AMENDMENTS TO APPENDICES I AND II OF THE CONVENTION

Proposals Submitted Pursuant to Resolution on Ranching

A. PROPOSAL

Transfer of the Ethiopian population of Crocodylus niloticus from Appendix I to Appendix II.

B. PROPONENT

The Peoples's Democratic Republic of Ethiopia.

C. SUPPORTING STATEMENT

1. Taxonomy

11. Class: Reptilia

12. Order: Crocodylia

13. Family: Crocodylidae

14. Species: Crocodylus niloticus, Laurenti, 1768

15. Common Names:

English:	Nile crocodile
French:	crocodile du Nil
Spanish:	Cocodrilo del Nilo
Amharic:	Azo

16. Code Numbers:

2. Biological Data

There is considerable information on the biology and ecology of the Nile crocodile and also on its conservation and utilization. Notable amongst scientific work is the monograph Cott (1961), the theses produced on the crocodile at Lake Turkana, part of which is the Ethiopia, by Graham (1968) and Modha (1967) and the recent work of Hutton (1984). With this information as background this proposal presents only biological data which are specific for Ethiopia.

21. Distribution

211. Geography: Ethiopia is a large and ancient country in the north east of Africa, bordering the Red Sea. With an area of 1.2 million km^2, this is the tenth largest country on the continent. Ethiopia has an elevated central plateau varying in height between 2,000-3,000m. To the north and east of the plateau are large tracts of arid and semi-arid country,

though the Awash River, which drains through the north east to end at Lake Abe, is perennial and supports a crocodile population.

Crocodiles are common in perennial lowland rivers in the south and west, and in fresh water Rift Valley lakes. Large sections of the upland plateau are climatically unsuited for crocodiles, but animals are reported from Lake Tana at over 2,000m and occur in most rivers which cut back into the plateau (see map 1). The main restriction on crocodile occurrence and numbers is the expanding human population which currently number $\pm$ 50 million most of whom live in the fertile highlands.

212. Historical Distribution: Ethiopians always recognized that crocodiles were common in low lying rivers and Rift Valley lakes, but throughout the country religious tradition has made the utilization of crocodiles (and indeed any wildlife) for food unlikely and for this and other reasons crocodiles have never featured large in Ethiopian culture. Some people in the extreme south do eat crocodiles and their eggs (like neighbouring people around Lake Turkana), but this must be considered the exception (Chapman, 1969; Graham, 1968).

The first documented evidence of serious crocodile utilization comes from the 1950s and early 1960s when crocodile skin fashion products were important in Europe and the value of a 3m crocodile skin was about £20, a large sum in those days. Various hunters held concessions to shoot crocodiles in Ethiopia in the 1950s and were able to hunt in most areas with few restrictions other than that animals under 2m could not be taken (Chapman, 1969).

In 1963 a French company (Dofan Ethiopia S.C.) began hunting and in 1966 were given sole hunting rights in exchange for the construction of a small tannery which took skins to "crust", and a series of surveys which were undertaken by a zoologist. Surveys were undertaken on Lake Abaya (formerly Margherita), Lake Chamo, the rivers Awash, Omo and the Blue Nile (Chapman, 1969). Although of little importance to this proposal the Ethiopian Wildlife Conservation Organization (EWCO) is seeking to recover this information, and also data on the number of skins taken during this period, however anecdotal.

By 1969 Chapman reported that the population of Lake Abaya had been heavily hunted and reduced to a few hundred animals. Lake Chamo was believed to have even fewer crocodiles. He predicted that populations could take 50 years to recover. In fact, by 1986 over 200 nests were found on Lake Chamo alone (see below), demonstrating the rapid potential recovery rate of exploited crocodile populations (Craig, Craig and Hutton, 1989).

Chapman (1969) describes the Awash River in some detail and gives some anecdotal information on its crocodile population. The most important information is that crocodiles occurred from the Koda dam in the headwaters of the Awash, and in all neighbouring lakes, all the way to the lakes and swamps into which it disappears 500 km later on the

Djibouti border. In some inaccessible places populations were believed to be good, but despite exploitation they were nowhere extirpated.

The Omo River is also described by Chapman (1969) who reported an estimated 2,000 adults in the stretch of 100km which is now within the Omo National Park. It is not clear if this area was subsequently hunted, but even in heavily exploited areas close to Lake Turkana Chapman reported that "the river has been repopulated".

Crocodiles were reported from the rivers of the arid south east, though their status was unknown.

In the west Chapman identified the Baro in Gambella as an area which had been hunted extensively both from Ethiopia, and illegally from the Sudan.

The Blue Nile was reported to be unsuitable for crocodiles along much of its course (though they were found throughout to Lake Tana at over 2,000m asl) and the lower reaches were said to have been heavily poached from the Sudan.

As early as 1969 Chapman was concerned about the effect of relatively indiscriminate hunting on crocodile populations in Ethiopia. He suggested a series of sensible and innovative measures such as quotas, size limits, closed seasons, protected areas and even crocodile ranching. Albeit slowly, Ethiopia subsequently moved steadily towards crocodile conservation and management, starting with a total ban on hunting in 1973 and culminating in the present successful ranching scheme.

In 1973 Bolton made a survey of Lake Abaya from a boat during daylight hours and saw 110 crocodiles deemed to be of breeding size (Bolton, 1973). It is interesting to note that a similar daytime count of crocodiles on part of Lake Kariba, Zimbabwe, where the crocodile population is believed to be in excess of 15,000 animals, revealed only about 0.3% of the animals (Hutton, pers. comm.). Clearly, crocodiles were not at endangered levels at the end of this period of exploitation.

In April 1977 an aerial survey of the crocodiles revealed 14 animals in Lake Abaya and 148 in Lake Chamo. These are presumed to have been adults and subadults (Andeberhan, 1977; Bolton, 1983). In a similar aerial survey of Lake Kariba, Zimbabwe, only 30% of the adults and subadults which were counted by spotlight at night were seen by experienced observers in aerial survey (Taylor, 1987).

It has further been found that on average only about 35% of crocodiles are counted at night (Hutton and Woolhouse, 1989). While correction factors are not directly transferable, it seems obvious that the crocodile population of these lakes was substantial in 1977.

In July 1983, 102 adult crocodiles were seen in a daytime count of about 15% of Lake Chamo in an area where, ten years previously 10 - 20 adults were seen (Bolton, 1983).

213. Current Distribution: Section 212. shows that in recent times crocodiles occurred in most suitable waters below the central plateau, on its edge and in the Rift Valley. Commercial hunting may have reduced numbers considerably in accessible places, but in many areas populations were untouched. Even where exploitation occurred the evidence strongly suggests that disturbed populations had recovered by the late 1970s. Although in the last twenty years Ethiopia's human population has doubled, and the settlement and cultivation of lake and river banks has increased with it, crocodiles still occur through their historical range.

Members of the EWCO have recently seen crocodiles in fair numbers in the Awash River and associated lakes (notably lakes Basaka and Liydo), the Omo River, the main Rift Valley lakes with fresh water and the Baro River in Gambella. In less disturbed parts of the country crocodiles are again found in large and spectacular concentrations which are totally unafraid of man (Hutton, 1988a).

22. Populations (estimates and trends): Crocodile survey have recently been undertaken on lakes Abaya and Chamo in the Rift Valley, the Omo River within the National Park, and the northern section of Lake Turkana which falls within Ethiopia.

As noted in Section 212. above, Bolton (1983) reported that crocodiles in Lake Chamo appeared to have increased dramatically since the end of commercial hunting. The twin lakes of Abaya and Chamo were subsequently identified as having considerable potential for providing eggs for crocodile ranching (Bolton, 1984). As a result, between 1984 and 1987, four standardized daytime boat counts were made of Lake Chamo by EWCO in the months of November/ December, before egg laying and collection. In addition Bolton (1984) counted about 5km of the Chamo shoreline at night to obtain rough correction factor for daytime counts. He saw a total of 360 crocodiles by day. In his sample area he saw 8 by day and 27 by night, a correction factor of 3.4.

Table I: Crocodile counts of Lake Chamo 1984 to 1987

Year	Number seen by day	Correction by 3.4	Number of nests found
1984	397	1350	22
1985	533	1812	87
1986	1321	4491	126
1987	1228	4175	316

The marked increase in the numbers seen between 1985 and 1986 is probably due to an increase in coverage and observer experience rather than to any real increase in numbers.

Over the initial survey period nest sites were identified and a crocodile ranch built nearby (see section 31. below). The number of nests located in each year is also described in Table 1. The majority were from Lake Chamo, but in the early years at least a few were from the southern end of Lake Abaya which is contiguous with Chamo through the 10km river Kulfo (Bolton, 1984; 1986).

On a small beach in the north-western section of Lake Chamo over 200 adult crocodiles, many of which are over 5m total length, can be seen basking at almost any time. This is probably the most outstanding wild crocodile spectacle anywhere in the world (Hutton, 1988a). A total of 239 crocodiles were observed along the southern shore of Lake Abaya and the northern shore of Lake Chamo in February 1989 during an aerial survey of Nechisar National Park where the emphasis was placed on counting large mammal populations (Allen-Rowlandson, 1991).

It is hard from the survey figures available to estimate the total population with any confidence. Total estimates are of limited value to the wildlife manager in any case. Of more importance are trends. It is clear that over the last twenty years, the crocodile population of Lake Chamo has increased rapidly. It is believed still to be increasing despite egg/hatchling utilization for ranching.

About 100km of river within the Omo National Park was briefly surveyed by air on 4th February 1989. An observer counting only the west bank saw 259 animals larger than 1.5m total length. No comparable surveys have been made from the ground or river itself, but Hirsch (pers. comm.) saw more than 1,000 animals in a stretch of 300km of water upstream of the Park while "whitewater rafting" in 1984.

In 1968 Graham reported 8.8 crocodiles/km in the northern section of Lake Turkana which falls within Ethiopia. When resurveyed in 1988 the density had declined slightly (5.22/km), but not significantly (Hutton, 1988b). The Lake Turkana population is contiguous with that of the Omo River.

23. Habitat (trends): As noted elsewhere, the human population of Ethiopia has doubled in the last 20 years, and is expected to do so again in the next two decades.

Densities of virtually all large wildlife species have declined as a result of human encroachment into former wilderness, and even protected areas. River-bank settlement and cultivation is a major problem in drier parts of the country and even the Omo river within the National Park is now settled. This will have a deleterious effect on crocodiles. There is no evidence that people are hunting or feeding on crocodiles (though there is abundant evidence for the reverse), but people and crocodiles compete for raised sandy banks and the crocodiles are commonly unable to use prime nesting areas. This is even the case on the relatively undisturbed Lake Chamo where crocodile nesting is largely concentrated within Nechisar National Park (Bolton, 1984). Suitable habitat will continue to disappear in this way and it is important to realize that it is this pressure and not exploitation which is the biggest threat to the survival of crocodile in Ethiopia today. Indeed, utilization is seen by EWCO as the key to conservation. The pilot project based on Lake Chamo is conspicuously successful. Both nationally and at a local level the lake is appreciated as a bank of crocodiles capable of earning substantial amounts of foreign currency. The conservation status of the population is better than at any other time in its history.

24. Conclusion: It is concluded that crocodiles still occur throughout their historical range, that in many protected places they have dramatically increased in the

last 20 years since the end of hunting and that the principal threat to their continued existence comes from the inexorable expansion of the human population and not from exploitation. Indeed, utilization to give wild population an economic value is believed to be the only way to assure the survival of these animals in any thing but small and fragmented populations.

3. Trade Data

31. National Utilization: Crocodiles have not been commercially hunted for their skins in Ethiopia since 1973 and the former Dofan tannery has long since shifted to tanning sheep skins. There is no vegetable tanning of crocodile skins and there are no crocodiles products fro sale anywhere in the country. It is rare for Ethiopian people to eat either crocodile meat or their eggs (see above) and there is no exploitation for national consumption of any sort.

Between 1973 and mid 1990 the only legal utilization of crocodiles of any sort was through sport hunting.

Table 2: Number of Crocodiles Hunted under Sport-hunting Licence

Year	Number of Crocodiles requested	hunted
1984	12	9
1985	19	17
1986	17	10
1987	30	20
1988	9	7
1989	4	2
1990	13	6

In June 1983 the Ethiopia Ministry of Agriculture and the FAO signed an agreement to assist with crocodile management. This was extended into a crocodile ranching programme based on the crocodile population of Lake Chamo. A ranch was built, equipped and staffed at Arba Minch. It took in its first hatchlings in 1985 (Bolton, 1983; 1984; 1986; 1987, Tadesse Hailu 1990). The eggs or hatchlings collected for the ranch in each year are detailed in Table 3.

It is notable that in 1987 when 206 nests were found only 126 were opened (61%). From these nests 5,521 eggs were taken for incubation and 4,928 hatchlings were obtained - an incubation success of 89.3%. Of these only 2,500 were placed on the farm, the rest were released back into the wild (Abdu Mahamued, 1987). Since this time all subsequent stocks have come from wild-collected live animals, not wild-collected eggs (Tadesse Hailu, 1990). However, it is important to note that collections are made from protected (i.e. guarded) nests as the young crocodiles hatch naturally (emergence is recognized by trained staff listening for the calls of the hatchlings). This method yields a higher incubation success than under artificial conditions and also provides a lower mortality rate than if the eggs were left unguarded or animals are collected at a later stage of development when numbers would have been further reduced by natural predation. Animals collected fro Arba

Minch therefore fall into an intermediate category; they are collected from the wild, but this is done as soon as they hatch naturally from eggs.

Table 3: Utilization of wild crocodile stocks for Arba Minch Crocodile Farm, 1985-1990

	1985	1986	1987	1988	1989	1990
No. of nest identified	4	87	206	132	204	292
opened	2	72	126	76	204	225
% of nests utilized	50	83	61	58	100	77
No of hatchlings collected	181	2713	2500	2587	6000	7140
alive after 1 yr	90	144	2200	2262	4257	2072
survival rate (%)	50	5	88	87	71	29

The survival rate of crocodiles during their first year on the ranch is shown in Table 3. The first two years were notably unsuccessful, but from 1987 to 1989 survival rates ranged from 71-88%. Overcrowding and heating problems were the main factors responsible for the low survival rate in 1990.

Local wildlife and veterinary staff have twice visited crocodile farms in Zimbabwe in 1984 and 1987; Zambia in 1987; Kenya 1987 and 1988, and emphasis has been placed on the training of local management. An attempt in 1987 to have the farm assisted by an outside company claiming expertise was unsuccessful. Subsequently the policy of training local management was assisted by WWF-International who organized an African crocodile specialist to visit the farm in August 1988 (Hutton, 1988).

Management of the Arba Minch ranch is now adequate, and constantly being improved. At the end of 1990 the ranch had 2080 animal of almost one year, 4043 two year old, 2183 three year old and 248 crocodiles of four years or older.

32. Legal International Trade: Ethiopia only acceded to CITES in 1989, and international trade in crocodile products commenced in 1990 following a successful application from Ethiopia and Zimbabwe pursuant to Resolution Conf. 5.21 "Special Criteria for the Transfer of Taxa from Appendix I to Appendix II". Annual quotas that were requested for the years 1989-1991 are detailed in Table 4.

Table 4: Quotas requested by Ethiopia for the years 1989-1991

Year	Ranch skins	Hatchlings live	Hunting trophies	Adults live	Curios from ranching	Total
1989	2500	0	25	20	300	2845
1990	4000	2500	50	20	300	6870
1991	6000	2500	50	20	300	8870

Following discussion as the 7th meeting, the Conference of the Parties approved the export quotas given below (Table 5) for 1990-1992 (valid as from 18 January 1990), and notified Ethiopia accordingly in November 1989.

Table 5: Quotas for Ethiopia approved by CITES at the 7th meeting

Year	Ranch skins	Hatchlings live	Hunting trophies	Adults live	Curios from ranching	Total
1990	6500	2500	50	20	300	9370
1991	6000	2500	50	20	300	8870
1992	6000	2500	50	20	300	8870

To date, legal international trade has been confined to the export of ranched skins, and is likely to remain so far the foreseeable future. A total of 2089 crocodiles have been humanely slaughtered at Arba Minch and details of this trade since Ethiopia was allowed to export crocodiles and/or their products as from January 1990 are detailed in Table 6.

Table 6: Export of crocodile skins from Ethiopia in 1990.

Date of export	Country of origin	Destination	Quantity	I.D. Tag Nos.
16/04/90	Ethiopia	Japan	500	*PAR 0090001-0090500
14/06/90	Ethiopia	Japan	534	ET NIL 9006001-9006534
27/06/90	Ethiopia	Japan	500	ET NIL 9005501-9006000
30/07/90	Ethiopia	Japan	500	ET NIL 9005001-9005500
15/11/90	Ethiopia	Japan	20	ET NIL 9000001-9000020
15/11/90	Ethiopia	Japan	20	ET NIL 9000021-9000024
				ET NIL 9006536-9006550
Total number of exported skins			2074	
Balance remaining (unsold)			15	
total number of skins			2089	

* Tags intended for leopard skins inadvertently used to mark crocodile skins.

33. Illegal Trade: It has long been held that crocodiles are poached from the Sudan along western rivers, notably the Blue Nile and the Baro (Chapman, 1969). We have no recent information on this but some illegal movement from these regions cannot be discounted. Current upheavals and unrest in the Sudan bordering Ethiopia make investigation impossible. It is however, fairly certain that there is no illegal offtake of animals from large populations of the Omo River, Awash and Rift Valley lakes.

34. Potential Trade Threats

341. Live Specimens: EWCO is faced with many reports of problem crocodiles each year. Human life is commonly lost to crocodiles. It was the intention of EWCO to catch rather than shoot offending crocodiles with a view to housing them either on local ranches or for export. This would

not have caused any threat to the wild population. However, this approach is now considered impractical and the request to export live adults has been omitted from Ethiopia's desired quota (see below).

In view of the limited capacity of the Arba Minch ranch (Bolton, 1983; 1984; 1986; 1987; Hutton, 1988a) a second ranch is planned in the near future. In the meantime, however, EWCO would like to retain its option to export a maximum of 1,000 live hatchlings each year, on the clear understanding that exports will be confined to those countries within the natural range of *C. niloticus* and that such exports have the approval of all relevant organization (TRAFFIC, WCMC, etc) with an active and specialized interest in such issues. This planned collection of hatchlings for export will present no threat to the wild populations within Ethiopia: Craig *et al* (1989) have demonstrated that 80% of all eggs and hatchlings can be removed from otherwise unexploited, stable or growing Nile crocodile populations without causing them to decline. A return to the wild of juveniles of 1.5m total length is planned to supplement and strengthen wild stocks in the future.

342. Parts and Derivatives: It is intended that trade in crocodile parts and derivatives will be controlled by a Resolution Conf. 3.15 ranching proposal. All products will be tagged and documented in accordance with the requirements of CITES. All products will come from controlled ranching and none from a wild harvest. Derivatives to be made into curios will only be supplied to recognized and registered taxidermists, and export permits only issued for products originating from this source where stocks can be constantly monitored and controlled. There is, therefore, no potential trade threat from this efficient form of utilization, which simultaneously allows Ethiopia the option of obtaining the full economic advantages from the ranching venture.

4. Protection Status

41. National: The Nile crocodile is a game animal protected under Wildlife Conservation Regulation Legal Notice No. 416 of 1972; Wildlife Conservation (Amendment) Regulation Legal Notice No. 445 of 1974; and Forest and Wildlife Conservation and Development proclamation No. 192 of 1980. This means that crocodile can only be hunted under a licence issued by the Ethiopian Wildlife Conservation Organization. In addition; ownership or possession of a crocodile or products is therefore only permitted under a valid certificate of ownership issued by the organization.

Crocodile populations occurring within the boundaries of Ethiopia's National Parks and Reserves are fully protected except for management purposes. These populations account for approximately 50% of Ethiopia's crocodile population.

42. International: Ethiopia has ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora on 12 January 1989, under Council of State Decree No. 14/1989.

The Nile crocodile was placed on Appendix I of CITES in 1973. It seems unlikely that the species ever merited this listing, but if it did the populations of several countries have recovered until they can sustain utilization. An ever increasing number of populations have been downlisted to Appendix II under Resolution Conf. 3.15 or 5.21. The Ethiopian population is currently on Appendix II under Resolution Conf. 5.21.

43. Additional Protection Needs: The key to protection of the Nile crocodile lies with the strict control of imports into consumer countries which have the resources to check shipments, documentation and end users to prevent abuse. If these controls are in place there are not additional protection needs.

5. Information on Similar Species

There are no other crocodilian species in Ethiopia.

6. Comments from Countries of Origin

Countries of origin are united in their belief that the Nile crocodile should be on Appendix II (see Hutton *et al.*, 1988). However, they are prepared to accept control and the encouragement of good management through the implementation of Resolutions Conf. 3.15 and 5.21.

7. Additional Remarks

71. This proposal is made under Resolution Conf. 3.15.

72. Ethiopia has a well established crocodile ranching programme, subject to outside scrutiny and supported by organizations such as FAO and WWF-International. It had been intended that on joining CITES a Resolution Conf. 3.15 proposal on ranching would be submitted in time for the October 1989 CITES meeting. Unfortunately, as a result of bureaucratic delays, it was not possible to accede to the Convention in time to submit a proposal 330 days before the meeting. As a result a quota under Resolution Conf. 5.21 was obtained as a temporary measure to allow the export of rapidly accumulating ranched products.

At the time of the 1989 submission Parties were asked to indicate what information additional to that present here would be required for a Conf. 3.15, proposal. No comments were received.

73. Ethiopia intends to utilize and export crocodiles and their products from two main sources:

- Sport Hunting
- Ranching

It is intended that up to 30 specimens will be exported from sport hunting though in some instance one animal may give more than one specimen, for example, where skin and skull are exported separately.

In 1993, 1994 and 1995 it is intended that up to 2,500, 2,000 and 4,000 skins will be produced respectively from the ranch at Arba Minch (again, the number of specimens may exceed this number as meat, skulls and hides may be exported separately). It is also intended to catch and export a maximum of 1,000 hatchlings each year from in 1993 to 1995.

Table 7: Quota required for the years 1993-1995

Year	Ranch skins	Hatchlings live	Hunting trophies	Curios from ranching	Total
1993	2500	1000	30	300	3830
1994	2000	1000	30	300	3330
1995	4000	1000	30	300	5330

74. Ethiopia will comply entirely with Resolutions Conf. 3.15, 5.16 and 6.22.

Criteria to be met under Resolution Conf. 3.15.

741. Paragraph (b)(i) of Conf. 3.15: The strict protection of crocodiles in recent years has led to an increase in population numbers. The main threat to the survival of these populations is not from exploitation but from human population pressures: providing an economic value to this resource is probably the best means of ensuring continued protection and survival. Ten percent of all ranched crocodiles will be released in the wild. These will predominantly be females, released at an age/size when their survival is assured and so in subsequent years they can make a substantial contribution to the natural breeding stock.

742. Paragraph(b)(ii) of Conf. 3.15: All crocodile products are marked with official identification tags before leaving Ethiopia. All relevant documents are completed by the CITES Management Authority (EWCO): export permits bear the CITES security stamps and meet all the other CITES requirements. This highly effective system will be continued to ensure that all ranched products can be readily distinguished from products originating elsewhere, whether listed in Appendix I or Appendix II.

743. Paragraph (c)(i) of Conf. 3.15: Evidence provided under section 22., 23., and 24. indicates that adequately protected crocodile populations have increased in Ethiopia over the last 20 years.The crocodile farm at Arba Minch has been collecting hatchlings since 1985 and there is no evidence to suggest that this has had any negative impact on the wild population. Re-introductions from suitably-sized ranched stock should increase numbers in the wild.

744. Paragraph (c)(ii) of Conf. 3.15: The export of crocodile products from Ethiopia to Japan and Europe commenced in 1990, and despite the considerable initial capital outlay, the farm should be running at a net profit by the end of 1991. This source of foreign currency is of considerable importance to the Ethiopian economy. The biological techniques improve and animals are restocked on a regular basis to suitable natural habitats.

745. Paragraph (c) (iii) of Conf. 3.15: Due to the excellent facilities at Arba Minch, all captive animals are maintained under carefully controlled conditions that minimise stress, and slaughtering is carried out as humanely as possible to avoid any unnecessary suffering. Careful supervision, experience and additional facilities (presently under construction) should ensure that high standards are not just maintained but that the management of the farm, at all levels, improves even further.

746. Paragraph (c)(iv) of Conf. 3.15: As already stated, EWCO will ensure that 10% of ranched stocks will be returned, on an annual basis, to the wild (either the original source of the reared crocodiles and/or to other suitable areas where crocodile numbers could be beneficially supplemented). Regular census programmes will be established in both protected and exploited areas to monitor the short and long term effects of hatchling collection.

747. Paragraph (c)(v) of Conf. 3.15: All crocodile products are marked with official identification tags before leaving Ethiopia. All relevant documents are completed by the CITES Management Authority (EWCO): export permits bear the CITES security stamps, details of the identification numbers used to tag each skin, and meet all the other CITES requirements. This highly effective system will be continued to ensure that all ranched products can be readily distinguished from both legal and illegal products originating elsewhere.

748. Paragraph (c) (vi) of Conf. 3.15: Ethiopia certifies that all crocodile ranching operations will be closely monitored by the Scientific and Management Authority (EWCO) to ensure that all the above criteria continue to be met. Annual reports will include details of the status of wild populations and the performance of the ranching operation.

8. References

Abdu, Mahamued, 1987. Crocodile Ranching in Ethiopia. Report to Crocodile Specialist Group. Minio 2pp.

Allen-Rowlandson, T.S., 1991. Aerial survey of wildlife resources in Ethiopia, January-February 1990. Report to Government.

Anderberhan, K., 1977. Lake Abaya and Lake Chamo crocodile survey. Report to Government. 5pp.

Bolton, M., 1973. Report on a survey of crocodile (*C. niloticus)* in selected parts of Lake Margherita (Abaya). Report to Government. 13 pp.

Bolton, M., 1983. Assistance to Crocodile Management - Ethiopia. FAO Report FO:TCP/ETH/2307 Consultant's Report.

Bolton, M., 1984. Assistance to Crocodile Management - Ethiopia. FAO Report FO:TCP/ETH/4405 Consultant's Report.

Bolton, M., 1986. Crocodile Farming - Ethiopia. FAO Report FO:OP/ETH/84/009 Field Document.

Bolton, M., 1987. Crocodile Farming - Ethiopia. FAO Report FO:OP/ETH/84/009 Field Document 2.

Chapman, C.M., 1969. The Nile Crocodile in Ethiopia. Unpublished MS. 18 pp.

Cott, H.B. 1961. Scientific results of an enquiry into the ecological and economic status of the Nile crocodile (*Crocodylus niloticus*) in Uganda and Northern Rhodesia. Trans. Zoo. Soc. Lond. 29(4):211-356.

Craig, G.C., D. Craig St.-C, and J.M. Hutton, 1989. A population model for the Nile crocodile. Annex to CITES Nile Crocodile project; Consultants; Report.

Graham, A.D., 1968. The Lake Rudolf Crocodile (*Crocodylus niloticus* Laurenti) population. M.Sc. Thesis, Nairobi, Kenya.

Graham, A.D., 1987. Methods of Surveying and Monitoring Crocodiles. In: Hutton *et al.* Eds. Proc. SADCC Workshop Crocodile Management and Utilization. Kariba, June 1987.

Hutton, J.M., 1984. The Population Ecology of the Nile Crocodile (*Crocodylus niloticus* Laurenti, 1768) at Lake Ngezi, Zimbabwe. D. Phil. Thesis, University of Zimbabwe.

Hutton, J.M., 1988(a). Crocodile and Ostrich Management in Ethiopia. Consultant's report to WWF-International and EWCO. 68 pp.

Hutton, J.M. 1988(b). The status and distribution of crocodiles in the major waters of Kenya in 1988. Report to Director, Wildlife Conservation and Management Department. Kenya.

Hutton, J.M., A.D. Graham, J.N.B. Mpande and H.H. Roth, 1987. Eds. Proc. SADCC. Workshop Crocodile Management and Utilization, Kariba. June 1987.

Hutton, J.M. and M.J. Woolhouse, 1989.Spotlight counts and mark recapture to estimate and monitor the absolute abundance of Nile crocodiles at Lake Mgezi, Zimbabwe. J. applied. Ecol.

Mohda, M.L. 1967. The ecology of the Nile Crocodile *Crocodylus niloticus* Laurenti, 1768, on Central Island, Lake Rudolf, M.Sc. Thesis, Nairobi, Kenya.

Tadesse Hailu, 1990. The method of crocodile hatching adopted at Arba Minch Crocodile Farm, Ethiopia. Mineo 6 pp.

Taylor, R.D., 1987. Estimation of crocodile numbers on Lake Kariba, Zimbabwe. In: Hutton *et al.,* Eds. Proc. SADCC Workshop Crocodile Management and Utilization. Kariba, June 1987,