

1880's

James, FL 1888 *The unknown horn of Africa*. George Philip & Sons, London, 344p.

After 59 days reach the Webbe Shebeyli. It is some 800 ft below the stony plateau they have been traversing (thus likely in Ogaden). Each bank is “shaded by magnificent trees of vivid green with mast-like trunks.” They meet the Rer Hammer tribe, the first actually friendly tribe; they are darker, shorter and more heavily built...Lots of cultivation.

1900's

Peel, CVA 1900 *Somaliland*. F.E. Robinson, London, 345p.

Reaches the Shabelle, it's hidden from view by a dense forest of trees and palms. Steep rocky hills on both sides – this must be in Beledweyne Dist (or is it in Ogaden?).

Swayne, HGC 1903(1895) *Seventeen trips through Somaliland and a visit to Abyssinia*, 3rd ed. Rowland Ward, London, 385p.

The Haud is a great elevated interior plateau and wilderness in southern N Som, part of Ogaden and part of northern C Som. “The Somáli word *haud* is used to describe a peculiar kind of country, consisting of thick and sometimes impenetrable thorn-jungle, broken up by shallow watercourses, and generally having an undergrowth of *hig* or *dár* aloes [incl. *Sansevieria*]. The great waterless plateau generally called the Haud is really a district, and besides the variety of ground properly called *haud*, includes large strips of open, rolling grass plains called *ban*, or, to the south-east, semi-desert country called *aror*....In the wooded parts of the Haud dense thorn-jungles alternate with small glades of *durr*[*Schizachyrium kelleri*] grass six feet high, luxuriating in beautiful feathery clumps, with a level red soil.”

1910's

Drake-Brockman, Ralph E 1912 *British Somaliland*. Hurst & Blackett, London, 344p.

N Somalia has 3 regions, the Guban (‘burnt’) flat maritime plain (0-2500 ft), the Golis foothills and mountains (2500-6000 ft), and the great internal plateau known as Haud, Nogal Valley etc.

1930's

Collenette, CL 1931 *North-Eastern British Somaliland*. Kew Bul. (Bul. Misc. Info.) 1931: 401-414.

Botanist attached to boundary demarcation Commission.

Centrally in N Somalia, 3 units:

(1) Flat & narrow coastal plain on N side.

(2) The Al Hills, paralleling coast, 4000-7250 ft.

(3) Inland plateau, mainly 2000-3500 ft.

The higher N slopes of mts have much mist & cloud, and precipitation is a lot more too than the very arid coastal plain or the inland plateau which has very unreliable rainfall. Highest zone of mts, 4000-6250 ft (& down to 3000 ft on N slope), is an almost unbroken cover of *Buxus hild.*, comprising c90% of larger vegetation. However, the Surud Mts which are 200 km W have no *Buxus* but evergreen forest and *Dodonaea* scrub.

Plateau veg, with limestone rocky soils, has *Acacia* spp dominant, also grasses; commonest succulents *Aloe percrassa* & *Sarcostemma viminale*. On sandy soils *Acacia tortilis* is the only common tree, & largely confined to tugs as are the other plants. On the plateau, shoats & camel “undoubtedly affect the composition of the vegetation in the principal grazing areas, where edible species lead a much more precarious existence than those which are protected or poisonous.” Also, in times of drought lopping and bending of *Acacia* and other stems.

Locusts (*Schistocerca gregaria*) periodically swarm, and important effect on vegetation, especially phenology – by eating buds, it much diminishes the leafing of following season.

Using local informants, “It was found that dried or withered specimens were rarely recognised, and that information was only satisfactory when obtained with the aid of large fresh specimens and from the actual plant in the field.” Also, that plant names vary considerably. The names separate into 2 classes, the Darod tribes (Warsangeli, Mijertain, Dolbahanta etc.) and Ishaak (the W part of N Somalia). “The native Somali names which have hitherto been obtained by botanists [in Brit Som] are probably almost entirely Ishaak.”

Stafford, JH & CL Collenette 1931 *The Anglo-Italian Somaliland boundary*. Geog. J. 78(2): 102-121.

Has some excellent photos, incl a few vertical airphotos, showing the kind of product from the RAF-enabled survey of the border. Logistics of the survey w/ the Italian mission.

Sorl Haud is near the SE end of British Somaliland. It is a plateau sloping gently S for 100 miles till reaching the valley of the Nogal. S of Nogal is the Haud proper, also red soil like the Sorl and appears to be a continuation of the Sorl, with frequent limestone outcrops. Thick thornbush 10-15 ft high and sections of tall grass with scattered trees

“The Somalis are a nomad race...The men of certain tribes do emigrate, and are found in most parts of the world, but they all eventually find their way back to Somaliland and return to their karias and live the simple life again. Their main relaxation seems to be raiding the flocks of other tribes.” “The Somali is not a good motor driver; he cannot understand the use of gears or how to change down.”

Clifford, EHM 1936 *The British Somaliland-Ethiopian boundary*. Geog. J. 87: 289-307.

Paper proper to p302, the rest is discussion. RE Cheesman says the tribes in the region “are very savage; they do almost anything but eat you. They are not cannibals, but they must be carefully and tactfully handled.” Beeby Thompson, who was Advisor to the Ethiopian Gov on water development, says “It was a welcome surprise to discover that a large part of the Haud, which was believed to be waterless, is likely to yield important supplies of subsoil water...It will be possible to develop first-class water centres at many points, thereby diminishing the congestion of men and animals at a few places and lessening the evil of overgrazing.” *That’s ironic, untrue: in fact, water development would be the cause rather than cure to overgrazing. e.g. see Handulle & Gay 1987*

Turner, DP 1937 *Some notes on the game of the British Somaliland boundary*. J. Soc. Preserv. Fauna Emp. (ns) 31: 56-62.

Notes based on 7 mo travelling by lorry near the Somaliland-Ethiopian boundary.

Started at tri-junction of Italian & British Somaliland and Ethiopia. Densely bushed, very little grass.

W to Bohotle (Buhodle) on British Somaliland-Ethiopian boundary. Grey-red sand, mostly daremo (*Chrysopogon plumulosus* = *Andropogon aucherii*) which continues W, reaching some durr (*Andropogon kelleri*). Beyond, the Haud, red sand with *Acacia oerfota* (nubica). Both daremo and durr continue. The acacia becomes uncommon, replaced by tall thornbush like apple orchard, interspersed with big patches of durr. The red soil gives way to black cotton soil, and the Marar plateau and then a range of broken hills to the Djibuti boundary.

All the following antelopes and gazelle are able to do without water. Lesser kudu uncommon, oryx in small bands and may be common but prefer the bush and hence not easily seen. Swayne’s hartebeeste very rare, Soemmerring’s gazelle (Aoul) in large to vast herds, dibatag which prefer more open country than gerenuk which occurs everywhere except open plain, Speke’s gazelle (Dhero) generally common. Guenther’s dikdik local, Madoqua phillipsi common, likely a few *M. swaynei*. A few warthog, rhino tracks, lion everywhere, leopard, cheetah fairly common in the Haud, wild cat common everywhere. Both spotted and striped hyena common, in the Haud appear to follow native caravans if accompanied by stock; occasional man-eaters. Jackals of perhaps 3 species. Wild dog seen. Various game birds.

Ciferri, R 1939 *Le associazioni dellitorale marino della Somalia meridionale*. Riv. Bioi. Colon. 2 (1): 5-42.

These are notes from Moggi 1987: According to our observations (made in 1976, 1979 and 1982), the coastal situation at Merka and Mogadishu described by CIFERRI in 1939 has changed little and it remains quite different from that observed at SarUanle. The dune strip between Merka and Mogadishu is massive, both in height (dune up to 100-150 m high) and width (up to 2 km from the sea). For this reason the vegetation types take on a very distinctive physiognomy and occupy large areas. The pioneer vegetation strip as described by CIFERRI («vegetazione

dispiaggia arenosa») is quite similar to that which I observed at Sar Uanle. However, in the area I explored, some species mentioned by CIFERRI (like *Scaevola plumieri*, *Atriplex farinosa*, etc.) are completely absent or only sporadic. One of the species common to both is *Ipomoea pes-caprae*, a plant which is the most characteristic of this kind of beach. In the active dunes south of Merka *Scaevola plumieri* and *Calotropis procera* dominate. These species are totally absent in the dunes south of Kisimayu.

As for the vegetation on consolidated sand, CIFERRI distinguished between the semi-consolidated level sands and the consolidated dunes. In the first case he noted that the plant communities were characterized by the dominance of *Cyperus chordorhizus* with which *Heliotropium zeylanicum* var. *arenarium*, *Eragrostis ciliaris* var. *arabica*, *Blepharis persica* (*B. edulis*), etc. were associated. In particular, *Cyperus chordorhizus* was highly abundant (according to CIFERRI, in some cases it accounted for even 80-95% of the individual plants present), confirming its ubiquitous nature even on the beaches of Merka. A comparison with the data I have presented shows the differences in the vegetation of the two zones: the only common denominators are the psammophilous species with vast ecological significance like *Cyperus chordorhizus* and *Blepharis persica*. As for the latter, CIFERRI underlined its frequency where there was intensive grazing, thereby indicating its anthropogenic character. I cannot confirm this point as far as Sar Uanle and neighbouring areas are concerned. On the other hand, I believe that the remarkable diffusion of *Dactyloctenium aegyptium*, species absent on the coast of Merka and Mogadishu, must be attributed to human interference.

As regards the influence of man on the vegetation of the area, CIFERRI pointed out the importance of *Calotropis procera*. According to him, the diffusion of this species (often together with *Datura stramonium*) was certainly caused by human activity: the total absence of these species on the beaches I explored confirms the relative significance of man's influence, in particular, because of the few villages along the coast and the distances between them. Nowadays this influence is limited to a modification of the dynamism of the vegetation along the trails and in the areas where grazing is more intense.



Bushland degraded by over-browsing in eastern Hiraan. The green shrubs (*Cordeauxia edulis* - Yicib) have been heavily browsed. The other plants are mostly *Indigofera ruspolii*, which is both a highly valued forage and resistant to browsing. Thus it shows no signs of being hedged.

Photo: Peter Kuchar

1940's

Gillett, JB 1941 *The plant formations of western British Somaliland and the Harar Province of Abyssinia*. Kew Bul. (Bul. Misc. Info.) 1941: 37-75.

(the cmp file includes Hutchinson & Bruce p.76-199)

An excellent grasp of the vegetation, particularly considering how old this was. Jan Gillett could have made as good a plant ecologist as taxonomist.

A prose description of the veg of this region (NW Som), along with an incompletely filled map indicating the main formations sensu Clements (veg/habitat types) (7) in the regions explored (presumably). Note extension W on map to Dire Dawa. At the end, a list of the more important plants with vernacular names (though no mention of provenance). *I have done this list. It is all Ishaak.*

1. Subdesert.

Scattered dS's < 1/2m and tufted grasses; taller woody only by watercourses or where belowground water. CTs classified by soil. On eluvial soil dominants include *Aerva tomentosa*, *Jatropha glandulosa*, *Farsetia longisiliqua*. Graminoids include *Aristida* spp, *A. mutabilis*, *Enneapogon* 4665, *Cyperus conglomeratus*. On deep sands, almost pure stands of *Eragrostis hararensis* or *Panicum turgidum*. In slight depressions *Indigofera* spp, *Crotalaria* spp, *Tephrosia* spp and a few others. Main species of alluvial fans are *Balanites orbicularis*, *Maerua somalensis*, *Zygophyllum hildebrandtii*. Where groundwater more plentiful, *Acacia tortilis* is a main tree.

On deep moist coastal sand, *Sporobolus spicatus* and *Aeluropus lagopoides* form a close sward. On shallow sand scattered tufts of *Cyperus conglomeratus*.

Tugs in subdesert have *Tamarix nilotica* forming dense groves, *Pentatropis cynanchoides* where *Tamarix* groves are broken up by heavy grazing, *Calotropis procera* prominent, *Acacia tortilis* forms dense thickets with evergreen shrubs and creepers, *Sansevieria ehrenbergii* dominant some places.

2. Commiphora – bush Acacia open deciduous scrub.

Not >4 m, usually spiny and resin or gum-bearing. On eluvial soils the dominants are usually *Commiphora* and *Acacia*, on alluvial soils *Acacia* spp alone. The climax on eluvial soils is dominated by *Commiphora* while *Acacias*, though usually more numerous, are often less conspicuous. Roots are shallow and widely spreading. The only real trees are *A. tortilis*, *Bala aegy* and *Delonix elata*. The main larger shrubs are *C. cuspidata*, *C. myrrha*, *A. asak*, *A. somalensis*, *Premna resinosa*, *Rhigozum somalense*, *Euphorbia cuneata*, *E. thi*. Other shrubs include *C. opobalsamum*, *C. crenulata*, *C. gowllo*, *C. tubuk*, *C. rostrata*, *C. erythraea*, *A. mellifera*, *Caesalpinia erianthera*, *Jatropha spinosa*, *Canada longifolia*.

In the Haud the chief shrubs are *C. erythraea*, *C. samharensis*, *C. obovata*, *C. playfairii*, *C. crenulata*, *C. crenatolobata*, *C. gowllo*, *C. resiniflua*, *C. ancistrophora*, *C. flaviflora*, *Lannea triphylla*, *Iphiaona rotundifolia*, *Sesamothamnus smithii*, *Dalbergia commiphoroides*, *Caesalpinia gillettii*, *Sarcostemma viminale*, *Boswellia bricchetti*, *Grewia* sp.

The main small shrubs are *Grewia tenax*, *Iphiaona rotundifolia*, *Croton cliffordii*, *C. somalensis*, *Tephrosia obbiadensis*. Others: *Adenia venenata*, *Adenium somalense* (not common but very conspicuous), *Cadaba glandulosa*, *Jatropha spinosa*, *Farsetia longisiliqua*, *Cienfuegosia ellenbeckii*.

In the Haud the main small shrubs are the tall grass *Andropogon cyrtocladus*, *Jatropha parvifolia*, *Ipomoea donaldsonii*, *Adenium somalense*, *Lycium europeum*, *Hildebrandtia somalensis*, *Blepharispermum fruticosum*, *Cephalocroton cordofanus*, *Adenia venenata*, *Iphiaona rotundifolia*.

Main herbs are *Cymbopogon schoenanthus*, *Blepharis edulis*, *Oldenlandia rotata*, *Boerhavia elegans*, *Indigofera*, also *Chrysopogon aucheri* and succulents (*Aloe trichosantha*, *Portulaca wightiana*, *Caralluma edithae*, *Euphorbia* spp) & some others. In The Haud some more important

herbs are *Sporobolus ruspolianus*, *Ceropegia subaphylla*, *Raphanocarpus stefaninii*, *Sarcostemma viminale*, *Indigofera ruspolii*, *Dorstenia crispa*, *Vernonia cinerascens*. (Note some of these are actually dS's & not herbs)

On alluvial soils, climax Acacia community. Scattered *Balanites orbicularis* and *B. aegyptiaca* trees. Acacia bushes dense, 1-2 m, flat-topped, *A. sieberiana* dominant on sand. Shrubs: *Cadaba farinosa*, *Grewia tenax*, *Lycium europeum*. Small woody: abundant *Indigofera ruspolii*, *Iphiona rotundifolia*. Graminoids which may be locally dominant: *Eragrostis hararensis*, *Cyperus* sp, *Lasiurus hirsutus*, *Chrysopogon aucheri*, *Sporobolus variegatus*, *Chaetostichium minimum*, *Dignathia villosa*, *Enteropogon barbatus*, *Chloris myriostachya*. Other herbs: *Crinum ornatum*, *Euphorbia nigrispina*, *Ceropegia nuda*, *Blepharis edulis*, *Barleria hochstetteri*, *Corchorus cinerascens*, *Hibiscus micranthus*, *Indigofera intricata*, *Eremopogon foveolatus*, *Tricholaena teneriffae*.

In the Haud this type occurs in the very slight depressions which alternate with equally slight ridges of *Commiphora*-Acacia bush. Trees are absent in the Haud (there are trees but they're only 1-2 m). *A. misera* dominant; also *A. senegal*, *A. sieberiana*, *A. mellifera*. Occasional *Boscia minimifolia*. Other shrubs: *Grewia tenax*, *Cordia gharaf*, *Caucanthus edulis*, *Ehretia obtusifolia*, *Grewia erythraea*, *Maerua sessiliflora*. In the Haud: *Craterostigma plantaginea*, *Abutilon molle*, *Cyclocheilon somalense*, *Sarcostemma viminale*, *Scilla somaliensis*, *Commelina albescens*, *Coccinea laevigata*, *Melhania muricata*, *Sericocomopsis pallida*.

Tugs. At the margin of tugs the most important grasses are *Panicum turgidum*, *Pennisetum dichotomum* and *Sporobolus robustus*. Also pure or mixed communities of *Typha angustifolia*, *Phragmites communis*, *Saccharum ravennae*. These give way to *Tamarix nilotica* thickets with a ground flora of *Coelachyrum stoloniferum*, *Cenchrus setigerus*, *Sporobolus spicatus*, *S. robustus*. These thickets give way to tree cover of *A. tortilis*, *Salvadora persica*, *Ziziphus mauritiana*, *A. senegal*, *Balanites aegyptiaca*.

Rhigozum scrub. Near Mt Elmis and W of it, a very impoverished scrub in which *Rhigozum somalense* dominant and sometimes the only shrub.

Commiphora erythraea-Acacia asak-Croton open scrub. On lower N-facing slopes of escarpment at 600-900 m. This open scrub occurs especially on noncalcareous substrate. Dominated by *Commiphora erythraea*, Acacia asak, *A. mellifera* along with *Croton cliffordii* and *S. somalensis* among the lesser shrubs on eluvial ground, and *Acacia senegal* on alluvial ground. Also common shrubs on eluvial ground are *Commiphora crassispina*, *C. opobalsamum*, *Grewia tenax*, *Premna resinosa*, *Cadaba glandulosa*. *Euphorbia scoparia* often abundant in river gorges. A common climber is *Psilotrichum gnaphalobryum*. Characteristic herbs: *Danthoniopsis barbata*, *Enneapogon cenchroides*, *Sporobolus*, *Barleria hochstetteri*, *B. acanthoides*, *Ecobolium anisacanthus*. Overgrazing in this CT eliminates first the *Commiphora* and then the Acacia, leaving a community with only *Croton* as its woody plants.

3. Tree Acacia open woodland.

Usually somewhat over 3m tall, and with a very extensive superficial root system. Beneath and between the trees is a carpet of grasses and acanthus. Aloes often abundant.

3a. *Acacia bussei* CT is widespread. Trees 3-8 m, with very extensive superficial root systems. In tree shade: *Justicia* spp, *Lycium europeum*, *Vernonia cinerascens*, *Chrysopogon aucheri*, *Tetrapogon villosus*. In open glades: *Cenchrus ciliaris* and *Sporobolus variegatus* often in pure stands. The former position of acacias is frequently shown by a ring of *Chrysopogon aucheri*. Also important trees: *A. tortilis*, *A. mellifera*, *Albizia* 4095, *Balanites glabra*. Important shrubs: *Grewia erythraea*. Important grasses: *Aristida adscensionis*, *Sporobolus marginatus*, *Tetrapogon tenellus*, *Cenchrus ciliaris*, and herbs *Polygala obtusissima*, *Hibiscus somalensis*, *Barleria diffusa*, *Solanum carense*, *Ipomoea cicatricosa*, *Commicarpus plumbagineus*, *Hibiscus hildebrandtii*, *Ocimum tomentosum*, *Hydnora abyssinica*, *Triplotaxis somalensis*, *Portulaca oleracea*, *Becium knyanum*, *Thesium radicans*, *Crotalaria dumosa*, *Zygophyllum simplex*, *Justicia* 4215.

Open grassland in slight depressions in the Haud, with *Chrysopogon aucheri* dominant and may be almost pure.

Drier *A. bussei* woodland in the Haud also has *A. senegal* and *A. mellifera* as codominants. Shrubs include *Grewia tenax*, *Commiphora gowlellii*, *C. candidula*, *C. linearifolia*, *Acacia etbaica*. The large and bushy *Andropogon cyrtocladus* is locally dominant in the Haud where lack of permanent water limits the severity of grazing, but has most probably been almost entirely grazed out in northern areas of *A. bussei* woodland. In drier *A. bussei* woodlands N of the Haud, other significant trees are *Delonix elata*, *Commiphora lughensis*, *C. ogadensis*, *Sterculia rivaie* and *Cadaba heterotricha*; and shrubs include *Grewia tenax*, *G. mollis*, *G. schweinfurthii*, *Euphorbia infausta*, *Aloe rivaie*, *Senecio longiflorus*, *Sarcostemma viminalis*, *Croton cliffordii* or *C. somalensis*; and characteristic herbs are *Caralluma speciosa*, *Sansevieria ehrenbergii*, *Aloe trichosantha*.

Some seasonally well-watered woodlands are dominated by *Ziziphus* and *A. tortilis*, and present are *Lawsonia inermis*, *Ficus sycomorus* and *Tamarindus indica*; a more open community has *Euphorbia nubica*, *Aloe abyssinica*, evergreen thickets of *Salvadora persica* and *Dobera glabra*, abundant *Sansevieria ehrenbergii* and *Aloe trichosantha*, and other woody species include *Berchemia discolor*, *Balanites aegyptiaca*, *Cordia ovalis* and *Turraea parvifolia*. (This hydrosere phase of *A. bussei* is a confusion to my mind.)

3b. *Acacia etbaica* association. The climax is *Acacia etbaica* woodland. This tree retains its leaves far into the dry season, in contrast to *A. bussei* whose leaves fall much earlier. Thanks to the persistence of its foliage, *A. etbaica* is much lopped for fodder, and the community often comes to consist of bushes rather than trees. The only other important tree is *Euphorbia grandis* which may be codominant on noncalcareous substrates. Also here are *Acacia* nr *subalata* (3948), *Balanites glabra* and *Maerua sessiliflora*, and the shrubs *Cadaba farinosa* and *Euphorbia nubica*. Abundant everywhere and sometimes forming close stands on deeper soil is *Aloe abyssinica*. *Cissus rotundifolia* is frequent. Important grasses are *Tetrapogon villosus*, *Chrysopogon aucheri*, *Eragrostis aulacosperma* and *Rhynchelytrum villosum*. Succulents are *Caralluma speciosa*, *Euphorbia turbiniformis*, *Caralluma dicapuae* and *Ceropegia* sp. Many forbs and dwarf shrubs,

and esp prominent are the acanths *Hypoestes hildebrandtii*, *Blepharis fruticulosa*, *B. edulis* and *Barleria proxima*; also *Ipomoea cicatricosa*, *Vaupelia heliocharis*, *Boerhavia reniformis*, *Lasiosiphon somalensis*, *Orthosiphon tenuiflorus* and *Vernonia cierasens*. Other forbs: *Barleria parviflora*, *Bouchea sessilifolia*, *Barleria quadrispina*, *Lasiosiphon somalensis*, *Helichrysum somalense*, *Cienfuegosia welshii*, *Tephrosia simplicifolia*, *Helichrysum glumaceum*.

Within the *A. etbaica* zone, wetter places have *A. tortilis* woodland with occasional large trees of *Ziziphus mauritiana* to 20 m. The acacia trees are relatively large, average specimens reaching 8-9 m with trunk circumference 2.3 m. The chief creepers are *Commicarpus plumbagineus* and *Cissus rotundifolia*. Beneath the trees a herb cover of *Leucas urticifolia*, *Hypoestes hildebrandtii*, *Boerhavia diffusa*, *Panicum maximum*, *Urochloa panicoides*, *Chloris virgata*, *Setaria verticillata*, *Chloris pycnothrix*, *Commelina albescens*, *C. forskalaei*, *Hibiscus calycinus*, *Crotalaria laxa*, *Wedelia abyssinica*, *Abutilon ramosum*, *Justicia flava*, *Sida rhombifolia*, *Ocimum suave*, *Leucas jamesii*, *Acalypha fruticosa*, *Dicliptera verticillata*, *Monechma debile*, *Verbena officinalis*.

A. tortilis-*Ziziphus* woodland is successional to *A. tortilis*-*Euphorbia nubica* open woodland. Shrubs include *Solanum incanum*, *Grewia mollis*, *Cadaba farinosa*, *Grewia tenax*, *Ehretia obtusifolia*, *Grewia villosa*, *Sarcostemma viminalis*, and a great variety of herbs e.g. *Solanum carense*, *Dactyloctenium aegyptium*, *Commicarpus plumbagineus*, *Vernonia amplexicaulis*, *Ocimum americanum*, *Eragrostis aulacosperma*, *Sporobolus marginatus*, *Tragus racemosus*, *Aerva tomentosa*, *Diceratella sinuata*, *Cyphocarpa pallida*, *Hibiscus hildebrandtii*, *Ochradenus somalensis*, *Pergularia daemia*, *Ipomoea obscura*, *Nidorella pedunculata*, *Salsola bottae*, *Pentstemon cynanchoides*, *Sansevieria abyssinica*, *Ruellia discifolia*, *Justicia aridicola*, *Pupalia lappacea*, *Cynanchum sarcostemmatoides*, *Cucumis dipsaceus*, *Ruellia patula*, *Ecballium anisacanthus*, *Indigofera intricata*, *Ochradenus somalensis*, *Crotalaria albicaulis*, *Tragia brevipes*.

Succulents are often much more abundant in drier variants of *A. etbaica* woodland: *Caralluma speciosa*, *Senecio longiflorus*; frequent are *Aloe somaliensis*, *A. trichosantha*, *A. abyssinica*, *Acacia senegal* and *A. bussei*. Often abundant are small bushes *Croton* and *Grewia schweinfurthii*.

3c. On the upper N slopes of the coastal mountains, above *Commiphora*-*Acacia* scrub and below evergreen scrub, is an open woodland of *Acacia glaucophylla*. On limestone it is codominated with *A. tortilis* and *Dracaena schizantha* which is trees 10 m tall. On non-limestone codominants are *A. etbaica*, *A. nilotica* and *Terminalia brownii*; *Commiphora* *tubuk* occurs, also *Ficus populifolia* and *Combretum tricanthum*. The absence of aloes is noteworthy. Prominent grasses are *Chrysopogon aucheri*, *Tricholaena setacea*, *T. gillettii* and *Hyparrhenia hirta*. Other herbs here are *Hypoestes hildebrandtii*, *Selaginella rupestris* (on noncalcareous rock), *Triumfetta trigona*, *T. flavescens*, *Indigofera oblongifolia*, *Asystasia coleae*, *Dorstenia foetida*, *Lindenbergia sinaica*, *Polygala abyssinica*, *Chascanum africanus*, *Stylosanthes flavicans*, *Linaria hastata*, *Pulicaria petiolaris*, *Polygala erioptera*, *Pentanisia ouranogyne*, *Oxygonum atriplicifolium* var. *sinuatum*, *Pavonia kotschyi*, *Melhania denhami*, *M. rotundata*. The acacias here retain their foliage well into the dry season if not year-round. The lower part of the CT adjoins *Commiphora erythraea*-*Acacia* *asak* open scrub.

4. Deciduous scrub.

Like acacia woodland but much greater density and richness of species, with trees 3-4 m, belonging largely to genera *Acacia*, *Combretum*, *Terminalia* and *Commiphora*. It is S&E of Harar. Only briefly seen; a short species list.

5. Evergreen scrub.

A closed scrub of evergreen or subevergreen shrubs and small trees, usually unarmed, and likely poisonous or distasteful to stock. Describes 4 CTs of which 3 have *Buxus hildebrandtii* and 1 dom by *Acokanthera schimperi*. Evergreen scrub occupies a fairly extensive area in Harar district eastward almost to Jijiga, between forest above c6500 ft and Acacia W and scrub below c5000 ft. In NW Somalia above c3700 ft, in fairly small patches. Here *Buxus* descends to the lowest part of the scrub community in ravines at 2800 ft. *Acokanthera* descends to 3700 ft and is dominant in the S margin of the scrub.

On noncalcareous substrata: *Buxus-Acokanthera* scrub. Scattered trees of *Cussonia holstii*, *Ficus vasta*, *F. populifolia*, also *Dracaena schizantha* on rocks. Large shrubs include *Gymnosporia luteola*, *Teclea pilosa*, *Rhus natalensis*, *Tarenna graveolens*, *Pavetta gardeniifolia*, *Flueggea virosa*, *Canthium* (*Plectronia*), *bogosensis*, *Commiphora playfairii* (which is evergreen), *Maerua sphaerogyna*, *Euclea kellau*, *Grewia tembensis*. Smaller shrubs include *Cadia purpurea*, *Clerodendrum myricoides*, *Jasminum steudneri*, *Azima tetracantha*, *Trematosperma cordatum*, *Psiadia arabica*. *Cissus schweinfurthii* a common climber. Among herbs are *Haemanthus abyssinicus*, *Cheilanthes coriacea*, *Actiniopteris australis*, *Crassula galunkensis*, *Selaginella rupestris*, *Commelina benghalensis*.

Acokanthera dominant on noncalcareous rocks. Other trees: *Euphorbia abyssinica* (*grandis*), *Olea somalensis*, *Gymnosporia luteola*, *Ficus populifolia*, *Pappea radlkoferi*. Smaller shrubs: *Azima tetracantha*, *Cadia purpurea*, *Euphorbia nubica*, *Dodonaea viscosa*. Herbs much the same as *Buxus-Acokanthera* scrub.

Open *Buxus-Commiphora* scrub. Dominants *Buxus* and *C. lughensis*. Other common trees *Dracaena schizantha*, *C. ogadensis*, *Lannea malifolia*, *Pappea radlkoferi*, *Olea chrysophylla*, *Sterculia riva*, *Grewia tembensis*, *Canthium bogosensis*, *Combretum tricanthum*, and scattered large *Mimusops kummel* trees. Abundant small shrubs: *Euphorbia infausta*, *Croton cliffordii*, *Grewia schweinfurthii*; frequent *Periploca ephedriiformis*, *Dodonaea viscosa*, *Aloe riva*, *A. abyssinica*, *Adenia venenata*.

Buxus-Juniperus scrub, successional to forest but many dead junipers were seen, maybe killed by drought. Common trees: *Juniperus procera*, *Olea chrysophylla*, *Sideroxylon gillettii*, *Pappea radlkoferi*, *Lannea malifolia*, *Pistacia falcata*, *Ficus populifolia*. Shrubs & small trees in approx order of importance: *Buxus*, *Gymnosporia luteola*, *Euclea kellau*, *Grewia tembensis*, *Acokanthera*, *Canthium bogosensis*, *Ziziphus mucronata*, *Teclea nobilis*, *Ficus glumosa*, *Jasminum steudneri*, *Pistacia lentiscus*, *Heeria insignis*, *Ficus salicifolia*, *Carissa edulis*, *Sageretia spiciflora*, *Commiphora playfairii*, *Maerua sphaerogyna*, *Tarch camp*, *Rhus retinorrhoea*, *Fagara chalybea*. Climbers *Asparagus*, *Rhoicissus revouilii*. Small shrubs in order of importance: *Cadia purpurea*, *Dodo visc*, *Euphorbia infausta*, *Ephedra alte*, *Periploca*

ephedrifolius, *Plectranthus*, *Ballota fruticosa*, *Euryops pinifolia*, *Lasiosiphon somalensis*, *Osyris abyssinica*.

Dry evergreen scrub, above c5600 ft. May be a fire-grazing subclimax to juniper forest. Main trees: *Olea somalensis*, *Acokanthera schimperi*, *Combretum ferrugineum*, *Sideroxylon gillettii*, *Acacia etbaica*. Other trees: *Ficus ingens*, *F. glumosa*, *Pistacia falcata*, *Pittosporum abyssinicum*. Numerous shrubs of *Dodonaea viscosa*, *Periploca ephedrifolius* (on rocky places), *Dicoma somalensis*, *Cadia purpurea*.

Evergreen scrub around Harar. Dominants are *Acokanthera*, *Cadia purpurea* where *Acokanthera* has been destroyed by fire. Larger trees scattered through the scrub: *Euphorbia* sp, *Ficus* incl *F. thonningi*, *Dracaena*, *Pappea radlkoferi*, *Croton macrostachys*, *Erythrina* sp, *Terminalia brownii*. Shrubs & small trees: *Carissa edulis*, *Calpurnia subdecandra*, *Premna viburnoides*, *Osyris abyssinica*, *Rumex nervosus*, *Rosa abyssinica*, *Vangueria apiculata*, *Euclea kellau*, *Rhus glutinosa*, *Brucea antidysenterica*, *Cassia mimosoides*, *Dovyalis abyssinica*, *Tephrosia barbigera*, *Rhus retinorrhoea*, *Acacia seyal*, *Grewia ferruginea*, *G. canescens*, *Heeria insignis*, *Grewia tembensis*, *Lannea schimperi*, *Ochna inermis*, *Sageratia spiciflora*, *Secamone punctulata*, *Cussonia holstii*, *Acacia etbaica*, *Fagara usambarensis*, *Periploca ephedrifolius*, *Dodonaea viscosa*. Chief climbers: *Rubia discolor*, *Commicarpus plumbagineus*, *Cissus adenocaulis*, *C. schimperi*, *Jasminum floribundum*, *Pterolobium exosum*, *Osyridicarpus schimperianus*, *Adhatoda schimperiana*, *Helinus mystacinus*, *Rhoicissus erythrodes*, *Stephania abyssinica*. Herbs: *Sida schimperiana*, *Rumex nervosus*, *Eulophia rueppelii*, *Dyschoriste radicans*, *Plumbago zeylanica*, *Rhynchelytrum repens*, *Arthropteris orientalis*, *Aloe steudneri*, *Hibiscus crassinervius*, *Indigofera brevicalyx*, *Polygala quartiniana*, *Orthosiphon somalensis*, *Lantana salvifolia*, *Abutilon angulatum*. Intensive cultivation in this zone, much destruction of woody cover for firewood (too).

6. Evergreen forest.

Upper parts of Harar massif 6500-9500 ft, small area on Libah Heleh mts in NW Som, summit of Golis range & on Surud mts in N Som. Pure *Juniperus* forest is relatively open and dry. Has no vascular epiphytes (vs. *Juniperus-Podocarpus* forest). Abundant *Sideroxylon gillettii* and common *Olea somalensis*. Shrubs mostly also in evergreen scrub. *Rhus natalensis*, *Pittosporum abyssinicum*, *Teclea nobilis*, *Gymnosporia luteola*, *Adhatoda schimperiana*, *Carissa edulis*, *Euclea kellau*, *Sageratia spiciflora*, *Cadia purpurea*. Some herbs & low shrubs: *Ephedra alata*, *Gymnosporia luteola*, *Psiadia arabica*, *Stachys hildebrandtii*, *Coleus albidus*, *Pollichia campestris*, *Galium aparine*, *Umbilicus botryoides*. Among lesser herbs are ferns: *Actiniopteris australis*, *Cheilanthes coriacea*, *Asplenium aethiopicum*, (also) *Pleurochaete beccarii*, *Tortulea atrovirens*. Climber *Secamone punctulata* sometimes abundant.

Juniperus-Podocarpus forest in Harar is a denser forest. Climax has tree to c30 m, a layer of shrubs & small trees, etc. Among big trees: *Olea hochstetteri*, *Prunus africana*, *Schefflera abyssinica* (usually on steep slopes), *Lachnopylis congesta*, *Dombeya bruceana*, *Myrica salicifolia* (in marshy places), *Erythrina brucei*. The main small trees & large shrubs: *Discopodium penninervium*, *Trichilia volkensii*, *Maesa lanceolata*, *Teclea nobilis*, *Dracaena afromontana*, *Maytenus*, *Pavetta abyssinica*, *Cassipourea abyssinica*, *Lasiosiphon glaucus*,

Ekebergia ruppeliana, Olea chrysophylla, Rhamnus staddo, Acacia abyssinica, Galiniera coffeoides, Rhus abyssinica, Buddleja polystachya, Gymnosporia luteola, Halleria lucida, Vernonia amygdalina, Allophylus abyssinicus, Debregeasia salicifolia, Trichocladus malosanus, Bersama abyssinica, Geymnosporia arbutifolia. Some shrubs: Carissa edulis, Calpurnia subdecandra, Osyris abyssinica, Rosa abyssinica, Dovyalis abyssinica, Celtis kraussiana, Clerodendrum myricoides, Podocarpus gracilior, Sideroxylon oxyacantha, Myrsine africana, Euphorbia polyacantha, Dovyalis verrucosa. Climbers: Rosa abyssinica, Urera hypselodendron, Jasminum abyssinicum, Cissus cyphopetala, Toddalia asiatica, Asparagus asiaticus, Rubus apetalus, Periploca linearifolia, Clematis sp. Long list of herbs & a bunch of epiphytes.

7. Erica thickets.

A patch at summit of Mt. Kondudo above 9300 ft and summit of Gara mulata above 9500 ft. Evergreen thicket 4 m high with Erica arborea dominant. Frequent Hypericum lanceolatum, Hagenia abyssinica; occasional Pittosporum lanatum, Crotalaria erlangeri; Myrsine africana (abundant undershrub), Lobelia rhyncopetalum, Rubus volkensii. Many herbs (listed). Erica thicket may be burned, and regenerates from the roots, but too frequent burning leads to creation of grassland fire subclimax, presently more extensive than the Erica thicket.

The NW Somalia Commiphora-Acacia scrub is poor in species compared to the same farther E and in the Haud which are rich in Commiphora species.

Trees like Cordeauxia and Conocarpus lancifolius could probably be successfully introduced into the NW Somalia Commiphora-Acacia semidesert, their absence “being simply a failure to migrate there.”

Numerous succulents are chewed by Somalis to allay thirst, e.g. Cynanchum sarcostemmatoides, Caralluma dicapuae, Portulaca somalica, Sarcostemma viminalis. They taste bitter and it is said that they are always much more bitter in the morning than afternoon.

Milk vessels are cleansed and disinfected by being smoked with wood fire, principally Balanites aegyptiaca, B. orbicularis, Acacia tortilis, Commiphora tubuk, Boscia minimifolia.

Edwards DC 1944 *A survey of the grazing areas of British Somaliland*, 2nd draft. Vet. Res. Lab., Kabete (Nairobi), unpub., 31p.

Mainly covers grazing milieu & conditions, also lots on range deterioration & remedies. *Some fine photos of main veg. types & stages of deterioration. A surprisingly informative paper considering it's unpublished & unquantitative.*

But note his reason (excuse?): the aim is to cover the main types of grazing, “and any attempt to describe the vegetation in detail has been avoided, as being unnecessary in this report and as tending even to obscure the salient points and recommendations.” Also notice his recommendation “to consult an excellent technical description of the vegetation of Western Somaliland” by Gillett (1941) – is that actually a good veg. paper? Yeah it's actually pretty good for its day.

Linked with the major veg. zones are 4 main types of grazing (areas). In all, a considerable proportion of the forage is derived from woody plants. The nearest approach to true grassland is in open areas of the southern plain or 'haud'.

(1) E plains of Desert Grass & Desert Shrub (= the Nogal Valley). Mostly dominated by *Sporobolus* 2 spp., frequent associate & occasionally dominant *Dactyloctenium scindicum*; in limited better areas *Chrysopogon aucheri* important. Grass alternates with narrower belts of saltbush (*Suaeda*).

(2) Grass-bush veg. of the haud: most of the S edge of N Somalia, southward; open bush with abundant turfed grass & shrubs; trees occasionally prominent, also extensive open SG, possibly anthropogenic. Bushes c2.5 m, dominated by *Acacia* & *Commiphora*; main grass dominants are *Aristida kelleri* & *A. papposa* with occasional areas of strongly dominant *Chrysopogon*. Frequent small areas of pure stands of *Schizachyrium kelleri*. *Cenchrus ciliaris* common. *Indigofera ruspolii* one of the most important shrubs, and important constituent of the forage in many parts.

Degenerate phase, with less grass, in the Gardo area and the region from Burao to Las Anod (see map).

(3) Acacia-short grass open woodland. Covers much of the interior in NW Somalia, from Burao to Borama and the border (see map). Dominants are *Acacia bussei* in the eastern portion and *A. etbaica* in the western & moister portion. Patchy herb layer; dominants *Sporobolus* sp., *Dactyloctenium scindicum*; important *Cenchrus ciliaris*, *Enneapogon*, *Tragus*; the annual *Eragrostis tenuifolia* appears after rain in the higher areas. Stony hills of the W have candelabra-like *Euphorbia*, and herbage becomes extremely scant, replaced by dense *Aloe*.

This habitat, with rainfall c400-500 mm, and with more plentiful water supply than in most of the N, is chiefly cattle along with other stock; also primitive agriculture based on sorghum.

(4) Shrub Acacia – desert shrub. The whole N coast of Brit.Somaliland, gradually narrowing eastward. Extremely low rainfall throughout, but considerable variation in vegetation from E to W.

At the E end, virtually barren rock rubble, the only significant plant life along water channels, notably wild date & *Conocarpus*. The coastal strip has very sparse dwarf *Acacia*, and *Ziziphus hamur*. Not even camels can survive at Bender Cassim.

Centrally, e.g. Berbera area, again dwarf acacia bushes on the sandy coastal belt, here c10-12 mi wide; but on higher land, considerable areas with fairly thick *Indigofera ruspolii*, insignificant grass cover.

Beginning at Berbera and gradually expanding westward (at Zeila it is at least 50-60 km wide) is a coastal zone with comparatively tall grass. In the E has well-developed *Suaeda*

fruticosa alternating with areas of scattered low acacia trees. Large open portions have *Eragrostis hararensis* and *Panicum* sp., limited areas dominated by *Sporobolus spicatus*.

The Zeila Plain is tall-grass, strongly dominated by *Lasiurus scindicus*, with *E. hararensis* frequent in limited areas.

[5] Transition zone on foothills of escarpment falling to the coastal plain; between evergreen scrub and desert plain. *Acacia* and *Commiphora* prominent, *Sansevieria* and other succulents common, and *I. ruspolii* often forms a considerable proportion of ground vegetation.

[6] Evergreen scrub – *Buxus*, *Acokanthera*, *Euphorbia*.

[7] Juniperus forest. Open areas carpeted by *Cynodon dactylon*.

The steep slopes of the Golis Range appear to constitute an important grazing area for desert pastoralists of the coastal plain.

Main factor controlling veg. zonation is climate – especially the marked difference between scant, stunted coastal-plain growth & the relatively productive woodland, etc. But “Soil types, however, appear to assume quite an unusual significance in determining the nature of the vegetation and grazing supported by areas within the plateau which occupies the main part of the country.” This is especially aimed at the existence and significance of the haud.

Haud The whole region of Grass-Bush vegetation along the S edge of N Somalia and extending far southward is known to Somali pastoralists as the haud, and “the name conveys to them a particular soil and vegetation. On several occasions in the course of the survey, careful observations were made of the change from superior to poorer vegetation in passing from the red soil of the Haud to other types. Everywhere this change could be attributed to soil, and nowhere was it definitely connected with the political boundary of the country” and that connection to different grazing histories. The typical haud area has a brick-red, deep, sandy limestone soil, and it provides by far the best grazing in N Somalia. *[this is a real recommendation, and should be noted in discussion of haud in CR, i.e. a great range area]* The edible shrubs as well as grasses attain a much better development here. The better vegetation owes its existence, at least in important measure, to the greater moisture-retaining property of the soil, which furthermore appears distinctly less subject to erosion than northward.

The area extending over the E boundary of Brit. Somaliland (and centered on Gardo) is known as Sorl Haud; it has the same dominants and a similar soil, but a drier climate.

The correlation of haud on the sketch-map of geology is evidently very closely with middle eocene limestone, both for the haud proper and the Sorl Haud (in fact the correlation is so tight, it is likely the vegetation map was drawn using the geology as a base-map). The other major types in the non-mountain regions are lower eocene limestone, gypsum anhydrite, and volcanic soil; these are definitely negatively correlated with haud.

Deterioration “I do not subscribe to the view that a high proportion of the country is changing towards desert as the result of human occupation. This does not imply, however, that evidence of very marked deterioration is lacking in localised areas.”

Gives a rational introduction and explanation for the deterioration, which is related to water availability; it is quoted in large part:

“If a map of the Protectorate is examined, it will be found that practically all the place names indicate widely scattered wells, the only permanent sources of water. The centres of population depend entirely upon these. The rainfall is insufficient to produce streams which flow throughout the year. The water resulting from storms in the hills is carried by gullies known as ‘tugs’. These usually flow as a violent rush of water, for a few hours only, following rain in higher country. Such intermittent streams are common throughout East Africa. Owing to the scarcity of water the human and stock population is tied to the wells and, except for comparatively brief periods after the two rainy seasons, must of necessity remain within range of the wells. The life of the Somali herdsman is therefore spent in seasonal migrations between the permanent water supplies and temporary supplies which enable him to utilize the grazing of outlying areas.

“Such a state of affairs naturally leads to excessive pressure upon the vegetation in the vicinity of the wells, and this is almost everywhere evidenced by extensive deterioration, amounting frequently to complete denudation of the ground surface and the resulting removal of the surface soil by wind and water erosion. The approach to a well is often noticeable for 10 or 15 miles, the deterioration of the vegetation becoming progressively more marked towards the centre of a wide circle. In the past the Somali appears to have recognised the danger of this destruction of the grazing lands around the permanent water supplies and to have evolved a system of wet-season protection, based upon tribal ownership of the areas. No such organised utilization now exists.

“The most extensive destruction is being wrought in the better vegetational area shown on the map as Acacia – Short Grass Open Woodland, and the area fringing this. Permanent water is more plentiful in this region, and together with the higher rainfall and consequently more productive nature of the country, it has resulted in a somewhat greater concentration of population. The whole of the formation is more or less heavily utilized.

“Around centres of population and water supplies in general there are extensive areas of very marked deterioration. This takes the form first of removal of the grass and shrub cover by continuous grazing, and then destruction of the trees. Once the ground vegetation has been removed, the death of the trees follows. In the absence of grass and shrubs the Somali herdsman cut and bend over branches of the Acacias in order to bring the leafage within reach of their sheep and goats, and this treatment, particularly in the eastern and drier portion of the area, finally results in the destruction of the trees. Cases have been seen where trees have been killed in this manner even when the shrubs and herbage have not been completely removed prior to cutting, but the removal of the ground vegetation is a potent factor in destroying the trees, and in some localities is capable of bringing about such destruction without the added affect of cutting. It is evident that denudation of the ground surface results in much greater run-off and the loss of much of the water which would otherwise sink through the soil to the tree roots. In the dry areas

under consideration this is a critical factor, and it will be further discussed below. Usually both over-grazing and tree cutting combine to destroy the open woodland and to leave a windswept, sandy waste.

“Various stages of this process of destruction may be seen in a belt surrounding all the larger centres of population and, in fact, in the proximity of all permanent water in this vegetational zone. Probably the most striking example of deterioration of the type described is to be found in the Burao area, where this vegetation is near to its dry eastern limit. The settlement itself stands in a large open area devoid of vegetation. A clearing was originally made for military purposes and it appears that the bare area has been extended to the north east as the result of the blown sand which is driven before the ‘Karif’. During my visits to Burao in July and August visibility was frequently only about a hundred yards. For 15 or 20 miles in any direction from this centre marked destruction of the vegetation is taking place. In the nearer areas the ground beneath the Acacia trees is bare and sandy with mounds of blown sand around the bushes and at the base of the trees. Towards the fringe of the affected area grasses have largely disappeared and have been replaced by low shrubs. Throughout, a marked feature of the landscape is dead and dying

Deterioration is slower in the W & moister part of the region: here the veg. withstands maltreatment rather longer, “but there is ample evidence of change in the same general direction towards the same final result – desert.”

Where agr. (sorghum) has appeared, there has been extensive tree-clearing, primarily for fencing material, also because bark and root of the acacias have various uses.

Comparatively little deterioration in the Haud or Sorl haud, at least partly due to scarcity of permanent water. But there are areas with partial or complete denudation of the ground surface, in the form of strips to c1 km wide and extending in direction of prevailing wind; the cause is fire. This form of deterioration resembles that in vicinity of permanent WPs.

Though grass burning is likely a useful management too in E.Afr., its practice is to be condemned in N Somalia. Grass and shrubs are often completely destroyed by a fire and are capable of only little recovery. Apart from the direct killing effect of fire on the small trees, the larger ones succumb to drought because rainwater is not held by the vegetation. The conclusion is that “*Unlike regions of East Africa to the south where the vegetation and soils have developed under the influence of periodical fire as a result of volcanic action in the past [note this bizarre reason! – i.e. he’s got the right idea but the wrong reason!], the vegetation of Somaliland is not fire tolerant to the same degree.*” [also, I think it’s a matter of trying to compare different veg. zones; much of the pyric grasslands and savanna of E.Afr. have far better rainfall, & the areas comparable to the N.Som. vegetation, viz. the NE bushlands, are not thought of as pyric at all].

The general impression is that a great part of the deterioration of Brit. Som. veg. has been in recent yrs, but is progressing rapidly and likely serious & probably irreparable loss will ensue; this is particularly true of the *A. bussei* zone.

Remedial measures Earlier researchers, viz. Peck, McKinnon, Robertson, & the present author, are agreed that restoration of the natural plant cover in Brit. Somaliland entails 2 essential steps:

(1) a scheme of grazing control, whereby deteriorated areas see grazing deferred to dry-season use

(2) prevent stock increase beyond the land's carrying capacity.

“There can be little doubt that if these steps can be successfully taken the problem will be solved.” [Sounds easy, huh, like a recipe. But think about it, & such management entails a lot of research to get the necessary numbers, and a lot of PR, and even then it likely won't be successfully implemented.]

1. Protection from wet-season grazing “has been proved as a means of bringing about recovery of the vegetation in a number of countries, including South and East Africa.” Grazing reserves in the 1930s in N Somalia were demarcated & implemented as dry-season reserves. “The effect of seasonal closure for periods of only 3 or 4 years has persisted to a marked degree and provides ample proof that recovery can be attained by this method of control.”

“The provision of alternative wet-season pasturage is implicit in the grazing scheme. As far as possible, the scheme should be fitted into former traditional native practice and it should be based on an investigation of tribal organisation in regard to migration... In the early stages of control enforced protection of the closed areas will be necessary, and this will involve considerable financial expenditure. The aim should be, however, gradually to hand over the responsibility to the tribal authorities and so to reduce direct control by Government.” *[Note how all this presages the current situation! Every one of the several important points implicit or explicit in the above quote has direct relevance in today's management schemes. This is a very important quote, ± requisite in any treatment of range management in CR]*

Edwards continues: “The difficulties which beset such a policy in the initial stages are appreciated, but it is well to realise that if recovery is attained by the measures suggested, its maintenance cannot indefinitely be ensured by an elaborate government organisation outside the social structure of the country. Only when the people themselves are capable of assuming the responsibility, with the guidance and assistance of Government, will the final goal be reached. It appears that recent policy in detribalising grazing areas and water supplies has gone far to produce an attitude of ‘every man for himself and the devil take the hindmost’. This is, unfortunately, a disastrous result of Pax Britannica in many parts of Africa. The position is concisely stated in general terms by G.V. Jacks of the Imperial Bureau of Soil Science in a recent article on soil conservation as follows:- ‘It has been proved beyond doubt that the individual, working by and for himself and in open competition with his fellows, is incapable of preserving the fertility of the prairie environment; sooner or later, he must destroy the soil in the struggle to maintain his position in society, whereas a co-operating community of farmers acts spontaneously in such a way as to preserve its social base, the land.’ This statement is just as true of Somaliland as of the United States of America” This is the tragedy of the commons thing, ‘refreshed’ or popularized in sci. circles much later by Hardin.

Suggests using the Haud as alternate wet-season grazing while the N vegetation recovers, and is the traditional alternative grazing ground of the CR tribes; without its use the recover of the interior is impossible, and it is a fortunate circumstance, notes Edwards, that such a superior

vegetation should be within reach. He also suggests that the Haud can take far more utilization than it has; I'm not sure how he arrives at this conclusion, without any experimental or analytic data, but he notes that it is scarcity of permanent water that has protected this vegetation from overuse, and that the particular soil and vegetation are "specially adapted" for use as wet-season grazing reserves.

Greater use of the Haud will require water development, notably temporary WPs for use during the wet season. "It is emphasised that the development should be of temporary water which dries up soon after the rains have ceased, rather than wells which would tend to induce the people to linger." [*Note presaging of this problem in CR hawd, & the specific problem of YIC*]

Seasonal protection of vegetation is rated far more important than measures to reduce direct destruction of trees or reduce grass burning. Lopping will be less prevalent when range condition improves, though fuel/charcoal use is a problem; "tree destruction should be resolutely suppressed by legislation." Prevention of grass fires may be more of a problem, mainly due to lack of gov. control, and may have to be a self-policing effort of tribal organizations.

2. Limiting stock populations implies disposal of the excess through commercial channels. "This assumes the development of a new outlook on the part of the Somali and a readiness to exchange animals for other commodities... Ultimate success cannot be attained by enforced reduction which takes no account of the mental attitude of the people." A suggestion that possibilities of creating a changed outlook should be sought through the medium of the small trader.

"Suggestions for the solution of this problem contained in various reports all deal with the possibility of discovering markets and organising the sale of stock. This conception does not, in my opinion, appreciate the root cause of the difficulty. External markets are obviously necessary to absorb the increase, but the provision of an outlet for stock does not imply the necessary outlook on the part of the stock owner...

"Voluntary reduction of stock can only be attained by development of the community, both towards responsibility for the welfare of the vegetation of their own particular territory and towards an appreciation of forms of wealth outside stock. The latter, at any rate, is a difficult proposition in a semi-arid contry populated by nomadic tribes. In most countries the small trader is an essential initial factor in this commercial development. Both he and his goods are singularly lacking in Somaliland. The explanation of this is difficult, but any or all of the following reasons may be responsible; (a) insecurity in outlying areas, which is a reflection upon the degree of law and order which British administration has been able to attain, under admittedly difficult circumstances; (b) shortcomings on the part of existing indigenous traders through lack of encouragement and opportunity for external comercial contacts; (c) the inherent limitations of the Somali as a potential purchaser, which renders difficult the selection of acceptable commodities. It is believed that a careful investigation of the whole question will indicate measures which would bring about great improvement."

Taxation suggested as a (*perhaps not very good*) incentive to stock disposal.

Shoats constitute the greatest danger to the vegetation. "Sheep in particular are responsible for a great deal of the damage near permanent water, where they are permitted to consume the first shoots of the grass as they appear season after season." *Note the unguarded statement re. camel: "The camel with its browsing habits need scarcely be considered." (The double mistake, that camel is ± only a browser with no impact on grass, & no implication of overbrowsing – especially e.g. yicib-type losses)*

Shoat condition in N Somalia is better than in other parts of E.Afr., likely due to low incidence of intestinal worms in these very dry areas.

The problem of land deterioration in the vicinity of agricultural areas may be overcome with a plan which depends "upon security of tenure of the mixed holdings and upon the availability of a more or less permanent form of fence." *What is being proposed here is individual land ownership or at any rate stewardship. This will allow a rotation of cultivated plots to grass, and use of fallow only or mainly in the dry season, i.e. dry-season grazing reserves of individual farmers. This Edwards calls semi-permanent agr., combining cattle and cultivation.*

A number of recommendations enumerated (± all touched upon above).

Greenway, PJ & WD Raymond 1947 *Yeheb*. E. Afr. Agric. J. 12: 216-219.

Review of discovery, description, distribution. Chemical analysis of seed.

Although the plant was first seen by Europeans in 1871 (by Robecchi), proper botanical material was not secured until 1907 by HES Cordeaux and sent to Kew. He said the seed was the food staple of poorer people living in the Haud. He also said the plant "is said to seed itself readily and grows with great rapidity." (Greenway & Raymond 1947) *Based on my experience with yicib in the field, neither of these is true.* According to Cordeaux' Somali informant the shrub was c2 ft tall, but it can grow much taller. On the other hand, GG Gilligan, stationed for some time in British Somaliland, said the plant "often grows into a large tree" *which also is false.* He said the seeds were usually boiled or stewed and the resulting water was sweet and sometimes drunk by Somalis. *I have only heard of the seeds being roasted, and that to prevent insect attack since the fresh seed is edible, tasting rather like fresh peas.*