinto | Herb | ASS 37 |
| **Nymphaeaceae** | | | |
| Nymphaea ampla (Salsib.) DC. | - | Herb | RCO 2302 |
| Nymphaea gardneriana Planch. | - | Herb | RCO 2232 |
| **Onagraceae** | | | |
| Ludwigia decurrens Walter | - | Herb | RCO 1965 |
| Ludwigia grandiflora (Michx.) Greuter and Burdet | - | Herb | ASS 25 |
| Ludwigia helminthorrhiza (Mart.) H.Hara | - | Herb | ASS 11 |
| Ludwigia octovalvis (Jacq.) P.H.Raven | - | Herb | ASS 7 |
| **Oxalidaceae** | | | |
| Oxalis glaucescens Norlind | - | Herb | RCO 2128 |
| **Phytolaccaceae** | | | |
| Petiveria alliacea L. | - | Herb | RCO 2228 |
| **Plantaginaceae** | | | |
| Angelonia cf. biflora Benth. | - | Herb | RCO 2238 |
| Angelonia campestris Nees and Mart. | - | Herb | RCO 1959 |
| **Plumbaginaceae** | | | |
| Plumbago sp. | - | Sub-shrub | RCO 2143 |
| **Poaceae** | | | |
| Aristida adscensionis L. | - | Herb | RCO 2147 |
| Aristida elliptica (Nees) Kanth | - | Herb | RCO 1935 |
| Axonopus capillaris (Lam.) Chase | - | Herb | RCO 2194 |
| Bouteloua americana (L.) Scribn. | - | Herb | RCO 2105 |
| Cenchrus cf. pedicellatus (Trin.) Morrone | - | Herb | RCO 2163 |
| Cenchrus purpureus (Schum.ach.) Morrone | - | Herb | RCO 2166 |
| Chloris barbata Sw. | - | Herb | RCO 2161 |
| Dactyloctenium aegyptium (L.) Willd. | - | Herb | RCO 2108 |
| Digitaria bicornis (Lam.) Roem. and Schult. | - | Herb | RCO 2109 |
| Echinochloa colona (L) Link | - | Herb | RCO 2333 |
| Echinochloa polystachya (Kunth) Hitchc. | - | Herb | RCO 2155 |
| Eleusine indica (L.) Gaertn. | - | Herb | RCO 2162 |
| Enteropogon mollis (Nees) Clayton | - | Herb | RCO 2148 |
| Eragrostis ciliaris (L) R.Br. | - | Herb | RCO 2197 |
| Eragrostis glomerata (Walter) L.H.Dewey | - | Herb | RCO 2250 |
| Eragrostis hypnoides (Lam.) Britton | - | Herb | RCO 2313 |
| Eragrostis pilosa (L) P.Beauv. | - | Herb | RCO 2106 |
| Eriochloa punctata (L) Desv. ex Ham. | - | Herb | RCO 2115 |
Table 2. Continued.

| SPECIES | COMMON NAME | HABIT | VOUCHER |
|---------|-------------|-------|---------|
| Panicum dichotomiflorum Michx. | - | Herb | RCO 2116 |
| Panicum trichoides Sw. | - | Herb | RCO 1930 |
| Panicum venezuelae Hack. | - | Herb | RCO 2216 |
| Paspalidium geminatum (Forssk.) Stapf | - | Herb | RCO 2230 |
| Paspalum fimbriatum Kunth | - | Herb | RCO 2119 |
| Paspalum melanospermum Desv. ex Poir. | - | Herb | RCO 2159 |
| Paspalum tumidum Kuhl. | - | Herb | RCO 2158 |
| Paspalum vaginatum Sw. | - | Herb | Ribeiro14 |
| Setaria parviflora (Poir.) Kerguélen | - | Herb | RCO 2196 |
| Sorghum bicolor (L) Moench | - | Herb | RCO 2236 |
| Steirachne barbata (Trin.) Renvoize | - | Herb | RCO 2254 |
| Trogus berteronianus Schult. | - | Herb | RCO 2150 |
| Urochloa fusca (Sw.) B.F. Hansen and Wunderlin | - | Herb | RCO 2149 |
| Urochloa mutica (Forssk.) T.Q.Nguyen | - | Herb | RCO 2156 |

Polygala boliviensis A.W.Benn. | - | Herb | RCO 2203 |

Polygola cf. bryoides A.St.Hil. and Moq. | - | Herb | RCO 2133 |

Coccocola sp. | - | Tree | ASS 49 |

Triplaris gardneriana Wedd. | oasaçu | Tree | ASS 18 |

sp. | cipo-verdadeiro | Liana | RCO 2335 |

Eichhornia crassipes (Mart.) Solms | aguapé | Herb | RCO 1813 |

Heteranthera seubertiana Solms | - | Herb | ASS 6 |

Ziziphus joazeiro Mart. | - | Tree | No voucher |

Borreria capitata (Ruiz and Pav.) DC. | - | Herb | RCO 1934 |

Borreria scabiosoides Cham. and Schltdl. | - | Herb | RCO 2154 |

Diodella apiculata (Willd. ex Roem. and Schult.) Delphine | alecrim-do-pasto | Herb | RCO 2185 |

Machaonia brasiliensis (Hoffmanns. ex Humb.) Cham. and Schltdl. | - | Tree | ASS 44 |

Spermacoce tenuior L. | - | Herb | RCO 2131 |

Tocoyena formosa (Cham. and Schltdl.) K.Schum. | jenipapo | Tree | RCO 2170 |

Tocoyena sellowiana (Cham. and Schltdl.) K.Schum. | jenipapo | Tree | ASS 40 |

Sideroxylon obtusifolium (Humb. ex Roem. and Schult.) T.D.Penn | quixabeira | Tree | Não coletada. |

Cardiospermum halicacabum L. | - | Liana | RCO 2225 |

Cardiospermum sp. | saída-de-acaú | Liana | RCO 1969 |

Paullinia sp. | - | Liana | RCO 2134 |

Paullinia pinnata L. | - | Liana | RCO 1937 |

Sapindus saponaria L. | sabonete | Tree | ASS 41 |

Serjania comata Radlk. | saíade-coá | Liana | RCO 2304 |

sp.1 | - | Tree | ASS 20 |

Phoradendron bathyoryctum Eichler | erva-de-passarinho | Hemi-parasite | ASS 52 |

Cardiospermum halicacabum L. | - | Liana | RCO 2225 |

Cardiospermum sp. | saída-de-acaú | Liana | RCO 1969 |

Paullinia sp. | - | Liana | RCO 2134 |

Paullinia pinnata L. | - | Liana | RCO 1937 |

Sapindus saponaria L. | sabonete | Tree | ASS 41 |

Serjania comata Radlk. | saíade-coá | Liana | RCO 2304 |

sp.1 | - | Tree | ASS 20 |

Phoradendron bathyoryctum Eichler | erva-de-passarinho | Hemi-parasite | ASS 52 |

Rutaceae | | | |

Lycium martii Sendtn. | - | Tree | RCO 2350 |

Solanum paniculatum L. | jurubeba | Herb | ASS 21 |

sp.1 | - | Sub-shrub | RCO 1816 |

sp.2 | - | Herb | RCO 2125 |

Avicennia germinans (L.) L | mangue | Tree | RCO 2353 |

Avicennia schaueriana Stapf and Leechm. ex Moldenke | - | Tree | Ribeiro 87 |

Lantana camara L. | camará | Sub-shrub | ASS 29 |
TABLE 2. CONTINUED.

| SPECIES | COMMON NAME | HABIT | VOUCHER |
|---------|-------------|-------|---------|
| Lantana fucata Lindl. | erva-cideira | Sub-shrub | RCO 1927 |
| Lippia alba (Mill.) N.E.Br. | - | Sub-shrub | RCO 1955 |
| Lippia gracilis Schauer | - | Sub-shrub | RCO 1928 |
| Lippia sp. | - | Herb | RCO 2117 |
| Stachytarpheta coccinea Schauer | Shrub | RCO 2215 |

TABLE 3. Total number of tree taxa, exclusive and common to the riparian vegetation of the rivers and the Sørensen index: PB = Taperoa, Paraíba (Lacerda et al. 2005); PE = Pajeú, Pernambuco (Souza and Rodal 2010) and RN = Apodi-Mossoró, Rio Grande do Norte (present study).

| Taxa Common to Areas | PB/PE | PB | PE | RN | PB/PE | RN | PE | RN/PE | RN/PB/PE |
|---------------------|-------|----|----|----|-------|----|----|-------|----------|
| Total/Sørensen      | 43    | 25 | 77 | 0.32 | 0.38  | 0.33 | 0.12 |

ACKNOWLEDGMENTS: To Petróbras Ambiental, who financed this study. The riverside communities of Apodi-Mossoró river, for the great contribution in the field-work and locating specific species, and especially, Sr. Luiz Belo and family from Luiz Gomes. To taxonomic specialists that helped in identifications: José Imânildo M. Melo (Boraginaceae); Julio A. Lombardi (Vitaceae); Ana Luiza Cortez (Acanthaceae); Christopher W. Fagg (Fabaceae); Elnatan Bezerra de Souza (Rubaceae); Sergio Romanic (Urticaceae); José Flaviano Barêa Pastore (Polycalaceae); Rubens Luiz Gayoso Coelho (Sapindaceae); Luiz Sema (Amarantaceae); Gracílaide Almeida (Asteraceae); Lidyane Aona (Commelinaceae) and João Bringel (Asteraceae and Labiatae).

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Almeida (Asteraceae); Lidyanne Aona (Commelinaceae) and João Bringel (Asteraceae and Labiatae).
Almeida (Asteraceae); Lidyanne Aona (Commelinaceae) and João Bringel (Asteraceae and Labiatae).
List of Angiosperm species of the riparian vegetation of the Apodi-Mossoró river, Rio Grande do Norte, Brazil

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ERRATUM

ON PAGE 740: Apodi – Mossoró should be read as Apodi-Mossoró.

ON PAGES 740, 741 AND 743: Apodi Mossoró should be read as Apodi-Mossoró.

ON PAGE 740: mineral exploration should be read as mineral exploitation.

ON PAGES 740 AND 741: Governor Dix-Sept Rosado should be read as Governador Dix-Sept Rosado.

ON PAGE 740: Andrade Lima should be read as Andrade-Lima.

ON PAGES 740 AND 743: Paraíba should be read as Paraiba.

ON PAGE 741: Planaltos Residuais should be read as residual elevated plains.

ON PAGE 742: The correct caption should be:

FIGURE 3. Some tree and shrub species of Apodi-Mossoró River, Rio Grande do Norte, Brazil. FABACEAE: A. *Erythrina velutina* Willd. SAPINDACEAE: B. *Sapindus saponaria* L. Fruits; APOCYNACEAE: C. *Cryptostegia grandiflora* R. Br., Invasive species; FABACEAE: D. *Geoffroa spinosa* Jacq.; POLYGONACEAE: E. *Triplaris gardneriana* Wedd. Fruits; CHRYSOBALANACE: F. *Licania rigida* L. Benth. Roots; FABACEAE: G. *Albizia inundata* (Mart.) Barneby and J.W. Grimes; ARECACEAE: H. *Syagrus cearensis* Noblick.

ON PAGE 742: The correct caption should be:

FIGURE 2. Some herbaceous species of Apodi-Mossoró River, Rio Grande do Norte, Brazil. HYDROLEACEAE: A. *Hydrolea spinosa* L.; MARANTACEAE: B. *Thalia geniculata* L.; ALSTROEMERIACEAE: C. *Bomarea edulis* (Tussac) Herb.; ACANTHACEAE: D. *Ruellia asperula* (Mart. and Nees) Lindau; CUCURBITACEAE: E. *Rytidostylos amazonica* (Mart. ex Cogn.) Kunze; POACEAE: F. *Echinocloa polystachya* (Kunth) Hitchc.; CYPERACEAE: H. *Pycreus polystachyos* ( Rothb.) P. Beauv.

ON PAGE 743: Ranga and Rao 2005 should be read as Rezende and Ranga 2005.

ON PAGE 743: Andrade-Lima (1982) and Andrade Lima (1982) should be read as Andrade-Lima (1981).

ON PAGES 743 AND 744: Luiz Gomes should be read as Luís Gomes.

ON PAGE 744: “algarroba” should be read as “algaroba”.

ON PAGE 750, THE FOLLOWING REFERENCE IS LACKING:

Barros, T.C.L., O.C. Lira, and A.J.R. Silva. 1988. Distribuição geográfica das Pteridófitas ocorrentes no Estado de Pernambuco, Brasil. *Acta Botanica Brasiliaca* 2(1-2): 47-86.

We regret these errors.

September 2013