The Status of Species Diversity in the Family Loranthaceae (Mistletoes) in Nigeria

by

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Introduction

- Conserving biodiversity cannot be over emphasized (UNCB, 1992; Farnsworth, 1988; Dahanayake, 1991; Lindberg, 1991) yet the story of threaten species are common knowledge.
- About 5000 recorded plant species in Nigeria, 0.4% of the species are threatened, 8.5% endangered(National Biodiveristy Strategy & Action Plan,2003)
- IUCN (2004) Red list of threatened species- 146 plants from Nigeria(endangered and critically endangered)

- With increased demands for the resources available, a number of important plant species have become scarce in areas where they were previously abundant.
- Loranthaceae (commonly known as mistletoes) is a parasitic angiosperm family
- Found on great diversity of host

Fruit of *T. bangwensis*

- Persistent leathery leaves and brightly coloured inflorescences (Burkill, 1995).
- Loranthaceae species are locality specific (Ibrahim & Ayodele, 2011)

G. braunnii

- threat to plantation and tended plants.
  - decreasing productivity (Boussim *et al*, 1993; Gill and Onyike, 1990).
  - increases operation cost (Hawksworth, 1993; Hadfeild, 1999).
- Medicinal value. e.g in treatment of diabetes, hypertension, cancer, urino-genital problems, cough and chest conditions e.t.c (Burkill, 1995; Obatomi *et al.*, 1996; Hussain and Karatela, 1989).

- parasitic nature and medicinal value

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- Destruction & indiscriminate collection

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Overexploitation

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- Threatened???

- If activities of the farmers, collection and use by TMPs and others are not regulated, some species may become threatened with extinction.

- Unfortunately, attempts at making more thorough biodiversity assessments are hampered by a lack of data for different taxa on common sites.
- For biodiversity conservation program to be effective, the conservationist, as a first step needs to know what is available, what is threatened and where they can be found

- Recent taxonomic revision documented 15 species of Loranthaceae in Nigeria (Ibrahim & Ayodele, 2011)

Flowers of *T. globiferus*

- Aims: to determine:
  - what is readily available in comparison with what is obtained in published literatures and herbaria in Nigeria.
  - And possibly, to determine the conservation status of each species

Materials and method

- data presented here is drawn from a detailed study on the taxonomic revision of the family Loranthaceae in Nigeria
- field trips (fig. 1)
- Four Herbaria: FHI (Forest Herbarium Ibadan), UIH (Uuniversity of Ibadan Herbarium), Herbarium of National Institute for Pharmaceutical Research and Development and University of Calabar Herbarium)
- Published literature: Flora of West Tropical Africa by Hutchinson and Dalziel (1954) and Mistletoes of Africa by Polhill and Wiens (1998) were consulted to ascertained the species that were found in Nigeria

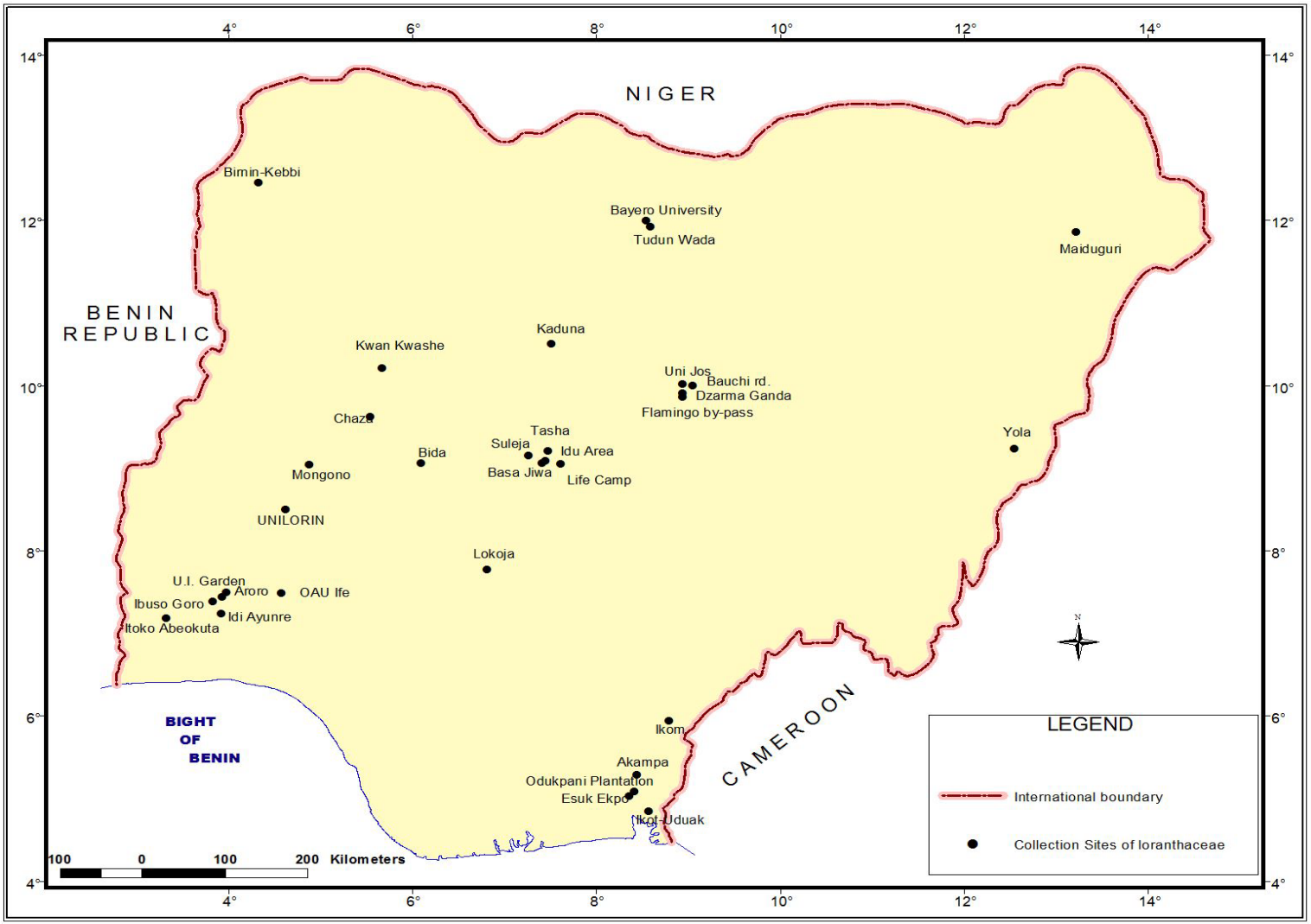

Figure 1: Map showing collection sites of Loranthaceae specimens for the study in Nigeria

Result

- 136 specimens were collected from field studies, and found to belong to 8 species
- 109 herbarium specimens, belong to 15 species
- Literatures documented 22 species in Nigeria
- a total number of 15 species were identified from the field study and herbarium specimen.

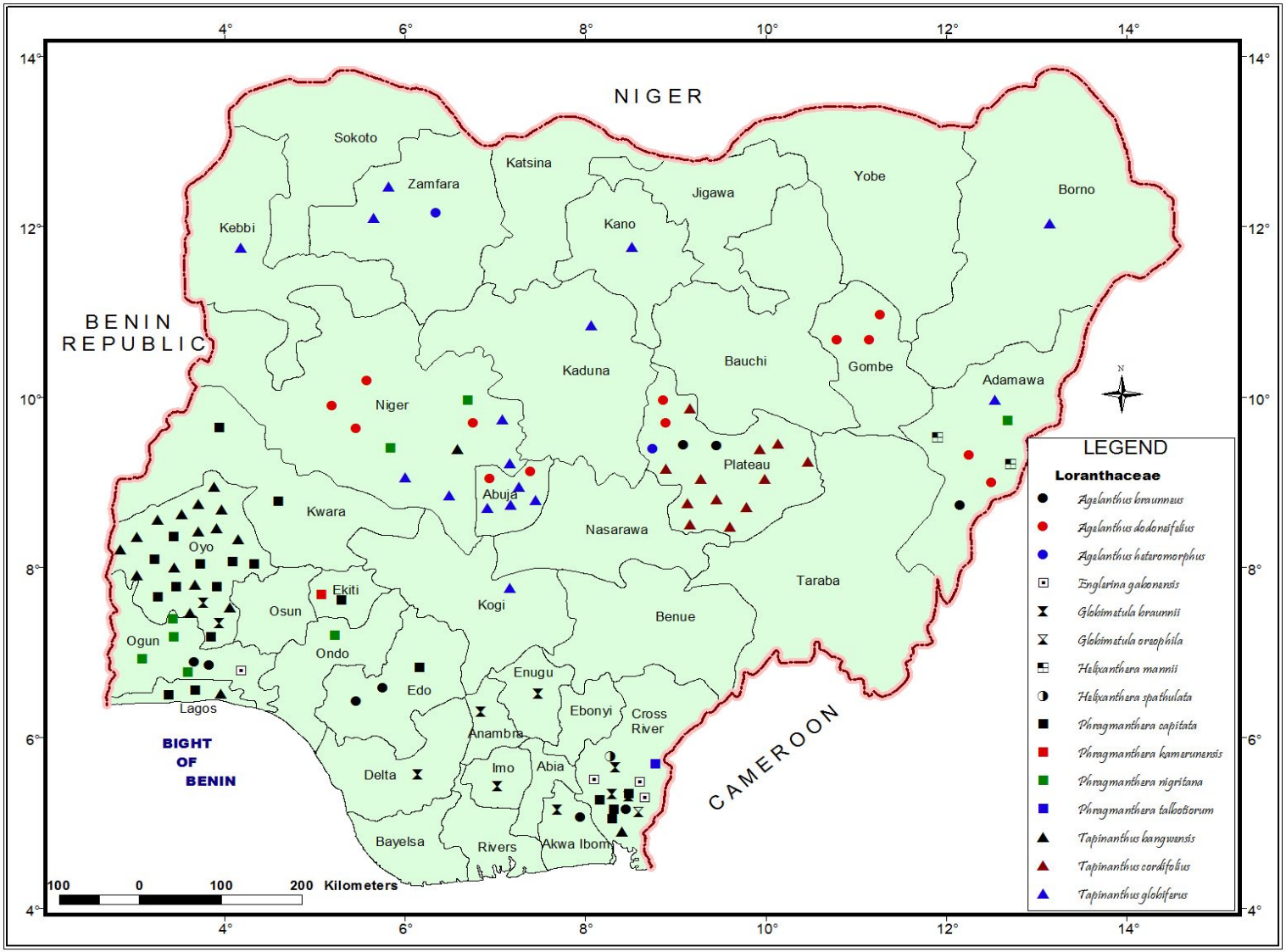

Figure 2: Map showing the distribution of Loranthaceae specimens in Nigeria

Table 1: List of Loranthaceae species and their status in Nigeria

Botanical name	Species documented in published literatures		Documented species in the Herbaria	Species collected from field study	Species documented in literatures but not represented in herbaria or from field study	Distribution / Likely conservation status
	(Huchinson & Dalziel, 1954)	(Polhill & Wiens, 1998)				
Agelanthus brunneus (Engl.) Balle & Halle	*	*	*			**O**
Agelanthus dodoneifolius (DC.) Polh. &Wiens Syn. *Tapinanthus dodoneifolius*	*	*	*	*		**A**
Agelanthus djurensis (Engl.) Polh. & Wiens		*			*	**-**
Agelanthus heteromorphus (A. Rich.) Polh.&Wiens	*	*	*			**O**
Englerina gabonensis (Engl.) Balle	*	*	*			**O**
Englerina ochroleuca (Engl. & K. Krause) Balle		*			*	**-**
Globimetula braunii (Engl.) Danse	*	*	*	*		**A**
Globimetula oreophila (Oliv.) Danser		*	*	*		**F**
Helixanthera mannii (Oliv.) Danser	*	*	*			**R/EN**
Helixanthera spathulata Wiens & Polh.		*	*			**R/EN*?**
Phragmanthera capitata (Sprengel) Balle	*	*	*	*		**A**

Phragmanthera kamerunensis (Engl.) Balle	*	*	*			**R/EN**
Phragmanthera nigritana (Hook. F. ex Benth.) Balle	*	*	*	*		**O**
Phragmanthera talbotiorum (Sprague) Balle	*	*	*			**R/EN**
Phragmanthera raynaliana (Balle) Polh. & Wiens		*			*	**-**
Tapinanthus apodanthus (Sprague) Danser		*			*	**-**
Tapinanthus bangwensis (Engl. & K. Krause) Danser	*	*	*	*		**A**
Tapinanthus belvisii(DC) Danser	***?**					
Tapinanthus cordifolius Polh. & Wiens. Synonym *T. sessilifolius* (P. Beauv) Tieghem	*	*	*	*		**A***
Tapinanthus globiferus (A. Rich.) Tieghem	*	*	*	*		**A**
Tapinanthus pentagonia (DC.) VanTiegh.	***?**					
Tapinanthus preussii (Engl.) Tieghem		*			*	**-**
Viscum congolense De Wild	*	*			*	**-**
Viscum decurrens (Engl.) Baker & Sprague,	*	*			*	**-**
TOTAL NUMBER OF SPECIES	**17**	**22**	**15**	**8**	**7**	

Key:

- **Distribution -** A: Abundant; F: Frequent; O: Occasional; R: Rare
- **Conservation status –** EN: Endangered; *: Endemic to Nigeria

Discussion

- *Tapinanthus cordifolius* is endemic to Jos plateau: any threat to its survival should be prevented
- *Agelanthus dodoneifolius* were found to occur across the north-central to the north-western states, Ikom???

T. cordifolius

A. dodoneifolius

- most commonly encountered species in the savannah: *Agelanthus dodoneifolius Tapinanthus globiferus* and *Tapinanthus cordifolius* (Bako et al, 2001; 2003; Ibrahim & Ayodele, 2011)
- Six out of the fifteen species were found to be abundant

- species represented by single herbarium specimens: *Helixanthera mannii, Helixanthera spathulata, Phragmanthera kamerunensis* and *Phragmanthera talbotiorum*
- This is a pointer to the fact that some species of mistletoes in Nigeria might be threatened.
- This assumption is not far from the fact that mistletoes are continually being faced with the problem of mass destruction due to their parasitic nature and their ability to kill the host plants which are mainly economic trees; they are also faced with the problem of uncontrolled gathering and collection due to their medicinal value; also their locality specific nature

- Gbile et al (1978) listed one species in Loranthaceae to be threatened
- **Conclusion**
- Although, mistletoes are parasites, its survival should not be ignored or overlooked because of its high medicinal and aesthetic value and also as an important component of the ecosystem.
  - Results from this study can be used to develop or modify management plans to take full account of the value of Africa's forest biodiversity especially the parasitic plants.

- **Recommendation**
- As much as the endangerment of these species poses threat to biodiversity conservation, it should be bear in mind that the parasitizing of economic trees is a serious issue. Therefore, in drawing up plans for conservation of these parasitic plants, a balance should be maintained that will be beneficial to all the stakeholders involved
- Detailed and extensive field study needs to be conducted to ascertain the existence of these species and where they are located for onward protection of the species and site.

- Species of loranthaceae should be included in the ex-situ conservation
- Conservation biologist should also work on the host/parasite relationship to determine the stage where the existence of parasite on the host can lead to death of the host and also to determine a mechanism which can be used to prevent the parasite from growing to that stage so that parasites and hosts can survive.
- Revision of the flora of west tropical Africa that was compiled in 1954
- **Flora of Nigeria needs to be written.**
  - to ascertain those species that are threaten, endangered or extinct.

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"We need to make case for the conservation of mistletoes. Who knows??? One of these might be a lead to drugs for solving emerging diseases"

- *Thank you for listening*