

## **Project Update: March 2016**

From May to July 2015, survey questionnaires were used to update knowledge on plant species that provide food for primates in Ketou District. Plant species that local communities know as being very useful for non-human primates within Dogo Forest, Ketou Forest and Ewe-Adaklamey Remnant Forest (EARF) were listed.

### **Questionnaire session**

Fifty nine peoples including 32 farmers, 11 students, nine hunters, five healers and two public servants were interviewed about the primate food, the hunting of primates, their uses, their views during the last 20 years and on the presence of primates currently around the community area. The hunters group of the Ewè village's with whom we have been working for the first RSG project, know where to find foraging non-human primate species in time and space. This initial information was used by our team to identify and describe specimens. But farmers are a majority in this community and are an important group to involve in any measures or community based activities aimed at sustaining primate populations or their habitat restoration. That's why more than half (54%) of questionnaires were addressed to local farmers.

All informants recognise that primates are living in the three forests (Dogo, Ketou and Ewe-Adaklamey) but with an important decrease of population during the last 20 years. People are generally aware that habitat loss because of land cultivation and fragmentation due to illegal deforestation are the main threats for non-human primate population decrease. However, 57 people (96%) of informants believe that primate hunting/ poaching is a permanent danger for the monkey's population's stability. Nine (15 %) of them are hunters who still kill primates for a popular bushmeat. The five healers (8% of informants) cited some traditional recipes in which the skull, skin, fingers and tail of primates are used.

Based on the interviewees, two monkey categories emerge. Domesticated monkeys and non-human primates that are mainly in the forested zone. The non-human primates are causing some havoc on crops. For instance, at the outskirts of the EARF two species of primates were indicated by farmers as being the monkey which eats farm crops like maize (*Zea mays*). But we have not yet correctly identified these two species in the wild because of their ability to detect human presence. The primates abscond quickly and disappear with the density of the vegetation.

### **Food resources of primates in Kétou District**

One hundred per cent of respondents agree that primates generally eat fruits. According to 77% of the respondents, a part of hunters and some farmers, monkeys fit easily to human diet. Primarily primates are viewed as frugivorous, sometimes vegetarians. Plant species listed by the respondents are essentially the common crops and exotic fruit. Solely hunters and few farmers (representing 23% of respondents) were able to list and identify the native fruit tree species harboured by forests of Dogo, Ketou and Ewè and Adapklame village in Ketou District.

According to the investigations, there are many native fruit trees species that are eaten by non-human primates of Ketou. These species are growing naturally in the tree forests of study area. We could identify twenty seven species that provide food for primates. We used hunter's local knowledge on the native plant species to perform herbaria on field (Fig.1) and pictures capture.



Fig 1: Outskirt of EARF (Top left), Dung of Doe in EARF (Top right) *Adansonia digitata* in maize field on the edge of Ketou forest (Middle left), A hunter in EARF (Middle right), Herbaria of (Bottom right) *E. oblancoletatum* and *T. scleroxylon* (E)

The table below gives a list of these identified plant species including native tree, common fruit trees often known as non-native species and target species which are already global conservation concerns. The citation frequency of the target species with a star is greater than 25%. These native trees should be planted and can provide food for non-human primates living in the wild. This choice has also been done with local communities and hunters especially in the aim to stop looting of farms while ensuring the well being of primates in their natural environment by the restoration of their habitat.

Plant species (Target species = *)	Family	Common names	Frequency citation after survey (%)	Type	Part used by primates
<i>Adansonia digitata</i> *	Malvaceae	monkey-bread tree	79	Native Tree	Mature fruits
<i>Albizia lebbek</i>	Fabaceae	Woman's tongues tree		Native Tree	Leaves
<i>Anacardium occidentale</i>	Anacardiaceae	Cashew		Non-native	Fruits and young leaves
<i>Blighia sapida</i> *	Sapindaceae	Ackee	79	Native Tree	Fruits
<i>Bombax costatum</i>	Bombacaceae	Kapok		Native Tree	Fruits and leaves
<i>Carica papaya</i>	Caricaceae	Papaya		Mother Herbs - non-native	Fruits
<i>Ceiba pentadra</i>	Bombacaceae	Kapok Tree		Native Tree	Fruit and leaves
<i>Citrus aurantium</i>	Rutaceae	Sweet Orange		Mother Herbs - non-native	Fruits
<i>Dialium guineense</i> *	Fabaceae	Velvet Tamarind	63	Native Tree	Bark, leaves and fruits
<i>Eleais guineensis</i>	Arecaceae	African oil palm		Common Native Tree	Nuts
<i>Englerophytum oblanceolatum</i> *	Sapotaceae	-	58	Native Tree	Fruits and Nuts
<i>Ficus Ovata</i>	Moraceae	Fig		Native Tree	Fruits
<i>Ficus spp</i>	Moraceae	Fig		Native Tree	Fruits
<i>Guiera senegalensis</i> *	Combretaceae		27	Shrub - Native Tree	Leaves
<i>Mangifera indica</i>	Anacardiaceae	Mango		Common Fruit Tree	Fruits
<i>Manihot esculenta</i>	Euphorbiaceae	Cassava		Common Cultivated shrub	Leaves and roots
<i>Manilkara multinervis</i>	Sapotaceae	-		Native Tree	Fruits and leaves
<i>Monodora tenuifolia</i>	Annonaceae	-		Native Tree	Fruits
<i>Musa sapientum</i>	Musaceae	Banana		Common largest herbaceous	Mature Fruits and sap
<i>Parkia biglobosa</i>	Fabaceae	Nere		Native Tree	Fruit and Nuts
<i>Psidium guajava</i>	Myrtaceae	Guava		Common Fruit Tree	Fruits
<i>Spondias mombin</i>	Anacardiaceae	-		Common Fruit Tree	Fruits
<i>Syzygium guineense</i>	Myrtaceae	Water pear		Native Tree	Fruits
<i>Triplochiton scleroxylon</i> *	Malvaceae	Obeche, Samba	44	Native Tree	Fruits and young leaves
<i>Vigna sp</i>	Fabaceae			Common Crop	Green beans
<i>Vitex doniana</i>	Lamiaceae	African black plum		Native Tree	Fruits
<i>Vitex sp2</i>	Lamiaceae			Native Tree	Fruits

## Community interaction

At the beginning of the long dry season, from October to November 2015, two sessions of Farmer Field Schools were held with some members of the local community to gather information on the second step of the second Rufford project. The first session focused on the result of surveys, herbaria presentation and the knowledge sharing for the recognition of targeted plants species. During this session we also reported to the community, our participation to the ICCB in August 2015 (section of Citizen Sciences) at Montpellier with the preliminary results of the first RSG project we already completed (Fig. 2).



Fig 2: Contribution to the International Congress of Conservation Biology 2015

In the second session of November 2015, we used Farmer Field School to train local team project on seed collecting based on the tools developed by Global Trees Campaign (FFI) (Fig 3). The staff of the RSG2 and the local team get practice on nursery monitoring and propagating techniques on the community conservation area established during the RSG1 project. The seed collecting campaign, nursery establishment and propagating test for target species reported during this project are ongoing during the dry season till March 2016.

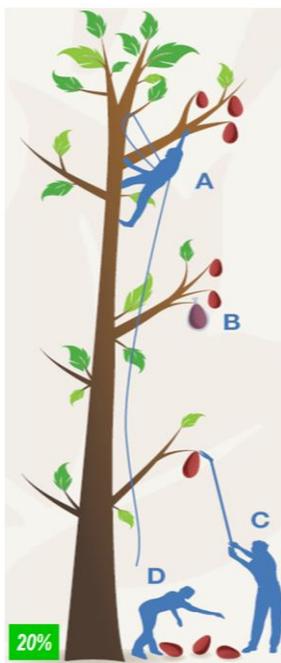




Fig 3: Seed collection based on Global Trees Campaign method (Top left), Farmers Field School 2015 session at village of Ewe (Top right & Bottom left), Baobab seed (*Adansonia digitata*) collected from a mother tree at Dogo, Ketou and Ewe forest (2015-2016) (Bottom right).

### **Conclusion**

This is an important step in identifying the specific plants that primates may depend in Ketou District. The study also help to quantify the level of local knowledge on non-human primate.

Running head: Conservation status of *Englerophytum oblanceolatum* in Benin Republic

Article Title: Botany ecology and geographical distribution of *Englerophytum oblanceolatum* T.D. Pennington in Benin Republic, West Africa.

Alfred Houngnon \*1, Bernard W.T. Coetzee 2, Clive V. Nuttman 3, Daniel Bocossa 4, Merveille K. Savi 5, Ronald Bellefontaine 6

1- AGIR Bénin, BP 719 Abomey-Calavi, République du Bénin.

2- Organisation for Tropical Studies, P. O. Box 33, Skukuza, Kruger National Park, 1350, South Africa.

3- Tropical Biology Association. Department of Zoology, Cambridge, UK

4- Laboratoire Interdisciplinaire de Recherche en Didactique, Education et Formation, 2 place Marcel Godechot Montpellier, France.

5- Laboratoire d'Ecologie Appliquée 01 BP 526 Cotonou, Bénin

6- CIRAD, UMR AGAP, F-34398 Montpellier, France

\*Corresponding author: alfred.houngnon@gmail.com

## Abstract

### *Background and aims*

*Englerophytum oblanceolatum* is a wild fruit tree used widely by people and wildlife in Benin. The species has a very localised distribution within forest fragments in central and southern parts of the country. We provide an overview on the botany, ecology, distribution and conservation status in Benin Republic.

### *Methods*

We reviewed the relevant literature and surveyed both forests in which the species was last recorded. Interviews were conducted with households to assess local knowledge on *E. oblanceolatum*. Existing forest maps were divided into plots of 500x500 m and within each plot ten randomly sub-plots (50 m radius) were established to map current populations and update the area of occupancy. Geoprocessing tools were used in ArcGIS to perform a diachronic study of Ewe Adapklame Remnant Semi deciduous Forest (EARSF) by tracing change in forest cover from 1987 to 2007. Data on the shape of the tree and the parts such as leaf, stem and flower were assessed. The conservation status of *E. oblanceolatum* was assessed using IUCN Red List Criteria.

### *Key results*

Three homotypic and six heterotypic (synonyms) were found in the literature. We confirm that in Benin Republic, the species is now restricted to EARSF which now represents the single location in the Guineo-Congolese region in Benin for *E. oblanceolatum*. Landscape fragmentation is one of the major threats that may lead to its potential extinction in Benin.

### *Conclusion*

According to the IUCN criteria, the species is critically endangered in Benin. Urgent conservation activities involving local communities are recommended.

**Key words:** *Englerophytum oblanceolatum*, distribution, ecology, critically endangered, Benin.