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The main forest species encountered in southern and central Benin, West Africa

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Abstract

Background

The south of Benin, a country in West Africa, is still home to remnants of dense forests that benefit from a particularly rainy sub-equatorial climate, with annual rainfall of up to 1,200 mm. These forest ecosystems are an integral part of the West African forest block, which stretches from Liberia to Togo. However, despite their richness and ecological importance, these forests are unfortunately subject to strong human pressures, particularly from slash-and-burn agriculture, intensive logging and the growing urbanisation of coastal areas. Preserving these forests is crucial, however, as they are home to remarkable plant and animal biodiversity, with many endemic species. What's more, these forests play an essential role in regulating the local climate, protecting soil and water resources, as well as providing local populations with a vital source of energy wood, non-timber forest products and support for their traditional agricultural practices. Faced with these conservation challenges, identifying and characterising the main forest species and their ecology is an essential prerequisite for implementing sustainable management and restoration strategies for these threatened forest ecosystems in southern Benin. This work aims to identify and draw attention to the different forest species present in southern and central Benin.

New information

The dataset provides information on forest species found in southern and central Benin, West Africa. This dataset is extremely useful for forestry research, as it focuses mainly on the various forest species of major importance. It can be used as a basis for characterising individuals or populations of species, based on their abundance in relation to anthropic pressure and changes in environmental conditions.

These species are characteristic of forests and above all are of particular interest both to populations and to managers of protected areas. Field collections were initiated in 2007 as

part of natural forest inventory work. The data collected has been completed by various field works that followed this work on forest species in southern Benin. The latest version of the dataset is publicly and freely accessible on the GBIF website at the address https://www.gbif.org/dataset/aff3a10a-a86b-4eff-98e4-d63f92fd6f7e.

It should be noted that the fact that the collection and monitoring were carried out in southern Benin, a region known for its great diversity of species, over a period of 10 years make these data, particularly relevant information to study the effects of climate change and human pressure on ecosystems in this area.

Keywords

dataset, biodiversity, forest species, southern Benin, west Africa

Introduction

The Republic of Benin is located in the intertropical zone, between parallels 6°30' and 12°30' north latitude and meridians 1° and 3°40' east longitude (Neuenschwander and Toko 2011). With the exception of the north-western part of the Atacora chains and the centre of the hill department, the country is relatively flat.

Southern Benin is located in the driest corridor generally referred to as the "Dahomey Gap", which separates the West African rainforest belt into two blocks: the Guinean (or western) and Congolese (eastern) forest blocks (FAO 2005). This Dahomean climatic discontinuity is characterised by pronounced water deficits, resulting in the absence of dense evergreen forest with all its flora and fauna (FAO 2010). The only remaining physiognomic unit is "dense semi-deciduous tropical forest", but this is now fragmented and crumbling. The consequences of fragmentation are compounded by the erosion of biological resources caused by human activities such as shifting cultivation and logging (Aoudji and Ganglo 2006). The conservation of plant resources should be an overriding objective in Benin; given the fragmentation of natural environments, it seems that the conservation of specimens from each type of ecosystem is the best approach for safeguarding the completeness of the flora (De-Souza 2009, Akoègninou et al. 2006). In the context of biodiversity conservation, communities rich in rare and threatened species of conservation interest are generally referred to as biodiversity hotspots (IUCN 2000). Particular attention is therefore increasingly being paid to the species richness and endemism of sites (Natta et al. 2002). The issue of plant biodiversity conservation in Benin deserves to be revisited in these terms.

It should be noted that the unavailability or lack of data on the distribution of species of particular conservation interest (rare, endemic or threatened) is a real problem. It is interesting to examine whether, in this respect, the number and geographical distribution of existing national parks and reserves allow effective conservation of Benin's flora.

General description

Purpose: This database focuses mainly on forest species in southern Benin. All occurrences are entered by several: Occurrence ID, CollectionCode, CatalogNumber. The database also includes the name of the institution that coordinated the work, the complete taxonomy, the names of the collectors and many other important information: dates (Day, month, year), regions, countries, exact sites, longitudes and latitudes converted to decimal degrees. This base can be used for various studies. Indeed, it can be used in studies that focus on the diversity of forest species (species richness, distribution models), spatial distribution and ecological niche modeling.

Additional information:

Project description

Title: Inventory of forest ecosystems in southern and central Benin

Study area description: The 7,126 occurrences of this dataset were collected in South Benin, West Africa (Figs 1, 2)

Sampling methods

Sampling description: This database is devoted to forest species found in southern Benin. Forest species ensure the balance of the ecosystems that belong to them and are of great importance for the survival of humanity (Ganglo 2005).

The Republic of Benin covers the major part of the 'Dahomey Gap' which is an interruption of the dense forest on the coast of West Africa. Few biogeographical regions have been the subject of an enigma comparable to the phenomenon of the "Dahomey Gap" in this part of the West African coast where the savanna comes directly into contact with the coastal strips. The climate is particularly dry (less than 1000 mm per year towards the southwest). The vegetation is in the form of a mosaic of forests, savannahs and fields.

Benin has fairly limited forest resources (Awokou et al. 2009). These meager resources are in the grip of alarming degradation (Aoudji and Ganglo 2006). Indeed, according to the latest figures, Benin is losing an average of 65,000 ha of forest per year (FAO 2005). It is therefore important to better control the available forest resources.

These are observationnal data collected during field work. The geographic coordinates were taken with a GPS. Once the data was collected in the field, all the information was carefully digitized. A correct data entry verification followed. Scientific names have also been checked for accuracy (Fig. 3).

Geographic coverage

Description: This database is devoted to forest species found in southern Benin (Fig. 2).

Coordinates: 6.901561 and 6.579434 Latitude; 1.650389 and 2.44661 Longitude.

Taxonomic coverage

Description: The identifications are reflected in the analytical flora of Benin (Akoègninou et al. 2006). In total, eight (08) families have been designated. These are: Annonaceae, Cannabaceae, Combretaceae, Fabaceae, Lamiaceae, Malvaceae, Meliaceae and Moraceae (Fig. 4).

Temporal coverage

Notes: The occurrences of this database covers the period from 2007 to 2017.

Usage licence

Usage licence: Creative Commons Public Domain Waiver (CC-Zero)

IP rights notes: Licence CC BY 4.0

Data resources

Data package title: The main forest species encountered in southern and central Benin, West Africa.

Resource link: https://doi.org/10.15468/sr46ah

Alternative identifiers: https://www.gbif.org/dataset/aff3a10a-a86b-4eff-98e4-d63f92fd6f7e

Number of data sets: 1

> **Data set name:** The main forest species encountered in southern and central Benin, West Africa.
>
> **Character set:** Arial
>
> **Download URL:** https://www.gbif.org/dataset/aff3a10a-a86b-4eff-98e4-d63f92fd6f7e
>
> **Data format:** csv
>
> **Data format version:** csv

Description: The dataset gathers information on the major forest species present in the southern region of Benin, a country in West Africa. The dataset therefore includes several species from different families. It includes a total of 27 different species, with 7126 data entries relating to them (Djeho 2021).

Column label	Column description
occurrenceID	An identifier for the occurrence
institutionCode	The name or acronym in use by the institution
collectionID	An identifier for the collection or dataset from which the data was derived
collectionCode	The name, acronym, coden or initialism identifying the collection or data set from which the record was derived
catalogNumber	An identifier for the record within the data set or collection
sex	The sex of the biological individual (s) represented in the Occurrence
kingdom	The full scientific name of the kingdom in which the taxon is classified
phylum	The full scientific name of the phylm or division in which the taxon is classified
class	The full scientific name of the class in which the taxon is classified
order	The full scientific name of the order in which the taxon is classified
family	The full scientific name of the family in which the taxon is classified
genus	The full scientific name of the genus in which the taxon is classified
subgenus	The full scientific name of the subgenus in which the taxon is classified
specificEpithet	The name of the first or species epithet of scientificName
infraspecificEpithet	The name of the lowest or terminal infraspecific of the scientificName, excluding any rank designation
scientificName	The full scientificName name, with authorship and date information if known.
scientificNameAuthorship	The authorship information for the scientificName formatted according the conventions of the applicable nomenclaturalCode
Modified	The most recent date-time on which the ressource was changed
taxonRank	The taxonomix rank of the most specific name in the scientificName
dateIdentified	The date on which the subject was identified as representing the taxa
identifiedBy	A list of names of people, groups or organizations who assigned the Taxon to the subject
typeStatus	A list of nomenclatural types applied to the subject
continent	The name of the continent in which the Location occurs
waterBody	The name of the water body in which the Location occurs

country	The name of country or major administrative unit in which the Location occurs
stateProvince	The name of the next smaller administrative region thzn country
locality	The specific description of the place
decimalLatitude	The geographic latitude in decimal degrees
decimalLongitude	The geographic longitude in decimal degrees
coordinatePrecision	A decimal representation of the presicion of the coordinates given in the decimalLatitude and decimalLongitude
minimumElevationInMeters	The lowest limit of the range of elevation in meters
maximumElevationInMeters	The upper limit of the range of elevation in meters
minimumDepthInMeters	The lesser depht of a range of depht below the local surface, in meters
maximumDepthInMeters	The greater depht of a range of depht below the local surface, in meters
basisOfRecord	The specific nature of the data record
eventDate	The date-time or interval during which an Event occurred
Yaer	The four-digit year in which the Event occurred, according to the Commen Era Calendar
Month	The ordinal month in which the Event occurred
Day	The integer day of the month on which the Event occurred
habitat	A category or description of the habitat in which the Event occurred
fieldNumber	An identifier given to the Event in the field
recordedBy	A list of names of people, groups, organizations responsible for recording the original Occurrence
samplingProtocol	The name of, reference to, or description of the method or protocol use during an Event
associatedMedia	A list of identifiers of media associated with the Occurrence
eventRemarks	Comments or notes about the Event

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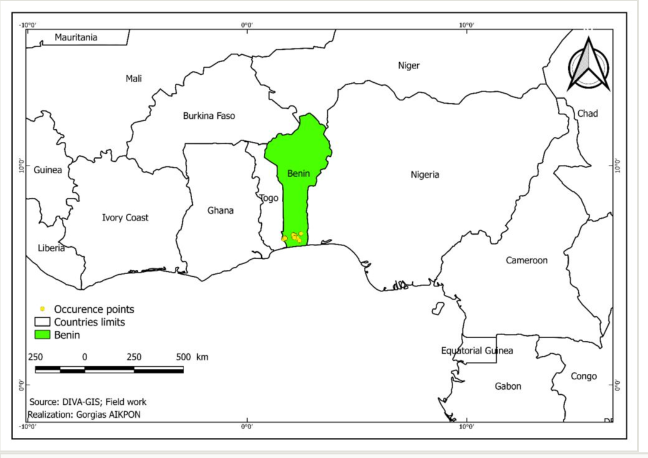

Figure 1.

Spatial distribution of the occurrence.

Figure 2.

Geographic scope of the dataset.

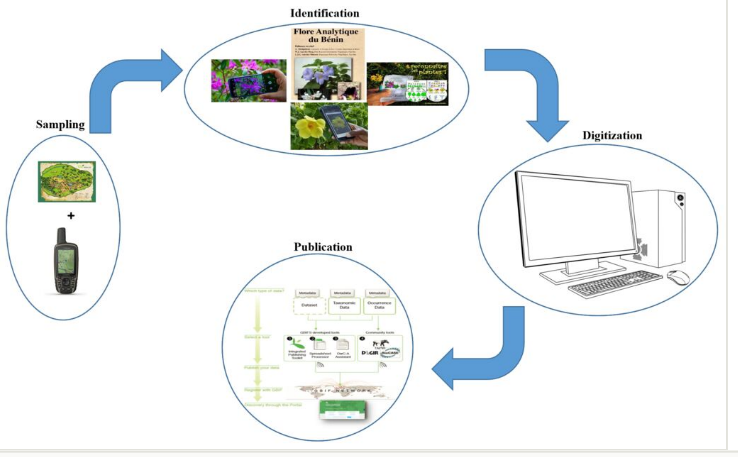

Figure 3.

Synoptic of the procedure used to generate the dataset.

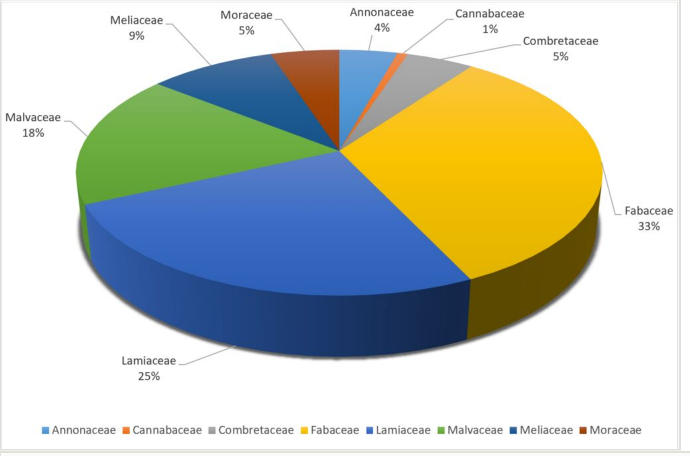

Figure 4.

Taxonomic coverage at the family level of the dataset.