

Recommendations suggested :

1. The status of Nile crocodiles in Somalia appears to be very good, even though estimates of 70,000 in Shebbelle river ( and 40-140,000 in Jubba) are on the very high side. However, the species does not have the support of any effective legal protection due to lack of actual field protection staff of the wildlife department in the riverine areas. Most of the killing of crocodiles appears to be the result of man-crocodile conflict situations and are wasteful. However, evidences of some illegal offtake of crocodiles from the wild are available, though not on a detrimental scale. The activities of the A.P.U should perhaps cover some of the important crocodile area as well. At the present time crocodile skin appears to be the most valuable wildlife product in Somalia and unless properly protected may be lost to illegal trade.
2. The loss of crocodile habitat ; particularly nesting and basking habitat due to inundation by reservoirs, clearing of riverine forest for horticultural crop development and constant disturbance from agricultural lift-irrigation pump-sets on the river bank causes concern to the future of Nile crocodile in Somali rivers.  
  
Development of large stretches of riverine protected areas and proper legal protection is an urgent need. The establishment of the Alifuito reserve is a very appropriate step in this direction.
3. Because of man-crocodile conflict and livestock-crocodile conflict situations the attitude of people towards crocodiles appears to be extremely negative. Even before a crocodile management programme with some public money investment is initiated it will be extremely important to initiate a public education and interpretation programme to change the negative attitude of people towards crocodiles.
4. Without proper field protection plan and safeguards to the wild population, harvesting of Nile crocodiles from the wild may prove to be detrimental to the Somali population of the species. A very detailed field based survey of the Jubba river is absolutely necessary before a final decision on wild-harvesting of crocodile is even considered.
5. There is a total absence of trained manpower to manage and operate any crocodile management programme. Though training of persons outside Somalia is essential, development of a small scale captive crocodile rearing centre in Somalia appears to be the best option to train a large number of local people in a short duration and could be less expensive.
6. Development of a model crocodile rearing facility based on wild-harvested eggs during the current wildlife project (TCP/SOM/8956) period may be considered to set the stage for training of personnel and to initiate an active wildlife management/utilization programme.
7. A long-term International aided project to set up a fully operational crocodile farm is also essential. During the period of this project several specialised consultancies may be arranged to organise workshops and intensive training for staff on captive rearing and management , health, marketing as well as field management and protection of crocodiles. Such a project, it is hoped, during its operation will act as a catalyst to initiate development of a chain of several such farms by providing extension education and technical support.

Mogadishu  
16.9.1990

B.C.Choudhury.  
FAO Crocodile Consultant.

# Recommendations

D. Defer

1. The <sup>status of</sup> Nile crocodile in Somalia appears to be very good even though estimates of (40,000 to 150,000 in Jubba and) 40,000 in Shabelle are on the very high side. However, the species does not have the support of any <sup>effective</sup> legal protection due to lack of active field protection staff of the wildlife Department. <sup>in the reserve areas.</sup> Most killing of crocodiles appears to be the result of man-crocodile conflict situations and are wasteful. <sup>However,</sup> ~~Evidences~~ of some illegal capture of crocodiles from the wild are present - though not <sup>to</sup> a detrimental scale.

~~The habitats destruction~~ The loss of crocodile habitat (- particularly nesting and basking ~~habitat~~) due to inundation by reservoirs, ~~and~~ clearing of riverine forest for horticultural crop development and constant disturbance due to agricultural lift-irrigation pump-sets on the river bank causes concern to the future of Nile crocodile in Somali rivers.

Development of large stretches of riverine protected areas and proper legal protection ~~to~~ is an urgent need. A full-scale public education - interpretation programme is essential to change the negative attitude of people towards crocodiles.

2. Without proper field protection plans and safeguards to the <sup>wild population</sup> harvesting of <sup>wild</sup> Nile crocodiles from the wild may prove detrimental to the <sup>large population of, etc</sup> species. A <sup>very detailed</sup> ~~more~~ <sup>wide</sup> field based survey of ~~both~~ <sup>the</sup> Jubba and Shabelle river is <sup>absolutely</sup> necessary before a final decision on wild harvesting is even considered.

3. There is a total absence of trained manpower to operate and manage any crocodile management programme. Though training of personals outside Somalia is essential, <sup>development of</sup> a small scale captive <sup>crocodile</sup> rearing programme in Somalia appears to be the best option to train a large number of local people in a short duration and <sup>comparable</sup> less expense.

4. Development of a model captive crocodile rearing facility based on wild-harvested ~~eggs~~ during the current project - (TCP/Som 1995) period is recommended to set the stage for training of personal and to initiate an active wildlife management programme.

5. A long-term <sup>(5yr)</sup> International Agency ~~area~~ project to set up a fully operational crocodile farm is also recommended. During the course of this project several consultancies may organise workshops on captive rearing, <sup>health</sup> field management and protection ~~and~~ and marketing development of crocodiles. ~~is set~~ <sup>such</sup> as a ~~for fully operational~~ project, during its operation will act as a catalyst to initiate development of a chain of several such farms providing extension education and technical support.

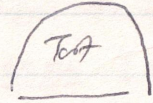
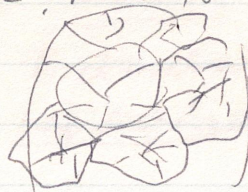
Bill Clark Vice President Friends of animals Inc  
11 West 65th Street, New York 10023. Eq Africaans  
Web Report

15th Delhi - Ronnie

16th - Rome FAO Briefing. Gil Child, Abbot, F to Mozambique

17th - Mozambique FAO office - CTA

18th



Nature Conservancy Council

World checklist of threatened  
amphibians and reptiles.

by  
Brian Groombridge

ICCN Conservation Monitoring Centre

TRAFFIC (INTERNATIONAL)

WORLD CONSERVATION MONITORING CENTRE

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Traffic Bulletin Vol 11 No 1. Sept. 1988

Walter Auffenberg's Article.

Publication Division

ICCN, Gland, Switzerland.

Simonetta A.M. and Mageni M.C. (1988) Status and conservation problems  
of Somali Lower Vertebrates. Rivista di Agricoltura Subtropicale &  
Tropicale 53(3): 405-432.

Tortoise in Somalia

Soft shelled turtle (River)

CITES III

~~Tortoise pardalis~~

Trionyx triunguis

① Geochelone pardalis (Leopard Tortoise or Mountain Tortoise)

CITES II

- Pelomedusa subrufa (Helmeted turtle or Marsh Terrapin)

② Kinixys belliana

CITES III

Bell's Hinged Tortoise

Uromastix macfarlanei

Uromastix princeps.

1 Chamaeleo africanus

2 Chamaeleo calcaricaeus

3 Chamaeleo dilepis

4 Chamaeleo gracilis

## Nile Crocodile Distribution

Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Egypt, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Swaziland, Togo, Uganda, Zaïre, Botswana, Cameroon, Congo, Kenya, Madagascar, Malawi, Mozambique, Sudan, Tanzania, Zambia.

5 Chameleo quilensis

6 Chameleo senegalensis (?)

Sea turtle

Chelonia mydas (Green turtle)

Eretmochelys imbricata (Hawksbill)

Lepidochelys olivacea (?)

Olive Ridley

f. Trionchidae

Trionyx triunguis

f. Pelomedusidae

Pelomedusa subrufa

✓ Varanus exanthematicus (African savanna monitor)

CITES II

✓ Varanus niloticus (Nile monitor)

CITES II

Eryx colubrinus (Theban Sand Boa)

CITES II

Python sebae (African Rock Python)

CITES II

Long-tailed Cormorant -  
White-necked Cormorant -  
Hamerkop  
Grey heron & Black-headed heron (?)  
Cattle egret -  
Yellow-billed egret  
Sacred Ibis  
Masked Ibis  
African spoonbill  
Lesser flamingo  
Marabou stork  
Open-billed stork  
White-faced tree duck  
African fish eagle (?)  
Black kite  
Spur-winged Plover (?)  
Black Smith Plover  
Spotted Stone Curlew  
African snipe  
Whiskered Tern (?)  
Temminck's Courser (?)  
Ring-necked dove  
Laughing Dove  
Like-breasted Roller (Somalian race - minus the tail spurs)  
Chocolate-backed Kingfisher  
Cinnamon bee-eater  
Golden pipit  
Red-billed oxpecker  
Pied horn  
Red-billed Buffalo Weaver

## TORTOISES

Geochelone pardalis (Leopard tortoise or Mountain tortoise) ✓

CITES II

Kinixys belliana (Bell's Hinged Tortoise)

CITES III

## TURTLES

Trionyx triunguis (Soft-shelled river turtle)

Pelomedusa subrufa (Horned turtle or Marsh terrapin) ✓

## Chameleons

Chameleo africanus

Chameleo calcaricornis

Chameleo dilepsis

Chameleo gracilis

Chameleo quilensis

Chameleo senegalensis (?)

## Sea turtles

Chelonia mydas (Green turtle)

Eretmochelys imbricata (Hawksbill) ✓

→ Lepidochelys olivacea (?) Olive Ridley

## Varanus (CITES II)

Varanus exanthematicus (African savanna monitor) ✓

Varanus niloticus (Nile monitor) ✓

## Snakes (CITES II)

Eryx colubrinus (Theban Sand boa)

Python sebae (African Rock Python) ✓

# OPERATION & SETTING UP PROGRAMME FOR MODEL CENTRES

YR I (OND)	YR II J F M A M J J A S O N D	YR III J F M A M J J A S O N D	YR IV J F M A M J J A S O N D
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CONSTRUCT & VISIT  
~~ILLUSTRATION~~  
 OF APO TO VARIOUS  
 CROCODILE CENTRES, INDIA/PAC AUSTRALIA.

**CONSULTANCY 2 Months**  
 FOR TRAINING  
 IN ACTUAL HANDLING  
 & EARLY CARE OF  
 YOUNG ONES -  
 APO / NATIONAL  
 CO-ORDINATOR & MODEL  
 FARM FIELD MANAGER

**WORKSHOP 2M**  
 FOR MANAGERS  
 & FARMERS

See TOR

- Background to the Consultancy & Terms of Reference

- Explain scope of project field work from data → schedule for security reasons (TOR specifies only data!)

1. Introduction.

- Nile crocodile in Africa - Status in General.
- Nile crocodile in Somalia - Review of Status from Literature.
- Legal protection to Nile crocodile in Somalia
- Livestock - man-crocodile conflict and Public Attitude.

2. Nile crocodile utilization proposal. (Research - Position CITES form in use)

- Rationale of proposal
  - opinion of CS, etc
- generally or Somalia only?

to be introduced

3. Present status of crocodile Resource in Somalia

- based on reports (Zuber survey JESS study) Simenitz et al

4. The Consultancy Survey of Resource (holistic)

- + Rationale of planning
- Methods and survey
- findings
- Limitations. (Coverage of Area, Season, situation etc)
- Need for future surveys.

5. Evaluation of (Resource based on previous survey)

- fisheries conflict.

6. Feasibility of Utilization Proposal and Govt alternatives.

- a) Wild harvest - in proposal
- b) Battery farming.
- c) Captive propagation based on wild egg harvest - Model.

7. Safe-guard to the Resource base

- Wild protection plan - National Reserve, National Park, Conservation Areas.
- Captive Management & Control.
- Education & Awareness Campaign

8. Review of Manpower (Personnel) Capability & Needs. (Training etc)

(Special specific species <sup>active</sup> management/Utilization project) Technical & socio-economic info??

9. Model Captive Rearing programme. (Assess Infrastructure)

- Criteria of site selection = Climate, water, food
- Management experience needs
- Social & Manpower needs (staff)

10. Trade on Nile Corridor in Africa Statistics

- a) Statistics for other African countries
- b) Present Management situation in Africa
- c) International Price & Demands
- d) Prospects for Simelika Corridor Resource.

Put  
earlier  
i  
report.

11. Appendices.

12. Bibliography.

13. Acknowledgement.

14. Itinerary

15. List of persons whom I have met.

Summary Recommendation

Project Proposal for  
Material assistance

- Background to the Consultancy & Terms of Reference

## 1. Introduction.

- Nile crocodile in Africa - Status in General.
- Nile crocodile in Somalia - Review of status from literature.
- Legal protection to Nile crocodile in Somalia
- Livestock - man-crocodile conflict and Public Attitude.

## 2. Nile crocodile utilization proposal. (Possible - Position CITES permission)

- Rationale of proposal
- opinion of CSJ etc

## 3. Present status of crocodile Resource.

- Based on reports (Zuber survey JESS study) Simons <sup>et al</sup>

## ④ The Consultancy Survey of Resource (holistic)

- + Rationale of Manning
- Methods and survey
- Findings
- Limitations. (Coverage of Area, Season, situation etc)
- Need for future surveys.

## 5. Evaluation of (Resource based on present survey)

- Fisheries conflict.

## 6. Feasibility of utilization proposal as best alternative.

- a) Wild harvest - as proposed    b) Battery farming.
- c) Captive propagation based on wild off harvest - 2 Model.

## 7. Safe-guard to the Resource base

- Wild Protection plan - National Reserve, National Park & Conservation Areas.
- Captive Management & Control.
- Education & Awareness Campaign ← National  
International

## 8. Review of Manpower (Personnel) Capability & Needs. (Training etc)

(As special specific species <sup>Active</sup> management/utilization project)

## 9. Model Captive Rearing programme. (Assess Infrastructure)

- Criteria of site selection =
- Climatic
  - Water
  - Food
  - Management supervision needs
  - Social & Manpower needs (staff)
  - Cost etc

10. Trade on Nile Corridor in Africa statistics  
a) Statistics for other African countries  
b) Forest Management situation in Africa  
c) International Price & Demands  
d) Prospect for Somalia Corridor Resource.

11. Appendices.

12. Bibliography.

13. Acknowledgement.

14. Itinerary

15. List of persons whom I have met.

Summary Recommendation.

# Captive Rearing (Demonstration facility)

## Location (Selection Criteria)

- ① Close to river (water)
- ② Close to food source (Offal & fish fresh water/marine)
- ③ Close to Administration centre  $\rightarrow$  supervision.
- ④ Reasonable supply of fuel/power etc
- ⑤ Reasonable ability of local talent for daily management
- ⑥ Uniform temperature zone

## Methods

- ① wild harvesting of eggs. [ Survey & field personnel to be placed from Jan 15 1991 to March 15 1991. 3 months in suggested location.
- ② Possible captive breeding (Mogadishu Zoological Park) - Check the present stock / sex-measure and after breeding post (to achieve breeding success for 1991 breeding season, suggest).
- ③ management regime and food supply etc.
- ③ Liaise with a Nairobi farm / ant centre for <sup>two</sup> ~~one~~ clutches of eggs for incubation/hatching.

# NILE CROCODILE IN AFRICAN COUNTRIES

1 MOROCCO		35 <u>MACAWI</u> *	✓
2 ALGERIA		36 <u>NAMIBIA</u> *	✓
3 LIBYA		37 <u>BOTSWANA</u> *	✓
4 EGYPT	✓	38 <u>ZIMBABWE</u> †	✓ 1+1+1+1
5 MAURITANIA		39 <u>MOZAMBIQUE</u> *	✓
6 MALI	✓	40 <u>SOUTH AFRICA</u> *	✓ 1+1+1+1+1+1+1+1
7 NIGER	✓	41 <u>SWAZILAND</u>	✓
8 CHAD	✓	42 <u>MADAGASCAR</u> †	✓
9 <u>SUDAN</u> :	✓		
10 ETHIOPIA 2	✓		
11 <u>SOMALIA</u> *	✓		
12 <u>SENEGAL</u>	✓		
13 GUINEA	✓		
14 SIERRA LEONE	✓		
15 LIBERIA	✓		
16 <u>IVORY COAST</u>	✓		
17 BURKINA	✓		
18 GHANA	✓		
19 TOGO	✓		
20 BENIN	✓		
21 NIGERIA	✓		
22 CAMEROON	✓		
23 EQUATORIAL GUINEA	✓		
24 CENTRAL AFRICAN REPUBLIC	✓		
25 GABON	✓		
26 CONGO	✓		
27 ZAIRE	✓		
28 <u>UGANDA</u> †	✓		
29 <u>KENYA</u> * 1+1	✓		
30 RWANDA	✓		
31 BURUNDI	✓		
32 <u>TANZANIA</u> *	✓		
33 ANGOLA	X		
34 <u>ZAMBIA</u> †	✓		

Morocco, Algeria, Libya, Mauritania

①

②

Population  
status

<del>LIST</del>	
CITES APPENDIX A &	
HARVEST QUOTA	
<del>WILD</del> FARM PRODS	

I would like to present my talk in three parts:

1. THE BASICS OF CROCODYLIAN BIOLOGY AND THE WORLD CROCODYLIAN SITUATION.
2. THE SOMALIAN CROCODYLIAN SITUATION IN THE AFRICAN CONTINENT.
3. THE OPTIONS OF A CROCODILE RESOURCE MANAGEMENT PROGRAMME - THE INDIAN CASE STUDY.

1. The basic of crocodilian biology.
  - distribution-tropical and subtropical, chinese and american alligator.
  - Alligator and crocodile difference
  - crocodile reproduction and dependency on land
  - nesting types
  - egg size ,clutch size ,nesting season
  - Incubation period and difference from birds eggs.
  - Hatching-parental involvement and care
  - Predation pressure -monitor, mongoose, stork etc
  - Natural loss-Decication, Flooding
  - Survival percentage -10% first year, 1% by 3yr ( but enough to replace natural adult mortality)

When man steps in by

- robbing eggs
- killing adults
- altering habitats
- considering crocodiles damaging for fish and fisheries.

This is what has brought 15 out of 29 species on to the endangered list

But this basic bit of knowledge has also helped people to utilise the crocodilian resource on a sustainable basis by creating a surplus stock by eliminating the natural loss and by protecting the adults from being slaughtered by greedy people.

WHAT HAPPENS IN AFRICA?

Nile crocodile and two other species in west africa  
Somalia  
Survey reports  
Our survey  
Findings Quick run through on slides  
Situation - Lack of adults but all size class

Threats- Habitat alteration  
flooding by barrages  
killing for protection  
fishermen  
a high density of predators

POSSIBLE OPTIONS

Wildharvest- not at the moment not without proper resource survey and protection  
Captive adult and closed operation - high costly and no trained manpower  
Wildharvest of eggs from few protected areas = Training and safeguard of wildstock  
PR measure - Perhaps some offtake from the wild of nuisance crocodiles  
CITES PERMISSION etc.

INDIAN EXPERIENCE.