

A-HERPING IN TANZANIA, BUT HARDLY IN LOVERIDGE'S FOOTSTEPS

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In another article, Cranbrook & Lambert (1983) have considered the merits of undertaking herpetological work in tropical, especially (in relation to the U.K.) Commonwealth countries. Arthur Loveridge (1891-1980) is someone who has!

Arthur Loveridge was truly a herpetological pioneer in what was East Africa. His life's work is considered by Ernest Williams (1982), his successor at the Herpetology Department in the Museum of Comparative Zoology (MCZ), Harvard University, Cambridge, Massachusetts; while his bibliography was published during his life time by the Harvard University Press in four parts (1913-36, 1933-44, 1944-50 and 1951-58). Born in Penarth, South Glamorgan, the son of a family businessman in ship furnishing, he was accepted for the post of Curator at the then British East African Museum (the forbear of the present National Museums of Kenya) and arrived in Nairobi in 1914. He first started writing on the herpetofauna of East Africa in 1916 in the *Journal of the East Africa & Uganda Natural History Society*. Soon after his arrival, the First World War cast its shadow over East Africa and Loveridge joined the East African Mounted Rifles. During his period of active service, one particular moment of danger in German East Africa was remembered by the capture of the rare Usambara bluish-grey caecilian, *Boulengerula boulengeri*. When 'digging-in' under unpleasant shell-fire, one of his fellow-troopers unearthed this subterranean species, which Loveridge gladly took charge of before the trooper heeded his threat to run his bayonet through 'the snake'. His same devotion to the cause obliged him first to pester his sergeant and then the General in the midst of his staff for permission to obtain bottles of pickled snakes from an abandoned house in what soon was to become Tanganyika (now Tanzania). He got the snakes! Loveridge was then invited in 1924 to the U.S.A. by Thomas Barbour, Director of MCZ (The Agassiz Museum) at Harvard University. Besides taking his East African collection with him, he became Curator of the herpetological collection, completely reorganising it, and remained at Harvard until retirement in 1957. During this period, he made further collecting expeditions to Africa in 1925-26, 1928-29, 1933-34 and 1938-39, writing highly entertaining accounts of his experiences in four books of more popular appeal during the academically slack World War II years: 'Many happy days I've squandered' (1944), 'Tomorrow's a holiday' (1947), 'I drank the Zambesi' (1953) and 'Forest Safari' (1956). Immediately after his retirement, he left Cambridge, Mass., and with his wife made his retirement home at Varney's on the island of St. Helena in the South Atlantic: Africa was no longer the Africa he knew and loved!

Although perhaps of another generation, punctilious and a fanatic for neatness, Loveridge was pre-eminently a Curator-Collector-Naturalist, not an academic; always British, despite 33 years in New England, and a son of the Empire. Besides articles and letters in newspapers, including fifty in the *East African Standard* in the early 20s, Loveridge published over 275 works, including several editions of his popular books, between the years 1913 and 1958.

HERPETOFAUNA OF EAST AFRICA

Loveridge (1957) recognised 527 species and races of herpetofauna (169 amphibia, 358 reptiles) in what was East Africa (Kenya, Uganda and Tanzania, including Zanzibar). In more recent times, Schiøtz (1975) lists 87 forms of treefrogs in eastern Africa (including Malawi and Zambia); with revisions of the Typhlopidae by Roux-Estève (1974), Spawls (1978) lists some 106 forms of 46 genera of snakes for Kenya alone and Duff Mackay (1980) in an unpublished conservation report for Kenya includes 97 species and subspecies of amphibia. North of the Kenyan border, Lanza (1984) has just produced a check list for Somalia (a photocopy of the proofs only seen to date) which includes 27 species of amphibia (four endemic) and not less than 201 species of reptiles (75 endemic).

TANZANIA

Although not my first visit to Tanzania (previous visits in 1970, a week; 1978, four months; 1981, a week, and 1982, two weeks), my work for the Tropical Development and Research Institute (until 1st April 1983, Centre for Overseas Pest Research), London, involved in this instance two training courses over the period 26th October to 2nd November 1983 in Morogoro (about 196 km WSW of Dar es Salaam). Since Tanzania is a tropical country and an independent member of the Commonwealth, the opportunity was taken to consider the herpetofauna there.

Departing for Nairobi on 19th October, I continued via Kigali in Rwanda (renowned for the forest gorillas) to Dar es Salaam on 22nd October. The short rains had scarcely started and the normally hot humidity of the coast was relatively tempered by cool breezes of the South-East Trade Winds at this time of year. The Bahari Beach Hotel about 20 km north of the town and fringing the Indian Ocean normally provides a pleasant stay and one's first sighting of herpetofauna — this time a small house gecko in the bathroom!, probably *Hemidactylus mabouia*, a species separated from *H. platycephalus* by Broadley (1977), which ranges south of the Sahara Desert from Somalia to South Africa, and a half-grown individual of the common African toad, *Bufo regularis* s.l., on the path outside a rondavel. Next morning (23rd October) with bright sunshine, little grey-bodied day geckos were basking on the trunks of pruned bougainvillea bushes in the landscaped gardens outside, probably *Lygodactylus picturatus* — the yellow-headed dwarf gecko, a specimen of which was caught later in the garden of the New Savoy Hotel in Morogoro (BM. 83. 1078).

But these are widespread species. I hoped to collect above the 2000m line in the Uluguru Mountains behind (SE. of) Morogoro, in particular in the Bondwa Forest, where many endemic species occur, including small frogs of the genus *Nectophrynoides*, which Miss A.G.C. Grandison (e.g. Grandison, 1978) of the BM(NH)'s Amphibian Section was keen to acquire.

Permits: Before contemplating the collection of species in Tanzania, especially rare or endemic ones, a permit is required, normally obtainable by writing in advance of a visit to: The Director of Wildlife, Ministry of Natural Resources and Tourism, Tancot House, P.O. Box 1994, Dar es Salaam; telephone Dar es Salaam (the code from London being 010 255 51) 27811-14. A Trophy Export Certificate, costing 2 Tanzanian Shillings (about 1 lp), is then issued, upon showing the specimens collected before departure from the country, in line with species protection under the Convention on International Trade in Endangered Species of Fauna and Flora (C.I.T.E.S.) of which Tanzania is a signatory. The permit is given with the proviso that the number of specimens, a list of species determinations and reprints of any scientific papers published on the collection are later sent to the Director of Wildlife. For the Uluguru Mountains, a further permit is required to visit the area behind the Radio Tower, which includes the Bondwa Forest, since this is an area of military significance, and is available from the Post Office in Morogoro. Finally, to enter the Bondwa Forest itself and collect biological material, a further permit is required from the Regional Agriculture and Development Officer (R.A.D.O.), Ministry of Agriculture, P.O. Box 88, Morogoro. Without these permits, collecting in the Ulugurus is not allowed.

At Morogoro: Meeting up with three colleagues, who had flown from Nairobi's Wilson Airport in a Beaver aircraft of the Desert Locust Control Organization for eastern Africa, we drove by Land Rover inland from Dar es Salaam along the first part of the American-built, tarmac, Dar es Salaam — Lusaka (Zambia) Highway as far as Morogoro. We travelled through grey-green savanna scrubland on lateritic soil interrupted by reddening tracts of *Brachystegia* bushes.

Upon arrival at the old, pre-war built, corrugated iron roofed, former colonial, railway hotel in Morogoro, the New Savoy Hotel!, a further colleague met us. Dr Peter Merrett was an entomologist based with the Ilonga Research Station near Kilosa. He immediately brought out of the back of his Land Rover a cardboard box with a range of containers inside, each with a snake bathed in 5% formalin solution crammed inside. This miscellaneous collection totalled seven specimens (one fresh!), five from inside buildings which had been killed by local people or found dead on the tracks of the Ilonga Research Station. All the species are described in V.F.M. FitzSimons's (1980) *A field guide to the snakes of southern Africa*, and included a large specimen (BM.83.1087) of the eastern subspecies of the stripe-bellied sand snake, *Psammophis subtaeniatus orientalis*, which as its name implies is characterised by a black line or stripe along either side of the body. Although this specimen was caught inside laboratory, it is normally found in dry open bush country, seeking refuge among the branches of the nearest bush or tree.

It is frequently confused with the olive grass snake, *Psammophis sibilans*, a small specimen of which, in poor condition, (BM.83.1086) was also included with the collection. *Psammophis* is a genus of back-fanged Colubrids (Boiginae), and *P. sibilans* can be bad-tempered when caught (also known as the hissing snake), inflicting quite a serious bite, the venom of which, although seldom fatal, can induce unpleasant and painful symptoms such as nausea and cold-sweats for some days afterwards. Feeding mainly on small mammals and lizards, itself often falling prey to predatory birds and other snakes such as cobras, it ranges widely in Africa and is found as far north as Cairo in Egypt where it inhabits gardens and has been given the name African Beauty Snake. The "fresh" snake which was found dead on the road by Emmanuel Church in Bomo Road, Morogoro, together with a small, thin, preserved specimen from Ilonga (BM.83.1083), were of the non-poisonous colubrid, *Philothamnus semivariatus*, the Spotted Wood Snake. The fresh specimen (BM.83.1084) was still bright green with dark specks on the front part of the body. It is an arboreal species, easily negotiating upright tree-trunks with the aid of strongly keeled and notched ventral and subcaudal scales, and averages 90-105cm (maximum 120-140cm) in length. It is often found far from water, moving across the ground by keeping the head well raised and feeding mainly on tree lizards such as geckos, chameleons and tree frogs. Of the other snake specimens from Ilonga, one included the savanna White-Lipped Snake, *Crotaphopeltis hotamboeia* (BM.83.1085), with flattened, short, broad head and rounded snout giving it an adder-like appearance. It is found at altitudes of up to 2000m. Largely nocturnal, the species prefers damp locations and is thus often found in gardens. Despite initial ferocity, as another back-fanged boigine, the effect of the venom being mild and certainly not dangerous, it becomes tame in captivity and accepts food (preferring frogs and toads, but also taking lizards and rodents) from the hand. The other Ilonga snake was the Snouted Night Adder, *Causus defilippii* (BM.83.1089), which as its name suggests is a front-fanged snake (F. Viperidae). A smaller, stumper snake, it has a somewhat up-turned snout distinguishing it from the common Rhombic Night Adder, *C. rhombeatus*. The rather smooth, shiny skin is grey to mauve-brown dorsally, with a darker middorsal stripe and well defined dark V-shaped marking on the back of the head. It scarcely extends further north than Tanzania in southern eastern Africa, although extending as far north as Malindi in coastal Kenya, but rare, and averages only 30-40cm (maximum 45cm) in length with a very short tail. Finally, of Peter Merrett's collection was a Common or Eastern Tiger Snake, *Telescopus semiannulatus* (BM.83.1088), occurring from the northern part of South Africa to Congo and Kenya, which was found dead outside Pugu Secondary School, near Kisarawe (19 km WSW. of Dar es Salaam). The body is yellowish with large dark transverse bands. As another boigine, although rather slow-moving, it can, like *C. hotamboeia*, be irascible when disturbed. Mainly nocturnal, its main diet is geckos and other lizards, and, sometimes found up trees, will rob birds' nests of nestlings and eggs.

Upon opening his suitcase, which I had taken to Dar es Salaam for one of my Nairobi colleagues, a tiny worm snake of only 68mm long and 2mm thick emerged! This later proved to be Jan's all-black Worm Snake, or the appropriately named Bootlace or Thread Snake, *Leptotyphlops conjuncta* (BM.83.1082). It does not grow to more than 18cm long and ranges from Uganda to South Africa.

Later in the evening of 25th October, a veritable family of *Hemidactylus mabouia* promptly scattered on the black-painted walls of the communal shower room, some deftly (and helpfully!) picking off settled mosquitoes, and fluttering moths and other *dudus* around the naked light bulb above the veranda. Later an adult *Bufo regularis* s.l. slowly crawled across the hotel bar patio. Next day, basking in the late afternoon sun, an adult of probably the common Two-Striped Skink, *Mabuya striata*, scuttled into a crack in the hotel wall; on 28th October after an evening's rain two days later, another adult and juvenile were seen plying the edge of a flower bed beneath the low-clipped hedge of bougainvillea in front of the hotel while we waited in the early morning sun for transport to the Centre for Continuing Education of the University of Dar es Salaam Faculty of Agriculture, Forestry and Veterinary Science.

Morogoro and the Ulugurus: From the University Campus at the foot of the Uluguru Mountains, one could only see the whole of this northern part of the range on clear days for normally the peaks are cloud covered. The Ulugurus rise to 2138m (Lupanga) in the better known north and to 2646m (Kimhandu) in the south. Loveridge collected from the Ulugurus twice; the first time from around Government House, Morogoro (now the Rest House) in 1918 up to 3000 feet (914m) and the second in October 1926 in and at the edge of the rain forest which was still there then at 3000 to 8000 feet (2438m) (Barbour & Loveridge, 1928). This was in order to determine to

what extent the Uluguru rain forest species were related to the Usambara Mountains around Lushoto some 210km to the NNE, and separated by lowland savanna with only a small connecting link of the Nguru Mountains between. The Ulugurus also support forms linking them with the Nyika Plateau in Malawi farther south with only the Poroto Mountains forming a possible connecting link. The fauna of the Usambaras was rather better known than the Ulugurus at that time for during German colonial days from the 1890s to World War I, there was a railway link with Tanga on the coast, and it was customary for residents there to seek the cool of the mountains for vacations and to recuperate. While doing so, specimens of amphibia, reptiles and other fauna were collected. Morogoro, being further from the coast, meant that the Ulugurus were less accessible. Loveridge, accompanied by his wife, also collected topotypic material from the Usambaras in November and December 1926 after visiting the Ulugurus.

Before departing from Tanzania, through an introduction of a colleague at TDRI, I wrote to Dr Sam R. Telford of the Denmark/Tanzania Rodent Control Project, an American herpetologist from Florida with a special interest in tropical lizards, enquiring whether he would be interested in collecting in the Bondwa Peak Forest in the Ulugurus. Sam Telford had been based at Morogoro for over two years, living on the University Campus, and had often collected in the Ulugurus before. Meeting up at his house, he agreed to get the necessary permits from the Post Office and Ministry of Agriculture. Regrettably, Dr Kim M. Howell of the Department of Zoology, University of Dar es Salaam, who has taken an interest in the Tanzanian herpetofauna, could not join us. Unfortunately, due to what we discovered later was an error in protocol (sometimes difficult for foreigners and other Commonwealth citizens to appreciate fully), we were only able to obtain a permit to go to the area behind the Radio Tower on the Bondwa Peak, but not to enter the forest where we wished to collect. We therefore decided, at Sam Telford's suggestion, to visit the virgin lowland Kimboza Forest, below Kibungu village (1km E. of the Ruvu River), to the east of the Ulugurus on Sunday, 30th October. Loveridge had not collected in this forest during his extensive visit to the Ulugurus in 1926.

On the Saturday before, although the weather was somewhat cloudy with sunny intervals having rained in the morning and the day before, we drove past the Regional Agriculture and Development Office near the Morogoro Cemetery (one maintained by the Commonwealth War Graves Commission, in memory of German and Commonwealth dead during a skirmish in Morogoro in 1916) — *Mabuya striata* were running over the tomb stones — and up the Morningside Trail to the Rock Garden, which had originally been constructed by the Germans and recently renovated by Japanese volunteers. After seeing no more than two half-grown *M. striata* and walking the 3 or 4km back to town with a grasshopper-collecting colleague, two reptile specimens were actually collected. First a *Hemidactylus platycephalus* (BM.83.1077) and then a Mozambique agama, *Agama mossambica* (BM.83.1080), both being very common species and both on trees by the side of the road, the agamid (snout-vent length 85mm) being caught where it sought refuge in a hole at the trunk base. With so many domestic and feral animals near the town, it was not surprising that no more reptiles were seen! The next day at the Kimboza Forest was a different matter.

The Kimboza Forest: Sam Telford picked us up in his Land Rover sharp at the pre-arranged time of 8.00 am. The sun in a completely clear sky was brilliant. After about an hour's drive over a reasonably even dirt road through a much cultivated area, we started to travel through the secondary forest/savanna mosaic so typical of the region. As we passed near some curious rock formations, we observed about 100m to our left two baboons eyeing us as they sunned themselves on a part vegetated rock. Shortly after, we went through the village of Mkuyni, where the Sunday market was in full sway with piles of bananas, paw-paw, pineapples and other fruits and vegetables for sale amongst the noisily chatting women in brightly coloured dresses and head scarves. At 9.15, we arrived at an open part of the Kimboza forest at an altitude of c. 300m. On the trunks of tall, white-barked trees, we saw from the road small lizards, pale-striped and blue-tinged, looking superficially like half-grown five-lined skinks, *Mabuya quinquetaeniata*, hunting in the sunshine on the trunks' surfaces. Sam informed us that they were gliding arboreal lizards, the eastern serrate-toad tree lizard, *Holaspis guentheri laevis*, a recording about which he intends to publish separately. Loveridge only collected this species in the Usambara Mountains in November 1926. Sam attempted to noose a specimen (Plate 1) for collecting a blood sample to look for malarial parasites, but in the end (the lizards elusively scuttled up their trunks!) skilfully used an air gun to knock one down. This little lizard (BM.83.1081) bore side flaps on the body

and pale blue tail-plates to aid gliding; its s-v length was 43mm. Sam did, however, succeed in noosing an *Hemidactylus platycephalus* (BM.83.1076) (Plate 2) for a blood sample and also a gravid female *Agama mossambica*, which was reddish dorsally and of s-v length of 82mm (BM.83.1079). An adult *Mabuya striata* ran over the trunk base just by our feet, and on the lower part of the trunk of another tree on the other side of the road, a largish skink quietly basked and slowly slid out of sight upon our disturbance which could have been *Mabuya maculilabrus*, the speckle-lipped skink. Loveridge collected this species at Vituri in the Ulugurus on 30th October 1926, exactly 57 years before! The eastern spiny-tailed lizard, *Cordylus cordylus tropidosternum*, which can climb trees had also been seen here before by Sam Telford. Amongst the bushes and heavy growth of green ground vegetation, a little frog (s-v length 14mm) was jumping and with some difficulty was collected among the base of plants' stems. This proved to be a juvenile *Arthroleptis (Schoutedenella) ? sylvatica*, together with two more very small specimens of 14 and 15mm s-v length found by a small leaf-filled stream passing through *Pandanus* forest 500m away (BM.83.1072-74). Loveridge (1957) appears to have assigned this frog to *Arthroleptis xenodactylus*, having collected the latter in both the Ulugurus and Usambaras, September to December 1926. Before going to the *Pandanus* forest, we took a tiny mud-rutted track to the right about 50m along the road and penetrated deep into the Kimboza lowland rain forest (Plate 3). Sam tried unsuccessfully (difficult in thick undergrowth!) to noose another *Hemidactylus platycephalus* on the trunk of a huge tree. By the side of a large, dark-coloured rock formation deep amongst the tangle of undergrowth and forest trees, at the base of which several centimetres of damp, decaying leaves had accumulated, we missed three more tiny frogs. But as we stood up again, we found ourselves face to face with a largish rock balancing on an outcrop; on the underside, several eggs, presumably of some gecko species, were adhering (Plate 4). In an open part of the forest, I collected a pair of forest grasshoppers *in cop.* for my grasshopper-collecting colleague, and we returned through the near impenetrable tangle of bamboo-like vegetation, myself amazed at Sam Telford's sense of direction!, eventually reaching the track again. Upon return to the Land Rover, as fair exchange, my grasshopper-collecting colleague had two small frogs! One proved to be *Phrynobatrachus parvulus* (BM.83.1070) of 12mm s-v length and the other, rather larger specimen (s-v length 32mm) *Arthroleptis stenodactylus*, which is usually found in dry savanna, chiefly on the coastal plain in Kenya. Loveridge, the great taxonomic 'lumper' that he was, appears to have assigned *P. parvulus* to a subspecies of *P. ukingensis*. He had also collected *A. stenodactylus* in several localities in the Ulugurus in late September and October 1926. Finally of these forest frogs, a specimen of *Phrynobatrachus acridoides* (BM.83.1071) was caught by the *Pandanus* forest stream, a species with a huge range in Africa south of the Sahara and distinctly less interesting than the brilliant little turquoise-blue dwarf gecko, *Lygodactylus williamsi*. Hunting in the by now late morning sun, three of these small (s-v length c. 60mm) day geckos were seen from the road crawling along the ferociously thorned *Pandanus* fronds at the edge of the forest. Loveridge (1952) first reported this startlingly coloured gecko in Tanzania from a specimen sent to him and in his 1957 check list is given as only being known from the holotype. Sam Telford had only succeeded in collecting a few individuals (to be deposited later in the Florida State Museum, Gainesville) by cutting down *Pandanus* fronds the geckos had chosen to climb onto with a panga. It is quite endemic and only known from the Kimboza Forest in Tanzania. Also by the roadside, there were several quite large ranids basking which took great leaps into the tangle of drainage channel vegetation. They were probably savanna sharp-nosed frogs, *Rana oxyrhynchus*, or possibly the savanna stream dusky-throated frog, *Rana fuscigula chapini*, a specimen of which Loveridge collected at Mkuyuni at about the same altitude on 18th October 1926 only a few kilometres away.

Returning again to the Land Rover, we drove about a kilometre along the dirt road looking for a place to turn. Just as we had done so (by now it was after midday at 12.35) within sight of the Ruvu River below, a large Nile monitor lizard, *Varanus niloticus*, occurring over most of Africa south of the Sahara Desert, emerged from the roadside vegetation and apparently deliberately crossed the road in front of us before diving back into the undergrowth on the other side and entering the river with a loud splash. By 12.46 we were returning past the rock formations on which we had seen the baboons sitting in the morning and by 1.05 pm Mkuyuni village with its by now ebbing Sunday market. Two vervet monkeys leapt across the road in front of us — these monkeys also often entered the gardens of the houses on the University Campus in Morogoro — and nearly back at Morogoro at 1.45 pm, a brightly-coloured Kenya yellow-throated plate lizard, *Gerrhosaurus flavigularis fitzsimonsi*, with reddish dorsal scales ran across the road only

PLATE 1

Kimboza Forest, Tanzania. Sam Telford attempting to noose an arboreal lizard, *Holaspis guentheri laevis*, on the trunk of a tall white-barked tree in an open part of the forest.



PLATE 2

Hemidactylus platycephalus, a very common gecko of eastern Africa, successfully noosed in Kimboza Forest, Tanzania.



PLATE 3

Deep in Kimboza Forest, Tanzania. Sam Telford positioning himself to noose a gecko on the trunk of a large tree amidst the tangle of lowland tropical rainforest vegetation.



PLATE 4

Eggs of a forest gecko species beneath and adhering to the underside of rock perched on an outcrop deep in the Kimboza Forest, Tanzania.

10m in front of the Land Rover and into the scrub at the edge. By 2.00 pm, we were back at the New Savoy Hotel. It had been an enjoyable and interesting trip, well worthwhile even if only for the drive, let alone the herpetofauna!

Departure: Only in the morning before the day of our departure for Dar es Salaam and Nairobi, a little tree frog, *Hyperolius viridiflavus bitaeniatus*, with a s-v length of only 19mm and uniformly grey dorsally with reddish coloured limbs (BM.83.1075), was caught. It was basking in the sunshine on a leafy bush outside the building of the Centre for Continuing Education after much rain in the evening and night before. We finally departed from Morogoro on 3rd November.

Perspective:

No-one could have contributed more to our knowledge of the herpetofauna of East Africa than Arthur Loveridge. Still his 1957 check list is to all intents and purposes definitive. But there is still much work than can be carried out in Tanzania (and for that matter elsewhere in central Africa) while virgin forests still fortuitously remain, especially in inaccessible places which could still yield new species. Many of Loveridge's habitat localities no longer remain and to this extent his work is out of date, apart from some taxonomic revisions in light of further work by more recent authors.

It is of interest to compare the richness of this tropical herpetofauna with that of North America, as Loveridge (1957) himself does. Kenya, Uganda and Tanzania (with Zanzibar Island) — the East African Community no longer exists — occupy an area spanning the Equator of 1,761,099km². This total area according to Loveridge (based on the number in his check list), therefore yields one form for every 3342km². The area of North America (U.S.A. and Canada) is 17,398,521km², or about 9.87 times as big. Much of the area of Canada (9,570,540km²), of course, is tundra and an inhospitable environment for ectothermic herpetofauna. But if one consider the total numbers of forms of herpetofauna in North America to be about 768 i.e. one form for every 22,654km², then the herpetofauna of 'East Africa', on an area basis is about 6.78 times as rich! And North America has about 3.53 times as many species as Europe! Then by sheer numbers alone, there should be justification enough for funds to be made available for European and North American herpetologists to consider specialising in tropical forms in Africa and elsewhere more than is being done at present.

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