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Somali Range Bulletin

A Bulletin of Range Management, Forestry,
Wild Life and Related Subjects.

Warsidaha Daaqa Soomaaliyeed

Warsidaha Maareeynta Daaqa, Dhirta,
Ugaarta & Maadooyinka la Xiriira.

NATIONAL RANGE AGENCY
P. O. BOX 1759
MOGADISHU-SOMALIA

S O M A L I R A N G E B U L L E T I N

No. 14 - 15, J U N E, 1 9 8 3

C O N T E N T S

N O T E S

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SOMALI RANGE BULLETIN is issued regularly 2 times a year by the National Range Agency, P.O. Box 1759, Mogadishu, Somalia.

Technical and Semi-technical articles on Range Management, Forestry, Wildlife and related subjects are accepted for publications.

The articles should be neatly typed in double space and may not exceed ten pages. At the moment facilities for the reproduction of half-tone pictures and figures are not available but simple graphs and tables are accepted.

The manuscripts may be sent any time of the year to the Editor on the above address.

S U B S C R I P T I O N

		Annual	Single copy
Somalia	So. Sh.	50.00	30.00
Other countries	US $	10.00	6.00

Subscriptions may be sent to:
General Manager, N.R.A., P.O. Box 1759, Mogadishu-Somalia.

GOOFKA (XERMOOYINKA BANAADIR)

Xuseen Khaliif Maxamed
Formal Education Component
C.R.D.P., P.O. Box 2954,
Mogadishu - Somalia.

Soomaalidu caad iyo dhaqanba waxay u lahayd in istiomaalka dhul-daaqeedku ka wada dhexeeyo.

Ninka reer miyiga ah wuxuu xoolihiisu u raraa halka ay caws biyo ka heli karaan, asagoo laga yaabo inuu geeddi dheer soo galo. Tusaale haddii aan u soo qaadano Abaartii dabadheer, waxaa gobolka Shabeelada Dhexe u soo daaq tegay xoolo ka yimid Hiiraan.

Ayadoo ay sidaa jirto ayaa haddana waddanka meelo ka mid ah dhul xirashada caadi ka tahay. Sida gobolka Banaadir oo loo yaqaan Goof (gobolada qaarkoodna waxaa lagu magacaabaa Sharmo).

Taariikhda goofku aad bay u da' weyn tahay. Mar aannu safar gaaban ku tagnay goofaf qaar ka mid ah aniga iyo Michael H. Madany (American expert in range science) waxaan soo ogaannay kadib markii aan dhowr oday wareeysanay in taariikhda iyo jiritaanka goofku ay da' weyn tahay. Isla markaana odayadu waxay isku khalaafsan yihiin sababihii loo aasaasay goofaf. Qaar waxay aaminsan yihiin inay sababtu tahay baahi cawska loo qabay awgeed. Kuwa kale waxay qabaan inay sababtu ahayd in wax lagu beerto. Waxaanse soo ogaanay in labada arrimood ay wada jiraan ayadoo isla goofka mar marka qaarkeed lagu beero waxyaabaha ay ka'mid yihiin: digir (Phaseolis sp.) moxog (Manihot sp.) Waambe (Eleusine sp.) Qare (Cucumis sp.) iyo

suuf (Gassypium sp.). Marka uusan roobka wax soo saarka bee-reed ku filnayna, waxaa loo daayaa in uu cawska ka baxo. Cawskaas oo noocyo badan ah: baar (Commilina sp.) dhag-dhago (Setaria sp.). Cawskaas waxaa daaqo xoolaha ninka goofka leh ama suuqyada ayaa loo iib geeyaa.

Wax soo saarka goofka waxaa lagu qiyaasay 25 gaari-dameer oo caws ah halkii hektarba. Halkii gaari-dameerna qeymihiisu wuxuu u dhaxeeyaa 60-70 Sh. xilli roobaadka, 400-500 SH. xilliga jiilaalka ah.

Hawlaha goofafka laga qabto waxaa ugu badan **oodidda** goof-**ka iyo** geedaha oo laga jaro si cawska dhul banaan loogu helo.

Goofafka wey kale weyn yihiin, hase yeeshee waxay u badan yihiin 2-4 hektar (inkastoo badka goof waliba soo ya-raanayo sababtoo ah goofka wuxuu ka mid yahay waxyaabaha la kala dhaxlo, sidaa darteed odey waliba dhimashadiisa ka dib waxaa goofkiisa qeybsada caruurtiisa). Haddaba nin waliba ninka kale intuu ka goof weyn yahay wuu ka hanti badan yahay.

Waxaad mooddaa in isticmaalkii hore ee goofka ay wax iska badaleen:

b) Xamar oo si xad dhaaf ah u fidaayo awgeed waxaa cawskii goofka ka xiisa batay dhismaha dhulka (eeg dhulka u dhaxeeya Afgooye iyo Xamar).

t) Ayadoo goofka laga ijaaro xoolaha la dhoofinayo inta ay maraakiibta sugayaan. Inkastoo qeymaha lagu kala ijaarto uu kala duwan yahay isagoo ku xiran cawska, badka goofka iyo xilliga markaa lagu jiro, haddana wuxuu qiimihiisu gaaraa 5,000 - 15,000 Sh. So.

j) Waxaa kaloo laga ijaartaa dadka Xamar xoolaha ku leh, si ay xoolahooda u daaqsadaan.

Goofaf ama dhulka la xirto kuma eka uun Xamar iyo agagaarkiisa ee waxaa jira degmooyin kale ee leh, inkastoo aysan saa u badneyn. Tusaale ahaan waxaan soo qaadan karnaa:

Qoryooley: oo ah magaalo xoolo (lð) badan, waxay leedahay xirmooyin ka duwan goofafka. Dad badan baa beerahooda ama aseendooyinka waxa ugu ag yaala dhul ballaaran oo keyd beereed ah, kaa soo caws fara badani ka baxo oo laga ijaarto xoola dhaqato ama la soo jaro ee intii gawaari lagu soo qaado suuqyada Xamar iyo magaalooyinka u dhaw loo iib geeyo.

Beled Weyne: Kuma badna xirmooyinka, hase yeeshee, waxaa jira beero oodan ee webiga ku ag yaalo, oo xilliga jilaalka meelaha ay biyaha webiga ka baxaan lagu abuuro digir iyo galey, meelaha qaarkoodna waxaa laga soo gurtaa caws suuqa loo iib geeyo.

Sannadyadaan dambe dad badan oo reer miyi ahaa ayaa magaalooyinka soo degay asbaabo kala duwan awgeed.

- Abaaraha culculus oo cayrteeyay dad badan xoolohoodina halkaa ku gubay. Kuwaasi oo ay ku adkaatay noloshii baadiyaha una soo qaxay magaalooyinka iyo tuulooyinka.

- Dhalin-yarada reer miyiga ah oo xiiseeya nolosha magaalo isla markaana u soo shaqo taga.

- Iyo in qoysaska reer miyiga ah qaar ka mid ah ay si toos ah u soo degaan magaalooyinka iyo tuulooyinka si ay caruurta dugsi quraan ama iskuul ugu helaan.

Arrintani waxay keentay in dad badani magaalooyinka la soo galaan xoolahooda (gaar ahaan lò iyo ari). Xoolahaas oo ku tarma halkaa.

Haddaba waxaa qasab noqotay in tirooyin xoola ah ka foofaan magaalo waliba si ay agagaarkeeda u daaqsadaan. Kuwaasoo halkaa nabaad guur lixaad weyn ka dhaliyay. Waxaa laga yaabaa inaad aragtay boor ama siigo fara badan oo kacayso waqtiyada ay xoolaha foofayaan ama ay soo hoyanayaan, dhibaatadaani waxay ku badan tahay meelaha daaq xireenka aan lahayn.

Waxaanu halkaa ka arki karnaa in uu faa'iidooyin badan leeyahay daaq-xireenka ama goofka (inkastoo dad yari ka faa'iideystaan goofka) waayo haddii aysan goofaf jiri lahayn, waxaa dhici lahayd in uu nabaad guur xoog lihi ka dhici lahaa agagaarka Muqdisho. Waxaana qasab noqon lahayd in la sameeyo mashruuc bacaadka looga celinaayo beeraha Afgooye sida midka Shalambood. Beledyada aan lahayn xirmooyinkaa isla markaana

xoolaha badani ka foofaan waxaa si xad dhaaf ah ugu fidaayo nabaad guurka.

Afartanka maalmood ee ugu horeeysa xilliga roobka, waxa goofafka ka dhasha qaniin sida diqsiga la yiraahdo mayoonge, oo aysan xooluhu ka daaqsan karin. Dabadeed xoolaha waxaa loo raraa meelo goofafka ka fog sida Wanle weyn iwm. Marka cawskuna wuxuu helaa waqti fiican oo uu ku bixi karo.

Haddaba goofku wuxuu waafaqsán yahay fikradaha casriga ah ee cilmiga daaqa oo leh dhulka waa imuu nasto si ay wax soo saarkiisu joogto u noqoto.

oOOOo

S U M M A R Y

The goof (plural goofaf), xirmo or sharmo as people from different parts of Somalia call them, are private exclosures usually found near cities and towns particularly Mogadishu. The aim is to furnish feed stuffs to animals in the cities. And as sort of dry farming where several crops are grown i.e. peas, cassava, finger millet, watermelon and some cotton. In some minor cases they are rented for animals that are to be exported since the goofaf are mostly located in the vicinity of the sea port.

This idea of goofaf has been practiced by people for a long time. There is usually a production of about 25 donkey (cart loads) of forage per rainy season. Each cart-load costs about 60-70 So. Sh. in the wet seasons and about 400-500 So. Sh. in the dry season. A goof is usually between 2 to 4 hectares in size and is enclosed by a fence of thorn bush limbs (usually Acacia sp.)

Nowadays, due to expanding cities, the goofaf may be gradually loosing their importance, in some areas, because of increased construction of houses. A good example of this is on the road between Afgoi and Mogadishu.

The management of many goofaf exclosures tend to be in agreement with modern range management principles that adivses that the land should get some periodical rest so its production will be permanent. The goofaf areas used by livestock are rested in the first 40 days of the rainy season, with animals herded inland to avoid the blood-sucking insects in the goof at that time. However, more research is needed to fully understand the ecological and economic importance of this form of land use.

oooOooo

C I L A A N " X I N N E "

Qore: Maryan Ciise Shirwac
Lamaane Taxonomist
Dhir Keydinta Qaranka,
Wakaaladda Daaqa Qaranka,
Muqdisho.

Xinnuhu waa geed ka mid ah geedaha ka baxa dhulkan aynu ku noolahay, waxaana la yaqaaney dhawr qarni ka hor, mana aha wax la fududeysan karo, waayo wuxuu leeyahay faa'iidooyin badan.

Cilaan waa magaca Soomaalidu u taqaan, afka carabiguna "Xinne". Lowsonia inermis L oo ka mid ah bahda (family) loo yaqaan Lytheraceae. Cilaanku waa geed meel dhexaad ah, badanaana qodxo leh. Caleemuhuna waxay leeyihiin lugo (petioles) gaagaaban caaradana u fiiqan oo qaabka ukunta leh, una ballaaran qaybta sare hareerahan u yar yar, ubaxiisu wuxuu leeyahay affar sebalis iyo betalis, siddeed steemanis iyo affar unug oo leh kaabsuul (capsule) wareegsan.Cillanku waa geed jirid gaaban, laamo badan, caleema badan, wuxuuna baxaa sanooyin badan (perennial) isagoo aan u baahnayn biyo joogto ah.

Soomaalidu xinnaha waxbadan ayay taqaaney, waxaana ay ka soo iibsan jirtay dalalka dibadda, gaar ahaan dalka Hindiya iyo qaar ka mid ah dalalka Carabta. Hadana waxay bilowday in ay dalkeeda ku abuurto si aan rasmi ahayn, taasoo aan weli haqab tirin baahida dadweynaha. Waxaan rajeynayaa waqtiyada soo socda in xoog la saaro abuurista xinnaha, mar haddii aan laga maarmi karin isticmaalkiisa.

ISTICMAALKA XINNAHA

Xinnaha waxaa badanaa isticmaala dalal ka mid ah qaaradaha Afrika iyo Asia, dal walibana wuxuu u isticmaala si gaar ah oo la xariirta hiddihiis iyo dhaqankiisa.

SIDA SOOMAALIDU U ISTICMAASHO XINNAHA

Xinnahu markiisa hore waa geed u baxa sida geedaha kale, waana geed caleen badan, calcenta xinnuhu waa cagaar, waana midda sida khaaska ah looga isticmaalo geedka, magacana u soo jiiday geedka, calcenta la'aanteedna geedku magac caan ah ma yeesheen.

Marka hore waxaa la guraa calcenta, waa la qalajiyaa, markaas kadib ayaa la shiidaa, calcentii oo daqiiq ah ayaa lagu shubaa weelal loogu tala galay oo aysan hawadu gali karin, si looga ilaaliyo in isticmaalka xinnuhu haddiiba xumaado. Xinnaha waxaa loo isticmaalaa badanaaba in la'isku qurxiyo, waxaana isticmaala dad badan oo da'doodu kala duwantahay oo iskugu jira rag iyo dumar.

Xinnuhu wuxuu caan ku yahay in loo mariyo dumarka marka la aroosayo, arintaasoo ah caado ay ka wada simantahay ummadda Soomaaliyeed, ahna wax jiray ama soo jiray muddo dheer.

HABKA XINNAHA LOO QASO

Xinnuhu waa caleen la daqiijiyey sidaan horeba u soo sheegnay, waxaa jirta habab kala duwan oo xinnaha loo qaso markii la rabo in la isticmaalo, haddaba waxaa jirta in dadka

qaarkii ay xinnaha marka ay qasayaan soo qaataan caleentii shiidnayd oo qiyaasan, waxay ku shubaan weel, waxay ku daraan xoogaa biyo ah oo aad u kulul, waxay kaloo ku daraan go' liin dhanaan ah, markaas baa la daboolaa, waxaa markaas marsigiisa la bilaabaa ugu yaraan 6 saac kadib, ayadoo la doonayo in ay wixii la isku daray isku qamiiraan.

Dadka qaar baa waxay xinnaha ku qasaan biyo qabow iyo xoogaa batrool ah si uu hadiiba gacmaha iyo lugaha ugu guduudiyo, laakiinse, xinaha mar haddii batrool lagu daro lama marsankaro korka qaarkii sida madaxa; dadka qaar kalena waxay xinnaha ku qasaan biyo xoogaa kulul iyo daawo si uu gacmaha iyo lugaha si fiican ugu guduudiyo.

Haddaba xinnaha markii la qaso kadib ayaa waxaa la mariyaa oogada qofka qaar.ka mid ah sida: gacmaha, lugaha, timaha, dadka qaarkiina waaba ku qubaystaan oo waxa ay yiraahdaan haraga ayuu noo jilcinayaa.

Xinnaha oo ah wax la isku qurxiyo waxaa isticmaalkiis u badan gabdhaha inamaha ah, kuwa la aroosayo, haweenka la qabo, haweenka da'da ah oo madaxa marsada marka ay timuhu ciroobaan, waxaa kale ee xinnaha isticmaala gabdhaha yaryar oo timaha loo mariyo si ay timuhu ugu qurxoonaadaan. Waxa kale oo xinnaha isticmaala ragga da'da ah oo marsada madaxa iyo garka marka ay timuhu ciro ka noqdaan.

Xinnuhu marka la marsanayo badanaa waxaa loo marsadaa koox-koox siiba marka ay dumarku marsanayaan markaas baa lagu sheekeeyaa weliba waxaa loo karsadaa shaah si aan loogu caajisin fadhiga badan.

HABKA LOOGU XINNIYO AROOSADDA

Aroosaddu waa gabadh samaynaysa aqalgal ay la samaynayso ninkii ay dooratay ayadoo ama reerkoodu ku daray, waxayna magacaas loogu yeeraa inta reerkaasi ay ilmo ka dhalayaan.

Haddaba aroosadda marka la aqal keenayo, waxaa loo mariyaa xinne aad iyo aad looga shaqeeyey oo la sharxay, waxaana loo xinniyaa ugu yaraan saddex maalmood, sababtoo ah waxaa la rabaa in ay gabadhu noqoto gaduud oo ay quruxbadnaato, sidaas darteed xinnuhu wuxuu ka mid yahay waxyaalaha aad iyo aad loo qiimeeyo marka gabdhaha la aroosinaayo.

Ayadoo ay jiraan arrimahaas oo dhan oo is-qurxinta qofka bini aadamka ah la xiriira ayaan waxaan talo ku soo jeedin lahaa, mar haddii xinnaha isticmaalkiisu noqday caado ka mid ah caadooyinka ummadda Soomaaliyeed, xinnuhu uu si fiicanna ugu bixi karo dalkeena, in xoog la saaro abuuridda xinnaha si aanu uga kaaftoono soo iibsashada xinnaha. Annaga oo Ilaahay nagu manaystay dal baaxad weyn oo wax kasta lagu beeri karo, xinnahana waxaan hubaa in uu caradeena si fiican ugaga bixi karo, waayo waxaan arkay meelo kala duwan oo gobolka Banaadir ka mid ah oo uu xinnuhu ka baxo asaga oo aan weliba xanaano fiican haysan, meelaha uu xinnuhu ka baxo waxaa ka mid ah Isbitaalka Booliska ee Madiina iyo Dugsiga Sare ee Xannaanada Xoolaha agtiisa.

Marmarka qaarkood dad baa waxay marsadaan xinnaha ayada ah oo caleenta qooyantahay, waxayna iskuraaceen in marka ay caleentu qoyantahay uu si fiican wax u guduudiyo, sidaas

darteed mar haddii xinnuhu marka uu qoyan yahay guduudkiisu uu badan yahay waxaa ummaddayada ku fiicnaan lahayd ayada oo ay u baxaan beero waaweyn oo xinne ah oo ay bar qoyaankaba ku marsato, barna qalaalka inta ka soo hadhana ay dibedda u iib geyso si ay lacag adag nooga soo gasho, intii aan annagu dibadda ks soo iibsan lahayn.

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S U M M A R Y

The leaves of "Elaan" (Lowsonia inermis L) are used by womenfalk for dying the hand and feet orange. To get different shades the leaves are mixed with other ingredients. The different ways fo preparing Elaan paste to be put on the nad and feed are discussed. It is suggested that "elaan" being an indiginous plant can be propagated and cultivated on commercial scale. Such steps will save the foreign exchange, which is spent on importing the leaf-powder for other countries.

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WAXTARKA GEEDAHA LEGYUUMKA (LEGUMES)

SIIBA NOOCA LUKIINA (LEUCAENA)

Jabir Maxamed Cali
Madaxa Laanta Fidinta
Wak. Daaqa Qaranka
Muqdisho.

Bahda Legyuumka (legumes), gaar ahaan nooca Lukiina (Leucaena), waa mid khaas ah, runtii hab wax soo saarkiis wuxuu yahay mid isugu jira Alwaax, Dhuxul, Baad. Hektarkii waxaa lagu qiyaasay Lukiina inuu soo saaro alwaax gaareyso 88 m^3, intaa waxaa u sii dheer oo laga helaa sanadkii baad xoolaad oo dhan 20 ton, caleentaa oo aad nafaqo u leh, waxaa ka faa'iideysan karo dadka iyo xoolahaba. Waa arin goor dhaw soo shaac baxday in geedkani mustaqbilka wax weyn ka beddelo gaar ahaan xagga dhaqaalaha Beero dhireed (Agro-forestry), shidaalka dhuxusha iwm. (Martin INce) ayaa sidaa yiri.

Lukiina waxa la yiraahdaa "geedo sare" (Super trees) waa nooc dhaqsi u baxa, wax weyna ka tara dhul keymeedka dunida saddexaad, waxa uu geedka lukiina si wanaagsan uga bixi karaa dhul nafaqadiisu aad u hooseyso, mar haddii uu sidaa geedka xaalkiisu yahay, waxaan shaki ku jirin inuu wax weyn ka beddelayo hab dhaqaaleedka beero-dhireed (Agro-forestry), waddamada soo koraya. Laakiin, qiimaha dhabta ee uu geedka Lukiina leeyahay, waxay tahay in uu ka xureeyo shidaal yaridda, dhuxusha, qoryaha iwm. ee ka jira dunida saddexaad.

Runtii Lukiina oo la yiraahdo ama loo yaqaano "Geed Sare" (Super trees), ma aha geedo, ee waa Legyuum waxayna nitrogiinka ka sameystaan hawada (atmosphere) iyaga oo sii wata habka

cunto samayska (photosynthesis), inkastoo ay yihiin sida geedaha dhirta oo ay soo saaraan Alwaax, dhuxul iyo caleemo nafaqo leh, haddana waxay awood u leeyihiin inay ka baxaan dhulalka waxyeeloobay oo dhirta ka maratay ama nabaad guuray.

Dr. Noel Vietmeyer, oo ah nin Khabiir ku ah Legyuumka kana tirsan Akadeemiyada Cilmiga ee Washington, wuxuu sheegay in ay jiraan 18,000 nooc oo ah legyuum, kuwaasoo 20 keliya laga beerto badankooduna yihiin nooca khudrada (vegetables).

Legyuumka waxay gaashaan-buur u yihiin mashaariicada dhireynta, marka dhul la baneeyo geedaha legyuumka ayaa ugu soo hor baxa oo wax weyn ka tara xagga sameynta nitorojiinka ciidda, iyaga oo caawiya (Microfauna)-ha ciidda ku jira, intaa waxaa u sii dheer iyaga oo loo isticmaalo joojinta nabaad guurka ciidda, isla markaa dabool u noqda dhulka, inta geedo kale ka soo baxayaan oo meesha qabsada.

Siduu Dr. Vietmeyer u sheegay, geedaha Legyuumka in ay yihiin kuwa ugu horeeya oo ka soo baxa dhul la baneeyey, (pioneers) awoodna u leh in ay ka baxaan meelaha xaaladoodu dabeeco aad u khalafsan, wuxuuna khabiirku sameeyey sahan weyn oo ku saabsan Legyuumka ka baxa dhulalka kulaalaha (Tropicals) isaga oo meel ku xanibay (isolate) dhowr nooc oo Legyuum ah si uu u ogaado hababaka loo beeri karo, wuxuuna caddeeyey in aanay u baahnayn beero kobcin, iyo wixii la mid ah, oo kharash ku baxaya, ee markaa si toos ah loo beeri karo. Dabiiciyan Legyuumka waa keli baxe umana oggolaado geedo kale inay ka dhexbaxaan, taa waxay ku tuseysaa legyuumka inuu yahay "Monocolture" isla markaana uu ka nabad galo waxyee-looyinka cayayaanka.

Mar haddii aad maqashid geed Legyuum ah waxaan shaki ku jirin inuu yahay Lukiina (Leucaena) oo gaarayo ilaa 100 nooc wax ka badan, inta la ogsoon yahay. Mike Benge, oo ka tirsan Hey'adda Horumarinta ee Mareykanka USAID, wuxuu isna qeexay (in Lukiina uu yahay geedka keliya ee u adkeysta ama la looltama qofka "geed jaraha".) ah.

Waxa jira geedo Lukiina oo aad u waaweyn dhirirkooduna gaarayo 20 mitir marka ay jirsadaan 5 sano, waxa kaloo jiro noocyo kaloo yaryar, loona isticmaali karo xirmooyinka (Hedges), dabeel-celin, iyo kuwo dhulka dabool u noqda.

Mar haddii intaas oo faa'iido laga helo geedka, taa micnaheedu waxay tahay, in uu noqon karo qeyb ka mid ah habab beereedka dunida seddaxaad ha noqoto lacag iyo hab suuqeedba ama suuq-geynta (soo saarka alaabo la iib geeyo).

Lukiina oo wax weyn ka tara xagga cuntada, shidaalka iyo looxaanta iwm. intaa waxaa u sii dheer ciidda uu ku siyaadiyo nitrojiin, oo wax weyn ka tara nafaqeynta ciidda.

Dhulalka Kulaalaha, Lukiina waxa loo isticmaalaa inuu u noqdo dugaal meelaha shaaha uu ku beeranyahay, dalka Induniisiya waxay aad iyo aad 100% ugu guuleysteen natiijad wanaagsanna ka gaareen isku dhex beeridda Lukiina iyo Shaaha, sidaa waxa yiri Mr. Benge. Haddaba farsamooyinka loo isticmaalo beerida keymaha dhirta caadiga looma isticmaali karo Lukiinaha, sidaa awgeed waxa lagama maarmaan noqotay in hab cusub ee farsamo la soo saaro kuna saleysan dhowritaan dabiicadeed iyo lagu dhex beero waxyaabo kale oo manaafacaad u leh dadka, waxaana leesu jirsiiyaa leemanka lagu beero Lukiinaha balacoodu 10 mitir oo lagu beero Shaah, Galley iwm.

Inkastoo Legyuumka nooca geedka Lukiina waxtar badani leeyahay haddana waxa jira geedo kaloo legyuum ah sida, geed qodxeedka, iyo kuwo kaleba, kalana ah: Acacia tortilis, A. aurculiformis, A. mangium, Gallandria iyo Sesbania grandiflora.

Geedo qodxeedka (Acacia) waxay awood u leeyihiin inay ka baxaan dhulalka lama degaanka oo ay timirtu xitaa ka bixi karin biyo yari darteed.

Vietmeyer, wuxuu tijaabo ku sameeyey Papua oo ka tirsan dalka New Guinea in ka badan toban sano, 19 nooc geedo ah, wuxuuna ku beeray dhul beereed oo horey looga tagay, nafaqo xumo, xagga ciidda iyo biyo maquurkaba, halkaa waxa si fiican uga baxay labo nooc geedo ah oo kala ah, Acacia auriculiformis iyo Eucalyptus spp. oo hal nooc ah, labada nooc siddeed sano gudahood dhirirkoodu wuxuu gaaray ilaa 17 m.

Ugu dambeyntii Waxaan ku soo koobayaa, warbixintan gaaban ee Legyuumka tusaalooyinka aan soo sheegay ee waxtarka dhaqaale in aysan intaa ku ekeen, waxaana soo jeedinayaa in si haboon looga faa'iideysto Legyuumka, dalka ka baxa laguna baraarujiyo beeraleyda iyo bulsho weynta kale beeritaanka legyuumka, anoo filayo in arintani wax weyn ka tari doonto xagga dabeecadda.

S U M M A R Y

Some Leucaena spp. produce timber at the remarkable rate of 88 cubic meter/ha. provide upto 20 tonnes of green forage and is most suitable for agro-forestry in the arid area. The qualities, production and uses of Leucaena spp. given in the article by Noel Vietmeyer published in International Agriculture Development June 81, have been summarized.

APPROACH TO RANGE MANAGEMENT IN SOMALIA

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Range Management in Somalia derives its legal basis from the Range Development and Management Act (Law No. 3 February 4th 1979). This act authorizes the Minister of Livestock, Forestry and Range to regulate grazing and to develop the rangelands of Somalia in the interest of National conservation and of the Pastoralists depending upon these grazing lands for a livelihood.

The Law authorizes the Minister, after consultation with the General Manager, Regional and District Officials of National Range Agency, to declare any area in Somalia as a Range Development Area, and to modify boundaries of development areas as the need arises; establish grazing reserves or cooperative ranches as management and development units within the districts, establish Range and Livestock Associations for each reserve to assist in the planning, implementation, and supervision of the Range Management and Development program for the managment units. The act confers broad powers on the Minister to do any and all things necessary for the preservation of these rangeland; including amongst other powers, the right to specify the number of livestock which may graze within such reserves and the seasons or times during the year they will be permitted to graze; to regulate cultivation and occupancy in order to preserve the lands and their resources from destruction or unnecessary injury.

The Minister's authority under the Law has been delegated to the General Manager, National Range Agency. The National Range Agency was created by Law No. 23 (August 16, 1976) to plan implement, regulate and monitor range management, forestry and wildlife activities throughout Somalia.

A National, Regional and District Organizational structure is in place to assist the General Manager in carrying out his responsibilities.

The broad objectives of the Range Development and Management Act as they relate to livestock grazing are:-

I) Conservation of Somali Rangelands by preventing overgrazing and desertification

II) Range rehabilitation through proper grazing management and development of the necessary facilities for efficient range utilization and conservation.

III) Stabilization of the livestock industry by cooperation with the pastoralists, and the enforcement of rules established to implement the management and development program

GRAZING RESERVES

Grazing reserves are areas of rangeland constituting a management unit, defined for applying specific management and development practices. They are designated as seasonal grazing reserves, which can be opened and closed to grazing for specific period each year, rotational grazing reserves, which are grazed on a rotational basis, famine reserves, which are only grazed during times of hardship (drought); and absolute reserves, which are closed to livestock grazing permanently, for flora and fauna study.

A recent report of the National Range Agency indicated that a total of 183 reserves had been established through out the country. A preliminary review of the 32 reserves in the Central Rangelands Development Project "CRDP" area generally found the management and boundaries vagely defined and in some instances the reserves reflect little or no improvement in range condition compared with adjoining area. Some of the reasons being :-

1. Sites for grazing reserves were selected arbitrarily forming a "Shot gun" pattern without supporting resource information as to current condition, production, and potential for improvement.

2. No attempt had been made to determine which pastoralists should graze in the reserve, nor restrictions planned or imposed or numbers of animals allowed to graze during the parts of the year, the reserves are used.

3. Unregulated use generally results in too many livestock, thus negating the benefits the forage plants may have derived from the rest or deferment from grazing.

4. Little concern had been given to the areas adjoining the grazing reserves. Livestock have to be some place every day of the year. If restrictions are imposed in one place concentrations and over-use occurs in other places often resulting in a net overall reduction in forage production. Capitalizing on past experience data provided by the Central Rangelands aerial survey and recognizing a need for a more systematic and effecient approach, the range management and development program in the Central Rangelands Development Project area is being implemented on "district by district" basis. The program is preceeded by a district resource analysis which documents information on the people involved in the program. The information includes their livestock numbers, the times during the year they graze within the district, and their grazing patterns. We are also collecting vegetative information reflecting the different kinds of forage plants, their relative forage value, their presence in plant communities (Range Sites), current level of forage production,

condition of the plant communities, and an assessment of potential for improvement.

Upon completion of the analysis we will be able to reach an informed consensus of the best methods and management practices to achieve the project goals of all concerned with the district rangeland resources.

With the livestock grazing patterns defined and resource problems identified the district can be further subdivided into specific management units or reserves. The delination of reserves will also consider topographical barriers and will represent a area of village and nomadic interest. In other words we will try to group villages and nomadic groups that are compatable and have common problems and goals with regards to livestock production. To prevent future problems we will try not to place villages or nomadic groups that do not get along well in the same reserve.

The reserve will serve as an areal basis for planning and implementing the management and development activities. Livestock and grazing associations are being organized for each reserve as a means of getting the pastoralists imput into all aspects of the planning and development activities. Both villagers and nomads will be mebers of these associations and will be represented by a workable committee which they select as their spokesman.

After the management and development program for each reserve is formulated they will be incorporated to a district range management plan. To function as a partner with National Range Agency a district committee with representation

from the various reserves, chaired by the district Commissioner, will be organized to share management and development responsibility. We feel this is a logical approach when dealing with a private use of a public resource.

Some advantages to this appraoch to grazing management includes :-

1. Priority districts are selected and the program is implemented on a district by distric basis. In determining priorities consideration is given to the range conditions, attitudes of the pastoralists and potential for improvement as well as political considerations.

2. Delineation of grazing reserves is preceeded by a resource analysis which documents livestock grazing patterns, and associated management problems, resource condition and potential for improvement.

3. Management and development activities are planned and implemented in a systematic manner with imput from the pastoralists at both the reserve and district level. Nomadic interests are fully considered.

4. All of the rangeland within a priority district are included in the resource analysis and management and development program.

5. The intensity of management proposed is responsive to the prevailing situation (e.g. if range conditions are acceptable and no problems exist the plan would merely document current management practices and establish a monitoring network).

CO-OPERATIVE RANCHES

Co-operative ranches can be established by NRA after acceptance of a proposal by the regional and district party committee. The designation of a cooperative ranch consititutes a land tenure action which restrict a grazing and development

area for a special group such as :-

1. Town and village communities
2. Nomadic groups
3. Livestock Traders.

Most of the present cooperative ranches are concentrated in areas other than the central rangeland and very little information is available on the success or failures of such operations. A common complaint seems to be that cooperative ranches are effective in excluding livestock of pastoralists not participating in the cooperative, but that cooperative members do not confine all of their grazing to the cooperative ranch. It this occurs, it represents an unfair adjudication of the grazing resource among the pastoralist and can only result in over grazing of the common area. Members of the cooperatives have their ranches to retreat to when the forage is exesives have their ranches to retreat to when the forage is exhausted in the commons, but the non-members have no reserve forage to fall back on and must remain at the depleted area.

Before the concept of cooperative ranches is expanded more specific guidelines should be developed in terms of adjudication and how the overall concept fits in with the establishment of grazing reserves, and the overall impacts on livestock production and range conditions.

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SOME PRELIMINARY RESULTS FROM RANGE ANALYSIS OF EL-DHERE DISTRICT, GALGADUUD REGION

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INTRODUCTION

Range analysis has been confined so far to the shrub/tree layer of shrublands in the western half of the District. Six range sites have been identified and mapped. The largest of these land system unit 71 of Resource Management and Research (1979 a), is the subject of this paper.

RANGE SITE ENVIRONMENT AND LAND USE

The Acacia nilotica - Dischrostachys sp. - Solanum jubae - Acacia horrida shrubland range site occurs on deep, gently sloping to rolling reddish brown loamy sands and sandy loams underlain by limestone.

This range site is a 20-25 km wide band which extends from n.e.-s.w. accross the District. It ranges in elevation from 100-300 meters and occurs just to the west of a 300 meter high ridge which parallels the coast about 30 km inland.

Rainfall has not been measured but usally occurs during two seasons (April-May and October-November) and is probably in the 200-300 mm/year range. There is little runoff of rainfall because of the sandy nature of the soils.

The principal land uses are pastoralism, emphasizing camels and goats but also including sheep and cattle, and subsistance agriculture. Water is not abundant. Only one source of permanent water exists within the range site - at Nooleye village. Approximately 50% of the range site is over 20 km from permanent water (Resource Management and Reasearch, 1979b).

Despite the relative lack of permanent water, livestock do not use the range site during the first 30-45 days of each rainy season because of an abundance of a biting fly (Ribi) which can cause death - especially to camels. Wet season use is primarily to the north where vegetation is less dense and annual grasses more abundant. However, the range site is used in the late wet season and throughout the dry season. Livestock numbers are presently being surveyed by Non-Fromal Education Officers.

Shifting subsistance agriculture is common. Over 12.6% of the area is in crops or fallow or recently abandoned farm land (Resource Management and Research, 1979b). This is one of the heaviest concentrations of agriculture in the three regions of the Central Rangelands Development Project area. However, the area in which vegetation composition and structure and - possibly soil fertility as well - still reflect the occurence of farms abandoned some time ago is probably much larger.

Corn, millet, beans, seasame and watermelon are grown. Farms generally last for about 7 years before being abandoned. About 20 years must pass before they can be farmed

again. Cropped plots are small, averaging about 0.025 hectares, but a much larger area around each plot (about 2.5 hecatere on the average) is usually enclosed with a thorn fence and used for dry season grazing. The extent to which such enclosure affects the use of rangeland remaining open to pblic usage is unknown and needs investigation.

RANGE ANALYSIS

Range analysis has to date emphasized the shrub layer component of the vegetation.

Shrub canopy cover is 28% making this a shrubland according to the physiognomic criteria of Pratt and Cwynne (1977). Shrub density is 1600 plants/hectare. As is normal, density is inversely related to height, i.e., the bigger the shrub the fewer there are of it. (Fig. 1).

The larger shrub species (Acacia horrida, A. reficiens, A. mellifera (?), A. nilotica, Dichrostachys sp., and Solanum jubae) attain 3-5 meters in height at maturity. Acacia nilotica is the largest species. However, most of the shrub species grow to either 0.5-1.0 meter or 2-2.5 meters high. Average heights of all plants is 1.21 meters. No vertical layering of shrub/tree heights exists (Fig. 1). However, there is an observable vertical layering of canopy cover of palatable shrub species, which is highest between 1-2 meters and between 3-5 meters. As the maximum effective browsing level of camels is about 2.5 meters the higher level is out of reach by browsers except when the leaves (mostly fine Acacia leaves) fall with the dry season (Fig. 2).

Forty-one shrub species were recorded - a large number compared with similar shrub communities studied in East Africa. The dominant shrub species, Acacia nilotica, Dichrostachys sp., Solanum jubae and Acacia horrida, make up 50% of the total importance value of all shrub species (imprtance value = relative density + relative cover + relative frequency). However, 84% of all the species had importance values of 10% or less (Fig. 3). Thus, although definite dominant shrub species can be discerned, most species are not abundant or are small or poorly distributed throughout the range site.

Of the 41 shrub species, at least 52% are considered palatable by local herdsmen whereas at least 20% are unpalatable or of little palatability. Palatability class has not been determined for the remaining 28% which, however, constitute only 7.1% of the total importance value. Approximately 20% of all shrub canopy cover is composed of least palatable or unpalatable shrubs. The largest contributor is Solanum jubae (13.3% of the total).

The most important shrub forage species base on palatability and accesability by browsers (under 2.5 meters in height) are Dichrostachys sp., Acacia horrida, A. nilotica, Dabakar (Somali name) and A. reficiens. (Table 1).

Forage availability for palatable shrubs will be sampled by correlating forage weight with shrub size through destructive sampling and linear regression and multiplying mean forage weight per shrub by shrub density.

Population structures of the dominant shrub species show vigorous populations with adequate regeneration and recruitment plants for Dichrostachys sp. and Solanum jubae. Those of Acacia horrida and A. nilotica look less vigorous. Acacia nilotica in particular has no middle sized trees and relatively little regeneration (Fig. 4).

Solanum jubae is closely correlated with abandoned farms. It is one of the first shrub species to become established following abandonment. Thus, its importance here indicates the widespread impact of farming on vegetation of this range site. Solanum jubae eventually dies out as it is overtopped by the other dominant shrub species.

Based on the shrub layer approximately 65% of the range site is in poor or very poor condition (Fig. 5). No relationship with nearness to water is apparent except that all land within 1 km of villages is in very poor (sometimes poor) condition.

According to the criteria presently in use by CRDP range ecologists, range condition of the shrub layer is a function of (a) palatability (species composition), (b) vigor (age class structure and plant health) and (c) hedging (cumulative impact of browsing on shrub form).

Poor and very poor range condition were most often due to the palatability component (47%) and secondly to the vigor component (33%). Hedging was third (20%). The only exception was within 1 km of villages where hedging was more frequently the cause of poor & very poor range condition.

In this case the poor palatability component was due to an over-abundance of least palatable and unpalatable shrubs with Solanum jubae being the most important. Poor vigor was caused by too few mature palatable and highly palatable plants.

Changes in shrub species composition and population structure is due to heavy browsing and would be expected to lead from and be accompanied by a significant amount of heavy hedging of shrubs. This was not the case except when very close to the villages. Furthermore, Solenum jubae, the most abundant species of low palatability, appears to be closely associated with abandoned farms. Therefore, the principal cause of degraded shrub layer condition in this range site is subsistance agriculture and its attendant shrub clearance rather than heavy browsing by livestock.

Further sampling of forage productivity and survey of range condition of the grass layer will be carried out before an attempt is made to form grazing associatinns in this area.

R E F E R E N C E S

Central Rangelands Survey. 1979a. Somali Democratic Republic Volume 1 part 2. Static Range Resources, maps.

Resource Management and Research. 1979b. Somali Democratic Republic Central Rangelands Survey. Volume 1, part 3. Summary maps at 1:2,700,000 for volume 1, part 1 and volume 4.

Pratt, E.J. and Gwynne, M.D. 1977. Rangeland Management and Ecology in East Africa. Hodder and Stoughton, London.

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Fig. 1. Number of shrub plants per height class in sample

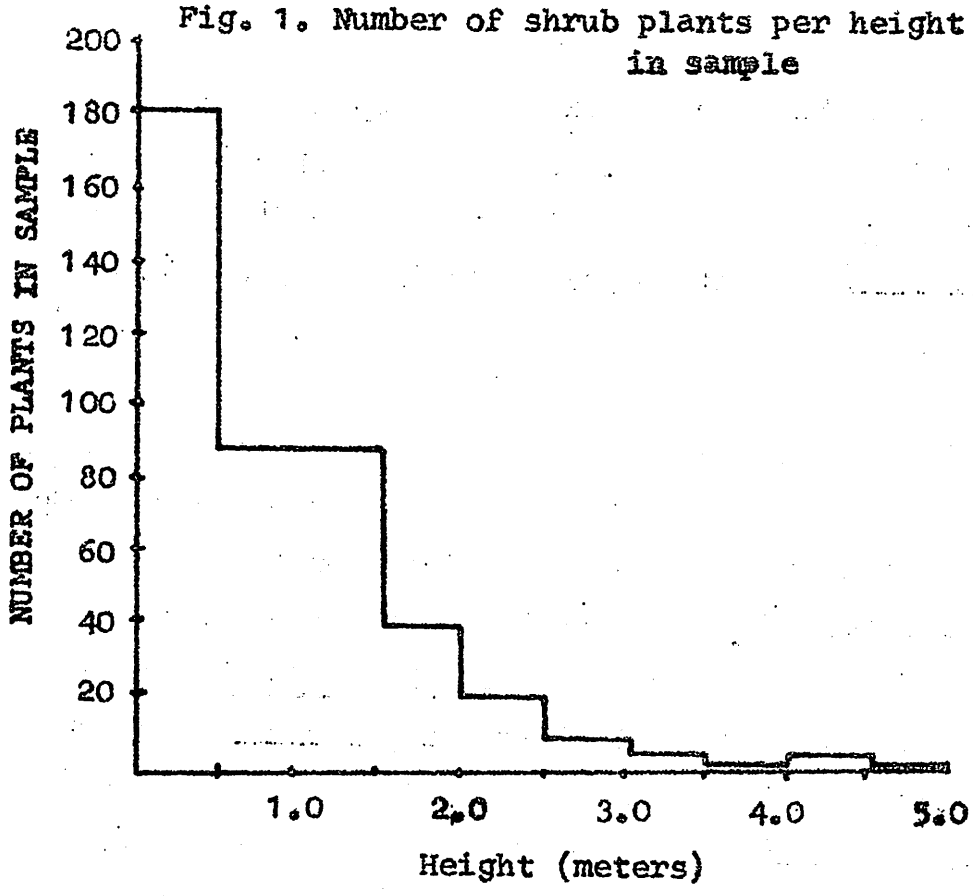


Fig. 2. Vertical Distribution of Canopy Cover of Palatable Shrubs. Shaded area Shows that part beyond the effective reach of camels.

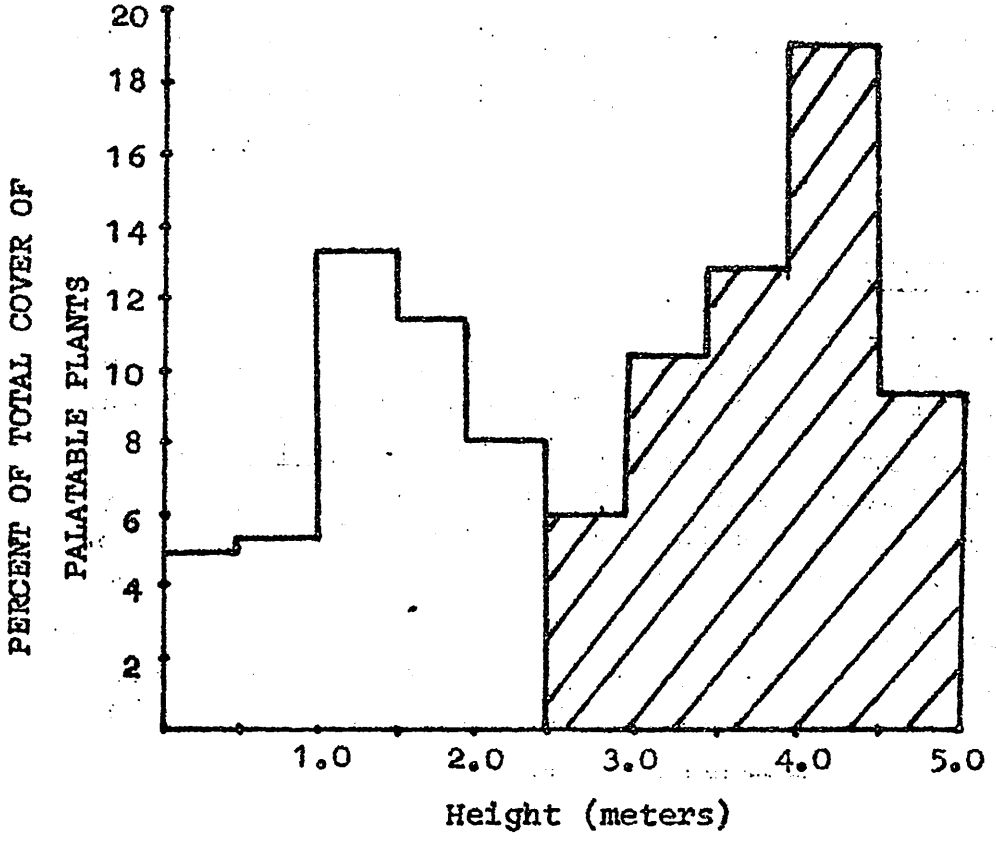


Fig. 3. Percentage of Shrub Species by Importance Value Class.

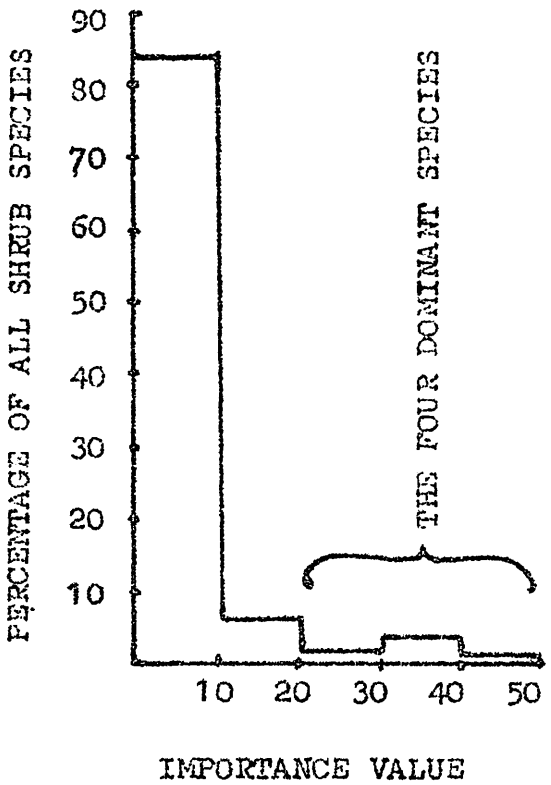


Table 1. Shrub Species with over 5 percent of Palatable Canopy Cover.

Species	% Total Canopy cover
Dicrostachys sp.	29.4
Acacia horrida	13.6
Acacia nilotica	10.9
Dabakar (Somali name)	10.2
Acacia reficiens	8.7
	72.8

Fig. 4. Population Structures of Four Dominant Shrub Species

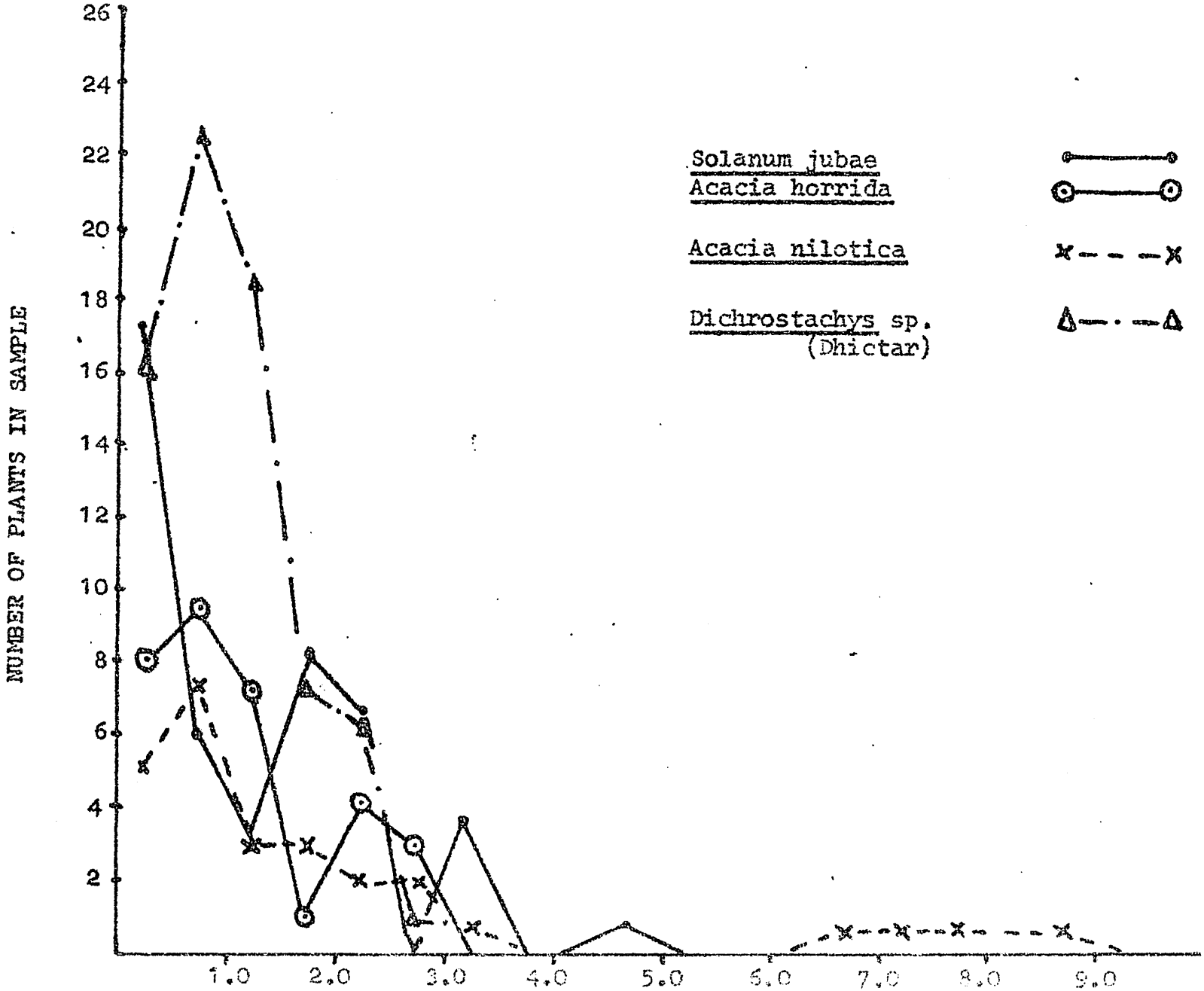
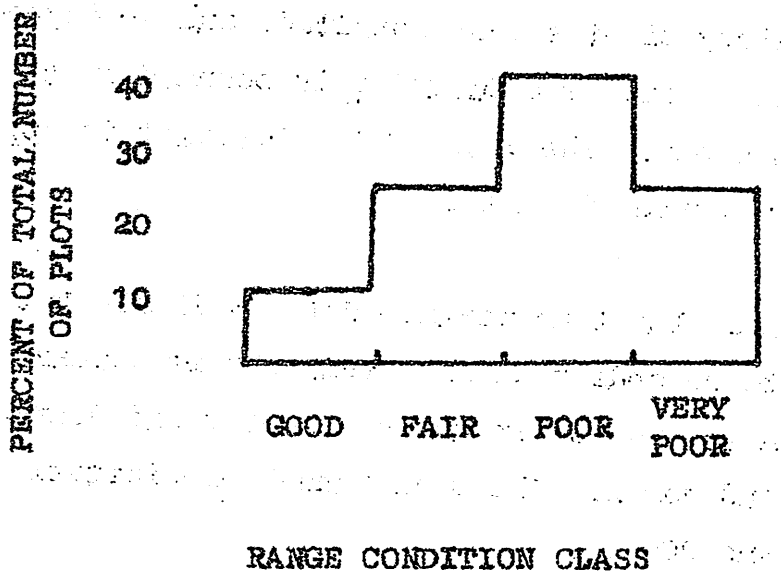


Fig. 5. Percentage of Total Plots by Range Condition Class.



RANGE ECOLOGY OF THE HOBBIO DISTRICT

By: James Naylor
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The Hobbio District, of which Hobbio is the District Headquarters, is on the east side of the Mudug Region. The District occupies the land area between five degree north latitude and six degree thirty minutes north; and between 47 degrees thirty minutes east longitude and 49 degrees fifteen minutes east. The District is bounded on the east by the Indian Ocean. The area of the District is approximately 25,000 square kilometers.

There are almost no weather data available but from the incomplete records that are available it appears that precipitation is highest in the south east and decreases to the west and north. The mean annual precipitation is between 150 and 200 mm.

The land area can be divided into four topographic types: the 1) gentle slope and low relief of the ridges and basins of the coastal plain; (2) narrow, relatively flat-topped plateau of the Gawan Escarpment with the deep canyons and gullies disecting steep escarpment sides; (3) large interior Basin containing many salt lakes; and (4) limestone Uplands along the north-west side of the District.

The Coastal Plain extends across the District from south-west to north-east parallel to the coastline of the

Indian Ocean, and is about 12 kilometers wide at the south end and about 22 kilometers wide at the north end of the District. The escarpment which forms the interior boundary of the Coastal Plain is abrupt and high along the southern half of the Plain but is less distinct in the north.

The Coastal Plain is an uneven surface of basins, ridges, hills and dunes of white sand. The dunes occur as single hills, less often in groups of two or three, and individually occupy an area of only a few hectares. The sand of these dunes appear to have originated from the coastal sands rather than from any blowouts on the Plain. The dunes are scattered across the Plain in no recognizable pattern and all seem to be moving west, indirectly, from the coast to the interior. Previous dunes may have been the source of a considerable portion of the interior sands.

The soils of the Coastal Plain are sandy, white to very pale orange and have an average depth of about one meter. Immediately under the sand, apparently throughout the Plain area, is a hard, reddish-orange rock with an uneven surface of holes, cavities, humps and lumps. This rock seems to have originated as a precipitate of calcareous minerals which have been leached from the sands. The rock is almost without cracks and is unlayered. This rock grades into limestone or reef deposits at about one meter depth. On the Plain there are areas of a few hectares to a few tens of hectares where there is now no sand over this solution rock. The amount of bare rock area increases on the Coastal Plain from southwest to northeast.

There are two or three long, narrow ridges parallel to the coastline. These ridges appear to be fossil reefs, are covered by the solution rock and are mostly bare of soil.

The plant species Oldenlandia saxifragoides grows in green mounds on this rock, appearing from above as mounds of tiny green leaves, often with tiny, yellowish-white flowers. The lower side of these plants show them to be dwarf shrubs with strong stems and branches. These unique plants resemble a growth-form more often found in Alpine or Artic tundra plants than in tropical plants.

The plant communities of the coastal Plain are dominated by grasses and grass-like plants. There are several species of low, semi-woody plants such as Indigofera intricata, Ocimum tomentosum, Pavonia sp., Grewia cerasifera and Jatropha obbiadensis. The sedge Cyprus sp., is common on the Coastal Plain, is not very palatable, and seems to have increased to become a dominant on disturbed or overused places. Aristida sp., particularly A. kelleri, is an increaser due to overgrazing. Leptothrium senegalenses, Cenchrus ciliaris, Digitaria spp., and Sporobolus spp., are some of the more palatable and desirable grasses.

As the land surface begins to rise near the escarpment a different plant community and range site begins. The grass species remain essentially the same but there are many more, very low, woody plants. Grewia cerasifera increases in density of plants from the few scattered plants found on the grassland. A very low Commiphora sp., grow at the soil surface. A low form of Acacia edgeworthii and a small, low-

growing Euphorbia cuneata are common. This community comes down close to the ocean near El Hur where Salvadora persica is also common, but near the north boundary of the District this community starts some 10 kilometers from the coastline.

Most of the potable water on the Coastal Plain is found in shallow wells just above the tide line. The potable water is floating on the much more salty sea water, and the people dig shallow wells a very few meters deep to get at this water for watering their livestock and for domestic use. The people usually dig out these wells each day as the thin layer of potable water is soon removed from the wells during the process of watering livestock.

In the south of the Distric access to these wells is easy but north of Hobbio a fossil reef ridge boarders the coastline forming a steep cliff facing the ocean, and the water wells at the tideline are very difficult to get to where this cliff exists.

There are a few, relatively deep, hand-dug wells along the west side of the Coastal plain near the escarpment.

The Gawan Plateau is a prominant feature of the south half of the District, becoming less distinct toward the north. Southwest of Hobbio where the Hobbio to Wisil road runs, the escarpment of the Plateau rises about 150 meters within two kilometers or at about seven percent slope. At the top the topography is nearly flat. The average width of this Plateau is approximately 10 kilometers. The west slope is only slightly less steep than the east slope.

The soils of the Plateau are deep sand over limestone. These have some silt content and have a pale orange color. On the east slope the canyons have been cut through the limestone cap and into rock below which is composed of poorly consolidated white, beachsands.

The west slope is deep, orange, sands which have a low silt content. This west slope is undergoing rapid erosion and has many deep erosion gullies.

The only water available on the Plateau is from three cisterns at Gawan village and from very temporary water pools which fill during the rainy season. When this runoff water supply is exhausted the livestock must be taken off the Plateau to Wisil or on the Coastal Plain for watering.

A plant community in which Terminalia sp., is the most conspicuous species extends from the lower edge of the steep slope on the east face to the top edge of the west facing slope of the Plateau. There has been considerable harvesting of Terminalia trees in the past and many areas now have only an occasional tree growing in an area of low shrubs and grasses. The west facing slope supports a community dominated by Acacia nilotica.

In the canyons on the east facing slope occur plants very different from the xerophytic plants usually found in the Mudug Region. In these steep-walled, mesic canyons are such plants as Eulophia petersii of the Orchidaceae, Ochna inermis of the Ochnaceae, Buxus hildebrandtii of the Buxaceae, and the fern Negripteris scioana.

There is some cultivation, past and current, on the Plateau and on the west facing slope. Perhaps because of this the greatest sand dune problems of the District occur here. On the Plateau and along the west slope from the area just east of Xingod and east of El Dibir south to the Bacadweyne-Cammara area active dunes of orange sand occur. In addition once stabilized dunes are becoming active, therefore, the problem is increasing.

The Acacia nilotica community, which contains over 20 important woody forage species, occupies the area in which the most cultivation of the District occurs.

The Interior Basin occupies most of the area between 47 degrees and 48 degrees east and between five degrees and six degrees north. Afguduudle, just north of Wisil on the Wisil to Galkayo road, is within this Basin. Bacadweyne is located on the east edge of the south end of the Basin. Doongab is within the Basin near the west side of the District. El Dibir is at the north end of the Basin. An arm of the Basin passes just east of Xingod, engulfs Afbarwaqo, and returns just east of Sacabad.

There are salt lakes scattered throughout the Basin. However, the main salt lakes are south of Bajeela and west of Bacadweyne.

There are also many gypsum basins. These gypsum basins are filled with silty alluvium and here water can often be found in shallow, hand-dug, wells. Most of the villages of the District are found near these gypsum basins because

of the reliable water supply. This water is usually potable, for people and livestock, but has enough disolved salts to be bitter and to cause some difficulty in the water balance of the large intestines, creating a laxative effect.

Most of the plants of the Interior Basin have some salt tolerance. In the gypsum basins and near the salt lakes are found genera such as Salsola, Limonium, Suaeda, Zygophyllum, Sporobolus, and Tamarix, all of which have a high salt tolerance. Some species found here are: Tamarix nilotica, Suaeda micromeris, Sporobolus ruspolianus, S. kentrophyllus, S. spicatus, Salsola pycnophylla and Limonium distichum.

North of the Interior Basin near the north end of the District are the Limestone uplands, an area of rocky limestone ridges alternating with relatively level plains. The soils of this uplands are shallow, pale-orange, sands over limestone. Although always shallow, the depth of the sands vary considerably, from almost no sand to 50 cm of sand over the rocks.

There are very few permanent watering places on these uplands but there are many basins filled with white silty-sandy, calcareous, alluvial material in which rain water accumulates. This water is never deep and does not last long after rainfall. In almost all of these basins some water can be obtained during at least part of a year, having near normal rainfall, by digging shallow (4 to 10 meters) wells. This water is potable for people and livestock but is never entirely sweet.

Heavily hedged trees of Balanites sp. and Boscia minimifolia are prominant on the uplands. Other common species include Euphorbia somalensis, Euphorbia cuneata, Acacia horrida and A. edgworthii. However, Indigofera ruspolii is probably the most abundant species in these uplands. Grasses such as Leptothrium senegalense, Cenchrus ciliaris, Dactyloctenium scindicum, and Enneapogon schimperianus are important forage species. Aristida sp., including Aristida kelleri, seem to be increasing as the more palatable plants are reduced by grazing.

The Hobbio District appears to have six range sites, within these four topographic types. These will be discussed in future reports.

Taxonomic information obtained from: Dr. S.M.A. Kazmi; The National Herbarium collection; Cope's draft of key to Somali grasse and J. Beckett, J.B. Gillet; C.F. Hemming, and R.W. Watson, Resource Management & Research volume 1 part 1, Central Rangelands Survey, 1979, London.

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GRAZING ASSOCIATIONS IN HOBBIO: PERPENDICULAR INTERSECTS PARALLEL ON THE SOMALI PLAINS

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Socioeconomists do not expect to discover pastoral nomads seemingly eager, albeit with minor qualifications, to accept advice from developers which threatens to impinge on their exploitation of the rangelands. This qualification "seemingly" has been injected purposefully; at the present stage of research/development efforts among the pastoral nomads of Danle and Sugulle Grazing Associations of Hobbio District, Mudug Region, Somalia, we can only conjecture as to what motivated them to accept in principle the proposed management plan designed by the Central Rangelands Development Project (CRDP).

From the perspective of the CRDP, this acceptance may symbolise auspicious project results to come. Some may assume that ecologically unenlightened pastoralists do in fact now see the light; the urgency for improved range management practices has been successfully extended by CRDP staff and critically accepted by Central Rangelands Pastoralists for their insight.

Were the "deterioration indices" relevant to the Danle and Sugulle rangelands stark, the latter assumption could seem reasonable. Yet according to the ecologist working in Hobbio District, the Danle and Sugulle rangelands are in

poor to fair conditions; poor to fair in a continuum from very poor - poor - fair - good is by ecological standards, somewhat middle of the road. One senses, on the basis of high proportions of unpalatable grasses such as the Aristida varieties versus palatable species like Cenchrus ciliaris or Digitaria, that range condition may be worsening over time. Yet in the Danle and Sugulle reserves, the moment for pressing the emergency button has yet to arrive. Caution yes, crisis no. So why have the pastoralists agreed, and what is it they have agreed to?

TRADITIONAL SPACE

The Danle and Sugulle pastoralists have agreed, through the representation of their respective Grazing Association Committees, to a rotational grazing scheme which while novel, is not necessarily irreconcilable with what I hypothesise to be their conceptualization of space. *Firstly, I hypothesize that the "cognized environment" for reer deexeed (plains pastoralists) is dominated by a series of spatial vectors whose

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* The stress on the hypothetical nature of the model presented below can not be emphasized too strongly. Ethnoecological research into the pastoralists' conception of the structure and function of their ecosystem has only just begun. If anything, the model and deductions ensuingly drawn, pint up the need for a research strategy which incorporates both insiders' (pastoralists') and outsiders' (supposedly objective scientists') perspectives. It is not inconceivable that this outsider may be imposing well defined conceptual structures onto insiders when in fact there are none. Thus while the patterns may be observable to the onlooker, their conceptualization for the pastoralist may actually not be apparent.

axes are roughly parallel. These vectors are distinguished by one or more of the following (a) topographic features, (b) location of wells, (c) location of seasonal surface watercourses, (d) type of availability of grazing, (e) location of xajub (religious/shrines/Pilgrammage centers), (f) location of gas (string of pastoral nomadic encampments called berins), (g) the range of ceshimo: "protective zone" between berins maintained largely for seperation of different heres or the "protective zone" created by elongating gas which a descent group maintains to control non-kin access to water and grazing within a dagen (traditional grazing area) and (h) location of the small urban center of Hobbio. Secondly, I hypothesize that the local conceptualization of perpendicularity along a NE-SE axis in relation to the dominant spatial vectors is associated with periods of movement, rather than categories of space. This does not imply that movement can not occur along, rather than across, vectors; rather, vectors are characterized as such because of inherent spatial patterns which are distinguishing.

In Figure 1, the parallel lines are axes which I hypothesize would be derived were regression analysis carried out on the distribution of distinguishing features within a vector. Vectors are therefore best conceived as "generalized spaces" within which distinguishing features are found, in regular enough configurations, to allow for hypotheses and a spatial model to emerge.

Vector bounds can coincide, or at times, overlap. Vectors 2 and 3 overlap slightly, as do 3 and 4. The bounds of 5 are meant to be tangent with 4 and 6, while 7 is tangent with 6 and 8. 1 and 9 are the topographic boundaries which gird the entire spatial framework. As an escarpment with numerous watercourses (togs) descending perpendicularly from its summit, 9 is segmented and nudged inland northwest of Hobbio. Even with this break, the parallel principle still holds true.

The gas, or string of berins, is located either on high ground relative to the surroundings (4 and 6), and interwoven adjacent to watercourses of wells in the case of 8 and 4 respectively. The berins are repeatedly settled; heavily eroded spots with high densities of goat and sheep pellets, along with relatively undesirable grasses such as guxud, characterize these as traditional habitation sites. Distance from grazing and water, both a function of seasonal variation in rainfall influence the siting and density of berin settlements along gas. We could hypothesize that during the gu and dayr rainy season, a higher density of settlement along 8 and possibly 6 will occur than during the dry seasons of xagaa and jilaal when pastoralists settle closer to permanent waters in 2 and 9 (particularly during the windy xagaa for the latter). In Jilaal, access to Hobbio for the sale of milk, small stock, and the purchasing of supplies takes on added importance. With the exception of Xagaa when some reer deexeed mount the escarpment to seek shelter from hefty "winter" winds access to water in the Hobbio wells

vector is kept within enedays trek. With the recent rekindling of interest in livestock exports and commodity imports through Hobbio port, this vector will only increase in importance, to the point where vector topology may possible become distorted.

Spacing between berine along gas is in turn related to ceshimo. Mayracasho is the concentric space immediately around the guri (temporary houses composing the berin) which livestock use as a running area before nightime enclosure. Depending on the size and composition of herds, if the interval between mayracasho contracts to the point where adjacent herds of goats and sheep intermingle, ceshimo between berins is threatened. Thus for husbandry purposes, overlap between mayracasho is avoided. At the same time, we may hypothesize that this facilitates the movement of livestock as independent herds to and from daytime grazing (5 and 7); as livestock move perpendicularly away to either side of the berins, they are even less likely to mingle than on their late afternoon return.

If factors were sought to explain the alignment of gas and the spacing of berins within them, topography, animal husbandry concerns, and distance from reliable water will come to the fore. Yet the strategic alignment of gas as a method for kin relations to maintain effective grazing control over dagen is likely to be equally important. Since the result of the CRDP's Non Formal Unit's research indicates that the pastoral groups throughout the Central Rangelands

adhere strongly to their dagen boundaries, it is reasonable to assume that settlement mechanisms have evolved to assure this continuity.

Elongation of gas parallel to the long axis of dagen is one means of controlling ingress of non-related group into the grazing area. One could argue that situating gas across the breadth of dagen, would prove an equal, if not more effective means of maintaining control over natural resources. Yet we recall that topographic axes run SW-NE, while wells and basins of seasonal watercourses do likewise. Thus the settlement pattern most likely to optimize resource utilization while minimizing ceshimo related conflicts occurs when gas vectors align parallel to the topographic axes.

The shrine vector poses the most theoretical problems since other xujub do occur in the plains. Nevertheless, the two principal shrines for the Hobbio plains peoples (as well as related inland peoples) are aligned parallel to other vector axes. The periodicity between pilgrimages and its affect on reer deexeed spatial orientation and mobility requires investigation.

DEVELOPMENT SPACE

Proposed CRDP management interventions assume that improved range condition along with increased forage production will result from adoption of systematic approaches to exploitation of the range resources. This in turn will lead to increased animal production. What the turnaround

effect of this increase will be on the rangelands is not clear since we lack data on present offtake rates. Nor do we possess sufficient information on local pastoral production systems or decision making strategies to be in the position to justifiably criticize indigenous management systems as being less efficient or "rational" than the systems being proposed. No one argues that certain aspects of range condition are not improving. Yet we are in the difficult process of determining which management systems are preferable to the next, and on the basis of what criteria.

In agreeing to the formation of grazing associations to manage the reserve areas of Sugulle and Danle along the lines of that presented by the CRDP management plan, the reer deexeed have no doubt offered CRDP staff ground for optimism. Yet the anticipation of "carrots" in the form of potential groundwater or surface water developments, in exchange for local participation, has likely played some role. Whether the interest expressed in range management to this date has been feigned, is difficult to say. It is possible that the motivation is mixed; new waters and improved range condition are for the pastoralist both enticing, even if precedence would most often be given the former.

It is into this context that the management plan outlined in Figure 2 descended. If Figure 2 were to be superimposed over Figure 1, the perpendicularity of the spatial configurations would be apparent. Yet the fact that a new spatial configuration is being introduced should not be cause for alarm. Followup monitoring is the more approp-

riate response since models for a conceptualized and proposed order are now in place for comarison. More complete field data needs to be collected to support or reject the validity of spatial conceptualizations hypothesized, and the probability of successful implementation of management plans proposed.

The proposed management plans for Danle and Sugulle reserves are founded on one fundamental criterion to achieve a viable plan, movement on the coastal plain must not be curtailed. Had the management plan proposed a rotational grazing regimen imposing blocks or "paddocks" parallel to the primary topographic or water vectors, mobility between vectors would have been seriously curtailed. In this sense, the overlay of paddocks perpendicular to our hypothesized vector axes reinforces an inherent trend, only minimally disrupting mobility along the SW-NE axis for those paddocks being rested.

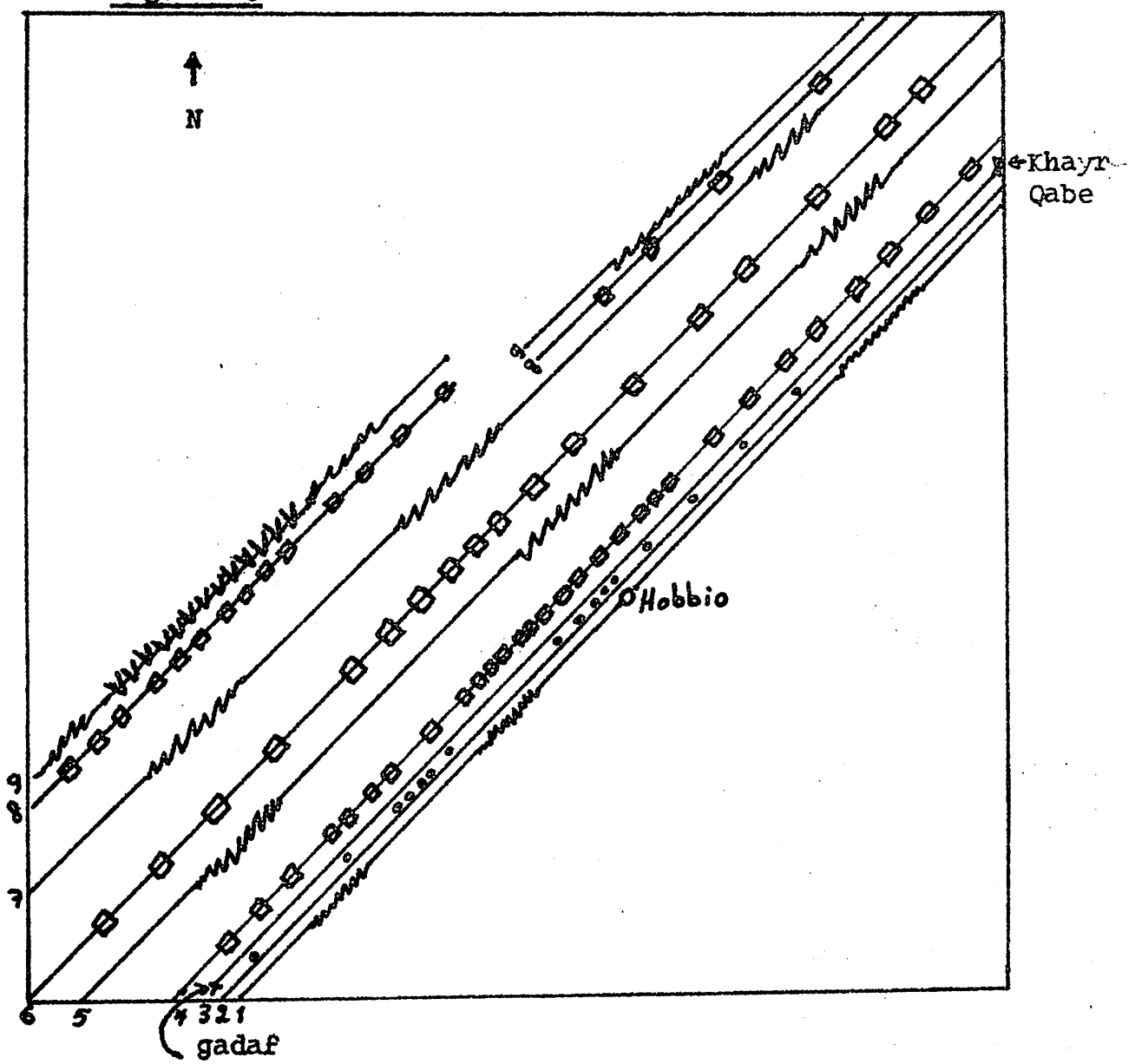
There are however, several potential snags. While the need for mobility has been recognized and incorporated into the management plan, it still necessitates a reconceptualization of primary spatial categories on reer deexeed's part.

For the first time, reer deexeed must think of the immediate space as being arbitrarily divided (paddock boundaries are marked by stone cairns). This implies a shift from conceivings space in terms of vaguely defined vectors with overlapping boundaries, to a more rigid conceptualization. Yet so long as the foundamental integrity of reer

deexeed's spatial conceptualization can be maintained, as evidenced by a continuity in actual population distribution along gas vectors, the management plan may work. If the new land divisions preclude this continuity, the plan may incur resistance, if not ultimate failure.

Failure is most likely to occur as the proportion of land requiring annual rest in a reserve area increases. In the CRDP management proposal, approximately 25% of the Danle and Sugulle reserves were to be initially rested. Since the benefits occuring from a rotational grazing scheme require several years time to be appreciated, the initial proposal for 25% of the land to be rested was perceived by reer deexeed as representing too great a sacrifice for unproven future gains. The grazing committees of Danle and Sugulle rejected the proposal counter-proposing instead that the proportion of land to initially rested be reduced in half. CRDP staff accepted this, recognizing that in an environment of highly sporadic rainfall where spatial mobility to optimize resource utilization is crucial, it is best for developers to minimize reer deexeed's perceived risks. After a year's time, through two growing seasons, it is hoped for by CRDP staff that the visible improvement in plant vigor and production in the rested areas will serve as a demonstration effect for increasing the proportion of land rested in each reserve area up to 25%. Assuming the biannual gu and dayr rains are adequately distributed through the plain, and that reer deexed's gas alignment can be maintained, there is reason for optimism. Success depends largely on whether open and frank communication between CRDP staff and reer deexeed endures.

Figure 1.



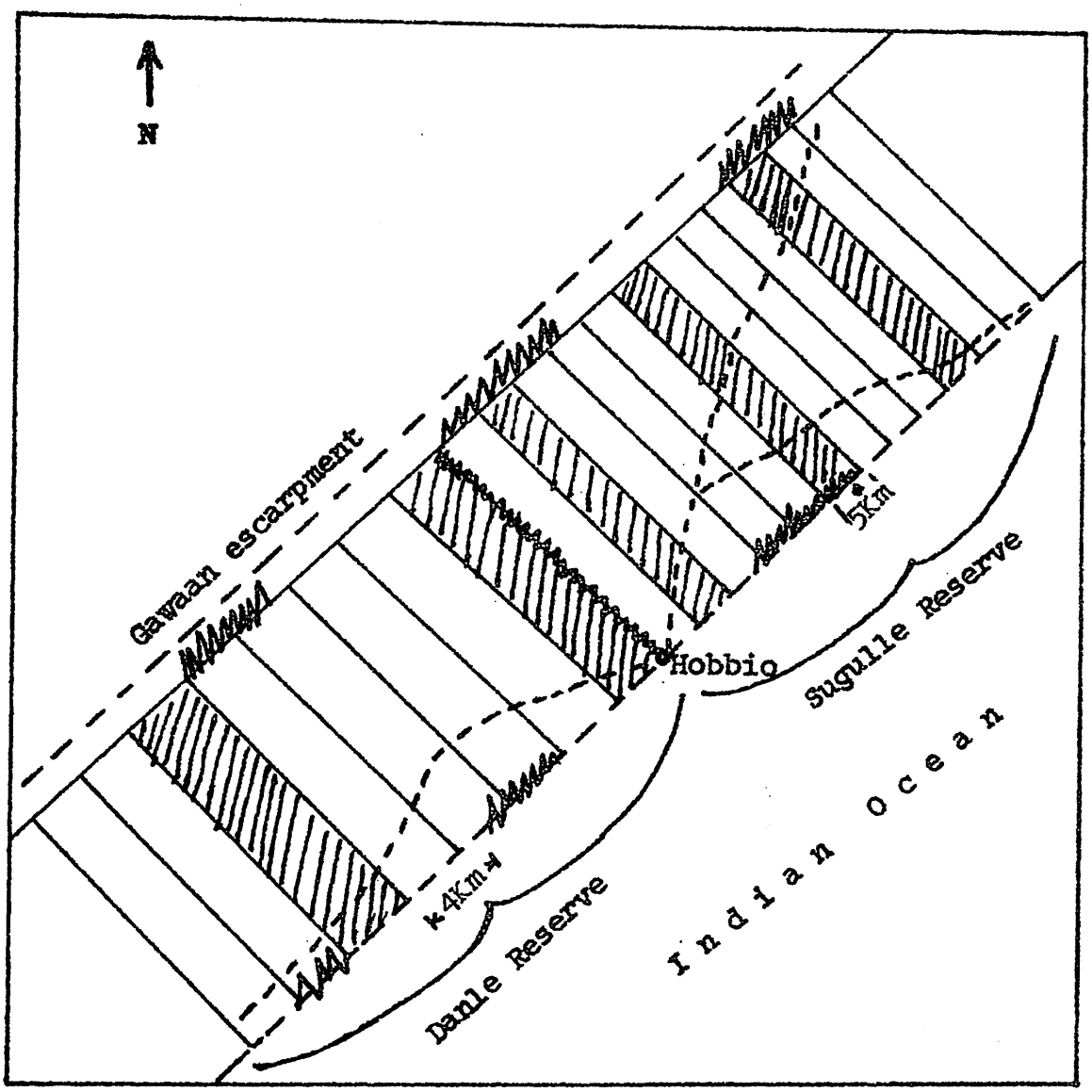
K E Y

1 cm = 3.3 Km appx

	Discontinuity in scale	
•	Well	
x	Xajub (religious shrine)	
	Berin (pastoral nomadic encampment)	
v	Tog (seasonal watercourse)	5 grazing area
1	Coast	6 Berins
2	Wells	7 Grazing area
3	Xajubyo (religious shrines)	8 wet season berins
4	Berins	9 escarpment

Note: Features represented in the Figure imply assumed distributions.

Figure 2.



K e y

Reserve boundary

Discontinuity in scale

"paddocks" proposed to initial rest

Transit routes

Note: not all paddocks within a reserve are equal in area.

THE SURVEYING AND MAPPING OF RANGE RESOURCES

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The National Range Agency has been surveying the Range Resources of the whole country in a National Programme aimed at establishing base lines of information. The work started in 1978, when Resource Management and Research, a Company specialising in Rangeland inventory work, was contracted to survey, covering about 132,000 square kilometers of land, being the Regions of Mudug, Galgaduud and most of Hiiraan, was completed at the end of 1979. The total cost of the work was US $ 191,000.00.

In 1980 the same company was contracted to continue the survey over the Northern Rangelands. This comprises the Regions of Galbeed, Togdheer, Sanaag, Nugaal and Bari, and covers 263,000 square kilometers. The survey was completed in 1982, at a cost of US $ 395,000.00.

The final part of the country, the Southern Rangelands, consisting of a small part of Hiiraan, Bakool, Gedo, Bay, Middle Shabeelli, Lower Shabeelli, Middle Juba, Lower Juba, and Banaadir Regions, covering about 238,000 square kilometer is being surveyed by Resource Management and Research now, and the work will be completed at the end of 1984.

The first two surveys were funded under a loan agreement with the World Bank, and the last survey is being paid for out a grant made to the Government of Somalia by USAID.

Since one of the most important objectives has been to assemble comparable information on resources the same methodology applied to establish the monitoring sites. In broadest outline each survey has been made up of :-

i. A mapping of vegetation and land systems made from satellite imagery, suitably checked from a survey aircraft in which the map maker marks the significant boundaries on the satellite imagery, and the 1:100,000 scale topographical maps. The satellite images used are based on LANDSAT Radiometry, and the actual product used is a large colour print (called a colour composite) at 1:200,000 scale. This approach enables maps to be made very quickly and at much less cost than the traditional methods.

ii. The vegetation and land system units mapped as described above then become the units (statistically they are usually called strata) in which a stratified random aerial strip sampling is carried out. Aerial strip sampling has been developed over the last 15 years to provide rapid, low cost means of making inventories and censuses of Range Resources particularly for the counting of livestock and wild animals. In performing aerial strip sampling the aircraft is flown slowly (100 Kph) over the terrain about 120m above ground level. The observer inspects a narrow strip of land (about 200m wide) through an optical marking structure, and records information on resources occuring in this strip on a tape recorder, photographing groups of animals which are too numerous to count by eye. The animals are carefully counted from the photographs (colour transparencies are used and a computer is then used to calculate the numbers

of livestock and other Range Resources in each land system unit, and for the whole survey area. The items inventoried in this fashion are: Cattle, sheep, goats, camels, donkeys, horses and mules, all wildlife by species, houses of recognisable different types, livestock enclosures both occupied and abandoned, wells, berkado, waro, bore holes, balliyo, and other sources of water, charcoal kilns and other manifestations of charcoal production, grain stores, fodder stores fishing boats, fishing nets, and other manifestation of fishing activity.

In addition land use is estimated during the aircrafts flight from the time taken for the aircraft to pass over particular types of land use. This is known technically as line intersect sampling. This method enables an estimate to be made of land currently being cropped, land recently cropped, irrigation croplands, land probably enclosed to protect grazing, areas from which grass has been cut for the production of hay, areas of land under conspicuous perennial crops (such as grapefruit, bannanas, etc.) and land being cleared presumably for cropping in the future.

iii. A large number of range monitoring sites have been recorded in the two surveys so far completed. Experience gained during the Central Rangelands Survey has caused the consultants to modify their technique in the Northern Rangelands, and each monitoring site is now recorded on colour photographs (12 to 14) taken in a carefully controlled way to show the ground surface round a fixed point, and also the vegetation to the horizon from that fixed point. The fixed points are tied into recognisable physical features, and can be returned to in the future to allow

re-photography of the sites, from which rangeland trends will be detectable. In addition aerial photographs in colour have been taken of each site, to enable large scale changes to be followed. A total of over 1400 such sites have been established, spread throughout the Central and Northern Rangelands.

Reconnaissance descriptions of soils, geomorphology, drainage, erosion, patterns of use and general ecology have been made at each site, and a collection and list of all identifiable or collectable plants has been made.

The large body of data (information sheets, tables of soil descriptions and pH's, plant specimens, photographs, site location plans and photgraphs etc), relating to monitoring sites are stored at the National Herbarium where the National Range Agency intends to establish a documentation and range monitoring centre in the near future.

The resource mapping and inventory products delivered to the National Range Agency over the last four years include:-

- Landsat imagery as colour composite, mounted as one degree sheets on boards, and marked with latitude and longitude.
- Colour copies of the 1:100,000 topographical map sheets.
- Maps of vegetation and land systems at 1:25,000 scale in 200 copies.
- Thematic maps at 1:1,000,000 scale of livestock distributions (by species), of livestock and wildlife biomass distributions, of water sources, of people,

of livestock compounds, of cropping, and of other forms of land management.

Maps at the same scale have been drawn to show the position of source maps and Landsat imagery.

- Reports on methods used.
- Reports on the implications of the survey results for numerous development opportunities.
- Tabulations of the census data by land system units by Ecological zones, and for the administrative Regions of Somalia.
- Aerial photographs of the Range Development sites of the Northern Rangelands Development Project.
- Several thousand plant specimens, identified against herbarium material overseas, for the National Herbarium.
- Over 1400 monitoring site descriptions, photographic records, site plans, etc. as described above.

Some of the more interesting results can be summurised, by Regions below:-

LIVESTOCK NUMBERS (In Thousands)

	Mudug	Galgaduud	Hiiraan	W.Galbeed
Areas in Km^2	63,000	45,000	36,000	26,000 (Nearest thousand)
Cattle	51	71	151	118 (D.S.)
"	108	140	177	107 (W.S.)
Sheep	714	562	265	1242 (D.S.)
"	1628	973	414	1289 (W.S.)
Goats	2098	1796	1085	1228 (D.S.)
"	3128	3573	1711	1450 (W.S.)
Camels	71	118	193	275 (D.S.)
"	383	264	444	283 (W.S.)

D.S. = Dry Season
W.S. = Wet Season

LIVESTOCK NUMBERS (In Thousands)

	T. Dheere	Sanaag	Nugaal	Bari
Areas in Km^2	34,000	55,000	53,000	70,000 (Nearest Thousand)
Cattle	15	19	40	8 (Dry S.)
"	33	38	20	6 (Wet S.)
Sheep	1265	1863	1651	507 (Dry S.)
"	2096	2223	550	837 (Wet S.)
Goats	1070	1073	1511	984 (Dry S.)
"	1630	1569	613	1279 (Wet S.)
Camels	243	162	364	102 (Dry S.)
"	530	247	283	115 (Wet S.)

These result clearly demonstrate that browsers (Goats and camels) are the most important livestock in Northern and Central Somalia, and that sheep are the most important grazer there. Cattle are numerous only in the Shabelle Valley and coastal dune grasslands (Hiiraan) and on the North Western plateau grasslands (W/Galbeed). There appears to have been rather exceptional movements into the Central Rangelands area in the 1979 wet season probably from the southern Ogaden, associated with civil and military disorder in that area. The movements observed in the Northern Rangelands are probably rather typical except for W. Galbeed. This Region could not be censused at the best time to reveal seasonal movements, and in fact there are much more appreciable movements of livestock out of W. Galbeed in the wet season than these data suggest.

WATER SOURCES (In Thousands)

	Bari	Mudug	G/dud	Hiraan	W.Galbeed	T/Dheer	Sanaag	Nugal
Wells All Types	1.4	20	18	1	3.4	0.9	1.7	0.8
					(Average for Wet and Dry S.)			
Berkado	0.7	0.2	0.2	0.1	1.2	1.5	-	-
Waro	-	0.2	0.1	0.1	0.5	-	-	-

HOUSES AND PEOPLE (In Thousands)

Aqalo	12	16	26	21	39	27	23	27(D.S.)
	16	34	33	40	55	56	25	12(W.S.)
Other Houses	10	2.6	28	23	49	15	7	6
					(Average for Wet & Dry season)			
Nomadic People	68	112	182	147	222	154	131	153(D.S.)
	93	238	231	280	312	318	143	69(W.S.)
Other People	70	16	168	138	341	104	51	41
					(Average for Wet & Dry season)			
All People	138	128	350	285	563	258	182	194(D.S.)
	163	254	399	418	653	422	195	110(W.S.)

LAND USE (In Thousands of Hectares)

Land Currently under Crops							
1	24	49	37	28	6	4	-
				(Average for Wet & Dry season)			
Land previously recently cropped							
-	25	56	43	33	7	5	-
Other enclosed land							
-	33	101	113	46	37	9	-

Among the more interesting implications of these results is the apparent importance of crop production in the Regions of Galgaduud, Hiiraan and W. Galbeed. There is in addition a clear correlation between population and crop production.

By the end of 1984 the survey will be complete, and Somalia will have one of the best range resource inventories in the World. Few semi-arid countries in Africa or elsewhere have so much up-to-date information on livestock, people and the range. In terms of maps Somalia will then have 1:100,000 and 1:200,000 topographic maps of high quality, up-dated during the range surveys, 1:250,000 scale range vegetation land systems maps, landsat coverage at 1:200,000 scale in colour composites, and a wide variety of thematic 1:1,000,000 and 1:2,500,000 scale maps. This information base, if periodically kept up to date, will be a firm platform for all the future programmes of the National Range Agency.

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BIRDS OF THE BELED WEYN DISTRICT

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In a continuing effort to document the rich avifauna of Somalia, the results of some observations of birds of the Beled Weyn area are presented here. The senior author spent 15-18 September 1982 in the field and compiled the following observations. The junior author was born and raised in Beled Weyn and has provided the vernacular names of most species (as well as notes on their natural history). Somali names are enclosed with quotation marks and Latin names are underlined.

Storks Ciconiidae

Marabou stork "Xantalaay", Leptoptilos crumeniferus . Several seen in the NRA fodder reserve just of east of Beled Weyn in an area of grassland with scattered Acacia thickets.

Vultures, eagles, hawks, and allies "Gorgor, galeyr, iyo dafo"

Accipitridae

Pale chanting goshawk "Galeyr" Melierax poliopterus. Near the village of Heegan, past 250 km marker between Buulo Berde and Beled Weyn. One bird observed perched in an Acacia tree; general vegetation of area was Boscia-Commiphora woodland. This bird is reputed to prey on snakes as well as birds and rodents.

Game bird Phasianidae

Yellow-necked spurfowl "Digiiran" Francolinus leucoscepus. Several seen in the Shebelle River floodplain a few kilometers south of Beled Weyn. The vegetation of the area was a mix of grassland, Acacia seyal thickets, abandoned cultivation and cotton fields. This is one of the few species of gamebirds commonly eaten by Somalis. "Digiiran" also refers to guinea-fowl and other closely related species.

Bustards Otididae

Arabian bustard Ardeotis arabs. (identification not definite; may also have been Heuglin's bustard Neotis heuglinii). Not a positve identification. Several seen in floodplain grass-land along the Shebelle River south of Beled Weyn, near the same location where the previous two species were sighted.

Plovers "Wiirowiiro""Charodriidae"

Crowned Plover "Wiirowiiro" Vanellus coronatus. Several seen in the NRA nursery along the Shebelle River. The vegeta-tion of the nursery environs is a mixture of grasslands, thickets and fields. This bird is disliked because it is considered to alert dangerous animals (lions, hyenas) to the presence of human or domestic animals by its loud cries, thus endangering that human (or livestock).

Sandgrouse "Barbaar ka nixis" Pteroclididae

Black-faced sandgrouse "Barbaar ka nixis" Pterocles decoratus. (not a positive identification; may have been Lichtenstein's sandgrouse. P. lichtensteinii). Several seen both at the NRA nursery and in the grasslands along the Shebelle River south of Beled Weyn. The Somali name means "those that frighten children" refers to the habit of a covey to abruptly fly upwards when flushed.

Doves and pigeons "Qolley" Columbidae

Speckled pigeon "Qolley gaal" Columba guinea. One seen at the NRA nursery in Beled Weyn. The name in Somali translates as "unbeliever dove". There is a popular account of how the doves "qolley) helped the prophet Mohamed hide from his enemies by covering his footprints. In order to differntiate the pigeons from the doves Somalis call the pigeon "qolley" since the pigeons did not do anything to assist the prophet Mohamed.

White-winged dove "Qolley" Streptopelia capicola. Abundant along the Shebelle River. This species of dove is restricted to southern Somalia and north east Kenya.

Namaqua dove "Qumburow" (or Qumburuf) Oena capensis. Several seen in the village of Beer Gadiid east of Beled Weyn. The vegetation of the general area is low thorn scrub woodland.

Turacos Musophagidae

White-bellied go-away-bird "Califood" Corythaixoides leucogaster. One seen along the road south of Beled Weyn (near the 280 km marker) in an area dominated by Boscia-Commiphora woodland. The name refers to the crest on this bird. "Food" means a crest or tuft of hair at the front of the head (seen in the hair styles of some children). Hoopoes also have the same name.

Cuckoos and coucals "Jirow ?" Cuculidae

Blue-headed coucal "Jirow ?" Centropus monachus. Not a positive identification. One seen at the NRA nursery in Beled Weyn.

Swifts "Fiidmeer" Apodidae

Palm swift "Fiidmeer" Cypsiurus parvus. Abundant along the Shebelle River at Beled Weyn. Several species of swifts were seen (having white rumps) but were not identified. The term means "evening wanderer" in Somali and is applied to bats as well as swifts.

Mousebirds Coliidae

Speckled mousebird Colius striatus. Several seen in trees along the Shebelle River at the NRA nursery.

White-headed mousebird Colius leucocephalus. Not a positive identification. Several seen along with speckeld mousebirds at the NRA nursery.

Kingfishers "Cannicani" Alcedinidae

Grey-headed Kingfisher "Cannicani" Halcyon leucocephala. One observed inside the NRA fodder reserve at Beled Weyn. The vegetation was a thick sward of grass (about .6 m tall) with scattered Acacia seyal.

Pygony kingfisher "Cannicani" Ispidina picta. Not a positive identification. One seen near Shebelle River in the NRA nursery.

Bee-eaters "Shirray" Meropidae

Carmine bee-eater "Shirray" Merops nubicus. One seen in the NRA fodder reserve in an area of dense grass cover and scattered Acacia seyal. Both this species and the following are reputed to take ticks from livestock; however this was not observed in the field.

Little bee-eater "Shirray" Merops pusillus. Several seen in the NRA nursery.

Hornibills "Qutequte; quutequute" Bucerotidae

Red-billed hornbill "Qutequte" Tockus erythrorhynchus. Many seen along road between Beled Weyn and Buulo Berde in area of Boscia-Commiphora woodland. A Somali saying concerning this bird is "Qutequte qaalinteyda xumbadeeda aan ku siinayaa ee ii garab jebi" ("Oh red-billed hornbill, I will give you the creamy foam of my cow's milk if you sing and dance for me").

It is widely held by children that if one says this to a hornbill it will commence singing and dancing.

Bulbuls "Raanyar" Pycnonotidae

Yellow-vented bulbul "Raanyar" Pycnonotus barbatus. Several seen in the NRA nursery at Beled Weyn. This bird is a destructive pest in grain fields. A bad wife is called "Raanyar" and the following saying has been made about this subject "Sidii raanyar reera boobay ha loo raro reer adoogeed" ("Like the bulbul the bad wife must be sent from her husband's family back to her parents family").

Waxbills Estrididae

Red-billed firefinch "Maalaakoy" Legonostricta senegala. Several seen in the NRA nursery.

Weavers, sparrows, whydahs and allies Ploceidae

Pin-tailed whydah Vidua macroura. Several seen in open ground at the NRA nursery.

Straw-tailed whydah Vidua fischeri. A small number were observed with the NRA nursery.

Paradise whydah Stegonura paradisaea. A few individuals of this species were noted in association with the above species of whydahs at the NRA nursery.

Black-necked weaver Ploceus nigricollis. Common at the NRA nursery.

W I L D L I F E R A N C H I N G*

By: Marie Hellouin

Game herds have been experimented in many parts of the world, often in totally unpredictable regions.

The saiga antelope was discovered in the icy regions of Kazakhstan when it was already well on the way to extinction. There were no more than some 300 head at the time. Today, their population is in the region of 2 million and produces 6000 tons of meat per annum.

In Southern Ukraine, in the famours Askanyia Nova farm, the Russians have introduced Livingstone's Eland. Four pains were imported at the end of the last century. They be gat a herd of 500 head, all of them perfectly domesticated, which made it possible to begin milk production in 1950. This milk has a particularly high dry matter, fat and protein content; it also has the advantage of keeping for 3 months at a temperature of 3°C.

Deer ranching is practised in several temperate zone countries, more particularly in Scotland, which exports essentially to Germany. In New-Zealand, deer ranching represents 2/3 of total game production; the reminder being made up of hare, wild pig and wild goat. The value of such ranching represents 13 million dollars per annum, representing exports, mainly to Western Europe. There are some 2,000 deer ranches in all.

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* Reproduced from BULLETIN, International Foundation For the Conservation of Game Nos. 12-13 - 1982.

This market is now governed by strict laws, rather similar to those of Kruger Park. They concern veterinary control, preservation techniques and transport.

This experience has also led to some useful information on the carrying capacity (900 Kg per hectare), and meat production (150 Kg per hectare), the choice of the territory which may not compete with that given over to sheep or cattle, and rearing methods which are also different from those used for domestic stock while ensuring more stable production.

Whatever the age or sex of the deer, deer meat has a protein content of 21%. The only factor which varies, dependent on whether animals feed on wild plants or are fattened on grass is fat content which can increase from 3 to 7%.

Thus,, contrary to cattle, there is no point in putting out deer to pasture, in as much as generally speaking lean meat is more sought after today than fat meat.

Rodent farming has been attempted successfully in Soth America and in Africa. The capybara is raised intensively in Venezuela with a harvesting rate as high as 40% without endangering the productive potential.

In Chana, Asibey was successful in his trial raising of grasscutters in captivity. The meat sells well and at high prices.

It appears obvious that Africa is the ideal choice for wildlife ranching.

However encouraging the results, this new form of land use is still only in its babbling infancy and the solution found so far have been on an individual basis.

The Galana Ranch, where trials have been carried by King and Heath, under State control, covers an area of over a million and a half acres between Tsavo Park and the West Coast. The best land is occupied by 14,000 Boran cattle and it is planned that the figure will increase to 26,000 in the future. Three wild species are being studied on a trial basis in the driest areas of the ranch : oryx, buffalo and eland (in smaller numbers).

The fullest possible use is made of the animals (meat, hide and trophies) which delays the age of harvesting but ensures better income. Slaughtering does not take place on the spot but in a coastal town some 60 miles away.

On a basis of current experimentation, it appears clear that of the three species selected for the relatively traditional type of rearing, the oryx alone has any distinct advantage over the Boran cattle in dry areas.

More recent, more revolutionary, and, doubtless, more ambitious, is the Hopcraft ranch experiment in Kenya designed to prove that African game can produce more protein than cattle for a comparable amount of investment.

Hoperaft, Moterram and other workers set up their project on the family ranch of 25,000 acres previously devoted to the raising of domestic cattle. After several years comparative study, Hopcraft was able to demonstrate that the potential carrying capacity was far greater for wild species, that the production of lean meat was greater, despite the fact that a single species - Thomson's Gazelle - had been selected and that, in any event, gross revenue per hectare was three times greater and net profit ten times greater with wild species. The game lives in complete liberty within the limits of the ranch. There are no fixed or moveable paddocks, no attempts at domestication, a large cariety of wild ungulates live the life they have always led, grazing and browsing at night so as to absorb the maximum amount of water contained in various plant species according to their preference, and making do with the water available on their territory. Only males are harvested. The animals are shot at night in order not to disturb the rest of the population and always in the head to ensure the best possible quality of meat. However, for the time being, the only purchasers of meat are smart restaurant owners in East Africa.

The Victoria Falls ranch in Zimbabwe has developed in an even more astonishing and significant manner. Ever since 1948 this poor savannah and forest territory, with sparse rainfall, at an altitude of 3,500 feet, and an area of a little under 60,000 acres, was given over to cattle raising. Low income levels plus the deterioration of the biotope induced the owners to take an interest in local game in 1963. Operations began in 1967, experimental safari hunting was introduced in 1970 and since then has become the main activity of

the ranch, while profit levers soar. Today the profitability level represents 17% of initial investments compared to 2.8% only for other cattle raising in that area.

Finally, several drought control agencies in the Sahel are taking an interest in the use of fauna to prevent desertification or restore certain territories while providing protein to starving populations.

These may be no more than straws in the wind compared to the enormous dimensions of the problem; nonetheless they do open up interesting and positive prosepects for the conservation of African wildlife.

While the small number of experiments conducted so far does not make it possible to establish a firm theory of wildlife farming and ranching, they do at least have the merit of clearly defining the questions which have to be solved for future work along these lines.

It is only if the pioneers are successful that subsidies will flow from governments, ever eager to help the winning side.

"If National Parks and game reserves are necessary to maintain wildlife, why should the life of elephants, tigers and rhinoceroses be considered more important than human life?" asks Jimoh Omo Fadaka quite rightly.

To the extent that the economy is to serve man rather than the other way about, wildlife will have to be economic or will cease to exist. To achieve this, we may have to go

much further to revise many of our convictions and overthrow that Minotaur, economy in the modern world.

4% of Kenyan land is devoted to wildlife conservation "some ten thousand square miles". Someday people may consider this to be enromous, but we should not forget that this means that 96% of a country is being managed with a totally different policy.

With such a disproportionate ratio, it is impossible to believe in effective conservation. We are still entrenched in the museum context.

The revolution which is timidly beginning to see the light of day must be deeper and further reaching if any results are to be achieved.

If we are not successful in restoring the eternal link between man and nature, nature will be unable to withstand its worst predator of all. But what future is there for a predator without its environment?

Today, it is no longer a moral question we are facing, no longer the question of Rousseauist sentimentality, but a question of sheer survival...

OBSERVATIONS ON THE TRIALS OF SOME EXOTIC SPECIES IN SOMALIA

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There exists acute shortage of wood in Somalia. The Government of Somalia spends approximately So. Sh. 60 million on wood import annually as against production potential of 1.3 to 2.6 million m^3 of fuelwood per year. The consumption of wood for fuel/charcoal was 5.6 million m^3 in 1980 with an expected rise to 7.6 million m^3 by 1990. This suggests that if the ruthless cutting and overgrazing of the existing meagar forest resource is continued the production potential, i.e., the supply will continue to detoriorate and with ever increasing demands leading to a situation where probably it will be very difficult, if not impossible, to reverse this process. Even it is not too late today if special campaign viz "Make the country green", "roadside plantations", "plantations along river banks", "agro-forestry", and "coconut plantations" etc. are vigorously introduced and special measures be taken to involve people in physical participation at village level through local community forestry. The commulative effect of these efforts is bound to produce visible results. The national planting day celeberated during the month of April every year must be extended to 7 days twice a year (since there are two rainy seasons) and it should be made more vigorous (Kasimani, Som. Range Bull., 1981).

In Somalia we have various tree uses e.g. fuel, building material, food, forage, green manure, soil conservation, land reclammation, wind hazards, etc. etc. which urgently calls for identification of multipurpose trees to be introduced on large scale to satisfy and meet the needs adequately. In view of the above some trials were made by me at the Afgoi and Balcad nursaries and the observation with uses and potential of such species are given in the following paragraphs:-

Sesbania grandiflora.

The seeds obtained from FAO, Rome, were sown in the polythene containers on 24.12.1981, within span of 15 month and 7 days the trees attained a height of 7.8 meters and a girth of 42 cm (Bht). The trees has produced big size creamy white flowers in the months of Oct.-December, 1982, after one year subsequently produced 40 cm long pods containing an average of 40-50 seeds. The plants were severely infested by insects during the rainy season of May and June 1982, but were successfully controlled by spraying insecticide. The rate of the growth of infested trees and their seed formation were retarded. Tree starter tablets were also used to some of the transplanted seedlings but were found to be ineffective as compared to the control plants.

Sweetinia species.

Two groups of selected "Mahogany" plants were planted out in the same soil. One group was treated with trees starter tablets while the other was used as control. Those treated with T.S. tablets showed an increased height of 25% against the control in approximately 3 months.

Gmeliana arborea.

Some trials were made on the germination of this species. It is observed that the seeds sun dried after removal of pulp take reasonably minimum time (Table 1).

Table 1. Trials on the germination of G. arborea.

Treatment	Sowing Date	Germination Date
i) Pulpremoved 84 hrs hot water soaking.	9/8/1982	12/8/1982
ii) Sowing with pulp	10/7/1982	highly undesireable for germination is greatly retarded.
iii) Pulpremoved and sown immediately	10/7/1982	26/7/1982
iv) Pulpremoved and seed sun dried	10/7/1982	23/7/1982

Potential: The tree has attained a height of 1 meter in 8 months time. It produces favourite wood for craftsman, for furniture, pannelling, boat building, boxes, camp furniture and also is suitable for match industry. It weighs 30 lbs per cft (airdry).

Acacia arabica.

The seeds obtained from Sind, Pakistan were sown after soaking in the hot water at Balad Forest Nursery on 19.4.1981, were germinated on 21.4.1981. The transplanted plants attained a height of 8-9 meters with a single straight trunk upto 1 meter from ground level and full developed crown. On 18.5.1983 it was flowering. No pods were observed so far, may be due to the lack of pollination which may occur once the insects became more friendly with the tree.

Potential: A. arabica wood is an extremely strong, hard and tough. It is nearly twice as hard as teak and bears a high shock resisting ability. The tree weighs 52 lbs per cft. (airdry). This can successfully be established along the river banks and within the flood plains which can effectively help in redressing the flood hazards and also meet with a combination of uses of the people by providing all purpose wood.

Dalbergia sisso.

The seeds obtained from Pakistan were sown in Balad nursery without any treatment on 17.4.1981, germinated on 20.4.1981. The transplanted plants have attained a height of approximately 9 meters as observed on 18.5.1983.

Potential: The tree produces all purpose wood, weighs 50-55 lbs per cft (airdry). It is fine for cabinate and furniture making and carving. It is employed for house building, flooring etc. It also makes a good quality firewood.

Acacia albida.

The seeds obtained from unknown source were sown on 5.3.1983. The seeds soaked for 24 hours with hot water, were germinated on 8.3.1983. The untreated seeds have not germinated till 28.3.1983. The plants are under observation.

Potential: Once the roots strike underground-water, it is the fastest growing Acacia species.

Punica granatum.

The seeds obtained from Pakistan were sown in Afgoi nursery, on 26.12.1981, the plant has attained a height of

1.6 meter and also produced fruit within one year as observed on 18.12.1982 without posing any problem. It is surprising that usually, in Pakistan Punica granatum produces fruits in 3-4 years time, attaining commercial yield after 10 yrs.

From the preliminary observations it appears that the land and climatic condition of Afgoi area are ideal for its growth. The tree starter tablet has shown no effect on the rate of growth.

Uses: It is relished as a fresh fruit. Juice makes a delicious drink. The bark of the fruit contains tannin therefore is used in tanning industry. The bark of the roots has medicinal value and is used to remedy dysentry and diorrhea. The bark of the fruit is boiled and used against stomach warms since ages.

Potential: One tree has the potential to produce 115-192 kgs of fruit each year. 7X7 meters spacing will accomodate 196 plants in a hectare. At an average yield of 29823 kgs of fruit per year per hectare will cost approximately 31,360 shilling per hectare per year. If estimated at the cost of 40.00 Sh. per 38.4 kgs.

Mangifera indica.

Two groups of selected "Mango plants" were planted at the Afgoi nursery, one group was treated with tree starter tablets while the other kept as control. The tree starter tablets has shown an increase in the height of the mango plant by about 30%

Three varieties of mango viz "Langra", "Anwar Ratol", and "Summor Best" imported from Pakistan were planted in the

compound of Forestry and Wildlife School Afgoi on December 1982. The plants have established successfully so far, with a robust growth.

Uses: The fruit is eaten, pickled, used for extracting juice and making squashes. The wood is also used for manufacturing agriculture implements and in carpentary.

Potential: The successful establishment of imported varieties can bring a revolution in mango production. The mango plant produces 200 to 500 fruit each year which can still be raised to 1000 fruits each year through tending operations and care of the plant. In Pakistan only one crop is obtained annually, while in Somalia two crops are produced each year hence double the production. The mango, judiciously called the king of the fruits, has a great potential to emerge as a special export item subject to extensive work and exclusive attention for the concerned quarters. The above quoted mango varieties produced through vegetative propagation fetch higher prices in the market and also draw keen interest of the purchaser.

Anacardium occidentale.

Seeds of cashew nut collected from Somaltex compound were sown in Afgoi nursery without any treatment on 21.6.1982, germinated on 10.7.1982 and attained a height of 20 cm in 15 days.

Uses: The shell of the nut contains cashew nut shell liquid (CNSL - 20 to 25% by weight). The CNSL is toxic and consists of anacardic acid by 10% and it can be polymerised by heating. Major demands for cashew nuts exists in USA, USSR, Netherlands, Canada, Germany (Fed. Rep.) Japan, Australia and UK (arranged in the order of the position).

The apple of cashew is also used for juice and jam in some countries. The CNSL is a natural phenol used in industries.

Potential: The successful establishment of the plant in the coastal sand dunes of Shalambot indicate the suitability of condition for the massive plantation of this plant in blocks and in combination with agriculture (agro-forestry).

Average yield of nuts ranges in between 300-1000 Kg/ha. Cashew nut grows quickly and the plant produced nuts in its 4th year in the Shalambot. Commercial yield is obtainable in 8-10 years.

Zizyphous jujuba.

Seeds collected from Pakistan were sown in the polythene containers in Afgoi nursery on 17.4.1981 were germinated (germination period not noted) and attained a height of 5-6 meters and were producing fruits as seen on 18.5.1983.

Uses: The fruit is highly nutritive and contains vitamins A,B, minerals and iron. The fruit is relished fresh and the dried ones can be stored for long period. The wood is useful for agricultural implements. It also makes a fairly good firewood.

Cordeauxia edulis.

Seeds collected from Galcayo area were sown in the polythene containers in Afgoi nursery on 19.6.1982 without any treatment, germinated on July 3, 1983. The plant has demonstrated its potential for dissemination outside its endemic habitat calling for vigorous research work.

Potential: The nut of the plant contains starch 37%, Sugar 24%, Proteins 13%, Fats 11% and other minerals, possesses a high energy value to emerge as a complete food for the poor.

C O N C L U S I O N S

With the presence of species, in Afgoi, viz Tamarix articulata, Ficus nitida, Moringa oleifera, Ailanthus excelsa, Chukrasia spp., etc. there is left no second opinion regarding the fertility of the soil and suitability of the land. The vigorous growth of semal (cotton tree) Mahogany, Cashew nut, Casuarina equisetifolia, Terminalia, Coconut etc. in Jenale and Shalambot area, proves the similar opinion for this track.

Further, the successful trial proven growth of Dalbergia sisso, Acacia arabica, Sesbania grandiflora, Gmelina arborea, Punica granatum, has proved that there exists a great promise for successful & massive plantation of all other species aiming at short term & long term benefits. The job of research is constant on going task and it must be kept in operation simultaneously with the forestry development works.

A word of Caution The introduction of exotic species without trial, observation, and knowledge can often cause seriously neckbreaking problems. Prosopis juliflora, one of the weed varieties, though very hardy and suitable for problematic areas, yet becomes a permanent nuisance once established. It should never be introduced to new localities without excercising great care and assessment. It is not recommended for planting for localities adjoining agriculture farms and good soil lands because it has all the capability of enchroaching upon the adjoining lands and is very difficult to eradicate. It also dominates and supresses the other plants of economic importance grown in the same area unless special measures are adopted.

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A BIBLIOGRAPHY ON DETTERANT QUALITIES OF AZADIRACHTA INDICA A. JUSS

(Neem or Mire Mire)

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Azadirachta indica A. Juss. locally called Mire Mire or Neem is one of the most commonly cultivated tree in Somalia. (Kazmi, Som. R. Bull. No. 9, May pp. 20 1981). All parts of this tree are useable. The wood is strong and durable; the leaves contain many compounds, which can protect our crops and health; the seeds provide the cheapest oil available, which is used for soap and energy and the cake is a valuable manure and good cattle feed.

Several chemist have recently identified quite a number of terpenoids responsible for the immunity of the neem tree to insect attack. One of the most potent compound is azadiractin. Another nine new compounds have been isolated and identified recently to be detterant to different type of insects. In the following pages a selected bibliography on the detterent qualities of Neem has been given.

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MARKETING OF LIVESTOCK & LIVESTOCK PRODUCTS

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The relative importance of livestock industry of Somalia in the National Economy is greater than any other country in Africa. It accounts for 50% of the gross domestic product. It accounts for over 80% of the export earning (Foreign Exchange of the country). The sector also provides about 40% of the national food supply. Economy of Somalia is basically an subsistence - Commercial oriented pastoral economy. The production of animals to meet both the demands of exports and local consumption comes entirely from the nomadic and semi nomadic sector of the community representing nearly 70% of the population. Although this gave rise to the development problems, it is evident that the livestock owners of Somalia have reacted positively to the growth of the livestock market and have found it possible to increase their production accordingly inspite of the extremely harsh conditions, under which they have to operate. Nearly one third of Somalia's livestock offtake is for export. The trade in live animals between Somalia and the Arabian Peninsula has been going on for centuries. Exports of ghee, hides and skins were of greater importance along with the live animals export until the 1950. Major expansion in the live animals trade took place in the middle of the ninteenth century and from 1950 through the early 1970's following the discovery of petroleum in Saudi Arabia. Since 1972 the volume of live animal exports has fluctuated considerably.

The live animal exports from 1972 to 1982 are shown in the table attached. The domestic market for slaughter animals draws mainly from nearby areas, with the exception of Mogadishu which receives supplementary quantities from the south eastern part of the central region, the upper and lower Shabelli and inter reverine regions.

The livestock marketing organisation in Somalia is principally the result of historically grown experience and pioneering innovation by multitude of activity competing traders.

The livestock system, which serves the whole of northern, central and southern regions of Somalia constitutes the major part of the national marketing system and covers purchase in the nomadic producing areas, traders operations in the major collecting centres, exporters activities in the major exporting ports (Berbera, Mogadishu and Kismayo) and activities of importing merchants and distributers in the country of destination.

The livestock marketing system involves a complex pattern of collection, transportation and distribution function. In view of the infrastructural constraints and limited resources available to it, the marketing system manages to function reasonably efficiently in coping with the extremes of environmental and price uncertainty in the semi arid extensive grazing system production. Particularly all animals in Somalia are produced in the traditional sector by nomads, transhuman's or settled cultivators. In terms

of livestock marketing over the whole country, two fundamental types of livestock flow may be identified domestic trading and export trading.

Livestock population (1975 Census figures)

Cattle	:	3,722,151
Camel	:	5,297,239
Sheep	:	9,432,320
Goats	:	15,275,588

The estimated average offtake from the above National herd for the year 1981/1982 is as follows:-

Cattle	:	10 - 11%
Camel	:	2.0 - 2.3%
Sheep & Goats	:	20 - 27%

Imports of livestock by Saudi Arabia have dramatically expanded during seventies (1975 onwards). It is expected that the demand of both live animal as well as chilled and frozen meat import will be doubled between 1980-1990 (Rising from 212,000 to 433,000 metric ton annually). In the present circumstances our traditional export is under keen competition with the live animal exports from other East African countries and Australia.

Thus the ability by traditional export from our country has to compete in supplying livestock to meet the increasing demand of fresh meat (Through live animals) In Saudi Arabia and this depends on improvement in our livestock

production, livestock health and marketing. Investment towards up grading animal health, range and water resources and the livestock marketing infrastructure are badly needed in Somalia as the country being in the great potential among the countries of East Africa, and Near East, is one of the top priority calls to respond to the opportunities that lie ahead.

In this connection it is to be re-ephasized that the self substained livestock export trade of the country run by the private sector is the immediate focus for improvement and deserves various facilities to be extended for it's maintenance and promotion (acceleration of offtake). The facilities required are more pressing, besides long term technical planning to keep the trade thriving in an atmosphere of keen competition at the traditional importing countries.

Towards service to the livestock trade an autonomous Agency Livestock Development Agency was established in the year 1966 (under the Ministry of Livestock) to coordinate, promote livestock development, export of livestock and livestock products. At a later stage the Agency was charged with the marketing of livestock also. The Agency was marketing essentially cattle and only in small number (about 5-7% in the over all livestock trade from the country) and occasionally sheep and goats. The LDA functioned from 1966 upto March 1981. Due to the difficulties encountered by the LDA with regards to both marketing and service to the entire volume of the trade through the private sector by way of managing the various infrastructures and other facilites led

to its being dissolved during 1981. With the abolition of the LDA, the Government clearly defined that only the marketing branch of the Agency involved in buying and exporting of livestock is totally dissolved leaving the entire trade of livestock and its marketing to the private sector, for the private sector to become more efficient.

In doing so the Government also decided that the development activities of the ex LDA towards service to the general livestock trade will continue under the perview of the Government and thus transferred these services and infrastructures of the ex LDA to the control of the National Range Agency for maintenance and improvement of all such services and infrastructures required for the promotion and expansion of export trade. Since the mid of 1981 the National Range Agency includes in it's task a new department of "Development of Livestock Marketing Facilities." The NRA after taking over this department has reorganised it's set up and has prepared a National Marketing Project hopefully to be implemented through the assistance of a single or multi donors. The object of the project is to encourage and facilitate increased offtake of livestock from the rangelands by making available to the industry markets, various infrastructures and transport facilities with a view to achieve export promotion a higher and highest possible foreign exchange earnings for the country and to make the most important industry of the country more efficient and relieve the grazing pressure on the rangelands. The role of the NRA would be supervisory and service oriented organisation encouraging private sector to become more efficient.

LIVESTOCK MARKETING FACILITIES

This service of livestock marketing facilities has got a chain of actions from producer to the middle man, from middle man to the local market, from local market to the exporter, from exporter through the export outlet finally to the international market.

The livestock development services start from the Government institutions of animal production and research and dissiminate the benefits through several medias of extension to the animal producer manifesting increased milk production, meat production and egg production.

In the similar ways the service of livestock marketing facilities start from the producer to the market and from the market to the exporter manifesting increased offtake from the National herd.

Lack of such facilities impede the offtake and reduce exports.

The LDA had been handling such facilities. At present such facilities are not adequate and are not available at all outlets of export and at all tracts of livestock concentration and their movements.

Therefore services of livestock marketing need a through re-organization to make every infrastructure of such a service to serve with its real objectives.

There are many infrastructures and service branches which link each other to form the complete facilities viz:-

1. Stock routes
2. Transport
3. Markets
4. Holding grounds
5. Quarantine stations
6. Marshalling yards
7. Port facilities
8. Shipping facilities
9. Ships for exports.
10. Market intelligence service
11. Quality control
12. Data collection, processing and forecast
13. Drought contingencies to prevent heavy mortalities of potential livestock for export.
14. Pilot schemes for alternate export of meat during emergencies.

Each one of the above item is vital to the trade at its own position in the whole chain of action. Any one item not serving to its objectives will upset the whole trade resulting in its decline.

LIVESTOCK PRODUCTS

1. Corned Beef.

There are two meat processing plants (1) one privately owned (Italian Sopral Company - but since 1981/1982 joint

venture with 51% Government share and 49% belonging to the Star Milano, principles of Sopral) at Mogadishu with a limited liability. Its capacity is to slaughter 50,000 cattle annually and to process mechanically slaughtered cattle into corned beef and meat extract.

2. The Government owned meat processing factory at Kismayo which is designed for both canning and chilled or frozn whole or boned out caracasses. The factory has a capacity to slaughter 60,000 cattle annually.

Both the plants have exported to Europe considerable quality of corned beef, stewed steaks, meat extracts etc. up to 1977. Since 1978 the plants remained mostly closed and worked only in partial capacity because of decrease in the World Market prices and uncertainty about prospects of their recovery.

3. M i l k

There exists a milk factory to pasture and bottle milk for sale in Mogadishu. The catory is run below the capacity due to short supply of milk. The reason for which no large scale activity has been initiated in the field of diary development, includes nomadic system of livestock management, location of pastures and watering points at places far away from town-ship, absence of all weather roads and tracks and lack of arrangements for the collection, pre-treatment, transportation and storage of milk. These are the conditions which have made milk a non commercial seasonal commodity in Somalia.

F.A.O.'s agricultural commodity projections 1970 - 1980 indicate an annual per capita milk consumption of 108.40 litre in Somalia based on the population.

Estimates made on the livestock population, the milk production of Somalia could be 900,000 tons annually, but actual situation will reveal it-self upon collection of real data of agricultural census.

Detailed feasibility study is required towards formulating projects of dairy development, it needs to seek and acquire technical collaboration of an international company engaged in the production and marketing of milk products, the other alternative could be to seek technical assistance from countries who have gained considerable experience in this industry.

LIVESTOCK BY-PRODUCTS

1. Hides and Skins.

Hides and skins traditionally played an important role in Somalia's livestock economy and formerly a predominent trade and the basis of commodity trade.

During 1973 an autonomous Agency the Hides and Skins Agency (HASA) was created under the control of the Ministry of Commerce. The main duties of HASA are export marketing over which it is given complete control, organisation of industry and hides and skin improvement through extension, training and pricing policy. The Agency collects hides all

over the country and has established tanneries. Hides are being tanned as well as exported raw.

All export marketing is in the hands of HASA, but the internal marketing is a free market system similar to that for live animals. HASA buys their stock from merchants and other suppliers. The main overseas markets are Europe and China.

Although bananas are Somalia's number two export commodity, hides and skins are a close third.

2. Other Animal By-Products

There is potential for animal by-products industry of the following by-products. Industrial units can be established on the availability of these products in regular commercial quantities, but the subject relating with each product needs detailed investigation and feasibility study.

This needs an organisation for collection of offals from all places of slaughter and municipal slaughter houses to the sites of animal by-products processing plants proposed.

Except for a random export of bones (rarely) there is no organised export of these by-products and most of them go waste and some of the offals like intestines are consumed locally on nominal prices.

1. Blood
2. Fat-Tallow
3. Meat scrap

4. Intestines
5. Gall
6. Gall stones
7. Pancreas glands
8. Tail switches
9. Whole bones
10. Hooves and horns.

LIVESTOCK EXPORTS ('000 HEADS)

YEAR	CATTLE	CAMEL	SHEEP	GOATS
1972	81	22	816	819
1973	68	29	709	675
1974	31	24	663	575
1975	40	34	793	743
1976	58	33	385	381
1977	55	33	465	461
1978	77	22	739	715
1979	68	13	717	705
1980	94	17	747	734
1981	116	14	679	685
1982	157	15	730	719

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N O T E S

STATUS REPORT ON THE FORMAL TRAINING PROGRAM AT THE SECONDARY SCHOOL LEVEL

An introductory course in range management has been offered at the Agricultural Secondary School in Afgoi since classes began in November. This class has been taught to the Second Form students; thus, 95 students have been receiving an education in the basic principles of range management during this school year.

The appointment of Hussein Khalief Mohamed as my counterpart in January has been an important event in the process of developing the training program. Floyd Kinsinger and Ahmed Elmi of the Dept. of Botany and Range Management at the Faculty of Agriculture have also assisted us in giving a number of lectures. Elmi was particularly successful in engendering students interest as he lectured on the cultural dimensions of range Management, drawing on his own boyhood experience as a camel herder. The major topics covered to date have been the geography of rangelands (worldwide and national), pastoral cultures, ecological factors in the range environment, basics of plant taxonomy and range-livestock relationships. Future topics to be considered before the end of the school year in mid June will be forage production (along with palatability and basic animal nutrition), desertification and range degradation, principles of modern range management and methods of range improvement and rehabilitation.

The showing of films on range management and wildlife subjects has begun in occasional evening sessions this has proved to be popular for the entire student body. Overall, I have received the impression of great student interest in a subject that is quite relevant to their background and environment.

We are all eagerly anticipating the completion of the building program at our campus. When this happens (a tentative date is January 1984) we will be able to begin a three year program in range management. With a much smaller class, field trips and practical work will become a possibility. Indeed, the more field work the better, as we hope to train qualified technicians for positions within the NRA. The overall emphasis has been, and will be, to make the entire curriculum as relevant as possible to the unique ecological and cultural conditions of Somalia.

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PROGRESS IN FORMAL TRAINING PROGRAM NATIONAL UNIVERISTY OF SOMALIA

The original goal for establishment of the Department of Range Management and implementation of the teaching program in Range management was January 1,1983, a proposed two-year curriculum was tentatively approved by the Faculty of Agriculture in September, 1982, as the deadline date of January 1,1983, approached, officials in the University and Ministry of Higher Education became increasingly concerned about establishment of the new Department and curriculum.

These officials raised several very valid questions about finances, longivity and continuity of the program, number of teaching staff, classroom and laboratory space, provision for post graduate training for Somali teaching staff, and other

questions. Several meetings were held during January and February to discuss these questions with officials from the University and Faculty of Agriculture, Ministries of Higher Education and Agriculture, National Range Agency and USAID.

Most of the problems were resolved satisfactorily and official approval for establishment of the new Department and to begin teaching the curriculum in Range management on March 10,1983, and classes started on March 12,1983.

The curriculum in Range management is a two-year course of study. All students in the Faculty of Agriculture take a common course of study during their first two years. Many of these courses, such as Botany, Agronomy, and Animal Husbandry are important background courses for students in Range Management. Students beginning the fifth semester may choose the Range Management option and study Range Management during their last two years (fifth, sixth, seventh, and eighth semesters), other students may choose to continue study in the agriculture curriculum in the final two years.

Two courses, Range Plant Ecology and Range Plant Physiology, are being taught in the current semester by lecturers Ahmed Elmi and Floyd Kinsinger. Because our program was not approved untill March 12, after the semester was almost half finished, we have had to double our lecture time to cover the course material in the remaining one-half semester. However, the students have agreed to continue classes in Range Management during their normal examination month (May) and their vacation month (June).

Twelve good students have enrolled in the Range Management option. They appear to be intelligent and eager young ment and will make a valuable contribution to the management of Somalia's valuable rangeland resources. These 12 students are really "Pioneers" in Range Management in Somalia, being the first to be graduated from the National University of Somalia with a degree in Range Management. It is hoped that the number of students in Range Management will gradually increase each year, perhaps 15-16 in 1984, 20-22 in 1985, 25-27 in 1986, etc.

Three additional courses in Range Management will be taught in the sixth semester beginning in July: Range Plant Identification, Principles of Range Management, and Sociology of Pastoralism. Dr. S.M.A. Kazmi, Taxonomist with the National Range Agency and CRDP, and Michael Madany, will assist Elmi and Kinsinger in teaching these courses.

Five students in Agriculture continue to work on their thesis problems in Range Management and should graduate in December, 1983. The twelve students currently enrolled in Range Management will soon be selecting their thesis problems. Since very little research has been done on the rangelands of Somalia, the students will have an unlimited choice of research opportunities. However, we will endeavor to select priority research projects for student thesis.

We are looking forward to the first graduation of students in Range Management in Dec. 1984. Anyone interested in visiting our classes are certainly welcomed.

Floyd Kinsinger
Dept. of Range Management
National University, Afgoi.

N E W S

LIVESTOCK MINISTER OPENS ENVIRONMENT CONSERVATION SYMPOSIUM

The SDR Minister for Livestock, Forestry and Range, Dr. Mohamed Ali Nur, on 15th May formally opened at Juba Hotel a 5-day-long symposium on Environmental Conservation attended by the officers of the National Range Agency headquarters, the heads of the regional branches, the officials of Agency-related projects and the representatives of environmental agencies resident in the SDR.

During the symposium, which was the fourth of its kind to be held in the SDR, discussions revolved around such important issues as the prevention of soil erosion the development of grazing lands, the preservation of the country's wildlife, and other topics related to environmental conservation.

Speaking at the opening ceremony, Jalle Mohamed Ali Nur defined the objectives of the symposium, explained the outcomes and experiences gained from previous seminars. He emphasized the need of environmental researches in the country. He informed the audience that international symposium on the conservation of environment will be held in Somalia at the end of this year.

The Minister also spoke at length about the adverse effects on environment of natures' unwarranted shifts, population growth, the lack of balance between environment and

the life it supports, the excessive falling of trees and the growing trend of migration to the towns, all of which, he said, needed scientific researches and comprehensive plans to be effectively dealth with.

Jaalle Mohamed Ali Nur stressed the need to stop the migration of rural people to the towns by providing them with necessary commodities and services in their home areas.

Prior to the minister, a brief report on the symposium's agenda was read by the General Manager of the National Range Agency, Jaalle Abdullahi Ahmed Karaani.

A number of the experts from the different projects running at the National Range Agency read their papers related to environment and pinted out the need of research in their respective fields, e.g. Range Management, Forestry, Wildlife, Soil Stabilization, Water Conservation and Sand Dune Stabilization etc. intresting and useful discussions followed each paper.

The symposium declared closed on 19th May after recommending a number of suggestions to improve the environment.

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TREE PLANTING DAY

The National Tree Plantation Day was inaugurated by the Minister of Livestock, Forestry and Range, on 17th April by planting a sapling at Wardhigley compound. About one million seedling of different species of trees were distributed to the public from the different forest nurseries throughout the country. The officers of different Government Departments, members of the public organizations and student participated in the campaign. The officers of the National Range Agency in different regions and districts explained to the public the methods of tree planting by giving lectures, exhibiting posters and showing movies.

In the evening of 17th April a concert on "Tree Planting" was performed by the WABERI Artisits at the National Theater, Mogadishu which was attended by the Government officials, members of the party, diplomats and representatives of the public.

About 600 certificates were issued by the National Range Agency to people who took extraordinary interest in tree planting at different places in the country.

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SEMINAR ON NURSERY & PLANTING TECHNIQUES

A seminar on Nursery and Planting Techniques, sponsored by FAO held on May 7, 1983 to May 19, 1983 at the Forestry and Wildlife School Afgoi. Mr. Hassan Abdul-Rahman Musanad, silviculturist addressed the audience on the modern techniques of

building, maintaining and utilizing the forest nurseries. He also demonstrated the techniques practically in the nursery and at the end conducted a tour to the plantations near Afgoi, nurseries at Balad and the National Herbarium at Mogadishu.

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EXPLORING MARKETS FOR SOMALI NATURAL RESOURCES

Mr. Ali Salah Abdul-Karim, Vice Minister, Ministry of Livestock, Forestry and Range, visited Saudi Arabia on 22nd May to negociate with the Saudi Authorities the supply of Somali livestock to Saudi Arabia.

Mr. Yousuf Mohamed Ahmed "Harare", Director Wildlife Department, N.R.A., left on 24 April to attend the International Trade Fair at Milan, to explore the market for minor wildlife and Forest products.

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FOUNDATION STONE OF THE NRA HEADQUARTERS LAID

On 1st June 1983, Dr. Abdullahi Ahmed Karani in a very simple ceremony laid the foundation stone of a multistored building for the NRA Headquarters to be built near Degfer Hospital. The Chinese contractors started leveling the ground immediately after the foundation laying ceremony. It is hoped that by 1985 the National Range Agency will move into its permanent Headquarters.

COOPERATION FOR DEVELOPMENT IN AFRICA APPROVED $ 6 miln FOR STRENGTHENING FORESTRY IN SOMALIA

C.D.A. approved $ 6 million for strengthening forestry in Somalia. The following three projects have been approved for financing by C.D.A.

1) Corioley Forestry Project will be undertaken by the "Save the Children Federation".

Objectives:

a. Nursery expansion, using the existing 13,000 m^3 storage reservoir.
b. Improvement of the delivery canals by reengineering and cutting.
c. Developing 150 ha of Fuel Plantation, 1000 ha canal and shelter belts, nursery functioning and land resource management for the unit.
d. Train 60 students and teachers in the field.

2) Jalalaqsi Reforestation Project will be undertaken by Africare.

Objectives:

a. Developing 44 ha of fuel plantation
b. Developing 160 ha of Shelter belts
c. Stabilizing 48 ha of moving sand dunes
d. Developing six nurseries with capacity of 35,000 seedling each.

3) Hiraan Refugee Reforestation Project

Objectives:

a. Developing 2 nurseries
b. Developing 770 ha woodlots
c. Developing 32 km of shelter belts
d. Planting 536,000 fruit and shade trees
e. Training 23 persons.

In addition to the above projects C.D.A. will provide a number of experts in different fields of forestry to plan organise and develope the Forestry Department and its relevant sections at the N.R.A. Headquarters and to train the local staff for running the department in future.

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NRA STAFF ATTENDS TRAINING COURSES AND SEMINARS ABROAD

Miss Madina Omar Abow, Director of Range Cooperatives and Mrs. Berlin Abdi Mohamed of Forest Department, attended a 7-week course, "Management and Role of Women in Development" given at the International Center Washington, George Meyson University, Arlington, Virgina and Blackbury Virginia. The visit of the 2 NRA officers was sponsored by US-AID.

Dr. Mohamed Mohamoud Jumale "Olow", Director of Forest Department, attended a 2 months seminar on "Forestry Techniques" held in Washington, from 28 Feb. to 28 April, sponsored by World Bank. During his absence Mr. Omar Addow Warsame officiated as Director of Forest Department.

Miss Madina Omar Abow, attended a 3-week course on "Watershed Management", sponsored by FAO from June 10th to February 2nd at Nairobi, Kenya.

Mr. Ahmed Mohamed Ayan, Director Department of Range Management, attended a conference on "The Problems of Arid Lands", sponsored by the Christian Council of Kenya, at Nairobi, from February 28th to March 2nd.

Dr. Abdullahi Ahmed Karani, General Manager, National Range Agency and Mr. Ahmed Mohamed Ayan, Director Department of Range Management, attended the Near East Forestry Commission Conference, held at Nicosia, Cyprus, from 6th June to 10th June. On his return the General Manager visited FAO Headquarters at Rome to discuss about the FAO Projects running in Somalia or submitted by the Government of Somalia for approval.

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MORE EXPERTS AND TECHNICIANS JOIN NRA

- Mr. Roger C. King, Forestry Technical Adviser under the US-AID component of the C.D.A. Programme, joined NRA on April 13th. Mr. Omar Addo Warsame one of the Deputies in the Forest Department has been appointed as his counterpart.

- Mr. Tom Kelly, appointed by National Range Agency as Project Coordinator under C.D.A. programme, joined NRA Headquarters on February 12th 1983. Mrs. Berlin Abdi Mohamed has been appinted as his counterpart.

- Mr. Robert Wedderburn, FAO senior Forestry Adviser, is expected soon to join the Forestry team at the NRA Headquarters. Dr. Mohamoud Jumale, Director of Forestry has been disignated as his counterpart.

- Mr. J.L. Mower, FAO Range Specialist and Team leader of the group of experts running the Northern Range Development Project for the interum period between the first and second phase of the Project, arrived Burao, the Headquarters of the NRDP Project, in April.

- Mr. B. Hattlebreke, FAO Master Mechanic, joined the NRDP Project in April 1983. at Burao.

- Mr. D. Richard, FAO Fodder crop specialist, joined the NRDP Project, Burao in April 1983.

- Mr. Michael Brown, Range Sociologist, joined the LBII group, a US-AID component of the Central Range Development Project, in February 1983. and Mr. Abdikarim was appointed as counterpart.

- Mr. Glen Buchta, Stockwater Specialist, joined the LBII group, a US-AID component of the Central Range Development Project, in May and Mr. Yusuf Warsame Mire was appointed as counterpart.

- Mr. Karl Schoept, Team Leader, Veterinary Services, GTZ component of the CRDP, joined the Ministry of Livestock early 1983.

FIRST GROUP OF DIPLOMA FORESTERS GRADUATE FROM AFGOI SCHOOL OF FORESTRY AND WILDLIFE

The Forestry and Wildlife School at Afgoi was established to train forest and wildlife assistants by the National Range Agency at the Afgoi Nursery compound with limited facilities in 1980. In 1982 the school occupied its new building on Afgoi-Merka road. The school offers 2 year curriculum on Forestry and Wildlife with special emphasis on the practical aspects.

The following 14 students graduated after completing the 1981-1983 course :-

1.	Siyad Dubo Osman	87.6%
2.	Bashir Ise Ali	87.3%
3.	Abdi Egeh Boqore	84.8%
4.	Nur Gele Farah	81.0%
5.	Abdulcadir Mohamed Abdi	80.9%
6.	Mohamed Abdi Ahmed	76.3%
7.	Hussain Mohamed Arable	69.6%
8.	Mohamed Ilmi Samatar	69.2%
9.	Abdiweli Hussain Ali	65.1%
10.	Abdiweli Ahmed Mohamed	62.9%
11.	Mohamoud Sheikh Hassan Osoble	62.8%
12.	Abdirizaq Hussain Ali	62.4%
13.	Mohamed Muhyaddin Mohamed	58.6%
14.	Sulaiman Abdullahi Yousuf	51.4%

A new group of 47 students enrolled for the next course of 1983-85.

RESOURCE SURVEY OF SOUTHERN AREAS

The Survey team of Resource Management and Research arrived Mogadishu on 15 May, 1983 to start surveying southern areas. The team is comprised of Dr. R.M. Watson, Team Leader, Mr. C.H. Hemming, ecologist, Dr. J.P. Gillet, Botanist and some Assistants. The Resource Surveys of the Northern and Central areas have also been completed by the same company.

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DRILLING PROGRAMME STARTED AT BULO-BURTI

Ground water Project of the Water Development Agency has started drilling at Bulo-Burti. This will be the first bore-hole of a series to be drilled in different areas of C.R.D.P. Project.

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NATIONAL HERBARIUM

Dr. S.M.A. Kazmi visited East African Herbarium for consultation of the leterature and identification of Somali Plant specimens from March 13th to April 6th.

Drs. Maryam Isse Shirwa and Istambul Haji Abdi-Samad joined the Herbarium as counterpart taxonomist on 1.2.83 and 1.3.83 respectively. Maryan & Istambul have graduated from the Faculty of Agriculture, National University, Mogadishu in January 1983.

The work on the following projects have been completed and the publications would be available in near future.

Kazmi, S.M.A.	Flowering Plants of Somalia - bearing Varnacular Names.
Cope, T.	Key to the Somali Grasses.

About 500 specimens collected from different parts of the world have been received in exchange from different Herbaria in Europe and U.S.A.

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NRA DOCUMENTATION CENTER

The following new books have been purchased for the Documentation Center and are available for consultation.

Oliver a. oth	Florea of Tropical Africa, Vols. 1-8 in 10 Vols.
Richard A.	Tentamen Florae Ethiopicae 1982 reprint 2 Vol.
Blundell, M.	The Wild Flowers of Kenya
Jex Blake (ed.)	Cardening in E. Africa 3rd Edn.
White & Sloan	The Stapediae, 2nd Edn. in 3 Volumes.
Ross, J.M.	A conspectus of the African Acacia species.
Clayton, W.D.	Graminae (Part 3) in Flora of Tropical East Africa, 1982.
Grey-Wilson,	Blasaminaceae, in Flora of Tropical Africa 1982.
Jonsell Bengt	Cruciferae, in Flora of Tropical E. Africa 1982.
Nordal Inger	Amaryllidaceae, in Flora of T.E.A., 1982.
Kokwaro, JO. O.	Rutaceae in Flora of Tropical E. Africa 1982.

US-AID EVALUATION TEAM

Mr. Kal Martin, Team leader, Mr. Rosalia Falae, Social scientist and Dr. James Tiedeman, Range Ecologist arrived Mogadishu on 17.3.83. They visited parts of the CRDP Project area and to acquaint themselves with the project activity and to evaluate the progress made so far.

Mr. Key Wilks, Technical Director and Team leader of the LBII component, Mr. Abshir, Project Director and Mr. Ayan Director Range Management, N.R.A. accompanied the team to the area. After discussions with the technical staff, General Manager, National Range Agency and AID authorities they considered possible modification and improvement in designing the project.

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WORLD BANK REVEW MISSION

Mr. Niel Worker of the World Bank visited N.R.A. Headquarters in the third week of March and discussed the progress of C.R.D.P. with the General Manager, N.R.A., Mr. Y.M. Bahaeldin, Project Coordinator and other relevant authorities.

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UNSO CHIEF VISITS N.R.A.

Mr. Lameyr, Chief of UNSO, visited the National Range Agency Headquarter and discussed the progress of the UNSO

contribution towards the strengthening of the Forestry Department and other projects at the NRA with Dr. Abdullahi Ahmed Karani, General Manager, NRA. Dr. Karani accompanied Mr. Lameyr on his visit to Shalambod to see the progress made in the sand dune stabilization there.

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EXECUTIVE VICE PRESIDENT LOUIS BERGER INT. INC. VISITS SOMALIA

Mr. Derish M. Wolff, Executive Vice President of Louis Berger Int. visited Somalia from 16-21.4.1983. He met the LBII Staff working in different projects and discussed their problems. He also met the authorities of US-AID, and other Somali Government officials.

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