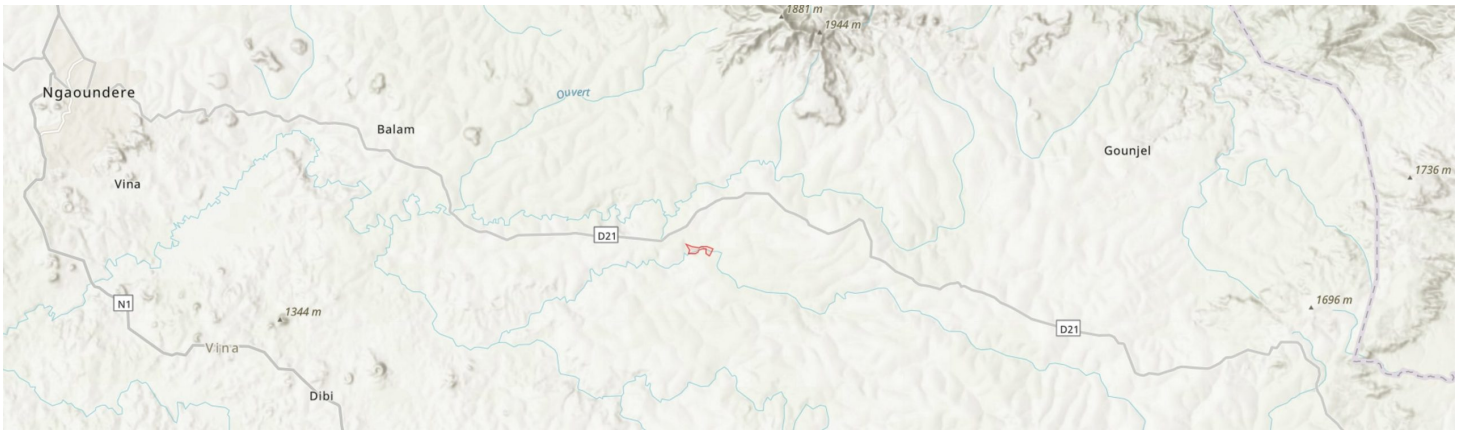
Tello Falls

CMNTIPA019



Country: **Cameroon**
Administrative region: **Adamawa (Region)**
Central co-ordinates: **7.22960 N, 13.94200 E**
Area: **0.5km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Important populations of six globally threatened species are recorded at the site. Four of these are also national endemics and Stonesia ghoeguei is unique to the site itself. Therefore, the site qualifies as a potential IPA under criterion A(i).

Site description

Tello Falls is a small riverine habitat surrounding some spectacular waterfalls on the Tello river in Vina department, Adamawa region, Cameroon. It is about 2 km south of the D21 Ngaoundere-Mbang road, approximately 40 km east of Ngaoundere. The falls occur where the river valley descends abruptly by approximately 50 m and the water drops freely off a wide stone table 10-15 m thick to a small lake below. Beneath the table and behind the curtain of falling water a large cavern has been carved out. Hygrophilic vegetation clings to the stone table, cave edge and banks of the river and lake.

Botanical significance

Although there is little information on the site and few recent botanical collections, six globally threatened species have been recorded, four of which are assessed as Endangered and two as Vulnerable. Four of these species are national endemics and Stonesia ghoguei is narrowly endemic to the site itself. Justicia telloensis (EN) and Platycoryne alinae (EN) are recorded at just one other location. Apart from a doubtful record at Bandounga (Cheek & Lovell, 2021), Phyllanthus calligatus is also known from just one other site in the Bamboutos mountains which have been very heavily de-vegetated since the only collection 85 years ago; therefore, this species is likely now endemic to Tello Falls. A second rare species, Phyllanthus discolaciniatus, from the same genus has also been recorded at the site. Digitaria adamaouensis (EN) is recorded from only two other nearby locations in Adamawa region and one location in West region (Cheek & Lovel, 2020).
Only one of the taxa listed here (Stonesia ghoguei) is included in Kuetegue et al.'s (2019) checklist of the rheophytic species of Cameroon but it is possible that further rheophytes may occur since the site has not been thoroughly surveyed. Phyllanthus caligatus is the only other species which is known to behave as a rheophyte in

the spray of the falls themselves. Justicia telloensis, Digitaria adamaouensis, Hygrophila mediatrix (EN) all grow in swampy or indundated habitats (Cheek, 2014ab; Cheek & Lovell, 2020;) while Sericanthe raynaliorum (VU) is a shrub of gallery forest. With regard to these species, it is not known exactly how close to the falls some of the specimens were collected and, for this reason, the area demarcated here is somewhat arbitrarily drawn. Further surveying or local knowledge is required to demarcate the boundary of the site more precisely. Other species known from Adamawa region but not known from the site should be searched for and if possible included, such as Eriosema raynaliorum (not officially threatened but known from only a very small area nearby), Cyphostemma leucotrichum (NE), Vernonia chapmanii and Hypoxis suffruticosa (both provisionally VU, Onana & Cheek, 2011) and Trifolium gilletianum (CR). The latter species is known only from a single collection at an unknown location recorded as "40km from Nagoundere towards Belel", which puts it very close to the Tello falls (Cheek, 2015).

Habitat and geology

The Tello falls cut through the Adamawa plateau, a horst bordered to the north and south by the Adamawa and Djerem-Mbam faults (Nkaouandou et al., 2008). The latter faults are part of the Central African Shear Zone which trends at 70 ° ENE-WSW, tangential to the 30 ° trending Cameroon Line (Nkaouandou et al., 2008). Much of the plateau is overlain by alkaline basalts of recent (Miocene-Pliocene) to Cretaceous age, with much older basement complex rocks exposed to the north and southwest of Nagoundere; amongst the basalts, there are multiple trachyte and phonolite plugs (Apollinaire et al., 2017; Nkaouandrou et al., 2008; Marechal and Vincent, 1971). Cretaceous sandstones fill the Mbere and Djerem basins to the southeast and southwest (Apollinaire et al., 2017). Soil maps indicate rhodic ferralsols are prevalent in this area (Jones et al., 2013). However, localised data on the site itself is limited. Lebrun (1968) describes "marécage temporaire sur basalte" ("temporary swamp on basalt") above the falls. Pfeiffer et al. (2009) report Stonesia ghoguei growing in the waterfall itself on "gneissic rock".
The Adamawa region is broadly categorised as savannah (Letouzey, 1968) but it has been much affected by humans and has also changed considerably in response to climate within the Holocene epoch (Lebamba et al., 2016). Annual precipitation at nearby Ngaoundere (1,104 m) is 1,518 mm with 6 months exceeding 100 mm, monsoonal rains peaking in July and August, and a single dry season with virtually no rain between November and February (Zepner et al., 2020). Mean daily temperatures vary relatively little around the annual mean of 21 °C, peaking at the beginning of the wet season in March at 23.4 °C. Mean monthly temperatures do not fall below 10 °C.
Shrubs and trees surround the falls and line the rivers, with grass and savannah elsewhere. The river Tello flows towards Ngaoundere and joins the Djerem river, which eventually joins the Sanaga.

Conservation issues

The natural vegetation of Adamawa has been extensively changed by centuries of human activity (Lebamba et al., 2016). Although not the most heavily populated region in Cameroon, the population has grown dramatically in the nearby city of Ngaoundere since the 1960s, resulting in agricultural pressure, loss of fertility and conversion of forestry reserves or pastoral lands with resulting loss of semi-natural vegetation (Bell, 2007; Bouba, 2012). Although there are signs of agriculture in the vicinity of the waterfall site, and Bouba (2012) suggests soils nearby may be more fertile and valued for agriculture than in some other local areas, pastoralism appears to be the greater threat. Adamawa is the main cattle rearing area in Cameroon, with 70% pasture land, and increasing stocking rates have raised concern since the early 1980s (Tchotsoua et al., 1999). The area suffers from soil erosion by gullying from cattle tracks, loss of vegetation and heavy seasonal rains (Tchotsoua & Moussa, 2005). Danger to the site itself appears to be acute because thousands of cattle are watered at the site daily, degrading the vegetation through trampling, water pollution and overgrazing (Cheek, 2018). Fuelwood is also increasingly intensively collected, threatening all woody vegetation in the area (Bouba, 2012). Tourism is also a threat at the falls (Cheek, 2018) but if well-managed may also be the best hope for preserving the flora as part of this scenic site.

Site assessor(s)

Bruce Murphy, Royal Botanic Gardens, Kew

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IPA criterion A species

SPECIES	QUALIFYING SUB-CRITERION	≥ 1% OF GLOBAL POPULATION	≥ 5% OF NATIONAL POPULATION	1 OF 5 BEST SITES NATIONALLY	ENTIRE GLOBAL POPULATION	SOCIO-ECONOMICALLY IMPORTANT	ABUNDANCE AT SITE
Digitaria adamaouensis Zon	A(i)	✓	✓	✓	–	✓	
Justicia telloensis Hedrén	A(i)	✓	✓	✓	–	–	
Phyllanthus caligatus Jean F.Brunel & Jacq.Roux	A(i)	✓	✓	✓	–	–	
Sericanthe raynaliorum (N.Hallé) Robbr.	A(i)	✓	✓	✓	–	–	
Hygrophila mediatrix Heine	A(i)	✓	✓	✓	–	–	
Stonesia ghoguei E.Pfeifer & Rutish.	A(i)	✓	✓	✓	✓	–	
Trifolium gillettianum Jacq.-Fél.	A(i)	–	–	–	–	–	
Platycoryne alinae Szlach.	A(i), A(iii)	✓	✓	✓	–	–	
Phyllanthus discolaciniatus Jean F.Brunel	A(iii)	✓	✓	✓	–	–	

IPA criterion C qualifying habitats

HABITAT	QUALIFYING SUB-CRITERION	≥ 5% OF NATIONAL RESOURCE	≥ 10% OF NATIONAL RESOURCE	1 OF 5 BEST SITES NATIONALLY	AREAL COVERAGE AT SITE

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Swamp Forest	–	Unknown
Savanna - Moist Savanna	–	Unknown
Wetlands (inland) - Permanent Rivers, Streams, Creeks [includes waterfalls]	–	Major

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Agriculture (pastoral)	–	Unknown
Tourism / Recreation	–	Major

Threats

THREAT	SEVERITY	TIMING
Agriculture & aquaculture - Annual & perennial non-timber crops - Small-holder farming	Medium	Ongoing - trend unknown
Agriculture & aquaculture - Livestock farming & ranching	High	Ongoing - trend unknown
Residential & commercial development - Tourism & recreation areas	Low	Ongoing - trend unknown
Biological resource use - Logging & wood harvesting	High	Ongoing - trend unknown

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
No management plan in place		–	–

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