United Nations

LIFELINE SUDAN

An Investigation into Production Capability
in the Rural Southern Sudan

A REPORT ON FOOD SOURCES AND NEEDS

June 1990

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"You see when a man is drowning he does not go straight down, but thrashes about with his arms clutching at anything. I am like a drowning man thrashing about, clutching at whatever other people give me."

Dinka returnee from Southern
Kordofan, Akon, 12 May 1990

DEFINITION OF TERMS

BITH	(Nilotic) barbed fishing spear
CIENG	(Nuer) section of a tribe
DURA	(Arab.) sorghum
HAFIR	(Arab.) dug water reservoir
LALOUB	(Arab.) Nut of the higlig tree
LUAK	(Nilotic) barn or cattle byre
MALODA	(Arab.) straight hoe
MERISSA	(Arab.) beer brewed from dura or cassava
TOIC	(Nilotic) seasonally flooded grasslands; dry season pasture
MISSIRIA	(Arab) Nomadic tribe from Southern Kordofan
NDVI	(Acronym) Satellite derived index measuring moisture content in soils/ plants.
MUAC	Mid Upper Arm Circumference
OLS	Operation Lifeline Sudan

MEASUREMENTS

1 tin of grain = 18 kg

1 sack of grain = 5 tins = 90 kg

1 feddan - 0.42 hectares

ACKNOWLEDGEMENT

This report is the product of joint cooperation between the United Nations and the Sudan Relief and Rehabilitation Association (SRRA).

At the beginning of our work the terms of reference were to assess the food relief needs of the populations under the administration of the SPLA/M. This report has gone further than this, we now have a comprehensive record of the situation facing rural populations trying to provide for themselves. The ability of these populations to survive and improvise for themselves is impressive, but they urgently need help to achieve a measure of self-sufficiency in food production.

We have concentrated on Bahr El Ghazal, Jonglei and Upper Nile provinces, and not on Eastern Equatoria. This is due to time constraints coupled with the fact that conditions within Eastern Equatoria are well documented by the many NGOs who are working in places such as Torit, Kapoeta, Kaya and Kajo Kaji.

There is no particular time frame involved in our recommendations, we have documented what we found and our general thoughts on how to tackle specific problems. We must have a further brief assessment in November when the harvest planted this year is coming in to fine tune our recommendations.

Many people have assisted our work, far to many to name but we would like to mention Nils Enquist, Marian Read (WFP) Vincent O'Reilly, Bob McCarthy and Patta Scott-Villiers (UNICEF). Pierre Ohure (SRRA) and the numerous chiefs and local people who put up with our questions, and are now expecting the UN (the mother of all nations, as one chief described his view of the UN) to come to their assistance.

Alastair Scott Villiers

UN Team

Acuil Malith Banggol

SRRA Team

Nairobi
June, 1990

METHODOLOGY

The UN assessment team of 5 members and the SRRA assessment team of 4 members travelled overland from Kapoeta to Waat and back to Bor between 20 April and 6 May. From 9 to 24 May they flew to Akon, Yirol, Ler, Nasir, Boma and Torit. Data was collected to assess food needs and food supplies. In each place visited, meetings were held with the resident SRRA committees to get a general picture of the local situation. Detailed information was then collected through formal meetings with chiefs, and through informal visits by individual members of the team to villages, cattle camps, and homesteads outside the main administrative court centres. In this way information presented at formal meetings could be verified and assessed by direct observation and informal encounters with a variety of persons living in the localities. Members of the UN team had direct access to families, farmers, traders, returnees, displaced persons, as well as chiefs and local administrative officials. During their enquiries the UN personnel were sometimes accompanied by SRRA personnel, and were sometimes unaccompanied. Of the five members of the UN team four had previously worked in the Sudan, and three of these already had direct experience of many of the areas in the Southern Sudan visited by the team.

Nutritional surveys of children under 5 years old (both MUAC/ht and wt/ht) were carried out in a variety of places, revisiting where possible locations surveyed in 1989. In this area of the Sudan, especially among the pastoral Nuer and Dinka, children are traditionally given priority in feeding during times of scarcity. A well nourished sample of children may still mask widespread undernourishment among the adult population. Similarly, a significant incidence of malnourished children will be an indication of wider malnourishment in the population. Due to the small size of the overall sample obtained (just under 1000 children) any conclusions drawn from the data must be tentative.

Local information about rainfall, flooding, and drought has been checked against Satellite data recorded by Advanced Very High Resolution Radio meter (AVHRR) formed into an index of biomass greenness, the Normalised Difference Vegetation Index (NDVI) providing an objective measure of vegetation growth and soil moisture. Most areas so examined contain a mosaic of sandy and clay soils supporting a variety of vegetation ranging from permanent swamp to acacia scrub. While the presence of a nearby swamp may obscure the drier condition of adjacent high land, the general pattern of peaks and troughs in the rainfall has been confirmed.

For background information on specific areas under study the team has referred to: Report of the Jonglei Investigation Team, 1954, Vol I; Report of the Southern Development Investigation Team, 1954; Sudan National Livestock Census & Resource Inventory, 1976-7, vols. 18-20; Mefit-Babtie Development Studies in the Jonglei Canal Area Final Report, 1983, vol. I; First Population Census of Sudan, 1955/56; and figures from the 1983 Sudan National Census. Sudan Survey Maps, scale 1:250,000, for each area visited have also been used.

Population and livestock figures present certain difficulties of interpretation. The samples used in both the 1955/56 and the 1983 censuses were low, and in many cases the figures can represent only an estimate. Fighting had already broken out in many parts of the Southern Sudan by the time of the 1983 census, especially in the Aweil, Bentiu, and Nasir areas, and this will have affected the final count. The 1955/56 census gives figures by tribe and tribal section, while the 1983 figures available to the team give general figures only for rural and town councils. Where necessary we have adapted the proportion of tribes and sections as recorded in 1955/56 to the figures of 1983, in order to produce a baseline figure for specific areas. Similarly, the 1954 livestock figures are based sometimes on veterinary counts, sometimes on mere estimates, and give numbers for tribal herds. The 1976/7 and 1983 livestock census was based entirely on aerial surveys and were not checked against veterinary counts. They give a good idea of the total livestock population, but not the size of specific herds. Again, where necessary, we have adapted the proportions for tribal herds recorded in 1954 to the later censuses to produce baseline figures for specific areas. Such figures must be considered as rough estimates only, useful for giving a sense of scale.

This being the first attempt at a comprehensive survey of the economic situation in the rural areas of the Southern Sudan since the beginning of the current civil war, it can naturally give only a general picture. More long term and detailed study in specific localities will be needed.

SUMMARY OF FINDINGS

The cumulative effect of seven years of war has been the accelerated decline of the economy of the Southern Sudan. War losses, the destruction of commercial and communication networks, and natural disasters have all had their effect. The resilience of the people of the Southern Sudan is impressive, and their obvious determination to rebuild their economy bodes well for the future, but this cannot hide the fact that the range of economic activity has narrowed, that reserves are almost non-existent, and that considerable assistance will be needed to halt the decline, much less reverse it.

In some areas fighting has been going on since 1982 or 1983. In all areas visited by the assessment team fighting seems to have intensified in 1986. Some areas have been effectively free from major fighting for two or three years, but most have seen peace since only last year. Losses due to fighting have included food, seed, tools, livestock, and shelter. This has meant that most communities visited have been unable to accumulate any food reserves for several years. Seed stocks have also been affected, and this has meant the reduction of the area under cultivation in many places.

Areas of heavy or constant fighting have also been depopulated. Some parts of the country, notably Northern Bahr el-Ghazal, have suffered from severe depopulation, and other areas have received more refugees than can be coped with. While there is beginning to be a movement of people back to their original homes, this movement will not become general until satisfactory harvests have been achieved. In the meantime some regions will suffer from labour shortage, while others will have to support a surplus destitute population.

The most destructive natural catastrophe in the last few years in the Southern Sudan was the 1988 flood, which was produced by a combination of high rivers and heavy rains. Many cattle, sheep, and goats were killed during that flood; riverbank cultivations in Northern Bahr el-Ghazal, Western Nuer, Lakes, Jonglei, and along the Sobat were destroyed; and a number of villages in low-lying areas are still under water or remain vulnerable to flood. Fishing areas in the Jonglei region have become inaccessible due to persistent flooding.

With the loss of fishing nets, hooks and lines, as well as canoes, the local fishing industry, which had been a major part of the Southern regional economy by 1983, has been badly hit. Not only was fish widely traded in markets throughout the South before the war, it was one of the region's main export commodities to neighboring countries. It was also a major source of food during the dry season and early wet season when grain stores were depleted, prior to the next harvest. Fishing is now confined to shallow pools, using traps and fishing spears, which produce a far smaller catch than nets and hooks in deeper waters. The people's capability of fishing in deep rivers and swamps must be revived.

The Southern Sudan used to be served by a network of bush shops along the main roads and in court centres. These shops sold grain, salt,oil and other

commodities. In addition to this cattle auctions were held in many court centres before 1983. The bush shops closed in 1983-4, and people in the rural areas no longer have access to those shops which remain open in the major towns. This has meant that they no longer have access to additional sources of food from the market. The disruption or destruction of the road network has also meant that people have greater difficulty travelling long distances in order to find food. This means that areas of local surplus cannot re-distribute food over a wide area. People looking for food are limited to what they can carry on foot.

The greatest burden of the war now falls on the women in the rural areas of the Southern Sudan. Even before the war they were responsible for much of the cultivation and all of the food preparation. Now, with so many men away from their homes, women are responsible for almost all of the cultivation. They are also the ones who walk long distances in search of food to buy.

Livestock herds have been affected by the war. Cattle have been captured by various raiders and eaten by armies in the field. Many cows, sheep,and goats died in the flood of 1988. The very large pre-war flocks of sheep and goats have almost entirely disappeared because these were the first domestic animals to be eaten in this period of food scarcity. Livestock health has also declined. Government cattle vaccination programmes stopped in most places in 1982-3. This means that there has been a growing vulnerability to disease among the herds of the Southern Sudan. Because of fighting during the war cattle have been concentrated in restricted areas away from immediate fighting. During the 1988 flood in many places cattle were similarly confined in small areas. This has increased the spread of infection of many diseases (rinderpest and CBPP especially), so that now there is a very real fear of epidemic among cattle if vaccination campaigns are not resumed throughout the Southern Sudan.

All of these factors have combined to produce a progressive, and in many cases an accelerating degradation of food supplies. The total area under cultivation has diminished; harvests are correspondingly smaller; livestock are becoming more unavailable to the majority of the population; there is little access to market stocks.

1988 was the year of the worst food crisis in the southern Sudan, with areas in Northern Bahr el-Ghazal, western upper Nile, and Jonglei suffering from famine, while many other regions experienced severe food shortages. No international assistance went to the worst affected areas that year. By the time Operation Lifeline Sudan got underway in 1989, those who had survived the previous year were attempting to revive their local economies by relying on traditional networks of support and mutual assistance. In 1990 we found that most people were still recovering from the devastation experienced in 1988, and they were relying on their own networks of kinship and exchange. Food produced is distributed mainly through these networks, but lack of transportation restricts their range.

The main effect of all this is to increase the traditional seasonal "hunger gap" prior to the first harvest of each year. With greater demands on the declining food stocks available, hunger becomes more widespread earlier in the

year. The hunger gap used to last from June to mid-August; it now begins in March in most places visited by the assessment team.

The needs of the Southern Sudan will not be met by food assistance alone. Greater attention must be paid to increasing local production through the revival of the fishing industry and the distribution of seeds and tools. Attention must also be focussed on means of re-distributing local surpluses. Here existing exchange and kinship networks will have to be encouraged and supported. At the same time other means of barter through local markets and co-operatives can distribute food and seed over a wider area. The recommendations at the end of this report are meant to focus attention on these areas. They are not solutions in themselves, merely indications as to which problems deserve greater attention.

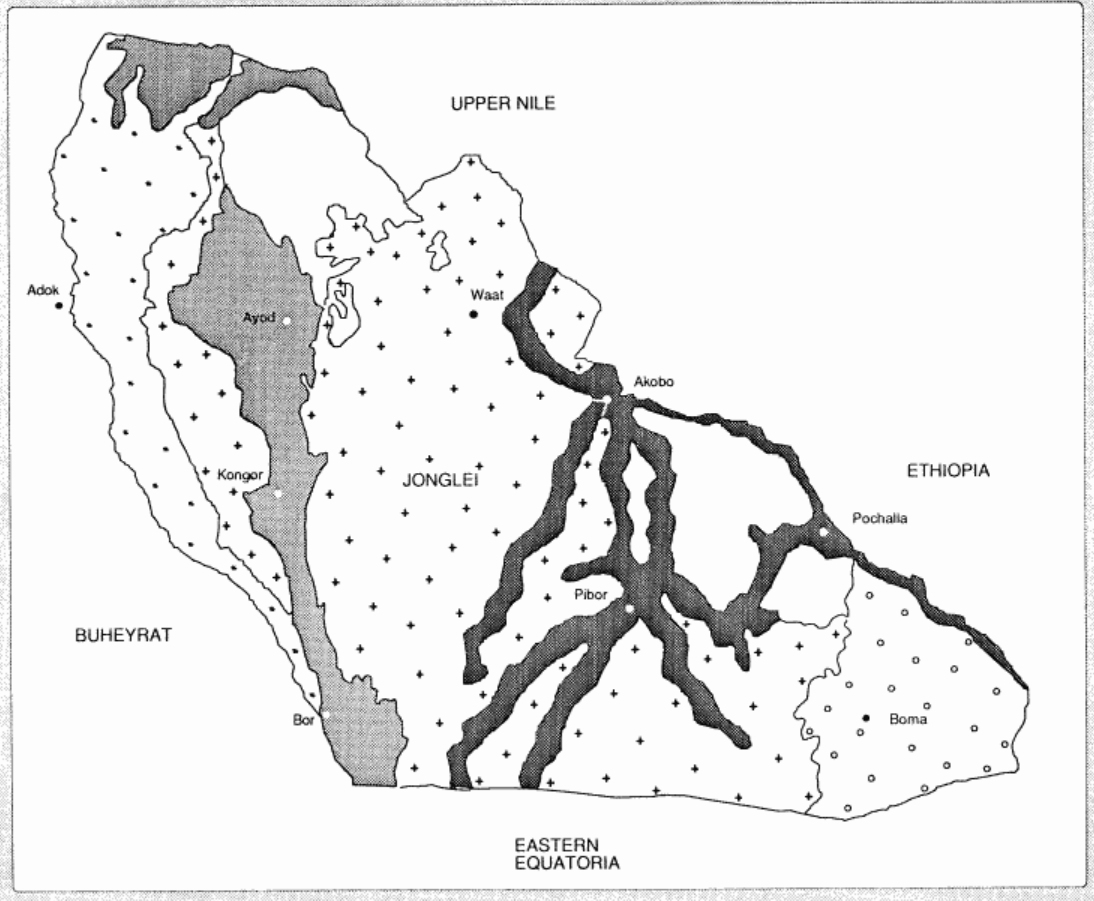
TRIBAL STRUCTURE OF THE NILOTIC PEOPLES

The largest groups covered by this assessment are the Nilotic pastoralists, the Dinka and Nuer of Jonglei, Upper Nile, Lakes, and Bahr el-Ghazal. Each of these people are subdivided into tribes, which are further subdivided into sections. In Jonglei the Dinka people are represented by the Bor, Twic, Nyareweng and Ghol tribes; in Lakes by the Aliab and Cic Dinka. In Northern Bahr el-Ghazal the Dinka sections are larger and are formed into tribal groups. These are the Twic (related to those in Jonglei), the Luac, the Malual (composed of the Abiem, Paliet, and Paliu-Piny), and the Rek (composed of the Awan, Aguok, Apuk, and Kuac). The Nuer of Western Upper Nile are divided into the Bul, Leek, Western Jikany, Jagei, Dok, Aak, Nyuong, and Dor tribes. In Eastern Upper Nile the Eastern Jikany Nuer (related to those in the west) are subdivided into the Gaajak, Gaajok, and Gaagwang sections. In Jonglei the Nuer tribes which concern this assessment are the Gaawar (divided into the Nyang and Bar sections), and the Lou (divided into the Gun and Mor sections). In Lakes the Atuot are a separate people, related to both the Dinka and the Nuer. In Jonglei and Upper Nile the main sections of the Nuer and Dinka chiefs are presided over by Court Presidents, assisted by Executive Chiefs. Below them each section is represented by Head Chiefs and Sub-chiefs. In Lakes and Bahr el-Ghazal the most senior chief of the major sections are the Executive Chiefs, with Head-Chiefs and Sub-Chiefs ranged below them by sections.

Given the administrative importance of the chiefs, and the representative nature of their offices at the local level, we feel that OLS II should make every effort to involve the chiefs in planning of needs and distribution of supplies.

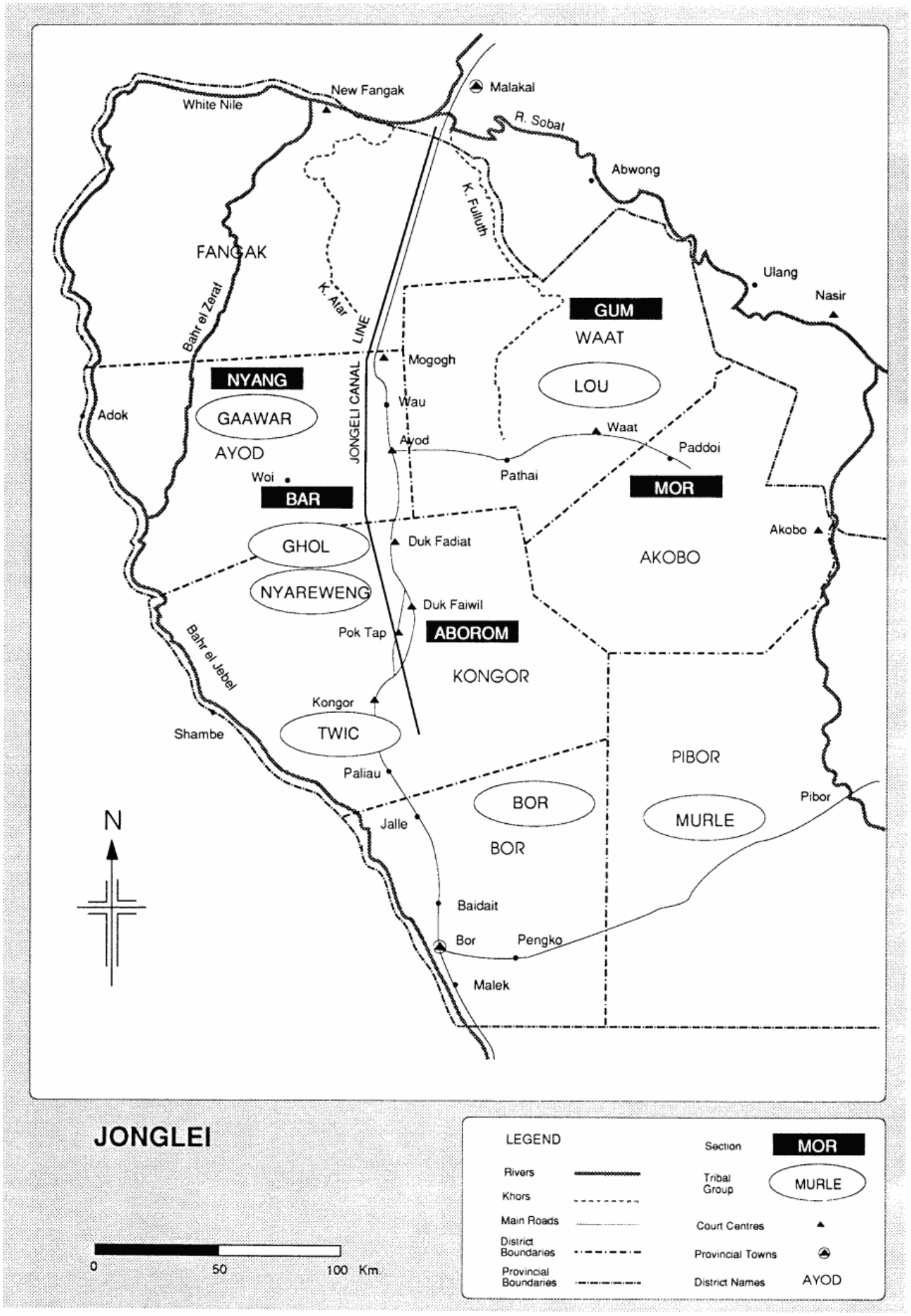
JONGLEI PROVINCE

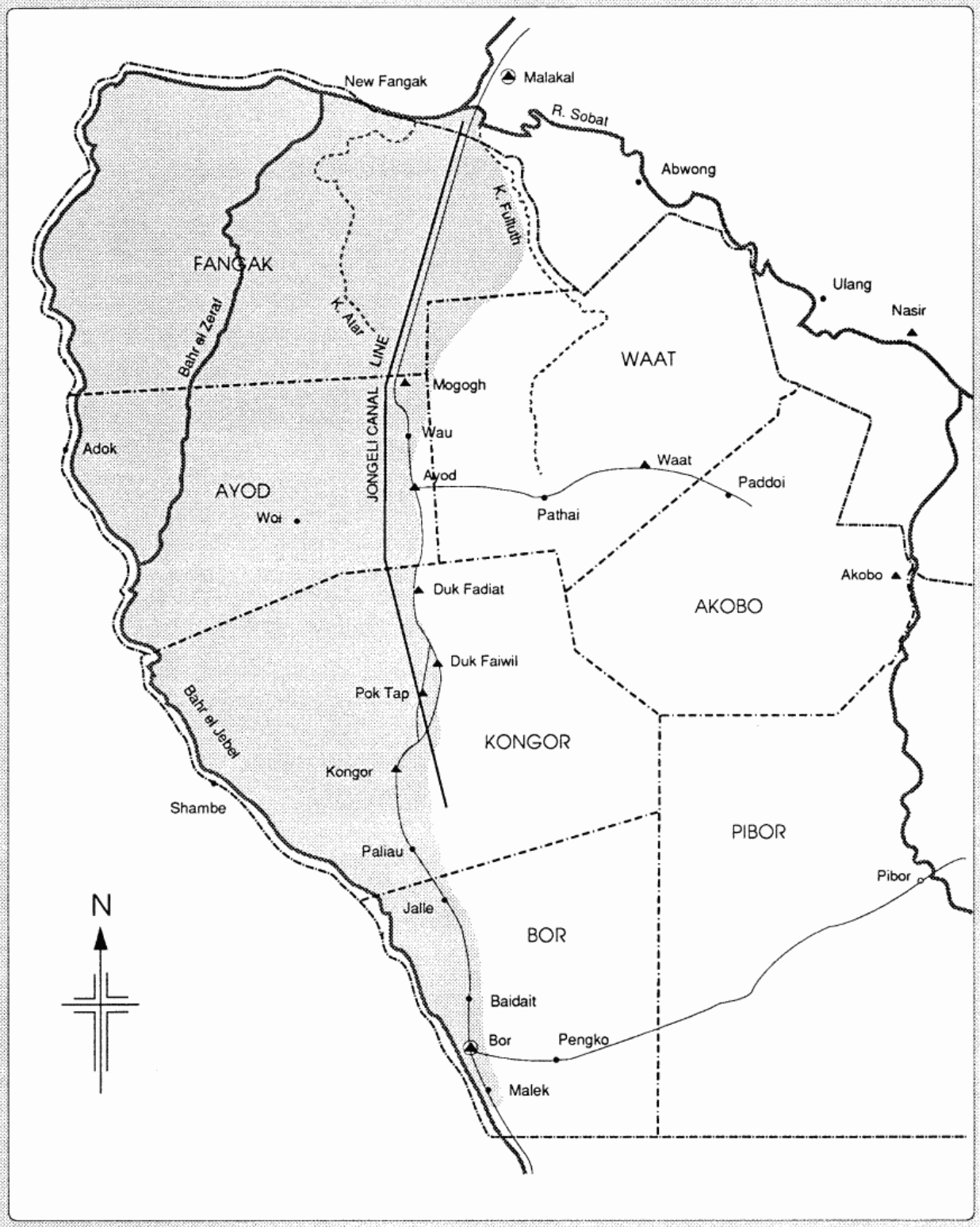
SOIL TYPES



LEGEND

- Cotton soil dense thickets
- Toic
- Swamp
- River valleys dense vegetation
- Higher wooded ground


White Nile
New Fangak
Malakal
R. Sobat
Abwong
K. Fulluth
FANGAK
K. Atar
Bahr el Zeraf
JONGELI CANAL LINE
Ulang
Nasir
GUM
WAAT
LOU
Mogogh
Wau
Adok
NYANG
GAAWAR
AYOD
Ayod
Waat
Paddoi
Pathai
Woi
BAR
MOR
Akobo
GHOL
Duk Fadiat
AKOBO
NYAREWENG
Duk Faiwil
Pok Tap
ABOROM
KONGOR
Bahr el Jebel
Kongor
Shambe
TWIC
PIBOR
Paliau
BOR
Pibor
MURLE
Jalle
BOR
Baidait
Bor
Pengko
Malek
N
JONGLEI
0
50
100 Km.
LEGEND
Rivers
Khors
Main Roads
District Boundaries
Provincial Boundaries
Section
MOR
Tribal Group
MURLE
Court Centres
Provincial Towns
District Names
AYOD



JONGLEI

LEGEND

- Rivers
- Khors
- Main Roads
- District Boundaries
- Provincial Boundaries
- Area affected by 1988 flood
- Court Centres
- Provincial Towns
- District Names (AYOD)

JONGLEI (BOR, KONGOR, AYOD, WAAT)

PHYSICAL DESCRIPTION

The area of Jonglei from Bor north to Ayod and Mogogh is found roughly between 6° and 8° 30' and 31° 15' and 31° 38'. It lies entirely within the flood region. The soils are mainly clay, except for a few slightly elevated sandy ridges and knolls which support woodland and cultivated areas. These areas, which are also the sites of permanent habitation, are found mainly along a south-north line running from Bor through Kongor to Duk Faiwil (Pok Tap), Duk Fadiat, Ayod and Mogogh.

An extensive permanent swamp along both the Bahr el-Jebel and Bahr el-Zeraf rivers extends from Bor to the White Nile. The adjacent grasslands on the clay soils are flat with almost no slope, and are vulnerable to seasonal flooding from the river and local rains. The extent of the seasonal flooding restricts the area suitable for permanent settlement, and in the 1960s that area contracted when the permanent swamp expanded, due to a long-term rise in the river level (see map after pg. 9). The annual flooding of the grasslands (toic) does produce good grazing grass, which becomes available in the dry season as the flood waters from the previous wet season recede.

The plains east of about 31° 28', bounded in the north by the Sobat and in the east by the Pibor, are not susceptible to river flooding. They can be subject to very heavy rain flooding in the wet season, however. In exceptional years when overspill from the Eastern Equatorian torrents combines with heavy local rains a steady "creeping flood" of water 1 to 2 metres deep flows from southeast to northwest, eventually flowing into the swamps of the Bahr el-Zeraf and Bahr el-Jebel, and out through the watercourses feeding the Sobat. The network of watercourses connected to the Sobat and Pibor can, in years of high rivers or heavy rains, provide water and grazing late into the dry season, and are sometimes used as alternate pastures to the riverine toic.[1]

POPULATION

The region from Bor to Duk Fadiat is inhabited by the Dinka (Bor, Twic, Nyareweng, and Ghol), Ayod by the Gaawar Nuer, and Waat by the Gun section of the Lou Nuer. Fangak District, to the north of Ayod and Waat, is settled by Dinka along the Sobat, Khor Fulluth, and Khor Atar, and Nuer on the Zeraf Island (formed by the White Nile, Bahr el-Jebel and Bahr el-Zeraf). Akobo, to the east of Waat and Kongor, contains part of the Lou Nuer (Mor section) and some Anuak, while Pibor, bordering Akobo, Kongor and Bor, is the home of the Murle

[1] A full description of the Jonglei area can be found in the Jonglei Investigation Team Report, 1954, vol. I, and the Mefit-Babtie Final Report, 1983, vol. I.

and Anuak. The areas of immediate concern in this assessment are Bor, Kongor, Ayod, Waat, and that part of Akobo in which the Mor Lou reside.

The majority of the population of the Jonglei area is concentrated along the ridges parallel to the Bahr el-Jebel. Large sections of the plains east of Bor, Kongor and Duk Faiwil are only seasonally inhabited, but the plains of Waat and part of Akobo contain a large number of people. Those parts of Bor, Kongor and Akobo bordering on Pibor were abandoned in the late 1970s and early 1980s as people left to escape Murle raiding, which had been going on almost annually since the previous civil war in the 1960s.

According to the 1983 census there were about 77,000 Gaawar Nuer in Ayod; some 154,000 Lou (109,000 Gun Lou in Waat, and a possible 45,000 Mor Lou in Akobo); around 134,000 people in Kongor (of which the probable divisions were: 87,000 Twic, 25,000 Nyareweng, and 22,000 Ghol); and nearly 159,000 Bor Dinka in Bor.

ECONOMIC ACTIVITY

Agriculture

The Bor and Twic Dinka generally plant two crops of dura. The first (*ruath*) is planted in the early rains (usually April-May) and consists of a mixture of fast and slow-maturing dura. The early varieties can be harvested as soon as June in good years. Little or no planting takes place from July to October, as droughts are common in July-August, and floods are likely in August-October. A second, and more reliable crop (*angul*) is planted between late September and late November when the main floods are over, but when the soil is still moist. A combination of early and late-maturing varieties are sown according to the time of planting. Because of water shortages as the dry season progresses, a smaller acreage is cultivated for the second crop than for the first. Maize, beans, cowpeas, simsim, and tobacco are also cultivated in household plots.

Further north, along the line of sandy knolls known as the Duk Ridge, the Nyareweng and Ghol Dinka, and the Gaawar Nuer follow a slightly different pattern. An early crop of quick maturing dura (*der*) is planted in homestead plots at the beginning of the rains (usually April-May), along with maize,beans,cowpeas, pumpkins and tobacco. The second crop of late-maturing (four to five months) dura (*belwic* or *nuer*) is planted only a few weeks later, when the rains have softened the soil enough to prepare larger fields. The second crop provides the biggest yield. The Nyareweng and Ghol sometimes cut back the second crop after it is harvested and get some additional grain from the regrowth (*aber*). Among the Ghol and Nyareweng another type of late-maturing dura (*jak*), which is harvested after five to six months, is sometimes planted on the open grasslands in June, flood waters permitting. The sandy soil of the Duk Ridge is also highly suitable for groundnuts, and Ayod is particularly noted for its groundnut harvests. The Lou Nuer follow the same general pattern as the Gaawar, though the timing of their planting and harvesting varies slightly, as there is no river flooding to contend with.

The main constraint on cultivation is flooding. Small, low embankments are usually made around household plots and larger fields, and this is usually sufficient to keep the water back in average years. The Twic Dinka have a more extensive system of dykes than is found in other parts of the region, and it is in this way that they have in the past secured a greater area in which to cultivate, especially around Kongor. After the great floods of the early 1960s, and the lesser floods of the early 1970s, the Twic Dinka and their southern neighbours in Jalle constructed a long embankment in their western toic, parallel to the river in an attempt to control the flood waters. The Southern Regional Government assisted in raising this embankment with heavy machinery in about 1977, but repairs and maintenance were done by local people using hand tools.[2]

Grain production has been traditionally a precarious activity in this region. In the past only a few areas, such as Kongor, Woi, and Paddoi,could be relied on to produce some modest surpluses. In many years the people of the interior also had to resort to grain grown by people settled along the the Khor Fulluth and the Sobat. Experiments in mechanised farming in the 1970s and 1980s proved far too expensive to be viable. The most effective means of increasing grain production in the short term have involved the provision of better hand tools and the improvement of local methods of flood control.

Livestock

Cattle are concentrated in the wet season around the permanent habitations. Some 90% of the cattle are kept in the grasslands, woodlands and cultivated areas during the wet and and early dry seasons, while some 60% are in the toic by the end of the dry season. In contrast to this, sheep and goats are kept closer to home, and only 30% are taken to the toic. A 1981-82 survey of some 67,900 sq. km of the Jonglei area (covering Bor, Kongor, Ayod, half of Waat, most of Fangak, and the eastern edges of Yirol and Ler) counted 470,000 head of cattle and 102,000 sheep and goats in the region in the mid wet season, with an increase to 783,000 head of cattle and 176,000 sheep and goats by the late dry season. This increase represents livestock brought into the region from the neighbouring areas of Ler, Yirol, and part of Waat and Akobo.[3]

Jonglei Province has been known to be rich in livestock, with the Nuer having rather more cattle overall than the Dinka. It was suggested in 1954 that the pastoralists of the area had probably reached their livestock limits, but the 1976 survey revealed their capacity for growth (estimates for tribal herds in 1976 are very approximately calculated; all figures are rounded down to the nearest thousand).[4]

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2 For the agricultural cycle, see the Jonglei Investigation Team Report, 1954, vol. I, pp.366-369.

3 Mefit-Babtie Final Report, vol. I, p.13.

4 Jonglei Investigation Team Report, 1954, vol. I, tables 128 & 129; Sudan National Livestock Survey & Resource Inventory, 1976, vol. 18B, figure 18B.01 & table 18B.06.

	CATTLE		SHEEP & GOATS	
	1954	1976	1954	1976
Bor	82,000	73,000*	20,000)	
Twic	76,000	153,000	6,000)	109,000
Nyareweng	23,000	50,000	2,000)	
Ghol	17,000	35,000	1,000)	
Gaawar	49,000	182,000	8,000	75,000
Lou	152,000	316,000	12,000	208,000

*Large numbers of Bor cattle had been moved to Juba by this time.

The largest concentrations of sheep and goats (goats far out numbering sheep) were to be found along the narrow strip of sandy land running from Bor and Kongor. One can infer from these figures, and from the percentages of sheep and goats kept close to home throughout the year, the very great importance of smallstock to the food security of the Jonglei region before the war.

A fairly complex pattern of livestock movements is undertaken each year by the different peoples of the region. The Bor, Twic, Nyareweng and Ghol Dinka move to the pastures immediately to the east of their permanent settlements before going west to the toic along the Bahr el-Jebel and river Atem. The Gaawar move by gradual stages to the Bahr el-Zeraf toic. The Lou Nuer have a variety of options, but also greater distances to cross. Many of the Gun and Mor Lou are able to make use of the network of watercourses which lead into the eastern pastures of the Dinka. The Mor Lou are also able to use pools along the Khor Geni which feeds into the Pibor. Some Lou negotiate passage through Gaawar and Dinka territory to gain access to the Bahr el-Zeraf and Bahr el-Jebel toic. A number of Mor Lou from Akobo and the Gaadbal section of Gun Lou (living around and to the north of Waat) go directly to the Sobat and Pibor rivers where they share pastures with the Gaajok section of the Eastern Jikany from Nasir. In wet years most Lou are able to remain along the watercourses which intersect their territory; but in dry years lack of water makes inland pastures unusable.

Commerce and Development

Before the war there was a vigorous commercial network of shops supplied from Malakal and Bor, as well as numerous cattle markets in the main court centres. Many local people became traders, dealing in grain, dried fish, imported foodstuffs (onions, salt, sugar, tea, oil, lentils), tools, clothing, and other items. Dried fish were a major component of the local economy, not only feeding the towns, but being exported to countries bordering the Sudan. During the late 1960s and throughout the 1970s many Bor Dinka brought their cattle south into Eastern Equatoria to escape the high floods which permanently claimed much of their former toic. After the end of the first civil war in 1972 they became the major suppliers of meat to the market in Juba. The Dinka cattle returned to Jonglei in 1983, after the dissolution of the Southern Region.

For a short period, during the construction of the Jonglei canal, there were some development projects in the region, centred mainly around Bor and Kongor. The most immediately beneficial were the veterinary and water programmes, and during that time many large hafirs (water reservoirs) were dug, wells bored, and handpumps and donkey engines installed. There were other high profile projects in the construction of roads, schools, dispensaries and other buildings. These involved a salaried work force and had little direct impact on the local populace, local food production, or food security.

Relations with Neighbours and Networks of Exchange

The inhabitants of the region have had to devise a number of strategies to survive the annual "hungry period" (in the past occuring between from late June to mid-August), as well as shortages brought about by natural catastrophes. Each local community has had to establish ties with distant neighbours, and each main tribe has a network of contacts (usually through intermarriage) beyond its borders in order to gain access to alternative sources of grain, fish, cattle, pastures and water.

Thus the northern and southern Bor Dinka (Bor Athoic and Bor Gok) have relied on each other for cattle and grain for a very long time, but they have also established contacts with the Aliab Dinka of Yirol across the river, where the Bor sometimes take their cattle. The Twic Dinka of Kongor have similar relations with the northern Bor and Nyareweng Dinka of Duk Faiwil (including Pok Tap), and they have also intermarried with the Lou Nuer. The Nyareweng are similarly tied to the Ghol Dinka of Duk Fadiat and to the Lou southwest of Waat, while the Ghol have a variety of exchange relations with the Gaawar Nuer of Ayod and the Lou of Waat. The Gaawar and Lou also intermarry with each other, as well as with the Dinka settled along the Sobat and the Khor Fulluth. The Gaawar settled on the Zeraf Island maintain a variety of relations with the Dok and other Nuer across the Bahr el-Jebel in Western Upper Nile, and the Lou (the Mor of Akobo especially) have strong ties with the Eastern Jikany of Nasir. The patterns of intermarriage frequently coincide with the patterns of dry season cattle movement.

It follows from the above that any area with a successful harvest will rapidly be depleted if it is surrounded by areas where crops have failed. Bad local harvests will often precipitate a cycle of cattle trading as people go to their neighbours with cattle to exchange for grain. An appeal to relatives will usually result in the gift of grain, or even cattle, depending on local circumstances. In the past these exchange networks tended to expand following major natural catastrophes such as floods or cattle epidemics, as families intermarried to secure access to relatively favoured areas. Since everyone expects to experience shortages of one kind or another at some time, and since it is rare for the whole

region to be equally devastated by natural disaters, it is in everyone's interest to secure their own place in the exchange network.[5]

CURRENT SITUATION

Overview

There was guerilla activity in many parts of Jonglei Province before the Bor Mutiny of 16 May 1983. From 1984 to 1987 there was also fighting between the SPLA (who recruited from local Dinka and Nuer) and the Anyanya II (who recruited many Nuer from the Zeraf valley). Ayod was occupied by the SPLA in 1987, but Waat and Bor were not taken until 1989. As late as 1988 the Lou Nuer were raided by Murle militia based in Akobo. Despite these complex hostilities there were some areas, such as much of Kongor district, which were relatively untouched by fighting. War returned briefly in February-March 1990 with the passage of the government's armoured column which travelled from Malakal to Juba, passing through the Gaawar territory.

Jonglei Province being an early centre of fighting, services came to an end here earlier than many other parts of the Southern Sudan. Bush shops ceased trading within the first year of the war (1983-4). Cattle vaccination programmes also came to a halt. The road running along the eastern embankment of the Jonglei canal was mined, as were all major roads between the Sobat and the canal, and from Ayod through Waat to Akobo. The mines have yet to be cleared. From Pok Tap (on the canal) to Duk Fadiat and Ayod, and from Ayod to Waat and Akobo there are no proper roads, just alternative tracks driven through the grasslands, or running parallel to the old roads.

A good deal of cattle was taken by opposing groups of armed men during the period of 1983-89 (and again by the armoured column in 1990); cultivation was also interrupted. But by all accounts the flood of 1988 caused the most devastation to the local economy, inundating pastures and cultivations from Bor up to the Sobat mouth. This was the situation when OLS I began operations last year. Ayod and Waat received small amounts of assistance, the bulk being sent to Bor. Because of an interruption in the rains throughout the province in July 1989 (clearly indicated in all NDVI charts) many areas had a poor harvest. The area from Jalle to Kongor was further beset by floods which destroyed the crops. It appears that stocks of seed were low due to the flood of 1988, and to the restricted distribution of OLS I; therefore the area under cultivation in 1989 was reduced from normal times. Only a few areas reported good harvests: south and east of Bor, Pok Tap, parts of Duk Fadiat, and Ayod. All of these areas have attracted supplicants beyond their capacity to supply.

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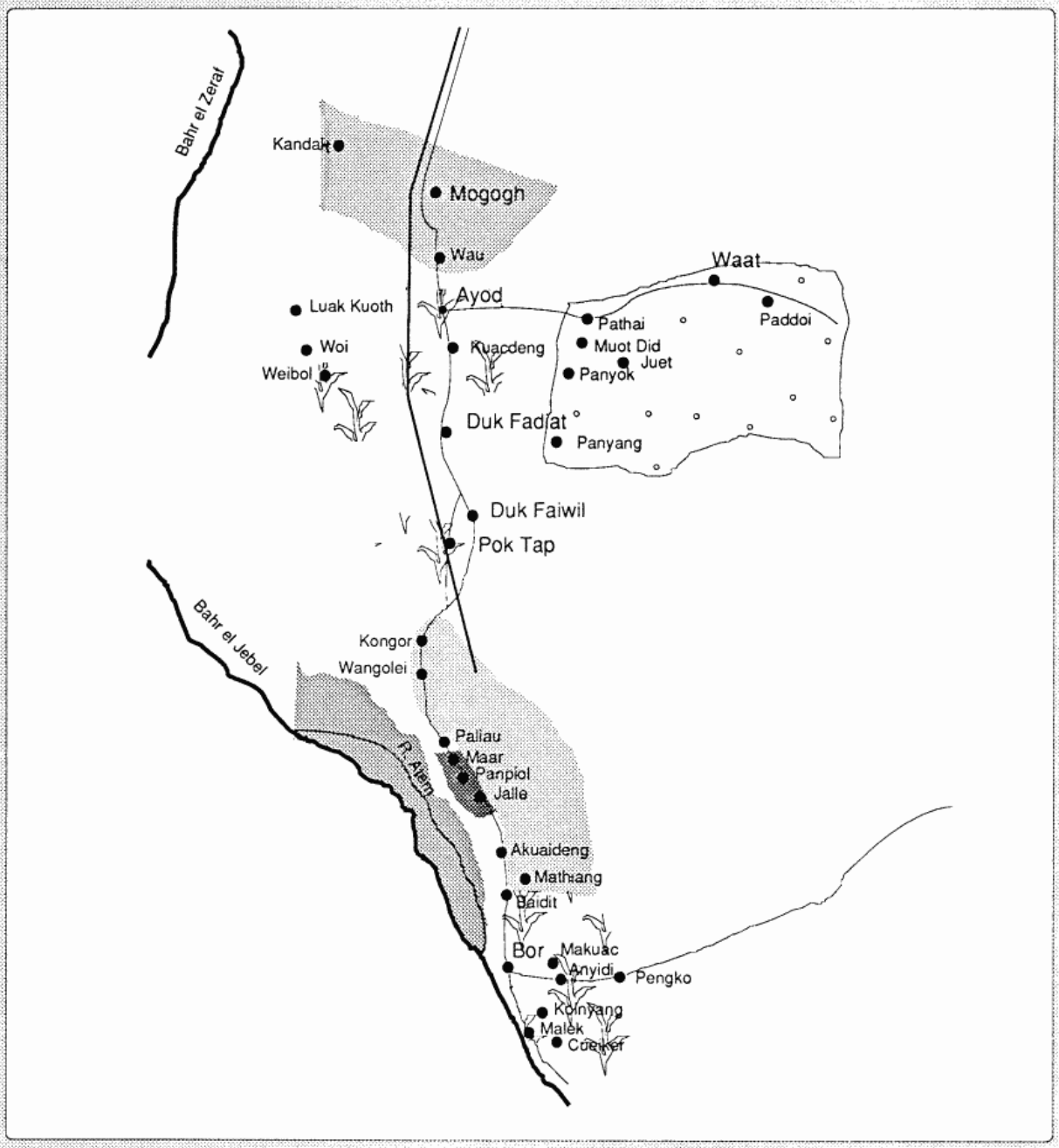
[5] For an historical survey of these networks see D.H. Johnson: "Adaptation to floods in the Jonglei area: an historical analysis", in Johnson & Anderson, eds., *The Ecology of Survival: Case Studies in Northeast African History*, London, 1988; and "Political ecology in the Upper Nile: the twentieth century expansion of the pastoral 'common economy'", *Journal of African History* 30, 1989, pp.463-486.



JONGLEI AREAS OF FLOODING AND HARVEST

LEGEND

- Good harvest 1989
- Areas of drought 1990
- Flooded road 1990
- Little harvest 1989
- Areas under water since 1988

BOR

Agriculture

Bor is reported to have received over 1400 metric tonnes of food (mainly maize) in OLS I as opposed to the 6 and 53 metric tonnes reported for Ayod and Waat respectively. This is one reason why Bor continues to draw people in need. The rains around Bor were substantial throughout the year (see NDVI chart No. 1), and the area mainly to the east of Bor reported good harvests (from Baidit to Makuac, Anyidi and Cueiker, including Pengko). The area south of Malek had lighter rains. Most of its population was still settled across the river, therefore only a small area was cultivated. North of Baidit floods destroyed cultivations. Since the pattern of flooding was repeated as far north as Kongor, many people from the Twic Dinka were coming into Bor looking for food throughout the early part of 1990.

Displaced Persons

Among those interviewed were persons from Mathiang (near Baidit), Jalle, the Twic villages of Paliau, Maar, and Wangolei, and even as far north as Duk Fadiat. In addition to this other people from farther away - Ler, Gogrial, Aweil, and even Abyei -were coming to Bor. Some hoped to find food in Bor, but those who had travelled the greatest distance intended to go on until they reached refugee camps in Ethiopia.

Those coming from closer to Bor either stayed with relatives, who gave them food, or came to sell cattle in order to buy grain. The only price quoted for cattle in Bor that we were given was LS 1500 for a heifer. Despite the size of Bor town there did not appear to be as active or as organized a market as we later found in Akon, Yirol and Ler. A few who obtained grain were returning to their homes, but the majority of those we met were people who had lost both cattle and cultivations to the floods of the previous two years, and therefore had nothing at home and nothing with which to barter for food. A feeding centre had been established for these people on the site of the Malek School in Bor town, opposite the hospital. Among the children there measured by MUAC/ht, 2% were severely malnourished and 18% were moderately malnourished.

JALLE

Flood

Signs of last year's flooding were visible at Akuaideng, 52 km north of Bor, where water hyacinth were seen growing along the eastern embankment of the road. Water extends on both sides of the road from about 64 km north or Bor most of the way to Paliau, 98 km from Bor. Water had broken through onto the road itself in Jalle along a 4 km stretch starting at about 66 km out of Bor.

Agriculture

At Jalle we were told that the floods of 1988 broke through the toic embankment and overwhelmed the cultivated fields after the seeds had been planted and had germinated, but before weeding could begin. There was still some food left over from 1987, and this was used to feed people who came to try to repair the embankment. People with cattle went south to Baidit, Makuac and Bor. Some people without cattle went to those places, too, looking for food.

In 1989 the flood came again in about April, before people had time to plant (see the NDVI chart No. 1, which covers the Jalle area). Again, those who had cattle took them south. Because of the flood the previous year there were no seeds from the previous harvest. The people of Jalle received two types of maize seeds from OLS I, distributed by the local SRRA. Some maize was also distributed as food aid at that time. Because food was scarce, there was not enough to give to work parties on the embankment, so no repairs were made in 1989.

The people were worried because the floods had already started again this year, even before the rains had begun. Water from the rising river was flowing through the damaged embankment. The area certainly was waterlogged: many homesteads were surrounded by water, some were even surrounged by large stretches of bullrushes and a few of the mud buildings were collapsing into the surrounding water. There were numerous cranes, storks, and water birds along the road, including one fish eagle.

Fishing

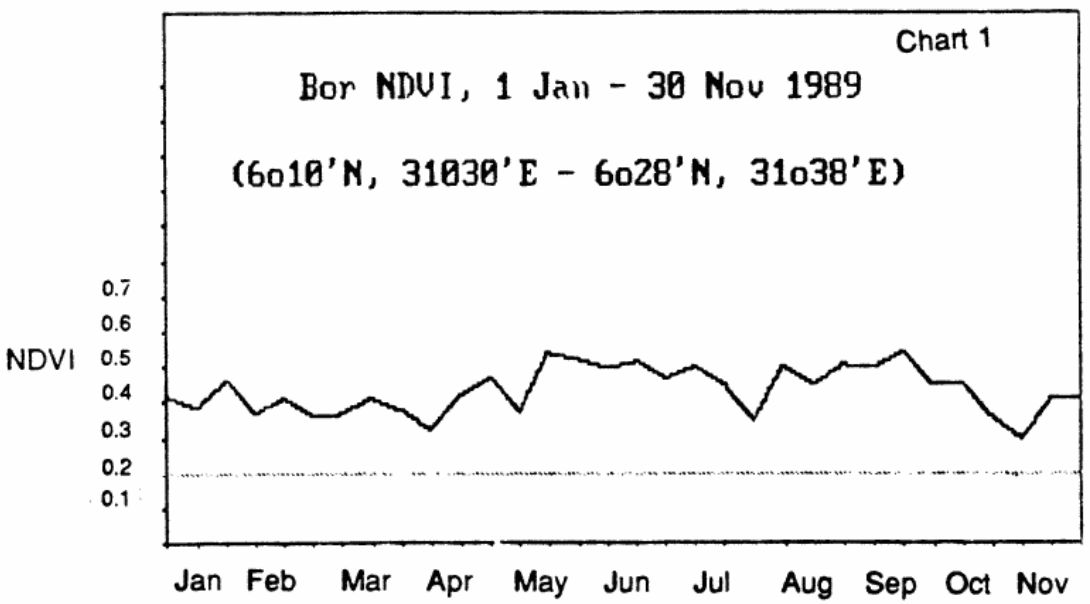
The people lacked fishing nets, fishing line and hooks with which to fish in their old camps close to the river. They also lacked mosquito nets which are necessary if fishermen are to stay in the camps long enough to accumulate a fair catch. The people said that if they had these things, they would be able to make their own way to the fishing sites. At present most people are living off the ubiquitous waterlily and the laloub nut of the higlig tree (*thou* in Dinka).

Cattle

Those who had cattle had milk, but there were a few people with no cattle at all. Many cattle were reported to have died in 1988 and the following year. The main diseases affecting them were rinderpest (*nyantek*), CBPP (*abuot*), trypanosomiasis (*luac*), a cold affecting the lungs (*jongweer*), and snails (*acom*). The last two were associated directly with the flood. Snails apparently became numerous on the grass the cattle grazed, and once ingested laid their eggs inside the cattle's intestines. Cattle are also believed to become ill upon eating the water hyacinth. The general state of the health of cattle is stated to be bad.

There was also a notable absence of any smallstock in Bor, Jalle, Paliau and Kongor. Given the very high figure and high concentration of sheep and goats in this very area in 1976, the losses of smallstock in the last few years must be

Normalised Difference Vegetation Index (NDVI) is created from data sensed by the Advanced Very High Resolution Radiometer (AVHRR) on the NOAA polar orbiting series of satellites. Light bands red and infrared are sensed daily, composited every ten days and a ratio formed (0.0 –1.0). Calibration work in East Africa has led to the establishment of a threshold of NDVI = 0.2, below which soil moisture is inadequate to support green vegetation for a protracted period.



considerable. The local veterinary officer, Ahmed Deng, estimated that there were only about 5000 sheep and goats left among the Bor now.

Some 93,000 cattle have been vaccinated for rinderpest and CBPP by UNICEF in an area extending from Jalle to Mongalla, including some camps across the river immediately opposite Bor. The Bor Dinka now pasture some of their their cattle with the Mandari in Mongalla and Gemaiza, as well as across the river with the Aliab. Though the figure may contain some Aliab and Mandari cattle, it represents a fair estimate of the present Bor Dinka cattle herd. As such, it can be used to estimate, by comparison of proportions, the likely size of current herds elsewhere (see below pg. 11).

Embankment Repairs

The chiefs of Jalle expressed their greatest concern about the state of the embankment and their inability to repair it, as they had no food with which to feed the labourers. In the past each sub-chief organised a labour gang from his own section, and food would be distributed to them while they worked. Each gang included some women who prepared the food. The chiefs suggested that if food was brought in to Jalle for a food-for-work scheme repairing the embankment, then people could be called in from as far as Makuac in Bor and Kongor to complete the job.

PALIAU

Flood

The Twic Dinka court centres of Panpiol (18 km north of Jalle) and Paliau (20 km from Panpiol, and 98 km from Bor) also suffered from floods in 1988 and 1989. In Paliau the flood started during the rainy season of 1988, and 12 villages to the west, northwest and southwest of Paliau have been under water since then. The flood appears to have been more severe that year in Paliau than in Jalle. Many people died, and most had to retreat east to the Jonglei canal, where they camped on top of the embankment. A few went further north to the Nyareweng Dinka at Pok Tap and found a little food there, but the food soon ran out. No one from Paliau went to the Lou Nuer because it was reported that there was no food there. Some people fled with their cattle south to Bor.

In 1988 people were able to live off the water lily. In 1989, when the flood came again, even this was denied them as the water hyacinth accumulated inland and killed off the water lily. The people did get some food aid (maize and beans) from OLS I, but they stated that the last delivery of food had been in June 1989. A MUAC/ht survey of children in Paliau revealed 19% were moderately malnourished.

Food Purchases

This year people have been going north to Pok Tap where a good harvest was reported. It is mainly women who go with money to buy small quantities of

grain which they then carry back on their heads, walking (it is some 62.5 km from Paliau to Pok Tap). A number of women were seen returning from Pok Tap along the road as far back as Jalle. Two women from Paliau whom we met in Wangolei complained that they had had to pay LS 160 for 3/4 of an 18 kg tin of dura between them. The said that men would go to buy grain only when they took cattle to exchange, but there was no reason to take cattle so far if they were only going to be cheated in the end.

Embankment Repairs

The chiefs at Paliau also expressed the desire for food to be brought in for a food-for-work scheme to repair the embankment. They insisted that if the embankment were repaired, then people would be able to cultivate. Their two main requests for assistance were, as in Jalle, fishing equipment and help to repair the embankment.

KONGOR

Kongor town used to be one of the largest, most active commercial centres in Jonglei Province. With the closing of the north-south road in 1983, Kongor's shops also closed down. As there was no army garrison in Kongor, there was no fighting around the town. From 1983-88 there were no severe problems in the rural areas around Kongor. People were able to cultivate and bring their cattle to and from the toic. Some townsmen left for refugee camps in Ethiopia, but the rural people remained in their homes. Nor was there a great influx of persons from Duk Faiwil, Ayod or Waat. The only serious problem people recalled from this time was that rinderpest was beginning to spread, as there had been no cattle vaccinations since the start of the war.

Flood

The flood of 1988 reached Kongor in July and August, covering cultivation areas both to the west, east, and north of Kongor itself. Kongor lies west of the Jonglei canal, and in 1988 the flood waters backed up against the canal's western embankment; thus deepening and prolonging the flood around Kongor itself. The area immediately to the east of the canal faced the same problem for different reasons. The heavy rains of 1988 produced a "creeping flood" flowing in from the Lou Nuer country. This water was prevented from flowing into the main swamps by the eastern embankment of the canal, and backed up into areas which were free, safe from the river flood. Only a little water drained off into the canal's unfinished southern end. During the second year of the flood, in July-August 1989, local people cut channels into the western side of the canal to allow water to flow off, hoping to avoid a repetition of the previous year.

There are large areas to the west of Kongor where villages have been under water since the flood of 1988, and a larger area to the north and east where villages are now annually flooded during the wet season. Wangolei, to the south of Kongor, was almost completely washed away in 1988, but many huts have been rebuilt this year. Supplementary embankments have been built along the

line of the road south of Kongor, and further east in the toic to try to inhibit the flood's eastward spread, but the flood came once again in 1989, affecting the same areas as 1988. Understandably, the people of Kongor are very anxious about this year's prospects, now that water has flowed through the embankment at Jalle.

In 1988 many people had to evacuate their homes and move to drier areas around Pok Tap, and even further east in the Lou Nuer country southwest of Waat. Bor was considered to have too little flood-free land to be worth going to. Each year of the flood has seen more families leave. Because the flood waters have not fully receded to reveal the toic the Twic normally rely on, there is now an annual migration of people with the cattle to Duk Faiwil and Duk Fadiat, looking for grazing. Because of the great distances involved in travel to Lou country, people who went there looking for grain took their families and their cattle to settle temporarily among the Lou. There was some food to be had in Lou in 1988, but it was soon exhausted. Because of the drought which affected most of Waat, but especially the southwest, Twic refugees have now had to return home. Many have also turned up in the Ethiopian refugee camps, complaining of floods in their home area.

Agriculture

Those who have remained behind have had little or no grain harvested for two years. Maize used to be cultivated by the river banks, and this was the first crop which was destroyed by floods. The same happened to the beans, simsim, and groundnuts some people planted. They have lost even the seeds. The first crop of 1988 was washed away by the flood. There was no second planting because the water did not recede until February 1989 (see NDVI chart No. 2). The cultivation area in 1989 was smaller than before the flood because the water had increased the number of weeds, which were difficult to remove, especially as hand tools were scarce. The flood came again in June 1989, overwhelming the dura when it was only knee high. A few places dried out quickly at the end of the flood, but the surrounding grasslands were still under water. For this reason, after the second crop was planted large numbers of "dura birds" (*amor* in Dinka, or quila-quila) gathered in November and December and attacked the standing cultivations as their only source of food. One woman in Panyagor described their descent on the area as being like a storm cloud on the horizon.

Some seed and grain were distributed in the immediate area of Kongor by ICRC in OLS I in 1989, but distributions are reported to have ended in July. People are now living on the higlig nut (*thou*), water lily, fish, and a little bit of milk. The water lily and fish are difficult to get to because the intervening water is so deep. The lack of fishing nets, fishing hooks, and mosquito nets has reduced the ability of the people to collect sufficient quantities of either fish or water lily.

The scarcity of food is beginning to have an effect on the nutrition of the children, even though milk, when available, is reserved for them first. In the area north of Kongor (Payom and northern Kongor) a wt/ht survey revealed 0-3% severely malnourished and 20-26% moderately malnourished. In Wangolei 3% were severly malnourished and 20% were moderately malnourished. In

Panyagor, near the canal, 10% were severely malnourished while only 15% were moderately malnourished.

Cattle

Cattle diseases were already increasing before 1988, but they spread more rapidly after the flood. With the loss of pastures and permanent settlements cattle were herded close together and infectious diseases, such as rinderpest, CBPP, foot and mouth (*aceny*), and haemorrhagic septiceamia (*atwiny*), were spread. New diseases also appeared, such as infection by snails (*acom*) ingested while grazing, and a cold affecting the lungs (*jongweer*). Mortality of cattle increased for other reasons. Those taken to the canal embankment in 1988 died partly of exposure (there were no luaks in which to place them) and from having to stand in the water so long. The quality of the grass also declined. The preferred grasses (Dinka names *gau* and *non*) have been destroyed by the floods, leaving only a less nutritious type (*liei*).

Markets and Exchanges

Kongor district was well supplied with shops before the war; there were six in Wangolei alone. There is a small market in Kongor now. Cattle are sometimes auctioned, and meat is sold at LS 10 per half kilo (about twice the price recorded in most other markets visited in the Southern Sudan), but aside from that little else is sold, other than locally grown tobacco (at about LS 1-1.20 per handfull), and locally made tyre sandals. Cooked food is prepared and sold in the market or in Kongor's one remaining restaurant. In the previous year, if a person exchanged cattle for grain he would try to get some return on the grain by cooking part of it and selling it in Kongor town. This practice has largely stopped this year because of the lack of grain.

In 1989 there was some grain available in Pok Tap, but the cattle/grain exchange rate has steadily declined as supplies of grain have decreased.

KONGOR-POK TAP CATTLE/GRAIN EXCHANGE

	1989	Early 1990
1 small bull	3 sacks dura	1 sack dura
1 heifer calf		2 sacks dura
1 heifer	5-6 sacks dura	2-3 sacks dura
1 large heifer		4-5 sacks dura
1 pregnant heifer		4 sacks dura

Cattle/grain exchanges had ceased in Pok Tap by late April this year.

In other times the Twic around Kongor would have other sources to which they could turn, but the flood has eliminated any assistance from further south, and the drought of 1989 affecting the easternmost Nyareweng Dinka and the Lou Nuer has further hemmed in the Twic. They are now thrown entirely on their own resources.

Embankment Repairs and Fishing

The chiefs in Kongor, and those in Wangolei who were also interviewed, were emphatic that the first priority this year was the reconstruction of the embankment. To achieve this food was needed to supply the labour gangs. The only simple solution for the moment, Court President Andrew Kuir Tor announced at the meeting in Kongor, to general assent from the other chiefs, is the provision of food to enable people to work. "It is food that works." Once the embankment is finished, cultivation can begin. The second priority, also unanimously agreed upon, was the provision of fishing equipment to enable some people to go to the far fishing camps to catch enough fish to provide food during the cultivation season.

POK TAP - DUK FADIAT

Pok Tap was the only place visited in Jonglei which had a definite air of prosperity about it. The old Nyareweng Dinka court centre of Duk Faiwil has been abandoned, and a new village was constructed in 1987-88 at Pok Tap in and around the main CCI construction camp for the Jonglei canal. The harvests in both those years were said to have been meagre: 1987 because of locusts, and 1988 because of the flood. 1989 had good steady rains (see NDVI chart No. 3) and was the first good harvest in three years. It is now feeding not only the Nyareweng, but many of their neighbours as well. Pok Tap had the atmosphere of a "boom town" of the American West: prosperity was recent and possibly transient, but in the meantime the residents were taking advantage of their good fortune. Merissa was being brewed both times the assessment team visited the village, and merissa is not brewed during times of grain shortage.

Agriculture

In Kongor Pok Tap's good harvest was attributed to its higher, sandier (and therefore drier) soil, and to the reported practice of obtaining a second crop from cutting back the stalks of the first harvest and getting a regrowth (*aber*). In fact, the Nyareweng have not practiced the regrowth method for some time, as the soil has not been moist enough to sustain a second crop (see NDVI charts No. 4 and 4a for rainfall trends in the 1980s). Because their soil is dry, and germination is not so assured, the Nyareweng do plant more seeds per hole than the Twic (10 to the Twic's 3 or 4), and this has paid off with a higher yield this year. But the dryness of their soil is an advantage when the area around them is flooded. The good harvest of the Nyareweng extended from around Pok Tap west to the toic.

Drought

The area to the east of Pok Tap, however, suffered from a severe drought in 1989, affecting not only the eastern (Aborom) Nyareweng, but the Lou Nuer. These were among the first to come to Pok Tap, not only looking for food, but coming to stay. The exodus into Pok Tap increased in March 1990 when the

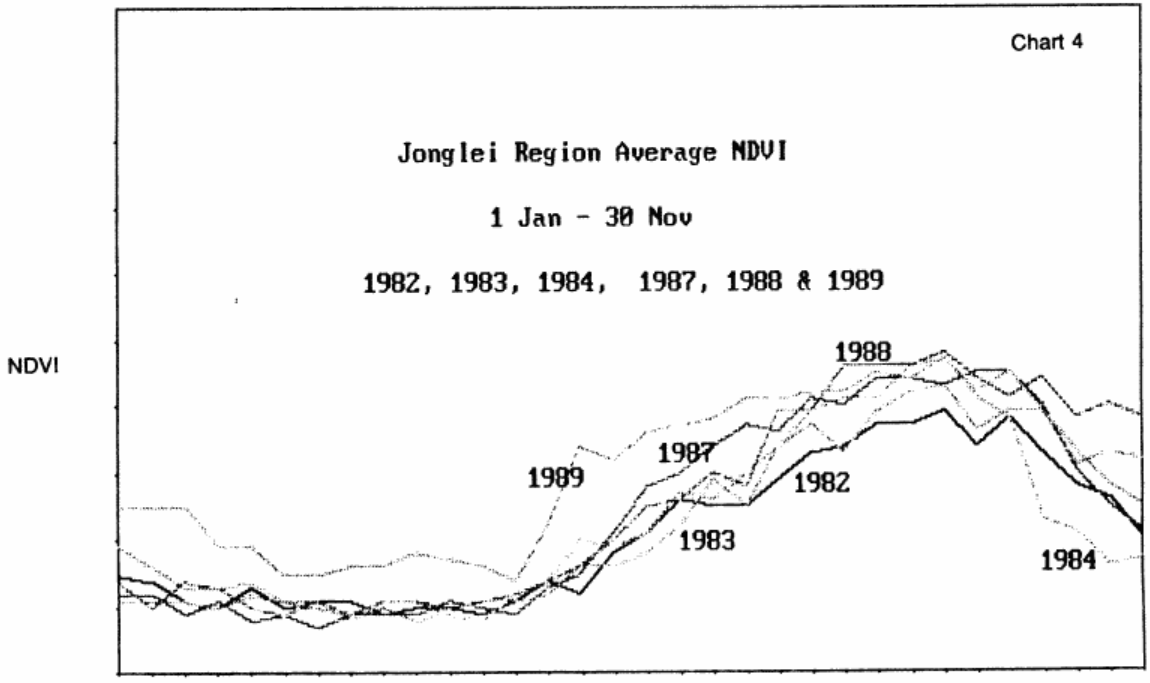


Chart 4
Jonglei Region Average NDVI
1 Jan - 30 Nov
1982, 1983, 1984, 1987, 1988 & 1989
NDVI
1988
1987
1989
1982
1983
1984

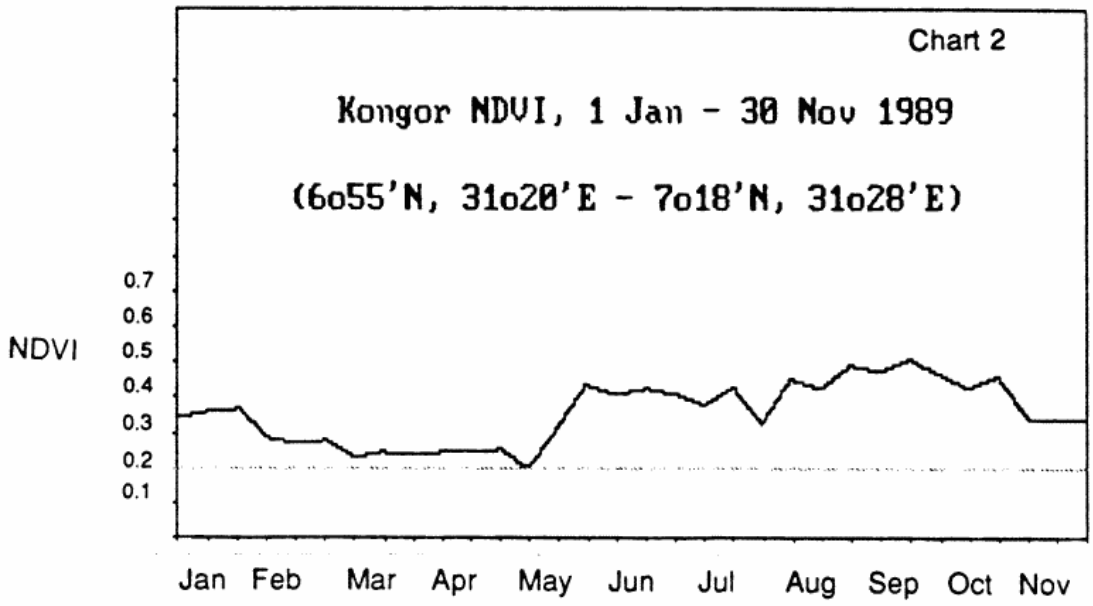


Chart 2
Kongor NDVI, 1 Jan - 30 Nov 1989
(6o55'N, 31o20'E - 7o18'N, 31o28'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

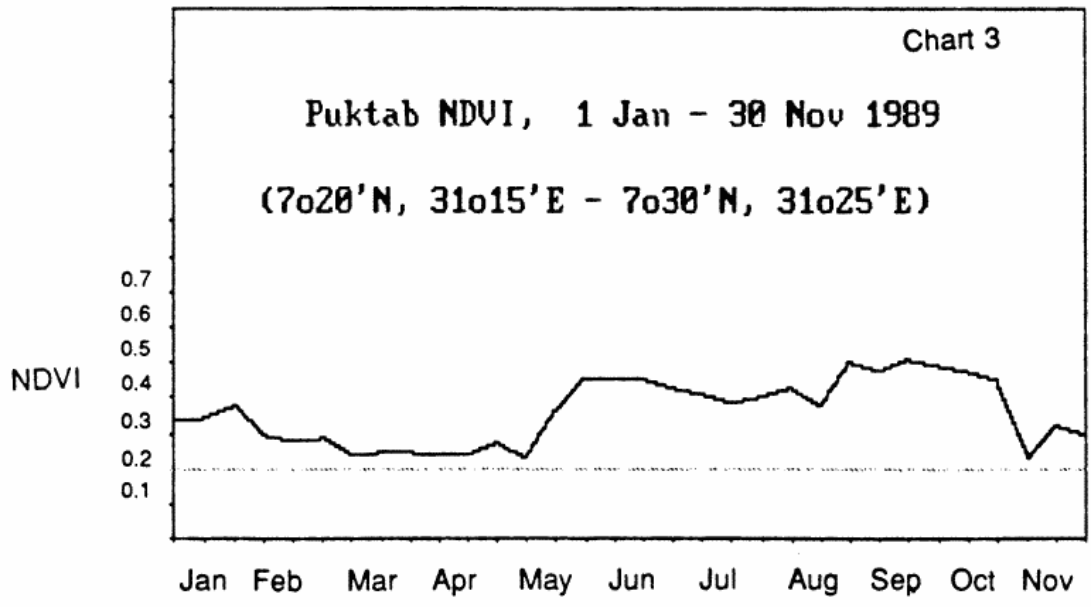


Chart 3
Puktab NDVI, 1 Jan - 30 Nov 1989
(7o20'N, 31o15'E - 7o30'N, 31o25'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

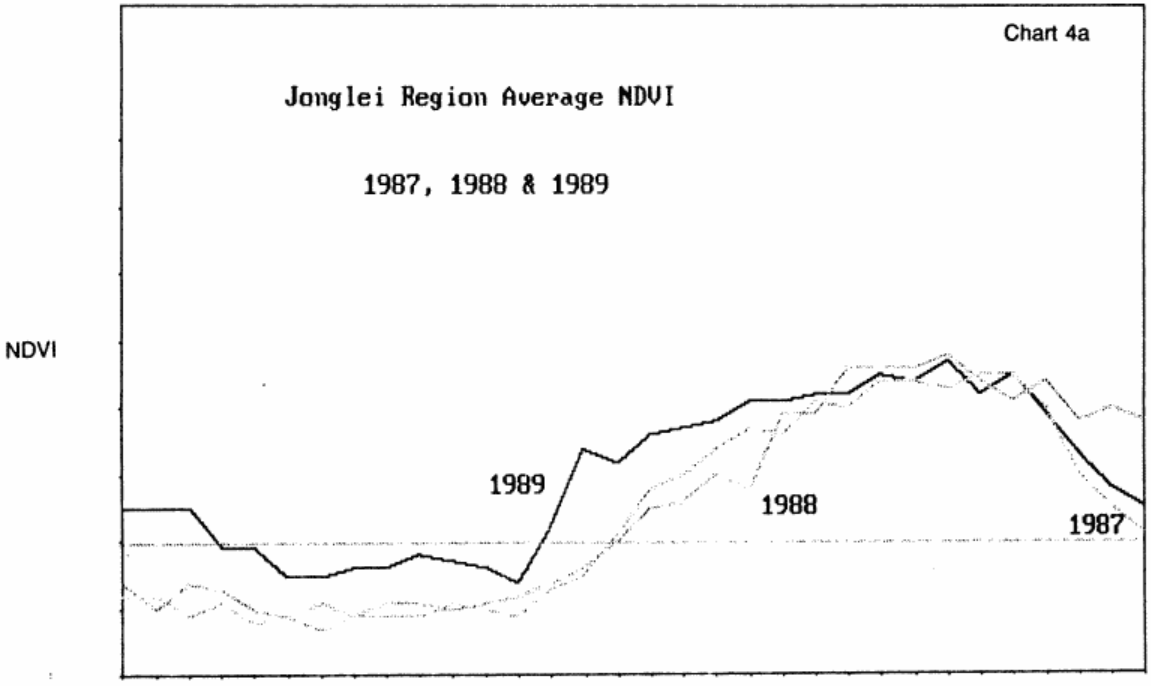


Chart 4a
Jonglei Region Average NDVI
1987, 1988 & 1989
NDVI
1989
1988
1987

government armoured column from Malakal passed through eastern Nyareweng country. Because the streams in Lou country are dry many Lou have come with their cattle to take advantage of the large, well-filled hafirs at Pok Tap. The Lou have previously been in the habit of taking their cattle into and through Nyareweng territory, but the difference this year is that even persons without cattle have come.

There is a large number of displaced Aborom Nyareweng and Lou Nuer families living in the abandoned machine workshop of the CCI camp at Pok Tap. The ones with nothing to sell or exchange for grain to take home are the ones who have remained. Some have received assistance from the residents of Pok Tap. Chief Majok Chuol, the head chief of Pok Tap, has said that he is encouraging the displaced people to remain and cultivate.

Many of the Lou Nuer now coming to Pok Tap for help were persons who gave the Nyareweng assistance when they came to Lou country to escape the major floods of the 1960s. Those they helped some twenty-five years ago, are now helping them. But the people of Pok Tap clearly expect some return on their generosity and anticipate some repayment, perhaps in the form of cattle, from those they are helping in the not too distant future.

Pok Tap Market

There is a small open-air market in Pok Tap which deals mainly in tobacco, much of which is brought by Lou and Aborom. People bringing tobacco sell it for about LS 1 per pipefull, and use the money to buy grain from individuals who have it. We were told in Pok Tap that no grain is sold in the market. We were also told in Wangolei that sometimes the people in Pok Tap refuse to accept cash for grain, but will accept fish. Meat is sometimes sold there for LS 10 a kilo (cattle for slaughter are sold for about LS 800).

Duk Fadiat - Agriculture

North of Pok Tap the Ghol Dinka of Duk Fadiat had very uneven rains (see NDVI chart No. 5), producing a very uneven harvest. This came at the end of two years where no grain reserves had been accumulated. In 1987 the Ghol had a good harvest when the Nyareweng did not; thus they had extra people to feed. Food reserves were finished before the 1988 harvest was expected. In 1988 the flood destroyed the crops of the Ghol Dinka as well as those of the Gaawar to the north and the Nyareweng to the south. The Ghol were reduced to eating doleib fruit and other wild foods. With the reduced harvest of 1989, many Ghol went to relatives or friends among the Gaawar Nuer to obtain food.

One reason for the reduced harvest of the Ghol emerged from questioning local farmers. The area under cultivation was less than previous years because people lacked food to give them the strength to cultivate as large an area as they needed. This year's planting may be delayed as people wander abroad searching for seeds. Because reports had reached Duk Fadiat that seeds were being distributed further south many people had already left for Kongor.

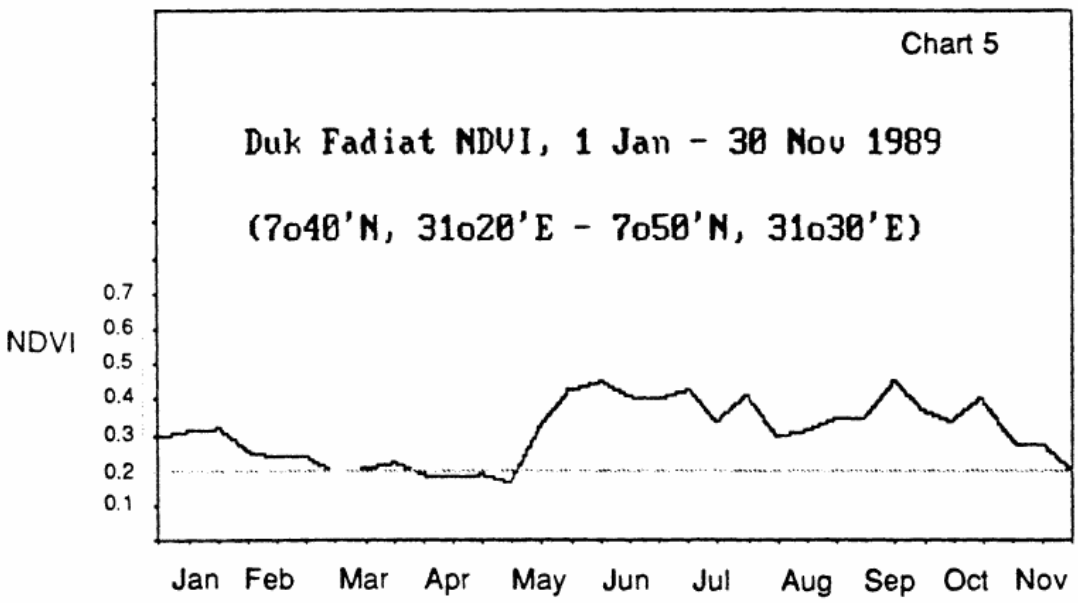


Chart 5
Duk Fadiat NDVI, 1 Jan - 30 Nov 1989
(7o40'N, 31o20'E - 7o50'N, 31o30'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov

AYOD

Ayod rural council is the home of the Gaawar who are divided into two main divisions. The northern half, the Nyang Gaawar, live from Mogogh west to the Zeraf Island. The southern half, the Bar Gaawar, occupy the southern end of the Duk Rdige and areas to the west.

The war came to Ayod in 1982 with the arrival of a guerrilla band which operated along the line of the Jonglei canal. The army garrison established in Ayod to control guerrilla activity joined the guerrillas shortly after the 1983 Bor mutiny. The area around Ayod then saw continuous fighting until 1987, when the government army garrison withdrew and the SPLA occupied the town.

This war activity has affected the food security of the area, and the people of Ayod say they have had insufficient food for the last 4-5 years. It is reported in Pok Tap that there was a good harvest in Ayod in 1987, but very little food came out of the area. The two most damaging events in the recent past were the 1988 flood and the armoured column from Malakal in February-March this year.

Flood

The 1988 flood began in July. It came from the river, but was added to by rain. The whole area west of the canal was under water, including places such as Luak Kuoth, Woi, and Kandak which are rarely flooded. The area between the canal and Ayod was affected by rain flood which backed up along the canal's eastern embankment and destroyed many crops. This flood lasted until after September-October, the usual time when the dura crop is harvested. The flood water also reached the lower Khor Fulluth but drained off into the Sobat.

Agriculture

The flood left people with reduced food and seed reserves. The 1989 rains were good the entire length of the Duk Ridge from Kuacdeng north to Mogogh and West to Weibol (see NDVI chart No. 6), but not everybody could take advantage of them. The Nyang section are reported to have had no seed to plant. The southern half of the Gaawar, the Bar, did have seed, but not enough to plant a normal area. Food shortages meant that people did not have the strength to cultivate a full area as well. During the cultivation period people were living off water lily and higlig nuts. In the Khor Fulluth region they were able to live off fish. When the harvest came many Nyang Gaawar were living with the Bar and were given a share. Then Ghol Dinka and Lou Nuer came for assistance. Maize was cultivated in small homestead plots and was consumed early.

In February and March 1990 the government armoured convoy appeared in the area. Not only did they capture a large number of cattle belonging to the Nyang and Bar Gaawar, but they burned a number of villages around Mogogh, Wau (mid-way between Mogogh and Ayod) and Ayod. Ayod itself was occupied and burned. People had to flee without taking their belongings, and their stores of grain were burned inside their huts. Had it not been for the loss of a good

proportion of their harvest in the renewal of fighting this year, the Gaawar would probably have continued to manage to feed themselves and their neighbours.

By April 1990 the Gaawar began advertising their lack of grain and were turning supplicants away. While they evidently still did have some grain, the main food seen being stored or prepared in households were laloub nuts, in far larger quantities than is usual even for the hungry period. People expressed considerable concern about where they would get seeds to plant this year, especially considering the small amount of assistance flown into Ayod last year (5.53 mt of maize), which was all consumed within Ayod itself.

Fishing

The Bar Gaawar have not been able to supplement their diet with fish, due to a lack of fishing equipment, some of which was reported to have been destroyed in the huts burnt by the army. The rivers where the fish can be found are too deep to be fished with fishing spears. Buth Nyin, court president of the Bar Gaawar, explained, "Our streams are rich in fish. If we had nets and hooks we could get fish. All people are now eating is water lily." If given the materials , local tailors could make the nets.

Cattle

The 1988 flood also brought about an increase in cattle mortality. The canal filled with water and cattle could not cross. Some drowned, others died because they had no grazing. The flood has affected the grazing grass east of the canal, and we were told that the amount of suitable grass had decreased. Cattle diseases, such as rinderpest and typanosomiasis, were spreading, and we were told that cattle mortality was increasing. As in all areas further south, there was a marked absence of sheep and goats, though they had been common and visible before the war. There has been a drastic decline from the figure of 75,000 recorded before the war.

Water

The Duk Ridge has a high water table and used to be well served by bore wells. The government army destroyed those at Cuilabong, Wau, Ayod, and Kuacdeng before leaving the area. The pumps at Duk Fadiat and Duk Faiwil are also unserviceable. The only well still intact is the Lister engine donkey pump in Mogogh, though it needs servicing and spare parts. The loss of this water is a severe hardship and health hazard. Ayod especially used to be renowned in the area for the quality of its water, and the pump was used to supply cattle gathered there during periodic vaccination campaigns. A thorough survey of the boreholes in the area should be undertaken as part of a water security programme.

Schools

As in many parts of the Southern Sudan there are a number of young boys who have either lost their parents or have become separated from their families. Many are reported to be leaving their home areas travelling long distances to places where schools have been set up. The chiefs of Ayod made a specific and emphatic request that schools be established locally to keep their children at home. They would be willing to support community school projects.

WAAT

Agriculture

The problems facing the Lou Nuer of Waat and Akobo are the reverse of the rest of the province. While the area from Jalle up to Ayod has had to contend with flood and the aftermath of flood, Waat has suffered from drought. Heavy rains in August 1988 did damage the cultivation, especially in low lying places. Those places which did harvest some dura in 1988 were Dirror (in the east), Thul and Pul Turuk (in the north), and Pathai and Pagau in the west. The people within Lou went to these places for food.

In 1989 there was a serious interuption in the rains during July and August, especially in the western part of Waat, but affecting the eastern area as well (Paddoi, being a small lake, reflects more moisture in the NDVI chart than may have been the average for the area around it). There was some harvest in Muot Did and Yedid, but in few other places. This drought precipitated the large movements of Lou out of Waat. The people of the west and southwest (including Pathai, Juet, Pieri, and Panyok) went searching for grain in Ayod, Duk Fadiat, and eventually Pok Tap, where many of them have remained. So many Lou moved west that it was remarked in Pok Tap that "Everyone and his dog has come." North of Waat the Gaadbal section of the Gun Lou, and east of Waat many Mor Lou have gone to the Sobat river, not only as part of their seasonal movement, but to look for food.

By early May some villages (such as Pathai) were beginning to prepare their fields and plant dura. Some seed had been delivered to Waat, where it was seen by the assessment team. Distribution was to follow the return of people from their dry season pastures.

Cattle

Cattle are suffering from the usual diseases of rinderpest, CBPP, and trypanosomiasis. There has been no vaccination since 1983. The most serious disease is rinderpest.

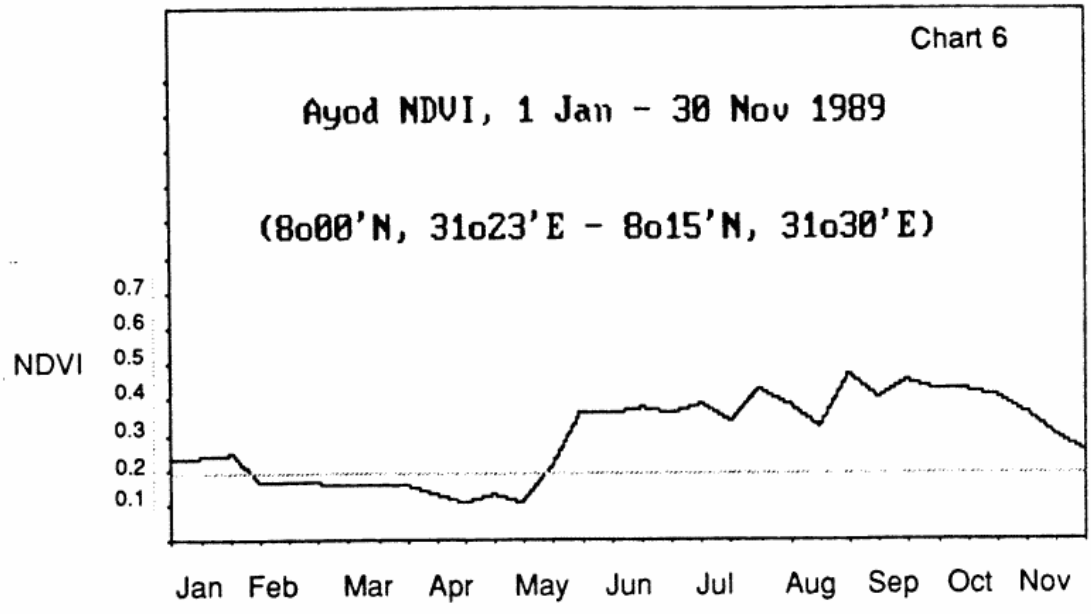


Chart 6
Ayod NDVI, 1 Jan - 30 Nov 1989
(8o00'N, 31o23'E - 8o15'N, 31o30'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

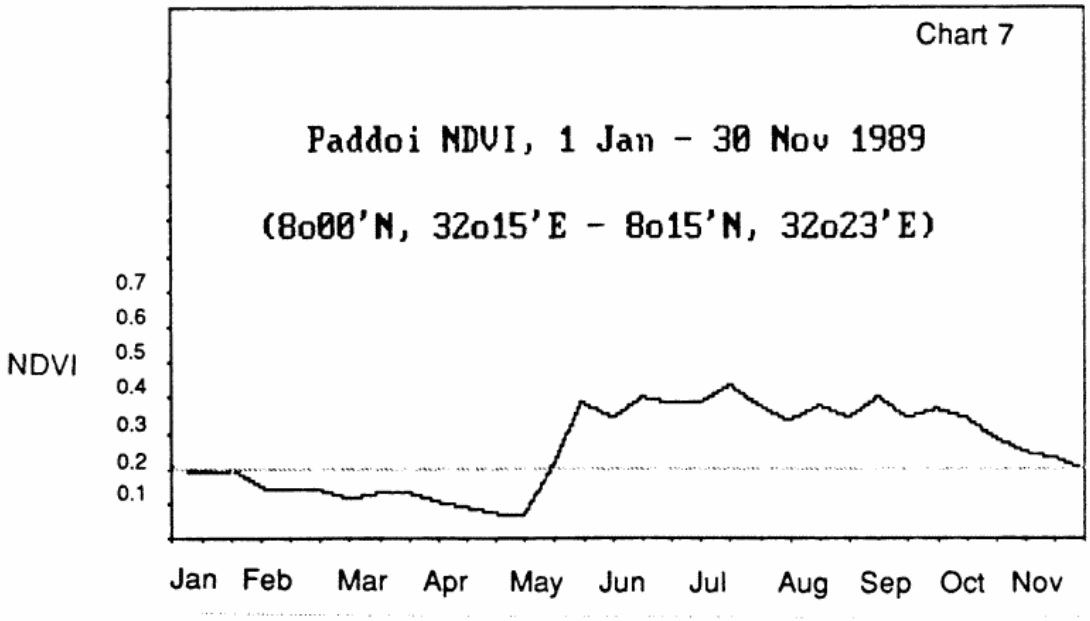


Chart 7
Paddoi NDVI, 1 Jan - 30 Nov 1989
(8o00'N, 32o15'E - 8o15'N, 32o23'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

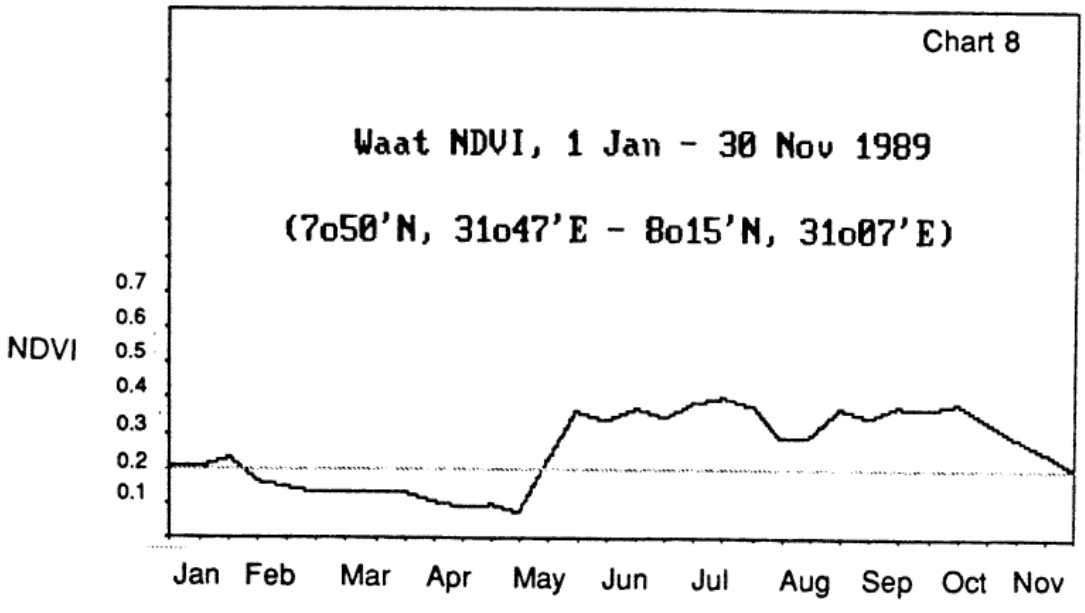


Chart 8
Waat NDVI, 1 Jan - 30 Nov 1989
(7o50'N, 31o47'E - 8o15'N, 31o07'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

Water

The pumps in Waat had been destroyed by the army before they evacuated the town. Last year in OLS I a Lister engine was obtained to get one pump functioning again. The success of this programme was evident this year. There are other donkey pumps in Langken, Pieri, Panyok, Panyag, Wikok, Walgak, and Kaikwi.

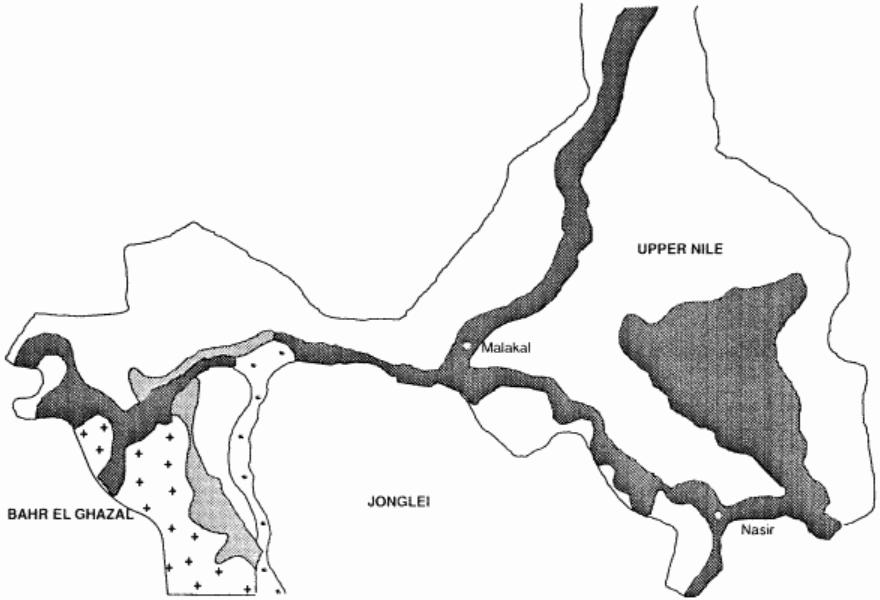
VETERINARY NEEDS - GENERAL

It is clear that there have been serious livestock losses during the war, not only to raiding and floods, but because of the suspension of veterinary activity throughout the rural areas throughout the period of the war. Some areas may now be free from the threat of cattle raids, but the spread of infectious diseases continues. There has been a higher mortality rate among smallstock than among cattle, but this has been a deliberate strategy on the part of the people, who have slaughtered their goats and sheep rather than slaughter their cattle.

UNICEF and ICRC have had veterinary programmes in the Bor and Kongor areas, but these have yet to be extended to Duk Fadiat, Ayod, and Waat. To assess the potential need in areas not yet covered by current programmes, one can take the current figure of the Bor herd as a base figure for a herd which has been diminished by warfare and disease. The estimates given below can only be notional, because some areas will have suffered higher losses than others. Pending a more thorough cattle census, this is the best estimate which can be obtained using the information now available.

The 1954 Jonglei report (which is based on cattle vaccination figures for the Jonglei area) gave the size of the Bor herd as 82,000. The Gaawar herd was then 59% of the size of the Bor herd, the Lou had 185% of the Bor figure, the Ghol had 20%, and the Nyareweng 30%. Using these figures as a guide, we can then extrapolate from the current Bor figure of 93,000 to suggest that the possible figures for similarly affected herds today will be about: Gaawar - 55,000; Lou - 172,000; Ghol - 18,000; Nyareweng - 28,000.

Bearing in mind that these are untested estimates, they could indicate a decline in the overall cattle population of these areas of some 210,000 head of cattle since 1976, down from 483,000 to 273,000.

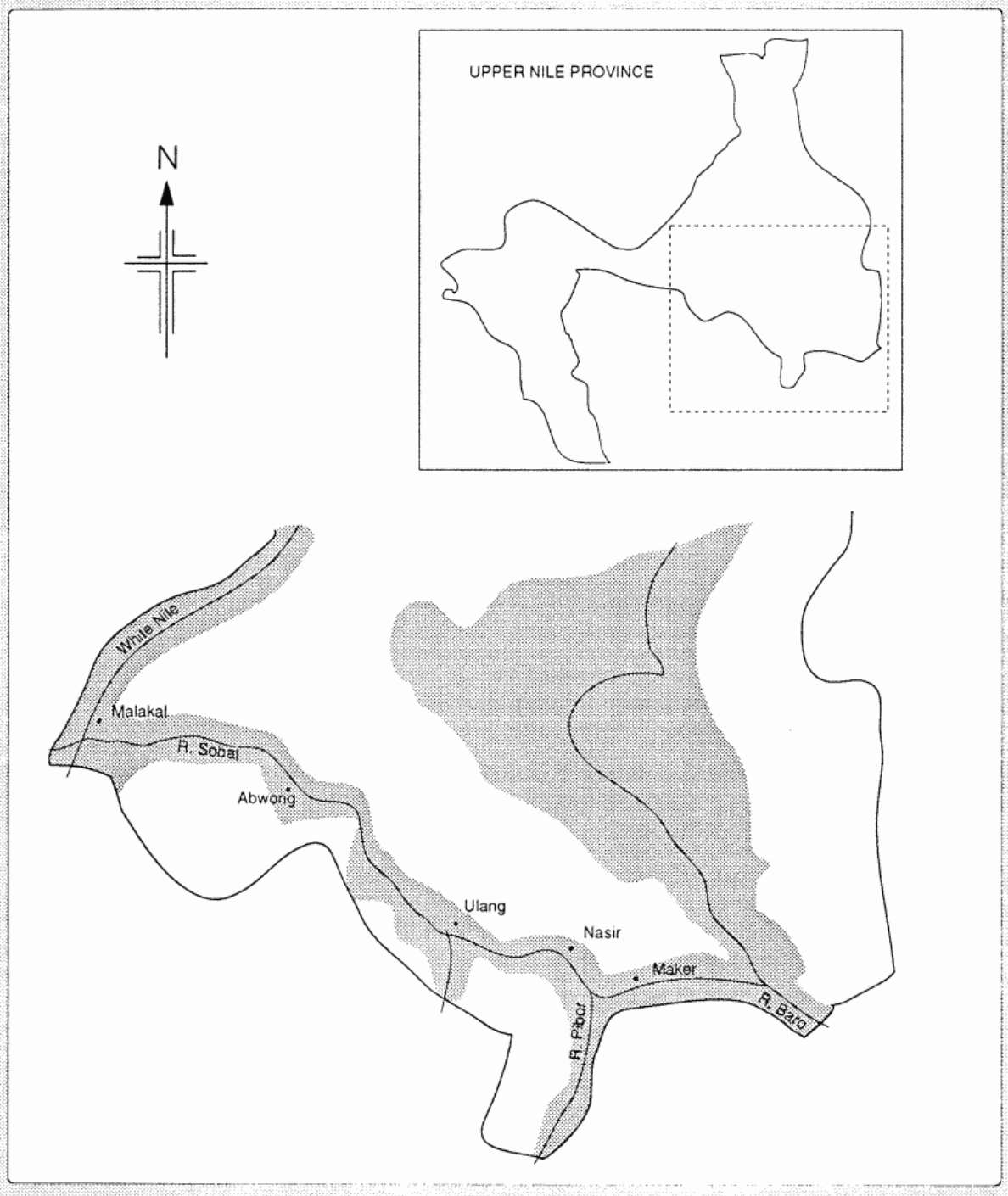


UPPER NILE PROVINCE

SOIL TYPES

LEGEND

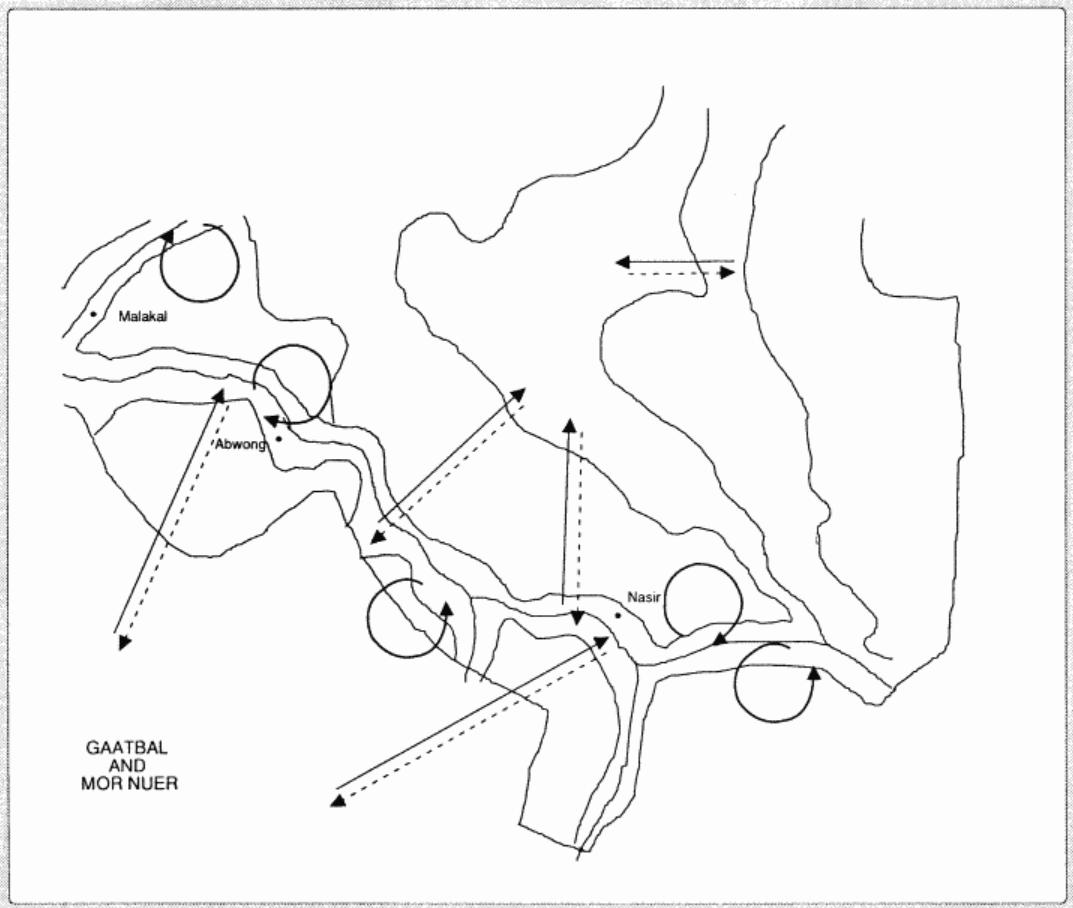
- Toic
- River valleys dense vegetation
- Intermediate grasslands
- Swamp
- Higher wooded ground



THE SOBAT BASIN

PERENNIALLY FLOODED AREAS

INFERRED CATTLE MOVEMENTS IN SOBAT BASIN



Legend

Dry Season movements

Wet Season movements

(Adapted from Map 18 A.09, Volume 18A: SNLCRI 1976/77)

EASTERN UPPER NILE (NASIR, ULANG, JEKMIR)

PHYSICAL DESCRIPTION

The Eastern Area Council of Upper Nile is extending from 7° 50' to 9° 30' and from 32° 31' to 34° 09'. It includes the Nasir Rural Council in the south (along the river Sobat and its tributaries) and the Maiwut Rural Council in the north with its low-lying Machar Marshes.

The living conditions of the Eastern Nuer (Jikany tribe) are mainly dominated by the hydrology of the watercourses in connection with the annual distribution of rainfalls.

From the Ethiopian hills numerous streams flow westwards on to the Sudan plains. The river Baro is the main stream, joined by the Pibor which runs south-north on Sudan territory along the Ethiopian border. From the junction, the river - known as Sobat -continues to the north-west and joins the White Nile south of Malakal. The major slope of the plain is to the north-west, from Nasir to Melut. In a normal flood the Sobat spills heavy losses over its right bank above Nasir, channelled through the Khor Machar and - less significant- the Khor Wakau into the Machar Marshes which therefore provide pastures in the dry season (toic). Most of the spilled losses never return to the Sobat. Further west a system of watercourses absorbs significant quantities of flood water into the southern plain. In December, by the end of the rainy season, the spill water returns into the Sobat, and the Khor Fulluth and Khor Nyanding contribute appreciable amounts as a drainage of the southern plain. No other significant contributaries exist.[1]

The rainy season starts at the beginning of May. The peak of the rainfalls occurs between end of May and end of August with a slow decline until November. The dry season is from December to March (see NDVI satellite data chart Nos. 9, 10 and 11).

The low-lying areas, flooded and drained by the watercourses, are of grey and black cotton soil. A dense cover of long grass with scattered acacia balanites and thickets forms the vegetation in these areas which are heavily used by livestock. The cleared parts show a medium cover of rain-fed cultivation. Maiwut area consists mainly of semi-loan (Nubian) soil.

The population concentrates along the rivers Baro,Pibor and Sobat with extensions on the Khor banks. In the dry season, Jikany Nuer expand with their cattle into the Machar Marshes. At the same time a large number of Lou Nuer is migrating with their cattle from the south-west (Akobo and Waat districts in Jonglei province) towards the south bank of the Sobat between Yomding and Jekmir.

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[1] A detailed hydrology of the Sobat is included in the Jonglei Investigation Report 1954, pp.11-13.

The Jikany Nuer divide into the Gaajok in the western part and the Gaajak in the east. Between these two groups a smaller sub-tribe called Gaagwang migrates between Maker area on the banks of the Sobat and the dry-season toic east of the Khor Wakau.

The 1983 Sudan National Census indicates a total population of 206,069 for the Eastern Area Council of Upper Nile. The figures in detail are as follows; Maiwut Rural 99,237, Nasir Rural 103,790, Nasir town 3,040.

The periodical migration of Lou Nuer from Jonglei is estimated at a total of 53,000 (29,900 Mor-Nuer from Akobo district and 23,100 Gaatbal Nuer from Waat district).

These figures are based on the following calculation. In the 1955/56 First Population Census of Sudan the total population of Waat District was given as 72,758. The Gaatbal section was listed as having a population of 23,411 or 32.18% of the total. Applying this percentage to the total population in Waat District of 109,010 as recorded in the 1983 Sudan National Census the Gaatbal section would be expected to comprise of 35,079 at this time. This represents an increase of 50% between 1955 and 1983. If the same growth rate is assumed to apply to the Mor section of Akobo district the population here can be said to have been roughly 45,300 (1955/56 Mor section: 30,224; 1983 Akobo District: 83,424).

In the dry season, not the whole family is migrating. Elderly and lactating women for example often stay in the villages. We can consider 2/3 of the family as the migrating part. So:

66% of 35,079 Gaatbal	=	23,100
66% of 45,300 Mor	=	29,900
Total		**53,000**

ECONOMIC ACTIVITY

The fragile environment of the Sobat valley and its marshes turns cultivation into a precarious task. The area is flat, has clay soils and is subject to heavy rainfalls. It is traversed by rivers which flood annually. When the rains cease and the rivers fall it is subject to severe droughts. The agricultural output is uneven and Jikany Nuer are regularly forced to barter cattle against grain in areas with good harvests. Although provision of pasture in the dry and early wet season is sufficient, restrictions of cattle grazing in the rainy season affects - due to extensive flooding - the milk production. The pre-harvest season - when grain stocks are exhausted - is thus earmarked as a 'hunger gap', a period of 2-3 months between June and August. If assistance through kinship networks fails, bartering of livestock against grain will be necessary. Significant numbers of sheep and goats help to sustain the 'hunger gap', and fish provided by the streams are another important source of food. The traditional means of catching fish is by spear (bith), but is restricted to an intermediate water-level, and productivity is

low. Therefore, the introduction of nets and hooks by local merchants some decades ago was highly appreciated by the local population.

In addition, people try to cover their food needs in the hungry period with wild food such as *lalub* and *lew*, a root which grows on termite moulds.

Livestock

For allocation of the livestock population of the eastern Jikany Nuer the Sudan National Livestock Census + Resource Inventory (1976).[2] gives the following picture (to nearest 1000):

Cattle	Sheep	Goats
201,000	39,000	56,000

At the time the census was carried out (July/August 1976), the cattle were concentrated along the Sobat, to the north-east in the eastern part of the Machar Marshes and at a lower density, in an area north of the Sobat between Nasir and Abwong. The areas of the Machar Marshes and south of the river bank are at this time of the year flooded and abandoned, but in the dry season people will migrate with their cattle to these areas.

The main concentration of sheep and goats is accordingly along the river, but the population in the north is higher than in the eastern Machar Marshes.

As mentioned above, Lou Nuer migrate in the dry season towards the south bank of the Sobat. The estimation of the migrating cattle population of 78,440 head is based on the total cattle population of the Lou given in 1954 as 152,200, based on an actual count.[3]

The human population of Lou Nuer given in the first population census of Sudan 1955/56 as 102,982 leads to a ratio cattle/humans of 1.48. The migrating Lou population of 53,000 multiplied with the 1.48 ratio results in 78,440 head of cattle. This is, of course, a rough estimation which might be used as an indicator only, but it shows that the pasture along the Sobat is used for heavy grazing from Lou Nuer. This is of importance for the current situation.

Agriculture

The main crops cultivated by Jikany Nuer are maize and dura. The maize is a hard-corn type of red, violet or yellow colour and matures in 75-90 days. Dura types vary in colour (grey,red,yellow) but mature all together in three months except the quick maturing *der* variety which can be harvested after 75 days. The agricultural calendar is as follows:

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2 Vol.18A, fig.18A.01 and table 18A.06,

3 Jonglei Investigation team 1954,Vol.1 p.231

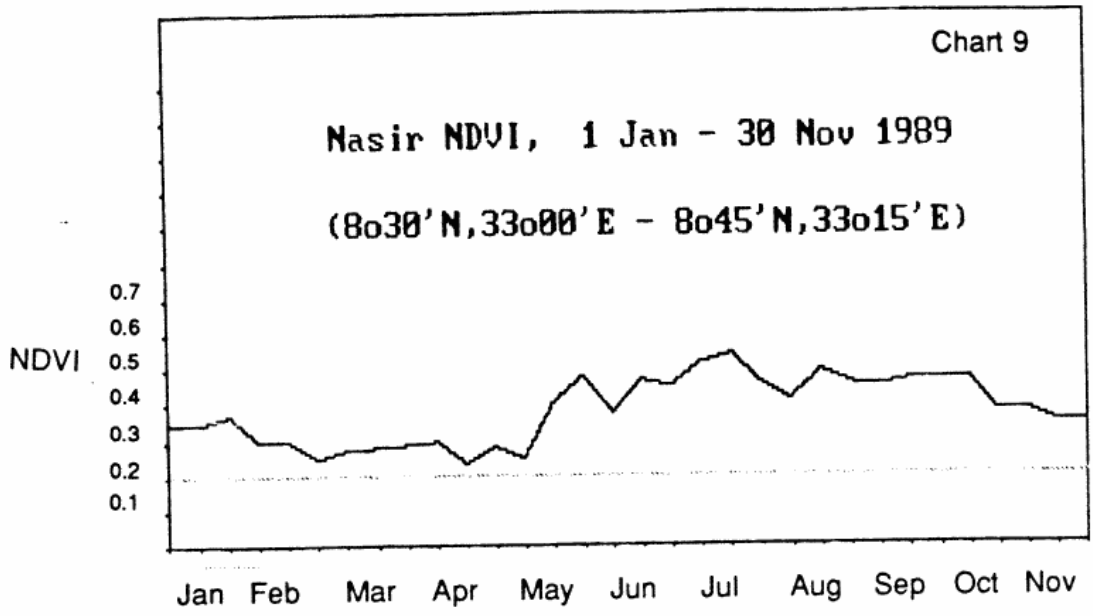


Chart 9
Nasir NDVI, 1 Jan - 30 Nov 1989
(8o30'N,33o00'E - 8o45'N,33o15'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

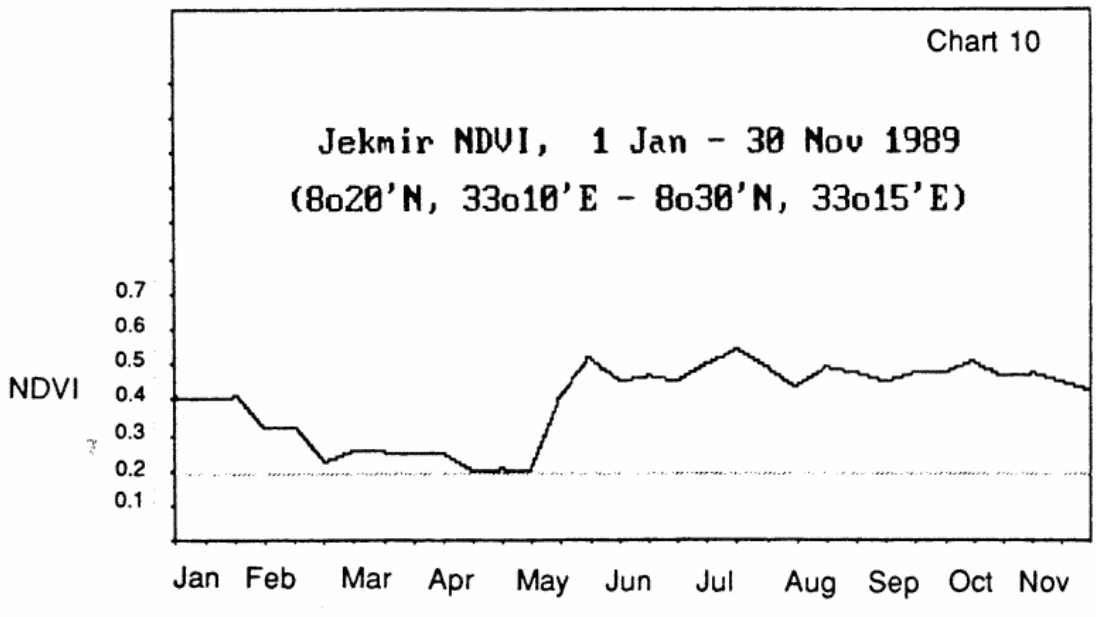


Chart 10
Jekmir NDVI, 1 Jan - 30 Nov 1989
(8o20'N, 33o10'E - 8o30'N, 33o15'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

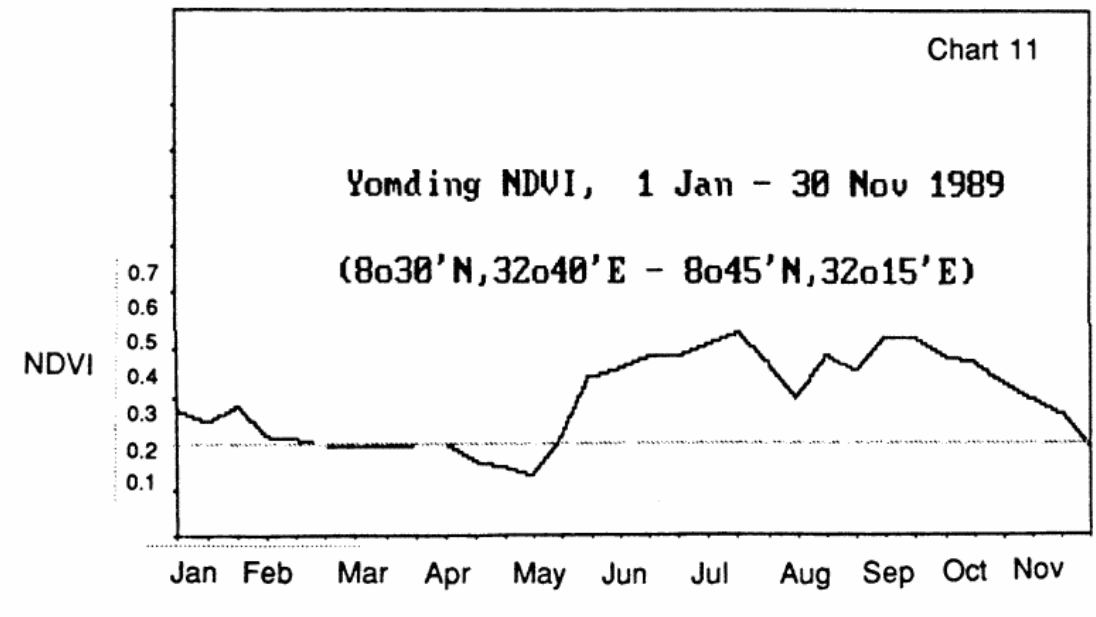


Chart 11
Yomding NDVI, 1 Jan - 30 Nov 1989
(8o30'N,32o40'E - 8o45'N,32o15'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

October-March	dry	clearing fields
April - May	beginning of rainy season dura/maize	sow 1st
May-June	rain	sow dura
July	"	sow maize along the river
August	"	harvest 1st maize
Sep-Oct	"	harvest dura
October	end of rainy seaon	harvest 2nd maize sow 3rd maize
Nov-Dec.	dry	harvest 3rd maize

The cultivated plots are about 1-4 fedans inland and 0.25-1 fedan on the river banks according to family size. Sowing is done by hand using malodas. Dura cultivation requires I tin (15-18 kg)/ feddan. In case of damage by drought, flood or insects, resowing takes place after some weeks.

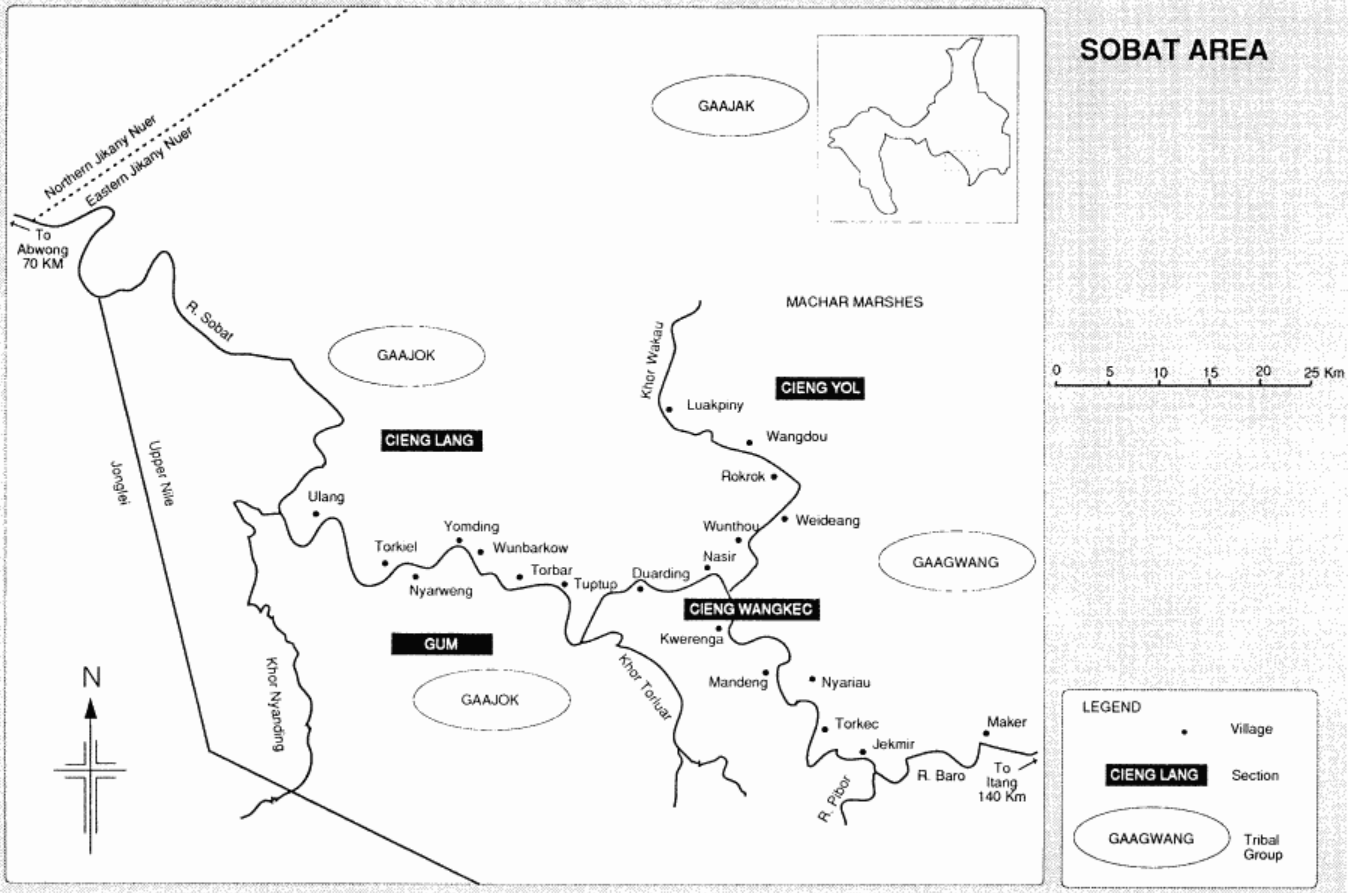
Crops like onions, okra, aubergines and tomatoes are produced in small quantities. The households grow tobacco and - if seed is available - cow peas for home consumption. The cultivation of pumpkin is essential to obtain gourds which are used for various purposes (milk containers, seed storage etc.)

Trading

Nuer economy in general hardly allows the establishment of marketing practices. Harvest surplus is usually exchanged within the tribe between regions with good and poor harvest. Little evidence is given for grain trade on a regional level.

Remarkably, though the net grain export from Sobat area, forwarded by the Sobat steamer service between 1930 and 1953, was about 3.453 tons, an average of 144 tons p.a.[4] Also, exchange of grain against cattle is common between the Jikany Nuer and the cultivators on the Ethiopian border (Itang area). Harvest surplus in the Sobat basin is from time traded to Lou Nuer who move to pastures on the river banks in the dry season. Cattle auctions were established in Malakal, Abwong and Nasir previous to the war. Arab traders in Nasir used to buy harvest surpluses and brought commodities like salt, soap, clothes, fishing equipment, mosquito nets etc. The capacity of grain storage in Nasir was certainly of considerable scale and most useful for the local needs in times of hunger. The availability of trade commodities stimulated the production of meat, grain and fish.

[4] Southern Development Investigation Team 1954, table 49,p137.


SOBAT AREA
GAAJAK
Northern Jikany Nuer
Eastern Jikany Nuer
To Abwong 70 KM
R. Sobat
GAAJOK
CIENG LANG
Jonglei
Upper Nile
Ulang
Torkiel
Yomding
Wunbarkow
Nyarweng
Torbar
Tuptup
Duarding
GUM
GAAJOK
Khor Nyanding
N
MACHAR MARSHES
Khor Waikau
CIENG YOL
Luakpiny
Wangdou
Rokrok
Wunthou
Weideang
Nasir
GAAGWANG
CIENG WANGKEC
Kwerenga
Khor Torluar
Mandeng
Nyariau
Torkec
Jekmir
Maker
R. Baro
To Itang 140 Km
R. Pibor
0 5 10 15 20 25 Km
LEGEND
Village
CIENG LANG
Section
GAAGWANG
Tribal Group

CONTRACTION OF THE ECONOMY DUE TO WAR AND NATURAL DISASTERS

The WFP assessment team visited Nasir and various villages along the Sobat river between 18 and 20 of May 1990. Like most parts in Southern Sudan, the situation in general is not an acute emergency, but gives evidence for serious concern. This for the following reasons:

The Nuer Anyanya II movement began guerilla activities outside Nasir to the north east in 1980. A large army presence was based in Nasir to control these activities, and fighting between the opponents took place up to 1983. Units of the SPLA started attacking the area in the east in 1984. This led to confused fighting between army, Anyanya II and the SPLA. Only when Jokau was taken by the SPLA in 1987, did the Anyanya II merge with the SPLA.

Yol Chiefs reported to the assessment team that villages like Ngueny, Wunthou, Kotcienggau, Kotciengthor, Canycou, Weideang, Rokrok, Dhikdhek and Wangdon (all of them along the Khor Wakou) were abandoned because of war before 1988. Many of these people fled to Malou region further north. The chief from Koat village said:

> "When there was no fighting, we used to cultivate and did not need as much help as we are asking now, What has brought hunger was that we deserted our homes. That is why we did not cultivate well and why we have no food".

In 1988, hard and violent fighting took place between the army and the SPLA in and around Nasir. Most of the people living near the Sobat fled and took refuge deeper into the land, in Itang or Malakal. In many villages, hundreds of huts have been burnt. Nasir fell after a long siege on 26/1/89.

The number of displaced in Malakal and refugees in Itang camp is unknown, but there is evidence that a large number went to Itang because of the traditional trade links and the availability of food.

The war led to a complete break-down of local trade. The links to Malakal are cut off. The Nasir merchants abandoned their shops and stores which were destroyed in the war. There are no more buffer stocks of grain in Nasir, and due to the absence of barter commodities no harvest surplus is produced. Seeds and tools, before the war provided by the merchants, are constantly lacking and in great demand.

One of the main constraints of the people is lack of fishing equipment. People used to catch considerable amounts of fish with nets and hooks. Before the war, fish used to be the main diet supplement in the hungry period, and dried fish from the Sobat supplied the market in Malakal. Nets and hooks were bartered in Nasir against grain or cattle, but now there are none. Unfortunately, these items are not available at the Itang market. So fishing has to be done by spear with the above mentioned severe restrictions.

A combination of three other factors leads to a serious shortage of food supply in Nasir area:

1) The livestock population is diminished. The last cattle vaccinations were carried out in 1983, and since then cattle diseases like rinderpest, CBPP and a disease locally reported as dysentery are spreading out. In the 1988 flood, a lot of people fled to low-lying areas of relative peace. Lack of shelter and lack of dry pasture affected the livestock seriously. The cattle had to stand in the water continously and had no place to dry, because people were not able to build luaks in time. In 1989, the chiefs estimated losses since the outbreak of war at 50%. WFP personnel witnessed "great numbers of sick and dead animals east of Nasir, at Kuorenge and Mandeng" (WFP situation Report Nasir 10.7. - 15.8.89), and the WFP Nasir Agricultural Survey 1989 reported 15 out of 630 cattle in Jekmir village as seriously sick. During our visit, the Chief of Jekmir claimed that in his area 100 - 150 animals die per day and that there is not enough milk for all. Although the figure given by the chief might be exaggerated, the summary of the findings gives reason for serious concern.

   Small livestock, which used to supply significant amounts of meat, suffered considerably in the war. Chiefs from Cieng Lang, Yol and Wangkec mentioned excessive raiding by the army since 1984. When people fled to remote areas, they consumed another part of the sheep and goats in order to save the cattle for milk production. The flood of 1988 caused further losses among the small livestock.

2) The agricultural production in Nasir area suffered for the last two years due to fighting, lack of seeds, the 1988 flood and a combination of drought and a stemborer attack in Yol and Cieng Lang in 1989. WFP situation reports and the WFP Nasir agricultural survey 1989 observed harvest damages of 50 - 80% of the maize harvest. The losses of dura due to stemborer attack in the Western part were estimated up to 100%. Our own investigation in Yomding village (Cieng Lang) showed that the 1989 grain stock lasted only until November. The NDVI satellite data confirms the lack of rain mentioned by the Chiefs. It stopped raining for 2 weeks between July and August. Especially the maize is very sensitive to lack of water.

We must keep in mind that heavy fighting took place in the beginning of 1989. The war caused a delayed return of those hiding in refuge. It was already too late to cultivate for many of them.

People who do not have seeds purchase them in Itang. We witnessed various canoes loaded with bags of grain coming downstream. People use to drive a cow along the river to Itang, where they barter the cattle against dura or maize. A good milking cow brings four sacks. Hiring a canoe costs one sack, and the trip is a long and precarious enterprise. Therefore the Yol people barter with Malou area to the North where they can obtain three sets per cow. This area is closer, where a good harvest was produced in 1989.

3) In addition to these serious losses in grain and livestock over the last years, the migrating Lou Nuer from Waat and Akobo have put stress on the food resources in 1990. The Yomding chief mentioned that Gun area south of the river - which had a reasonable harvest in 1989 and served as a buffer stock for grain - is already exhausted by Lou Nuer. Some Lou had such a poor harvest in 1989, that they are intending to stay at the Sobat river the whole year - not only for the dry season, which they usually do. We do not know the scale, but our investigation in Jonglei Province confirm the testimony from the Lou present in Nasir, that the 1989 harvest was badly affected by drought and only a little seed is in stock. Hardly any reason can be found for the Lou Nuer to return to their homesteads, if they have nothing to cultivate.

RETURNEES

Although the situation of the refugees from Nasir area - most of whom are in Itang and Malakal - is vaguely known and needs further assessment, it must be born in mind that during the war a significant number of Jikany Nuer fled their homesteads, but are expected to return at any time, at least when the situation is settled in such a way that a normal life - and cultivation - is possible and security provided by the SPLA is enough to return safely. In the moment, only insignificant numbers of refugees return from Itang and none from Malakal, the latter because the town is under siege.

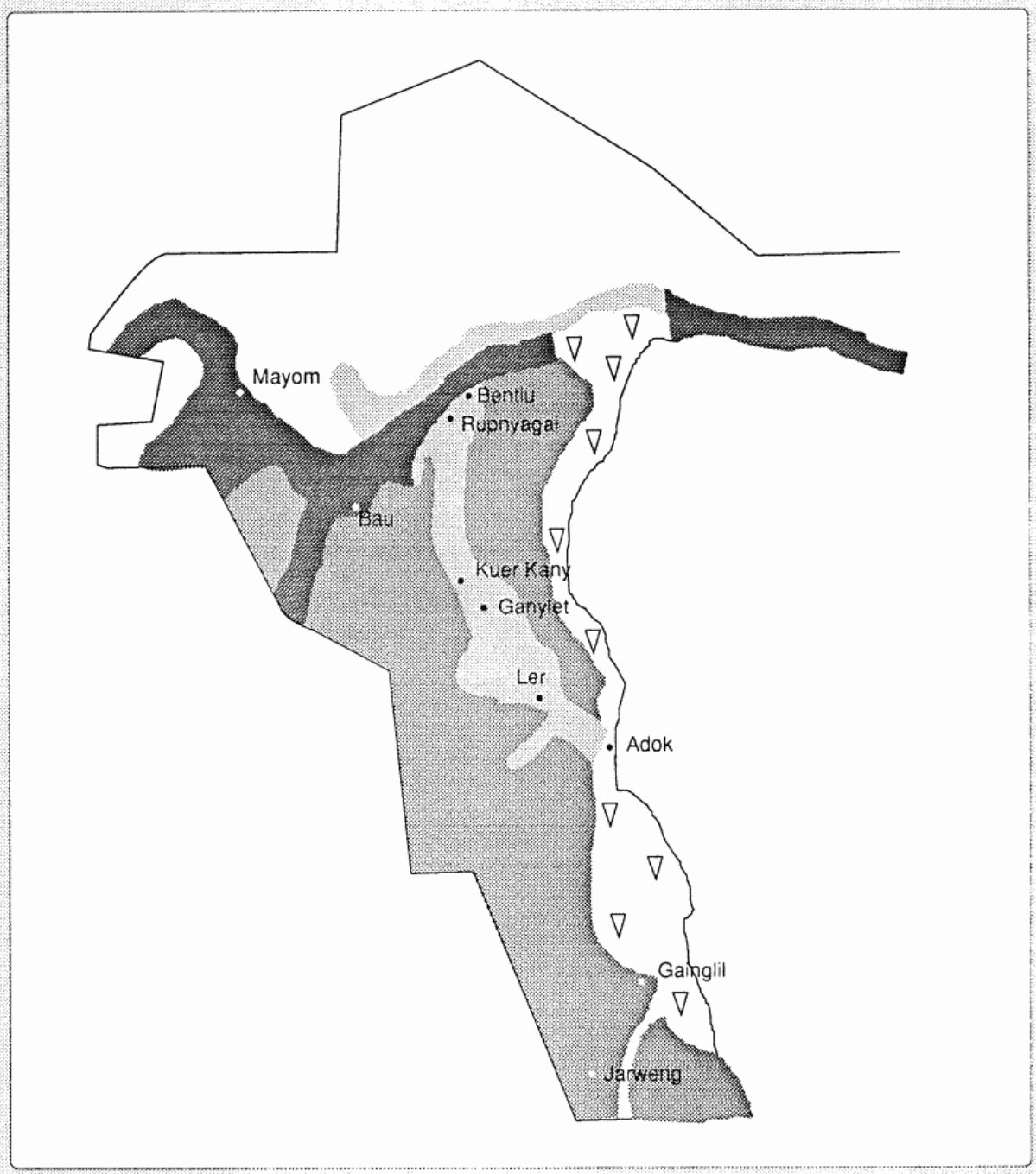
Attention must be paid to the returnees if OLS II starts to be involved in relief programmes of larger scale than last year. Information about such programmes is known to be spread out unsystematically, for example through radio news or contact with people moving between refugee camps and affected areas, as is the case in Nasir and Itang.

CONCLUSION

The conclusion drawn regarding the current situation in Nasir area is that the population needs further food assistance. It is obvious that large amounts of food cannot be moved to Nasir as adequate transport capacities are not available. But the local authorities as well as the population in general stressed that significant amounts of food can be produced by the people themselves if only enough fishing equipment is provided. The Sobat and its tributaries are a rich source of fish and used to balance the food needs before the war. The paramount chief of Yol expressed it this way:

> "Even though there is fish, it is impossible to get it, as we have nothing with which to get them out. If we can get fish, this will be a very good thing on which the people can live. We want something with which to support ourselves, like food, nets and hooks. Fish will give us enough strength to cultivate".

Delivery of fishing equipment seems to be the only possible short-term assistance in providing substantial quantities of nutritious food. In addition, assistance is required to improve livestock and cultivation. There are urgent needs of cattle vaccination programmes to avoid further spread of diseases, as well as supply of dura/maize seed and tools for cultivation.

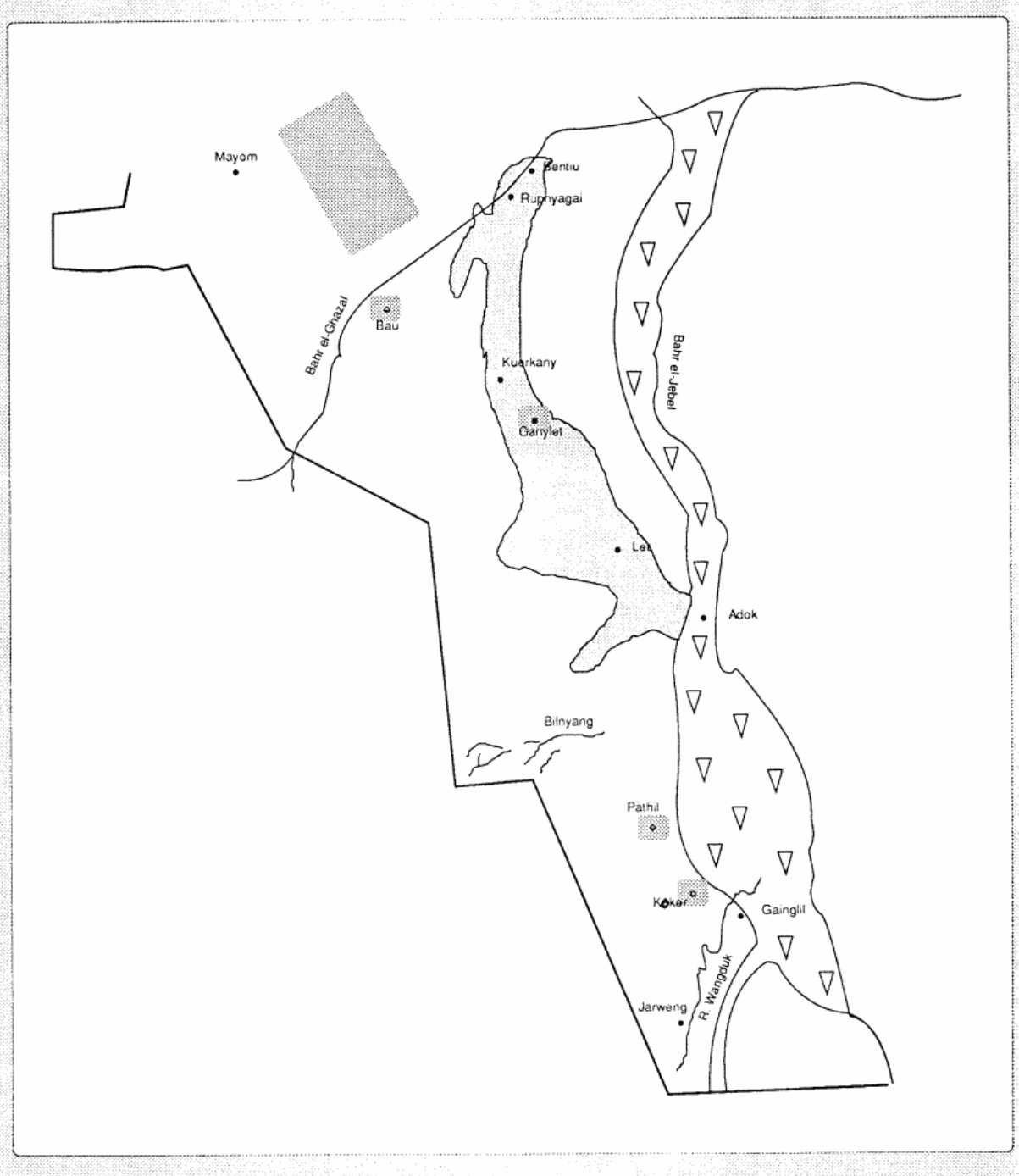


WESTERN UPPER NILE

SOILS AND VEGETATION

LEGEND

- Intermediate Grasslands
- Sandy soils Grasslands
- River valley Grasslands
- Swamp
- Flood Region

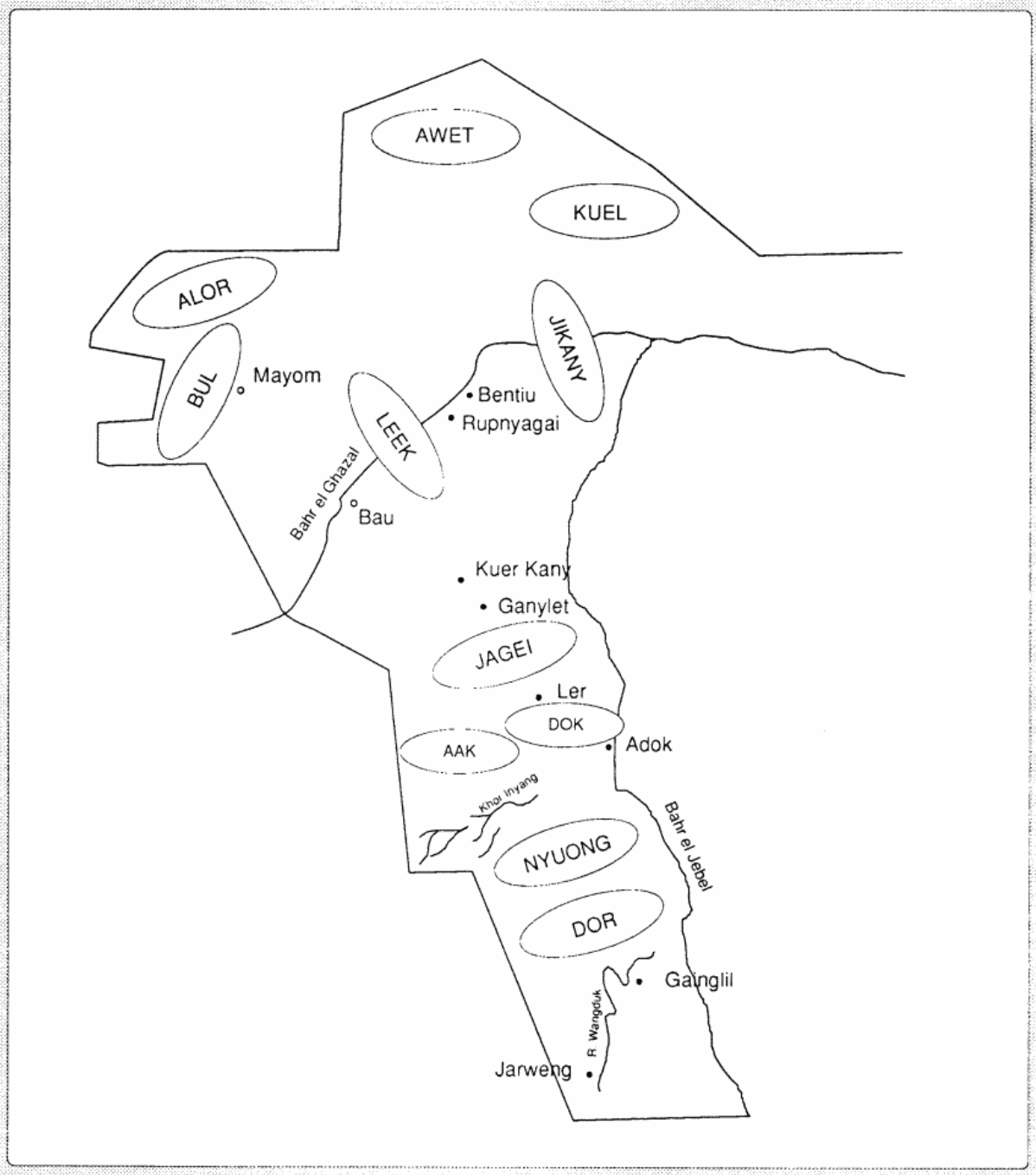


WESTERN UPPER NILE

AREAS OF GOOD CULTIVATION 1989

LEGEND

- Swamp
- Sandy soils grasslands
- Areas of good cultivation 1989



WESTERN UPPER NILE

TRIBAL AREAS

LEGEND

DOR — Tribal Groups

Jarweng — Towns

WESTERN UPPER NILE (BENTIU, MAYOM, LER)

PHYSICAL DESCRIPTION

Western Upper Nile lies within the flood region, bounded by permanent swamps around the mouth of the Bahr el-Ghazal river, along the Bahr el-Jebel, and extending inland in the southern area of the region. During the rainy season the swampy area to the west, extending roughly from 7°. 45'to 9°., and from about 29°. 20' to 29°. 45' effectively isolates the Western Nuer from neighbouring Bahr el-Ghazal.

Soils in the area vary from clay (near the rivers, swamps, and watercourses) to sandy ridges and outcroppings throughout the grasslands where permanent villages are sited. The sandy soils are usually free from flood, but being dry are vulnerable to drought. The clay soils on the toic (rain-flooded pastures) hold the moisture better, and are higher in nutrients, but are susceptible to floods in years of high rivers or heavy rains. People normally plant on both types of soil as a precaution against the variations in rainfall and flooding each year.

The region south of the Bahr el-Ghazal river is the area most susceptible to flooding. The population there is concentrated on a sandy ridge, broken by a network of seasonal watercourses, running from Bentiu south to the Nyuong Nuer, and branching off from Ler to Adok. To the east of this ridge is permanent swamp and seasonally flooded grassland; to the west is mainly open grassland with some permanent villages. In the south there are extensive swamps which cut the Nyuong and Dor off from the rest of Ler during the rains. [1]

POPULATION

Before the war the main population concentrations were found north of the Bahr el-Ghazal river. The 1983 census gave the following figures: Mayom Rural Council (Bul Nuer and Alor Dinka)-68,332; Bentiu Rural Council (Leek and Jikany Nuer, Awet and Kuel Dinka)- 142, 356; Ler Rural Council (Jagei, Dok, Aak, Nyuong, and Dor Nuer)-81,403. It is the area south of the Bahr el-Ghazal, and especially the former Ler Rural Council, which is the main concern of this assessment, but there are people from north of the Bahr el-Ghazal who are currently living south of the river.

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[1] For a full physical description of the area, see Jonglei Investigation Team Report, 1954, Volume I, and the Southern Development Investigation Team Report, 1954.

Economic Activity

Agriculture

The main crops grown are maize and dura, the latter consisting of a quick-maturing variety *(der)* and a late-maturing type *(belwic* or *bel nuer). Der* and maize are planted early in the rains, though *der* is confined to household plots and maize is cultivated more widely, especially on the sandy soils of Dok and Jagei.

The *der* dura is considered only as a stop-gap during the hungry period. It is usually harvested in early August along with the maize, except in Jagei, Nyuong and Dor country where only the late maturing *belwic* variety is grown, and which is harvested in September. Some beans, cowpeas, and pumpkins are planted around the time of the second harvest, and are picked in January. In years of average rainfall and flooding, villages near the river and major watercourses will plant a third crop of maize and *der* dura on land made available as the flood recedes. Sometimes they will also plant within embanked plots designed to trap water. This is not normally done in the Jagei country, where the soil is generally sandier and drier.

Before the independence of the Sudan, Western Upper Nile as a whole was considered to be just self-supporting, with regular grain surpluses from the north and northwestern parts of the district (Dinka and Bul Nuer) being available to other areas where crop production was unreliable because of flooding. Some importation of grain from outside the district was still needed from time to time, and was sold through small shops in the major administrative centres and along the road from Adok to Bentiu.[2] The importance of shops increased especially after the end of the first civil war, and people were used to being able to buy salt, sugar, onions, oil, dura, wheat flour, beans, fishing nets and hooks, agricultural tools, and cooking utensils, among other items.

Cattle

The herding of cattle and other livestock has always been the main economic activity of the region. Western Nuer herds in the Ler area are generally smaller than herds in Bahr el-Ghazal and Lakes. Estimates from 1954 and 1976 (the latter based on an aerial survey)-indicate a doubling of the cattle population and a trebling of sheep and goats during that 22 year period, despite the intervening civil war (which did not affect this area greatly). Livestock population for the Ler area was Cattle: 109,200 (1954) 220,478 (1976); Sheep & Goats: 31,400 (1954), 96,568 (1976). Using the proportions of tribal herds recorded

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2 Jonglei Investigation team report, 1954, Vol. I, p.197.

in 1954, one would expect the following breakdown of figures, rounded down to the nearest thousand.[3] .

	CATTLE		SHEEP & GOATS	
	1954	1976	1954	1976
Dok & Aak	47,000	94,000	16,000	48,000
Jagei	37,000	74,000	5,000	15,000
Nyuong & Dor	25,000	50,000	10,000	31,000

(for current situation see below pg. 38)

If this represents an accurate trend, then it shows an increasing importance of small stock, which provide an important protein supplement to the diet in milk and meat, small stock being slaughtered more readily and more frequently than cattle.

The Jagei, Dok, and most of the Aak Nuer tend to graze most of their cattle in the toic bordering the Bahr el-Jebel, though the Jagei and Aak also make regular use of the western grasslands. In years of high river flood the eastern pastures are often inaccessible. In those years the Jagei, Dok, and Aak move to the southwest pastures fed by the Khor Bilnyang system. The Nyuong and Dor similarly graze along the Bahr el-Jebel in most years, but move southwest to Lake Nyubor in years when the riverine pastures are flooded.

Fishing

Fishing in adjacent rivers, swamps, and watercourses is an important dry season activity, providing food during the hungry period. Traditional methods using fishing spears and traps can be practiced only in shallow water. The introduction of nets and hooks in modern times made fishing in deeper waters possible and increased the local output of fish dramatically, especially in the years 1972-1983, when local Nuer merchants organized the collection of dried fish from the fishing camps, and exported it to nearby towns as well as Zaire.

Oil

The Chevron company also had two well sites north of Bentiu, at Unity and Higlig wells, and a supply depot at Adok. Chevron ceased to be active in the area in 1984.

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3 Jonglei, Investigation team report, 1954, Vol I,. tables 128 &129. Sudan National Livestock Census & Resource Inventory, 1976, Vol. 18A, tables 18A.01 &18A.06. All figures are estimates and must be treated with some caution

RELATIONS WITH NEIGHBOURING REGIONS

In the northwest of the region the Dinka and Leek Nuer bordering on Southern Kordofan have a long history of contact and conflict with the Missiria. The Bul Nuer frequently move into the pastures of neighbouring Dinka in northern Bahr el-Ghazal. The Dok and Nyuong have historical contacts with the Gaawar across the Bahr el-Jebel, and there is frequent intermarriage, movement, and exchanges between them.

The Jagei, Dok, and Aak are frequently brought into contact with the Dinka of Thiet and Rumbek Rural Councils, especially the Agar of Rumbek, through their use of the Bilnyang Khor system. Similarly the Nyuong and Dor often come into contact with the Agar of Rumbek and the Cic and Atuot of Yirol, who already make regular and heavy use of Lake Nyubor in the dry season. Such seasonal contacts can lead to conflict over pastures, water, and cattle.

CONTRACTION OF THE ECONOMY SINCE 1983

Agriculture

The last good harvest in most of the Ler area was in 1984, which was also the last year in which grain was available in local bush shops. A good harvest was had between Ler and Adok in 1986, and in the far south of the area, around Gainglil, there was a good harvest in 1987 when most of the rest of the area (Jagei, Dok and Aak) were suffering from a drought and scarcity. It is also reported in Ler that the Leek Nuer area near Bentiu has had relatively good harvests for the last three years (1987-89), but that it is the only area so favoured.

People from Jagei, Dok and Aak went to Nyuong and Dor for food in 1987 and early 1988; people from these areas as well as Jikany have also been going to the Leek area annually for grain. Thus prior to 1988 there were already great demands on the few productive areas of the region, with no alternative sources of imported grain in the rural areas. Seed and grain reserves were therefore already low and ill-distributed throughout Western Upper Nile, which is one reason why the flood of 1988 was so disruptive of food security.

Flood

The 1988 flood (named "*Pibor*", or "White Water" locally) was produced by the combination of a high river and heavy local rain; an effect which was reproduced along the length of the Nile from at least as far south as Juba to north of Khartoum. In Western Nuer the flood began in July 1988, and the water did not begin to recede in the Ler-Adok area until March 1989, reaching its lowest point only in April-May. The drop began earlier and was sharper around Gainglil further south (local testimony is confirmed by the NDVI charts). In normal times the flood waters would begin to recede in December-January, if not earlier.

The easternmost settlements bordering the Bahr el-Jebel from Dor in the south to Jagei and Jikany in the north were inundated and abandoned. The

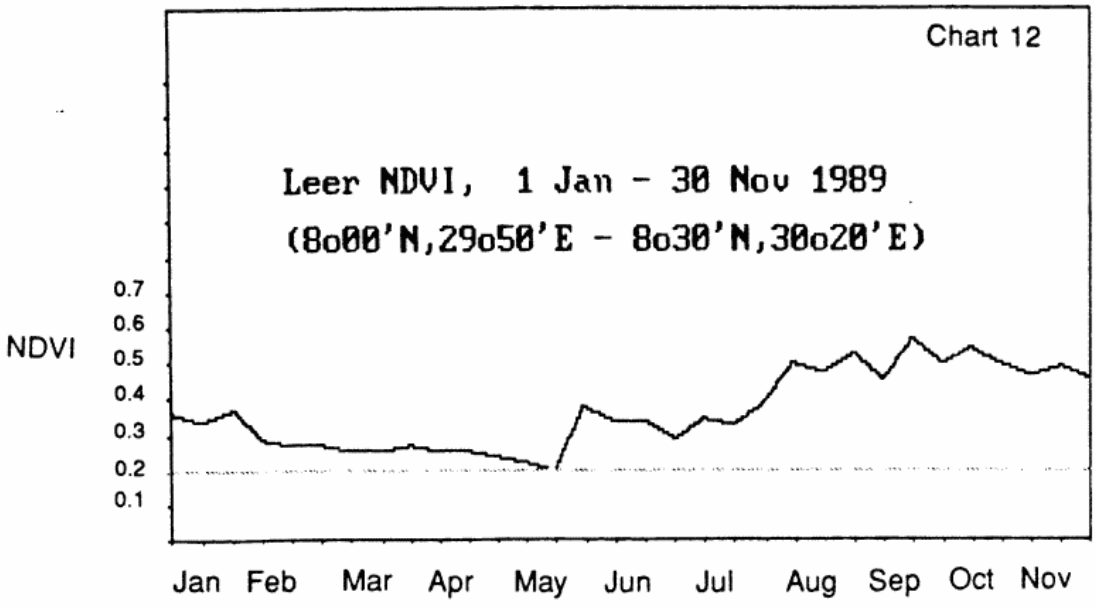
Chart 12
Leer NDVI, 1 Jan - 30 Nov 1989
(8o00'N,29o50'E - 8o30'N,30o20'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

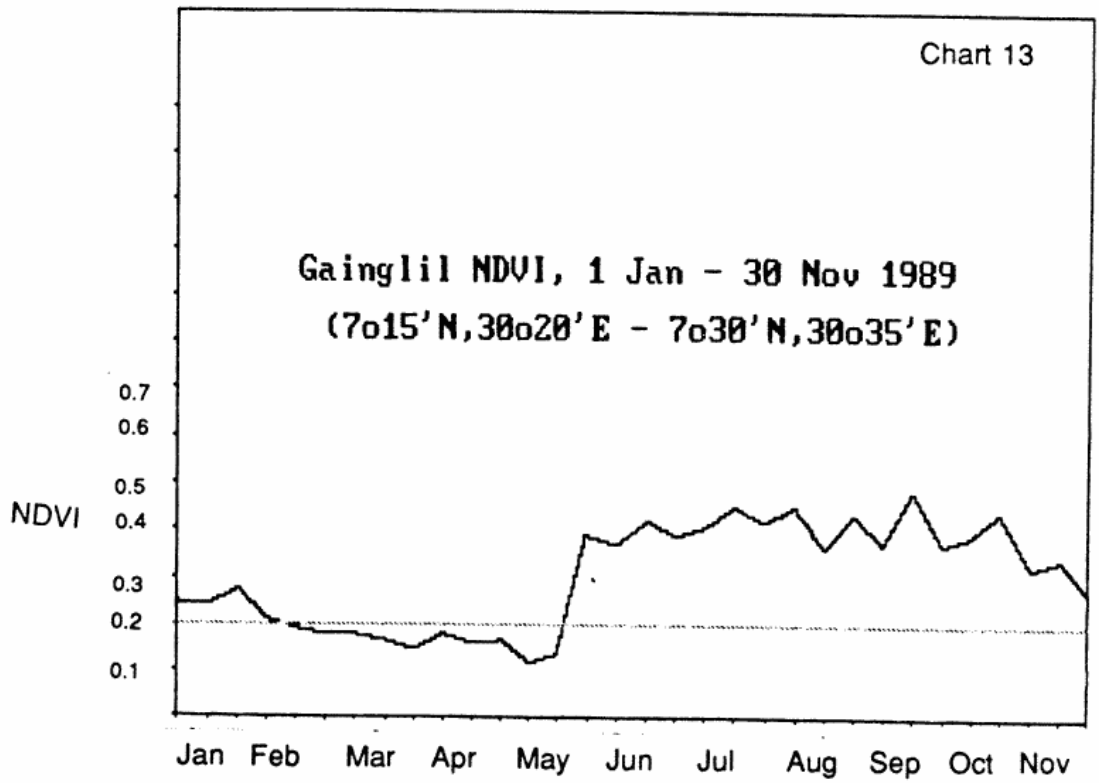
Chart 13
Gainglil NDVI, 1 Jan - 30 Nov 1989
(7o15'N,30o20'E - 7o30'N,30o35'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

inland watercourses which normally feed into the Bahr el-Jebel were backed up with water and remained high throughout the rest of the year.[4] Thus many of the western villages of Aak along the Bilnyang system were also flooded, while the low-lying villages of Jagei were inundated by the heavy rains In Dok 12 villages bordering the Bahr el-Jebel swamp were listed as flooded; in Aak some 19 villages throughout the southwestern territory (bordering Nyuong) were flooded; at least 4 villages around Gainglil in Dor were also inundated.

The effect on cultivation was reported to be devastating. The floods began in July just as the maize and early dura crops were ripening. Maize and dura planted in the flooded villages were completely destroyed; but because of the heavy rains, the main dura crop planted in the low-lying clay soils of the western plains were also washed away. In Jagei country maize planted on the higher sandier soils were attacked by an insect (*dier*) which cut the stalks from outside. In Aak country the crops of 8 villages which had survived the flood were eaten by birds who converged on the few cultivations remaining (a similar phenomenon occurred in Jonglei in the same year). Only 6 Aak villages, all bordering the Dok Nuer, produced a harvest in 1988, and these had to provide food for the rest of the Aak who came to them until stores ran out in December. The small amount harvested in Dok also lasted only as far as November-December. People then either left to the Leek Nuer, or left Western Upper Nile completely, or began collecting wild foods (water-lily, laloub nuts, and a large hard kernel called *tuoh*). Farther south in Gainglil the maize harvest (mainly in small household plots) was good, but only a small area appears to have been under cultivation.

Livestock

Cattle, too, were affected by the flood, following a pattern already seen in Jonglei, and to a certain extent discernible in Northern Bahr el-Ghazal for other reasons. Regular cattle vaccination programmes ended when the war began. By 1988 a large proportion of the existing herd were young animals vulnerable to disease, especially rinderpest. With the 1988 flood many cattle were forced out of the permanent village sites and were left either exposed to the elements, or standing in water throughout most of the wet season, to the detriment of their health. Because in most places the waters did not fully recede during the dry season, cattle were not able to go to their usual pastures and were kept confined in greater numbers in restricted spaces. Contagious diseases thus began to spread rapidly. The most serious diseases appear to be rinderpest, CBPP, and black quarter among cattle, and foot and mouth diseases among the sheep and goats.

Local testimony that large numbers of cattle were lost to the flood itself, or died of exposure or disease are partially borne out by the ICRC cattle vaccination figures from 1989, when only about 80,000 head of cattle were vaccinated in Ler. This figure excludes the 3-7 year old range of cattle who were considered to be

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[4] For a description of the hydrological regime of the area, see Jonglei Investigation Team report, 1954, Vol I, chapter 1.

immune to rinderpest already, but when compared to the 1976 estimate of over 220,000 cattle in the area, it indicates the possibility of considerable losses.[5] Goats and sheep are said to have suffered even more, not only dying in the flood or succumbing to disease, but also being slaughtered in greater numbers for food, both to supplement the diet because of grain shortages, and to preserve the cattle herds. Given the 1976 estimate of some 96,000 sheep and goats in the area, the almost total absence of observable flocks was both startling and worrying.

Food shortages

The water of the 1988 flood had scarcely subsided in 1989 when floods resumed in May-June (see Ler and Gainglil soil moisture charts No. 12 & 13), again due to a combination of river flood and local rain. Here many of the eastern villages close to the river were once again inundated, but the rain flooding in the western plains of Jagei and Aak was not nearly so severe as in the previous year. In Jagei the area from Kuerkuany to Ganylet, as well as the area of Bau, had good harvest, whereas the sandier villages to the east suffered a drought during the drop in moisture during the months of June and July (see Ler NDVI chart No. 12). Most of the crops of Dok and Aak were damaged by floods, but not to the same extent as in 1988. In some areas between Ler and Adok people protected their cultivations behind low embankments, but they were once again bothered by birds at harvest time. Nyuong and Dor areas also reported several areas flooded late in the year, with harvests in the higher ground of Koker and places north of Gainglil.

In 1989 those areas suffering from food shortages survived on fish, laloub nuts, doleib palm nuts, water-lily, and *leau* (a very bitter nut growing in sandy places). but they were also able to get grain closer to home in Leek, at Bau and Kuerkuany in Jagei, at Pathil in Nyuong, and in the region north of Gainglil in Dor.

People close to Ler also benefited from relief food (maize, dura, beans, cooking oil), as well as the market in Ler itself where meat and laloub nuts (but not grain) could be purchased. These are the factors mentioned as keeping people at home during the dry season 1989-90 (though many people of Nyuong and Dor have gone to Yirol for a variety of reasons explained below).

MARKETS AND EXCHANGES

There have been considerable sale of goods and exchanges in kind in various places through Western Upper Nile. There are two main market/cattle auction centres, one at Rupnyagai on the Bahr el-Ghazal, and another at Ler. Goods are often brought into Rupnyagai from Southern Kordofan, and many of these later appear for sale in Ler. Cattle/grain exchanges are practiced in other

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[5] Of the 1-3 year old range vaccinated, there were very few in the 2-3 range, indicating a high mortality in that age-group.

parts of the region, but if cash is used to buy grain, people tend to sell their cattle at the auctions in Rupnyagai and Ler, and take the money to where the grain is.

In 1990 the Ler cattle auction averaged the following:

Chicken-hen	LS 10
-cock	20-30
goat or sheep	150-270
1 small bull	500-1000
1 small heifer	1800
1 pregnant hiefer	1200-1300
1 big heifer	1200-1300
1 big bull	1500
cattle sold for slaughter (old cows or or oxen)	600-800

People did report that when cattle traders from Rupnyagai or Yirol arrive at the Ler auction, prices for a large heifer can rise to LS 1500-2500. Traders from Ler will take livestock to Rupnyagai in the dry season, where market prices are said to be higher. They use cash from livestock sales to purchase goods to sell in the Ler market.

Rural cattle/grain exchanges:

	Leek 1988*	Nyuong 1990
1 heifer	= 1 sack of grain	1 small cow = 1 sack of grain
1 big heifer	= 11/2-2 sacks of grain	LS 1000 = 3 sacks of grain*
1 big cow	= 3 sacks of grain	

*(A similar rate of exchange was reported in Bau (Jagei) in 1989.

* (1 sack of grain in the Gaawar area of the Zeraf Island in 1988 was reported to sell for LS 400).

People who went to their relatives for grain would be given a tin or more free, or might be given more favourable rate of exchange for cattle.

It was reported in May that no more grain was available for trade in Ler Nuer country.

Other items for sale in the Ler market in May 1990 are shown overleaf:

LER MARKET

(16-17 May 1990)

Meat, 1 Kg	LS	7.50
Intestines, 1 Kg		5
Chicken		10
Groundnut oil, per teaglass		13
Laloub nuts, small pile		1
Tobacco, small pile		1
Onions (4)		10)
Salt, per teaglass		7.50)
Dress		130)
Woman's cloth		130)
Skirt		70)
Shorts		60)
Rubber shoes		90) brought from
Nylon twine		10) Rupnyagai market
Soap - packaged		25)
Soap - washing		10-20)
Penicillin (+water ampoule)		39)
Razor blade		2 @)
Sewing needle		2 @)
Sodium Bromide tablet (for cattle - about 6 for sale)		30 @
100ml Oxtra CBPP vaccine		150
1 string of elastic		10
1 string small plastic beads		10
1 string large plastic beads		10
cast brass bracelet (local mfg)		70
coil rope (local mfg)		1
aluminum spoon (local mfg)		12
maloda (made from bedstead)		20

Note: there were fewer items, both in quantity and variety, than found in Akon/Milo or Yirol markets.

There was no dried fish for sale in the market on those days when it was visited by the assessment team, and though fish is sometimes sold there, its absence points to the substantial decline in the local fishing industry since 1983. There are two reasons for this: loss of markets, and loss of equipment. The nets, hooks and lines people used have not been replaced as they have worn out. People still use the traditional methods of fishing with traps and fishing spears, but these are suitable only for shallow waters during part of the dry season. Hooks and nets especially would increase their ability to fish in deeper waters, and would provide food in the hungry period before the harvest, and for local markets.

MOVEMENTS OF PEOPLE

Fighting began in the northern part of the region before 1983, with both guerrilla activity and Baggara Arab raids. The army remained south of the Bahr el-Ghazal until 1986, and while there was some dislocation of population and loss of cattle due to army activity, this is not remembered as having caused constant distress. The severest fighting took place mainly north of the Bahr el-Ghazal in 1986-8, not only with battles between SPLA and the Sudan government army, but with raids by Arab militia and Anyanya II from the Bul Nuer against the Dinka and Nuer civilian population. The main exodus out of the Ler took place in 1988, the year of the flood. People went to Itang and Khartoum looking for food, or to Khartoum for health reasons or even looking for education. Many brought relatives to Khartoum to be treated for Kalazar, a disease already prevalent in the region before the war, but which has increased unchecked in the last few years.

Not all people have travelled so far. In 1988 many Dok Nuer crossed the Bahr el-Jebel and settled with the Gaawar living on the Zeraf Island. Most returned in 1989 with some dura and maize obtained in that area (it was a region inaccessible to OLS I). For many Jagei, Aak, Dok, Nyuong and Dor, however, the persistent flooding of riverine pastures dictated a southwestern and southern movement to pastures shared with neighbouring Dinka in both 1989 and 1990. Many Dok, Dor, and Nyuong are now taking their cattle to the Jarweng area west of Khor Wangduk (Khor Wangleir on the Sudan Survey map), an area also shared by the Agar and Cic Dinka. A number of Dor and Nyuong have settled in the Yirol area during this dry season, mainly to be with their cattle, but also to escape flooded homes. Many have already begun returning home, but there are a number who may decide to stay on during the planting season, especially as there is a widespread anticipation of further flooding in Ler area again this year.

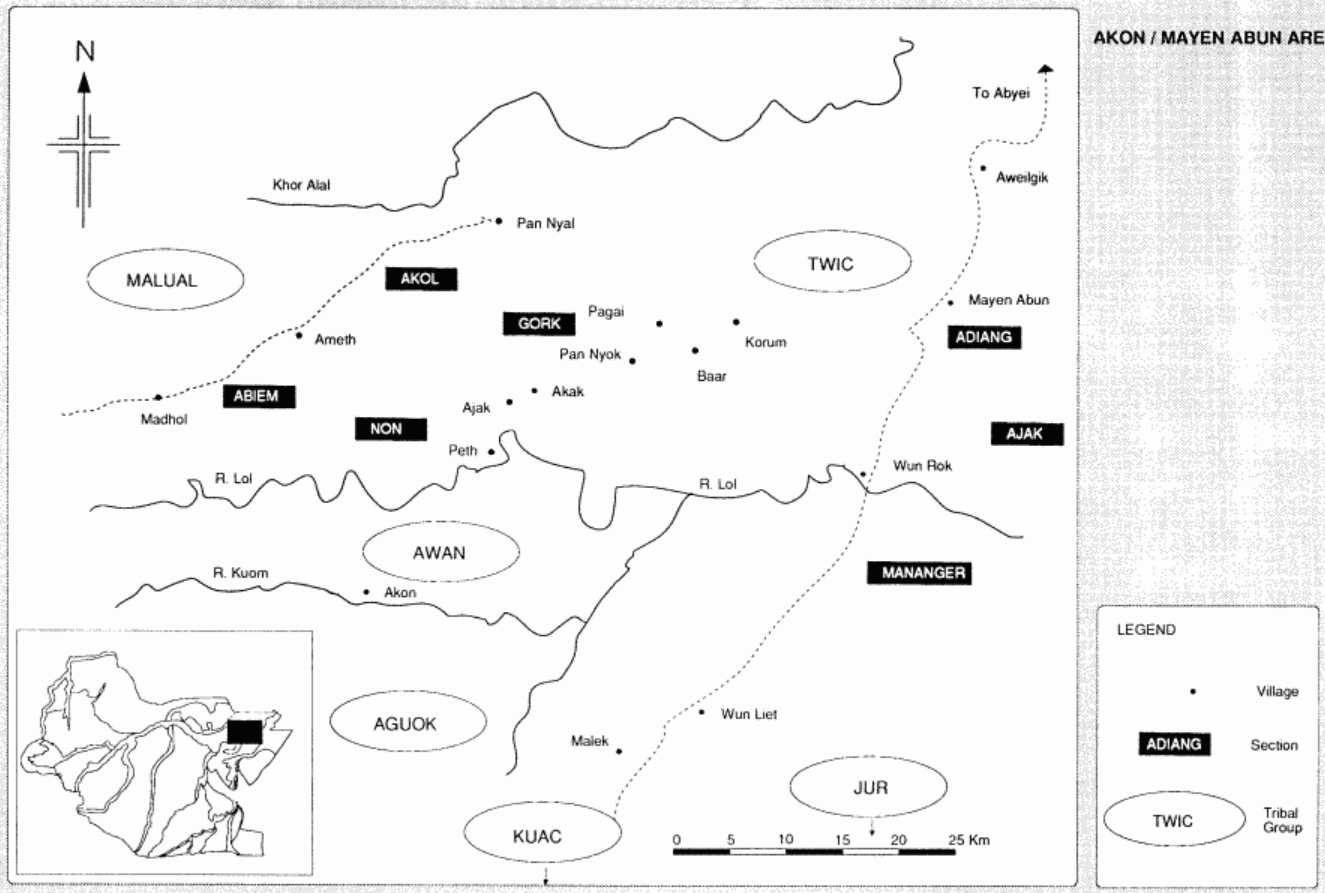
The movement of Nuer cattle into pastures shared with Dinka is causing some friction in the Yirol pastures. Cattle vaccination in Ler was less extensive than in Yirol and many Cic Dinka fear that their own herds may become infected by unvaccinated Nuer animals. They have tried to interdict the movement of other herds in their home area (see below pg. 64).

Returnees

People are beginning to return from Khartoum and Itang, though not in the numbers experienced in Northern Bahr el-Ghazal. The exodus of Western Nuer from Khartoum is less organized than the repatriation of Dinka to Bahr el-Ghazal, and there seems to be no government assistance to encourage the Nuer to leave. Most of those recently returned from Khartoum cited lack of food, the precarious living in Khartoum, constant harrassment by police, fear of "kasha" (forced removal from Khartoum and transportation to agricultural schemes), and the simple desire to return home as the main reasons for leaving Khartoum. None had been told in Khartoum that food was awaiting them in Ler, but there is clearly the expectation that some assistance will be made available. As one Dok woman returnee expained, "we came here with the hope of being helped."

People have to pay their own passage back to Western Upper Nile. Some have taken advantage of the movement of persons into Abyei and have made their way from Abyei to Mayom, and then to Ler. Most come via Kadugli to Mayom. The cost of lorry travel from Khartoum to Mayom is about LS 335, the last leg, Kadugli-Mayom, being the most expenisve at LS 200. The Nuer are helping each other raise money for the passage back. Nuer who have money lend it to those who do not, on the agreement of repayment in cattle when both return home. Returnees are however, experiencing difficulties in Abyei and Mayom. In Abyei the army is reported to be preventing people from taking any food out of the town. In Mayom the Anyanya II are reported to be confiscating food, clothing, money and personal belongings before letting people leave. This has only encouraged people to settle as far away from government centers as possible. One Bul Nuer recently arrived in Ler decided to settle among the Dok, his wife's people, rather than return to his own home near Mayom.

Some persons are also returning from Itang, either in family units, or sometimes women and their children only. They have heard rumours in Itang that UN food is available at home. This, and the fear of disease in the camps is persuading many to make the long journey home, via Bor or Nasir. They seem unable to carry much in the way of food or personal belongings with them as the entire journey, at least as far as Bor, is made on foot. There are unlikely to be great numbers of returnees arriving from Ethiopia in the next few months (the rainy season), but more may still return from Khartoum and the North. All returnees are in need of some relief on arrival.


AKON / MAYEN ABUN AREA
N
Khor Alal
Pan Nyal
To Abyei
Awelgik
MALUAL
AKOL
TWIC
Mayen Abun
GORK
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Ameth
Korum
ADIANG
Pan Nyok
Baar
ABIEM
Akak
Madhol
Ajak
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Wun Liet
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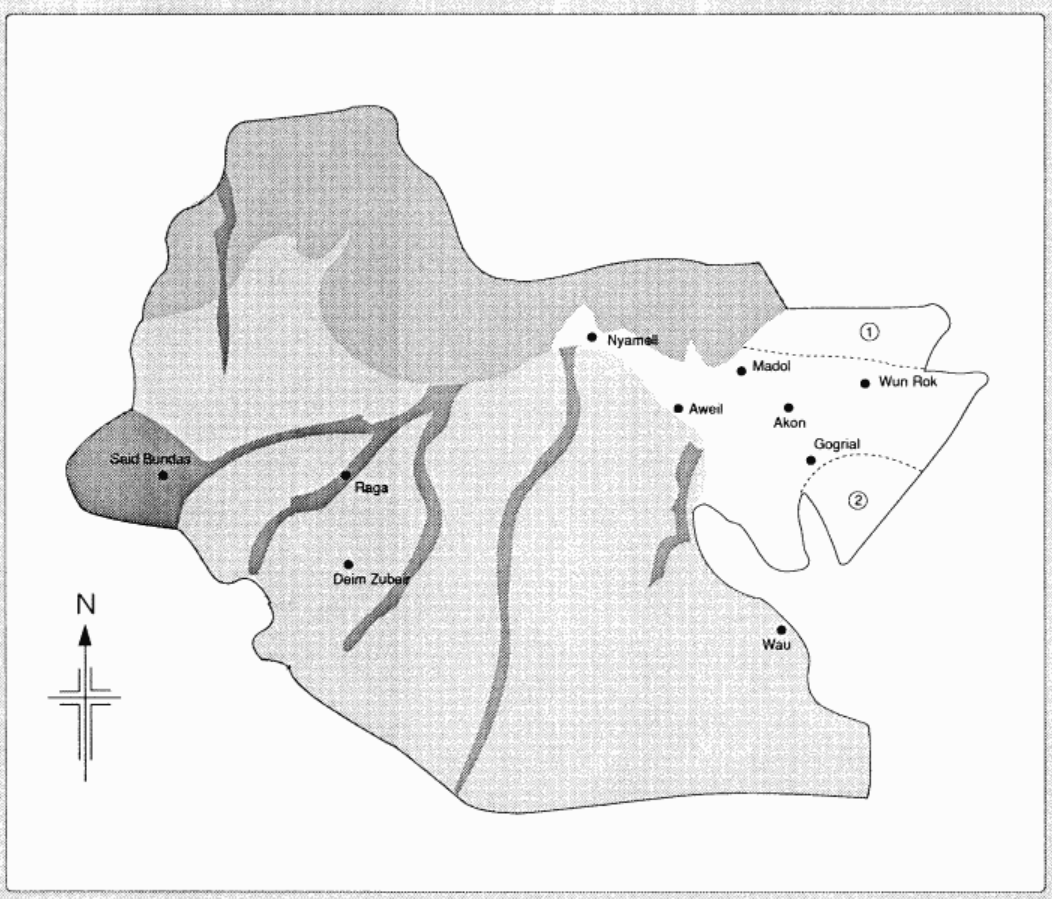
LEGEND
Village
ADIANG
Section
TWIC
Tribal Group

BAHR EL GHAZAL

SOIL TYPES



0 50 100 km

LEGEND

Flood Region
- Black and grey cracking clays
- Small areas of cracking soils especially 1 & 2
- poor drainage
- flat
- heavily used by livestock
- heavy cropping in 1 & 2

Ironstone Plateau
- red and brown sandy soils
- some outcrops/pavements of ironstone
- well developed drainage
- very scattered small areas of crop production

Qoz
- red and brown sand
- poor drainage

- well developed flowing rivers
- riverine sands
- heavily livestocked
- some crops

Adapted from Sudan National Livestock Census and Resource Inventory, Volume 20 A, Map 20 A.02

BAHR EL- GHAZAL (AKON, MAYEN ABUN)

INTRODUCTION AND OVERVIEW

Bahr el-Ghazal province covers an area of 128,899 square kms south of the Bahr el Arab and east of the border with the Central African Republic. Much of the south and west of the province is located on the ironstone plateau but the more heavily populated and utilized area is in the relatively small northeastern corner which falls within the flood region (from 27° 25' to 28° 50' and from 8° 15' to 9° 15'). Population figures from 1977 indicate that 67% of the estimated total population of 2,046,665 were located within the flood region; that is, in an area covering only 11.3% of the total land surface in Bahr el Ghazal.[1]

The inhabitants are usually classed as Western and Northern Dinka tribes, but to the west of Wau, across the ironstone plateau to Raga, live a number of minor tribal groups of different origin, many of them remnants of once much larger tribes. Of the northern Dinka, the Rek Dinka comprise of the Awan, Aguok, Apuk and Kuac, inhabiting the flood region or areas of the ironstone plateau bordering with it. The Malual and Twic Dinka live on the more northern parts of the flood region from the north bank of the River Lol to the south bank of the Bahr el-Arab. The inhabitants south of the flood region towards and around Wau and to the west are referred to as the 'Jur' and represent some of the smaller tribal groupings.

That part of Bahr el-Ghazal which falls within the flood region is generally characterized by extensively flooded perennial grasslands with poor drainage and heavy clays. The relatively high rainfall and lack of slope means that soils are often waterlogged and unfavorable for crop production. The inhabitants are primarily stock-owners, cultivation taking a second place in their interests. This area is at the northeastern and 'bottom' end of the Bahr el-Ghazal drainage system (comprising the Lol and Jur rivers) and witnesses a very heavy concentration of livestock during the dry season. In 1977 it was estimated that 90% of the cattle population of the province was to be found in this northeast corner during the mid-dry season, whilst cattle were virtually absent in the south and west of the province.[2]

A northern strip of land running east-west along the northeast corner of Bahr el- Ghazal contains areas of sandier soil which is more heavily cropped, being lighter to work and less susceptible to flooding. It is in this area that a predominantly broad-leaved woodland occurs, known in Dinka as "*gok*".

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1 Note that these estimates exclude the urban populations of Wau and Aweil. Figures from Sudan National Livestock Census and Resource Inventory 1976/77. Volume 20.A. P.13.

2 For a more detailed breakdown of the cattle population see table 20.A.06 SNLCRI 1976/77 volume 20A.

Belts of land near Gogrial and Melek contain well-developed flowing rivers (the R. Jur and the R. Pongo/Kuom respectively) which consist of riverine sands and are both heavily cropped and extensively used by livestock.

Although livestock are more important to the inhabitants, cultivation is practiced by all and due to the lack of good agricultural land, farming is intensive. The two main cereal crops are maize and dura, the latter being by far the more important. On the sandy soils of slightly higher land north of the River Lol, groundnuts and sesame are grown and, in the past, these have been produced for the market in Aweil. Pulses and tobacco are also grown and a range of vegetables in household plots (mainly okra and pumpkin but also including sweet potatoes, tomatoes and cowpeas).

In the Ironstone plateau to the southwest (covering 70% of the total land surface of the province) the soils are mostly shallow, acidic and poor in nutrients so that people are limited to relatively small areas of more fertile soil on which shifting cultivation is practiced. The most important crops in this area are dura, maize, beans, groundnuts and cassava. The Jur people are more enthusiastic cultivators than the neighboring tribes to the north and have traditionally sown significantly larger areas of crops; the population of Wau used to depend largely on the Jur's production of dura, beans and sesame. The cultivation of cassava meant that, under normal conditions, serious food shortages would not occur since the plant could be left almost indefinitely in the ground for use when required.

Map 1. shows the areas of Bahr el-Ghazal covered by the flood region and those falling on the ironstone plateau with brief descriptions of soil characteristics and drainage.

Map 2 shows the area of Akon and Mayen Abun. This was the area which most concerned the recent assessment; in the north, up to the Bahr el-Arab and bounded by the River Jur to the south. This area has been termed in past reports as the "epicentre" of the famine which affected southern Sudan during 1988 and was seen as an acute example of how war and drought had combined to create the famine which prevailed at this time. It is certainly true that this area suffered very badly and is currently on the verge of experiencing widespread hardship and food shortage and a further erosion of the population's ability to care for itself. However, the experience of northern Bahr el-Ghazal is significantly different from other areas of South Sudan; during the period between 1984 and 1988 armed arab militia caused a large-scale depopulation of the area. Their widespread raiding led to a large loss of cattle and other livestock and in many instances people were killed or enslaved. In many cases, villages and fields were burned and grain stocks carried off. Refugees from these attacks fled their home villages to settle precariously on the marginal lands of their neighbours to the south. Many also went north to El Obeid and Khartoum.

Militia activity of this kind continues in the Jur Col area, conducted by Fertit militia from northwest of Wau, but in the northern areas of the Twic, Malual and Awan, security has increased considerably in the last two years and

there has been a slow drift of the populations back to their home villages.There are, therefore, a number of factors which are peculiar to Bahr el-Ghazal which have led to the present deprivation and the current situation in terms of population distribution and their capacity to provide for themselves.

The four year period of militia activity has left many abandoned villages and fields are now overgrown with young acacia thorns and scrub. Cattle not stolen or killed in raids have been concentrated in safer areas from all over the northern part of the province and people driven out of their homes have been returning to the hard task of re-establishing their former livelihoods in what are increasingly precarious circumstances.

The present situation in Bahr el- Ghazal is worrying in itself; an uneven harvest in 1989 has caused heavy dependence on a few areas which did produce grain, the amount of land under cultivation has decreased considerably due to a depletion in the labour force and a lack of seed stocks, livestock herds have been severely depleted and the normal seasonal distribution of cattle disrupted.

The most alarming and potentially serious problem of the area, however, is the large influx of southern refugees (estimated at between 40,000 and 60,000 since December, 1989) returning from the north. During the last six months they have represented an additional and substantial burden on the meagre resources of the existing population and, although the incomers are people returning to their home areas, they are arriving with virtually nothing but a sincere belief that relief in terms of food and seeds are awaiting them. It is this influx of returnees to an area in which the normal survival mechanisms have been so disrupted in recent years that is seen as the most worrying trend.

The assessment team were able to interview many of the chiefs of the areas which are receiving these new-arrivals and information from them was verified by field visits during which returnees themselves were met, either moving southwards on the roads or newly-settled in their villages.

AGRICULTURE

In the flood region the monthly distribution of rainfall is variable. As well as periods of drought during the early part of the rains, the impermeable soils and lack of slope can mean that torrential storms later in the rainy season cause severe flooding.

It has been pointed out that the unfavourable conditions and shortage of suitable land means that areas cultivated are large enough to give only a meagre sufficiency in years of average yield, and in poor years conditions of near famine can prevail. Food production from cultivation is rarely expected to last until the next harvest although, in favourable years, the northern part of Aweil district is capable of producing surplus dura and, before the conflict, this would find a market in Wau.[3] Other areas within the flood region do not have this potential

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[3] Jonglei Investigation Team Report Vol. 1

however and there is a recognised traditional 'hunger gap' between the exhaustion of stores of grain from one year's harvest until the first harvest of the following year. What is happenning now in Bahr el-Ghazal, in common with many other rural areas of South Sudan, is that the 'hunger gap' is lengthening and, at the same time, the resources to which people would normally turn to (milk and meat from livestock and food supplies from rural networks of 'bush' shops) are no longer there or have been disrupted by the conflict.

An ICRC agricultual survey conducted in and around Akon and Mayen Abun during October of 1989 draws a distinction between the resident populations (mainly south of the River Lol) and those displaced within the province by the history of militia raiding. It also draws attention to the particular situation of Mayen Abun,the centre of the most affected area, indicating that harvest prospects at this time were not good due to the shortage of seeds, the small size of the population capable of heavy work in the fields (most of the young men and women having been either captured by the militia or driven southwards to tend to the remaining cattle) and the generally fragile situation as a result of this being a "recently pacified" area.

The findings of the May 1990 Assessment support the earlier findings of the ICRC agriculturalist but show that a general drought severely affected grain production in many areas both amongst the settled population and those displaced away from their homes. The lack of rain seems to have been throughout the flood region but the effect on crop production varied with the position and soil type of a particular area.

Most badly affected were the sandier regions (referred to by the inhabitants as *'gok'*), predominantly in the northern Twic areas but also occurring in Awan, Aguok, Malual and Apuk in areas of higher ground. Places which suffered less were located in the toic, along the river basins, or where pockets of black cotton soils occurred (known as *"tiom col"*), giving better moisture retention and thereby allowing crops to survive the lack of rain.

The eastern Ajak region of the Twic (east of Mayen Abun towards Aweeng) is an area to where people have only recently returned and 1989 was their first attempt at cultivating since being chased from the area by militia. Here the dura was sown in *'alekbor'* (the period of mid-May to mid-June) but in *'akoldit'* (mid-June to mid-July) the seeds were attacked by army worm (known locally as *'anyakol'*) which ate the new seedlings; those who had sown treated serena seeds were left with some crop at this time but a subsequent drought in *'bil'* (July - August) came when the sorghum was almost blossoming and badly affected the yields.

To the west of Ajak, in the Akoc region, the same thing occurred; crops were damaged first by worm, then by drought. Some villages in the Non section, in the south of Akoc and therefore off the sandy soils of the *'gok'* were able to harvest some grain and it was these which, up until April, were able to supply the northern villages of the region.

Between these regions lies Gork, where 15 villages were listed as badly affected and dependant on the harvest from 4 others (Pan Nyok, Baar, Pagai and Toinygoi) which, being in the south, close to the River Lol, had a good harvest.

The Awan Dinka in the area between the River Lol and the River Kuom were saved from the drought by their cultivations in the toic and near to the River Lol, but had to supply relatives and inhabitants from south of the Kuom where the *'riang'* type of soil (sandy clay) retained less moisture and the crops consequently succumbed to the drought. Twic from the northern affected areas also came here in search of grain.

Traditionally, the Awan would plant *'nyanjang'* and *'luel'* (both slow-maturing) types of dura but they now no longer have access to *'luel'* seeds. Last year they planted fast-maturing serena, received as relief, but commented that it did not store well, being vulnerable to attack by weavils and that it could not be pounded easily. In this area between the two rivers (and close to the distribution centre and market of Akon) they also planted maize, groundnuts and some vegetables (tomatoes, aubergines, onions and okra). The groundnut yield was not high due to the drought but it was possible in May to buy both groundnuts and a form of groundnut paste in the market at Milo. Some of the vegetable seeds had been planted to supply the market as well as for home consumption. Maize planted last year was from seeds brought as relief and the Awan commented that this type of maize grew very tall and was susceptible to damage by high winds.

Insecurity along the River Jur, since 1986, which has resulted in the burning of several villages, has caused major problems for the Aguok Dinka, many of whom have been forced to move to areas further south, notably Autho-Appol and Boyar, southeast of Gogrial on the more forested land at the edge of the ironstone plateau. At the intersection of the Paliet, Aguok and Jur Col territories this is said to be a fertile area and although the dura harvest was affected by the drought the sesame, planted in the sandy soils, grew well. The Twic and Malual who have fled the hostilities in the north have come into this area, joined also by people from Akot Maror (Aguok Dinka). These latter come from an area bordering with the Twic and they, along with the Jur peoples who live in the Mananger area, were affected by raiding both by Murhalin and groups of Anyanya II coming from the east. From the Malual area, north of the River Lol and to the west of the Twic, have come a considerable number of people who have settled in Aguok and begun to cultivate. Many more, however, are dependant on the sesame and groundnut harvests of the inhabitants and areas which have produced these crops in surplus are attracting many people. There is at present a drift of these displaced people to the east of the Aguok area where two places, Marol and Agem, on the north bank of the River Jur east of Gogrial, still have stocks. To the east of Apuk, slightly south of the Aguok areas, the drought seems to have been quite severe and in Thonangok it was said that the dura failed to blossom.

The people of Akot Maror and some of the Twic and Malual who had been displaced by Murhalin militia raids in 1986/7 had already returned home when the flooding of 1988, restricted in Bahr el-Ghazal to areas along the rivers,

once again affected their crops. They were consequently displaced once more and have only now begun to return again.

The drought of 1989 least affected the Paliet area west of Akon in the low-lying toic areas. The best area seems to have been on the east bank of the River Pongo, half-way between Akon and Magwok on the railroad, and in May people from far north and west were arriving to buy grain here. Along the railroad further south the Jur Col harvest was affected by pest and drought and their only significant crop was of groundnuts; the shea nut and *'ngana'* (a wild root plant similar to an onion) which would be their usual recourse in times of hunger, were also affected by the drought.

The Malual regions show the same pattern of drought-affected areas as the neighbouring Twic to the east. Further from the River Lol, in Wangjok, Yargot and Madhol (on the road from Aweil to Pan Nyal in the Twic region) crops planted on the sandier soil of the *'gok'* suffered from the sparse rain; nearer to the Lol, in the toic fields, the harvest was unaffected. One chief from this area, Deng Dang Wol, explained why a period of drought such as last years has had such a severe effect:

"Before, in a drought like this, we depended on our cattle for milk and meat. But today cattle and goats have been taken by Murhalin. Then came the drought. That is the source of hunger"

By May, supplies of grain from the toic areas were no longer sufficient to support the villages in the *'gok'* and people had begun the long walk southwards to Paliet to try to barter for dura. One interviewee suggested that part of the reason for the meagre harvests is that the cattle have been moved away and, with them, a potential source of manure for maintaining soil fertility. It was a traditional local practise to lay down manure before the early rains by tethering the cattle on the areas to be cultivated. One returnee interviewed had managed to prepare a new field by inviting other people to use it as a cattle-camp.

To the south of the flood region, around Wau, the Jur and Kuac Dinka have arguably suffered much more from insecurity than from the drought. Dhurup, a very populous area to the east of the Wau-Aweil road and reportedly very fertile, contains at least 13 villages raided and destroyed by militia since 1986. To the west in the area near to Raga the raiding of the Fertit militia has driven the western Jur people east to Dhukuango where they have converged, with the people of Dhurup, in search of food and water. The resulting high concentration of people has disrupted the normal balance of interdependence between these areas. Dhurup and Dhukuango would in the past produce sufficient quantities of grain between them, the Dhurup area harvesting an early-maturing type of dura (*'uduro'*) in September, followed by a harvest of late-maturing dura (*'uluelo'*) from Dhukuango in December. Other crops planted in these areas would normally include sesame, groundnuts, maize, beans, cassava, manioc, sweet potatoes, pumpkins and okra but the drought, which especially affected Dhurup, has meant that only cassava and groundnut crops were sufficient. The Jur of these areas do not keep cattle (using sheep and goats as bridewealth) and would, in times of need, depend upon shea nut oil (*'zeit lulu'*

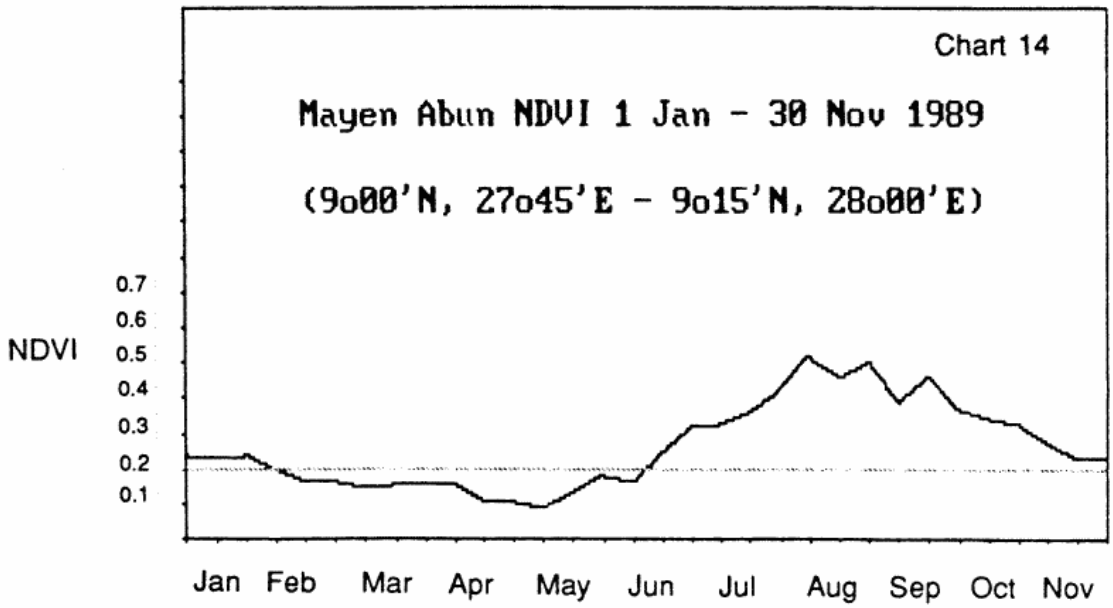
Chart 14
Mayen Abun NDVI 1 Jan - 30 Nov 1989
(9o00'N, 27o45'E - 9o15'N, 28o00'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

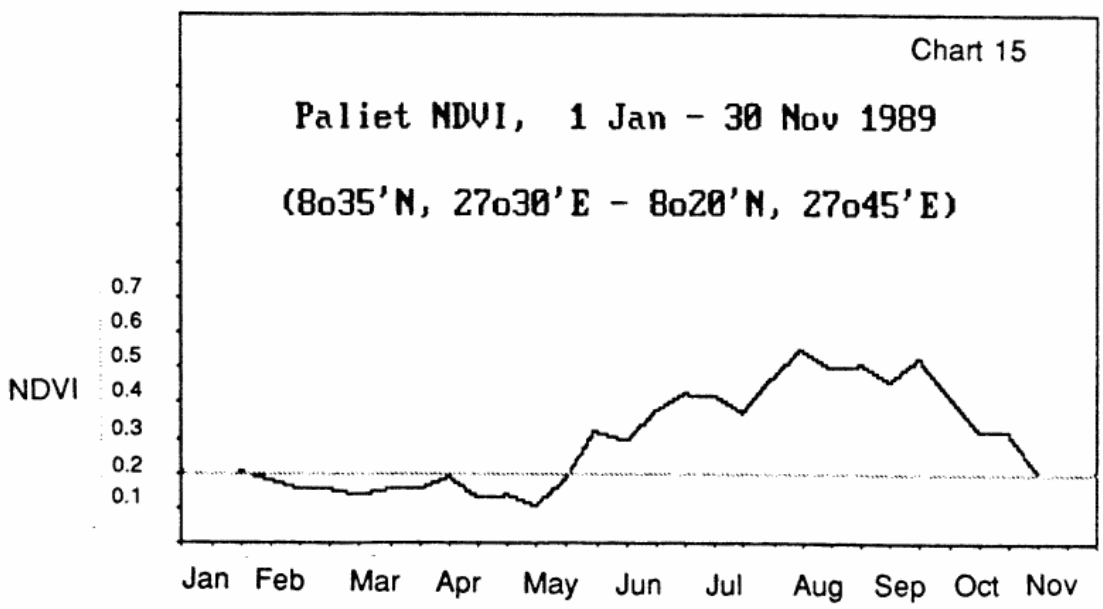
Chart 15
Paliet NDVI, 1 Jan - 30 Nov 1989
(8o35'N, 27o30'E - 8o20'N, 27o45'E)
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov

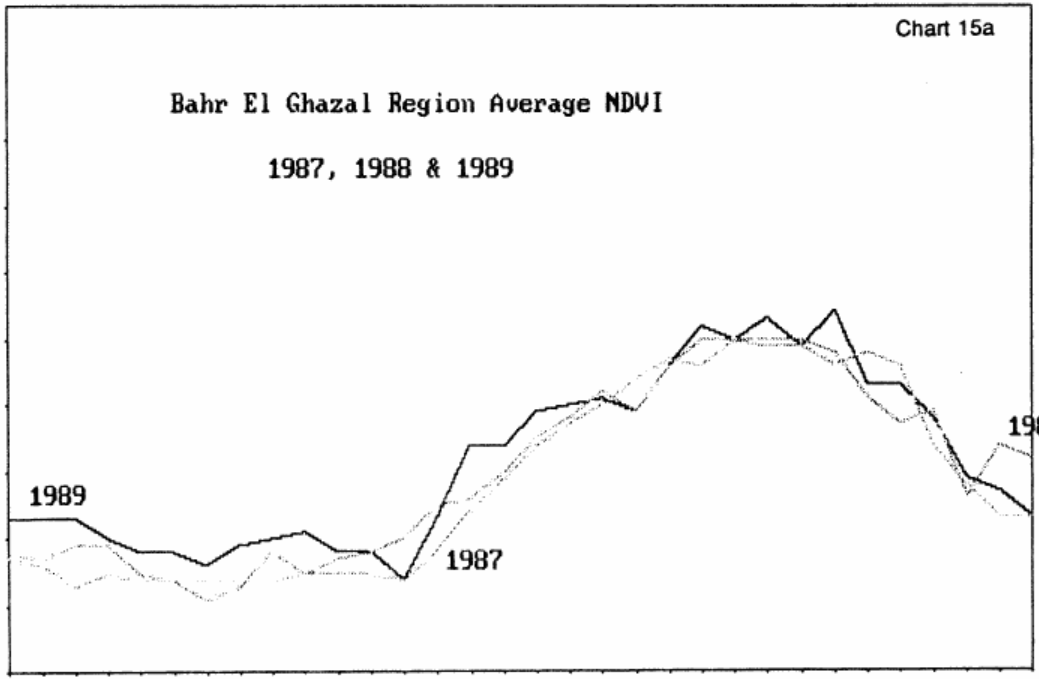
Chart 15a
Bahr El Ghazal Region Average NDVI
1987, 1988 & 1989
NDVI
1989
1987
1988

in arabic) or honey, both of which could be exchanged for grain in Aguok or Paliet (or, before the conflict, in the many bush shops around Wau). Production of shea nut oil, normally carried out in May, is much lower this year because of pest damage to the trees (this was caused by an insect referred to locally as *'got'* and seems to be a species of locust). Shea nut oil is used by the inhabitants for cooking or rubbing. The yields of wild trees are known to vary considerably.[4] Honey is also difficult to find since the drought has meant a lack of flowering plants.

The Dinka living northwest of Wau along the road to Gogrial (around Marial Bai and Tharkueng) divided when disturbances began, some running north to Apuk, others seeking refuge in the town. The latter have returned to the area after the recent killings in Wau but were unable to cultivate and are now facing serious problems. They have been joined by other refugees from the town who had originally come south from the Twic and Malual. The only places in May with any grain were on the border with the Kuac or in Apuk. The displacement of cattle into Apuk or further south to Alur (Jur area north of Tonj) or Abiem Mayar has meant that there is no milk available locally.

Data from the NDVI satellite shows that the generalised description from the inhabitants of a drought during August and September is reflected in the vegetation index. The graph dips less in the area of Paliet, where the crops were less affected but Mayen Abun shows a quite marked drop in August into the middle of September.

LIVESTOCK

The flood region of Bahr el-Ghazal, compared to that of Upper Nile province, contains larger areas of relatively high land and less toic. This means that there is wet season grazing available in more or less sufficient quantities around the permanent settlements of the flood region and along the edge of the ironstone plateau. The plateau proper is not healthy for cattle due to the presence of tsetse fly and trypanosomiasis and cattle here are restricted in the wet season to areas of more open woodland (*'gok'*) to the north.

Dry season pasture of suitable quality is almost entirely restricted to the flood region, in certain areas; these consequently display high concentrations of cattle during the dry season (see table I).

Aerial surveys conducted in the late 70's indicated large scale movements of cattle from the north into the northern half of the flood region, with a return northwards in the wet season. These were cattle from the south bank of the Bahr el-Arab brought southwards at a time when the Rizeigat and Missiria cattle from much further north arrived in search of dry season grazing in this region. Dinka cattle would be taken northwards once again at the end of the dry season to graze the pastures after the Baggara Arab herds had departed.[5]

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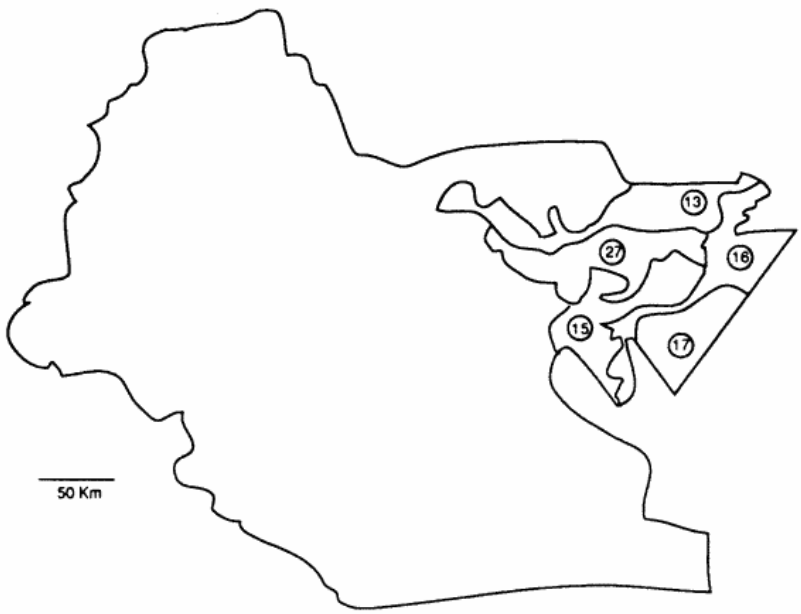
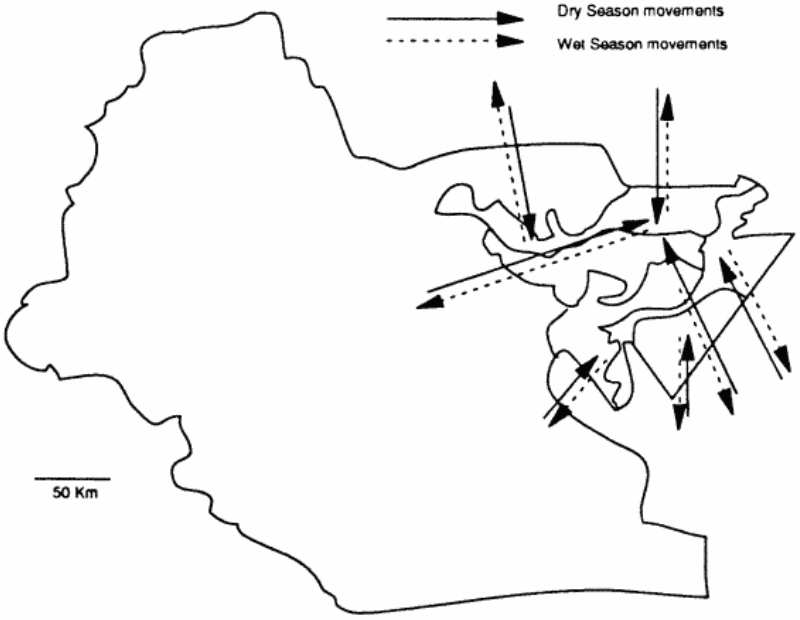
[5] SNLCRI Volume 20.A.

Map 3

Locations of strata from
Aerial Livestock Census (1977)



Map 4



Inferred movement patterns of cattle in Bahr el Ghazal

(Adapted from S.N.L.C, Volume 20 A, Map 20 A.09)

Since the onset of the militia attacks from the north, which are widely seen as having at least part of their origin in the competition for good dry season grazing land, the normal seasonal distributions of cattle have been disturbed. In some areas this means that people who would normally have been able to depend on milk and meat to see them through a time of grain shortage no longer have this available to them; this especially applies to the elderly population who will not have accompanied the cattle to the safe areas where they are now being kept. The Awan Dinka have brought their cattle closer to their permanent settlements along the River Lol in order to provide milk for the children but almost all the other sections have hidden away their cattle in the toic of Apuk, to the southeast of the flood region, far from their homes.

Of more immediate concern to the inhabitants, however, are the large losses which were incurred during the period of militia activity. It is difficult to give any accurate figures concerning the general situation but an idea of the extent of the loss can be obtained from individuals who had their cattle raided, and also from a comparison of the estimated numbers of cattle, now concentrated in the safe areas, with the 1977 figures covering the flood region.

Table 1. Estimated Cattle Population 1977 (Jan)

The five strata listed below represent the entire flood regions of Bahr el-Ghazal. Cattle numbers are estimated from an aerial census to which statistical bias-correcting formulas were applied. (see Map opposite for areas covered by strata).

Area	Strata No.	cattle No's	
Gogrial > W.(R. Pongo)	15	143,620	
Gogrial > E.	17	37,419	
East of Wunrok	16	281,604	
Mayan Abun	13	163,724	
Aweil	27	328,040	
Flood region total		954,407	(77.7%)
Ironstone plateau (total area)		74,078	(6.1%)
(Other areas)		199,222	(16.2%)
Bahr el-Ghazal		1,227,707	

(These figures show the extreme concentration of cattle in the flood region during the dry season).

Table 2. Figures from ICRC Vaccination Report

AreaNo.	Vaccinated No.	Not Vaccinated	Total
Akon	37,630	54,833	92,463
Par Acier	27,000	29,350	56,350
Pariak	11,500	16,020	27,520
Manjak (Apuk)	14,000	16,852	30,852
Wunrok	17,750	16,550	34,300
Low (Agot)	18,750	27,839	46,589
Gogrul	7,800	5,044	12,844
Kuajok	10,250	5,405	15,655
	144,680	**171,893**	**316,573**

A comparison of these figures with those from an ICRC vaccination report of 1989 must be done with extreme caution. The vaccination programme was active for one year (12/88 > 12/89) and covered various areas within the flood region, but was certainly not fully comprehensive in it's coverage. However, in all villages visited during the assessment there were always some people who had taken their cattle to one or another of the vaccination centres and always the cattle which were already immune (> 3 yrs old) were counted along with those vaccinated. The local Veterinary Officer's estimate of the number of cattle in the Apuk toic, where almost all interviewees claimed to have taken their cattle for safety, was 70,000. Even with caution, then, the above figures would seem to indicate that there has been a very substantial loss of livestock over the last few years. From an estimated population of almost a million head of cattle in the flood region in 1977 there could be only half this number remaining now.

Interviews with chiefs and individuals during the assessment provided much supporting evidence for the picture of widespread loss of cattle to the Arab militia. Most badly affected were the Twic from the northern areas towards Abyei but the Malual to the west also seem to have suffered heavily from raiding. One man from Majong Adiang (between Pan Nyok and Mayen Abun in the Twic area) described how his whole home area had been cleared of people by militia attacks in 1987. He himself lost 50 cattle and managed to escape with only a few to Apuk where he had kept them for safety. It is possible to see the large Arab raiding camp, now abandoned, at Kuroom, near to this man's former home. Covering almost 5 - 6 acres of cleared acacia scrubland this camp was used as a base by the militia who conducted raids in most of the surrounding areas.

The Awan, the Aguok, the Twic and the people of Malual have all concentrated their remaining cattle in the *'toinapuk'* (toic areas of Apuk). This has caused considerable problems; the consequent concentration of cattle has meant a spreading of diseases between cattle of different areas and now, as people begin to return to their home areas to resettle, they are concerned about further spreading of diseases to the cattle which remained in the unaffected permanent settlements. The Awan have already moved their cattle from Apuk to grazing areas along the River Lol for precisely this reason; also, in the words of one

Awan chief: "since we have fewer cattle than before they can be kept close to the village to give milk to the children". The Aguok, who occupy areas south of the River Kuom and bordering to the east with Apuk are particularly concerned with the spread of diseases as people bring their cattle out of the area through their homeland. Especially prevailent seems to be rinderpest: the same interviewee who had lost 50 cattle to militia in Majong Adiang, subsequently lost a further five which died of rinderpest once he had reached Apuk.

The Twic have also been moving their cattle since the end of last year. The advent of peace in their home areas is part of the reason but the high incidence of diseases in Apuk was also a factor, since they would have preferred to leave cattle for the time being and only bring them home in the wet season. (the Malual are doing this because of the relative lack of pasture during the dry season in their northern higher lands.) The Twic have indicated that rinderpest is already spreading, especially in Turalei and are afraid it will continue to around Mayen Abun. The local Veterinary Officer, Abraham Agok, indicated the main areas in which diseases had been identified (information was also obtained from chiefs/individuals)

Disease	Dinka Name	Area most affected
Rinderpest	*Awet*	Found all over but especially in Apuk, Kuajok, Mayen Abun, Turalei (Twic)
CBPP	*Abuot*	Mayen Abun, Aguok, Kuajok
Haemorragic Septicaemia	*Marol*	Mayen Abun, Aguok, Kuajok Tharkueng, Abiem Mayar
Black quarter	*Macoa*	
Anthrax	*Jong nhial*	Malek Ngok (Aguok)
Foot + Mouth	*Dat*	
Trypanosomiasis	*Manyai*	common all over

To the south-west the Kuac Dinka (a branch of the main Rek tribe) have suffered raiding from the Fertit militia who began their operations in 1986 in the area between Wau and Raga. 13 villages were listed, all of which are northwest of Wau, on the road to Aweil, which were burned and destroyed between 1986 and the present day. Barakol, one of the villages east of Wau, was once more attacked 10 days prior to the assessment team's visit.

The area around Tharkueng (northern Wau) has had similar problems; in 1986 many Malual and Twic from further north left their homes and came into Wau. When conditions deteriorated they were forced to leave the town and stay with the people of Tharkueng, representing an additional burden on the resident population. Cattle of these areas have been taken to *'toinapuk'* (in the case of Tharkueng) or to Lonarik and Abiem Mayur (of the Kuac Dinka living between Wau and Aweil). Lonarik and Abiem Mayar are southeast and north of Tonj respectively, a considerable distance in the opposite direction to that which these people would normally go with cattle in search of dry season pasture. (see Map 4 for the inferred movement pattens of cattle *under normal conditions*.) The chiefs reported similar problems with the spreading of diseases amongst cattle concentrated in these places.

FISHING

Fish form an essential part of the local subsistence diet and as the still existing (although small-scale) trading of fish meal demonstrates, those tribes located in areas away from rivers or major khor systems will exchange surpluses of grain to obtain it. Before the war, dried fish in considerable quantities would be sold in the market in Wau and Gogrial. Spears and local fish traps are used in the dry season to catch fish remaining in large pools of the river beds or in swamp areas but in the wet season, the rivers and khors run deep and fishing by net or with hooks and line (often paternosters) is the only viable method.

It is the lack of hooks and line for making nets which is most restricting the amount of fishing done by people nowadays. From villages in the Twic areas north of the River Lol the only people who now go to the river to fish are the few who do possess either a net or line. At other times much more fishing would be done in the khors using spears or traps but the lack of rain last year has left both the rivers and khor systems with little water. Spots which usually provide good fishing grounds in other years are now dry. In some cases old fishing grounds are no longer used because of hostilities in the area. The Twic of the northern Adiang section, for example, fish only the Lol and the Alal and no longer go north to the River Kir (Bahr el-Arab).

TRADING

The current trading patterns amongst the various tribes of Bahr el-Ghazal reflect the fairly widespread search for grain that would normally exist at the beginning of the 'hunger gap' in June. The fact that they were observable in May and had been going on for a considerable time before this demonstrates the poor harvests of some areas and the lengthening of this 'hunger gap'. Also, the distances over which cattle and grain exchanges were being conducted demonstrates how completely the previously existing network of bush shops has broken down. These would, in the past, hold stocks of grain until this period of the year when local inhabitants would be able to trade with other local products or purchase dura with money.

Traders from the north and local merchants no longer bring consumer commodities into the rural areas and, though a limited amount of goods can still be obtained from towns such as Abyei and Rumaker, conducting this kind of trade is a dangerous pursuit and is consequently very limited. The table below gives the number of traders and bush shops which existed in the 1950's in the three relevant districts of Bahr el-Ghazal;

		No of traders	No of shops
Jur river	Tonj	104	104
	Gogrial	94	94
Aweil		141	135
Western	Wau	128	97
	Raga	45	39

The profusion of shops in Bahr el-Ghazal at this time illustrates the long history of this network. The province was in fact the first to use standard government measures, introduced in the late 1940's. It is possible to see only the ruins of many of these 'bush shops' today; a line of 3 ft high walls in WunRok, damaged buildings in Mayen Abun now occupied by returnees from the north, an abandoned shop and store now used as an ICRC bush warehouse in Malek Ngok and the remains of a brick-built shop destroyed at the time of Anyanya I.

These shops would sell a variety of items, most of them brought from the north; cloth, tools, beads, fishing lines and hooks, soap, foodstuffs and clothing were all available and these shops would also act as a collecting point for local surpluses of dura and groundnuts.

There is at present a lively market at Milo (1 km from Akon) selling a range of goods far wider than that encountered in any other place covered by the assessment. A full list with prices is given below with figures given in brackets indicating the prices of some goods as at September of last year (source: ICRC Agricultural Report)

In the market area are two tea shops where a glass of tea (with sugar) costs Ls 3.00. By far the most common items in the market were the locally-made clothes and cloth, much of this coming from Southern Kordofan. These things are brought out at some risk to the traders since the government army and militia are trying to restrict the amount of food and trade items coming into Bahr el-Ghazal by this means.

Milo Market May 1990		
Commondity	**Price in LS**	
Jallabiya (polyester)	100-120	(75)
Women's cloth - printed	100	(100)
- black	70	
Women's dress	120	
Sirwal	70	
Child's skirt	25	(40)
Undervest (imported)	40	
Taggia	20	
Damuria mosquito net	250	(350)
Rubber tire sandals (local)	50	
Rubber flip-flops (imported)	60	
Rubber shoes ("Madonna"/"Arusha")	75	
1 roll cellotape	30	
C.1 doz straight pins	1	
Exercise book	10	
100 m spool fishing line (1/2 1b)	200	
toothbrush (chinese)	50	
toothpaste (chinese)	50	
packet razor blades (sokol)	20	
soap - bar	10	
- package (Rex)	15	
Small jar body ointment	25	
chloroquine injection (10ml ampules)	15	(no syringes or needles available)
procaine penicillin + water	40	
salt (per tin tomato paste)	5	
peanuts (per tin tomato paste)	0.50	
peanuts butter (per ball)	0.50	
onions c 1 kg	20	
pressed fish	1	
dried fish (small pile)	0.50	
okra (small pile)	0.50	
tamarind nuts (small pile)	0.50	
green vegetables (small pile)	0.50	

The dominant form of exchange between the Dinka tribes is cattle for grain and the Twic, Malual, Aguok and Awan are all bringing cattle southwards to Paliet where, in May, stocks of dura could still be found. Until February it was still possible to obtain dura in some areas of Apuk and the Kuac Dinka but the large concentration of displaced people in these areas exhausted the supplies. All interviewees indicated the following exchange rates:

Heifer and calf	3 sacks
Pregnant heifer	2 sacks
Small heifer or bull	1 sack

(Note: 1 sack = 5 tins = 90 kg)

During interviews with chiefs they all commented that grain was becoming harder to find. People met on the road returning from Paliet with grain indicated that the above rates were more difficult to obtain, reflecting the increasing scarcity even in this area.

The large distances involved, especially for those coming from the Twic or Malual areas, meant that dura could only be brought back from Paliet in stages. A group of women met whilst returning to Mayen Abun were only able to carry one tin (18kg) at a time; that is, enough to feed an average family over a period of about two weeks, at which time the long trek would have to be made once more.

The Jur were trading small quantities of shea or groundnut oil and honey for Dura from the Paliet, Kuac or Aguok areas:

1 bucket g'nut oil	2 tins (36kg)
2 gallons shea nut oil	1 tin
1 litre honey	2 *'malou'* (6kg)

Some of the Twic would buy salt in the market at Milo to take south to Paliet and exchange there for dura but this was only on a small scale and seemed to have no fixed barter rate. The Twic would also bring a form of fish meal made by drying and pounding a small species of fish caught in the Lol. This they would trade for groundnuts from the Malual or the Awan (in the past, dried fish in significant quantities would be taken from the Twic areas far south to Wau or Gogrial and lorries would return at the beginning of the year bringing grain from the western districts).

Nature of the Present Influx

The large influx of southern displaced people returning to their home areas in Bahr el-Ghazal began at the end of 1989 with the major wave of people arriving during March and April of this year. Interviews with a number of people who had arrived in Akon or were on their way down the road from Mayen Abun established that there is a common pattern to their return. At the beginning of the year they were informed by their chiefs in the shanty areas and camps of Khartoum that transport back home was being provided and that there were stocks of relief food, seeds and tools awaiting them. Chiefs had been rounded up in lorries and taken to the local police stations to receive these instructions. In some of the shanty towns this message was relayed directly to the people by loudspeakers. From January onwards the train was used to transport people as far as Muglad or Babanusa, where lorries would then be available to take them further south to Abyei.

The train would leave every Monday and it was said that on this day the station in Khartoum would be crowded with returning refugees from the south. Delays on the journey seem to have been common, either along the train route in places such as Kosti, or in Babanusa whilst waiting for trucks. It was claimed by one interviewee that several people had died of hunger or thirst during these forced stoppages. The returnees seem to receive relief food for the duration of

their stay in Abyei (although this was not confirmed by all those who were interviewed) but when they leave Abyei to begin the walk southwarads to their homes they are prevented from carrying food and trade items, and in some cases money, by the army and the local militia.

Most of the returnees are going back to their previous homes but given the prevailing food shortages in some areas a large number are continuing south to Paliet or heading towards recognized distribution points (Akon and Mayen Abun) in the hope of receiving relief. The message which they bring with them from Khartoum about stocks of relief items already being in place seems to have prompted some of the indigenous population to gravitate towards these areas also. Those who do resettle in their old villages are largely dependant on friends and relatives who will share any agricultural tools and seeds which they have. In many cases these newly-returned families are now surviving on wild foods collected from the forests (predominantly "*thou*" nuts and tamarind).

During interviews with chiefs of areas to where people are returning they all stressed the most important priority of providing food for these people *in their areas* to enable them to cultivate; if food does not reach them directly they will spend the agricultural season in search of grain or waiting for relief distributions around the major centres.

HOUSEHOLD CONDITIONS

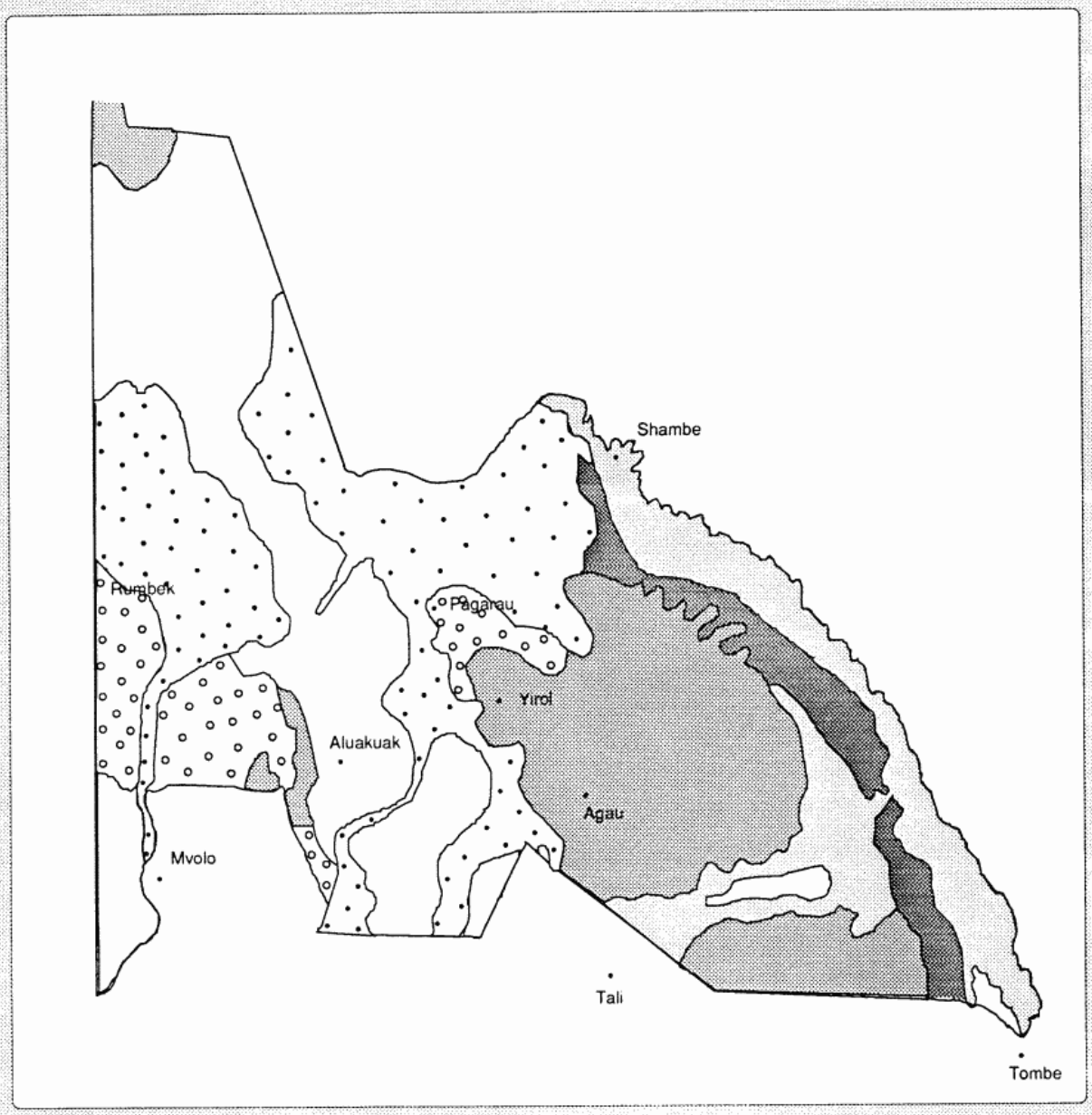
The longer 'hunger gap' presently being experienced in Bahr el-Ghazal meant that in May it was already possible to observe wide-spread dependence on wild foods.

In the main these consisted of the leaves and nuts of "*thou*" trees, wild figs, tamarid, and various wild root crops. Fish were available in most areas close to the River Lol and the Bahr el-Arab. Nutrition data collected during the assessment indicated that in the areas surveyed there was no evidence of widespread malnutrition (average wt/ht 98%) as yet but these surveys were carried out in and around Akon (an area with a reasonable harvest and large market) and the village of Peth (on the River Lol; experienced a good harvest and easy access to fish) so should be viewed with caution. In the northern areas of the Twic the health and nutritional status, especially of the adults, was apparently less good than in other areas. Amongst the returnees the household conditions were fairly meagre, reflecting their recent return although their nutritional status tended to be, on average, slightly better that the indigenous population. Many of them commented on how they had been "very fat" on their return but were now losing this because of the lack of food.

In some areas clean drinking water was non-existent and the available muddy water from khors or the riverbed were long distances from the settlements. Clothing, cooking pots and utensils and agricultural tools were not much in evidence and many inhabitants described having to share a wide range of such items, with their neighbours. Traditional fishing baskets were to be found in most areas where there were local fishing grounds, but there was little

evidence of nets and hooks and the lack of these was a common complaint from interviewees.

In the northern areas which suffered militia raiding it was noticeable that the field sizes tend to be smaller, reflecting possibly the lack of labour available in these areas. Most inhabitants encountered at home in these areas tended to be elderly people with a very small proportion of young men. It is in these areas where fairly extensive re-settlement is going on and there were a considerable number of recently-built huts and luaks and recently cleared fields (small acacia stumps + some burned areas).



EASTERN LAKES AREA

LEGEND

- Flood Region Swamp
- Woodland
- Ironstone
- Grassland/ Thickets
- Toic
- Intermediate grassland

EASTERN LAKES (YIROL, SHAMBE)

PHYSICAL DESCRIPTION

Eastern Lakes (the Eastern Area Council of Lakes Province) straddles the flood region and the ironstone plateau. Lying roughly between 30°. and 31°. 41' and 6°. 10' and 7°. 20', it is bounded on the east by the Bahr el-Jebel and a permanent swamp stretching from Tombe to Shambe. On the north it borders the Nuer of Western Upper Nile.

The soils vary from clay in the swamps, to dark alluvial loams (50%-70% clay) along the boundary of the flood region, to gray sandy loams on the lower slopes of the ironstone plateau, to the shallow lateritic soils on the ironstone plateau. Bordering the flood plain in the South East is acacia forest on sandy soil overlying clay. This gives way to open acacia scrub in the north and west, and finally to deciduous broad-leaved woodland to the west on the plateau itself. Much of the Yirol area is mixed woodland, but, along the river Lau, and some watercourses, are found riverine swamp type grasslands. The alternations between soil types, with their variations in clay and sand content, means that invariably some area or other may suffer either from drought or waterlogging, depending on the pattern of rainfall and river flooding in the year. [1]

POPULATION

The Eastern Lakes area is inhabited by the Cic and Aliab Dinka, and the Atuot (a pastoralist group related to both the Dinka and the Nuer). The 1983 census gave a figure of 214,137 persons for the whole of the Eastern Area Council (excluding Yirol town), with 156,025 in Yirol Rural Council itself. They have their permanent habitations and main cultivations on the ironstone plateau, but spend the dry season mainly in the pastures along the Bahr el-Jebel around Lake Nyubor. [2]

ECONOMIC ACTIVITY

Agriculture

The people of the area have a variety of soil types to choose from, but generally the higher sandier soils are of low fertility, while the low-lying, more fertile soils, are vulnerable to flooding either from high rivers or heavy rains.

The Aliab Dinka live on mainly clay soils and have a limited area in which to cultivate. They plant one type of dura (*rap jang*, or *nyanjang*), and try to

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[1] For a physical description of the area and of the soils see Jonglei Investigation Team Report, 1954, vol I, pp.137, 143; and Southern Development Investigation Team Report, 1954, pp.36, 64-6.

[2] Southern Development Investigation Team Report, 1954, Table 14, p.79.

get three harvests a year, the second being from the regrowth of the first. The Cic and Atuot cultivate mainly on the sandy soil (*liet* in Dinka), though in dry years they may also plant extensively on the clay soil.

Their first crop of dura (*nyanjang*) is broadcast with maize, beans, cowpeas, and other crops (green gramm, pumpkin, okra). A second crop of later maturing dura (*kec*) plus another variety of earlier maturing dura used mainly for beer (*nyandok*) is planted about a month after the rains begin. At the same time bullrush millet (*awo*) is planted on lighter soils, and simsim and groundnuts are also planted. Oil is also made from the nuts of the sheanut tree (*lulu*).

In the past the first crop (confined mainly to household plots) was planted in April and harvested in August, while the second crop was planted in May and harvested in October and November. The maximum family unit cultivated was 2-3 feddans (less if on clay soil).[3] Local farmers now claim that for most of the decade of the 1980s the pattern of rainfall has changed, the rains beginning in May, rather than April, and ending in October. This has caused problems with the late maturing variety of dura, which they now say is usually harvested in December.

Fishing

Because of the close proximity of a large number of rivers, streams, lakes, and pools, fish are an important part of the local diet. Large parties of several hundred persons armed with fishing spears can fish in the larger lakes at one time, but individuals also fish with traps, hooks, and nets. Fish is eaten fresh, dried, or prepared in a special way in which it is dried, shredded, and pressed into small lumps or large loafs.[4]

Cattle

Cattle and smallstock are still the main concern of the people of the area. The total of the Yirol herds is less than the herds of Rumbek or Tonj. The 1977 aerial survey indicates that there were about 102,000 cattle in Yirol, 263,000 in Rumbek, and some 334,000 in Tonj (which includes Thiet). In Yirol there were also about 30,000 sheep and goats. Using the proportions of tribal herds listed in 1954, we can suggest that the pre-war herds were: Cic - 27,000 cattle, 16,000 sheep and goats; Aliab - 32,000 cattle, 14,000 sheep and goats; Atuot - 41,000 cattle, 14,000 sheep and goats.[5]

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[3] Jonglei Investigation Team Report, 1954, vol I, p. 365

[4] For an idea of the scale of pre-war fishing parties in lakes, see the photos on pp.102-109 of John Ryle, *Warriors of the White Nile. The Dinka*, 1982

[5] Sudan National Livestock Census and Resource Inventory, Vol.20B, tables 20B.01 and 20B.06. The figures given in the 1954 Jonglei report were estimates only, and not based on actual counts. The 1977 aerial census cannot tell us whether cattle from Yirol were to be found outside the district boundaries at the time of the survey.

The Aliab graze their cattle along the river, and share pastures with the Bor Dinka and the Mandari. The Atuot share pastures with the Mandari from Tali, but they also make use of pastures along the Lau river and Lake Nyubor. The Cic send their cattle to the riverine pastures around Shambe, but a number also go northwest to the pastures of the Lau River and Lake Nyubor, according to the conditions along the Bahr el-Jebel.[6]

The people around Yirol, the Cic and Atuot especially, entered into the cash economy earlier than many other pastoralists in the Southern Sudan. A Yirol Co-operative Society was established as early as 1950 for the marketing of agricultural products. Yirol was also an early cattle market centre, and Atuot traders especially were involved in cattle sales and the cattle trade for many years before the outbreak of the current war.

Relations with Neighbouring Areas

The location and seasonal movements of the Aliab bring them in frequent contact with the Bor Dinka and with the Mandari of Tombe. There is considerable intermarriage between the Aliab and these two peoples, but there can also be conflict in the pastures when grazing is scarce. The Atuot also have a complex set of relations with the Mandari of Tali.

The swampy area around Lake Nyubor, and the rivers Lau and Gel which emerge from the lake, attract people and cattle from a wide area: Agar and Luac Dinka from Rumbek, Nyong and Dor Nuer from Upper Nile, as well as Cic and Atuot from Yirol. These grazing lands are sites of potential conflict in years when floods along the Bahr el-Jebel leave no alternative, but access to and use of common pastures used to be negotiated at regular inter-tribal meetings involving chiefs from different districts and provinces. The Agar Dinka in particular have larger herds than the Cic and Atuot combined; in 1954 it was estimated that the Agar alone had nearly as many cattle as the whole of Yirol district.

In addition to these complex relations between various pastoralists of the area, the Atuot, and to a lesser extent the Cic, also come into contact with the agricultural Jur south of Rumbek and around Mvolo in Eastern Equatoria. The two groups of people frequently rely on each other for food.

Current Situation

Agriculture

The SPLA have occupied Yirol town since December 1985, so there has been little dislocation from the war in the Yirol area. The main problems have arisen from environmental difficulties compounded by lack of services. Most

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[6] Jonglei Investigation Team Report, 1954, vol I, p.217.

farmers claim that due to a contraction in the rainy period which has lasted for most of the past decade, they are having trouble spacing their planting to catch the rains. The late-maturing *kec* dura, on which people depend the most, seems to have suffered reduced yields. As one villager put it, "God has not been happy with grain since this war began." The overall reduction of grain harvests has forced people to rely increasingly on their livestock.

Yirol suffered less from the 1988 flood than Jonglei or Western Upper Nile, because most villages are situated on high land well above the flood level. The only people to suffer directly from the flood were the Aliab and the Ador section of the Cic, both peoples living along the Bahr el-Jebel. The main problem for those living on the lighter, sandier soils around Yirol appears to have been a sudden cessation or decrease in the rain around about October 1988, just as the late-maturing dura and millet were about to ripen. It was then attacked by an insect of the weevil family (*Cuculidae*), of a type unknown to the local farmers but common in Lokichokio (it may have been introduced in the first shipment to Yirol in 1988). Other cultivations close to the toic were attacked by large flocks of "dura birds" (*amor* in Dinka). Groundnuts, vegetables, and some *nyanjang* dura around inland homestead plots were harvested in 1988, but the main fields of maize, *kec*, and millet were largely destroyed. People were able to get water-lily from the toic, and they were further compensated by the good fishing which was had in the streams and pools that year.

Others had to go further afield to find some dura. The harvest had been better in some areas of the Apak Atuot section where the soil is a mixture of clay and sand (mainly south of Aluakluak), and better harvests were also reported among the Agar Dinka and the Jur-Beli of Mvolo and other areas south of Rumbek. Many Cic Dinka went temporarily to Apak, Agar and Jur areas, some to exchange cattle for grain, others to stay throughout the dry season of 1988-89, working to obtain dura and returning to their home areas in time to cultivate in May-June 1989. Others, notably the Luac section of Atuot (from the immediate vicinity of Yirol), have left more or less permanently to settle in better agricultural lands, whether among the neighbouring Apak Atuot, or the Agar, the Jur, and even some going as far north as Akon.

In 1989 cultivation on the whole was better, especially west of Yirol. Rains began in early May and ended in October-November (see Yirol NDVI Chart No 16). There was some decrease in the rains in August and again in September, and these slight drops were said to have affected the *kec* dura and millet fields on the sandy, drier soils around Pagarau and Agau (see NDVI Chart No. 17 & 18), and the harvests of late-maturing crops may have been reduced. However, the early maturing dura and vegetables planted around homesteads survived, but were planted in small quantities and were soon consumed. During the cultivation season some people were fed with relief supplies brought in by the ICRC. Many were also issued with serena sorghum seeds, a fast-maturing variety, but due to faulty instructions from the local SRRA, it was planted late in the year, after the planting of *kec*, and was not yet ripe when the rains ended in October.

Chart 16

Yirol NDVI

1 Jan - 30 Nov 1989

(6o20'N,30o20'E - 6o45'N,30o30'E)

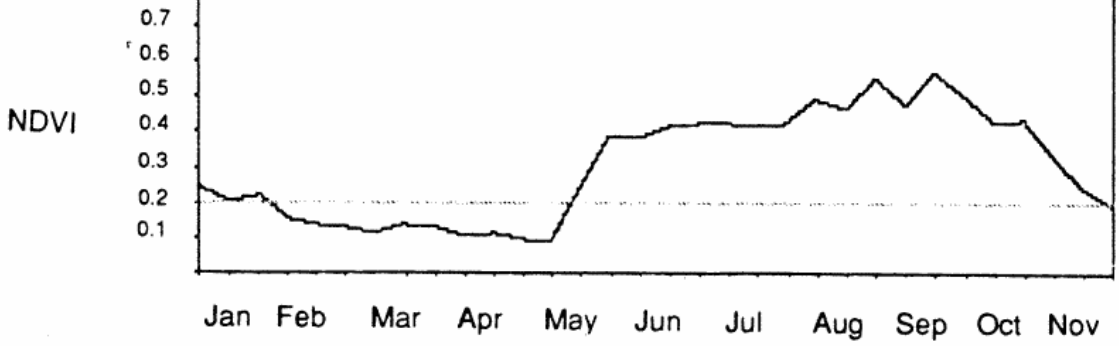
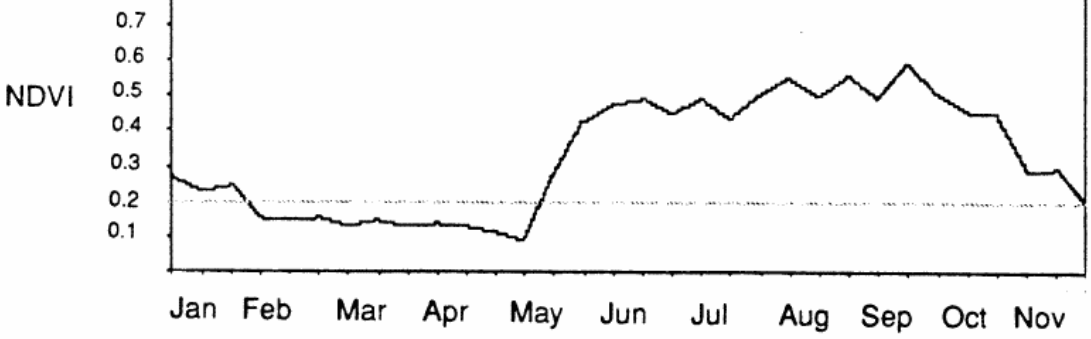


Chart 17

Pagarau NDVI, 1 Jan - 30 Nov 1989

(6o45'N, 30o25'/30'E - 6o32'N, 30o28'/30'E)



Agau NDVI, 1 Jan - 30 Nov 1989

(6o15'N, 30o35'E - 6o18'N, 30o38'E)

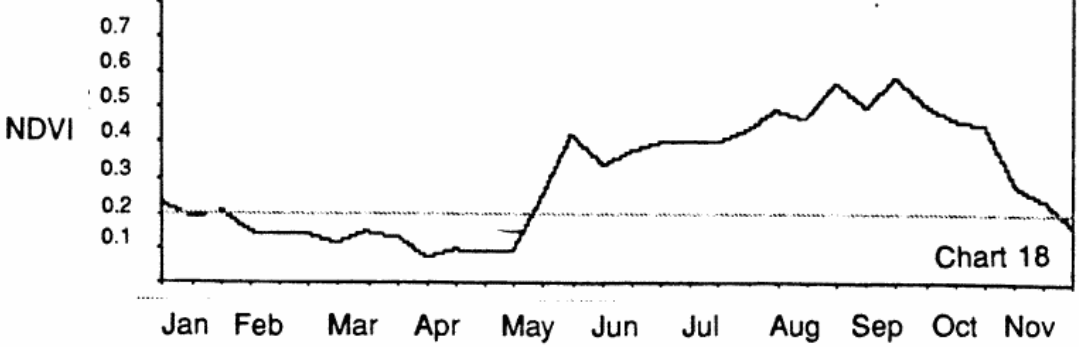
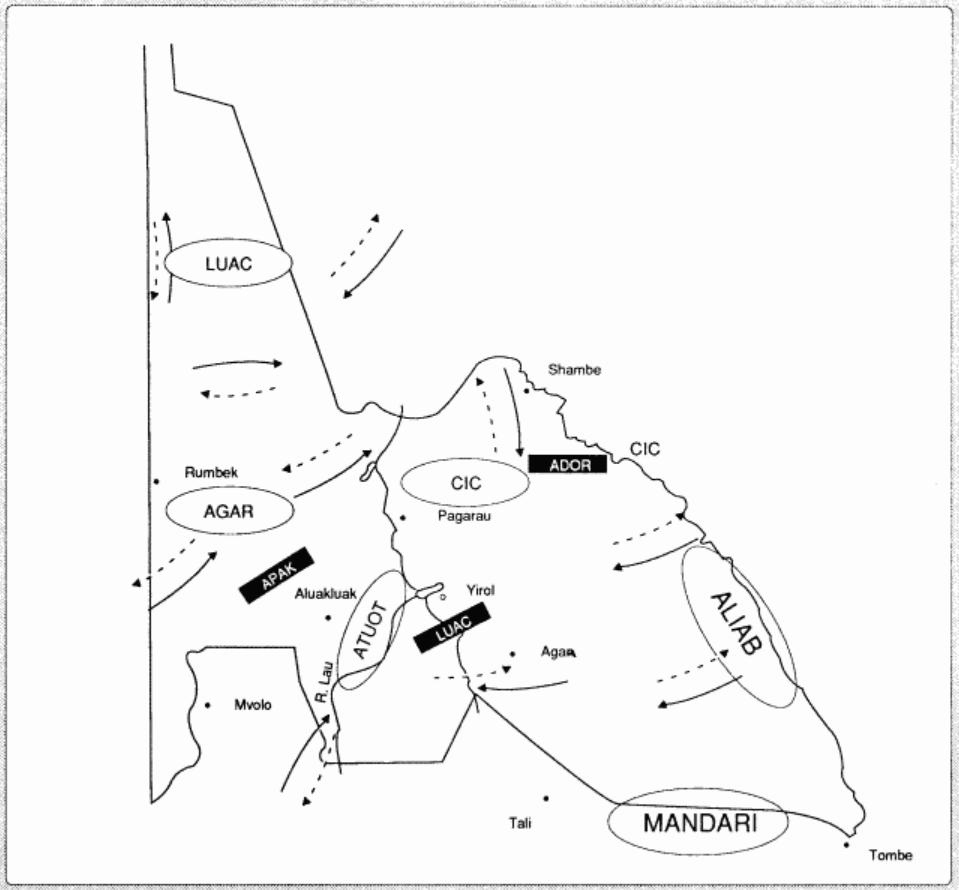


Chart 18

CATTLE MOVEMENTS IN EASTERN LAKES



LEGEND

ADOR — Section

CIC — Tribal Group

Wet season movements

Dry season movements

Livestock

The health of cattle is another major concern among local people. Standard diseases such as rinderpest and CBPP have been on the increase. Others have come recently and are associated with the 1988 flood, which did affect pastures, even if it spared homesteads and cultivations. Diseases which have spread since the flood are cattle dysentery *(ajolthok)*, haemorrhagic septicaemia (*atwiny*) and snails (*acom*). There apparently had been large livestock losses to disease prior to 1988, and the herds of many sections of the Cic, as well as the Luac Atuot, are reported to be much reduced.

The 1989 ICRC Vaccination figures for all of Lakes (taking in cattle from Yirol, Rumbek and Thiet areas) gave a total of 360,000 head of cattle vaccinated for rinderpest. This was limited to the 1-3 year age range, and even within that group very few cattle of 2-3 years were seen, indicating high mortality in that age-group. Of the above figures, 62,250 head of cattle were from Thiet, the rest were from Rumbek and Yirol. The Rumbek and Thiet herds together are larger than Yirol and many cattle from Rumbek share pastures with cattle from Yirol. We must therefore assume that the remaining figure of 297,750 cattle vaccinated out of Yirol represents a large number of Agar and Luac Dinka cattle as well.

The biggest worry among Yirol cattle owners now is that with the mixing of cattle in the dry season toic their own herds will become infested by cattle coming from outside the vaccination programme area. The main fear is of CBPP, rather than rinderpest. The Atuot, especially, have tried to interdict non-vaccinated cattle from entering their toic, and even those bringing home cattle bought in the market are intercepted. There have been fights in the toic, not only between Atuot, Cic, Agar and Nuer, but between sections of Atuot themselves.

There is a notable absence of sheep and goats in the area. Local testimony indicates that, as in other areas visited, sheep and goats have been slaughtered for food at an increased rate since the war began both to provide food in the absence of grain, and to preserve the cattle herds. A few goats and sheep are sold at the livestock auction, though apparently not to butchers in the town to be slaughtered for meat. The scarcity of sheep and goats is indicated by the price they fetch, LS 200, which is the same as for a small bull today, or the same as the remembered price for a medium-size bull immediately before the war.

Markets and Exchange

The presence of an active cattle auction in Yirol and a vigorous network of cattle exchange has enabled people to overcome many of the recent food shortages. People come to the Yirol market to sell cattle from as far as the Nuer of Western Upper Nile and the Rek Dinka of Gogrial. Those coming for grain sell their cattle for cash in order to buy grain, usually outside the town. In 1988 Cic Dinka and Luac Atuot also went to the Agar and the Apak Atuot for grain, which was in short supply. After the 1989 harvest people went again to the Apak area. Comparison of rates of exchange for 1988 and early 1990 indicate an improvement in the grain supply (see overleaf):

	1988 (Agar & Apak)	1990 (Apak)
Small bull	3 tins dura	1 sack dura
Weaned calf	-	1 sack dura
Small heifer (large calf)	4 tins dura	2 sacks dura
big bull	-	2 sacks dura
pregnant heifer	1 sack (5 tins) dura	3 sacks dura (sometimes with an additional tin of groundnuts)
1 tin dura	LS 100	LS 75 (LS 25 at end 1989)

The Yirol cattle auction was very active at the end of 1989 and early 1990. In March, after government planes bombed Yirol town, many people moved to the countryside and prices in the cattle dropped. The figures given for late 1989/early 1990 and May 1990 (after the bombing) show a drop in most cattle prices, because of the reduction of buyers, but also indicates a rise in grain prices as stocks ran short. A further comparison of cattle/grain exchange with the market prices indicates that people may be able to get more grain for their cattle by making direct exchanges rather than first selling their cattle for money.

Yirol Livestock Prices

	Late 1989/early 1990	May 1990
Chicken - hen	-	LS 30
- cock	-	50
goat or sheep	-	200
small bull	-	200
small calf	-	500
heifer calf	LS 1000	1000 (= 2 sacks dura)
1-2 yr heifer	1400-1700	-
pregnant heifer	1500-2500	1000-2000
pregnant cow	1600	-
big bull	2000	1000
song bull	2500	-
good cow	2500	2000
cattle for butchery	500 (rose to 1500-2000)	500
1 tin of dura	50	100

The Yirol cattle market appears to be the centre of quite an extensive internal cattle trade. Yirol traders have gone to Ler to buy cattle. At the same time cattle traders come to Yirol from Bor, Tombe, Thiet, and even as far away Milo/Akon. Traders also used to come from Tali until very recently. The traders from Akon travel some 17 days by foot, and sell items from the Akon market (mainly clothes) for cash, which they use to buy cattle at the Yirol auction. The cattle are then taken back to Akon.

The Yirol market itself sells a combination of local products (mainly dried or pressed fish, groundnuts, laloub nuts, and tobacco), and finished goods imported from Akon. A comparison of Yirol and Akon market prices show more than 100% mark up on foods from Akon. Fish is one of the most frequent items bought.

Yirol Market			
(14-15 May 1990)			
Meat, 1 Kg	LS	10	(up from LS 5 at end of 1989)
pressed fish - large loaf		100	
- large ball		20	
dried fish, 1 pile		5	
fresh fish, 9 tilapia		10	
salt, small tin		10	(from Akon)
groundnuts, small pile		1	
laloub nuts, large pile		0.25	
tobacco, large lump		2	
grass woven mat		35	
woven basket, large		20	
small		5	
wooden seive		25	
wooden pipe bowl		20	
children's ivory bracelet		30	
large ivory armlet		350	
firewood, small bundle		1	
penicillin		50	
tetracycline capsule		5	@
jallabiya		250-300	)
woman's cloth		250	)
dress		250	)
skirt		150	)
shirt		200	)
trousers		200	) brought from Akon/Milo
cotton undervest (mfg)		150	)
underpants (synthetic)		100	)
rubber bath sandals		130	)

MOVEMENT OF PEOPLES AND THE PRIORITY OF NEEDS

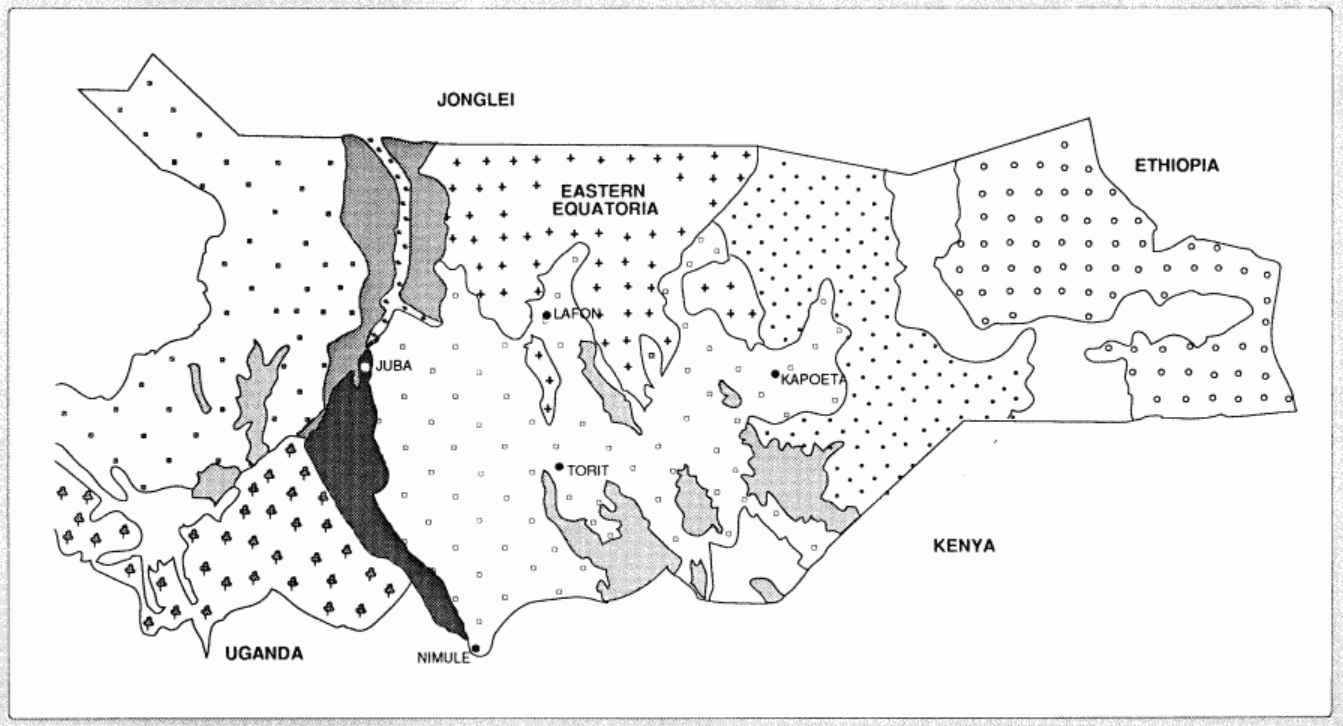
There are some areas of the Cic Dinka and the Luac Atuot have been depopulated as people have left because of drought and the death of livestock. Some of these have moved to neighbouring Rumbek district, or even to the Jur of Mvolo in Eastern Equatoria, but the majority seem to have remained in Yirol district, setting in more favoured areas. At the same time there has been a movement into Yirol from Western Upper Nile. One resident Nuer chief reported 110 Nuer families around Yirol alone. Most of the Nuer who entered the area this year were part of an abnormally large seasonal movement, but some families may intend to stay throughout the coming wet season.

As with people, so with livestock; there has been a large circulation of cattle into and through Yirol area via the cattle trade, and it is difficult to make an accurate assessment of permanent cattle numbers. Yet the main priority of the people of Yirol, as far as food security is concerned, is the health of their cattle. The most telling comment we heard on the general situation in Yirol came from one man in Pagarau, who wondered why we are asking so many questions about the crops, which God alone could help, when what the people really needed was medicine for their cattle.

Despite reports of grain shortages, the nutritional state of the people was relatively good. In Pagarau and Aroup Nyiel, two villages where crop failures were reported, 10% and 13% of the children measured were found to be moderately malnourished, while in a cattle camp near Aroup Nyiel only 3% of the children appeared to the moderately malnourished. Such figures are not unusual for the seasonal hungry period, though they probably indicate that the hunger gap has set in early.

Farmers did express some concern for the declining efficacy of late-maturing *kec* dura and seemed keen to be supplied with more of the fast-maturing serena type, known locally as "UN" after last year's supply from OLS I. Clearly more fish is available in this area than in some others the team visited, but nets and hooks are scarce in Yirol as well.

The consensus of those interviewed was that the first need was veterinary medicine for a full range of diseases (rinderpest, CBPP, haemorrhagic septicaemia), seeds and tools, and fishing nets and hooks. The provision of these would help to reinforce local food production and the local economy.



EASTERN EQUATORIA PROVINCE

SOIL TYPES

LEGEND

- Cotton soil dense thickets
- Toic
- River valleys dense vegetation
- Higher wooded ground

Chart 19

Kapoeta NDVI, 1 Jan - 30 Nov 1989

(4o45'N, 33o30'E - 4o55'N, 33o33'E)

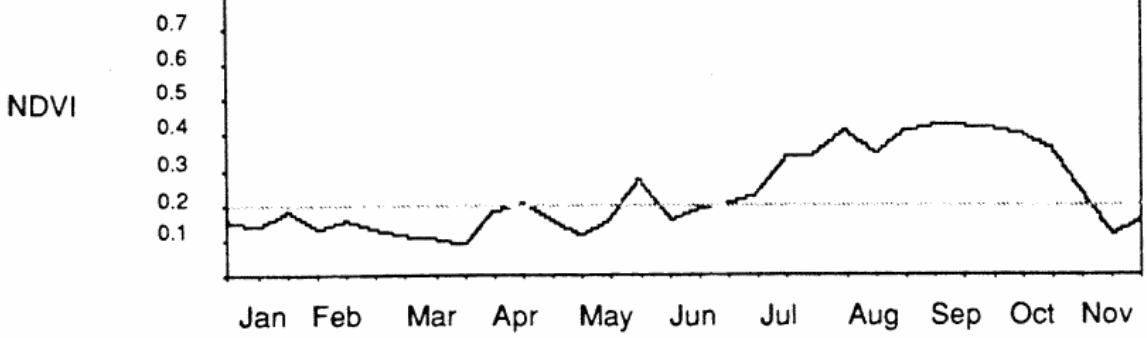
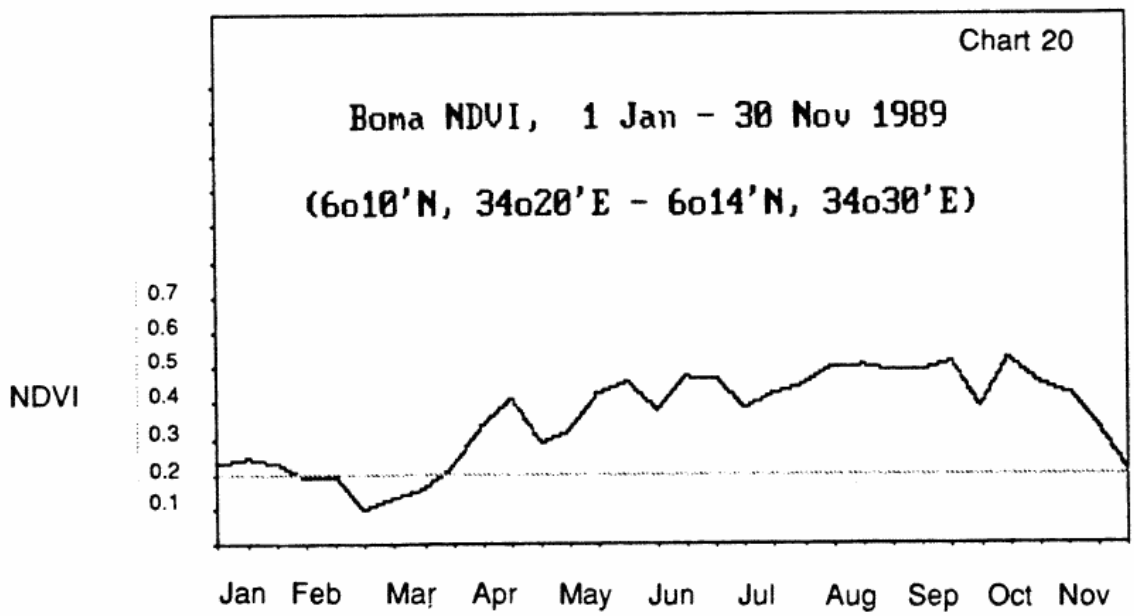


Chart 20

Boma NDVI, 1 Jan - 30 Nov 1989

(6o10'N, 34o20'E - 6o14'N, 34o30'E)



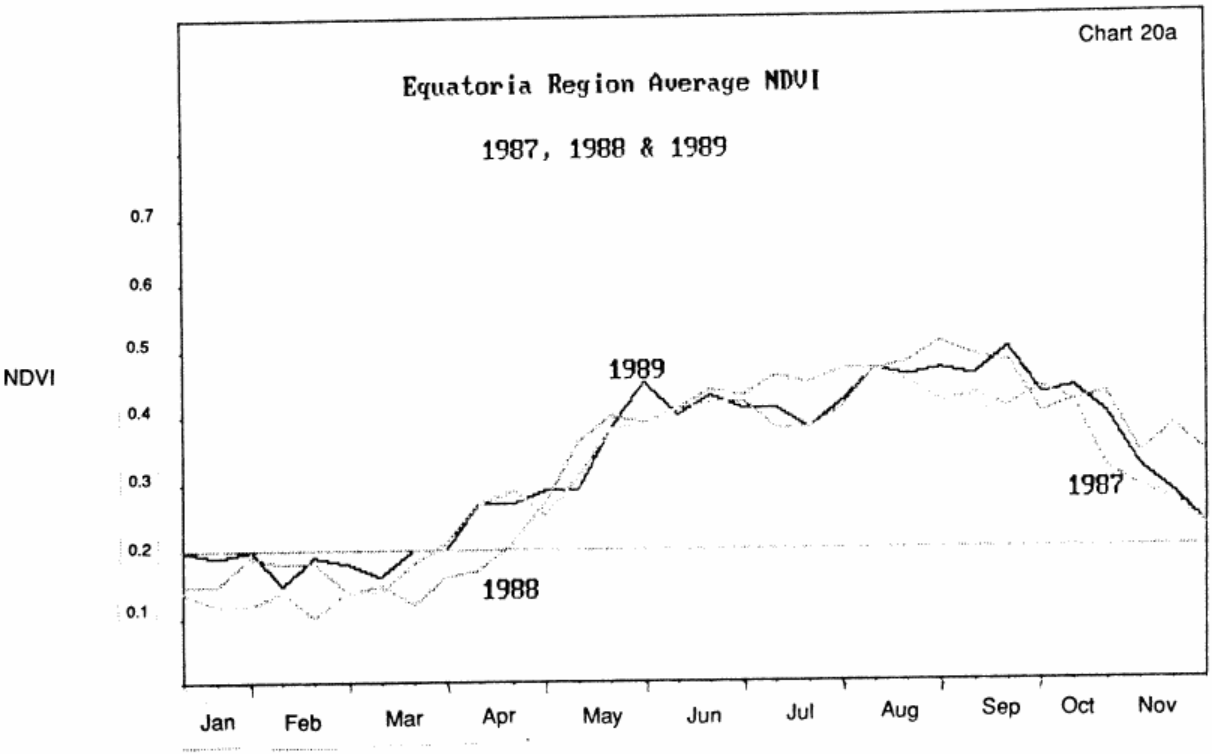


Chart 20a
Equatoria Region Average NDVI
1987, 1988 & 1989
NDVI
0.7
0.6
0.5
0.4
0.3
0.2
0.1
1989
1987
1988
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov

EASTERN EQUATORIA (KAPOETA, BOMA, TORIT)

KAPOETA

Of all places reported to have suffered a drought in the Southern Sudan last year, Kapoeta was by far the most severe (see NDVI Chart No. 19). Considerable food assistance has been sent into Kapoeta to feed the local people, mainly Taposa.

The people of Kapoeta (Taposa, Boya, Didinga) are cattle keepers. There is an estimated 200,000 head of cattle in the district, of which only about 71,000 have been vaccinated for rinderpest and CBPP. Despite the drought very few cattle have been brought on the market in Kapoeta, and prices for animals sold there range from LS 1000 to LS 1500 for a cow, and about LS 150-250 for a goat. The price of cattle is lower than in many other areas visited.

There is a market in Kapoeta where meat, vegetables, and maize are sold. Meat is about LS 10-20 per kilo, and maize about LS 15-20 for 3 kg.

BOMA

Boma is part of Pibor District in Jonglei Province, but it is close to the border of Eastern Equatoria, with which it is linked by road. For the purposes of this report it is included within Eastern Equatoria.

Boma is inhabited by the Hill Murle who are cultivators and own very little livestock. They have a number of relations with the cattle-keeping, or Plains Murle of Pibor. What cattle the Hill Murle possess are usually kept with their relatives among the Plains Murle.

The Hill Murle cultivate dura, maize, cassava, sweet potatoes, groundnuts, cowpeas, beans, and manioc, and also grow bananas, mangoes, sugar cane, and limes. They collect honey and shea nuts for oil.

Most crops are planted in March, with a second planting of dura in September, but the crops are planted according to the spacing of the rains. Last year rains were intermittent (see NDVI chart No. 20), and this caused some problem in the timing of cultivation and harvesting.

This year a brief interruption of rain in April has affected the early maize crop, which may cause a reduced yield, but those farms inspected in the hills were doing well, and people were brewing cassava beer to organize work parties to plant the far fields. Homesteads still had some quantities of dura and maize, though the main staple at this time of year is cassava. This was being supplemented by bananas, mangoes, groundnuts, and beans. The nutritional state of the children was reasonable for the time of year (only 13% appearing to be moderately malnourished). The villages in the hills had been supplied with maize seed through ACROSS, and the existing aid programme seems to be meeting most needs.

TORIT

Co-Operatives

The New Sudan Council of Churches, headed by the Bishop of Torit, Bishop Taban Paride, has been working with co-operatives and the local Women's Union established by the SRRA in setting up a system of barter exchanges which is helping to redistribute local surpluses to areas of local deficit. The people of Torit Diocese are mainly agriculturalists, owning little livestock. The region being mountainous, the rain pattern can affect villages in different ways, producing both good and poor harvests in close proximity to each other. Local surpluses this year have been found at Kyala, Lopit, at Ikotos, while shortages have been reported close to the Ugandan border at Upper Talanga, Owinykibul and Parajok.

The NSCC has brought in a variety of commodities, purchased in Kenya and Uganda, such as soap, salt, plastic shoes, cooking utensils, and clothing, which have been distributed to the Women's Union and Co-operatives in Torit itself. Local famers, some coming as far as twenty miles away, have brought both dura and maize in to be exchanged for these commodities. Some 2000 sacks of dura and another 2000 sacks of maize were collected in this way for distribution to areas suffering from food shortages.

The NSCC would like to expand this system into other areas beyond Torit town, and hopes to train a nucleus of co-ordinating groups in various centres. The bringing in of commodities must be carefully timed to coincide with the harvest. Otherwise farmers may be tempted to barter much needed reserves if goods are brought in at the end of the dry season.

Community Schools

A further development of the co-operative idea has been the community school. Where schools have been set up the NSCC has brought in clothes for the school children. The parents of the children are required to bring in a certain amount of grain in order to receive the clothes. This grain is then used to feed the pupils and the teachers of the school. This initiative has been very well received in the area, and could well serve as a model for community schools in other regions.

Refugees and Returnees

There are some 57,000 Sudanese refugees in Uganda, most coming from Eastern Equatoria. Many are returning under the encouragement of Bishop Taban and the NSCC. An average of about 50 returnees a day have been coming back the Sudan, and it is reported that already some 8000-10,000 Acoli have returned. It is hoped that more will be persuaded to return during the months of June, July and August, in time to plant cassava, potatoes, and simsim. Food reserves will have to be established to accommodate returnees.

TIBARI

Tibari had a registered population of 5600 as of 24 April 1990, in households averaging 9 people. These were predominantly Bari with some Mandari tribes.

Tibari is being re-established on the site at a Bari village destroyed in 1988, at which time the inhabitants fled to Juba. The sorrounding area is said to have contained 16,000 people before the war. Remains of the former habitations and cultivated plots can still be seen, indicating that Tibari was once fairly extensive. The current inhabitants began leaving Juba at the beginning of this year, settling first in Mogiri camp, before being transferred to Tibari on 5th April. Consequently, the site is still being established, fields cleared, and houses being build. Tibari is not a displaced centre nor a resettlement site. It is rather a revived village consisting predominantly of previous inhabitants and some people new to the area. In this sense it is unique.

The residents were unable to bring much food or many personal possessions with them when they fled Juba. For the same reason there was an absence of small stock - only 2-3 families had managed to bring their goats with them and only 2 goat folds, one with 20 tethering pegs, the other with 56, were seen.

The surrounding area is used for cultivation not for cattle. The main crops grown were maize (katumani variety, 45 days to mature), dura (*landi*, a grain similar to serena), vegetables such as tomatoes pumpkin and okra, groundnuts and sim sim.

At present people are living almost exclusively on wild foods collected from the surrounding woodland. These foods include: '*loros*' (Bari) or '*koljok*' (Mandari) a wild fruit, the seeds of which are poisonous and have to be washed, soaked and dried in the sun, before being ground into a paste. Another food is '*doyo*' (Bari) a wild pea-like vegetable, which is ground up and made into a porridge. Other foods include '*lenget*' (Bari) or *nabak* (Arabic) a berry chewed as a sweet by children, and '*kidi*' (Bari) another berry like-fruit.

Since most of the inhabitants of Tibari are recent arrivals, they appear to be adequately nourished at the time of our visit. However, their condition is bound to deteriorate as they continue to rely on wild foods alone. 4 people were said to have died of hunger over the 3 days prior to our visit. A nutritional assessment of children between the ages of 1-5 was carried out (because of lack of time, only Muac/ht rather than weight/ht measurements could be taken). Of children surveyed, the results appear below.

Site	Date	Sample size	Mean MUAC/Ht	percentage of sample <70	<80	>80
Tibari	24-4	50	86	2	24	74

It must be noted that in times of food scarcity it is the children who traditionally receive priority over food. Therefore it is quite possible that, in Tibari and elsewhere, it is the elderly who are the most vulnerable group, and in areas where surveys of children do not show alarming results, this may be masking suffering in other sections of the population, i.e. the elderly.

Water is another problem. There are 8 water holes in the area, but it is claimed that these are inadequate for the current population. It is possible that some holes have silted up either partially or completely.

Firewood and building materials are adequately supplied from the nearby woodland.

GENERAL CONCLUSIONS

The decade of the 1980s was a period of generally low rainfalls throughout the Sudan, as the comparative NDVI charts indicate. Rains have tended to start later, in May rather than April, and the rainy season has contracted. This, by itself, would cause some difficulties for local farmers. In the Southern Sudan this period of environmental stress has coincided with the civil war. Thus the rural Southern Sudanese have had to face natural difficulties at a time when they have lost the services they had come to rely on to alleviate such difficulties. The transportation network of road and river suffered, the commercial network largely disappeared, veterinary programmes came to an almost immediate halt, wells were destroyed and hand pumps fell into disrepair, and the health service ceased to function outside of the major towns.

1988 was a year of severe flooding which affected most of the riverine areas of the South. 1989, by contrast, was potentially one of the best years for agricultural production in the past decade. Yet the state of the people was such that they could not fully take advantage of this. The contraction of exchange networks severely restricted the mechanism for distributing local surpluses beyond their immediate area. The shortages of the previous years magnified the effect of local shortages this year.

The aim of OLS II is not to distribute food for everyone. Rather it is to target specific groups, to assist methods of increasing local production, and to provide for the stockpiling of reserves.

To achieve these objectives it is necessary to work as closely as possible with local organizations and officials in the distribution of supplies. The co-operative system being developed in Torit could be encouraged in other regions. Local chiefs also can play a crucial part in organizing the distribution of food, seeds, tools and fishing equipment, or in organizing food-for-work schemes, as they already had the responsibility for many of these activities before the war. This philosophy is now actively encouraged and supported by the SRRA, and the role of chiefs should be highlighted in project design and implementation. This report incorporates many ideas and recommendations initiated by chiefs in meetings with the assessment team.

RECOMMENDATIONS

INTRODUCTION

The most pressing need within rural Southern Sudan is for local people to become self sufficient in food production. The regional narrative sections provide ample data for a good understanding of the current situation, and as is mentioned elsewhere, trends we have identified replicate themselves in all the regions of Southern Sudan.

Within the section regarding recommendations we have attempted to provide figures, by category, of food needs that would have to come from external sources. It is equally, if not more important, to study and support traditional mechanisms that assist in improving local food supply.

We have briefly raised issues that we strongly feel are key to this process below, but advise that each area of support to local food supply systems should be the subject of joint UN/SRRA investigation leading to the formulation of separate programmes and projects closely tied together to give maximum impact.

FOOD ASSISTANCE

After careful analysis of the food supply situation in all the areas visited by the assessment team it is felt that the food needs should be categorized and prioritized in three ways.

1. Hard hit areas, ie immediate and urgent needs. (see table 1)

2. Food for people returning to home areas from outside Southern Sudan. (see table 2)

3. Buffer stocks, these to be established to cover future acute food needs for vulnerable populations particularly in times of food crisis during the hungry seasons. Mechanisms for use would include feeding of valuerable groups, food for work and through cooperative exchanges.

There is no perfect formula to estimate buffer stock needs but the overall pattern of increased hunger is fairly uniform in most of rural Southern Sudan during the traditional hunger gap. Thus whatever calculation is applied can be considered appropriate for the area as a whole. What we would recommend is that ways of providing food be found that get away from free food handouts; cooperatives, for example, could serve effectively in this. Further careful study of this issue is called for.

Table 1. Areas of urgent and immediate needs

Area	Target population	Food needs
Northern Bahr el-Ghazal (Rural)	30,000 families	5,400 MTs
Jur areas (B el-G)	5,000 families	900 MTs
Ayod	2,870 families	630 MTs
Sobat (Nasir,Ulang, Abwong and Lou Nuer from Waat)	7,000 families	1,000 MTs
North Bor - Kongor	2,870 families	630 MTs
Kaya[1]	7,500 families	1,200 MTs
Kajo Kaji[1]	7,500 families	1,560 MTs
TOTAL	**62740 families**	**11320 MTs**

NB:
1. Allocations for Kaya and Kajo Kaji include displaced from Yei. Needs calculated for 5 months, not 3 months as in previous UN assessment.
2. Deliveries to Kapoeta, Torit and Nimule have already covered immediate emergency requirement.
3. Food needs bare in mind logistical constraints.

Table 2. Food needs for Returnees

Area	Target Population	Food needs
Northern Bahr el-Ghazal	50,000 people	2,400 MTs
Tibari [1] (South of Mongalla)	5,600 people	269 MTs
Nimule area (returnees from Uganda)	10,000 people	480 MTs
Northwest Upper Nile	7,000 people	252 MTs
TOTAL	**72,600 people**	**3,401 MTs**

Note: All calculations based on 16 kg/person/month

REQUIREMENT FOR BUFFER STOCKS

Food reserves held in anticipation of future emergency needs would be a sensible development in South Sudan's overall food strategy. Until on farm reserves have returned to acceptable levels and trade and economic patterns have normalised there will continue to be a high risk of food insecurity. Minor variations in climatic conditions or seasonal changes in access to food are likely to have a disproportionate effect on the population's health and nutrition status. Even quite small reserves, strategically placed, could play an important part in ensuring vulnerable groups do not go without food in times of crop failure and an extended hungry season.

Costs of procurement and placement tend to limit the amount of buffer stock affordable. A further restriction will be the capacity to store and manage food without unacceptable levels of loss. Nevertheless a modest buffer stock programme could be cost-effective if initiated with appropriate training inputs and some investment in store construction and rehabilitation. Certainly a well supervised and implemented scheme could be much cheaper than emergency deliveries of food by air to remote places in response to future localised crises.

Disbursement mechanisms should focus on targeted feeding of high risk groups, food for work when no other employment opportunities exist and through cooperatives in periods when flood or drought have caused unusually high food prices.

Taking into accounts costs, disbursement mechanisms, current levels of risk of food insecurity and overall operational and logistics capacity an initial buffer stock of grain for the vulnerable rural area of South Sudan is of the order of 10-12,000 mt.

In relation to population size and current food insecurity this is similar to the requirements for areas of the dry belt of Northern Darfur and N. Kordofan. Although not calculated in this way, it is approximately equivalent to 3% of average cereal consumption. A quantity double this amount (say 20,000 to 25,000 mt)* would afford more security and must be aimed at as physical and management capacity increase. Details of the siting, management and release mechanism for the buffer stock will be published separately.

* See table 3

Table 3. Requirements for Buffer stocks*

Area	1983 Pop.	At risk population (residents)	Buffer Stock MTs	At risk population (transitory)	Buffer Stock MTs
Kapoeta (rural)	184,220	22,106	**1,768**	5,527	**443**
Torit (inc Lafon)	77,595	9,311	**744**	2,328	**187**
Nimule + Ikotos	35,713	4,286	**343**	1,071	**87**
Bor (2) (rural)	158,815	19,058	**1,525**	4,764	**382**
Kongor (rural)(1)	134,325	16,119	**1,290**	4,030	**323**
Ayod	77,184	9,262	**741**	2,316	**186**
Waat	109,010	13,081	**1,047**	3,270	**262**
Pibor(inc Boma)	73,617	8,834	**707**	2,209	**177**
Yei (rural)	217,319	26,078	**2,087**	6,520	**522**
Kajo Kaji	96,063	11,528	**923**	2,882	**231**
Ler	81,403	9,768	**782**	2,442	**196**
Yirol	156,025	18,723	**1,497**	4,681	**375**
Nasir	103,790	12,455	**997**	3,114	**250**
Maiwut	99,237	11,908	**953**	2,977	**239**
Northern Bahr el-G.(3)	463,793	55,655	**4,445**	13,914	**1,113**
TOTALS	**2,068,109**		**19,849** MTs		**4,973** MTs

Notes: 1. Includes Duk Fadiat and Duk Faiwil.

2. Includes Gemmeiza and Mongalla.

3. Only census returns for Twic rural and Aweil rural were used. This was done in light of the fact that there has been a large out-migration over last few years.

* Buffer stocks equivalent to providing 80 kg for the at risk population.

PRODUCTION ASSISTANCE

It is certain that there are some sectors of the subsistence economy which, if supported materially, would significantly improve local food availability. There are certain things which people need in order to help themselves; these are things which they no longer have access to in Southern Sudan. In the short-term the direct provision of such materials will increase local food production but, more importantly it will give a solid basis for people to begin rebuilding the supporting links of their subsistence economy. These links are the mechanisms which saw the Southern Sudanese through the famine of 1988, to a far greater extent than the provision of food aid one year later. If there is a genuine will to increase food security for those people they should be given the means to reconstruct what they have lost to the destruction and disruption of the war.

Fishing

During a period of increasing food shortages the fish in the rivers of South Sudan are, and always have been, a dependable recourse. The current conflict has meant, however, that fishing materials which were once available can no longer be found. Consequently, only a very small proportion of the population faced with meagre food supplies are able to supplement these with fish caught in the rivers. An increase in the number of people able to do so is easily achieved by providing certain equipment to them and would represent a considerable step away from the current uncertainty in food supplies.

As well as the general and widespread lack of fishing equipment there are some areas which are facing particular problems. Flooding in the Kongor area, for example, has meant that traditional fishing grounds are no longer accessible except by canoe. In this case then there is also a need to provide canoe-building tools (e.g. axes and adzes) if the population is to take full advantage of the basic fishing equipment.

Areas best provided with basic fishing equipment are northern Bahr el-Ghazal, the area along the River Sobat, along the Nile from Jalle up to Ayod on the east bank and from Yirol up to Ler on the west bank. If people are to benefit from these inputs during the times of greatest need they must be transported by not later than July. This is with the aim of providing assistance to cover the 'hunger gap' and bearing in mind that fishing is most productive when the waters are deep (i.e. July to November). Transport of these materials is logistically easy relative to the potentially high food returns.

In some areas the provision of mosquito nets should also be considered in order to allow people to remain in the fishing camps for extended periods of time.

Table 5. Population engaged in fishing activities

For calculating the production assistance needs for fishing, we have assumed 5% of the population to be using hooks and 15% to be using nets. The percentages are calculated according to the total population figures from the 1983 Census, unless other indicated. For those using fishing hooks we recommend 30 hooks and two 500 m spools of line per person; for fishing nets we are recommending 5 spools of 500m line. The recommended line should be 21 ply and hooks can range from size 6 - 8.

Area	Population using fishing nets	Population using hooks and lines
Kapoeta Rural	N/A	
Torit Rural (inc Lafon)	1,163	387
Nimule and Ikotos	5,358	1,785
Bor Rural	23,823	7,940
Kongor Rural	20,149	6,716
Ayod	11,578	3,859
Waat	4,089	1,362
Pibor Rural (inc Boma)	11,043	3,680
Yei Rural	N/A	
Kajo Kaji	3,603	1,200
Ler Rural	12,211	4,070
Yirol Rural	22,404	7,801
Nasir Rural	15,569	5,189
Maiwut Rural	14,886	4,961
Northern Bahr el-Ghazal	69,570	23,189
TOTAL	**216,439**	**72,146**

Seeds and Tools

Stocks of seeds and the availabilty of agricultural tools have been seriously eroded in recent years and there has been an inevitable reduction in the size of the area under cultivation. In areas to where people are returning the need for these things is paramount if they are to re-establish their former livelihoods.

Table 6 Target population for agricultural inputs

Area	Target population
Kapoeta (rural)	55,266
Torit (incl. Lafon)	23,279
Nimule + Ikotos	10,714
Bor (rural)	47,645
Kongor (rural)	40,298
Ayod	23,155
Waat	32,703
Pibor (inc. Boma)	22,085
Yei (rural)	65,198
Kajo Kaji	28,819
Ler	24,421
Yirol	46,808
Nasir	31,137
Maiwut	29,771
Northern Bahr el-Ghazal	139,138
Total	**620,427**

Note

1. It is felt that 30% of the total population as given in the 1983 Sudan Population Census gives an indication of the population in need of some assistance with agricultural inputs.

It may be possible in the future to integrate the provision of seeds with an on-going programme aimed at guaranteeing permanent stocks of seeds in certain localities (see below pg. 80) but in the meantime the simple provision of small quantities of seeds to families will remove the major problem they are currently facing and considerably improve the prospects for the coming harvest. The fact that cultivation ought already to have started in many areas means that any provision of seeds and tools should be immediate.

In areas of severe hardship the provision of food at the same time should also be considered to prevent the consumption of grain meant for seeds.

Blacksmiths/Tinsmiths

A considerable number of tools and utensils, for agriculture, fishing and house-hold use were, in the past, made locally by blacksmiths or tinsmiths using their own simple tools and scrap metal acquired in the area. Many of these skilled people are no longer able to continue producing such articles because of a general lack of the tools neccesary to do their work.

The provision of simple blacksmithing tools for these people was seen in many areas as an efficient and simple way of improving the local availability of such items as malodas, cooking pots, axes, knives, water containers and spears. The channelling of inputs like these is almost certainly best achieved through local chiefs. They know the people in their area best able to utilise the tools and in many cases it was the chiefs themselves that brought the problem to the attention of the Assessment team. If further thought and discussions are given to planning the form that a programme of support to local blacksmiths could take, it is felt that this would be one way of linking the provision of neccesary items to the partial rehabilitation of this sector of the economy.

FOOD FOR WORK

Local chiefs and the SRRA have both expressed the desire that food assistance be directed towards the encouragement of work, rather than as a replacement for it. Food for work schemes, where appropriate, are considered neccesary to allow essential work to continue.

1. The Jalle - Paliau embankment is the most urgent food- for-work project proposed for this year. The provision of food and tools to supply 5000 workers for one month will enable local chiefs to organise the repair of the embankment. When completed this would give the people security to plant at least one crop later this year (this has already been started).

2. Hospitals and health centres are now reopening and have to be supported with food for staff and for patients. At present doctors, nurses, medical assistants and hospital workers receive no salaries, but depend on food in payment. The supply of food has been irregular during the past year. It is proposed that health employees be paid in regular installments of grain, beans, lentils, oil, salt, soap, and even clothing for a period of six months, after which the programme can be re-assessed and allocations re-adjusted. Food also must be provided for in-patients as well as "co-patients" (relatives who accompany the sick to look after them in hospital). Refer to Table 4.

BARTER

Cooperatives

The initiative taken by the NSCC in setting up a system of barter exchanges to help redistribute local surpluses within Torit district has been

briefly reviewed earlier in this report (see pg. 69). It is a valuable and interesting initiative which could possibly be adopted in other areas. It's advantages lie in the fact that it provides a stock of locally-realised grain with which local authorities can respond to problems within the area and, more importantly, that it contributes to the rehabilitation of the subsistence economy. If it does not go so far as to stimulate greater production it does at least provide a way in which people can exchange existing surpluses for much-needed consumer goods.

In recommending that much more careful thought is given to the possibilty of supporting similar schemes in other areas it is felt that there are a number of factors central to the success of the existing programme in Torit which should be borne in mind:

a) The people of Torit Diocese are mainly agriculturalists who would have traditionally depended on the exchange of agricultural surpluses for other commodities to a far greater extent than the mainly cattle-owning peoples of other areas. The concept of this type of exchange has formed a central part in the workings of their economy in previous times.

b) The NSCC, although a recently-constituted organisation, has in it's ranks a depth of knowledge and experience in Torit area which has allowed it to avoid cultural or logistical pitfalls whilst planning the inputs and mechanics of the programme.

c) Torit district lends itself to this kind of redistribution of surpluses because of the nature of the terrain and the rainfall patterns. It is also well-placed in terms of ensuring a reasonably constant availability of goods for barter, being linked by road to both Kenya and Uganda.

It is possible to indicate other areas of South Sudan where this kind of barter exchange system has potential (for example, northern Bahr el-Ghazal, Nasir, Kongor and other areas of Jonglei province, Ler and Yirol). It is more difficult, however, to suggest the form that such programmes might take, beyond recommending that further careful study is conducted and that the experience of Torit is used as a very valuable basis for indicating possible problems. Local conditions will play a large part in deciding such things as the kind of commodities which could be used for exchange and any research that is to be conducted into this recommendation must be flexible enough to take these into account.

Schools

The way in which a barter system can be adopted to form some kind of community support for local schools has been demonstrated by the operation of the NSCC in Torit where the inhabitants of an area are able to obtain consumer goods in exchange for surplus grain which is then used for supplying the needs of their children at the schools.

Seed Banks

Linked to the recommendation in 1.(above) is the idea that surplus grain provided by local inhabitants in exchange for consumer goods might also be used as the basis for the creation of a network of simple seed banks to be kept exclusively for distribution as seed in a situation where there are people who, because of displacement or harvest shortfalls, have no way of obtaining them. If this were to form part of the objectives of a commodity exchange system it's operation would hinge on the capacity of the local authorities to ensure that the inhabitants were sufficiently involved in decisions about where seed distributions should take place and to whom. The stockpiling of an amount of local grain for use as seed would certainly be an improvement on the present widespread importation of foreign and, in some cases, unknown seed types but the real value of creating such stocks lies in the fact that they could operate in a way which matches the traditional practises of communities. To achieve this would require that exchange centres were located in the court centres, for example, and that there were both the conditions and the cooperation necessary for the safe storage of seed until such time as needs arose. It is only possible to recommend therefore that this issue is worthy of further investigation. The investment of time and energy in examining the possibilities carefully is very important but the advantages and potential benefits are such that this forms an important part of the recommendations arising from the assessment.

Construction of local stores should also be considered.

VETERINARY

As most of the people of Jonglei, Upper Nile, Lakes and Bahr el-Ghazal depend on livestock, veterinary programmes are essential. Vaccination against rinderpest, CBPP and other common diseases should be extended to areas which lie outside the current ICRC/UNICEF programmes. This would include Ayod, Waat, and Nasir. It is now time to consider expanding veterinary programmes to include curative as well as preventive medecine.

WATER

One of the most successful development projects of the period before the war was the provision of new wells, whether hand-pumps or deep bore wells provided with donkey pumps. Most donkey engines were destroyed during the war and many hand pumps have fallen into disrepair. In northern Bahr el-Ghazal, for example, there are a number of hand-pumps in the rural areas which were originally installed under a comprehensive water programme co-ordinated by UNICEF. Many of these have fallen into disrepair and their rehabilitation was seen as a high priority by the local chiefs. As many of the wells were originally dug by agencies currently involved in OLS II (e.g. UNICEF and NCA), their own surveys can be used as a basis for assessing the general water needs of the rural areas, although this should be coupled with a new survey to assess the current needs. Any programme designed to repair existing hand pumps or install new

ones in the rural areas must lay a heavy emphasis on ensuring that the maintenance can in the future be carried out by local people and that they are equipped to do so. Towns such as Kongor, Ayod, Ler and Yirol need to have their deep bore wells repaired and engines provided.

The repair of hand-pumps in the rural areas should have priority over the repair of donkey engines, except in cases where simple repairs of existing engines will suffice.

CONCLUSION

This investigation into the capacity of rural Southern Sudan to meet its own food needs should not be seen as an isolated exercise. It is strongly recommended that both the United Nations and the SRRA should put in place the mechanism for ongoing evaluation of programming, needs assessment and data collection leading to a better understanding of how programmes are actually assisting the rural population. It should also be noted that our understanding of the interpretation of AVHRR satellite data has reached a level of confidence such that prediction of local growing conditions can now successfully be tied into evaluation and needs assessment programming.

Lastly both the findings of the investigation team and the recommendations must be the subject of a workshop to turn what is contained in this report into a joint plan of action. UN agencies, NGOs and both the New Sudan Council churches and the SRRA should participate in this.

ANNEX 1

Livestock Prices

	BULL	HEIFER	FULLY GROWN HEIFER	PREGNANT HEIFER	SHEEP	GOAT	CHICKEN
)ETA Kapoeta	-	-	1,500 LS	-	150/250 LS	150/250 LS	-
IT Torit	-	-	1,500/3,000 LS (?)	-	300 LS	300 LS	50 LS
A (UP HILL) Boma	1 SACK GRAIN	-	-	2 SACKS GRAIN	1 TIN GRAIN	-	-
	-	-	1,500 LS		-	-	30/40 LS
TAP/DUK FADIAT Pok Tap / Duk Fadiat	3 SACKS GRAIN	2/3 SACKS GRAIN	5/6 SACKS GRAIN		-	-	-
)	-	-	500 LS		-	200 LS	50 LS
IT	-	500 LS	800/1,200 LS		-	300 LS	20/30 LS
N	1,600 LS	480 LS 1,500 LS	1 SACK GRAIN OR 1.500 LS		-	90/105 LS	-
ET (AKON)	1 SACK GRAIN	1 SACK GRAIN	2 SACKS GRAIN		-	-	-
L	200 LS (SMALL BULL)	1,000 LS	-		200 LS	200 LS	30/50 LS
KLUAK (YIROL) Alnaklnak	1/2 SACK GRAIN	1/2 SACK GRAIN	-		2 TINS	2 TINS	-
	500/1,500 LS	800 LS	1,200/1,300 LS		150/270 LS	150/270 LS	10/20/30 LS LS
K + BAU (LER)	-	1 SACK GRAIN	1.5/3 SACKS GRAIN		-	-	-
R (WANGKEC	1 SACK GRAIN	2 SACKS GRAIN	4 SACKS GRAIN		1 TIN + BUCKET GRAIN	1 TIN + BUCKET GRAIN	
DU (NASIR)	-	1 SACK GRAIN	2 SACKS GRAIN		3 SACKS GRAIN	1 SACK GRAIN	-
IG AREA Itang	-	100 BIRR (CALF 50 BIRR)	200 BIRR		-	-	-

Annex 2

SRRA Representatives

Kapoeta:	Pierre Ohure	Secretary General
	John Sabur	Veterinary Coordinator
	Dr. Acol Marial	Health Coordinator
	Acuil Malith	Agricultural Coordinator
	Mabior Deu	Project Coordinator
	Atem Garang	Press and Information Coordinator
	Majak Arop	Field and Transport Coordinator
	Peter Kidi	Public RelationsCoordinator
	Manas Marial	Water Project Coordinator
	Ajith Akuei	Educational Coordinator
	Abraham Malak	Store and Equipment Coordinator
	Majok Madut	Engineering Coordinator
	Daniel Deng	Accountant
	Joseph Agoth	Legal Advisor
Nairobi:	James Duku	Liaison Officer
Torit:	Dr. Carlo Madut	Health
Boma:	Miss Naomi	Secretary
	James Marial	Agr.
Bor:	Ben Oduho	Secretary
	Ahmed Deng Kur	Vet.
	Dr. Lueth Garang	Health
	Ezra Kuol	Agr.
Kongor:	Wek Manyuon	Secretary
	Peter Deng	Agr.
	Joseph Malou	Vet.
	Guer Nuer	Health

Ayod:	George Par Puk	Secretary
Waat:	Michael Pajok	Secretary
Akon:	Gai Manyang	Secretary
	Kernyang Ciir Dut	Deputy Secretary
	John Mangok Kuok	Secretary (Mayen Abun)
	Joseph Yak	Agr.
Yirol:	Paul Mabior	Secretary
	Dr. Michael Mabor Makuer	Health
	John Warabek	Vet.
Ler:	Kizito Oduho	Secretary
	Gideon Gatdor	Health
	Dr. Nhial Mager	Vet.
Nasir:	Angelo Can	Agr.
	James Lam	Health
	Magot Piok	Fisheries

Chiefs

Boma:		
Paramount Chief	Wazin Dewakol	Maijat
Head Chief	Lili Kuanye	Kaiwa
Headman	Konye Lukodor	Kaiwa
Bor:		
Court President	Atem Kuany Atem	Paliau Court Center
Chief	Ajak Mabior	Jalle
Kongor:		
Court President	Andrew Kuir Tor	
Chief	Duot Ajang	
"	Andrew Akoi	
"	Cuol Thoar	
"	Akoi Nyuon	
"	Bior Ajang	
"	Akuien Garang	Wangolei
"	Malek Malou	"
"	Reec Ayual	"
"	Majak Cuol	Pok Tap
"	Lual Warajak	Duk Fadiat
Ayod:		
Paramount Chief of Gaawar	Buth Nyin	
Chief	Gang Thot	Ayod town
Executive Chief	Tot Yap	" "
Subchief Wau (Regional Court)	Gony Dayien	
Headman Ayod (Regional Court)	Tut Kur	
Chief	Tutdel Kuajien	Ayod
"	Pathot With	Wau
"	Ruac Liep	"
"	Puot Dual	Ayod
"	Bong Dual Diu	Kuacdeng

Waat:

Court President	John Kutey	Waat
" "	Gatluak Thou Kuong	Yuai
" "	Tut Gay	Muotot
" "	Kuony Tuit	Pathai
" "	Gony Ran	Kaikuiny
" "	Dak Hoth	Pultruk
" "	Makuei	Thul
" "	Geng Thainypieny	Walgak

Akon:

Twic Dinka:		
Executive Chief	Deyen Deng Giir	Mayen Abun
" "	Piom Yuol Kuol	Pan Yok
" "	Garang Nyuol Bol	Turalei
Dep.Executive Chief	Atem Anguei Atem	Aweeno
Executive Chief	Wundit Madut Ring	Ajak
Dep.Executive Chief	Bak Bol Rec	"
Malual/Paliet Dinka:		
Chief	Deng Dang Wol	Malual-Lol
"	Majok Deng	Malual-Malual
Dep.Executive Chief Juber	Dut Jaber	Jur Col
Chief	Geng Ariath Kon	Paliet-Bonacuei
Jur Col/Wau Dinka:		
Chief	Majong Mayan	Jur Col
"	William Akuoin Dhol	Wau
"	Yal Longar	"
"	Acom Makuac	Jur Col-Kangi
"	Alfred Amet Kuol	Kuac
"	Pasquale Bak Acol	Jur Col-Wudici

Aguok Dinka:

Executive Chief	Wek Kuanyin Agoth	Wun
" "	Akot Moror Kuek	Pakol
Dep.Executive Chief	Kuel Bol	Bothanith
Executive Chief	Lual Mabior Ayok	Marial
Dep.Executive Chief	Bol Diing Kout	Ngok Kuec

Yirol:		
Executive Chief	Marial Nyibol	Cic
Chief	Dor Majak	Yirol town
Chief	Akec Nyareel	Atuot-Apak
Ler:		
Head Chief	Kong Kuol	Jagei-Bur
Chief	Cuol Malieth	Jagei-Rengyan
"	Dak Kuic Gai	Dok-Dogwar 2
"	Gideon Biding	Dok-Dogwar 1
"	Badeng Gatbuok	Dok-Aak 1
"	Kong Yar	Dok-Aak 2
Nasir:		
Cieng Yol:		
Paramount Chief	John Cuol Gaaluak	
" "	Buth Ruea Thong	Wunthou
" "	Kaat Rut	Koat
" "	Kailec Yut Wuor	"
" "	Maibai Bath Monycol	Homkor
" "	Yien Puoc Dhoal	Luakpiny
Cieng Wangkec:		
Paramount Chief	John Bidiet Joah	
Executive Chief	Deng Lual	Jekmir
Cieng Lang:		
Chief	Kwal Long	Yomding