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**Flora and fauna Inventory of species with  
relevance to the tourism in the “Dutchmen’s  
Trail” – Itamaracá, Pernambuco – Brazil.**



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## Introduction

In the year of 1630, Dutchmen commanded by Admiral Henrique Loncq invaded the Northeast of Brazil mooring at “Pau Amarelo” beach. One year later, they entered in the Island of “Itamaracá” and after some time of struggle with the Portuguese, they occupied the village of “Nossa Senhora da Conceição”, current “Vila Velha”, in 1633. Probably in the same year, they built a trail with a bridge crossing the “Paripe” river among the village, called "Schoppestad" by the Dutch, and Fort “Orange”. This fact is documented in several Dutch and Portuguese maps. Until today, the memory of the passage of the Dutch in the area is kept alive in the presence of the fort and the trail referred by the local residents as the "Dutchmen’s Trail."

The trail is located to the east of “Vila Velha” crossing over “Paripe” river and continuing to the Northeast towards Fort “Orange”. In its itinerary, it crosses mangrove and “restinga” areas passing close to the East coast of the island where one can admire the landscape created by the sea, “Santa Cruz” Channel and a great sandbank in the sea called “Coroa do Avião”.

The climate of the area is hot and humid with medium temperature along the year of 27°C. The dry season is between the months of September and February and the rainy season, from March to August. In Köppen’s classification, that climate is framed within the Ams’ and As’ type. The air relative humidity varies from 80 and 90% in the rainy season and from 60 and 70% in the dry season.

The area of the trail is located in a plane terrain a few meters above the sea level. The coastal plain is constituted basically of quaternary deposits.

Besides its great historical importance, Itamaracá Island possesses biological and ecological value as well. Such fact is verified in the presence of the two estuarine environmental protection areas, including the “Paripe” river’s protection area and in the six ecological reserves there existent. The island is also part of the Unesco-MAB<sup>1</sup> biodiversity reserve that includes the whole “Santa Cruz”

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<sup>1</sup> United Nations Educational, Scientific and Cultural Organization – Man and Biosphere.

Channel. Together, the historical and ecological aspects of the island evoke a third importance: tourism.

The “Dutchmen’s Trail” unites historical and natural aspects of the island which could attract the tourism and, in consequence, economical development for the local community and the Municipal district of Itamaracá. It is highlighted also that the area of “Santa Cruz” Channel sees itself in roads of implementation of the nautical circuit of PRODETUR<sup>2</sup> II. This will cart in an increase in the number of tourists, including next to “Paripe” river where the construction of a dock is foreseen. The historical and biological information are differential factors for a better use of this tourism and the development of Itamaracá Island.

The objective of the present work is to accomplish an inventory of the flora and fauna species with tourist relevance in the area where the “Dutchmen’s Trail” is located. This information will be useful in the valorization of the trail not only as objective of historical tourism, but also in the ecological aspect. The own residents of “Vila Velha” may be benefited with this information. They will be able to work their environmental conscience, their children will have access to this document through the village school and there will be possibility of job and income generation before a best use of the tourist flow attracted by the restoration of the trail.

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<sup>2</sup> Tourism Develop Program.

## Materials and methods

The field work was accomplished in eight days, between January 29<sup>th</sup> and February 10<sup>th</sup> in 2003, since only the most frequent species in the site and of tourist interest were related. The equipment used in the cataloguing of species was a camera, binoculars, notebook, pen, flasks and plastic sacks for collecting some organisms.

Initially, it was made recognition of the area through the observation of the present habitats along the trail. The study site for the accountancy of the species was, besides the trail, the adjacent mangrove areas and secondary trails where the tourists and other users can use as passage. After known the present ecosystems and habitats in the area, parts of unfamiliar plant species were collected for subsequent identification while the acquaintances were listed. Regarding the animal species, these were observed, listed and photographed whenever possible. The expeditions for fauna sighting were conducted in different periods of the day: early morning (7:30), morning (10:00) and afternoon (14:00). With this approach, it was possible to observe animals with varied habits while there are usually people in the area of the trail. The day's climate was too observed. Sunny, cloudy and rainy days they were analyzed to capture the largest number and diversity of animal species.

The identification of some of the animals was made starting from reports and books relative to the mangrove and "restinga" of Pernambuco and Brazil. A lot of birds not observed in field, but with presence pointed out by residents from "Vila Velha" during this study had confirmation in previous local studies and were added to the inventory.

Some of the plants needed identification which has took place in the herbarium of UFPE<sup>3</sup>. When there was no material for comparison in the herbarium, Prof. Dr. Roxana Barreto of the Department of Botany of UFPE, offered important support and final statement in this matter.

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<sup>3</sup> Federal University of Pernambuco.

The Internet was used for greater explanations on some animals, curiosities and medicinal properties of plants.

The information of this study will help the “Vila Velha” residents' training for the tourism and also the village children's education.

## Results

### 1. Fauna

An appropriate inventory of an area should take several months where specific capture techniques are applied for each animal group. However, this work has considered just frequent visualized species and with tourist relevance. Therefore, other species can eventually be found in the course of the trail which have not been related in this document.

#### 1.1. Insects

In a general way, it was observed that the area comprehending the trail has varied butterflies, wasps and flies. They were found in every period of observation. In spite of many existing plant species with flowers by the time of the study, only *Xilocopa sp.* and *Trigona spinipes* bees were sighted. The *Xilocopa sp.*, watched in several places of the area were seen many times feeding from *Cuphea flava* flowers. The bees were observed in the period of the morning and in sunny days as expected. There was abundantly found a millipede species (*Diplopoda sp.*) typical of sandy terrain crossing the trail and in adjacent vegetation in the early period of the morning. These insects, as the females of the *Mutillidae sp.* wasp (which don't possess wings) avoid being in discovered land when the sun is already high, because the soil reaches very high temperatures in this period. There are a few pictures of some observed insects below.

## 1.2. Mollusks

The only mollusk that could be observed in dry land throughout the studied area was the mangrove oyster, *Cassostrea rhizophorae*. This animal occurs frequently on the roots of local mangrove plant species fixing itself also to artificial structures in the estuary.

## 1.3. Crustaceans

In the upper littoral of “Paripe” river’s estuary, in the periphery of the mangrove swamps and even in dry land between mangrove and “restinga”, there were found three species of crabs: *Uca maracoani*, *U. thayeri* and *U. rapax*. In the mangroves and littoral next to the Dutch bridge it was discovered other species: *Ucides cordatus*, *Goniopsis cruentata* and the blue Crab *Callinectes danae*. On the other hand, according to residents from “Vila Velha”, there is still two crab species: *Portunus sp.* and *Callinectes exasperatus*. That is very likely due to the habitat and location of the island, since these crabs are present in many parts of the state.

## 1.4. Reptiles

During all the field work, the only reptile species that showed up were the green lizard (*Ameiva ameiva*), *Kentropyx calcarata* and (*Tropidurus hispidus*). All these species are more observed in sunny days were even in the hottest hours they leave the lair to warm their bodies.

## 1.5. Birds

The following list (table1) was developed with information from the field work, previous studies in Itamaracá Island and contribution of some residents from the village. The species here related are the ones seen in the area or with possibility of being found there in agreement with the literature and habits of these animals.

Table 1 – Scientific names of the bird species identified in the area of the “Dutchmen’s Trail”.

<b>CICONIIFORMS ORDER</b>
<b>Ardeidae Family:</b>
<i>Tigrisoma lineatum</i>
<i>Botaurus pinnatus</i>
<i>Butorides striatus</i>
<b>Cathartidae Family:</b>
<i>Coragyps atratus</i>
<b>FALCONIFORMS ORDER</b>
<b>Accipitridae Family:</b>
<i>Buteo brachyurus</i>
<i>Buteo magnirostris</i>
<i>Spizaetus tyrannus</i>
<b>Falconidae Family:</b>
<i>Falco peregrinus</i>
<i>Falco sparverius</i>
<b>GALLIFORMS ORDER</b>
<b>Rallidae Family:</b>
<i>Aramides cajanea</i>
<i>Porzana albicollis</i>
<b>CHARADRIIFORMS ORDER</b>
<b>Charadriidae Family:</b>
<i>Pluvialis squatarola</i>
<i>Charadrius semipalmatus</i>
<b>Scolopacidae Family:</b>
<i>Arenaria interpres</i>
<i>Tringa solitaria</i>
<i>Tringa flavipes</i>
<i>Tringa melanoleuca</i>
<i>Actitis macularia</i>
<i>Calidris minutilla</i>
<i>Calidris pusilla</i>

<b>Laridae Family:</b>
<i>Sterna hirundo</i>
<i>Sterna eurygnatha</i>
<b>CUCULIFORMS ORDER</b>
<b>Cuculidae Family (Subfamily Crotophaginae):</b>
<i>Crotophaga ani</i>
<i>Guira guira</i>
<b>CAPRIMULGIFORMS ORDER</b>
<b>Caprimulgidae Family:</b>
<i>Nyctidromus albicollis</i>
<b>APODIFORMS ORDER</b>
<b>Trochilidae Family:</b>
<i>Phaethornis ruber</i>
<i>Eupetomena macroura</i>
<i>Chrysolampis mosquitus</i>
<i>Amazilia versicolor</i>
<i>Amazilia fimbriata</i>
<b>ORDER CORACIIFORMS</b>
<b>Alcedinidae Family:</b>
<i>Ceryle torquata</i>
<i>Chloroceryle amazona</i>
<i>Chloroceryle Americana</i>
<i>Chloroceryle aenea</i>
<b>PASSERIFORMS ORDER</b>
<b>Family Furnariidae (Subfamily Furnariinae):</b>
<i>Furnarius rufus</i>
<b>Family Tyrannidae (Subfamily Fluvicolinae):</b>
<i>Fluvicola nengeta</i>
<b>(Subfamily Tyranninae):</b>
<i>Pitangus sulphuratus</i>
<i>Megarynchus pitangua</i>
<b>Family Hirundinidae:</b>
<i>Tachycineta leucorrhoa</i>
<b>Family Muscicapidae (Subfamily Sylviinae):</b>
<i>Polioptila plumbea</i>
<b>(Subfamily Turdinae):</b>
<i>Turdus leucomelas</i>
<i>Turdus rufiventris</i>
<b>Family Emberizidae (Subfamily Coerebinae):</b>
<i>Coereba flaveola</i>
<b>(Subfamily Thraupinae):</b>

<i>Thraupis palmarum</i>
<i>Conirostrum bicolor</i>
<b>(Subfamily Emberizinae):</b>
<i>Volatinia jacarina</i>
<i>Sporophila nigricollis</i>
<i>Sporophila leucoptera</i>
<i>Oryzoborus angolensis</i>
<b>Family Passeridae:</b>
<i>Passer domesticus</i>

## 1.6. Mammals

Common Marmosets (*Callithrix jacchus*) were the only mammals sighted in the whole period of work. They could be seen practically everyday and period of the study. They were usually in groups on trees like the cashew tree probably after some fruits.

Local residents indicated the Maned Sloth (*Bradypus torquatus*) as being other present mammal in the trail. None was observed, but the fact is that they exist in the Atlantic forest reserves nearby "Vila Velha". It is difficult to say if the sloths go to the area of the trail. The forest is a well protected environment and with larger food supply. However, as it is shown more in front of this report, there were found specimens of *Cecropia palmata* in the trail. Its leaves are one of the main sources of food for the Sloth.

## 2. Flora

The record of the plant species with tourist appeal gave origin to the following table. There were identified a total of 24 species. In table three, it is shown medicinal uses for some of those plants.

Table 2 – List of the plant species identified in the area of the “Dutchmen’s Trail”.

Plants	Family	Origin
“ <b>Aroeira</b> ” ( <i>Schinus terebinthifolius</i> Raddi)	Anacardiaceae	Brazil
“ <b>Imbaúba</b> ” ( <i>Cecropia palmata</i> Willd)	Moraceae	Brazil
“ <b>Mutamba</b> ” ( <i>Guazuma ulmifolia</i> Lam.)	Sterculiaceae	Tropical America (South and Central)
“ <b>Angelim</b> ” ( <i>Andira fraxinifolia</i> Benth.)	Fabaceae	Brazil
“ <b>Murta</b> ” ( <i>Eugenia</i> sp.)	Myrtaceae	Brazil
“ <b>Guapira</b> ” ( <i>Guapira pernambucensis</i> (Caesar.) Lundell)	Nyctaginaceae	Brazil
“ <b>Lantana/Chumbinho/Camará</b> ” ( <i>Lantana camara</i> L.)	Verbenaceae	Antilles to Brazil
“ <b>Lantana/Chumbinho</b> ” ( <i>Lantana fucata</i> Lindl.)	Verbenaceae	South America
“ <b>Cufeia</b> ” ( <i>Cuphea flava</i> Spreng.)	Lythraceae	Brazil
“ <b>Algodão-de-praia</b> ” ( <i>Gossypium barbadense</i> L.)	Malvaceae	South America
“ <b>Cipó-pau</b> ” ( <i>Connarus</i> sp.)	Connaraceae	-
“ <b>Trapoeraba</b> ” ( <i>Commelina</i> sp.)	Commelinaceae	Brazil
“ <b>Mangue branco</b> ” ( <i>Laguncularia racemosa</i> Gaerth.)	Combretaceae	Tropical America (South, Central and Caribbean) and Western Africa (Senegal to Cameroon)
“ <b>Mangue vermelho</b> ” ( <i>Rhizophora mangle</i> L.)	Rhizophoraceae	Tropical America (South, Central and Caribbean). Western Africa (Senegal to Nigeria), Melanesia and Polynesia
“ <b>Mangue de botão</b> ” ( <i>Conocarpus erectus</i> L.)	Combretaceae	Tropical America (South, Central and Caribbean) and Western Africa (Senegal to Zaire)
“ <b>Mangue preto, canoé</b> ” ( <i>Avicennia schaueriana</i> Stapf & Leechm.)	Avicenniaceae=Verbenaceae	Tropical America (South and Central)
“ <b>Mangueira</b> ” ( <i>Mangifera indica</i> L.)	Anacardiaceae	India
“ <b>Cajueiro</b> ” ( <i>Anacardium occidentale</i> L.)	Anacardiaceae	Brazil
“ <b>Angélica</b> ” ( <i>Guettarda platypoda</i> D. C.)	Rubiaceae	Brazil
“ <b>Lixinha / Cipó-caboclo</b> ” ( <i>Davilla</i> sp.)	Dilleniaceae	South America
“ <b>Murici</b> ” ( <i>Byrsonima sericea</i> D. C.)	Malpighiaceae	Brazil
“ <b>Araçá</b> ” ( <i>Psidium araçá</i> Raddi)	Myrtaceae	Brazil
“ <b>Mangabeira</b> ” ( <i>Hancornia speciosa</i> Gomez)	Apocinaceae	Brazil

<b>Jatobá</b> ( <i>Hymenaea courbaril</i> L.)	Caesalpinaceae	Brazil
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Table 3 – Medicinal properties and curiosities of the identified plant species in the “Dutchmen’s Trail” region.

Plants	Medicinal uses	Curiosities
<b>“Aroeira”</b> ( <i>Schinus terebinthifolius</i> Raddi)	Problems in the breathing and urinary systems. It possesses balsamic and astringent effect.	Its leaves are believed to be noxious to cattle and of the seed it is extracted an essence which is similar to therebintin.
<b>“Imbaúba”</b> ( <i>Cecropia palmata</i> Willd)	Good for the heart and pain. The tea made of its leaves is anti rheumatic, haemostatic and anti dysenteric. The sap of roots is a powerful diuretic. Its syrup is useful against asthma. Not for continuous use.	Its leaves are known to be main sources of food for the Sloth.
<b>“Mutamba”</b> ( <i>Guazuma ulmifolia</i> Lam.)	The infusion obtained by cooking its bark is used against elephantiasis, leprosy, cutaneous infections and syphilis. For uterus pain and diarrhea it is also used the tea of the peel of the fruit.	
<b>“Angelim”</b> ( <i>Andira fraxinifolia</i> Benth.)	Researches indicate that this plant has anti helminthic activity.	
<b>“Murta”</b> ( <i>Eugenia</i> sp.)	Tea of the bark and leaves have astringent and anti diarrheic effects.	
<b>“Lantana/Chumbinho/Camará”</b> ( <i>Lantana camara</i> L.)	Tonic, febrifuge, expectorant, emollient, balsamic, stimulant and a painkiller.	
<b>“Traçoeraba”</b> ( <i>Commelina</i> sp.)	Healing and anti hemorrhagic (leaves).	
<b>“Mangue branco”</b> ( <i>Laguncularia racemosa</i> Gaerth.)	It is astringent and tonic so is used against dysentery; a bark is used on fevers. Its anti tumoral activity is attributed to the tannin in the bark.	The bark contains 10,3% of tannin and the leaves 16,8%.
<b>“Mangue vermelho”</b> ( <i>Rhizophora mangle</i> L.)	Possesses astringent, tonic, haemostatic and expectorant activity. Is used against angina, asthma, diarrhea, convulsion, dyspepsia, dysentery, fever, hemorrhage, inflammation, leucorrhoea, tuberculosis and syphilis.	It is the most common mangrove species in Brazil and its wood is much used as construction material because it almost doesn’t putrefy. The bark has about 30% tannin.
<b>“Mangue de botão”</b> ( <i>Conocarpus erectus</i> L.)	It has astringent and tonic activity and is used against anemia, conjunctivitis, diarrhea, fever, diabetes, hemorrhage and syphilis.	Bark has between 16-18% of tannin.
<b>“Mangue preto, canoe”</b> ( <i>Avicennia schaueriana</i> Stapf & Leechm.)		Bark, branches and leaves with about 14% of tannin.
<b>“Cajueiro”</b> ( <i>Anacardium occidentale</i> L.)	Bark, leafs, nut and pseudo fruit: bactericidal action, anti dysenteric, microbicide, antiseptic, anti-inflammatory, aphrodisiac, astringent, diuretic, febrifuge, hypoglycemic, purgative and tonic.	

<b>“Angélica”</b> (Guettarda platypoda D. C.)	Antiviral activity	
<b>“Lixinha / Cipó-caboclo”</b> (Davilla sp.)	Anti-inflammatory and stimulating action of the central nervous system. It combats peptic ulcers.	
<b>“Araçá”</b> (Psidium araçá Raddi)	Tea of the root and bark of the stem has diuretic and anti diarrheic effect	
<b>“Mangabeira”</b> (Hancornia speciosa Gomez)	The latex is used against tuberculosis and fractures.	The latex is poisonous. It is a endangered species.
<b>“Jatobá”</b> (Hymenaea courbaril L.)	Balsamic, expectorant, decongestant, tonic, fungicide, astringent and anti-inflammatory.	It possesses antioxidant substances.

## Final considerations

The results obtained in this work showed, in a primary analysis, there is a greater diversity of plant species and animals than the expected. For a more profound evaluation it would be necessary more affected techniques on the fauna inventory. However, this would last several months not being possible its conclusion until the inauguration of the “Dutchmen’s Trail”.

The studied site is located very close to “Vila Velha”, fact that could have caused a larger impact in the area. Nevertheless, as seen in previous work, the residents from “Vila Velha” show a good ecological conscience and they recognize the importance of the natural environment, possessing a sense of integrity and interaction to it (Albuquerque, 2001). Maybe a reason for such an area to be still conserved is the maintenance of “Vila Velha” as a village. This way, uncontrolled commerce and tourism did not reach the place and there was a greater conservation of the natural habitat.

The idea of restructuring the “Dutchmen’s Trail” as strategy for increasing tourism is very interesting on municipal and local levels. However, if there is a great tourist influx in the area, it is necessary to establish an inspection to guarantee the maintenance of its natural characteristics. The disordered commerce and tourism can together cause degradation as happened in other parts of the island. The FUNDARPE<sup>4</sup> managed to maintain the secular historical characteristics

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<sup>4</sup> Pernambuco’s Foundation for Historic and Artistic patrimony.

of “Vila Velha” with actions of preservation of its patrimony. That example should be followed in the control of the tourism as it grows in the area.

Itamaracá Island still possesses great biological richness, but it suffers heavy tourist and industrial pressure of cement, paper and aluminum factories that cause the pollution of its estuaries. If the concern of the public organs and citizens with the conservation of the Municipal district is equivalent to the existent on the economical subject, the maintainable use of their resources and environment can still guarantee sustenance and benefits for the presents and future generations.

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