

Vegetation and soils

The Environmental Profiles Project compiled a map of vegetation types in Caprivi. Information on the main plant species was collected for each vegetation type. The mapping attempted to achieve two goals. The first was to describe and map units which other people might recognize as real and relevant in Caprivi, while the second was to have units which reflect patterns and differences in the availability of important plant resources. A total of 36 different units were described and mapped.

Sources and processing

The units are based largely on an interpretation of TM (Thematic Mapping) images taken in 1994 and processed by the National Remote Sensing Centre (NRSC) in Windhoek. Three Landsat TM images taken in June and July 1994 were processed to enhance bands four, five and three. The three images excluded the eastern tip of the eastern floodplains and information for this area was added separately to the maps and databases using existing 1:50 000 SPOT (Système Probatoire d'Observation de la Terre) xs false colour composites from June 1992. Enhancements were made using intensity, hue and saturation decorrelation, and the three decorrelated layers were combined into a normal red, green and blue image. Lastly, photographic images were printed at scales of 1:150 000 retaining a pixel size of 30 by 30 metres. The boundaries of apparently homogenous units were digitized off these images.

The digitized units consisted of some 3 600 polygons and about 270 distinctly coded mapping units, and it was clear that these data had to be corrected and simplified. Accordingly, the polygon units were overlaid on the photographic print of the TM images, and many units were merged based on colouration, pattern and a knowledge that many of the image colours were due to the effects of fire. Further field work showed the need to remove and merge many more units and, in a few cases, new units were added. The final product provides an approximation to what we believe to be the main vegetation units in the Caprivi. This approximation should provide a basis for others to check, add and to elaborate on the units.

Description of databases

Sample data on soils and vegetation taken at 137 sites (see releve data, ppxx) were overlaid on the units and additional descriptive information was provided by aerial and ground surveys. The main vegetation and soils map is available as an ArcView 3 data set: theveg.shp, theveg.shx and theveg.dbf.

The attribute fields of the data set are described below:

CODE	acts as a unique linking field to other attribute data
SOIL_PH	gives the soil pH derived from data collected by NRSC staff during field visits; not all units were sampled, hence the gaps in the data base
SOIL_TEXT	gives a descriptive name of the soil type derived from data collected by NRSC staff during field visits and from data collected by Chris Hines
VEG_STRUC	gives the vegetation structure, based on the descriptive system for structural groups proposed by Edwards (Edwards, D. 1983. A broad-

scale structural classification of vegetation for practical purposes. *Bothalia* 14(3): 705-712); an additional unit, wetlands, was added to the system; where the vegetation unit may comprise two structural groups, this is indicated, for example, code MM is high closed woodland or wetland.

ARABLE	The vegetation unit is classified according to its potential (poor, moderate or high) for arable agriculture. The rating is based largely on a subjective assessment of the production potential of the soils, flooding frequency, saline accumulation and 'workability' (i.e. how easy is it to plough and work) of the soils.
LIVESTOCK	The vegetation unit is classified according to its potential (poor, moderate or high) for livestock farming. The rating is based on a general understanding of forage quality related to soil nutrient status, species composition (palatability) and biomass production potentials.
COMM_RES	The vegetation unit is classified according to the non-agricultural values (poor, moderate, high) of the vegetation unit for the local communities. This is a subjective assessment of the value of the vegetation resources for construction wood, thatching grass, medicinal and food purposes.
DIVERSITY	The vegetation unit is classified according to the overall diversity (low, medium, high) of plants and animals likely to be supported in the system. This assessment is made based on an extensive knowledge of the area and general patterns of biodiversity observed in other studies.
CONS_VAL	The vegetation unit is classified according to its conservation value (low, medium, high) relative to its biodiversity and importance on local, regional, national and international levels. The degree to which the units are threatened by development or degradation and the degree to which they are conserved elsewhere was also used in the assessment of these values.
AREA	The area, in square metres, as calculated from an Albers Conical Equal Area projection, with standard parallels at 17° and 19° South, a central meridian at 23° East and a latitude of origin at 19° South.
LEGEND	The name given to the unit and used in the publication <i>An environmental profile and atlas of Caprivi</i> .

Information on plant species is provided in four files for the 36 mapping units: FREQUENCY.xls, STRATUM.xls, COVER.xls and SUM_SPECIES.xls. Species in all these files are given an eight-character code, this being made up of the first four letters of the generic name and the first four of the species name. A complete listing of species names and codes is given in SPECIES LIST.xls.

FREQUENCY.xls

Provides ratings per plant species on a five point scale which indicates the likelihood of finding any one species in a given vegetation unit or sample within a unit (1 = 1–20%; 2 = 21–40%; 3 = 41–60%; 4 = 61–80%; 5 = 81–100%).

STRATUM.xls

Provides information for all plant species on the height (in metres) of the stratum in which any

one species makes its most important contribution to a vegetation unit. This is an attempt to characterise the structure of the vegetation. For example, in unit BaD, *Baikiaea*, *Pterocarpus* and *Ricinodendron* make up a distinct tree layer at 18 m. Most grasses are indicated as contributing only to a ground layer of one metre, although some may be 1.5 m to 2.0 m in height.

COVER.xls

Provides a broad assessment of the cover-abundance of any species expressed as a percentage of aerial cover within the stratum in which it is most important in a unit. These are approximate modal values for a species within a unit. The range of cover values is not reflected in the value given.

SUM_SPECIES.xls

This file provides frequency, stratum and cover values, as per the files described above, for a number of more 'important' species. Data for these species have simply been copied and merged into this file for ease of use. The fields are coded for each species, with the last letter of each species code being 'f' for frequency data, 's' for stratum data, and 'c' for cover information.