

**THE 7<sup>TH</sup> BOTANICAL SURVEY REPORT  
OF OL ARI NYIRO, LAIKIPIA NATURE CONSERVANCY, NORTHERN KENYA**



**A Technical Report Submitted to the Gallmann Memorial Foundation (GMF)**

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## Summary

A wet season survey of plants of Laikipia Nature Conservancy was conducted from 27<sup>th</sup> November – 3<sup>rd</sup> December, 2019 by National Museums of Kenya staff. A total of **sixteen (16)** new records were documented with 12 (75%) of them being grasses and sedges. This is an indication that the full diversity of plants of OAN has not yet been realized and more surveys are required.

In the last 8 years, a total of 87 new records has so far been added to the 704 list of seed plants and ferns of OAN published by Muasya et al, 1994. This makes a total of **791** species of indigenous and naturalized species and excludes exotic ones found around the dwelling places. As a result, it therefore represents an increase of about 12% added in six sampling surveys. If more fieldworks are conducted, the total is expected to be well over 800 species, especially if exotic taxa are included in the list.

Cover photos: *Huernia keniensis* (Photos: Kennedy Matheka)

## Materials and Methods

Different habitats within the sampling sites were targeted for botanical assessments. A plot-less method involving randomised walks as developed by Hall and Swaine (1981) and used in modification by Mwachala, *et al.* (2004) was used to record the plant species.

Plant species not encountered in the previous surveys were recorded and specimens collected using standard methods (Foreman & Bridson, 1992). Although some plant species were identified on site, the difficult ones such as grasses and sedges were collected for confirmation at the East African Herbarium. Identification was done using taxonomic literature by Agnew and Agnew (1994), Beentje (1994) and the FTEA (Various publications). In addition, the species were compared side by side with existing herbarium collections to ascertain their identity. The recorded plant list was compared with the existing plant checklists of LNC/OAN to check for new records for the study area.

## Results and discussion

### New records

A total of 16 species was recorded as new to the existing plant list of OAN as shown in table 1 below. The majority of the new records were grasses (Poaceae) and sedges (Cyperaceae) with the latter represented by half (8) of the total number of the species. One fern (*Asplenium theciferum*) and one parasitic species (*Plicosepalus sagittifolius*), in the family Loranthaceae were also recorded. This was found parasitizing only *Acacia abyssinica* at Engelesha and Lugwa Kipi forests. However, neither rare nor endemic species were recorded during this survey.

Table 1: List of the new species to the OAN plant list, December 2019

No.	Family	Genus	Species	Site
1	Aspleniaceae	<i>Asplenium</i>	<i>theciferum</i>	Engelesha Hill Forest
2	Cyperaceae	<i>Bulbostylis</i>	<i>pusilla</i>	Dam Mawe
3	Cyperaceae	<i>Courtoisina</i>	<i>assimilis</i>	Dam Nyama
4	Cyperaceae	<i>Courtoisina</i>	<i>cyperoides</i>	Dam Mawe
5	Cyperaceae	<i>Cyperus</i>	<i>exaltatus</i> var. <i>dives</i>	Lugwa Kipi
6	Cyperaceae	<i>Fuirena</i>	<i>sp. 2</i>	Miharati Mbili
7	Cyperaceae	<i>Kyllinga</i>	<i>pulchella</i>	Dam Nyama
8	Cyperaceae	<i>Schoenoplectus</i>	<i>confusus</i>	Dam Mawe
9	Cyperaceae	<i>Schoenoxiphium</i>	<i>sp.</i>	Pareto
10	Gramineae	<i>Echinochloa</i>	<i>pyramidalis</i>	Engelesha Forest
11	Gramineae	<i>Panicum</i>	<i>repens</i>	Dam Nyama
12	Gramineae	<i>Sporobolus</i>	<i>stapfianus</i>	Dam Nyama
13	Gramineae	<i>Stipa</i>	<i>keniensis</i>	Engelesha Hill Forest
14	Loranthaceae	<i>Plicosepalus</i>	<i>sagittifolius</i>	Engelesha Forest, Lugwa Kipi
15	Passifloraceae	<i>Adenia</i>	<i>volkensis</i>	Mlima Kisu
16	Scrophulariaceae	<i>Sopubia</i>	<i>eminii</i>	Dam Nyanya, Mlima Celtel dam

## Total plant diversity of OAN

The published plant checklist of OAN by Muasya et al (1994) boasts of 708 species and subspecies of fungi (4), ferns (11) and flowering, seed plants (693). Excluding the understudied mushrooms, a total of 704 species of seed plants and ferns were recorded in the 90's.

Continued botanical surveys in the last eight years have however yielded additional **eighty seven (87)** new species records to the original checklist of OAN. This represents an increment of about **12%** of the original species diversity. All of these are native or naturalized species and excluded exotic ones. Based on these recent studies the current species total as at the date of this study is **seven hundred and ninety one (791)**. However, this total is thought to be well over 800 species when exotic species are taken into consideration.

*Summary of new records of OAN in the last six botanical surveys (see appendix I)*

Year	Species no.
2019	16
2016	12
2015	21
2014	24
2013	6
2011	8

A species accumulation curve for the new records over the years suggests that the diversity of OAN is not yet fully realized as shown by the seemingly rising graph below. This is an indication that further surveys would continue unearthing more records for the conservancy.

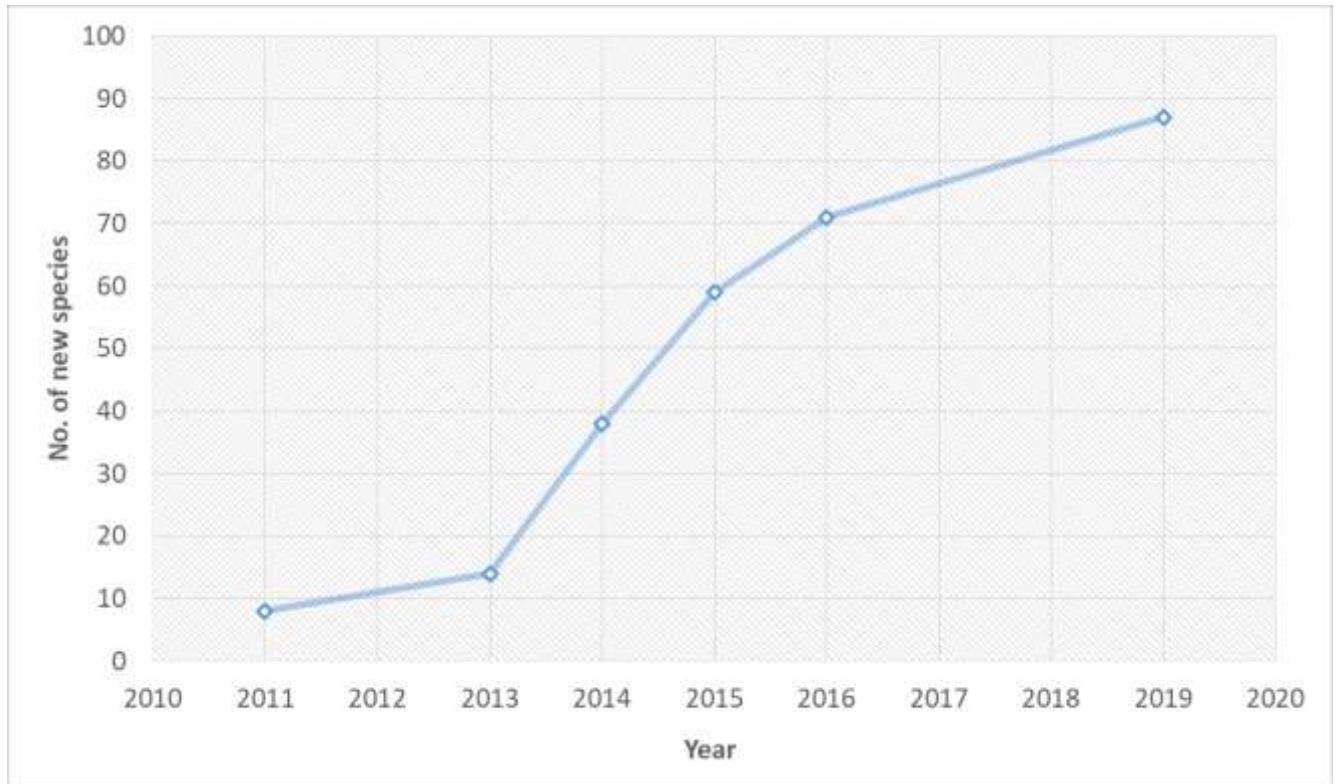
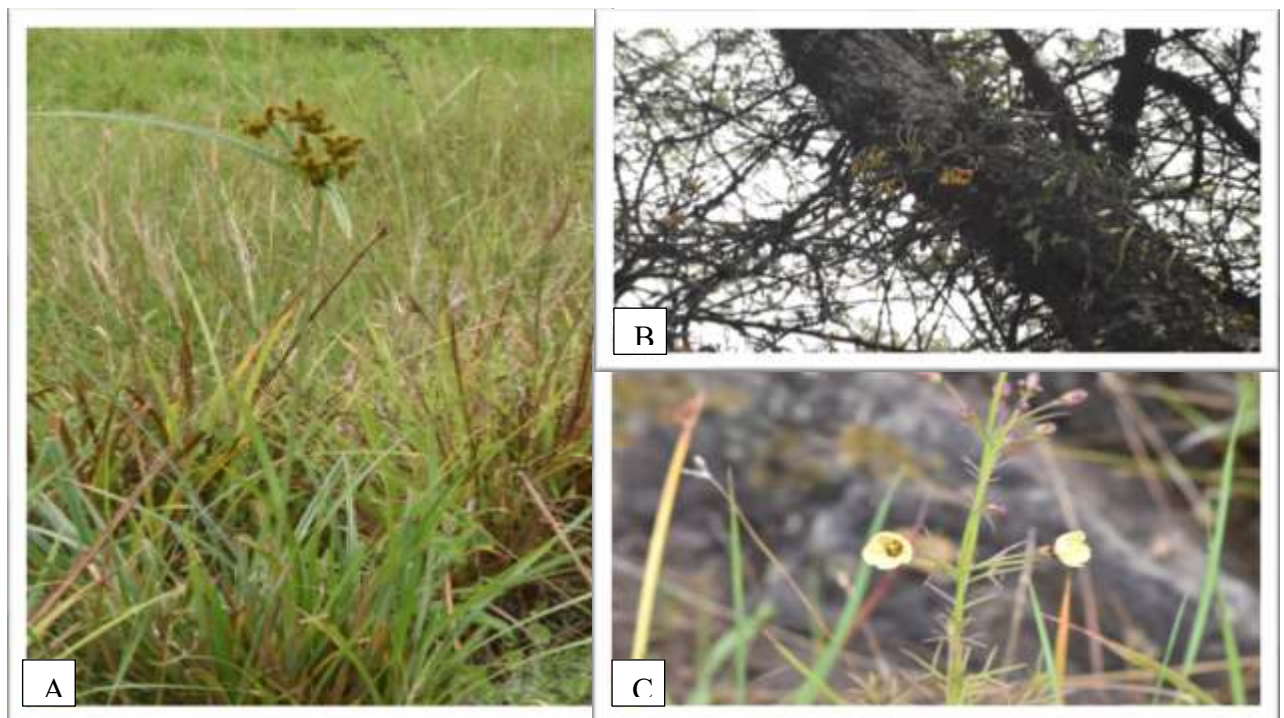


Figure: Cumulative curve of new species to the OAN checklist from 2011 to 2019

### Some photographs of the new plant records



A – *Cyperus exaltatus* var. *dives*, B – *Plicosepalus sagittifolius* (yellow flowered) and C – *Soperbia eminii* (Photos: K. Matheka).





*Adenia volkensi* (left) and *Asplenium theciferum* (right); Photos – K. Matheka

### **Conclusion and recommendations**

Despite numerous field surveys in the past 8 years, more species records continue to be discovered in OAN/Laikipia Nature Conservancy (LNC). This is confirmed by the most recent fieldwork which has yielded a total of 16 new records of which 75% (12) are grasses and sedges. These results are attributed to explorations targeting various habitat types and less studied areas especially towards the western side of the conservancy.

More surveys targeting both wet and dry seasons will be required to continue improving the plant checklist of OAN Conservancy. In addition, the management of the conservancy might also want think of producing a guide to the common flowering plants of the area for their visitors and plant lovers in the general public. This will however require investment in good quality photographs and simplified descriptive literature of the species. Consequently, it will take some time to build enough data for publishing as well as funding and additional personnel to help with the process. The good news is that the staff at NMK would be more than willing to make this project a success.

## References

- Agnew A.D.Q. (3<sup>rd</sup> Ed.) 2013. Upland Kenya Wild Flowers and Ferns: A flora of the Flowers, Ferns, Grasses and Sedges of Highland Kenya. Nature Kenya – The East African Natural History Society, Nairobi.
- Beentje H.J., 1994. Kenya, Trees, Shrubs and Lianas. National Museums of Kenya, Nairobi.
- Flora of Tropical East Africa, (Plant families are in numerous individual publications).
- Kenya Endemics; List of East African Plants (LEAP), 2011
- Matheka K.W, 2016. Laikipia Nature Conservancy (LNC) Botanical Survey Report
- Matheka K.W, 2015. Laikipia Nature Conservancy (LNC) Botanical Survey Report
- Matheka K.W, 2014. Laikipia Nature Conservancy (LNC) Botanical Survey Report
- Matheka K.W, 2013. Laikipia Nature Conservancy (LNC) Botanical Survey Report
- Muasya J. M, Trumam P.Y., Okebiro D.N., 1993. Checklist of the Plants of Ol Ari Nyiro and the Mukutan Gorge



**Appendix I:** A combined list of new species added to the published OAN plant list by Muasya *et al* 1994 - additions done from 2011 to 2019

Kennedy Matheka & Judith Nyamai - December 2019			
Family	Genus	Species	Site
Aspleniaceae	<i>Asplenium</i>	<i>theciferum</i>	Engelesha Hill Forest
Cyperaceae	<i>Bulbostylis</i>	<i>pusilla</i>	Dam Mawe
Cyperaceae	<i>Courtoisina</i>	<i>assimilis</i>	Dam Nyama
Cyperaceae	<i>Courtoisina</i>	<i>cyperoides</i>	Dam Mawe
Cyperaceae	<i>Cyperus</i>	<i>exaltatus var. dives</i>	Lugwa Kipi
Cyperaceae	<i>Fuirena</i>	<i>sp. 2</i>	Miharati Mbili
Cyperaceae	<i>Kyllinga</i>	<i>pulchella</i>	Dam Nyama
Cyperaceae	<i>Schoenoplectus</i>	<i>confusus</i>	Dam Mawe
Cyperaceae	<i>Schoenoxiphium</i>	<i>sp.</i>	Pareto
Gramineae	<i>Echinochloa</i>	<i>pyramidalis</i>	Engelesha Forest
Gramineae	<i>Panicum</i>	<i>repens</i>	Dam Nyama
Gramineae	<i>Sporobolus</i>	<i>stapfianus</i>	Dam Nyama
Gramineae	<i>Stipa</i>	<i>keniensis</i>	Engelesha Hill Forest
Loranthaceae	<i>Plicosepalus</i>	<i>sagittifolius</i>	Engelesha Forest, Lugwa Kipi
Passifloraceae	<i>Adenia</i>	<i>volkensis</i>	Mlima Kisu
Scrophulariaceae	<i>Sopubia</i>	<i>eminii</i>	Dam Nyanya, Mlima Celtel dam
Kennedy Matheka & Judith Nyamai - November 2016			
Anacardiaceae	<i>Lannea</i>	<i>fulva</i>	Mlima Kisu
Anacardiaceae	<i>Rhus</i>	<i>ruspolii</i>	Repeater Hill
Apocynaceae	<i>Cynanchum</i>	<i>altiscandens</i>	Repeater Hill
Apocynaceae	<i>Cynanchum</i>	<i>stoloniferum</i>	Katinga area

Compositae	Bidens	kilimandscharica	Repeater Hill
Compositae	Vernonia	smithiana	Repeater Hill
Gramineae	Ehrharta	erecta	Repeater Hill
Gramineae	Melinis	minutiflora	Repeater Hill
Leguminosae	Crotalaria	lebrunii	Repeater Hill
Leguminosae	Tephrosia	holstii	Repeater Hill
Loranthaceae	Englerina	woodfordioides	Repeater Hill
Loranthaceae	Oncocalyx	sulfureus	Repeater Hill
Kennedy Matheka & Judith Nyamai - August 2015			
Acanthaceae	Justicia	anagalloides	Sambara
Apocynaceae	Marsdenia	schimperi	Engelesha
Compositae	Senecio	ruwenzoriensis	Mlima Kisu
Compositae	Sonchus	oleraceus	Engelesha
Convolvulaceae	Ipomoea	sp.1	Sambara
Convolvulaceae	Ipomoea	sp.2	Sambara
Cyperaceae	Fuirena	sp.1	Lugga Tonkuli
Cyperaceae	Scleria	bulbifera	Engelesha
Fabaceae	Caesalpinia	sp.	Kutwa
Fabaceae	Rhynchosia	resinosa	Kutwa
Gentianaceae	Sebaea	pentandra var. burchellii	Lugga Tonkuli
Geraniaceae	Pelargonium	alchemilloides subsp. multibracteatum	Lugga Tonkuli
Hyacinthaceae	Bowiea	volubilis subsp. volubilis	Sambara
Hyacinthaceae	Drimia	altissima	Kutwa
Iridaceae	Aristea	abyssinica	Sambara
Labiatae	Ocimum	lamiifolium	Engelesha

Leguminosae	Tephrosia	linearis	Sambara
Primulaceae	Asterolinon	adoense	Sambara
Scrophulariaceae	Alectra	sessiliflora	Mlima Kisu
Scrophulariaceae	Orobanche	minor	Kutwa & Sambara
Vitaceae	Cayratia	ibuensis	Kutwa
Kennedy Matheka & Judith Nyamai - November 2014			
Acanthaceae	Dyschoriste	naghchana	Mlima Kisu
Acanthaceae	Hygrophila	spiciformis	Mlima Kisu (Shimo ya Jangili)
Aizoaceae	Delosperma	nakurense	Mlima Kisu (Shimo ya Jangili)
Apocynaceae	Raphionacme	flanaganii	Mlima Kisu
Apocynaceae	Tylophora	caffra	Kutwa
Bignoniaceae	Stereospermum	kunthianum	Kutwa & Jela Nugu
Brassicaceae	Coronopus	didymus	LNC Center
Combretaceae	Combretum	collinum	Kutwa
Cyperaceae	Cyperus	rubicundus	Mlima Kisu
Euphorbiaceae	Euphorbia	tirucalli	Mlima Kisu
Fabaceae	Albizia	amara	Kutwa
Fabaceae	Alysicarpus	rugosus	Boromoko
Fabaceae	Astragalus	atopilosulus	Boromoko
Fabaceae	Indigofera	vohemarensis	Mlima Kisu
Loranthaceae	Oncocalyx	fischeri	Mlima Kisu
Orchidaceae	Dendrobium	sp.	LNC main gate (Alpha 3)
Orchidaceae	Eulophia	petersii	Mlima Kisu
Poaceae	Pennisetum	procerum	Jela Nugu
Rubiaceae	Gardenia	volkensii	Kutwa

Rubiaceae	Pavetta	gardeniifolia	Mlima Kisu & Mukutan
Rutaceae	Vepris	sp. nov.	Mlima Kisu
Rutaceae	Zanthoxylum	chalybeum var. molle	Mlima Kisu
Scrophulariaceae	Buttonia	natalensis	Mlima Kisu
Solanaceae	Solanum	lanzae	Kutwa
Kennedy Matheka & Judith Nyamai - July 2013			
Hydrocharitaceae	Egeria	densa	Engelesha
Balsaminaceae	Impatiens	sp.	Engelesha
Cyperaceae	Isolepis	fluitans	Engelesha
Scrophulariaceae	Sopubia	ramosa	Engelesha
Ceratophyllaceae	?Ceratophyllum	sp.	Engelesha
Pontederiaceae	Heteranthera	callifolia	Tonkuli
Kimani Ndung'u & Kennedy Matheka - August 2011			
Orchidaceae	Aerangis	brachycarpa	Muktan Girge
Orchidaceae	Cytorchis	arcuata	Muktan Girge
Orchidaceae	Disparis	sp	Engelesha Forest
Orchidaceae	Microcoelia	globulosa	Muktan Girge
Orchidaceae	Rangaeris	amaniensis	Muktan Girge
Asteraceae	Solanecio	manii	Mlima Kisu
Viscaceae	Viscum	combreticola	Mlima Kisu
Asteraceae	Acanthospermum	glabratum	Lugwa Kipi