

## **:Dedication**

This dissertation is dedicated to the souls of my parents (Mayik and .Nyajowk) who encourage me to continue my education during their life .To my family; my wife Monica, my sons, Pojowk, Monyjowk and Awet To my brother and sisters and relatives; Chanyjowk, Achuany, Padony, Nyabaj, Judith, and Chanyjowk Steph who encouraged and supported me .during study period

To all foresters and other green movements, environmental and natural resources managers whose concern in preserving, protecting, and conserving natural resources and natural environment for future .generations

### Acknowledgement:

I would like to thank Dr Abdel Hafeez Ali Mohammed Yeddi for his -  
.supervision, encouragement and advice through out this study

;Great appreciation and sincere thanks are extended to the following

The academic and supporting staff of College of Forestry and Range -  
Science at Soba, for their assistance and encouragement awarded to me  
.during my course work

To my colleagues, Sara, Ekhlal, Martain, Atifa and Tagreed for their -  
.cooperation and friendliness

,Directors and staff of forests national cooperation (FC) in the study area

(Peter Achen (Renk-

(Oboki Mayik (Melut-

(Chanyjowk Mayik (Wadakona-

To the team members who work with me in the field, Makino, Sebat, Ter  
and others for their valuable field assistance, by providing means of  
.transportation and protection

Last to Mr. Maluit Bony Deng and Chanyjowk Awadh for lending me -  
.their camera video and computer for recording and typing the field works

Othow Mayik Awet Anyong

September 2007

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### :List of Abbreviations

Word	Meaning
FNC	Forests National Corporation
MFC	Mechanised Farming Corporation
(Ziereba (Arabic	Fence
Arabic)Dura)	Sorghum Species
Semsem	Sesame species
Hashab	<i>Acacia senegal</i>
Talh	<i>Acacia seyal</i>
Higli	<i>Balanites aegyptica</i>
SPLA	Sudanese People Liberation Army
(Khor (Arabic	Water Courses
(Haffirs (Arabic	Ponds
FAO	Food Agriculture Organization
UNED	United Nation Environmental Department
UNEP	United Nation Environmental Programme
ICRAF	International Center for Research in Agroforestry
(Tayia (Arabic	Camps
SPSS	Statistical Package for Social Science
FPF	Field Production Facilities
CPF	Central Oil Processing Facility
GNPOC	Greater Nile Petroleum Operation Company
CPA	Comprehensive Peace Agreement
NGOs	Non Governmental Organizations

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**Abstract:**

This study was carried at northern Upper Nile State. The main objective is to study some factors affecting natural forests in this area, also to know the side effects of ecosystem deterioration.

This study was focused on vegetation cover, distribution and density. According to the differences in woody cover which include quantity, types, density and the differences of the factors affecting them, the area was subdivided into five strata, for ease of study.

- First stratum: include the areas of agriculture schemes, Goz Rom, Goz Fami and ElDola schemes. This area is affected by agricultural rain fed schemes. 97% of woody cover was clearfelled, most of the areas were clearfelled completely, and what remain is the undesired species such as *Acacia mellifera* which found scattered and patchy form.
- Second stratum: is the around villages areas, (El Gagier, Renk, Shomidi, Gelhak, Palouge and Melut). This stratum is affected by the population pressure that due to human displacement. There are immigrant from southern state and western states, especially from Darfur and Kordofan, searching financial support, that through cutting wood for charcoal production, fire wood, gum production, weeding and harvesting agriculture schemes. The study illustrated that, this stratum dominated by *Acacia mellifera*, *Acacia nubica*

and *Acacia nilotica* around water courses. Other types of species have disappeared from this stratum.

- Third stratum: Charcoal and Gum production areas (around Gelhak): this stratum dominated by *Acacia seyal* and *Acacia senegal* but, there are also *Balanites aegyptiaca* and *Tamarindus indica* in small proportion around water courses. Now *Acacia seyal* begin its declining from north to southward, what remained are found in small sizes.
- Fourth stratum: (Manpyok area in southeast Gelhak), is the undisturbed area, not affected by the factors affecting natural forests because, it is very far from the human settlement areas. But there are few activities of animals grazing, fires hazard and charcoal burning in this year. That is why it has been chosen as an index for comparing the changes in the disturbed areas.
- Fifth stratum: Palouge and Adar Yale area, is located east and southeast Melut town, it is the area that have been affected by the petroleum mining and exploitation activities. The forests were affected by roads and wells networks, also the increase in population density due to availability of employment opportunities in petroleum companies.

Finally, The study found that, the expansion of mechanized rainfed schemes, traditional rainfed (shifting and monocropping), over grazing (cutting, lobbing and bending) of *Acacia seyal*, illegal cutting of *Acacia seyal* and other species for firewood and charcoal production, over tapping in traditional ways, setting uncontrolled fires in the natural forests, petroleum mining and exploitation without

environmental impacts assessment (EIA) associated with increase in population density, all these factors led to destruction of biodiversity and environmental equilibrium.

It is found that, there are changes in vegetation cover and trees species. *Acacia seyal*, *Balanites aegyptiaca* and *Acacia senegal* disappeared in many areas. They have been replaced by *Acacia mellifera* which become a dominant species in the study area.

- There are changes in some of climatic and biotic factors, soil degradation and reduction in crops production (dura, sesame in ElDola schemes) .e.g. The productivity ranging between 1.5-3 sack per feddan instead of 4 -6 sack per feddan in the past. Also there are increases in prices of forest products, that due to scarcity and their distant to the consumption areas. Now, one sack of charcoal cost 24 SDG in stead of 12 SDG in 2004.

- Some of wildlife species disappeared from the area, except small animals such as Rabbets, Monkies who adapted the human interventions into the forests. Others animals' species migrates and displaced to undisturbed areas and other countries.

To mitigate the effects of these factors and utilize natural forests in a sustainable way, the integration and coordination between sectors involve in natural resources' planning, implementing, evaluating and utilization in the area, should be activated.

## ملخص الدراسة :-

اجريت هذه الدراسة في المنطقة شمال اعالي النيل - الرنك - ملوط وذلك لمعرفة العوامل المؤثرة على الغابات الطبيعية في تلك المنطقة ومن اهداف هذا البحث معرفة انعكاسات الاثار السالبة الناتجة من تدهور النظام البيئي. ركزت الدراسة على الغطاء النباتي ، توزيعه وكثافته. بناءً على اختلاف الغطاء الشجري نوعاً وكثافة تم تقسيم المنطقة الى اربعة اقسام رئيسية على حسب انواع الاشجار السائدة والعوامل المؤثرة .

### 1.منطقة شمال شرق مدينة الرنك.

وتشمل مناطق مشاريع قوز روم ، فامي ، الدولة ، حيث انها متأثرة بمشاريع الزراعية الالية المطرية. تم إزالة الغطاء الشجري فيها بنسبة 97% حيث انها تخلو تماماً من الغطاء الشجري وإن وجد يكون في شكل مبعثر من الاشجار غير المرغوبة كأشجار الكتر .

2. المناطق الواقعة حول القرية . (القيقر - الرنك - شمدي - جلهاك - فلوج - ملوط).

هذا القسم متأثر بزيادة الضغط السكاني بسبب النزوح اي زيادة النازحين والوافدين من كل من جنوب الولاية وغرب السودان (دارفور وكردفان) للحصول على الموارد المالية بأيسر الطرق كقطع لانتاج الفحم , حطب الوقود , طق الصمغ ونظافة وحصاد المشاريع الزراعية . بينت الدراسة ان هذا المنطقة تسودها اشجار الكتر , اللعوت ثم اشجار السنط حول مجاري المياه اما انواع الاخرى قد تم ازالتها بواسطة السكان .

3. منطقة انتاج الفحم والصمغ العربي .

تقع هذه المنطقة في جنوب و جنوب شرق مدينة جلهك توجد فيها اشجار الطلح , واعشاب عالية الكثافة، إلا ان اشجار الطلح تمت ازلتها بواسطة منتجي الفحم , والحطب الحريق . لم تبقى منها إلا الاحجام الصغيرة .

#### 4. منطقة منافيوك ( جنوب شرق جلهك )

هذه المنطقة غير متأثرة بالعوامل المؤثرة على الغابات الطبيعية نسبة لبعدها عن السكان إلا انه يوجد فيها قليل من نشاط الرعاة والحرائق . لذا استخدمت هذه المنطقة كمعيار لمقارنة التغيرات على الغطاء الشجري في مناطق سبق ذكرها .

#### 5. منطقة فلوج و اداريل :

هي المنطقة التي تقع شرق و جنوب شرق مدينة ملوط , حيث يكثر فيها نشاط تدقيب البترول . تأثر الغطاء الشجري بشبكة الطرق و ابار البترول , كذلك الزيادة في الكثافة السكانية نسبة لتوفر فرص العمالة في شركات البترول .

خلصت الدراسة , إلى ان ممارسة الانسان للنشاط الزراعي غير المرشد , الرعي الجائر المتمثلة في القطع غير الكامل لاشجار الطلح بواسطة الرعاة , القطع الجائر لاشجار الطلح لانتاج الفحم و حطب الحريق , والطق المتكرر وباسلوب غير علمي او بالطرق التقليدية , حدوث حرائق متكررة داخل الغابات والتدقيب عن البترول دون دراسة الأثار البيئية الجانبية كذلك الزيادة السكانية الناتجة عن النزوح والبحث عن سبل المعيشية , هذه العوامل قد أخلت بالتوازن البيئي والتنوع الحيوي .

بينت الدراسة ايضاً ان هناك تغيرات في الغطاء النباتي والنوع الشجري , قد اختلفت اشجار الطلح , الهجليج والهشاب في عدة مناطق وحلت بدلها اشجار الكتر الذي اصبح النوع السائد في المنطقة . بينت الدراسة ان هناك تغيرات في بعض عناصر المناخ والعوامل الاحيائية والتدهور في التربة و انتاجية المحاصيل الزراعية كالذرة والسهم بمنطقة الدولة , الانتاج يتراوح ما بين 1 ½ - 3 جوال للفدان . كما بينت الدراسة ان هناك ارتفاع في اسعار المنتجات الغابية نسبة لندرتها وبعدها عن المنطقة حيث اصبح سعر جوال الفحم في الرنك 24 جنية بدلاً عن 12 جنية في عام 2004م .

بينت الدراسة ايضاً اختفاء للحيوانات البرية في المنطقة عدا حيوانات صغيرة الحجم كالارانب والقرود التي تأقلمت مع حركة الدخول المتزايدة من قبل الانسان الى الغابة , أما الحيوانات الاخرى فقد هاجرت جنوباً الى مناطق اكثر اماناً و قليلة التأثير بتدخل الانسان . وللحد من العوامل المؤثرة على الغابات الطبيعية واستغلالها في شكل مستدام لابد من تفعيل التكامل والتنسيق بين إدارات الموارد الطبيعية والمجتمع

المحلى في تخطيط وتنفيذ ومتابعة مشاريع وبرامج ذات صلة بالموارد الطبيعية في المنطقة .