

**NGOK DINKA ABYEI AREA COMMUNITY
MAPPING PROJECT**



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1. INTRODUCTION

In connection with arbitration proceedings between the Government of Sudan and the Sudan Peoples Liberation Movement/Army (SPLM/A), I was instructed by the SPLM/A to train Ngok Dinka in the Abyei Area to gather the raw data necessary to prepare a community map. This community mapping project was developed to produce an accurate map depicting a sampling of the historical and cultural places of importance to the Ngok Dinka in 1905. Global Positioning System (GPS) mapping technology was utilized in the project to provide geographically accurate locations for the landmarks identified by Ngok Dinka elders so that Ngok historic use and occupation could be positioned on a map. By landmark, I mean settlements, cattle camps, burial sites or other examples of traditional occupation and use of the land.

Due to time limitations and other serious obstacles surrounding this project, we restricted ourselves to production of a community map of a representative group of Ngok landmarks in the general region of Abyei town extending north in a semi-circle with a radius of approximately 40 miles (60-64 kilometres)(the "Study Area"). I am aware that Ngok landmarks extend south of the Kiir. We restricted ourselves to the area north of the Kiir due to the limited time available and the fact that the area below the Kiir is not in dispute. I also understand that Ngok landmarks extend considerably north of the Study Area, yet access to these lands requires safe passage across both the high waters of the Ngol in the wet season and areas with known militia presence as well as Government controlled military checkpoints. Due to the significant time constraints, the serious safety and access issues involved, the Abyei Mapping Team limited the scope of its community map production to the Study Area, including sites located on both banks of and to the south of the Ngol.

Even in this limited area, I would ordinarily expect a project of this type to require at least a year of work. Due to the arbitration timetable and the severe wet season in the Abyei Area, we could only really start mapping in the field in December and necessarily had substantially less than the usual period of time for such a project. These factors meant that it would not be feasible to produce a community map of all Ngok landmarks in the Abyei Area in the time available. For this reason, as set out above, we concentrated our efforts on the most accessible and safe areas in the region. To implement this program, I trained a team of Ngok Dinka (the "Abyei Mapping Team") on the use of GPS technologies and information gathering. I also guided the Abyei Mapping Team in the implementation of the methodology described below, which included attendance at several community meetings and field data gathering trips.

The objective of the program was twofold: (1) to harness the historical and cultural knowledge of the members of the Ngok Dinka about a representative portion of their ancestral lands; and (2) to use scientific methods to record the location corresponding to that information to produce an accurate and reliable map of selected

Ngok Dinka landmarks from 1905 in the Study Area. Based on the information gathered by the community, the maps depicting the occupation and use of ancestral lands in the Study Area by the nine Chiefdoms of the Ngok Dinka were produced by an external cartographer.

1.1 Organisation of this Report

- Chapter 1 describes the origins of Community and Tenure Mapping and its continued and growing use.
- Chapter 2 outlines general Community and Tenure Mapping methodology.
- Chapter 3 applies Tenure Mapping in the context of the Abyei Mapping Project, describing the selection of source maps, legend design and the training of the Abyei Mapping Team
- Chapter 4 provides an account of various steps taken by the Abyei Mapping Team to produce the map, including hosting community meetings and field data gathering.
- Chapter 5 summarizes the evidence of Ngok Dinka permanent settlements and resource use in the Abyei Area in 1905.
- Chapter 6 sets out Conclusions based on the results of the Ngok Dinka Abyei Mapping Project.

1.2. Community and Tenure Mapping

Mapping is the visual representation of data by geography or location: the linking of information to place. Community Mapping involves community members defining their community through investigation, identification and measurement of the position of important landmarks. It is widely held to be an appropriate instrument for determining or defining areas of indigenous land use and occupation.

Since the 1970s, various community mapping methodologies have evolved around the world. Each utilises a combination of sophisticated modern technologies and manual labour, involving community members to varying degrees. In Indonesia, community maps have been used as evidence of ancestral land use in protected areas. In Malaysia, community maps are used to identify community lands that are recognized but not accurately mapped. In South Africa, community mapping is used to monitor animal distributions. In the United States, tribal councils use community maps for forest and wildlife management. Examples of community maps used by indigenous peoples to support land claims are detailed below.

Some community maps have been criticized as being geographically inaccurate, compared to “official” topographic maps. However, a map is only as accurate as the

underlying data from which it is created and the skill of the cartographer: even “official” maps are of variable accuracy and quality. By way of illustration, when the Abyei Mapping Team mapped the road between Agok and Abyei town, they found it varied from the base map (created from “official” maps) by up to 9 kilometres. Community mapping can and does identify and correct errors in existing “official” maps.

The type of community mapping used in this case was tenure mapping. Tenure mapping refers to the way the map is used. Tenure maps illustrate, with geographic precision, the historical and cultural linkages between indigenous peoples and their ancestral territories. The exclusive focus is on traditional use and occupancy and the cultural connections of people with their land that are able to be placed on a map.

Tenure maps usually include collective territories shared by a number of communities. They range from the 2,000,000 sq km of the Inuit territory of Nunavut to a few square kilometres in areas where tenure is by a single community. Tenure maps have been used to provide evidence of prior occupation in cases where communities seek legal recognition of ancestral indigenous territories.

The ultimate objective of the map is to depict a recognised territory with unambiguous boundaries. Tenure maps are generated by working with communities and involve travel over the territory. They show local names, traditional resources, seasonal movements and activities, and important places.

1. 3. Examples of Tenure Mapping in Practice

Tenure mapping has been utilised by several indigenous groups around the world including the following:

- In **Canada**, in the 1970s, the Inuit of the Nunavut Settlement Area produced a tenure map which resulted in a formal recognition of their ancestral territory by the Government of Canada, including an Inuit dominant provincial government and compensation. The tenure map included a four-volume Inuit Land Use and Occupancy Study (ILOUS 1975) that the Inuit used as evidence in their land negotiations (which lasted another 25 years). This evolved into a data base which is one of the authoritative environmental information sources for the Canadian Arctic. Nunavut now sells this data to third parties;
- In the 1990s, around forty Maya communities (Ke'Kechi and Mopan) ¹ in Southern **Belize** produced the Maya Atlas of their ancestral lands. The maps, text, photographs, drawings and interviews were done by Maya village researchers and

¹ Assisted by the Maya NGO, SATIIM. In 2007, SATIIM, already GIS-literate, added a capacity in aircraft-based survey, to map and delineate the territory of Santa Marta community from the air.

cartographers elected by the communities.² The community map (i.e. the Maya Map Atlas) was held by the Inter-American Commission on Human Rights to constitute persuasive evidence that the lands claimed were those that they had historically used and occupied as demonstrated by the map.³ This resulted in a power-sharing management agreement for Sarstoon Temash National Park, part of their ancestral territory;

- In **Honduras**, in the early 1990s, Miskito communities mapped their coastal and marine territory which resulted in the designation of a marine conservation area designed to protect their ancestral waters. Twenty two indigenous people were elected by their communities to gather information about how the community utilises the land. They produced a land-use map which was submitted to the Honduran government at the First congress on Indigenous Lands of the Mosquitia. Subsequently, the Honduran Ministry of Defense opposed plans by a US timber company to expand logging operations on Mosquitia land identified on the community map⁴. The Miskito⁵ and other coastal peoples negotiated a management role in several coastal parks and reserves through the use of the community map;
- In **Indonesia**, related community mapping efforts were employed in East Kalimantan multiple actions on behalf of indigenous communities:
 - (a) in 1992, the first community-mapping pilot project in the Kayan Mentarang National Park⁶ used community mapping techniques to assess the position and nature of forest tenure boundaries;
 - (b) in 1994, another community-mapping exercise was undertaken in four villages: Long Alango, Long Pujungan, Lembudud and Tang Laan in connection with the decision to change Kayan Mentarang's status from a Strict Nature Reserve to a National Park;
 - (c) in 1997, community mapping was also used to identify and resolve boundary disputes between different stakeholders and to facilitate community participation in the management of a significant conservation area, including the establishment of boundaries;

² See Mayan Atlas website <http://geography.berkeley.edu/projectsresources/MayanAtlas/MayaAtlas/MayanAtlas2.htm> **TAB 1.**

³ Report N° 40/04, Case 12.053, Merits, Maya Indigenous Communities of the Toledo District, Belize (October 12, 2004) **TAB 2**, paras. 22 and 25 (referring to land tenure map produced by community with professional cartographer) and paras. 123-24, 127-129 (describing evidence put forth by Petitioner, finding in their favor, and noting specifically that the Community's use and occupancy of their territory was confirmed by the "Maya Atlas" of maps).

⁴ See L. Swenarski de Herrera "Unusual Map helps Indians of Honduras Push for Land Rights" from Tropical Conservation Newsbureau. (1993) <http://nativenet.uthscsa.edu/archive/nl/9304/0049.html> **TAB 3.**

⁵ Assisted by MOPAWI, an indigenous support NGO

⁶ K. Deddy, *Community Mapping, Tenurial Rights and Conflict Resolution in Kalimantan*, Chapter 5, 2005, **TAB 4.**

- (d) in 1997 adat leaders from the villages of Pujungan and Ulu Bahau used the community maps to negotiate with a local timber concession. The maps depicted restricted forest areas, on the basis of which community leaders were able to protect those areas from logging and obtain acknowledgment of community rights and traditions. They also used the maps to obtain assistance from the Minister of Forestry.
- In **Nicaragua**, during the 1990s (leading to a 2001 decision) the Awas Tingni Mayagna community produced, using GPS, a community map that was submitted as evidence to the Inter-American Court of Human Rights. The map illustrated historic use and occupancy of the Awas Tingni indigenous community of the land. On the basis of the map, corroborated by the oral history of the tribe's leaders, the Court found that the Awas Tingni had a property right in their ancestral lands. The Court concluded that the Government violated that right by granting concessions without their consent. The Government of Nicaragua was ordered to define, demarcate and title those lands in accordance with the customs, values and traditions of the Awas Tingni people;⁷
- In the **Philippines**, in the 1990s/2000s, indigenous peoples, including the Higa-onons applied for Certificates of Ancestral Domain Claim (CADC) to identify, determine and delineate ancestral domain claims in the country. A CADC is a legal instrument that gives indigenous communities full rights over their domains. To prove their case for rights over land, the Higa-onons constructed a 3-D map for use in negotiations including details that they considered significant, such as names of sacred places, important landmarks and cultural sites. Names of mountain peaks, rivers and roads were taken from the topographic map of the area. A physical perimeter survey of the area took place in 2002 which effectively created a community map led to further negotiations and increased recognition of indigenous lands. These mapping exercises, The community land tenure programme⁸, which facilitates the mapping exercises, has resulted in more than 500,000 hectares of Ancestral Domains being secured;

⁷ The *Mayagna (Sumo) Awas Tingni Community Case*, Judgment of August 31, 2001, Inter-Am. Ct. H.R. Ser. C No. 76 TAB 5, pp. 21-23 (describing the witness testimony and in particular the community maps that the Court admitted into evidence and considered; the maps began with a simple sketch map made by the community by themselves and then was further developed by an expert who trained several young people in tenure mapping and then based on the information gathered from the community and in field visits with Global Positioning System (GPS) equipment (explained in greater detail below) accompanied by community members, collected approximately 150 way points and produced additional community maps with Geographic Information Systems (GIS) technology, which enables geographic information to be stored and manipulated.)

⁸ Of the Philippine Association For Intercultural Development

- In **Malaysia**, in 2001, the community of Rumah Nor⁹ sued Borneo Pulp and Paper, which the community insisted was logging their customary land. The Penan people surveyed and mapped their land and associated resources. In May 2001, the community of Rumah Nor won their land dispute case in the Kuching High Court brought about from their representative suit against Borneo Pulp Plantation Sdn. Bhd.¹⁰ In the landmark ruling, the judge was satisfied with the evidence brought forward by the Penan, which demonstrated that the disputed area was their native customary land by virtue of practicing their Native Customary Rights there. The community map tendered as evidence showed the area of dispute between the longhouse community and the pulp and paper plantation company.¹¹ The World Rainforest Movement observed that “maps made by NGOs and the people of Rumah Nor were vital evidence” in the “huge success for the recognition of Native Customary Rights lands.”¹² Friends of the Earth International noted that “[t]he community mapping approach has since spread across Sarawak, resulting in important legal victories for many forest communities”,¹³ and
- In 2007, the Inter-American Court of Human Rights case involving the Saramaka tribal people of **Suriname** held that a community land tenure map was instrumental in its ruling that found the government in violation of the property rights of the tribal peoples and an order that the lands be demarcated and titled and until such time the State was instructed to refrain from all activities that could affect the Saramaka’s use and enjoyment of their lands.¹⁴ The Court made specific reference to my contribution as evidence. It stated that in regard to the tribal peoples’ interests in the impacts of logging concessions within their territory “a map produced by expert witness *Dr. Peter Poole* and submitted to the Court depicts Saramaka occupation and use of lands and resources in the concessions granted within Saramaka territory to non-Saramaka members. This evidence shows that members of the Saramaka people were extensively using the areas granted to the logging companies as hunting and fishing grounds, as well as

⁹ The case of *Nor Ak Nyawai & 3 ors v Borneo Pulp Plantation Sdn. Bhd. & 2 ors*, at the Kuching High Court, Sarawak. Rumah Nor was assisted by BRIMAS (Borneo Resources Institute). A BRIMAS staffer mapped the logging sites with a GPS unit. M. Bujang, *Malaysia’s Case Study A Community Initiative: Mapping Dayak’s Customary Lands in Sarawak*, Regional Community Mapping Network Workshop, November 8 – 10, 2004 Diliman, Quezon City, Philippines, **TAB 6**.

¹⁰ Borneo Pulp Plantation Sdn. Bhd. is a joint venture company between Asia Pulp and Paper and the Sarawak Government owned the Sarawak Timber Industry Corporation.

¹¹ Within two months, the regional government of Sarawak enacted legislation criminalising any attempt by communities to gather and present GPS-based information, as authoritative, without employing a surveyor who had been approved by the government.

¹² WRM’s bulletin N° 52, November 2001 <http://www.wrm.org.uy/bulletin/52/Malaysia.html>, **TAB 7**.

¹³ Friends of the Earth, *People’s Wealth Issue 108 - Malaysia - Mapping their rights: Sarawak Forest Communities*- July 2005 <http://www.foei.org/en/publications/link/poverty/13.html>, **TAB 8**.

¹⁴ Case of the *Saramaka People v. Suriname*. Preliminary Objections, Merits, Reparations, and Costs. Judgment of November 28, 2007. Series C No. 172; I/A Court H.R., para. 214(1), **TAB 9**.

a source of a variety of forest products....” (emphasis added).¹⁵ Based on that evidence, the Court ruled that the Suriname government violated the property rights of the Saramaka tribal people and ordered them to delimit, demarcate and title their lands and until then, refrain from conducting activities that affect those lands and resources within without their free, prior and informed consent.¹⁶

2. A FOUR-PHASE TENURE MAP MAKING METHOD

I developed the methodology for the Abyei Mapping Project based on my extensive experience in indigenous community mapping projects adapted over a period of 20 years. I created the methodology in the course of mapping projects with Ye’Kuana and Sanema communities in the Venezuelan Amazon. I successfully employed the same methodology with other communities, including the Akawaio, Arecuna, Wapisiana and Wai Wai communities in Guyana, and the Saramaka and Njuka communities in Suriname. The methodology was further adapted and applied to tenure mapping projects in Thailand (Karen and Hmong) and Russia (Evenki).

This methodology enables community-based mapping teams, to gather raw data, after receiving a few weeks of training. The only specialized tool which is required is a GPS unit, which we provided to community members once they had been trained to use them. The method has four main phases:

- 1. Selection of Source Maps and Compilation of Base Map*
- 2. Design of Map Legend*
- 3. Collection of Field Data and Placement on Base Map*
- 4. Compilation and Production of Final Map*

2.1. Selection of Source Maps and Compilation of Base Map

Topographic Source Maps are those which cover the ‘survey area’. The survey area is an approximation of the territory to be mapped and provides a basis for researching available cartography. A project base map is extracted from the topographic source map. It typically displays the landscape or topography with which an indigenous society has historically interacted, and excludes as far as possible the place names and infrastructure of the dominant society. Hence, these base maps are sometimes referred to as *no-name maps*.

Raw data gathered in the course of field observations and interviews is placed on the base map.

¹⁵ *Ibid.* at para. 149.

¹⁶ *Ibid.* at paras. 148, 149, 154, & 214(1).

Tenure data may sometimes be superimposed directly onto topographic source maps. This works well in remote areas, such as the Arctic, where there are virtually no signs of development and was in fact the approach adopted by Inuit. Relevant information must be extracted digitally¹⁷ or manually¹⁸ from the topographic source map.

Some states have digitised layers that make up the official topographic maps and make these available to the public at little or no cost. Typically, tenure map makers will select those layers from topographic source maps which represent the 'natural' landscape as opposed to urban infrastructure or industrial agriculture. Satellite image maps are also increasingly utilized as topographic source maps as long as the data is available in a *rectified* (geographically accurate) form.¹⁹

2. 2. Design of Map Legend

Since the purpose of tenure maps is to demonstrate and characterise prior occupancy and use, its content typically includes traditional place names, resources, historic and sacred sites. This content is expressed in the *map legend*, which is designed in the course of training and community discussions, and refined during the field data gathering process.

The map legend consists of a list of symbols that have a culturally significant meaning to the community, such as a [^] to represent a village, cow horns to reflect cattle camps or grazing areas, or a cross to represent a sacred site. These are discussed further as they are applied to the Abyei Mapping Project below.

2. 3. Collection and Placement of Field Data on Base Map

The basic technological equipment required for tenure mapping is a Global Positioning System (GPS) unit.²⁰ In my consistent experience, community members with

¹⁷ Digital extraction requires a *digitising table*, a *specialised mouse*, a *GIS and expertise*. The digitising table needs to be at least the size of the topographic map. To digitise river patterns, for example, the mapmaker follows the watercourses with the crosshairs on the digitising mouse. These lines are automatically transferred to GIS map layer. Lines of latitude and longitude are added in a separate layer. River and coordinate layers are then printed as a *project field map*.

¹⁸ The manual method is known as tracing, whereby rivers are traced, using a drafting pen and ink, on a transparent medium, such as Mylar. The tracing is then scanned and converted to a digital file. This file is then uploaded to a graphics programme such as Adobe Illustrator. In the case of the Akawaio/Arecuna tenure map in Guyana, it took four days to trace the rivers stretching through the 34 1:100,000 scale topographic source maps that were used to cover the Upper Mazeruni river system.

¹⁹ Rectification is needed as most satellite imagery is oblique rather than vertical imagery and contains inherent radial distortions. Rectification corrects radial distortion and makes satellite imagery directly comparable with topographic maps. Satellite image maps are advantageous in areas without prominent river networks and serve as geographical and navigational references for forest communities. Satellite images record subtle variations in landscape that are not captured by topographic maps but may be recognisable on the ground, as reference points. One disadvantage of satellite-based image maps is cost. The more accessible and affordable satellite image maps usually have low ground resolution.

²⁰ Compass binoculars may be used to triangulate distant but visible features, such as sacred mountains. Compass binoculars were not used in this case as they are designed and specifically employed to triangulate distant, inaccessible

no previous experience can acquire the required GPS skills (mainly positioning and navigation) very quickly and reliably.

The field data are recorded in log books. These tabulate the: date and trip number, GPS waypoint number, legend symbol(s), latitude and longitude, records of photos or video recordings taken of the site, and other site details.

The two principal data sources are: (1) interviews with local informants; and (2) direct GPS-based field observations. Often, the first source prompts the second, as was the case in this project.

Interviews are conducted with community members to reveal memories of journeys regularly taken by them and their ancestors. These interviews are recorded, detailing land features, natural resources, and place names.

The informants are typically elders and representatives from specific community sectors with knowledge of the land (i.e. cattle herders, hunters, gatherers, women). The recorded journeys are then undertaken by the Abyei Mapping Team together with the community elders. GPS waypoints of the recorded features are taken during the journey and additional features and points of interest are noted.

A “waypoint” is the GPS term for the latitude and longitude of the site where the GPS unit is positioned at any moment. The GPS unit positions itself by computing signals from up to 12 GPS satellites, that the GPS unit can see or *acquire* above the horizon.

The unit then assesses the *signal strength* of the acquired satellites and selects the four satellites which will triangulate the most precise position of the GPS unit (expressed as coordinates of latitude and longitude known a *waypoint*.²¹)

The GPS unit will indicate the accuracy of the waypoint. The Garmin GPSMAP 60CSx used by the Abyei Mapping Team has an accuracy, under optimum conditions, of approximately five metres. This means that the *waypoint* is less than 5 metres away from its true position.

2. 4. Compilation and Production of Final Map

and conspicuous sites (i.e. a sacred mountain in the distance). In the case of the Ngok Dinka Abyei Area Community Mapping project, the Sudanese mapping team and Ngok Dinka elders, traveled directly by car and foot to key sites and therefore had no need to triangulate a feature in the distance. Those sites that were inaccessible because they were deep in the forest and/or old paths that they used previously were no longer present, could not be triangulated with binoculars as the sites were not “conspicuous” given the nature of the terrain in the Abyei Area.

²¹ Once the GPS unit is placed above the centre of the feature to be mapped, the operator presses the mark button. The unit will assign and show a waypoint number for the feature. The waypoints are stored in the GPS unit memory and can be recalled at any time.

Community maps can be compiled with either Geographic Information Systems (GIS), technology which enables geographic information to be stored and manipulated or graphics software.²² Both techniques enable map makers to compile their maps in discrete layers, and to select the layers they require for the final map. For printing, there are two options: (1) high end, wide bed printer, of 36-60 inches; and (2) a medium size printer, of 12-24 inches.

3. FOUR-PHASE METHODOLOGY APPLIED TO ABYEI MAPPING PROJECT

Prior to my arrival, a Ngok Dinka elder who had prior training and experience in GPS mapping, Kwol Biong²³, selected 11 Ngok Dinka men to form the Abyei Mapping Team. They were: Ayak Dau; Adhar Deng Kuol; Chol Kwol Mathiang; Mawein Deng Kuol; Gamou Yak Pathiong; Mangar Lal Alei; Mangesto Mawenin Kor; Aguer Kur Aguer; Longo Malei Miyen; Miyen Nuol Kwol; and Chol Kwol Guak. Kwol Biong was the Abyei Mapping Team Coordinator.

In light of the limited time available, and the practical obstacles that were anticipated and encountered, several of the individuals who were selected had some prior GPS experience and had multiple language skills necessary for the work.²⁴ The trainees were divided into three teams on the basis of their various skills, including information gathering and use of media (i.e. cameras, videos, tape recorders).

3.1. Delineation of Survey Area, Evaluation and Selection of Existing Cartography

Available mapping sources were compiled by International Mapping Associates (IMA).²⁵ IMA considered topographic maps compiled by two agencies and two sources for satellite images.²⁶ IMA combined these two source maps to compile the Base Map or Composite Map, at a scale of 1:250,000.

²² Graphics software is more appropriate for communities making their first maps, as it is cheaper, simpler and trainees can, under supervision, immediately participate in the map compilation process. GIS is more complex and expensive but has the advantage that GPS waypoints can be directly downloaded to the project base map file.

²³ I am advised that Kwol Biong was appointed to serve as the Sudan Coordinator of the Ngok Dinka Abyei Area Community Mapping Project due to his intimate knowledge of the area and prior experience in GPS work. In 2007 the SPLM/A designated Kwol Biong as the team leader of the SPLM/A component of the Joint Technical Team (JTT) on Abyei Area. After the Government of Sudan refused to implement the ABC Report findings, the parties agreed to establish the JTT to take GPS coordinates of forty seven (47) Ngok Dinka villages designated in 1977 by Nemieri to be upgraded to the status of "rural councils." Apparently when the Government of Sudan observed that many of these villages were far north of the River Kiir, it cancelled the initiative. (See Annex B for a list of these 47 sites.)

²⁴ Of the initial team, four (4) members had some facility with a GPS unit. In addition four of the trainees spoke English, Dinka and Arabic fluently, while the others spoke fluent Dinka and Arabic.

²⁵ IMA is a company specializing in cartography based in the United States.

²⁶ The Centre for Environment and Development, Bern University (Switzerland) and the Sudan Inter-Agency Mapping Agency. The two satellite sources were: (1) free Landsat satellite imagery, with a ground resolution of 20 metres; and (2) a high resolution (50 cm) image map of Abyei town. Although the map of Abyei town yielded more data, since the land in question is relatively featureless save the river systems and would be unlikely to permit the Abyei Mapping Team to identify the smaller but critical sites such as graves, sacred and age set sites. Moreover, high resolution imagery of the entire area would cost well in excess of \$100K.

This phase was complicated by the fact that the available topographic maps for the Study Area were not accurate, particularly roads and trails, but also some watercourses. Due to the low quality of existing maps, I instructed the Abyei Mapping Team to record site locations on the basis of latitude and longitude (and not roads and waterways).

3. 2. Design of Map Legend

During the training period, in accordance with customary practice, the Abyei Mapping Team produced a map legend with Ngok-specific legend symbols.

The legend symbols were used in the field in the Study Area to record particular sites that had been identified by the elders, where GPS coordinates were then taken. Next to each GPS site recorded in the field logs, there is a legend symbol that describes the nature of the historic use or occupancy of that site. An example of this can be found in the sample log book pages at Annex D. The Ngok Dinka map legend (detailing all legend symbols used) for the Study Area is attached at Annex G.

3. 3. Training of Abyei Mapping Team

The training took place between November 17 and December 1, 2008, in Agok, Southern Sudan. The Abyei Mapping Team used Garmin Map 60 CSx GPS units (ground resolution of five metres or less), digital still cameras, video and audio recorders.

The trainees mastered the use of the GPS equipment in a few days. Classroom sessions were followed by field training, which included gathering sample GPS waypoints, recording key areas on film, and logging results (See Figures 1 to 4). The

Training of the Abyei Mapping Team



Figure 1



Figure 2



Figure 3



Figure 4

Abyei Mapping Team positioned their practice waypoints on the topographic Base Map to experience translating their field observations onto a map.

The Abyei Mapping Team was taught interview techniques, with a focus on gathering information relevant to the location of places important to the Ngok Dinka as at 1905. A set of sample questions were prepared and discussed, including through mock interviews. The sample questions are attached at Annex C.

The Abyei Mapping Team was provided with lined notebooks, to be used as Field Log Books. Multiple team members recorded observations that they made in the Study Area in log books to guarantee against data loss if one was ruined and to serve as a check. Log Book samples can be found at Annex D. At the top of the page the data loggers entered the following information: (a) Trip Date; (b) Trip Number; (c) Team Name; (d) Name of Data Logger/Team Leader; and (e) Chiefdom. The data column titles were: (a) Waypoint Number; (b) Legend Symbol(s); (c) Latitude and Longitude; and (d) Photos. This is standard practice and consistent with my previous work in this field.

The Abyei Mapping Team was eventually divided into three groups as this size of organizational unit was more functional in the field. Each group was responsible for its own log books, video camera, GPS unit, and still camera. All items were labeled Team A or Team 1, Team B or Team 2, and Team C or Team 3. This was an organizational technique to ensure accuracy in data collection and avoid the possibility of one team's data being crossed with another.

3.4. Final Map Design

As indicated above, since the Base Map was not accurate (i.e. roads and waterways were not correct in some cases), the decision as to whether to use a topographic or satellite image map as the basis for the Final Map was left until a later stage.

In the end, we used a topographic map for the Study Area because it permitted the greatest level of detail to be displayed. Also, we had great difficulty locating a suitable satellite image, due to the drastic climatic shifts which made watercourses difficult to see on dry season images and displayed heavy cloud cover on wet season images.

4. COMMUNITY MEETINGS AND FIELD VISITS

4.1. Community Meetings

In accordance with standard practice in tenure mapping, the Abyei Mapping Team hosted meetings with Ngok Dinka elders and other community members. (See Figures 5 to 7). The purpose of this meeting was to gather information about where and how Ngok Dinka lived and used their lands and in particular in the Study Area in 1905.

Community Meeting between Mapping Team and Ngok Dinka Elders



Figure 5



Figure 6



Figure 7

Community meetings were held with elders from each of nine Ngok Dinka chiefdoms: Alei, Achueng, Anyiel, Manyuar, Mareng, Achaak, Diil, Bongo, and Abyior. The attendees from each of the meetings are listed in Annex E.

The meeting dates and locations are as follows:

Chiefdom	Date	Meeting Location
Abyior	November 26, 2008	Wundup
Achaak	November 27, 2008	Juoljok
Achueng	November 28, 2008	Mading Achueng
Alei	November 29, 2008	Dungop
Anyiel	November 30, 2008	Awolnhom Primary School
Bongo	December 1, 2008	Nyinkuac
Diil	December 2, 2008	Juoljok
Manyuar	December 3, 2008	Mijak Payam
Mareng	December 4, 2008	Leu

Prior to the meetings, the Chief and elders from each section identified 25 elders to represent each section in a community meeting.²⁷ Other community members were allowed to observe the meetings. These additional members could not participate directly, but the elders could confer with them.

At the beginning of each of the community meetings, the Abyei Mapping Team introduced the mapping project and asking the elders to identify permanent settlements and resource use in 1905. This was conveyed to participants as being in the time of Ngok Dinka Paramount Chief Arop Biong and the “time of your father and grandfathers.” References were also made to the Mahdi/Mahdiyya, British times, Egyptian times, and Turkish times to provide orientation to distinguish relevant historical periods from irrelevant periods.

²⁷ The Abyei Mapping Team requested 25 elders to ensure a sufficiently large number to corroborate the information presented.

During the meeting, Kuol Biong presented a list of Ngok Dinka historical and cultural sites at 1905 that had been compiled by SPLM/A's legal counsel.²⁸ The list was provided as a guideline only and did not restrict or bind the community members in any way in identifying important sites. The field visits concentrated on those locations in the Study Area. The final map depicts landmarks in the Study Area. During each meeting, the elders discussed the history of their chiefdom, as well as history of other chiefdoms as they understood it. To encourage participation and stimulate discussion, the Abyei Mapping Team asked the elders questions (sample questions provided in training are attached at Annex C). This is standard practice in this type of exercise. The elders were encouraged to speak freely throughout the meeting. The Abyei Mapping Team took a written note of the contributions made by the elders. The meetings were also recorded.

The discussions generally focused on the following topics:

- Permanent Settlements (location of villages, including origin of names; location of ancestral burial sites; birth places)
- Use of Land Resources (age set locations; grazing, fishing, hunting, and farming locations; seasonal migration patterns; road links)
- Intra-tribe and inter-tribe relations (i.e. contact with other Ngok sections and with Misseriya); and
- Impact of the war and slave trade on the Ngok Dinka.

At the conclusion of each meeting, each Chiefdom's elders selected three to five elders who had the best knowledge of the relevant area to accompany the Abyei Mapping Team in the field.

4.2. GPS-based field Observations

The Abyei Mapping Team made four field visits during: (a) the same weeks as the community meetings (November 26 to 6 December 6, 2008); (b) the week following the community meetings (December 8 to 12, 2008); (c) the week of January 18, 2009; and (d) the week of 2 February 2009.

At each site visited during those field visits, the following actions were performed by the Abyei Mapping Team:

- (a) take and record GPS position (waypoint) of the site;²⁹
- (b) take photographs, date and assign a number; and

²⁸ In August and November 2008, the SPLM/A legal team interviewed a number of elders and chiefs from the Ngok Dinka chiefdoms. Based on those interviews and other documents, legal counsel prepared a list of some possible culturally and historically significant places to the Ngok Dinka.

²⁹ On a few occasions where only one English speaker was present, only one log book page was produced.

(c) record appropriate legend symbol in log book together with any other relevant information.

During the field visits, the Abyei Mapping Team, together with the designated elders typically visited approximately eight to 12 sites per day. Apart from the limited time period for the overall project, the Ngol was a further obstacle to access the northern part of the Abyei Area because the amount of water in the river prevented passage of the vehicles (there being no accessible bridges for vehicles in critical areas) as well as security concerns from military and militia in the area.

The elders set the daily agenda and guided the Abyei Mapping Team to sites that were of historical and cultural significance to the Ngok Dinka in 1905. The team would drive as close to each site as possible, then they would walk if necessary. Once at the site, the elder would indicate important details, such as location of gravesites and where the *huts* and *luaks* stood in 1905.

While one team attended community meetings with one Chiefdom, the other team would conduct its field work using information obtained the previous day from another community meeting. That way, the team that worked with the Chiefdom's representatives in the community meetings conducted the site visits almost immediately afterwards, whilst the discussions were still very fresh in everyone's minds. Once we completed the field visits, the Mapping Team and Elders reviewed the data collected and made all corrections, additions and reconciliations necessary. This included addressing such issues as ensuring consistent spelling, correcting transposed numbers and ensuring log sheets were completed in full. This phase of the project is important to confirm that final data submitted to be mapped is accurate. The final results of the Abyei Mapping Project are set out in the List of Nine Ngok Dinka Chiefdoms' Permanent Settlements of 1905 attached at Annex F.

4.3 Limitations on and Obstacles to Field Visits

The Abyei Mapping Team faced a number of challenges and obstacles to its work, even within the limited Abyei study area. It is important to note that the total territory that comprised the Study Area was some 5200 square kilometers (2000 square miles). Under normal conditions, a mapping project of this magnitude and importance would take a year to complete. The restricted time period did not impact the quality of the information obtained, but severely constrained the number of sites that could be visited and documented.

Additionally, the Abyei Mapping Team encountered armed Misseriya at cattle camps south west of the Ngol on December 11, 2007. The Abyei Mapping Team was unable to negotiate access through some areas as the Misseriya barred access. When the Abyei Mapping Team attempted to pass, they were turned away by armed Misseriya who blocked the road. Also, the presence of militia was an obstacle to access to the

northernmost reaches of the Abyei Area. This was the case with the Abyior northwestern settlements of Thigei, Maper Amal and Akot Kot. Both SAF and SPLA sources advised that these areas were insecure.

The extreme climate of the Abyei region also posed access challenges to the Abyei Mapping Team. While the Abyei Mapping Team was largely ready to begin extensive field work in the beginning of December 2008, as noted above, several rivers were still quite high as it was the end of the rainy season. In particular, in December the high water levels of the Ngol River permit only one crossing point. This point is along the main road leading northward from Abyei to Nyama. This route contains numerous Government-controlled checkpoints manned by the Sudan Armed Forces. A critical checkpoint exists at Kech (Arabic: Diffra) where connecting roads exist to the western and eastern areas above the Ngol.

Brush burning also prevented access to some areas until the end of the rainy season in December.³⁰ **Figures 8 to 11** illustrate some of the obstacles.

Finally, as previously mentioned, the Base Map contained a number of inaccuracies, which made it unreliable for navigation. The available maps were largely written in Arabic, which made it difficult for Ngok Dinka elders to use. Additionally, the disappearance of access roads or tracks which existed in the past made it difficult for the teams to access sites that were far into the interior of the Abyei Area.

5. NGOK DINKA SETTLEMENT AND USE IN 1905

5.1 Abyei Town

I had the opportunity to visit and travel within Abyei Town. I was told that Abyei Town was effectively the center of the economic, political, and cultural life of the Ngok Dinka since at least 1905. The elders identified this area as an Abyior chiefdom

³⁰ The Abyei Mapping Team tried to reach Thigei, a Ngok Dinka settlement in the west just southeast of Meiram but they were warned by locals that the village was sitting on a river that could not be passed. The Ngok Dinka custom of brush burning also prevented the team from entering other areas earlier in the project timeline. The Ngok Dinka employ a method of burning grass (known as backburning) to clear the land and leave it very fertile for planting and grazing.

Obstacles to the Community Mapping Team



Figure 8 : Back Burning

Armed Misseriya Cattle Camps



Figure 9




Figure 10




Figure 11 : Ngol River, January 2009

settlement from 1905. The Abyei Mapping Team photographed the area (see **Figure 12**). The Abyei Mapping Team took GPS coordinates of the town at N9°35'33"; E28°26'08". As indicated by the list at Annex F, the Ngok Dinka used the area for a number of activities in 1905, including cultivation, holding community court sessions and community meetings.

5.2 Permanent Settlements

Through the course of its community interviews and field-based observations accompanied by elders, the Ngok Dinka Abyei Area Community Mapping Team identified areas of Ngok Dinka historic occupancy and use in the Study Area as of 1905. In total, the Mapping Team and elders identified in the field **150 permanent settlements** in the Study Area dating from the time of Paramount Chief Arop Biong. These settlements are listed at Annex F along with the many characteristics and features demonstrating the Ngok Dinka use of these lands and resources. These permanent settlements can be found on the map of the Study Area at Annex H and are indicated with the following symbol .

5.3 Other Ngok Dinka Settlements

As noted above, Annex F is a list of **154 sites** of 1905 that the Abyei Mapping Team identified in the Study Area with the elders, and for which GPS coordinates were obtained. The list includes only those sites for which GPS coordinates were obtained and identified with the settlement symbol  on the log sheets. This is not meant to be an *exhaustive* list of 1905 Ngok Dinka settlements within the Study Area but instead those which we were able to visit in the limited available time (and in the face of the obstacles discussed above).

Despite the prolonged war and displacement, I observed from my limited involvement in the field visits and review of the raw data that some Ngok Dinka villages within the Study Area are still present and occupied. In some cases, as I observed and the field data records, the lands have new infrastructure on them and markets (largely dominated by Arab traders). In other cases the only remaining elements of 1905 Ngok settlements are prominent trees that were known to all of the village's inhabitants (including the elders of today). Such trees marked village borders, or community meeting spots or location of the court. **Figures 13 to 17** illustrate examples of each of these cases.

5.4 Location of Ngok Burial Places

The Abyei Mapping Team, through the community meetings with the elders, identified a number of burial places of the elders' ancestors within the Study Area. I have been advised that Ngok Dinka custom is to bury their dead in their villages, which

Sites of 1905 Settlements



Figure 12 : Abyei Town, an Abyior Settlement of 1905



Figure 13 : Dakjur, Alei Settlement of 1905



Figure 14 : Kollom, Abyior settlement of 1905



Figure 15 : Miokol(Moykol)-Ale, Alei settlement of 1905




Figure 16 : Alal-Kueng, an Achueng 1905 Settlement



Figure 17 : Makeir-Agoot, an Abyior settlement of 1905

means that burial sites are evidence of permanent settlements. Traditionally a Ngok Dinka man would be buried in the middle of his *luak* (cattle byre), typically next to his home.

The Abyei Mapping Team recorded **110 individual graves** located in 79 Ngok Dinka permanent settlements within the Study Area. The team determined that at a minimum, **56 of these graves held individuals buried in 1905 or earlier**. An accounting of known Ngok burial sites is included in the list at Annex F and indicated on the map at Annex H with the following symbol . Locating Ngok Dinka grave sites can be challenging since it was not customary to mark the grave with stones or sepulchers. Traditionally, Ngok grave sites were marked with ebony stakes, which are placed above the graves. For instance, the grave site of Maper Monydang, who was buried prior to 1905 in the Abyior settlement of NyoKreng demonstrates this custom, as shown at **Figure 18**.

The grave of Paramount Chief Arop Biong (at **Figure 19**) is in Gol Gol, a permanent settlement of the Abyior Chiefdom in 1905. The grave is located in front of a tamarind tree, (at **Figure 20**), formerly the location of Arop Biong's home.

Very old graves may be located through visible indentations in the ground (as shown at **Figure 21**) where the earth has settled over time. This is exemplified by the grave site of Deng Akonon buried prior to 1905 in the Manyar permanent settlement of Taj Alei, as shown at **Figure 21**. At grave sites of important and prominent Ngok Dinka men, one can also sometimes find bones left over from sacrifices made to honour the deceased.

Most elders remember where their fathers and grandfathers were buried, since it is part of the Ngok oral tradition. As a result, many of these grave sites were found by the Abyei Mapping Team even where overgrowth made their location difficult to find.

5.5 Locations of Ngok "Age-Set" Initiation Sites

Ngok elders and chiefs identified a number of areas where Ngok Dinka age-set initiations took place. These indicate areas of settlement, since I am advised that the Ngok Dinka custom is to carry out initiation near the permanent villages.

I am advised that all Ngok males in the chiefdoms are initiated into age sets and that the age sets are an important part of the social network, used to identify peers. The elders identified to the Abyei Mapping Team several key sites within the Study Area where age set initiations took place.

In particular, the Abyei Mapping Team focused on age set initiations taking place on or about 1905 -- in the time of the elders' fathers and grandfathers. Though their work on this issue was not yet complete at the time of finalizing this report, I am aware that the

Burial Places



Figure 18 : Grave of Maper Monydang, NyoKreng



Figure 19 : Grave of Paramount Chief Arop Biong, Gol Gol



Figure 20 : Location of Grave of Paramount Chief Arop Biong, Gol Gol



Figure 21 : Grave of Deng Akonon, Taj Alei

Mapping Team visited and took GPS readings of six Ngok Dinka settlements that hosted age set initiation rites during the 1897-1906 period as previously identified by the SPLM/A in their presentations to the Abyei Boundaries Commission.

These include:

Agany and Riet (Riet): initiation sites for the Ajuotdid age set of Achueng

Panjang: initiation site for the Mijakthoei age set of the Dill

Dakjur: initiation site for the Kuac Nyiokthoei age set of Achaak

Rumegok: initiation site for the Mijakthoei age set (Diil) (see **Figure 22**).


5.6. Use of Land and Resources

An understanding of how traditional peoples used their lands and the natural resources assists in determining where their ancestral lands were located. With that in mind, the Abyei Mapping Team also discussed with the elders and chiefs their various traditional customs and practices which involved use of the land and its natural resources to advance their political, economic, and cultural needs.

When they met with the Abyei Mapping Team and traveled with them on field visits, the Ngok elders pointed out and described their sacred sites, grazing areas, cattle camps, as well as use of river systems such as the Kiir, Nyamora and Ngol. They also described their pattern of cultivation of sorghum, collection of honey and other subsistence needs. The following sets out those discussions and findings.

5.7 Location of Cattle Camps

Cattle camps are sites where the Ngok Dinka gather their cattle before moving southwards towards permanent rivers at the outset of the dry season, and northwards before the rains. I was informed cattle-herding is more than a matter of subsistence for the Ngok Dinka, it is deeply intertwined in their culture and traditional practices and social interactions. Ngok cattle-herding practices are well-synchronized with the geography, ecology and climatic changes of the region. I was informed that Herders would use the same cattle trails each season, before and after gathering at the cattle camps. The elders noted that cattle camps were often located by finding distinctive piles of dung burned by the herders such as the pile seen at **Figure 23** is a current photo of Kaar, an Alei permanent settlement from 1905 and continuing to this day.

I was advised that cattle camps were often located in permanent villages as well as in areas that were used only for grazing by the Ngok. The Mapping Team identified **74 cattle camps** at or near permanent settlements. These were recorded in their log books as . The herders take their cattle to other area for the extreme dry and wet

Age Set Sites




Figure 22 : Initiation Site, Rumegok

season, to the north of the Ngol and to the south of the Kiir. These have not been included on the map, as they fall outside the Study Area. The cattle camps have not been independently mapped because they are already represented by the tukul symbol on the map at Annex H.

At **Figure 24** is a picture of Dugob, an Alei permanent settlement in 1905 that was identified by the elders as a wet season cattle camp – currently without much water during the dry season when Ngok cattle are further South. At **Figure 25** is the Langar, according to the elders, also a known cattle camp and Anyiel settlement of 1905.

5.8 Location of Hunting, Fishing and Gathering Sites

I was informed that many of the permanent villages of Ngok Dinka chiefdoms were situated on river systems that would support their cattle and their fishing needs. The legend symbols used to signify fishing sites represent distinctive instruments used by each genders: cone-shaped woven traps used by women and spears used by men, pictured as follows . While not a full list of fishing sites within the Ngok Dinka territories of 1905, the Mapping Team did identify **26 fishing sites** within the Study Area as depicted in the map at Annex H.

During wet and dry seasons, I am informed that Ngok Dinka would fish around particular river system and pools of water. For instance, the elders noted that some of the Achueng's favorite fishing sites in 1905 were within the villages of Malual Agak and Kol Ajak. The elders also noted that before the Ngok Dinka would fish, often a goat would be sacrificed to ensure a good haul. For this reason, it was not uncommon to find a sacred site near to a critical fishing area. At **Figures 26 and 27** are two settlements and areas known for fishing.

5.9 Sacred Sites

During the community meetings and mapping exercises the elders and chiefs explained to the Abyei Mapping Team that the Ngok Dinka had several sacred sites throughout their lands –some specific to just one chiefdom, even to a specific household, and others pertaining to the whole of the Ngok Dinka. They explained that these sites were there to pay respect to certain deceased individuals of importance to the Ngok Dinka or what they referred to as “divines.”

They described that a “divine” will instruct a person where to build the sacred site, what wood to build it from, and what type of animal to sacrifice at the site. I was advised that annual sacrifices at sacred sites were common and in particular, graves of Ngok medicine men were revered as sacred sites.

Cattle Camps



Figure 23 : Kaar, Alei Permanent Settlement, Dung Pile for Burning



Figure 24 : Dugob, Alei Permanent Settlement, Wet Season Cattle Camp



Figure 25 : Langar, Cattle Camp and Anyiel Permanent Settlement


Rivers



Figure 26 : Kuthaku, Manyuar 1905 Settlement, along the Kuthaku River




Figure 27 : Mabek Deng Chol, Alei 1905 settlement, fish from the Ngol river being dried


During field visits and community meetings the elders identified to the Abyei Mapping Team **11 sacred sites** located within the Study Area. These are each identified in the map at Annex H with the following symbol . An example of such a place is the sacred site at *Angang*, an Alei permanent settlement of 1905 (at **Figure 28**) as well as the sacred site at *Wayang*, an Achaak permanent settlement in 1905. According to the elders, bones found at sacred site are from animals that Ngok Dinka sacrificed to ask for protection from the divine.

5.10 Community Meeting and Court Location

Ngok Dinka elders informed the Abyei Mapping Team that many permanent settlements in 1905 contained within them distinctive trees (typically tamarind, Abyei or willow trees) that were used by the chiefs to assembly their communities for meetings and to hear disputes between members of the chiefdom and perhaps even with members from other chiefdoms. Within each chiefdom, the Chief was in charge of maintaining internal law and order, among other responsibilities. It was explained to me that for internal disputes, the Chief would hear the two parties and make a decision. For disputes between chiefdoms, the elders might also meet, discuss, and work out a resolution.

During the course of its work with the elders, the Abyei Mapping Team identified **45 community meeting and court locations** in the Study Area. In the map at Annex H, these Ngok Dinka settlements with these trees under which disputes were resolved and community matters discussed are annotated with the symbol of a tamarind tree as such . Some examples of such sites are the following found within the Diil, Manyuar, Abyior and Achueng settlements of 1905: Rumamer (**Figure 29**), Wuntgoc (**Figure 30**), Wundup (**Figure 31**) and Alal Kueng (**Figure 32**).

5.11 Other Uses of Natural Resources within Ngok Lands

During my work with the Abyei Mapping Team, I was further advised that the in 1905 (as they do now) Ngok Dinka cultivated sites near their home as well as within a short distance from their home (able to travel there and back within a day). Sorghum was a key crop. The Abyei Mapping Team documented **35 of these cultivation sites** located within the Study Area. The legend symbol used for key cultivation sites was  and these findings are depicted on the map at Annex H.

In addition, the team was told that the Ngok Dinka gathered honey in certain areas within their lands as shown at **Figure 33** is a recent picture of the 1905 Diil chiefdom settlement known as "Diil Wayang" where a beehive hangs above.

The Ngok Dinka, the elders explained, also made use of a number of plants for subsistence and medicinal purposes such as the "*langara*" plant used to make teas. A

Sacred Sites



Figure 28 : Angang, Alei Permanent Settlement

Community Meeting and Holding Court



Figure 29 : Rumamer (Wunamer), Diil



Figure 30 : Wuntgoc, Manyuar

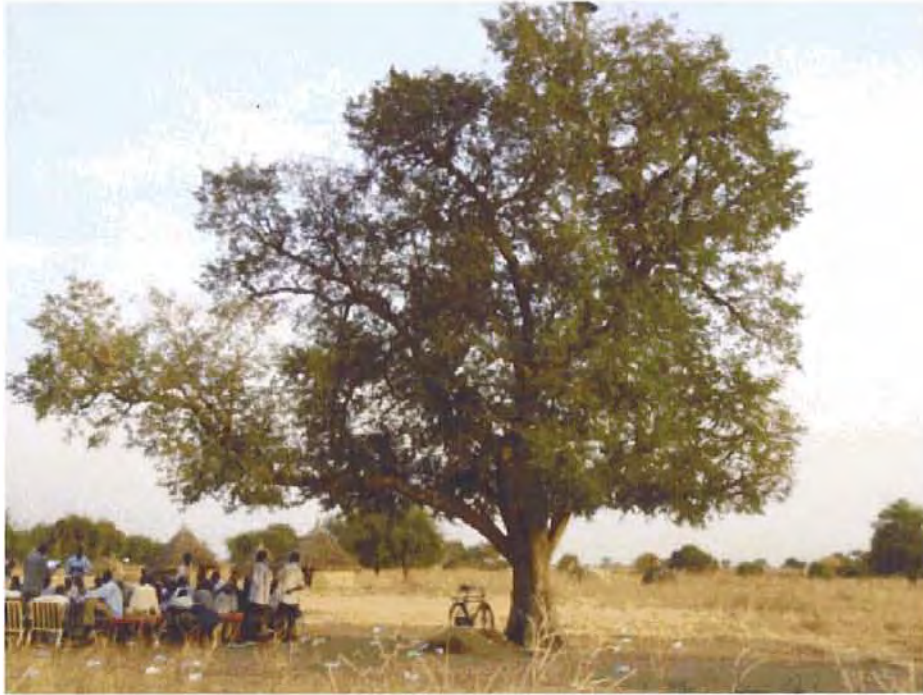


Figure 31 : Wundup, Abyior



Figure 32 : Alal-Kueng, Achueng

Uses of Natural Resources



Figure 33 : Beehive, Diil Wayang



Figure 34 : Langara plant for teas Wac Anguom, Abyior Permanent Settlement

sample of this plant was found by the Abyei Mapping Team in Wac Anguom, a permanent settlement of the Abyior in 1905, shown at **Figure 34**.

The Abyei Mapping Team was also told that in 1905 the Ngok Dinka also used various trees within their lands for building the roofs of their houses, cutting canoes to cross the rivers Kiir, Nyamorra and Ngol, constructing drums for traditional music, dances and rituals and other broadly similar uses. The photo at **Figure 35** shows one of many tree bottoms in Giarich (Gareech) (Diil 1905 settlement) cut to make Ngok Dinka drums (believed by the elders to have been cut pre 1905).

The photo at **Figure 36** shows the "*athony*" tree bark that was harvested in the Panyang -- a Diil settlement in 1905. The bark was used for the roofing on Ngok Dinka houses.



Figure 35 : Base of Tree, Giarich, Diil Permanent Settlement



Figure 36 : “Athony” Tree, Panyang, Diil Permanent Settlement

6. CONCLUSION

I directly observed that the Ngok Dinka, in particular their chiefs and elders, have an intimate and impressive knowledge of their ancestral lands as they were in 1905. In particular, they understand the manner in which their ancestors lived in those lands and used the natural resources that those lands contained.

I am advised and observed the Ngok Dinka have a strong oral history. From interviews with chiefs and elders in community meetings, as well as one-on-one interviews during the field visits, the use of oral history to understand the tribe's connection to the land was obvious to me. The Abyei Mapping Team documented the collective group's knowledge of Ngok historic connection to their lands, and in particular to the Study Area in their log books, with their GPS units, and using video footage and photographs.

The Abyei Mapping Team mastered the GPS units quickly and diligently. They paid close attention to record accurately, methodically, and consistently their findings. While not an exhaustive representation of all of the Ngok Dinka landmarks of 1905, the Abyei Mapping Team gathered data about a significant number of important places. In light of the limited time frame, emphasis was placed on permanent settlements and gathering additional information about how else particular sites were used (i.e., for grazing, initiations, cultivation, fishing etc.).

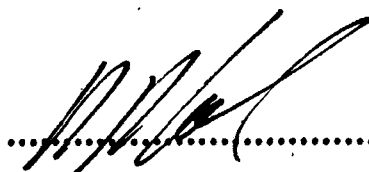
There were significant time and other constraints on this project. As indicated, I would expect this type of project to take about a year. For this reason, we started from the premise that we could not feasibly record and map all Ngok landmarks, and instead concentrated on the Study Area. The combination of environmental factors (i.e. swollen rivers), limited infrastructure (i.e. lack of roads and bridges), and safety concerns (i.e. militia, Government controlled checkpoints and armed Misseriya) made it impossible to fully map even the Study Area, much less to create a map of the entire Abyei Area.

Nevertheless, based on the information collected, the Abyei Mapping Team's data records a considerable number of Ngok Dinka landmarks. Their efforts have resulted in the production of a map of Ngok landmarks within the general vicinity around and to the north of Abyei town. The data that was collected by the Abyei Mapping Team is of a quality and type that I would expect from a project of this nature and complexity. I am confident that the methodology was implemented appropriately and carried out effectively. In my opinion, the Abyei Mapping Team's results are sound and reliable.

The fact that most of the data is from areas accessible by motor vehicle is consistent with the fact that time did not permit extensive coverage of the land by foot, which would have been the ordinary method of transportation of the Ngok Dinka ca. 1905. Whilst the data set is not complete, it is fair representation of Ngok Dinka landmarks in 1905 and consistent with the type of data obtained working with groups on similar projects.

I confirm that the facts stated in this report and the opinions expressed represent my true and complete professional opinion:

Signed:

A handwritten signature in black ink, appearing to read 'Peter Poole', is written over a horizontal dotted line.

Peter Poole

Hudson, Quebec

Date:

10..... February 2009