

1970 - 1979



***Vachellia (Acacia) tortilis* tree in acacia-commiphora bushland depleted by cutting, cultivation and overgrazing, Eastern Hiraan Region.**

Photo by Peter Kuchar

Curry-Lindahl, K 1972 *Ecological considerations on land use effects in two regions of Somalia*. Unesco Regional Rep. in Ecol. & Conserv., FR/RP/AFRICES/KENYA 3, Paris, 19p.

Field trip of <1 mo. A grave fault of this paper is its virtually total lack of references - I can't believe all this can be original data, though I have abstracted some of it. Evidently the author must have had access to older literature, and on the positive side, it is a compact, well written, informative overview of the basic ecology and problems of N and southernmost Somalia.

"On 1 July 1968, the Somali Government published a Manifesto on Conservation of Nature and Natural Resources. Its first two paragraphs read as follows:

'The Somali Government solemnly acknowledges that conservation of nature and natural resources and restoration of the original environment, where nature has been excessively altered, represents the fundamental basis for the consolidation and the harmonious development of Somalia.

The Somali Government, aware of the importance of these problems and of the urgent necessity of averting greater damage to the soil, flora and fauna pledges itself to intensify its efforts directed towards the conservation of nature, by introducing appropriate laws, establishing national parks and natural reserves and teaching conservation in schools.'

"The Manifesto expresses the same philosophy and approach as the African Convention on Nature and Natural Resources. It was greeted in the conservation world as a pioneering document and gave rise to great expectations for conservation of natural resources in Somalia."

N. Somalia has 4 major veg. typ

1. Lower coastal desert plain, dominant are grasses notably *Panicum turgidum* and *Lasiurus hirsutus*.
2. Upper coastal subdesert plain with shrubs, dominated by *Acacia* and *Commiphora*.
3. Dry acacia semi-desert steppe, with *A. etbaica* in the W part and *A. bussei* in the E part.
4. Mt or submontane evergreen vegetation, partly macchia type with shrubs and partly forest with juniper and Afr. olive.

All 4 have been or still are being destroyed by overgrazing, mostly by goat and cattle. Less than 100 yrs ago, the acacia steppe supported an extensive fauna of large and medium mammals. This type has suffered the greatest devastation, though the other 3 types are also suffering, essentially through overgrazing.

"The fertility of the plains from the coastal Berbera region to the upland Hargeisa region only about 60-100 years ago is testified by contemporary explorers and travellers. The 110 miles long stretch of land from Berbera to Hargeisa was a woodland savanna of park-like character with rich grasses under the trees. The mountain slopes and plateaux were covered by forests. Elephants occurred from the coast up to higher country. The woodland savanna and the mountain slopes also produced food and shelter to black rhinoceroses, wild asses and large antelopes such as Swayne's hartebeest, oryx, greater and lesser kudu, gerenuk, beira, three species of gazelles and others. These herbivores were controlled by lions, leopards and cheetahs.

"Only a portion of this fauna remains. Three species (elephants, black rhinoceros, hartebeest) have vanished completely from Northern Somalia and many of the others are going the same way.

"Hence, from a flourishing landscape functioning in an ecologically normal way, with continuous high productivity and well-balanced water and soil resources, man has dramatically

in 100 years of environmental misuse reduced fertile lands and waters to a ruin. And what is worse, he is continuing the destruction. The results are that formerly perennial rivers now are permanently dry, that the soils are eroded down to the bare rock, that the vegetation disappears and with it the wild animals, that local climate deteriorates. Northern Somalia is on the point of turning into a desert, where neither livestock nor man can live permanently."

Solution: "The number of livestock must be drastically reduced in order to correspond to the carrying capacity of the land." Recommends an ecol. survey to assess the productive potential of the veg. types, leading to a restoration plan and land use plan/policy. Stresses the potential value of game as protein source. "So far, the wild animals have been wrongly considered as waste. This has been an environmentally fatal mistake." [*but at least there have been hunters*]

Some of the N Somalia herbivores were independent of surface water or go long periods without drinking - oryx, gerenuk and several gazelles.

Lower Jubba: 4 major veg. types in the southernmost triangle [note that forest is not included]:

1. Mangrove.
2. Dunes with acacia & commiphora.
3. Dry bush with dense thickets & grassy glades with *Themeda triandra*[!]; some baobabs.
4. Open woodland, diverse habitats, predominantly acacia woodland, also scrub.

In the Lower Jubba, i.e. the southernmost triangle of Somalia (specifically Bubasci & Bel Gogani regions), still good densities of certain game, comparable to conservation areas of other E.Afr. countries; the case for elephant, warthog, gerenuk, giraffe 2 dikdiks (*Madoqua guentheri* & *M. kirki*). Other important herbivores are beisa oryx, Grant's gazelle, lesser kudu, waterbuck. Nevertheless, these represent only a fraction of the former populations and richness of only a few decades ago. Still present are black rhino, oribi, bushbuck, topi, hippo, buffalo, bush pig. A variety of predators. Several mammals exterminated in recent times: common zebra, Grevy zebra, Hunter's antelope. Not clear why these three have gone. Some reasons suggested: bush encroachment, competition with stock, hunting pressure. Notes that shyness of current fauna an indicator of continuing persecution. Several time emphasizes that game do not deteriorate the resource.

Suggests tourism, game hunting and cropping as major uses of the game resource. "The value of the wild animal resources as an important economic part of land productivity in Somalia must be realistically recognized. This resource has so far been underestimated, particularly in arid regions."

"To sink boreholes and build dams in order to increase the water supply or to provide water-points in places where no permanent surface water exists are only short-term solutions which do not solve environmental problems but usually aggravate them by encouraging animals and people to remain in an area longer than the pastures can maintain them without serious

deterioration. Therefore, artificial water supply usually creates more long-term environmental problems than it solves."

Curry-Lindahl also wrote a 1974 paper (Conservation problems and progress in equatorial African countries. Envir. Conserv. 1: 111-122) with specific comments on various countries, mostly in terms of wildlife. Note his write-off of Somalia, that most of it is ALREADY desert. i.e. that desertification is really speeding along. He's an EXPERT: Senior Adviser, UNEP, and former UNESCO Expert in Ecology & Conservation for Africa, and IUCN rep. With these kind of credentials desertification should be stopped dead in its tracks.

Finzi, Alessandro & Patrizio Giulini 1975 *Le foraggiere della boscaglia della regione del Benadir (Somalia)*. Raccolta, composizione botanica e chimica. Rivista Agr. Subtrop. Trop. 69: 129-139.

Grasses are one of 3 important forage contributors (together with Commelinaceae and Convolvulaceae) in coastal bushed grasslands of Muqdisho area. Grass forage protein 12.7%, fibre 25%, EE 1.6%, ash 12.5%, Ca 0.78%, Mg 0.52%, P 0.15%. Grazed by stock or collected with the roots and fed fresh to cattle and sheep. Species mentioned: *Dichanthium foveolatum* (*Andropogon foveolatus*), *Cenchrus ciliaris*, *Cynodon dactylon*, *Dactyloctenium scindicum*(?) (*D. glaucophyllum*), *Urochloa rudis*? (*Panicum gorinii*), *P. regulare* (syn?), *Tetrapogon tenellus* (*T. macranthus*).

Monod, Théodore 1975 *Introduction*, p.99-183 in Théodore Monod, ed., Pastoralism in tropical Africa, XIIIth Int. Afr. Seminar, Niamey, Dec 1972, Int. African Institute, Oxford Univ. Press, London etc., 502p.

This English version has large blocs of quotes in untranslated French. Some citations not referenced. A lot of general observations, using the literature.

The idea of blaming pastoralists for desertification, e.g. "the nomad is not so much the 'son of the desert', but its father" (Reifenberg 1953). Overstocking of range and impact around WPs were the perceived wisdom vis-à-vis land deterioration and desertification. Some writers took it to an almost poetic extreme (pk), e.g. "Millions of square miles of country that at the beginning of this century were pristine forests or lush grasslands well populated by wild animals, have deteriorated to eroded wastes of bare red soil, infested by useless unpalatable scrub. Whole countries, such as Somalia, may be widely affected." (Brown 1971) My studies in central Somalia certainly failed to show this. Although perennial grasses had been eradicated in some areas, the excellent browse resource, and minimal erosion, demonstrated the durability of the range and inability of camel herders to ruin this resource.

The writer brings up further negative perceptions, e.g. "It is a well-known cliché of popular literature and journalism that the nomad is a plunderer and man of prey." The writer suggests that this originated in Europeans "instinctively and atavistically adopting a peasant mentality," and in their conclusions from observing the powerful position of nomads in W.Africa when colonialists arrived.

At least in W.Africa, the main problems of overstocking and overgrazing are more in perennial grassland and savanna than in desert, and due mostly to cattle. Cattle are not part of the livestock holdings of many pastoral societies in arid W & N Africa.

“The problem of motivating the pastoralist to sell his animals...is one of the keys, perhaps the main one, to all progress in the sphere of regional economic development.” (You mean of fiscal development from the standpoint of the state, not the pastoralist. This is precisely the attitude colonial and postcolonial governments and int’l development agencies and their theorists used for ‘developing’ pastoralists. They took it as a given that the ‘problem’ with pastoralists was their reluctance to part with their animals, hence a reluctance to enter into the national and global economy which is all about buying and selling. The entire rationale of many range development programs was to convince (or force?) pastoralists to sell animals, in effect creating a beef-production industry and never mind pastoralists’ beliefs, including their prime goal of herd size maximization. The aim of ‘development’ was to disabuse pastoralists of their ‘irrational’ stock-accumulating behavior.) Developers could not appreciate the rationality of traditional management as it was “outside the framework of a conventional commercial economy based on money.”

There are no hard and fast rules on transitions between pastoralism and agriculture. Some pastoralists may become cultivators without losing ethnic affiliation, others lose it (and some are merely pitied as poor because they have no animals). Historically some pastoralists have not only become cultivators but culturally assimilated, losing not just their animals but even their language (e.g. the Tchilowa Fulani of NE Niger).

Are some pastoralists intrinsically more difficult to develop or respond to administrative interventions than agriculturists or certain other pastoralists? "Not only is there a widespread popular belief that pastoralists constitute some sort of special problem of development, but even students of pastoralism often imply this." The writer doesn't see why they should be inherently less responsive to administrative interventions and suggests it's at least partly due to the bureaucratic nature of interventions and ignorance or misconceptions about pastoralists. I wouldn't go that far: clearly a mobile population is less amenable to social service delivery. I'm surprised that he doesn't mention perhaps the leading reason for 'developing' pastoralists, namely the aim of states to control them, politically and socially.

Sedentarization. Few states have been able to resist the temptation of sedentarizing their pastoralists, assisted or forced. Most African governments are dominated by the cultural values of the settled population and sometimes have a contempt for the 'primitive' and 'uncivilized' pastoralist; there is a desire to remove these communities because they are an embarrassment (Baker qb Monod). With the possible exceptions of Somalia, Niger and Mauretania, "African governments have explicit, stated national policies which are positively more or less hostile to pure or traditional pastoralism" (Jacobs qb Monod). Hence the overwhelming policy trend is commercial ranching: take land away from pastoralists so that sedentary populations can supposedly better exploit the land.

Bally PRO 1976 *Notes on the vegetation of Somalia*. Boissiera 24: 447-450.

“The Somali Democratic Republic extends over the greater part of the Horn of Africa. Today it consists of the former British and Italian Somaliland, but ethnologically French Somaliland, the Ethiopian Province of Ogaden and the North-Eastern Province of Kenya belong to it; ecologically too, for the entire region is one of low rainfall and is almost devoid of permanent watercourses. Only in the south two rivers, the Juba and the Webi Scebelli, springing from the Ethiopian Highlands, are more or less permanent; occasionally their beds are reduced to dry sandy lanes.” In the N, several low mt ranges, summit at 2700 m. To the E are several massifs. S of the N mts is a plateau generally at 500 m, with numerous minor & much eroded hills, some of pure gypsum.

The land in the S half uniform, rarely >300 m. “The two rivers which traverse it contribute little to the general aspect of the vegetation; both banks are fringed with a dense but very narrow belt of riverine vegetation, whose dominating tree is the Doum Palm, *Hyphaene*; immediately beyond this fringe one finds oneself in arid desert country.”

At intervals of up to 20 yrs, “the coast experiences mighty cyclones with heavy rainfall penetrating up to 80 km inland.” This gives a rich ephemeral vegetation but much damage through erosion especially where plant cover already largely removed.

In the arid Horn of Africa, “an extraordinarily varied and highly specialized xerophytic vegetation had come into being, able to withstand the long periods of drought and at the same time to support a rich and diversified fauna.”

“Until less than a hundred years ago the Somali countries were practically unknown to the West, and their inhabitants depended entirely on the very limited resources of their arid land, frequently plagued by droughts with ensuing famines. Blood-feuds and internal fighting took their toll too, to reduce the human population.”

“Reliable accounts by travellers at the turn of the century bear witness to the rich vegetation covering the hillsides; on few of the mountains forests still exist. The tree-studded plains were densely covered with grasses. They teemed with numerous herds of a great variety of wild game, including several endemic species, herbivores with their attendant predators and scavengers.”

“The Flora of the Horn of Africa is extremely rich in endemics, estimated by some botanists to be as high as 30% or even more.” Also, an important N-temperate element especially in the extreme N tip of the Horn, pointing to a closer pre-Rift connection with Eurasia. Also striking is the wealth of xerophytes, suggesting long arid eras.

“But while delicately adjusted to hold its own against the rigours of an arid climate, the plant-cover cannot withstand the sudden onslaught of today’s proliferation of man and his livestock.”

Few resources, especially lack of oil and other mineral resources; very limited potential for conventional crop production; irrigated floodplains with banana-export industry. Economy mostly based on livestock and byproducts. Fisheries a great unexploited potential: c2900 km of coastline.

Then, some discussion & promotion of yicib as a valuable resource (summarized in YICIB file).

Moggi, Guido 1976 *Aperçu sur la connaissance floristique d'Ethiopie et de Somalie en vue d'une nouvelle édition de la Carte du degré d'exploration floristique de l'Afrique*. Boissiera 24: 593-596.

In Cent Somalia, the only areas with a significant degree of botanical exploration have been (as of mid-1970s) the Shabelle River valley and environs, and inland from Hobyo and crossing in to the Ogaden. The map of degree of exploration shows the rest of Cent Somalia as a blank. (*And yet, despite the botanical activity along the Shabelle, many new species turned up over the next 15 years.*)

HTS 1977 *Inter-riverine agricultural study – final report*. Somali Democratic Rep. Settlement Devel. Agency, Hunting Tech. Services Ltd., UK, 231p.

The area between Shabelle and Juba rivers.

Rainfall is the principal limiting factor in agr devel in the inter-riverine region. Coastally (within 50-100 km), moist onshore winds produce the Haggai rains of May-July. Inland, 2 similar rainy seasons: Gu 35-45 days, Dayr 40-50 days; average 150-175 mm/season; in the E the Gu tends to be more reliable than the Dayr.

Generally, the Dayr rains are inadequate for cropping, and only 2 of 3 Gu rains are sufficient for viable crop production.

“To provide protection against the effects of the unreliable rainfall, there are close family ties between farmers and pastoralists, with pastoralism providing an alternative source of subsistence when low rainfall adversely affects crop production.”

In the Hiiraan section of the Shabelle River, most of the valley (1206 of 1434 ha within 30 km each side of the river [that's unrealistic, the escarpment is a lot closer than 30 km]) is in Land Class VI, meaning that it is unsuitable for irrigation and rainfed agr; none is in Class I and only 21 ha in Class II; most suffers from at least 1 and often 2+ significant deficiencies reducing yield – e.g. poor SM holding capy, impermeable layers, very low fertility, high erosion hazard, high salinity, high Na levels. (*But that hasn't stopped farmers from trying.*)

No less than 581 of 1434 ha are considered to have low potential for devel as rangeland because particularly susceptible to overgrazing and requiring frequent rest to avoid a decline in livestock CC [*by what criteria??*]. And 313 ha are classed as Class VIII, meaning unsuitable for range devel: “best set aside for wildlife [*what wildlife, dikdiks?*] or for grazing by migrant livestock.” High erosion hazard.

All of W Bulo Burte Dist (except river valley sections), being in the <450 mm rainfall area, is classified as unsuitable for agr except for a small fraction, for special mgmt systems. B/B apparently 336 mm, Beledweyne 225 mm. The highest regional rainfall is in Baidoa and Dinsor

at c550 mm, also high at Gelib 586 mm. Mog is given as 430 mm, but an area of >500 mm from Afgooye to Jowhar, thence declines northward.

Pratt, DJ & MD Gwynne, eds. 1977 *Rangeland management and ecology in East Africa*. Hodder & Stoughton, London, 310p.

Includes the familiar Pratt & Gwynne (P&G) vegetation classification system used in E Africa; also familiar is its predecessor (Pratt, DJ, PJ Greenway & MD Gwynne 1966 A classification of East African rangeland with an appendix on terminology. J. Appl. Ecol. 3: 369-382.) This is a physiognomic system, a straightforward hierarchical approach emphasizing structure. Vastly superior for our purposes (e.g. animal diet, timber and many other wood uses, ecological significance of cover, etc.) to the popular Z-M/B-B system which classifies on floristic criteria particularly presence/absence of indicator species. That keeps you in the dark as to the physical and dominance structure of the vegetation. Note the importance of the woody layer in the classification, in contrast to both traditional and recent range-leaning classifications in E Africa building on a perennial-grass foundation (e.g. Herlocker 1999). Such grass systems eschew the woody layer in favor of the herbaceous (and particularly grass) layer. One would think that a hybrid system combining woody and grass systems would be ideal but it would entail far too many categories to be practicable.

Here is the P&G system, slightly modified.

Physiognomic vegetation types of East Africa.

SYMBOL	NAME	CHARACTERISTICS OF WOODY LAYERS	WOODY COVER (%)

F	forest	multi-storied; interlaced upper canopy >7m	>80?
W	woodland	one distinct, not interlaced upper layer >7m; shrubs <10% of canopy cover	
			21-40
Wx	dense woodland	"	41-80
Wt	woodland thicket	"	>80
B	bushland	multi-storied, 2-10m, with trees + shrubs; Emergents may be higher	
			1-40

Bx	dense bushland	"	41-80
Bt	bushland thicket	"	>80
WB	woodland-bushland or combination of tree layer		21-40
or WS	woodland-shrubland and shrub understory		
WBx	dense woodland-bushland	"	41-80
or WSx	dense woodland-shrubland		
S	shrubland	shrubs 0.7-6m; trees <10% of canopy cover	21-40
Sx	dense shrubland	"	41-80
St	shrubland thicket	"	>80
WG	wooded grassland	trees >7m; shrubs <2% cover	5-20
BG	bushed grassland	multi-storied, trees + shrubs to 10m	5-20
WBG	wooded-bushed grassland	distinct tree and shrub layers	5-20
SG	shrub grassland	shrubs 0.7-6m	5-20
dS	dwarf shrubland	shrubs <0.7m	21-40
dSG	dwarf-shrub grassland	shrubs <0.7m	5-20
dSGx	dense dwarf shrubland	"	>40
G	grassland	-	-
SW	swamp	-	-

NOTES

1. In all mixed categories of woody + grass layers, grass cover must exceed 2%.
2. All % cover values refer to crown ("ecological") cover rather than vertical intercept ("true") cover.
3. Prefix "d" means a dwarf phase.

4. Suffix "x" means dense cover (41-80%).
5. Suffix "t" means very dense cover (>80%).
6. Alternatively, S 0.7-2m and >2m applicable to B

Babalola, O 1979 *Sand dune fixation project in the Democratic Republic of Somalia*. UNEP, Na 79-4413, Mogadishu and Nairobi, 54p. (abst in Bowen & Bird 1988)

Reviewed current methods of fixing dunes in Somalia. It was felt that *Opuntia*, *Euphorbia* and *Ipomoea* were non-productive and should be replaced by a grid system of *Commiphora* cuttings as windbreaks. These should be interplanted with trees e.g. *Casuarina equisetifolia*, various species of *Acacia*, *Atriplex*, *Prosopis* and other salt-tolerant genera. Grasses listed that are potentially useful.

CRDP No date. Information about Land Systems Units (L.S.U.). Based on RMR 1979 and published by Adult Education Unit, Central Rangelands Development Project, NRA, Mogadishu, 91 units.

Note that this is best seen in conjunction with a map of CR that delineates the units. Each unit is described by ecology (common trees, shrubs, herbs, degree of cropping), physiognomy (veg patterns, density, termitaria), physical (alt range, topography, drainage, soils and rocks, erosion, dunes).

I have only selected the units relevant to Hiiraan Region:

LSU 24 and 74 Haud type. The only 2 of the 91 LSU's delineated for Central Somalia that are reported to have yicib (RMR 1979), though they are among the largest. They occupy the plateau along the east side of Hiiraan Region. It begins above an Escarpment which is c20-25 km east of the Shabelle River and is mostly 40-50 km wide. Limestones demarcate it on the E side. At the NE end, c10% of the LSU is in Galguduud Region and a smaller area extends SE of Hiiraan Region into Central Shabelle Region. Topography is gentle W to E slopes with no microrelief, and toward the S end gentle SW to NE slopes. In the N the soil is red-brown compacted (and locally cemented) loamy sand with 2% lateritic deposits and 1-2% limestone exposures. In the S it is orange to pale orange silty sand, slightly compacted and not cemented toward the S end, and no limestone exposures. Erosion negligible, virtually no surface channels. The vegetation entails sparse to medium tree cover, predominantly acacias (*Vachellia*), medium to dense shrub cover particularly *Vachellia* and *Commiphora*, and sparse to medium herb and dwarf-shrub cover. More open grassland dominates the northernmost part of the units. Acacia-commiphora wooded grassland and dense shrubland [bushland] averages 55-70% cover [presumably this includes the herb layer, otherwise it is an overestimate].

LSU 25 S. (**Shabelle?**) Limestone 140-270 m. Extremely gentle NW/SE slope, limited microrelief. Massive & fragmented limestone 20-40%, the rest orange and pale-yellow sand. Medium density cropping. Medium to high density commiphora shrubland with scattered acacia trees, 60% cover. Note *Delonix baccal*.

LSU 33 Shebelle Gypsums. 160-270 m. Flat with gentle W to E slopes, gypsum exposed in linear depressions. Gypsum/anhydrites as stony fragments over 10-20% of surface; the rest is pale gypseous and pale brown clay loams. Cropping medium to high-density on pale brown alluviums. Complex mosaic of gypseous dwarf shrubland, sandy clay loams with dense commiphora shrubland, and gypseous shrub-herb, cover 35%. Includes *Euphorbia somalense*, *Pterodiscus ruspolii*, *Senra incana*, *Dactyloctenium scindicum*, *Cleome brachycarpa*, *Limonium distichum*, *Indigofera spiniflora*, *Chrysopogon aucheri*, *Sporobolus ruspolianus*, *Latipes*, *Enneapogon*.

LSU 58 Shebelle Limestone. 160-340 m. Very steep convex slopes at edges of northern plateau remnants. Massive limestones and stony hillslopes, only 5% pink soils washed downslope in sheet erosion. High-density acacia-commiphora bushland with scattered trees, 65% cover.

LSU 59 S.W. Arced Silts. 170-300 m. Gentle to medium slopes from W to E. Pale orange silty clay with compaction, and 15-20% stone mantles and limestone banding. Some gullies near hills (LSU 58). Moderate sheet erosion associated with veg arcs which are poorly defined and 10-15 m wide. Arced acacia-commiphora bushland, medium to dense.

LSU 67 Shebelle Mixed Limestones & Hard Escarpment. 250-450 m. Very broken edges of Haud plateau escarpment with steep slopes and less steep secondary colluvial terraces. A complex mixture of broken limestone escarpment and red lateritic surface, and orange and pale colluvial loamy sands. Sheet erosion evident. Medium to dense Commiphora bushland ['shrubby' as usual], 60% cover. Trees concentrated along drainage channels, shrubs [i.e. mostly bushland] concentrated on limestone, herbs densest on colluvial slopes & fans.

LSU 68 Shebelle Limestone. 180-350 m. Very steep edges of limestone plateaux, with secondary scarps. Massive limestone and fragments 90% cover, small patches of pale orange colluvial soils in the hills and more alluvium on secondary terraces. Sheet erosion. Steeper slopes have less soil but higher density of woody cover. Overall acacia-commiphora bushland, 70% cover.

LSU 69,70,83 Shebelle Pale Alluviums. 120-190 m. The river flows through the LSUs. Most surface is a mixture of pale grey, pale orange and dark brown alluvial & colluvial deposits; c5% mantle of limestone fragments & gravels. Almost all has been cropped. Veg is regenerating herb cover with scattered woody cover overall 40%. Commiphora spp, several acacias (mostly *Vachellia*), various other woody spp, grasses, forbs and succulents.

LSU 70 – see 69

LSU 74 – see 24

LSU 75 Shebelle Mixed Limestones & Hard Escarpment. 160-350 m. Same as LSU 67.

LSU 76 Shebelle Limestone. 160-320 m. Less steeply sloping edges of limestone plateaux with secondary scarps. Massive and fragmented limestones 80%, orange colluvial soils and lateritic pavement 20%. High density acacia-commiphora bushland with scattered trees and isolated thickets overall 80% cover. Steeper slopes with less soil but more woody cover.

LSU 77 Shebelle Gypseous Alluviums. 120-290 m. Gentle W to E slope, some microrelief. A complex of exposed gypsums/anhydrites (10%), brown gypseous clays (20%), limestone ridges & small hills (20-30%), & dark orange alluvial clays (40-50%). Veg a mix of saline gypseous grassland-forbland[?] with acacia-commiphora-euphorbia thickets, and dense Commiphora bushland with scattered thickets, 50% cover. Some notable spp mentioned: Acacia tortilis, A. mellifera, Salvadora persica, Suaeda micromeris, Limonium axillare, Senra incana, Urochondra setulosa, Dactyloctenium scindicum.

LSU 78 Shebelle Dark Alluviums. 130-240 m. Gentle W to E slopes, no microrelief but some surface channels at boundaries near limestone hills. Very dark brown clays, and 5% fragmented limestone. Almost all has been cropped. The veg is medium-density regenerating acacia-commiphora shrubland [or bushland?] in mosaic with low-density herb land (grassland); cover 50-60%. Note Terminalia orbicularis listed, also Acacia mellifera, A. seyal (listed for many LSUs but almost certainly all wrong).

LSU 79 Shebelle Limestone. 130-230 m. Steeply sloping edges of residual limestone plateaux with secondary scarps, also some colluvial soils. Fragmented limestone surfaces 60% cover, the rest orange sandy clay loam with many surface stones. Woody cover concentrated on limestone, more herbs on loams. Acacia-commiphora shrubland, 50% cover. Note mention of Lannea greenwayii, Sida ovata, Indigofera spinosa, Gossypium somalense, Aristida kelleri.

LSU 80 Transitional S Limestones, Cultivated Stabilized Sand Dunes. 115-160 m. Gentle W to E slopes with shallow depressions & ridges of limestone. Transitional between limestones with orange silty sands, pale old dune sands as 'tracks' over weathered limestone pavement – this is LSU 80. Medium-density acacia-commiphora bushland, Acacia tortilis common in tree layer, various woody spp in shrub layer.

LSU 81 Cultivated Stabilized Sand Dunes. 110-280 m. Very gentle slopes from S to N with distinct undulating microrelief. Very pale orange sand, and <1% limestone. Acacia-commiphora bushland, 65% cover.

LSU 83 – see 69

LSU 84 Uncultivated stabilized Sand Dunes. 130-240 m. General slope from E to W, stabilized dune undulations. Medium to dark orange sands. Dense acacia-commiphora bushland, 80% cover.

RMR 1979 *Central rangelands survey, 4 vols. Vol.1 Part 1. Static range resources and appendices.* NRA, Somali Democratic Rep. and Resource Management & Research, London UK. (By RM Watson, CI Tippet, JJ Beckett & V Scholes.)

Cordeauxia edulis Two spp or ssp grow in Land System Units 24 and 74 ('Haud') (RMR 1979). These are the only 2 of the 91 LSU's delineated for Central Somalia that are reported to have yicib, though they are among the largest. They occupy the plateau on the east side of Hiiraan Region. It begins above an Escarpment which is c20-25 km east of the Shabelle River and is mostly 40-50 km wide. Limestones demarcate it on the E side. At the NE end, c10% of the LSU

is in Galguduud Region and a smaller area extends SE of Hiiraan Region into Central Shabelle Region. Topography is gentle W to E slopes with no microrelief, and toward the S end gentle SW to NE slopes. In the N the soil is red-brown compacted (and locally cemented) loamy sand with 2% lateritic deposits and 1-2% limestone exposures. In the S it is orange to pale orange silty sand, slightly compacted and not cemented toward the S end, and no limestone exposures. Erosion negligible, virtually no surface channels. The vegetation entails sparse to medium tree cover, predominantly acacias (*Vachellia*), medium to dense shrub cover particularly *Vachellia* and *Commiphora*, and sparse to medium herb and dwarf-shrub cover. More open grassland dominates the northernmost part of the units. Acacia-commiphora wooded grassland and dense shrubland [bushland] averages 55-70% cover [presumably this includes the herb layer, otherwise it is an overestimate].

CF Hemming in 1972 prepared an ecological and grazing survey of Mudug Region (FAO WS/C9085 or UNDP AGP: DP/SOM/70/512). RMR (1979) referred to it as follows: "Hemming's impression that *Cordeauxia edulis* (Yicib) was becoming seriously reduced, and not regenerating seems unfounded. This potentially important plant is still abundant over a large area, and appreciable amounts of regeneration have been seen." It may be true that yicib is still abundant over a large part of eastern Hiiraan Region, but because Hemming was looking at Mudug Region (at that time Galguduud Region was included under Mudug), only a very small part of the distribution of yicib in Somalia came under his scrutiny and his comments on yicib may not be relevant for the bulk of its distribution as witnessed by RMR.

App. 1.03 is a list of collections by Gillett, Hemming & Watson. No Som names.