Return to Tanzania in spring 2018

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Zusammenfassung
Der Autor ist bekannt als langjährig botanisch aktiver und besonders an Sansevierien interessierter Mitinhaber einer großen Sansevierien Gärtnerei in Thailand. Nach seiner Pensionierung konzipierte er sein *Tanzania-Sansevieria-Project.* Es ist gedacht als mehrjährige Untersuchung der wildwachsenden Sansevierienpopulationen in Tansania. Beabsichtig ist eine genaue Untersuchung und Dokumentation, vor allem auch unter dem Aspekt des Artenschutzes. Hierzu ist es erforderlich, auch die in der Umgebung lebenden Menschen dafür zu sensibilisieren. Nach den ersten Erfahrungen im Vorjahr wird hier über die Reise im Frühjahr 2018 ausführlich berichtet. Der Autor lädt am Schluß seines Berichtes den Leser ein, mitzumachen und das Projekt zu unterstützen.

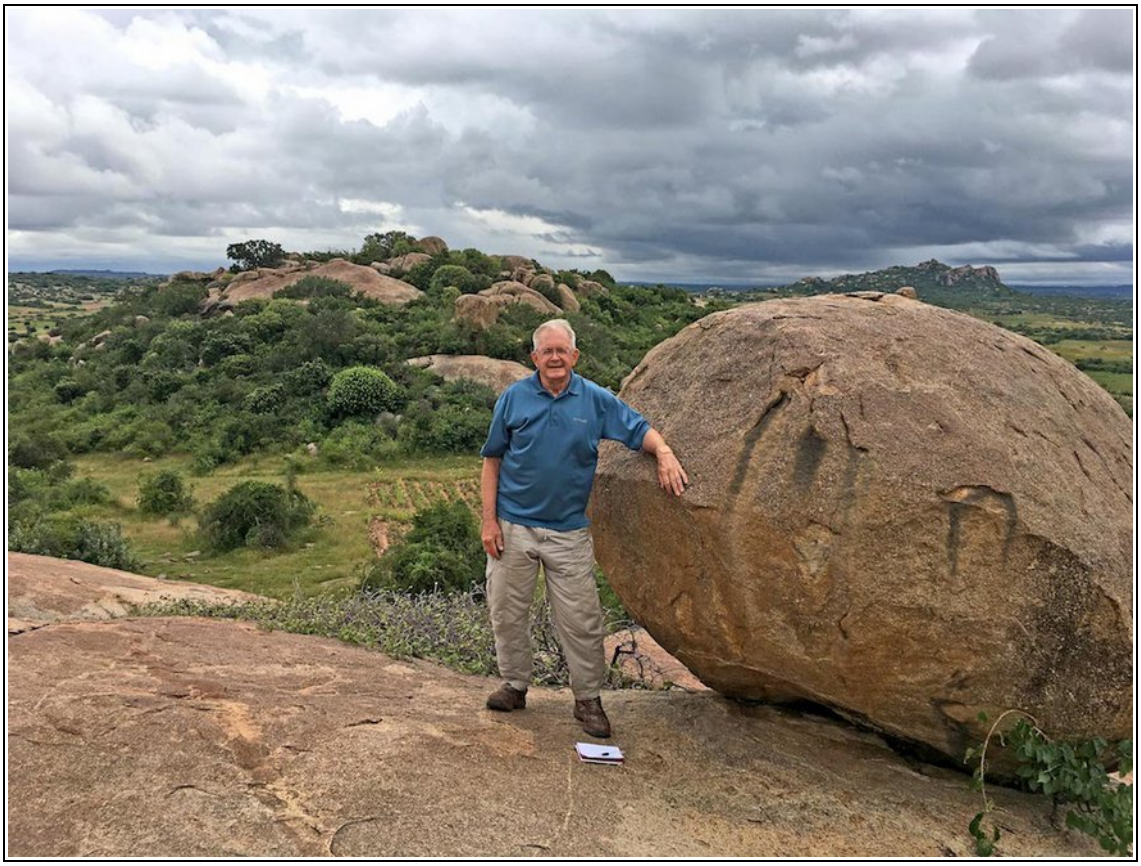

Fig. 1 – The Author and view from top of Inselberg at Maswa.

In 2017 I travelled from my retirement home in Bangkok, Thailand, to Tanzania for the first time to do the on-site planning for a long-term project of researching and collecting the native Sansevieria species of that spectacular country. I returned to Tanzania in April and June, 2018, to focus on a few of the many opportunities that we found there. In particular, I wanted to learn more about the species variation, ecology, and extent of the native range of *Sansevieria bhitalae* (*Sansevieria kirkii* 'Superclone'), observe and collect more examples of the *S. elliptica* complex [1)], and attempt to settle the questions about the status of a plant that is related to *S. trifasciata*. Once again, we documented populations with photos, collected seeds and cut leaves for propagation to bring these plants into cultivation, and applied GPS readings to all collection sites.

Since my last visit, my dear friend Robert Sikawa had been energetically scouting for new locations to see Sansevierias. Thanks to his hard work and discerning eye, we were able to use the two weeks in April and two weeks in June most efficiently.

Fig. 2 – *Sansevieria elliptica* – group near Singida.

1) *Sansevieria elliptica* is generally considered to be a synonym of *S. forskaoliana*. (Editor´s note)

Fig. 3 – *Sansevieria elliptica* (YS 0101) group at Singida.

We followed much the same route on both visits this year as we had in 2017: an irregular circle starting in Arusha, south to the Southern Highlands, then north through the centre of the country, and finally across the Serengeti back to Arusha. In between the Southern Highlands and the Serengeti, and after our return to Arusha, we made a series of side trips throughout the region south of the Serengeti where many examples of taxa in the *Sansevieria elliptica* group are found, and then revisited some of these sites after our return to Arusha. We also added side trips to the Oldupai Gorge, and the Lake Natron area on the north side of the Serengeti plain, near the Kenya border.

Between Robert's many scouting trips, and our more intensive investigations together, we are gaining an understanding of the Sansevierias growing in the approximately one third of the country that we have chosen to investigate. The highest diversity of species and forms that we have seen is in the north-eastern region from Kilimanjaro southwest through Tarangire and then west through Singida and Tabora. This great diversity no doubt continues even further west, although we have not done any investigating there. Within this region is found a dizzying array of taxa in the *Sansevieria elliptica* complex and several other species. The Southern Highlands have so far only shown us *Sansevieria bhitalae* in various forms (assuming that the plants that appear to be that species are in fact all one species), and *S. trifasciata* subsp. *sikawae* (in ed.). It was not until we were well north of the highlands that we began to encounter examples of the *S. elliptica* complex.

After an overnight in Arusha, we headed south/southwest on the main highway from Arusha to Dodoma, and then on to Iringa, into the Southern Highlands. In 2017 I saw *Sansevieria bhitalae* (formerly known as *S. kirkii* 'Superclone') in nature for the first time. At that time, this species had not yet been

Fig. 4 – *Sansevieria trifasciata* subsp. *sikawae* (YS 0039) at the type location.

published and its status was less clear. We saw a number of colonies of this species in the vicinity of Ikungwe village, in every case growing on degraded termite mounds. On the 2018 trips, I decided to do more exploration of the area west of Iringa including the extraordinary Ruaha National Park. I hoped to get a better idea of the ecology and distribution of this beautiful and interesting species.

In April, at the end of the rainy season, the day-long drive from Arusha to Iringa was an encyclopaedic video of showy flowering plants, many of them unfamiliar and hard to identify. There are two wa-

Fig. 5 – *Sansevieria bhitalae*
- along ravine, Makombe with Robert Sikawa (left) and at Makombe ravine (right).

ves of flowering early in the year in this part of Tanzania. The first is in January-February after the rains break the long dry season. This is when most trees and shrubs burst into bloom, along with some field and woodland flowers, especially bulbous plants. The second wave of bloom is March to May when annual and perennial flowers, especially those in open areas, are at their peak. Many Sansevierias will bloom during this time as well. I was particularly impressed by the many species of Ipomoea (morning glory), both climbing vines and herbaceous and semi-woody shrub-like species. *Ipomoea tuberculata*, with its large yellow flowers with a purple throat, is a stunning ornamental that deserves to be in general cultivation.

Our first area of focus on Sansevieria was at Makombe, northwest of Ikungwe, where we had first seen *Sansevieria bhitalae* in 2017, on the east side Ruaha National Park. This is one of the botanical hot spots of Tanzania, where plants more typical of South Africa, including what are called the *fynbos* flora, extend north into the highlands. There are also many interesting species more characteristic of the other regions of Tanzania. This area is burned every year. Originally this was likely a less frequent natural occurrence, but now it is a deliberate annual process to stimulate the growth of new grass for the many cattle that are grazed there and most everywhere. Still, there is much to see, including at least two species of *Protea*, with large showy flowers, several species of *Clematis*, *Aloe* spec., and terrestrial orchids.

Makombe is an area of hills and valleys, mostly thin woodlands with an understory of exciting plants. There are a number of small streams and dramatic rock outcroppings.

Here we saw *Sansevieria bhitalae* growing in two radically different situations, both different from the termite mound ecology that we saw in 2017 near Ikungwe.

Fig. 6 – *Ipomoea tuberculata* road to Dodoma.

Fig. 7 – *Aloe duckeri* at Makombe

Fig. 8 – P*rotea* spec. at Makombe

Fig. 9 – *Syncolostemon* spec. at Makombe


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The first populations were growing along a ravine with a small stream at the bottom. The soil at this shaded site was moist, deep and rich. Large colonies of *S. bhitalae* grow on the sloping walls of the ravine, down to the small stream. These colonies would likely never be subjected to much stress for lack of water, even in the dry season. Many of the rigidly upright leaves grew to more than two meters. Our guide took a few leaves to use to make high-quality string! There were a few flower stalks, mostly with no fruit, so we were able to collect only a few seeds. It appeared that the plants had bloomed three or four months before, and most fruit had ripened and had been dispersed.

At a separate location we found *Sansevieria bhitalae* growing among and on large boulders, again in shade, although at this site the plants would have been severely water-stressed in the dry season. Nevertheless, the plants were vigorous and healthy, with some leaves about two meters in length.

Skipping ahead to June, we returned to this area and spent a couple of days further west in the Ruaha National Park. This remarkable park is about the size of Denmark, with a great diversity of ecological niches, with savanna, rivers and wetlands, the weathered rock outcroppings called *inselbergs* or *kopje*, and woodland. Here we found even more examples of the amazing diversity of habitat that is acceptable to *Sansevieria bhitalae*. Most of our first day was a fruitless search; although we saw many other interesting plants and animals, we did not see our target species. Finally, late in the day, we had our first encounter near a wildlife wallow on the savanna where it grew in thickets near large old trees. After that we saw more populations growing quite independently here and there in the savanna grassland. Finally, we saw large colonies growing in thickets along the banks of the Ruaha River. Most of the colonies were two meters, or more, in height. They are dramatically beautiful plants.

Fig. 10 – *Sansevieria robusta*
Maasai grazing lands.

I think that it is remarkable to see a *Sansevieria* species growing in so many distinctly different habitats. The only other species that we saw in Tanzania that is as widespread is *Sansevieria robusta*, which can be found on open savanna, among rocks on hillsides, and occasionally near seasonal watercourses. Still, *S. bhitalae* seems to be even more flexible because it also can be found growing in moist soils in heavy shade and along permanent watercourses. In general, *Sansevieria* species seem to be pretty specific about where they are able to grow. The widespread *S. elliptica* complex grows in many different kinds of habitats, but it is not uniform in its appearance, and we are certainly seeing a number of different, but related, species despite some similarities among them.

Fig. 11 – *Sansevieria bithalae*
savanna Ruaha NP beside Ruaha River.
Fig. 12 – *Sansevieria bithalae*
Ruaha River with Robert Sikawa.

In 2017 I noticed a Sansevieria growing in the front garden of a small house in Ibinzamata village. We stopped, and Robert asked Miss Catherine, the owner of the house, about the plant. It was similar in appearance to *S. trifasciata*, but also different in some ways. Miss Catherine, who is 87 years old, said that it had been given to her by her grandfather, who had collected it in the Tabora region, well to the west of her village. This was to be the first of many encounters with this plant. I think that other Sansevieria specialists dismissed it as cultivated *S. trifasciata*, but its distribution shows that if it is *S. trifasciata* as we know it in cultivation, then that species is native in Tanzania, on the opposite side of the African continent from where is supposed to be found in nature.

According to Bob Webb and Juan Chahinian, specimens of this plant in Kenya were identified as *Sansevieria burmanica*, which is found wild in central Burma (Myanmar). It is vaguely similar to that species, but they are certainly not the same. I can compare it here to plants of *S. burmanica* that I collected at its type location in Kyaukse, Burma in 2017. There has also been speculation that it is what Juan Chahinian has called 'Slimmerette', although that is disputed by Bob Webb.
I don't have a living specimen of 'Slimmerette', but from photos I don't see that they can be the same plant. The origin of 'Slimmerette' is also unclear. It came to Juan Chahinian originally from Dr. Clyde Reed in the US, but it is not known where Dr. Reed got it. Juan Chahinian reports also finding it in Kenya. If I can get a documented plant of 'Slimmerette' I can compare it growing un-

der the same conditions. There are two different forms of this mystery plant found throughout its very wide range: a form with broad leaves to about a meter tall, and a form with narrow leaves (two to three cm wide) that grows to more than two meters tall. A man living near Ruaha National Park who is very familiar with these plants in the wild says that the two forms grow on different soil types.

Nearly everywhere we went in Tanzania we encountered this taxon, often growing in front of houses in rural areas. We stopped and talked to a number of people who are growing this plant, and unsurprisingly found that it was planted for medicinal use. Everyone that we talked to reported taking the plant from the wild and planting it at their houses. Unfortunately, we did not have time to visit those places where they had collected it, but the reports are consistent, and completely credible. A major highlight of the June trip for me was finally seeing indisputably wild populations of *Sansevieria trifasciata* subsp. *sikawae* at Lake Manyara National Park. This is an area of above average rainfall, not nearly as arid as most of the other places we visited. I noticed that it was planted around the visitors' entrance parking lot. Just before we left after our tour of the park, we stopped at the park business office and noticed it growing as a ground cover in the forest across the road. Here it grew in fairly dense shade in rich moist soil. The park rangers confirmed that it is an indigenous plant in the park.

Bob Webb of Arid Lands Nursery has taken type specimens of this plant in the Tabora region (YS 0039), where Miss Catherine said that her grandfather had collected it, and will take the lead on publishing the plant as *Sansevieria trifasciata* subsp. *sikawae*, named for Robert Sikawa, who tirelessly scouts the countryside for Sansevierias and makes it possible for me to see and study these fascinating plants.

From Ruaha National Park we drove north to Singida in the north central part of the country. This arid region is home to many iterations of the *Sansevieria elliptica* complex. We saw these plants growing in many different habitats: among rocks on *Inselbergs*, in open grassland, in wet woodland, on poor, barren soils, and on degraded termite mounds. The various colonies differed in leaf size and colour, height of the flowering scape, and the thickness and colour of the rhizomes. With further study, it is likely to turn out that we have been seeing a number of different species.

Over several days we found colonies of the *Sansevieria elliptica* complex growing throughout north central to northeast Tanzania south of the Serengeti, particularly in the Tabora, Singida, Shinyanga, and Manyara regions. I was astonished by the range of variation in this group. Most of us know *S. elliptica* as the cultivar 'Horwood', and in fact many of the variations that we saw resemble this variety to some extent, but some are very distinct.

Driving north from Ruaha, we entered a much more arid landscape, in places there was little vegetation covering the poor, weathered soil surface. At one spot near Singida there were extensive colonies of Sansevierias growing in this most difficult habitat, often on or near degraded termite mounds. The most beautiful Sansevieria that we saw in this region occurred in this habitat, a taxon in the *Sansevieria elliptica* complex with spreading leaves with striking silver patterns (YS 0101). It had many dried scapes with ripening seed, which I was able to collect. This taxon had relatively short scapes to about 50 cm.

At the village of Mwanyala, a local man, Mr. Robert Mndachi, led us to a place where we were shown colonies of plants in the *Sansevieria elliptica* complex (YS 0037 and 0038) growing in an unexpected situation, almost the exact opposite of the conditions described above at Singida. Here the

Fig. 13 – *Sansevieria elliptica*
group at Singida on old termite mound.

Sansevierias grew in wet woods, with soggy wet soil, even though it was well past the rainy season. These plants had broader, greener, more upright leaves to one meter tall, and thicker, taller scapes.

In the vicinity of Shinyanga, there are many impressive *Inselbergs* erupting from the flat landscape. These formations are the home of many plants and animals different from the surrounding landscape. We examined several of these formations, and often found interesting Sansevierias as well as other wonderful plants. On one of these outcroppings, we found colonies of *Sansevieria bhitalae* with leaves two meters long. At another we found large colonies of a representative of the *S. elliptica* complex growing in moist soil in the field at the base of the rock formation, as well as among the boulders that were part of the formation.

Near Lake Manyara we found yet other exciting populations. One of these (YS 0009-0111), in open rocky fields, had beautiful silver-patterned leaves nearly a meter tall, and flowering scapes to almost two meters. These were by far the tallest flower scapes of any Sansevieria that we encountered in Tanzania. To the west of Manyara, at Lake Eyasi, we saw yet another remarkable scene, where Sansevierias with long rhizomes with few leaves grew on steep eroding hillsides. Some of the rhizomes had broken off and were working their way downhill. It seemed that this taxon might have evolved for this sort of reproductive dispersal.

Near Tarangire National Park we stopped at a lodge overnight, arriving in the dark. In the morning I walked the grounds and saw that there were new plantings of native plants, including *Sansevieria*. Among these were plants of the *S. elliptica* group with leaves two meters long! There were a few plants on the ground that had not yet been planted, and Ms. Marry Samuel very kindly allowed me to take one of them (YS 0106). It had been collected nearby, but we did not have time to search out the wild population. This collection is by far the tallest example of a taxon in the *S. elliptica* complex that we saw, easily more than twice as tall as any other.

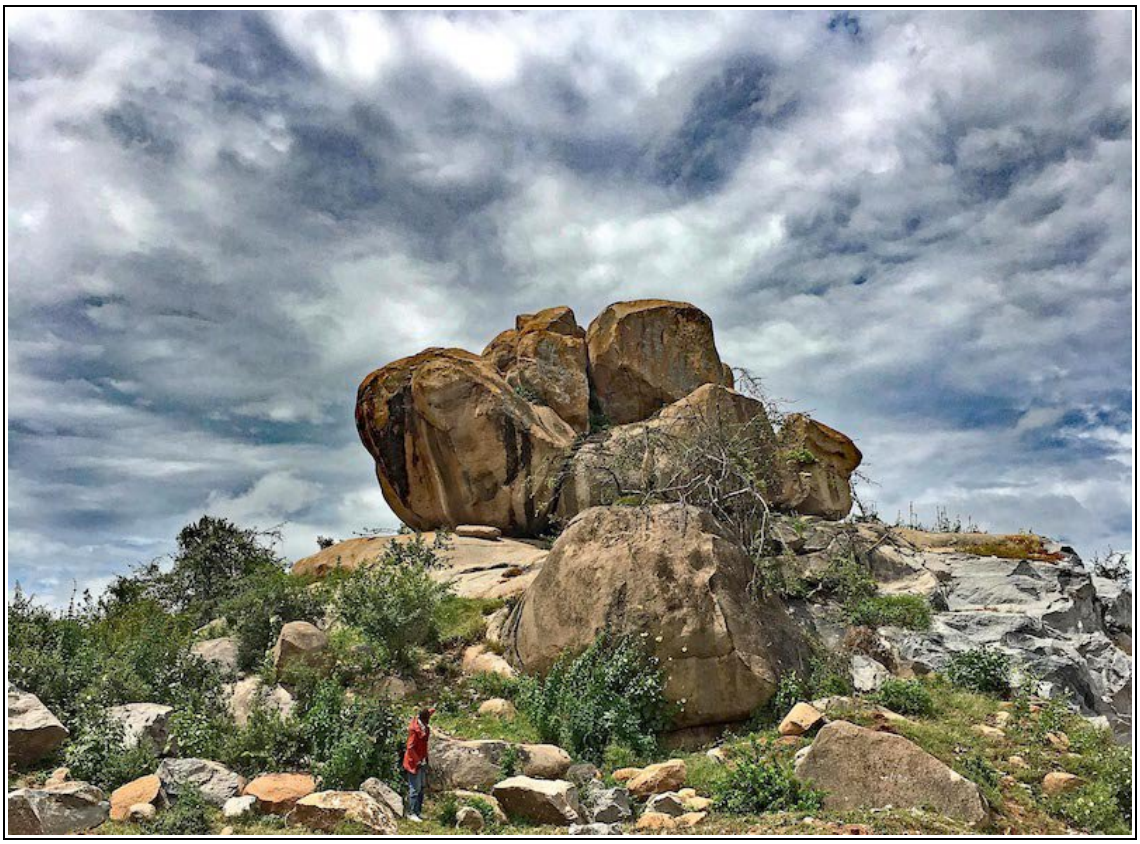

Fig. 14 – *Sansevieria bhitalae*
population on the Inselberg at Maswa.

Throughout northern Tanzania we were frequently in contact with Ma'asai nomadic herders and their families. These semi-nomadic people are intimately in touch with the natural world; they can tell you where to find almost any plant or animal. They are unfailingly cheerful and helpful. We often relied on them to help us find populations of Sansevieria, and to help us understand how the plants are used by local people.

Sansevieria robusta is a common, widespread species in Tanzania. Although we never saw it in the Southern Highlands, we encountered this species almost everywhere we went in the northern part of the country. On Ma'asai grazing lands I saw this species in fruit for the first time. *Oldupai* is the local name for *Sansevieria robusta*; the Oldupai Gorge is named for this plant which is common there. This is

a key site for research in understanding the evolution of humans in Africa. All Tanzanians know *Oldupai*, and it is culturally a very important plant. In fact, the only Sansevieria graffiti I ever saw anywhere was a drawing of this plant on a wall in Arusha.

Southwest of the Arusha airport, in the direction of Tarangire, is an arid region called Mirerani. It is hilly and rocky, with infertile soil. Mostly it is used for grazing livestock. Here there are colonies of a very interesting form of *Sansevieria fischeri* that is much different from the forms that I see in cultivation. The leaves emerge directly from the soil, apart from one another. They grow to about 30 cm, much shorter than other populations. Furthermore, they are a matte gray colour, some with dark stripes, with a rough surface texture that is quite different from other *S. fischeri* that I know. In colour they resemble a form called "Moktau", but differ in other ways. I don't know the origin of the "Moktau" form, although I have heard that it is also from Tanzania. There is no location with that name in Tanzania, but there is a town called Maktau, sometimes spelled Moktau, on the Kenya side of the border opposite and not so distant from the Kilimanjaro/Arusha region. Like so many of the Sansevierias in this region, it is very localized and thus vulnerable to habitat destruction. In this case, the area where it is found has been levelled for construction of houses, so this population is probably doomed.

Fig. 15 – Oldupai-graffiti in Arusha
(*Sansevieria robusta*)

The conservation of *Sansevieria* is a serious and urgent issue. Tanzania has made an unusually strong commitment to protecting nature; about a third of the country's territory is protected in some way as parks or reserves. The management of these areas appears to be professional and successful. Unfortunately, some of the parts of the country with the greatest diversity of Sansevieria taxa lie outside of these protected areas. In the case of the *S. elliptica* complex, each population is different, sometimes radically so, and these populations do not occupy a wide range.

Fig. 16 – *Sansevieria fischeri*
at Mirerani.

A single construction or road-widening project can wipe out an entire distinctive population that might be an undescribed species. Likewise, the many forms of *S. bhitalae* in Iringa Province are outside of protected areas. Sansevierias can co-exist with the nomadic herding culture because they are seldom eaten by livestock, and traditional subsistence agriculture, where small plots are cultivated and later abandoned, is also not a serious problem because the temporary plots rarely occupy preferred Sansevieria habitat. But recently China has taken a great interest in East Africa, lending money for public works projects. It is no secret that the Chinese want to convert the traditionally managed open spaces into factory farms, a conversion that destroys all native plants and animals that live there. In other East African countries, the Chinese have clear cut old forests as repayment for loans. In parts of Tanzania there is little time left to document and preserve the genetic heritage of *Sansevieria.*

So, what's next? On the next trip I hope to do as much further documentation as possible of the taxa in the Sansevieria elliptica complex. Because most of these populations lie outside protected areas, this is urgent work. Also, I want to extend our understanding of this group of plants west from Tabora to the Zambia border. Near the border we will also seek out wild populations of *S. braunii* to help with the understanding its range and ecology, and bring documented plants into cultivation.

If you are excited by this important work, you might want to join me and Robert Sikawa on a Sansevieria Safari. You can get details about upcoming trips by contacting me, Barry Yinger, on Facebook or by email to barryyinger@yahoo.com; or by contacting Robert Sikawa on Facebook or by email to sikawakitoto73@yahoo.com. The number of guests on these trips is limited to six people. You can come along as an observer or help with the work if you like.

Link
Kalala Tours & Safaris – Sansevierias plants safari

Comment
The same version in German was published in the journal: Sansevieria Online, Vol. 7 (1), p. 4-18.

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