Project Update: April 2020

1. Methodology used

1.1. Assessing local perception and indigenous strategies

A semi-structured interview (photo 1) was undertaken between August and October 2019 in 19 localities where the remaining individuals of the species are found. 602 informants were investigated. Personal characteristics of the respondents (sex, age, ethnic groups, etc.), perception of the species status, categorization of the species changes (i.e. if the species has disappeared, decreased or increased), local strategies for the species conservation were recorded.

1.2. Modeling the suitable habitats

Geographical coordinates of all individuals of *C. bonduc* were recorded through 3 transects established per locality between November 2019 and January 2020. Each transect had 3 km length following a band of investigation of 200 m on each side of the transects.

Moreover, diameter of all plants of *C. bonduc* with diameter at breast height (dbh) more than 5 cm (adults) were measured. The number of individuals according to adult, sapling and seedling were also recorded. Saplings are individuals with DBH <5 cm and 0.5 m< height <2 m while seedlings (photo 2) are individual with height \leq 0.5 m. Occurrences of the species were also extracted from already existing databases for West Africa (http://www.gbif.org).

Bioclimatic and soil variables were downloaded respectively from Africlim website (<u>www.africlim.org</u>) and Africa Soil Profiles Database (<u>https://www.isric.org</u>).

2. Results

2.1. Repartition of respondents

Table 1 presents the number of surveyed in function of their localities, ethnic groups, age and sex.

Table 1 Repartition of respondents according to localities, ethnic groups, sex and age

CHARACTERISTICS	NUMBER OF INFORMANTS	PROPORTION (%)
LOCALITIES :		
APLAHOUE	60	9.97
ATHIEME	31	5.15
KLOUEKANME	39	6.48
LOKOSSA	30	4.98
OUIDAH	40	6.64
ADJARRA	23	3.82
BONOU	30	4.98
DANGBO	29	4.82
EKPE	21	3.49
KETOU	34	5.65
POBE	31	5.15
SAKETE	32	5.32
ABOMEY	50	8.31

ABOMEY-CALAVI	17	2.82
ALLADA	18	2.99
BOHICON	35	5.81
COVE	35	5.81
ZE	17	2.82
ZOGBODOMEY	30	4.98
ETHNIC GROUPS :		
МАНІ	34	5.65
FON	225	37.38
GUN	98	16.28
NAGO	79	13.12
ADJA	123	20.43
AIZO	37	6.15
OTHERS	6	1.00
AGES (IN YEARS) :		
YOUTH	114	18.93
ADULTS	428	71.10
OLD PEOPLE	60	9.97
SEX :		
MALE	419	69.60
FEMALE	183	30.40

2.2. The different organs and their use forms

Table 2 presents the organs of *C. bonduc* used by local people. Almost all organs of the species are used to treat diseases with leaves and roots the most used.

Table 2. Main organs used and the associated use forms

ORGANS	USE FORMS
	malaria
	antibiotic
	Stomachache
	Fever
LEAVES	Faeces easiness
	Edematous
	Low weight prevention
	Headache
	Infection
	Memory weakness
FLOWERS	Cult
	Malaria
	Game domino (photo 3)
	Cult
SEED	Dentition
	Edematous
	Sleeplessness

	Teeth ache
	Malaria
STEM	antibiotic
	Hemorrhoid
	Prevention of prostate gland diseases
	Sexual weakness
	Malaria
	antibiotic
ROOT	Edematous
	tiredness
	Stomachache
	Fever
	Angina
	Infection

2.3. Perception on the plant species trend and associated knowledge

2.3.1. Changes in Caesalpinia bonduc abundance in the study area

Opinion of local communities about the changes in *C. bonduc* abundance is shown in Table 3. The results indicate that 79 % local people think that abundance of the species has decreased while 18 % of them think that the species has disappeared.

Table 3. Opinion of local people about the changes in *C. bonduc* abundance

Opinion	about	the	changes	in	C.	bonduc	Proportion of
abundan	ice						Informants (%)
decreasir	ng						78.6
disappea	ared						18.1
increasing	g						2.0
stable							1.3

2.3.2. Possible causes of disappearing and decreasing of *C. bonduc* The main causes of disappearing and decreasing of *C. bonduc* are roots overexploitation, pharmacopoeia and agricultural expansion (table 4).

Table 4. Causes of disappearing and decreasing of C. bonduc

Opinion about the possible causes of disappearing	Proportion	of
and decreasing of C. bonduc	informants (%)	
roots overexploitation	38.1	
pharmacopoea	26.3	
agricultural expansion	23.1	
climate change	8.7	
herbicides	2.5	
materials cuttings	0.9	
firewood production	0.2	
others	0.1	

2.4. Local strategies for conservation of the species

2.4.1. Need for conservation

About 66 % and 31 % of the respondents think that there is respectively a very urgent and urgent need for conservation of the species (Table 5).

Table 5. Need for conservation of *C. bonduc*

Do you think that there is an urgent need for	Proportion of
conservation of the species?	Informants (%)
very urgent	65.7
urgent	30.7
not so urgent	3.2
no urgent	0.5

2.4.2. Strategies used by local people for the conservation of the species The most used strategies for conservation are harvesting reduction (43 %), plant nursery (32 %) and seedlings protection (8.8 %) (Table 6).

Table 6. Strategies for conservation of C. bonduc

	Proportion	of
Actions developed for C. bonduc Conservation	informants (%)	
harvesting reduction	43.0	
plant nursery	32.1	
seedlings protection	18.8	
seeds conservation	3.7	
apiculture	2.2	
others	0.1	

2.5. Distribution of the species through the study area

A total of 234 occurrences were obtained (Figure 1) with 156 from field inventory and the others from <u>www.gbif.org.</u>

Figure1:GeographicdistributionofC.bonducrecords across the study area.



2.6. Structural parameters of the species

Diameter structure (Figure 2) shows that the adult individuals of diameter between 5 and 6.5 cm are most represented. Moreover, seedlings are less encountered in the fields (Table 7).



Figure 2: Diameter structure of C. bonduc in the study area.

Table 7. Proportion of individuals of C. bonduc

Individuals of C. bonduc	Proportion (%)
adults	60.28
saplings	35.75
Seedlings	3.97

3. Other achievements

Two manuscripts have been written and will be submitted to international journals for publication.

4. Next step of the project

Farmer Field Schools on seed collecting (Photo 4), nursery monitoring and replanting will be engaged in following days.



Photo 1. Interview with a farmer



Photo 2. Seedlings of C. bonduc



Photo 3. Traditional game played with the seeds of C. bonduc



Photo 4. Seeds of C. bonduc