

## Some Plants of South Luangwa National Park, Zambia

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(Accepted December 16, 2014)

### Abstract

The nature of the African savanna around South Luangwa National Park, Zambia, was partly surveyed in July 2013. A purpose of the survey was to introduce the nature of the African savanna in a special exhibition held at the Ibaraki Nature Museum in 2014. Thirty-six species were identified from 60 herbarium specimens of vascular plants which were collected during the survey.

**Key words:** savanna, South Luangwa National Park, vascular plant.

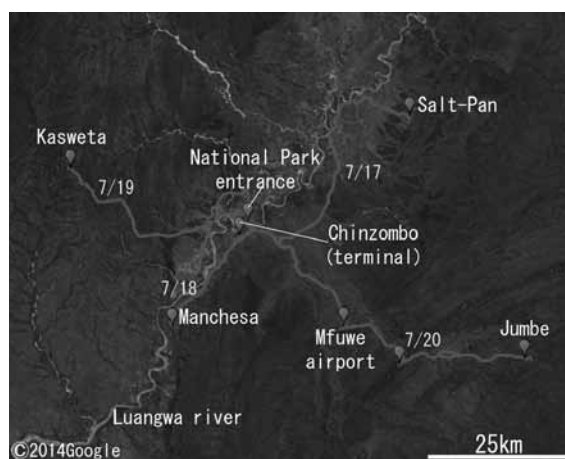
### Introduction

A special exhibition entitled "Messages from the Savanna - African Wildlife and its Conservation -" was held from 8 th March to 15 th June 2014 at the Ibaraki Nature Museum (Ibaraki Nature Museum, 2014). The main points were to introduce various wild animals and plants occurring in the African savanna, and to tell about recent challenges of wildlife management. In order to collect the materials for the special exhibition, we visited South Luangwa National Park and surrounding areas in Eastern Zambia from 16 th to 22nd July in 2013. Plant specimens were collected in the savanna around South Luangwa National Park. This paper reports on the plant specimens that were collected.

### Study Area and Method

The study area and the routes of the botanical survey are shown in Fig. 1.

South Luangwa National Park is located in the middle part of the Luangwa Valley, and is the second largest park (9,050 km<sup>2</sup>) in Zambia. The park, which was established by law in 1972, was formerly used as a game reserve. The elevation is between 500 to 1,000 m a. s. l. The west side



**Fig. 1.** Study area and routes of investigations.

of the Park is occupied by the Muchinga Hills; however, most of the area is flat. Miombo and Mopane woodlands are dominant, while the area of open grassland is limited. Visitors come from all over the world to view the rich wildlife. Many wildlife-viewing lodges are available, and this park was the origin of the walking safari tour.

Permission for conducting the botanical survey in the Luangwa Valley was officially given by the Zambia Wildlife Authority (ZAWA). Plant collection was permitted in the Game Management Areas where human activities are allowed, including game hunting. The botanical survey in

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and around the Park was carried out for four days, from 17 th to 20 th July 2013. During our survey, 4WD vehicles provided by ZAWA were used for collecting the plant specimens at each site. We were accompanied by Mr. Teddy Bwalya (senior officer of ZAWA) for all four days, and by Mr. Ashed Makukula (ex-wildlife scout of ZAWA) from the 17 th to the 19th. We were guarded by an armed wildlife scout.

On 17 th July, we left the Chinzombo Office of the ZAWA Luangwa Unit, and went to Salt-Pan Spring along the Luangwa River. On the way, we collected eight specimens of vascular plants from two sites in the Nsefu area near the Kauluzi River, a branch of the Luangwa River.

On 18 th July, we collected plant specimens around our accommodation, ZAWA Guest House, in Chinzombo in the early morning, and then went to Manchesa Wild Life Camp along Nyamluma Road. We obtained a total of 33 specimens from seven sites.

On 19 th July, we went to Kasweta Wild Life Camp from Chinzombo along Kasweta Road. We could not collect any plant specimens there, because collection is prohibited inside the national park.

On 20 th July, we went to Jumbe from Chinzombo along Chipata Road, and obtained a total of 19 plant specimens from four sites.

We referred to the literature (Fanshawe, 1984, Moll, 2011, Phiri, 2005, Storrs, 1979, Van Wyk, B. and P. van Wyk, 1997, Van Wyk, P. 1993) for plant identification.



**Fig. 2.** A view of Mionbo woodland near Kasweta Wild Life Camp.

## Results and Discussion

### 1. Plant specimens collected

During the four-day survey, we collected a total of 60 plant specimens, of which 49 were herbarium specimens, and eleven were fruit specimens. By careful examination of these specimens, we have identified 36 species which belong to 14 families and 30 genera.

The collected specimens list is shown in the Appendix with growth form, distribution, specimen number, location and date for each species. The growth form and distribution are based on Bingham *et al.* (2014) and Conservatoire et Jardin botaniques de la Ville de Genève and South African National Biodiversity Institute (2014).

Three species are herbaceous: *Physostigma mesoponticum* Taub. (Fabaceae), *Pistia stratiotes* L. (Araceae), *Hyparrhenia* sp. (Poaceae). Along a roadside, we found *Physostigma mesoponticum* which has a similar habitat to *Pueraria lobata* (Willd.) Ohwi in Japan. *Pistia stratiotes* is known as an introduced species in Japan, and is found in riparian environments. *Hyparrhenia* sp. is a dominant species in that area.

The other 33 species are woody plants. Fabaceae is the most varied, comprising 13 species. Three families, Capparaceae, Ebenaceae and Bignoniaceae, each comprise three species. Two other families, *Brachystegia* (Fabaceae) and *Boscia* (Capparaceae), each comprise two species.

### 2. Overview of the vegetation

Miombo woodland (Figs. 2, 3) is a typical vegetation type of Southern Africa, and is dominated by savanna



**Fig. 3.** *Brachystegia boehmii* Taub. (Photo taken near Kasweta Wild Life Camp). The length of the leaflet is 4 to 4.5 cm.

*Brachystegia* spp. and *Julbernardia* spp. (both Fabaceae) (Hayashi, 1990; Phiri, 2005).

Mopane woodland (Figs. 4 and 5), together with Miombo woodland, is a typical vegetation type in the Luanguwa Valley. In the dry savanna, there is a pure forest occupied by *Colophospermum mopane* (J. Kirk ex Benth.) J. Léonard (Hayashi, 1990; Phiri, 2005). The genus *Colophospermum*, is monotypic. In Mopane woodland, we often saw *Combretum* spp. and *Terminalia* spp. (both Combretaceae).

In the grassland dominated by such *Hyparrhenia* (Fig. 6) we often saw *Acacia* spp. (Figs. 7, 8) and *Adansonia digitata* L. (Fig. 9). This type of grassland is very common in dry savanna in Africa (Hayashi, 1990).



**Fig. 4.** A view of Mopane woodland near Nsefu near Kauluzi River. The height of the canopy is about 15 m.



**Fig. 5.** *Colophospermum mopane* (J. Kirk ex Benth.) J. Léonard (Photo taken near Nsefu near Kauluzi River). Leaf length ranges from 7 to 9 cm.



**Fig. 6.** *Hyparrhenia* sp. (Photo taken at Manchesa Wild Life Camp). Plant height ranges from 2 to 3 m.



**Fig. 7.** Tree shape of *Acacia tortilis* (Forssk.) Hayne subsp. *spirocarpa* (Hochst. ex A. Rich.) Brenan (Photo taken at Mfuwe Chinzombo). The height of the crown is about 15 m.

### Acknowledgments

We would like to thank ZAWA officers Dr. Vincent R. Nyirenda, Mr. Mathews Mushinbalume and Mr. Charles Simwana for their collaboration with our survey, Mr. Ashed Makukula for his field assistance, Dr. Patrick S. M. Phiri of Copperbelt University for his plant identification in the Valley, and Dr. Yasuhiko Endo, Ibaraki University, and Dr. Yasushi Ibaragi, Tokushima Prefectural Museum for their work after we returned to Japan. Lastly, we would like to greatly acknowledge Mr. Teddy Bwalya for his assistance and arrangements that helped to make our survey possible.



**Fig. 8.** Branch of *Acacia tortilis* (Forssk.) Hayne subsp. *spirocarpa* (Hochst. ex A. Rich.) Brenan (Photo taken at Mfuwe Chinzombo). The thorn length is 4 to 6 cm.



**Fig. 9.** *Adansonia digitata* L. (Photo taken at Manchesa Wild Life Camp). The tree height is about 30 m.

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### (要 旨)

小幡和男・山崎晃司. ザンビア・南ルワンガ国立公園周辺で採集した植物. 茨城県自然博物館研究報告 第17号 (2014) pp. 59-65.

著者らは、ミュージアムパーク茨城県自然博物館で2014年に開催した企画展においてアフリカのサバンナの自然を紹介するため、2013年7月にザンビア・南ルアンガ国立公園およびその周辺で調査を行った。その調査において、展示用資料として60点36種の維管束植物標本を採集した。

(キーワード): サバンナ, 南ルアンガ国立公園, 維管束植物.

**Appendix.** A list of vascular plant specimens collected around South Luangwa National Park, Zambia.

## Annonaceae

*Friesodielsia obovata* (Benth.) Verdc.

Scrambling shrub or very small tree. Southern DRC, Tanzania, Angola, Malawi, Mozambique, Zambia, Zimbabwe and Botswana.

INM-2-82554, Mfuwe Chinzombo, 13.12926° S 31.76885° E 511.3m, 18 July 2013.

## Araceae

*Pistia stratiotes* L.

Free-floating aquatic evergreen herb. Widespread throughout the tropics in the world.

INM-2-82574, Mfuwe Chinzombo, 13.29884° S 32.16841° E 518m, 17 July 2013.

## Arecaceae

*Hyphaene coriacea* Gaertn.

Tall erect, single-stemmed tree. From Central Africa to Namibia, Botswana, Zimbabwe and South Africa.

INM-2-82549, along Nyamluma road, 13.10549° S 31.88194° E 527.2m, 18 July 2013.

## Poaceae

*Hyparrhenia* sp.

Perennial herb.

INM-2-82541, INM-2-82542, Manchesa Wild Life Camp, 13.12042° S 31.7729° E 528.4m, 18 July 2013. INM-2-82550, INM-2-82551, along Nyamluma road, 13.10549° S 31.88194° E 527.2m, 18 July 2013.

## Euphorbiaceae

*Drypetes mossambicensis* Hutch.

Shrub or small to medium tree. Zambia, Mozambique, Zimbabwe and South Africa.

INM-2-82539, INM-2-82540, Manchesa Wild Life Camp, 13.12042° S 31.7729° E 528.4m, 18 July 2013.

*Pseudolachnostylis maprouneifolia* Pax

Single-stemmed tree. Kenya, Tanzania, DRC, Zambia, Zimbabwe, Mozambique, Angola, Malawi, Botswana, Namibia and South Africa.

INM-2-82564, INM-2-82586 (fruits), Jumbe along Chipata road, 13.04067° S 31.91772° E 693.2m, 20 July 2013.

## Salicaceae

*Flacourtia indica* (Burm. f.) Merr.

Shrub or small tree. Tropical Africa to northern South Africa, Madagascar, India, Sri Lanka, Indo-china, Indonesia and China.

INM-2-82571, Jumbe along Chipata road, 13.04067° S 31.91772° E 693.2m, 20 July 2013.

*Scolopia zeyheri* (Nees) Harv.

Shrub or tree. Uganda, Rwanda, Burundi, Kenya, Tanzania, DRC, Zambia, Zimbabwe, Mozambique, Angola, Malawi, Botswana and South Africa.

INM-2-82569, INM-2-82570, Jumbe along Chipata road, 13.04067° S 31.91772° E 693.2m, 20 July 2013.

## Fabaceae

*Acacia gerrardii* Benth.

Small tree. Throughout most of Tropical Africa to South Africa.

INM-2-82533, along Nyamluma road, 13.12797° S 31.76987° E 524.8m, 18 July 2013.

*Acacia nilotica* (L.) Willd. ex Delile subsp. *kraussiana* (Benth.) Brenan

Small to medium tree. Angola, Botswana, Tanzania, Malawi, Mozambique, Zambia, Zimbabwe and South Africa.

INM-2-82534, INM-2-82585 (fruits), along Nyamluma road, 13.12797° S 31.76987° E 524.8m, 18 July 2013.

*Acacia tortilis* (Forssk.) Hayne subsp. *spirocarpa* (Hochst. ex A. Rich.) Brenan

Medium to large tree. Botswana, Ethiopia, Kenya, Malawi, Mozambique, Namibia, Sudan, Tanzania, Uganda, Zambia and Zimbabwe.

INM-2-82529, Mfuwe Chinzombo, 13.12926° S 31.76885° E 511.3m, 18 July 2013.

*Azelia quanzensis* Welw.

Medium to large deciduous tree. Eastern Africa: Somalia to South Africa.

INM-2-82582, Jumbe along Chipata road, 13.01948° S 31.51356° E 756m, 20 July 2013, fruits.

*Albizia harveyi* E. Fourn.

Slender, deciduous, small tree. Eastern Africa: southern Kenya to Botswana and South Africa.

INM-2-82579, along Nyamluma road, 13.12122° S 31.77558° E 528.8m, 18 July 2013, fruits.

*Brachystegia boehmii* Taub.

Tall Tree. DRC, Tanzania, Zambia, Zimbabwe, Mozambique, Malawi, Angola and Botswana.

INM-2-82565, INM-2-82566, Jumbe along Chipata road, 13.04067° S 31.91772° E 693.2m, 20 July 2013.

*Brachystegia manga* De Wild.

Tall Tree. Tanzania, Mozambique, Zambia and Malawi.

INM-2-82572, INM-2-82573, Jumbe along Chipata road, 13.01948° S 31.51356° E 756m, 20 July 2013.

*Colophospermum mopane* (J. Kirk ex Benth.) J. Léonard

Small to medium-sized deciduous tree. Angola, Botswana, Malawi, Mozambique, Zambia, Zimbabwe and South Africa.

INM-2-82524, INM-2-82525, INM-2-82526, INM-2-82583 (fruits), Nsefu near Kauluzi River, 13.13307° S 31.76594° E 526.2m, 17 July 2013.

*Julbernardia globiflora* (Benth.) Troupin

Tree. Tanzania, DRC, FZ countries and the Caprivi Strip.

INM-2-82567, INM-2-82568, INM-2-82587 (fruits), Jumbe along Chipata road, 13.04067° S 31.91772° E 693.2m, 20 July 2013.

*Lonchocarpus capassa* Rolfe

Medium-sized semi-deciduous tree. From DRC and Tanzania to northern Namibia and Swaziland

INM-2-82537, INM-2-82538, Manchesa Wild Life Camp, 13.12042° S 31.7729° E 528.4m, 18 July 2013.

*Pericopsis angolensis* (Baker) Meeuwen

Medium to large tree. DRC, Tanzania, Angola, Zambia, Malawi, Mozambique and Zimbabwe.

INM-2-82558, Jumbe along Chipata road, 13.04232° S 31.53158° E 636.3m, 20 July 2013.

*Physostigma mesoponticum* Taub.

Perennial herb. Angola, Zambia, Tanzania, Malawi and Mozambique.

INM-2-82563, Jumbe along Chipata road, 13.04232° S 31.53158° E 636.3m, 20 July 2013.

*Pterocarpus angolensis* DC.

Medium to large deciduous tree. DRC, Tanzania, Mozambique, Malawi, Zimbabwe, Zambia, Botswana, Namibia, Angola and South Africa.

INM-2-82581, Jumbe along Chipata road, 13.01948° S 31.51356° E 756m, 20 July 2013, fruits.

*Tamarindus indica* L.

Medium to large evergreen tree. Widespread in Tropical Africa and Madagascar.

INM-2-82535, along Nyamluma road, 13.12051° S 31.774° E 530.5m, 18 July 2013.

## Combretaceae

*Combretum obovatum* F. Hoffm.

Usually a semi-evergreen scrambling shrub. Tanzania, Mozambique, Zambia and Zimbabwe.

INM-2-82530, INM-2-82531, INM-2-82584 (fruits), Mfuwe Chinzombo, 13.12926° S 31.76885° E 511.3m, 18 July 2013.

*Terminalia sericea* Burch. ex DC.

Small to medium-sized deciduous tree. Tanzania and DRC southwards to Angola and Namibia, Zimbabwe and South Africa.

INM-2-82546, INM-2-82547, along Nyamluma road, 13.10549° S 31.88194° E 527.2m, 18 July 2013.

## Capparaceae

*Boscia albitrunca* (Burch.) Gilg-Ben.

Small to medium tree. Mozambique, Zambia, Namibia and south to South Africa.

INM-2-82527, INM-2-82528, Mfuwe Chinzombo, 13.12926° S 31.76885° E 511.3m, 18 July 2013.

*Boscia angustifolia* A. Rich. var. *corymbosa* (Gilg) DeWolf

Small evergreen tree. Tanzania, DRC, Malawi, Mozambique, Zambia, Zimbabwe and Botswana.

INM-2-82532, along Nyamluma road, 13.12797° S 31.76987° E 524.8m, 18 July 2013.

*Capparis tomentosa* Lam.

Woody Climber, liane, shrub or small tree. Widespread in tropical Africa and South Africa.

INM-2-82520, INM-2-82521, Nsefu near Kauluzi River, 13.24856° S 31.66835° E 534.6m, 17 July 2013. INM-2-82552, INM-2-82553, Mfuwe Chinzombo, 13.12926° S 31.76885° E 511.3m, 18 July 2013.

## Malvaceae

*Adansonia digitata* L.

Massive tree. Tropical and sub-tropical Africa, parts of the Middle East and India.

INM-2-82588, Manchesa Wild Life Camp, 13.12042° S 31.7729° E 528.4m, 18 July 2013, fruits.

## Anacardiaceae

*Sclerocarya birrea* (A. Rich.) Hochst. subsp. *caffra* (Sond.) Kokwaro.

Medium-sized deciduous tree. Angola, southern DRC, Namibia, Kenya, Tanzania, Zanzibar, Botswana, Malawi, Mozambique, Zambia, Zimbabwe and South Africa. Also in Madagascar.

INM-2-82580, along Nyamluma road, 13.12122° S 31.77558° E 528.8m, 18 July 2013, fruits.

## Meliaceae

*Trichilia emetica* Vahl

Medium to large evergreen tree. Widespread in tropical Africa to South Africa. Also in Yemen.

INM-2-82556, INM-2-82557, Mfuwe Gate of South Luangwa National Park, 13.09573° S 31.79191° E 532.7m, 20 July 2013.

## Ebenaceae

*Diospyros batocana* Hiern

Small, often gnarled tree. Angola, Botswana, Zambia, DRC and Zimbabwe

INM-2-82548, along Nyamluma road, 13.10549° S 31.88194° E 527.2m, 18 July 2013.

*Diospyros kirkii* Hiern

Small tree. Angola, Shaba-DRC, Tanzania, Malawi, Mozambique, Zambia and Zimbabwe.

INM-2-82559, Jumbe along Chipata road, 13.04232° S 31.53158° E 636.3m, 20 July 2013.

*Diospyros mespiliformis* Hochst. ex A. DC.

Medium to large tree. Widespread in tropical Africa from Senegal to Eritrea and Yemen, southwards to Namibia, South Africa and Mozambique.

INM-2-82522, Nsefu near Kauluzi River, 13.24856° S 31.66835° E 534.6m, 17 July 2013.

## Bignoniaceae

*Kigelia africana* (Lam.) Benth.

Medium to large tree. Widespread in tropical Africa and South Africa.

INM-2-82536, Manchesa Wild Life Camp, 13.12042° S 31.7729° E 528.4m, 18 July 2013.

*Markhamia zanzibarica* (Bojer ex DC.) K. Schum.

Tree or shrub. Tropical Africa and northern South Africa.

INM-2-82578, along Nyamluma road, 13.12797° S 31.76987° E 524.8m, 18 July 2013, fruits.

*Stereospermum kunthianum* Cham.

Small to medium tree. Senegal to Ethiopia and South to Mozambique and Zimbabwe.

INM-2-82543, INM-2-82544, along Nyamluma road, 13.11231° S 31.79209° E 527.4m, 18 July 2013.

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