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# SANSEVIERIA

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# Sansevieria

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**Front cover:** *Sansevieria trifasciata* ssp. *sikawae* at the type locality near Tabora, Tanzania. Photograph taken by Robert Webb.

**Rear cover:** *Sansevieria nilotica* at the type locality for *S. nilotica* ssp. *obscura* near Kampala, Uganda. These plants match the description of the original species. Photograph by Robert Webb.

**Table of Contents:** *Sansevieria forestii* at a locality in southwestern Kenya. Photograph by Robert Webb.

**Inside rear cover:** *Sansevieria masoniana* leaf detail. Photograph by Irwin Lightstone.

Sansevieria 41/2019

## From the Editors...

Robert H. Webb and Alan Myklebust

We put this issue out relatively quickly compared to ones in the recent past. The motivation was to return to a semblance of schedule, with an issue in the summer and one in the winter. That had gotten a little pushed towards spring and fall recently owing to how busy we've gotten in our personal and business lives as well as other commitments to the International Sansevieria Society. So, a quick turnaround on this one, and we hope you enjoy it.

Issue 41 is more heavily skewed to the science side. We have wanted for several years now to revisit the collections of the late John J. Lavranos, who perhaps did more for the science and hobby of succulent plants than anyone else before or since. We always heard the anecdotal rumours that John hated sansevierias, and if so, why did he collect so many of them? Here, we extract a complete list of the *Sansevieria* that Lavranos collected in his numerous trips around Africa, India, and the Arabian Peninsula and provide some notes about these plants.

Barry Yinger wrote in this journal about his mission, with colleague Robert Sikawa, to document species of *Sansevieria* in Tanzania. In this issue, we describe a new subspecies of the most common *Sansevieria* in cultivation, *S. trifasciata*. This subspecies is named after Sikawa, who brought it to Yinger's attention and subsequently to Webb's attention. Yinger then documents where this subspecies has been found in Tanzania and why it is to be considered a native plant, not an introduced cultivar.

We include an article by Webb and Len Newton, who describe three new species from Kenya and Tanzania. One of these species has been of interest to Newton for decades, and he chose to name it after the man who originally discovered it: Arturo Foresti. Another is a plant that Webb and Newton found purely by accident along a major road in northern Tanzania. The third is yet another of the interesting plants that Bhwire Bhitla has found in his travels in East Africa, and this plant is named for the rough surfaces of its leaves.



Fig. 1. *Sansevieria dooneri* at its type locality on the western edge of the Rift Valley Escarpment west of Nairobi, Kenya.

The International Sansevieria Society greatly appreciates the renewed subscriptions of its long-time members, the life-time memberships that we have been receiving, and the new members who continue to join us. We are slowly expanding our services to meet the demand in information about this diverse genus, and we continue to urge you to talk with your friends and fellow plant collectors about these plants. On both the Facebook page we have, and on the website [www.sansevieria-international.org](http://www.sansevieria-international.org), we are making more and better photographs available for those of you who are interested in obtaining new and interesting species and cultivars as well as those of you who have lost the information on your plant and want to learn about what they are. Do not hesitate to ask; we're here to help you learn about your plants and tell you how you might get new ones.

# A New Subspecies of *Sansevieria trifasciata* in Tanzania

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Photographs by the authors

**S***ansevieria trifasciata* quite possibly is the most common species of this genus in cultivation around the world. Numerous cultivars have been created from this species, mostly as offset sports (Chahinian, 1986). In this paper, we describe a new subspecies of *S. trifasciata* from Tanzania and discuss why we believe this is a subspecies and not an escapee from cultivation. A companion article (Yinger, this volume) discusses the distribution of this subspecies in Tanzania and provides the arguments for why we think it is native to the region.



Fig. 1. Wild population of *Sansevieria trifasciata* subsp. *sikawae* in flower.

***Sansevieria trifasciata* subsp. *sikawae* R.H. Webb & Barry Yinger subsp. nov.** (Figs. 1–3), which clearly is related to *Sansevieria trifasciata* from western Africa but differs with narrower patterned gray-green leaves and an inflorescence with a zig-zagged peduncle.

**Type:** Tanzania, Tabora Region, 23 km west of Tabora near the village of Lolanguru. Latitude S 5.10099°, longitude E 32.61139°, elevation 1152 m, 21 February 2018, *WY 999* (EA, holotype). This subspecies is named for Robert Sikawa, a safari-tour operator from Arusha, Tanzania, who found this subspecies and took us to the type locality.

**Description.** Acaulescent, rhizomatous, clumping perennial with 50–100 or more rosettes in a colony; rhizomes ~ 2 cm, turning orange when in the air; basal bracts papery, triangular-deltoid 4 (–5) × 4 cm; leaves (2–) 3 (–9), ± upright, flexible, ensiform, smooth both sides with gray-green background bearing lateral medium-green lines or bands or disconnected blotches, flat with vague center channel, (55–) 120 (–160) cm long × (4–) 5 cm wide, widest ~2/3rds distance from the base, < 1 cm thick near base; tip blunt. Inflorescence simple, 50–75 cm long, ~5 mm wide, wavy (zig-zagged) with flexures in the pale green peduncle at ~ 5 cm intervals, infertile section patchy tomentose with discontinuous channel, fertile



Fig. 2. Large clump of *Sansevieria trifasciata* subsp. *sikawae* at its type locality at Lolanguru near Tabora, Tanzania.



Fig. 3. Close-up of inflorescence of *Sansevieria trifasciata* subsp. *sikawae* showing zig-zagged form and lax flower clusters.

section about half the total length of the peduncle, basal bracts the color of leaves 8 × 4 cm; light green bracts at flexures 20 × 4 mm; flower clusters lax, cluster peduncle short and stubby with no subtending (or weak) bracts, (2–) 3 (–5) flowers per cluster. Floral tube on short (~1 mm) peduncle, 50–55 mm long, 2 mm diameter around ovary, narrowing to 2 mm diameter above ovary, cream to yellow-green color; tepal lobes widely spreading, 25 mm long, 2–3 mm wide; filaments attached to the base of the tepals, exserted, 30 mm long, anthers 2 mm long, asymmetrically attached to filaments, cream to light yellow in color; style 25 mm long, exserted, white to cream colour, stigma <1 mm diameter and resembles an upside-down hemisphere. Flowers opening in the evening without a strong scent. Seeds not seen.

**Other Specimens.** Yinger (this volume) has collected a series of specimens of *Sansevieria trifasciata* subsp. *sikawae* from northern and central Tanzania. He suggests that there is a broad-leaf form as well as a narrow-leaf form of this subspecies; our description is of the broad-leaf form. We believe that a cultivar named *Sansevieria trifasciata* ‘Slimmerette’ (Chahinian,

1986, p. 48) is likely to be subsp. *sikawae*. One of the interesting notations in Chahinian’s book is that rooted leaf cuttings create offsets that are true to the typical plant, which supports the idea that this cultivar is in fact the subspecies we describe.

Oddly enough, this subspecies was collected numerous times in Tanzania by well-known botanists, and the specimens were deposited in the herbarium at the East African Museum in Nairobi, Kenya (Table 1). The earliest specimen collected was by Peter Greenway in 1934, indicating, as Chahinian does as well, that this plant was known about for many decades. However, as Table 1 indicates, all the previous specimens were collected from cultivated settings, giving the implication that the plants were thought to be non-native.

**Habitat and Distribution.** *Sansevieria trifasciata* subsp. *sikawae* is widely distributed in north-central Tanzania (Yinger, this volume), although herbarium specimens (Table 1) suggest that the distribution may be much larger. Owing to collection and planting as ornamentals, it is unlikely that a true distribution of wild-growing plants will be known exactly. Generally,

it is found in the shade in rocky, loamy soil among bushes in degraded savannah.

**Discussion.** *Sansevieria trifasciata* subsp. *sikawae* is clearly different from the typical *Sansevieria trifasciata* (Fig. 4), both in patterning of the leaf and inflorescence characteristics. The largest differences are in the inflorescence and flowers; subsp. *sikawae* has an articulated (zig-zagged) inflorescence while subsp. *trifasciata* does not, and the flowers of subsp. *sikawae* have a yellow appearance whereas subsp. *trifasciata* is typically white (Fig. 4). Its presence as a putative native species in East Africa raises interesting questions concerning the status of *Sansevieria trifasciata* across Africa from at least Nigeria in the west to at least Tanzania in the east. Other species may also belong to a greater *S. trifasciata* complex but are currently listed under other names. These might include *Sansevieria lineata* from Uganda (Forest, 2013), which has considerable similarities with *Sansevieria trifasciata*. It is possible that subsp. *sikawae* is the second (following subsp. *laurentii*) subspecies in a much larger concept of one of the most common species of *Sansevieria* in cultivation.



Fig. 4. *Sansevieria trifasciata* subsp. *trifasciata* in flower in Tucson, Arizona.

Table 1. Samples of *Sansevieria trifasciata* subsp. *sikawae* preserved in the East African Herbarium in Nairobi, Kenya, under other names.

Stored Under This Name	Collector	Sample Number	Date Collected	Where Collected	Notes
<i>Sansevieria burmanica</i>	Miss D. Patel	145	4 April 1977	not noted	peduncle articulated
<i>Sansevieria burmanica</i>	M. Sanders	EAH 11870	1959	Sisal Research Station	
<i>Sansevieria burmanica</i>	R. Wingfield	2384	30 August 1973	Dar University Plant Nursery	
<i>Sansevieria burmanica</i>	C.K. Ruffo	589	22 November 1972	State House Dar	articulated peduncle
<i>Sansevieria burmanica</i>	P.R.O. Bally	M778	December 1940	"cultivated"	articulated inflorescence
<i>Sansevieria burmanica</i>	P.G. Greenway	4931	17 May 1934	not noted	slight articulation in peduncle

**Acknowledgements.** We greatly thank Robert Sikawa, for whom this new subspecies is named, for his friendship and logistical support for trips to look for sansevierias in Tanzania.

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# Observations of *Sansevieria trifasciata* subsp. *sikawae* in Tanzania

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Photographs by the author

**M**y first visit to Tanzania was in June 2017. My friend in Arusha, Mr. Robert Sikawa, had arranged a nine-day itinerary for us to travel to places where sansevierias are likely to be found. We made a circuit starting in Arusha in the northeast, south and west to the southern highlands, then north to the Serengeti National Park, and east to Arusha. I just completed my fifth visit; altogether I have spent about

16 weeks in the field covering most of the country except the Indian ocean coast and the western border region with the Democratic Republic of the Congo and Zambia. We have made almost 250 collections documented by GPS readings, photographs, and live specimens.

Our first encounter with *Sansevieria trifasciata* subsp. *sikawae* (Webb and Yinger, this volume) was in the small village of Ibinzamata in Shinyanga Region. We were driving in the countryside and through small villages looking for sansevierias when we saw some interesting plants growing in front of a house belonging to Miss Catherine, 85 years old. We saw plants in bloom about 50 cm tall. They were slender plants that resembled the common *Sansevieria trifasciata* but its leaves and flowers looked a bit different to me (Fig. 1). Miss Catherine told Robert that it was collected by her grandfather in Kahama, in the western part of Shinyanga Region.

Miss Catherine gave us a few plants to take with us (sample YS 0006). In 2018, Robert visited Kahama to investigate this plant and was told that the plant is common in the vicinity of Ushimombo. Later that day we stopped in Igegu village to see some sansevierias in a field behind a house; one of them was the broad-leafed form of this new species. Since then, Robert Sikawa has made many field trips on his own to supplement our work together. We have found many sites where this new subspecies can be seen.

The first question that came to mind was whether or not this *Sansevieria* is native to Tanzania. Tanzania was, until its independence in 1961, colonized by the Germans and subsequently ceded to the British



Figure 1. *Sansevieria trifasciata* subsp. *sikawae* (narrow-leaf form) in flower.



Figures 2 a and b. *Sansevieria trifasciata* subsp. *sikawae* (narrow-leaf form) in nature at Lake Manyara National Park



Figure 3. *Sansevieria trifasciata* subsp. *sikawae* (narrow-leaf form) at Lake Manyara National Park.

after World War I. Some of the major cities such as Dodoma were visited by Arab traders for hundreds of years, so there were many opportunities for exotic plants to be established. When visiting cities in Tanzania, it is easy to see where European people had settled, as much or most of the plantings there are exotic species. This is much less true in native villages, and in the remote areas it is rare to see any exotic species other than food crops.

Introduced ornamental plants are generally more abundant closer to their point of introduction, and in the case of Tanzania, wherever the residents of the colonial powers were living. We have almost never seen subspecies *sikawae* growing in the large cities, where *Sansevieria trifasciata* subsp. *laurentii* is generally the only *Sansevieria* to be seen. We do frequently see *S. trifasciata* subsp. *sikawae* growing in gardens of the small houses in rural villages. There is a greater likelihood of seeing this subspecies growing in the most remote villages that, even today, almost never see visitors from outside. We were told several times that I was the first white visitor to their village.

We stopped to investigate this subspecies at a number of houses, and we almost always got the same information: the plants had been collected in the wild and planted at the houses for medicinal use for livestock, especially chickens, and people. In some cases, we got fairly precise site localities for the wild plants, and also the observation that they are now scarce in the wild because of collecting.

Nativity is also supported by the variability of the plants seen and collected. Plants like sansevierias that are passed around are normally one clone, as we see with the widespread plants of subspecies *laurentii*. We have now observed subspecies *sikawae* growing in places where it is clearly indigenous, in particular in the undisturbed closed-canopy forest in Lake Manyara National Park (Figs. 2 and 3) and in open forest in the southern Iringa region in Tungamalenga, a remote unpopulated area. Mr. Innocent Kisanyage (Fig. 4) has been exploring for sansevierias in the southern part of Iringa Region. He reports that there are a number of natural populations, but only in very remote areas. The populations nearer to villages have been nearly destroyed by local collectors.

We can now identify the range of this subspecies in Tanzania: Iringa, Singida, Tabora, Shinyanga, Mayara, and Arusha Regions (Table 1). Along with our study of *S. trifasciata* subsp. *sikawae*, we have been trying to establish the native range of *Sansevieria bhitatae* (Webb and Newton, 2018), a species that has been thought to be mostly limited to Iringa Region. So far the range of this species is nearly the same as *S. trifasciata* subsp. *sikawae*, at and west of the Rift Valley (Fig. 5).

In 2018, Robert Webb joined us in the field for a visit to Lolanguru, Tabora Region, where Robert Sikawa has identified several populations that are probably native (Fig. 6). He took specimens from the broad-leaf plants in flower growing there to serve as the type specimen (Webb and Yinger, this volume). There are two distinct leaf forms of this subspecies (Fig. 7), one with



Figure 4. Robert Sikawa (left) and Innocent Kisanyage with wild populations of *Sansevieria trifasciata* subsp. *sikawae* (broad-leaf form) at Tungamalenga, Iringa Region



Figure 5. Known distribution of *Sansevieria trifasciata* subsp. *sikawae* in Tanzania.



Figure 6. The broad-leaf form of *Sansevieria trifasciata* subsp. *sikawae* in flower at the type locality near Lolanguru, Tanzania.



Figure 7. Comparison of the narrow-leaf (left) and broad-leaf (right) forms of *Sansevieria trifasciata* subsp. *sikawae*

Table 1. Localities where *Sansevieria trifasciata* subsp. *sikawae* was observed in Tanzania.

Location in Tanzania	Latitude	Longitude	Elevation (ft)	Width	YS#	Comments
Ibinzamata, Shinyanga Region	S 3.18250	E 33.41583	3707	narrow	YS0006	Cultivated at house of Miss Catherine, age 85; collected by her grandfather in wild at Kahama, west Shinyanga region
Igegu, Shinyanga Region	S 2.43055	E 33.96333	4310	broad	YS0014	Probably wild in bush at edge of field behind house of Mayungwa family growing with <i>Sansevieria robusta</i>
Old Maswa, Shinyanga Region	S 2.68222	E 33.99472	4190	narrow		Probably wild in bush at edge on farm of John Salum
Lolangulu, Tabora Region	S 4.36027	E 33.15444	4040	broad	YS0039	Probably wild in grass field in sun, several large colonies
Utigwu, Tabora Region	S 4.24944	E 33.15444	4050	broad	YS0036	Probably wild in shade of mango tree and in grass field in sun, several large colonies
Mara-Musoma Road west entrance Serengeti NP, Mara Region	S 2.19250	E 33.87055	3786	narrow	YS0056	Extensive plantings at Serengeti Stopover campground from local source; some plants more than two meters tall
Arusha, Usa River, Arusha-Himo Road, roadside near entrance River Tree Lodge	<b>S 3.36666</b>	E 36.85000	3927	narrow	YS0088	In wet swale part shade along road; possibly planted
Nsimba Village, Iringa Region	<b>S 7.38638</b>	E 35.20777	3160	broad		cultivated at Felista Moro's house; collected from dry rocky forest east of the village
Lake Manyara National Park, ranger station, Arusha Region	<b>S 3.76027</b>	E 36.35444	1969	narrow	YS0118	cultivated, collected from park
Lake Manyara National Park, pumping station, Arusha Region	<b>S 3.76027</b>	E 36.35444	1969	narrow	YS0119	understory, moist closed canopy forest, growing as ground cover
Tungamalenga village, Chogela Camp Ground, Iringa Region	<b>S 8.39333</b>	E 35.15194	3235	broad	YS0139	planted from local wild collections
Tungamalenga, Iringa Region	<b>S 7.83472</b>	E 35.08694	3090	broad	YS0140	wild in open woods
Hhando Lodge, Karatu, Ngorongoro Entrance, Arusha Region	<b>S 3.30444</b>	E 35.59694	5570	broad	YS0175	cultivated from local wild collections
Road north of Lake Manyara, Karatu, Arusha Region	<b>S 3.36138</b>	E 35.79527	3370	narrow	YS0176	roadside in bush, apparently dwarf form
Road north of Lake Manyara, Karatu, Arusha Region	<b>S 3.36138</b>	E 35.79527	3370	narrow	YS0177	roadside in bush

\* Type locality

leaves 1-2.5 cm wide, and another with leaves 2.5-5 cm wide. The narrow-leaf form (Fig. 8) has slender rhizomes about 1.5 cm thick; the broad-leaf form (Fig. 8) has rhizomes about 2.5 cm thick. Mature height of the narrow-leaf form is more than 2 meters; the broad-leaf form has a maximum observed height of about 1.6 meters. Sometimes populations with intermediate characteristics can be seen. The relationship between the two forms needs more study. The two forms never grow together at the same site. For now, both should be included within the concept of subspecies *sikawae*.

In natural settings, *Sansevieria trifasciata* subsp. *sikawae* grows in areas where rainfall occurs year-round as well as seasonally dry areas, but it does not occur in

the most arid bush. Most commonly it will be found in closed-canopy forest and open woods in rich soil. It is very tolerant of wet soil; we have even seen it growing in seasonal standing water. It is very tolerant of seasonal drought as well. The leaves will lose rigidity and lie flat on the ground until the rainy season comes.

There are a number of differences between the flowers of *Sansevieria trifasciata* ssp. *trifasciata* and *S. trifasciata* subsp. *sikawae*, but some of the differences cannot be seen on an herbarium specimen. The sequence of flower development, the way that the flowers are held, and the absence of the broadly open white flower of *S. trifasciata* subsp. *trifasciata* are a few of the differences.



Figure 8. *Sansevieria trifasciata* subsp. *sikawae* (narrow-leaf form) in flower. This specimen was collected originally from Miss Catherine's house in Ibinzamata, Tanzania.



Figure 9. *Sansevieria trifasciata* subsp. *sikawae* (broad-leaf form) in flower.

**Acknowledgements.** I especially thank Robert Sikawae for his friendship and logistical support for our trips together in Tanzania.

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# Three New Species of *Sansevieria* in Kenya and Tanzania

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The Rift Valley through East Africa is part of a much larger fault system that extends from the Dead Sea in Israel and Jordan southwards to the Okovango Delta in Botswana (Chorowicz, 2005). In the East African countries of Kenya and Tanzania, the Rift Valley is a graben that dropped downwards owing to east-west extension, forming a deep and wide valley between two imposing escarpments. This is significant because the Rift Valley is a demarcation line between different species of plants in this region. This is especially true for the genus *Sansevieria*, and we are just now learning about how certain groups of plants appear to have evolved separately on different sides of the Rift Valley, and then some species whose distribution seems to span the Rift Valley.

Here, we describe three new related species from the region near the border of Kenya and Tanzania (Fig. 1). These species are broad-leaf ones that range in width considerably, and they clearly are related to each other. The first new species was originally found by Bhwire Bhitala of Arusha, Tanzania. The second species was originally found in southwestern Kenya by Arturo Foresti, now deceased, and is named for him. The third species was found serendipitously by Newton and Webb alongside a main highway in northern Tanzania.



Fig. 1. Locations of three new species of *Sansevieria* in Kenya and Tanzania. *Sansevieria enchiridifolia* was only found near Ol Doiyo Sambu (blue dot). The red dots indicate localities where *Sansevieria rugosifolia* was found; the yellow dots indicate where *Sansevieria forestii* was found. The sighting of *Sansevieria rugosifolia* near Mbuyuni (Table 1) is well south of the map area and is not shown.

Table 1. Localities where *Sansevieria rugosifolia* was observed in Tanzania.

Locality	Latitude	Longitude	Elevation (m)
Ngare Nanyuki*	S 3.18458°	E 36.85516°	1498
S. Longido	S 3.09635°	E 36.70774°	1536
S. Mkwenzi	S 3.47241°	E 36.48807°	1270
Makuyuni	S 3.54375°	E 36.09115°	1048
N. Babati	S 4.15389°	E 36.73798°	1276
W. Karatu	S 3.38275°	E 35.56768°	1403
Mibuyuni	S 7.47044°	E 36.49980°	593

\* Type locality

Table 2. Localities where *Sansevieria forestii* was observed in Kenya and Tanzania.

Country	Locality	Latitude	Longitude	Elevation (m)
Kenya	Nkokone*	S 1° 5.718'	E 35° 23.915'	1925
Kenya	Nkosuni	S 1° 21.924'	E 35° 36.153'	1976
Kenya	Maa-Masilingi	S 1° 33.362'	E 35° 35.526'	1912
Tanzania	Kyengege	S 4° 25.587'	E 34° 28.225'	1484
Tanzania	Mwanhala	S 4° 21.102'	E 33° 09.075'	1231
Tanzania	Nzega	S 3° 38.156'	E 33° 28.882'	1197
Tanzania	SW of Maswa	S 3° 18.729'	E 33° 33.573'	1254
Tanzania	W Maswa	S 3° 11.542'	E 33° 42.692'	1325
Tanzania	Maswa	S 3° 11.312'	E 33° 44.066'	1347
Tanzania	Maswa	S 3° 11.220'	E 33° 45.182'	1362
Tanzania	NE of Maswa	S 3° 06.738'	E 33° 51.124'	1300
Tanzania	Old Maswa	S 2° 41.039'	E 33° 59.780'	1326

\* Type locality

## *Sansevieria rugosifolia*

Bhwire Bhitala found this species in various places near Arusha, Tanzania, where he lives. We first saw this species in flower at the Bhitala nursery in Arusha on 24 December 2009 (Fig. 2) but failed to recognize its significance as a new species. The most striking characteristic of this species is its extremely rough leaves on both sides (the epithet reflects this character); other related species are only rough on the undersides of the leaves and only slightly rough to smooth on the tops of the leaves. Bhitala mailed plants to us under the collection number of Bhitala 1008, and we grew it in ground beds for years. Eleven years after receiving those plants, several bloomed in February 2019, enabling this description.



Fig. 2. *Sansevieria rugosifolia* growing in a plastic liner pot at Bhwire Bhitala's nursery in Arusha, Tanzania, in 2011. This plant was collected from the type locality near Ngare Nanyuki, Tanzania.

## *Sansevieria rugosifolia* R.H. Webb & L.E. Newton

**sp. nov.** (Figs. 2–4). Related to many broad-leaf species in East Africa, especially *S. elliptica*, but differs because of the roughness on both sides of the longer leaves and the taller inflorescence.

**Type:** Tanzania, Ngare Nanyuki, about 33 km northeast of Arusha, Tanzania. Lat. S 3.18458°, E 36.85516°, 1498 m, *Bhitala* 1008 (MO, holo), collected about 2010.

**Other Specimens.** *D. Vesey-Fitzgerald* 6397, Arusha National Park, Big Momela Lake, 22 August 1969 (EA).

**Description.** Acaulescent, rhizomatous, clumping perennial; rhizome 1–2 cm diameter, pale brown



Fig. 3. *Sansevieria rugosifolia* inflorescence in cultivation in Tucson, Arizona.



Fig. 4. *Sansevieria rugosifolia* at the type locality of Ngare Nanyuki, Tanzania.

epidermis. Basal bract papery, triangular shaped 14 cm long by 4 cm wide. Leaves (1-) 2 (-4) in opposite arrangement, decumbent to  $\pm$  upright, stiff, oblanceolate, (35-) 40 (-50) cm long by (7-) 9 (-11) cm wide, widest about one-third to one-half the distance from base to tip, 2-3 mm thick near base, canaliculate and folded when dry, tip blunt and white; upper surface pale glaucous green with numerous scattered dark-green blotches, rough to very rough; lower surface with more prominent blotches and very rough surface; vague striations on both sides of leaves but more apparent on the bottom side; margin with fine (< 1 mm) white-red-green line, whitish edge slightly shredding; upper surface rough and  $\pm$  dull green with pale green blotches, lower surface rough and appearance similar to upper surface. Inflorescence 55 cm long, 2 cm wide, with the main axis simple, peduncle pale green colour, basal bracts triangular 80 x 25 mm, pale green with lighter blotches and reddish-brown tips, smooth; fertile portion 22 cm, vaguely canaliculate, densely flowered, (3-) 5 flowers per cluster, cluster round and about 2 x 2 mm. Total length of flowers 55 mm, ovary yellow-green, 4 mm wide by  $\sim$ 5 mm long, tube is yellowish-white and narrows to 2 mm just below tepals; tepals white, lobes strap-like and recurved, 20 mm long, 2 mm wide; filaments about 35 mm long, translucent, exerted 15 mm, attached to the base of the sepals, anthers 2 (-3) mm long, attached at bottom center, yellow; style 45 mm long, exerted 30 mm, white, stigma  $\sim$ 1 mm diameter, translucent, and capitate. Flowers opening in the morning with strong sweet scent. Fruit not seen.

**Distribution.** *Sansevieria rugosifolia* is distributed generally in the Rift Valley or eastwards (Fig. 1, Table 1). The most northerly sighting of this species is north of Ol Doinyo Sambu, the type locality of *Sansevieria enchiridifolia*; the most southerly sighting is north of Lake Manyara National Park. This species has a large elevation range, from 593 to 1536 m, and it occurs on basaltic rocks or alluvium derived from basaltic terranes.

#### *Sansevieria enchiridifolia*

This species really deserved to be named *Sansevieria serendipida*, because we found it by chance along the main road between Arusha, Tanzania, and Nairobi, Kenya. We pulled over for a proverbial “rest stop” before we got to the border crossing at Namanga, and we happened to notice a clump of this *Sansevieria* behind an *Acacia* shrub. We immediately knew that this was something different despite the fact that goats and other domestic animals had nibbled on it (Fig. 5). Despite careful searching the area on a later trip, during which



Fig. 5. *Sansevieria rugosifolia* south of Longido, Tanzania.



Fig. 6. *Sansevieria enchiridifolia* at its type locality north of Ol Doinyo Sambu, Tanzania.



Fig. 7. *Sansevieria enchiridifolia* in a ground bed in Tucson, Arizona.



Fig. 8. *Sansevieria enchiridifolia* with inflorescence in February 2019.





Fig. 9. Inflorescences of *Sansevieria enchiridiofolia* (foreground) and *S. rugosifolia* (left background).

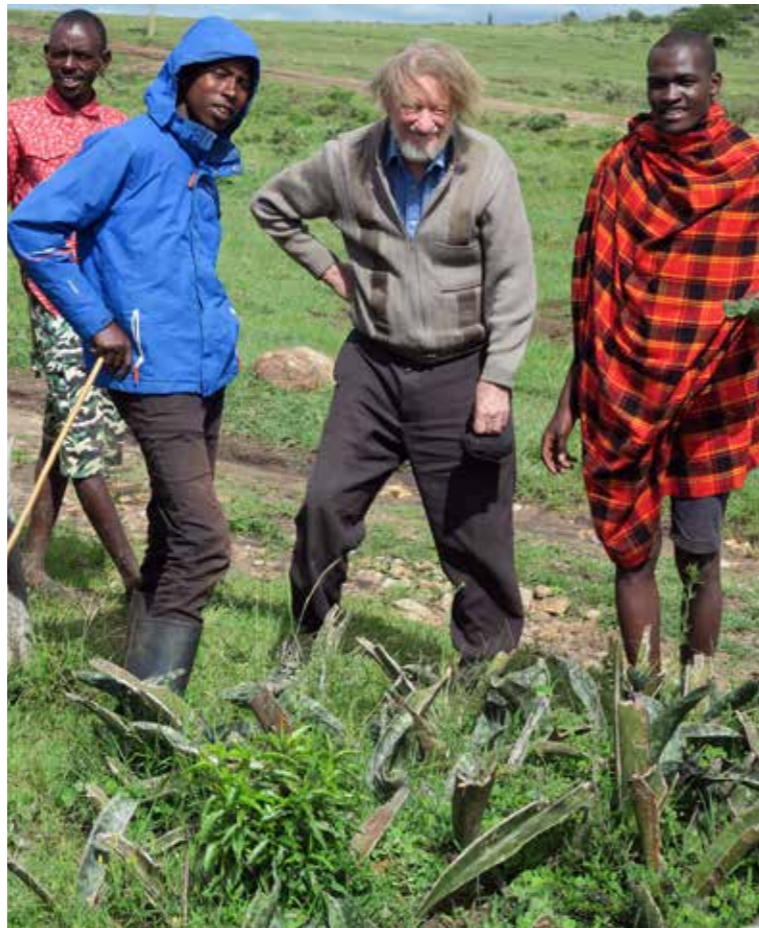


Fig. 10. Len Newton between two Maasai at a locality of *Sansevieria forestii* near Maa-Masilingi, Kenya, northeast of the Maasai Mara National Park.

we located a clump of *S. rugosifolia* several hundred meters away from the type locality of this species, we have yet to find another locality of this new species. We wanted to name this *Sansevieria ensifolia*, because it has sword-like leaves, but that name was used and discarded long ago. So we settled for something that means a handy dagger instead.

***Sansevieria enchiridiofolia* R.H. Webb & L.E.**

**Newton sp. nov.** (Figs. 6–8), with affinity to *S. lunatifolia*, but with fewer but more highly patterned gray-green leaves, more reflexed tepals, and more exerted stigma and anthers.

**Type:** Tanzania, Arusha Province, north of Ol Doinyo Sambu, about 30 km north of Arusha, Tanzania, and 60 km south of Namanga, Kenya. Latitude 3.09536°S, Longitude 36.70509°E, Elevation 1543 m, 27 December 2009, *Webb-Newton* 1055 (MO holo.).

**Description.** Acaulescent, rhizomatous, clumping perennial; rhizome 2.5–3 cm in diameter, pale brown epidermis. Leaves U-shaped to folded, 1 (-2), decumbent to ± upright, stiff, ensiform, to (55-) 65

(-100) cm long x (6-) 6.5 (-9) cm wide around the fold, 2–3 cm wide across the fold, widest about halfway from base to tip, 30 mm thick near base with a center thickness of 15 mm; tip chartaceous, white, and not pungent; both surfaces pale green background with numerous scattered dark-green blotches, slightly rough to very rough; margin with fine (< 1 mm) red-brown line and narrow whitish edge with no shredding. Inflorescence 80 cm long, 2 cm wide, with the main axis simple, peduncle pale green; fertile portion of peduncle 50 cm, canaliculate, flower clusters lax to dense, spirally arranged clockwise when viewed from above, (2-) 3 flowers per cluster, not opening simultaneously. Inflorescence bracts triangular, 10 cm long, 3 cm wide, light mottled green color with chartaceous reddish-white tip. Floral tube 50 mm long, 3 mm diameter around ovary, narrowing to 2 mm diameter above ovary, white colour; tepal lobes 23 mm long, 2 mm wide, strongly reflexed at anthesis; filaments 55 mm long, translucent, attached to base of tepals, anthers 2 mm long, asymmetrically attached to filaments; style 70 mm long, exerted 37 mm, white colour, stigma ~1 mm

diameter and capitate, ovary 3 mm long, 3 mm diameter. Flowers opening in the late evening/ early morning with strong sweet scent.

**Habitat.** We found this species in the open on rocky, loamy soil among bushes in overgrazed grassland. We have only found it at the type locality but suspect it could occur along the eastern escarpment above the Rift Valley, perhaps into southern Kenya.

***Sansevieria forestii***

Len Newton received a cutting of this plant in 1999 from the late Dr. Arturo Foresti (1930–1999) shortly before he died. Arturo became resident in Kenya following retirement from his career as a lawyer in his native Italy. On his property in Muthaiga, a suburb of Nairobi, he developed a remarkable botanical garden that had trees, bromeliads, orchids and succulent plants. All plants were labelled and their details were meticulously recorded in a card file, later transferred to a computer database. He visited many little-known areas in Kenya, establishing new locality records for a number of species. He was an enthusiastic supporter of Succulenta East Africa, the main hobbyist group in Kenya. He also recorded birds, insects, and other visitors to his garden (Newton, 2001a).

The plant discussed here has remarkably large flat leaves in cultivation, and it was clearly different from any other Kenyan *Sansevieria* species. Newton learned that another Succulenta EA member, Belinda Levitan, had also collected this species from southwestern Kenya, although in a different locality about 23 kilometres north-west of Foresti’s original collection site. At this point, Newton realized that this was a new species worthy of description.

Webb had seen the Foresti plant in Newton’s garden on a number of occasions and was struck by the large, smooth green leaves that are very dark in deep shade. A similar-looking plant has been in cultivation for a number of years as “Leiden Botanical Gardens,” although there was no provenance data associated with this plant. Prior to meeting up with Newton to search for the putative new species in southwestern Kenya, Webb began seeing the same plants at a variety of localities in northwestern Tanzania (Fig. 1), mostly southwest and west of the Serengeti National Park (Table 2). The two of us travelled to southwestern Kenya in May 2018 and found the Foresti plants in the general areas where Levitan and Foresti had originally collected them.

***Sansevieria forestii* L.E. Newton & R.H. Webb sp. nov.**

(Figs. 10–13). Related to many broad-leaf species in East Africa, especially *S. elliptica*, but differs because both sides of the longer, glossy leaves are relatively smooth and decumbent and the inflorescence is taller.

**Type:** Kenya, Nkokone, about 65 km west of Narok, Kenya. Lat. S 1° 05.718', E 35° 23.915', 4 May 2018, *Webb-Newton* 1000 (EA, holo.).

**Description.** Acaulescent, rhizomatous, clumping perennial; rhizome 4 cm diameter, pale brown epidermis. Leaves (1-) 2 (-4) in



Fig. 11. *Sansevieria forestii* flowering at its type locality near Nkokone, Kenya.



Fig. 12. *Sansevieria forestii* flowering in Belinda Levitan’s garden in Nairobi, Kenya.



Fig. 13. *Sansevieria forestii* in an area of granitic outcrops near Nzega, Tanzania.

Table 3. Characteristics of the three new species of *Sansevieria* compared with several other species.

Characteristic	<i>Sansevieria enchiridiifolia</i>	<i>Sansevieria lunatifolia</i> *	<i>Sansevieria elliptica</i> *	<i>Sansevieria rugosifolia</i>	<i>Sansevieria forestii</i>	<i>Sansevieria raffillii</i> *	<i>Sansevieria dawei</i> *	<i>Sansevieria nitida</i> *
Number of leaves	1 (-2)	2-3	1-3	(1-) 2 (-3)	(1-) 2 (-4)	2-3	2-3	(1-) 2 (-5)
Leaf length × width (cm)	(55-) 65 (-100) × (6-) 6.5 (-9)	85-130 × 4-6.5	16-30 × 9-14	(35-) 40 (-50) × (7-) 9 (-11)	70 (-108) × 14 (-22)	55-65 × 8	60-150 × 5.7-11	40 × 6
Thickness at base (cm)	0.3	2-2.7	0.4-0.5	0.2-0.3	0.2	n.d.	n.d.	n.d.
Leaf center	U-shaped channel	U-shaped channel	Shallow channel	Channel with folding	Vague to no channel	No channel	No channel	No channel
Roughness	Slightly rough to very rough	Rough	Rough on underside	Rough both sides	Smooth both sides	Smooth both sides	Smooth both sides	Smooth top, rough bottom
Stiffness	Very stiff	Very stiff	Stiff	Stiff	Flexible	Flexible	Flexible	Flexible
Mottling	Very mottled	Scarcely mottled	Very mottled	Very mottled	Plain green to mottled	Scarcely mottled	No mottling	Very mottled
Inflorescence height (cm)	80	110	20-35	55	65	85	45-75	15-24
Flowers per cluster	(2-) 3	Up to 7	3-5	(3-) 5	5	2 (-4)	3-4	1-2
Flower length (mm)	50	43-48	n.d.	55	73	50	36-47	38-50
Tepal length (mm)	23	25	n.d.	20	23	n.d.	17-22	20-26
Tepal characteristics	Strongly recurved	n.d.	Reflexed to recurved	Strongly recurved	Spreading	Spreading	Spreading	Strongly recurved

\* Characteristics from Newton (2001b).

opposite arrangement, decumbent to ± upright, stiff, oblanceolate, to 70 (-108) cm long, to 14 (-22) cm wide, widest about halfway from base to tip, 20 mm thick near base, deeply grooved with a depth of 5 cm in the first 10-20 cm, flattened with a shallow channel to the tip, tip pungent and white; upper surface pale green background with numerous scattered dark-green blotches, smooth to slightly rough; lower surface with more prominent blotches and slightly rough surface; margin with fine (< 1 mm) red-brown line and narrow whitish edge, slightly shredding; upper surface smooth and ± glossy green with pale green blotches, lower surface slightly rough and appearance similar to upper surface. Inflorescence 65 cm tall, 2 cm wide, with the main axis simple, peduncle pale green colour; fertile portion 45 cm, vaguely canalicate, lax to dense, 5 flowers per cluster; bracts triangular, 6 mm long, 3 mm wide, white with green mid-stripe. Floral tube 50 mm long, 3 mm diameter around ovary, narrowing

to 2 mm diameter above ovary, white colour; tepal lobes spreading, 23 mm long, 2 mm wide; filaments 55 mm long, translucent, anthers 2 mm long, attached at bottom center; ovary 3 mm long, 3 mm diameter, style 70 mm long, exerted 37 mm, white colour, stigma ~1 mm diameter and capitate. Flowers opening in the evening with strong sweet scent. Fruit green, ripening to orange-yellow, 7-8 mm diameter, 1 (-3) seeds, frequently with horn where fruit was aborted.

**Distribution.** *Sansevieria forestii* is distributed in northwestern Tanzania and southwestern Kenya west of the Rift Valley. Arturo Foresti's original note read:

*Sansevieria* ('Horwood?') (*Foresti* 731) North of north end of Loita Hills, west side of road to Maasai Mara, ± 23 km from Uasu Nyiro jct., 01°19' 542 S, 37°37'57" E, ± 1950 m alt., in the open on gritty, loamy soil among bushes in degraded bushed grassland, 30 Sept. 1990.

The reference to 'Horwood' is to *Sansevieria elliptica* 'Horwood,' a plant collected in northeastern Kenya. We did not find *S. forestii* in the exact location given in Foresti's note but instead found it farther down the road that skirts the northwestern side of the Loita Hills (Table 2). Belinda Levitan collected the same species at Ol Kinyei with coordinates of 35°23'E, 1°9'S and we found *S. forestii* flowering in that location and made it the type locality.

**Habitat.** *Sansevieria forestii* has a varied habitat over its range. In deep shade, it resembles the plants from Newton's garden: decumbent and dark-colored leaves. In full sun, however, it is mostly upright (Fig. 10). Mostly this species appears in deep alluvium in valley centers and margins. In Tanzania, at several localities, we observed this species growing among granite boulders or on granite outcrops. It always occurred to the south and west of the Serengeti plains west of the Rift Valley.

**Discussion.** When Webb joined a tour with Newton in 2003, Len would jokingly call all broad-leaf sansevierias *Sansevieria raffillii*, reflecting the taxonomic uncertainty surrounding this genus in East Africa. Mbugua (2007) added to this uncertainty somewhat with his insistence that *Sansevieria forskaliana*, a species from both sides of the Red Sea, was an appropriate identification for a number of somewhat disparate

plants in East Africa. Careful study of these plants in habitat is leading to a revision of the broad-leaf species and how they are related.

*Sansevieria rugosifolia* and *S. forestii* are clearly related species and are related as well to *Sansevieria elliptica* from Kenya and Somalia. As Table 3 shows, they differ from that ±elliptical shape that *S. elliptica* typically has in habitat. Both species have a relatively large distribution (Fig. 1); we would not be surprised to find *S. rugosifolia* in southern Kenya east of the Rift Valley (e.g., the Amboselli region). If the Serengeti region spanning the Kenya-Tanzania border were more accessible to exploration by foot, we likewise would expect to find *S. forestii* in many more localities. It seems better to be less certain about its distribution than to be prey for lions.

*Sansevieria enchiridiifolia* is clearly a different species, even from its close relative *S. lunatifolia*. Both species are, by all our work, narrow endemics in small areas. These two species bear superficial resemblance to some other species: the stiff, relatively thick (but wider) leaves of *Sansevieria bhitaleae* versus the nearly cylindrical but channeled leaves of *S. fischeri*. Future molecular work may elucidate the commonalities among these species and provide a bridge, at least in East Africa, between the flat-leaf and cylindrical-leaf species of *Sansevieria*.

**Acknowledgements.** We thank Belinda Levitan, who collected a sample of what we describe here as *Sansevieria forestii* at Ol Kinyei. Toni Yocum was with the authors when *Sansevieria enchiridiifolia* was found and was with Webb when Bhwire Bhitale showed us the original collection site for *Sansevieria rugosifolia* at Ngare Nanyuki, Tanzania. We especially thank Bhitale for his diligent searching for new species of *Sansevieria* in East Africa.

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# The John Lavranos *Sansevieria*: Field Notes, Photographs, and Some Plant Identifications

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Photographs by the authors except as noted

The late John J. Lavranos should be well known to the readers of this journal as well as collectors of *Sansevieria* in general (Mottram, 2018). Several articles in this journal have explored his collections and clarified his numbers, and his passing was noted in the *Cactus and Succulent Society Journal* (Harvey, 2018). Lavranos' collections, from Somalia especially, are legendary among lovers of this genus. As this manuscript shows, he sure collected a lot of *Sansevieria* from a lot of countries for a man who allegedly hated the genus. We named one of his collected plants *Sansevieria lavranii* (Webb and Myklebust, 2018) to honor his contributions. Here, we edit those notes on *Sansevieria* extracted from Lavranos and Mottram (2017a, 2017b) to make them completely legible, note which plants have either been identified or named as new species, and add photographs of these plants in cultivation. Many of these plants are either no longer in cultivation, or at the very least we do not have them in our collections. We also provide some additional notes on selected plants that have been given cultivar names.



Fig. 1. John J. Lavranos in Portugal, 10 June 2017.

## Associates and Expeditions

Beginning in 1962, and continuing for over 50 years, John Lavranos made numerous botanical expeditions to various exotic localities in Africa, Arabia, India, and other areas of the world, collecting over 32,000 plants (Lavranos and Mottram, 2017a). He travelled with, or was associated with, many of the past and present luminaries of the succulent plant profession, including Seymour Linden, Susan Carter, Myron Kimmach, Jerry Barad, Sheila Collette, Tom McCoy, Peter Bally, Gerhard Marx, G.W. Reynolds, Darrel Plowes, Larry Leach, R.A. Dyer, Werner Rauh, and Len Newton.

Lavranos was accomplished in ten different languages and authored or coauthored descriptions of nearly 300 succulent plants, including *Sansevieria*

*dhofarica* (McCoy and Lavranos, 2017). However, John did not attempt to describe many plants in certain genera for which he believed others had more expertise, such as *Sansevieria*. He collected and catalogued over 90 *Sansevieria* specimens from various countries, some of which were repeat collections, leaving 67 unique plants.

John was particularly drawn to the Arabian peninsula and especially Somalia and the island of Socotra, and travelled extensively collecting plants from 1962–1989. His trips to Mogadishu, Eyl, and Hargeisa, Somalia, resulted in the collections of many iconic *Sansevieria*. Roy Mottram provided a great service to everyone who collects succulent plants by publishing the unedited notes to the Lavranos plant collections (Mottram, 2018).

## The Lavranos Collection Data for *Sansevierias*, Sorted by Country

Discussions of the *Sansevieria* sp. collected by John Lavranos have graced the journal *Sansevieria* numerous times over its near 20-year history. Descriptions of the Lavranos plants that have become new species are discussed below under the collection numbers. Butler (2009) discusses several of the Somali species and the taxonomic challenges they present. Under the name of Carol Miller (2005), apparently the editor discussed a drawing Miller had made of Lav 23319. Jankalski (2007), in a discussion of species described after publication of Brown (1915), mentions several of these plants that have become species.

### Botswana

- *Sansevieria* sp. **Lav 24026** (1986). 3–5 km from Lobatse border post on road from Zeerust to Gaborone. Interestingly enough, Jankalski (2009) discusses Lavranos & Bleck 4186, collected about 3 km north of Tlokwen Gate, which appears to be the same locality for **Lav 24026**. He thinks it is a natural hybrid between *Sansevieria aethiopica* and *S. pearsonii*. We have never seen this plant.

### India

- *Sansevieria* sp. **Lav 12137** (1975). Karnataka, Mysore District, Bandipur (apparently collected by Sarkaria in 1975). This plant sometimes is called 'Bandipur' by commercial growers, although there is another plant at also bears this cultivar name.
- *Sansevieria* sp. **Lav 12589** (1975). Karnataka, Narasapur Hills, Bengaluru [formerly Bangalore] to Kolar road, rocky mounts (collected by Sarkaria J97-75, 1975)
- *Sansevieria* sp. **Lav 15242** (1977). Karnataka, Narasapur, 53 km east of Bengaluru [formerly Bangalore], (collected by Sarkaria J11/77, 3 Feb 1977).

### Kenya

- *Sansevieria gracilis* **Lavranos & Newton 12271** (1975). Coast Province, Kilifi District, 48 km west of Malindi, on Sala Gate road, flats below Mangea Hill on road to Vitengeni.
- *Sansevieria parva* **Lav 2051** (1962). Rift Valley Province, Nakuru District, Kedong.
- *Sansevieria ballyi* **Lav 7537** (1970). Newton (pers. commun.) does not know of a Kivuko Hill in Kenya, but the locality information places this plant close to the type locality for *Sansevieria ballyi* (Newton, 2004).
- *Sansevieria fischeri* **Lav 1983** (1962). Coast Province, Taita Taveta District, between Voi and Maktau.



Fig. 2. *Sansevieria ballyi*.



Fig. 3. *Sansevieria pinguicula* (Lav 9424).

- *Sansevieria pinguicula* Lav 7541 (1970). Coast Province, Tana River District, Bura area, near Garissa.
- *Sansevieria pinguicula* Lav 9424 (1972). Coast Province, Tana River District, Bura area, Garissa.
- *Sansevieria pinguicula* Lavranos & Newton 12240 (1975). Coast Province, Tana River District, 24 km north-east of Garissa along A3 from Dadaab-Liboi road.
- *Sansevieria* sp. Lav 1984 (1962). Coast Province, Taita Taveta District, between Voi and Maktau.
- *Sansevieria robusta* Lav 4441 (1966). Rift Valley Province, Magadi. Lavranos and Mottram (2017b) refer to this as *Sansevieria ehrenbergii*, which now may be most appropriately called *Sansevieria lavranii* and grows a long distance away along the coast with the Indian Ocean. This most likely is *Sansevieria robusta*, which is very common in the southern part of the Rift Valley.
- *Sansevieria* sp. Lav 1985 (1962). Coast Province, Taita Taveta District, between Voi and Maktau.
- *Sansevieria* sp. Lav 1986 (1962). Coast Province, Taita Taveta District, between Voi and Maktau.
- *Sansevieria* sp. Lav 2030 (1962). Rift Valley Province, Kajiado District, below Ngong Escarpment, SW of Nairobi, 1962).
- *Sansevieria* sp. Lav 2091 (1962). Central Province, Thika District, Fourteen Falls.



Fig. 4. *Sansevieria pinguicula* (Lavranos & Newton 12240).

- *Sansevieria* sp. Lav 4421 (1966). Rift Valley Province, 15 miles southeast of Nakuru. This site is very near the type locality for *Sansevieria suffruticosa*.
- *Sansevieria* sp. Lav 11231 (n.d.). Coast Province, Kilifi District, 38 km northwest of Mombasa.
- *Sansevieria* sp. Lav 11836 (1974). Coast Province, Taita Taveta District, Maktau.
- *Sansevieria* (?) putative hybrid Lav 11837 (1974). Coast Province, Taita Taveta District, Maktau.
- *Sansevieria* sp. Lavranos & Newton 12179 (1975). Eastern Province, slopes of 1397 m peak Gar Jirimi, 3 km south of Marsabit.
- *Sansevieria* sp. Lavranos & Newton 12254 (1975). Coast Province, Malindi District, 26 km north of Malindi along the B8, 77 km south of Galole, on road to Malindi.
- *Sansevieria* sp. Lavranos & Newton 12280 (1975). Coast Province, Kilifi District, Chonyi Rocks near Kaloleni. *Sansevieria conspicua* is the most common species in this area (Newton, 2019, personal communication).
- *Sansevieria* sp. Lavranos & Newton 12281 (1975). Coast Province, Kilifi District, Chonyi Rocks near Kaloleni. *Sansevieria conspicua* is the most common species in this area (Newton, 2019, personal communication).

- *Sansevieria* sp. Lavranos & Newton 17631 (1979). Coast Province, Taita Taveta District, 6 km north-east of Maktau.
- *Sansevieria* sp. Lavranos & Newton 17662 (1979). Coast Province, Kilifi District, north of Mangea Hill, 23 km north of Mombasa. 17662
- *Sansevieria* sp. Lavranos & Newton 17688 (1979). Rift Valley Province, Samburu District, 22 km west of junction with Isiolo to Marsabit road, on road to Wamba.
- *Sansevieria* sp. Lav 18584 (1980). Rift Valley Province, Samburu District, 65 km north of Isiolo, on the A2 road towards Wamba.
- *Sansevieria* sp. Lav 18669 (1980). Coast Province, Taita Taveta District, Maktau, 46 km west of Voi.
- *Sansevieria* sp. Lav 18719 (1980). Rift Valley Province, Kiambu District, Ngong – Narok road, at first viewpoint.

#### Mozambique

- *Sansevieria concinna* Lav 5933 (1967). Inhambane Province, 20 km west of Vilankulo (also HBG28355). This is also known as *Sansevieria* sp. aff. *concinna* 'Dwarf'.
- *Sansevieria concinna* Lav 5949 (1967). Inhambane Province, north of Massinga (also HBG61068, LV309). This is also known as *Sansevieria* sp. aff. *concinna* and erroneously as *Sansevieria concinna* 'Lake Sibaya.' Chahinian (2010) corrected this error by noting that the plant currently in the trade as *Sansevieria concinna* 'Lake Sibaya' was actually collected by the late Dave Hardy (Hardy 19879) and that plant is not attributable to Lavranos.



Fig. 5. *Sansevieria concinna* (Lav 5933).

- *Sansevieria hyacinthoides* Lav 5973 (1967) Xai-Xai District, Praia Sepulveda. The species epithet on this collection was questioned by Lavranos and Mottram (2017a).
- *Sansevieria* sp. Lav 4685 (1966). Maputo, Catembe.

#### Namibia

- *Sansevieria* cf. *scabrifolia* Lav 23819 (1986), Farm Tiras, 60 km north of Aus. *Sansevieria scabrifolia* is a form of *S. aethiopica* with roughened leaves.
- *Sansevieria* cf. *scabrifolia* Lav 23820 (1986). Farm Iissenborn, west Tiras mountains. *Sansevieria scabrifolia* is a form of *S. aethiopica* with roughened leaves.
- *Sansevieria* sp. Lav 25269 (1987). Kunene Province, Outjo townlands.
- *Sansevieria* sp. Lav 25272 (1987). Kunene Province, Otjihavera, Grootberg Mountains.
- *Sansevieria* sp. Lav 25264 (1987). Oshikoto Province, 10 km south of Tsumeb on Otavi road.
- *Sansevieria* sp. Lav 15348 (1977). Kunene Province, western foot of Grootberg Pass, 80 km west of Kamanjab on the C40 road.
- *Sansevieria* sp. Lavranos & Newton 16903 (1978). Khomas Province, Remhoogte Pass [D1261] (also collected as LEN 2466).
- *Sansevieria* sp. Lav 22962 (1984). Kunene Province, east of Huab River.



Fig. 6. *Sansevieria concinna* (Lav 5949).

## Oman

- *Sansevieria dhofarica* Lav 4328 (1966). Dhofar Governorate, Wadi Adonab near Raysut camp. McCoy and Lavranos (2017) described this as *Sansevieria dhofarica* from specimen T.A. McCoy 5014.
- *Sansevieria dhofarica* Lav 6286 (1968). Dhofar Governorate. This is now known as *Sansevieria dhofarica* (McCoy and Lavranos, 2017).

## Somalia

- *Sansevieria arborescens* Lav 23251 (1985). 20 km north-northwest of Mogadishu, Somalia. Butler (2009) called this sp. aff. *arborescens*, changing Lavranos original determination from sp. aff. *powellii*. Jankalski (2009) refers to this as 'Kew Blue,' which actually is something collected by Chris Bailes (BAIC 243) (Butler, 2009). Jankalski (2009) suggests it is similar to what became *Sansevieria powysii* from Kiwaiyu Island off the northeastern coast of Kenya. We think this is just *Sansevieria arborescens*, albeit a potentially slower-growing version of that species. This Lavranos collection has certainly sparked some discussion among *Sansevieria* aficionados.
- *Sansevieria* sp. aff. *arborescens* Lav 23251 (1985). Shebeellaha Hoose Region, 20 km north-northwest of Mogadishu on road to Ballard, in deep reddish sand with heavily degraded *Acacia* forest with *Sesamothamnus*, *Mundulea*, *Cassia*, etc., 100 m elevation. This is probably *Sansevieria arborescens*.
- *Sansevieria* cf. *arborescens* Lav 23328A (1985). Mudug Region, 421 km north of Mogadishu, west-southwest of Harardere, on red sand overlying surface limestone, about 330 m elevation (also ISI 95-42). This supposedly is an undescribed species allied to *Sansevieria arborescens* but with shorter, thicker glaucous leaves, but what we have under this collection number is a variegated *Sansevieria gracilis*.
- *Sansevieria ehrenbergii* Lav 23395 (1985). Puntland, Nugaal Region, on plateau 5 km north of Eyl, about 250 m elevation (also ISI 97-86, HBG55045). This plant probably is *Sansevieria rorida* and is also known as *Sansevieria* 'Xaskul' and *S.* 'Johannesburg.'
- *Sansevieria ehrenbergii* Lav 24769 (1986). Puntland, Bari Region, hills above Galgalla, east end of the Al Madu range. We include this collection in *Sansevieria lavranii*.
- *Sansevieria eilensis* Lav 10178 (1973). Top of Eyl Pass. This is the type specimen for the species (Chahinian, 1995).
- *Sansevieria eilensis* Lav 23374 (1985). Puntland, Nugaal Region, 10 km southwest of Eyl on road to Gaalkacyo on a limestone plateau, 270 m elevation.
- *Sansevieria elliptica* Lav 6795 (1968). Somaliland, Togdheer Province, first limestone hills northwest of Burao, on the road to Lower Sheikh [Shiikh] (also HBG22830).
- *Sansevieria elliptica* Lav 24882 (1986). Puntland, Bari Region, 78 km southwest of Qardho (also HBG57915). This is an especially thick leafed form of *Sansevieria elliptica*.
- *Sansevieria lavranii* Lav 23295 (1985). Galguduud Region, 179 km northeast of Mogadishu on a track to Harardere, in deep, reddish, sandy soil with *Acacia*, *Cordia*, *Ormocarpum*, etc., 90 m elevation. In Mottram (2018A), this is listed without a genus or species, but the number fits this area and it is the type collection of *Sansevieria lavranii* (Webb and Myklebust, 2018).



Fig. 7. *Sansevieria dhofarica*.



Fig. 8. *Sansevieria arborescens* (photograph by Susan Carter-Holmes).



Fig. 9. *Sansevieria* sp. aff. *arborescens* (Lav 23251).



Fig. 10. *Sansevieria gracilis* (variegated) (Lav 23328A).



Fig. 11. *Sansevieria ehrenbergii* (Lav 23395).



Fig. 12. *Sansevieria lavranii* (Lav 24769).



Fig. 13. *Sansevieria eilensis* (Lav 10178).



Fig. 14. *Sansevieria elliptica* (Lav 6795).



Fig. 15. *Sansevieria lavranii* (Lav 23295).



Fig. 16. *Sansevieria gracillima* (Lav 27839).



Fig. 19. *Sansevieria rorida* (Lav 23319).



Fig. 17. *Sansevieria hargeisana* (Lav 7382).



Fig. 21. *Sansevieria* sp. (likely *S. powellii*) (Lav 24534).



Fig. 18. *Sansevieria powellii* (Lav 27828).



Fig. 20. This field photograph could show *Sansevieria* aff. *rorida* on the left side. The subject of the photograph is the asclepiad at center. (Photograph by Susan Carter-Holmes).



Fig. 22a. *Sansevieria* sp. (Lav 24561), blue form.



Fig. 22b. *Sansevieria* sp. (Lav 24561).



Fig. 23. *Sansevieria* sp. (Lav 24688).



Fig. 24a. *Sansevieria* sp. (Lav 24977), green form.



Fig. 24b. *Sansevieria* sp. (Lav 24977), blue form.



Fig. 25. This field photograph could be *Sansevieria* sp. (Lav 24977) 'Las Anod' based on similarity with what is shown in Butler (2009, Fig. 1). (photograph by Susan Carter-Holmes).

- *Sansevieria gracillima* **Lav 27839** (1989). Bay Region, Burhakaba District, Mt. Buur Heybe, about 35 km northeast of the town of Buur Hakaba, about 160 km northwest of Mogadishu, on granite, 400–600 m elevation. Chahinian (2005b) described this as *Sansevieria gracillima*; in his book (Chahinian, 2005a), he listed it as *Sansevieria gracilis* var. *somaliensis*.
- *Sansevieria hargeisana* **Lav 7382** (1969). Somaliland, Woqooyi Galbeed Province, limestone hills west-southwest of Hargeisa, about 1200 m elevation (also as HBG61013, Grigsby GC81029, Pfennig 204). This is the type specimen for *Sansevieria hargeisana* (Chahinian, 1994).
- *Sansevieria powellii* **Lav 27828** (1989). LoIr Shabelle Region, about 25 km southwest of Mogadishu, a little inland of the coast road on the road towards Afgooye. This plant sometimes is sold under the cultivar name 'Ice Blue.'
- *Sansevieria rorida* **Lav 23319** (1985). Galguduud Region, 378 km northeast of Mogadishu, past Ceeldhere, on a track to Harardere, in dense *Acacia-Commiphora* deciduous scrub, 4–5 m high, rich in species, about 300 m elevation.
- *Sansevieria rorida* **Lav 23328** (1985). Mudug Region, 421 km northeast of Mogadishu, west-southwest of Harardere, on red sand overlying surface limestone, about 330 m elevation. This likely is *Sansevieria rorida*.
- *Sansevieria* sp. aff. *phillipsiae*. **Lav 6823A** (1968). Somaliland, Woqooyi Galbeed Province, Hargeisa townland (also as HBG22831).
- *Sansevieria* sp. **Lav 24534** (1986). Shabeellaha Dhexe region, 37 km north-northeast of Mogadishu, airport on track to Warshiik (also as GC86015). This is a caulescent plant with spiraled, broad and thickened leaves and likely is *Sansevieria powellii* (similar to **Lav 23251**).
- *Sansevieria* sp. **Lav 24561** (1986). Sool region, 104 km north of GarooI on Qardho road. This plant is discussed in Miller (2005) and potentially related another Lavranos plant, **Lav 23319**.
- *Sansevieria* sp. **Lav 24582** (1986). Nugaal Region, 67 km north of Galkayu on road to GarooI, 47 km southwest of GarooI, flat-topped low hills with very sparse low *Acacia-Commiphora* scrub.
- *Sansevieria* sp. **Lav 24688** (1986). Puntland, Bari Region, Migiurtinia, 132 km east-northeast of Qardho on road to Iskushuban.
- *Sansevieria* sp. **Lav 24898A** (1986). Nugaal Region, on Dan Goreyo to Sinujiif road.
- *Sansevieria* sp. **Lav 24919** (1986). Nugaal Region, above Eyl on plateau.
- *Sansevieria* sp. **Lav 24920** (1986). Nugaal Region, above Eyl on plateau.
- *Sansevieria* sp. **Lav 24977** (1986). Sool Region, 10 km south of Las Anod on the Bohotle road, on rocky slopes and gypsum/anhydrite hills with denuded *Commiphora* scrub, 2400 ft elevation. This plant is also known as *Sansevieria* 'Las Anod' (Fig. 25) and appears to be transitional to *Sansevieria robusta* but has glaucous leaves. As a result, there is a "blue form" and a "green form" in cultivation (Fig. 24).
- *Sansevieria* sp. **Lav 23154** (1986). Shabeellaha Dhexe Region, 37 km northeast of Mogadishu on the coast road to Warshiikh, in deep sandy red soil among *Acacia – Dichrostachys – Euphorbia* scrub, heavily grazed and cut for firewood or charcoal burning (also as ISI 96-57, *Sansevieria* 'Warshiikh'; Butler, 2009). The ISI 96-57 was listed as *Sansevieria ehrenbergii* 'Warshiikh,' and some growers in Thailand refer to this collection as Samurai or Samurai dwarf. The leaves are green and smooth, which makes this a distinctive plant. The plant is also synonymous with Chris Bailes' BAIC 3.
- *Sansevieria* sp. **Lav 23163A** (1985). Shabeellaha Hoose Region, Afgooye District, 3 km southeast of Afgooye on Mogadishu road, in degraded *Acacia* scrub.
- *Sansevieria* sp. **Lav 23242** (1985). Shebeellaha Hoose Region, 3 km southwest of Ballad, in riverine scrub along the Shebelle River, 13 km northeast of Afgooye.
- *Sansevieria* sp. **Lav 23318** (1985). Galguduud Region, 378 km northeast of Mogadishu, past Ceeldhere, on a track to Harardere, in dense *Acacia-Commiphora* deciduous scrub 4-5 m high, rich in species, about 300 m elevation.

#### South Africa

- *Sansevieria* cf. *aethiopica* **Lav 26144** (1988). Eastern Cape Province, Cacadu District, about 10 km south-southeast of Kirkwood, south of the R336 road on the road north of Bluecliff Station.
- *Sansevieria* cf. *hyacinthoides* **Lav 26143** (1988). Eastern Cape Province, Cacadu District, about 10 km south-southeast of Kirkwood, south of the R336 road on the road north of Bluecliff Station. This area is very close to the type locality for *Sansevieria hyacinthoides*.
- *Sansevieria* sp. **Lav 25234** (1987). Eastern Cape Province, Cacadu District, west of Kleinplaat, Baviaanskloof Mountains. There is a dwarf

*Sansevieria aethiopica* collected near this locality that eventually could be named ssp. *marxii* after its collector, Gerhard Marx.

- *Sansevieria* sp. **Lav 26220** (1988). Mpumalanga Province, Ehlanzeni District, about 11 km north of Burgersfort on road to Penge.
- *Sansevieria* sp. **Lav 25891** (1987). Eastern Cape Province, Nelson Mandela Bay, east of Motherwell, Port Elizabeth. This is very close to the type locality of *Sansevieria hyacinthoides*, which is very common in this area.
- *Sansevieria* sp. **Lav 226** (1959). Gauteng Province, suburb of Johannesburg, Bryanston.
- *Sansevieria* sp. **Lav 24034** (1986). Northwest Province, 65 km north of Zeerust on road to Botswana.
- *Sansevieria* sp. **Lav 24147** (1986). Kwazulu-Natal Province, Oribi flats, edge of escarpment of the Mzimkulu River.
- *Sansevieria* sp. **Lav 24351** (1986). Northern Cape Province, 24 km east-northeast of Kuruman.
- *Sansevieria* sp. **Lav 22169** (1984). Limpopo Province, Mopane District, Letaba River, Kruger National Park.

#### Yemen

- *Sansevieria ehrenbergii* **Lav 4207** (1965). Shabwah Governorate, Wadi Hawar, some miles south of Habban, on a flat, sandy, sparse scrub-covered plain, 14°10'N, 47°03'E, about 900 m elevation, with acacias, *Salvadora persica*, a spiny euphorbia, *Aloe fulleri*, and others.

- *Sansevieria ehrenbergii* **Lav 4598** (1966). Shabwah Governorate, Wadi Habban.
- *Sansevieria ehrenbergii* **Lav 4776** (1966). Abyan Governorate, Jahhayn.
- *Sansevieria ehrenbergii* **Lavranos & Newton 13118** (1976). Ibb Governorate, As Sayyani District, 32 km north of Ta'izz, on the N1 road to Ibb.
- *Sansevieria ehrenbergii* **Lavranos & Newton 15749** (1977). Ibb Governorate, As Sayyani District, 32 km north-northeast of Ta'izz on the N1 road to Ibb.
- *Sansevieria ehrenbergii* **Lav 31340** (2000). Lahij Governorate, Tur Al Bahah District, Tawr al Bahah, about 90 km northwest of Aden.
- *Sansevieria forskaliana* **Lav 31349** (2000). Abyan Governorate, Lawdar District, 2 km west-northwest of Lawdar.
- *Sansevieria forskaliana* **Lav 31374** (2000). Ad-Dali' Governorate, Amiri Highlands, Dhala.
- *Sansevieria* sp. **Lav 1672** (1962). North of Am Surrah, about halfway to Lawdar on road more or less east of Al Humaymah.
- *Sansevieria* sp. **Lav 1756** (1962). Abyan, 20 miles north of Shuqra.
- *Sansevieria* sp. **Lavranos & Newton 15750** (1977). Ibb Governorate, As Sayyani District, 32 km north-northeast of Ta'izz on the N1 road to Ibb.
- *Sansevieria* sp. **Lav 30719** (1998). Ad-Dali' Governorate, Amiri Highlands, Dhala.



Fig.26. *Sansevieria* sp. (Lav 23154).



Fig. 27. *Sansevieria ehrenbergii*, plant from material collected in Yemen by John Lavranos without collection number.

## Discussion

John Lavranos collected a lot of specimens of *Sansevieria* at a time when the genus was mostly understood from the work of Brown (1915), who described species from garden plants collected around Europe. Understandably, there was considerable confusion as to the species when Lavranos travelled through Africa, and not surprisingly he listed many of the plants he collected as “sp.” without attempting to put them into Brown’s framework. Without implying disrespect for this great plant collector, Lavranos’

reputation for hating the genus *Sansevieria* may have stemmed from this confusion. Another possibility is that he just got stuck too often by these prickly plants. Another, perhaps best, explanation is that he deferred to other experts on the genus *Sansevieria* to make the final species determination, but those experts did not get back to him with a final opinion. We hope here that we have clarified some of the confusion concerning this amazing group of plants without adding further to the existing uncertainty as to what these plants are.

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