

Report

# Botanical expeditions to the Guinea sandstone plateau areas

19 September – 15 October 2016 and 2 – 28 April 2017

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## Introduction

This is the report of two botanical expeditions to the sandstone plateau area in Coyah Préfecture and the Kounounkan Forest and Benna Plateau in Forécariah Prefecture; Guinea, 19 September – 16 October 2016 and 2 – 28 April 2017. During the two expeditions, 37 seed collections, 305 herbarium collections and 128 observations were made.

## The sandstone plateau area in the Coyah Préfecture

The original vegetation of the sandstone plateau area in the Coyah Préfecture is mainly a mixture of forest and wooded grassland. There are also vertical sandstone cliffs. The wooded grassland is mostly found on plateau mountains and wider valleys. The forest is found on slopes and along streams. Most of the forest is converted to agricultural land.

The landscapes in the sandstone area are impressive, as well as located near Conakry; there may be some touristic potential there (Figs. 1, 2).



Fig. 1. The sandstone cliffs in Coyah Préfecture, near Malassi Village.



Fig. 2. The lake at the bottom of the Malassi waterfall.



Map 1: The areas of the sandstone plateau in Coyah Préfecture which were visited on the two expeditions. Dots are collections or observations. From: Google Earth.

The following rare species were found in the sandstone area in the Coyah Préfecture:  
*Cola angustifolia*, *Diospyros felicianae*, *Guibourtia copallifera*, *Pseudoprosopis bampsiana*,  
*Sakersia echinulata*.



Fig. 3. *Talbotiella sp nov.*, a new tree species has been identified from the sandstone area near Coyah.

A new tree species has been identified from the sandstone area near Coyah: *Talbotiella sp. nov.* (Fig. 3). The new species occurs only 50 km northeast of the centre of the capital Conakry and 12 km east of the town of Coyah, part of the Conakry urban agglomeration. The new species is a tree to 21 m high, with a stem diameter to 83 cm; occurring in forest dominated by tree species of the Leguminosae subfamily Detarioideae, on rocky stream banks and rocky hill slopes, at an altitude of 100 – 350 m. A number of 1200 – 1600 mature trees is estimated to have been seen; in 6 forest patches; more trees may be present in places not yet visited. The extent of occurrence is 47 km<sup>2</sup>. The new species will be assessed to the IUCN Red List category Endangered.

### The Kounounkan Forest and Benna Plateau

The vegetation on the Benna plateau is sparsely wooded grassland, with grasses 10 cm to 100 cm high, with a few shrubby forest patches with trees up to 8 m high, on a flat or slightly sloping sandstone plateau; at an altitude between 800 and 1180 m (Fig. 4). On the south part of the Benna Plateau, very few signs of humans were seen, no paths, no cattle dung. However, a working poachers camp was found there in April 2017; and most of the grassland on the plateau was burned. The intensity of the fire seems to be low, because the grass is low; trees scarred by fire or with blacked bark are very rare on the plateau; only one burned tree was seen.



Fig. 4. The Benna Plateau, with grassland and forest patches.



Fig. 5. The sandstone escarpment of the Benna Plateau.

The vegetation on the Benna Plateau is threatened by increased frequency and intensity of fires. Cattle grazing is also a threat but occurs only on the northern part of the plateau. The southern part of the plateau is surrounded on all sides by up to 400 m high sandstone walls; access is only possible through a few very steep and pathless ways up. Because the southern part of the plateau is so difficult to access, the level of threat there is currently low.

The vertical cliffs of the Benna Plateau (Fig. 5) must be subject to some form of erosion undermining the base, which makes vertical sections of rock collapse and so maintain the vertical edges of the plateau. A rock avalanche occurred in the wet season of 2015, when a 150 m wide and about 200 m high section of the rock wall collapsed; the avalanche destroyed a 200 m wide and 500 m long section of the forest below the rock wall. Sometime later, the rock debris on the slope was sliding 300 m further down the slope, destroying more forest. This avalanche is well visible on Google Earth. It could be that the “old secondary nature” of much of the Kounounkan forest is partly the result of such rock avalanches.

The Kounounkan forest is located mainly on the West and Southwest side of the Benna Plateau; smaller areas of forest occur on the South and East sides. The Kounounkan forest is the largest block of natural forest remaining in Maritime Guinea (Fig. 6). Lowland rainforest is found in valleys and on slopes, and consists of trees of up to 42 m high, of species characteristic of Western African forests. The middle story consists of many pole-sized trees. The understory is usually open. Large lianas are present, but no rattans; not a single rattan has been seen. *Piptadeniastum africanum* and *Parkia bicolor* are very common in the lowland Kounounkan rainforest, which gives the forest a late-secondary appearance. *Ceiba pentandra* also occur in densities indicating late secondary forest. This may be partly explained by the occurrence of rock avalanches; see below. Other common tree species are *Nesogordonia papaverifera* and *Aubrevillea platycarpa*.



Fig. 6. The Kounounkan Forest seen from the Benna Plateau.

Rain forest of a more primary nature was found on inaccessible hill summits. These forests are dominated by grove-forming tree species, mostly in the Detarioideae subfamily, such as *Gilbertiodendron aylmeri* and *Guibourtia copallifera*, but also in other families: *Neolemonniera clitandrifolia*, *Trichoscypha longifolia*.

A submontane forest type is common on steep slopes, hill summits, as well as in the forest patches on the Benna Plateau. Submontane-like forests have been found at altitudes as low as 200 m. This forest type consists of small to medium-sized trees, 5 to 12 m high, often of rare species, such as *Diospyros felicianae*, *Guibourtia copallifera*, *Tessmannia baikieaoides*, *Vitex*. The ground is often densely covered by herbs such as *Crossandra flava*, *Mostuea hirsuta*, *Nervilia subintegra* and *Selaginella vogelii*. The lowland rainforest and the submontane forest type are not strictly separated; many intermediate forest types occur.

Numerous plant species new for Basse-Guinée have been found in the Kounounkan Forest and the Benna Plateau; they are often widespread but have their westernmost distribution in the Kounounkan Forest or the Benna Plateau. Examples are: *Acridocarpus alternifolius*, *Antrocaryon micraster*, *Ficus kamerunensis*, *Hannoa klaineana*, *Hildegardia barteri*, *Klainedoxa trillesii*, *Newtonia duparquetiana*, *Pavetta leonensis*, *Placodiscus pseudostipularis*, *Strombosia pustulata*, *Synsepalum afzelii*.

The following rare species were found in the Kounounkan forest and on the Benna Plateau: *Apodiscus chevalieri*, *Cailliella praerupticola* (Fig. 7), *Cinnobotrys felicis*, *Cola angustifolia*, *Diospyros feliciana*, *Dissotis leonensis*, *Eriocaulon tingilomum*, *Fegimanra afzelii*, *Fleurydora felicis*, *Guibourtia copallifera*, *Heterotis pygmaea*, *Neolemonniera clitandrifolia*, *Sakersia echinulata*, *Strychnos melastomatoides*, *Stylochaeton pilosus*.



Fig. 7. *Cailliella praerupticola* used to be known from a single herbarium collection made in 1937. The species was found to be common on vertical cliffs of the Benna Plateau.

Two new herbaceous plant species have been identified so far from the plant collections: a *Gladiolus sp nov* (Fig. 8) and a *Melastomastrum sp nov*, both are worldwide only found on the Benna Plateau.

The Kounounkan forest is threatened by village logging for poles and planks, farming, fire and hunting. Almost all of the original Kounounkan forest has disappeared though farming. Remaining forests close to villages are usually damaged by village logging. Only in remote places far from villages, less disturbed forest remains. Most parts of the Kounounkan Forest close to villages have been damaged by village logging and fire. Those parts of the Kounounkan forest remaining close to villages, are usually on, or above, very steep slopes; or the soils are too rocky for farming and/or the trees are too small for logging.



Map 2: The areas of the Kounounkan Forest and the Benna Plateau which were visited on the two expeditions. Dots are collections or observations. From: Google Earth.

Future research into the Kounounkan Forest and the Benna Plateau must be done by very intrepid researchers. The southern part of the Benna Plateau cannot be reached in one day return trips from any of the nearby villages. It is therefore necessary to set up a camp near the sandstone cliffs. From such a camp, the plateau can be reached by climbing up to 500 m, through pathless forest on very steep rocky slopes. Camping on the plateau would be possible as well; fast porters may go there and back to the village in one day, but porters will only go there if they are highly paid. The best possibility to camp on the plateau is to start from Gbereboum village, on a 5 hour walk and a 700 m climb to the *Gladiolus* meadow at 900 m altitude, where there is flat grassland, forest patches and a seasonal stream. In the rainy season, there are a number of small streams on the plateau; in the dry season only a few deep parts of the streams will still contain stagnant water. The least disturbed parts of the Kounounkan Forest also cannot be reached in one day; therefore camping is necessary. The remote parts of the Kounoukan Forest are mostly pathless.

If the Kounounkan Forest and the Benna Plateau are proposed to become a National Park, it is important to include the hills to the Southwest (Map 2). There is about 7 km<sup>2</sup> of forest left on these hills, containing many rare species in large numbers. For example, there are an estimated 48,000 trees of *Guibourtia copallifera* in this hill range. *Diospyros feliciana* is also very common here.

## Specimens collected

2016

Xander van der Burgt 2006 – 2074 (69 collections).

Almamy Diallo 1 – 32 (33 collections).

Alphonse Goman 345 – 354 (10 collections).

Pepe Haba 416 – 459 (44 collections).

Denise Molmou 1014 – 1045 (32 collections).  
Guinea observations 1 – 71 (71 observations).  
Total 188 collections and 71 observations.

2017

Xander van der Burgt 2084 – 2129 (46 collections).  
Almamy Diallo 49 – 57 (9 collections).  
Pepe Haba 800 – 834 (36 collections).  
Gbamon Konomou 247 – 272 (26 collections).  
Guinea observations 72 – 128 (57 observations).  
Total 117 collections and 57 observations.

### Short programme

19 – 21 Sept. 2016: Work at herbarium in Conakry.  
23 Sept. – 5 Oct.: Plant and seed collecting in Kounounkan Forest and Benna Plateau.  
6 – 8 Oct.: Work at herbarium in Conakry.  
9 – 12 Oct.: Plant and seed collecting in the sandstone area near Coyah.  
13 – 15 Oct.: Work at herbarium in Conakry.

2 – 6 April 2017: Work at herbarium in Conakry.  
8 – 13 April: Plant and seed collecting in the sandstone area near Coyah.  
15 – 23 April: Plant and seed collecting in Kounounkan Forest and Benna Plateau.  
25 – 28 April: Work at herbarium in Conakry.