IMPROVING UTILISATION OF Raphia hookeri G. MANN & H. WENDL THROUGH COMMUNITY BASED CONSERVATION IN THE NIGER DELTA OF NIGERIA

Conference Paper · March 2016

CITATIONS
0

READS
792

2 authors:

Gabriel Adedeji
University of Port Harcourt
39 PUBLICATIONS **100** CITATIONS
SEE PROFILE

Adedapo Ayo Aiyeloja
University of Port Harcourt
77 PUBLICATIONS **203** CITATIONS
SEE PROFILE

IMPROVING UTILISATION OF *Raphia hookeri* G. MANN & H. WENDL THROUGH COMMUNITY BASED CONSERVATION IN THE NIGER DELTA OF NIGERIA

Adedeji, G. A. and A. A. Aiyeloja
Department of Forestry and Wildlife Management
University of Port Harcourt, Nigeria.

Abstract

Raphia hookeri is a multi-purpose palm plant of high socio-cultural and economic values capable of providing array of both timber and non-timber forest products in Nigeria. Regrettably, natural stands of *R. hookeri* are grossly neglected and untapped for more viable and sustainable business in the Niger Delta. This paper highlights avenues for sustainable utilisation of the plant in the Niger Delta of Nigeria. The two main specific uses of *R. hookeri* in Niger Delta are palm wine and edible insect larvae (*Rynchophorus phoenicis*) from stem sap and wood (trunk). The production of these products is inconsistent with long-term environmental enhancement, because it is usually associated with death of the utilised palms. Developing higher value products capturing sustainability are very promising and can contribute to improving the success of economy diversification and good forest enterprises development in the zone. However, the evidenced behaviours and behavioural data had revealed what indigenous people are doing with forest and its associated resources. The abundance of this resource should be an impetus to produce baskets for other regions at the expense of baskets consumption being purchased from zones of less resource. It is therefore imperative for entrepreneurial institutions and centres to create more awareness on the prospect of abundant untapped resource. Interests should focus mainly on handicraft practices that can sustainably improve the local economies and ecology of the plants.

Keywords: Forest enterprises, forest products, socio-economic values, sustainable business
angelgabade2004@yahoo.com; adedapo.aiyeloja@uniport.edu.ng

Introduction

Since the ancient time, the types of native forest resources found in the specific society have dictated the handicrafts evolvement over time and transmitted from one generation to another by practice. Based on this, the utilization of *Raphia hookeri* and perhaps *Elaeis guineensis* fronds for production of baskets are peculiar to Nigeria. Different types of baskets are produced from one country to another as a result of people's experiences and nature given tools (African Heritage, 2010). In Africa, baskets are made out of diversity of materials ranging from palm leaves to reeds, to stem bark, to sisal fibres, to banana fibres etc (African Heritage, 2010). The baskets are of two types based on the design and function: the aesthetic and non-aesthetic baskets. The aesthetics utilise mostly a combination of materials such as rattan (*Calamus* sp.), palm fronds, grasses and stem bark fibres etc and/or dyes while

the non-aesthetics utilise mostly single materials like fronds of *R. hookeri* and *E. guineensis*. Unlike Asian countries and some African countries like Ghana, Cameroon, Ethiopia, and Kenya, Nigeria baskets are chosen more out of necessity than artistic values.

The most widely used baskets in Nigeria are the non-aesthetic ones made from *R. hookeri* fronds. The weaving of baskets has evolved for long and has been passed down from generation to generation in the south western Nigeria. Despite the sophistication of technology, the art and techniques of basket weaving still remain labour-intensive across the globe because no one has ever invented basket-weaving or basket-material twining machine (TREDA, 2008) and Nigeria is at advantage considering the huge human resource. It is evident that rural households in developing countries derive their living mostly from forests and non-cultivated environments including basketry to meet subsistence needs and generate income (Byron and Arnold, 1999; Kaimowitz, 2003; World Bank, 2004; Sunderlin *et al.*, 2005; FAO, 2008). Environmental income has been estimated to contribute about 28% of total income of which 77% comes from natural forests (Angelsen *et al.*, 2014). The highest 63% of household's income obtained from forest products mainly from Brazil nut (*Bertholletia excels*) has been documented in one Bolivian site (Duchelle *et al.*, 2014). Also, a forest income share of above 59% has been attributed to the collection of bush-meat and high-value wild fruits in Cameroon (Ambrose-Oji, 2003). Nigerian basket weaving alone if well harnessed has a potential of being one of the most promising activities of huge employment with higher economic value than those reported above, thus relieving government of burdens. The sector has self-reliance characterization that includes training of young apprentices, abundance of resources, high economic sustenance profile capacities, thereby, helping the individuals and industry not to be reliant on the Government. Adding to this, the craft is eco-friendly, and could successfully maintain sustainable conservation of the environment. However, the craft is still considered a sleeping sector due to the fast decreasing shortage of raw materials and reducing effort in passing the acquired skills from the present generation to the next outside Niger Delta region.

Niger Delta is blessed with huge diverse of resources of which many like *Raphia hookeri* have remained untapped. In spite of its potential, the craft sector in Niger Delta has often been observed as contributing insignificantly to economic development. Field surveys have shown that baskets utilised in the region come from Eastern zone of the country mostly Imo State. While a plethora of paper exists in national debate convergence annually, only very few concentrate on transfer and adoption of skills/technology. Technological progress is driven not only by indigenous innovation but also by the process of technology absorption, and thus the ability of a region to 'catch-up' might substantially depend on its capacity to imitate and adopt innovations developed in more technologically advanced regions (Alexiadis *et al.*, 2011). The abundance of this resource should therefore be an impetus for the adoption and development of

robust basket weaving craft in the region. Efforts have to be made to shift the consumption paradigm from relying on baskets made outside the Niger Delta localities focusing on practical oriented training of basket craft with holistic supports of local communities and youth, and aids such as credits, grants, subsidies etc from government. Outstanding characteristic of rural households in Sub-Saharan Africa including oil-rich Niger Delta is that they earn their living from environmental resources. Basketry sector is highly recognized as a promising alternative primary source of livelihood since the craft products are daily used in connection with agriculture and trade activities. The growing demand for baskets in the local markets has made the products important economic commodity. This is so because it finds wider applications in domestic, and intra and inter-states trades. No doubt *R. hookeri* is considered as one of the best palm trees used for basket craft in Nigeria. Interestingly, the *R. hookerii* which naturally grown in its range is abundant in the Niger Delta region of Nigeria. This paper therefore looks at one of the huge opportunities in Niger Delta which has the potential of being the driving force of poverty reduction above threshold level.

Ecology of *Raphia hookeri*

Raphia hookeri (Arecaceae) is native palm to Nigeria and naturally grown in freshwater swamp and river banks, and forms part of population livelihoods. *R. hookeri* is abundantly available in Niger Delta region than any other zone and/or combination of other zones because of favourable ubiquitous ground surface moisture. Ecological and genetic studies have established the important bases for understanding the natural evolution and functioning practices of native mangroves and wetlands ecosystems of Nigeria (BDCP, 2014).

Uses

Indigenous uses of plants are cultural heritage which must be handed over to posterity for sustenance of experiences and skills. *R. hookeri* is a rich source of many valuable products. Perhaps, the most viable commonly known consumed product is basket. Sap extract of the plant, commonly known as wine is used as food and medicine. The beautiful naturally woven fruit coat or case in those past years was an important identity of the 'Boys Scout' Neckties while the seeds find application in hardening children's medula oblongata region of the skull. Other notable products include: tray, sieves, fishing gear, cage, edible insect, broom etc which yield economic values.

Palm wine

Hunting and gathering are still major sources of wine production in Nigeria and tap mainly by men. The wine is usually obtained through piercing the base of terminal bud of standing palm and inserting the sizeable hollow bamboo tightly into either keg or gourd. *Elaeis guineensis* is an alternative source of palm wine but being an important agricultural palm for oils, it is rarely used except for height challenge. For centuries, many palm species have

been tapped throughout the tropical world in order to produce fresh juice (‘sweet toddy’ in India, Emu, Oguro in Yoruba Language), fermented drinks (toddy, wine, arak), syrup ("honey"), brown sugar (jaggery) or refined sugar (Dalibard, 1999). Certain Islands of Indonesia have used native palm wine as viable source of digestible food energy to fatten pigs for centuries (Dalibard, 1999) and such indigenous use has been successfully initiated in an FAO project in Campodia (Khieu and Preston, 1995). In Nigeria like other African counties, the main traditional use of palm sap is in the production of wine. More than 10 million people have been estimated as consumers of palm wine in West Africa sub-continent (Ukhum *et al.*, 2005; Nwachuwu *et al.*, 2006). The support of wine to people’s livelihood has been estimated to the tune of average income of 20 000-35 000 FRS CFA (US$ 40–70) monthly for many tappers in Cameroon (Falconer, 1993), range income of ₦50,000.00 to ₦90,000.00 for tappers (producers) and ₦45,000.00 to ₦70,000.00 per annum for marketers (traders) in Delta State, Nigeria (Aiyeloja *et al.*, 2014).

Production of edible insect

The stems or trunks of *R. hookeri* and its related species have long historical usage as sources of edible insect larva collection in Nigeria. *Rynchophorus phoenicis* larvae perhaps been a major edible insect being hunted for has formed part of the livelihood as a major sustainable product of commerce more importantly in Delta State of the region.

These two specific uses of *R. hookeri* discussed above are dominant in the Niger Delta. The development of these products are however inconsistent with long-term environmental enhancement, because their production approaches are usually associated with death of the utilized palms

Baskets

Around the world, over 60 plant species are used for making baskets (Novellino and Ertug, 2005). *R. hookeri* fronds possess excellent reeds content and it has long been traditionally known for basket production in Nigeria. Baskets are a familiar sight to many people, even in large cities, however, few people pause to think or consider from which plants they are produced and the benefits they bestow on man. Records of using *R. hookeri* for basket craft in Niger Delta are less frequent or rare unlike palm wine and edible insect than those from south east, and south west zones, where much indigenous knowledge and skills have been preserved. The making and usage of baskets probably date back to early human existence. Baskets from earliest form were used to carry items and safe keeping of valuable materials including human. The notable first protection service account of basket is given in the story of Moses in Exodus 2:3 (BSN, 2009,) when his mother protected him in a basket of bulrushes (probably *R. hookeri* fronds) treated with (sealants) slime and “pitch” placed by the river bank. From this utilisation stand point, a basket that prevented the seepage of

water, surely can be used to fetch and carry water. Therefore, etymologically, basket can be seen or considered as an item of baby rest and protection. A similar account was reported in some cultures, such as the Anasazi of the Arizona desert known for using basket as baby carrier (TREDA, 2008). In recent past, baskets have been reinforced (internal lining) with synthetic nylon to collect water and soak cassava tubers in derived savannah part of Ogun State. This was so because of the light weight of baskets and nylons unlike ceramic/clay pots which are heavy and fragile to transport. Today, baskets made from *R. hookeri* are utilized in a variety of scales ranging from domestic to small/medium scale uses. Some of these many specific and general purposes in Nigeria include:

i. For carrying (minor transportation) farm produce such as cassava tubers (Plate 1), Cacao fruits, orange fruits, vegetables etc from harvesting point to the landing.
ii. For measuring and carrying perishable goods such as tomatoes and pepper fruits to the village and city markets.
iii. For washing and draining of raw and/or cook seeds such as Melon seeds and *Parkia biglobosa* seeds.
iv. As standard local measures to buy some specific farm produce/products such as cassava tubers, Cocoa, Kola-nuts, *Parkia biglobosa* seeds, Melon seeds.
v. For storage and preservation of farm produce like Kola-nuts and Coffee nuts.
vi. For carrying new born babies delivered on the farms to the hospital.

Processing: *R. hookeri* have numerous reeds rich fronds that descend from the trunk (stem) and able to produce more quality fronds if older ones are carefully harvested. The making of basket begins with careful harvest of the fronds with sharpened cutlass. The frond has front, back and sides. The reeds (‘Efun’) and the skeletal frame rods locally called ‘Opa’ in Yoruba language can be prepared in-situ or at weaving site. The removal of reeds usually starts with back reed with knife from the smaller end, followed by side’s reed. The front is not as shiny and slippery like its counterpart back and sides. The front reed is normally prepared to contain more inner pulp specifically for frame rods. The thickness and length of frame rods depend on the intending (specification) size and function of the basket. The typical Yoruba basket consists of either twelve or sixteen plus frame rods and arranged in threes or fours in a star-like solid round form. The side reeds are more flexible than the back reed, so commonly used to start and weave the base and close the basket mouth. The back reeds are mainly use for the basket body. The fronds can be utilized immediately after harvesting or after few days so as to prevent drying that could cause splitting of the reeds in the course of weaving.

Other products developed in the manner of basket with *R. hookeri* fronds' reeds include: **Cages** used for acclimatization and domestication of birds especially fowl and duck, for hawking and trading of birds (fowl, pigeon bird, and duck).

Fishing gears used for trapping and harvesting of small/medium size fish in open water bodies.

Sieves used for sorting and grading farm products especially 'Gari' (cassava flakes) into primary and secondary commodity.

Plate 1: *R. hookeri* made basket used for minor transportation of cassava tubers to landing.

Seats and Beds

Often, fronds used to construct seats and beds are allowed to dry and probably smoked lightly to improve the strength and service life. Strong reeds from the frond back are usually prepared in peg-like or nail-like form to join all the joints. The seats are more often used as kitchen stools by women and the beds are gender friendly in the rural villages.

Ceiling material

Indigenously, *R. hookeri* frond is known for both compressive strengths perpendicular and parallel to grain. Its use for ceiling was probably informed by this property and its general flexibility. Apart from insulating effect, the cardinal aim of using the frond was evident in the storage and preservation function of fronds-based ceiling/roofing system in the rural

areas. Dry farms produce such maize cobs, and ground nuts have often been the storage candidates. The fronds have been very useful as decking material for construction of maize and yam barns in distant farms. In comparative studies of *Calamus deerratus, R. hookeri*, and synthetic board, Alausa *et al.*(2011), reported that both palms have lower thermal conductivity and higher resistivity than asbestos sheet. This implies better suitability of the palms as ceiling materials. The reported better reduction in heat-load effect is an added advantage of the palm fronds as suitable structural material for ceiling. In agreement with Alausa *et al*. (2011) mixture of fronds with other compatible materials for ceiling of modern buildings in Niger Delta, Nigeria is highly recommended.

Item of cultural festival dance

The flexibility, light weight, durability, and high compressive strength parallel to grain demonstrated by *R. hookeri* frond have probably made it the only suitable item for 'Gagalo' or 'Agere' cultural festival dance among the 'Egba' and 'Yewa' people of Ogun State Nigeria over the years. The indigenous manner of *R. hookeri* fronds stands (legs) aided dance has assumed a tremendous socio-cultural value to the 'Imeko' people both home and away. The Imeko early settlers introduced different cultural festival dances that are periodically (mostly yearly) celebrated except on special or sudden occasions to entertain important visitors or tribute to the demise of important son or daughter of the soil. Among the cultural festivals are Egungun, Gelede, Gukan, Igununko, Gagalo etc, however, Gagalo has been the most celebrated due to its openness and devoid of any local legislation, cultic associations and restrictions like others (Egungun, Igunuko etc). The utilization of *R. hookeri* for Gagalo festival dance has become an important cultural history among the value of the plant. In recent times, its status has changed to become a popular communal annual sport festival of overwhelming attendance and celebration every February month the year. It involves singing, drumming, dancing with entertaining outfits made of different plant parts (Plates 2, 3and 4). Religiously unbiased, the sport festival dance has become a valuable source of tourism providing opportunity for many friends to meet on yearly basis. Variation exists in thickness and height of the Gagalo legs depending on the age class, weight, and the ability of individuals to move the legs effectively. However, 'Arinbioloye' (Plate 4) which literarily means "working majestically", is usually the tallest and dance last to close the sport festival.

The solid fronds have also found application in the construction of ladders for climbing purposes.

Plate 2: Children twins Gagalos posing on their way to dancing site (Gelete market) in Imeko, Ogun State, Nigeria

Plate 3: Youth twins Gagalos using one leg up, one leg down dance to entertain spectators in Imeko, Ogun State

Plate 4: Arinbioloye Gagalo (adult) standing majestically prior to his dancing display at Gelete market, Imeko, Ogun State, Nigeria

SWOT ANALYSIS

The five most important strengths and weaknesses of the resource based area, the opportunities open to the people, and the threats that users and collectors of *R. hookeri* fronds may likely face are presented in Table 1.

Table 1: Five important SWOT analysis of basket craft in the Niger Delta

Strengths	**Weaknesses**
1. There are many capable hands that can transmit the skills within the University system in the zone.	1. Access to the resource may be restricted by some local people.
2. The Universities in the zone have enough students to benefit from the skills.	2. Nonchalant attitude of youths towards skill acquisition.
3. Some of the transmitters of skills are direct lecturers of the students in the zone.	3. Recalcitrant behaviour of some of the people in the communities.
4. Many of the lecturers are indigenes and understand the local dialects.	4. Some of the people may continually request for money.
5. Many of the students are indigenes of Niger Delta	5. Being an indigene is not always a consideration factor
Opportunities	**Threats**
1. The palm is abundant	1. Occupational hazards
2. Careful harvesting ensures future more quality fronds and steps to climb the trunk further	2. The security of fronds collectors may not be guaranteed.
3. Great demand for baskets and little or no initial investment capital required.	3. No other threat.
4. The frond is highly renewable.	4. No other threat.
5. The skills can be learnt within a shorter period of time.	5. No other threat.

The weaknesses identified can be addressed and turned to strengths by: creation of awareness about the sustainable economic potentials of *R. hookeri* fronds utilization involving the local people and other stakeholders, sourcing for holistic support of aids such as credits, grants, subsidies etc for establishment of functional crafts centres, giving incentives to the community heads to ensure cooperation, and giving free practical training to the local people and the students.

The threats can be addressed by: wearing safety dress and taking careful precautions when harvesting, using climbing rope or ladder, and involving the community people.

Conclusion

The information related to *R. hookeri* as presented, provides huge opportunities for firsthand cross-cultural comparison between and among the plant utilization knowledge/experiences and skills. Observing the high degree of indigenous knowledge loss, it is imperative to identify appropriate mechanisms and incentives for supporting transmission of basketry knowledge and traditional skills into Niger Delta zone. Considering the untapped sustainable capital tie down of abundant Niger Delta *R. hookeri*, the knowledge based of the plant can be developed into huge gainful venture that would bring immediate long lasting economic benefits to the rural dwellers and improve the national economy. Practical oriented training of basket craft with holistic supports of local communities and youth, and aids such as credits, grants, subsidies etc from government is essential if the diversification and improvement of local economy is desired.

References

African Heritage, 2010. Weaving African baskets. African heritage article posted on 11th February 2010 retrieved on 4th September 2015 from *http://afrolegends.com/2010/02/11/weaving-african-baskets/*

Aiyeloja, A. A., Oladele, A. T. and Tumulo, O. 2014. Potentials of *Raphia hookeri* Wine in Livelihood Sustenance among Rural and Urban Populations in Nigeria. *International Journal of Social, Behavioral, Educational, Economic and Management Engineering*, 8(7): 2316-2323.

Alausa, S. K., Oyesiku, O. O., Aderibigbe, J. O. and Akinola, O. S. 2011. Thermal properties of *Calamus deërratus*, *Raphia hookeri* and synthetic board in building design in Southwestern Nigeria. *African Journal of Plant Science*, 5(4): 281-283.

Alexiadis, S., Hasanagas, N. and Christo, L. 2011. Endogenous knowledge and innovation. In: Dermol, V., Sirca, N. T., Dakovic, G. and Lindav, U. (Eds.) Proceedings of the Management, Knowledge and Learning International Conference, 22-24 June, 2011, Celje, Slovenia, pp 399-406.

Ambrose-Oji, B. 2003. The contribution of NTPPs to the livelihoods of the 'forest poor': Evidence from tropical forest zone of Southwest Cameroon. *International Forest Review*, 5(2): 106-117.

Angelsen, A., Hogarth, N. J., Bauch, S., Borner, J., Smith-Hall, C. and Wunder, S. 2014. Environmental income and rural livelihoods: A global-comparative analysis. *World Development*, 64: S12-S28

Bible Society of Nigeria, BSN 2009. The Holy Bible in English and Yoruba. King James Version, 1978 pp

Bioresources Development and Conservation Programme (BDCP), 2014. Bioresources News. News articles retrieved on the 7th September, 2015 from http://bioresources.org/category/bioresnews/

Byron, N. and Arnold, M. 1999. What futures for the people of tropical forest? *World Development*, 27(5): 789-805

Dalibard, C. 1999. Overall view on the tradition of tapping palm trees and prospects for animal production. *Livestock Research for Rural Development. Volume 11, Article #5.* Retrieved September 11, 2015, from *http://www.lrrd.org/lrrd11/1/dali111.htm*

Duchelle, A. E., Zambrano, A. M. A., Wunder, S., Borner, J. and Kainer, K. A. 2014. Smallholder specialization strategies along the forest transition curve in Southwestern Amazonia. *World Development*, 64(S1): S149–S158

Falconer, J. 1993. The Major Significance of 'Minor' Forest Products. In: Koppell, C. R. S. (Ed.) The Local Use and Value of Forests in the West African Humid Forest Zone. CF Note 6, FAO, Rome retrieved on the 27th May, 2014 from *http://www.fao.org/docrep/t9450e/t9450e00.htm*

FAO, 2008. Links between national forest programmes and poverty reduction strategies. Forestry Policy and Institutions Working Paper 22. Rome: Food and Agriculture Organization of the United Nations, 57 pp

Kaimowitz, D. 2003. Not by bread alone. . . Forests and rural livelihoods in Sub-Saharan Africa. In: Oksanen, T., Pajari, B. and Toumasjukka, T. (Eds.), Forests in poverty reduction strategies: Capturing the potential. EFI Proceedings No. 47, pp. 45–63.

Khieu, B. and Preston, T. R. 1995. Conserving biodiversity and the environment and improving the wellbeing of poor farmers in Cambodia by promoting pig feeding systems using the juice of the sugar palm tree (*Borassus flabellifer*). *Livestock Research for Rural Development*, 7(2): 25-29

Novellino, D. and Ertug, Z. F. 2005. "Baskets of the World" the social significance of plaited crafts. Proceeding of the IV International Congress of Ethobotany (ICEB), 21-26 August 2005, Yeditepe University, Istanbul-Turkey, 73pp.

Nwachukwu, I. N., Ibekwe, V. I., Anyanwu, B. N. 2006. Investigation of some physic-chemistry and microbial succession parameters of palm wine. *J. Food Technol.*, 4(4): 308-312.

Sunderlin, W. D., Angelsen, A., Belcher, B., Burgers, P., Nasi, R. and Santoso, L. 2005. Livelihoods, forests and conservation in developing countries: An overview. *World Development*, 33(9): 1383-1402

Trade Research and Development Agency (TREDA), 2008. Indonesian Basket wear: Handbook of commodity profile, 60pp.

Ukhun, M. E., Okolie, N. P, Oyerinde, A. O. 2005. Some mineral profiles of fresh and bottled palm wine-a comparative study. *Afr. J. Biotechnol*., 4(8): 829-832

World Bank, 2004. Sustaining forests: A development strategy. Washington DC, The Word Bank., 99 pp

Publication of Forestry Association of Nigeria (FAN)

Cite this article as: Adedeji, G. A. and Aiyeloja, A. A. (2016). Improving Utilisation of *Raphia hookeri* G. Mann & H. Wendl. through Community Based Conservation in the Niger Delta of Nigeria. In: O.Y. Ogunsanwo and A. O. Akinwole (Eds.) Proceedings of the 38th Annual Conference of Forestry Association of Nigeria. 07-11 March, 2016. Port Harcourt, Rivers State, Nigeria, 1: 221-332.