

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Maintenance of the population of *Crocodylus niloticus* of Zambia in Appendix II, subject to an annual export quota of no more than 548 wild specimens (including hunting trophies and problem-animal control). This quota does not include ranched specimens.

B. Proponent

Zambia.

C. Supporting statement

The purpose of the present proposal is not to demonstrate that the Zambian population of the Nile crocodile does not meet the criteria for inclusion in Appendix I, but rather to show that the quota being requested is sustainable to enhance its economic value presently undermined by the general low value placed on the Nile crocodile by the Zambian public. Increased human-crocodile conflicts have caused the rural communities, who live side by side with the crocodiles, to consider the species as a vermin that should be exterminated. This could be attributed to lack of sustainable economic utilization of the wild population that seems to have exacerbated the problem. Currently, the annual collection of eggs and limited capture of breeding stocks by crocodile farmers are the only forms of utilization of the wild crocodile population hence the proposal to hunt crocodile from the wild through safari hunting.

D. Background

The Nile crocodile was listed in CITES Appendix I in 1973. It is still included in Appendix I as a species, while a number of national populations have since been transferred to Appendix II (Prop.12). The Zambian population is one of the populations, which were downlisted to allow for trade in ranched specimens only.

Though the production from the existing ranching programmes seems to be on an increase, the farming industry in itself has not increased. For the past ten years, Zambia has moved from eight operations to six, with no sign of expansion. This has been due to the high capital investment required as crocodile farming is generally capital and labor intensive enterprise, coupled with high interest rates (30 – 40 %) charged by local commercial lending institutions thereby discouraging borrowing by potential investors. Furthermore, production costs are high due to high tariffs on energy (electricity and petroleum), inadequate local markets for crocodile products and the continued depreciation of the Zambian currency (Kwacha against major currencies such as the United States Dollar, British Pound, South African Rand and now the Euro).

1. Taxonomy

- | | |
|--------------------------|--|
| 1.1 Class: | Reptilia |
| 1.2 Order: | Crocodylia |
| 1.3 Family: | Crocodylidae |
| 1.4 Species: | <i>Crocodylus niloticus</i> Laurenti (1968) |
| 1.5 Scientific synonyms: | None |
| 1.6 Common names: | English: Nile crocodile
French: Crocodile du Nil
Spanish: Cocodrilo del Nilo |

1.7 Code numbers: ---

2. Biological parameters

2.1 Role of the Nile crocodile in its ecosystem

The Nile crocodile is an ancient group of the few surviving giant reptiles from the age of dinosaurs (NPWS 1993). The Nile crocodile is a predator whose diet are mainly fish, amphibian and reptiles. Adult crocodiles can also take a wide range of large vertebrates. Nile crocodiles play an important role in its ecosystem and any excessive increase of its population in specific areas might have an impact on other species.

In common with other large predators, the Nile crocodile does not co-exist easily with human populations. There is evidence in Zambia of predation by crocodile's on human beings (ZAWA 2003; Siamudaala 1997; Changwe 2004). The species population should therefore be managed to maintain it at an acceptable level to safeguard the interests of the rural communities. This would incite rural communities to conserve crocodiles, in particular if their negative impact is compensated by economic returns generated by the harvest of perceived problem crocodiles.

2.2 Threats to crocodile conservation

The Zambian Government recognizes that the challenges to crocodile conservation are numerous and complex and include *inter alia*, increased encroachment on the crocodile habitat by the human population in pursuit of other resources such as water and fish and multiple economic land use practices along major rivers and lakes, which are the principal crocodile habitats. Communities living along the major crocodile habitats have had no economic benefits, hence no desire to promote any form of conservation.

2.3 Distribution and habitats

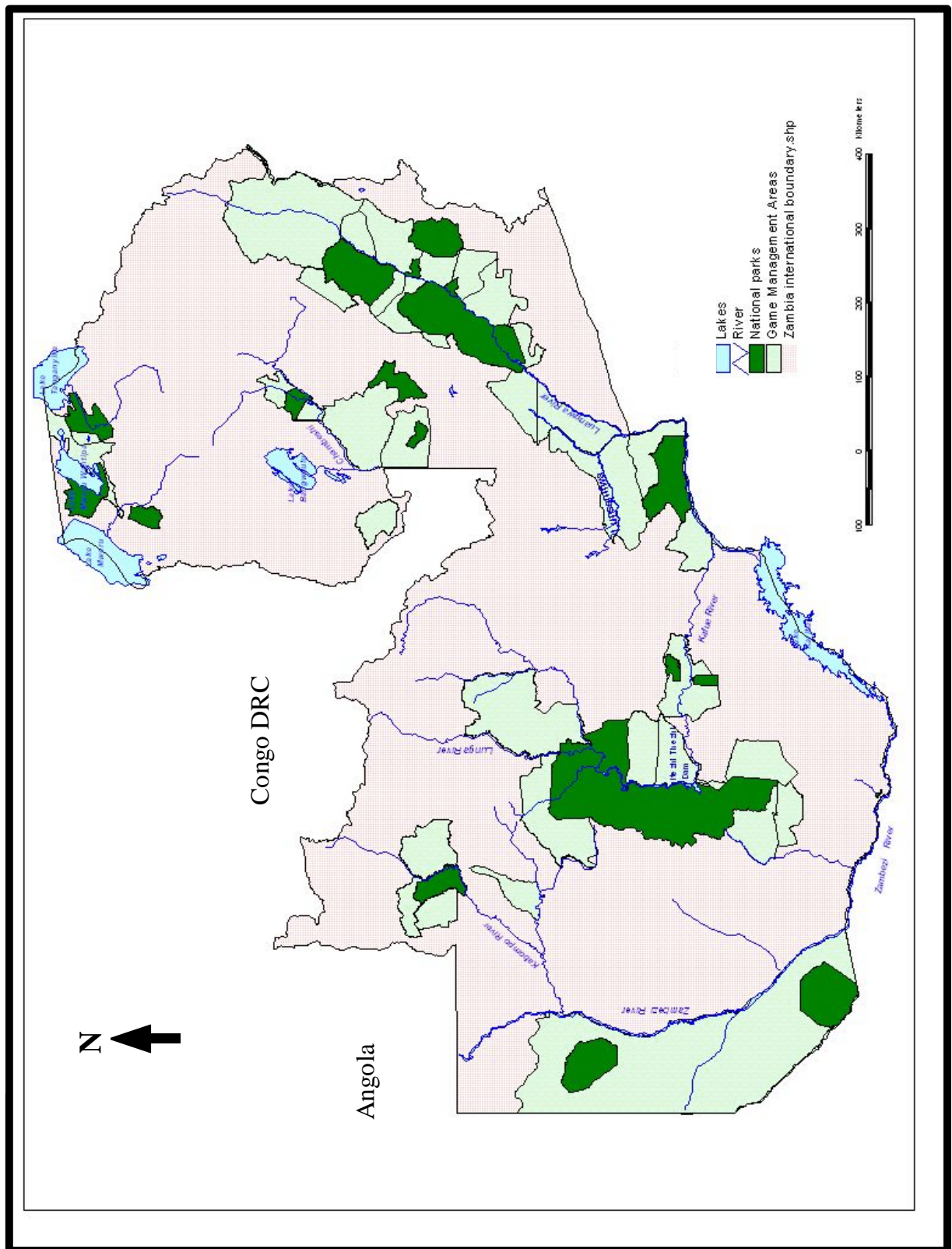
The Nile crocodile is widely distributed in Zambia occurring in all the major rivers and lakes. It has been estimated that the main natural range for the Nile crocodile consists of 12, 640 km of shoreline length of Zambia's rivers and lakes (NPWS 1993), falling within National Parks, Game Management Areas and Open Areas (areas not specifically protected for wildlife), figure 1. Like in other countries, the distribution of the Nile crocodile has been affected mainly by human disturbances, (NPWS 1993; Changwe 1996; Nyirenda 1997).

The continuity of the distribution of the species within these areas depends on the habitat availability. Although Open Areas are heavily encroached upon by human activities such as fishing and settlements, which might have led to permanent fragmentation of the crocodile habitats, there are adequate undisturbed areas in National Parks and GMAs (6.72 million hectares) where Nile crocodile forage and breed. The extent of the habitats destroyed, lost or rate of habitat change in open areas is not known as no studies have been undertaken to determine these parameters. However, well-preserved habitats with sound ecological integrity still exist in National Parks and GMAs where the Nile crocodiles still forage and breed. Furthermore, with the current strategy of integrating local communities in the conservation and management of wildlife, it is envisaged that degradation of habitats for crocodile will be well minimized through Land Use Plans for GMAs and Open Areas.

2.4 Population status and trends

Aerial and ground surveys of crocodiles have been undertaken in specific areas for the purpose of estimating the density of crocodiles (NPWS 1993 cited from SADC 1987; Jachmann 1996; Changwe 1996; Nyirenda 1997; Raine & Stone 2000; Mupemo 2004; Kampamba 2004; Changwe 2004; Nyirenda 2004), the results of which are presented in Table 1. The surveyed areas were mainly National Parks and GMAs. Landuses such as human settlement and sustainable utilisation of the faunal species are provided for in Game Management Areas where safari hunting is permissible.

Figure 1. Major rivers and Lakes—Crocodile Habitats



The most recent surveys were undertaken in the month of November 2003 in selected water systems; Zambezi, Kafue and Luangwa rivers, the Bangweulu complex, Lakes Mweru Wa Ntipa and Tanganyika. The programme involved a combination of aerial and ground counts. Depending on the area, the census required the use of an aircraft for crocodile sampling, ground riverbank sample count by walking and the use of boats for total counts, during day and night time.

Results of the 2003 crocodile counts estimate the population of the species at 13,702 animals for the surveyed areas of selected water systems. The proposed quota, at 4% of the estimated population, is 548 animals per annum. The quota will also provide for problem animal control in order to address the numerous human-crocodile conflicts.

From Table 1, it is evident that surveys have concentrated mainly in the Luangwa Valley where crocodile population is well documented and has increased from 13.5/river km to 22.2/ river km (Changwe 2004). This is due to the fact that Protected Areas in the Luangwa Valley were better supported financially by NORAD, the Frankfurt Zoological Society and Wildlife Conservation Society since late 1980's. Trends in densities for other areas are difficult to immediately establish because the areas have not been consistently monitored. Lack of financial support to undertake regular crocodile surveys is responsible for scanty and paucity demographic data in the vast water systems in Zambia.

Table 1. Major rivers and lakes and estimated populations for the Nile crocodile

River/Lake	Date of Survey	Sampled length (km)	Protection Status of area surveyed	Density (Croc/km)	Source of Information
Zambezi Lower *	2003	202	Protected	5.25	Nyirenda 2004
Zambezi Upper*	2003	248	Protected	1.78	Nyirenda 2004
Kafue*	2000	184	Protected	0.14	Scott & Raine 2000
Kafue*	2003	427	Protected	3.10	Kampamba 2004
Luangwa*	1996	165	Protected	13.6	Jachmann 1996
Luangwa*	1996	165	Protected	17.9	Changwe 1996
Luangwa*	1997	30	Protected	18.0	Nyirenda 1997
Luangwa*	2003	400	Protected	22.2	Changwe 2004
Luapula*	2003	155.3	Open Area	1.01	Mupemo 2003
Bangweulu and chifunabulu+	2003	1300	Open Area	0.02	Simwanza 2004
Mweru+	2003	1140	Open Area	0.01	Simwanza 2004
Mweru-Wantipa System+	2004	740	Open Area	0.08	Simwanza 2004
Tanganyika	2003	540	Inside & outside PA	0.89	Simwanza 2004
Kariba+		1500	Unknown	12.0	NPWS 1993
Itezhi-tezhi+		350	Unknown	12.0	NPWS 1993

NOTE: * indicates Rivers and + indicates Lakes. The densities from NPWS 1993 are cited from SADCC 1987.

Generally, the Nile crocodile is considered secure and the evidence based on numerous reports of human-crocodile conflicts (Table 2 and Annexes 1 and 2) and problem animal control suggests that the population is on the increase (NPWS 1993; ZAWA 2003).

Table 2. Statistics of human lives lost through Crocodile predation in Zambia (2002-2004 April)

Central region	2002	2003	2004
Sinazongwe	4,1b		
Luangwa-Feira	1		
Malilansolo-L Zambezi	1		
Chipepo-Lake Kariba		1	
Lower Zambezi	4		
Chanyanya-Kafue			1
Northern region			
Munyamadzi	1	1b	
West Musalangu	1	1	
Mutinondo	-	-	3
Area not specified			6
Bangweulu AMU		1,4b	2,1b
Luapula AMU			6
Eastern region			
Chief Mwanya		1	1b
Western region			
Senanga	1		
Mulinga	1		
Itezhi tezhi			4
Total	14	4	24

N.B: b represents the number of people injured by crocodiles.

3. Utilization and trade

Crocodiles in Zambia are exploited in accordance with Statutory Instrument 26 of 1983, National Crocodile Conservation Plan 1993 and Zambia Wildlife Act of 1998. The 2004 Policy and Management Plan for Crocodile Conservation in Zambia and its related Statutory Instrument have been formulated and approved by the Board of Directors of the Zambia Wildlife Authority pending ratification by government in the near future.

At the moment, the only one form of utilization of the wild population is the harvesting of eggs and adult breeding animals by the crocodile farmers. Currently there are a total of seven crocodile farming operations in Zambia. At this rate, private operations are not coping in dealing with problem animal harvesting in order to manage the human-crocodile conflict. It is envisaged that in future, crocodile farming will remain a management tool for crocodiles in Zambia, in addition to the harvesting of wild crocodiles. Table 3; 4; 5; 6 show data on the stocks held, eggs collected from the wild and exports by crocodile ranchers for the period 2000 – 2003 (Source: Crocodile Farmers Association, 2004). Although collection of eggs may have some effect on the wild population, there is no information in Zambia to support this assertion. The main products from crocodile farming are skins and meat. Both products are destined for export markets. A small market for the meat exists among local hotels and lodges (ZAWA 2003).

Whereas egg collection and live captures for breeding have been practiced in the wild, Safari hunting which is considered the most lucrative form of crocodile utilization has not been allowed in Zambia since mid 1990's due to inadequate information on the population status of the species on which a hunting quota could be based.

Table 3. Crocodile farms report; January to December 2000

Name of farm	Farm eggs		Wild eggs		Combined totals		Skin export detail		Meat detail		Captive breeders	
	Incubated	Hatched	Incubated	Hatched	Incubated	Hatched	Belly	H/Back	Local	Export	Male	Female
Zongwe Farming Ent	15,604	13,042	14994	11,187	30,598	24,229	10,487	3,648		34,684.28	160	1239
Gordana Croc & Fish Farm	4,234	3,620	-	-	4,234	3,620	1,549	697	-	9,313.85	15	172
Kaliolio Crocodile Farm	2,472	1,782	1,432	997	3,904	2,779	1,875	459	-	8,192.41	10	70
Sumbu Crocodiles Ltd	1,451	1,266	-	-	1,451	1,266	677	205	-	633.42	13	184
J & Brooks Ltd	2,826	1,976	-	-	2,826	1,976	2,133	-	573	8,687.20	12	159
Kalimba Farms Ltd	1,818	1,545	496	425	2,314	1,970	550	-	1,650	-	15	92
Luangwa Crocodile Farm	-	-	512	394	512	394	200	-	-	-	-	-
Totals	28,405	23,231	17,434	13,003	45,839	36,234	17,471	5,009	2,223	61,511.16	225	1,916

Table 4. Crocodile farms Annual report; January to December 2001

Name of farm	Farm eggs		Wild eggs		Combined totals		Skin export detail		Meat detail		Captive breeders	
	Incubated	Hatched	Incubated	Hatched	Incubated	Hatched	Belly	H/Back	Local	Export	Male	Female
Zongwe Farming Ent	20,941	16,259	18,731	15,492	39,672	31,751	9,208	3,692	-	32,208.56	164	1,245
Gordana Croc & Fish Farm	4,326	4,093	-	-	4,326	4,093	1,283	381	-	2,747.05	15	172
Kaliolio Crocodile Farm	2,922	2,279	2,083	1,358	5,005	3,637	1,293	214	-	5,422.77	10	80
Sumbu Crocodiles Ltd	1,314	1,176	-	-	1,314	1,176	380	74	-	889.75	13	184
J & Brooks Ltd	2,571	1,957	-	-	2,571	1,957	2,155	-	224.9	5,077.50	32	158
Kalimba Farms Ltd	1,962	1,570	516	421	2,478	1,991	930	-	2,500.00	-	15	92
Luangwa Crocodile Farm	-	-	1,284	1,038	1,284	1,038	102	-	-	-	-	-
Totals	34,036	27,334	22,614	18,309	56,650	45,643	15,351	4,361	2,724.90	46,345.63	249	1,931

Table 5. Crocodile farms Annual report; January to December 2002

Name of farm	Farm eggs		Wild eggs		Combined totals		Skin export detail			Meat detail		Captive breeders	
	Incubated	Hatched	Incubated	Hatched	Incubated	Hatched	Belly	H/Back	B/Strip	Local	Export	Male	Female
Zongwe Farming Ent	19,837	16,921	14,566	11,730	34,403	28,651	8,636	11,593	1,500	-	22,982.32	183	1,292
Gordana Croc & Fish Farm	4,868	4,152	-	-	4,868	4,152	2,484	-	-	-	11,864.83	15	172
Kaliolio Crocodile Farm	2,976	2,456	2,405	2,072	5,381	4,528	1,374	-	-	-	6,790.95	10	80
Sumbu Crocodiles Ltd	1,474	1,276	-	-	1,474	1,276	865	-	-	-	2,067.93	13	184
J & Brooks Ltd	2,481	1,059	1,454	763	3,935	1,822	1,145	270	-	584.9	4,906.88	27	158
Kalimba Farms Ltd	2,379	1,950	273	232	2,652	2,182	267	500	-	1,168	-	15	92
Luangwa Crocodile Farm	-	-	826	555	826	555	150	-	-	-	-	-	-

Name of farm	Farm eggs		Wild eggs		Combined totals		Skin export detail			Meat detail		Captive breeders	
	Incubated	Hatched	Incubated	Hatched	Incubated	Hatched	Belly	H/Back	B/Strip	Local	Export	Male	Female
Croc Hide	-	-	3,300	2,657	3,300	2,657	-	-	-	-	-	7	51
Totals	34,015	27,814	22,824	18,009	56,839	45,823	14,921	12,363	1,500	1,753	48,613.00	270	2,029

Table 6. Crocodile farms annual report; January to December 2003

Name of farm	Farm eggs		Wild eggs		Combined totals		Skin export detail			Meat detail		Captive breeders	
	Incubated	Hatched	Incubated	Hatched	Incubated	Hatched	Belly	H/Back	B/Strip	Local	Export	Male	Female
Zongwe Farming Ent	25,759	22,632	19,150	15,796	44,909	38,428	12,875	13,874	40	-	9,464.17	178	1,279
Gordana Croc & Fish Farm	4,492	2,888	360	232	4,852	3,120	1,739	-	-	-	-	15	187
Kaliolio Crocodile Farm	3,009	2,603	1,737	1,524	4,746	4,127	2,209	50	-	-	3,824.00	15	95
Sumbu Crocodiles Ltd	1,806	1,490	-	-	1,806	1,490	704	352	-	-	-	13	184
J & Brooks Ltd	2,291	1,944	810	625	3,101	2,569	393	335	-	775	-	13	158
Kalimba Farms Ltd	2,493	1,870	207	155	2,700	2,025	200	-	-	600	-	15	92
Luangwa Crocodile Farm	-	-	3,040	2,168	3,040	2,168	150	-	-	-	-	-	-
Croc Hide	861	535	2,805	2,518	3,666	3,053	-	-	-	-	-	13	76
Totals	40,711	33,962	28,109	23,018	68,820	56,980	18,270	14,611	40	1,375	13,288.17	262	2,071

3.1 Legal international trade

Zambia being a Party to CITES adheres strictly to the provisions of the Convention. As earlier mentioned, any trade and exports are strictly followed under CITES regulations and procedures. The export of skins is closely and strictly controlled through physical tagging of skins by ZAWA and the centralization of the export documentation at ZAWA Headquarters. This has controlled illegal trade in crocodile products.

4. Protection/Conservation status

According to the Zambia Wildlife Act No. 12 of 1998 of the laws of Zambia, the crocodile is recognized as a game animal. This means that the crocodile can only be hunted under a license issued by Zambia Wildlife Authority or a special license issued by the Minister of Tourism Environment and Natural Resources in consultation with Zambia Wildlife Authority. In addition, ownership or possession of a crocodile or its by-products is permitted only under a valid certificate of ownership issued by the Director General of ZAWA. Like any other animal, crocodile may not be hunted or collected in National Parks or Wildlife Sanctuary. A crocodile or its parts and derivatives are only exported on the strength of ZAWA and CITES permits and tags. With a proper system of monitoring trade (CITES regulations and procedures) and licensing in place in Zambia, there seems to be no need for additional protection measures other than continued policing of crocodile habitats and monitoring of population trends, and harvest.

5. The policy and management plan

This policy is based on the following principles and objectives:

- a) To put in place comprehensive legal framework on the conservation and management of crocodile.

- b) To scientifically conserve and manage the crocodile in Zambia in a sustainable manner by harmonising commercial and conservation objectives.
- c) To support scientific research to improve information and knowledge on the crocodile and its conservation including crocodile farming as an agro-wildlife production system.
- d) To provide for the protection of crocodiles and their habitat throughout their range, based on the zone system with emphasis on the zones with medium-to-high crocodile population densities.
- e) To monitor wild crocodile populations in all its range and use such information as a basis for determining quotas for harvesting of wild eggs, capture of breeding stock
- f) To promote sustainable economic utilization of crocodile through ranching, sport hunting and trade based on a quota system.
- g) To provide for non-consumptive uses such as aesthetic, scientific, cultural and recreation.
- h) To minimise conflicts between crocodiles and humans by zoning the crocodile conservation areas, undertaking extensive community education and problem animal control where the population endangers human life and property, including economic benefits to the communities.
- i) To support the CITES, regional and international co-operation with regard to the utilization and protection of the crocodile, where this does not conflict with the interest of the country.

6. Quota for sustainable utilisation (Safari hunting and problem animal control)

It is envisaged that the requested quota will not have any negative impact on the crocodile population, given that the quota will only be 4% of the population of the major crocodile habitats as already mentioned in 2.4 above.

The local communities' income will be boosted due to the economic value of safari hunting. At the moment, the following benefit sharing occurs where wildlife resources are concerned;

- a) ZAWA retains 100% of hunting concessions fees;
- b) 50% of all animal, hunting rights fees is given to the local communities
- c) The other remaining 40% from 2, above is retained by ZAWA; and
- d) 10% is given to Government Republic of Zambia.

Revenue from crocodile hunting will significantly assist local communities who in a great way have suffered costs of conservation. Local communities have often times resorted to destroying both the habitats and nests in areas where crocodiles have been a threat to human life and livestock.

In addition, the harvest of wild crocodiles is intended to reduce the conflict currently existing with rural human populations in GMAs and Open Areas. This will be achieved by the removal of actual and potential problem animals. The undertaking will offer relief and bring confidence to the communities, as they will now place value on crocodiles unlike at present where problem animals do not bring any benefit not to mention compensation. A positive impact will secure promise for habitat and thus diminish threats to conservation.

The proposed quota will be controlled through the strict licensing procedures and field enforcement activities and the staff at ZAWA will tag the skins.

7. References

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Times of Zambia, Tuesday April 27, 2004

HOME NEWS

Crocs kill more than 100 people

By Times Reporter

OVER 100 people have been killed by crocodiles in Luapula's Bangweulu area and its surrounding swamps in the last one year.

He said the crocodiles had become a menace to the local people.

Mr Chuliyu said it had proved too expensive to keep these people who had not enough to save the people's lives.

The minister commended the combined efforts of the Government and the people to save the people's lives.

Mr Chuliyu said it had proved too expensive to keep these people who had not enough to save the people's lives.

Crop 'killer' crocodiles, residents urge ZA WA

Luangwa round-up
By NEBERT MULENGA

LUANGWA residents in Luanshya are appealing to Zambia Wildlife Authority (ZAWA) to crop crocodiles that have infested the Luangwa river killing several villagers.

Luangwa district health management team administrator Mphahlele said that while other victims had their lives saved, several others had died.

Mr Mphahlele said there were reports of people being killed by crocodiles this year.

Mr Chuliyu said it had proved too expensive to keep these people who had not enough to save the people's lives.

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Times of Zambia, Saturday 17 April, 2004

Times of Zambia, Monday, May 3, 2004

FEATURES

crocs torment locals



•THE threaded crocodile,

knee as the infection had already spread to the lower part of the thigh by the time they were operating on her.

But that will not be without a challenge. Kamayi lost so much blood at the time of attack that she had to be transfused during the operation.

And to talk of the second amputation would mean more blood transfusion. But her blood stream has coagulated

blood group, she was given 0+. The medical experts are now in a dilemma - they do not know what blood group should be given to her. Otherwise, it is virtually impossible to give her any transfusion. And thus, chances are high of ruling out the fresh amputation which cannot be undertaken in the absence of a blood transfusion.

Kamay's problem is not

fallen Luangwa residents in Lusaka rural this year.

Luangwa District Health Management Team administration manager Lungowe Zulu said at least 20 cases of crocodile bites have been reported in various parts of the district this year alone, of which about five have resulted in deaths.

And the local people also spoke of people disappearing in mysterious and suspicious circumstances.

Mr Nickson Banda, of Mwaivi area, said about eight people had sustained serious injuries after they were attacked by the reptiles in his area. And two had been missing since January.

Ms Lungowe said cases of crocodile attacks had become more rampant this year than in the past.

In her view, the fact that more cases had been reported this year indicated there was an increase in the population of the water beasts.

Her views were shared by Dr Miroslava whose institution is the only referral hospital in the district, taking care of chronic cases like crocodile bites.

Dr Miroslava said at least a



•FIVE-year-old Paul Phiri winces as his mother, Munica, washes his right foot which

the sensitisation programmes would leave people malnourished and poorer as they would be scared of fishing, which is the major livelihood of the people and a reliable source of income and protein in the area.

As for now, the situation has remained much the same, casting a heavy burden on the weary shoulders of Katondwe Mission Hospital which is still fighting for improved sanitation in many areas.

Dr Miroslava said the hospital is limited in its operations by lack of artificial limbs for amputated patients, especially children who are still growing, surgical instruments as well as gauze and bandages for dressing wounds.

The absence of electricity is another limiting factor. The hospital relies on solar energy and a power generator which runs for four hours a day, from 18:00 hours to 22:00 hours.

"We are unable to successfully carry out certain operations because machines for ventilation and X-ray, for