



Somaliland Biodiversity Foundation

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Somaliland’s known biodiversity increases!

This year there are 15 more species known from Somaliland than last year; 8 scorpions, 5 plants, 1 snake, and 1 insect. Their names are listed on page 2 and linked to the source information. Twelve are “new” species. This means that they were not known to the scientific world before 2018. The other two species were first documented as being present in Somaliland in 2018. The plant species were known to be “different” by people in the area; this is probably not true the “new” scorpions and insects. The papers describing the “new” species are not easy reading because they must allow specialists to distinguish the new species from all other species in the world.

Why do scientific names matter? The primary reason is that it makes it possible to share information with people from around the world. Names are needed to tell people about a species’ role in an ecosystem, to answer questions such as what does it do? What does it need to survive? How does it impact ecosystem stability and human welfare? It is easy to overlook the small animals and plants around us, but they can be very important to soil improvement, pollination, and control of other undesirable organisms.

Unfortunately, the ability to study animals in Somaliland is threatened by those who interpret Somaliland law as forbidding all animal collection in Somaliland, even for scientific research authorized by the Ministry of Environment and Rural Development and conducted in association with instructional institutions in Somaliland. This has already led some outstanding scientists to cancel plans for working in Somaliland, making it unlikely Somalilanders will have the opportunity to learn from them and others like them. This is a tragedy.

Ignorance is not protection. It does not stop construction nor decrease grazing pressure, both of which lead to animal death. It will prevent Somalilanders from learning about their country’s animal diversity and Somaliland’s institutions from educating their students about important groups of animals and their interaction with plants. It will deter funding agencies from supporting activities that require such knowledge. It will negatively impact development of ecologically-oriented tourism programs because the information tour guides have will be limited to large animals whose activities can be monitored by cameras. There is a lot to be learned about such species from cameras and video images, but for learning about the many animals that have not yet been described, strong education programs are essential. The Foundation was established to assist in developing them. If that is going to be possible, it will need to reconsider its goals.

Featured Species

Pachnoda iskuulka



This colorful scarab beetle was described by David Kral and his colleagues in 2019 based on collections made in northeastern Somaliland in 2018. It is the first species of *Pachnoda* to be found in Somaliland. There are probably other species present, but no one has looked.

[\[continued on page 5\]](#)

Recent additions to Somaliland's Known Biodiversity

Mary E. Barkworth

Group	Name	Place of Publication	Group	Name	Place of Publication
Scorpion	<i>Neobuthus amoudensis</i> (new species)	Euscorpius. 2018. No. 271 Open access	Beetle	<i>Pachnoda iskuulka</i> (new species)	Zootaxa. 2019. 4604 (3): 482–496
Scorpion	<i>Neobuthus erigavensis</i> (new species)	Euscorpius. 2018. No. 271 Open access	Snake	<i>Telescopus pulcher</i> (first reco)	Zootaxa. 2018. 4462 (4): 483–496
Scorpion	<i>Neobuthus factorio</i> (new species)	Euscorpius. 2018. No. 271 Open access	Plant	<i>Aloe sanguinalis</i> (new species)	Phytokeys. 2019. 117:85–97.
Scorpion	<i>Neobuthis gubanensis</i> (new species)	Euscorpius. 2018. No. 271 Open access	Plant	<i>Boswellia occulta</i> (new species)	Phytotaxa. 2019. 394 (3): 219–224. PDF file from authors
Scorpion	<i>Neobuthus maidensis</i> (new species)	Euscorpius. 2018. No. 271 Open access	Plant	<i>Cylindropuntia intricata</i> (First documentation)	OpenHerbarium.org. 2018.
Scorpion	<i>Neobuthus montanus</i> (new species)	Euscorpius. 2018. No. 271 Open access	Plant	<i>Opuntia microdasys</i> (First documentation)	OpenHerbarium.org. 2018. HARG000263.
Scorpion	<i>Pandinurus fulvipes</i> (new species)	Euscorpius. 2019. No. 275 Open access	Plant	<i>Opuntia stricta</i> var. <i>stricta</i> (First documentation)	OpenHerbarium.org. 2018. HARG000266
Scorpion	<i>Barbarurus feti</i> (new species)	Euscorpius. 2019, No. 280 Open access	Plant	<i>Opuntia stricta</i> var. <i>dillenii</i> (First documentation)	OpenHerbarium.org. 2018. HARG000267

The table above lists the species described, discovered, or documented for Somaliland since the start of 2018. Describing new species is not simple because first one must know the species that have been described and then write a description that enables the new one to be distinguished from all known species. Follow the links to see examples.

Documenting the existence of a known species requires **verifiable** evidence in a collection. Depending on the kind of organism, involved, this may mean a specimen, images/videos that show the diagnostic features of the species, tissue or DNA samples, or some combination of these, and the location of the documentation must be known. The important point is that the record must be verifiable.

For plants, well-collected specimens are the best documentation but images are satisfactory for distinctive species. Specimens supported by images are best because tissue can be taken from the specimen and the image can be shared via the web. Below is an image documenting the presence of *Cylindropuntia intricata* in Hargeysa,. It was

spotted by Ahmed Awale, imaged by Helen Pickering, and identified by Lucas Majure



Walaaleeye: an island of vegetation biodiversity

Mohamed M. Mirreh

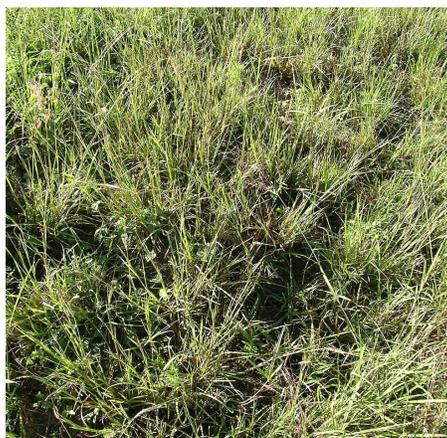
I had the pleasure of meeting Dr. Abdullahi Haji Mohamoud, a medical doctor who is also a passionate environmentalist. He insisted on taking me to his family's 20-hectare land holding in an area called Dooxada Farmara, a valley located approximately five kilometers north of Ainaabo City in the western part of the Sool Region. The area was allocated to his father in 1948. Less than one hectare is farmed; the rest of the area is grazed by a limited number of cows.

Like other valleys of the Nugal, Dooxada Farmara receives considerable runoff from the surrounding hills and can, therefore, develop considerable aboveground biomass. In addition, because it is only lightly grazed, it has a very high diversity of perennial species and is considered to be in pristine range condition. Walaaleeye is one of the few remaining sites, other than Golis Range Mountains, where the plants are healthy and show good vigor. Nearby sites that have not been managed so carefully are either devoid of vegetation or poorly covered with species of low grazing value. In addition, plants such as *Andropogon kelleri* (Duur), that have disappeared from large parts of their native range grow densely at Walaaleeye. It demonstrates the benefits of adopting appropriate range management techniques in such valleys (Dooxos).

The common, conspicuous species I have identified at at Wakaaleeye include: *Andropogon kelleri* (Duur), *Paspalidium desertorum* (Gargaro), *Heteropogon contortus* (Avaxmakare), *Cynodon dactylon* (Doomaar), *Cenchrus ciliaris* (Ciirdhuuq), *Cordia monoica* (Madheed), *Grewia villosa* (Gomashaa), *Grewia tenax* (Dhafaruur), other *Grewia* species (*Hohob*), *Boscia minimifolia* (Maygaag), *Dalbergia commiphoroides* (Duyac), *Glossonema revoilii* (Askax), *Senna alexandrina* (Jaleelo Geel), *Aerva javanica* (Soonah), *Ocimum* sp. (Reexaan) and *Vachellia tortilis* (Qudhac).

Walaaleeye is a site where many studies could be carried out by range ecologists, botanists, and environmental scientists. It could be used to develop range condition guides for similar sites elsewhere and recommendations for rangeland management and improvement. It could also be used for exploring the economic benefits and sustainability of alternative land uses such as farming versus livestock grazing. In addition, it can serve for in-situ conservation of natural biodiversity and as an important seed source for seed multiplication programs for use in rangeland improvement. The best aspect is that Dr. Abdullahi is willing to give full access to those interested in carrying out such studies.

Three of Walaaleeye's common and conspicuous species



Heteropogon contortus (Avaxmakare)
[CC-BY-SA Harry Rose](#)



Cynodon dactylon (Doomaar)
[CC-BY-SA Юкатан](#)



Senna alexandrina
[CC-BY-SA Lalithamba](#)

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Is *Vernonia mogadoxensis* in Somaliland?

Farhan Furre

Recently, I asked SBF to lend me equipment for collecting *Vernonia mogadoxensis* in Somaliland, or, in Somali “Gagabood”. Its roots are used to treat mange in camels and goats. My goal is to discover whether the leaves could be used rather than the roots because harvesting leaves would damage the plants less. The species is best known from near Mogadishu at elevations up to 340 m, but it, or something very similar to it, was collected from Burao at 1067 m by Capt. F.E. Peck in 1941.

I asked Ahmed Saed, a veterinary practitioner in Burao interested in plants, about the species using the Somali name and he said he knew it and would be happy to help me find it. Then Ahmed Awale (SBF) pointed out a potential problem: another species, *Iphionopsis rotundifolia*, has very similar sounding Somali names: “Gedgebot”, “Gogobo”, and “Gugabod”, Ahmed suggested I try to find and make specimens of both species so they could be identified by experts. This would ensure my findings were associated with the correct species.

Other people added more information. Mutuku Musili, Head of Botany at Nairobi National Museum sent an [image of a specimen of *Vernonia mogadoxensis*](#) from southern Somalia. Helen Pickering sent images of the Peck specimen and put me in touch with Henk Beentje, author of the treatment in the Flora. Henk replied, commenting that the two species are so similar he was not surprised they have the same vernacular names and Herbarium specimen from Nairobi added another way to tell the two apart: “The style in *Vernonia* should be narrow and almost upright, tapering to the tips; ... in *Iphionopsis* the style arms should be much more spreading ... and get a bit wider towards the tips”.

Equipped with all this information and collecting tools, I joined Ahmed Saed in May to search for the two species

around Burao. We found one population of plants not in flower and another that was. Because it is almost impossible to identify plants without flowers, we only collected and imaged the flowering plants.

Looking at the styles, it seems more likely they belong to *Iphionopsis rotundifolia* than *Vernonia mogadoxensis*. This is not surprising. *Iphionopsis rotundifolia* is more widespread than *V. mogadoxensis* and is known to grow at elevations of 60-1050 m. Another possibility is that they belong to neither of these two species. The specimen

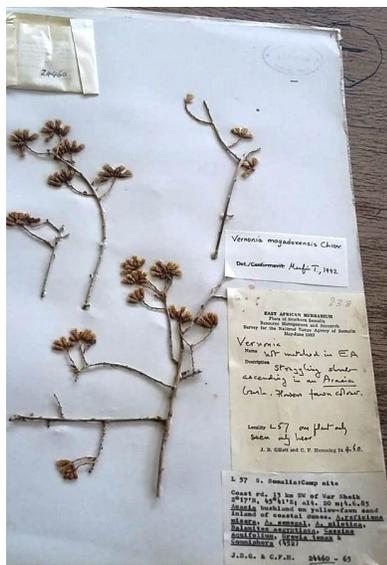


will make it possible to be sure. Flowering head of plant The non-flowering plants may be collected near Burao. *Vernonia mogadoxensis*, but we need flowering material to be sure. We are looking forward to finding out what experts on the group think.

Ahmed Awale also noticed that the Peck specimen has a note suggesting it be compared with another specimen, Barbier 1052, collected in Alula near Cape Guardafui, Puntland. This seems a more likely location for *V. mogadoxensis* than Burao, so now there is another specimen to re-examine and population to find.

What next? *Vernonia mogadoxensis* was the focus of my master’s thesis but, because it and *Iphionopsis rotundifolia* are used in the same way in veterinary medicine, I shall investigate the species growing at Burao. My goal is to find an inexpensive and ecologically sustainable treatment for camel and goat mange. Using plant roots is likely to lead to loss of local populations. Harvesting leaves would cause less harm and might make it worth cultivating the species. If only roots are effective, then we need to learn how much root mass can be removed without killing a plant. In either case, we need to know the identity of the plants that are effective so the information can benefit people throughout the region. That is why the first step in my research was to borrow collecting equipment.

I thank all those who are helping with this aspect of my research.



Finding *Aloe parvidens*

Mary E. Barkworth

The East African Herbarium of National Museums, Kenya has many specimens collected in Somaliland when it was a British Protectorate. One caught Faisal's eye because he knew the collecting locality, "Raybadka, south of Hargeisa". The specimen, identified as *Aloe pirottae*, had been collected on October 19, 1954. We consulted the *Flora of Somalia* and discovered that the plants growing in Somaliland are now known as *Aloe parvidens*. *Aloe pirottae* is a larger plant with longer teeth (3.5-5 mm versus 1-2.5 mm) that suckers more profusely and is known only from Ethiopia and northern Kenya

On March 4 2019, Faisal land I went to see if we could find *Aloe parvidens*. We did! The plants were not looking happy, but they were alive, a major achievement given the severe droughts that the area has experienced in the last few years. A walk around revealed that several plants were present.



Aloe parvidens growing in the protection of a shrub.

All were growing under or surrounded by heavily browsed, woody plants. The leaves were brown with lots of large white markings and short, sharp, white teeth on the margins.

We asked the local people about the plants, but they do not consider it of interest, telling Faisal that their animals do not eat it. Its restriction to localities protected by woody plants is, therefore, probably because such areas protect it from trampling rather than from being eaten.

Because several plants were present, we dug up two, one



Aloe parvidens showing underground stem. Imaged 2019-Apr-05

for growing outside the Biodiversity Museum, the other for the Ministry of Environment and Rural Development. Doing so revealed that this *Aloe*, which appears stemless, has a stem but it is mostly below ground.

On May 27, the plant outside the Museum was getting ready to flower. Unlike plants in the wild, it has been regularly watered.

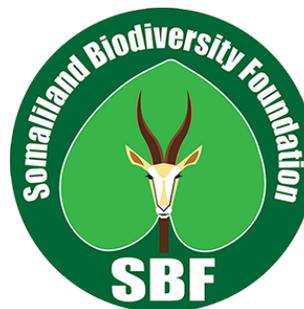
We shall be recording the development of the plant via images, making them available on OpenHerbarium.org with the image date as the caption. This is one way we shall be using the garden to build knowledge of Somaliland's plants.



Aloe parvidens outside the museum getting ready to flower.

Pachnoda iskuulka (continued)

It was usually found in feeding on flowers in the tops of mature acacia trees, arriving around 11 in the morning. Kral and his colleagues stated that at night and before it warms up in the morning, the beetles are probably hidden on the ground, either under vegetation or in the soil. It was usually found with another scarab species, *Rhabdotis gemelli*.



To donate to the Foundation, go to its web site: [Somaliland BioDiversity.org](http://SomalilandBioDiversity.org). To offer other assistance (establishing groups for bird watching, plant monitoring, weed removal; helping build our outreach), so to the site's [contact page](#).

Leucaena leucocephala (Xoolo-naaxiye)

Ahmed Ibrahim Awale



Illustration by [Francisco Manuel Blanco in Flora de Filipinas](#)

Leucaena leucocephala is a shrub or tree that grows to be 2-10 m tall. It was introduced to Somaliland in the 1970s primarily as a forage tree but also as a windbreak. It is often hyped as a choice plant for fattening livestock. Its Somali name, 'Xoolo-naaxiye' which means "animal fattener" further contributes to its popularity.

Leucaena leucocephala has many immediate benefits. For example, it is a good nitrogen fixer and its produces high

protein fodder. Despite these positive attributes, it is considered one of the world's 100 worst weeds. It produces many seeds, resprouts after being cut down, secretes chemicals from its roots that prevent other species growing, and rapidly becomes established in drainage areas, both natural and along roadsides. Seeds are established by small animals such as birds as well as browsing animals. Once established, it forms dense stands that keep out other plants.

The species is listed as a noxious weed in Western Cape South Africa which means it is a prohibited species that must be controlled because it serves no economic purpose and possess characteristics that are harmful to humans, animals or the environment. In other parts of South Africa, it is considered a category 2 invader, that is a species with some desirable qualities that can be grown under certain controlled conditions.

Generally, the invasiveness of *Leucaena leucocephala* in Somaliland is checked by goats and other browsing animals. The problem is that, if the plant escapes into areas that are free from browsers, it can quickly become a problem which is very difficult to control.

The grounds of the University of Hargeisa provide strong evidence of the ability of *L. leucocephala* to become established if not grazed. Two years back, a few tortoises and a limited number of goats were allowed to browse the vegetation in the compound. Because *L. leucocephala* is very palatable the goats prevented any plants from growing to maturity but, with the removal of the goals, several plants have already grown to 3 m tall and are setting seed.



Faisal Jama Gelle



Faisal Jama Gelle

Leucaena leucophala on the grounds of the University of Hargeisa April 2019.

Research Visit to Nairobi National Museum

Faisal Jama Gelle



Nairobi National Museum is one of the oldest museums in eastern Africa. It was started in 1910 when members of the East Africa and Uganda Natural History Society wanted a place to store their specimens. It was moved to its present location on Museum Hill in 1930. It has been renovated many times, since then most recently in 2005.



Specimen cabinets, East African Herbarium

The East Africa Herbarium, which is now part of the Nairobi National Museum, is even older, having been started in 1902. This makes it one of the oldest herbaria in Africa. It also houses the largest botanical collection in tropical Africa, having more than 700,000 specimens and accompanying field notes plus a library that is rich in regional resources.

Its extensive resources make the East Africa Herbarium a national and regional research centre for botanists and plant ecologists. Among its specimens are many from Somaliland, mostly collected when Somaliland was still a British protectorate or shortly after independence from British rule.

In November 2018, Mary Barkworth and Faisal Gelle visited the East Africa Herbarium in connection with research on the Somali Red Aloe (*Dacar Cas*). The purpose of their visit

was to see whether the species had already been named. To do this, they looked at each of the few hundred Aloe specimens in the herbarium to see if any might be the same species. There were none. This, added to their inability to find any matches among the over [640 online images](#) from the Royal Botanic Gardens Kew, the over 200 specimens in the Missouri Botanical Garden, and the more than 500 descriptions in *Aloes: the definitive guide* (Carter et al. 2011) enabled them to convince reviewers of the manuscript prepared by [Barkworth, Awale, and Gelle \(2019\)](#) formally naming the Somali Red Aloe that it deserved recognition as a new species.

While there, Barkworth and Gelle were impressed by the warmth of their welcome and agreed to build a closer collaboration with EA. In particular, they made plans for Gelle to complete a 3 month internship at EA in 2019. They also presented the herbarium with a copy of "Introduction to plants in Central Somaliland by Helen Pickering and Ahmed Awale.



Faisal with member of the East Africa Herbarium. From left to right, Kennedy Matheka, Judith Nyamai, Dr. Mutuku Musili, and Faisal Jama Gelle.



News from the Foundation



Major Grant from the [Aromatic Plant Research Center](#)

In May, The Somaliland Biodiversity Foundation received a \$27,000 grant from the Aromatic Plant Research Center for promoting awareness of the ecological and biological importance of frankincense and promoting its sustainable use. The Foundation will work with Anjanette DeCarlo, director of the Cal Madow Project, and her associates in developing resources and training sessions that will engage Somalis with the species involved.

Closer collaboration with the Ministry of the Environment and Rural Development

This spring Minister Shukri, Minister, of Environment and Rural Development and an SBF board member visited the museum. She asked many insightful questions about the museum's activities and displays.



Minister Shukri visits the museum to learn more about its activities.

The next day, Mary and Faisal met with her and members of the ministry's Dept. of Forestry and Range to discuss increasing collaboration between the Foundation and the Ministry. All agreed to work together more closely in future. This result in the museum benefitting more from the knowledge of the Ministry's staff and, in turn, supporting the ministry with collection of specimens, sharing of biodiversity data, and joint development of pamphlets in English and Somali on Somaliland's plants and animals.

Becoming a Data Provider to the [Global Biodiversity Information Facility](#)

The museum's herbarium (HARG) now provides data from its specimen records to the Global Biodiversity Information Facility (GBIF), a facility makes data from institutions and organizations around the world freely

available for researchers throughout the world. HARG is the first herbarium from eastern Africa to share its information with GBIF.

Collection development

The University of Hargeisa Biodiversity Museum now houses holotypes of two species, both described in 2019: *Aloe sanguinalis*, known locally as Dacar Cas and *Boswellia occulta*, known locally as Mohor Madow. They are the first two holotypes to be housed in Somaliland.

Holotypes are particularly important herbarium specimens because they fix the meaning of a name. There may be many specimens of a species, but there is only one holotype.

The succulent garden now has about 30 different species. One reason for the succulent garden is to learn more about the biology of the species involved.



Two plants, both *Edithcolea grandis* with 1 bud and 1 members of the flower in the Succulent Garden. *Apocynaceae*, were in flower in late February, *Edithcolea grandis* and *Echidnopsis dammanniana*. Neither set seed, indicating they need pollinators before they can do so.

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