

**INTERNATIONAL EXPERTS WORKSHOP
ON CITES NON- DETRIMENT FINDINGS**

Cancun (México), 17-22 Nov. 2008

PRESENTATION ON

**Kenya Case Study on Pancake tortoise
(*Malacochersus tornieri*)**

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Conservation Status and Management of Pancake Tortoise
(*Malacochersus tornieri*, (SiebenRock, 1903) in Kenya-
Non –Detriment Finding Studies process

A Case Study presented at the International Expert
Workshop on CITES Non-Detriment Findings, Cancun
(Mexico), 17-22 November 2008



BACKGROUND

The Species- Pancake tortoise (*Malacochersus tornieri*)

- Land tortoise

Taxonomy:

Class: REPTILIA

Order: Testudinata

Family: Testudinidae

Geographical Distribution

Kenya, Tanzania & **Zambia *(2003)**



- IUCN Classification: Vulnerable
- CITES Listing: Appendix II



Objectives

Understanding the Factors affecting Conservation and Management of *Malacochersus tornieri* in Kenya: **The NDF Studies**

Data source/references

- Species distribution maps
- Assessments of species abundance in different areas of distribution
- Assessments of threats to the species population
- Trade levels
- Recommended management strategies and practical



Methods for Mitigating threats to the species

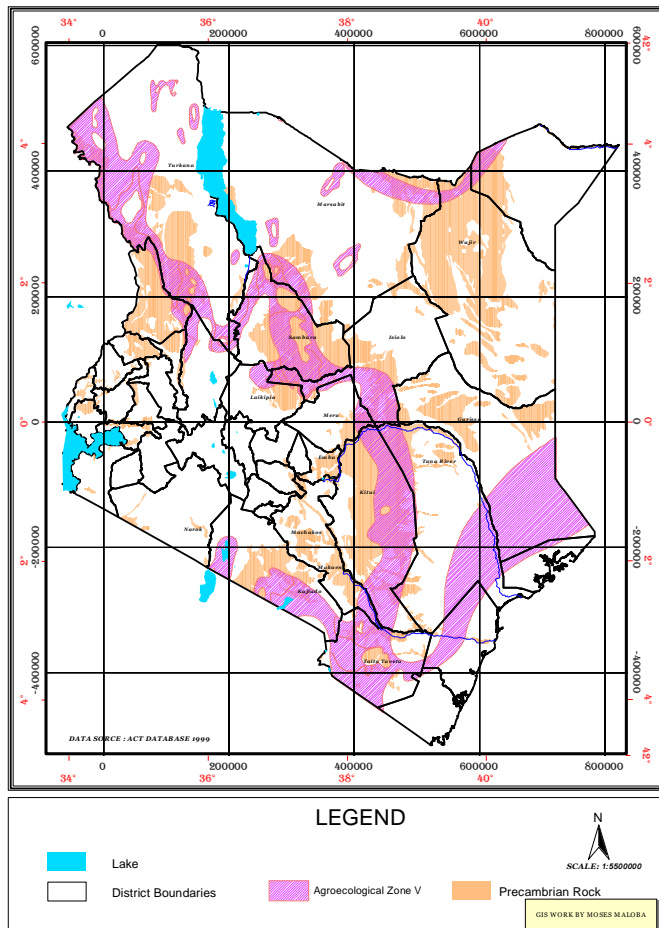
Distribution mapping

- Administrative blocks(districts) under Agro-climate Zone V overlapping with Precambrian rock system

(Habitats are a function of interplay of exfoliating granite rocks of Precambrian rock type in Arid and semi-arid climate) and characterized by rock outcrops &kopjes with crevices

- Information from collectors





Map of Kenya showing overlapping distribution of Precambrian rocks & Agro ecological Zone V

FIG: 1 MAP SHOWING OVERLAPPING DISTRIBUTION OF PRECAMBRIAN ROCKS AND AGROECOLOGICAL ZONE V IN KENYA



Extent of Distribution

- From known species' range (Nguni & Nuu, Mwingi) to unknown
- 4 Disjointed field surveys to 10 districts undertaken
- **Occurrence or non occurrence confirmed with the following:**
 - Search for Live specimens
 - Search for faecal materials at entrance of crevices
 - Interviews with locals
 - GPS Germin 12 x used to record locality coordinates and altitude



Population estimates

- Counting using systematic search and seize sampling method (Karns 1986) and Hayer et al (1994)
- Strip transects used (varying lengths between 2-20 km and 0.5 width) depending on distribution of patchy microhabitats.

Body measurements- Straight Carapace Length (SCL)



Materials/Equipment

- Global positioning System –GPS Germin 12 x for recording distribution areas and altitude
- 2 m long strong and flexible hooked wire for retrieving in humane way specimens from crevices
- Vernier Calipers for measuring SCL along the midline
- 1000g spring balance calibrated into 10g intervals for measuring live specimen weight
- Trade data from UNEP-WCMC to determine volumes of trade & trends for the period 1975 to 2001



Results- Area of Species distribution

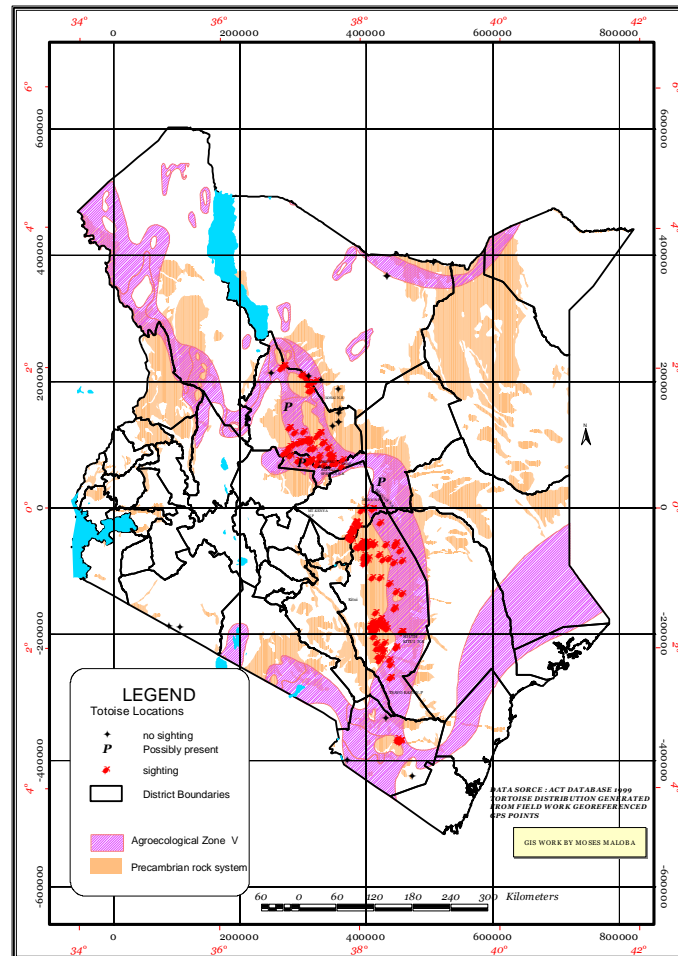


FIG. 2 MAP SHOWING DISTRIBUTION OF PANCAKE TORTOISE OVERLAPPING WITH PRECAMBRIAN ROCKS AND AGROECOLOGICAL ZONE V IN KENYA 2002



Two disjointedly sub-populations exist in Kenya:

- Northern sub-population (North of Nyambene Hills, Meru)
- Southern Sub-population (South of Nyambene Hills, Meru)



Distribution in Kitui & Mwingi Districts

Key areas:

Voo, Kalalani, Kemwaa, Kyaango, Kinakoni, Endau, Malalani, Koi, Katumbi, Kinanie

Katse, Kamwerini, Gankanga, Kanzinwa, Ciampiu, Nguni, Mathyaka, Maai, Kalanga, Ivuusya,

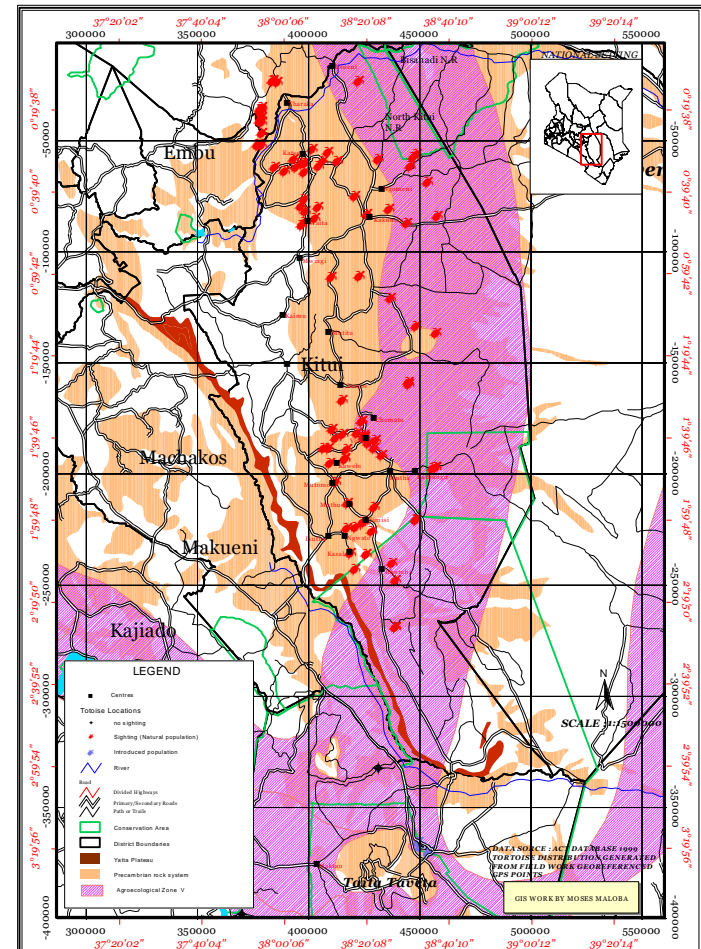


FIG.3 MAP SHOWING DISTRIBUTION OF PANCAKE TORTOISE IN KITUI & MWINGI (GREATER KITUI) DISTRICTS 2002



Results- Area of Species distribution

Distribution in Isiolo, Marsabit & Samburu districts

Areas:

Wamba, Sware, Archers Post, Namunyak conservancy,

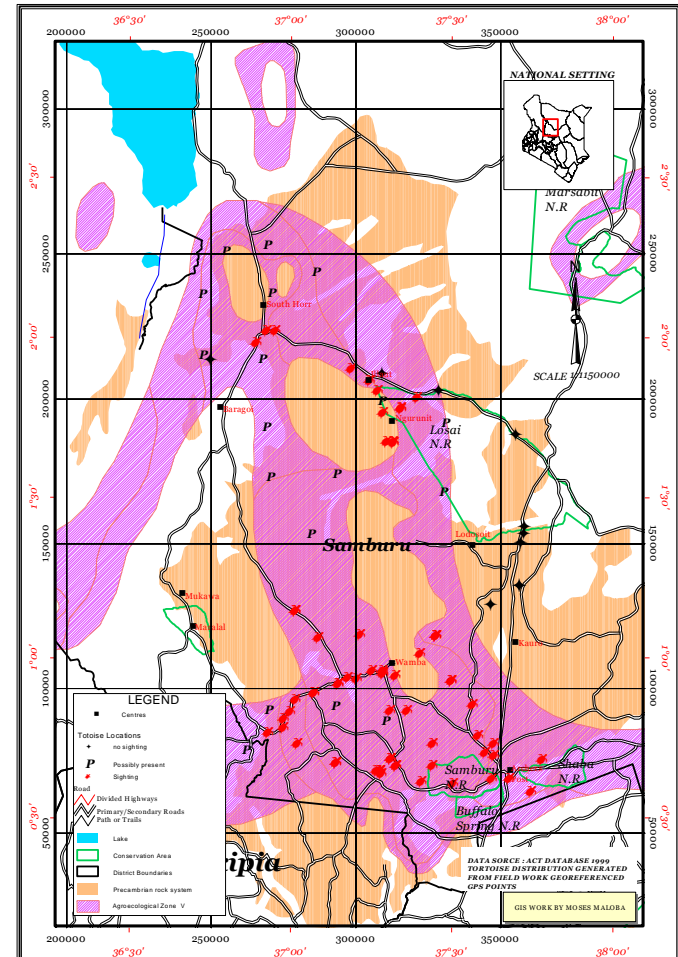


FIG: 5 MAP SHOWING DISTRIBUTION OF PANCAKE TORTOISE IN ISIOLO MARSABIT AND SAMBURU DISTRICTS 2002



Distribution in Mbeere & Tharaka Districts

Areas:

Kianjeru, Ciangera, Iira

Chiakariga, Kamanyaki, Rwakinanga



Distribution: Protected Area Vs. Non-Protected Area

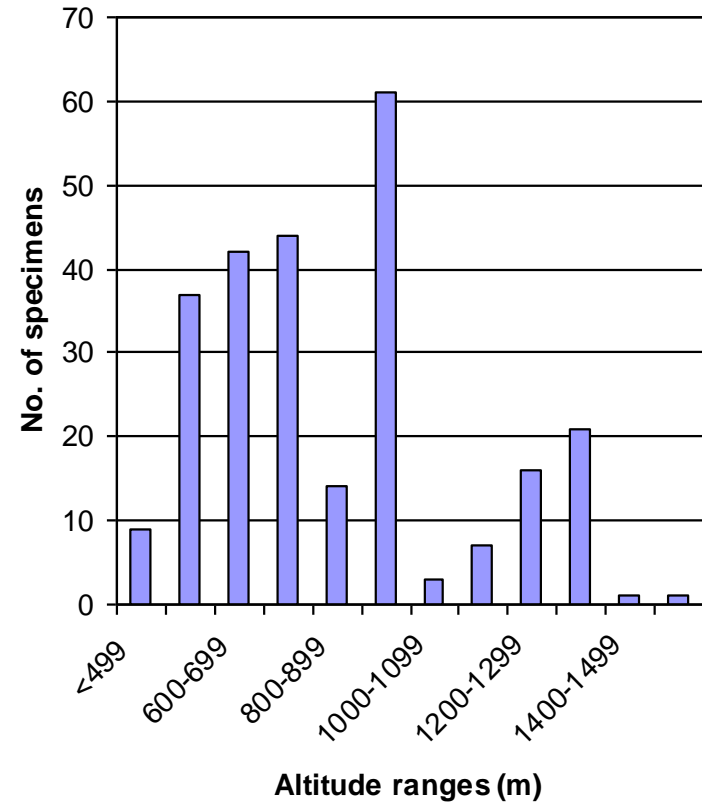
- Species population in Protected Area is estimated 5% of total population
- 95% of total population in the wild is in Non-Protected Areas

District	Protected Area & level of protection
Kitui	Tsavo East N.P (North of Galana river South Kitui N.R
Isiolo	Buffalo Springs N.R, Shaba N.R
Samburu	Samburu N.R
Marsabit	Losai N.R



Species distribution Vs. Altitude

Based on sightings of 256 live specimens



Species abundance and density is a function of habitat quality.

- Well oriented rock crevices, high vegetation cover over the rock outcrop and less human habitat destruction are indicators of high quality habitat
- 7 sites in 4 districts sampled on densities giving the following results



Species population density variation

Transect Name & District	Transect area size in KM sq.	No. of specimens counted	Mean Density Specimens/area
Wamba, Samburu	20	49	2.61
Chiakariga, Tharaka	17.5	32	1.72
Ishiara, Mbeere	7.5	13	1.73
Katse, Mwingi	20	132	6.6
Nguni, Mwingi	15	29	1.2
Endau, Kitui	10.5	27	2.95
Voo, Kitui	27	108	8.86



Analysis on population density

There was significant difference (t-test for dependent samples, one tailed; $n=8$, $t=114.06$, $d.f =7$, $P=<0.05$)

High abundance and density is attributed to high density of rock outcrops and kopjes with suitable crevices.

Low density especially in Nguni is as a result of past collection for commercial purposes.



Species body measurements (weight & Length)

Measurement		Females (n=130)	Males (n=98)
Mean Carapace Length	1SD	141.98 15.35	135.21 29.84
Range		82.65-157.33	105.37-165.05
Mean Body weight	1SD	355.88 93.32	310.16 128.72
Range		262.56-449.20	181.44-438.88

- **No significant difference in mean body weight & SCL between sexes**
- **There is significant positive linear correlation between SCL & Body weight ($r=0.9196$, $df= 226$, two tailed $n1=228, n2=228, P<0.01$)**



- Pancake tortoise specimens only found in suitable rock crevices in rock outcrops and kopjes in Arid and semi arid areas dominated by *Acacia-Commiphora* vegetation
- Granitic outcrops with shelter underneath exfoliating rock slabs provide the best habitats
- Frequency and location of the suitable habitats determine abundance and distribution of the species



Habitat alteration and destruction

- Slash and burn shifting cultivation (around rock outcrops and kopjes)
- Charcoal burning
- Rock slab and ballast harvesting

Predation

International trade for pet industry

- Illegal trade

Southern sub-population is the most threatened population



Country of Import	No.of specimens reported imported	No. of specimens reported exported
Kenya	3,016	928
United Republic of Tanzania	11,458	6,683



Several seizures of shipments reported :

- **1992**- seizure of specimens of Pancake tortoise illegally traded prompted placement of a moratorium on exports of specimens of the species

- **2001**- 209 specimens seized in Kampala, Uganda

Specimens repatriated to Kenya & released into Tsavo N.P (Monitored population)

- **2007(August)** -36 specimens seized at JKIA coming from TZ . Specimens kept in rescue centre in Kenya for Education



- Trade in wild collected specimens of Pancake tortoise should be prohibited however, captive breeding for commercial purposes should be encouraged as incentives for insitu conservation
- Trade in specimens from captive breeding operations should be limited to a maximum of Straight carapace length of 8 cm (Decision of the CoP12 in 2002) based on proposal by Kenya following the NDF studies)



- In-situ conservation (refuge/nature reserves either publicly or privately owned), the case of Voo Reptiles Sanctuary
- Moratorium on trade in wild specimens in force
- Ex-situ conservation (captive breeding operations) e.g Mathemba tortoise farm, Voo Reptiles farm and Nguni Kalanga C Tortoise Farm
- Any sustainable harvesting from the wild for commercial purposes to be based on scientifically determined quotas.



**THANK
YOU**

