

# THE VEGETATION OF MARICÁ - RIO DE JANEIRO SANDBANKS

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**Abstract.** This work studied the vegetation of the Maricá - Rio de Janeiro sandbanks from 1993 to 1994. It identifies local specimens of trees and bushes that have potential for use in landscape projects on the Brazilian seacoast.

Vegetation in Brazilian sandbanks is going into an accelerated process of destruction. In the state of Rio de Janeiro, the native plants on the sandbanks of Maricá bloom throughout the year, a situation not found in any other Brazilian region. Urbanization without controls has caused environmental degradation. Native specimens have disappeared and been replaced by exotics.

This study was carried out in Barra de Maricá sandbanks located approximately 35 km east of Rio de Janeiro, Brazil. The climate of this region is hot and rainy in summer and dry in winter. The average temperature in Maricá varies from 22° to 24°C and the annual precipitation is approximately 100 to 135 cm. An analysis of the vegetal communities was done for a year, starting in March 1993 and focused on the potential use of the species for landscape projects.

The study region, a sandy strip between the sea and the Maricá Lagoon, exhibits soil characteristics that vary from low marine quartz sand to hydromorphic podzole to small tertiary sedimentary plateaus. The study area is protected by governmental laws but is suffering environmental degradation through burning and soil extraction endangering flora and fauna.

The analysis was based on the definition of three zones: 1) pioneer vegetation, 2) herbaceous and shrubby vegetation and 3) arboreous vegetation (Figure 1). The frequency of occurrence of the species in the three zones along 10 transects of the sandbank was obtained by identifying and counting the individuals in each plot and noting the frequency of similarity between the three zones.

In each transect, the vegetation was studied in 10 squares of (0.5 m)<sup>2</sup> each. The squares are

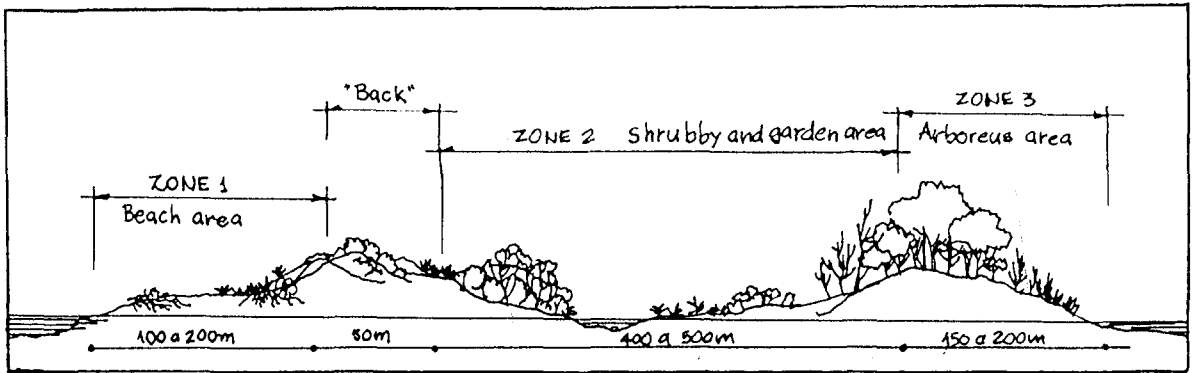
positioned 10 meters apart. In each square, the number of stems of each vegetal species was recorded. The data were used for calculating density, frequency and landscape potential of those species. The characteristics related to their height and phenology (flowering, growing, fructification, etc.) were observed. The main objective was to evaluate the landscape potential of some species.

## Results

Zone 1 had sandy surface soil and was under the direct influence of prevailing tides. The plants were primarily grasses or creeping herbaceous plants. In the second zone the plants were herbaceous or bushy depending of the presence of sandy soil. The third zone contained the preponderance of native plant material representing a climax state of herbaceous, shrubby and arboreous plants as well as creepers. The plants were in mosaic formations depending on the presence of beach sand. The free space and the paths of sand gave the impression of a natural garden. The more inland areas of the third zone contained dense vegetation making access difficult.

The results are summarized in Table 1. The observations and field studies reveal that about 75% of the plants have ornamental and landscape potential. Among those with the greatest potential are *Clusia lanceolata*, *Vriesea neoglutinosa*, *Coccoloba arborescens*, *Andira frondosa*, *Vanilla chamissonis*, *Cyrtopodium* sp. and *Passiflora mucronata*.

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**Figure 1. Schematic outline of Barra de Maricá sandbanks (ocean and lagoon) showing three zones: zone 1 = beach area, zone 2 = shrubby and garden area, zone 3 = arboreous area.**

**Table 1. Phenological data**

Species	Zone	Occurrence*	Flowering	Fruiting
<b>shrubs</b>				
<i>Philodendron corcorvadense</i>	2,3	scarce	January	March
<i>Clusia lanceolata</i>	2,3	scarce	Nov. Jan.	May
<i>Leucothe revoluta</i>	2,3	frequent	June	October
<i>Cassia bicapsularis</i>	1,2,3	frequent	Apr. May	July
<i>Byrsonima sericeae</i>	2,3	scarce	February	May
<i>Eugenia uniflora</i>	1,2	frequent	February	March
<i>Eugenia copacabanensis</i>	2,3	uncommon	March	April
<i>Tocoyena bullata</i>	1,2,3	scarce	December	May
<i>Opuntia sp.</i>	1,2,3	frequent	January	March
<i>Cereus pernanbucensis</i>	1,2,3	frequent	February	April
<b>trees</b>				
<i>Anacardium occidentale</i>	2	scarce	Sept. - Jan.	Dec. Jan.
<i>Schinus terebinthifolius</i>	1,2,3	frequent	November	June
<i>Tabebuia chysotricha</i>	3	scarce	September	Nov. Dec.
<i>Andira frondosa</i>	1,2,3	scarce	June	October
<i>Pithecellobium tortum</i>	1,2,3	frequent	January	March
<i>Coccoloba arborescens</i>	2,3	frequent	April	July
<i>Clusia fluminensis</i>	1,2,3	frequent	Nov. - Jan.	May

\* Occurrence: uncommon = < 5 individuals per zone, scarce = 5 - 20 individuals per zone, frequent = 20 to 100 individuals per zone.

**Résumé.** La végétation des berges sableuses du Brésil se dirige vers un processus accéléré de destruction. Dans l'état de Rio de Janeiro, les plantes indigènes des berges en sable de Maricá fleurissent toute l'année, une situation qu'on ne peut observer dans les autres régions du Brésil. L'urbanisation incontrôlée a causé une dégradation de l'environnement. Des plantes indigènes ont disparu au profit de plantes exotiques. Cet article relate l'étude de la végétation de berges sableuses de Maricá dans la région de Rio de Janeiro effectuée au cours des années 1993 et 1994. Elle identifie des spécimens locaux d'arbres et d'arbustes qui comportent un potentiel d'utilisation pour des projets d'aménagement paysager sur la côte brésilienne.

**Zusammenfassung.** Die Vegetation der brasilianischen Sandbänke befindet sich in einem zunehmend beschleunigten Abbauprozess. In dem Staat Rio de Janeiro blühen die einheimischen Pflanzen auf den Sandbänken von Maricá das ganze Jahr über, während diese Situation in keiner anderen Region Braziliens festgestellt wurde. Die unkontrollierte Verstädterung hat zu einem Abbau der Umwelt geführt. Einheimische Arten verschwanden und wurden durch Exoten ersetzt. In dieser Arbeit wurde die Vegetation von Maricá, der Sandbänke Rio de Janeiros von 1993 bis 1994 erforscht. Es wurden dabei einheimische, lokale Arten von Bäumen und Sträuchern identifiziert, die für den Einsatz in Landschaftsprojekten entlang der brasilianischen Küste geeignet sind.