

SUB-THEME 2



Utilization and Livelihood Possibilities
of Mangroves and Wetlands

UTILIZATION AND LIVELIHOOD POSSIBILITIES IN MANGROVE AND WETLANDS

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Abstract

The objective of this paper is to look at the utilization and livelihood possibilities of mangroves and wetlands. Wetlands and Mangroves are important to man's survival and the environment. wetlands are relevant in; Agriculture, water quality, carbon sequestration/climate change mitigation, biodiversity, flood control, science education and a niche for plants and animals while mangroves have the following values; spawning grounds, energy inputs, recreational areas, food/building materials, medicine and other potential values. In spite of their importance to man and the environment, they are under threat by natural and artificial factors. Eventually, the ecosystem services that wetlands provide are compromised. Proper management of wetlands and mangroves is recommended.

Keywords: Wetlands, Mangroves, Biodiversity, Livelihood possibilities.

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Introduction

Wetlands are areas saturated with water either permanently or seasonally, such that it takes on the characteristics of a distinct ecosystem (U.S.EPA, 2004). According to the Ramsar convention held in Iran, 1971 on Wetlands, "Wetlands are areas of marsh, peat land or water, whether natural or artificial permanent or temporary with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six (6) meters" (Ramsar Convention Secretariat (2007)). Wetlands can also be defined as traditional environments where dry lands meet water. Natural wetlands include; lakes, lagoons and mangroves while man-made wetlands are fish ponds, shrimp ponds, canals, irrigated agricultural land and reservoirs (Faith and Itoro, 2014). According to Faith and Itoro (2014), wetlands cover about 6% of the Earth's land surface, that is about 5.7 million sq km². Wetlands exist in every country and in every climatic zone, from the polar regions to the tropics. They are distributed around the world and cover an area that is 33% larger than the USA (Figure 1).

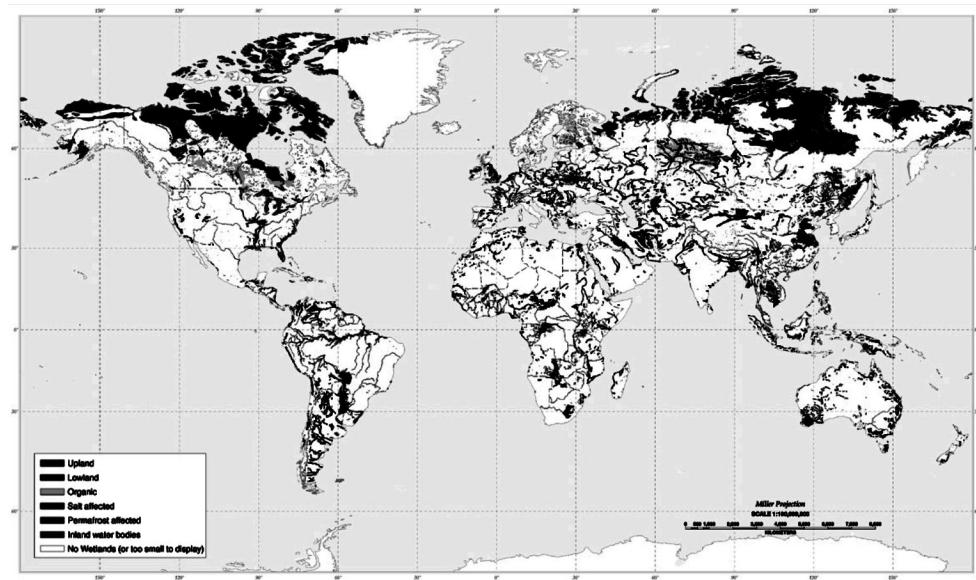


Figure 1: Map of the world showing wetlands

However, wetlands are under threat due to anthropogenic activities, for example the Hadejia-Nguru wetlands have shrunk by two-thirds in the past 30-40 years because of diversion from Dams, irrigation developments and drought. Indeed! The rate of loss and deterioration of wetlands is increasing in all parts of the world (Uluocha and Okeke, 2004). The pressure on wetlands is likely to increase in the coming years as a result of increased global demand for land and water as well as issues bothering around climate change

The World's largest wetland was declared by the Ramsar convention on wetlands of International importance (Ramsar Convention Secretariat, 2007). The site known as Llanos de Moxos is located in Bolivia, South America and it's about 17million acres (Martins, 2014). Nigeria is richly blessed with both coastal and In-land wetlands. Eleven (11) wetlands are recognized in Nigeria (Table 1 and Fig. 2). Other wetlands cover 3% of the Country's land surface. Currently, there are 162 contracting parties to the convention with 2,040 wetland sites, totaling 193 million hectares, designated for inclusion in the Ramsar list of Wetlands of International Importance. Nigeria's Niger Delta is one of the most important wetlands in Nigeria, the largest in Africa and the largest in the world. Unfortunately, it was not listed among the eleven Ramsar sites in Nigeria (Martins, 2014). The listed sites are Apoi Creek Forest Reserve in Bayelsa, Upper Urasi Forest in Rivers, Pandium/Wuse in Nasarawa and Baturiya Game Reserve in Kano. Dagona sanctuary lake

in Yobe, Foge Island in Niger State, Lake Chad Wetlands in Bornu, Lower-Kaduna – Middle Niger flood plain in Niger, Maladumba Lake in Bauchi, Nguru lake in Yobe, Oguta lake in Imo. The Freshwater swamp portion of the wetland is estimated to be over million hectares while the mangrove swamp is estimated to be 858,000 hectares. The Fresh wetlands are Niger Delta, Rivers Niger, River Benue, Cross River, Imo River, Ogun-Osun River and Lake Chad (Martins, 2014).

Table 1: Table of Nigeria's 11

S/N	Site	Date of Designation	State(s)	Area (ha)	Co-ordinates
1	Nguru lake (and Marma Channel) complex	02/10/2000	Jigawa & Yobe	58,100	10°01'20" E
2	Apoi Creek Forests	30/04/2008	Bayelsa	29, 213	05°47'N 004°42'E
3	Baturiya Wetlands	30/04/2008	Kano	101, 095	12°31'N 010°29'E
4	Dangona Sanctuary Lake	30/04/2008	Yobe	344	12°48'N 010°44'E
5	Foge Islands	30/04/2008	Kebbi & Niger	4, 229	10°30'N 004°33'E
6	Lake Chad Wetland	30/04/2008	Borno	607, 354	13°04' N 013° 48'E
7	Lower Kaduna-Middle Niger Floodplain	30/04/2008	Kwara & Niger	229, 054	08° 51'N 005°45'E
8	Maladumba Lake	30/04/2008	Bauchi	1, 860	10°24'N 009° 51'E
9	Oguta Lake	30/04/2008	Imo	572	05°42'N 006° 47'E
10	Pandam & Wase Lake	30/04/2008	Nasarawa	19, 742	08° 42'N 008° 58'E
11	Upper Orashi Forests	30/04/2008	Rivers	25, 165	04° 53'N 006° 30'E

(Source: Asibor, 2009)

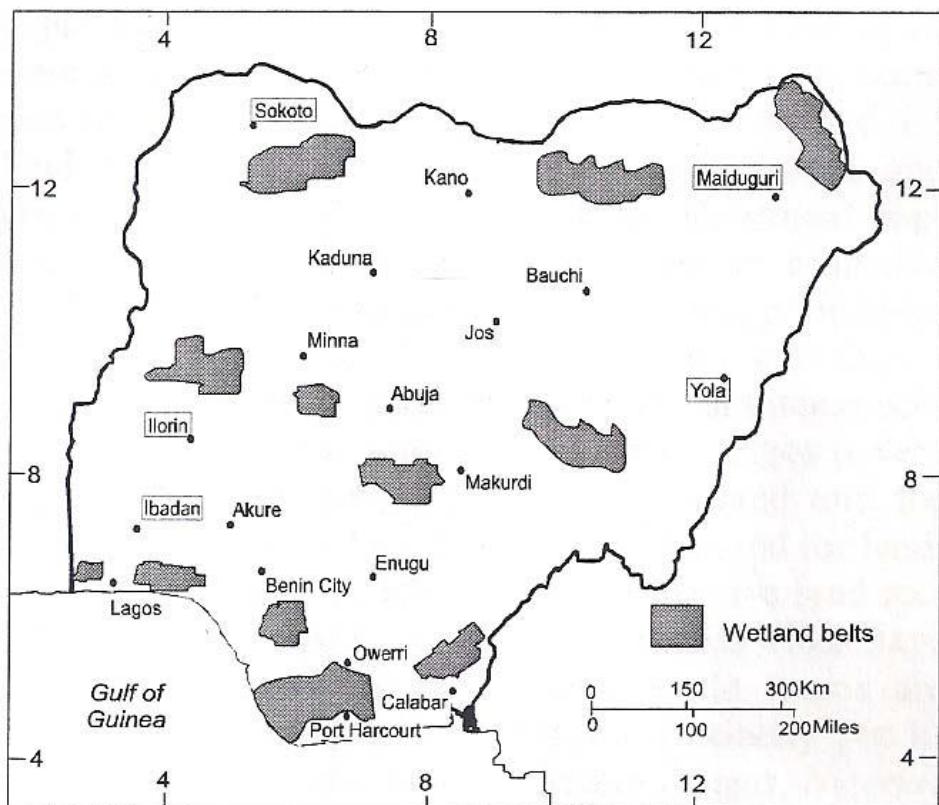


Figure 2: Map of Nigerian showing wetland belts

What are Mangroves?

Mangroves are various large extensive types of trees up to medium height and shrubs that grow in saline coastal sediment habitats in the tropics and sub-tropics. They grow only at tropical and sub-tropical latitudes near the equator because they cannot withstand freezing temperatures. Mangrove forests can be identified mainly through their prop roots. These roots allow the trees to cope with the daily rise and fall of tides (UNEP-WCMC, 2006). Mangrove origin is traced to Senegal, Gambia and Guinea. They occur in 19 West African countries and extend from Mauritania to Angola (Tomlinson, 1986; UNEP-WCMC, 2006). There are five main species of mangrove trees in Nigeria; Red mangrove (*Rhizophora mangle*), *R. racemosa*, *R. harrisonii*, Black mangrove (*Avicennia germinans*) and White mangrove (*Laguncularia racemosa*). The origin of Nypa palm is traced to Asia (Plates 1 and 2).



Plate 1: Nypa palm along Andoni creek



Plate 2: Rhizophora mangle

**Utilization/Livelihood Possibilities of Wetlands/Mangroves
Utilization/livelihood possibilities of wetlands**

According to the office of Environment and Heritage (2015); Martins, (2014); Nwankwoala, (2012) and Asibor, (2009) Wetlands have the following values:

1. Agriculture, Forestry and Tourism

Wetlands support agricultural activities by providing a source of water for irrigation, livestock and domestic consumption. Notably, pastures on inland plain wetlands are more productive than those in adjacent areas. It also supports sustainable forestry, for example, some River Red gum forests have been harvested over 150 years in Australia

Supports nursery areas for juveniles of commercially valuable fish species.

Most coastal and in lands wetlands are used for tourism and recreational activities such as swimming, boating, fishing, camping and bird watching.

2. Water quality, flooding and pests

Wetlands trap sediments, filter pollutants and absorb nutrients that would result to poor quality water down stream. They also reduce flooding by slowing movement of flood waters along rivers. Wetlands, also provides fresh water to large urban areas especially during the rainy season. It is also a habitat for birds which can feed on pests of flocks of white Ibis (*Threskiornis molucca*) and Straw-necked ibis (*Threskiornis spinicollis*). They also feed on grasshopper (*Zonocerus variegatus*).

3. Carbon Sequestration

Wetlands cover about 9% of the earth's surface and it is estimated to contain about 35% of global terrestrial carbon. It is a sink for carbon dioxide and other green house gases.

4. Historical significance

Historical significance is very relevant because of their contribution to the growth and development of inland regions. Before the commencement of railways and roads, wetlands along rivers Niger and Benue were used as transport routes for delivering agricultural products and other services.

5. Science and Education

Wetlands provide important locations for scientific research and also play an important role in educating people about biodiversity. Researches are conducted by higher institutions on the ecology of wetlands.

6. Niche for plants and animals

Wetlands are homes for birds, plants, fishes, micro organisms and reptiles.

Utilization and Livelihood Possibilities of Mangrove

The importance of mangrove is described by (Okpiliya *et al* 2013; Ukoima *et al*, 2009; David *et al* 2008; Abere, S. A. and Ekeke, B. A. 2004; Ukoima, H. N. 2001.; Quarto, 2001; Ukoima, 1998; Chan, 1986 ; Russel, 1986 and Tomlinson, 1986).

These include:

1. Spanning grounds

The mangrove is a spawning ground for fish and other marine organisms. Mangroves are nurseries brooding fishes, crustacean and mollusks.

2. Energy Inputs

Fallen leaves and stems act as source food for estuarine and near shore fisheries. Mangroves provide a link between marine and terrestrial ecosystem. There is an import of nutrients from the land to the mangrove and export of nutrients from the mangrove to the sea.

3. Mangrove trap silt and filter run-off

Mangroves enhance siltation of flowing water and this enhances the growth of some plants which would have been affected by turbid water.

4. Reduction of estuarine pollution

Mangroves adsorb and trap pollutants in the soil.

5. Recreational areas

Mangroves are sites for excursions, bird watching and generally for ecotourism purposes.

6. Sites for education and Research

Researches are done by Institutes, Colleges, Universities and Companies in the mangrove forest. It therefore helps to increase the knowledge especially about the mangrove ecosystem.

7. Fuel wood

Avicennia and Rhizophora are the preferred genera for domestic wood fuel in the Niger Delta of Nigeria. Income generated from wood extraction in Calabar South between 1991 and 2011 accrued to #13, 633,1440.00 – #27,591,120.00 from cutting down of 130,724,00.00 (Okpiliya *et al*, 2013).

8. Construction Purposes

Mangrove species such as *Rhizophora spp* are used to make poles, beams and scaffolds for construction purposes.

9. Boat building

Mangrove trees such as *Excoecaria agallocha* is used to make boats for fishing purposes.

10. Production of tool handles

Handles for farm tools and furniture are made from mangrove trees.

11. Tannin

Barks of *Rhizophora spp* and *Bruguiera, Ceriop spp* are used for tannin production to tan leather and other products.

12. Medicinal uses

Some mangrove species have medicinal and pharmaceutical values. For instance some members of *Avicennia* species are as astringents to treat ulcers while the barks and roots are used as aphrodisiac and maturative poultice.

13. Agriculture

Avicenna leaves are used as green manure to fertilize soil.

14. Source of Food

Several edible fruits are found in the mangrove forest e.g. *Sonneratia caseolaris*. Fishes, shrimps and wildlife are sources of protein to rural and urban dwellers.

15. Niche for Wildlife

It is a home for wild animals such as tigers, monkeys, crocodiles and others.

16. Resource Base

The mangrove is a resource base for local inhabitants. It is a place they live and derive their means of livelihood.

17. Nypa palm

Nypa palm is one of the most productive mangrove plants. It provides leaves for making thatches, hats and brooms. It also provides juice making sugar, alcohol and aromatic tea. The nuts are edible and shell is used to make ear-rings, necklaces and bangles (Ukoima, 2000 and Tomlison, 1998).

Conclusion

Wetlands and mangroves should be conserved to avoid turning them into waste lands. This can be achieved through proper management planning. Besides, Government, Companies and Private individuals should be involved in the funding, maintenance and conservation of Wetlands and Mangroves. Wetlands and Mangroves are indeed indispensable to man both on the ecosystem and component levels. Therefore, there is the need to understand and devise measures for the enhancement of wetlands / mangrove forest production and services through research as well as creating awareness of their relevance to man and society.

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