

Andoni Marine Ecology: Emphasis on the Biology and Importance of Some Useful Plants

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ABSTRACT

There appears to be a dearth in literature of mangrove plants in Andoni. This write up intends to fill the gap using photographs of plants found in the mangrove and its environment. Below is the description of some of the mangrove plants found in Andoni:

INTRODUCTION

The Andoni River lies between latitudes $4^{\circ} 28'$ to $4^{\circ} 45'$ and longitudes $4^{\circ} 28'$ and $4^{\circ} 45'$ East (Francis *et al*,2007)(Fig 1). It is one of the rivers that drain into River Niger. It is brackish water habitat. The area is made up vegetations such as Red and White mangrove as well as Nypa palm.

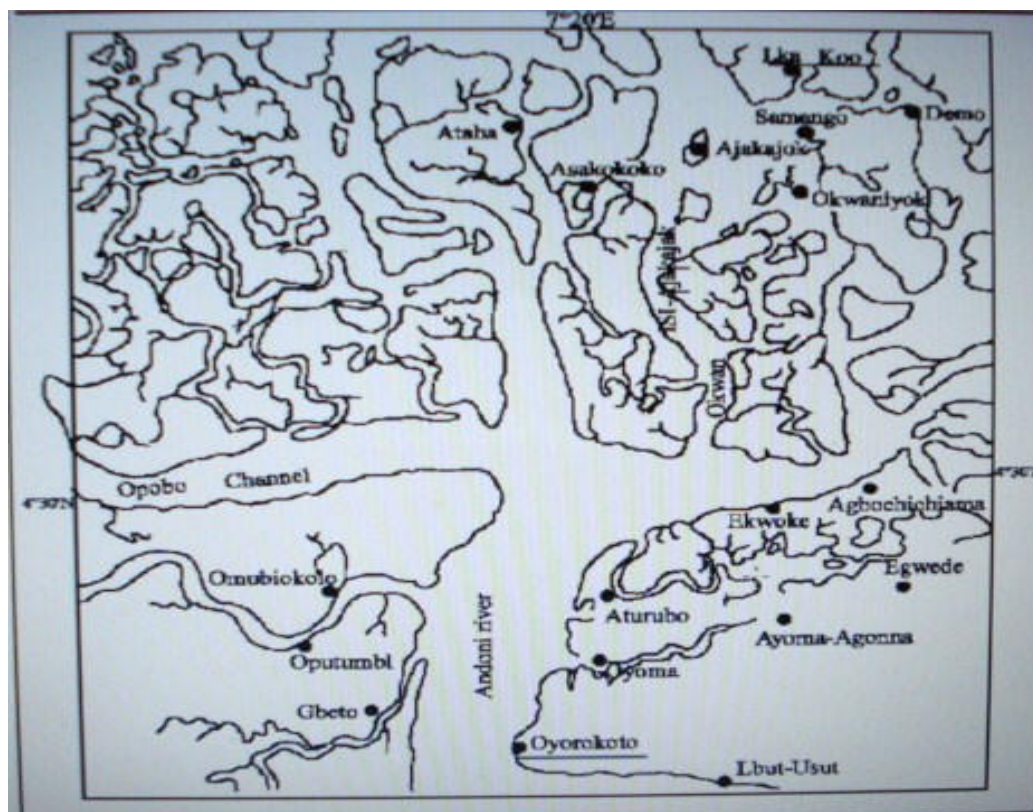


Fig 1: Sketched map of Andoni River where some mangrove plants occur (Francis *et al*, 2007)

FEATURES OF SOME MANGROVE FOREST TREES

a) *Rhizophora mangle*

Literally, members of Rhizophoraceae are called red mangroves because their mid ribs have red colour. The inflorescence of *R.mangle* is usually 2-flowered (rarely 3-4), the peduncle is 3-4cm long and the pedicels are 10-13cm long, the bracts are obtuse, pericaps 2-2.5 long, the flowers are sweet-scented, the sepals are greenish-yellow and the mid-rib is straw-coloured. {Plates 1A and B).

b) *R.harrisonii*

The inflorescence is much branched and many flowered which are 7-12cm long, it also has slender branches, the peduncle is 3.5-8cm long, the bracts are more or less acute and spreading and the sepals are greenish-yellow with a reddish mid-rib.

c) *R.racemosa*

The plant is the most common in Andoni creeks. It grows to about 39.6m high and forms a Shrubby tangle of about 3.7-9.1m. (Plates 3A and B).

d) *Avicennia Africana* (White mangrove)

It has flowers that are covered at the end of short peduncles, the bracts are imbricate, ovate and about 4mm long, it also has branchlets that are puberous with lanceolate leaves, the fruit is obliquely ellipsoid and is 2.5cm long (Hutchinson and Dalziel, 1963). (Plate 4)

e) *Nypa palm*

Nipah Palm also known as *Nypa fruticans* and is among the few palms that grow well in mangroves. It grows in soft mud, usually where the water is calmer, but where there is regular inflow of freshwater and nutritious silt. They can be found inland, as far as the tide can deposit the Palm's floating seeds. It can tolerate infrequent inundation, so long as the soil does not dry out for too long. Fronds emerge from the ground and the palm appears trunkless. Grows to about 4-9m tall. The leaves are up to 9m long. Flowers have globular inflorescence of female flowers at the tip with catkin-like or yellow male flowers on the lower branches. The fruits have woody seeds, severally compressed into a ball. It is a highly unutilized plant in Andoni of Rivers State and the entire Obolo Kingdom. (Plates 5A,B,C). (Ukoima, 2000)



Plate 1A: *Rhizophora mangle*



Plate 1B : *R.mangle*:Showing prop roots



Plate 2 : *Rhizophora harrisonii*



Plate 3A : *Rhizophora racemosa*



Plate 3B: *R. racemosa*: Showing pneumatophores.



Plate 4: *Avicennia africana*



Plate 5A: Pure stands of *Nypa*



Plate 5B: Nypa palm on



Plate 5C: Nypa palm seeds

OTHER PLANTS IN THE MANGROVE HINTERLAND IN ANDONI



Plate 6: *Chrysobalanus orbicularis*

FAMILY : Rosaceae



Plate 7 : *Urena lobata* ;FAMILY : Gramineae



Plate 8 : *Aspilia africana*

FAMILY : Compositae



Plate 9 : *Calopogonium mucunoides*

FAMILY : Papilionaceae



Plate 10 : *Crotalaria retusa*

FAMILY : Papilionaceae



Plate 11 : *Paspalum jaminance*

FAMILY : Gramineae



Plate 12 : *Chromophaena odorantum*

FAMILY : Compositae

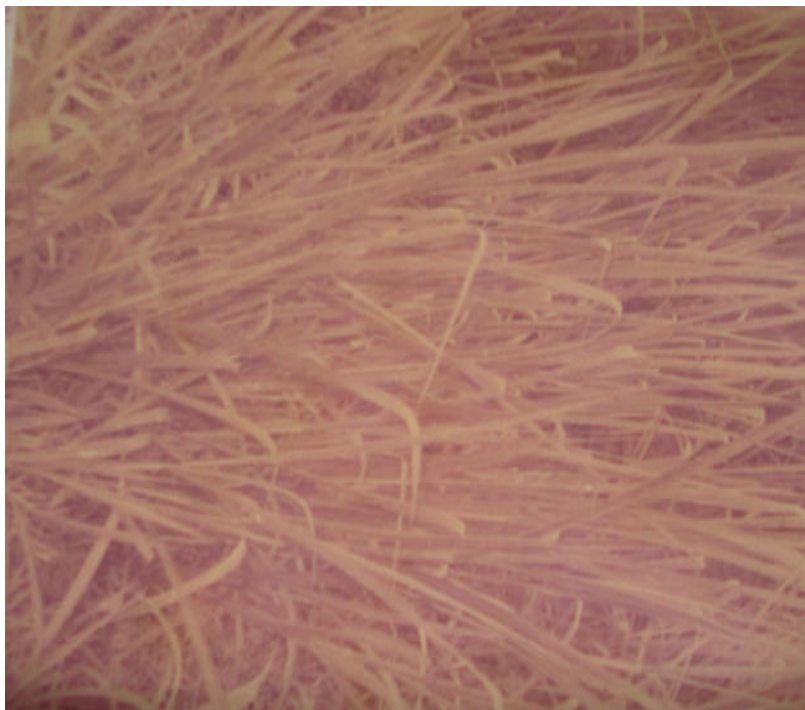


Plate 13 : *Panicum maximum*

FAMILY : Gramineae



Plate 14 : *Terminalia catapa*

FAMILY : Combretaceae



Plate 15 : *Dalbergia ecastaphyllum*

FAMILY : Papilionaceae

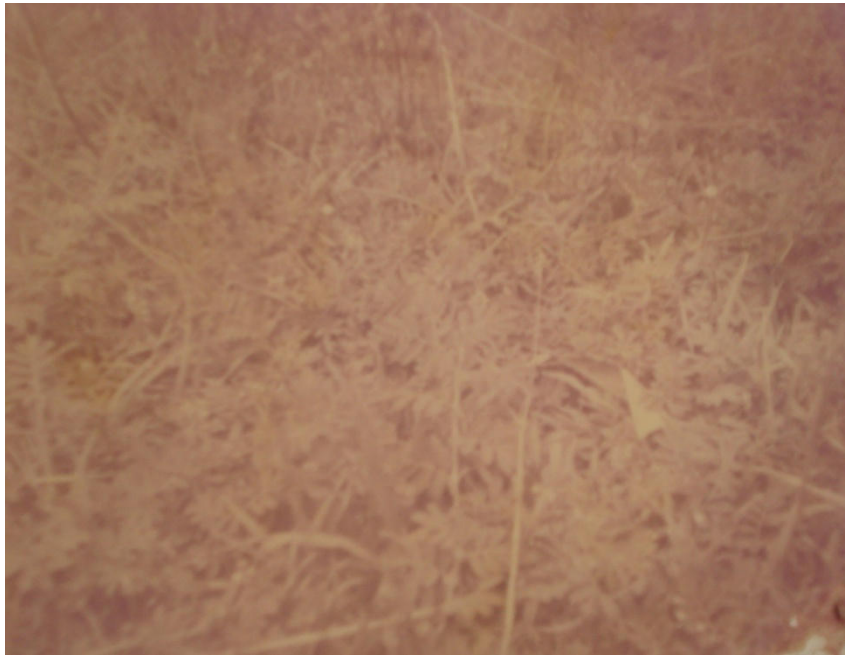


Plate 16 : *Ingotera spicata*

FAMILY : Papilionaceae



Plate 17 : *Acrosticum aereum*

FAMILY : Adiantaceae



Plate 18 : *Cragrostis tremula*

FAMILY : Gramineae



Plate 19 : *Manotes* sp.

FAMILY : Connaraceae



Plate 20 : *Vernonia cinerea*

FAMILY : Compositae

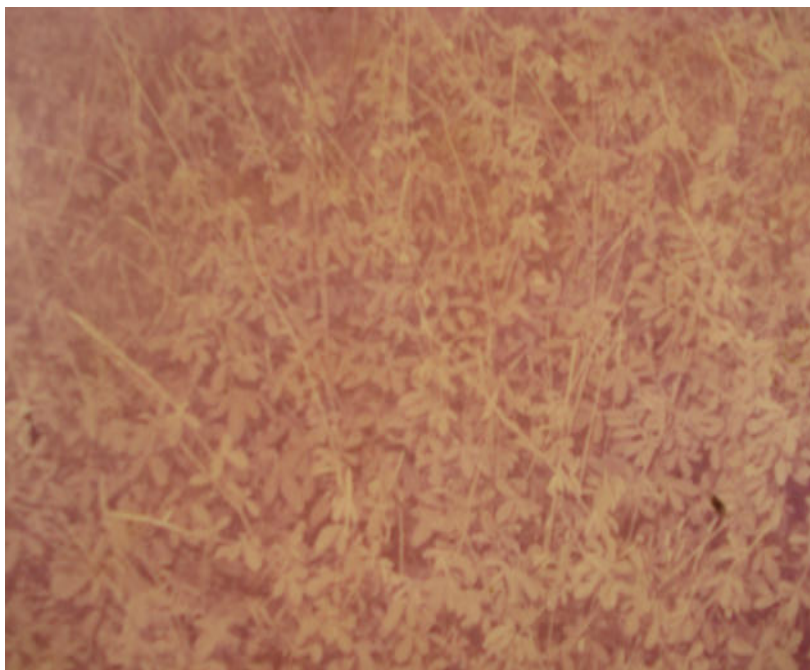


Plate 21 : *Desmodium ramosissimum*

FAMILY : papilionaceae

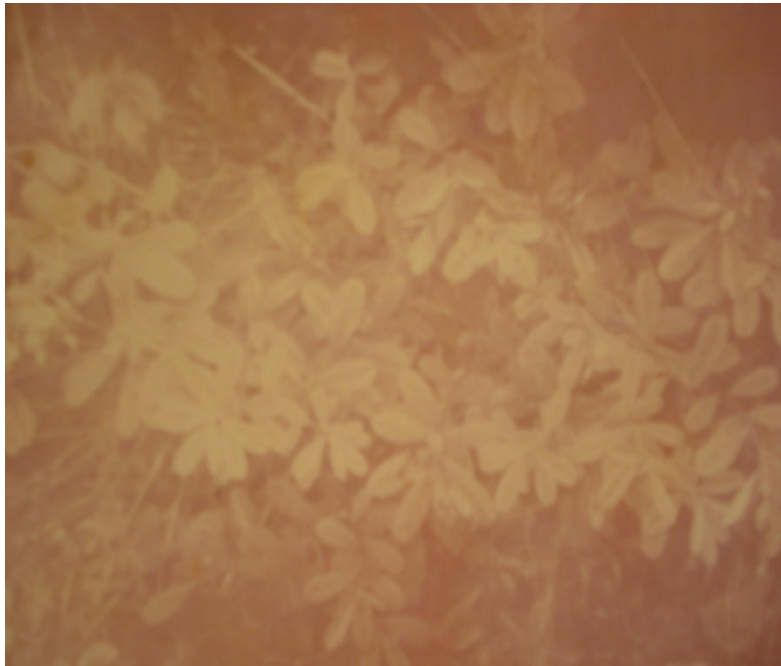


Plate 22 : *Crotalaria retusa*

FAMILY : papilionaceae



Plate 23 : *Kyllingia erecta*

FAMILY : Cyperaceae



Plate 24 : *Sporobolus pyramidalis*

FAMILY : Gramineae

USEFULNESS OF THE MANGROVE COMMUNITY TO THE ANDONI PEOPLE

Mangroves plants especially the Red and White mangroves mostly serve as wood fuel and carving of boats to the average community dwellers in Andoni. Other uses are;

- I. Provision of Food for Marine Organisms:
Mangrove swamps are one of the richest and most productive areas and form the base of the food chain in the sea and coastal waster. Mangrove forest also serves as a link between terrestrial and marine ecosystems. There is an import of nutrients from the land to mangrove and export of organic matter from the mangrove to sea. The floral elements in mangrove forest such as angiosperm, phytoplankton and marine algae are dependent on organic matter for food. (Jayewardene, 1984).
- II. Habitat for Marine Fishes:
They also serve as habitats for some commercially exploited marine organisms at critical phases of their life cycle. Mangroves also serve as nurseries in certain instances. Similarly, they direct support some organisms, such as oysters and other shell fish that usually grow in mud. Ekundayo, (1985), reported that nearly 80% of Nigeria's seafood harvest is dependent directly or indirectly on mangrove ecosystem and that in those areas where the mangrove had been destroyed, the shell fish and fin fish output has gone down drastically.
- III. Source of Wood Fuel:
Firewood and charcoal from mangrove species are used for domestic purposes such as cooking, heating and cloth ironing especially in the rural areas.
- IV. Source of Poles and Piles:
Poles and piles from *Rhizophora* species are used as a source of construction materials for shanties, fish, corral pots, fences and others.
- V. Source of Timber:
A number of major mangrove forest plants produce timbers of high density which are resistant to termites and marine borers. The woods have special uses, such as in boat building and in making of fish traps.
- VI. Fodder:

- The salt tolerance, growth and vegetative habits of *Paspalum vaginatum* makes it a natural fodder grass and for use in fine textures lawns, erosion control and reclamation practices in the Niger Delta mangrove area (Wicox, 1985).
- VII. Coastal Protection:
Mangroves are also known to stabilize degrading shores and prevent excessive shifting of coastline. Consequently, they are particularly important on coasts that are subject to major tropical storm tides during hurricanes and typhoons (Tomlinson, 1985).
- VIII. Resource Base:
The mangrove forest is a resource base for local inhabitants. It is a place they live and derive their means of livelihood.
- IX. Nypa Palm:
Although, the Nypa palm constitutes a major threat to the Rivers State people of Nigeria, because of its ability to favourably compete and suppress other mangrove plants which harbour some shell fishes and fin fishes. The result is that some mangrove species are gradually disappearing, along the coastal lines. This has also led to a reduction in the number of shell fishes such as periwinkles and oysters. However, the Nypa palm is one of the most useful mangrove plants. It provides leaves for thatching, juice for making sugar and alcoholic beverages and edible fruits.
- X. Pulp and Paper Manufacture:
On the potential uses of mangrove species, studies have been made on the suitability of mangrove timber pulp and paper manufacture. Most recent findings of the Forest Products Research and Development Institute (FPRDI) showed that mangrove species usually noted for their pulp yield and celluloses. *Rhizophora sp.* Has also been found as good material for high-alpha (Viscose rayon), pulp with 31.05% yield containing 90% alpha cellulose, 0.13% lignin and 0.09% ash which are 1.32 and 0.24mm, respectively (UNESCO, 1986).
- XI. Tannins and Dyes:
Extractives derived from mangrove barks for local industries include tannin and dyes. Tannin is a phenolic substance used for the processing of leather. Similarly, it is used as an adhesive material. It also serves as an important component of ink, rust preventives and insecticides. Moreover, because of the viscous property of tannin, the compound is also used in deep sea oil drilling. Cellulose xanthate, a relatively unstable compound derived from *Rhizophora sp.* is the most important among cellulose derivatives. Its importance is usually seen in the production of viscose rayon for all normal textile needs, tyre cords, industrial belts, cellophanes and as a potential pulp. *Rhizophora sp.* is expected to open the way for a more serious research towards the development of viscose industry in the Philippines.
- XII. Medicinal Value:
Some mangrove species have medicinal and pharmaceutical value, for example, some members of *Avicennia spp.* are used as astringents also to treat ulcers. The barks and roots are used as aphrodisiac and maturative poultice.
- XIII. Salt Conversion:
In areas that are dry, mangrove can be converted to salt pans. Some mangrove plants secrete salt, presumably very pure, but no attempt seems to have been made to utilize this natural process. (Tomlinson, 1986).
- XIV. Sewage Treatment:
In Nigeria, most mangrove swamps are used as garbage dumps and local sewage disposal units. The tidal movement makes the unit self-flushing.
- XV. Wildlife Management:
The mangrove forest harbours some wild animals such as crocodiles, tiger, monkeys, etc. Mangroves have been a refuge for the African Elephant at Ikuru town in Andoni, Rivers State, Nigeria.
- XVI. Minor Forest Products:
The Gluta (Anacardiaceae) has an irritant sap that causes skin rashes; *Excoecaria* and *Hippomane* (Euphorbiaceae) have an irritant sap that causes skin ulcers. The seeds of *Cerbera* are said to be poisonous. Where plants contain saponins, they have been used as fish poisons (e.g. *Barringtonia* and *Derris*).

CONCLUSION

This study highlights the biology of some mangrove plants in Andoni using photographs. Emphasis was placed on members of Rhizophoraceae, Avicenniaceae and Nypa palm. Other plants especially some common weeds associated with mangrove hinterland were also mentioned. It is hoped that it will help to boost the data bank of mangrove plants in Andoni in Rivers State, Nigeria.

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